

# Cam Units

## DYNE-A-CAM® SERIES

*IDEAL FOR PIERCING, FLANGING,  
CUTTING AND FORMING OPERATIONS*



**HYSON**  
Metal Forming Solutions™

***IDEAL FOR PIERCING, FLANGING,  
CUTTING AND FORMING OPERATIONS***

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## General Information

HYSON headquartered in Brecksville, Ohio, is a world class engineering and manufacturing company that provides high-quality, safety-engineered force and motion control solutions for a wide range of applications and industries, including automotive, aerospace, appliance, medical and HVAC. HYSON partners with our customers to understand applications and provide the best solutions for each one. We are a full service force control provider for critical machine, vehicle and precision metal processing applications, meaning we can supply dependent upon each customer's needs, including: gas springs, cam systems, cushions, manifolds and knockout systems.

Our success lies with our commitment to continually improve ourselves, our processes and our products to ensure we meet or exceed our customers' expectations. Our ISO-9001, AS-9000 and PED certifications attest to our ongoing commitment to the highest standards of quality.

## PED – Pressure Equipment Directive



HYSON gas springs are designed to meet customer expectations for reliability, safety and service lifetime. The design, manufacture and testing of HYSON gas springs has been approved according to the European Pressure Equipment Directive (97/23/EC).

The Pressure Equipment Directive (PED) replaces all previous European legislation governing the design, manufacture and testing of pressure vessels.

## Product Value

Cam units are ideal for delivering force to pierce, flange, form or trim. Cams are available in the mechanical Roller Cam or the hydraulic Nitro-Cam®. Compact cam units prevent damage to die components in the event an obstruction blocks the cam from its full travel, and resets without assistance.

Compact units can be coupled together, allowing for multiple operations within the same tool, performed simultaneously, and often provide the ability to produce a part with fewer tools.

The **Nitro-Cam®** system can be easily mounted in a die at virtually any angle or position, providing the greatest flexibility. The Nitro-Cam® units come equipped with a built-in safety overload protection.

The **Roller Cam** system utilizes a roller bearing for reduced wear and long life.

## Advanced Safety Features

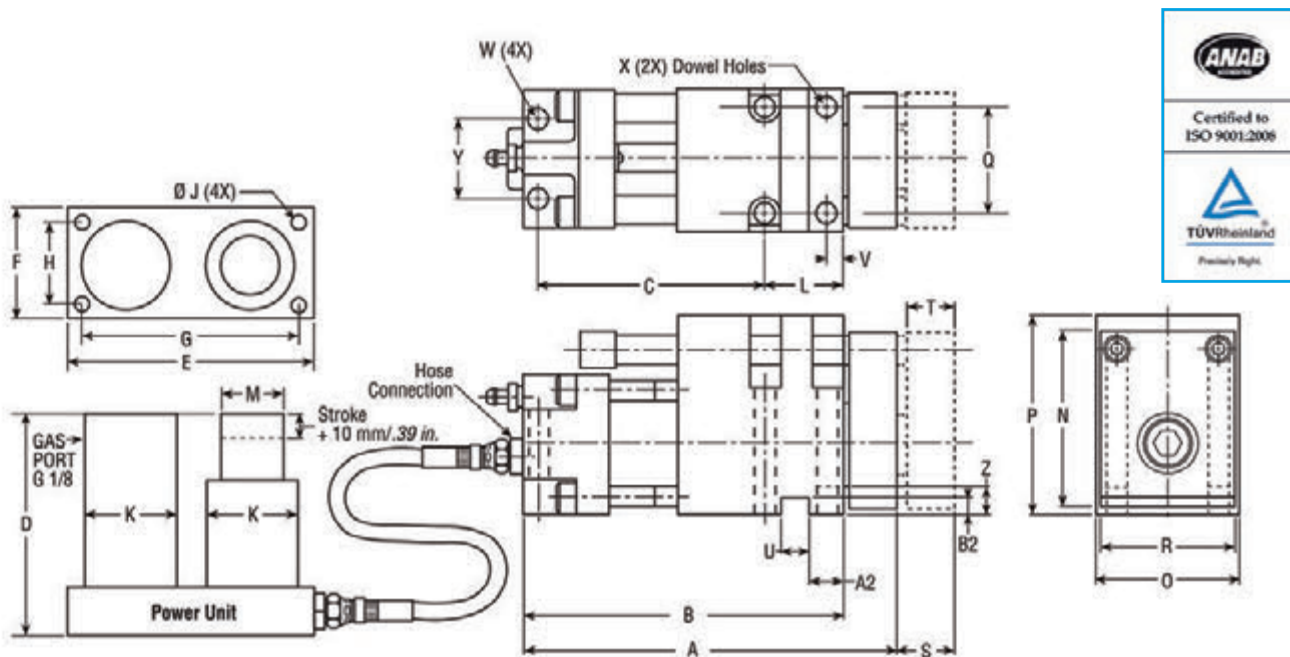
**Overload Protection:** In the case of blockage in the tool that causes excessive piston return speed, a specially-designed rod and integral safety stops retain the piston rod in the gas spring and allow gas to vent safely.

