High Temp. Mold Series

HIGH TEMPERATURE GAS SPRINGS

IDEAL FOR THE HIGHER WORKING TEMPERATURES TYPICAL IN PLASTIC MOLDS

APPROVED PED 2014/68/EU
2 million

ANAB

Certified to ISO 9001:2008

TÜVRheinland

HYSON
Metal Forming Solutions™

GENUINELY HYSON

Since 1964 HYSON has been dedicated to providing safer and more reliable products with worldwide support and service. We are continually at the forefront of innovative product design and engineer forward-thinking features into our self-contained springs, which enable our customers to provide safer working environments.

Our nitrogen gas springs, which comply with all major industry standards, are designed to reduce the risk of tool damage and injuries and include at least one of the following safety features:

Overstroke Protection:

In the event of an overstroke, the Hyson cylinder is designed to fail-safe and release pressure in a pre-defined manner with deformation or knockout plug.

Overpressure Protection:

Designed to vent excessive gas in the event that the spring becomes overpressured, deformation of the safety lip guide or separation of disc will occur.

Overload Protection:

The piston rod is designed for controlled gas venting between the seal and piston rod with a specially designed guide and fundamental safety stop in the event of an overload caused by a jammed tool, part or rod side-load.

Additionally, the majority of Hyson springs are **PED** (Pressure Equipment Directive) approved to withstand a minimum of 2 million full cycles according to PED2014/68/EU. Many of our competitors are in compliance of PED, but compliance is unequal to the 2 million cycle test and approval that Hyson gas springs have undergone. This is one more assurance that with Hyson Nitrogen Gas Springs you receive an added value of reliability and operational excellence.

COMPACT AND POWERFUL ROD-SEALED NITROGEN GAS SPRINGS ARE ENGINEERED TO WITHSTAND HIGHER WORKING TEMPERATURES INCLUDING THOSE TYPICAL IN PLASTIC MOLD OPERATIONS.

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General Information

HYSON Metal Forming Solutions, 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 customers needs, including: gas springs, cam systems, cushions, manifolds to 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 (2014/68/EU).

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

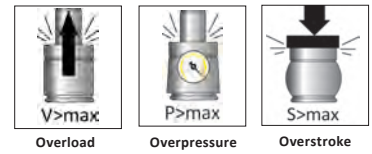
T2M/T3M Spring Value

- Engineered to withstand higher working temperatures
  - Can be used in applications with working temperatures up to 120°C/*248°F*
  - Ideal for plastic injection mold tooling
- Force adjustability & increased productivity
  - Control the force of our gas springs by adjusting gas pressure through the control panel to reduce downtime and increase productivity.
- Balanced, consistent force
  - Our gas springs provide for a balanced force, resulting in higher quality parts.

Product Features

- Fully adjustable charge pressure
- Various mounting possibilities using our standard mounts as well as bottom threaded holes
- T2M-16 and T2M-24 have a threaded body design for easy and adjustable mounting
- Six gas spring models available with initial forces from 420N/*95 lbf* to 9200N/*2068 lbf*
- Compact rod seal design

Advanced Safety Features



Overload Protection | Overpressure Protection | Overstroke Protection

- **Over-Pressure Protection**: designed to safely vent excessive gas pressure in the event of an over-pressure situation such as over-charged gas springs or the ingestion of large amounts of drawing or cooling fluids.

- **Over-Stroke Protection:** A patented system allows the venting of gas in a pre-determined manner with deformation or knock-out plug in the event of a mechanical overload of the gas spring body.

- **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.

