PUNCHES

PUNCHES

Product name Catalog No.	SHOULDER PUNCHES	SHOULDER PUNCHES —Dicoat® treatment—	SHOULDER PUNCHES —TiCN coating—	SHOULDER PUNCHES —WPC® treatment・HW coating—
Page	47	49	51	53

SHOULDER PUNCHES —Lapping—	JECTOR PUNCHES	JECTOR PUNCHES —Dicoat® treatment—	JECTOR PUNCHES —TiCN coating—	JECTOR PUNCHES —WPC® treatment・HW coating—
55	57	59	61	63

JECTOR PUNCHES —Lapping—	JECTOR PUNCHES —Configurable full length. Fixed B type—	JECTOR PUNCHES —Configurable full length, fixed B type, WPC®treatment—	JECTOR PUNCHES —Large diameter pin—	JECTOR PUNCHES —Large diameter pin, lapping—
65	67	67	69	69

SHOULDER PUNCHES —Quill type—	SHOULDER PUNCHES —Quill type, lapping・TiCN coating・HW coating—	SHOULDER PUNCHES —Short type—	SHOULDER PUNCHES —Short type, normal・TiCN coating—	DOUBLE-STEPPED SHOULDER PUNCHES —Normal・TiCN coating・HW coating—
71	71	73	73	75

DOUBLE-STEPPED SHOULDER PUNCHES —Quill type—	KEY FLAT SHANK SHOULDER PUNCHES —Normal・TiCN coating—	KEY FLAT SHANK SHOULDER PUNCHES —WPC® treatment・HW coating—	KEY FLAT SHANK JECTOR PUNCHES —Normal・TiCN coating—	KEY FLAT SHANK JECTOR PUNCHES —WPC® treatment・HW coating—
77	79	81	83	85

PUNCHES WITH LOCATING DOWEL HOLES	PUNCHES WITH LOCATING DOWEL HOLES —Dicoat®treatment—	PUNCHES WITH LOCATING DOWEL HOLES —TiCN coating—	PUNCHES WITH LOCATING DOWEL HOLES —WPC® treatment・HW coating—	JECTOR PUNCHES WITH LOCATING DOWEL HOLES
87	89	91	93	95

JECTOR PUNCHES WITH LOCATING DOWEL HOLES —Dicoat® treatment—
97

JECTOR PUNCHES WITH LOCATING DOWEL HOLES —TiCN coating—
99

JECTOR PUNCHES WITH LOCATING DOWEL HOLES —WPC® treatment・HW coating—
101

PUNCHES FOR HEAVY LOAD
103

PUNCHES FOR HEAVY LOAD —Dicoat® treatment—
105

PUNCHES FOR HEAVY LOAD —TiCN coating—
107

PUNCHES FOR HEAVY LOAD —WPC®TREATMENT・HW COATING—
109

PUNCHES FOR HEAVY LOAD —Lapping—
111

JECTOR PUNCHES FOR HEAVY LOAD
113

JECTOR PUNCHES FOR HEAVY LOAD —Dicoat®treatment—
115

JECTOR PUNCHES FOR HEAVY LOAD —TiCN coating—
117

JECTOR PUNCHES FOR HEAVY LOAD —WPC® treatment・HW coating—
119

JECTOR PUNCHES FOR HEAVY LOAD —Lapping—
121

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type—
123

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type, TiCN coating—
125

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type, WPC® treatment—
127

JECTOR PUNCHES FOR HEAVY LOAD —Configurable full length, fixed B type, HW coating—
127

TAPERED HEAD PUNCHES
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TAPERED HEAD PUNCHES —TiCN coating—
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TAPERED HEAD PUNCHES —HW coating—
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TAPERED HEAD JECTOR PUNCHES
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TAPERED HEAD JECTOR PUNCHES —WPC® treatment—
131

TAPERED HEAD JECTOR PUNCHES —TiCN coating—
131

TAPERED HEAD JECTOR PUNCHES —HW coating—
131

PUNCHES FOR HEAVY LOAD, WITH DOWEL HOLES
133

PUNCHES FOR HEAVY LOAD, WITH DOWEL HOLES —TiCN coating—
135

PUNCHES FOR HEAVY LOAD, WITH DOWEL HOLES —WPC® treatment・HW coating—
137

JECTOR PUNCHES FOR HEAVY LOAD, WITH DOWEL HOLES
139

JECTOR PUNCHES FOR HEAVY LOAD, WITH DOWEL HOLES —TiCN coating—
141

JECTOR PUNCHES FOR HEAVY LOAD, WITH DOWEL HOLES —WPC® treatment・HW coating—
143

PUNCHES

DOUBLE-STEPPED SHOULDER PUNCHES FOR HEAVY LOAD —Normal・TiCN coating・HW coating—	TAPPED PUNCHES	TAPPED PUNCHES —Dicoat® treatment—	TAPPED PUNCHES —TiCN coating—	TAPPED PUNCHES —WPC® treatment・HW coating—
145	147	149	149	151

TAPPED JECTOR PUNCHES	TAPPED JECTOR PUNCHES —WPC® treatment—	DOUBLE-STEPPED TAPPED PUNCHES	KEY FLAT SHANK TAPPED PUNCHES —Normal・TiCN coating—	PUNCHES WITH KEY GROOVES
153	153	155	157	159

PUNCHES WITH KEY GROOVES —TiCN coating—	PUNCHES WITH KEY GROOVES —WPC® treatment・HW coating—	JECTOR PUNCHES WITH KEY GROOVES	JECTOR PUNCHES WITH KEY GROOVES —WPC® treatment—	FLANGE STOPPER PUNCHES —Normal・TiCN coating—
161	163	165	165	167

STRAIGHT PUNCHES	STRAIGHT PUNCHES —Lapping—	STRAIGHT PUNCHES —TiCN coating—	JECTOR STRAIGHT PUNCHES	JECTOR STRAIGHT PUNCHES —Lapping—
169	169	170	171	171

TAPPED STRAIGHT PUNCHES	TAPPED STRAIGHT PUNCHES —Lapping—	STRAIGHT PUNCHES FOR HEAVY LOAD	STRAIGHT PUNCHES FOR HEAVY LOAD —Lapping—	BLANKING PUNCHES
172	172	173	174	175

MINI PUNCHES	MINI STRAIGHT PUNCHES	PUNCH BLANKS	PUNCH BLANKS —With locating dowel holes—	JECTOR PUNCH BLANKS
177	178	179	179	180

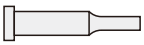
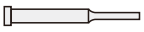
JECTOR PUNCH BLANKS —With locating dowel holes—	PUNCH BLANKS FOR HEAVY LOAD	TAPPED PUNCH BLANKS	FOR HEAVY LOAD PUNCH BLANKS WITH DOWEL HOLES
180	181	181	181

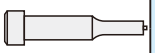
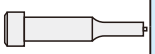
FOR HEAVY LOAD JECTOR PUNCH BLANKS	TAPPED JECTOR PUNCH BLANKS	FOR HEAVY LOAD, WITH DOWEL HOLE JECTOR PUNCH BLANKS	JECTOR PIN SETS
182	182	182	183 186

PUSHING PINS JP JPW JPWH	PUNCH HOLDERS BBPH BBPHC BBPHW BBPHWA KBPH KBPHC	PUNCH SPACERS PWA	PUNCH SHIMS PWB	SPACERS FOR TAPPED PUNCHES PWC
186	187	188	188	188

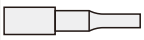
FIXING KEYS FOR PUNCHES WITH KEY GROOVES	FIXING KEYS FOR PUNCHES WITH KEY GROOVES —Long type—	KEYS FOR PUNCHES KE KED KES KEG
189	189	190

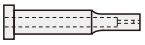
PUNCH LIST①
—GUIDE—

Shank type		M	Shank diameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		Lapping	
Shoulder		Equivalent to SKD11	D_{m5}	SP□□	P.47	T—SP□□	P.49			W—SP□□	P.53	L—SP□□	P.55
			$D^{+0.005}_{0}$	A—SP□□		AT—SP□□				AW—SP□□		AL—SP□□	
		SKH51	D_{m5}	SH□□				H—SH□□	P.51	W—SH□□ HW—SH□□		L—SH□□	
			$D^{+0.005}_{0}$	A—SH□□				AH—SH□□		AW—SH□□ AHW—SH□□		AL—SH□□	
		Powdered high-speed steel	D_{m5}	PH□□		T—PH□□	P.49	H—PH□□		W—PH□□ HW—PH□□		L—PH□□	
			$D^{+0.005}_{0}$	A—PH□□		AT—PH□□		AH—PH□□		AW—PH□□ AHW—PH□□		AL—PH□□	
Shoulder jector ＊: Spring reinforced type		Equivalent to SKD11 (D4～6 SKH51)	D_{m5}	SJ□□ (＊SJV□□)	P.57	T—SJ□□ ＊T—SJV□□	P.59			W—SJ□□ ＊W—SJV□□	P.63	L—SJ□□ ＊L—SJV□□	P.65
			$D^{+0.005}_{0}$	A—SJ□□ ＊A—SJV□□		AT—SJ□□ ＊AT—SJV□□				AW—SJ□□ ＊AW—SJV□□		AL—SJ□□ ＊AL—SJV□□	
		Powdered high-speed steel	D_{m5}	PJ□□ (＊PJV□□)		T—PJ□□ ＊T—PJV□□		H—PJ□□ ＊H—PJV□□	P.61	W—PJ□□ HW—PJ□□ ＊W—PJV□□ ＊HW—PJV□□		L—PJ□□ ＊L—PJV□□	
			$D^{+0.005}_{0}$	A—PJ□□ ＊A—PJV□□		AT—PJ□□ ＊AT—PJV□□		AH—PJ□□ ＊AH—PJV□□		AW—PJ□□ AHW—PJ□□ ＊AW—PJV□□ ＊AHW—PJV□□		AL—PJ□□ ＊AL—PJV□□	
Shoulder jector (fixed B type) ＊: Spring reinforced type		Equivalent to SKD11	D_{m5}	LFSJ□□ ＊LFSJV□□	P.67					W—LFSJ□□ ＊W—LFSJV□□	P.67	Alteration SC	P.68
			$D^{+0.005}_{0}$	A—LFSJ□□ ＊A—LFSJV□□						AW—LFSJ□□ ＊AW—LFSJV□□			
Shoulder jector (Large dia. pin type)		Equivalent to SKD11	D_{m5}	SJF□□	P.69							L—SJF□□	P.69
Shoulder Quill type		SKH51	D_{m5}	SH□□	P.71			H—SH□□	P.71	HW—SH□□	P.71	L—SH□□	P.71
			$D^{+0.005}_{0}$	A—SH□□				AH—SH□□		AHW—SH□□		AL—SH□□	
		Powdered high-speed steel	D_{m5}	PH□□				H—PH□□		HW—PH□□		L—PH□□	
			$D^{+0.005}_{0}$	A—PH□□				AH—PH□□		AHW—PH□□		AL—PH□□	
Shoulder Quill type (Head thickness 5 mm)		SKH51	D_{m5}	SHLT□□	P.71			H—SHLT□□	P.71	HW—SHLT□□	P.71	L—SHLT□□	P.71
			$D^{+0.005}_{0}$	A—SHLT□□				AH—SHLT□□		AHW—SHLT□□		AL—SHLT□□	
		Powdered high-speed steel	D_{m5}	PHLT□□				H—PHLT□□		HW—PHLT□□		L—PHLT□□	
			$D^{+0.005}_{0}$	A—PHLT□□				AH—PHLT□□		AHW—PHLT□□		AL—PHLT□□	
Shoulder Short type		Equivalent to SKD11	D_{m5}	SS□□	P.73				P.73			Alteration SC	P.74
			$D^{+0.005}_{0}$	A—SS□□									
		SKH51	D_{m5}	SSH□□				H—SSH□□					
			$D^{+0.005}_{0}$	A—SSH□□				AH—SSH□□					
		Powdered high-speed steel	D_{m5}	SSP□□				H—SSP□□					
			$D^{+0.005}_{0}$	A—SSP□□				AH—SSP□□					
Shoulder Double stepped		Equivalent to SKD11	D_{m5}	SPTW□	P.75							Alteration SC	P.76
			$D^{+0.005}_{0}$	A—SPTW□									
		SKH51	D_{m5}	SHTW□				H—SHTW□	P.75	HW—SHTW□	P.75		
			$D^{+0.005}_{0}$	A—SHTW□				AH—SHTW□		AHW—SHTW□			
		Powdered high-speed steel	D_{m5}	PHTW□				H—PHTW□		HW—PHTW□			
			$D^{+0.005}_{0}$	A—PHTW□				AH—PHTW□		AHW—PHTW□			

Shank type		M	Shank diameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		Lapping	
Shoulder quill type, double stepped		SKH51	Dm5	SHTWA	P.77							Alteration SC	P.78
			D +0.005 0	A—SHTWA									
		Powdered high-speed steel	Dm5	PHTWA									
			D +0.005 0	A—PHTWA									
Key flat shank shoulder		Equivalent to SKD11	D +0.005 0	G—SP□□	P.79					GW—SP□□	P.81		
		SKH51		G—SH□□				GH—SH□□	P.79	GW—SH□□ GHW—SH□□			
		Powdered high-speed steel		G—PH□□				GH—PH□□		GW—PH□□ GHW—PH□□			
Key flat shank jector		Equivalent to SKD11 (D4~6 SKH51)	D +0.005 0	G—SJ□□	P.83					GW—SJ□□	P.85		
		Powdered high-speed steel	D +0.005 0	G—PJ□□				GH—PJ□□	P.83	GW—PJ□□ GHW—PJ□□			
Key flat shank jector (Spring-reinforced type)		Equivalent to SKD11	D +0.005 0	G—SJV□□	P.83					GW—SJV□□	P.85		
		Powdered high-speed steel	D +0.005 0	G—PJV□□				GH—PJV□□	P.83	GW—PJV□□ GHW—PJV□□			
With locating dowel hole		Equivalent to SKD11	Dm5	SP□□—C	P.87	T—SP□□—C	P.89	H—SP□□—C	P.91	W—SP□□—C HW—SP□□—C	P.93	Alteration SC	P.88
Jector with locating dowel hole		Equivalent to SKD11	Dm5	SJ□□—C	P.95	T—SJ□□—C	P.97	H—SJ□□—C	P.99	W—SJ□□—C HW—SJ□□—C	P.101	Alteration SC	P.96
Jector with locating dowel hole (Spring-reinforced type)		Equivalent to SKD11	Dm5	SJV□□—C	P.95	T—SJV□□—C	P.97	H—SJV□□—C	P.99	W—SJV□□—C HW—SJV□□—C	P.101	Alteration SC	P.96
For heavy load		SKH51	Dm5	AP□□	P.103			H—AP□□	P.107	W—AP□□ HW—AP□□	P.109	L—AP□□	P.111
			D +0.005 0	A—AP□□				AH—AP□□		AW—AP□□ AHW—AP□□		AL—AP□□	
		Powdered high-speed steel	Dm5	APH□□		T—APH□□	P.105	H—APH□□		W—APH□□ HW—APH□□		L—APH□□	
			D +0.005 0	A—APH□□		AT—APH□□		AH—APH□□		AW—APH□□ AHW—APH□□		AL—APH□□	
Jector for heavy load ＊: Spring and pin reinforced type		Powdered high-speed steel	Dm5	APJ□□ ＊APJV□□	P.113	T—APJ□□ ＊T—APJV□□	P.115	H—APJ□□ ＊H—APJV□□	P.117	W—APJ□□ HW—APJ□□ ＊W—APJV□□ ＊HW—APJV□□	P.119	L—APJ□□ ＊L—APJV□□	P.121
			D +0.005 0	A—APJ□□ ＊A—APJV□□		AT—APJ□□ ＊AT—APJV□□		AH—APJ□□ ＊AH—APJV□□		AW—APJ□□ AHW—APJ□□ ＊AW—APJV□□ ＊AHW—APJV□□		AL—APJ□□ ＊AL—APJV□□	
Jector for heavy load (Fixed B type) ＊: Spring and pin reinforced type		Powdered high-speed steel	Dm5	LFAPJ□□ ＊LFAPJV□□	P.123			H—LFAPJ□□ ＊H—LFAPJV□□	P.125	W—LFAPJ□□ HW—LFAPJ□□ ＊W—LFAPJV□□ ＊HW—LFAPJV□□	P.127	Alteration SC	P.124
			D +0.005 0	A—LFAPJ□□ ＊A—LFAPJV□□				AH—LFAPJ□□ ＊AH—LFAPJV□□		AW—LFAPJ□□ AHW—LFAPJ□□ ＊AW—LFAPJV□□ ＊AHW—LFAPJV□□			
Tapered head		SKH51	Dm5	TSSHA□	P.129			H—TSSHA□	P.129	HW—TSSHA□	P.129	Alteration SC	P.130
		Powdered high-speed steel		TSPHA□				H—TSPHA□		HW—TSPHA□			
Tapered head jector		SKH51	Dm5	TSSJA□	P.131			H—TSSJA□	P.131	W—TSSJA□ HW—TSSJA□	P.131	Alteration SC	P.132
		Powdered high-speed steel		TSPJA□				H—TSPJA□		W—TSPJA□ HW—TSPJA□			

PUNCH LIST②
—GUIDE—

Shank type		M	Shank diameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		Lapping	
For heavy load with dowel hole		SKH51	Dm5	AP□□—C	P.133			H—AP□□—C	P.135	W—AP□□—C HW—AP□□—C	P.137	Alteration SC	P.134
		Powdered high-speed steel		APH□□—C				H—APH□□—C		W—APH□□—C HW—APH□□—C			
Jector for heavy load with dowel hole ＊: Spring and pin reinforced type		SKH51	Dm5	AHJ□□—C ＊AHJV□□—C	P.139			H—AHJ□□—C ＊H—AHJV□□—C	P.141	W—AHJ□□—C ＊W—AHJV□□—C HW—AHJ□□—C ＊HW—AHJV□□—C	P.143	Alteration SC	P.140
For heavy load double stepped		SKH51	Dm5	APTW□	P.145			H—APTW□	P.145	HW—APTW□	P.145	Alteration SC	P.146
			$D^{+0.005}_{0}$	A—APTW□				AH—APTW□		AHW—APTW□			
		Powdered high-speed steel	Dm5	APHTW□				H—APHTW□		HW—APHTW□			
			$D^{+0.005}_{0}$	A—APHTW□				AH—APHTW□		AHW—APHTW□			
Tapped		Equivalent to SKD11	Dm5	MP□□ MPL□□	P.147	T—MP□□	P.149			W—MP□□	P.151	Alteration SC	P.148
			$D^{+0.005}_{0}$	A—MP□□		AT—MP□□				AW—MP□□			
		Powdered high-speed steel	Dm5	MPH□□		T—MPH□□		H—MPH□□	P.149	W—MPH□□ HW—MPH□□			
			$D^{+0.005}_{0}$	A—MPH□□		AT—MPH□□		AH—MPH□□		AW—MPH□□ AHW—MPH□□			
Tapped jector		Equivalent to SKD11	Dm5	MJ□□	P.153					W—MJ□□	P.153	Alteration SC	P.154
			$D^{+0.005}_{0}$	A—MJ□□						AW—MJ□□			
Tapped, double stepped		Equivalent to SKD11	Dm5	MPTW□	P.155							Alteration SC	P.156
			$D^{+0.005}_{0}$	A—MPTW□									
		Powdered high-speed steel	Dm5	MPHTW□									
			$D^{+0.005}_{0}$	A—MPHTW□									
Key flat shank, tapped		Equivalent to SKD11	$D^{+0.005}_{0}$	G—MP□□	P.157								
		Powdered high-speed steel		G—MPH□□				GH—MPH□□	P.157				
With key groove		Equivalent to SKD11	Dm5	SK□□	P.159					W—SK□□	P.163	Alteration SC	P.160
			$D^{+0.005}_{0}$	A—SK□□						AW—SK□□			
		SKH51	Dm5	SHK□□				H—SHK□□	P.161	W—SHK□□ HW—SHK□□			
			$D^{+0.005}_{0}$	A—SHK□□				AH—SHK□□		AW—SHK□□ AHW—SHK□□			
		Powdered high-speed steel	Dm5	PK□□				H—PK□□		W—PK□□ HW—PK□□			
			$D^{+0.005}_{0}$	A—PK□□				AH—PK□□		AW—PK□□ AHW—PK□□			
Jector with key groove		Equivalent to SKD11	Dm5	SKJ□□	P.165					W—SKJ□□	P.165	Alteration SC	P.166
			$D^{+0.005}_{0}$	A—SKJ□□						AW—SKJ□□			
Flange stopper		Powdered high-speed steel	$D^{+0.005}_{0}$	PHTAL	P.167			H—PHTAL	P.167			Alteration SC	P.168
Straight		Equivalent to SKD11	—	SPC	P.169							L—SPC	P.169
		SKH51	—	SHC				H—SHC	P.170			L—SHC	
		Powdered high-speed steel	—	PHC				H—PHC				L—PHC	

Shank type		M	Shank diameter tolerance	Standard type		Dicoat® treatment		TiCN coating		WPC® treatment (upper) HW coating (lower)		Lapping	
Straight jector		Equivalent to SKD11 (No.5・SKH51)	—	SJC	P.171							L—SJC	P.171
Tapped straight		Equivalent to SKD11	—	MSPC	P.172							L—MSPC	P.178
Straight for heavy load		SKH51	—	AHC	P.173							L—AHC	P.174
		Powdered high-speed steel	—	APHC								L—APHC	
Blanking punch		Equivalent to SKD11	D_{m5}	SPCPD	P.175								
Mini		SKH51	—	SHCL	P.177								
Mini straight		SKH51	—	SH	P.178								

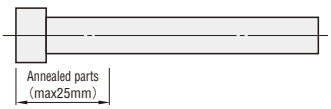
■Guide to jector punches

Features		Type of jector						
		Standard type				Configurable full length type		
		Standard type	Spring reinforced type	Spring and pin reinforced type	Large-diameter pin type	Standard type	Spring reinforced type	Spring and pin reinforced type
		These are the most commonly used punches for scrap removal.	The spring constant is twice that of the standard type.The large spring load results in more effective scrap removal.	The spring constant is twice that of the standard type, and the improved strength of the pin shaft under the flange prevents breakage below the flange.	This type has a thicker jector pin than the standard type. It provides excellent strength and rigidity.	The tip length B remains constant even when the full length L changes.	The tip length B remains constant even when the full length L changes. The spring constant is twice that of the standard type, and results in more effective scrap removal.	The tip length B remains constant even when the full length L changes.The spring constant is twice that of the standard type, and the improved strength of the pin shaft under the flange prevents breakage below the flange.
Shank type	**Surface treatment**							
Shoulder	Normal	P.57	P.57		P.69	P.67	P.67	
	Lapping	P.65	P.65			P.68 Alteration SC	P.68 Alteration SC	
	Dicoat® treatment	P.59	P.59					
	TiCN coating	P.61	P.61					
	WPC® treatment	P.63	P.63			P.67	P.67	
	HW coating							
Key flat shank	Normal	P.83	P.83					
	TiCN coating							
	WPC® treatment	P.85	P.85					
	HW coating							
With locating dowel hole	Normal	P.95	P.95					
	Lapping	P.96 Alteration SC	P.96 Alteration SC					
	Dicoat® treatment	P.97	P.97					
	TiCN coating	P.99	P.99					
	WPC® treatment	P.101	P.101					
	HW coating							
For heavy load	Normal	P.113		P.113		P.123		P.123
	Lapping	P.121		P.121		P.124 Alteration SC		P.124 Alteration SC
	Dicoat® treatment	P.115		P.115				
	TiCN coating	P.117		P.117		P.125		P.125
	WPC® treatment	P.119		P.119		P.127		P.127
	HW coating							
Tapered head	Normal					P.131		
	Lapping					P.132 Alteration SC		
	TiCN coating							
	WPC® treatment					P.131		
	HW coating							
For heavy load with dowel hole	Normal	P.139		P.139				
	Lapping	P.140 Alteration SC		P.140 Alteration SC				
	TiCN coating	P.141		P.141				
	WPC® treatment	P.143		P.143				
	HW coating							
Tapped	Normal	P.153						
	Lapping	P.154 Alteration SC						
	WPC® treatment	P.153						
With key groove	Normal	P.165						
	Lapping	P.166 Alteration SC						
	WPC® treatment	P.165						
Straight	Normal	P.171						
	Lapping	P.171						

■ Because punches and punch blanks made from powdered high-speed steel are annealed at the head, the hardness is lower. (45～55 HRC)

However, the following types are not annealed.

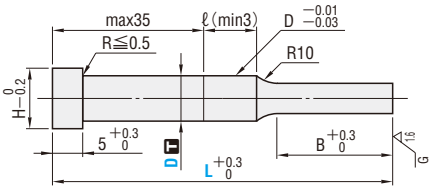
- Flange stopper type
- Short type
- Shank diameter (D dimension) 1.6, 2.0, 2.5



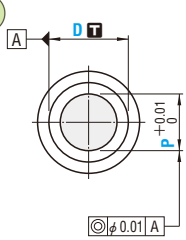
SHOULDER PUNCHES

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
RoHS	D_{m5}	Equivalent to SKD11 60～63HRC	SP	A D R E G	S
		SKH51 61～64HRC	SH		L
		Powdered high-speed steel 64～67HRC	PH		X
	$D^{+0.005}_{0}$	Equivalent to SKD11 60～63HRC	A—SP		Tip length (B) X>L>S
		SKH51 61～64HRC	A—SH		
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.		Powdered high-speed steel 64～67HRC	A—PH		

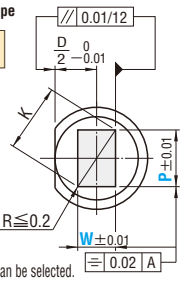
The tip shape can be selected from Tip shape A～G in the figure below.



Tip shape A

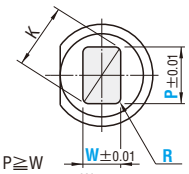


Tip shape D



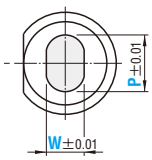
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



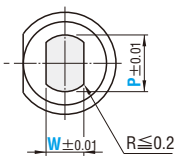
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01 mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	Ⓡ R	B	H
(D_{m5}) SP SH PH ($D^{+0.005}_{0}$) A—SP A—SH A—PH	A D R E G	S	3	40	50	60	70	80	90	100	1.00～ 2.99	(P.71)		$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	5
			4	40	50	60	70	80	90	100	1.00～ 3.99	3.97	1.00			7
			5	40	50	60	70	80	90	100	2.00～ 4.99	4.97	1.20			8
			6	40	50	60	70	80	90	100	2.00～ 5.99	5.97	1.50			9
			8	(40)	50	60	70	80	90	100	3.00～ 7.99	7.97	2.00		13	11
			10	(40)	50	60	70	80	90	100	3.00～ 9.99	9.97	2.50			13
			(12)				70	80	90	100	5.00～ 11.99	—				15
			13	(40)	50	60	70	80	90	100	6.00～ 12.99	12.97	3.00			16
			16	(40)	50	60	70	80	90	100	10.00～ 15.99	15.97	4.00		19	19
			20	(40)	50	60	70	80	90	100	13.00～ 19.99	19.97	5.00			23
			25	(40)	50	60	70	80	90	100	18.00～ 24.99	24.97	6.00			28
		L	3		50	60	70	80	90	100	1.00～ 2.99	(P.71)			13	5
			4		50	60	70	80	90	100	1.00～ 3.99	3.97	2.00			7
			5		50	60	70	80	90	100	2.00～ 4.99	4.97	2.00			8
			6		50	60	70	80	90	100	2.00～ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00～ 7.99	7.97	2.50		19	11
			10		50	60	70	80	90	100	3.00～ 9.99	9.97	2.50			13
			13		50	60	70	80	90	100	6.00～ 12.99	12.97	3.00			16
			16			60	70	80	90	100	10.00～ 15.99	15.97	4.00		25	19
			20			60	70	80	90	100	13.00～ 19.99	19.97	5.00			23
			25			60	70	80	90	100	18.00～ 24.99	24.97	6.00			28
		X	3		50	60	70	80	90	100	1.20～ 2.99	—			19	5
			4		50	60	70	80	90	100	1.20～ 3.99	3.97	2.00			7
			5			60	70	80	90	100	2.00～ 4.99	4.97	3.50		25	8
			6			60	70	80	90	100	2.00～ 5.99	5.97	3.50			9
			8			60	70	80	90	100	3.00～ 7.99	7.97	5.00		30	11
			10			60	70	80	90	100	3.00～ 9.99	9.97	5.00			13
			13			60	70	80	90	100	6.00～ 12.99	12.97	5.00			16
			16				70	80	90	100	10.00～ 15.99	—			40	19
			20				70	80	90	100	13.00～ 19.99					23
			25				70	80	90	100	18.00～ 24.99					28

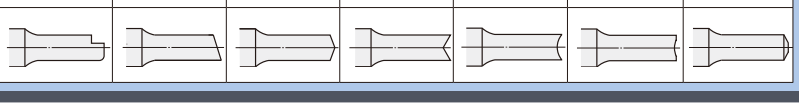
- Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>(D−0.05)…ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- L(40)…B=8 If full length is (40), tip length is 8 mm in all cases.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
A—PHDL13	—	80	—	P10.50	—	W7.34		

For a smaller diameter than listed: Shoulder Punches —Quill— P.71
For a shorter L dimension: Shoulder Punches —Short Type— P.73

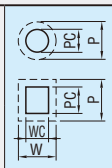
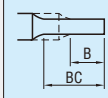
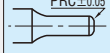
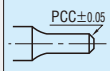
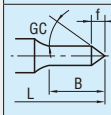
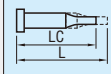
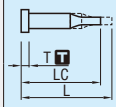
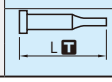
Days to Ship Quotation

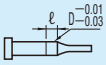
Punch tip shear angle alterations P.176	1F	2F	3F	4F	5F	6F	7F
							

Alterations

Catalog No. — L(LC·LCT·LMT) — P(PC) — W(WC) — R — (BC·HC, etc.)

SPDS10 — LC72 — PC1.9 — WC1.9 — BC8—KC45

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 0.500~0.799 / 10 0.800~0.999 / 13 1.000~1.999 / 20 2.000~3.999 / 35 4.000~4.999 / 45 5.000~5.999 / 50 6.000~ / 60	Tip dimension change PC/WC ≧ P·Wmin./2 ≧0.80 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)·W(WC) / Bmax. 0.80~1.49 / 8 1.50~1.99 / 13 2.00~3.49 / 19 3.50~4.99 / 25 5.00~ / 30	
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30 mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC.	———	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f = P/2×tan(90°−GC°) ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.	———	Quotation
		PKC	Tip tolerance change P +0.01/0 ⇨ +0.005/0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01 ⇨ +0.01/0	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length - 25 mm). (If combined with LKC·LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length - 30 mm).	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change T +0.3/0 ⇨ +0.02/0 + LC: Full length change + Full length tolerance change L +0.3/0 ⇨ +0.1/0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change T +0.3/0 ⇨ 0/−0.02 + LC: Full length change + Full length tolerance change L +0.3/0 ⇨ +0.1/0		
		LKC	Full length tolerance change L +0.3/0 ⇨ +0.05/0		
		LKZ	Full length tolerance change L +0.3/0 ⇨ +0.01/0		

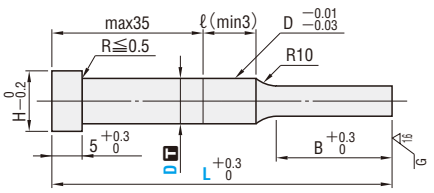
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0°and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0°and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC/LCT/LMT, full length remains as specified.		
		TKC	Head thickness tolerance change T +0.3/0 ⇨ +0.02/0		Quotation
		TKM	Head thickness tolerance change T +0.3/0 ⇨ 0/−0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5. ⊗ Cannot be combined with SRC.		
		RC	Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. ⊗ Cannot be used for D +0.005/0 types.		
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.627. Can be used for D10~25. ⊗ Cannot be used for D +0.005/0 types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ: •D3~6 P≦D−1.2; •D8~ P≦D−2.2 DREG: W≦D−1.2 (Machining width 0.5) (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		UC	Modification for urethane stripper (USN) installation For details P.630. Can be used for D10~25.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

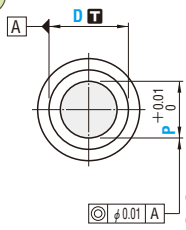
SHOULDER PUNCHES
—DICOAT® TREATMENT—

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
—Dicoat® treatment— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5} (D3~25)	Equivalent to SKD11 60~63HRC Surface 3000HV	T—SP	A D R E G	S L X Tip length (B) X>L>S
		Powdered high-speed steel 62~64HRC Surface 3000HV	T—PH		
	$D^{+0.005}_{0}$ (D3~13)	Equivalent to SKD11 60~63HRC Surface 3000HV	AT—SP		
		Powdered high-speed steel 62~64HRC Surface 3000HV	AT—PH		

The tip shape can be selected from Tip shape A~G in the figure below.

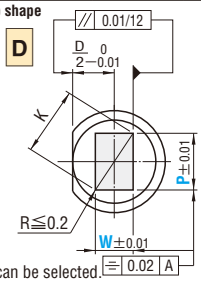


Tip shape A

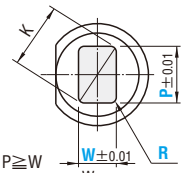


P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape D

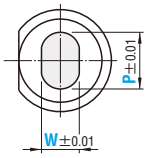


Tip shape R



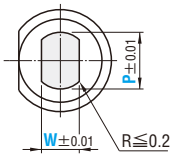
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01 mm increments Ⓐ min.	Ⓐ P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
(D_{m5}) T—SP T—PH ($D^{+0.005}_{0}$) (D3 ~ 13) AT—SP AT—PH	A D R E G	S	3	40	50	60	70	80			1.00~	2.99	—	—	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	5
			4	40	50	60	70	80			1.00~	3.99	3.97	1.00			7
			5	40	50	60	70	80			2.00~	4.99	4.97	1.20			8
			6	40	50	60	70	80			2.00~	5.99	5.97	1.50			9
			8	(40)	50	60	70	80	90	100	3.00~	7.99	7.97	2.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~	9.99	9.97	2.50			13
			13	(40)	50	60	70	80	90	100	6.00~	12.99	12.97	3.00			16
			16	(40)	50	60	70	80	90	100	10.00~	15.99	15.97	4.00		19	19
			20	(40)	50	60	70	80	90	100	13.00~	19.99	19.97	5.00			23
			25	(40)	50	60	70	80	90	100	18.00~	24.99	24.97	6.00			28
		L	3		50	60	70	80			1.00~	2.99	—	—		13	5
			4		50	60	70	80			1.00~	3.99	3.97	2.00			7
			5		50	60	70	80			2.00~	4.99	4.97	2.00			8
			6		50	60	70	80			2.00~	5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00~	7.99	7.97	2.50		19	11
			10		50	60	70	80	90	100	3.00~	9.99	9.97	2.50			13
			13		50	60	70	80	90	100	6.00~	12.99	12.97	3.00			16
			16			60	70	80	90	100	10.00~	15.99	15.97	4.00		25	19
			20			60	70	80	90	100	13.00~	19.99	19.97	5.00			23
			25			60	70	80	90	100	18.00~	24.99	24.97	6.00			28
	A	X	3		50	60	70	80			2.00~	2.99	—			19	5
			4		50	60	70	80			2.00~	3.99					7
			5			60	70	80			2.00~	4.99				25	8
			6			60	70	80			2.00~	5.99					9
			8			60	70	80	90	100	3.00~	7.99				30	11
			10			60	70	80	90	100	3.00~	9.99					13
			13			60	70	80	90	100	6.00~	12.99					16
			16				70	80	90	100	10.00~	15.99				40	19
			20				70	80	90	100	13.00~	19.99					23
			25				70	80	90	100	18.00~	24.99					28

Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)···B=8 If full length is (40), tip length is 8 mm in all cases.

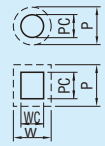
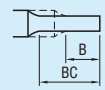
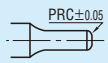
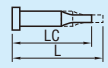
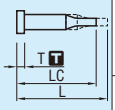
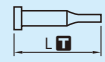
Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
T—SPEL 16	—	70	—	P12.00	—	W6.00		

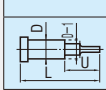
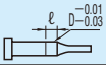
Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	— (BC·HC·TC, etc.)
T—SPEL 16	—	LC65	—	P12.00	—	W6.00	—	KC90	

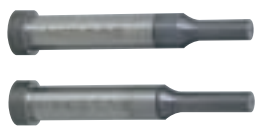
Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip				
	PC WC	Tip dimension change PC≧ Pmin./2 ≧1.00 0.01 mm increments P(PC) / Bmax. 1.00~1.99 / 20 2.00~3.99 / 35 4.00~5.99 / 40 6.00~ / 45	Tip dimension change PC/WC≦ P·Wmin./2 ≧1.00 0.01 mm increments P(PC)·W(WC) / Bmax. 1.00~1.49 / 8 1.50~1.99 / 13 2.00~3.49 / 19 3.50~4.99 / 25 5.00~ / 30	
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30 mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2.	———	
Alterations to full length				
	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length−30 mm).	Quotation
		(If combined with LKC, 0.01 mm increments can be selected.)		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Alterations to head				
	KC	Addition of single key flat to head	90° 0° 180° 270° Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	

Price Quotation

Alteration	Code	Ⓐ	DREG	1Code
Alterations to head				
	KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	
	NKC	———	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5. Cannot be combined with SRC.		Quotation
	RC	0 −0.04 Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. Cannot be used for $D^{+0.005}_{0}$ types.		
	SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10~25. Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank				
	SKC	Single key flat on shank Ⓐ: $\frac{D}{2}-0.5^{\ 0}_{-0.01}$ •D3~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) •D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) $\frac{D}{2}-1^{\ 0}_{-0.01}$ Cannot be combined with KC·WKC·KFC.	DREG	
	UC	Modification for urethane stripper (USN) installation For details P.630. Can be used for D10~25.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

SHOULDER PUNCHES
—TiCN COATING—

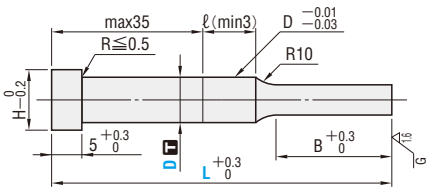
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—TiCN coating— RoHS	Dm5	SKH51 61～64HRC Surface 3000HV	H—SH	A D R E G	S L X
		Powdered high-speed steel 64～67HRC Surface 3000HV	H—PH		
	$D^{+0.005}_{0}$	SKH51 61～64HRC Surface 3000HV	AH—SH		
		Powdered high-speed steel 64～67HRC Surface 3000HV	AH—PH		



For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

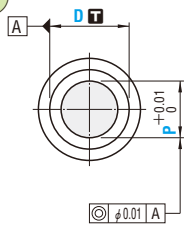
Tip length (B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.

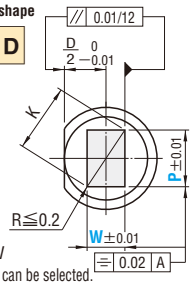


The tip end is ground before the coating is applied.

Tip shape A

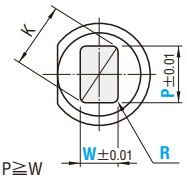


Tip shape D



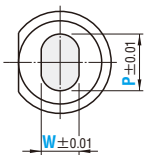
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



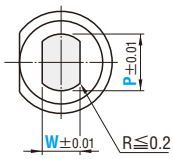
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01 mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
(Dm5) H—SH H—PH (D+0.005 0) AH—SH AH—PH	A D R E G	S	3	40	50	60	70	80	90	100	1.00～ 2.99	—	—	0.15≦R<W/2 (Ⓡ only)	8	5
			4	40	50	60	70	80	90	100	1.00～ 3.99	3.97	1.00			7
			5	40	50	60	70	80	90	100	2.00～ 4.99	4.97	1.20			8
			6	40	50	60	70	80	90	100	2.00～ 5.99	5.97	1.50			9
			8	(40)	50	60	70	80	90	100	3.00～ 7.99	7.97	2.00		13	11
			10	(40)	50	60	70	80	90	100	3.00～ 9.99	9.97	2.50			13
			13	(40)	50	60	70	80	90	100	6.00～ 12.99	12.97	3.00			16
			16	(40)	50	60	70	80	90	100	10.00～ 15.99	15.97	4.00		19	19
			20	(40)	50	60	70	80	90	100	13.00～ 19.99	19.97	5.00			23
			25	(40)	50	60	70	80	90	100	18.00～ 24.99	24.97	6.00			28
		L	3		50	60	70	80	90	100	1.00～ 2.99	—	—		13	5
			4		50	60	70	80	90	100	1.00～ 3.99	3.97	2.00			7
			5		50	60	70	80	90	100	2.00～ 4.99	4.97	2.00			8
			6		50	60	70	80	90	100	2.00～ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00～ 7.99	7.97	2.50		19	11
			10		50	60	70	80	90	100	3.00～ 9.99	9.97	2.50			13
			13		50	60	70	80	90	100	6.00～ 12.99	12.97	3.00			16
			16			60	70	80	90	100	10.00～ 15.99	15.97	4.00		25	19
			20			60	70	80	90	100	13.00～ 19.99	19.97	5.00			23
			25			60	70	80	90	100	18.00～ 24.99	24.97	6.00			28
		X	3		50	60	70	80	90	100	1.20～ 2.99	—	—		19	5
			4		50	60	70	80	90	100	1.20～ 3.99	3.97	2.00			7
			5			60	70	80	90	100	2.00～ 4.99	4.97	3.50		25	8
			6			60	70	80	90	100	2.00～ 5.99	5.97	3.50			9
			8			60	70	80	90	100	3.00～ 7.99	7.97	5.00		30	11
			10			60	70	80	90	100	3.00～ 9.99	9.97	5.00			13
			13			60	70	80	90	100	6.00～ 12.99	12.97	5.00			16
			16				70	80	90	100	10.00～ 15.99	—			40	19
			20				70	80	90	100	13.00～ 19.99					23
			25				70	80	90	100	18.00～ 24.99					28

Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05…ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)…B=8 If full length is (40), tip length is 8 mm in all cases.

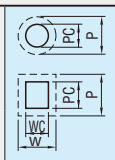
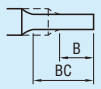
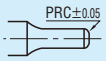
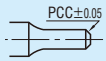
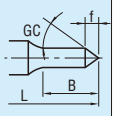
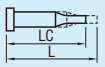
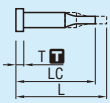
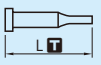
Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
AH—SHEL16	—	70	—	P12.00	—	W6.00		

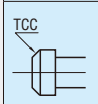
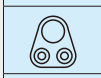
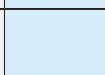
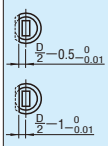
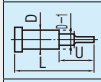
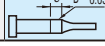
Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	—	(BC·HC·TC, etc.)
H—SHAL 10	—	LC72	—	PC2.80					—	BC8

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 ≧1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.000~1.999 / 20 2.000~3.999 / 35 4.000~4.999 / 45 5.000~5.999 / 50 6.000~ / 60	Tip dimension change PC/WC ≧ P·Wmin./2 ≧1.00 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)·W(WC) / Bmax. 1.00~1.49 / 8 1.50~1.99 / 13 2.00~3.49 / 19 3.50~4.99 / 25 5.00~ / 30	
		BC	Tip length change 2≦BC≦Bmax.≦L/2 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax.≦L/2 0.1 mm increments Full length L must be at least 30 mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC·GC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC·GC.	———	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°—GC°) If combined with SC, tip edgesare rounded. ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LCT·LMT·PRC·PCC.	———	Quotation
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P·W±0.01 ⇨ +0.01 0 ⊗ Cannot be used for D>13.	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length—25 mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length—30 mm).	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 —0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		

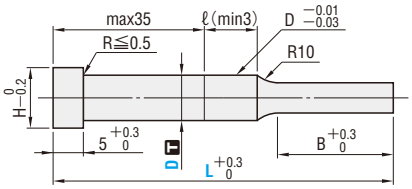
Price Quotation

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		Quotation
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 —0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5. ⊗ Cannot be combined with SRC.		
		RC	 Head thickness is machined to a tolerance of —0.04~0 relative to the retainer surface. ⊗ Cannot be used for D +0.005 0 types.		
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10~25. ⊗ Cannot be used for D +0.005 0 types.		
Alterations to shank		SKC	 Single key flat on shank Ⓐ DREG • D3—6 P≦D—1.2 W≦D—1.2 (Machining width 0.5) • D8 and larger P≦D—2.2 W≦D—2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		UC	Modification for urethane stripper (USN) installation For details P.630. Can be used for D10~25.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

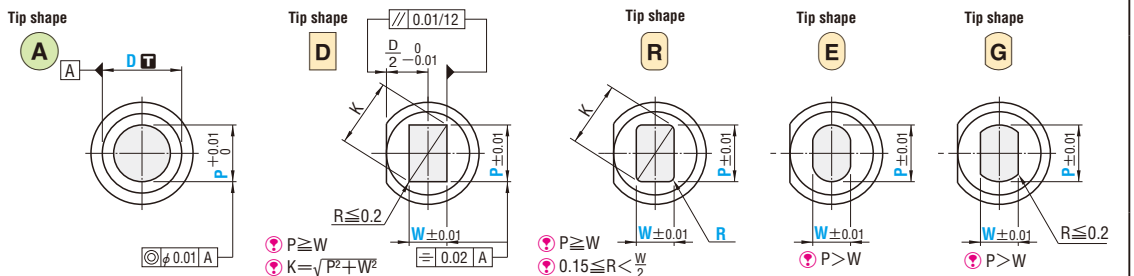
SHOULDER PUNCHES
—WPC® TREATMENT・HW COATING—

Type	M H	Catalog No. Type: Shank dia. T D m5	Catalog No. Type: Shank dia. T D +0.005/0	Tip shape	B Tip length
—WPC® treatment— RoHS	Equivalent to SKD11 60~63HRC Surface 1000~1100HV	W—SP	AW—SP	A	S
	SKH51 61~64HRC Surface 1000~1100HV	W—SH	AW—SH	D	
—HW coating—	Powdered high-speed steel 64~67HRC Surface 1000~1100HV	W—PH	AW—PH	R	L
	SKH51 61~64HRC Surface 3000HV	HW—SH	AHW—SH	E	X
For shank diameter tolerance D T, select either m5 or +0.005/0.	Powdered high-speed steel 64~67HRC Surface 3000HV	HW—PH	AHW—PH	G	Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.



The tip edges are very slightly rounded.



Type	Tip shape	B Tip length	D	L							Ⓐ min. P max.	DⓇⒺⒼ P・Kmax.	DⓇⒺⒼ P・Wmin.	Ⓡ R	B	H
											0.01 mm increments					
(Dm5) —WPC® treatment— W—SP	A D R E G	S	3	40	50	60	70	80	90	100	1.00~ 2.99	—	—	0.15≦R<W/2 (Ⓡ only)	8	5
W—SH			4	40	50	60	70	80	90	100	1.00~ 3.99	3.97	1.00			7
W—PH			5	40	50	60	70	80	90	100	2.00~ 4.99	4.97	1.20			8
—HW coating—			6	40	50	60	70	80	90	100	2.00~ 5.99	5.97	1.50			9
HW—SH			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	2.00		13	11
HW—PH			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	2.50			13
(D+0.005/0) —WPC® treatment— AW—SP			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	3.00			16
AW—SH			16	(40)	50	60	70	80	90	100	10.00~ 15.99	15.97	4.00		19	19
AW—PH			20	(40)	50	60	70	80	90	100	13.00~ 19.99	19.97	5.00			23
—HW coating—			25	(40)	50	60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
AHW—SH		L	3		50	60	70	80	90	100	1.00~ 2.99	—	—		13	5
AHW—PH			4		50	60	70	80	90	100	1.00~ 3.99	3.97	2.00			7
			5		50	60	70	80	90	100	2.00~ 4.99	4.97	2.00			8
			6		50	60	70	80	90	100	2.00~ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	2.50		19	11
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	2.50			13
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	3.00			16
			16			60	70	80	90	100	10.00~ 15.99	15.97	4.00		25	19
			20			60	70	80	90	100	13.00~ 19.99	19.97	5.00			23
			25			60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
		X	3		50	60	70	80	90	100	1.20~ 2.99	—	—		19	5
			4		50	60	70	80	90	100	1.20~ 3.99	3.97	2.00			7
			5			60	70	80	90	100	2.00~ 4.99	4.97	3.50		25	8
			6			60	70	80	90	100	2.00~ 5.99	5.97	3.50			9
			8			60	70	80	90	100	3.00~ 7.99	7.97	5.00		30	11
			10			60	70	80	90	100	3.00~ 9.99	9.97	5.00			13
			13			60	70	80	90	100	6.00~ 12.99	12.97	5.00			16
			16				70	80	90	100	10.00~ 15.99	—			40	19
			20				70	80	90	100	13.00~ 19.99					23
			25				70	80	90	100	18.00~ 24.99					28

Ⓐ:P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DⓇⒺⒼ: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)…B=8 If full length is (40), tip length is 8 mm in all cases.

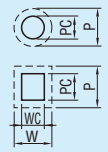
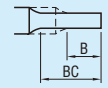
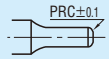
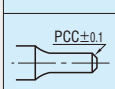
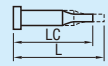
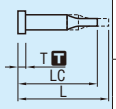
Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
AW—PHDL 13	—	80	—	P10.50	—	W7.34		

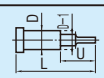
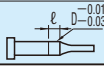
Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	— (BC/HC, etc.)
W—SPDS 10	—	LC72	—	PC1.90	—	WC1.90	—		— BC8—KC45

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 0.500～0.799 / 10 0.800～0.999 / 13 1.000～1.999 / 20 2.000～3.999 / 35 4.000～4.999 / 45 5.000～5.999 / 50 6.000～ / 60	Tip dimension change PC/WC ≧ P·Wmin./2 ≧0.80 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)·W(WC) / Bmax. 0.80 ～ 1.49 / 8 1.50 ～ 1.99 / 13 2.00 ～ 3.49 / 19 3.50 ～ 4.99 / 25 5.00 ～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC. ⊗ PC<1.00 Cannot be used with HW coating.	Tip length change 2≦BC≦Bmax 0.1 mm increments Full length L must be at least 30 mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC. ⊗ Cannot be used with HW coating.	———	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating.	Tip tolerance change P·W±0.01 ⇨ +0.01 0	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length—25 mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length—30 mm).	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 —0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		

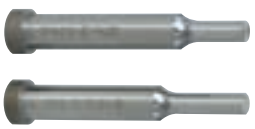
Price Quotation

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC·LCT·LMT, full length remains as specified.		Quotation
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 —0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5. ⊗ Cannot be combined with SRC.		
		RC	Head thickness is machined to a tolerance of —0.04 ～ 0 relative to the retainer surface. ⊗ Cannot be used for D +0.005 0 types.		
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10～25. ⊗ Cannot be used for D +0.005 0 types.		
Alterations to shank		UC	Modification for urethane stripper (USN) installation For details P.630. ⊗ Can be used for D10～25.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

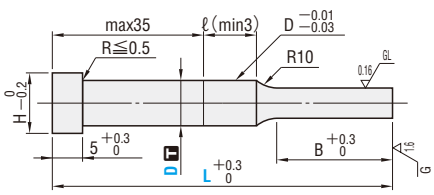
SHOULDER PUNCHES
—LAPPING—

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
—Lapping— RoHS	Dm5	Equivalent to SKD11 60 ~ 63HRC	L—SP	A D R E G	S L X
		SKH51 61 ~ 64HRC	L—SH		
		Powdered high-speed steel 64 ~ 67HRC	L—PH		
	$D^{+0.005}_{0}$	Equivalent to SKD11 60 ~ 63HRC	AL—SP		
		SKH51 61 ~ 64HRC	AL—SH		
		Powdered high-speed steel 64 ~ 67HRC	AL—PH		Tip length (B) X>L>S

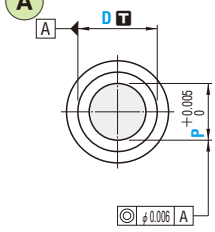
The tip shape can be selected from Tip shape A~G in the figure below.



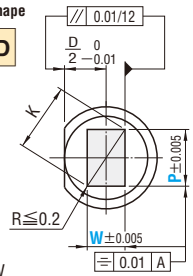
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.



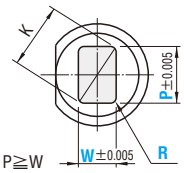
Tip shape A



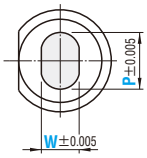
Tip shape D



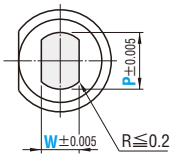
Tip shape R



Tip shape E



Tip shape G



P≧W
$K=\sqrt{P^2+W^2}$

P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

P>W

P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.001 mm increments Ⓐ min. P max.	DⓇⒺⒼ P·Kmax.	DⓇⒺⒼ P·Wmin.	0.01 mm Ⓡ R	B	H
(Dm5) L—SP	A D R E G	S	3	40	50	60	70	80	90	100	1.000~ 2.990	(☞ P.71)		0.15≦R<W/2 (Ⓡ only)	8	5
L—SH			4	40	50	60	70	80	90	100	1.000~ 3.990	3.970	1.000			7
L—PH			5	40	50	60	70	80	90	100	2.000~ 4.990	4.970	1.200			8
			6	40	50	60	70	80	90	100	2.000~ 5.990	5.970	1.500			9
			8	(40)	50	60	70	80	90	100	3.000~ 7.990	7.970	2.000		13	11
			10	(40)	50	60	70	80	90	100	3.000~ 9.990	9.970	2.500			13
			13	(40)	50	60	70	80	90	100	6.000~ 12.990	12.970	3.000			16
			16	(40)	50	60	70	80	90	100	10.000~ 15.990	15.970	4.000		19	19
			20	(40)	50	60	70	80	90	100	13.000~ 19.990	19.970	5.000			23
			25	(40)	50	60	70	80	90	100	18.000~ 24.990	24.970	6.000			28
(D+0.005 0) AL—SP		L	3		50	60	70	80	90	100	1.000~ 2.990	(☞ P.71)			13	5
AL—SH			4		50	60	70	80	90	100	1.000~ 3.990	3.970	2.000			7
AL—PH			5		50	60	70	80	90	100	2.000~ 4.990	4.970	2.000			8
			6		50	60	70	80	90	100	2.000~ 5.990	5.970	2.000			9
			8		50	60	70	80	90	100	3.000~ 7.990	7.970	2.500		19	11
			10		50	60	70	80	90	100	3.000~ 9.990	9.970	2.500			13
			13		50	60	70	80	90	100	6.000~ 12.990	12.970	3.000			16
			16			60	70	80	90	100	10.000~ 15.990	15.970	4.000		25	19
			20			60	70	80	90	100	13.000~ 19.990	19.970	5.000			23
			25			60	70	80	90	100	18.000~ 24.990	24.970	6.000			28
		X	3		50	60	70	80	90	100	1.200~ 2.990	—			19	5
			4		50	60	70	80	90	100	1.200~ 3.990	3.970	2.000			7
			5			60	70	80	90	100	2.000~ 4.990	4.970	3.500		25	8
			6			60	70	80	90	100	2.000~ 5.990	5.970	3.500			9
			8			60	70	80	90	100	3.000~ 7.990	7.970	5.000		30	11
			10			60	70	80	90	100	3.000~ 9.990	9.970	5.000			13
			13			60	70	80	90	100	6.000~ 12.990	12.970	5.000			16
			16				70	80	90	100	10.000~ 15.990	—			40	19
			20				70	80	90	100	13.000~ 19.990					23
			25				70	80	90	100	18.000~ 24.990					28

Ⓐ:P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DⓇⒺⒼ: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)···B=8 If full length is (40), tip length is 8 mm in all cases.

Order

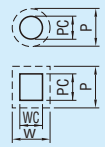
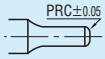
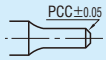
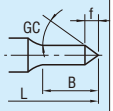
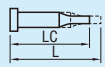
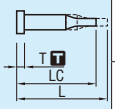
Catalog No. — L — P — W — R (Ⓡ only)

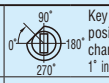
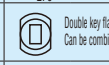
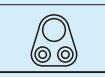
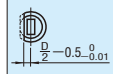
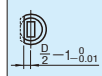
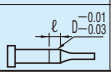
L—SHAS 10 — 70 — P9.500
AL—PHDL 13 — 80 — P10.500 — W7.340

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	— (BC·HC·TC, etc.)
AL—SPAS 10	—	LC72	—	PC2.800					— BC8

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change $PC \geqq \frac{Pmin.}{2}$ 0.001 mm increments P(PC) / Bmax. 0.500 ~ 0.799 / 10 0.800 ~ 0.999 / 13 1.000 ~ 1.999 / 20 2.000 ~ 3.999 / 35 4.000 ~ 4.999 / 45 5.000 ~ 5.999 / 50 6.000 ~ / 60	Tip dimension change $PC, WC \geqq \frac{P \cdot Wmin.}{2} \geqq 0.800$ ⊗ Cannot be used for tip X. 0.001 mm increments P(PC)·W(WC) / Bmax. 0.800 ~ 1.499 / 8 1.500 ~ 1.999 / 13 2.000 ~ 3.499 / 19 3.500 ~ 4.999 / 25 5.000 ~ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30 mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC·GC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC·GC.	———	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°—GC°) Tip edges are rounded. ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.	———	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length—25 mm). (If combined with LKC·LKZ, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30 mm or less, tip length is adjusted to (Full length—30 mm).	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. **TKC** Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + **LC** Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. **TKM** Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + **LC** Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$		
Alterations to head		KC	Addition of single key flat to head	 Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	 Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC·LCT·LMT, full length remains as specified.		Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of —0.04~0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ DREG  •D3 ~ 6 P≦D—1.2 W≦D—1.2 (Machining width 0.5)  •D8 ~ P≦D—2.2 W≦D—2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		NDC	No press-in lead $\ell \geqq 3 \Rightarrow \ell = 0$		

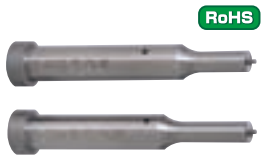
Price

Quotation

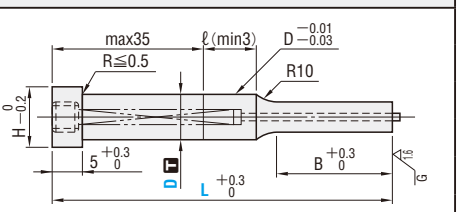
JECTOR PUNCHES

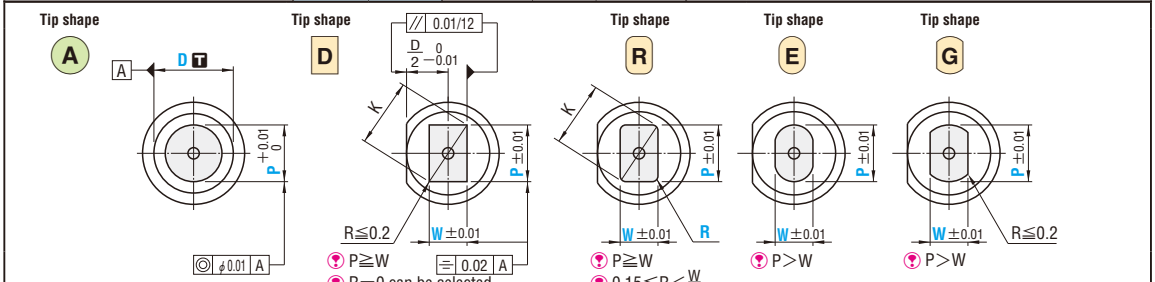
- For details of jector holes, refer to Jector Punch Blanks P.180
- For details of jector pins, refer to Jector Pin Sets P.185

Calculating the projection length of the jector pin (reference value) P.185

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
 RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	D4~6 SKH51 61~64HRC	SJ SJV	A D R E G	S L X Tip length (B) X>L>S
		D8~25 Equivalent to SKD11 60~63HRC	PJ PJV		
		Powdered high-speed steel 64~67HRC			
	$D^{+0.005}_{0}$	D4~6 SKH51 61~64HRC	A—SJ A—SJV		
		D8~25 Equivalent to SKD11 60~63HRC			
		Powdered high-speed steel 64~67HRC	A—PJ A—PJV		

The tip shape can be selected from Tip shape A~G in the figure below.





- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01 mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	H
(Dm5) SJ PJ Spring reinforced type (D8~25) SJV PJV	A D R E G	S	(4)	40	50	60	70	80			1.00~ 3.99	3.97	1.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	8	7
			(5)	40	50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)	40	50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16	(40)	(50)	60	70	80	90	100	10.00~ 15.99	15.97	6.00		19	19
			20	(40)	(50)	60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25	(40)	(50)	60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) A—SJ A—PJ Spring reinforced type (D8~25) A—SJV A—PJV		L	(4)		50	60	70	80			1.00~ 3.99	3.97	2.00		13	7
			(5)		50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)		50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		19	11
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16			60	70	80	90	100	10.00~ 15.99	15.97	6.00		25	19
			20			60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25			60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
(Dm5) SJ Spring reinforced type (D8~25) SJV		X	(5)			60	70	80			2.00~ 4.99	4.97	3.50		25	8
			(6)			60	70	80			2.00~ 5.99	5.97	3.50			9
			8				70	80	90	100	3.00~ 7.99	7.97	5.00		30	11
			10				70	80	90	100	3.00~ 9.99	9.97	6.00			13
			13				70	80	90	100	6.00~ 12.99	12.97	6.00			16
($D^{+0.005}_{0}$) A—SJ Spring reinforced type (D8~25) A—SJV			16					80	90	100	10.00~ 15.99	—		—	40	19
			20					80	90	100	13.00~ 19.99					23
			25					80	90	100	18.00~ 24.99					28

- The spring constants of SJV, PJV, A—SJV, and A—PJV are twice those of SJ, PJ, A—SJ, and A—PJ respectively.
- L(40)···B=6 If full length is (40), tip length is 6 mm in all cases.
- L(50)···B=13 If full length is (50), tip length is 13 mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D(4), (5), and (6) are specifications available for SJ, PJ, A—SJ, and A—PJ only. Spring reinforced types are available for D8~25 only.

Order

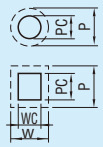
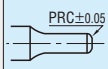
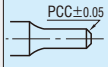
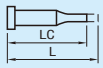
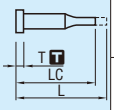
Catalog No.	—	L	—	P	—	W	—	R (R only)
SJDS 6	—	60	—	P3.00	—	W2.80		
A—SJEL 10	—	70	—	P8.50	—	W4.25		

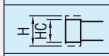
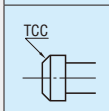
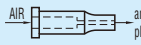
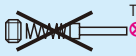
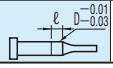
Days to Ship Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	— (BC·HC·TC, etc.)
SJDS 6	—	LC58	—	P3.00	—	W2.80	—	HC8—KC45	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 4 / 0.900 5 / 1.800 6 / 1.800 8 / 2.500 10 / 2.800 13 / 5.000 16 / 8.000 20 / 9.000 25 / 9.000	Tip dimension change PC·WC≧PC·WCmin. 0.01 mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X. D / PC·WCmin. 5 / 1.80 6 / 1.80 8 / 2.50 10 / 2.80 13 / 5.00 16 / 5.00 20 / 5.00 25 / 5.00	
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments The following restriction applies to SJAX, A—SJAX with D dimension 5 or 6. PC / Bmax. 1.80~1.99 / 20		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PRC.	———	Quotation
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L—LC). (If combined with LKC·LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		Quotation
		TCC	Chamfering of head This improves the strength of the punch head P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5 ⊗ Cannot be combined with SRC.		
		RC	Head thickness is machined to a tolerance of −0.04 ~ 0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10 ~ 25. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ $\frac{D}{2}-0.5^{0}_{-0.01}$·D4~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) $\frac{D}{2}-1^{0}_{-0.01}$ ⊗ Cannot be combined with KC·WKC·KFC.	DREG	
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

JECTOR PUNCHES
—DICOAT® TREATMENT—

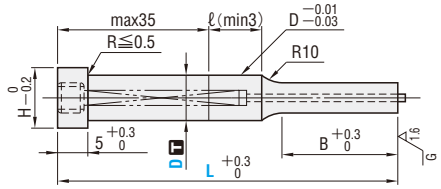
● For details of jector holes, refer to Jector Punch Blanks. P.180
● For details of jector pins, refer to Jector Pin Sets. P.185

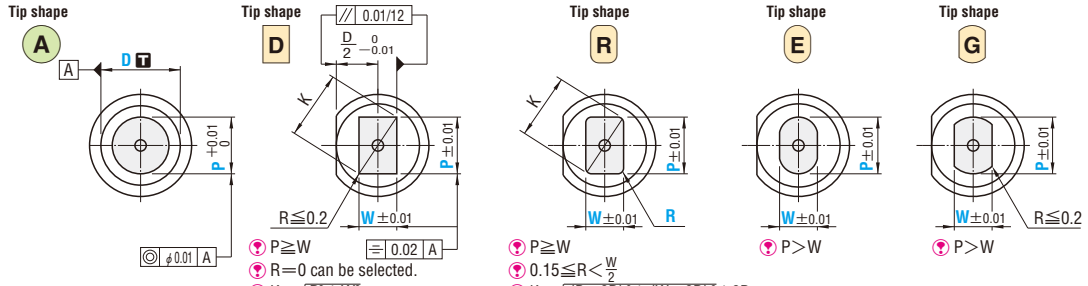
Calculating the projection length of the jector pin (reference value) P.185

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
—Dicoat® treatment— RoHS	Dm5 (D4~25)	Equivalent to SKD11 60~63HRC Surface 3000HV	T—SJ T—SJV	A D R E G	S L
		Powdered high-speed steel 62~64HRC Surface 3000HV	T—PJ T—PJV		
	$D^{+0.005}_{0}$ (D4~13)	Equivalent to SKD11 60~63HRC Surface 3000HV	AT—SJ AT—SJV		
		Powdered high-speed steel 62~64HRC Surface 3000HV	AT—PJ AT—PJV		Tip length (B) L>S

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A~G in the figure below.





Tip shape A: P≧W
Tip shape D: R=0 can be selected. $K=\sqrt{P^2+W^2}$
Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
Tip shape E: P>W
Tip shape G: P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01 mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
(Dm5) T—SJ T—PJ Spring reinforced type (D8—25) T—SJV T—PJV	A D R E G	S	(4)	40	50	60	70	80			1.00~ 3.99	3.97	1.00	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40	50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)	40	50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16	(40)	(50)	60	70	80	90	100	10.00~ 15.99	15.97	6.00		19	19
			20	(40)	(50)	60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25	(40)	(50)	60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) (D4~13) AT—SJ AT—PJ Spring reinforced type (D8—13) AT—SJV AT—PJV		L	(4)		50	60	70	80			1.00~ 3.99	3.97	2.00		13	7
			(5)		50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)		50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		19	11
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16			60	70	80	90	100	10.00~ 15.99	15.97	6.00		25	19
			20			60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25			60	70	80	90	100	18.00~ 24.99	24.97	6.00			28

The spring constants of T—SJV, T—PJV, AT—SJV, and AT—PJV are twice those of T—SJ, T—PJ, AT—SJ, and AT—PJ respectively.
Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
L(40)···B=6 If full length is (40), tip length is 6 mm in all cases.
L(50)···B=13 If full length is (50), tip length is 13 mm in all cases.
D(4), (5), and (6) are specifications available for T—SJ, T—PJ, AT—SJ, and AT—PJ only. T—SJV and T—PJV are available for D8~25 only. AT—SJV and AT—PJV are available for D8~13 only.

Order

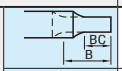
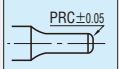
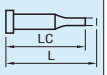
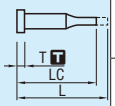
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
T—SJES 6	—	50	—	P5.48	—	W3.20		

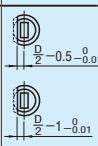
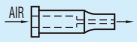
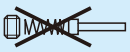
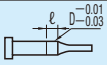
Days to Ship **Quotation**

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P	—	W	—	R	— (BC·HC·TC, etc.)
T—SJES 6	—	50	—	P5.48	—	W3.20			— HC8.0—TC4.0

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180	———	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of the jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		Quotation
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	
		NKC	———	No key flat	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5. Cannot be combined with SRC.		
		RC	Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. Cannot be used for $D^{+0.005}_{0}$ types.		Quotation
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10~25. Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	 Single key flat on shank Ⓐ DREG $\frac{D}{2}-0.5\ {}^{0}_{-0.01}$ •D4~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) •D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC·WKC·KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

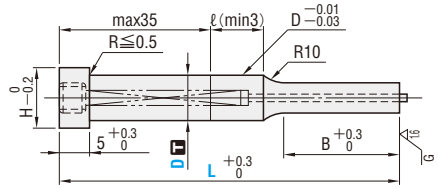
Price

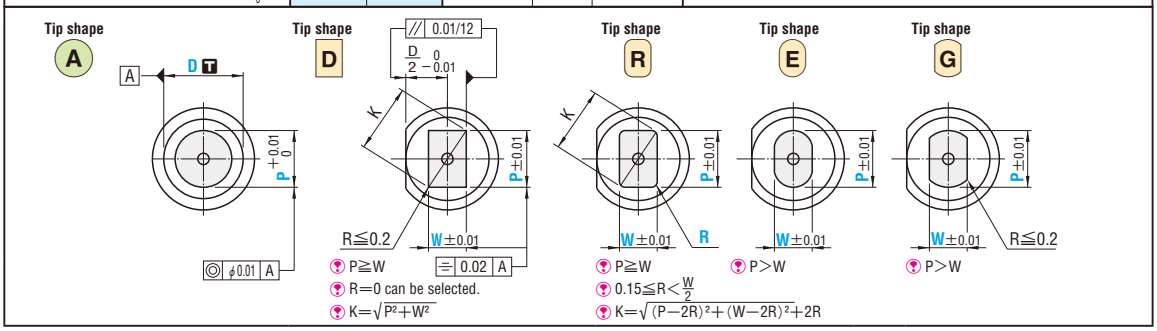
Quotation

JECTOR PUNCHES
—TiCN COATING—

Calculating the projection length of the jector pin (reference value) P.185

- For details of jector holes, refer to Jector Punch Blanks. P.180
- For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—TiCN coating— RoHS	Dm5	Powdered high-speed steel 64~67HRC	H—PJ H—PJV	A D R E G	S L	
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	$D^{+0.005}_{0}$	Powdered high-speed steel 64~67HRC	AH—PJ AH—PJV		Tip length (B) L>S	The tip end is ground before the coating is applied.



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01 mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	Ⓡ R	B	H
(Dm5) H—PJ Spring reinforced type (D8~25) H—PJV	A D R E G	S	(4)	40	50	60	70	80			1.00~ 3.99	3.97	1.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	7
			(5)	40	50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)	40	50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16	(40)	(50)	60	70	80	90	100	10.00~ 15.99	15.97	6.00		19	19
			20	(40)	(50)	60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25	(40)	(50)	60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) AH—PJ Spring reinforced type (D8~25) AH—PJV		L	(4)		50	60	70	80			1.00~ 3.99	3.97	2.00		13	7
			(5)		50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)		50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		19	11
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16			60	70	80	90	100	10.00~ 15.99	15.97	6.00		25	19
			20			60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25			60	70	80	90	100	18.00~ 24.99	24.97	6.00			28

- The spring constants of H—SJV, H—PJV, AH—SJV, and AH—PJV are twice those of H—SJ, H—PJ, AH—SJ, and AH—PJ respectively.
- L(40)···B= 6 If full length is (40), tip length is 6 mm in all cases.
- L(50)···B=13 If full length is (50), tip length is 13 mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D(4), (5), and (6) are specifications available for H—SJ, H—PJ, AH—SJ, and AH—PJ only. Spring reinforced types are available for D8~25 only.

Order

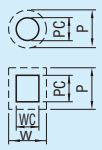
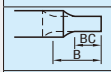
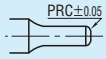
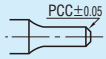
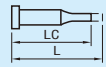
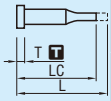
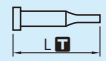
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—PJEL16	—	70	—	P12.00	—	W6.00		

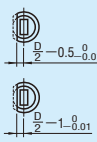
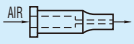
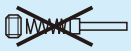
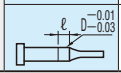
■Effect of spring reinforced type
Spring constant is twice that of a standard jector punch. The large spring load results in more effective scrap removal.

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	— (BC·HC·TC, etc.)
H—PJDS 6	—	LC58	—	P3.00	—	W2.80	—		— HC8

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip				
	PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) ⊗ Cannot be used for D4. D / PCmin.: 5 / 1.800; 6 / 1.800; 8 / 2.500; 10 / 2.800; 13 / 5.000; 16 / 8.000; 20 / 9.000; 25 / 9.000	Tip dimension change PC·WC≧PC·WCmin. 0.01 mm increments ⊗ Cannot be used for D4. D / PC·WCmin.: 5 / 1.80; 6 / 1.80; 8 / 2.50; 10 / 2.80; 13 / 5.00; 16 / 5.00; 20 / 5.00; 25 / 5.00	
	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PCC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PRC.	—	
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	Quotation
Alterations to full length				
	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is shortened by (L−LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head				
	KC	Addition of single key flat to head	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
	NKC	—	No key flat	

Alteration	Code	Ⓐ	DREG	1Code
Alterations to head				
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC/LCT/LMT, full length remains as specified.		
	TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
	TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5. ⊗ Cannot be combined with SRC.		
	RC	Head thickness is machined to a tolerance of −0.04~0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		Quotation
	SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10~25. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank				
	SKC	 Single key flat on shank Ⓐ DREG $\frac{D}{2}-0.5^{0}_{-0.01}$ ·D4~6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8~ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
	AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

JECTOR PUNCHES
—WPC® TREATMENT・HW COATING—

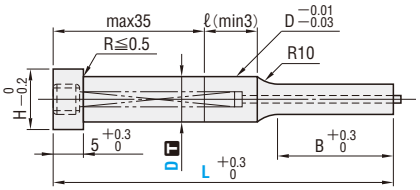
- For details of jector holes, refer to Jector Punch Blanks. P.180
- For details of jector pins, refer to Jector Pin Sets. P.185

Calculating the projection length of the jector pin (reference value) P.185

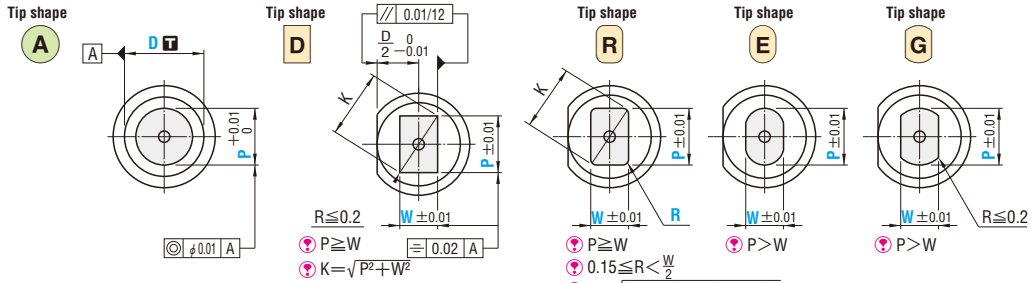
Type	M H	Catalog No. Type: Shank dia. T D_{m5}	Catalog No. Type: Shank dia. T $D^{+0.005}_{0}$	Tip shape	B Tip length
—WPC® treatment— RoHS —HW coating— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D4~6 SKH51 61~64HRC Surface 1000~1100HV	W—SJ W—SJV	AW—SJ AW—SJV	A D R E G	S L X
	D8~25Equivalent to SKD11160~63HRC Surface 1000~1100HV				
	Powdered high-speed steel 64~67HRC Surface 1000 HV~1100HV	W—PJ W—PJV	AW—PJ AW—PJV		
	Powdered high-speed steel 64~67HRC Surface 3000HV	HW—PJ HW—PJV	AHW—PJ AHW—PJV		

Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.



The tip edges are very slightly rounded.



Tip shape A: P≧W

Tip shape D: $K=\sqrt{P^2+W^2}$

Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Type	Tip shape	B Tip length	D	L							Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
(Dm5) —WPC® treatment— W—SJ W—PJ Spring reinforced type (D8~25) W—SJV W—PJV —HW coating— HW—PJ Spring reinforced type (D8~25) HW—PJV	A D R E G	S	(4)	40	50	60	70	80			1.00~ 3.99	3.97	1.00	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40	50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)	40	50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16	(40)	(50)	60	70	80	90	100	10.00~ 15.99	15.97	6.00		19	19
			20	(40)	(50)	60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25	(40)	(50)	60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
(D+0.005 0) —WPC® treatment— AW—SJ AW—PJ Spring reinforced type (D8~25) AW—SJV AW—PJV —HW coating— AHW—PJ Spring reinforced type (D8~25) AHW—PJV		L	(4)		50	60	70	80			1.00~ 3.99	3.97	2.00		13	7
			(5)		50	60	70	80			2.00~ 4.99	4.97	2.00			8
			(6)		50	60	70	80			2.00~ 5.99	5.97	2.00			9
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	3.00		19	11
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	3.00			13
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16			60	70	80	90	100	10.00~ 15.99	15.97	6.00		25	19
			20			60	70	80	90	100	13.00~ 19.99	19.97	6.00			23
			25			60	70	80	90	100	18.00~ 24.99	24.97	6.00			28
(Dm5) —WPC® treatment— W—SJ Spring reinforced type (D8~25) W—SJV (D+0.005 0) —WPC® treatment— AW—SJ Spring reinforced type (D8~25) AW—SJV		X	(5)			60	70	80			2.00~ 4.99	4.97	3.50		25	8
			(6)			60	70	80			2.00~ 5.99	5.97	3.50			9
			8				70	80	90	100	3.00~ 7.99	7.97	5.00		30	11
			10				70	80	90	100	3.00~ 9.99	9.97	6.00			13
			13				70	80	90	100	6.00~ 12.99	12.97	6.00			16
			16					80	90	100	10.00~ 15.99	—		—	40	19
			20					80	90	100	13.00~ 19.99					23
			25					80	90	100	18.00~ 24.99					28

- The spring constants of W—SJV, W—PJV, HW—PJV, AW—SJV, AW—PJV, and AHW—PJV are twice those of W—SJ, W—PJ, HW—PJ, AW—SJ, AW—PJ, and AHW—PJ respectively.
- L(40)···B=6 If full length is (40), tip length is 6mm in all cases.
- L(50)···B=13 If full length is (50), tip length is 13mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D(4), (5), and (6) are specifications available for W—SJ, W—PJ, HW—PJ, AW—SJ, AW—PJ, AHW—PJ, W—SJ, and AW—SJ only. Spring reinforced types are available for D8~25 only.

Order

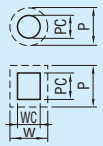
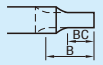
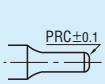
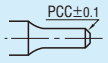
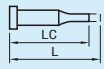
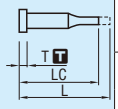
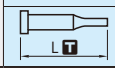
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
W—SJDS 6	—	60	—	P3.00	—	W2.80		
HW—PJEL 10	—	70	—	P8.50	—	W4.25		

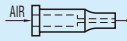
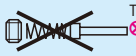
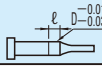
Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	— (BC·HC·TC, etc.)
W—SJDS 6	—	LC58	—	P3.00	—	W2.80		— HC8—KC45	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin.: 4 / 0.900; 5 / 1.800; 6 / 1.800; 8 / 2.500; 10 / 2.800; 13 / 5.000; 16 / 8.000; 20 / 9.000; 25 / 9.000 ⊗ PC<1.00 Cannot be used with HW coating.	Tip dimension change PC·WC≧PC·WCmin. 0.01mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X. D / PC·WCmin.: 5 / 1.80; 6 / 1.80; 8 / 2.50; 10 / 2.80; 13 / 5.00; 16 / 5.00; 20 / 5.00; 25 / 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments ⊗ The following restriction applies to tip type X with D dimension of 5 or 6. PC·WC / Bmax.: 1.80～1.99 / 20		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PRC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating.	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓟ) are the same as for LC. TKC (Head thickness tolerance change) $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC (Full length change) + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓟ) are the same as for LC. TKM (Head thickness tolerance change) $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC (Full length change) + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5. ⊗ Cannot be combined with SRC.		
		RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10～25. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

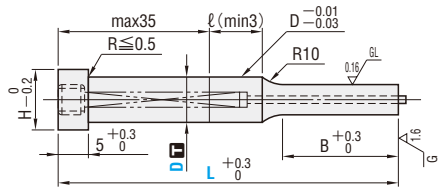
Price

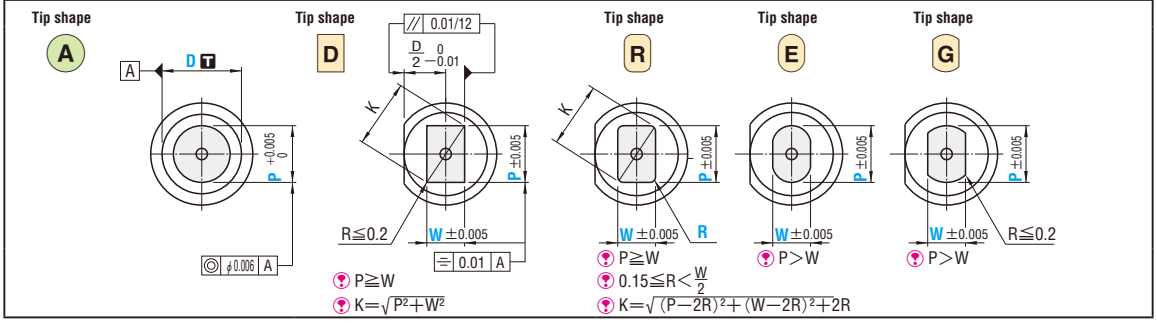
Quotation

JECTOR PUNCHES
—LAPPING—

- For details of jector holes, refer to Jector Punch Blanks. P.180
- For details of jector pins, refer to Jector Pin Sets. P.185

Calculating the projection length of the jector pin (reference value) P.185

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A ~ G in the figure below.
—Lapping— RoHS For shank diameter tolerance D, select either T m5 or $^{+0.005}_{0}$.	D_{m5}	D4—6 SKH51 61—64HRC	L—SJ L—SJV	A D R E G	S L X	
		D8—25 Equivalent to SKD11 60—63HRC				
		Powdered high-speed steel 64~67 HRC	L—PJ L—PJV			
	$D^{+0.005}_{0}$	D4—6 SKH51 61—64HRC	AL—SJ AL—SJV			
		D8—25 Equivalent to SKD11 60—63HRC				
		Powdered high-speed steel 64~67 HRC	AL—PJ AL—PJV		Tip length (B) X>L>S	



Catalog No. Type	Tip shape	B Tip length	D	L							0.001 mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) L—SJ L—PJ Spring reinforced type (D8 ~ 25) L—SJV L—PJV	A D R E G	S	(4)	40	50	60	70	80			1.000~ 3.990	3.970	1.000	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40	50	60	70	80			2.000~ 4.990	4.970	2.000			8
			(6)	40	50	60	70	80			2.000~ 5.990	5.970	2.000			9
			8	(40)	50	60	70	80	90	100	3.000~ 7.990	7.970	3.000		13	11
			10	(40)	50	60	70	80	90	100	3.000~ 9.990	9.970	3.000			13
			13	(40)	50	60	70	80	90	100	6.000~ 12.990	12.970	6.000			16
			16	(40)	(50)	60	70	80	90	100	10.000~ 15.990	15.970	6.000		19	19
			20	(40)	(50)	60	70	80	90	100	13.000~ 19.990	19.970	6.000			23
			25	(40)	(50)	60	70	80	90	100	18.000~ 24.990	24.970	6.000			28
($D^{+0.005}_{0}$) AL—SJ AL—PJ Spring reinforced type (D8 ~ 25) AL—SJV AL—PJV		L	(4)		50	60	70	80			1.000~ 3.990	3.970	2.000		13	7
			(5)		50	60	70	80			2.000~ 4.990	4.970	2.000			8
			(6)		50	60	70	80			2.000~ 5.990	5.970	2.000			9
			8		50	60	70	80	90	100	3.000~ 7.990	7.970	3.000		19	11
			10		50	60	70	80	90	100	3.000~ 9.990	9.970	3.000			13
			13		50	60	70	80	90	100	6.000~ 12.990	12.970	6.000			16
			16			60	70	80	90	100	10.000~ 15.990	15.970	6.000		25	19
			20			60	70	80	90	100	13.000~ 19.990	19.970	6.000			23
			25			60	70	80	90	100	18.000~ 24.990	24.970	6.000			28
(D_{m5}) L—SJ Spring reinforced type (D8 ~ 25) L—SJV		X	(5)			60	70	80			2.000~ 4.990	4.970	3.500		25	8
			(6)			60	70	80			2.000~ 5.990	5.970	3.500			9
			8				70	80	90	100	3.000~ 7.990	7.970	5.000		30	11
			10				70	80	90	100	3.000~ 9.990	9.970	6.000			13
			13				70	80	90	100	6.000~ 12.990	12.970	6.000			16
($D^{+0.005}_{0}$) AL—SJ Spring reinforced type (D8 ~ 25) AL—SJV			16					80	90	100	10.000~ 15.990	—		—	40	19
			20					80	90	100	13.000~ 19.990					23
			25					80	90	100	18.000~ 24.990					28

The spring constants of L—SJV, L—PJV, AL—SJV, and AL—PJV are twice those of L—SJ, L—PJ, AL—SJ, and AL—PJ respectively.
L(40)···B= 6 If full length is (40), tip length is 6 mm in all cases.
L(50)···B=13 If full length is (50), tip length is 13mm in all cases.
Ⓐ: P>D − 0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D(4), (5), and (6) are specifications available for L—SJ, L—PJ, AL—SJ, and AL—PJ only. Spring reinforced types are available for D8 ~ 25 only.

Order

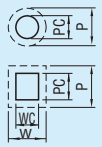
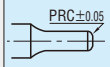
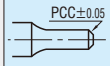
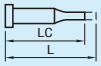
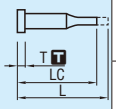
Catalog No.	—	L	—	P	—	W	—	R(Ⓡ only)
L—SJDS16	—	60	—	P9.000	—	W6.800		
AL—SJEL10	—	70	—	P8.500	—	W4.250		

Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

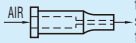
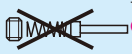
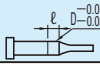
Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	— (BC·HC·TC, etc.)
L—SJDS 6	—	LC58	—	P3.000	—	W2.800	—	HC8	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.001mm increments D / PCmin. 4 / 0.900 5 / 1.800 6 / 1.800 8 / 2.500 10 / 2.800 13 / 5.000 16 / 8.000 20 / 9.000 25 / 9.000	Tip dimension change PC·WC≧PC·WCmin. 0.001mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X. D / PC·WCmin. 5 / 1.800 6 / 1.800 8 / 2.500 10 / 2.800 13 / 5.000 16 / 5.000 20 / 5.000 25 / 5.000	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments The following restriction applies to L−SJAX or AL−SJAX with D dimension 5 or 6. PC / Bmax. 1.80～1.99 / 20		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PRC.	———	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC·LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$		

Price Quotation

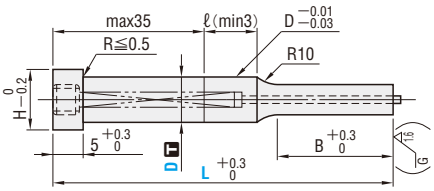
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$		Quotation
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	Single key flat on shank Ⓐ DREG $\frac{D}{2}-0.5^{0}_{-0.01}$ •D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) $\frac{D}{2}-1^{0}_{-0.01}$ •D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead $\ell \geq 3 \Rightarrow \ell = 0$		

JECTOR PUNCHES

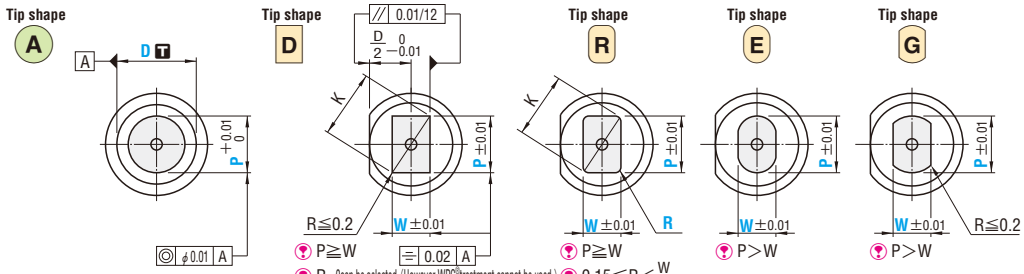
—CONFIGURABLE FULL LENGTH, FIXED B TYPE, NORMAL・WPC® TREATMENT・SPRING REINFORCED TYPE—

※ Jector punch which maintains the same tip length B even when L is changed.
Projection length of the jector pin is 2mm.

● For details of jector holes, refer to Jector Punch Blanks. P.180
● For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS —WPC® treatment— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	D5～6 SKH51 61～64HRC D8～25 Equivalent to SKD11 60～63HRC —WPC® treatment— Surface 1000～1100HV	LFSJ LFSJV	A D R E G	S L Tip length (B) L>S	
			WPC® treatment W—LFSJ W—LFSJV			
	$D^{+0.005}_{0}$		A—LFSJ A—LFSJV			
			WPC® treatment AW—LFSJ AW—LFSJV			

For a WPC® type punch, the tip end is ground before the coating is applied.
The tip edge of a WPC® treatment punch is very slightly rounded.



Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	H
(Dm5) LFSJ W—LFSJ Spring reinforced type (D8～25) LFSJV W—LFSJV	A D R E G	S	(5)	40.0～ 80.0	2.00～ 4.99	4.97	2.00	0.15≦R<W/2 (R only)	8	8
			(6)		2.00～ 5.99	5.97	2.00			9
			8	60.0～ 100.0	3.00～ 7.99	7.97	3.00		13	11
			10		3.00～ 9.99	9.97	3.00			13
			13		6.00～ 12.99	12.97	6.00			16
			16	70.0～ 100.0	10.00～ 15.99	15.97	6.00		19	19
			20		13.00～ 19.99	19.97	6.00			23
			25	50.0～ 100.0	18.00～ 24.99	24.97	6.00			28
($D^{+0.005}_{0}$) A—LFSJ AW—LFSJ Spring reinforced type (D8～25) A—LFSJV AW—LFSJV		L	(5)	40.0～ 80.0	2.00～ 4.99	4.97	2.00		13	8
			(6)		2.00～ 5.99	5.97	2.00			9
			8	60.0～ 100.0	3.00～ 7.99	7.97	3.00		19	11
			10		3.00～ 9.99	9.97	3.00			13
			13		6.00～ 12.99	12.97	6.00			16
			16	70.0～ 100.0	10.00～ 15.99	15.97	6.00		25	19
			20		13.00～ 19.99	19.97	6.00			23
			25	60.0～ 100.0	18.00～ 24.99	24.97	6.00			28

The spring constants of LFSJV, W—LFSJV, A—LFSJV, and AW—LFSJV are twice those of LFSJ, W—LFSJ, A—LFSJ and AW—LFSJ respectively. Jector holes are based on the jector punch blanks. P.180
If the tip shape is D R E G and the difference between full length and tip length is 30mm or less, the tip length is adjusted to (Full length—30 mm).
Ⓐ: P>D—0.03 ···ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P・K>D—0.05···ℓ=0 If P・K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D (5) and (6) are specifications available for LFSJ, W—LFSJ, A—LFSJ, and AW—LFSJ only. Spring reinforced types are available for D8～25 only.

Order

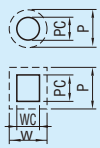
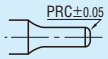
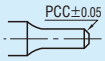
Catalog No.	—	L	—	P	—	W	—	R (R only)
LFSJDS 6	—	60	—	P3.00	—	W2.80		
A—LFSJEL 10	—	75.3	—	P8.50	—	W4.25		

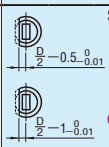
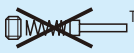
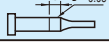
■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch.The large spring load results in more effective scrap removal.

Days to Ship Quotation

Alterations

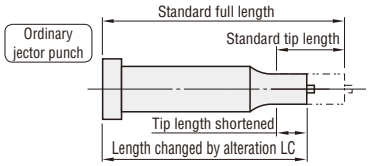
Catalog No.	—	L	—	P(PC)	—	W(WC)	—	R	— (BC・HC・TC, etc.)
LFSJDS 6	—	58	—	P3.00	—	W2.80	—		— HC8—KFC225

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 5 / 1.800 6 / 1.800 8 / 2.500 10 / 2.800 13 / 5.000 16 / 8.000 20 / 9.000 25 / 9.000	Tip dimension change PC・WC≧PC・WCmin. 0.01 mm increments D / PC・WCmin. 5 / 1.80 6 / 1.80 8 / 2.50 10 / 2.80 13 / 5.00 16 / 5.00 20 / 5.00 25 / 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		
		SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for the tip shape D corners. Cannot be used with WPC® treatment.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 Cannot be combined with PCC. For a WPC® treatment, the tolerance is PRC±0.1.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 Cannot be combined with PRC. For a WPC® treatment, the tolerance is PCC±0.1.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{0.01}_{0}$ Cannot be used with WPC® treatment.		

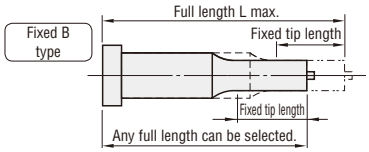
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
		HC	Head diameter change D≦HC＜H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC＜5 0.1mm increments (If combined with TKC・TKM, 0.01mm increments can be selected.) The full length L remains as specified.		Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, TCC is 0.5. Cannot be combined with SRC.		
		RC	Head thickness is machined to a tolerance of −0.04～0 relative to the retainer surface. Cannot be used for $D^{+0.005}_{0}$ types.		
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10～25. Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	 Single key flat on shank Ⓐ DREG ・D5～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC. Cannot be used with WPC® treatment.		
		NC	 The jector pin is removed.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Features

・Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.



Price Quotation



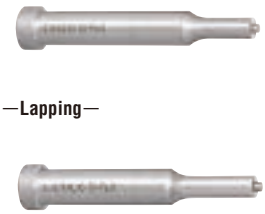
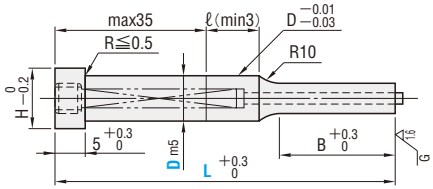
・Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

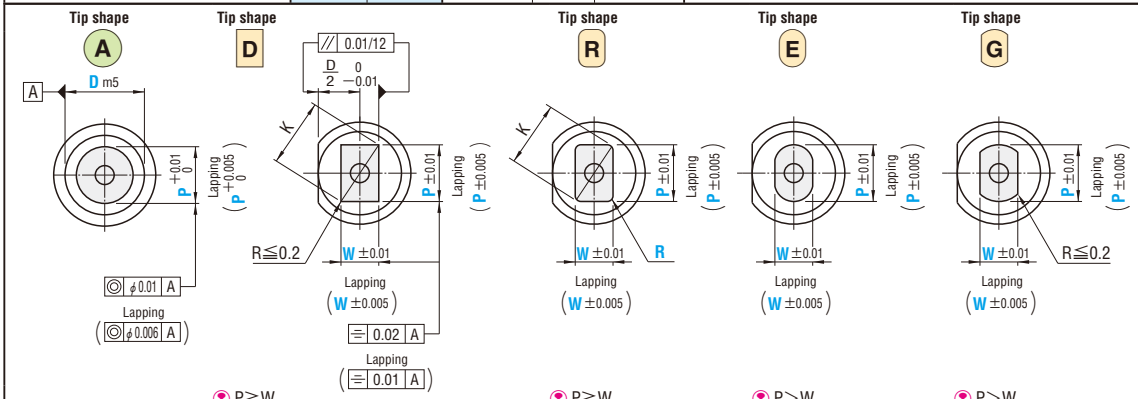
JECTOR PUNCHES

—NORMAL AND LAPPING TYPES WITH LARGE DIAMETER PINS— ※Jector punches with thicker jector pins (compared with other MISUMI jector punches)

Calculating the projection length of the jector pin (reference value) P.185

- For details of jector holes, refer to Jector Punch Blanks. P.180
- For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS  —Lapping—	Dm5	Equivalent to SKD 11 60~63HRC	SJF Lapping L—SJF	A D R E G	S L Tip length (B) L>S	



- P≧W
- R=0 can be selected. (However lapping cannot be used.)
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L						Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	H
(Dm5) SJF	A D R E G	S	8	50	60	70	80	90	100	5.00~ 7.99	7.97	5.00	0.15≦R<W/2 (R only)	13	11
			10	50	60	70	80	90	100	5.00~ 9.99	9.97	5.00			13
			13	50	60	70	80	90	100	8.00~ 12.99	12.97	8.00			16
			16	(50)	60	70	80	90	100	10.00~ 15.99	15.97	8.00		19	19
			20	(50)	60	70	80	90	100	13.00~ 19.99	19.97	10.00			23
			25	(50)	60	70	80	90	100	18.00~ 24.99	24.97	10.00			28
Lapping L—SJF		L	8	50	60	70	80	90	100	5.00~ 7.99	7.97	5.00		19	11
			10	50	60	70	80	90	100	5.00~ 9.99	9.97	5.00			13
			13	50	60	70	80	90	100	8.00~ 12.99	12.97	8.00			16
			16		60	70	80	90	100	10.00~ 15.99	15.97	8.00		25	19
			20		60	70	80	90	100	13.00~ 19.99	19.97	10.00			23
			25		60	70	80	90	100	18.00~ 24.99	24.97	10.00			28

- L(50)···B=13 If full length is (50), tip length is 13 mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

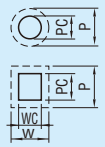
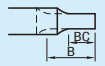
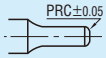
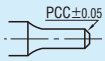
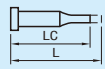
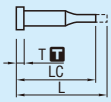
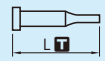
Order

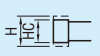
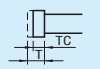
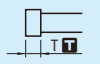
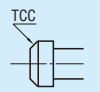
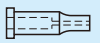
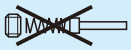
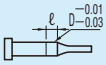
Catalog No.	—	L	—	P	—	W	—	R (R only)
SJFDS 16	—	60	—	P12.50	—	W9.35		
L—SJFEL 10	—	70	—	P8.50	—	W6.75		

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC・LCT・LMT)	—	P	—	W	—	R	—	(BC・HC・TC, etc.)
SJFDS 13	—	LC58	—	P10.50	—	W9.50	—	HC15—KC45		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (For a lapping combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 8 / 4.500 10 / 4.500 13 / 7.000 16 / 7.000 20 / 9.000 25 / 9.000	Tip dimension change PC・WC≧PC・WCmin. 0.01 mm increments (For a lapping, 0.001mm increments can be selected.) D / PC・WCmin. 8 / 4.500 10 / 4.500 13 / 7.000 16 / 7.000 20 / 9.000 25 / 9.000	
		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 Cannot be combined with PRC.	———	Quotation
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) Cannot be used with lapping.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ Cannot be used with lapping.	
Alterations to full length		LC	Full length change (reduction in tip length) LC＜L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC＜H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC＜5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 Cannot be combined with SRC.		
		RC	Head thickness is machined to a tolerance of −0.04 ～ 0 relative to the retainer surface.		
		SRC	Modification of head for use with select retainers (SLS) For details, refer to P.629. Can be used for D10 ～ 25.		
Alterations to shank		NC	 The jector pin is removed. Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price **Quotation**

■Features

- With a standard type, scraps inside the die may rotate, resulting in scrap lifting.
  This product has a larger diameter pin, which expands the area of contact with scraps and improves the scrap removal effect.
- Because of the pin diameter that is larger than the standard type, this pin type features superior strength and rigidity.

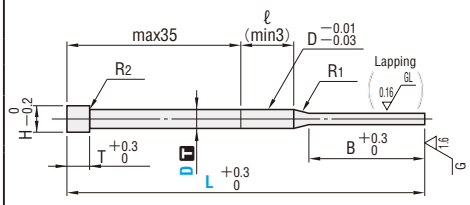
SHOULDER PUNCHES

—QUILL PUNCHES, NORMAL·TiCN COATING·LAPPING·HW COATING—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Type (Head thickness 5mm)	Tip shape	B Tip length
RoHS —LAPPING—	Dm5	SKH51 61~64HRC	SH Lapping L—SH	SHLT Lapping L—SHLT	A D R E G	S
		SKH51 61~64HRC Surface 3000HV	TiCN coating H—SH —HW coating— HW—SH	TiCN coating H—SHLT —HW coating— HW—SHLT		
		Powdered high-speed steel 64~67HRC	PH Lapping L—PH	PHLT Lapping L—PHLT		
		Powdered high-speed steel 64~67HRC Surface 3000HV	TiCN coating H—PH —HW coating— HW—PH	TiCN coating H—PHLT —HW coating— HW—PHLT		
—TiCN coating— —HW coating—	$D^{+0.005}_{0}$	SKH51 61~64HRC	A—SH Lapping AL—SH	A—SHLT Lapping AL—SHLT		L
		SKH51 61~64HRC Surface 3000HV	TiCN coating AH—SH —HW coating— AHW—SH	TiCN coating AH—SHLT —HW coating— AHW—SHLT		
		Powdered high-speed steel 64~67HRC	A—PH Lapping AL—PH	A—PHLT Lapping AL—PHLT		
		Powdered high-speed steel 64~67HRC Surface 3000HV	TiCN coating AH—PH —HW coating— AHW—PH	TiCN coating AH—PHLT —HW coating— AHW—PHLT		Tip length (B) L>S

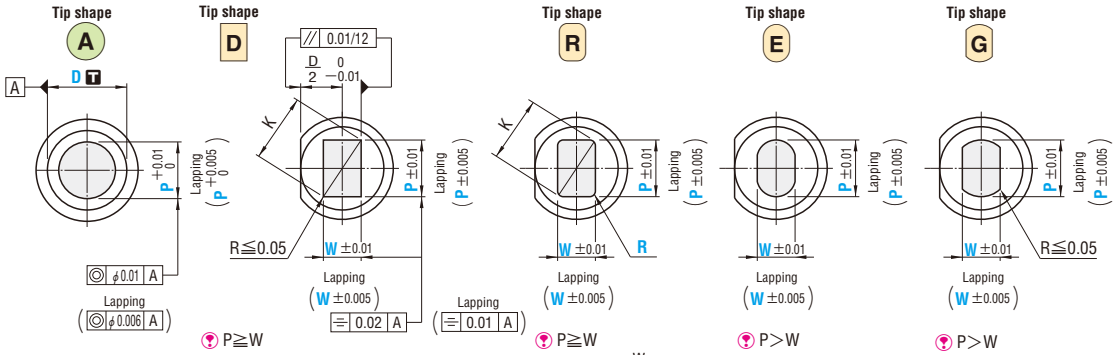
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A~G in the figure below.



D	R1 Ⓐ	R1 D R E G	R2
1.6	2~3	—	≦0.2
2.0		≦16	
2.5			
3	—		≦0.5

- The tip end of a TiCN coating punch is ground before the coating is applied.
- The tip edge of an HW coating punch is very slightly rounded.



- P≧W
- R=0 can be selected. (However lapping and HW coating cannot be used.)
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.05 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments (0.001mm increments for lapping) Ⓐ min. P max.	B	D R E G P·Kmax.	D R E G P·Wmin.	D R E G B	0.01 mm Ⓡ R	H	T
(Dm5) ($D^{+0.005}_{0}$) SH A—SH PH A—PH —Lapping— L—SH AL—SH L—PH AL—PH —TiCN coating— H—SH AH—SH H—PH AH—PH —HW coating— HW—SH AHW—SH HW—PH AHW—PH	A D R E G	S	1.6	(20) (25) 30 35 40 50 60	0.30 (1.00)~1.59	6	—	—	—	$0.05 \leqq R < \frac{W}{2}$ (Ⓡ only)	2.6	3
			2.0	(20) (25) 30 35 40 50 60	0.50 (1.00)~1.99	8	1.97	0.30 (1.00)	4		3.0	
			2.5	(20) (25) 30 35 40 50 60	0.80 (1.00)~2.49		2.47	0.50 (1.00)	6		3.5	
			3	40 50 60 70 80	(P.47, 51, 55)	—	2.97	0.70 (1.00)			5	5
		L	1.6	30 35 40 50 60	0.50 (1.00)~1.59	8	—	—	—		2.6	3
			2.0	30 35 40 50 60	0.80 (1.00)~1.99	10	1.97	0.30 (1.00)	6		3.0	
			2.5	30 35 40 50 60	0.80 (1.00)~2.49	13	2.47	0.50 (1.00)	8		3.5	
			3	50 60 70 80	(P.47, 51, 55)	—	2.97	0.70 (1.00)			5	5
(Dm5) ($D^{+0.005}_{0}$) SHLT A—SHLT PHLT A—PHLT —Lapping— L—SHLT AL—SHLT L—PHLT AL—PHLT —TiCN coating— H—SHLT AH—SHLT H—PHLT AH—PHLT —HW coating— HW—SHLT AHW—SHLT HW—PHLT AHW—PHLT	A D R E G	S	1.6	(20) (25) 30 35 40 50 60	0.30 (1.00)~1.59	6	—	—	—	$0.05 \leqq R < \frac{W}{2}$ (Ⓡ only)	2.6	5
			2.0	(20) (25) 30 35 40 50 60	0.50 (1.00)~1.99	8	1.97	0.30 (1.00)	4		3.0	
			2.5	(20) (25) 30 35 40 50 60	0.80 (1.00)~2.49		2.47	0.50 (1.00)	6		3.5	
		L	1.6	30 35 40 50 60	0.50 (1.00)~1.59	8	—	—	—		2.6	5
			2.0	30 35 40 50 60	0.80 (1.00)~1.99	10	1.97	0.30 (1.00)	6		3.0	
			2.5	30 35 40 50 60	0.80 (1.00)~2.49	13	2.47	0.50 (1.00)	8		3.5	

- L (20)/(25)···B=4 If full length is (20) or (25), tip length is 4mm in all cases.
- Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- P·W (1.00)···For TiCN coating/HW coating, P·Wmin. is 1.00.

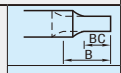
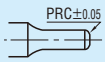
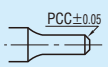
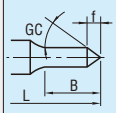
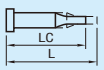
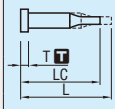
Order

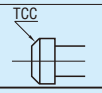
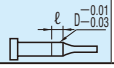
Catalog No.	L	P	W	R (Ⓡ only)
SHAS 1.6	30	P1.31		
L—PHDL 2.0	40	P1.240	W0.830	

Days to Ship Quotation

Alterations

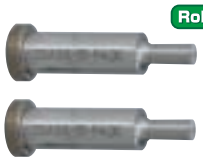
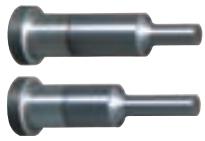
Catalog No.	L (LC・LCT・LMT)	P	W	R	(BC・HC・TC, etc.)
PHDL 2.0	LC42	P1.24	W0.83		HC2.8

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P—0.2)/2 Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge. 0.3≦PCC≦1 0.1mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC・GC.	—	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°—GC°) When combined with SC, tip edges are rounded. Cannot be used for P<1.0. Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC. Cannot be used with HW coating.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) Cannot be used with Lapping. Cannot be used with HW coating.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
Alterations to full length		LC	Full length change Can be changed within the following range. 0.1 mm increments D / S / L 1.6~2.5 / 20<LC<60 / 30<LC<60 3 / 36<LC<80 / 50<LC<80 If LC is 25 or less, tip length B is 4mm in all cases. (If combined with LKC・LKZ, 0.01mm increments can be selected.)		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. **TKC** Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + **LC** Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (Ⓡ) are the same as for LC. **TKM** Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + **LC** Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		

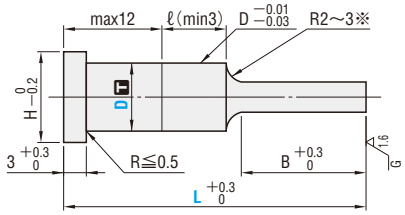
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		Quotation
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$ Cannot be used with TiCN・HW coating.		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<T 0.1 mm increments (If combined with TKC/TKM/LCT/LMT, 0.01 mm increments can be selected.) Full length L is shortened by (T—TC). If combined with LC・LCT・LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$		
		TCC	Chamfering of head (C0.5) This improves the strength of the punch head. P.1097 Ordering method TCC 0.5 Cannot be used for H<2.6.		
Alterations to shank		SKC	—	Single key flat on shank ・D3 W≦D—1.2 (Machining width 0.5) $\frac{D}{2}-0.5^{\ 0}_{-0.01}$ Only D3 can be used. Cannot be combined with KC・WKC・KFC. HW coating cannot be used.	
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

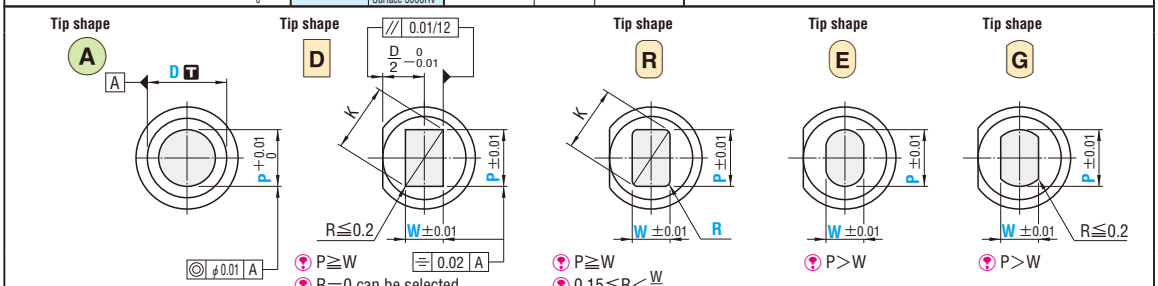
SHOULDER PUNCHES
—SHORT TYPE, NORMAL・TiCN COATING—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS  —TiCN coating—  For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Equivalent to SKD11 60~63HRC	SS	A D R E G	S L
		SKH51 61~64HRC	SSH		
		SKH51 61~64HRC Surface 3000HV	H—SSH		
		Powdered high-speed steel 64~67HRC	SSP		
		Powdered high-speed steel 64~67HRC Surface 3000HV	H—SSP		
	$D^{+0.005}_{0}$	Equivalent to SKD11 60~63HRC	A—SS		
		SKH51 61~64HRC	A—SSH		
		SKH51 61~64HRC Surface 3000HV	AH—SSH		
		Powdered high-speed steel 64~67HRC	A—SSP		
		Powdered high-speed steel 64~67HRC Surface 3000HV	AH—SSP		Tip length (B) L>S

The tip shape can be selected from Tip shape A~G in the figure below.



※If W<3 for shapes R E, R13 is selected.
The tip end of a TiCN coating punch is ground before the coating is applied.



Tip shape A: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	H
(Dm5) ($D^{+0.005}_{0}$) SS A—SS SSH A—SSH SSP A—SSP —TiCN coating— H—SSH AH—SSH H—SSP AH—SSP	A D R E G	S	3	25 30 35 40	1.00~2.99	2.95	1.00	0.15≦R<W/2 (R only)	8	5
			4		2.00~3.99	3.95	1.20			7
			5		2.00~4.99	4.95	1.20			8
			6		2.50~5.99	5.95	1.50			9
			8		5.00~7.99	7.95	2.00			11
			10		7.00~9.99	9.95	2.50			13
		L	3	30 35 40	1.00~2.99	2.95	1.00		13	5
			4		2.00~3.99	3.95	1.20			7
			5		2.00~4.99	4.95	1.20			8
			6		2.50~5.99	5.95	1.50			9
			8		5.00~7.99	7.95	2.00			11
			10		7.00~9.99	9.95	2.50			13

Ⓐ: P>D—0.03···ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

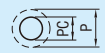
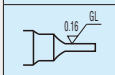
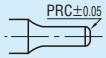
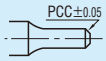
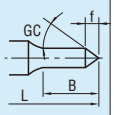
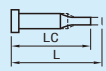
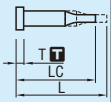
Order

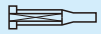
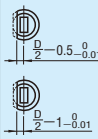
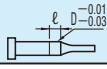
Catalog No.	L	P	W	R (R only)
SSDS 4	30	P2.00	W1.20	
A—SSAL 5	40	P3.65		
H—SSHDS 4	30	P2.00	W1.20	

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W	—	R	— (BC·HC·TC, etc.)
SSAS 4	—	LC28	—	P3.02				— BC10	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC	Tip dimension change $PC \geqq \frac{Pmin.}{2}$ ⊗ TiCN coating cannot be used for D3. 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.)	———	Quotation
		BC	P(PC) / Bmax. 0.500～0.999 / 10 1.000～ / 20 Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 15mm longer than tip length BC.	P·W / Bmax. 1.00～1.19 / 15 1.20～ / 20 Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 15mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ Cannot be used with TiCN coating. ⊗ R=0 cannot be selected for the tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC.	———	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	
Alterations to full length		LC	15+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 15mm or less, tip length is adjusted to (Full length−15mm). (If combined with LKC·LKZ, 0.01 mm increments can be selected for LC.)		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating.		
Alterations to shank		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		Quotation
		TC	Head thickness change 2≦TC<3 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (3−TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
Alterations to head		SKC	Single key flat on shank Ⓐ:  $\frac{D}{2}-0.5^{0}_{-0.01}$ •D3～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) •D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.	DREG: $\frac{D}{2}-1^{0}_{-0.01}$	
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

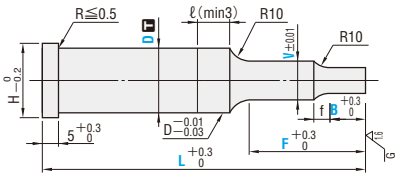
DOUBLE-STEPPED SHOULDER PUNCHES

—NORMAL・TiCN COATING・HW COATING—

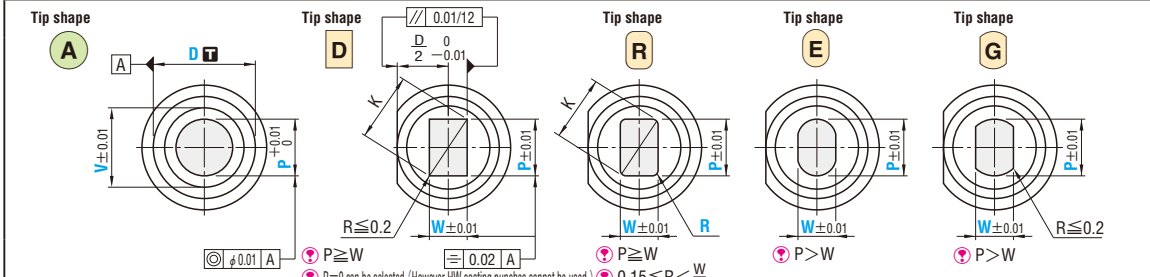
Type	Shank diameter D T tolerance	M H	Catalog No. Type: Normal	TiCN coating Surface 3000HV	HW coating Surface 3000HV	Tip shape
RoHS	Dm5	Equivalent to SKD11 60～63 HRC	SPTW	—	—	A D R E G
		SKH51 61～64 HRC	SHTW	H—SHTW	HW—SHTW	
		Powdered high-speed steel 64～67 HRC	PHTW	H—PHTW	HW—PHTW	
	$D^{+0.005}_{0}$	Equivalent to SKD 11 60～63HRC	A—SPTW	—	—	
		SKH51 61～64 HRC	A—SHTW	AH—SHTW	AHW—SHTW	
		Powdered high-speed steel 64～67 HRC	A—PHTW	AH—PHTW	AHW—PHTW	

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.



- The tip end of a punch is ground before the coating is applied.
- The tip edge of an HW coating punch is very slightly rounded.
- P min is 1.00 for coating punches.