### Advanced Safety Features



Overload Protection

## FULLY ADJUSTABLE HYDRAULIC CAM FORCE



### Product Features

- Available in five forces: 15,000 N/1.69 ton; 40,000 N/4.50 ton; 60,000 N/6.74 ton; 90,000 N/10.12 ton and 150,000 N/16.86 ton.
- Three standard stroke lengths: 24 mm/.94 in; 49 mm/1.93 in and 99 mm/3.90 in\*.
- Sensor kits are available for positioning verification.
- Can be mounted at any angle in the die.
- Power unit, containing power cylinder and accumulator, can be positioned remotely from cam (up to a distance of 2m/6.5 ft).
- Power cylinder is driven by actuator on ram.
- No bulky mechanical drivers.
- Constant force through stroke.
- Built-in mechanical stop for exact cam stroke.
- No fluid pressure at die open.
- Reduce side load in tool.
- Retrofittable to existing dies.
- For piercing applications, one power unit can drive three cam units.
- Controllable return force (up to 20% of piercing force).
- Accumulator prevents over-pressurization of system if blockage occurs in cam.

### Selection and Installation Guidelines

- Power cylinder stroke is normally 10 mm/.39 in longer than the cam stroke. The actual power cylinder stroke must be designed into application.
- When connecting three cams to one power unit, the power unit must be sized accordingly. Contact Hyson Products for application support.
- When piercing forces are close to maximum catalog ratings, choose the next larger size cam.
- Secured into position with key and two dowel pins, and bolted to the tool.
- Retainer mounting surface allows easy machining of mounting and dowel holes.
- For complete filling and draining instructions or for service, contact Hyson.

\* Stroke length not available on Cam Unit HCCU-15.

## Dimensional Information

### Power Unit Fixed Dimensions

Order Number Model x Stroke	Force		E	F	G	H	J	K	M
HCPU-15 x Stroke	15,000 N	mm	160	80	130	50	11	50.10	32
	1.69 tons	in	6.30	3.15	5.12	1.97	0.43	1.97	1.26
HCPU-40 x Stroke	40,000 N	mm	200	100	175	75	11	75.10	50
	4.50 tons	in	7.87	3.94	6.89	2.95	0.43	2.96	1.97
HCPU-60 x Stroke	60,000 N	mm	250	125	220	95	13	95.10	65
	6.74 tons	in	9.84	4.92	8.66	3.74	0.51	3.74	2.56
HCPU-90 x Stroke	90,000 N	mm	300	150	270	120	13	120.10	80
	10.12 tons	in	11.81	5.91	10.63	4.72	0.51	4.73	3.15
HCPU-150 x Stroke	150,000 N	mm	400	200	350	150	17	150.10	80
	16.86 tons	in	15.75	7.87	13.78	5.91	0.67	5.91	3.15



### Compact Cam Fixed Dimensions

Order Number Model x Stroke	Force		N	O	P	Q	R	L	T	U	V	W mm	X mm	Y	Oil Port	Z	A2	B2
HCCU-15 x Stroke	15,000 N	mm	73	59	82	44	56	33	20	12	6.50	8.5	8	44	G 1/2	12	14	7
	1.69 tons	in	2.87	2.32	3.23	1.73	2.20	1.30	0.79	0.47	0.26	(4x)	(2x)	1.73		0.47	0.55	0.28
HCCU-40 x Stroke	40,000 N	mm	97.50	95	105	74	92	44	25	20	8	10.5	10	41	G 3/4	12	16	7
	4.50 tons	in	3.84	3.74	4.13	2.91	3.62	1.73	0.98	0.787	0.32	(4x)	(2x)	1.61		0.47	0.63	0.28
HCCU-60 x Stroke	60,000 N	mm	124	120	133	100	117	44	30	20	8	12.5	10	45	G 3/4	12	16	7
	6.74 tons	in	4.88	4.72	5.24	3.93	4.61	1.73	1.18	0.79	0.32	(4x)	(2x)	1.77		0.47	0.63	0.28
HCCU-90 x Stroke	90,000 N	mm	154.50	148	170	120	144	65	30	30	10	16.5	12	70	G 3/4	15	20	11
	10.12 tons	in	6.08	5.83	6.69	4.72	5.67	2.56	1.18	1.18	0.39	(4x)	(2x)	2.76		0.59	0.79	0.43
HCCU-150 x Stroke	150,000 N	mm	193	160	205	134	156	65	30	30	10	16.5	12	70	G 1-1/4	15	20	11
	16.86 tons	in	7.60	6.30	8.07	5.27	6.14	2.56	1.18	1.18	0.39	(4x)	(2x)	2.76		0.59	0.79	0.43