Temperature Considerations

Spring Model	Max. working temp. interval	Max. strokes per minute spm	Max. charge pressure at 20°C bar	Force per temperature		
				Spring temp.	Initial force N	End force at full stroke N
T2M-16	0 - 80°C	20	150	80°C	510	810
				20°C	420	670
	80 - 100°C	15	125	100°C	450	720
				20°C	355	570
	100 - 120°C	10	115	120°C	435	700
				20°C	325	520
T2M-24	0 - 80°C	20	150	80°C	2040	3250
				20°C	1700	2700
	80 - 100°C	15	125	100°C	1800	2880
				20°C	1415	2250
	100 - 120°C	10	115	120°C	1750	2800
				20°C	1300	2080
T3M-300	0 - 80°C	20	150	80°C	3,630	5,550
				20°C	3,000	4,600
	80 - 100°C	15	125	100°C	3,200	4,900
				20°C	2,510	3,850
	100 - 120°C	10	115	120°C	3,100	4,750
				20°C	2,310	3,540
T3M-500	0 - 80°C	20	150	80°C	5,680	8,690
				20°C	4,700	7,200
	80 - 100°C	15	125	100°C	5,000	7,650
				20°C	3,930	6,010
	100 - 120°C	10	115	120°C	4,850	7,420
				20°C	3,610	5,520
T3M-750	0 - 80°C	20	150	80°C	8,870	14,100
				20°C	7,400	11,760
	80 - 100°C	15	125	100°C	7,810	12,420
				20°C	6,140	9,750
	100 - 120°C	10	115	120°C	7,570	12,050
				20°C	5,650	9,000
T3M-1000	0 - 80°C	20	150	80°C	11,130	17,500
				20°C	9,200	14,500
	80 - 100°C	15	125	100°C	9,800	15,400
				20°C	7,700	12,100
	100 - 120°C	10	115	120°C	9,500	14,900
				20°C	7,080	11,100

Product Specifications

Pressure Medium ..... Nitrogen
Max. Charging Pressure ..... See Table
Min. Charging Pressure ..... 25 bar/*365 psi*
Operating Temperature ..... 0° to 120°C/*32° to 248°F*
Max. Piston Rod Velocity ..... 1m/second / *197 ft/min*
Max. Utilized stroke 100%
Inlet Valve 4018112
Charge Fitting T2-770-T3

Ordering Instructions

T2M-16 x **25**

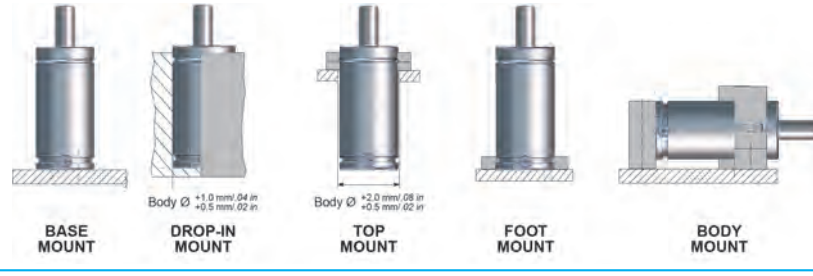
Model	Stroke
T2M-16 T2M-24 T3M-300 T3M-500 T3M-750 T3M-1000	See Dimensional Information Charts

All gas springs shipped at maximum charge pressure unless otherwise specified.

Repair Kits

Gas Spring	Repair Kit Part Number
T2M-16	NON-REPAIRABLE
T2M-24	NON-REPAIRABLE
T3M-300	**3322687**
T3M-500	**3322688**
T3M-750	**3322686**
T3M-1000	**3322690**