- P≧W
- R=0 can be selected. (However HW coating punches cannot be used.)
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	D	L (Selection)	0.01mm increments Ⓐ P	0.1mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments D R E G P・W	R R	0.01mm increments D R E G B	0.01mm increments V	0.1mm increments F	H
(Dm5) SPTW SHTW PHTW —TiCN coating— H—SHTW H—PHTW —HW coating— HW—SHTW HW—PHTW	A D R E G	3	40・50・60・70・80	(0.50～0.999)	2.0～10.0	2.96	0.70(1.00)～ 1.49	0.15≦R<W/2 (Ⓡ only)	2.0～ 8.0	Ⓐ: D>V>P+0.01 D R E G: D>V>(P, K)+0.03	B+f+2<F≦Fmax. & Ⓐ: F≦L−25 D R E G: F≦L−30	5
				1.00～ 1.999	2.0～20.0		1.50～ 1.99		2.0～ 13.0			
				2.00～ 2.98	2.0～35.0		2.00～ 2.96		2.0～ 19.0			
		4	40・50・60・70・80	(0.50～0.999)	2.0～10.0	3.96	0.80(1.00)～ 1.49		2.0～ 8.0			7
				1.00～ 1.999	2.0～20.0		1.50～ 1.99		2.0～ 13.0			
				2.00～ 3.98	2.0～35.0		2.00～ 3.49		2.0～ 19.0			
				2.00～ 3.98	2.0～35.0		3.50～ 3.96		2.0～ 25.0			
		5	40・50・60・70・80	1.00～ 1.999	2.0～20.0	4.96	0.80(1.00)～ 1.49		2.0～ 8.0			8
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 4.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 4.98	2.0～45.0		3.50～ 4.96		2.0～ 25.0			
		6	40・50・60・70・80	1.00～ 1.999	2.0～20.0	5.96	0.80(1.00)～ 1.49		2.0～ 8.0			9
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 5.98	2.0～45.0		3.50～ 4.99		2.0～ 25.0			
				4.00～ 5.98	2.0～45.0		5.00～ 5.96		2.0～ 30.0			
($D^{+0.005}_{0}$) A—SPTW A—SHTW A—PHTW —TiCN coating— AH—SHTW AH—PHTW —HW coating— AHW—SHTW AHW—PHTW		8	40・50・60・70・80・90・100	1.00～ 1.999	2.0～20.0	7.96	1.00～ 1.49		2.0～ 8.0			11
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 7.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 7.98	2.0～60.0		5.00～ 7.96		2.0～ 30.0			
		10	40・50・60・70・80・90・100	1.50～ 1.999	2.0～20.0	9.96	1.25～ 1.49		2.0～ 8.0			13
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 9.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 9.98	2.0～60.0		5.00～ 9.96		2.0～ 30.0			
		13	40・50・60・70・80・90・100	3.00～ 3.999	2.0～35.0	12.96	1.50～ 1.99		2.0～ 13.0			16
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～12.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～12.98	2.0～60.0		5.00～ 12.96		2.0～ 30.0			
		16	40・50・60・70・80・90・100	5.00～ 5.999	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			19
				6.00～15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	40・50・60・70・80・90・100	6.50～19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			23
				6.50～19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	40・50・60・70・80・90・100	9.00～24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			28
				9.00～24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			

V	Fmax.
0.51～0.999	10
1.00～1.999	20
2.00～3.999	35
4.00～5.999	45
6.00～	60

For dimension f, refer to the punch R length in [Products data] on P.1082 and verify the following.
Ⓐ: (V−P)/2=X
D R E G: (V−W)/2=X

- If V>D−0.03 ···ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.
- P・W(1.00) ···For TiCN coating/HW coating, P・Wmin. is 1.00.

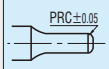
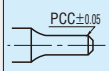
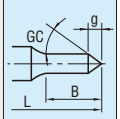
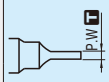
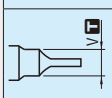
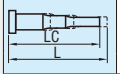
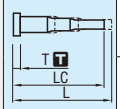
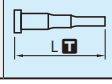
Order

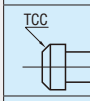
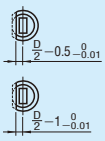
Catalog No.	L	P	W	B	V	F	R (Ⓡ only)
SPTWA 10	80	P9.50		B30	V9.80	F45	
A—PHTWR13	80	P10.50	W7.34	B25	V12.00	F45	R0.5

Days to Ship **Quotation**

Alterations

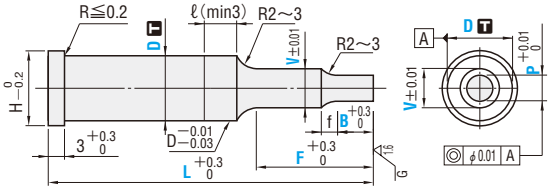
Catalog No.	—	L(LC·LCT·LMT)	—	P	—	W	—	B	—	V	—	F	—	R(Ⓡ only)	—	(HC·TC·KC, etc.)
SPTWA 10	—	LC72	—	P4.80	—		—	B10	—	V6.80	—	F40	—		—	HC12

	Alteration	Code	Ⓐ	DⓇⒺⒼ	1Code
Alterations to tip		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape D corners. ⊗ Cannot be used with TiCN·HW coating.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC·GC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC·GC.	———	
		GC	20°≦GC<90° 1° increments Tip length B≧g+2 g=P/2×tan(90°—GC°) When combined with SC, tip edges are rounded. ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC. ⊗ Cannot be used with TiCN·HW coating.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P·W±0.01⇨ $^{+0.01}_{0}$	Quotation
		VKC	Tip tolerance change V±0.01⇨ $^{+0.005}_{0}$ (V dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with TiCN·HW coating.	Tip tolerance change V±0.01⇨ $^{+0.01}_{0}$	
Alterations to full length		LC	Full length change 25+F≦LC<L 0.1mm increments (If combined with LKC·LKZ, 0.01 mm increments can be selected.)	Full length change 30+F≦LC<L 0.1mm increments	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance andfull length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used with TiCN·HW coating.		

	Alteration	Code	Ⓐ	DⓇⒺⒼ	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC) . If combined with LC·LCT·LMT, full length remains as specified.		Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5.		
		RC	Head thickness is machined to a tolerance of —0.04 ~0 relative to the retainer surface. ⊗ Cannot be used for $D^{+0.005}_{0}$ types.		
Alterations to shank		SKC	 Single key flat on shank •D3~6 V≦D—1.2 (Machining width 0.5) •D8~ V≦D—2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC. ⊗ Cannot be used with TiCN·HW coating.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price **Quotation**

DOUBLE-STEPPED SHOULDER PUNCHES
—QUILL TYPE—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Tip shape	Shape
RoHS	Dm5	SKH51 61～64HRC	SHTW	A	
		Powdered high-speed steel 64～67HRC	PHTW		
	$D^{+0.005}_{0}$	SKH51 61～64HRC	A—SHTW		
		Powdered high-speed steel 64～67HRC	A—PHTW		

Catalog No. Type	Shape / Tip shape	D	L	0.01mm increments P (Ⓐ)	0.1mm increments B (Ⓐ)	0.01mm increments V	0.1mm increments F	H
(Dm5) SHTW PHTW	Ⓐ	1.6	20 25 30 35 40 50 60	0.30～0.49	1.0～ 3.0	D>V>P+0.01	B+f+1<F≦Fmax. F<L−12	2.6
				0.50～0.79	1.0～ 5.0			
				0.80～0.99	1.0～ 8.0			
				1.00～1.56	1.0～ 10.0			
($D^{+0.005}_{0}$) A—SHTW A—PHTW		2.0		0.50～0.79	1.0～ 5.0			3.0
				0.80～0.99	1.0～ 8.0			
				1.00～1.96	1.0～ 10.0			
		2.5		0.80～0.99	1.0～ 8.0			3.5
				1.00～2.46	1.0～ 10.0			

V	Fmax.
0.31～0.49	6
0.50～0.79	8
0.80～0.99	10
1.00～1.99	20
2.00～	35

For dimension f, refer to the punch R length in [Products data] on P.1224 and verify that (V−P)/2=X.

If V>D−0.03 ···→ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.

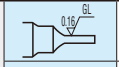
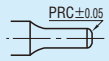
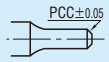
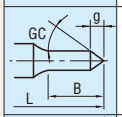
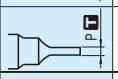
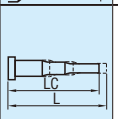
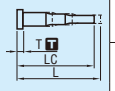
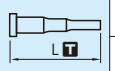
Order

Catalog No.	L	P	B	V	F
A—SHTWA2.0	40	P0.85	B2	V1.50	F10

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P	—	B	—	V	—	F	—	(HC·TC·KC, etc.)
A—SHTWA2.0	—	LC45	—	P0.76	—	B3	—	V1.2	—	F10	—	HC2.8

	Alteration	Code	Ⓐ	1Code
Alterations to tip		SC	Lapping of tip P dimension tolerance and increment are the same.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC·GC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC·GC.	
		GC	20°≦GC<90° 1° increments Tip length B≧g+2 g=P/2×tan (90°−GC°) ⊗ Cannot be used for P<1.0. When combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC·LKZ·LCT·LMT·PRC·PCC.	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Quotation
Alterations to full length		LC	Full length change Can be changed within the following range. 0.1 mm increments D: 1.6～2.5 / LC: 20<LC<60 If LC is 25 or less, tip length B is 4mm in all cases. (If combined with LKC·LKZ, 0.01mm increments can be selected.)	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$	
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{0.01}_{0}$	

	Alteration	Code	Ⓐ	1Code
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		HC	Head diameter change D≦HC<H 0.1 mm increments	
		TC	Head thickness change 2≦TC<3 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (3−TC). If combined with LC·LCT·LMT, full length remains as specified.	Quotation
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$	
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$	
		TCC	Chamfering of head (C0.5) This improves the strength of the punch head. P.1097 Ordering method TCC 0.5 ⊗ Cannot be used for H<2.6.	
Shank		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

Price

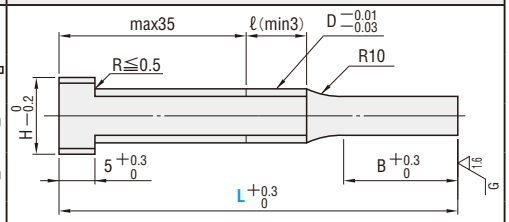
Quotation

KEY FLAT SHANK SHOULDER PUNCHES

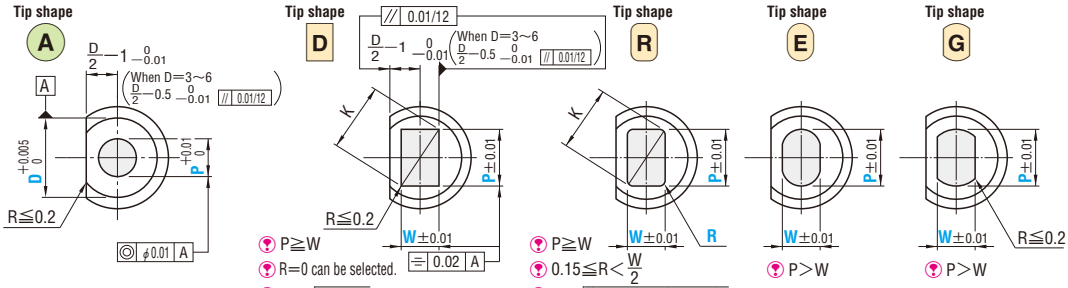
—NORMAL・TiCN COATING—

Type	Shank diameter D (T) tolerance	(M) (H)	Catalog No. Type	Tip shape	B Tip length
RoHS	$D^{+0.005}_{0}$	Equivalent to SKD 11 60~63HRC	G—SP	A D R E G	S L X
		SKH51 61~64HRC	G—SH		
		Powdered high-speed steel 64~67HRC	G—PH		
		SKH51 61~64HRC Surface 3000HV	TiCN coating GH—SH		
		Powdered high-speed steel 64~67HRC Surface 3000HV	TiCN coating GH—PH		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.



The tip end of a TiCN coating punch is ground before the coating is applied.



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG W max.	DREG P·Wmin.	Ⓡ R	B	H
G—SP	A D R E G	S	3	40	50	60	70	80	90	100	1.00~ 1.80		—		$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	5
			4	40	50	60	70	80	90	100	1.00~ 2.80	3.97	2.80	1.00			7
			5	40	50	60	70	80	90	100	2.00~ 3.80	4.97	3.80	1.20			8
			6	40	50	60	70	80	90	100	2.00~ 4.80	5.97	4.80	1.50			9
			8	(40)	50	60	70	80	90	100	3.00~ 5.80	7.97	5.80	2.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~ 7.80	9.97	7.80	2.50			13
			13	(40)	50	60	70	80	90	100	6.00~ 10.80	12.97	10.80	3.00			16
			16	(40)	50	60	70	80	90	100	10.00~ 13.80	15.97	13.80	4.00		19	19
			20	(40)	50	60	70	80	90	100	13.00~ 17.80	19.97	17.80	5.00			23
			25	(40)	50	60	70	80	90	100	18.00~ 22.80	24.97	22.80	6.00			28
G—SH		L	3	40	50	60	70	80	90	100	1.00~ 1.80		—			13	5
			4		50	60	70	80	90	100	1.00~ 2.80	3.97	2.80	2.00			7
			5		50	60	70	80	90	100	2.00~ 3.80	4.97	3.80	2.00			8
			6		50	60	70	80	90	100	2.00~ 4.80	5.97	4.80	2.00			9
G—PH			8		50	60	70	80	90	100	3.00~ 5.80	7.97	5.80	2.50		19	11
			10		50	60	70	80	90	100	3.00~ 7.80	9.97	7.80	2.50			13
			13		50	60	70	80	90	100	6.00~ 10.80	12.97	10.80	3.00			16
—TiCN coating—			16			60	70	80	90	100	10.00~ 13.80	15.97	13.80	4.00		25	19
			20			60	70	80	90	100	13.00~ 17.80	19.97	17.80	5.00			23
			25			60	70	80	90	100	18.00~ 22.80	24.97	22.80	6.00			28
GH—SH		X	3		50	60	70	80	90	100	1.20~ 1.80		—			19	5
			4		50	60	70	80	90	100	1.20~ 2.80	3.97	2.80	2.00			7
GH—PH			5			60	70	80	90	100	2.00~ 3.80	4.97	3.80	3.50		25	8
			6			60	70	80	90	100	2.00~ 4.80	5.97	4.80	3.50			9
			8			60	70	80	90	100	3.00~ 5.80	7.97	5.80	5.00		30	11
			10			60	70	80	90	100	3.00~ 7.80	9.97	7.80	5.00			13
			13			60	70	80	90	100	6.00~ 10.80	12.97	10.80	5.00			16
			16				70	80	90	100	10.00~ 13.80		—		—	40	19
			20				70	80	90	100	13.00~ 17.80						23
			25				70	80	90	100	18.00~ 22.80						28

- L(40)···B=8 If full length is (40), tip length is 8mm in all cases.
- DREG: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D=3~ 6···a=0.5 When D dimension is 3~6, a dimension is 0.5mm.
D=8~25···a=1 When D dimension is 8~25, a dimension is 1mm.

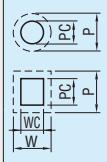
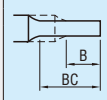
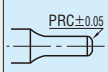
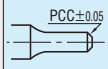
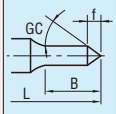
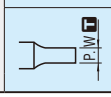
Order

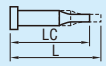
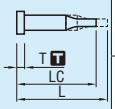
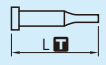
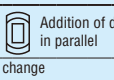
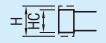
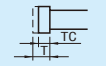
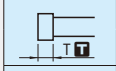
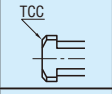
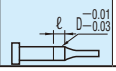
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
G—PHDL 13	—	80	—	P10.50	—	W7.34		

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC・LCT・LMT)	—	P(PC)	—	W(WC)	—	R	—	(BC・HC・TC, etc.)
G—SPAS 10	—	LC72	—	PC2.80			—	BC8		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01mm increments For TiCN coating,PC> Pmin./2>1.00 (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax. 0.500～0.799 / 10 0.800～0.999 / 13 1.000～1.999 / 20 2.000～3.999 / 35 4.000～4.999 / 45 5.000～5.999 / 50 6.000～ / 60	Tip dimension change PC≧ P・Wmin./2 ≧0.80 WC≧ P・Wmin./2 ≧1.00 0.01 mm increments For TiCN coating type: Cannot be used for tip X. P(PC)・W(WC) / Bmax. 0.80～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 Cannot be combined with PCC・GC.	———	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC・GC.	———	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan (90°—GC°) If combined with SC, tip edges are rounded. Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC.	———	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) TiCN coating cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length—25 mm). (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length—30mm).	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 +Full length change+ LC: Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKM: Head thickness tolerance change T +0.3 0 ⇨ 0 —0.02 +Full length change+ LC: Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 Cannot be used with TiCN coating.		
Alterations to head		WKC	 Addition of double key flats in parallel		Quotation
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC・LCT・LMT, full length remains as specified.		
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0		
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 —0.02		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5.		
Alterations to shank		SKF	Single key flat on shank, configurable size SKF 0 —0.01 Ⓐ: P≦2(SKF—0.1) 0.1mm increments DREG: W≦2(SKF—0.1) 0.1mm increments 0.3D≦SKF≦D/2—0.1 Cannot be combined with WKC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price

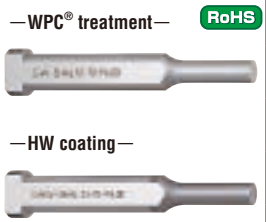
Quotation

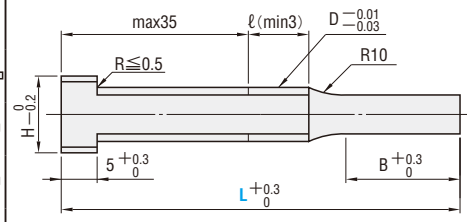
KEY FLAT SHANK SHOULDER PUNCHES

—WPC® TREATMENT・HW COATING—

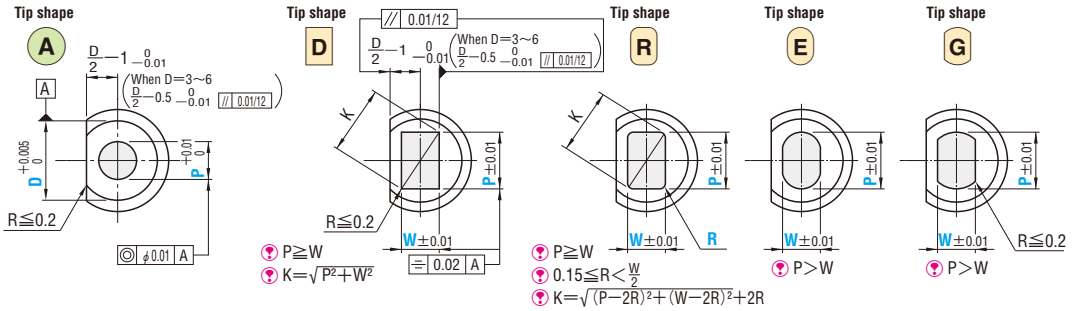
Type	Shank diameter D (T) tolerance	(M) (H)	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS	$D^{+0.005}_{0}$	Equivalent to SKD11 60~63 HRC Surface 1000~1100HV	GW—SP	A D R E G	S
		SKH51 61~64 HRC Surface 1000~1100HV	GW—SH		
—HW coating—		Powdered high-speed steel 64~67 HRC Surface 1000 HV~1100HV	GW—PH		L
		SKH51 61~64 HRC Surface 3000 HV	GHW—SH		X
		Powdered high-speed steel 64~67 HRC Surface 3000 HV	GHW—PH		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.





The tip edges are very slightly rounded.



Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P·Kmax.	W max.	P·Wmin.	Ⓡ R	B	H
—WPC® treatment— GW—SP	A D R E G	S	3	40	50	60	70	80	90	100	1.00~ 1.80	—			0.15≦R<W/2 (Ⓡ only)	8	5
			4	40	50	60	70	80	90	100	1.00~ 2.80	3.97	2.80	1.00			7
			5	40	50	60	70	80	90	100	2.00~ 3.80	4.97	3.80	1.20			8
			6	40	50	60	70	80	90	100	2.00~ 4.80	5.97	4.80	1.50			9
			8	(40)	50	60	70	80	90	100	3.00~ 5.80	7.97	5.80	2.00		13	11
			10	(40)	50	60	70	80	90	100	3.00~ 7.80	9.97	7.80	2.50			13
			13	(40)	50	60	70	80	90	100	6.00~ 10.80	12.97	10.80	3.00			16
			16	(40)	50	60	70	80	90	100	10.00~ 13.80	15.97	13.80	4.00		19	19
			20	(40)	50	60	70	80	90	100	13.00~ 17.80	19.97	17.80	5.00			23
			25	(40)	50	60	70	80	90	100	18.00~ 22.80	24.97	22.80	6.00			28
GW—SH		L	3	40	50	60	70	80	90	100	1.00~ 1.80	—				13	7
			4		50	60	70	80	90	100	1.00~ 2.80	3.97	2.80	2.00			7
			5		50	60	70	80	90	100	2.00~ 3.80	4.97	3.80	2.00			8
			6		50	60	70	80	90	100	2.00~ 4.80	5.97	4.80	2.00			9
GW—PH			8		50	60	70	80	90	100	3.00~ 5.80	7.97	5.80	2.50		19	11
			10		50	60	70	80	90	100	3.00~ 7.80	9.97	7.80	2.50			13
			13		50	60	70	80	90	100	6.00~ 10.80	12.97	10.80	3.00			16
			16			60	70	80	90	100	10.00~ 13.80	15.97	13.80	4.00		25	19
—HW coating—			20			60	70	80	90	100	13.00~ 17.80	19.97	17.80	5.00			23
			25			60	70	80	90	100	18.00~ 22.80	24.97	22.80	6.00			28
GHW—SH		X	3		50	60	70	80	90	100	1.20~ 1.80	—				19	5
			4		50	60	70	80	90	100	1.20~ 2.80	3.97	2.80	2.00			7
GHW—PH			5			60	70	80	90	100	2.00~ 3.80	4.97	3.80	3.50		25	8
			6			60	70	80	90	100	2.00~ 4.80	5.97	4.80	3.50			9
			8			60	70	80	90	100	3.00~ 5.80	7.97	5.80	5.00		30	11
			10			60	70	80	90	100	3.00~ 7.80	9.97	7.80	5.00			13
			13			60	70	80	90	100	6.00~ 10.80	12.97	10.80	5.00			16
			16				70	80	90	100	10.00~ 13.80	—			—	40	19
			20				70	80	90	100	13.00~ 17.80						23
			25				70	80	90	100	18.00~ 22.80						28

L(40)···B=8 If the full length is (40), the tip length is 8mm in all cases.

Ⓓ Ⓡ Ⓔ Ⓖ: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D=3~6···a=0.5 When D dimension is 3~6, dimension a is 0.5mm.
D=8~25···a=1 When D dimension is 8~25, dimension a is 1mm.

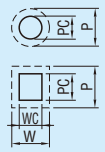
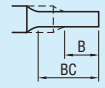
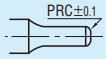
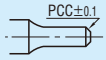
Order

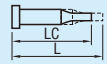
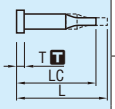
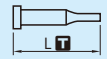
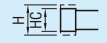
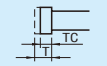
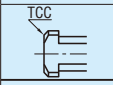
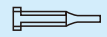
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
GW—PHDL 13	—	80	—	P10.50	—	W7.34		

Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	—	(BC·HC·TC, etc.)
GW—SPAS 10	—	LC72.0	—	PC2.80					—	BC8

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change $PC \geq \frac{Pmin.}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P (PC) / Bmax. 0.500~0.799 / 10 0.800~0.999 / 13 1.000~1.999 / 20 2.000~3.999 / 35 4.000~4.999 / 45 5.000~5.999 / 50 6.000~ / 60 ⊗ PC<1.00 Cannot be used with HW coating.	Tip dimension change $\frac{PC}{WC} \geq \frac{P \cdot Wmin.}{2} \geq 0.80$ 0.01 mm increments ⊗ Cannot be used for tip length X. P(PC)·W(WC) / Bmax. 0.80~1.49 / 8 1.50~1.99 / 13 2.00~3.49 / 19 3.50~4.99 / 25 5.00~ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length—25 mm). (If combined with LKC·LKZ, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length—30mm).	Quotation
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKC Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKM Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Alterations to head		WKC	Addition of double key flats in parallel		
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 If H≦5, then TCC is 0.5.		
Alterations to shank		SKF	Single key flat on shank, configurable size $SKF^{0}_{-0.01}$ Ⓐ P≦2(SKF—0.1) 0.1mm increments DREG W≦2(SKF—0.1) 0.1mm increments 0.3D≦SKF≦D/2—0.1 ⊗ Cannot be combined with WKC.		
		NDC	No press-in lead ℓ≧3 ⇨ℓ=0		

Price

Quotation

KEY FLAT SHANK JECTOR PUNCHES

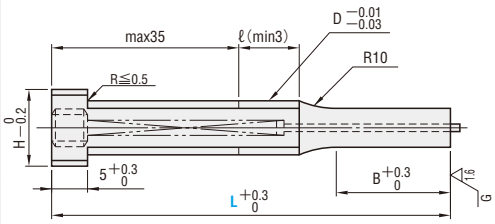
—NORMAL・TiCN COATING—

Calculating the projection length of the jector pin (reference value) P.185

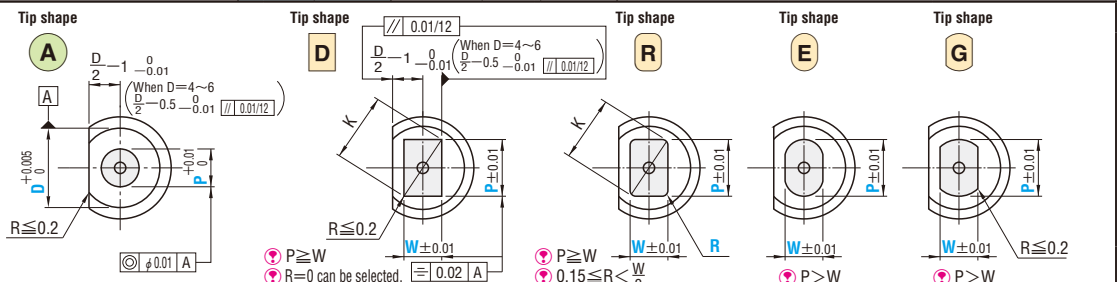
- For details of jector holes, refer to Jector Punch Blanks. P.180
- For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS	$D^{+0.005}_{0}$	D4～6 SKH51 61～64HRC D8～25 Equivalent to SKD11 60～63HRC	G—SJ G—SJV	A D R E G	S L X
		Powdered high-speed steel 64～67HRC	G—PJ G—PJV		
		Powdered high-speed steel 64～67HRC Surface 3000HV	TiCN coating GH—PJ GH—PJV		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.



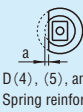
The tip end of a TiCN coating punch is ground before the coating is applied.



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	Ⓓ Ⓡ Ⓔ Ⓖ P·Kmax.	W max.	P·Wmin.	Ⓡ R	B	H
G—SJ G—PJ	A D R E G	S	(4)	40	50	60	70	80			1.00～ 2.80	3.97	2.80	1.00	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40	50	60	70	80			2.00～ 3.80	4.97	3.80	2.00			8
			(6)	40	50	60	70	80			2.00～ 4.80	5.97	4.80	2.00			9
Spring reinforced type (D8～25) G—SJV G—PJV			8	(40)	50	60	70	80	90	100	3.00～ 5.80	7.97	5.80	3.00		13	11
			10	(40)	50	60	70	80	90	100	3.00～ 7.80	9.97	7.80	3.00			13
			13	(40)	50	60	70	80	90	100	6.00～ 10.80	12.97	10.80	6.00			16
			16	(40)	(50)	60	70	80	90	100	10.00～ 13.80	15.97	13.80	6.00		19	19
			20	(40)	(50)	60	70	80	90	100	13.00～ 17.80	19.97	17.80	6.00			23
			25	(40)	(50)	60	70	80	90	100	18.00～ 22.80	24.97	22.80	6.00			28
—TiCN coating— GH—PJ		L	(4)		50	60	70	80			1.00～ 2.80	3.97	2.80	2.00		13	7
			(5)		50	60	70	80			2.00～ 3.80	4.97	3.80	2.00			8
			(6)		50	60	70	80			2.00～ 4.80	5.97	4.80	2.00			9
Spring reinforced type (D8～25) GH—PJV			8		50	60	70	80	90	100	3.00～ 5.80	7.97	5.80	3.00		19	11
			10		50	60	70	80	90	100	3.00～ 7.80	9.97	7.80	3.00			13
			13		50	60	70	80	90	100	6.00～ 10.80	12.97	10.80	6.00			16
			16			60	70	80	90	100	10.00～ 13.80	15.97	13.80	6.00		25	19
			20			60	70	80	90	100	13.00～ 17.80	19.97	17.80	6.00			23
			25			60	70	80	90	100	18.00～ 22.80	24.97	22.80	6.00			28
G—SJ		X	(5)			60	70	80			2.00～ 3.80	4.97	3.80	3.50		25	8
			(6)			60	70	80			2.00～ 4.80	5.97	4.80	3.50			9
Spring reinforced type (D8～25) G—SJV			8				70	80	90	100	3.00～ 5.80	7.97	5.80	5.00		30	11
			10				70	80	90	100	3.00～ 7.80	9.97	7.80	6.00			13
			13				70	80	90	100	6.00～ 10.80	12.97	10.80	6.00			16
			16					80	90	100	10.00～ 13.80	—			—	40	19
			20					80	90	100	13.00～ 17.80						23
			25					80	90	100	18.00～ 22.80						28

- The spring constants of G—SJV, G—PJV, and GH—PJV are twice those of G—SJ, G—PJ, and G—SJ respectively.
- L(40)…B=6 If full length is (40), tip length is 6 mm in all cases.
- L(50)…B=13 If full length is (50), tip length is 13mm in all cases.
- Ⓓ Ⓡ Ⓔ Ⓖ: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.



D=4～6…a=0.5 When D dimension is 4 ～ 6, dimension a is 0.5mm.
D=8～25…a=1 When D dimension is 8 ～ 25, dimension a is 1mm.

- D(4), (5), and (6) are specifications available for G—SJ, G—PJ, and GH—PJ only. Spring reinforced types are available for D8～25 only.

Order

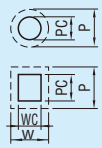
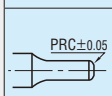
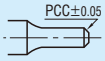
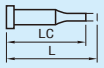
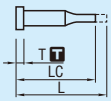
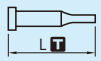
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
G—SJDS 6	—	60	—	P3.00	—	W2.80		

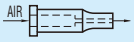
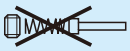
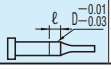
■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC·LCT·LMT)	—	P(PC)	—	W(WC)	—	R	—	(BC·HC·TC, etc.)
G—SJDS 6	—	LC58	—	P3.00	—	W2.80	—		—	HC8

Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC ≧ PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) ⊗ D4 cannot be used with TiCN coating. D / PCmin.: 4 / 0.900; 5 / 1.800; 6 / 1.800; 8 / 2.500; 10 / 2.800; 13 / 5.000; 16 / 8.000; 20 / 9.000; 25 / 9.000	Tip dimension change PC·WC≧PC·WCmin. 0.01mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X. D / PC·WCmin.: 5 / 1.80; 6 / 1.80; 8 / 2.50; 10 / 2.80; 13 / 5.00; 16 / 5.00; 20 / 5.00; 25 / 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments The following restriction applies to tip type X with D dimension of 5 or 6. PC / Bmax.: 1.80~1.99 / 20		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PRC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating cannot be used for D>13.	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC·LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. **TKC** Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + Full length change + **LC** Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. **TKM** Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + Full length change + **LC** Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating.		

Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		WKC	Addition of double key flats in parallel		
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC·TKM·LCT·LMT, 0.01mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC·LCT·LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		Quotation
Alterations to shank		SKF	Single key flat on shank, configurable size SKF $^{0}_{-0.01}$ Ⓐ: P≦2(SKF−0.1) 0.1mm increments DREG: W≦2(SKF−0.1) 0.1mm increments D4~6 D/2−0.5≦SKF≦D/2−0.1 D8~25 D/2−1.0≦SKF≦D/2−0.1 ⊗ Cannot be combined with WKC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

KEY FLAT SHANK JECTOR PUNCHES

—WPC® TREATMENT・HW COATING—

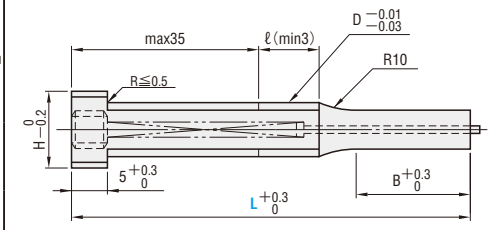
- For details of jector holes, refer to Jector Punch Blanks. P.180
- For details of jector pins, refer to Jector Pin Sets. P.185

Calculating the projection length of the jector pin (reference value) P.185

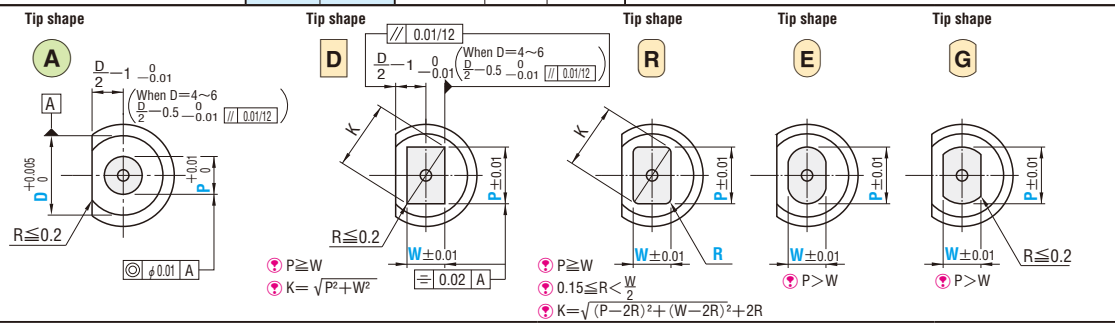
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS —HW coating—	$D^{+0.005}_{0}$	D4～6 SKH51 61～64HRC Surface 1000～1100HV	GW—SJ GW—SJV	A D R E G	S L X
		D8～25 Equivalent to SKD11 60～63HRC Surface 1000～1100HV			
		Powdered high-speed steel 64～67HRC Surface 1000～1100HV	GW—PJ GW—PJV		
		Powdered high-speed steel 64～67HRC Surface 3000HV	GHW—PJ GHW—PJV		

Tip length (B) X>L>S

The tip shape can be selected from Tip shape A～G in the figure below.



The tip edges are very slightly rounded.



P≧W
$K=\sqrt{P^2+W^2}$
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
P>W
P>W

Type	Tip shape	B Tip length	D	L	Ⓐ min.P max.	DⓇⒺⒼ P·Kmax.	DⓇⒺⒼ Wmax.	DⓇⒺⒼ P·Wmin.	Ⓡ R	B	H
—WPC® treatment— GW—SJ GW—PJ	A D R E G	S	(4)	40 50 60 70 80	1.00～ 2.80	3.97	2.80	1.00	0.15≦R<W/2 (Ⓡ only)	8	7
			(5)	40 50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	40 50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
			8	(40) 50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	3.00		13	11
			10	(40) 50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	3.00			13
			13	(40) 50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
Spring reinforced type (D8—25) GW—SJV GW—PJV			16	(40) (50) 60 70 80 90 100	10.00～ 13.80	15.97	13.80	6.00		19	19
			20	(40) (50) 60 70 80 90 100	13.00～ 17.80	19.97	17.80	6.00			23
			25	(40) (50) 60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
—HW coating— GHW—PJ		L	(4)	50 60 70 80	1.00～ 2.80	3.97	2.80	2.00		13	7
			(5)	50 60 70 80	2.00～ 3.80	4.97	3.80	2.00			8
			(6)	50 60 70 80	2.00～ 4.80	5.97	4.80	2.00			9
			8	50 60 70 80 90 100	3.00～ 5.80	7.97	5.80	3.00		19	11
			10	50 60 70 80 90 100	3.00～ 7.80	9.97	7.80	3.00			13
			13	50 60 70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
Spring reinforced type (D8—25) GHW—PJV			16	60 70 80 90 100	10.00～ 13.80	15.97	13.80	6.00		25	19
			20	60 70 80 90 100	13.00～ 17.80	19.97	17.80	6.00			23
			25	60 70 80 90 100	18.00～ 22.80	24.97	22.80	6.00			28
—WPC® treatment— GW—SJ		X	(5)	60 70 80	2.00～ 3.80	4.97	3.80	3.50		25	8
			(6)	60 70 80	2.00～ 4.80	5.97	4.80	3.50			9
			8	70 80 90 100	3.00～ 5.80	7.97	5.80	5.00		30	11
			10	70 80 90 100	3.00～ 7.80	9.97	7.80	6.00			13
			13	70 80 90 100	6.00～ 10.80	12.97	10.80	6.00			16
Spring reinforced type (D8—25) GW—SJV			16	80 90 100	10.00～ 13.80	—			—	40	19
			20	80 90 100	13.00～ 17.80						23
			25	80 90 100	18.00～ 22.80						28

The spring constants of GW—SJV, GW—PJV, and GHW—PJV are twice those of GW—SJ, GW—PJ, and GHW—PJ respectively.

L(40)···B=6 If full length is (40), tip length is 6 mm in all cases.

L(50)···B=13 If full length is (50), tip length is 13mm in all cases.

DⓇⒺⒼ: P・K>D—0.05···ℓ=0 If P・K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D=4～6 ···a=0.5 When D dimension is 4～6, dimension a is 0.5mm.
D=8～25···a=1 When D dimension is 8～25, dimension a is 1mm.

D(4), (5), and (6) are specifications available for GW—SJ, GW—PJ, and GHW—PJ only. Spring reinforced types are available for D8～25 only.

Order

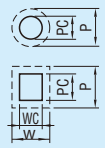
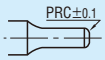
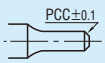
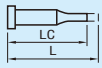
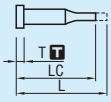
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
GW—SJDS 6	—	60	—	P3.00	—	W2.80		

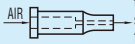
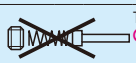
Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch.The large spring load results in more effective scrap removal.

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC・LCT・LMT)	—	P(PC)	—	W(WC)	—	R	—	(BC・HC・TC, etc.)
GW—SJDS 6	—	LC58	—	P3.00	—	W2.80	—		—	HC8

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 4 / 0.900 5 / 1.800 6 / 1.800 8 / 2.500 10 / 2.800 13 / 5.000 16 / 8.000 20 / 9.000 25 / 9.000 ⊗ PC<1.00 Cannot be used with HW coating.	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for D4. ⊗ Cannot be used for tip X. D / PC・WCmin. 5 / 1.80 6 / 1.80 8 / 2.50 10 / 2.80 13 / 5.00 16 / 5.00 20 / 5.00 25 / 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments The following restriction applies to tip type X with D dimension of 5 or 6. PC / Bmax. 1.80～1.99 / 20		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge. 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.180 ⊗ Cannot be combined with PRC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating.	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L−LC) . (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. **TKC** Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$ + **LC** Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes are the same as for LC. **TKM** Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$ + **LC** Full length change + Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		WKC	Addition of double key flats in parallel		Quotation
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length remains as specified.		
		TKC	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{+0.02}_{0}$		
		TKM	Head thickness tolerance change $T^{+0.3}_{0}$ ⇨ $^{0}_{-0.02}$		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 If H≦5, then TCC is 0.5.		
Alterations to shank		SKF	Single key flat on shank, configurable size Ⓐ: $SKF^{0}_{-0.01}$ P≦2(SKF−0.1) 0.1mm increments DREG: W≦2 (SKF−0.1) 0.1mm increments D4～6 D/2−0.5≦SKF≦D/2−0.1 D8～25 D/2−1.0≦SKF≦D/2−0.1 ⊗ Cannot be combined with WKC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

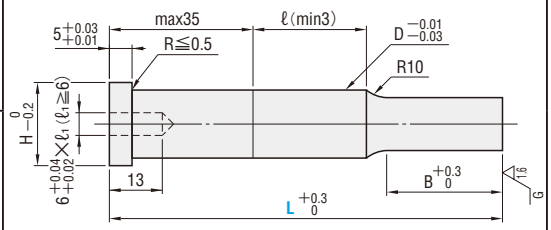
PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS—

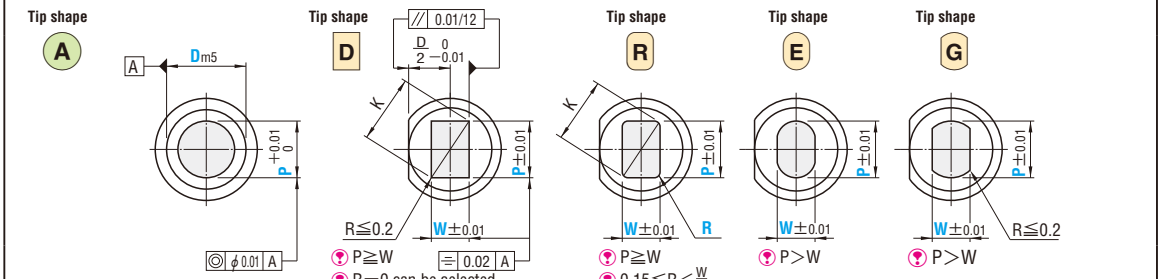
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
With locating dowel hole	Dowel pin MS6—25	Dm5	Equivalent to SKD11 60～63HRC	SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

The tip shape can be selected from Tip shape A～G in the figure below.

RoHS



Tip length (B) X>L>S



Tip shape A: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Catalog No. Type	D	L	0.01mm increments Ⓐ min. P max.	DⓇⒺⒼ P·Kmax.	DⓇⒺⒼ P·Wmin.	Ⓡ R	B	H
SPAS—C	10	(40) 50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
SPDS—C	13	(40) 50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
SPRS—C	16	(40) 50 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	19
SPES—C	20	(40) 50 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
SPGS—C	25	(40) 50 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
	32	(40) (50) 60 70 80 90 100 110 120 130 140 150	20.00～ 31.99	31.97	7.00			35
	38	(40) (50) 60 70 80 90 100 110 120 130 140 150	28.00～ 37.99	37.97	8.00			41
	45	(40) (50) 60 70 80 90 100 110 120 130 140 150	35.00～ 44.99	44.97	9.00			48
SPAL—C	10	50 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	13
SPDL—C	13	50 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			16
SPRL—C	16	60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	19
SPEL—C	20	60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			23
SPGL—C	25	60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			28
	32	60 70 80 90 100 110 120 130 140 150	20.00～ 31.99	31.97	7.00			35
	38	60 70 80 90 100 110 120 130 140 150	28.00～ 37.99	37.97	8.00			41
	45	60 70 80 90 100 110 120 130 140 150	35.00～ 44.99	44.97	9.00			48
SPAX—C	10	70 80 90 100 110 120 130 140 150	6.00～ 9.99	9.97	5.00		30	13
SPDX—C	13	70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	5.00			16
SPRX—C	16	80 90 100 110 120 130 140 150	10.00～ 15.99	—		—	40	19
SPEX—C	20	80 90 100 110 120 130 140 150	13.00～ 19.99					23
SPGX—C	25	80 90 100 110 120 130 140 150	18.00～ 24.99					28
	32	80 90 100 110 120 130 140 150	20.00～ 31.99					35
	38	80 90 100 110 120 130 140 150	28.00～ 37.99					41
	45	80 90 100 110 120 130 140 150	35.00～ 44.99					48

L(40): D10 ～ 25···B=8 If full length is (40) and D dimension is 10 ～ 25, tip length is 8mm in all cases.
D32 ～ 45···B=6 If full length is (40) and D dimension is 32 ～ 45, tip length is 6mm in all cases.

L(50) ···B=13 If full length is (50), tip length is 13mm in all cases.

Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

DⓇⒺⒼ: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

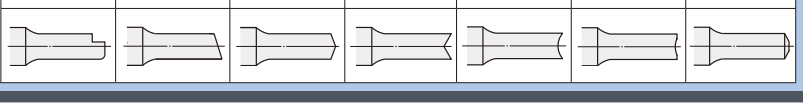
Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
SPAS—C 25	—	100	—	P18.05				

Example

■Uses of punches with locating dowel holes

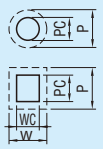
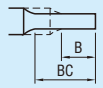
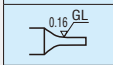
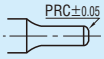
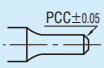
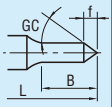
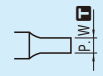
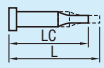
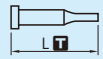
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.These punches are particularly effective when used for die machining with NC machines.This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Punch tip shear angle alterations P.176	1F	2F	3F	4F	5F	6F	7F
							

Days to Ship **Quotation**

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・HC・TC, etc.)
SPAS—C 25	LC95	P18.05			BC30

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip 	PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.500 ~ 1.999 / 20 2.000 ~ 3.999 / 35 4.000 ~ 5.999 / 45 6.000 ~ / 60	Tip dimension change PC/WC≧ P・Wmin./2 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax. 1.25 ~ 1.49 / 8 1.50 ~ 1.99 / 13 2.00 ~ 3.49 / 19 3.50 ~ 4.99 / 25 5.00 ~ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip shape D corners.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC・GC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC・GC.	——	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°—GC°) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・PRC・PCC.	——	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
Alterations to full length 	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length—25mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length—30mm).	
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
	LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used for D>25.		
Alterations to head	KC	Addition of single key flat to head	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	

Alteration	Code	Ⓐ	DREG	1Code
Alterations to head	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Quotation
	NKC	——	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1mm increments Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.		
	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 ⊗ Cannot be combined with SRC.		
	SRC	Modification of head for use with select retainers (SLS) Details P.629 Can be used for D10~32.		
Alterations to shank	UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN UC40 / 37 / L≧80 / USN40 UC50 / 47 / L≧90 / USN50 P・Kmax.=D—1.1 Details P.630 Can be used for L≧80 or L≧90. Can be used for D10 ~ 32.		
	TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38・45.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price **Quotation**

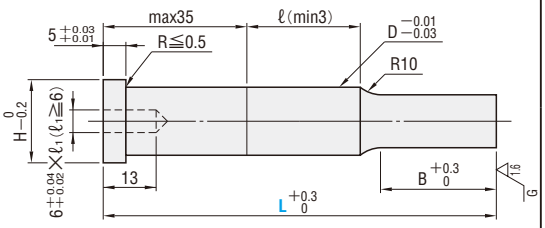
PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS・DICOAT® TREATMENT—

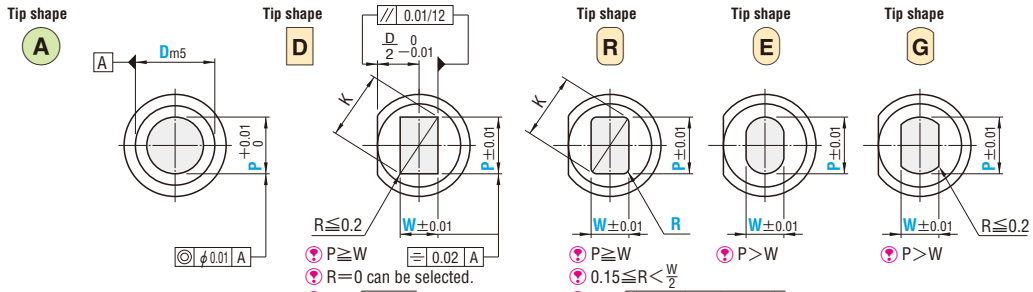
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
Dicoat® treatment with locating dowel hole	Dowel pin MS6—25	Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	T—SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

RoHS

The tip shape can be selected from Tip shape A～G in the figure below.



Tip length (B) X>L>S



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	D	L	Ⓐ min. P max.	D R E G P・Kmax.	D R E G P・Wmin.	R R	B	H
S T—SPAS—C T—SPDS—C T—SPRS—C T—SPES—C T—SPGS—C	10	(40) 50 60 70 80 90 100	3.00～ 9.99	9.97	2.50	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	13
	13	(40) 50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
	16	(40) 50 60 70 80 90 100	10.00～ 15.99	15.97	4.00		19	19
	20	(40) 50 60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
	25	(40) 50 60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
	32	(40) (50) 60 70 80 90 100 110 120	20.00～ 31.99	31.97	7.00			35
	38	(40) (50) 60 70 80 90 100 110 120	28.00～ 37.99	37.97	8.00			41
	45	(40) (50) 60 70 80 90 100 110 120	35.00～ 44.99	44.97	9.00			48
L T—SPAL—C T—SPDL—C T—SPRL—C T—SPEL—C T—SPGL—C	10	50 60 70 80 90 100	3.00～ 9.99	9.97	2.50		19	13
	13	50 60 70 80 90 100	6.00～ 12.99	12.97	3.00			16
	16	60 70 80 90 100	10.00～ 15.99	15.97	4.00		25	19
	20	60 70 80 90 100	13.00～ 19.99	19.97	5.00			23
	25	60 70 80 90 100	18.00～ 24.99	24.97	6.00			28
	32	60 70 80 90 100 110 120	20.00～ 31.99	31.97	7.00			35
	38	60 70 80 90 100 110 120	28.00～ 37.99	37.97	8.00			41
	45	60 70 80 90 100 110 120	35.00～ 44.99	44.97	9.00			48
X T—SPAX—C	10	70 80 90 100	6.00～ 9.99	—		—	30	13
	13	70 80 90 100	6.00～ 12.99					16
	16	80 90 100	10.00～ 15.99				40	19
	20	80 90 100	13.00～ 19.99					23
	25	80 90 100	18.00～ 24.99					28
	32	80 90 100 110 120	20.00～ 31.99					35
	38	80 90 100 110 120	28.00～ 37.99					41
	45	80 90 100 110 120	35.00～ 44.99					48

- L(40): D10～25…B=8 If full length is (40) and D dimension is 10～25, tip length is 8mm in all cases.
  D32～45…B=6 If full length is (40) and D dimension is 32～45, tip length is 6mm in all cases.
- L(50)…B=13 If full length is (50), tip length is 13mm in all cases.
- Ⓐ: P>D−0.03 …ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

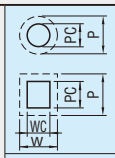
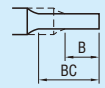
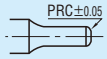
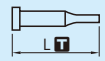
Order

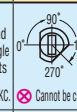
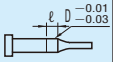
Catalog No.	—	L	—	P	—	W	—	R (R only)
T—SPAS—C 25	—	100	—	P18.05				

Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・HC・TC, etc.)
T—SPAS—C 25	—	LC95	—	P18.05					— BC30

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip				
	**PC WC**	Tip dimension change PC≧ Pmin./2 0.01mm increments P(PC) / Bmax. 1.50～1.99 / 20 2.00～3.99 / 35 4.00～5.99 / 40 6.00～ / 45	Tip dimension change PC, WC≧ P・Wmin./2 0.01mm increments P(PC)・W(WC) / Bmax. 1.25～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
	**BC**	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
	**PRC**	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2	———	
Alterations to full length				
	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length—25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length—30mm).	
	**LKC**	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Alterations to head				
	KC	Addition of single key flat to head	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	

Alteration	Code	Ⓐ	DREG	1Code
Alterations to head				
	KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	 Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Quotation
	NKC	———	No key flat	
	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC	Head thickness change 2≦TC<5 0.1mm increments Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.		
	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 Cannot be combined with SRC.		
	SRC	Modification of head for use with select retainers (SLS) Details P.629 Can be used for D10～32.		
Alterations to shank				
	UC	Modification for urethane stripper (USN) installation For details P.630 Can be used with D 10 ～ 32.		
	TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). Cannot be used for D38・45.		
	**NDC**	No press-in lead $\ell \geq 3 \Rightarrow \ell = 0$		

Example

■Uses of punches with locating dowel holes

This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.

Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.

These punches are particularly effective when used for die machining with NC machines.

This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

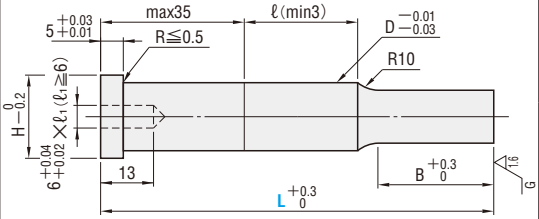
PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS・TiCN COATING—

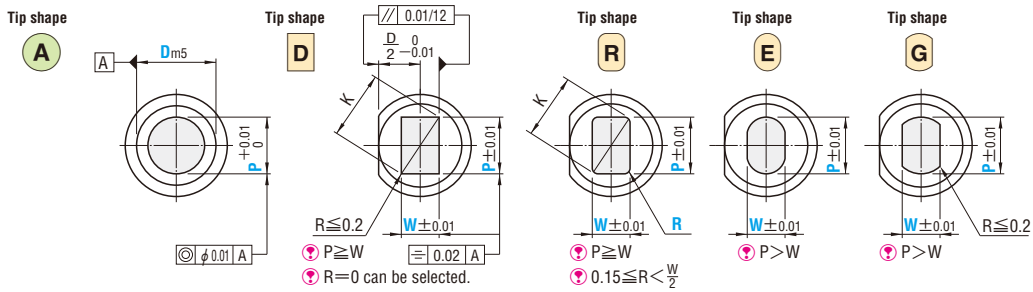
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	H—SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

RoHS

The tip shape can be selected from Tip shape A～G in the figure below.



The tip end is ground before the coating is applied.
Tip length (B) X>L>S



Tip shape A: P≧W
Tip shape D: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$
Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
Tip shape E: P>W
Tip shape G: P>W

Catalog No. Type	D	L												0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	Ⓡ R	B	H
S H—SPAS—C H—SPDS—C H—SPRS—C H—SPES—C H—SPGS—C	10	(40)	50	60	70	80	90	100	110	120	130	140	150	3.00～ 9.99	9.97	2.50	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
	13	(40)	50	60	70	80	90	100	110	120	130	140	150	6.00～ 12.99	12.97	3.00			16
	16	(40)	50	60	70	80	90	100	110	120	130	140	150	10.00～ 15.99	15.97	4.00		19	19
	20	(40)	50	60	70	80	90	100	110	120	130	140	150	13.00～ 19.99	19.97	5.00			23
	25	(40)	50	60	70	80	90	100	110	120	130	140	150	18.00～ 24.99	24.97	6.00			28
L H—SPAL—C H—SPDL—C H—SPRL—C H—SPEL—C H—SPGL—C	10		50	60	70	80	90	100	110	120	130	140	150	3.00～ 9.99	9.97	2.50		19	13
	13		50	60	70	80	90	100	110	120	130	140	150	6.00～ 12.99	12.97	3.00			16
	16			60	70	80	90	100	110	120	130	140	150	10.00～ 15.99	15.97	4.00		25	19
	20			60	70	80	90	100	110	120	130	140	150	13.00～ 19.99	19.97	5.00			23
	25			60	70	80	90	100	110	120	130	140	150	18.00～ 24.99	24.97	6.00			28
X H—SPAX—C H—SPDX—C H—SPRX—C H—SPEX—C H—SPGX—C	10				70	80	90	100	110	120	130	140	150	6.00～ 9.99	9.97	5.00		30	13
	13				70	80	90	100	110	120	130	140	150	6.00～ 12.99	12.97	5.00			16
	16					80	90	100	110	120	130	140	150	10.00～ 15.99	———		—	40	19
	20					80	90	100	110	120	130	140	150	13.00～ 19.99					23
	25					80	90	100	110	120	130	140	150	18.00～ 24.99					28

L(40)…B=8 If full length is (40) and D dimension is 10 ～ 25, tip length is 8mm in all cases.
Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

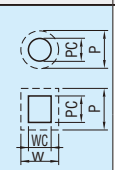
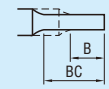
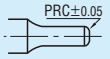
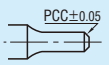
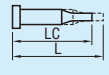
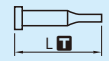
Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—SPAS—C 25	—	100	—	P18.05				

Days to Ship Quotation

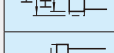
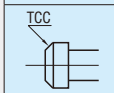
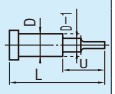
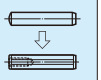
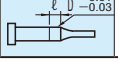
Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	—	(BC・HC・TC, etc.)
H—SPAS—C 25	—	LC95	—	P18.05					—	BC30

Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC≦ P・Wmin./2 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax. 1.25～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length—25mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length—30mm).	
			(If combined with LKC, 0.01 mm increments can be selected.)		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Price

Quotation

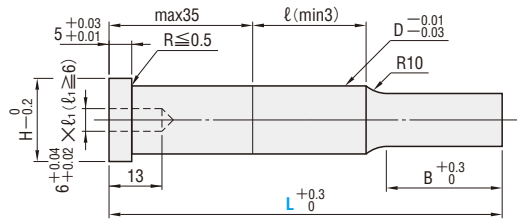
Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1mm increments Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H—D)/2 ⊗ Cannot be combined with SRC.		
		SRC	Modification of head for use with select retainers (SLS) Details P.629		
Alterations to shank		UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN UC40 / 37 / L≧80 / USN40 UC50 / 47 / L≧90 / USN50 P・Kmax.=D—1.1 Details P.630 Can be used for L≧80 or L≧90.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin D10～32 MS6—25 D38/45 SJB—CMS	Dm5	Equivalent to SKD11 60～63HRC Surface 1000～1100HV	W—SP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C
HW coating with locating dowel hole		Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	HW—SP			

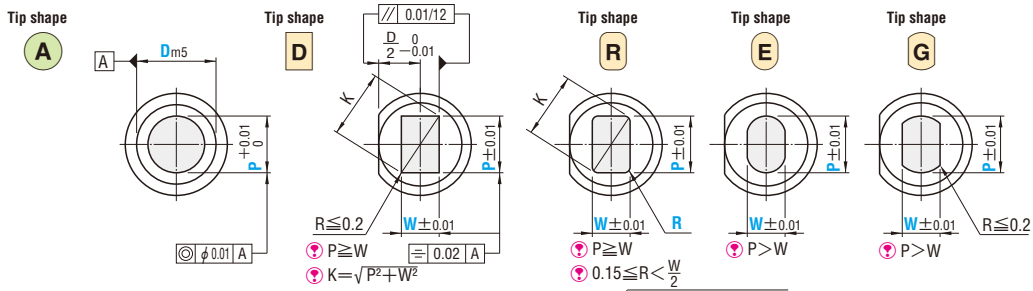
The tip shape can be selected from Tip shape A～G in the figure below.