### Variable Dimensions with Stroke

Cam Stroke Model	Power Cylinder Stroke		HCCU-15 & HCPU-15				HCCU-40 & HCPU-40				HCCU-60 & HCPU-60			
			A	B	C	D	A	B	C	D	A	B	C	D
24 mm	35	mm	155.50	133.50	94	220	214	187	135	242	223	191	137	258
0.94 in	1.38	in	6.12	5.26	3.70	8.66	8.43	7.36	5.31	9.53	8.78	7.52	5.39	10.16
49 mm	60	mm	180.50	158.50	119	270	239	212	160	292	248	216	162	308
1.93 in	2.36	in	7.11	6.24	4.69	10.63	9.41	8.35	6.30	11.50	9.76	8.50	6.38	12.13
99 mm	110	mm	—	—	—	370	289	262	210	392	298	266	212	408
3.90 in	4.33	in	—	—	—	14.57	11.38	10.31	8.27	15.43	11.73	10.47	8.35	16.06

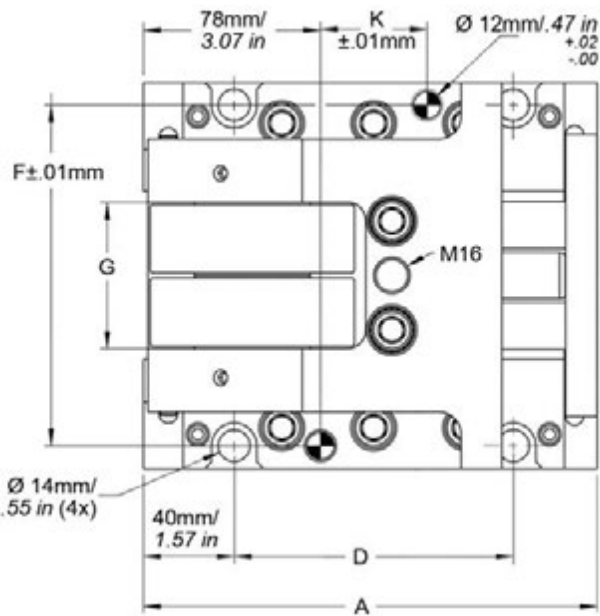
### Variable Dimensions with Stroke (continued)

Cam Stroke Model	Power Cylinder Stroke		HCCU-90 & HCPU-90				HCCU-150 & HCPU-150			
			A	B	C	D	A	B	C	D
24 mm	35	mm	268	236	159	276	268	236	159	307
0.94 in	1.38	in	10.55	9.29	6.26	10.87	10.55	9.29	6.26	12.09
49 mm	60	mm	293	261	184	326	293	261	184	357
1.93 in	2.36	in	11.54	10.28	7.24	12.83	11.54	10.28	7.24	14.06
99 mm	110	mm	343	311	234	426	343	311	234	457
3.90 in	4.33	in	13.50	12.24	9.21	16.77	13.50	12.24	9.21	17.99

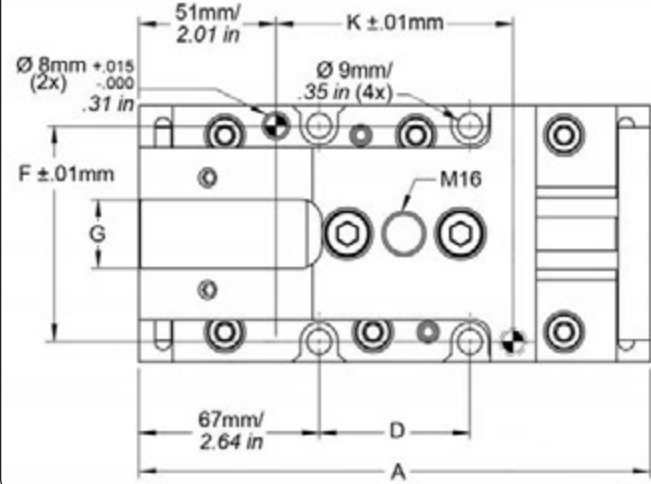
**NOTE: Other models and styles are available. Refer to our comprehensive Nitro-Cam Catalog for additional information.**