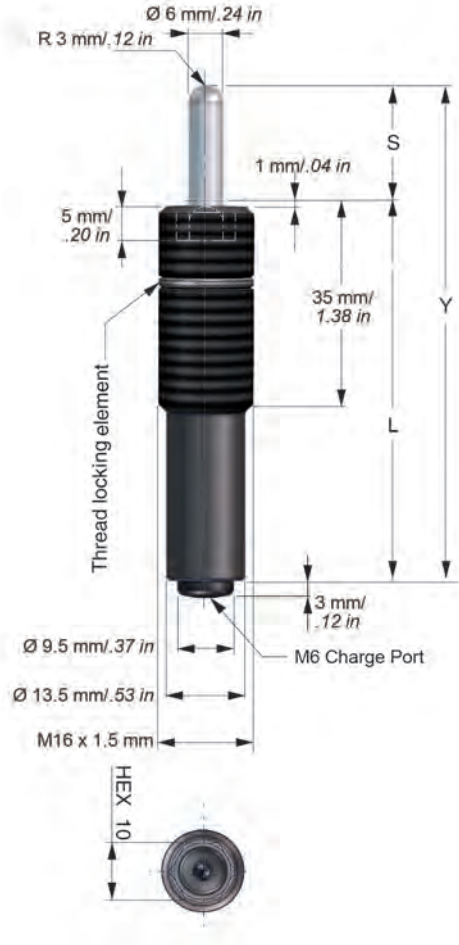
Mounting Options



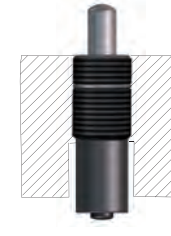
Advanced Safety Features

Overload Protection

Overpressure Protection



APPROVED PED 2014/68/EU
2 million



Thread Mount Lock Nut
available M16x1.5
Order Number 503681

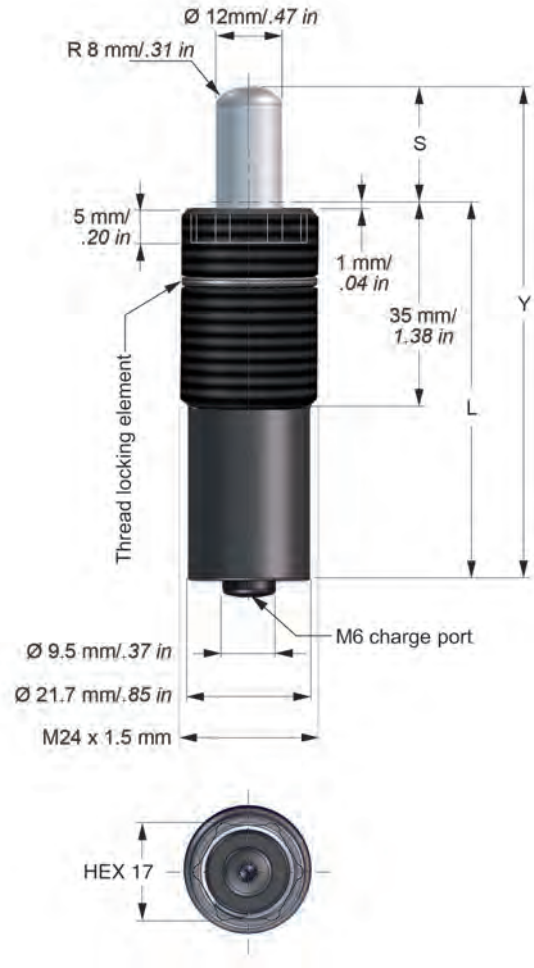
T2M-16 Dimensional Information

Order Number Model X Stroke	Stroke S		Contact Force*		Y		L		Gas Volume	Weight	
					± 0.25	± 0.010					
	mm	in	N	lbf	mm	in	mm	in	ℓ	kg	lbs
T2M-16X10	10	0.39	420	95	65	2.56	55	2.17	0.002	0.06	0.13
T2M-16X20	20	0.79			85	3.35	65	2.56	0.003	0.07	0.15
T2M-16X30	30	1.18			105	4.13	75	2.95	0.003	0.07	0.15
T2M-16X40	40	1.57			125	4.92	85	3.35	0.004	0.08	0.18
T2M-16X50	50	1.97			145	5.71	95	3.74	0.005	0.09	0.20
T2M-16X60	60	2.36			165	6.50	105	4.13	0.006	0.10	0.22
T2M-16X70	70	2.76			185	7.28	115	4.53	0.007	0.11	0.24
T2M-16X80	80	3.15			205	8.07	125	4.92	0.008	0.11	0.24

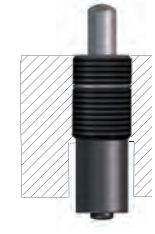
* = at full charge
Longer stroke lengths are available on request.