The tip edges are very slightly rounded.
Tip length (B) X>L>S

—WPC® treatment—

—HW coating— RoHS



Ⓐ P≧W
Ⓓ $K=\sqrt{P^2+W^2}$
Ⓡ P≧W, $0.15 \leqq R < \frac{W}{2}$, $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
Ⓔ P>W
Ⓖ P>W

Catalog No. Type	D	L												0.01mm increments Ⓐ min. P max.	DⓇⒺⒼ P·Kmax.	DⓇⒺⒼ P·Wmin.	Ⓡ R	B	H
S	10	(40)	50	60	70	80	90	100	110	120	130	140	150	3.00～ 9.99	9.97	2.50	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
	13	(40)	50	60	70	80	90	100	110	120	130	140	150	6.00～ 12.99	12.97	3.00			16
—WPC® treatment— W—SP□S—C	16	(40)	50	60	70	80	90	100	110	120	130	140	150	10.00～ 15.99	15.97	4.00		19	19
—HW coating— HW—SP□S—C	20	(40)	50	60	70	80	90	100	110	120	130	140	150	13.00～ 19.99	19.97	5.00			23
	25	(40)	50	60	70	80	90	100	110	120	130	140	150	18.00～ 24.99	24.97	6.00			28
	(32)	(40)	(50)	60	70	80	90	100	110	120	130	140	150	20.00～ 31.99	31.97	7.00			35
	(38)	(40)	(50)	60	70	80	90	100	110	120	130	140	150	28.00～ 37.99	37.97	8.00			41
	(45)	(40)	(50)	60	70	80	90	100	110	120	130	140	150	35.00～ 44.99	44.97	9.00			48
L	10		50	60	70	80	90	100	110	120	130	140	150	3.00～ 9.99	9.97	2.50		19	13
	13		50	60	70	80	90	100	110	120	130	140	150	6.00～ 12.99	12.97	3.00			16
—WPC® treatment— W—SP□L—C	16			60	70	80	90	100	110	120	130	140	150	10.00～ 15.99	15.97	4.00		25	19
—HW coating— HW—SP□L—C	20			60	70	80	90	100	110	120	130	140	150	13.00～ 19.99	19.97	5.00			23
	25			60	70	80	90	100	110	120	130	140	150	18.00～ 24.99	24.97	6.00			28
	(32)			60	70	80	90	100	110	120	130	140	150	20.00～ 31.99	31.97	7.00			35
	(38)			60	70	80	90	100	110	120	130	140	150	28.00～ 37.99	37.97	8.00			41
	(45)			60	70	80	90	100	110	120	130	140	150	35.00～ 44.99	44.97	9.00			48
X	10				70	80	90	100	110	120	130	140	150	6.00～ 9.99	9.97	5.00		30	13
	13				70	80	90	100	110	120	130	140	150	6.00～ 12.99	12.97	5.00			16
—WPC® treatment— W—SP□X—C	16					80	90	100	110	120	130	140	150	10.00～ 15.99	——		—	40	19
—HW coating— HW—SP□X—C	20					80	90	100	110	120	130	140	150	13.00～ 19.99					23
	25					80	90	100	110	120	130	140	150	18.00～ 24.99					28
	(32)					80	90	100	110	120	130	140	150	20.00～ 31.99					35
	(38)					80	90	100	110	120	130	140	150	28.00～ 37.99					41
	(45)					80	90	100	110	120	130	140	150	35.00～ 44.99					48

L (40): D10～25···B=8 If full length is (40) and D dimension is 10～25, tip length is 8mm in all cases.
D32～45···B=6 If full length is (40) and D dimension is 32～45, tip length is 6mm in all cases.
L (50)···B=13 If full length is (50), tip length is 13mm in all cases.
Ⓐ: P>D—0.03 ···ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
ⒹⒸⒺⒼ: P・K>D—0.05···ℓ=0 If P・K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D (32), (38), and (45) are specifications available for W—SP□□—C only.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
W—SPAS—C 25	—	100	—	P18.05				

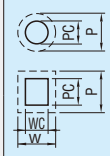
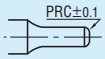
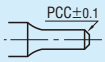
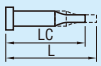
Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.These punches are particularly effective when used for die machining with NC machines.This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Days to Ship **Quotation**

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・HC・TC, etc.)
W−SPAS−C 25	LC95	P18.05			BC30

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P (PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC, WC≧ P・Wmin./2 0.01 mm increments ⊗ Cannot be used for tip X. P'(PC)・W(WC) / Bmax. 1.25～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC	——	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
			(If combined with LKC, 0.01 mm increments can be selected.)		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		

Price **Quotation**

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 2≦TC<5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		Quotation
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 ⊗ Cannot be combined with SRC.		
		SRC	Modification of head for use with select retainers (SLS) Details P.629 Can be used for D10 ～ 32.		
Alterations to shank		UC	Modification for urethane stripper (USN) installation Code / U / L / Applicable USN UC40 / 37 / L≧80 / USN40 UC50 / 47 / L≧90 / USN50 P・Kmax.=D−1.1 Details P.630 Can be used for L≧80 or L≧90. Can be used for D10 ～ 32.		
		TPC	Dowel pin change MS6−25 that comes with the product is changed to MSTP6−25 (tapped type). ⊗ Cannot be used for D38・45.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

JECTOR PUNCHES WITH LOCATING DOWEL HOLES
—FINISHED FOR RETAINERS—

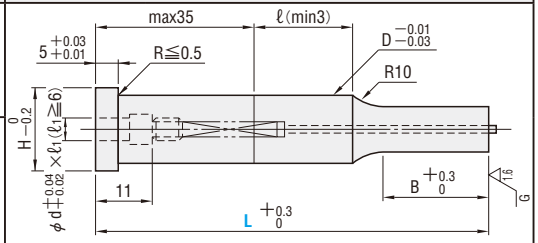
● For details of jector holes, refer to Jector Punch Blanks. P.180
● For details of jector pins, refer to Jector Pin Sets. P.185

Calculating the projection length of the jector pin (reference value) P.185

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
With locating dowel hole	Dowel pin D10 ~ 32 MS6—25 D38/45 SJB—CMS	Dm5	Equivalent to SKD 11 60 ~ 63HRC	SJ —Spring reinforced type— SJV	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

RoHS

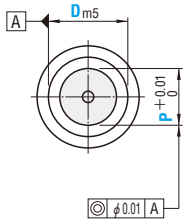
The tip shape can be selected from Tip shape A~G in the figure below.



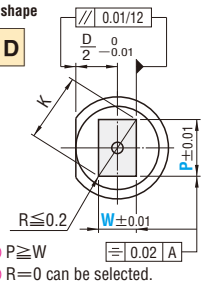
D	d
10~32	6
38・45	10

Tip length (B) X>L>S

Tip shape A

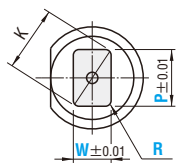


Tip shape D



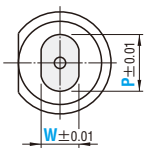
P≧W
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



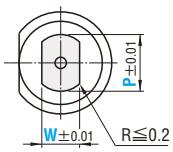
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	D	L							0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	R R	B	H
S Spring reinforced type (D10 ~ 32)	10	60	70	80	90	100	110	120	3.00~ 9.99	9.97	3.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
	13	60	70	80	90	100	110	120	6.00~ 12.99	12.97	6.00			16
SJAS—C SJVAS—C	16	(60)	70	80	90	100	110	120	10.00~ 15.99	15.97	6.00		19	19
SJDS—C SJVDS—C	20	(60)	70	80	90	100	110	120	13.00~ 19.99	19.97	6.00			23
SJRS—C SJVRS—C	25	(60)	70	80	90	100	110	120	18.00~ 24.99	24.97	6.00			28
SJES—C SJVES—C	32	(60)	70	80	90	100	110	120	20.00~ 31.99	31.97	7.00			35
SJGS—C SJVGS—C	(38)	(60)	70	80	90	100	110	120	28.00~ 37.99	37.97	8.00			41
	(45)	(60)	70	80	90	100	110	120	35.00~ 44.99	44.97	9.00			48
L Spring reinforced type (D10 ~ 32)	10		70	80	90	100	110	120	3.00~ 9.99	9.97	3.00		19	13
	13		70	80	90	100	110	120	6.00~ 12.99	12.97	6.00			16
SJAL—C SJVAL—C	16		70	80	90	100	110	120	10.00~ 15.99	15.97	6.00		25	19
SJDL—C SJVDL—C	20		70	80	90	100	110	120	13.00~ 19.99	19.97	6.00			23
SJRL—C SJVRL—C	25		70	80	90	100	110	120	18.00~ 24.99	24.97	6.00			28
SJEL—C SJVEL—C	32		70	80	90	100	110	120	20.00~ 31.99	31.97	7.00			35
SJGL—C SJVGL—C	(38)		70	80	90	100	110	120	28.00~ 37.99	37.97	8.00			41
	(45)		70	80	90	100	110	120	35.00~ 44.99	44.97	9.00			48
X Spring reinforced type	10			80	90	100	110	120	6.00~ 9.99	9.97	6.00		30	13
	13			80	90	100	110	120	6.00~ 12.99	12.97	6.00			16
SJAX—C SJVAX—C	16					100	110	120	10.00~ 15.99	—		—	40	19
SJDX—C SJVDX—C	20					100	110	120	13.00~ 19.99					23
SJRX—C SJVRX—C	25					100	110	120	18.00~ 24.99					28
SJEX—C SJVEX—C	32					100	110	120	20.00~ 31.99					35
SJGX—C SJVGX—C														

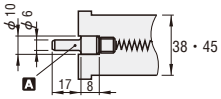
The spring constant of SJV□□—C is as twice that of SJ□□—C.
L (60)···B=13 If the full length is (60), the tip length is 13 mm in all cases.
Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D (38) and (45) are specifications available for SJ□□—C only. Spring reinforced types are available for D10 ~ 32 only.

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch.The large spring load results in more effective scrap removal.

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

● D38・45 A SJB—CMS



・Finished for retainer
・For details on retainers P.611 and later pages.
・Optional backing plates are available. Only the backing plates for φ38・φ45 punches have a φ10.2 hole for a stepped dowel pin. P.180

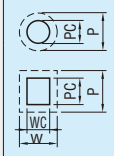
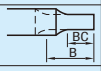
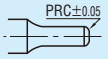
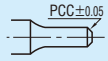
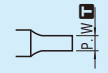
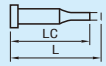
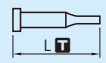
Order

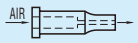
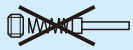
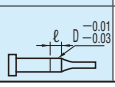
Catalog No.	—	L	—	P	—	W	—	R(Ⓡ only)
SJDS—C 38	—	100	—	P30.00	—	W18.00		

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・HC・TC, etc.)
SJAS—C 25	—	LC95	—	P18.05					— PKC

Alteration	Code	Ⓐ	DⓇⒺⒼ	1Code
Alterations to tip				
	PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 10 / 2.800 13 / 5.000 16 / 8.000 20 / 9.000 25 / 9.000 32 / 15.000 38 / 23.000 45 / 30.000	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for tip X. D / PC・WCmin. 10 / 2.80 13 / 5.00 16 / 5.00 20 / 5.00 25 / 5.00 32 / 6.00 38 / 7.00 45 / 8.00	
	BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		
	SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape Ⓓ corners.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P.180 ⊗ Cannot be combined with PCC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension details P.180 ⊗ Cannot be combined with PRC.	—	Quotation
	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length				
	LC	Full length change (reduction in tip length) LC＜L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
	LKZ	Full length tolerance change L+0.3⇨$^{+0.01}_{0}$ ⊗ Cannot be used for D＞25.		
Alterations to head				
	KC	Addition of single key flat to head	Key flat position change 1° increments	
	WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
	KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	

Alteration	Code	Ⓐ	DⓇⒺⒼ	1Code
Alterations to head				
	NKC	——	No key flat	
	HC	Head diameter change D≦HC＜H 0.1 mm increments		
	TC	Head thickness change 3.5≦TC＜5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		
	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 ⊗ Cannot be combined with SRC.		Quotation
	SRC	Modification of head for use with select retainers (SLS) Details P.629 Can be used for D10 ～ 32.		
Alterations to shank				
	AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
	NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
	TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38・45.		
	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS・DICOAT® TREATMENT—

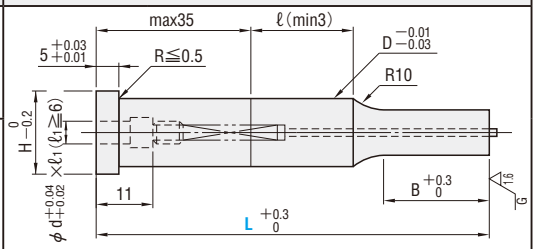
● For details of jector holes, refer to Jector Punch Blanks. P.180
● For details of jector pins, refer to Jector Pin Sets. P.185

Calculating the projection length of the jector pin (reference value) P.185

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
Jector with locating dowel hole, Dicoat® treatment	Dowel pin D10～32 MS6—25 D38・45 SJB—CMS	Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	T—SJ (Spring reinforced type) T—SJV	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L	—C

RoHS

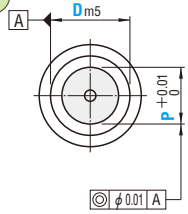
The tip shape can be selected from Tip shape A～G in the figure below.



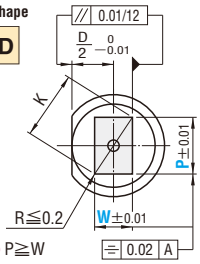
D	d
10～32	6
38・45	10

Tip length (B) L>S

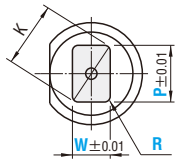
Tip shape A



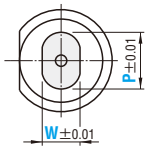
Tip shape D



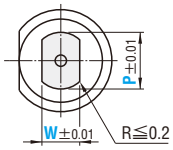
Tip shape R



Tip shape E



Tip shape G



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

Catalog No. Type	D	L							0.01mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G P・Wmin.	Ⓡ R	B	H
Spring reinforced type (D10～32)	10	60	70	80	90	100			3.00～ 9.99	9.97	3.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
	13	60	70	80	90	100			6.00～ 12.99	12.97	6.00			16
T—SJAS—C T—SJVAS—C	16	(60)	70	80	90	100			10.00～ 15.99	15.97	6.00		19	19
T—SJDS—C T—SJVDS—C	20	(60)	70	80	90	100			13.00～ 19.99	19.97	6.00			23
T—SJRS—C T—SJVRS—C	25	(60)	70	80	90	100			18.00～ 24.99	24.97	6.00			28
T—SJES—C T—SJVES—C	32	(60)	70	80	90	100	110	120	20.00～ 31.99	31.97	7.00			35
T—SJGS—C T—SJVGS—C	(38)	(60)	70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)	(60)	70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48
Spring reinforced type (D10～32)	10		70	80	90	100			3.00～ 9.99	9.97	3.00		19	13
	13		70	80	90	100			6.00～ 12.99	12.97	6.00			16
T—SJAL—C T—SJVAL—C	16		70	80	90	100			10.00～ 15.99	15.97	6.00		25	19
T—SJDL—C T—SJVDL—C	20		70	80	90	100			13.00～ 19.99	19.97	6.00			23
T—SJRL—C T—SJVRL—C	25		70	80	90	100			18.00～ 24.99	24.97	6.00			28
T—SJEL—C T—SJVEL—C	32		70	80	90	100	110	120	20.00～ 31.99	31.97	7.00			35
T—SJGL—C T—SJVGL—C	(38)		70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)		70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48

- The spring constant of T—SJV□□—C is twice that of T—SJ□□—C.
- L (60)…B=13 If the full length is (60), the tip length is 13 mm in all cases.
- Ⓐ: P>D—0.03…ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P・K>D—0.05…ℓ=0 If P・K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D (38) and (45) are specifications available for T—SJ□□—C only. Spring reinforced types are available for D10～32 only.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
T—SJAS—C 25	—	100	—	P18.05				

Days to Ship: Quotation

■Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	R	—	(BC・HC・TC, etc.)
T—SJDS—C 38	—	100	—	P20.00	—	W10.00			—	BC13

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip	BC, B	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P.180	——	
Alterations to full length	LC, L	LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2mm.		Quotation
	L T	LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	90°, 0°, 180°, 270° Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90°, 0°, 180°, 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90°, 0°, 180°, 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	

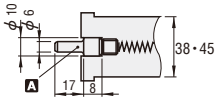
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head	H, HC	HC	Head diameter change D≦HC<H 0.1 mm increments		
	TC, T	TC	Head thickness change 3.5≦TC<5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		
	TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 ⊗ Cannot be combined with SRC.		Quotation
		SRC	Modification of head for use with select retainers (SLS) Details P.629 Can be used for D10~32.		
Alterations to shank		AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38・45.		
	ℓ, D $^{-0.01}_{-0.03}$	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes

This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

●D38・45 Ⓐ SJB—CMS



- Finished for retainer
- For details on retainers **P.611** and later pages.
- Optional backing plates are available. Only the backing plates for φ38・φ45 punches have a φ10.2 hole for a stepped dowel pin. **P.180**

Price

Quotation

JECTOR PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS・TiCN COATING—

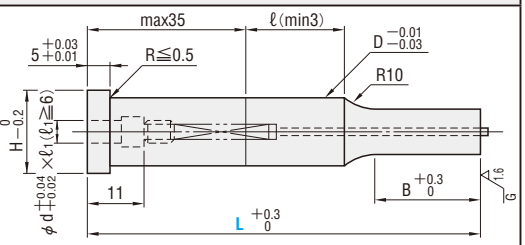
Calculating the projection length of the jector pin (reference value) P.185

- For details of jector holes, refer to Jector Punch Blanks. P.180
- For details of jector pins, refer to Jector Pin Sets. P.185

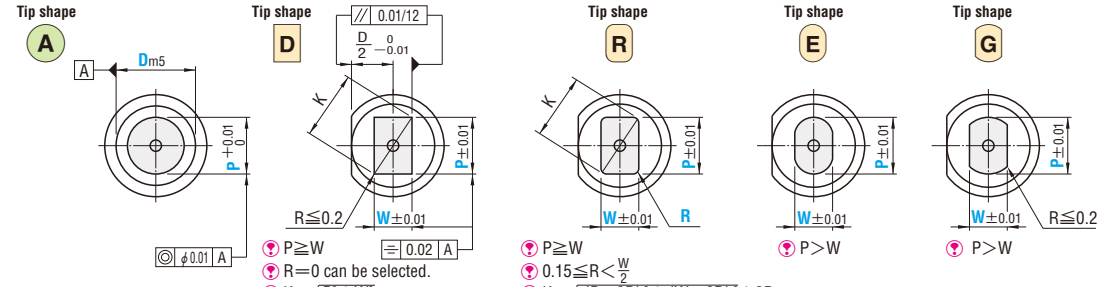
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	Dm5	Equivalent to SKD11 60～63HRC Surface 3000HV	H—SJ —Spring reinforced type— H—SJV	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L X	—C

RoHS

The tip shape can be selected from Tip shape A～G in the figure below.



The tip end is ground before the coating is applied.
Tip length (B) X>L>S



Tip shape A: P≧W
Tip shape D: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$
Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
Tip shape E: P>W
Tip shape G: P>W

Catalog No. Type		D	L							0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
S	Spring reinforced type														
H—SJAS—C	H—SJVAS—C	10	60	70	80	90	100	110	120	3.00～ 9.99	9.97	3.00	0.15≦R<W/2 (Ⓡ only)	13	13
H—SJDS—C	H—SJVDS—C	13	60	70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
H—SJRS—C	H—SJVRS—C	16	(60)	70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		19	19
H—SJES—C	H—SJVES—C	20	(60)	70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
H—SJGS—C	H—SJVGS—C	25	(60)	70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
L	Spring reinforced type														
H—SJAL—C	H—SJVAL—C	10		70	80	90	100	110	120	3.00～ 9.99	9.97	3.00		19	13
H—SJDL—C	H—SJVDL—C	13		70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
H—SJRL—C	H—SJVRL—C	16		70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		25	19
H—SJEL—C	H—SJVEL—C	20		70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
H—SJGL—C	H—SJVGL—C	25		70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
X	Spring reinforced type														
H—SJAX—C	H—SJVAX—C	10			80	90	100	110	120	6.00～ 9.99	9.97	6.00		30	13
H—SJDX—C	H—SJVDX—C	13			80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
H—SJRX—C	H—SJVRX—C	16					100	110	120	10.00～ 15.99	———		—	40	19
H—SJEX—C	H—SJVEX—C	20					100	110	120	13.00～ 19.99					23
H—SJGX—C	H—SJVGX—C	25					100	110	120	18.00～ 24.99					28

The spring constant of H—SJV□□—C is twice that of H—SJ□□—C.
L(60)···B=13 If the full length is (60), the tip length is 13 mm in all cases.
Ⓐ: P>D—0.03···ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D—0.05···ℓ=0 If P・K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order: Catalog No. — L — P — W — R (Ⓡ only)
H—SJEL—C 16 — 70 — P12.00 — W6.00

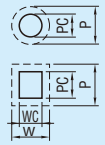
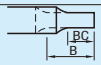
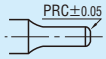
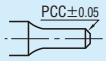
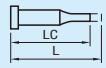
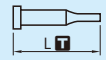
Days to Ship: Quotation

Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

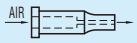
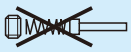
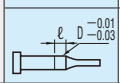
- Finished for retainer
- For details on retainers, refer to P.611 and later pages.

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・HC・TC, etc.)
H—SJAS—C 10	—	LC95	—	P9.50					— PKC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 10 / 2.800 13 / 5.000 16 / 8.000 20 / 9.000 25 / 9.000	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for tip length X. D / PC・WCmin. 10 / 2.80 13 / 5.00 16 / 5.00 20 / 5.00 25 / 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P.180 ⊗ Cannot be combined with PCC.	———	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension details P.180 ⊗ Cannot be combined with PRC.	———	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $P^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D＞13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D＞13.	
Alterations to full length		LC	Full length change (reduction in tip length) LC＜L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Price Quotation

Alteration		Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	———	No key flat	
		HC	Head diameter change D≦HC＜H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC＜5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		Quotation
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 ⊗ Cannot be combined with SRC.		
		SRC	Modification of head for use with select retainers (SLS) Details P.629		
Alterations to shank		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

JECTOR PUNCHES WITH LOCATING DOWEL HOLES

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

● For details of jector holes, refer to Jector Punch Blanks. P.180
● For details of jector pins, refer to Jector Pin Sets. P.185

Calculating the projection length of the jector pin (reference value) P.185

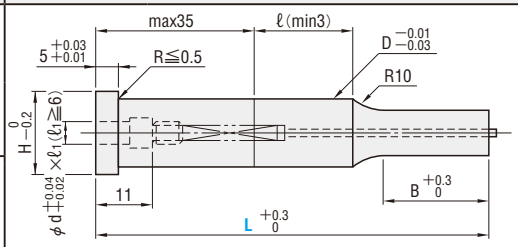
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin D10～32 MS6—25	Dm5	Equivalent to SKD11 60～63HRC Surface 1000～1100HV	W—SJ Spring reinforced type W—SJV	A D R E G	S L X	—C
HW coating with locating dowel hole	D38・45 SJB—CMS		Equivalent to SKD11 60～63HRC Surface 3000HV	HW—SJ Spring reinforced type HW—SJV			

The tip shape can be selected from Tip shape A～G in the figure below.

—WPC® treatment—

—HW coating—

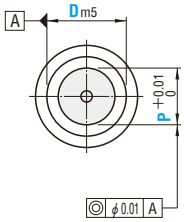
RoHS



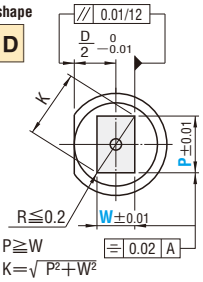
D	d
10～32	6
38・45	10

The tip edges are very slightly rounded.
Tip length (B) X>L>S

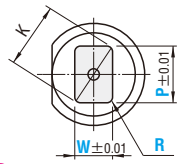
Tip shape A



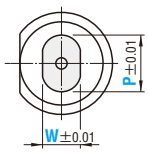
Tip shape D



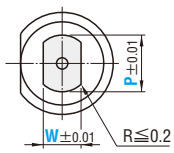
Tip shape R



Tip shape E



Tip shape G



P≧W
$K=\sqrt{P^2+W^2}$

P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

P>W

P>W

Catalog No. Type	D	L							0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
—WPC® treatment— W—SJ□S—C	10	60	70	80	90	100	110	120	3.00～ 9.99	9.97	3.00	0.15≦R<W/2 (Ⓡ only)	13	13
	13	60	70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
Spring reinforced type (D10～32) W—SJV□S—C	16	(60)	70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		19	19
	20	(60)	70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
—HW coating— (D10～25) HW—SJ□S—C	25	(60)	70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
	(32)	(60)	70	80	90	100	110	120	20.00～ 31.99	31.97	7.00			35
Spring reinforced type (D10～25) HW—SJV□S—C	(38)	(60)	70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)	(60)	70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48
—WPC® treatment— W—SJ□L—C	10		70	80	90	100	110	120	3.00～ 9.99	9.97	3.00		19	13
	13		70	80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
Spring reinforced type (D10～32) W—SJV□L—C	16		70	80	90	100	110	120	10.00～ 15.99	15.97	6.00		25	19
	20		70	80	90	100	110	120	13.00～ 19.99	19.97	6.00			23
—HW coating— (D10～25) HW—SJ□L—C	25		70	80	90	100	110	120	18.00～ 24.99	24.97	6.00			28
	(32)		70	80	90	100	110	120	20.00～ 31.99	31.97	7.00			35
Spring reinforced type (D10～25) HW—SJV□L—C	(38)		70	80	90	100	110	120	28.00～ 37.99	37.97	8.00			41
	(45)		70	80	90	100	110	120	35.00～ 44.99	44.97	9.00			48
—WPC® treatment— W—SJ□X—C	10			80	90	100	110	120	6.00～ 9.99	9.97	6.00		30	13
	13			80	90	100	110	120	6.00～ 12.99	12.97	6.00			16
Spring reinforced type W—SJV□X—C	16					100	110	120	10.00～ 15.99	———		—	40	19
—HW coating— (D10～25) HW—SJ□X—C	20					100	110	120	13.00～ 19.99					23
Spring reinforced type (D10～25) HW—SJV□X—C	25					100	110	120	18.00～ 24.99					28
	(32)					100	110	120	20.00～ 31.99					35

The spring constants of W—SJV□□—C and HW—SJV□□—C are twice those of W—SJ□□—C and HW—SJ□□—C respectively.
L (60)…B=13 If full length is (60), tip length is 13 mm in all cases.
Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05, for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D (32) is a specification available for W—SJ and W—SJV only.
D (38) and (45) are specifications available for W—SJ only.
W—SJV is available for D10—32 only, and HW—SJV is available for D10～25 only.

Order

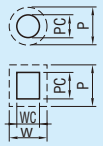
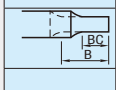
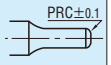
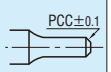
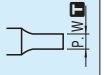
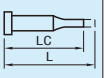
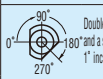
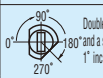
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
W—SJDS—C 38	—	100	—	P30.00	—	W18.00		

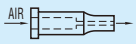
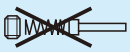
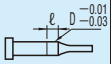
Effect of spring reinforced type
The spring constant is twice that of a standard type jector punch. The large spring load results in more effective scrap removal.

Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・HC・TC, etc.)
W—SJAS—C 25	—	LC95	—	P18.05					— PKC

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 10 / 2.800 13 / 5.000 16 / 8.000 20 / 9.000 25 / 9.000 32 / 15.000 38 / 23.000 45 / 30.000	Tip dimension change PC・WC≧PC・WCmin. 0.01mm increments ⊗ Cannot be used for tip X. D / PC・WCmin. 10 / 2.80 13 / 5.00 16 / 5.00 20 / 5.00 25 / 5.00 32 / 6.00 38 / 7.00 45 / 8.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P.180 ⊗ Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension details P.180 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length		LC	Full length change (reduction in tip length) LC<L 0.1 mm increments Tip length B is reduced by (L−LC). (If combined with LKC, 0.01 mm increments can be selected.) Projection length of jector pin is 2 mm.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		NKC	——	No key flat	Quotation
		HC	Head diameter change D≦HC<H 0.1 mm increments		
		TC	Head thickness change 3.5≦TC<5 0.1mm increments Full length L is shortened by (5−TC). If combined with LC, full length is equal to LC.		
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−D)/2 ⊗ Cannot be combined with SRC.		
		SRC	Modification of head for use with select retainers (SLS) Details P.629 Can be used for D10～32.		
Alterations to shank		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type). ⊗ Cannot be used for D38・45.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

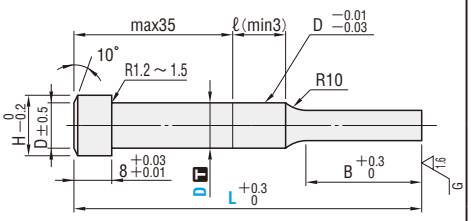
Price Quotation

PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS—

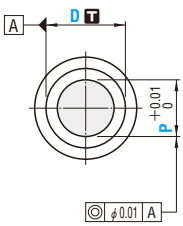
PRODUCTS DATA P.1097

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	SKH51 61~64HRC	AP	A D R E G	S L Tip length (B) L>S
		Powdered high-speed steel 64~67HRC	APH		
	$D^{+0.005}_{0}$	SKH51 61~64HRC	A—AP		
		Powdered high-speed steel 64~67HRC	A—APH		

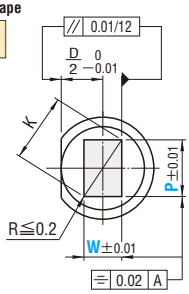
The tip shape can be selected from Tip shape A~G in the figure below.



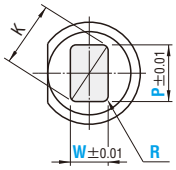
Tip shape A



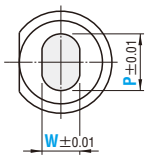
Tip shape D



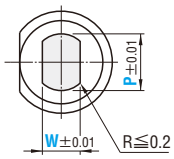
Tip shape R



Tip shape E



Tip shape G



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

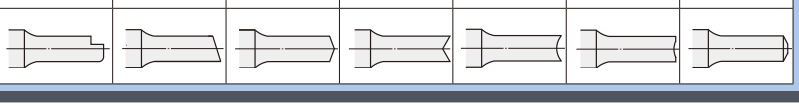
Catalog No. Type	Tip shape	B Tip length	D	L									0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) AP APH	A D R E G	S	5	50	60	70	80	90	100				2.00~ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50	60	70	80	90	100				2.00~ 5.99	5.97	1.50			11
			8	(50)	60	70	80	90	100	110	120	130	3.00~ 7.99	7.97	2.00		13	13
			10	(50)	60	70	80	90	100	110	120	130	3.00~ 9.99	9.97	2.50			15
			13	(50)	60	70	80	90	100	110	120	130	6.00~ 12.99	12.97	3.00			18
			16	(50)	60	70	80	90	100	110	120	130	10.00~ 15.99	15.97	4.00		19	21
			20	(50)	60	70	80	90	100	110	120	130	13.00~ 19.99	19.97	5.00			25
			25	(50)	60	70	80	90	100	110	120	130	18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) A—AP A—APH		L	5		60	70	80	90	100				2.00~ 4.99	4.97	1.20		13	10
			6		60	70	80	90	100				2.00~ 5.99	5.97	1.50			11
			8		60	70	80	90	100	110	120	130	3.00~ 7.99	7.97	2.00		19	13
			10		60	70	80	90	100	110	120	130	3.00~ 9.99	9.97	2.50			15
			13		60	70	80	90	100	110	120	130	6.00~ 12.99	12.97	3.00			18
			16			70	80	90	100	110	120	130	10.00~ 15.99	15.97	4.00		25	21
			20			70	80	90	100	110	120	130	13.00~ 19.99	19.97	5.00			25
			25			70	80	90	100	110	120	130	18.00~ 24.99	24.97	6.00			30

- L(50)···B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

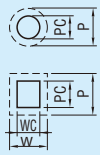
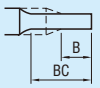
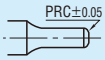
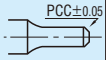
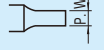
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
APAS 20	—	80	—	P15.00				

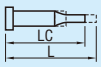
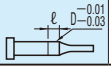
Days to Ship Quotation

Punch tip shear angle alterations P.176	1F	2F	3F	4F	5F	6F	7F
							

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	—	(BC・KC, etc.)
APAS 20	—	LC82	—	PC12.00						BC13

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 For D5・6, PC≧1.50 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC ≧ P・Wmin./2 For D5・6, PC/WC≧1.00 0.01 mm increments P(PC)・W(WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01/0 ⇨ +0.005/0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01/0	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	Quotation
		LKC	Full length tolerance change L +0.3/0 ⇨ +0.05/0		
		LKZ	Full length tolerance change L +0.3/0 ⇨ +0.01/0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ D/2 −0.5 0/−0.01 D/2 −1 0/−0.01	DREG ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.	
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price

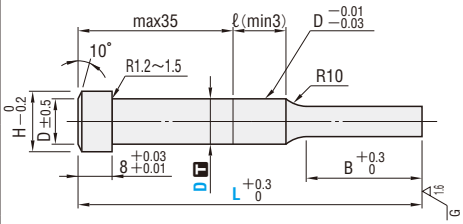
Quotation

PUNCHES FOR HEAVY LOAD

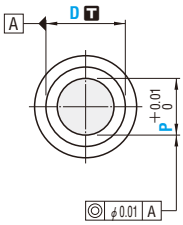
—FINISHED FOR RETAINERS・DICOAT® TREATMENT—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—Dicoat® treatment— RoHS	Dm5	Powdered high-speed steel 62~64HRC Surface 3000HV	T—APH	A D R E G	S L	
	$D^{+0.005}_{0}$ (D5~13)		AT—APH		Tip length (B) L>S	

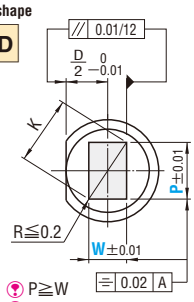
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.



Tip shape A

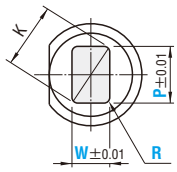


Tip shape D



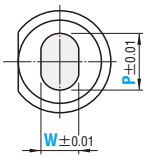
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



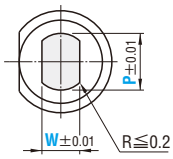
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L						0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	Ⓡ R	B	H
(Dm5) T—APH	A D R E G	S	5	50	60	70	80			2.00~ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50	60	70	80			2.00~ 5.99	5.97	1.50			11
			8	(50)	60	70	80	90	100	3.00~ 7.99	7.97	2.00		13	13
			10	(50)	60	70	80	90	100	3.00~ 9.99	9.97	2.50			15
			13	(50)	60	70	80	90	100	6.00~ 12.99	12.97	3.00			18
			16	(50)	60	70	80	90	100	10.00~ 15.99	15.97	4.00		19	21
			20	(50)	60	70	80	90	100	13.00~ 19.99	19.97	5.00			25
			25	(50)	60	70	80	90	100	18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AT—APH (D5~13)		L	5		60	70	80			2.00~ 4.99	4.97	1.20		13	10
			6		60	70	80			2.00~ 5.99	5.97	1.50			11
			8		60	70	80	90	100	3.00~ 7.99	7.97	2.00		19	13
			10		60	70	80	90	100	3.00~ 9.99	9.97	2.50			15
			13		60	70	80	90	100	6.00~ 12.99	12.97	3.00			18
			16			70	80	90	100	10.00~ 15.99	15.97	4.00		25	21
			20			70	80	90	100	13.00~ 19.99	19.97	5.00			25
			25			70	80	90	100	18.00~ 24.99	24.97	6.00			30

- L(50)···B=8 If full length is (50), tip length is 8mm in all cases.
- Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

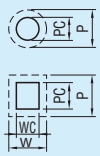
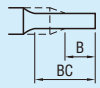
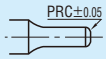
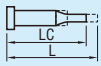
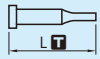
Order

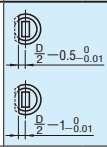
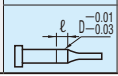
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
T—APHDS 25	—	80	—	P18.00	—	W10.00		

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC, etc.)
T—APHAS 20	— LC82	— PC12.00			— BC13

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 For D5・6, PC≧1.50 0.01mm increments P(PC) / Bmax. 1.50～1.99 / 20 2.00～3.99 / 35 4.00～5.99 / 45 6.00～ / 50	Tip dimension change PC/WC≧ P・Wmin./2 For D5・6, PC/WC≧1.00 0.01 mm increments P(PC)・W(WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2	——	
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length—35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length—40mm).	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
Alterations to shank		SKC	 Single key flat on shank Ⓐ / DREG ・D5・6 P≦D—1.2 W≦D—1.2 (Machining width 0.5) ・D8～ P≦D—2.2 W≦D—2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
		NDC	No press-in lead	$\ell \geq 3 \Rightarrow \ell = 0$	

Price

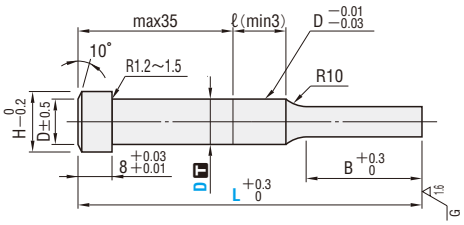
Quotation

PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・TiCN COATING—

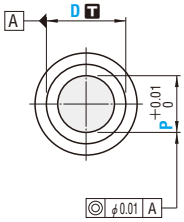
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—TiCN coating— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	SKH51 61~64HRC Surface 3000HV	H—AP	A D R E G	S L Tip length (B) L>S
		Powdered high-speed steel 64~67HRC Surface 3000HV	H—APH		
	$D^{+0.005}_{0}$	SKH51 61~64HRC Surface 3000HV	AH—AP		
		Powdered high-speed steel 64~67HRC Surface 3000HV	AH—APH		

The tip shape can be selected from Tip shape A~G in the figure below.

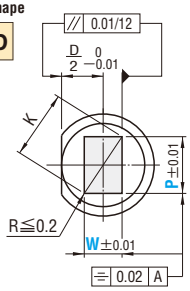


The tip end is ground before the coating is applied.

Tip shape A

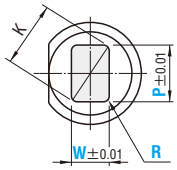


Tip shape D



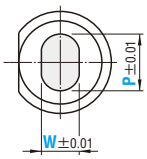
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



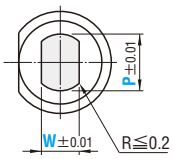
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G P・Wmin.	Ⓡ R	B	H
(D_{m5}) H—AP H—APH	A D R E G	S	5	50 60 70 80 90 100	2.00~ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80 90 100	2.00~ 5.99	5.97	1.50			11
			8	(50) 60 70 80 90 100 110 120 130	3.00~ 7.99	7.97	2.00		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.00~ 9.99	9.97	2.50			15
			13	(50) 60 70 80 90 100 110 120 130	6.00~ 12.99	12.97	3.00			18
			16	(50) 60 70 80 90 100 110 120 130	10.00~ 15.99	15.97	4.00		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.00~ 19.99	19.97	5.00			25
			25	(50) 60 70 80 90 100 110 120 130	18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AH—AP AH—APH		L	5	60 70 80 90 100	2.00~ 4.99	4.97	1.20		13	10
			6	60 70 80 90 100	2.00~ 5.99	5.97	1.50			11
			8	60 70 80 90 100 110 120 130	3.00~ 7.99	7.97	2.00		19	13
			10	60 70 80 90 100 110 120 130	3.00~ 9.99	9.97	2.50			15
			13	60 70 80 90 100 110 120 130	6.00~ 12.99	12.97	3.00			18
			16	70 80 90 100 110 120 130	10.00~ 15.99	15.97	4.00		25	21
			20	70 80 90 100 110 120 130	13.00~ 19.99	19.97	5.00			25
			25	70 80 90 100 110 120 130	18.00~ 24.99	24.97	6.00			30

- L(50)…B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D−0.03 …ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

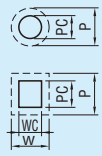
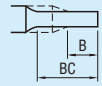
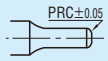
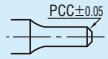
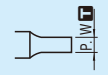
Order

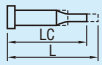
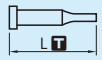
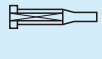
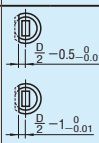
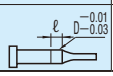
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—APAS 20	—	80	—	P15.00				

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	—	(BC·KC, etc.)
H—APAS 20	—	LC82	—	PC12.00					—	BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧Pmin./2 For D5·6, PC≧1.50 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC≧P·Wmin./2 For D5·6, PC/WC≧1.00 0.01mm increments P(PC)·W(WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 P dimension can be selected in 0.001 mm increments. Cannot be used for D>13.	Tip tolerance change P·W±0.01 ⇨ +0.01 0 Cannot be used for D>13.	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	 Addition of single key flat to head	 Key flat position change 1° increments	
		WKC	 Addition of double key flats in parallel	 Double key flats in parallel Can be combined with KC.	
		KFC	 Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	 Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC·WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	 Single key flat on shank Ⓐ DREG ·D5·6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC·WKC·KFC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price Quotation

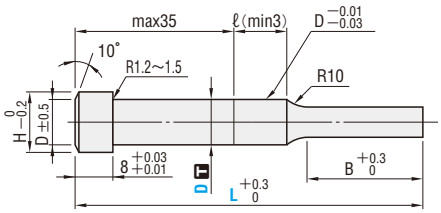
PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS	D_{m5}	SKH51 61～64HRC Surface 1000～1100HV	W—AP	A D R E G	S L
		Powdered high-speed steel 64～67HRC Surface 1000～1100HV	W—APH		
—HW coating—		SKH51 61～64HRC Surface 3000HV	HW—AP		
		Powdered high-speed steel 64～67HRC Surface 3000HV	HW—APH		
	$D^{+0.005}_{0}$	SKH51 61～64HRC Surface 1000～1100HV	AW—AP		
		Powdered high-speed steel 64～67HRC Surface 1000～1100HV	AW—APH		
		SKH51 61～64HRC Surface 3000HV	AHW—AP		
		Powdered high-speed steel 64～67HRC Surface 3000HV	AHW—APH		

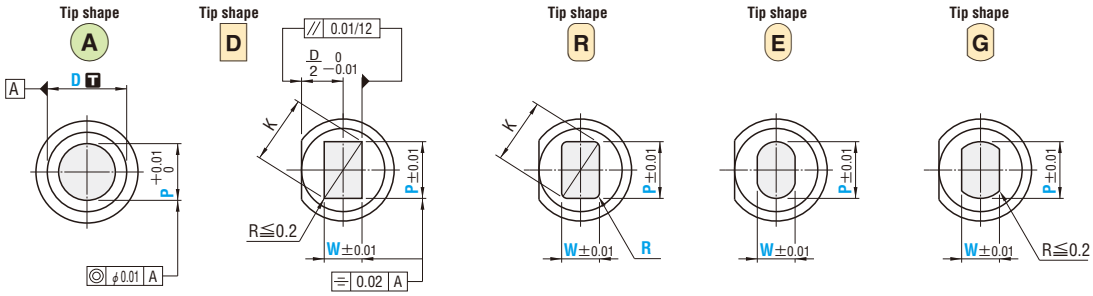
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.



Tip length (B) L>S

The tip edges are very slightly rounded.



P≧W
$K=\sqrt{P^2+W^2}$

P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

P>W

P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) —WPC® treatment— W—AP W—APH —HW coating— HW—AP HW—APH	A D R E G	S	5	50 60 70 80 90 100	2.00～ 4.99	4.97	1.20	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	(50) 60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	(50) 60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	(50) 60 70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	(50) 60 70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) —WPC® treatment— AW—AP AW—APH —HW coating— AHW—AP AHW—APH		L	5	60 70 80 90 100	2.00～ 4.99	4.97	1.20		13	10
			6	60 70 80 90 100	2.00～ 5.99	5.97	1.50			11
			8	60 70 80 90 100 110 120 130	3.00～ 7.99	7.97	2.00		19	13
			10	60 70 80 90 100 110 120 130	3.00～ 9.99	9.97	2.50			15
			13	60 70 80 90 100 110 120 130	6.00～ 12.99	12.97	3.00			18
			16	70 80 90 100 110 120 130	10.00～ 15.99	15.97	4.00		25	21
			20	70 80 90 100 110 120 130	13.00～ 19.99	19.97	5.00			25
			25	70 80 90 100 110 120 130	18.00～ 24.99	24.97	6.00			30

L(50)…B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03 …ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P・K>D−0.05 …ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

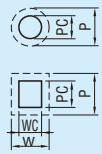
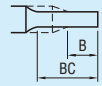
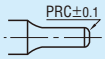
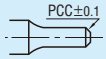
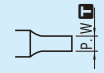
Order

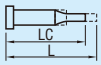
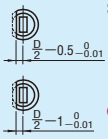
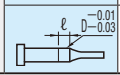
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
W—APAS 20	—	80	—	P15.00				
HW—APAS 20	—	80	—	P16.50				

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	—	(BC・KC, etc.)
W—APAS 20	—	LC82	—	PC12.00					—	BC13

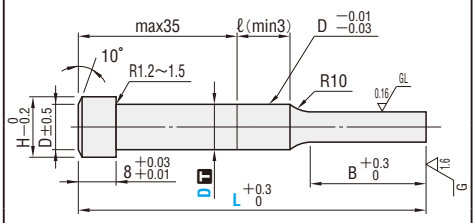
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 For D5・6, PC≧1.50 0.01mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC≧ P・Wmin./2 For 5・6, PC/WC≧1.00 0.01 mm increments P(PC)・W(WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm inc rements Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P—0.2)/2 Cannot be combined with PCC	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) Cannot be used with HW coating.	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

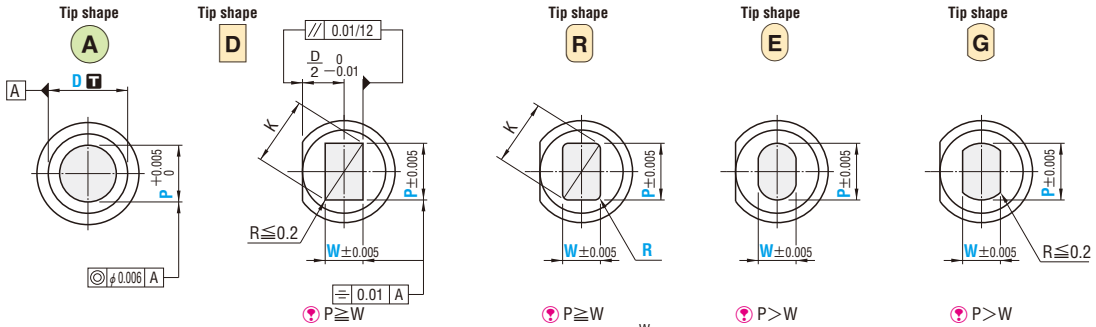
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length—35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length—40mm).	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	 Single key flat on shank Ⓐ DREG ・D5・6 P≦D—1.2 W≦D—1.2 (Machining width 0.5) ・D8～ P≦D—2.2 W≦D—2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price

Quotation

PUNCHES FOR HEAVY LOAD
—FINISHED FOR RETAINERS・LAPPING—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	SKH51 61~64HRC	L—AP	A D R E G	S L Tip length (B) L>S	
		Powdered high-speed steel 64~67 HRC	L—APH			
	$D^{+0.005}_{0}$	SKH51 61~64HRC	AL—AP			
		Powdered high-speed steel 64~67 HRC	AL—APH			



Tip shape A: P≧W; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R: P>W

Tip shape E: P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.001 mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G P・Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) L—AP L—APH	A D R E G	S	5	50 60 70 80 90 100	2.000~ 4.990	4.970	1.200	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	8	10
			6	50 60 70 80 90 100	2.000~ 5.990	5.970	1.500			11
			8	(50) 60 70 80 90 100 110 120 130	3.000~ 7.990	7.970	2.000		13	13
			10	(50) 60 70 80 90 100 110 120 130	3.000~ 9.990	9.970	2.500			15
			13	(50) 60 70 80 90 100 110 120 130	6.000~ 12.990	12.970	3.000			18
			16	(50) 60 70 80 90 100 110 120 130	10.000~ 15.990	15.970	4.000		19	21
			20	(50) 60 70 80 90 100 110 120 130	13.000~ 19.990	19.970	5.000			25
			25	(50) 60 70 80 90 100 110 120 130	18.000~ 24.990	24.970	6.000			30
($D^{+0.005}_{0}$) AL—AP AL—APH		L	5	60 70 80 90 100	2.000~ 4.990	4.970	1.200		13	10
			6	60 70 80 90 100	2.000~ 5.990	5.970	1.500			11
			8	60 70 80 90 100 110 120 130	3.000~ 7.990	7.970	2.000		19	13
			10	60 70 80 90 100 110 120 130	3.000~ 9.990	9.970	2.500			15
			13	60 70 80 90 100 110 120 130	6.000~ 12.990	12.970	3.000			18
			16	70 80 90 100 110 120 130	10.000~ 15.990	15.970	4.000		25	21
			20	70 80 90 100 110 120 130	13.000~ 19.990	19.970	5.000			25
			25	70 80 90 100 110 120 130	18.000~ 24.990	24.970	6.000			30

L(50)···B=8 If the full length is (50), the tip length is 8mm in all cases.

Ⓐ: P>D−0.03···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D R E G: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

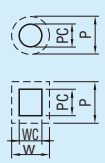
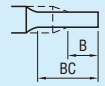
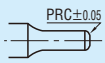
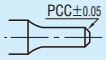
Order

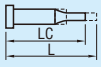
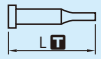
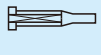
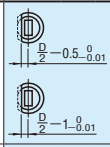
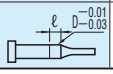
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
AL—APDS25	—	80	—	P18.000	—	W10.000		

Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	—	(BC・KC, etc.)
L—APAS 20	—	LC82	—	PC12.000					—	BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 For D5・6, PC≧1.500 0.001mm increments P (PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC ≧ P・Wmin./2 For D5・6, PC/WC≧1.000 0.001mm increments P(PC)・W(WC) / Bmax. 1.000～1.499 / 8 1.500～1.999 / 13 2.000～3.499 / 19 3.500～4.999 / 25 5.000～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC.	—	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length —35mm). (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length —40mm).	Quotation
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	 Single key flat on shank Ⓐ / DREG ・D5・6 P≦D—1.2 W≦D—1.2 (Machining width 0.5) ・D8～ P≦D—2.2 W≦D—2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
		NDC	No press-in lead ℓ≧3⇨ℓ=0		

Price

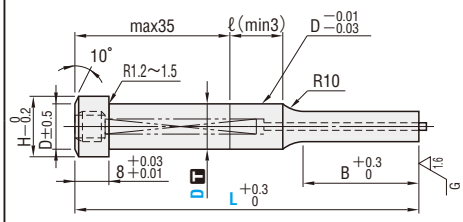
Quotation

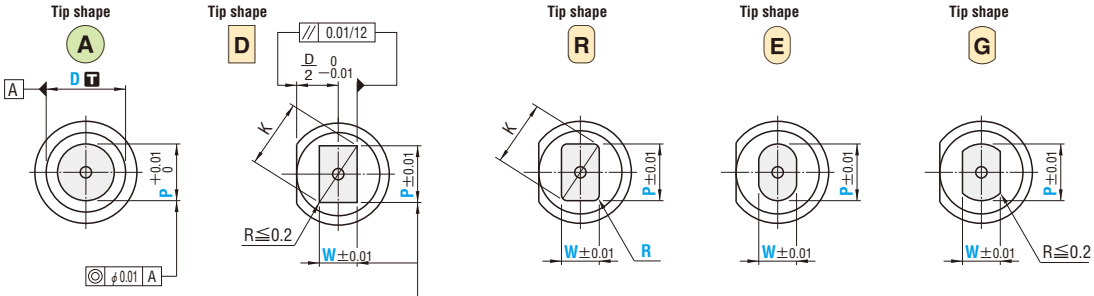
JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・SPRING AND PIN REINFORCED TYPE—

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64 ~ 67HRC	APJ Spring and pin Reinforced type APJV	A D R E G	S L Tip length (B) L>S	
	$D^{+0.005}_{0}$		A—APJ Spring and pin Reinforced type A—APJV			



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G P・Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) APJ —Spring and pin reinforced type— APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16		10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) A—APJ —Spring and pin reinforced type— A—APJV		L	8		4.00~ 7.99	7.97	4.00		19	13
			10	60 70 80 90 100 (110) (120) (130)	5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16		10.00~ 15.99	15.97	6.00		25	21
			20	70 80 90 100 (110) (120) (130)	13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30

- The spring constants of APJV and A—APJV are twice those of APJ and A—APJ respectively.
- ⊗ L(110) (120) (130)···L110, 120, and 130 cannot be used for spring and pin reinforced types.
- L(50)···B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D—0.03···ℓ=0 If P>D—0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- D R E G: P・K>D—0.05···ℓ=0 If P・K>D—0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
APJAS 20	—	80	—	P15.00				

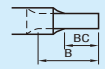
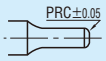
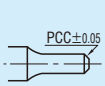
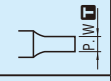
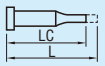
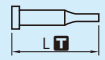
Days to Ship Quotation

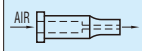
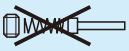
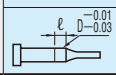
■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

PRODUCTS DATA P.1097
RELATED PRODUCTS P.123

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	R	—	(BC・KC, etc.)
APJDS 20	—	LC79	—	P15.00	—	W6.00			—	KFC225

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P$^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 D R E G W≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC・KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

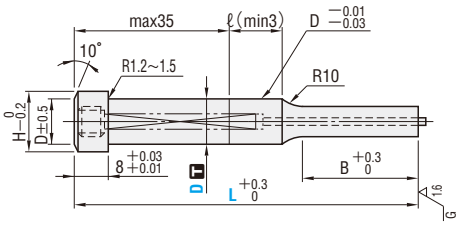
Price Quotation

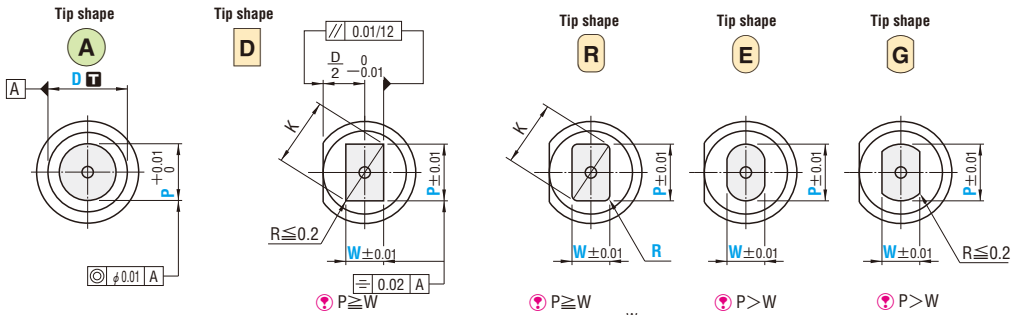
JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・DICOAT® TREATMENT・SPRING AND PIN REINFORCED TYPE—

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

● For details of jector holes, refer to Jector Punch Blanks. P.182
● For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—Dicoat® treatment— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Powdered high-speed steel 62~64HRC Surface 3000HV	T—APJ Spring and pin reinforced type T—APJV	A D R E G	S L	
	$D^{+0.005}_{0}$ (D8~13)		AT—APJ Spring and pin reinforced type AT—APJV		Tip length (B) L>S	



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	Ⓡ R	B	H
(Dm5) T—APJ —Spring and pin reinforced type— T—APJV	A D R E G	S	8	(50) 60 70 80 90 100	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16		10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AT—APJ (D8~13) —Spring and pin reinforced type— AT—APJV (D8~13)		L	8	60 70 80 90 100	4.00~ 7.99	7.97	4.00		19	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	70 80 90 100	10.00~ 15.99	15.97	6.00		25	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30

- The spring constants of T—APJV and AT—APJV are twice those of T—APJ and AT—APJ respectively.
- L(50)···B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

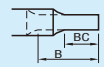
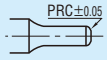
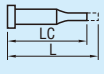
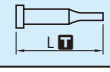
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
T—APJDS 25	—	80	—	P18.00	—	W10.00		

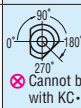
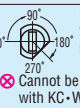
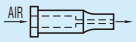
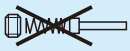
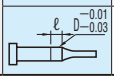
Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	R	— (BC·KC·WKC, etc.)
T—APJDS 20	—	LC79	—	P15.00	—	W6.00	—		— SKC

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 Dimension P.182	——	
Alterations to full length		LC	Full length change LC＜L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	 Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	——	No key flat	Quotation
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 D R E G W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price

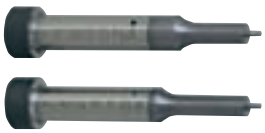
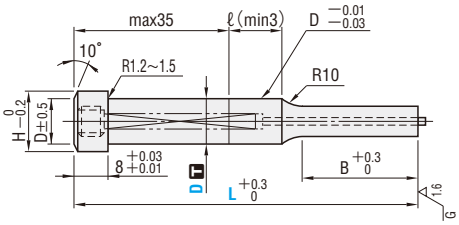
Quotation

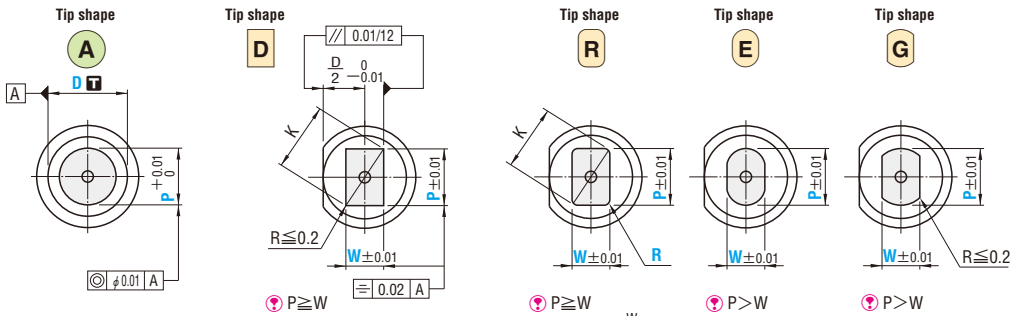
JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・TiCN COATING・SPRING AND PIN REINFORCED TYPE—

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—TiCN coating— RoHS  For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Powdered high-speed steel 64~67HRC Surface 3000HV	H—APJ Spring and pin reinforced type H—APJV	A D R E G	S L	
	$D^{+0.005}_{0}$		AH—APJ Spring and pin reinforced type AH—APJV		Tip length (B) L>S	The tip end is ground before the coating is applied.