**MECHANICAL ROLLER FORCE**

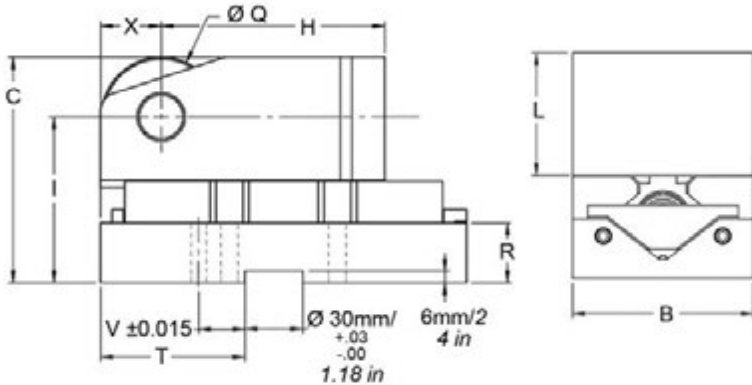
**RCP2-150**



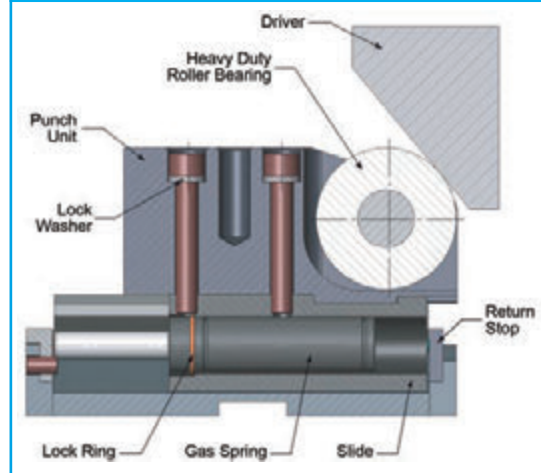
**RC2-30 & RC2-50**



**RC2-30, RC2-50 & RCP2-150**



**DESIGN**



**Product Features**

- Available in three piercing forces: RC2-30 offers 30kN/3.37 ton; RC2-50 offers 50kN/5.62 ton and RCP2-150 offers 150 kN/16.86 ton.
- Engineered for a minimum service life of one million cycles.
- Precision guiding allows more off-center loading and upside-down installation.
- Built-in return stroke dampening.
- Simple punch attachment.
- Maintenance-free operation.
- Heavy duty roller bearing transfers force from driver to cam.
- All models feature HYSON nitrogen gas springs for return force.

**Selection and Installation Guidelines**

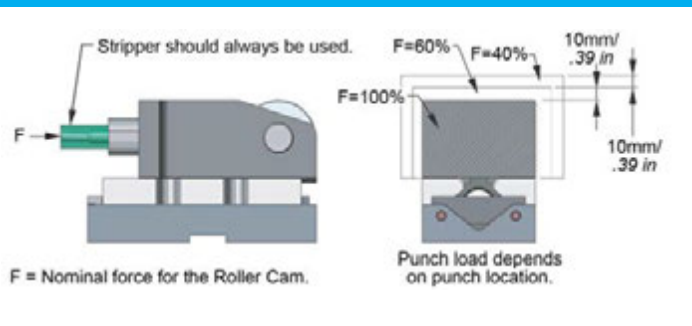
- When required forces are close to maximum catalog ratings, choose the next larger size cam.
- Secured into position with key and two dowel pins, and bolted to the tool.
- Retainer mounting surface allows easy machining of mounting and dowel holes.