Advanced Safety Features

Overload Protection



2 million



Thread Mount Lock Nut
available M24x1.5
Order Number 503928

T2M-24 Dimensional Information

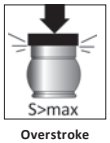
Order Number Model X Stroke	Stroke S		Contact Force*		Y		L		Gas Volume	Weight	
					± 0.25	± 0.010					
	mm	in	N	lbf	mm	in	mm	in	ℓ	kg	lbs
T2M-24X10	10	0.39	1,700	382	65	2.56	55	2.17	0.003	0.13	0.29
T2M-24X20	20	0.79			85	3.35	65	2.56	0.006	0.15	0.33
T2M-24X30	30	1.18			105	4.13	75	2.95	0.008	0.17	0.37
T2M-24X40	40	1.57			125	4.92	85	3.35	0.011	0.19	0.42
T2M-24X50	50	1.97			145	5.71	95	3.74	0.012	0.21	0.46
T2M-24X60	60	2.36			165	6.50	105	4.13	0.014	0.23	0.51
T2M-24X70	70	2.76			185	7.28	115	4.53	0.017	0.25	0.55
T2M-24X80	80	3.15			205	8.07	125	4.92	0.019	0.27	0.60

* = at full charge
Longer stroke lengths are available on request.