- Tip shape A: P≧W
- Tip shape D: R=0 can be selected. $K=\sqrt{P^2+W^2}$
- Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- Tip shape E: P>W
- Tip shape G: P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	Ⓡ R	B	H
(Dm5) H—APJ —Spring and pin reinforced type— H—APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16		10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AH—APJ —Spring and pin reinforced type— AH—APJV		L	8	60 70 80 90 100 (110) (120) (130)	4.00~ 7.99	7.97	4.00		19	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	70 80 90 100 (110) (120) (130)	10.00~ 15.99	15.97	6.00		25	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30

- The spring constants of H—APJV and AH—APJV are twice those of H—APJ and AH—APJ respectively.
- ⊗ L(110) (120) (130)···L110, 120, and 130 cannot be used for spring and pin reinforced types.
- L(50)···B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D—0.03···ℓ=0 If P>D—0.03 for a round punch, D$^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P・K>D—0.05 ···ℓ=0 If P・K>D—0.05 for a shaped punch, D$^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—APJAS 20	—	80	—	P15.00				

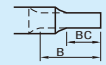
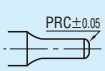
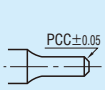
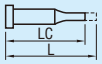
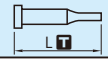
Days to Ship Quotation

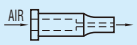
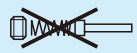
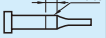
■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

PRODUCTS DATA P.1091・1094・1097
RELATED PRODUCTS P.123

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	R	— (BC・KC・WKC, etc.)
H—APJDS 20	—	LC79	—	P15.00	—	W6.00			— BC13

Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	Quotation
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

Price

Quotation

JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING・SPRING AND PIN REINFORCED TYPE—

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

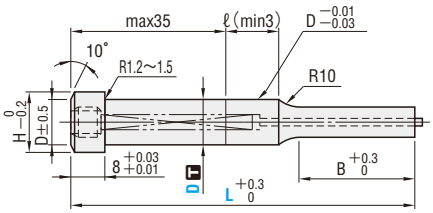
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS	D_{m5}	WPC® treatment Powdered high-speed steel 64~67 HRC Surface 1000~1100HV	W—APJ	A D R E G	S L
			Spring and pin reinforced type W—APJV		
—HW coating—		HW coating Powdered high-speed steel 64~67HRC Surface 3000 HV	HW—APJ		
			Spring and pin reinforced type HW—APJV		
	$D^{+0.005}_{0}$	WPC® treatment Powdered high-speed steel 64~67 HRC Surface 1000~1100HV	AW—APJ		
			Spring and pin reinforced type AW—APJV		
		HW coating Powdered high-speed steel 64~67HRC Surface 3000 HV	AHW—APJ		
			Spring and pin reinforced type AHW—APJV		

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

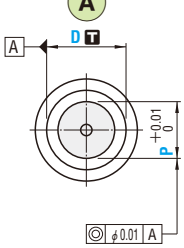
Tip length (B) L>S

The tip shape can be selected from Tip shape A~G in the figure below.

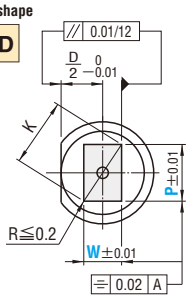


The tip edge are very slightly rounded.

Tip shape A



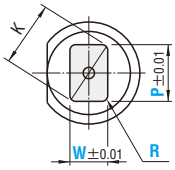
Tip shape D



P≧W

$K=\sqrt{P^2+W^2}$

Tip shape R

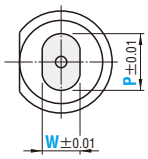


P≧W

$0.15 \leqq R < \frac{W}{2}$

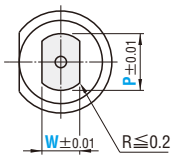
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) —WPC® treatment— W—APJ	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.00 ~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
($D^{+0.005}_{0}$) —WPC® treatment— AW—APJ			10		5.00 ~ 9.99	9.97	5.00			15
Spring and pin reinforced type W—APJV			13		6.00 ~ 12.99	12.97	6.00			18
Spring and pin reinforced type AW—APJV			16		10.00 ~ 15.99	15.97	6.00		19	21
			20		13.00 ~ 19.99	19.97	6.00			25
			25		18.00 ~ 24.99	24.97	6.00			30
—HW coating— HW—APJ		L	8	60 70 80 90 100 (110) (120) (130)	4.00 ~ 7.99	7.97	4.00		19	13
—HW coating— AHW—APJ			10		5.00 ~ 9.99	9.97	5.00			15
Spring and pin reinforced type HW—APJV			13		6.00 ~ 12.99	12.97	6.00			18
Spring and pin reinforced type AHW—APJV			16	70 80 90 100 (110) (120) (130)	10.00 ~ 15.99	15.97	6.00		25	21
			20		13.00 ~ 19.99	19.97	6.00			25
			25		18.00 ~ 24.99	24.97	6.00			30

The spring constants of W—APJV, AW—APJV, HW—APJV, and AHW—APJV are twice those of W—APJ, AW—APJ, HW—APJ, and AHW—APJ respectively.

L(50)···B=8 If the full length is (50), the tip length is 8mm in all cases.

Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D R E G: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

L(110) (120) (130)···L110, 120, and 130 cannot be used for spring and pin reinforced types.

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
W—APJAS 20	—	80	—	P15.00				

■Effect of spring and pin reinforced type

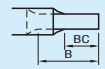
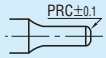
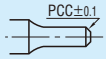
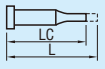
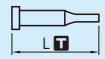
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

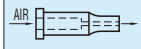
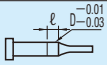
Days to Ship Quotation

PRODUCTS DATA P.1091·1095·1097
RELATED PRODUCTS P.123

Alterations

Catalog No.	L(LC)	P	W	R	(BC·KC, etc.)
W—APJDS 20	LC79	P15.00	W6.00		BC13

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating.	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). The projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	
		NKC	—	No key flat	Quotation
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead	ℓ≧3 ⇨ ℓ=0	

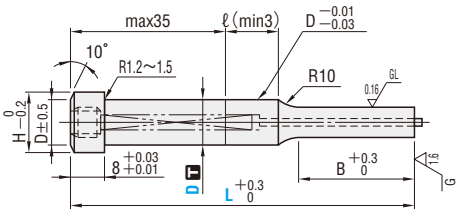
Price Quotation

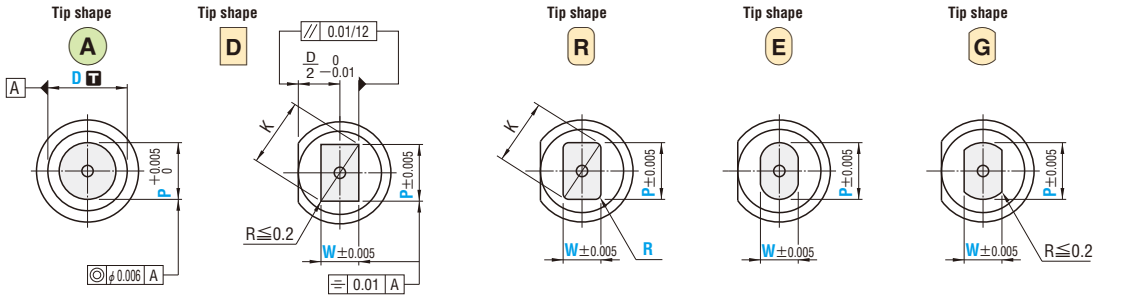
JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・LAPPING・SPRING AND PIN REINFORCED TYPE—

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64 ~ 67HRC	L—APJ Spring and pin Reinforced type L—APJV	A D R E G	S L	
	$D^{+0.005}_{0}$		AL—APJ Spring and pin Reinforced type AL—APJV		Tip length (B) L>S	



- Tip shape A: P≧W
- Tip shape D: $K=\sqrt{P^2+W^2}$
- Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- Tip shape E: P>W
- Tip shape G: P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.001 mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	0.01 mm Ⓡ R	B	H
(D_{m5}) L—APJ —Spring and pin reinforced type— L—APJV	A D R E G	S	8	(50) 60 70 80 90 100 (110) (120) (130)	4.000~ 7.990	7.970	4.000	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.000~ 9.990	9.970	5.000			15
			13		6.000~ 12.990	12.970	6.000			18
			16		10.000~ 15.990	15.970	6.000		19	21
			20		13.000~ 19.990	19.970	6.000			25
			25		18.000~ 24.990	24.970	6.000			30
($D^{+0.005}_{0}$) AL—APJ —Spring and pin reinforced type— AL—APJV		L	8	60 70 80 90 100 (110) (120) (130)	4.000~ 7.990	7.970	4.000		19	13
			10		5.000~ 9.990	9.970	5.000			15
			13		6.000~ 12.990	12.970	6.000			18
			16	70 80 90 100 (110) (120) (130)	10.000~ 15.990	15.970	6.000		25	21
			20		13.000~ 19.990	19.970	6.000			25
			25		18.000~ 24.990	24.970	6.000			30

- The spring constants of L—APJV and AL—APJV are twice those of L—APJ and AL—APJ respectively.
- ⊗ L(110) (120) (130)···L110, 120, and 130 cannot be used for spring and pin reinforced types.
- L(50) ···B=8 If the full length is (50), the tip length is 8mm in all cases.
- Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
- DREG: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

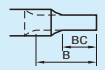
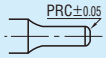
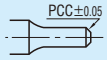
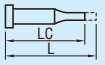
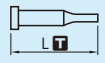
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
AL—APJDS 25	—	80	—	P18.000	—	W10.000		

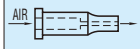
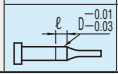
■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Days to Ship Quotation

Alterations

Catalog No.	L(LC)	P	W	R	(BC・KC, etc.)
L—APJDS 20	LC79	P15.000	W6.000		BC13

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PRC.	—	
Alterations to full length		LC	Full length change LC＜L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). The projection length of the jector pin is 2mm for spring and pin reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price

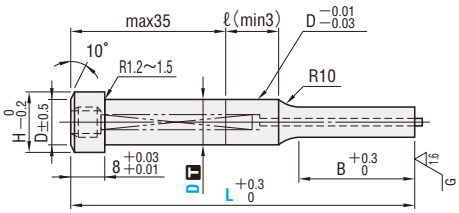
Quotation

JECTOR PUNCHES FOR HEAVY LOAD

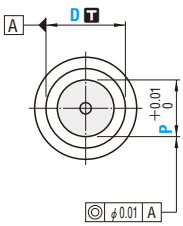
—FINISHED FOR RETAINERS·CONFIGURABLE FULL LENGTH·FIXED B TYPE·SPRING AND PIN REINFORCED TYPE—

※ Jector punch which maintains the same tip length B even when L is changed.
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

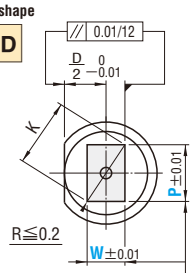
● For details of jector holes, refer to Jector Punch Blanks. P.182
● For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Powdered high-speed steel 64~67HRC	LFAPJ Spring and pin reinforced type LFAPJV	A D R E G	S L Tip length (B) L>S	
	$D^{+0.005}_{0}$		A—LFAPJ Spring and pin reinforced type A—LFAPJV			

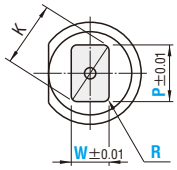
Tip shape A



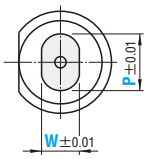
Tip shape D



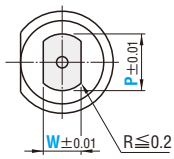
Tip shape R



Tip shape E



Tip shape G



P≧W // 0.02 A
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

P>W

P>W

Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	0.01 mm R R	B	H
(Dm5) LFAPJ —Spring and pin reinforced type— LFAPJV	A D R E G	S	8	60.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	70.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) A—LFAPJ —Spring and pin reinforced type— A—LFAPJV		L	8	70.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00		19	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	80.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		25	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30

The spring constants of LFAPJV and A—LFAPJV are twice those of LFAPJ and A—LFAPJ respectively.
Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P·K>D−0.05···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Jector holes are based on the jector punch blanks for heavy load. P.182

Order

Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
LFAPJAS 20	—	80	—	P15.00				

Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

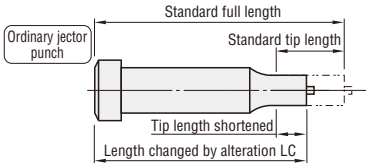
Catalog No.	—	L	—	P	—	W	—	R	— (BC・KC, etc.)
LFAPJDS 20	—	79	—	P15.00	—	W6.00			— KFC225

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip	BC, B	BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		Quotation
	GL, 0.16	SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape D.		
	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PCC.	—	
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PRC.	—	
	P, W, T	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length	L, T	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

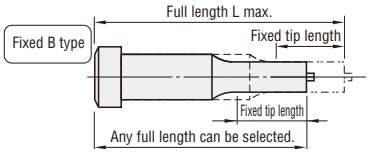
	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to head		KC	Addition of single key flat to head	90°, 0°, 180°, 270° Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90°, 0°, 180°, 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90°, 0°, 180°, 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Quotation
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ P≦D−2.2 D R E G W≦D−2.2 $\frac{D}{2}-1^{0}_{-0.01}$ (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NC	The jector pin is removed.		
	ℓ, $D^{-0.01}_{-0.03}$	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price Quotation

■Features



・Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.



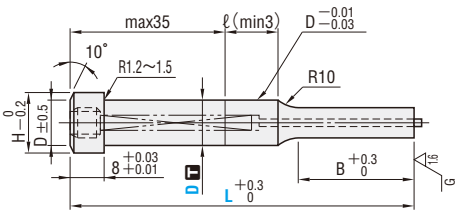
・Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

JECTOR PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS・CONFIGURABLE FULL LENGTH・FIXED B TYPE・SPRING AND PIN REINFORCED TYPE・TiCN COATING—

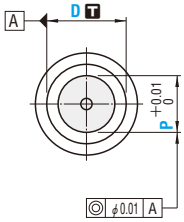
※ Jector punch which maintains the same tip length B even when L is changed.
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

● For details of jector holes, refer to Jector Punch Blanks. P.182
● For details of jector pins, refer to Jector Pin Sets. P.185

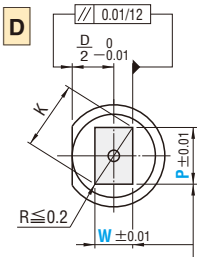
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—TiCN coating— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Powdered high-speed steel 64~67HRC Surface 3000HV	H—LFAPJ Spring and pin reinforced type H—LFAPJV	A D R E G	S L Tip length (B) L>S	
	$D^{+0.005}_{0}$		AH—LFAPJ Spring and pin reinforced type AH—LFAPJV			

The tip end is ground before the coating is applied.

Tip shape A

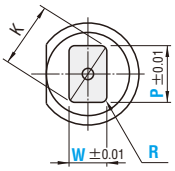


Tip shape D



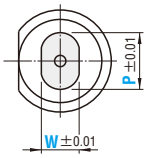
P≧W ⌯ 0.02 A
R=0 can be selected.
$K=\sqrt{P^2+W^2}$

Tip shape R



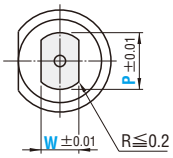
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G P・Wmin.	0.01 mm Ⓡ R	B	H
(Dm5) H—LFAPJ —Spring and pin reinforced type— H—LFAPJV	A D R E G	S	8	60.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	70.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		19	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30
($D^{+0.005}_{0}$) AH—LFAPJ —Spring and pin reinforced type— AH—LFAPJV		L	8	70.0~130.0 Spring and pin reinforced type (70.0~100.0)	4.00~ 7.99	7.97	4.00		19	13
			10		5.00~ 9.99	9.97	5.00			15
			13		6.00~ 12.99	12.97	6.00			18
			16	80.0~130.0 Spring and pin reinforced type (80.0~100.0)	10.00~ 15.99	15.97	6.00		25	21
			20		13.00~ 19.99	19.97	6.00			25
			25		18.00~ 24.99	24.97	6.00			30

The spring constants of H—LFAPJV and AH—LFAPJV are twice those of H—LFAPJ and AH—LFAPJ respectively.
Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
D R E G: P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Jector holes are based on the jector punch blanks for heavy load. P.182

Order

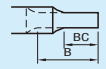
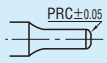
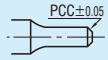
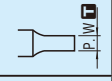
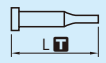
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—LFAPJAS 20	—	80	—	P15.00				

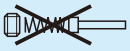
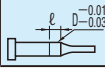
Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	—	L	—	P	—	W	—	R	— (BC·KC, etc.)
H−LFAPJDS 20	—	79	—	P15.00	—	W6.00			— BC13

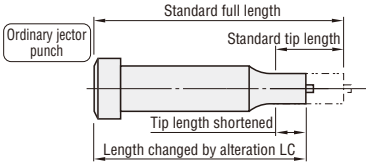
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D>13.	Tip tolerance change P·W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for D>13.	
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC·WKC.	Quotation
		NKC	—	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ DREG P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·WKC·KFC.		
		NC	 The jector pin is removed.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

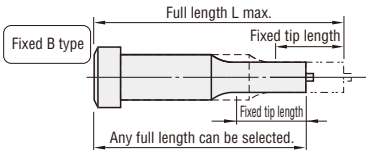
Price

Quotation

■Features



- Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.



- Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

JECTOR PUNCHES FOR HEAVY LOAD

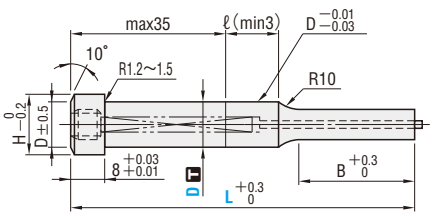
—FINISHED FOR RETAINERS・CONFIGURABLE FULL LENGTH・FIXED B TYPE・SPRING AND PIN REINFORCED TYPE・WPC® TREATMENT・HW COATING—

※ Jector punch which maintains the same tip length B even when L is changed.
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

● For details of jector holes, refer to Jector Punch Blanks. P.182
● For details of jector pins, refer to Jector Pin Sets. P.185

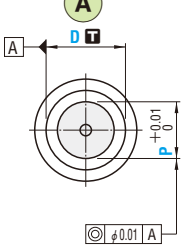
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—WPC® treatment— RoHS —HW coating— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Dm5	Powdered high-speed steel with WPC® treatment 64～67HRC Surface 1000～1100HV	W—LFAPJ Spring and pin reinforced type W—LFAPJV	A D R E G	S L Tip length (B) L>S
		Powdered high-speed steel with HW coating 64～67HRC Surface 3000HV	HW—LFAPJ Spring and pin reinforced type HW—LFAPJV		
	$D^{+0.005}_{0}$	Powdered high-speed steel with WPC® treatment 64～67HRC Surface 1000～1100HV	AW—LFAPJ Spring and pin reinforced type AW—LFAPJV		
		Powdered high-speed steel with HW coating 64～67HRC Surface 3000HV	AHW—LFAPJ Spring and pin reinforced type AHW—LFAPJV		

The tip shape can be selected from Tip shape A～G in the figure below.

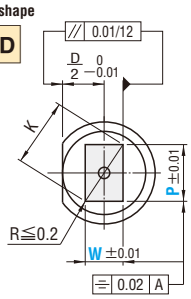


The tip edges are very slightly rounded.

Tip shape A

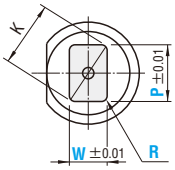


Tip shape D



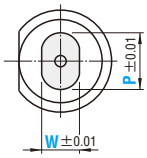
P≧W
$K=\sqrt{P^2+W^2}$

Tip shape R



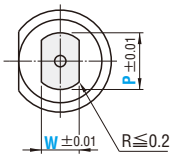
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L 0.1mm increments	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	0.01 mm R R	B	H
(Dm5) —WPC® treatment— W—LFAPJ Spring and pin reinforced type W—LFAPJV; ($D^{+0.005}_{0}$) —WPC® treatment— AW—LFAPJ Spring and pin reinforced type AW—LFAPJV	A D R E G	S	8	60.0～130.0 Spring and pin reinforced type (70.0～100.0)	4.00～ 7.99	7.97	4.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	13	13
			10		5.00～ 9.99	9.97	5.00			15
			13		6.00～ 12.99	12.97	6.00			18
			16	70.0～130.0 Spring and pin reinforced type (80.0～100.0)	10.00～ 15.99	15.97	6.00		19	21
			20		13.00～ 19.99	19.97	6.00			25
			25		18.00～ 24.99	24.97	6.00			30
—HW coating— HW—LFAPJ Spring and pin reinforced type HW—LFAPJV; —HW coating— AHW—LFAPJ Spring and pin reinforced type AHW—LFAPJV		L	8	70.0～130.0 Spring and pin reinforced type (70.0～100.0)	4.00～ 7.99	7.97	4.00		19	13
			10		5.00～ 9.99	9.97	5.00			15
			13		6.00～ 12.99	12.97	6.00			18
			16	80.0～130.0 Spring and pin reinforced type (80.0～100.0)	10.00～ 15.99	15.97	6.00		25	21
			20		13.00～ 19.99	19.97	6.00			25
			25		18.00～ 24.99	24.97	6.00			30

The spring constants of W—LFAPJV, AW—LFAPJV, HW—LFAPJV, and AHW—LFAPJV are twice those of W—LFAPJ, AW—LFAPJ, HW—LFAPJ, and AHW—LFAPJ respectively.
Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG :P・K>D−0.05···ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Jector holes are based on the jector punch blanks for heavy load. P.182

Order

Catalog No.	—	L	—	P	—	W	—	R (R only)
W—LFAPJAS 20	—	80	—	P15.00				

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Days to Ship Quotation

Alterations

Catalog No.	—	L	—	P	—	W	—	R	— (BC・KC, etc.)
W—LFAPJDS 20	—	79	—	P15.00	—	W6.00			— BC13

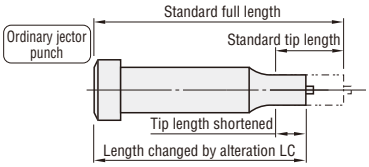
	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip	BC, B	BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
	PRC±0.1	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments ℗ PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PCC.	—	
	PCC±0.1	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments ℗ PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 ⊗ Cannot be combined with PRC.	—	
	P, W, L	PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ ℗ P dimension can be selected in 0.001 mm increments. ⊗ Cannot be used with HW coating. ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$	
Alterations to full length	L	LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	90°, 0°, 180°, 270° Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	90°, 0°, 180°, 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	90°, 0°, 180°, 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		SKC	$\frac{D}{2}-1^{0}_{-0.01}$ Single key flat on shank Ⓐ P≦D−2.2 DREG W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC.		
		NC	The jector pin is removed.		
	R, $D^{-0.01}_{-0.03}$	NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

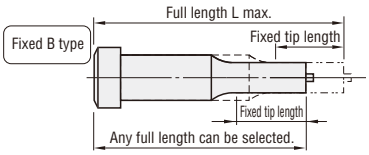
Price

Quotation

■Features

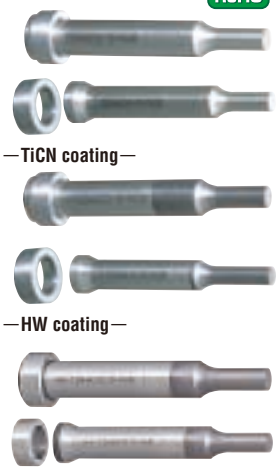
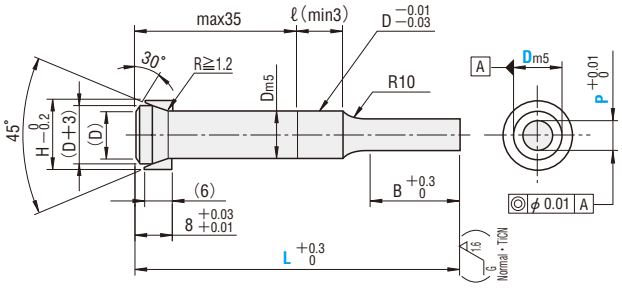


- Whereas the tip length B gets shortened when alteration LC is added to an ordinary jector punch, a fixed B type maintains the same tip length B for any L dimension.



- Because a fixed B type jector punch has no side hole on the shank, it can be used as an air blow punch simply by removing the jector pin.

TAPERED HEAD PUNCHES
—NORMAL・TiCN COATING・HW COATING—

Type	M H	Catalog No.	Shape
RoHS  —TiCN coating— —HW coating—	Punch SKH51 61～64HRC TiCN coating Surface 3000HV HW coating Surface 3000HV Taper ring NAK80 37～43HRC	TSSHAS TSSHAL TiCN coating H—TSSHAS H—TSSHAL HW coating HW—TSSHAS HW—TSSHAL	 The tip end of a TiCN coating punch is ground before the coating is applied. The tip edge of an HW coating punch is very slightly rounded.
	Punch Powdered high-speed steel 64～67HRC TiCN coating Surface 3000HV HW coating Surface 3000HV Taper ring NAK80 37～43HRC	TSPHAS TSPHAL TiCN coating H—TSPHAS H—TSPHAL HW coating HW—TSPHAS HW—TSPHAL	

Catalog No. Type	D	L					0.01mm increments min. P max.	B	H
S TSSHAS TSPHAS —TiCN coating— H—TSSHAS H—TSPHAS —HW coating— HW—TSSHAS HW—TSPHAS	8	60	70	80	90	100	3.00～ 7.99	13	13
	10	60	70	80	90	100	3.00～ 9.99		15
	13	60	70	80	90	100	6.00～ 12.99		18
	16	60	70	80	90	100	10.00～ 15.99	19	21
	20	60	70	80	90	100	13.00～ 19.99		25
	25	60	70	80	90	100	18.00～ 24.99		30
L TSSHAL TSPHAL —TiCN coating— H—TSSHAL H—TSPHAL —HW coating— HW—TSSHAL HW—TSPHAL	8	60	70	80	90	100	3.00～ 7.99	19	13
	10	60	70	80	90	100	3.00～ 9.99		15
	13	60	70	80	90	100	6.00～ 12.99		18
	16	60	70	80	90	100	10.00～ 15.99	25	21
	20	60	70	80	90	100	13.00～ 19.99		25
	25	60	70	80	90	100	18.00～ 24.99		30

P>D−0.03···ℓ=0 If P>D−0.03, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

Order

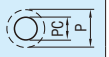
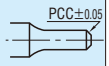
Catalog No.	—	L	—	P
HW—TSSHAS 20	—	80	—	P15.00

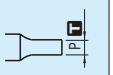
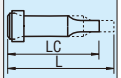
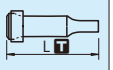
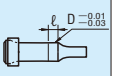
Days to Ship Quotation

Price Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	(BC・SC, etc.)
TSSHAS 20	—	LC82	—	PC12.00	—	BC13

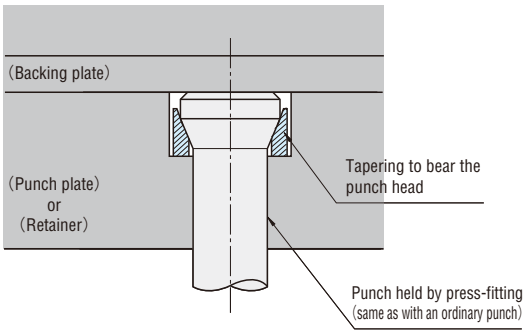
	Alteration	Code	Spec.	1Code
Alterations to tip		PC	Tip dimension change PC≧ $\frac{P_{min.}}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ Cannot be used with TiCN or HW coating.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC. For HW coating, the tolerance is PRC±0.1.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC. For HW coating, the tolerance is PCC±0.1.	

	Alteration	Code	Spec.	1Code
Alterations to tip		PKC	Tip dimension change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating cannot be used for D>13. ⊗ Cannot be used with HW coating.	
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments (If combined with LKC, 0.01mm increments can be selected.) If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm).	Quotation
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	
Shank		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

Example

■Features

- Tapered head punches relieve stress concentration, providing greater head strength than conventional heavy-load punches.
- These products were developed for heavy-load applications, such as punching of high-tensile steel sheets with tensile strength of 980 MPa (100 kgf/mm^2) or higher, spring steel, and hardened steel.
- When used with the accessory taper rings, the tapered head punches eliminate the need for machining of tapered holes in the punch plates and for machining to align the thickness of the plate and punch head.
- Because the head of a tapered head punch is interchangeable with that of a heavy-load punch, the retainer for a heavy-load punch can be used.
- Guide to tapered head punches P.1097



■Note

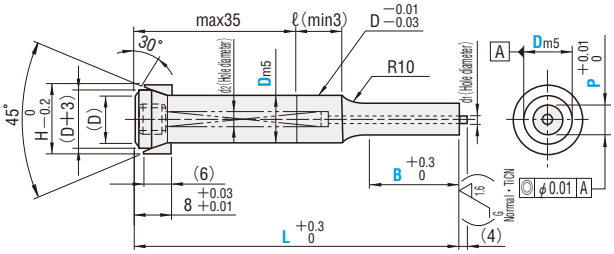
- The head thickness tolerance of a tapered head punch, $8^{+0.03}_{+0.01}$, is achieved by machining a match between the actual individual punch and its taper ring.
  Be sure to use a taper ring that has the same ID number as the punch.
  If the punch is combined with a tapered ring that has a different ID number, the head thickness may deviate from the tolerance listed in the catalog.
- When a punch is replaced, replace both punch and taper ring as a set.
  (The punch and taper ring are not sold individually.)

TAPERED HEAD JECTOR PUNCHES

—NORMAL・WPC® TREATMENT・TiCN COATING・HW COATING—

Type	M H	S	Catalog No.
RoHS	Punch SKH51 61～64HRC	—	TSSJAS TSSJAL
—WPC® treatment—		WPC® treatment Surface 1000～1100HV	W—TSSJAS W—TSSJAL
	Taper ring NAK80 37～43HRC	TiCN coating Surface 3000HV	H—TSSJAS H—TSSJAL
		HW coating Surface 3000HV	HW—TSSJAS HW—TSSJAL
—TiCN coating—	Punch Powdered high-speed steel 64～67HRC	—	TSPJAS TSPJAL
		WPC® treatment Surface 1000～1100HV	W—TSPJAS W—TSPJAL
—HW coating—	Taper ring NAK80 37～43HRC	TiCN coating Surface 3000HV	H—TSPJAS H—TSPJAL
		HW coating Surface 3000HV	HW—TSPJAS HW—TSPJAL

Shape



The tip end of a TiCN coating punch is ground before the coating is applied.
The tip edges of a WPC® treatment or HW coating punch are very slightly rounded.

Catalog No. Type		D	0.1 mm increments L	0.01mm increments min. P max.	B	H	d_1	d_2
S	—WPC® treatment—	8	50.0～ 80.0	4.00～ 7.99	13	13	1.5	3.4
TSSJAS TSPJAS	W—TSSJAS W—TSPJAS	10	55.0～ 90.0	5.00～ 9.99		15	1.8	4.4
—TiCN coating—	—HW coating—	13	65.0～ 100.0	6.00～ 12.99		18	2.8	
H—TSSJAS H—TSPJAS	HW—TSSJAS HW—TSPJAS	16		10.00～ 15.99	19	21		
L	—WPC® treatment—	8	60.0～ 80.0	4.00～ 7.99	19	13	1.5	3.4
TSSJAL TSPJAL	W—TSSJAL W—TSPJAL	10	60.0～ 90.0	5.00～ 9.99		18	1.8	4.4
—TiCN coating—	—HW coating—	13	70.0～ 100.0	6.00～ 12.99		15	2.8	
H—TSSJAL H—TSPJAL	HW—TSSJAL HW—TSPJAL	16		10.00～ 15.99	25	21		

P>D−0.03…ℓ=0 If P>D−0.03, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
Jector holes are based on the jector punch blanks for heavy load. P.182

Order

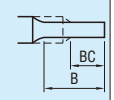
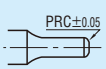
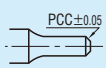
Catalog No.	—	L	—	P
TSSJAS10	—	82	—	P8.30

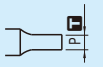
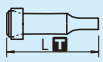
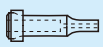
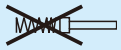
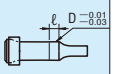
Days to Ship Quotation

Price Quotation

Alterations

Catalog No.	—	L	—	P	—	(BC・SC, etc.)
W—TSSJAL 10	—	82	—	8.60	—	PRC0.3

	Alteration	Code	Spec.	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC≦B 0.1 mm increments	Quotation
		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ Cannot be used with TiCN coating, WPC® treatment and HW coating.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 ⊗ Cannot be combined with PCC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 ⊗ Cannot be combined with PRC.	

	Alteration	Code	Spec.	1Code
Alterations to tip		PKC	Tip dimension change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D16 TiCN coating punches or for HW coating punches.	
Alterations to full length		LKC	Full length tolerance change $L^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$	Quotation
Shank		NC	 The jector pin is removed.	
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

Example

■Features

- Tapered head jector punches are designed for punching of stainless steel, high-tensile steel, and for general heavy loads.
  The strength and convenience are superior to conventional heavy-load jector punches due to improvements to the following points.

①There is no side hole on the shank. Such a hole can be a cause of punch breakage during punching for heavy loads.
②A problem with conventional jector punches is that the tip length B is shortened if an LC alteration is used. However tapered head jector punches are designed to maintain the same tip length B for any L dimension.

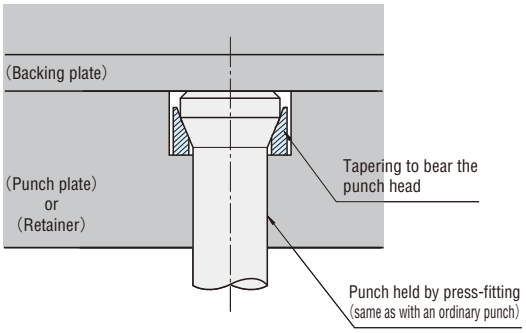
- When used with the accessory taper rings, the tapered head jector punches eliminate the need for machining of tapered holes in the punch plates and for machining to align the thickness of the plate and punch head.

- Guide to tapered head punches P.1097

■Note

- The head thickness tolerance of a tapered head punch, $8^{+0.03}_{+0.01}$, is achieved by machining a match between the actual individual punch and its taper ring. Be sure to use a taper ring that has the same ID mark as the punch.
  If the punch is combined with a tapered ring that has a different ID number, the head thickness may deviate from the tolerance listed in the catalog.

- When a punch is replaced, replace both punch and taper ring as a set. (The punch and taper ring are not sold individually.)



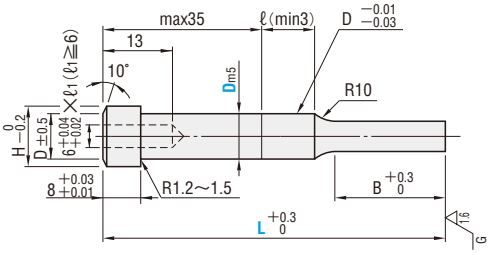
PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

—FINISHED FOR RETAINERS—

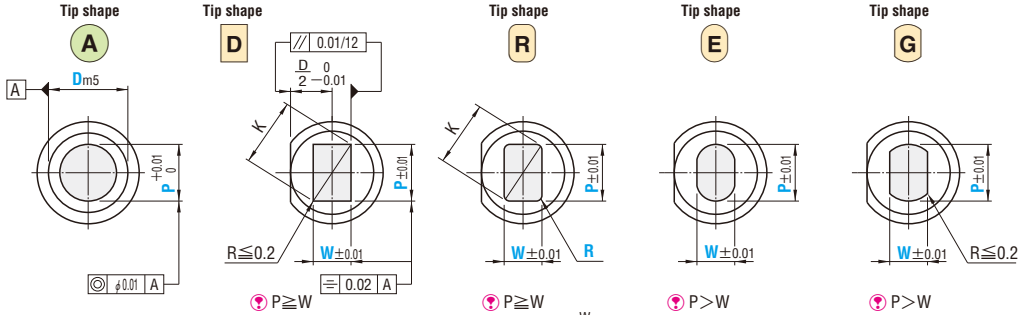
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
With locating dowel hole	Dowel pin MS6—25	Dm5	SKH51 61~64HRC	AP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S	—C
			Powdered high-speed steel 64~67HRC	APH		L	

The tip shape can be selected from Tip shape A~G in the figure below.

RoHS



Tip length (B) L>S



Tip shape A: P≧W; R=0 can be selected.; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Catalog No. Type		D	L											0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
S APAS—C	APHAS—C	10	(50)	60	70	80	90	100	110	120	130	140	150	3.00~ 9.99	9.97	2.50	0.15≦R<W/2 (Ⓡ only)	13	15
APDS—C	APHDS—C	13	(50)	60	70	80	90	100	110	120	130	140	150	6.00~ 12.99	12.97	3.00			18
APRS—C	APHRS—C	16	(50)	60	70	80	90	100	110	120	130	140	150	10.00~ 15.99	15.97	4.00		19	21
APES—C	APHES—C	20	(50)	60	70	80	90	100	110	120	130	140	150	13.00~ 19.99	19.97	5.00			25
APGS—C	APHGS—C	25	(50)	60	70	80	90	100	110	120	130	140	150	18.00~ 24.99	24.97	6.00			30
L APAL—C	APHAL—C	10		60	70	80	90	100	110	120	130	140	150	3.00~ 9.99	9.97	2.50		19	15
APDL—C	APHDL—C	13		60	70	80	90	100	110	120	130	140	150	6.00~ 12.99	12.97	3.00			18
APRL—C	APHRL—C	16			70	80	90	100	110	120	130	140	150	10.00~ 15.99	15.97	4.00		25	21
APEL—C	APHEL—C	20			70	80	90	100	110	120	130	140	150	13.00~ 19.99	19.97	5.00			25
APGL—C	APHGL—C	25			70	80	90	100	110	120	130	140	150	18.00~ 24.99	24.97	6.00			30

L(50)···B=8 If the full length is (50), the tip length is 8mm in all cases.

Ⓐ: P>D−0.03 ···ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

DREG: P·K>D−0.05 ···ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

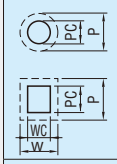
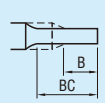
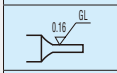
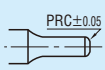
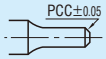
Order

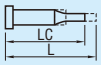
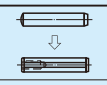
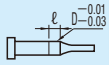
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
APAS—C20	—	80	—	P15.00				
APDS—C25	—	80	—	P18.00	—	W10.00		

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・KC, etc.)
APAS—C 20	—	LC82	—	PC12.00					— BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.500~1.999 / 20 2.000~3.999 / 35 4.000~5.999 / 45 6.000~ / 60	Tip dimension change PC/WC ≧ P・Wmin./2 0.01mm increments P(PC)・W(WC) / Bmax. 1.25~1.49 / 8 1.50~1.99 / 13 2.00~3.49 / 19 3.50~4.99 / 25 5.00~ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for the tip D corner.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length—35mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length—40mm).	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes

This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price

Quotation

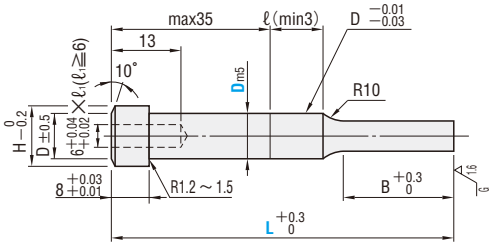
PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

—FINISHED FOR RETAINERS・TiCN COATING—

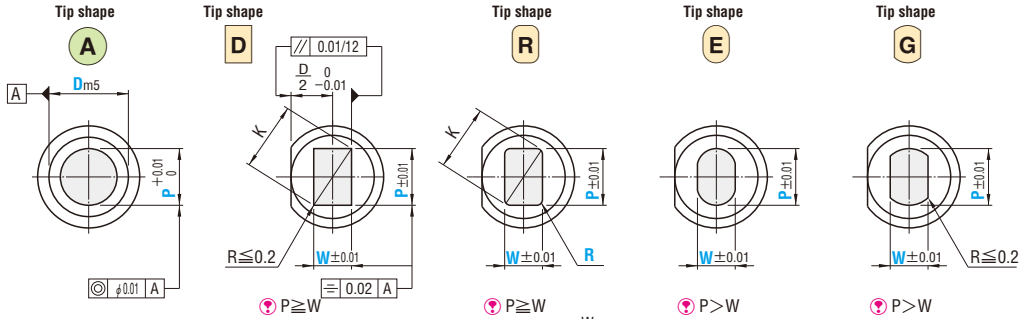
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	Dm5	SKH51 61～64HRC Surface 3000HV	H—AP	Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ	S L	—C
			Powdered high-speed steel 64～67HRC Surface 3000HV	H—APH			

RoHS

The tip shape can be selected from Tip shape A～G in the figure below.



The tip end is ground before the coating is applied.
Tip length (B) L>S



Tip shape A: P≧W
Tip shape D: R=0 can be selected. $K=\sqrt{P^2+W^2}$
Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
Tip shape E: P>W
Tip shape G: P>W

Catalog No. Type		D	L	0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
S H—APAS—C	H—APHAS—C	10	(50) 60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	13	15
H—APDS—C	H—APHDS—C	13	(50) 60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
H—APRS—C	H—APHRS—C	16	(50) 60 70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		19	21
H—APES—C	H—APHES—C	20	(50) 60 70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
H—APGS—C	H—APHGS—C	25	(50) 60 70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30
L H—APAL—C	H—APHAL—C	10	60 70 80 90 100 110 120 130 140 150	3.00～ 9.99	9.97	2.50		19	15
H—APDL—C	H—APHDL—C	13	60 70 80 90 100 110 120 130 140 150	6.00～ 12.99	12.97	3.00			18
H—APRL—C	H—APHRL—C	16	70 80 90 100 110 120 130 140 150	10.00～ 15.99	15.97	4.00		25	21
H—APEL—C	H—APHEL—C	20	70 80 90 100 110 120 130 140 150	13.00～ 19.99	19.97	5.00			25
H—APGL—C	H—APHGL—C	25	70 80 90 100 110 120 130 140 150	18.00～ 24.99	24.97	6.00			30

L(50)…B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P·K>D−0.05…ℓ=0 If P·K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

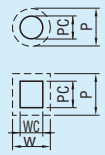
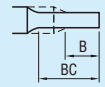
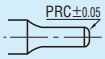
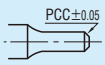
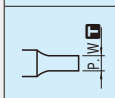
Order

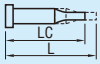
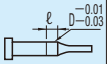
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
H—APAS—C20	—	80	—	P15.00				
H—APDS—C25	—	80	—	P18.00	—	W10.00		

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	—	(BC・KC, etc.)
H—APAS—C 20	—	LC82	—	PC12.00					—	BC13

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC≧ P・Wmin./2 0.01mm increments P(PC)・W(WC) / Bmax. 1.25～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ +0.01 0 Cannot be used for D>13.	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length—35mm).	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length—40mm).	Quotation
			(If combined with LKC, 0.01 mm increments can be selected.)		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING—

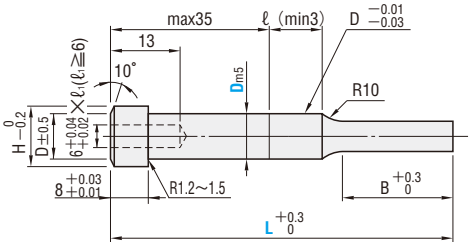
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin MS6—25	Dm5	SKH51 61~64HRC Surface 1000~1100HV	W—AP	A D R E G	S	—C
			Powdered high-speed steel 64~67HRC Surface 1000~1100HV	W—APH			
HW coating with locating dowel hole			SKH51 61~64HRC Surface 3000HV	HW—AP		L	
			Powdered high-speed steel 64~67HRC Surface 3000HV	HW—APH			

The tip shape can be selected from Tip shape A~G in the figure below.

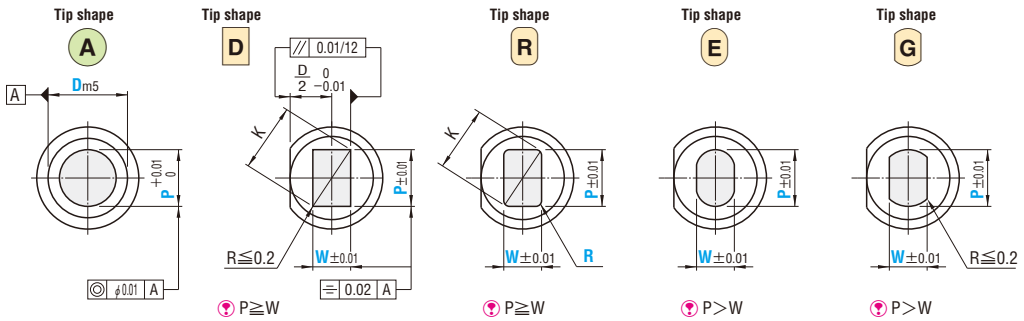
—WPC® treatment—

RoHS

—HW coating—



The tip edges are very slightly rounded.
Tip length (B) L>S



Tip shape A: P≧W
Tip shape D: $K=\sqrt{P^2+W^2}$
Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
Tip shape E: P>W
Tip shape G: P>W

Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	DⓇⒺⒼ P・Kmax.	DⓇⒺⒼ P・Wmin.	Ⓡ R	B	H
WPC® treatment (SKH51) W—AP (Powdered high-speed steel) W—APH	A D R E G	S	—C	10	(50) 60 70 80 90 100 110 120 130 140 150	3.00~ 9.99	9.97	2.50	0.15≦R<W/2 (Ⓡ only)	13	15
				13	(50) 60 70 80 90 100 110 120 130 140 150	6.00~ 12.99	12.97	3.00			18
				16	(50) 60 70 80 90 100 110 120 130 140 150	10.00~ 15.99	15.97	4.00		19	21
				20	(50) 60 70 80 90 100 110 120 130 140 150	13.00~ 19.99	19.97	5.00			25
				25	(50) 60 70 80 90 100 110 120 130 140 150	18.00~ 24.99	24.97	6.00			30
HW coating (SKH51) HW—AP (Powdered high-speed steel) HW—APH		L		10	60 70 80 90 100 110 120 130 140 150	3.00~ 9.99	9.97	2.50		19	15
				13	60 70 80 90 100 110 120 130 140 150	6.00~ 12.99	12.97	3.00			18
				16	70 80 90 100 110 120 130 140 150	10.00~ 15.99	15.97	4.00		25	21
				20	70 80 90 100 110 120 130 140 150	13.00~ 19.99	19.97	5.00			25
				25	70 80 90 100 110 120 130 140 150	18.00~ 24.99	24.97	6.00			30

L (50)…B=8 If the full length is (50), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03 …ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DⓇⒺⒼ: P・K>D−0.05 …ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

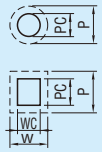
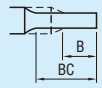
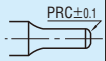
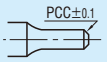
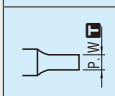
Order

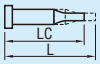
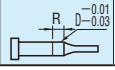
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
W—APAS—C20	—	80	—	P15.00				
HW—APDS—C25	—	80	—	P18.00	—	W10.00		

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・KC, etc.)
W—APAS—C 20	—	LC82	—	PC12.00					— BC13

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax. 1.500～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC, WC≧ P・Wmin./2 0.01 mm increments P(PC)・W(WC) / Bmax. 1.25～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 35mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 40mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) Cannot be used with HW coating.	Tip tolerance change P・W±0.01 ⇨ +0.01 0 Cannot be used with HW coating.	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 35+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 35mm or less, tip length is adjusted to (Full length−35mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 40+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 40mm or less, tip length is adjusted to (Full length−40mm).	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Shank		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price Quotation

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

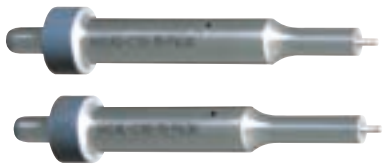
—FINISHED FOR RETAINERS・SPRING AND PIN REINFORCED TYPE—

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

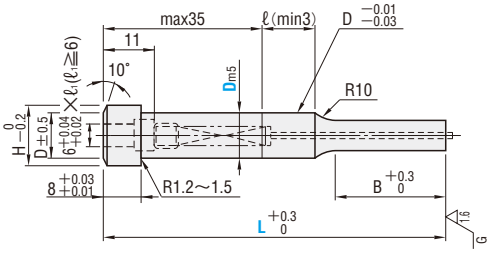
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
With locating dowel hole	Dowel pin MS6—25	Dm5	SKH51 61～64HRC	AHJ Spring and pin reinforced type AHJV	A D R E G	S L	—C

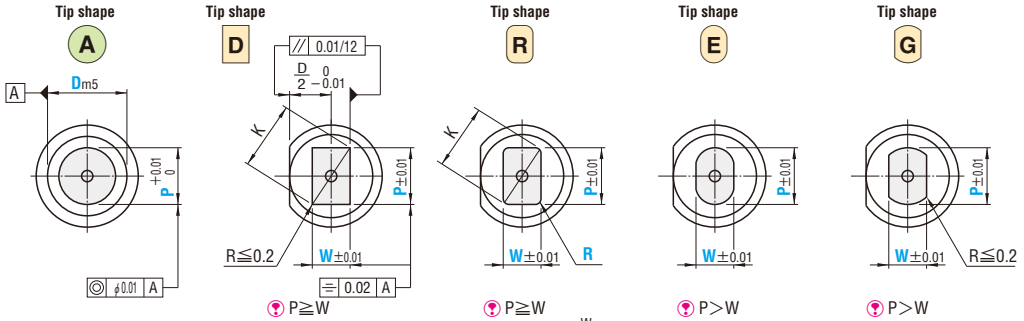
The tip shape can be selected from Tip shape A～G in the figure below.



RoHS



Tip length (B) L>S



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

Catalog No. Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	DREG P·Kmax.	DREG P·Wmin.	Ⓡ R	B	H
AHJ Spring and pin reinforced type AHJV	A D R E G	S	—C	10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00	0.15≦R<W/2 (Ⓡ only)	13	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	(60) 70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		19	21
				20	(60) 70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	(60) 70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30
		L		10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00		19	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		25	21
				20	70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30

- L(60)…B=8 If full length is(60), tip length is 8mm in all cases.
- Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$(press-in lead) is not included.
- DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$(press-in lead) is not included.
- ⊗ L(110), (120) and (130) cannot be used for spring and pin reinforced types.

Order

Catalog No.	—	L	—	P	—	W	—	R(Ⓡ only)
AHJAS—C 20	—	80	—	P15.00				
AHJVDS—C 25	—	80	—	P18.00	—	W10.00		

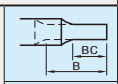
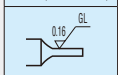
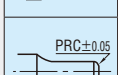
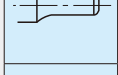
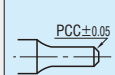
■Effect of spring and pin reinforced type

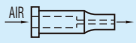
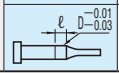
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	R	—	(BC・KC, etc.)
AHJAS—C 20	—	LC82	—	P13.00					—	BC13

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		Quotation
		SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for tip shape D corners.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	
Alterations to full length		LC	Full length change LC＜L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC) . Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Quotation
		NKC	——	No key flat	
Alterations to shank		AC		The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.	
		NC		The jector pin is removed. Cannot be combined with AC.	
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes

This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price

Quotation

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

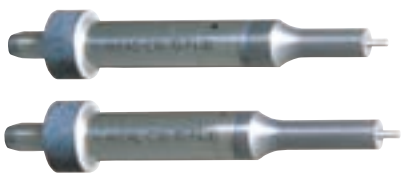
—FINISHED FOR RETAINERS・TiCN COATING・SPRING AND PIN REINFORCED TYPE—

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

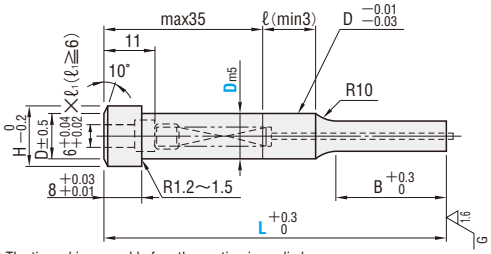
Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
TiCN coating with locating dowel hole	Dowel pin MS6—25	Dm5	SKH51 61～64HRC Surface 3000HV	H—AHJ Spring and pin reinforced type H—AHJV	A D R E G	S L	—C

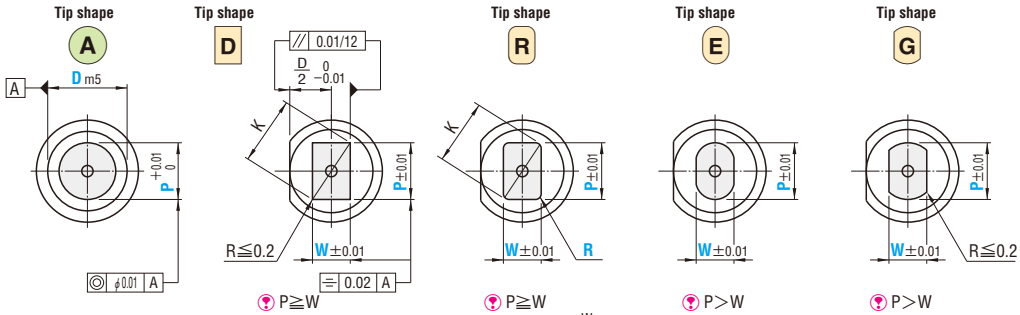
The tip shape can be selected from Tip shape A～G in the figure below.



RoHS



The tip end is ground before the coating is applied.
Tip length (B) L>S



Tip shape A: P≧W
Tip shape D: R=0 can be selected. $K=\sqrt{P^2+W^2}$
Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
Tip shape E: P>W
Tip shape G: P>W

Catalog No. Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	DREG P・Kmax.	DREG P・Wmin.	Ⓡ R	B	H
H—AHJ Spring and pin reinforced type H—AHJV	A D R E G	S	—C	10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00	0.15≦R<W/2 (Ⓡ only)	13	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	(60) 70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		19	21
				20	(60) 70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	(60) 70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30
		L		10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00		19	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		25	21
				20	70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30

L(60)…B=8 If the full length is (60), the tip length is 8mm in all cases.
Ⓐ: P>D−0.03…ℓ=0 If P>D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
DREG: P・K>D−0.05…ℓ=0 If P・K>D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.
⊗ L(110), (120) and (130) cannot be used for spring and pin reinforced types.

Order

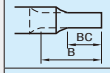
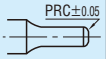
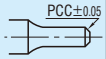
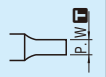
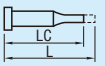
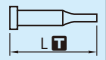
Catalog No.	L	P	W	R (Ⓡ only)
H—AHJAS—C 20	80	P15.00		
H—AHJVDS—C 25	80	P18.00	W10.00	

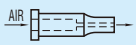
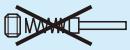
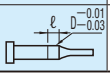
Days to Ship Quotation

■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	R	— (BC・KC, etc.)
H—AHJAS—C 20	—	LC82	—	P15.00					— KFC225

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—d_1—0.5)/2 d_1 dimension details P.182 Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—d_1—0.5)/2 d_1 dimension details P.182 Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) Cannot be used for D＞13.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$ Cannot be used for D＞13.	
Alterations to full length		LC	Full length change LC＜L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L—LC). Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		AC		The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.	
		NC		The jector pin is removed. Cannot be combined with AC.	
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes
This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch. Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

Price

Quotation

JECTOR PUNCHES FOR HEAVY LOAD WITH DOWEL HOLES

—FINISHED FOR RETAINERS・WPC® TREATMENT・HW COATING・SPRING AND PIN REINFORCED TYPE—

Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

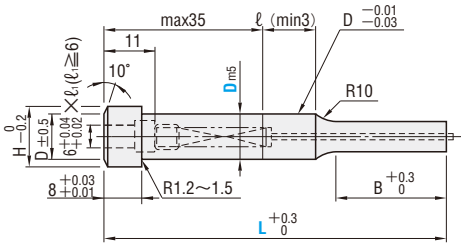
Type	A	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	With dowel hole
WPC® treatment with locating dowel hole	Dowel pin MS6—25	Dm5	SKH51 61～64HRC Surface 1000～1200HV	W—AHJ (Spring and pin reinforced type W—AHJV)	A D R E G	S	—C
HW coating with locating dowel hole			SKH51 61～64HRC Surface 3000HV	HW—AHJ (Spring and pin reinforced type HW—AHJV)		L	

The tip shape can be selected from Tip shape A～G in the figure below.

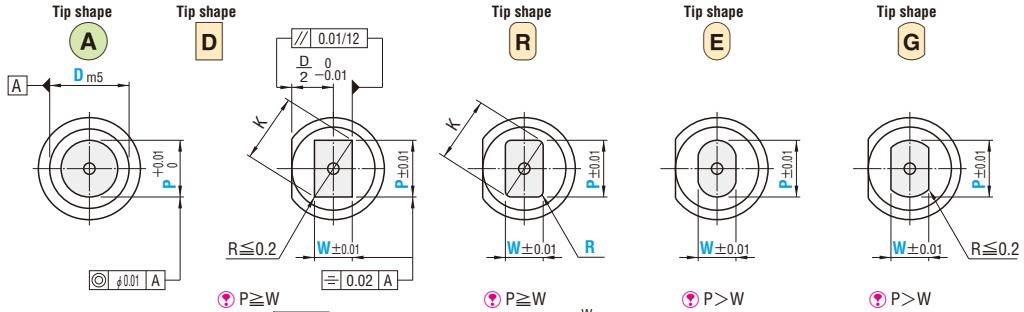
—WPC® treatment—

—HW coating—

RoHS



The tip edges are very slightly rounded.
Tip length (B) L＞S



Tip shape A: P≧W; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape R: P≧W

Tip shape E: P＞W

Tip shape G: P＞W

Catalog No. Type	Tip shape	B Tip length	With dowel hole	D	L	0.01mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G P・Wmin.	Ⓡ R	B	H
WPC® treatment W—AHJ (Spring and pin reinforced type W—AHJV)	A D R E G	S	—C	10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00	0.15≦R＜W/2 (Ⓡ only)	13	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	(60) 70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		19	21
				20	(60) 70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	(60) 70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30
HW coating HW—AHJ (Spring and pin reinforced type HW—AHJV)		L		10	(60) 70 80 90 100 (110) (120) (130)	5.00～ 9.99	9.97	5.00		19	15
				13	(60) 70 80 90 100 (110) (120) (130)	6.00～ 12.99	12.97	6.00			18
				16	70 80 90 100 (110) (120) (130)	10.00～ 15.99	15.97	6.00		25	21
				20	70 80 90 100 (110) (120) (130)	13.00～ 19.99	19.97	6.00			25
				25	70 80 90 100 (110) (120) (130)	18.00～ 24.99	24.97	6.00			30

L (60)…B=8 If the full length is (60), the tip length is 8mm in all cases.

Ⓐ: P＞D−0.03…ℓ=0 If P＞D−0.03 for a round punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

D R E G: P・K＞D−0.05…ℓ=0 If P・K＞D−0.05 for a shaped punch, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

⊗ L (110), (120), and (130) cannot be used for spring and pin reinforced types.

Order

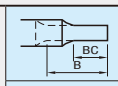
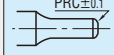
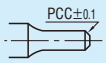
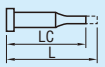
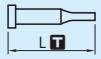
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
W—AHJAS—C 20	—	80	—	P15.00				
HW—AHJDS—C 25	—	80	—	P18.00	—	W10.00		

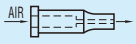
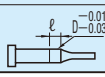
■Effect of spring and pin reinforced type
The spring constant is twice that of the standard type, resulting in improved scrap removal. In addition, the improved strength under the pin head prevents breakage below the head.

Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	R	—	(BC・KC, etc.)
W—AHJAS—C 20	—	LC82	—	P15.00					—	KFC225—TPC

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P.182 ⊗ Cannot be combined with PCC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension details P.182 ⊗ Cannot be combined with PRC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with HW coating. ⊗ Cannot be used for D>13.	Tip tolerance change P・W±0.01 ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used with HW coating. ⊗ Cannot be used for D>13.	
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of the jector pin is 2mm for reinforced types and 4mm for non-reinforced types.		
		LKC	Full length tolerance change L $^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	—	No key flat	
Alterations to shank		AC		The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.	
		NC		The jector pin is removed. ⊗ Cannot be combined with AC.	
		TPC	Dowel pin change MS6—25 that comes with the product is changed to MSTP6—25 (tapped type).		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Example

■Uses of punches with locating dowel holes

This type of punch is mainly used with dies for parts such as automobile bodies, in combination with a retainer that holds the punch.
Rather than indirect positioning using the retainer dowel hole, these punches can be positioned directly using the dowel hole machined on the punch axis, improving die accuracy.
These punches are particularly effective when used for die machining with NC machines.
This type of punch can be also used with dies for the external panels of electrical appliances, either in combination with a retainer, or attached to the punch plate of an ordinary progressive die.

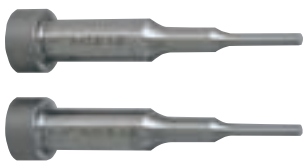
Price Quotation

DOUBLE-STEPPED SHOULDER PUNCHES FOR HEAVY LOAD

—FINISHED FOR RETAINERS, NORMAL・TiCN COATING・HW COATING—

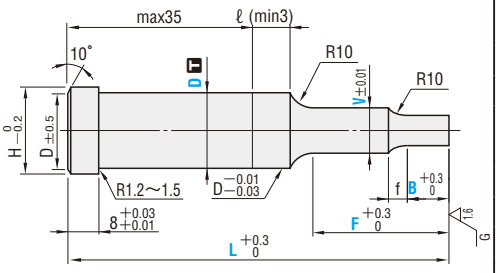
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Catalog No. Tip shape
	Dm5	SKH51 61～64HRC Surface 3000HV	Normal APTW	A D R E G
			TiCN coating H—APTW	
			HW coating HW—APTW	
		Powdered high-speed steel 64～67HRC Surface 3000HV	Normal APHTW	
			TiCN coating H—APHTW	
			HW coating HW—APHTW	
	$D^{+0.005}_{0}$	SKH51 61～64HRC Surface 3000HV	Normal A—APTW	
			TiCN coating AH—APTW	
			HW coating AHW—APTW	
		Powdered high-speed steel 64～67HRC Surface 3000HV	Normal A—APHTW	
			TiCN coating AH—APHTW	
			HW coating AHW—APHTW	

RoHS

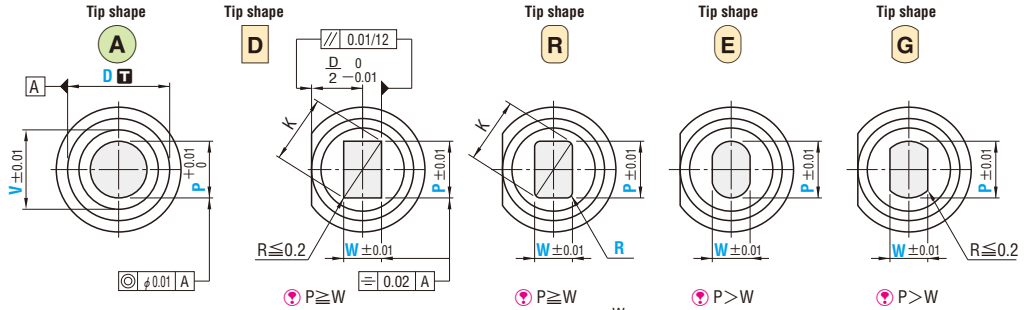


For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.



The tip end of a TiCN coating punch is ground before the coating is applied.
The tip edge of an HW coating punch is very slightly rounded.



P≧W　　P≧W　　P>W　　P>W

R=0 can be selected. (However HW coating punches cannot be used.)　　$0.15 \leqq R < \frac{W}{2}$

$K=\sqrt{P^2+W^2}$　　$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Catalog No. Type	Tip shape	D	L	0.01mm increments Ⓐ P	0.1mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments D R E G P・W	R R	0.1mm increments D R E G B	0.01mm increments V	0.1mm increments F	H
(Dm5) Normal APTW APHTW TiCN coating H—APTW H—APHTW HW coating HW—APTW HW—APHTW	A D R E G	5	50・60・70・80	1.50～ 1.999	2.0～20.0	4.96	1.00～ 1.49	0.15≦R<W/2 (R only)	2.0～ 8.0	Ⓐ D>V>P+0.01 D R E G D>V>(P,K) +0.03	B+f+2<F≦Fmax. & Ⓐ :F≦L−35 D R E G :F≦L−40	10
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 4.98	2.0～40.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 4.98	2.0～40.0		3.50～ 4.96		2.0～ 25.0			
		6	50・60・70・80	1.50～ 1.999	2.0～20.0	5.96	1.00～ 1.49		2.0～ 8.0			11
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.98	2.0～40.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 5.98	2.0～40.0		3.50～ 4.99		2.0～ 25.0			
				4.00～ 5.98	2.0～40.0		5.00～ 5.96		2.0～ 30.0			
		8	50・60・70・80・90・100	1.50～ 1.999	2.0～20.0	7.96	1.00～ 1.49		2.0～ 8.0			13
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 7.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 7.98	2.0～60.0		5.00～ 7.96		2.0～ 30.0			
($D^{+0.005}_{0}$) Normal A—APTW A—APHTW TiCN coating AH—APTW AH—APHTW HW coating AHW—APTW AHW—APHTW		10	50・60・70・80・90・100	1.50～ 1.999	2.0～20.0	9.96	1.25～ 1.49		2.0～ 8.0			15
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 9.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 9.98	2.0～60.0		5.00～ 9.96		2.0～ 30.0			
		13	50・60・70・80・90・100	3.00～ 3.999	2.0～35.0	12.96	1.50～ 1.99		2.0～ 13.0		For dimension f, refer to the punch R lengths in [Products Data] on P.1224, and verify the following. Ⓐ : (V−P)/2=X D R E G : (V−W)/2=X	18
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 12.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 12.98	2.0～60.0		5.00～ 12.96		2.0～ 30.0			
		16	50・60・70・80・90・100	5.00～ 5.999	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			21
				6.00～ 15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	50・60・70・80・90・100	6.50～ 19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			25
				6.50～ 19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～ 19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	50・60・70・80・90・100	9.00～ 24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			30
				9.00～ 24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～ 24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			

V	Fmax.
1.030～1.999	20
2.000～3.999	35
4.000～5.999	45
6.000～	60

If V>D−0.03…ℓ=0　If V>D−0.03, $D^{-0.01}_{-0.03}$ (press-in lead) is not included.

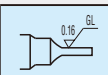
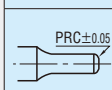
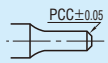
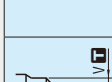
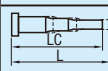
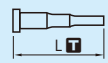
Order

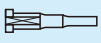
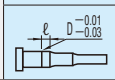
Catalog No.	L	P	W	B	V	F	R (R only)
APTWA 10	80	P 9.50		B30	V 9.80	F35	
A—APHTWR 13	80	P10.50	W7.34	B25	V12.00	F35	R0.5

Days to Ship **Quotation**

Alterations

Catalog No.	—	L(LC)	—	P	—	W	—	B	—	V	—	F	—	R(Ⓡ only)	—	(KC・WKC, etc.)
APTWA 10	—	LC72	—	P4.80			—	B10	—	V6.80	—	F25			—	SKC

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip Ⓓ corner. ⊗ Cannot be used with TiCN coating or HW coating.		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with TiCN coating or HW coating.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating or HW coating.	
		VKC	Tip tolerance change $V \pm 0.01 \Rightarrow {}^{+0.005}_{0}$ (V dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with TiCN coating or HW coating.	Tip tolerance change $V \pm 0.01 \Rightarrow {}^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating or HW coating.	
Alterations to full length		LC	Full length change 40+F≦LC<L 0.1mm increment (If combined with LKC・LKZ, 0.01mm increments can be selected.)		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$ ⊗ Cannot be used with TiCN coating or HW coating.		

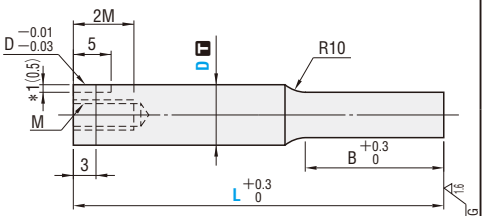
Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to head		KC	Addition of single key flat to head	Key flat position change 1° increments	Quotation
		WKC	Addition of double key flats in parallel	Double key flats in parallel Can be combined with KC.	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	
		NKC	——	No key flat	
Alterations to shank		SKC	Single key flat on shank Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC・KFC. ⊗ Cannot be used with TiCN coating or HW coating.		
		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0		

Price **Quotation**

TAPPED PUNCHES

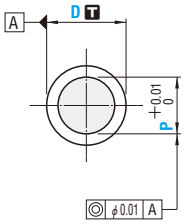
Type	M H	Catalog No. Type: Shank diameter tolerance D m5	Catalog No. Type: Shank dia. tolerance D +0.005 0	Tip shape	B Tip length
Tapped RoHS For shank diameter tolerance D T, select either m5 or +0.005 0.	Equivalent to SKD 11 60~63HRC	(D5~25) MP Tapped large-diameter type (D16~25) MPL	(D5~25) A—MP	A D R E G	S L X
	Powdered high-speed steel 64~67HRC	(D5~25) MPH	(D5~25) A—MPH		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.

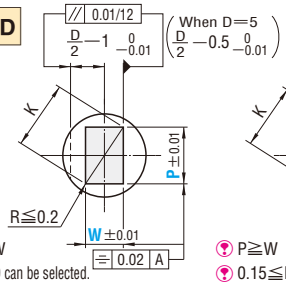


* When D=5, the key slot depth is 0.5.

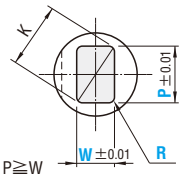
Tip shape A



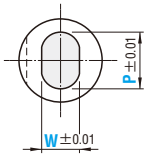
Tip shape D



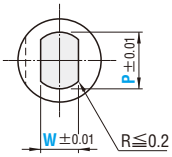
Tip shape R



Tip shape E



Tip shape G



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

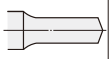
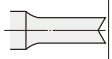
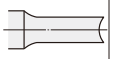
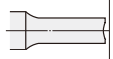
Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	M
(Dm5) MP MPH (D +0.005 0) A—MP A—MPH	A D R E G	S	5	40 50 60 70 80	2.00~ 4.99	4.97	1.20	0.15≦R<W/2 (R only)	8	3
			6	40 50 60 70 80	2.00~ 5.99	5.97	1.50			
			8	(40) 50 60 70 80 90 100	3.00~ 7.99	7.97	2.00		13	4
			10	(40) 50 60 70 80 90 100	3.00~ 9.99	9.97	2.50			5
			13	(40) 50 60 70 80 90 100	6.00~ 12.99	12.97	3.00		19	6
			16	(40) 50 60 70 80 90 100	10.00~ 15.99	15.97	4.00			
			20	(40) 50 60 70 80 90 100	13.00~ 19.99	19.97	5.00			
			25	(40) 50 60 70 80 90 100	18.00~ 24.99	24.97	6.00			
		L	5	50 60 70 80	2.00~ 4.99	4.97	2.00		13	3
			6	50 60 70 80	2.00~ 5.99	5.97	2.00			
			8	50 60 70 80 90 100	3.00~ 7.99	7.97	2.50		19	4
			10	50 60 70 80 90 100	3.00~ 9.99	9.97	2.50			5
			13	50 60 70 80 90 100	6.00~ 12.99	12.97	3.00		25	6
			16	60 70 80 90 100	10.00~ 15.99	15.97	4.00			
			20	60 70 80 90 100	13.00~ 19.99	19.97	5.00			
			25	60 70 80 90 100	18.00~ 24.99	24.97	6.00			
		X	5	60 70 80	2.00~ 4.99	4.97	3.50		25	3
			6	60 70 80	2.00~ 5.99	5.97	3.50			
			8	60 70 80 90 100	3.00~ 7.99	7.97	5.00		30	4
			10	60 70 80 90 100	3.00~ 9.99	9.97	5.00			5
			13	60 70 80 90 100	6.00~ 12.99	12.97	5.00		40	6
			16	70 80 90 100	10.00~ 15.99	—				
			20	70 80 90 100	13.00~ 19.99					
			25	70 80 90 100	18.00~ 24.99					
Tapped large-diameter type (Dm5) MPL		S	16	(40) 50 60 70 80 90 100	10.00~ 15.99	15.97	4.00		19	8
			20	(40) 50 60 70 80 90 100	13.00~ 19.99	19.97	5.00			
			25	(40) 50 60 70 80 90 100	18.00~ 24.99	24.97	6.00			
		L	16	60 70 80 90 100	10.00~ 15.99	15.97	4.00		25	
			20	60 70 80 90 100	13.00~ 19.99	19.97	5.00			
			25	60 70 80 90 100	18.00~ 24.99	24.97	6.00			

L(40)···B=8 If the full length is (40), the tip length is 8mm in all cases.

Order

Catalog No.	—	L	—	P	—	W	—	R (R only)
MPAL 13	—	80	—	P8.24				
MPLRS 20	—	60	—	P15.50	—	W7.25	—	R0.50

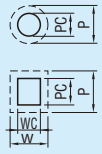
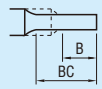
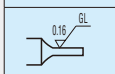
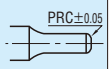
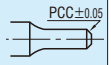
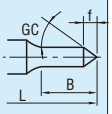
Days to Ship Quotation

Tip profile alteration P.176	1F	2F	3F	4F	5F	6F	7F
							

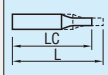
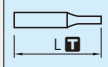
Alterations

Catalog No.	L(LC)	P(PC)	W(WC)	R	(BC・KC・WKC, etc.)
MPAL 13	80	P8.24			KC—LKC

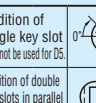
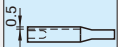
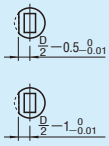
Alterations to tip

Alteration	Code	Ⓐ	DREG	1Code
	PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.000～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC≦ P・Wmin./2 ≧0.80 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax. 0.80～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
	SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip D corner.		
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	—	
	GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・PRC・PCC.	—	
	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

Alterations to full length

Alteration	Code	Ⓐ	DREG	1Code
	LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
	LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		Quotation

Others

Alteration	Code	Ⓐ	DREG	1Code
	KC	 Addition of single key slot ⊗ Cannot be used for D5.	 Key slot position change 1° increments	
	WKC	 Addition of double key slots in parallel ⊗ Cannot be used for D5.	 Double key slots in parallel Can be combined with KC.	
	NKC	—	No key slot	
	SKC	 Single key flat on shank Ⓐ: D5・6 P≦D−1.2 (Machining width 0.5) D8～ P≦D−2.2 (Machining width 1) DREG: W≦D−1.2 ⊗ Cannot be combined with KC・WKC.		

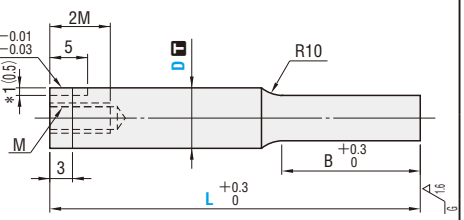
Price Quotation

TAPPED PUNCHES

—TiCN COATING・DICOAT® TREATMENT—

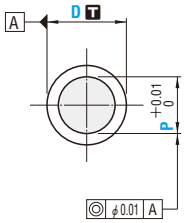
Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length
—TiCN coating— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Powdered high-speed steel 64~67HRC Surface 3000HV	H—MPH	A D R E G	S L X
	$D^{+0.005}_{0}$	Powdered high-speed steel 64~67HRC Surface 3000HV	AH—MPH		
—Dicoat® treatment— RoHS For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKD11 60~63HRC Surface 3000HV	T—MP		
		Powdered high-speed steel 62~64HRC Surface 3000HV	T—MPH		
	$D^{+0.005}_{0}$	Equivalent to SKD11 60~63HRC Surface 3000HV	AT—MP		
		Powdered high-speed steel 62~64HRC Surface 3000HV	AT—MPH		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.

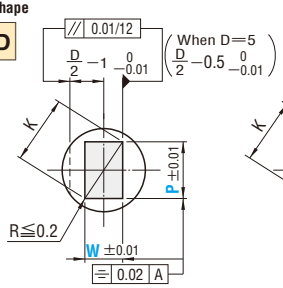


- The tip end of a TiCN coating punch is ground before the coating is applied.
- ＊When D=5, the key slot depth is 0.5.

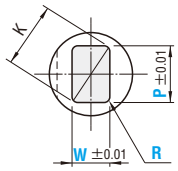
Tip shape A



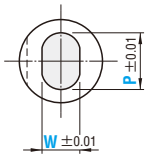
Tip shape D



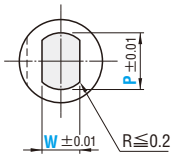
Tip shape R



Tip shape E



Tip shape G



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	DⒸⒺⒼ P・Kmax.	DⒸⒺⒼ P・Wmin.	Ⓡ R	B	M
(Dm5) H—MPH T—MP T—MPH (D+0.005 0) AH—MPH AT—MP AT—MPH	A D R E G	S	5	40	50	60	70	80			2.00~ 4.99	4.97	1.20	0.15≦R<W/2 (Ⓡ only)	8	3
			6	40	50	60	70	80			2.00~ 5.99	5.97	1.50			
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	2.00		13	4
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	2.50			5
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	3.00			6
			16	(40)	50	60	70	80	90	100	10.00~ 15.99	15.97	4.00		19	
			20	(40)	50	60	70	80	90	100	13.00~ 19.99	19.97	5.00			
			25	(40)	50	60	70	80	90	100	18.00~ 24.99	24.97	6.00			
		L	5		50	60	70	80			2.00~ 4.99	4.97	2.00		13	3
			6		50	60	70	80			2.00~ 5.99	5.97	2.00			
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	2.50		19	4
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	2.50			5
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	3.00			6
			16			60	70	80	90	100	10.00~ 15.99	15.97	4.00		25	
			20			60	70	80	90	100	13.00~ 19.99	19.97	5.00			
			25			60	70	80	90	100	18.00~ 24.99	24.97	6.00			
		X	5			60	70	80			2.00~ 4.99	4.97	3.50		25	3
			6			60	70	80			2.00~ 5.99	5.97	3.50			
			8			60	70	80	90	100	3.00~ 7.99	7.97	5.00		30	4
			10			60	70	80	90	100	3.00~ 9.99	9.97	5.00			5
			13			60	70	80	90	100	6.00~ 12.99	12.97	5.00			6
			16				70	80	90	100	10.00~ 15.99	—		—	40	
			20				70	80	90	100	13.00~ 19.99					
			25				70	80	90	100	18.00~ 24.99					

- L(40)…B=8 If the full length is(40), the tip length is 8mm in all cases.
- The Dicoat® treatment tip-length X type is available for tip shape Ⓐ only.

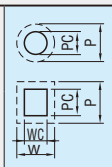
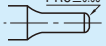
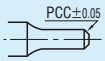
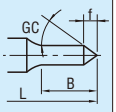
Order

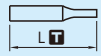
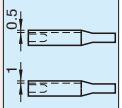
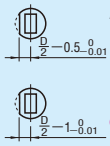
Catalog No.	—	L	—	P	—	W	—	R(Ⓡ only)
AH—MPHRS 8	—	60	—	P6.50	—	W4.25	—	R0.50
T—MPHAL 13	—	80	—	P8.24				

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・KC・WKC, etc.)
T—MPHAL 13	—	80	—	P8.24					— KC—LKC

Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧$\frac{Pmin.}{2}$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.000～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 40(45) 6.000～ / 45(60) Coating can be used for the types in ( ).	Tip dimension change PC/WC≧$\frac{P・Wmin.}{2}$≧1.00 0.01 mm increments Cannot be used for tip X. P(PC)・W(WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Can be used with TiCN coating only. Cannot be combined with PRC・GC.	—	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) Can be combined with TiCN coating only. When used with SC, tip edges are rounded. Cannot be combined with LKC・PRC・PCC.	—	

Alterations	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PKC	Tip tolerance change P$^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001mm increments.) Can be used with TiCN coating only. Cannot be used for D>13.	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	Quotation
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
		LKC	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
Others		KC	Addition of single key slot Cannot be used for D5.	Key slot position change 1° increments	
		WKC	Addition of double key slots in parallel Cannot be used for D5.	Double key slots in parallel Can be combined with KC.	
		NKC	—	No key slot	
		SKC	 Addition of single key flat on shank Ⓐ DREG $\frac{D}{2}-0.5^{0}_{-0.01}$ ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC.		

Price

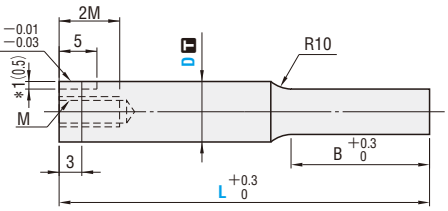
Quotation

TAPPED PUNCHES

—WPC® TREATMENT·HW COATING—

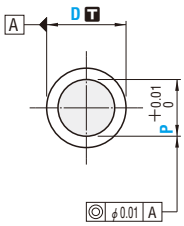
Type	M H	Catalog No. Type: Shank dia. T D_{m5}	Shank dia. T $D^{+0.005}_{0}$	Tip shape	B Tip length
—WPC® treatment— RoHS —HW coating— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	Equivalent to SKD11 60~63HRC Surface 1000~1100HV	WPC® treatment W—MP	WPC® treatment AW—MP	A D R E G	S L X
	Powdered high-speed steel 64~67HRC Surface 1000~1100HV	WPC® treatment W—MPH	WPC® treatment AW—MPH		
	Powdered high-speed steel 64~67HRC Surface 3000HV	HW coating HW—MPH	HW coating AHW—MPH		Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.

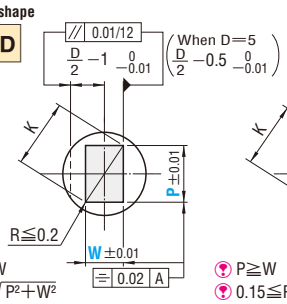


The tip edges are very slightly rounded.
∗When D=5, the key slot depth is 0.5.

Tip shape A

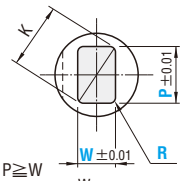


Tip shape D



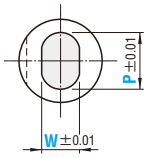
P≧W
$K=\sqrt{P^2+W^2}$

Tip shape R



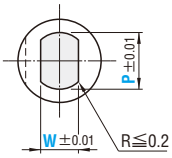
P≧W
$0.15 \leqq R < \frac{W}{2}$
$K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



P>W

Tip shape G



P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	Ⓡ R	B	M
(Dm5) —WPC® treatment— W—MP W—MPH —HW coating— HW—MPH	A D R E G	S	5	40	50	60	70	80			2.00 ~ 4.99	4.97	1.20	0.15≦R<W/2 (Ⓡ only)	8	3
			6	40	50	60	70	80			2.00 ~ 5.99	5.97	1.50			
			8	(40)	50	60	70	80	90	100	3.00 ~ 7.99	7.97	2.00		13	4
			10	(40)	50	60	70	80	90	100	3.00 ~ 9.99	9.97	2.50			5
			13	(40)	50	60	70	80	90	100	6.00 ~ 12.99	12.97	3.00			6
			16	(40)	50	60	70	80	90	100	10.00 ~ 15.99	15.97	4.00		19	
			20	(40)	50	60	70	80	90	100	13.00 ~ 19.99	19.97	5.00			
			25	(40)	50	60	70	80	90	100	18.00 ~ 24.99	24.97	6.00			
($D^{+0.005}_{0}$) —WPC® treatment— AW—MP AW—MPH		L	5		50	60	70	80			2.00 ~ 4.99	4.97	2.00		13	3
			6		50	60	70	80			2.00 ~ 5.99	5.97	2.00			
			8		50	60	70	80	90	100	3.00 ~ 7.99	7.97	2.50		19	4
			10		50	60	70	80	90	100	3.00 ~ 9.99	9.97	2.50			5
			13		50	60	70	80	90	100	6.00 ~ 12.99	12.97	3.00			6
			16			60	70	80	90	100	10.00 ~ 15.99	15.97	4.00		25	
			20			60	70	80	90	100	13.00 ~ 19.99	19.97	5.00			
			25			60	70	80	90	100	18.00 ~ 24.99	24.97	6.00			
—HW coating— AHW—MPH		X	5			60	70	80			2.00 ~ 4.99	4.97	3.50		25	3
			6			60	70	80			2.00 ~ 5.99	5.97	3.50			
			8			60	70	80	90	100	3.00 ~ 7.99	7.97	5.00		30	4
			10			60	70	80	90	100	3.00 ~ 9.99	9.97	5.00			5
			13			60	70	80	90	100	6.00 ~ 12.99	12.97	5.00			6
			16				70	80	90	100	10.00 ~ 15.99	—			40	
			20				70	80	90	100	13.00 ~ 19.99					
			25				70	80	90	100	18.00 ~ 24.99					

L(40)···B=8 If the full length is (40), the tip length is 8mm in all cases.

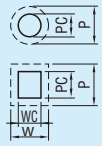
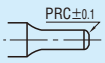
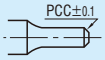
Order

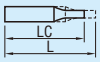
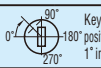
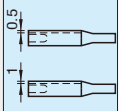
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)
AW—MPDL 13	—	80	—	P10.50	—	W7.34		

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・KC・WKC, etc.)
W—MPHAL 13	—	80	—	P8.24					— KC—LKC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.000～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC, WC≧ P・Wmin./2 ≧1.00 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25 mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	
			⊗ Cannot be used with HW coating. ⊗ Cannot be used for D>13.		

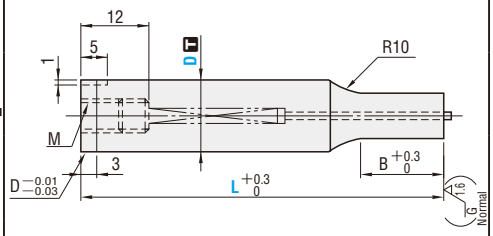
Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25 mm or less, tip length is adjusted to (Full length−25 mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others		KC	Addition of single key slot ⊗ Cannot be used for D5.	 Key slot position change 1° increments	
		WKC	Addition of double key slots in parallel ⊗ Cannot be used for D5.	 Double key slots in parallel Can be combined with KC.	
		NKC	——	No key slot	
		SKC	Single key flat on shank Ⓐ DREG ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC.		

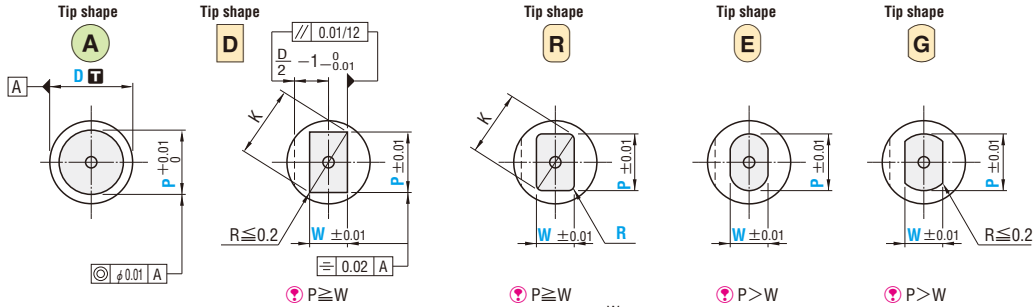
Price Quotation

TAPPED JECTOR PUNCHES
—NORMAL・WPC® TREATMENT—

Calculating the projection length of the jector pin (reference value) P.185

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—Tapped— RoHS	Dm5	Equivalent to SKD 11 60~63HRC	MJ	A D R E G	S L	
			W—MJ			
—WPC® treatment—	$D^{+0.005}_{0}$	WPC® treatment 60~63HRC Surface 1000~1100HV	A—MJ			
For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.			AW—MJ		Tip length (B) L>S	The tip edge of a WPC® treatment punch is very slightly rounded.



- P≧W
- R=0 can be selected. (WPC® treatment punches cannot be used.)
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments A min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	B	M
(Dm5) MJ —WPC® treatment— W—MJ	A D R E G	S	6	(40) 50 60 70 80	2.00~ 5.99	5.97	2.00	$0.15 \leqq R < \frac{W}{2}$ (R only)	8	3
			8	(40) 50 60 70 80 90 100	3.00~ 7.99	7.97	3.00		13	4
			10	(40) 50 60 70 80 90 100	3.00~ 9.99	9.97	3.00			5
			13	(40) 50 60 70 80 90 100	6.00~ 12.99	12.97	6.00			6
			16	(40) (50) 60 70 80 90 100	10.00~ 15.99	15.97	6.00		19	
			20	(40) (50) 60 70 80 90 100	13.00~ 19.99	19.97	6.00			
			25	(40) (50) 60 70 80 90 100	18.00~ 24.99	24.97	6.00			
($D^{+0.005}_{0}$) A—MJ —WPC® treatment— AW—MJ		L	6	50 60 70 80	2.00~ 5.99	5.97	2.00		13	3
			8	50 60 70 80 90 100	3.00~ 7.99	7.97	3.00		19	4
			10	50 60 70 80 90 100	3.00~ 9.99	9.97	3.00			5
			13	50 60 70 80 90 100	6.00~ 12.99	12.97	6.00			6
			16	60 70 80 90 100	10.00~ 15.99	15.97	6.00		25	
			20	60 70 80 90 100	13.00~ 19.99	19.97	6.00			
			25	60 70 80 90 100	18.00~ 24.99	24.97	6.00			

- L(40)···B=6 If full length is (40), tip length is 6mm in all cases.
- L(50)···B=13 If full length is (50), tip length is 13mm in all cases.

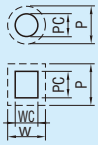
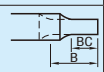
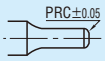
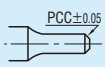
Order

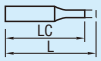
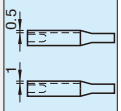
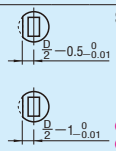
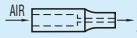
Catalog No.	—	L	—	P	—	W	—	R (R only)
A—MJAL 13	—	80	—	P8.24				

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	W(WC)	—	R	— (BC・KC・WKC, etc.)
A—MJAL 13	—	80	—	P8.24					— KC—LKC

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 6 / 1.80 8 / 2.50 10 / 2.80 13 / 5.00 16 / 8.00 20 / 9.00 25 / 9.00	Tip dimension change PC・WC≧PC・WCmin. 0.01 mm increments D / PC・WCmin. 6 / 1.80 8 / 2.50 10 / 2.80 13 / 5.00 16 / 5.00 20 / 5.00 25 / 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC＜B 0.1 mm increments		
		SC	Lapping of tip P dimension tolerance and increment are the same. R=0 cannot be selected for tip shape D corners. Cannot be used with WPC® treatment.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension P.182 Cannot be combined with PCC. WPC® treatment, the tolerance is PRC±0.1.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension P.182 Cannot be combined with PRC. For WPC® treatment, the tolerance is PCC±0.1.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0}$ ⇨ $^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01⇨$^{+0.01}_{0}$	

Alteration		Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change LC＜L (reduction in tip length) 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). Projection length of jector pin is 2 mm.		
		LKC	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.05}_{0}$		
		LKZ	Full length tolerance change L$^{+0.3}_{0}$ ⇨ $^{+0.01}_{0}$ Cannot be used with WPC® treatment.		
Others		KC	Addition of single key slot	Key slot position change 1° increments	Quotation
		WKC	Addition of double key slots in parallel	Double key slots in parallelCan be combined with KC.	
		NKC	—	No key slot	
		SKC	 Single key flat on shank Ⓐ DREG ・D6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) Cannot be combined with KC・WKC. Cannot be used with WPC®.		
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		

Price

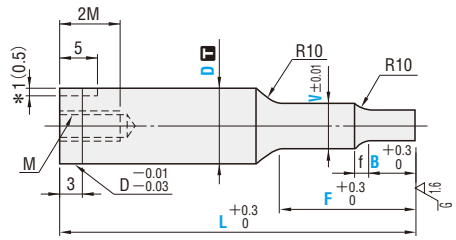
Quotation

DOUBLE-STEPPED TAPPED PUNCHES

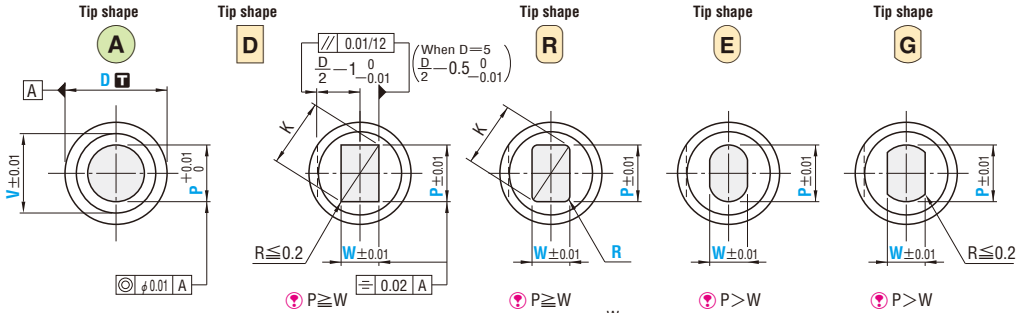
Type	M H	Catalog No. Type: Shank dia. T D_{m5}	Catalog No. Type: Shank dia. T $D^{+0.005}_{0}$	Tip shape
—Tapped— RoHS	Equivalent to SKD 11 60～63HRC	MPTW Tapped large-diameter type MPLTW	A—MPTW	A D R E G
	Powdered high-speed steel 64～67HRC	MPHTW	A—MPHTW	

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

The tip shape can be selected from Tip shape A～G in the figure below.



∗When D=5, the key slot depth is 0.5.



- Tip shape A: P≧W; R=0 can be selected.
- Tip shape D: $K=\sqrt{P^2+W^2}$
- Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- Tip shape E: P>W
- Tip shape G: P>W

Catalog No. Type	Tip shape	D	L	0.01mm increments Ⓐ P	0.1mm increments Ⓐ B	Diagonal Kmax.	0.01mm increments D R E G P·W	R R	0.1mm increments D R E G B	0.01mm increments V	0.1mm increments F	M
Standard type (Dm5) MPTW MPHTW	A D R E G	5	40·50·60·70·80	1.00～ 1.999	2.0～20.0	4.96	0.80～ 1.49	0.15≦R<W/2 (R only)	2.0～ 8.0	Ⓐ: D>V>P+0.01 D R E G: D>V>(P,K)+0.03	B+f+2<F≦Fmax & F≦L−30	3
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 4.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 4.98	2.0～45.0		3.50～ 4.96		2.0～ 25.0			
		6	40·50·60·70·80	1.00～ 1.999	2.0～20.0	5.96	0.80～ 1.49		2.0～ 8.0			
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.98	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				4.00～ 5.98	2.0～45.0		3.50～ 4.99		2.0～ 25.0			
				4.00～ 5.98	2.0～45.0		5.00～ 5.96		2.0～ 30.0			
		8	40·50·60·70·80·90·100	1.00～ 1.999	2.0～20.0	7.96	1.00～ 1.49		2.0～ 8.0			4
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 7.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 7.98	2.0～60.0		5.00～ 7.96		2.0～ 30.0			
(D+0.005 0) A—MPTW A—MPHTW		10	40·50·60·70·80·90·100	1.50～ 1.999	2.0～20.0	9.96	1.25～ 1.49		2.0～ 8.0			5
				2.00～ 3.999	2.0～35.0		1.50～ 1.99		2.0～ 13.0			
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 9.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 9.98	2.0～60.0		5.00～ 9.96		2.0～ 30.0			
		13	40·50·60·70·80·90·100	3.00～ 3.999	2.0～35.0	12.96	1.50～ 1.99		2.0～ 13.0			6
				4.00～ 5.999	2.0～45.0		2.00～ 3.49		2.0～ 19.0			
				6.00～ 12.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 12.98	2.0～60.0		5.00～ 12.96		2.0～ 30.0			
		16	40·50·60·70·80·90·100	5.00～ 5.999	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			
				6.00～ 15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	40·50·60·70·80·90·100	6.50～ 19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			
				6.50～ 19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～ 19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	40·50·60·70·80·90·100	9.00～ 24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			
				9.00～ 24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～ 24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			
Tapped large-diameter type MPLTW		16	40·50·60·70·80·90·100	5.00～ 5.98	2.0～45.0	15.96	2.00～ 3.49		2.0～ 19.0			8
				6.00～ 15.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.00～ 15.98	2.0～60.0		5.00～ 15.96		2.0～ 30.0			
		20	40·50·60·70·80·90·100	6.50～ 19.98	2.0～60.0	19.96	2.50～ 3.49		2.0～ 19.0			
				6.50～ 19.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				6.50～ 19.98	2.0～60.0		5.00～ 19.96		2.0～ 30.0			
		25	40·50·60·70·80·90·100	9.00～ 24.98	2.0～60.0	24.96	3.00～ 3.49		2.0～ 19.0			
				9.00～ 24.98	2.0～60.0		3.50～ 4.99		2.0～ 25.0			
				9.00～ 24.98	2.0～60.0		5.00～ 24.96		2.0～ 30.0			

V	Fmax.
0.83～0.99	10
1.00～1.99	20
2.00～3.99	35
4.00～5.99	45
6.00～	60

For **f** dimension, refer to the punch R length in [Products Data] on P.1224, and verify the following.
Ⓐ: (V−P)/2=X
D R E G: (V−W)/2=X

If V>D−0.03···ℓ=0 If V>D−0.03, D $^{-0.01}_{-0.03}$ (press-in lead) is not included.

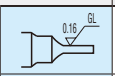
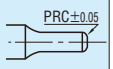
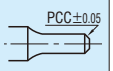
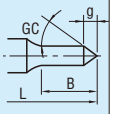
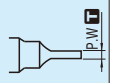
Order

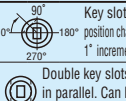
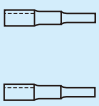
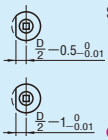
Catalog No.	L	P	W	B	V	F	R (Ⓡ only)
MPTWA10	80	P9.50		B30	V9.80	F45	
A—MPHTWR13	80	P10.50	W7.34	B25	V12.00	F45	R0.5

Days to Ship Quotation

Alterations

Catalog No.	L (LC)	P	W	B	V	F	R Ⓡ only	(KC・WKC, etc.)
MPTWA10	LC72	P4.80		B10	V6.80	F40		KC

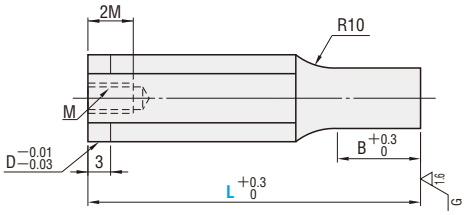
	Alteration	Code	Ⓐ	DⓇⒺⒼ	1Code
Alterations to tip		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip D corner.		Quotation
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	—	
		GC	20°≦GC<90° 1° increments Tip length B≧g+2 g=P/2×tan(90°−GC°) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・PRC・PC.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change $P・W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	

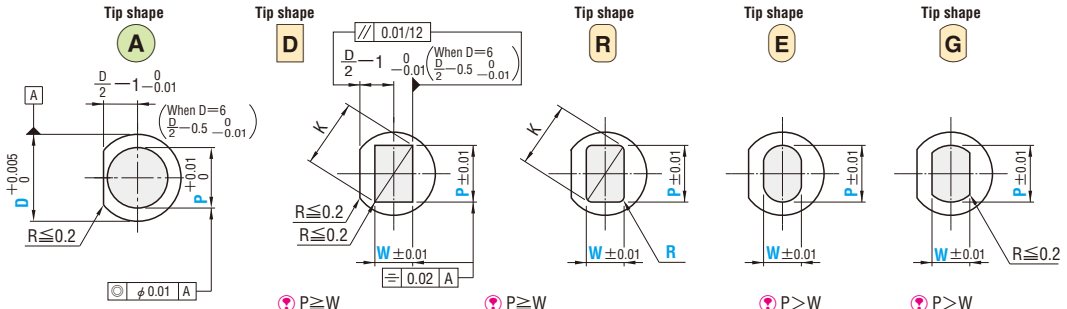
	Alteration	Code	Ⓐ	DⓇⒺⒼ	1Code
Alterations to full length		LC	Full length change 30+F≦LC<L 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.)		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$		
Others		KC	Addition of single key slot ⊗ Cannot be used for D5.	 Key slot position change 1° increments	Quotation
		WKC	Addition of double key slots in parallel ⊗ Cannot be used for D5.	 Double key slots in parallel. Can be combined with KC.	
		NKC	—	No key slot	
		SKC	Single key flat on shank  Ⓐ DⓇⒺⒼ ・D5・6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC・WKC.		

Price Quotation

KEY FLAT SHANK TAPPED PUNCHES

—NORMAL・TiCN COATING—

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
—Tapped— RoHS	$D^{+0.005}_{0}$	Equivalent to SKD 11 60~63HRC	G—MP	A D R E G	S L X	
		Powdered high-speed steel 64~67HRC TiCN coating Surface 3000HV	G—MPH TiCN coating GH—MPH		Tip length (B) X>L>S	The tip end of a TiCN coating punch is ground before the coating is applied.



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- P>W
- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	D R E G P・Kmax.	D R E G Wmax.	D R E G P・Wmin.	R R	B	M
G—MP	A D R E G	S	6	40	50	60	70	80			2.00~ 3.80	5.97	3.80	1.50	0.15≦R<W/2 (Ⓡ only)	8	3
			8	(40)	50	60	70	80	90	100	3.00~ 5.80	7.97	5.80	2.00		13	4
			10	(40)	50	60	70	80	90	100	3.00~ 7.80	9.97	7.80	2.50			5
			13	(40)	50	60	70	80	90	100	6.00~ 10.80	12.97	10.80	3.00			6
			16	(40)	50	60	70	80	90	100	10.00~ 13.80	15.97	13.80	4.00		19	
			20	(40)	50	60	70	80	90	100	13.00~ 17.80	19.97	17.80	5.00			
			25	(40)	50	60	70	80	90	100	18.00~ 22.80	24.97	22.80	6.00			
G—MPH		L	6		50	60	70	80			2.00~ 3.80	5.97	3.80	2.00		13	3
			8		50	60	70	80	90	100	3.00~ 5.80	7.97	5.80	2.50		19	4
			10		50	60	70	80	90	100	3.00~ 7.80	9.97	7.80	2.50			5
			13		50	60	70	80	90	100	6.00~ 10.80	12.97	10.80	3.00			6
			16			60	70	80	90	100	10.00~ 13.80	15.97	13.80	4.00		25	
			20			60	70	80	90	100	13.00~ 17.80	19.97	17.80	5.00			
			25			60	70	80	90	100	18.00~ 22.80	24.97	22.80	6.00			
—TiCN coating— GH—MPH		X	6			60	70	80			2.00~ 3.80	5.97	4.80	3.50		25	3
			8			60	70	80	90	100	3.00~ 5.80	7.97	5.80	5.00		30	4
			10			60	70	80	90	100	3.00~ 7.80	9.97	7.80	5.00			5
			13			60	70	80	90	100	6.00~ 10.80	12.97	10.80	5.00			6
			16				70	80	90	100	10.00~ 13.80	—			—	45	
			20				70	80	90	100	13.00~ 17.80						
			25				70	80	90	100	18.00~ 22.80						

L(40)…B=8 If the full length is(40), the tip length is 8mm in all cases.

Order

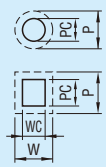
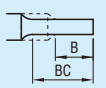
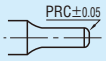
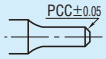
Catalog No.	—	L	—	P	—	W	—	R(Ⓡ only)
G—MPDS 13	—	60	—	P10.65	—	W6.55		

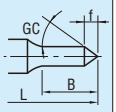
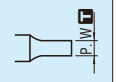
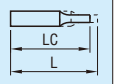
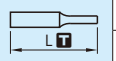
Days to Ship Quotation

Alterations

Catalog No. — L(LC) — P(PC) — W(WC) — R(R only) — (BC・PKC・LKC, etc.)

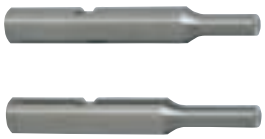
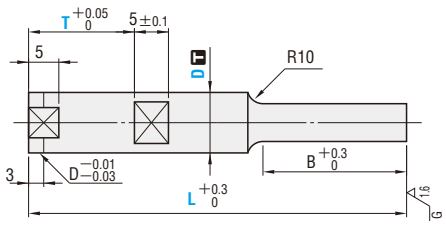
G—MPES 8 — LC65.5 — P7.00 — W4.00

Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.000～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC ≧ P・Wmin./2 ≧0.80 WC 0.01 mm increments ⊗ Cannot be used for tip X. For TiCN coating: PC ≧ P・Wmin./2 ≧1.00 WC P(PC)・W(WC) / Bmax. 0.80～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	—	

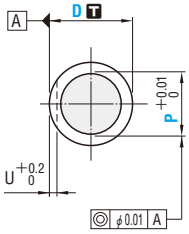
Alteration		Code	Ⓐ	DREG	1Code
Alterations to tip		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LKZ・PRC・PCC.	—	Quotation
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ TiCN coating cannot be used for D>13.	Tip tolerance change P・W±0.01⇨ +0.01 0	
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm). (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
		LKC	Full length tolerancechange L +0.3 0 ⇨ +0.05 0	⊗ Cannot be used with TiCN coating.	
		LKZ	Full length tolerancechange L +0.3 0 ⇨ +0.01 0		

Price Quotation

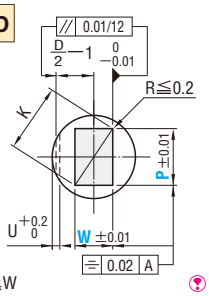
PUNCHES WITH KEY GROOVES

Type	Shank diameter D T tolerance	M H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS  For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKD 11 60~63HRC	SK	A D R E G	S L X	
		SKH51 61~64HRC	SHK			
		Powdered high-speed steel 64~67HRC	PK			
	$D^{+0.005}_{0}$	Equivalent to SKD 11 60~63HRC	A—SK			
		SKH51 61~64HRC	A—SHK			
		Powdered high-speed steel 64~67HRC	A—PK		Tip length (B) X>L>S	

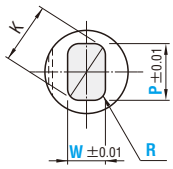
Tip shape A



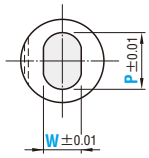
Tip shape D



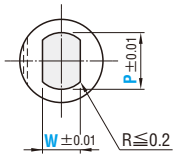
Tip shape R



Tip shape E



Tip shape G



- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

- P>W

- P>W

Catalog No. Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	Ⓡ R	0.1 mm increments T	B	U Key groove depth
(D_{m5}) SK SHK PK	A D R E G	S	3	40	50	60	70	80			1.00~ 2.99	—	—	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	T>5.0	8	0.5
			4	40	50	60	70	80			1.00~ 3.99	3.97	1.00				
			5	40	50	60	70	80			2.00~ 4.99	4.97	1.20				
			6	40	50	60	70	80			2.00~ 5.99	5.97	1.50				1.0
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	2.00			13	1.5
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	2.50				
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	3.00				
			16	(40)	50	60	70	80	90	100	10.00~ 15.99	15.97	4.00			19	
($D^{+0.005}_{0}$) A—SK A—SHK A—PK		L	3		50	60	70	80			1.00~ 2.99	—	—			13	0.5
			4		50	60	70	80			1.00~ 3.99	3.97	2.00				
			5		50	60	70	80			2.00~ 4.99	4.97	2.00				
			6		50	60	70	80			2.00~ 5.99	5.97	2.00				1.0
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	2.50			19	1.5
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	2.50				
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	3.00				
			16			60	70	80	90	100	10.00~ 15.99	15.97	4.00			25	
		X	3		50	60	70	80			1.20~ 2.99	—	—			19	0.5
			4		50	60	70	80			1.20~ 3.99	3.97	2.00				
			5			60	70	80			2.00~ 4.99	4.97	3.50			25	
			6			60	70	80			2.00~ 5.99	5.97	3.50				1.0
			8			60	70	80	90	100	3.00~ 7.99	7.97	5.00			30	1.5
			10			60	70	80	90	100	3.00~ 9.99	9.97	5.00				
			13			60	70	80	90	100	6.00~ 12.99	12.97	5.00				
			16			60	70	80	90	100	10.00~ 15.99	—	—			40	

- L(40)···B=8 If the full length is (40), the tip length is 8mm in all cases.
- If no key groove is required, select T dimension that is the same as the full length L.

Order

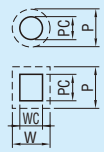
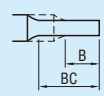
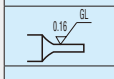
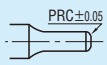
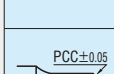
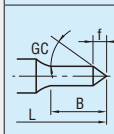
Catalog No.	—	L	—	P	—	W	—	R (Ⓡ only)	—	T
SKEL 16	—	70	—	P12.00	—	W6.00			—	T20.1
A—SKAS 3	—	40	—	P 1.80					—	T13.0

- If no key groove is required, select T=L.

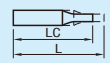
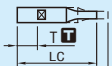
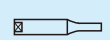
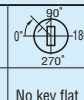
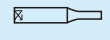
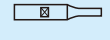
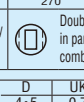
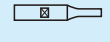
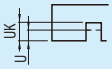
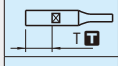
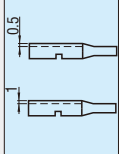
Days to Ship Quotation

Alterations

Catalog No.	—	L(LC・LCT)	—	P(PC)	—	W(WC)	—	R	—	T	—	(BC・KC・PKC, etc.)
SKEL 16	—	LC68	—	P12.00	—	W6.00			—	T20.5	—	PKC

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 0.01 mm increments (If combined with PKC, 0.001mm increments can be selected.) P(PC) / Bmax. 0.500～0.799 / 10 0.800～0.999 / 13 1.000～1.999 / 20 2.000～3.999 / 35 4.000～4.999 / 45 5.000～5.999 / 50 6.000～ / 60	Tip dimension change PC/WC≧ P・Wmin./2 ≧0.80 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax. 0.80～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for the tip D corner.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	—	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) When combined with SC, tip edges are rounded. ⊗ Cannot be used for P<1.0. ⊗ Cannot be combined with LKC・LKZ・LCT・PRC・PCC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change P・W±0.01 ⇨ +0.01 0	

Price **Quotation**

	Alteration	Code	Ⓐ	D R E G	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length−25mm).	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length−30mm).	
			(If combined with LKC・LKZ, 0.01 mm increments can be selected.)		
		LCT	T dimension tolerance and full length change are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: T dimension tolerance change T +0.05 0 ⇨ 0 −0.02 + Full length change + LC: Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0		
Others		KC	—	 Key flat position change 1° increments	Quotation
		NKC	—	No key flat	
		KD	—	 Key groove position change 1° increments	
		WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
		UK	Key groove depth change ⊗ Cannot be used for D3. D / UK 4・5 / 0.7 6 / 1.2 8～16 / 1.7		
		TKC	T dimension tolerance change T +0.05 0 ⇨ 0 −0.02		
		SKC	Single key flat on shank Ⓐ D R E G ・D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ・D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be used for D3. ⊗ Cannot be combined with KC・KD・WKD.		

■Fixing keys for punches with key grooves P.189

PSKB
PSKBH

PSKS
PSKJ

PSK
PSKP
PSKH

PSKW

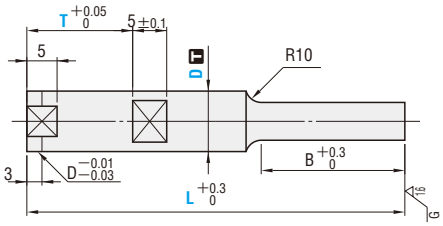
PUNCHES WITH KEY GROOVES
—TiCN COATING—

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length
—TiCN coating— RoHS	D_{m5}	SKH51 61~64HRC Surface 3000HV	H—SHK	A D R E G	S L X
		Powdered high-speed steel 64~67HRC Surface 3000HV	H—PK		
	$D^{+0.005}_{0}$	SKH51 61~64HRC Surface 3000HV	AH—SHK		
		Powdered high-speed steel 64~67HRC Surface 3000HV	AH—PK		

For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.

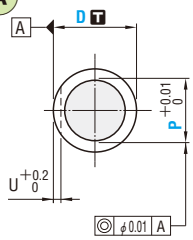
Tip length (B) X>L>S

The tip shape can be selected from Tip shape A~G in the figure below.

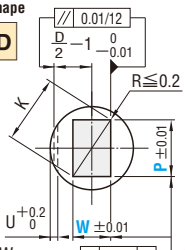


The tip end is ground before the coating is applied.

Tip shape A

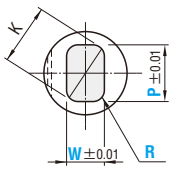


Tip shape D



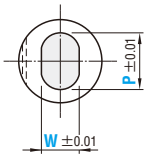
- P≧W
- R=0 can be selected.
- $K=\sqrt{P^2+W^2}$

Tip shape R



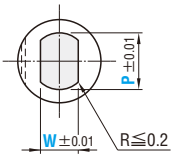
- P≧W
- $0.15 \leqq R < \frac{W}{2}$
- $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E



- P>W

Tip shape G



- P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	Ⓡ R	0.1mm increments T	B	U Key groove depth
(D_{m5}) H—SHK H—PK	A D R E G	S	3	40 50 60 70 80	1.00~ 2.99	—	—	$0.15 \leqq R < \frac{W}{2}$ (Ⓡ only)	T>5.0	8	0.5
			4	40 50 60 70 80	1.00~ 3.99	3.97	1.00				
			5	40 50 60 70 80	2.00~ 4.99	4.97	1.20				
			6	40 50 60 70 80	2.00~ 5.99	5.97	1.50				1.0
			8	(40) 50 60 70 80 90 100	3.00~ 7.99	7.97	2.00			13	1.5
			10	(40) 50 60 70 80 90 100	3.00~ 9.99	9.97	2.50				
			13	(40) 50 60 70 80 90 100	6.00~ 12.99	12.97	3.00				
			16	(40) 50 60 70 80 90 100	10.00~ 15.99	15.97	4.00			19	
($D^{+0.005}_{0}$) AH—SHK AH—PK		L	3	50 60 70 80	1.00~ 2.99	—	—			13	0.5
			4	50 60 70 80	1.00~ 3.99	3.97	2.00				
			5	50 60 70 80	2.00~ 4.99	4.97	2.00				
			6	50 60 70 80	2.00~ 5.99	5.97	2.00				1.0
			8	50 60 70 80 90 100	3.00~ 7.99	7.97	2.50			19	1.5
			10	50 60 70 80 90 100	3.00~ 9.99	9.97	2.50				
			13	50 60 70 80 90 100	6.00~ 12.99	12.97	3.00				
			16	60 70 80 90 100	10.00~ 15.99	15.97	4.00			25	
		X	3	50 60 70 80	1.20~ 2.99	—	—			19	0.5
			4	50 60 70 80	1.20~ 3.99	3.97	2.00				
			5	60 70 80	2.00~ 4.99	4.97	3.50			25	
			6	60 70 80	2.00~ 5.99	5.97	3.50				1.0
			8	60 70 80 90 100	3.00~ 7.99	7.97	5.00			30	1.5
			10	60 70 80 90 100	3.00~ 9.99	9.97	5.00				
			13	60 70 80 90 100	6.00~ 12.99	12.97	5.00				
			16	70 80 90 100	10.00~ 15.99	—	—			40	

- L(40)···B=8 If the full length is (40), the tip length is 8mm in all cases.
- If no key groove is required, select T dimension that is the same as the full length L.

Order

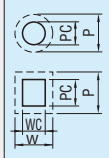
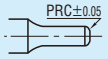
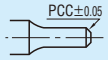
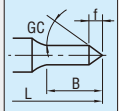
Catalog No.	L	P	W	R (Ⓡ only)	T
H—SHKEL16	70	P12.00	W6.00		T20.1
AH—SHKAS3	40	P1.80			T13.0

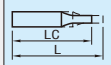
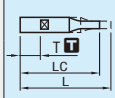
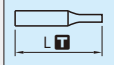
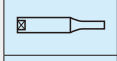
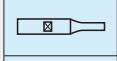
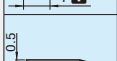
If no key groove is required, select T=L.

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC・LCT)	—	P(PC)	—	W(WC)	—	R	—	T	—	(BC・KC・LKC, etc.)
H—SHKEL 16	—	LC68	—	P12.00	—	W6.00			—	T20.5	—	LKC

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip		PC WC	Tip dimension change PC≧ Pmin./2 ≧1.00 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P(PC) / Bmax. 1.000～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change PC/WC≧ P・Wmin./2 ≧1.00 0.01 mm increments ⊗ Cannot be used for tip X. P(PC)・W(WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC・GC.	—	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°—GC°) If combined with SC, tip edges are rounded. ⊗ Cannot be combined with LKC・LCT・PRC・PCC.	—	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D16.	Tip tolerance change P・W±0.01 ⇨ +0.01 0 ⊗ Cannot be used for D16.	

	Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length		LC	Full length change 25+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length—25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B(BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length—30mm).	
		LCT	T dimension tolerance andfull length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: T dimension tolerance change T +0.05 0 ⇨ 0 —0.02 LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0		
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0		
Others		KC	—	Key flat position change 1° increments	Quotation
		NKC	—	No key flat	
		KD	—	Key groove position change 1° increments	
		WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
		UK	Key groove depth change ⊗ Cannot be used for D3. D / UK 4・5 / 0.7 6 / 1.2 8～16 / 1.7		
		TKC	T dimension tolerance change T +0.05 0 ⇨ 0 —0.02		
		SKC	Single key shaft on flank Ⓐ ・D4～6 P≦D—1.2 W≦D—1.2 (Machining width 0.5) ・D8～ P≦D—2.2 W≦D—2.2 (Machining width 1) ⊗ Cannot be used for D3. ⊗ Cannot be combined with KC・KD・WKD.	DREG	

Price

Quotation

■Fixing keys for punches with key grooves

P.189

PSKB
PSKBH

PSKS
PSKJ

PSK
PSKP
PSKH

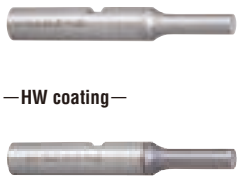
PSKW

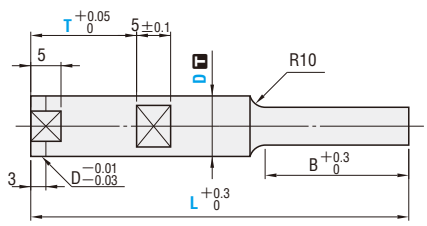
PUNCHES WITH KEY GROOVES

—WPC® TREATMENT·HW COATING—

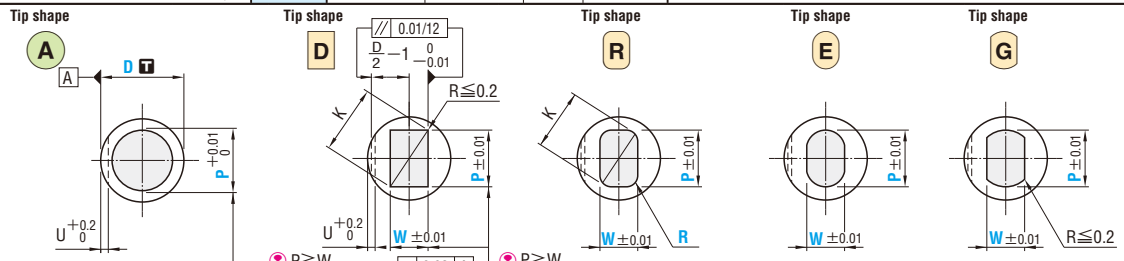
Type	M H	Catalog No. Type: Shank dia. T Dm5	Catalog No. Type: Shank dia. T D +0.005/0	Tip shape	B Tip length
—WPC® treatment— RoHS	Equivalent to SKD11 60~63 HRC Surface 1000~1100HV	W—SK	AW—SK	A D R E G	S
	SKH51 61~64 HRC Surface1000~1100HV	W—SHK	AW—SHK		L
—HW coating—	Powdered high-speed steel 64~67 HRC Surface 1000~1100HV	W—PK	AW—PK		X
	SKH51 61~64 HRC Surface 3000 HV	HW—SHK	AHW—SHK		Tip length (B) X>L>S
For shank diameter tolerance D T, select either m5 or +0.005/0	Powdered high-speed steel 64~67 HRC Surface 3000 HV	HW—PK	AHW—PK		

The tip shape can be selected from Tip shape A ~ G in the figure below.





The tip edges are very slightly rounded.



Tip shape A: P≧W; $K=\sqrt{P^2+W^2}$

Tip shape D: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$

Tip shape E: P>W

Tip shape G: P>W

Type	Tip shape	B Tip length	D	L							0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R (R only) R	0.1 mm increments T	B	U Key groove depth
(Dm5) —WPC® treatment— W—SK W—SHK W—PK —HW coating— HW—SHK HW—PK	A D R E G	S	3	40	50	60	70	80			1.00~ 2.99	—	—	0.15≦R<W/2 (R only)	T>5.0	8	0.5
			4	40	50	60	70	80			1.00~ 3.99	3.97	1.00				
			5	40	50	60	70	80			2.00~ 4.99	4.97	1.20				
			6	40	50	60	70	80			2.00~ 5.99	5.97	1.50				1.0
			8	(40)	50	60	70	80	90	100	3.00~ 7.99	7.97	2.00			13	1.5
			10	(40)	50	60	70	80	90	100	3.00~ 9.99	9.97	2.50				
			13	(40)	50	60	70	80	90	100	6.00~ 12.99	12.97	3.00				
			16	(40)	50	60	70	80	90	100	10.00~ 15.99	15.97	4.00			19	
(D +0.005/0) —WPC® treatment— AW—SK AW—SHK AW—PK —HW coating— AHW—SHK AHW—PK		L	3		50	60	70	80			1.00~ 2.99	—	—			13	0.5
			4		50	60	70	80			1.00~ 3.99	3.97	2.00				
			5		50	60	70	80			2.00~ 4.99	4.97	2.00				
			6		50	60	70	80			2.00~ 5.99	5.97	2.00				1.0
			8		50	60	70	80	90	100	3.00~ 7.99	7.97	2.50			19	1.5
			10		50	60	70	80	90	100	3.00~ 9.99	9.97	2.50				
			13		50	60	70	80	90	100	6.00~ 12.99	12.97	3.00				
			16			60	70	80	90	100	10.00~ 15.99	15.97	4.00			25	
		X	3		50	60	70	80			1.20~ 2.99	—	—			19	0.5
			4		50	60	70	80			1.20~ 3.99	3.97	2.00				
			5			60	70	80			2.00~ 4.99	4.97	3.50			25	
			6			60	70	80			2.00~ 5.99	5.97	3.50				1.0
			8			60	70	80	90	100	3.00~ 7.99	7.97	5.00			30	1.5
			10			60	70	80	90	100	3.00~ 9.99	9.97	5.00				
			13			60	70	80	90	100	6.00~ 12.99	12.97	5.00				
			16				70	80	90	100	10.00~ 15.99	—	—			40	

L(40)···B=8 If the full length is (40), the tip length is 8mm in all cases.

If no key groove is required, select T dimension that is the same as the full length L.

Order

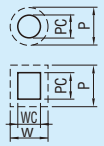
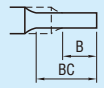
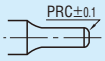
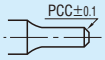
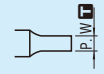
Catalog No.	—	L	—	P	—	W	—	R (R only)	—	T
AW—SKDL 13	—	80	—	P10.50	—	W7.34			—	T20.1

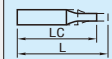
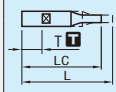
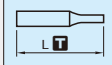
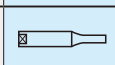
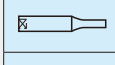
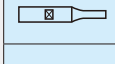
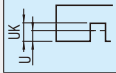
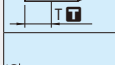
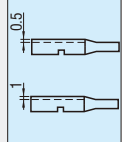
If no key groove is required, select T=L.

Days to Ship Quotation

Alterations

Catalog No.	L (LC・LCT)	P (PC)	W (WC)	R	T	(BC・KC・LKC, etc.)
HW−SHKEL 16	LC68	P12.00	W6.00		T20.5	LKC

Alteration	Code	Ⓐ	DREG	1Code
Alterations to tip				
	PC WC	Tip dimension change $PC \geqq \frac{Pmin.}{2} \geqq 1.00$ 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) P (PC) / Bmax. 1.000～1.999 / 20 2.000～3.999 / 35 4.000～5.999 / 45 6.000～ / 60	Tip dimension change $PC \geqq \frac{P \cdot Wmin.}{2} \geqq 1.00$ 0.01 mm increments ⊗ Cannot be used for tip X. P (PC)・W (WC) / Bmax. 1.00～1.49 / 8 1.50～1.99 / 13 2.00～3.49 / 19 3.50～4.99 / 25 5.00～ / 30	Quotation
	BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 25mm longer than tip length BC.	Tip length change 2≦BC≦Bmax. 0.1 mm increments Full length L must be at least 30mm longer than tip length BC.	
	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	——	
	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	——	
	PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (Pdimension can be selected in 0.001 mm increments.) ⊗ Cannot be used for D16. ⊗ Cannot be used with HW coating.	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	

Alteration	Code	Ⓐ	DREG	1Code
Alterations to full length				
	LC	Full length change 25+B (BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 25mm or less, tip length is adjusted to (Full length −25mm). (If combined with LKC, 0.01 mm increments can be selected.)	Full length change 30+B (BC)≦LC<L 0.1 mm increments If difference between full length and tip length is 30mm or less, tip length is adjusted to (Full length −30mm).	Quotation
	LCT	T dimension tolerance and full length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: T dimension tolerance change $T^{+0.05}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
	LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
Others				
	KC	——	Key flat position change 1° increments	
	NKC	——	No key flat	
	KD	——	Key groove position change 1° increments	
	WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
	UK	Key groove depth change ⊗ Cannot be used for D3. D / UK 4・5 / 0.7 6 / 1.2 8～16 / 1.7		
	TKC	T dimension tolerance change $T^{+0.05}_{0} \Rightarrow {}^{0}_{-0.02}$		
	SKC	Single key flat on shank Ⓐ: $\frac{D}{2}-0.5\ {}^{0}_{-0.01}$ •D4～6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) •D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) DREG: $\frac{D}{2}-1\ {}^{0}_{-0.01}$ ⊗ Cannot be used for D3. ⊗ Cannot be combined with KC・KD・WKD.		

Price Quotation

■Fixing keys for punches with key grooves
P.189

PSKB
PSKBH

PSKS
PSKJ

PSK
PSKP
PSKH

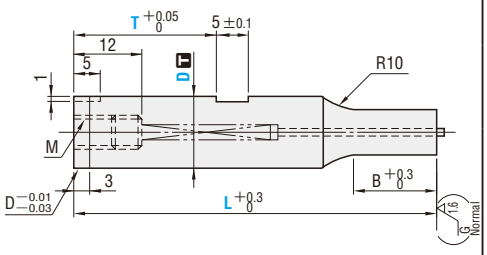
PSKW

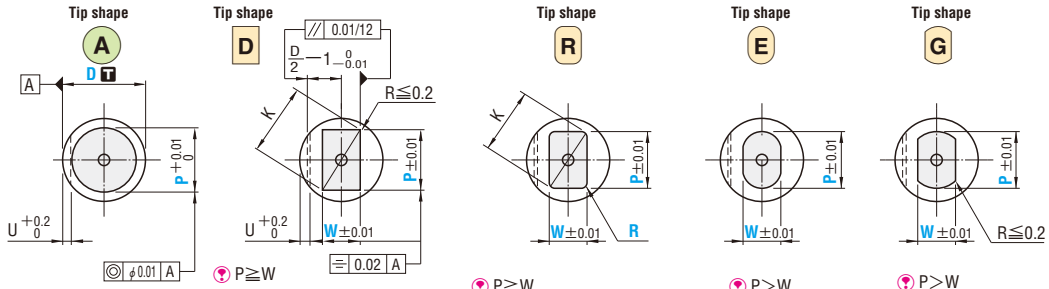
JECTOR PUNCHES WITH KEY GROOVES

—NORMAL・WPC® TREATMENT—

Calculating the projection length of the jector pin (reference value) P.185

- For details of jector holes, refer to Jector Punch Blanks. P.182
- For details of jector pins, refer to Jector Pin Sets. P.185

Type	Shank diameter D T tolerance	M / H	Catalog No. Type	Tip shape	B Tip length	The tip shape can be selected from Tip shape A~G in the figure below.
RoHS —WPC® treatment— For shank diameter tolerance D T, select either m5 or $^{+0.005}_{0}$.	D_{m5}	Equivalent to SKD11 60~63HRC —WPC® treatment— Surface 1000~1100HV	SKJ	A D R E G	S L	
	$D^{+0.005}_{0}$		WPC® treatment W—SKJ			
			A—SKJ			
			WPC® treatment AW—SKJ		Tip length (B) L>S	The tip edge of a WPC® treatment punch is very slightly rounded.



- Tip shape A: P≧W
- Tip shape D: R=0 can be selected. (However WPC® treatment cannot be used.) $K=\sqrt{P^2+W^2}$
- Tip shape R: P≧W; $0.15 \leqq R < \frac{W}{2}$; $K=\sqrt{(P-2R)^2+(W-2R)^2}+2R$
- Tip shape E: P>W
- Tip shape G: P>W

Catalog No. Type	Tip shape	B Tip length	D	L	0.01mm increments Ⓐ min. P max.	D R E G P·Kmax.	D R E G P·Wmin.	R R	0.1mm increments T	B	U Key groove depth	M
(Dm5) SKJ —WPC® treatment— W—SKJ (D+0.005 0) A—SKJ —WPC® treatment— AW—SKJ	A D R E G	S	6	(40) 50 60 70 80	2.00~ 5.99	5.97	2.00	0.15≦R<W/2 (R only)	T>5.0	8	1.0	3
			8	(40) 50 60 70 80 90 100	3.00~ 7.99	7.97	3.00			13	1.5	4
			10	(40) 50 60 70 80 90 100	3.00~ 9.99	9.97	3.00					5
			13	(40) 50 60 70 80 90 100	6.00~ 12.99	12.97	6.00					6
			16	(40) (50) 60 70 80 90 100	10.00~ 15.99	15.97	6.00			19		
		L	6	50 60 70 80	2.00~ 5.99	5.97	2.00			13	1.0	3
			8	50 60 70 80 90 100	3.00~ 7.99	7.97	3.00			19	1.5	4
			10	50 60 70 80 90 100	3.00~ 9.99	9.97	3.00					5
			13	50 60 70 80 90 100	6.00~ 12.99	12.97	6.00					6
			16	60 70 80 90 100	10.00~ 15.99	15.97	6.00			25		

- L(40)···B=6 If full length is (40), tip length is 6mm in all cases.
- L(50)···B=13 If full length is (50), tip length is 13 mm in all cases.
- If no key groove is required, select T dimension that is the same as the full length L.

Order

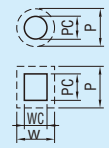
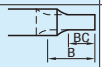
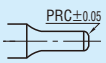
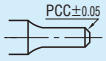
Catalog No.	—	L	—	P	—	W	—	R (R only)	—	T
A—SKJAS 13	—	80	—	P8.24					—	T20.0

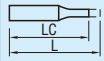
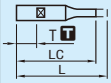
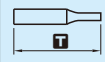
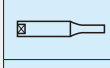
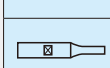
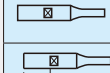
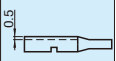
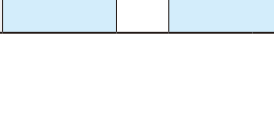
If no key groove is required, select T=L.

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC·LCT)	—	P(PC)	—	W(WC)	—	R	—	T	— (BC·KC·NKC, etc.)
A—SKJAL 13	—	80	—	P8.24					—	T20.0	— LKC

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to tip		PC WC	Tip dimension change PC≧PCmin. 0.01 mm increments (If combined with PKC, 0.001 mm increments can be selected.) D / PCmin. 6 / 1.80 8 / 2.50 10 / 2.80 13 / 5.00 16 / 8.00	Tip dimension change PC·WC≧PC·WCmin. 0.01 mm increments D / PC·WCmin. 6 / 1.80 8 / 2.50 10 / 2.80 13 / 5.00 16 / 5.00	Quotation
		BC	Tip length change (shorter than standard) 2≦BC<B 0.1 mm increments		
		SC	Lapping of tip P dimension tolerance and increment are the same. ⊗ R=0 cannot be selected for tip shape Ⓓ corners. ⊗ Cannot be used with WPC treatment.		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1mm increments PRC≦(P−d₁−0.5)/2 d₁ dimension P.182 ⊗ Cannot be combined with PCC. For WPC treatment, the tolerance is PRC±0.1.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d₁−0.5)/2 d₁ dimension P.182 ⊗ Cannot be combined with PRC. For WPC treatment, the tolerance is PCC±0.1.	—	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	Tip tolerance change $P \cdot W \pm 0.01 \Rightarrow {}^{+0.01}_{0}$	

Alteration		Code	Ⓐ	Ⓓ Ⓡ Ⓔ Ⓖ	1Code
Alterations to full length		LC	Full length change LC<L (reduction in tip length) 0.1 mm increments (If combined with LKC·LKZ, 0.01 mm increments can be selected.) Tip length B is shortened by (L−LC). The projection length of the jector pin is 2 mm.		
		LCT	T dimension tolerance and full length changes are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: T dimension tolerance change $T^{+0.05}_{0} \Rightarrow {}^{0}_{-0.02}$ + Full length change + LC: Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$		
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$		
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$ ⊗ Cannot be used with WPC treatment.		
Others		KC	—	90°, 0°, 180°, 270° Key flat position change 1° increments	Quotation
		NKC	—	No key flat	
		KD	—	90°, 0°, 180°, 270° Key groove position change 1° increments	
		WKD	Addition of double key grooves in parallel	Double key grooves in parallel. Can be combined with KD.	
		TKC	T dimension tolerance change $T^{+0.05}_{0} \Rightarrow {}^{0}_{-0.02}$		
		SKC	Single key flat on shank Ⓐ Ⓓ Ⓡ Ⓔ Ⓖ ·D6 P≦D−1.2 W≦D−1.2 (Machining width 0.5) ·D8～ P≦D−2.2 W≦D−2.2 (Machining width 1) ⊗ Cannot be combined with KC·KD·WKD. ⊗ Cannot be used with WPC treatment.		
		AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.		

Price

Quotation

■Fixing keys for punches with key grooves
P.189

PSKB
PSKBH

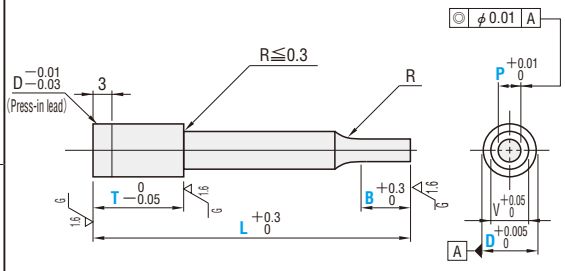
PSKS
PSKJ

PSK
PSKP
PSKH

PSKW

FLANGE STOPPER PUNCHES

—NORMAL・TiCN COATING—

Type	M H	Catalog No.	Shape
RoHS	Powdered high-speed steel 64～67HRC	PHTAL	
	Powdered high-speed steel 64～67HRC Surface hardness 3000HV	TiCN coating H—PHTAL	

The tip end of a TiCN coating punch is ground before the coating is applied.

Catalog No. Type	D	L	0.01mm increments min. P max.	T	1mm increments B	V	R
PHTAL —TiCN coating— H—PHTAL	4	40	0.50(1.00)～2.00	13 16 20	2～ 6	2	2～3
		50		13 16 20 25	2～ 6		
	5	40	1.00～ 3.00	13 16 20	2～ 8	3	10
		50 60		13 16 20 25	2～ 8		
	6	40	1.50～ 4.00	13 16 20	2～10	4	
		50 60 70		13 16 20 25	2～13		
	8	40	2.00～ 6.00	13 16 20	2～10	6	
		50 60 70		13 16 20 25	2～13		
	10	40	3.00～ 8.00	13 16 20	2～10	8	
		50 60 70		13 16 20 25	2～13		
	13	40	3.00～ 10.00	13 16 20	2～10	11	
		50 60 70		13 16 20 25	2～13		
	16	40	6.00～ 13.00	13 16 20	2～10	14	
		50 60 70		13 16 20 25	2～13		
	20	40	10.00～ 16.00	13 16 20	2～10	18	
		50 60 70		13 16 20 25	2～13		
	25	40	13.00～ 23.00	13 16 20	2～10	23	
		50 60 70		13 16 20 25	2～13		

P(1.00)···For TiCN coating, Pmin. is 1.00.

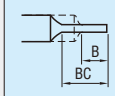
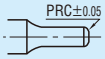
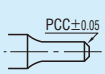
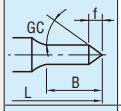
Order

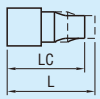
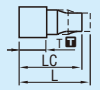
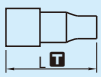
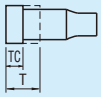
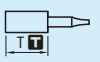
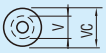
Catalog No.	—	L	—	P	—	T	—	B
PHTAL 5	—	60	—	P3.00	—	T20	—	B5

Days to Ship Quotation

Alterations

Catalog No.	—	L(LC・LCT)	—	P	—	T(TC)	—	B(BC)	—	(PKC・LKC, etc.)
PHTAL 5	—	60	—	P3.00	—	TC15.0	—	B5		

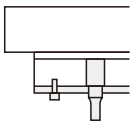
	Alteration	Code	Spec.	1Code
Alterations to tip		BC	Tip length change 2≦BC≦Bmax. 0.1 mm increments L−B−T≧10 P: 0.500～0.999 / 1.000～1.999 / 2.000～2.999 / 3.000～3.999 / 4.000～ Bmax.: 6 / 10 / 20 / 30 / 40	Quotation
		SC	Lapping of tip P dimension tolerance and increment are the same. Cannot be used with TiCN coating.	
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC・GC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC・GC.	
		GC	20°≦GC<90° 1° increments Tip length B≧f+2 f=P/2×tan(90°−GC°) If combined with SC, tip edges are rounded. Cannot be combined with LKC・LKZ・LCT・PRC・PCC. Cannot be used for P<1.0.	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) TiCN coating cannot be used for D>16.	

	Alteration	Code	Spec.	1Code
Alterations to full length		LC	Full length change 40<LC<L 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.) If LC<50, T and TC must be 20 or less. If LC<50 with D6・8, the allowable range of B is 2～10.	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC: Head thickness tolerance change T 0 −0.05 ⇨ 0 −0.02 + LC: Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 Cannot be used with TiCN coating.	
Alterations to head		TC	T dimension change 13<TC<25 0.1 mm increments If L<50, the allowable range is 13<TC<2. The full length L remains the same.	
		TKC	Head thickness tolerance change T 0 −0.05 ⇨ 0 −0.02	
Others		VC	V dimension change D4～6 V−0.5≦VC≦D−1.2 D8～ V−2≦VC≦D−1.2 0.1 mm increments	

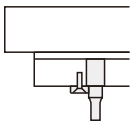
Price Quotation

Example

■Example showing use of slotted plate to prevent loosening of punch



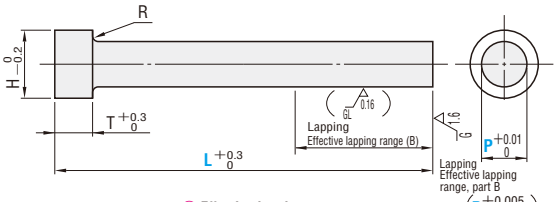
■Example showing use of punch fixing key



STRAIGHT PUNCHES
—NORMAL・LAPPING—

Type	M H	Catalog No.
RoHS —Lapping—	Equivalent to SKD 11 60～63HRC	SPC Lapping L—SPC
	SKH51 61～64HRC	SHC Lapping L—SHC
	Powdered high-speed steel 64～67 HRC	PHC Lapping L—PHC

Shape



No.	R
1.0～2.5	≦0.2
3 ～25	≦0.5

Effective lapping range

P	L	(B)
0.500～0.999	20≦L≦30	8
1.000～2.499	20≦L≦80	13
2.500～2.999	L<23	L—10
	L≧23	13

P	L	(B)
3.000～9.999	L<25	5
	25≦L<40	L—20
	L≧40	19
10.000～	L<25	5
	25≦L<40	L—20
	L≧40	25

Catalog No. Type	No.	L	0.01mm increments (0.001mm increments for lapping) min. P max.	H	T
—Lapping— SHC L—SHC PHC L—PHC	1.0	20 25 30	0.50～ 1.00	2.0	3
	1.6	20 25 30 35 40 50 60	1.00～ 1.60	2.6	
	2.0	20 25 30 35 40 50 60	1.60～ 2.00	3.0	
	2.5	20 25 30 35 40 50 60	2.00～ 2.50	3.5	
—Lapping— SPC L—SPC SHC L—SHC PHC L—PHC	3	40 50 60 70 80	2.00～ 3.00	5	5
	4	40 50 60 70 80	3.00～ 4.00	7	
	5	40 50 60 70 80	4.00～ 5.00	8	
	6	40 50 60 70 80	5.00～ 6.00	9	
	8	40 50 60 70 80 90 100	6.00～ 8.00	11	
	10	40 50 60 70 80 90 100	8.00～ 10.00	13	
	13	40 50 60 70 80 90 100 110 120	10.00～ 13.00	16	
	16	40 50 60 70 80 90 100 110 120	13.00～ 16.00	19	
	20	40 50 60 70 80 90 100 110 120	16.00～ 20.00	23	
	25	40 50 60 70 80 90 100 110 120	20.00～ 25.00	28	

Order

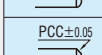
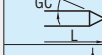
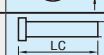
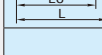
Catalog No.	—	L	—	P
PHC 6	—	40	—	P5.50
L—PHC 6	—	40	—	P5.500

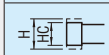
Price Quotation

Days to Ship Quotation

Alterations

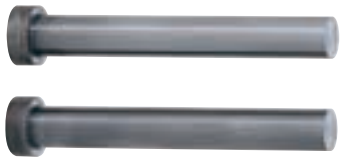
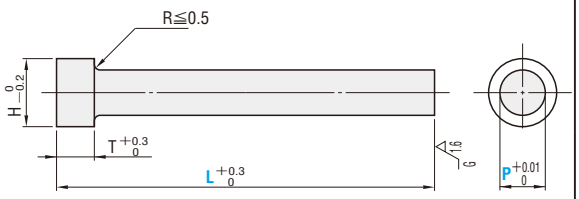
Catalog No.	—	L (LC・LCT・LMT)	—	P	—	(HC・TC・GC, etc.)
SPC 6	—	LC45	—	P5.50	—	PKC—LKC

Alteration		Code	Spec.	1Code
Alterations to tip	 PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC・GC.	Quotation
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC・GC.	
	 GC	GC	20°≦GC<90° 1° increments ⊗ Cannot be combined with LKC・LKZ・LCT・LMT・PRC・PCC. With lapping, the tip edges are rounded.	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.0005}_{0}$ (P dimension can be selected in 0.001 mm increments.) ⊗ Lapping cannot be used.	
Alterations to full length		LC	Full length change 20≦LC<L 0.1 mm increments (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKC: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$	
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (?) are the same as for LC. TKM: Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$ + LC: Full length change + Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.1}_{0}$	

Alteration		Code	Spec.	1Code
Full length		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$	
Alterations to head		KC	Addition of single key flat to head (?) Can be used for No. 3 and above.	
		WKC	Addition of double key flats in parallel (?) Can be used for No. 3 and above.	
		KFC	Double key flats at 0° and a selected angle 1° increments (?) Can be used for No. 3 and above. ⊗ Cannot be combined with KC・WKC.	Quotation
		HC	Head diameter change P≦HC<H 0.1 mm increments	
		TC	Head thickness change 2≦TC<T 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) (?) Full length L is shortened by (T—TC). If combined with LC・LCT・LMT, full length is equal to LC.	
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$	
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$	
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.5≦TCC≦(H—P)/2 0.1 mm increments (?) If H≦5, then TCC is 0.5. ⊗ Cannot be used for H<2.6.	

STRAIGHT PUNCHES
—TiCN COATING—

PRODUCTS DATA P.1091・1094

Type	M H	Catalog No.	Shape
—TiCN coating— RoHS 	SKH51 61～64HRC Surface 3000HV	H—SHC	
	Powdered high-speed steel 64～67HRC Surface 3000HV	H—PHC	

Coating is applied to the tip end and the tip diameter (P).
(Coating is not applied to the head.)
The tip end is ground before the coating is applied.

Catalog No. Type	No.	L									0.01mm increments min. P max.	H	T	Base unit price 1～9 pieces H—SHC	H—PHC
H—SHC H—PHC	4	40	50	60	70	80					3.00～ 4.00	7	5	Quotation	
	5	40	50	60	70	80					4.00～ 5.00	8			
	6	40	50	60	70	80					5.00～ 6.00	9			
	8	40	50	60	70	80	90	100			6.00～ 8.00	11			
	10	40	50	60	70	80	90	100			8.00～ 10.00	13			
	13	40	50	60	70	80	90	100	110	120	10.00～ 13.00	16			
	16	40	50	60	70	80	90	100	110	120	13.00～ 16.00	19			
	20	40	50	60	70	80	90	100	110	120	16.00～ 20.00	23			
	25	40	50	60	70	80	90	100	110	120	20.00～ 25.00	28			

Order

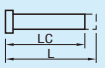
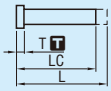
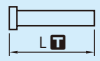
Catalog No.	—	L	—	P
H—SHC 6	—	40	—	P5.50
H—PHC 8	—	70	—	P6.30

Alterations

Catalog No.	—	L(LC・LCT・LMT)	—	P	— (TC・KC, etc.)
H—SHC 6	—	LC45	—	P5.50	— LKC

Days to Ship Quotation

Price Quotation

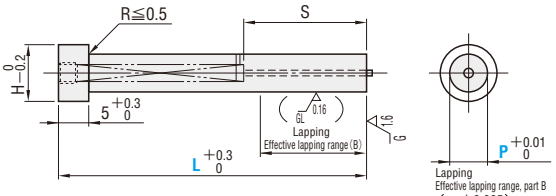
	Alteration	Code	Spec.	1Code
Alterations to tip		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC・GC.	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC・GC.	
		GC	20°≦GC<90° 1° increments ⊗ Cannot be combined with LKC・LCT・LMT・PRC・PCC.	
Alterations to full length		LC	Full length change 20≦LC<L 0.1 mm increments (If combined with LKC, 0.01 mm increments can be selected.)	Quotation
		LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes (💡) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
		LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change,increment, ordering process, and notes (💡) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0 ⊗ Cannot be combined with GC.	

	Alteration	Code	Spec.	1Code
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	Quotation
		TC	Head thickness change 4.0≦TC<T 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (T−TC). If combined with LC・LCT・LMT, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
		TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−P)/2 If H≦5, then TCC is 0.5.	

JECTOR STRAIGHT PUNCHES
—NORMAL・LAPPING—

Calculating the projection length of the jector pin (reference value) P.185

● For details of jector holes, refer to Jector Punch Blanks. P.180 ● For details of jector pins, refer to Jector Pin Sets. P.185

Type	M H	Catalog No.	Shape
RoHS —LAPPING—	(No.5・6) SKH51 61～64HRC (No.8～25) Equivalent to SKD11 60～63HRC	SJC Lapping L—SJC	

Effective lapping range

P	(B)
4.500～9.999	19
10.000～	25

If L＜(B)+20, (B) is adjusted to (L−20).

Catalog No. Type	No.	L	0.01mm increments (0.001mm increments for lapping) min. P max.	H	S	Base unit price 1～9 pieces SJC	L—SJC
SJC —LAPPING— L—SJC	5	(40) 50 60 70 80	4.50～ 5.00	8	20	Quotation	
	6		5.00～ 6.00	9			
	8	(40) 50 60 70 80 90 100	6.00～ 8.00	11	27		
	10		8.00～ 10.00	13	28		
	13		10.00～ 13.00	16			
	16	(40) (50) 60 70 80 90 100	13.00～ 16.00	19	36		
	20		16.00～ 20.00	23			
	25		20.00～ 25.00	28			

When full length L is (40), S dimension for No. 5～No. 13 is 15mm and for No. 16～No. 25 is 17mm.
When full length L is (50), S dimension for No. 16～No. 25 is 24mm.

Order

Catalog No.	—	L	—	P
SJC 6	—	50	—	P5.50
L—SJC 6	—	50	—	P5.500

Days to Ship Quotation

Alterations

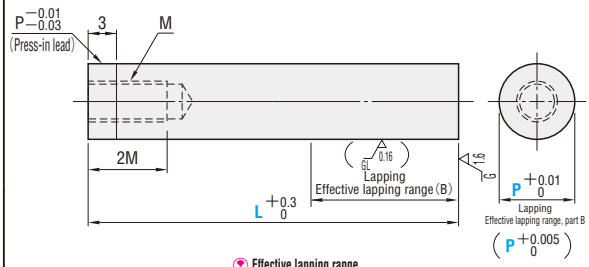
Catalog No.	—	L (LC・LCT・LMT)	—	P	—	(HC・TC, etc.)
SJC 6	—	LC45.5	—	P5.50	—	AC—PKC

Price Quotation

Alteration	Code	Spec.	1Code
Alterations to tip: PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−d_1−0.5)/2 d_1 dimension details P.180 Cannot be combined with PCC.	
PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−d_1−0.5)/2 d_1 dimension details P.180 Cannot be combined with PRC.	
P	PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) Cannot be used with lapping.	
Alterations to full length: LC, L	LC	Tip length change 30≦LC＜L 0.1 mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.) S dimension is shortened accordingly. Projection length of the jector pin is 2 mm.	Quotation
T, LC, L	LCT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKC Head thickness tolerance change T +0.3 0 ⇨ +0.02 0 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
	LMT	Changes to head thickness tolerance and full length are processed using a single code. The allowable range of change, increment, ordering process, and notes ( ) are the same as for LC. TKM Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02 + LC Full length change + Full length tolerance change L +0.3 0 ⇨ +0.1 0	
L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
	LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0	

Alteration	Code	Spec.	1Code
Alterations to head	KC	Addition of single key flat to head	
	WKC	Addition of double key flats in parallel	
	KFC	0°, 90°, 180°, 270° Double key flats at 0° and a selected angle 1° increments Cannot be combined with KC・WKC.	
H, HC	HC	Head diameter change P≦HC＜H 0.1 mm increments	Quotation
T, TC	TC	Head thickness change 3.5≦TC＜5 0.1 mm increments (If combined with TKC・TKM・LCT・LMT, 0.01 mm increments can be selected.) Full length L is shortened by (5−TC). If combined with LC・LCT・LMT, full length is equal to LC.	
T	TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
	TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
TCC	TCC	Chamfering of head This improves the strength of the punch head. P.1097 0.1 mm increments 0.5≦TCC≦(H−P)/2 If H≦5, then TCC is 0.5.	
Shank	AC	AIR The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring.	
	NC	The jector pin is removed. Cannot be combined with AC.	

TAPPED STRAIGHT PUNCHES
—NORMAL・LAPPING—

Type	M H	Catalog No.	Shape
RoHS —LAPPING—	Equivalent to SKD 11 60～63HRC	MSPC Lapping L—MSPC	

Effective lapping range

P	(B)
6.000～9.999	19
10.000～	25

If L＜(B)＋20, (B) is adjusted to (L—20).

Catalog No. Type	No.	L	0.01mm increments (0.001mm increments for lapping) min. P max.	M	Base unit price for 1~9 pieces MSPC	L—MSPC
MSPC —Lapping— L—MSPC	8	40 50 60 70 80 90 100	6.00～ 8.00	3	Quotation	
	10		8.01～10.00	4		
	13		10.01～13.00	6		
	16		13.01～16.00			
	20		16.01～20.00			
	25		20.01～25.00			

Order

Catalog No.	—	L	—	P
MSPC 16	—	70	—	P14.73
L—MSPC 16	—	70	—	P14.730

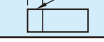
Days to Ship Quotation

Alterations

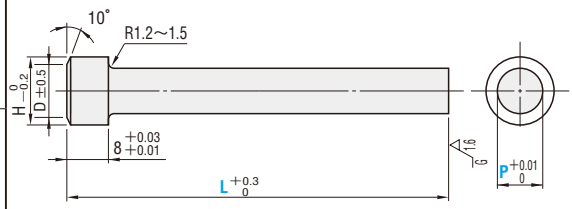
Catalog No.	—	L(LC)	—	P	— (KC, etc.)
MSPC 16	—	LC67.3	—	P14.73	— LKC

Price Quotation

	Alteration	Code	Spec.	1Code
Alterations to tip		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC・GC.	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC・GC.	
		GC	20°≦GC＜90° 1° mm increments ⊗ Cannot be combined with LKC・LKZ・PRC・PCC.	
		PKC	Tip tolerance change P +0.01 0 ⇨ +0.005 0 (P dimension can be selected in 0.001 mm increments.) ⊗ Cannot be used with lapping.	

	Alteration	Code	Spec.	1Code
Alterations to full length		LC	Full length change 30≦LC＜100 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0	
Others		KC	Addition of single key flat	
		WKC	Addition of double Key flats in parallel	
		NDC	No press-in lead ℓ=3 ⇨ ℓ=0	

STRAIGHT PUNCHES FOR HEAVY LOAD

Type	M H	Catalog No.	Shape
RoHS	SKH51 61～64HRC	AHC	
	Powdered high-speed steel 64～67HRC	APHC	

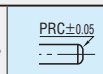
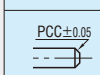
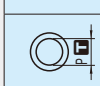
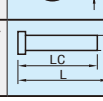
Catalog No. Type	No.	L									0.01mm increments min. P max.	H
AHC APHC	4	40	50	60	70	80					3.00 ～ 4.00	9
	5	40	50	60	70	80					4.00 ～ 5.00	10
	6	40	50	60	70	80					5.00 ～ 6.00	11
	8	40	50	60	70	80	90	100			6.00 ～ 8.00	13
	10	40	50	60	70	80	90	100			8.00 ～ 10.00	15
	13	40	50	60	70	80	90	100	110	120	10.00 ～ 13.00	18
	16	40	50	60	70	80	90	100	110	120	13.00 ～ 16.00	21
	20	40	50	60	70	80	90	100	110	120	16.00 ～ 20.00	25
	25	40	50	60	70	80	90	100	110	120	20.00 ～ 25.00	30

Order Catalog No. — L — P
AHC 6 — 40 — P5.50

Price Quotation

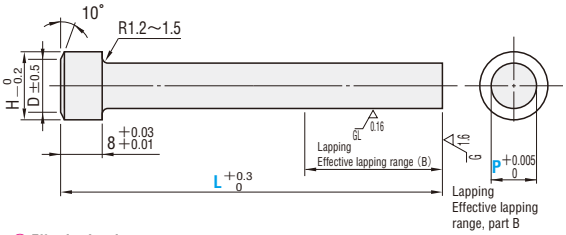
Days to Ship Quotation

Alterations Catalog No. — L(LC) — P — (PKC, etc.)
AHC 6 — LC45 — P5.50 — PKC—LKC

	Alteration	Code	Spec.	1Code
Alterations to tip		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 ⊗ Cannot be combined with PCC.	Quotation
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 ⊗ Cannot be combined with PRC.	
		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	
Alterations to full length		LC	Full length change 20≦LC＜L 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	

	Alteration	Code	Spec.	1Code
Full length		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	Quotation
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$	
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	

STRAIGHT PUNCHES FOR HEAVY LOAD
—LAPPING—

Type	M H	Catalog No.	Shape
RoHS	SKH51 61～64HRC	L—AHC	
	Powdered high-speed steel 64～67HRC	L—APHC	

Effective lapping range

P	L	(B)
3.000～9.999	L＜25	5
	25≦L＜40	L—20
	L≧40	19
10.000～	L＜25	5
	25≦L＜40	L—20
	L≧40	25

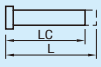
Catalog No. Type	No.	L									0.001mm increments min. P max.	H
L—AHC L—APHC	4	40	50	60	70	80					3.000 ～ 4.000	9
	5	40	50	60	70	80					4.000 ～ 5.000	10
	6	40	50	60	70	80					5.000 ～ 6.000	11
	8	40	50	60	70	80	90	100			6.000 ～ 8.000	13
	10	40	50	60	70	80	90	100			8.000 ～ 10.000	15
	13	40	50	60	70	80	90	100	110	120	10.000 ～ 13.000	18
	16	40	50	60	70	80	90	100	110	120	13.000 ～ 16.000	21
	20	40	50	60	70	80	90	100	110	120	16.000 ～ 20.000	25
	25	40	50	60	70	80	90	100	110	120	20.000 ～ 25.000	30

Order Catalog No. — L — P
L—APHC 6 — 40 — P5.500

Price Quotation

Days to Ship Quotation

Alterations Catalog No. — L(LC) — P — (LKC, etc.)
L—AHC 6 — LC45 — P5.500 — LKC

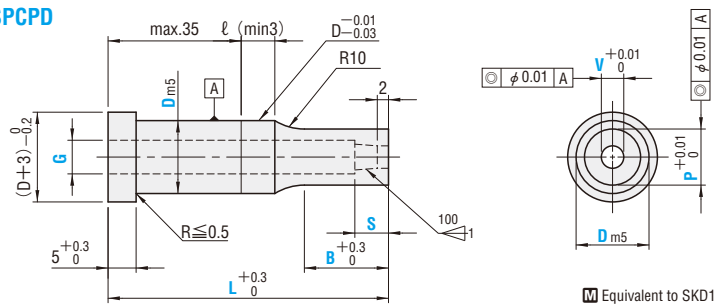
Alteration		Code	Spec.	1Code
Alterations to tip	PRC±0.05	PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P—0.2)/2 ⊗ Cannot be combined with PCC.	Quotation
	PCC±0.05	PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P—0.2)/2 ⊗ Cannot be combined with PRC.	
Alterations to full length	 LC L	LC	Full length change 20≦LC＜L 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.)	

Alteration		Code	Spec.	1Code
Full length	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	Quotation
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0	
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		KFC	90° 0° 180° 270° Double key flats at 0° and a selected angle 1° increments ⊗ Cannot be combined with KC・WKC.	

BLANKING PUNCHES

RoHS

SPCPD



M Equivalent to SKD11
H 60～63HRC

Catalog No. Type	D	0.1mm increments L	0.01mm increments P	V min.	V max.	0.1mm increments B	S min.	S max.	G		Base unit price 1～9 pieces
SPCPD	8	35.0～60.0	4.80 ～ 7.99	1.50	G−0.5	4.0≦B≦19.0 and B≦L−27	3	(10)	G≦P×0.6 and (P−G)/2 ≧1.20	0.2mm increments	Quotation
	10		4.80 ～ 9.99	1.50							
	13		5.80 ～ 12.99	1.50							
	16		9.80 ～ 15.99	2.50		4.0≦B≦25.0 and B≦L−27				0.5mm increments	
	20		12.80 ～ 19.99	3.50				12			
	25	40.0～60.0	17.80 ～ 24.99	5.00		4.0≦B≦25.0 and B≦L−32					
	32		19.80 ～ 31.99	7.50				15			

Smax.(10)•••When V≦1.99, S is 4 mm at maximum.
P>D−0.03•••If P>D−0.03, $D^{-0.01}_{-0.03}$(press-in lead)is not included.

Order

Catalog No.	L	P	V	B	S	G
SPCPD 20	55.0	P14.65	V7.35	B8	S10	G8.5

Example

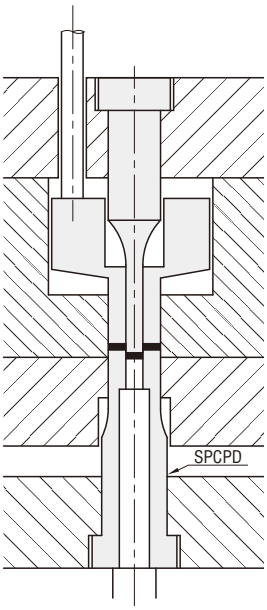
Be aware that when the difference between P dimension and V dimension or G dimension is small (thin walls), the punch may lack sufficient strength depending on the workpiece.

Days to Ship Quotation

Price Quotation

Alterations

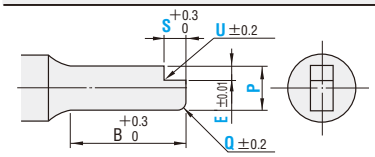
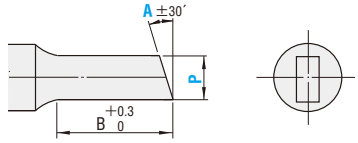
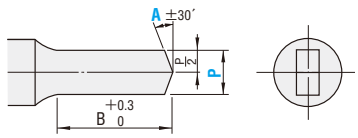
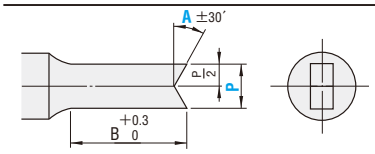
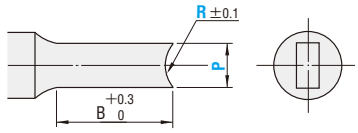
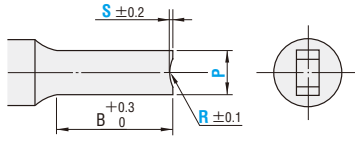
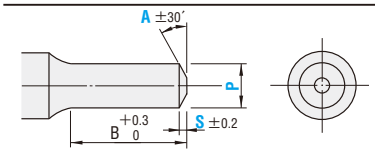
Catalog No.	L	P	V	B	S	G	(TKC・LKC, etc.)
SPCPD 20	55.0	P14.65	V7.35	B8	S10	G8.5	TKC



	Alteration	Code	Spec.	1Code
Alterations to tip		PKC	Tip tolerance change $P^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (P dimension can be selected in 0.001 mm increments.)	
		VKC	Tip tolerance change $V^{+0.01}_{0} \Rightarrow {}^{+0.005}_{0}$ (V dimension can be selected in 0.001 mm increments.)	
Full length		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	
Alterations to head		KC	Addition of single key flat to head	Quotation
		WKC	Addition of double key flats in parallel	
		HC	Head diameter change D≦HC<(D+3) 0.1 mm increments	
		TC	Head thickness change 2≦TC<5 0.1mm increments (If combined with TKC・TKM, 0.01mm increments can be selected.) The full length remains as specified.	
		TKC	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{+0.02}_{0}$	
		TKM	Head thickness tolerance change $T^{+0.3}_{0} \Rightarrow {}^{0}_{-0.02}$	
Shank		NDC	No press-in lead ℓ≧3 ⇨ ℓ=0	

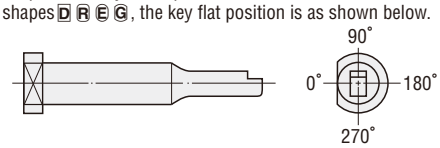
PUNCH TIP SHEAR ANGLE ALTERATIONS

These alterations cannot be used for TiCN·HW coating and WPC® treatment.

Shape	Code	Tip shape Ⓐ	Tip shape D R E G	1Code
	1F	—	●1≦S≦B ●S≦Smax. ●1≦E≦P/2 ●U≦S−1 ●0.2≦U≦E ●Q=0 or 1≦Q≦P/2 ⊗ Cannot be used for LKC·LKZ. ⊗ E G shape Q dimension cannot be selected. S: 0.1mm increments U: 0.1mm increments E: 0.01mm increments Q: 0.01mm increments P−E / Smax.: 1.00~1.99 / 4.0; 2.00~2.49 / 7.0; 2.50~3.99 / 10.0; 4.00~ / 13.0	
	2F	●0° <A≦15° ●P tanA+2<B ⊗ Cannot be used for LKC·LKZ. ⊗ Cannot be combined with PRC·PCC·GC. ⊗ Cannot be combined with KC·WKC·KFC. A: 1° increments	●0° <A≦15° ●P tanA+2<B ⊗ Cannot be used for LKC·LKZ. A: 1° increments	
	3F	●0° <A≦15° ●P/2 tanA+2<B ⊗ Cannot be used for LKC·LKZ. ⊗ Cannot be combined with PRC·PCC·GC. ⊗ Cannot be combined with KC·WKC·KFC. A: 1° increments	●0° <A≦15° ●P/2 tanA+2<B ⊗ Cannot be used for LKC·LKZ. A: 1° increments	
	4F	●0° <A≦15° ●P/2 tanA<B ⊗ Cannot be used for LKC·LKZ. ⊗ Cannot be combined with PRC·PCC·GC. ⊗ Cannot be combined with KC·WKC·KFC. A: 1° increments	●0° <A≦15° ●P/2 tanA<B ⊗ Cannot be used for LKC·LKZ. A: 1° increments	Quotation
	5F	●P+1≦R≦P+5 Full length tolerance L±0.3 Not spherical machining. ⊗ Cannot be used for LKC·LKZ. ⊗ Cannot be combined with PRC·PCC·GC. ⊗ Cannot be combined with KC·WKC·KFC. ⊗ Cannot be combined with PKC. R: 0.1mm increments	●P+1≦R≦P+5 Full length tolerance L±0.3 No spherical surface. ⊗ Cannot be used for LKC·LKZ. ⊗ Cannot be combined with PKC. R: 0.1mm increments	
	6F	●S<R ●S≧0.5 ●2√{R²−(R−S)²}<P ⊗ Cannot be used for LKC·LKZ. ⊗ Cannot be combined with PRC·PCC·GC. ⊗ Cannot be combined with KC·WKC·KFC. R: 0.1mm increments S: 0.1mm increments	●S<R ●S≧0.5 ●2√{R²−(R−S)²}<P ⊗ Cannot be used for LKC·LKZ. R: 0.1mm increments S: 0.1mm increments	
	7F	●0° <A≦45° ●S≧0.5 ●S/tanA<P/2−0.3 ⊗ Cannot be used for LKC·LKZ. ⊗ Cannot be combined with PRC·PCC·GC. ⊗ Cannot be combined with KC·WKC·KFC. A: 1° increments, S: 0.1mm increments	—	

Applicable ranges for the above alterations
Tip shape Ⓐ→P≧2.0mm, B≦10P Tip shape D R E G→W≧2.0mm, B≦10W

For tip shape Ⓐ no key flat is provided.
For tip shapes D R E G, the key flat position is as shown below.



■Effect of the shear angle
The benefits of adding a shear angle to the punch tip include a reduction in punching load, reduced noise, and prevention of scrap lifting.

Order

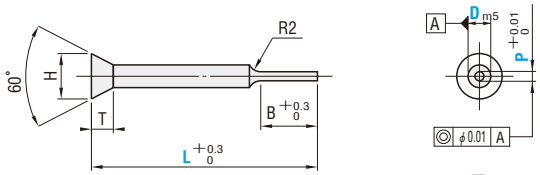
Standard order code						Punch tip shear angle alteration
Catalog No.	L	Tip dimension (P,W,R)	Code	Specified dimension (S·E·U·Q·A)		
SPEL 16	70	P12.00—W6.00	3F	A11		

Days to Ship Quotation

MINI PUNCHES

RoHS

SHCL



M SKH51
H 61～64HRC
(Head: 40～50HRC)

B	T	H	Catalog No. Type	Catalog No. D	L	0.01mm increments min. P max.	Base unit price 1～9 pieces
4	1.1	2.9	SHCL	1.6	(25) 30 35 40 50	0.30～1.59	Quotation
6	1.4	3.6		2.0		0.50～1.99	
8	1.8	4.5		2.5		1.00～2.49	

L(25)···B=4 If full length is(25), tip length is 4mm in all cases.

Order

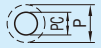
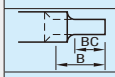
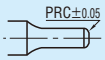
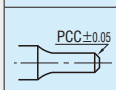
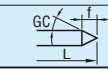
Catalog No.	—	L	—	P
SHCL 2.0	—	30	—	P0.88

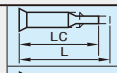
Days to Ship Quotation

Price Quotation

Alterations

Catalog No.	—	L(LC)	—	P(PC)	—	(BC・GC・LKC, etc.)
SHCL 2.0	—	LC28	—	P0.88		

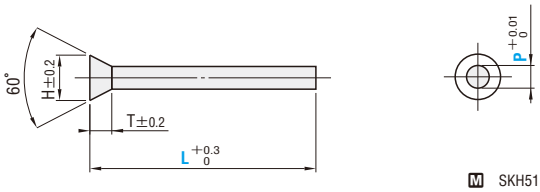
	Alteration	Code	Spec.		1Code
Alterations to tip		PC	Tip diameter change D2.0: PC≧0.30 D2.5: PC≧0.50 0.01mm increments Tip length is 4mm in all cases. Cannot be used for D1.6.		Quotation
		BC	Tip length change 2≦BC<B 0.1 mm increments		
		PRC	Rounding of tip side edge 0.3≦PRC≦1 0.1 mm increments PRC≦(P−0.2)/2 Cannot be combined with PCC・GC.	—	
		PCC	Chamfering to tip side edge 0.3≦PCC≦1 0.1 mm increments PCC≦(P−0.2)/2 Cannot be combined with PRC・GC.	—	
		GC	Conical tip 20°≦GC<90° 1° increments	Cannot be combined with PRC・PCC・LKC. Tip length B≧f+2	

	Alteration	Code	Spec.	1Code
Alterations to full length		LC	Full length change 25<LC<50 0.1mm increments(If combined with LKC, 0.01 mm increments can be selected.) If LC<30, tip length B is 4mm in all cases.	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0 Cannot be combined with GC.	

MINI STRAIGHT PUNCHES

RoHS

SH



M SKH51
H 61～64HRC
(Head: 40～50HRC)

T	H	Catalog No. Type	Catalog No. P	L	Base unit price 1～9 pieces
0.7	1.8	SH	1.0		Quotation
0.8	2.0		1.1		
0.8	2.1		1.2		
0.9	2.3		1.3		
1.0	2.6		1.4		
1.1	2.8		1.5		
1.1	2.9		1.6	25	
1.2	3.1		1.7		
1.3	3.3		1.8	30	
1.3	3.4		1.9		
1.4	3.6		2.0	35	
1.5	3.8		2.1		
1.5	3.9		2.2	40	
1.6	4.1		2.3		
1.7	4.4		2.4	50	
1.8	4.5		2.5		
1.8	4.7		2.6		
1.9	4.9		2.7		
2.0	5.1		2.8		
2.0	5.2		2.9		
2.1	5.4		3.0		

Order Catalog No. — L
SH 1.5 — 40

Days to Ship Quotation

Price Quotation

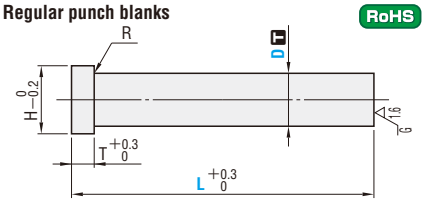
Alterations Catalog No. — L(LC) — (LKC)
SH 1.5 — LC38 — LKC

Alteration		Code	Spec.	1Code
Alterations to full length	LC L	LC	Full length change 25<LC<50 0.1mm increments (If combined with LKC, 0.01mm increments can be selected.)	Quotation
	L T	LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	

PUNCH BLANKS

Regular punch blanks

RoHS



D	R
1.0 ~ 2.5	R≦0.2
3 ~ 25	R≦0.5

Catalog No.	Shank diameter tolerance	M	H	Applicable dim. D
SPB	Dm5	Equivalent to SKD11	60~63HRC	D3 ~25
SHB		SKH51	61~64HRC	D1.0~25
PHB		Powdered high-speed steel	64~67HRC	D1.6~25
A—SPB	D +0.005 0	Equivalent to SKD11	60~63HRC	D3 ~25
A—SHB		SKH51	61~64HRC	D1.0~25
A—PHB		Powdered high-speed steel	64~67HRC	D1.6~25

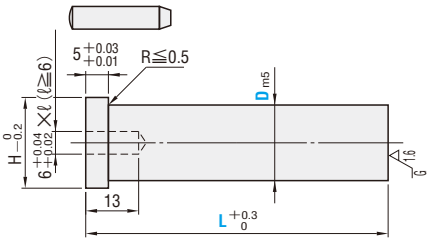
H	T	Catalog No. Type	D	10mm increments L	Base unit price 1 ~ 9 pieces SPB	SHB	PHB	A—SPB	A—SHB	A—PHB
2.0	3	(Dm5) SPB SHB PHB (D +0.005 0) A—SPB A—SHB A—PHB	1.0	30~50						
2.6			1.6							
3.0			2.0							
3.5			2.5							
5	5		3	40~100						
7			4							
8			5							
9			6							
11			8	40~100						
13			10							
16			13							
19			16							
23			20							
28			25							

Quotation

Punch blanks with locating dowel holes

SPB—C

RoHS



M Material equivalent to SKD11
H Hardness 60 ~ 63HRC
A Accessory MS6—25

H	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces
13	SPB—C	10	40~150	
16		13		
19		16		
23		20		
28		25		
35		32		
41		38		
48		45		

Quotation

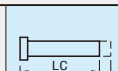
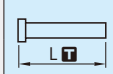
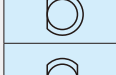
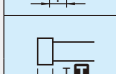
P Price **Quotation**

Alterations

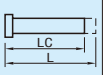
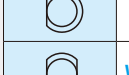
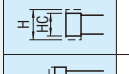
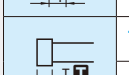
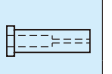
Catalog No. — L(LC) — (HC·TC, etc.)

SHB 3 — LC65

■Punch blanks other than jector

Alteration		Code	Spec.	1Code
Alterations to full length		LC	·SPB ·SHB A—SPB ·A—SHB ···15≦LC<L ·SPB—C ···20≦LC<L ·PHB·A—PHB ···30≦LC<L 0.1mm increments (If combined with LKC·LKZ, 0.01mm increments can be selected.)	Quotation
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used for D>25, or .L(LC)<16.	
Alterations to head		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		HC	Head diameter change D≦HC<H 0.1 mm increments	
		TC	2≦TC<T 0.1mm increments (If combined with TKC·TKM, 0.01mm increments can be selected.) Full length L is shortened by (T—TC). If combined with LC, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	

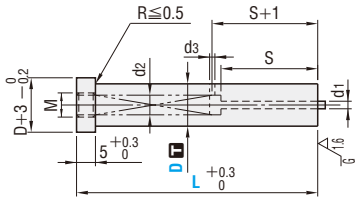
■Jector punch blanks

Alteration		Code	Spec.	1Code
Alterations to full length		LC	·SJB·SJVB·PJB·PJVB·SJFB A—SJB·A—SJVB·A—PJB·A—PJVB···30≦LC<L ·SJXB·SJB—C·SJVB—C·SJBL A—SJXB·A—SJXVB·A—PJBL·A—SJBL LFSJB·LFSJVB·A—LFSJB·A—LFSJVB···40≦LC<L ·SJXB—C·SJXVB—C···90≦LC<L 0.1mm increments (If combined with LKC·LKZ, 0.01 mm increments can be selected.)	
		LKC	Full length tolerance change L +0.3 0 ⇨ +0.05 0	
		LKZ	Full length tolerance change L +0.3 0 ⇨ +0.01 0 ⊗ Cannot be used for D>25.	
Alterations to head		KC	Addition of single key flat to head	Quotation
		WKC	Addition of double key flats in parallel	
		HC	Head diameter change D≦HC<H 0.1 mm increments	
		TC	3.5≦TC<5 0.1mm increments (If combined with TKC·TKM, 0.01mm increments can be selected.) Full length L is shortened by (5—TC). If combined with LC, full length is equal to LC.	
		TKC	Head thickness tolerance change T +0.3 0 ⇨ +0.02 0	
		TKM	Head thickness tolerance change T +0.3 0 ⇨ 0 −0.02	
Alterations to shank		AC	The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring. ⊗ Cannot be used for LFSJB·A—LFSJB.	
		NC	The jector pin is removed. ⊗ Cannot be combined with AC.	

Calculating the projection length of the jector pin (reference value) P.185 SJB—CMS will be eliminated beginning from the next edition of the catalog.