**Dimensional Information**

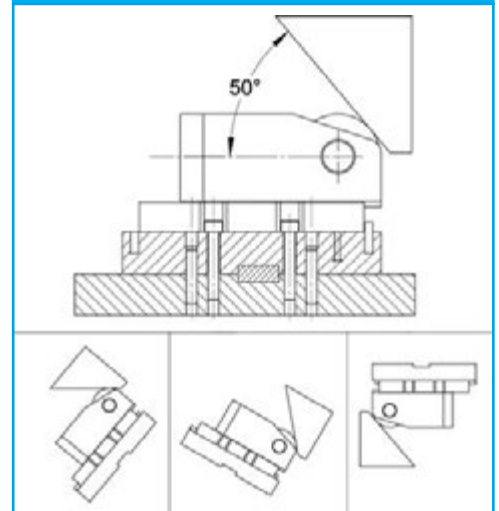
**Variable Dimensions with Stroke**

Cam Order Number	S Stroke	A	B	C	D	F	G	H	I	K	L	Q	R	T	V	X	Max Width of Driver	
<b>Nominal Force 30,000 N/3.37 tons    Initial Return Force 2,000 N/450 lbs.    Gas Spring T2-180</b>																		
RC2-30 x 50	mm	50	190	94	117	56	79	25	116	86	88	64	62	31	75	24	31	31
	in	1.97	7.48	3.70	4.61	2.20	3.11	0.98	4.57	3.39	3.47	2.52	2.44	1.22	2.95	0.95	1.22	1.22
RC2-30 x 80	mm	80	220	94	117	86	79	25	116	86	118	64	62	31	75	24	31	31
	in	3.15	8.66	3.70	4.61	3.39	3.11	0.98	4.57	3.39	4.65	2.52	2.44	1.22	2.95	0.95	1.22	1.22
<b>Nominal Force 50,000 N/5.62 tons    Initial Return Force 3,500 N/787 lbs.    Gas Spring T3-350</b>																		
RC2-50 x 50	mm	50	190	120	140	56	105	29	110	103	88	75	72	40	75	24	36	35
	in	1.97	7.48	4.72	5.51	2.20	4.13	1.14	4.33	4.06	3.47	2.95	2.83	1.57	2.95	0.95	1.42	1.38
RC2-50 x 80	mm	80	220	120	140	86	105	29	110	103	118	75	72	40	75	24	36	35
	in	3.15	8.66	4.72	5.51	3.39	4.13	1.14	4.33	4.06	4.65	2.95	2.83	1.57	2.95	0.95	1.42	1.38
RC2-50 x 100	mm	100	240	120	157	126	105	29	110	120	158	75	72	40	75	24	36	35
	in	3.94	9.45	4.72	6.18	4.96	4.13	1.14	4.33	4.72	6.22	2.95	2.83	1.57	2.95	0.95	1.42	1.38
<b>Nominal Force 150,000 N/16.86 tons    Initial Return Force 5,000 N/1124 lbs.    Gas Spring T3-500</b>																		
RCP2-150 x 50	mm	50	200	170	165	123	150	62	110	120	47	92	90	46	86.50	9	46	62
	in	1.97	7.87	6.69	6.50	4.84	5.91	2.44	4.33	4.72	1.85	3.62	3.54	1.81	3.41	0.35	1.81	2.44
RCP2-150 x 80	mm	80	230	170	165	153	150	62	110	120	77	92	90	46	86.50	9	46	62
	in	3.15	9.06	6.69	6.50	6.02	5.91	2.44	4.33	4.72	3.03	3.62	3.54	1.81	3.41	0.35	1.81	2.44
RCP2-150 x 100	mm	100	250	170	165	173	150	62	110	120	97	92	90	46	86.50	9	46	62
	in	3.94	9.84	6.69	6.50	6.81	5.91	2.44	4.33	4.72	3.82	3.62	3.54	1.81	3.41	0.35	1.81	2.44

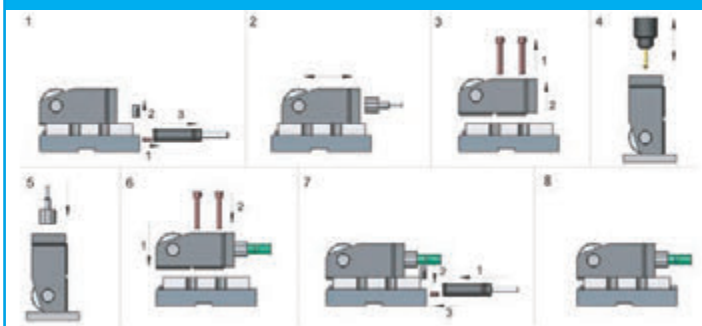
**PUNCH LOCATION AND LOAD RATINGS**



**MOUNTING OPTIONS**



**CAM REMOVAL FOR PUNCH ATTACHMENT**





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