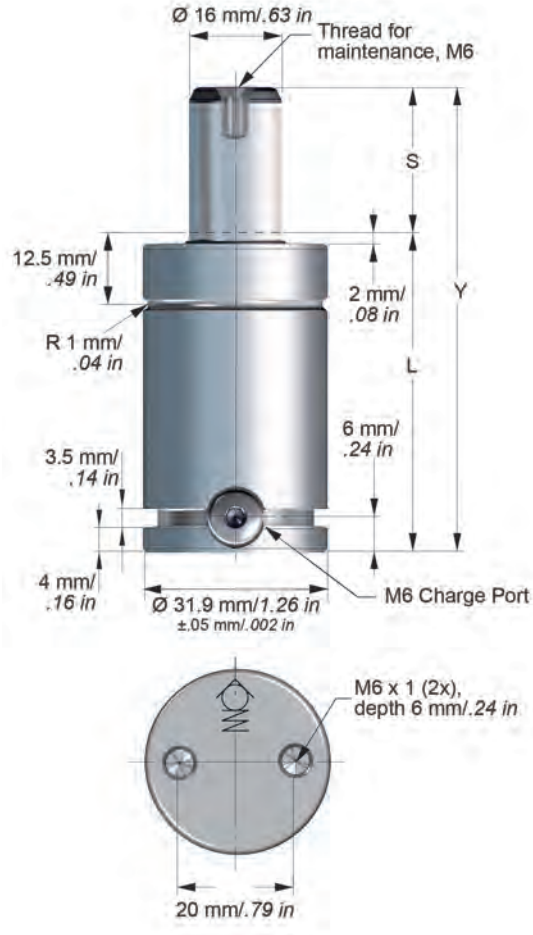
Advanced Safety Features

Overload Protection

Overpressure Protection



Overstroke Protection



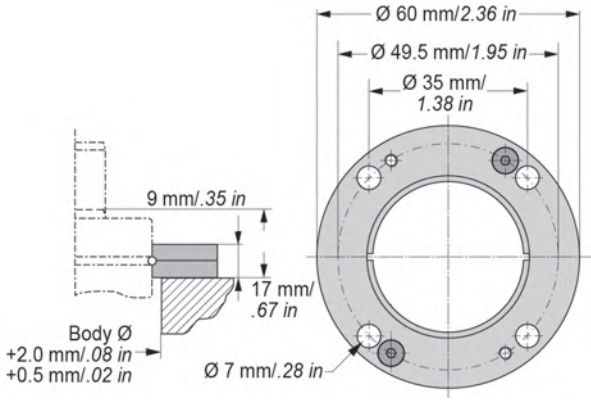
T3M-300 Dimensional Information

Order Number Model X Stroke	Stroke S		Contact Force*		Y		L		Gas Volume	Weight	
					± 0.25	± 0.010					
	mm	in	N	lbf	mm	in	mm	in	ℓ	kg	lbs
T3M-300X10	10	0.39	3,000	675	50	1.97	40	1.57	0.01	0.17	0.37
T3M-300X13	13	0.51			56	2.20	43	1.69	0.01	0.17	0.37
T3M-300X16	16	0.63			62	2.44	46	1.81	0.01	0.19	0.42
T3M-300X19	19	0.75			68	2.68	49	1.93	0.01	0.20	0.44
T3M-300X25	25	0.98			80	3.15	55	2.17	0.02	0.21	0.46
T3M-300X32	32	1.26			94	3.70	62	2.44	0.02	0.23	0.51
T3M-300X38	38	1.50			106	4.13	68	2.68	0.03	0.25	0.55
T3M-300X50	50	1.97			130	5.12	80	3.15	0.03	0.29	0.64
T3M-300X63	63	2.48			156	6.14	93	3.66	0.04	0.33	0.73
T3M-300X75	75	2.95			180	7.09	105	4.13	0.05	0.36	0.79
T3M-300X80	80	3.15			190	7.48	110	4.33	0.05	0.38	0.84

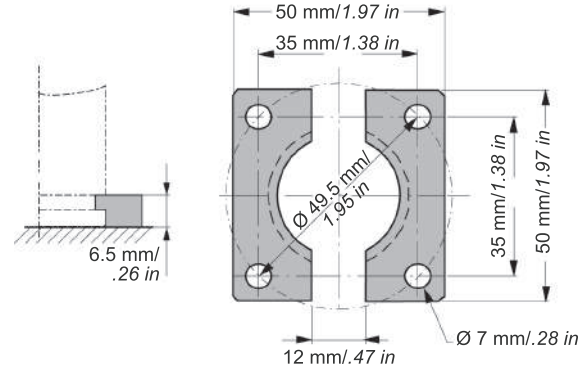
* = at full charge
Longer stroke lengths are available on request.

Note: All flanges ordered separately.

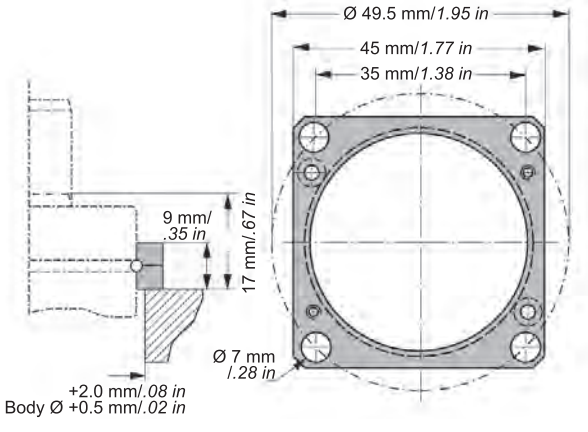
FC - Circular Flange
Order Number FC-350