Jector punch blanks

RoHS



Catalog No.	Shank diameter tolerance	M	H
SJB Spring reinforced type SJVB	Dm5	D4 ~ 6 SKH51 D8 ~ 25 Equivalent to SKD11	61~64HRC 60~63HRC
SJBL			
SJXB Spring reinforced type SJXVB			
SJFB			
LFSJB Spring reinforced type LFSJVB			
PJB Spring reinforced type PJVB		Powdered high-speed steel	64~67HRC
PJBL			
A—SJB Spring reinforced type A—SJVB	D +0.005 0	D4 ~ 6 SKH51 D8 ~ 25 Equivalent to SKD11	61~64HRC 60~63HRC
A—SJBL			
A—SJXB Spring reinforced type A—SJXVB			
A—LFSJB Spring reinforced type A—LFSJVB			
A—PJB Spring reinforced type A—PJVB		Powdered high-speed steel	64~67HRC
A—PJBL			

Details of jector pins P.183

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces SJB	PJB	A—SJB	A—PJB	SJVB	PJVB	A—SJVB	A—PJVB
0.35	0.4	2.1	1.0	13	2.5	(Dm5) SJB PJB Spring reinforced type SJVB PJVB (D +0.005 0) A—SJB A—PJB Spring reinforced type A—SJVB A—PJVB	(4)	40~ 80								
0.65	0.7			20			(5)	(40) ~ 80								
0.65	0.7	2.6		20	3		(6)									
1.0	1.1	3.4	1.5	27	4		8	(40) ~ 100								
1.4	1.5	4.4		28	5		10									
1.7	1.8						13									
2.7	2.8			36			16	(40) (50) ~ 100								
							20									
							25									

Quotation

L (40) ··· φD 5 ~ 13=S15 φD16 ~ 25=S17
L (50) ··· φD16 ~ 25=S24
D (4), (5) and (6) are specifications available for SJB·PJB·A—SJB·A—PJB only.

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces SJBL	PJBL	A—SJBL	A—PJBL
0.35	0.4	2.1	1.0	20	2.5	(Dm5) SJBL PJBL (D +0.005 0) A—SJBL A—PJBL	4	50~80				

Quotation

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces SJXB	A—SJXB	SJXVB	A—SJXVB
0.65	0.7	2.1	1.0	32	2.5	(Dm5) SJXB Spring reinforced type SJXVB (D +0.005 0) A—SJXB Spring reinforced type A—SJXVB	(5)	60~80				
0.65	0.7	2.6			3		(6)					
1.0	1.1	3.4	1.5	40	4		8	70~100				
1.4	1.5	4.4			5		10					
1.7	1.8						13					
2.7	2.8			50			16	80~100				
							20					
							25					

Quotation

D (5) and (6) are specifications available for SJXB·A—SJXB only.

Jector pin diameter	d_1 (hole dia.)	d_2	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces LFSJB	LFSJVB	A—LFSJB	A—LFSJVB
0.65	0.7	2.1	32	2.5	(Dm5) LFSJB Spring reinforced type LFSJVB (D +0.005 0) A—LFSJB Spring reinforced type A—LFSJVB	(5)	(50) ~80				
0.65	0.7	2.6		3		(6)					
1.0	1.1	3.4	40	4		8	60~100				
1.4	1.5	4.4		5		10					
1.7	1.8					13					
2.7	2.8		50			16	70~100				
						20					
						25					

Quotation

L (50) ···S=30 D (5) and (6) are specifications available for LFSJB·A—LFSJB only.

Jector pin diameter	d_1 (hole dia.)	d_2	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces
2.7	2.8	4.4	27	5	(Dm5) SJFB	8	(50) ~100	
			28			10		
4.0	4.2	6.9		8		13		
			36			16		
6.0	6.2	8.7		10		20		
						25		

Quotation

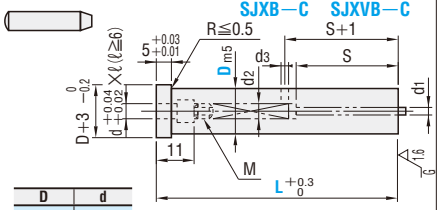
L (50) ··· φD16~25=S24

Jector punch blanks with locating dowel holes

RoHS

Jector punch blanks

SJB—C SJVB—C
SJXB—C SJXVB—C



D	d
10~32	6
38・45	10

Details of jector pins P.183

M Material Equivalent to SKD11 A Accessory D10~32···MS6—25
H Hardness 60~63HRC D38・45···SJB—CMS

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces SJB—C	SJVB—C
1.4	1.5	4.4	1.5	28	5	SJB—C Spring reinforced type SJVB—C	10	60~120		
1.7	1.8						13			
2.7	2.8			36			16	(60) ~120		
							20			
							25			
							32			
4.0	4.2	6.9		37	8		(38)			
							(45)			

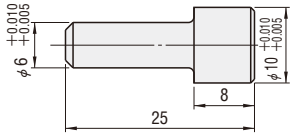
Quotation

L (60) ··· φD16~45=S24 D (38) and (45) are specifications available for SJVB—C only.

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	Catalog No. Type	D	10mm increments L	Base unit price 1 ~ 9 pieces
1.4	1.5	4.4	1.5	40	5	SJXB—C Spring reinforced type SJXVB—C	10	100 ~ 120	
1.7	1.8						13		
2.7	2.8			50			16	100 ~ 120	
							20		
							25		
							32		

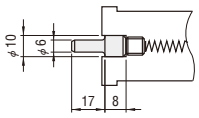
Quotation

Dowel pin for D38・45 SJB—CMS



M Material SUJ2
H Hardness 58HRC~

Catalog No.	Base unit price 1~9 pieces
SJB—CMS	Quotation



Order

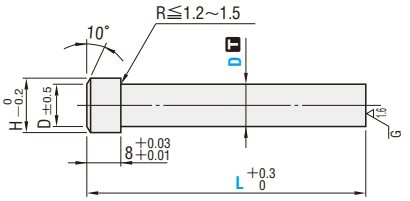
Catalog No.	—	L
SHB 3	—	50

Days to Ship Quotation

PUNCH BLANKS

Heavy load punch blanks

RoHS



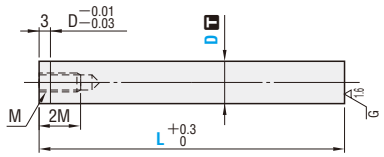
Catalog No.	Shank diameter tolerance	M	H
APB	D_{m5}	SKH51	61~64HRC
AHB		Powdered high-speed steel	64~67HRC
A—APB	$D^{+0.005}_{0}$	SKH51	61~64HRC
A—AHB		Powdered high-speed steel	64~67HRC

H	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces APB	AHB	A—APB	A—AHB
10	(D_{m5}) APB AHB ($D^{+0.005}_{0}$) A—APB A—AHB	5	50~ 80				
11		6					
13		8	50~100				
15		10					
18		13					
21		16					
25		20					
30		25					

Quotation

Tapped punch blanks

RoHS



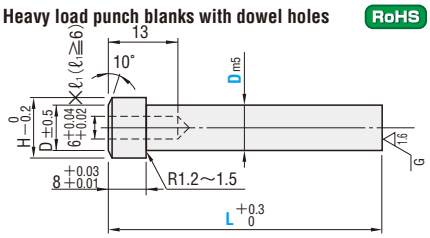
Catalog No.	Shank diameter tolerance	M	H
MPB	D_{m5}	Equivalent to SKD11	60~63HRC
MPHB		Powdered high-speed steel	64~67HRC
A—MPB	$D^{+0.005}_{0}$	Equivalent to SKD11	60~63HRC
A—MPHB		Powdered high-speed steel	64~67HRC

M	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces MPB	A—MPB	MPHB	A—MPHB
3	(D_{m5}) MPB MPHB ($D^{+0.005}_{0}$) A—MPB A—MPHB	5	40~ 80				
		6					
4		8	40~100				
5		10					
6		13					
		16					
		20					
		25					

Quotation

Heavy load punch blanks with dowel holes

RoHS



Catalog No.	Shank diameter tolerance	M	H
APB—C	D_{m5}	SKH51	61~64HRC
AHB—C		Powdered high-speed steel	64~67HRC

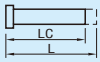
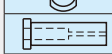
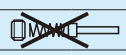
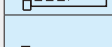
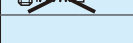
H	Catalog No. Type	D	10mm increments L	Base unit price 1~9 pieces APB—C	AHB—C
15	(D_{m5}) APB—C AHB—C	10	50~100		
18		13			
21		16			
25		20			
30		25			

Quotation

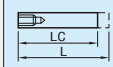
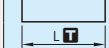
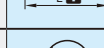
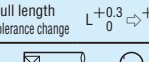
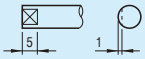
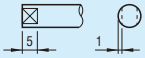
Alterations Catalog No. — L(LC) — (KC・WKC, etc.)

MPB 10 — LC85

■ ・APB ・A—APB ・AHB ・A—AHB ・APB—C ・AJB ・A—AJB ・LFAJB ・A—LFAJB ・AHJB—C ・AHB—C

	Alteration	Code	Spec.	1Code
Alterations to full length		LC	Full length change APB・AHB・A—APB・A—AHB・APB—C・AHB—C 20≦L<LC 0.1mm increments AJB・AJVB・A—AJB・A—AJVB・LFAJB・A—LFAJB 40≦L<LC 0.1mm increments AHJB—C・LFAJB・LFAJVB・A—LFAJB・A—LFAJVB 50≦L<LC 0.1mm increments S dimension is shortened accordingly. (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	Quotation
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$	
Others		KC	Addition of single key flat to head	
		WKC	Addition of double key flats in parallel	
		NC	 The jector pin is removed. ⊗ Cannot be combined with AC.	
		AC	 The jector pin is removed to create an air path and the side vent hole is plugged from the inside by inserting a resin (ABS) ring. ⊗ Cannot be used for LFAJB・A—LFAJB.	

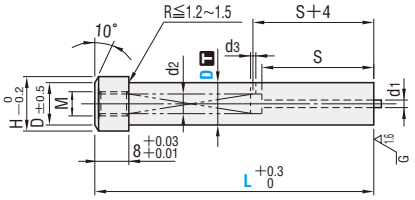
■ ・MPB ・A—MPB ・MJB ・MPHB ・A—MPHB ・A—MJB

	Alteration	Code	Spec.	1Code
Alterations to full length		LC	Full length change MPB・A—MPB・MPHB・A—MPHB 20≦LC<L 0.1mm increments MJB・A—MJB 30≦LC<L 0.1mm increments S dimension is shortened accordingly. (If combined with LKC・LKZ, 0.01 mm increments can be selected.)	
		LKC	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.05}_{0}$	Quotation
		LKZ	Full length tolerance change $L^{+0.3}_{0} \Rightarrow {}^{+0.01}_{0}$	
Others		KC	 Addition of single key flat ⊗ Cannot be used for D5.	
		WKC	 Addition of double key flats in parallel ⊗ Cannot be used for D5.	
		NC	 The jector pin is removed.	

Calculating the projection length of the jector pin (reference value) P.185

Jector punch blanks for heavy load

RoHS



For LFAJB・LFAJVB・A—LFAJB・A—LFAJVB, d_3 (side hole) is not provided.

Catalog No.	Shank diameter tolerance	M	H
AJB Spring and pin reinforced type AJVB LFAJB Spring and pin reinforced type LFAJVB	D_{m5}	Powdered high-speed steel	64 ~ 67HRC
A—AJB Spring and pin reinforced type A—AJVB A—LFAJB Spring and pin reinforced type A—LFAJVB	$D^{+0.005}_{0}$		

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	H	Catalog No. Type	D	L (10mm increments)	Base unit price 1 ~ 9 pieces AJB L≦100	AJB 100<L≦130	A—AJB L≦100	A—AJB 100<L≦130	AJVB L≦100	A—AJVB L≦100
1.4	1.5	3.4	1.5	28	4	13	(D_{m5}) AJB	8	(50) ~ 130	Quotation					
1.7	1.8	4.4			5	15	Spring and pin reinforced type AJVB	10							
2.7	2.8			36		18	($D^{+0.005}_{0}$) A—AJB	13							
						21		16							
						25	Spring and pin reinforced type A—AJVB	20							
3.0	3.1					30		25							

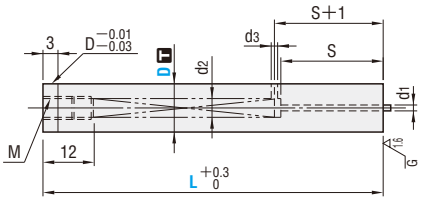
L (50) ···S=24 For AJVB・A—AJVB, max. L is 100. Details of jector pins P.183

Jector pin diameter	d_1 (hole dia.)	d_2	S	M	H	Catalog No. Type	D	L (10mm increments)	Base unit price 1 ~ 9 pieces LFAJB・LFAJVB L≦100	LFAJB・LFAJVB 100<L≦130	A—LFAJB・A—LFAJVB L≦100	A—LFAJB・A—LFAJVB 100<L≦130
1.4	1.5	3.4	40	4	13	(D_{m5}) LFAJB	8	70 ~ (130)	Quotation			
1.7	1.8	4.4		5	15	Spring and pin reinforced type LFAJVB	10					
2.7	2.8		50		18	($D^{+0.005}_{0}$) A—LFAJB	13					
					21		16	80 ~ (130)				
					25	Spring and pin reinforced type A—LFAJVB	20					
3.0	3.1				30		25					

For LFAJVB・A—LFAJVB, max. L is 100. Details of jector pins P.183

Tapped jector punch blanks (Jector punch blanks with key grooves)

RoHS



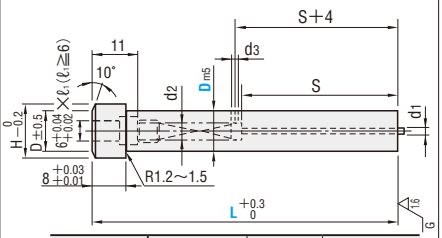
Catalog No.	Shank diameter tolerance	M	H
MJB	D_{m5}	Equivalent to SKD11	60~63HRC
A—MJB	$D^{+0.005}_{0}$		

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	Catalog No. Type	D	L (10mm increments)	Base unit price 1~9 pieces MJB	A—MJB
0.65	0.7	2.6	1.0	20	3	(D_{m5}) MJB	6	(40) ~80	Quotation	
1.0	1.1	3.4	1.5	27	4		8	(40) ~100		
1.4	1.5	4.4		28	5		10			
1.7	1.8				6		13			
2.7	2.8			36		($D^{+0.005}_{0}$) A—MJB	16	(40) (50) ~100		
							20			
							25			

L (40) ···φD 6~13=S15 φD16~25=S17 L (50) ···φD16~25=S24 Details of jector pins P.183

Heavy-load jector punch blanks with dowel holes

RoHS



Catalog No.	Shank diameter tolerance	M	H
AHJB—C AHJVB—C	D_{m5}	SKH51	61~64HRC

Jector pin diameter	d_1 (hole dia.)	d_2	d_3	S	M	H	Catalog No. Type	D	L (10mm increments)	Base unit price 1~9 pieces AHJB—C	AHJVB—C
1.7	1.8	4.4	1.5	28	5	15	(D_{m5}) AHJB—C	10	(60) ~100	Quotation	
2.7	2.8			36		18		13			
						21		16			
						25	Spring and pin reinforced type AHJVB—C	20			
3.0	3.1					30		25			

L (60) ···S=24 Details of jector pins P.183

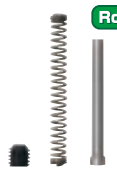
Order

Catalog No.	—	L
MPB 10	—	90

Price Quotation

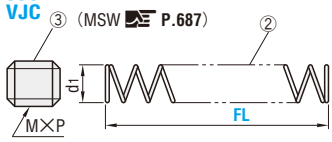
Days to Ship Quotation

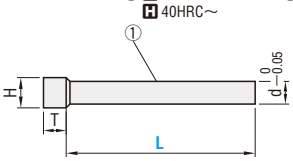
JECTOR PIN SETS



RoHS

SJ1～7 SJC
SJX VJC
AJ
AJX
AVJ
VJ
VJX
VAJ
FJ4・5





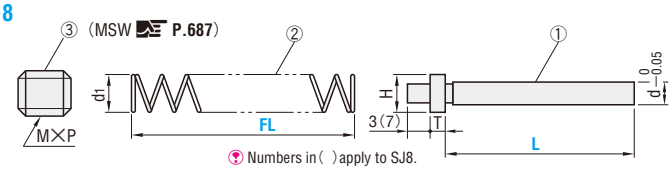
① M SKD61
H 40HRC～

② Spring constant
SJ・SJX・FJ: 0.49N/mm {0.05kgf/mm}
VJ・VJX: 0.98N/mm {0.1kgf/mm}
AJ・AJX: 0.78～0.98N/mm {0.08～0.1kgf/mm}
AVJ: 1.96～2.16N/mm {0.20～0.22kgf/mm}

Punch blank Type	Punch diameter φD	Catalog No.	Pin length ①L	②FL (Spring length) Punch length 40L	50L	60L	70L	80L	90L	100L	110L	120L	130L	d	H	T	d_1	③ MSW (M×P)
SJB A—SJB PJB A—PJB SJBL A—SJBL PJBL A—PJBL	4	(Set) SJ1 (① only) SJ1P (② only) SJ1F	14	30	40	50	60	70						0.35	1.6	1.5	2.0	MSW2.5 (2.5×0.45)
	4	(Set) SJL1 (① only) SJL1P (② only) SJL1F	21		33	43	53	63										
	5	(Set) SJ2 (① only) SJ2P (② only) SJ2F	16	28										0.65				
			21		33	43	53	63										
	6	(Set) SJ3 (① only) SJ3P (② only) SJ3F	16	28											2.0		2.2	MSW3 (3×0.5)
			21		33	43	53	63										
	8	(Set) SJ4 (① only) SJ4P (② only) SJ4F	16.5	29										1.0	2.8	2.0	3.0	MSW4 (4×0.7)
			28.5		27	37	47	57	67	77								
	10	(Set) SJ5 (① only) SJ5P (② only) SJ5F	16.5	27										1.4	3.6		3.8	MSW5 (5×0.8)
			29.5		27	37	47	57	67	77								
	13	(Set) SJ6 (① only) SJ6P (② only) SJ6F	16.5	27										1.7				
			29.5		27	37	47	57	67	77								
	16・20 25	(Set) SJ7 (① only) SJ7P (② only) SJ7F	18.5	27										2.7				
			25.5		27													
			37.5			27	37	47	57	67								
SJB—C	10	(Set) SJ5 (① only) SJ5P (② only) SJ5F	29.5			20	27	37	47	57	67	77		1.4	3.6	2.0	3.8	MSW5 (5×0.8)
	13	(Set) SJ6 (① only) SJ6P (② only) SJ6F	29.5			20	27	37	47	57	67	77		1.7				
	16・20 25・32	(Set) SJ7 (① only) SJ7P (② only) SJ7F	25.5			27								2.7				
			37.5				27	37	47	57	67	77						
	38・45	(Set) SJ8 (① only) SJ8P (② only) SJ8F	28			15								4.0	6.0	3.0	6.0	MSW8 (8×1.25)
			40				15	25	35	50	60	70						
SJXB A—SJXB LFSJB A—LFSJB	5	(Set) SJX2 (① only) SJX2P (② only) SJX2F	33		21	31	41	51						0.65	1.6	1.5	2.0	MSW2.5 (2.5×0.45)
	6	(Set) SJX3 (① only) SJX3P (② only) SJX3F	33		21	31	41	51							2.0		2.2	MSW3 (3×0.5)
	8	(Set) SJX4 (① only) SJX4P (② only) SJX4F	41.5			23	33	43	53	63				1.0	2.8	2.0	3.0	MSW4 (4×0.7)
	10	(Set) SJX5 (① only) SJX5P (② only) SJX5F	41.5			23	33	43	53	63				1.4	3.6		3.8	MSW5 (5×0.8)
	13	(Set) SJX6 (① only) SJX6P (② only) SJX6F	41.5			23	33	43	53	63				1.7				
	16・20 25	(Set) SJX7 (① only) SJX7P (② only) SJX7F	51.5				23	33	43	53				2.7				
SJXB—C	10	(Set) SJC5 (① only) SJX5P (② only) SJ5F	41.5					37	47	57	67	77		1.4	3.6	2.0	3.8	MSW5 (5×0.8)
	13	(Set) SJC6 (① only) SJX6P (② only) SJ6F	41.5					37	47	57	67	77		1.7				
	16・20 25・32	(Set) SJC7 (① only) SJX7P (② only) SJ7F	51.5					37	47	57	67	77		2.7				
MJB A—MJB	6	(Set) SJ3 (① only) SJ3P (② only) SJ3F	16	24										0.65	2.0	1.5	2.2	MSW3 (3×0.5)
			21		28	33	43	53										
	8	(Set) SJ4 (① only) SJ4P (② only) SJ4F	16.5	20										1.0	2.8	2.0	3.0	MSW4 (4×0.7)
			28.5		17	27	37	47	57	67								
	10	(Set) SJ5 (① only) SJ5P (② only) SJ5F	16.5	20										1.4	3.6		3.8	MSW5 (5×0.8)
			29.5		17	27	37	47	57	67								
	13	(Set) SJT6 (① only) SJ6P (② only) SJ6F	16.5	20										1.7				MSW6 (6×1.0)
			29.5		17	27	37	47	57	67								
	16・20 25	(Set) SJT7 (① only) SJ7P (② only) SJ7F	18.5	17										2.7				
			25.5		17													
			37.5			17	27	37	47	57								
AJB A—AJB	8	(Set) AJ4 (① only) AJ4P (② only) AJ4F	28		28									1.4	2.8	2.0	3.2	MSW4 (4×0.7)
			32			34	44	54	64	74	84	94	104					
	10	(Set) AJ5 (① only) AJ5P (② only) AJ5F	28		26									1.7	3.6		4.3	MSW5 (5×0.8)
			32			32	42	52	62	72	82	92	102					
	13・16 20	(Set) AJ6 (① only) AJ6P (② only) AJ6F	28		26									2.7				
			40			24	34	44	54	64	74	84	94					
	25	(Set) AJ7 (① only) AJ7P (② only) AJ7F	28		26									3.0		3.0		
			40			24	34	44	54	64	74	84	94					
AHJB—C	10	(Set) AJ5 (① only) AJ5P (② only) AJ5F	28			26								1.7	3.6	2.0	4.3	MSW5 (5×0.8)
			32				32	42	52	62	72	82	92					
	13・16 20	(Set) AJ6 (① only) AJ6P (② only) AJ6F	28			26								2.7				
			40				24	34	44	54	64	74	84					
	25	(Set) AJ7 (① only) AJ7P (② only) AJ7F	28			26								3.0		3.0		
			40				24	34	44	54	64	74	84					
SJVB (Spring reinforced type) PJVB (Spring reinforced type) A—SJVB (Spring reinforced type) A—PJVB (Spring reinforced type)	8	(Set) VJ4 (① only) VJ4P (② only) VJ4F	16.5	25										1.0	2.8	2.0	3.2	MSW4 (4×0.7)
			28.5		23	35	45	55	65	75								
	10	(Set) VJ5 (① only) VJ5P (② only) VJ5F	16.5	26										1.4	3.6		4.3	MSW5 (5×0.8)
			29.5		22	33	43	53	63	73								
	13	(Set) VJ6 (① only) VJ6P (② only) VJ6F	16.5	26										1.7				
			29.5		22	33	43	53	63	73								
	16・20 25	(Set) VJ7 (① only) VJ7P (② only) VJ7F	18.5	26										2.7				
			25.5		29													
			37.5			27	37	47	57	67								

RoHS

FJ6～8
SJ8



Numbers in ( ) apply to SJ8.

① M SK4
H 53～58HRC
(Annealing of head to max. 45 HRC)
② Spring constant
1.0～1.5N/mm
{0.1～0.15kgf/mm}

Punch blank Type	Punch diameter φD	Catalog No.	Pin length ①L	②FL (Spring length) Punch length 50L	60L	70L	80L	90L	100L	110L	120L	130L	d	H	T	d_1	③ MSW (M×P)
SJVB—C (Spring reinforced type)	10	(Set) VJ5 (① only) VJ5P (② only) VJ5F	29.5		21	32	42	52	62	72	82		1.4	3.6	2.0	4.3	MSW5 (5×0.8)
	13	(Set) VJ6 (① only) VJ6P (② only) VJ6F	29.5		21	32	42	52	62	72	82		1.7				
	16・20 25・32	(Set) VJ7 (① only) VJ7P (② only) VJ7F	25.5		28								2.7				
			37.5			26	36	46	56	66	76						
SJXVB (Spring reinforced type) A—SJXVB (Spring reinforced type) LFSJVB (Spring reinforced type) A—LFSJVB (Spring reinforced type)	8	(Set) VJX4 (① only) VJX4P (② only) VJX4F	41.5			32	42	52	62				1.0	2.8	2.0	3.2	MSW4 (4×0.7)
	10	(Set) VJX5 (① only) VJX5P (② only) VJX5F	41.5			31	41	51	61				1.4	3.6		4.3	MSW5 (5×0.8)
	13	(Set) VJX6 (① only) VJX6P (② only) VJX6F	41.5			31	41	51	61				1.7				
	16・20 25	(Set) VJX7 (① only) VJX7P (② only) VJX7F	51.5				33	43	53				2.7				
SJXVB—C (Spring reinforced type)	10	(Set) VJC5 (① only) VJ5P (② only) VJ5F	29.5						52	62			1.4	3.6	2.0	4.3	MSW5 (5×0.8)
		(Set) VJC5 (① only) VJ5P (② only) VJ5F	41.5								72						
	13	(Set) VJC6 (① only) VJ6P (② only) VJ6F	29.5						52	62	72		1.7				
	16・20 25・32	(Set) VJC7 (① only) VJ7P (② only) VJ7F	37.5						42	52	62		2.7				
SJFB (Large-diameter pin type)	8	(Set) FJ4 (① only) FJ4P (② only) FJ4F	29	27	37	47	57	67	77				2.7	3.6	2.0	3.8	MSW5 (5×0.8)
	10	(Set) FJ5 (① only) FJ5P (② only) FJ5F	30	27	37	47	57	67	77								
	13	(Set) FJ6 (① only) FJ6P (② only) FJ6F	30	15	25	35	45	55	65				4.0	6.0	3.0	6.0	MSW8 (8×1.25)
	16	(Set) FJ7 (① only) FJ7P (② only) FJ7F	26	20													
			38		15	30	40	50	60								
	20 25	(Set) FJ8 (① only) FJ8P (② only) FJ8F	26	15									6.0	8.0		8.0	MSW10 (10×1.5)
			38		15	25	35	45	55								
AJVB A—AJVB (Spring and pin reinforced type)	8	(Set) AVJ4 (① only) AVJ4P (② only) AVJ4F	26	26									1.4	2.8	2.0	3.2	MSW4 (4×0.7)
			30		32	43	53	63	73								
	10	(Set) AVJ5 (① only) AVJ5P (② only) AVJ5F	26	26									1.7	3.6		4.3	MSW5 (5×0.8)
			30		33	43	53	63	73								
	13・16 20	(Set) AVJ6 (① only) AVJ6P (② only) AVJ6F	26	27									2.7				
			38		27	37	47	57	67								
	25	(Set) AVJ7 (① only) AVJ7P (② only) AVJ7F	26	27									3.0		3.0		
			38		24	37	47	57	67								
LFAJB A—LFAJB	8	(Set) AJX4 (① only) AJX4P (② only) AJX4F	44			28	44	54	64	74	84	94	1.4	2.8	2.0	3.2	MSW4 (4×0.7)
	10	(Set) AJX5 (① only) AJX5P (② only) AJX5F	44			32	42	52	62	72	82	92	1.7	3.6		4.3	MSW5 (5×0.8)
	13	(Set) AJX6 (① only) AJX6P (② only) AJX6F	44			32	42	52	62	72	82	92	2.7				
	16 20	(Set) AJX7 (① only) AJX7P (② only) AJX7F	54				32	42	52	62	72	82					
	25	(Set) AJX8 (① only) AJX8P (② only) AJX8F	54				32	42	52	62	72	82	3.0				
LFAJVB (Spring and pin reinforced type) A—LFAJVB (Spring and pin reinforced type)	8	(Set) VAJ4 (① only) AVJ4P (② only) AVJ4F	42			32	43	53	63				1.4	2.8	2.0	3.2	MSW4 (4×0.7)
	10	(Set) VAJ5 (① only) AVJ5P (② only) AVJ5F	42			33	43	53	63				1.7	3.6		4.3	MSW5 (5×0.8)
	13	(Set) VAJ6 (① only) AVJ6P (② only) AVJ6F	42			33	43	53	63				2.7				
	16 20	(Set) VAJ7 (① only) AVJ7P (② only) AVJ7F	52				33	43	53								
	25	(Set) VAJ8 (① only) AVJ8P (② only) AVJ8F	52				33	43	53				3.0		3.0		
AHJVB—C (Spring and pin reinforced type)	10	(Set) AVJ5 (① only) AVJ5P (② only) AVJ5F	26		26								1.7	3.6	2.0	4.3	MSW5 (5×0.8)
			30			33	43	53	63								
	13・16 20	(Set) AVJ6 (① only) AVJ6P (② only) AVJ6F	26		27								2.7				
			38			27	37	47	57								
	25	(Set) AVJ7 (① only) AVJ7P (② only) AVJ7F	26		27								3.0		3.0		
			38			24	37	47	57								

Order

	Catalog No.	—	L	—	FL
(Sets ①, ② and ③)	SJ3	—	21	—	43
(Pin ① only)	SJ5P	—	16.5		
(Spring ② only)	SJ5F			—	47

■For SJB—C D38・45

No set product is available. Select a combination of the parts listed at right.

φD	L	SJB—C
38 45	60	LPS4—28—WL20
	70	LPS4—40—WL30
	80	LPS4—40—WL40
	90	LPS4—40—WL50
	100	LPS4—40—WL60
	110	LPS4—40—WL70
	120	LPS4—40—WL80

WL P.995
LPS P.727

Days to Ship Quotation

Price P.185

JECTOR PIN SETS

Catalog No.	Page	Punch blank		Page
		Tip length S·L	Tip length X	
SJ□□	P.57	SJB	SJXB	P.180
SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
PJ□□		PJB	—	
PJV□□		PJVB (Spring reinforced type)	—	
A—SJ□□		A—SJB	A—SJXB	
A—SJV□□		A—SJVB (Spring reinforced type)	A—SJXVB (Spring reinforced type)	
A—PJ□□		A—PJB	—	
A—PJV□□		A—PJVB (Spring reinforced type)	—	
T—SJ□□	P.59	SJB	—	
T—SJV□□		SJVB (Spring reinforced type)	—	
T—PJ□□		PJB	—	
T—PJV□□		PJVB (Spring reinforced type)	—	
AT—SJ□□		A—SJB	—	
AT—SJV□□		A—SJVB (Spring reinforced type)	—	
AT—PJ□□		A—PJB	—	
AT—PJV□□		A—PJVB (Spring reinforced type)	—	
H—PJ□□	P.61	PJB	—	
H—PJV□□		PJVB (Spring reinforced type)	—	
AH—PJ□□		A—PJB	—	
AH—PJV□□		A—PJVB (Spring reinforced type)	—	
W—SJ□□	P.63	SJB	SJXB	
W—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
W—PJ□□·HW—PJ□□		PJB	—	
W—PJV□□·HW—PJV□□		PJVB (Spring reinforced type)	—	
AW—SJ□□		A—SJB	A—SJXB	
AW—SJV□□		A—SJVB (Spring reinforced type)	A—SJXVB (Spring reinforced type)	
AW—PJ□□·AHW—PJ□□		A—PJB	—	
AW—PJV□□·AHW—PJV□□		A—PJVB (Spring reinforced type)	—	
L—SJ□□	P.65	SJB	SJXB	
L—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
L—PJ□□		PJB	—	
L—PJV□□		PJVB (Spring reinforced type)	—	
AL—SJ□□		A—SJB	A—SJXB	
AL—SJV□□		A—SJVB (Spring reinforced type)	A—SJXVB (Spring reinforced type)	
AL—PJ□□		A—PJB	—	
AL—PJV□□		A—PJVB (Spring reinforced type)	—	
LFSJ□□·W—LFSJ□□	P.67	LFSJB	—	
LFSJV□□·W—LFSJV□□		LFSJVB (Spring reinforced type)	—	
A—LFSJ□□·AW—LFSJ□□		A—LFSJB	—	
A—LFSJV□□·AW—LFSJV□□		A—LFSJVB (Spring reinforced type)	—	
SJF□□·L—SJF□□	P.69	SJFB	—	
G—SJ□□	P.83	SJB	SJXB	
G—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
G—PJ□□·GH—PJ□□		PJB	—	
G—PJV□□·GH—PJV□□		PJVB (Spring reinforced type)	—	
GW—SJ□□	P.85	SJB	SJXB	
GW—SJV□□		SJVB (Spring reinforced type)	SJXVB (Spring reinforced type)	
GW—PJ□□·GHW—PJ□□		PJB	—	
GW—PJV□□·GHW—PJV□□		PJVB (Spring reinforced type)	—	

Catalog No.	Page	Punch blank		Page
		Tip length S·L	Tip length X	
SJ□□—C	P.95	SJB—C	SJXB—C	P.180
SJV□□—C		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
T—SJV□□—C	P.97	SJB—C	—	
T—SJV□□—C		SJVB—C (Spring reinforced type)	—	
H—SJ□□—C	P.99	SJB—C	SJXB—C	
H—SJV□□—C		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
W—SJ□□—C·HW—SJ□□—C	P.101	SJB—C	SJXB—C	
W—SJV□□—C·HW—SJV□□—C		SJVB—C (Spring reinforced type)	SJXVB—C (Spring reinforced type)	
APJ□□·L—APJ□□	P.113	AJB	—	P.182
APJV□□·L—APJV□□		AJVB (Spring and pin reinforced type)	—	
A—APJ□□·AL—APJ□□		A—AJB	—	
A—APJV□□·AL—APJV□□		A—AJVB (Spring and pin reinforced type)	—	
T—APJ□□	P.115	AJB	—	
T—APJV□□		AJVB (Spring and pin reinforced type)	—	
AT—APJ□□		A—AJB	—	
AT—APJV□□		A—AJVB (Spring and pin reinforced type)	—	
H—APJ□□	P.117	AJB	—	
H—APJV□□		AJVB (Spring and pin reinforced type)	—	
AH—APJ□□		A—AJB	—	
AH—APJV□□		A—AJVB (Spring and pin reinforced type)	—	
W—APJ□□·HW—APJ□□	P.119	AJB	—	
W—APJV□□·HW—APJV□□		AJVB (Spring and pin reinforced type)	—	
AW—APJ□□·AHW—APJ□□		A—AJB	—	
AW—APJV□□·AHW—APJV□□		A—AJVB (Spring and pin reinforced type)	—	
L—APJ□□	P.121	AJB	—	
L—APJV□□		AJVB (Spring and pin reinforced type)	—	
AL—APJ□□		A—AJB	—	
AL—APJV□□		A—AJVB (Spring and pin reinforced type)	—	
LFAPJ□□	P.123	LFAJB	—	
LFAPJV□□		LFAJVB (Spring and pin reinforced type)	—	
A—LFAPJ□□		A—LFAJB	—	
A—LFAPJV□□		A—LFAJVB (Spring and pin reinforced type)	—	
H—LFAPJ□□	P.125	LFAJB	—	
H—LFAPJV□□		LFAJVB (Spring and pin reinforced type)	—	
AH—LFAPJ□□		A—LFAJB	—	
AH—LFAPJV□□		A—LFAJVB (Spring and pin reinforced type)	—	
W—LFAPJ□□·HW—LFAPJ□□	P.127	LFAJB	—	
W—LFAPJV□□·HW—LFAPJV□□		LFAJVB (Spring and pin reinforced type)	—	
AW—LFAPJ□□·AHW—LFAPJ□□		A—LFAJB	—	
AW—LFAPJV□□·AHW—LFAPJV□□		A—LFAJVB (Spring and pin reinforced type)	—	
AHJ□□—C	P.139	AHJB—C	—	
AHJV□□—C		AHJVB—C (Spring and pin reinforced type)	—	
H—AHJ□□—C	P.141	AHJB—C	—	
H—AHJV□□—C		AHJVB—C (Spring and pin reinforced type)	—	
W—AHJ□□—C·HW—AHJ□□—C	P.143	AHJB—C	—	
W—AHJV□□—C·HW—AHJV□□—C		AHJVB—C (Spring and pin reinforced type)	—	
MJ□□·W—MJ□□	P.153	MJB	—	
A—MJ□□·AW—MJ□□		A—MJB	—	
SKJ□□·W—SKJ□□	P.165	MJB	—	
A—SKJ□□·AW—SKJ□□		A—MJB	—	
SJC·L—SJC	P.171	SJB		P.180

P Price

COMPONENTS	Catalog No.	Base unit price	Volume discount unit price		
		1～4 pieces	5～9	10～19	20～50
①②③	SJ1～8				
①	SJ1P～8P				
②	SJ1F～8F				
①②③	SJL1				
①	SJL1P				
②	SJL1F				
①②③	SJC5～7				
①②③	SJX2～7				
①	SJX2P～7P				
②	SJX2F～7F				
①②③	SJT6·7				
①②③	AJ4～7				
①	AJ4P～7P				
②	AJ4F～7F				
①②③	VJ4～7				
①	VJ4P～7P				
②	VJ4F～7F				
①②③	VJC5～7				
①②③	VJX4～7				
①	VJX4P～7P				
②	VJX4F～7F				
①②③	FJ4～8				
①	FJ4P～8P				
②	FJ4F～8F				
①②③	AVJ4 ～ 7				
①	AVJ4P ～ 8P				
②	AVJ4F ～ 8F				
①②③	AJX4 ～ 8				
①	AJX4P ～ 8P				
②	AJX4F ～ 8F				
①②③	VAJ4 ～ 8				

Quotation

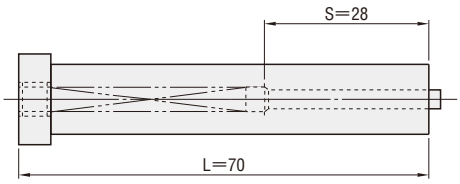
■Calculating the projection length of the jector pin (reference value)

(L dimension of jector pin) −(S dimension of the punch blank)

(Example) In case of SJEL10—70—P8.50—W4.25

・Punch blank: **SJB10—70**

S dimension 28

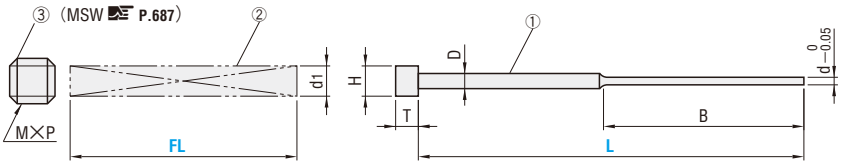


・Jector pin: **SJ5P**

L dimension 29.5

Projection length of jector pin: 29.5—28=1.5

LJ



RoHS

① M SKD61
H 40HRC～
② Spring constant
0.98N/mm
{0.1kgf/mm}

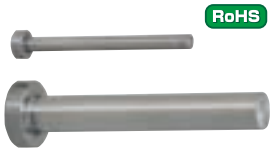
Punch diameter φD	Catalog No.	① B Punch length 40L	50L	60L	70L	80L	90L	100L	d	D	H	T	②Spring length WL30 Wire diameter	WL30 Fmax.	WL35 Wire diameter	WL35 Fmax.	WL40 Wire diameter	WL40 Fmax.	WL50 Wire diameter	WL50 Fmax.	WL60 Wire diameter	WL60 Fmax.	d1	③ MSW (M×P)
5	LJ2	20	30	30	40	50	60	70	0.65	1.9	4	3	0.55	12	0.55	14	0.6	16	0.6	20	0.65	24	4	MSW5 (5×0.8)
6	LJ3								0.65	2.3	4.5	3	0.55	12	0.55	14	0.6	16	0.6	20	0.65	24	4	MSW6 (6×1.0)
8	LJ4		35	40					1.05	3.1	6	3	0.7	12	0.7	14	0.7	16	0.75	20	0.8	24	6	MSW8 (8×1.25)
10	LJ5								1.4	3.9	8	4	0.8	12	0.8	14	0.8	16	0.85	20	0.9	24	8	MSW10 (10×1.5)
13	LJ6								1.7	3.9	8	4	0.8	12	0.8	14	0.8	16	0.85	20	0.9	24	8	
16・20・25	LJ7								2.7	3.9	8	4	0.8	12	0.8	14	0.8	16	0.85	20	0.9	24	8	

Punch diameter φD	Catalog No.		①L Punch length 40L	50L	60L	70L	80L	90L	100L	②FL
5	(Set) LJ2	(① only) LJ2P	41	51	61	71	81			30
6	(Set) LJ3	(① only) LJ3P	41	51	61	71	81			35
8	(Set) LJ4	(① only) LJ4P	41.5	51.5	61.5	71.5	81.5	91.5	101.5	40
10	(Set) LJ5	(① only) LJ5P	41.5	51.5	61.5	71.5	81.5	91.5	101.5	40
13	(Set) LJ6	(① only) LJ6P	41.5	51.5	61.5	71.5	81.5	91.5	101.5	50
16・20・25	(Set) LJ7	(① only) LJ7P	42	52	62	72	82	92	102	60

Order — Catalog No. — L — FL
①②③ LJ2 — 61 — 40
① LJ5P — 81.5

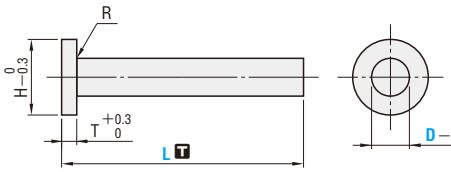
Days to Ship: Quotation

Price: Quotation



RoHS

JP
JPW
JPWH



Catalog No.	L T	R
JP	L +0.3 0	R≦0.3
JPW JPWH	L±0.1	0.5≦R≦1.0

JP・JPW
M DH2F
H 40HRC～

JPWH
M SKD61
H 50HRC～

T	H	Catalog No. Type	D	L 0.1mm increments	Base unit price 1～49 pieces L5.0～29.9	L30.0	L30.1～49.9	L50.0	L50.1～69.9	L70.0
2	3	JP	1	5.0～70.0						
	3		1.5							
	4		2							
	5		2.5							
	6		3							
3	8		4							
	9		5							

Quotation

T	H	Catalog No. Type	D	L 0.1mm increments	Base unit price 1～49 pieces L10.0～29.9	L30.0	L30.1～49.9	L50.0	L50.1～69.9	L70.0	L70.1～99.9	L100.0
5	5	JPW	2	10.0～100.0								
	8		3									
	10		4									
	12		5									
	14		6									
	16		8									
	18		10									

Quotation

T	H	Catalog No. Type	D	L 0.1mm increments	Base unit price 1～49 pieces L10.0～29.9	L30.0	L30.1～49.9	L50.0	L50.1～69.9	L70.0	L70.1～99.9	L100.0
5	5	JPWH	2	10.0～100.0								
	8		3									
	10		4									
	12		5									
	14		6									
	16		8									
	18		10									

Quotation

Order — Catalog No. — L
JP 4 — 28.5

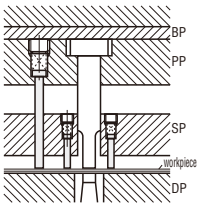
Days to Ship: Quotation

Price: Quotation

Alterations — Catalog No. — L — (RC・HC)
JP5 — 70.0 — RC—HC8.0

	Alteration	Code	Spec.	1Code
Alterations to tip	R0.2～0.3	RC	Rounding of pin end to R0.2～0.3.	Quotation
Alterations to head	H	HC	Head diameter change D≦HC<H 0.1 mm increments	

ex Example



PUNCH HOLDERS

—FIXING-BOLT TYPE・DOUBLE-FIXING-BOLT TYPE・CAVITY INSERT TYPE—

—Fixing-bolt type—

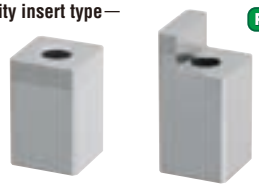
RoHS

—Double-fixing-bolt type—

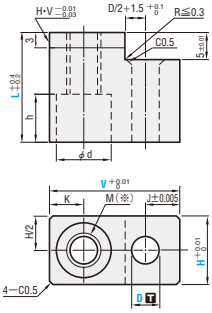
RoHS

—Cavity insert type—

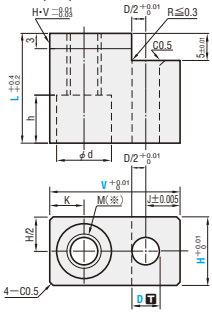
RoHS



BBPH (For round punches)



BBPHC (For shaped punches)



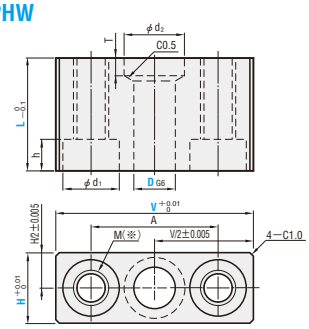
M(※)
For lift-out tap hole, use a bolt 1 size larger than the mounting bolt.

Mounting bolt	M (lift-out tap hole)
M3	M4
M4	M5
M6	M8
M8	M10

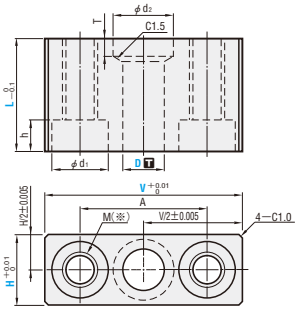
D	T
3～6	+0.012 +0.004
8・10	+0.015 +0.007
13・16	+0.018 +0.010

M Equivalent to SKD11
H 60～63HRC

BBPHW



BBPHWA (For heavy-load punches)



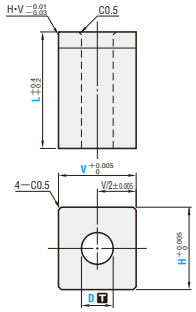
M(※)
For lift-out tap hole, use a bolt 1 size larger than the mounting bolt.

Mounting bolt	M (lift-out tap hole)
M6	M8
M8	M10

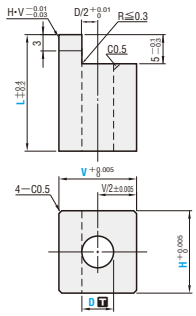
D	T
8・10	+0.014 +0.005
13・16	+0.017 +0.006
20	+0.020 +0.007

M Equivalent to SKD11
H 60 ～ 63HRC

KBPH (For round punches)



KBPHC (For shaped punches)



D	T
1.6～2.5	+0.008 +0.002
3～6	+0.012 +0.004
8・10	+0.015 +0.007
13・16	+0.018 +0.010

H・V3～5
M SKH51
H 61～64HRC
H・V8～25
M Equivalent to SKD11
H 60～63HRC

K	Mounting bolt d	h	Size	J	Catalog No.	V	H	L	D	Base unit price 1～9 pieces BBPH	BBPHC
4	6	7.5	M3	4	BBPH (For round punches) BBPHC (For shaped punches)	16	8	16	3	Quotation	
5	8	8.5	M4	4		18	10	20	3・4		
6.5	11	10.5	M6	6.5		25	13	22	4・5・6		
6.5	11	10.5	M6	8		28	16	25	8・10		
8	14	12.5	M8	10		35	20	30	10・13		
8	14	12.5	M8	12.5		40	25		13・16		

A	Mounting bolt d1	h	Size	T	d2	Catalog No.	V	H	L	D	Base unit price 1～9 pieces
25	11	7	M6	In case of BBPHW T=5	In case of BBPHW d2=D+4	BBPHW BBPHWA (For heavy-load punches)	40	20	25	8 10	Quotation
34							50			10 13	
36	14	9	M8	In case of BBPHWA T=8	In case of BBPHWA d2=D+6		55	25	30	10 13 16	
40							60	30		13 16 20	

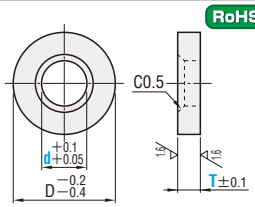
Catalog No.	V	H	L	D	Base unit price 1～9 pieces
KBPH (For round punches)	3	3	7・10・13 17・19・22	1.6	Quotation
	4	4		1.6・2.0	
	5	5		2.5	
	8	8	11 15 17 20 25	3・4	
	10	10		3・4・5	
	13	13		4・5・6・8	
	16	16		8・10	
	20	20		10・13	
	25	25		13・16	

Catalog No.	V	H	L	D	Base unit price 1～9 pieces
KBPHC (For shaped punches)	8	8	16 20 22 25 30	3・4	Quotation
	10	10		3・4・5	
	13	13		4・5・6・8	
	16	16		8・10	
	20	20		10・13	
	25	25		13・16	

SPACERS & SHIMS FOR PUNCHES

PWA—Spacers for punches—

RoHS



M SKS3 H 58～62HRC

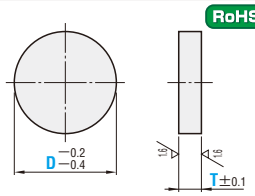
D	Catalog No. Type	d	T (thickness) tolerance±0.1	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
5	PWA	3	0.5 (d3～13 only)	Quotation			
7		4					
8		5					
9		6					
11		8	1				
13		10	2				
16		13	3				
19		16	4				
23		20	5				
28		25					

⊗ If d is 16 or more, T0.5 cannot be selected.

(C0.5)…If T is 0.5, chamfering is C0.2～0.3.

PWB—Shims for punches—

RoHS



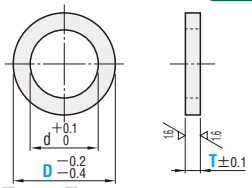
M SKS3 H 58～62HRC

D	Catalog No. Type	D	T (thickness) tolerance±0.1	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
5	PWB	5	0.5 (D5～16 only)	Quotation			
7		7					
8		8					
9		9					
11		11	1				
13		13	2				
16		16	3				
19		19	4				
23		23	5				
28		28					

⊗ T0.5 can not be selected for D19 or larger.

PWC—Spacers for tapped punches—

RoHS



M SKS3 H 58～62HRC

d	Catalog No. Type	D	T (thickness) tolerance±0.1	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
3.5	PWC	5	0.5 (D5～16 only)	Quotation			
		6					
4.5		8	1				
5.5		10	2				
		13	3				
6.5		16					
		20	4				
		25	5				

⊗ T0.5 can not be selected for D20 or larger.

Order

Catalog No.	—	T
PWA 3	—	0.5

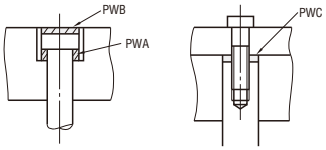
Days to Ship Quotation

Alterations

Catalog No.	—	T	—	TKC
PWB 5	—	0.5	—	TKC2

Quotation

Example



Use to make adjustments when regrinding a punch tip.

Alteration	Code	Spec.	1Code
Alteration to thickness	TKC	Thickness tolerance change No. / Tolerance 1 / ±0.05 2 / ±0.01 3 / ±0.005	Quotation

Order

Catalog No.	V	H	—	L	—	D
BBPH	16	08	—	20	—	D3
KBPH	04	04	—	10	—	D1.6

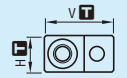
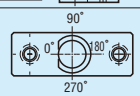
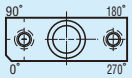
Days to Ship Quotation

Price Quotation

Alterations

Catalog No.	V	H	—	L(LC)	—	D	— (LKC・VKC1, etc.)
BBPH	16	08	—	LC21.1	—	D3	

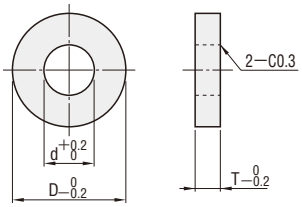
Alteration	Code	Spec.	1Code
	LC	Full length change **BBPH・BBPHC・KBPHC** 16＜L＜30 **BBPHW・BBPHWA** If A−(d_1+d_2)＜4, T+h+3.5≦LC＜L If A−(d_1+d_2)≧4, h+4≦LC＜L **KBPH** V・H: 3～5 7＜L＜25 V・H: 8～25 11＜L＜25 0.1mm increments (If combined with LKC・LKZ, 0.01mm increments can be selected.) Punch fixing part (5±0.01)・Press-in lead length (3) Bolt counterbore depth (h) is the same as specified.	Quotation
	LKC	Full length tolerance change $L^{+0.4}_{+0.2}$ ⇨ $^{+0.05}_{0}$ ⊗ Cannot be used for BBPHW・BBPHWA.	
	LKZ	Full length tolerance change $L^{+0.4}_{+0.2}$ ⇨ $^{+0.01}_{0}$ ⊗ Cannot be used for BBPHW・BBPHWA.	

Alteration	Code	Spec.	1Code
	VKC1	V・H tolerance change $V・H^{+0.01}_{0}$ ⇨ $V・H^{+0.005}_{0}$ ⊗ Cannot be used for BBPHW・BBPHWA・KBPH・KBPHC.	Quotation
	VKC2	V・H tolerance change $V・H^{+0.01}_{0}$ ⇨ $V・H^{0}_{-0.005}$ ⊗ Cannot be used for BBPHW・BBPHWA.	
	NDC	No press-in lead ⊗ Cannot be used for BBPHW・BBPHWA.	
	KC	Addition of single key flat to head 1° increments ⊗ Cannot be used for BBPH・BBPHC・KBPH・KBPHC.	
	TKC	Head tolerance change No specification → $^{+0.05}_{+0.03}$ ⊗ Cannot be used for BBPH・BBPHC・KBPH・KBPHC.	
	CCP	Chamfering of C3.0 to 1corner ⊗ Cannot be used for BBPH・BBPHC・KBPH・KBPHC.	

FIXING KEYS FOR PUNCHES WITH KEY GROOVES

RoHS

Catalog No.	M	H	S
PSKB	S45C	45～55HRC	—
PSKBH	SKS3	58～62HRC	Chromate treatment (silver)

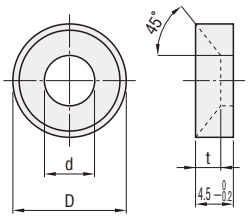


Bolt	D	d	T	Catalog No. Type	Catalog No. No.	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
M4	10	4.2	3	PSKB	4				
			4.5		4—4.5				
M5	12	5.2	3		5				
			4.5		5—4.5				
M6	14	6.2	3		6				
			4.5		6—4.5				
M4	10	4.2	3	PSKBH	4				
			4.5		4—4.5				
M5	12	5.2	3		5				
			4.5		5—4.5				
M6	14	6.2	3		6				
			4.5		6—4.5				

Quotation

RoHS

Catalog No.	M	H
PSKS	S45C	45～55HRC
PSKJ	SKS3	58～62HRC

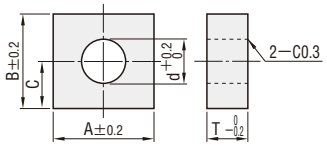


Bolt	D	d	t	Catalog No. Type	Catalog No. No.	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
M4	10	4.5	2.5	PSKS	4				
M5	13	5.5	3		5				
M4	12	4.2	2.5	PSKJ	4				
M5	15	5.2	3		5				

Quotation

RoHS

Catalog No.	M	H	S
PSK	S45C	45～55HRC	—
PSKP			
PSKH	SKS3	58～62HRC	Chromate treatment (silver)



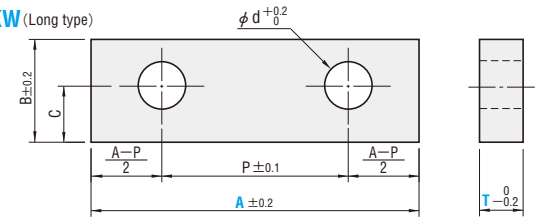
Bolt	A	B	C	d	T	Catalog No. Type	Catalog No. No.	Base unit price 1～19 pieces	Volume discount unit price 20～49	50～99	100～200
M4	10	11	6	4.2	3	PSK	4—3				
					4.5		4				
M5				5.2	3		5—3				
					4.5		5				
M6	12	14	7	6.2	3		6—3				
					4.5		6				
M4	11	11	5.5	4.2	3	PSKP	4—3				
					4.5		4				
M5				5.2	3		5—3				
					4.5		5				
M6	14	14	7	6.2	3		6—3				
					4.5		6				
M4	10	11	6	4.2	3	PSKH	4—3				
					4.5		4				
M5				5.2	3		5—3				
					4.5		5				
M6	12	14	7	6.2	3		6—3				
					4.5		6				

Quotation

Because PSKP has a hole at the center, it can be mounted in any direction.

RoHS

PSKW (Long type)



M S45C
H 45～55HRC

Bolt	B	C	d	P A=21～30	P A=31～40	P A=41～50	P A=51～60	Catalog No. Type	Catalog No. No.	T (Selection)	A 1mm increments	Base unit price 1～19 pieces A21～30	A31～40	A41～50	A51～60
M4	11	6	4.2	10	20	30	—	PSKW	4	3	21～50				
M5			5.2	—	20	30	40		5	4.5	31～60				

Quotation

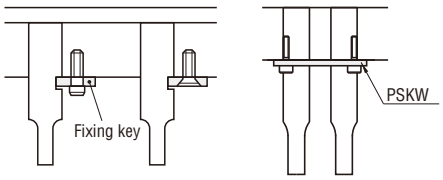
Order

Catalog No.	—	T	—	A
PSKB 4				
PSKS 5				
PSKP 5				
PSKW 4	—	3	—	40

Days to Ship Quotation

Price Quotation

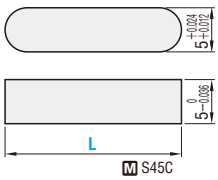
Example



KEYS

RoHS

KE



M S45C
H 45～55HRC

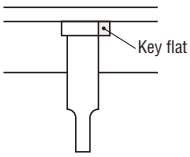
Catalog No.		Base unit price	Volume discount unit price		
Type	L	1～199 pieces	200～399	400～599	600～1000
KE	8				
	10				
	12		Quotation		
	15				
	20				
	25				
	30				

Order

Catalog No.
KE 12

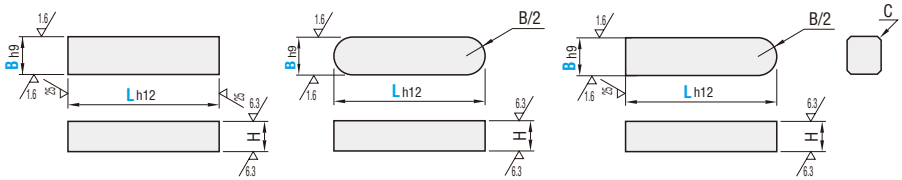
Days to Ship **Quotation**

Example



RoHS

KED KES KEG



L	Tolerance
Shortest ～ 10	0 −0.15
11 ～ 18	0 −0.18
19 ～ 30	0 −0.21
31 ～ 50	0 −0.25
51 ～ 80	0 −0.30
81 ～ 110	0 −0.35

JIS B 1301−1996

Type	M
KED KES KEG	S45C

Tensile strength 600N/mm² or more

| Catalog No. | | | |