FFC - Lower Square Flange
Order Number FFC-350



FCS Upper Square Flange
Order Number FCS-32

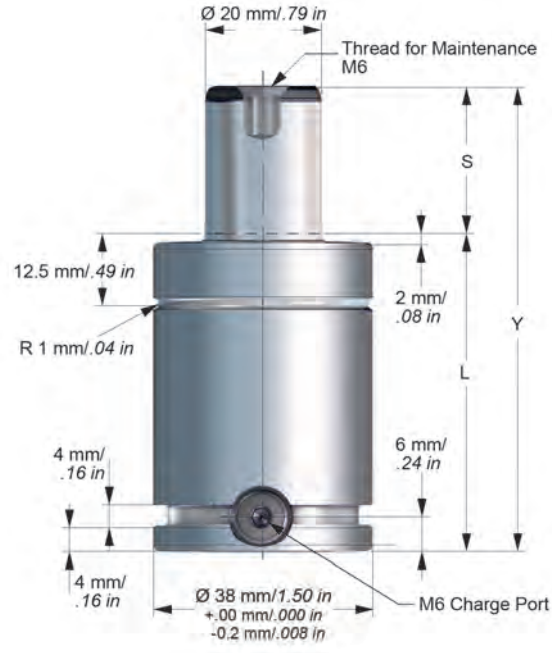


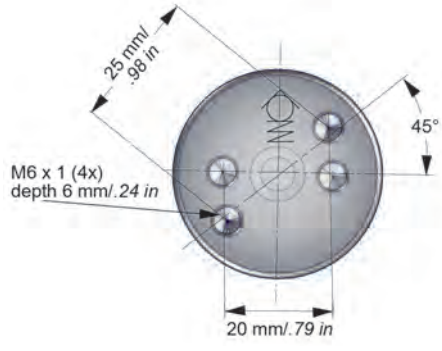
Advanced Safety Features

Overload Protection

Overpressure Protection

Overstroke Protection





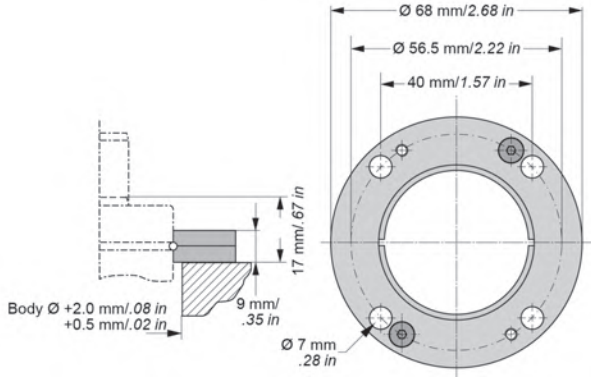
T3M-500 Dimensional Information

Order Number Model X Stroke	Stroke S		Contact Force*		Y		L		Gas Volume	Weight	
					± 0.25	± 0.010					
	mm	in	N	lbf	mm	in	mm	in	ℓ	kg	lbs
T3M-500X10	10	0.39	4,700	1,055	50	1.97	40	1.57	0.01	0.25	0.55
T3M-500X13	13	0.51			56	2.20	43	1.69	0.01	0.26	0.57
T3M-500X16	16	0.63			62	2.44	46	1.81	0.02	0.27	0.60
T3M-500X19	19	0.75			68	2.68	49	1.93	0.02	0.28	0.62
T3M-500X25	25	0.98			80	3.15	55	2.17	0.03	0.31	0.68
T3M-500X32	32	1.26			94	3.70	62	2.44	0.03	0.34	0.75
T3M-500X38	38	1.50			106	4.13	68	2.68	0.04	0.36	0.79
T3M-500X50	50	1.97			130	5.12	80	3.15	0.05	0.40	0.88
T3M-500X63	63	2.48			156	6.14	93	3.66	0.06	0.45	0.99
T3M-500X75	75	2.95			180	7.09	105	4.13	0.07	0.50	1.10
T3M-500X80	80	3.15			190	7.48	110	4.33	0.08	0.52	1.15

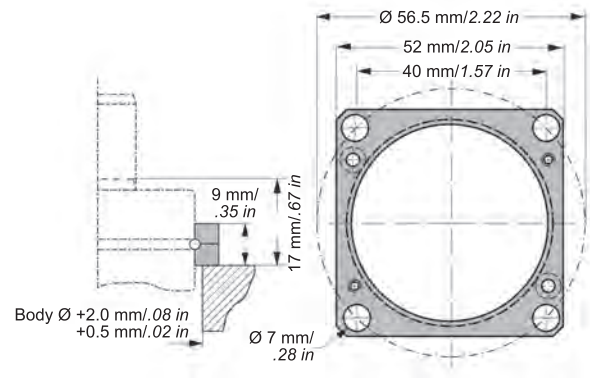
* = at full charge
Longer stroke lengths are available on request.

Note: All flanges ordered separately.

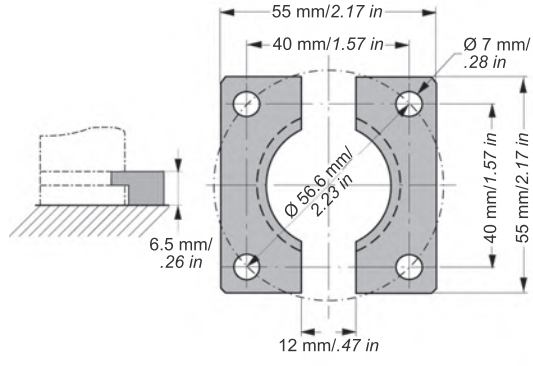
FC - Circular Flange
Order Number FC-250



FCS Upper Square Flange
Order Number FCS-250



FFC - Lower Square Flange
Order Number FFC-250

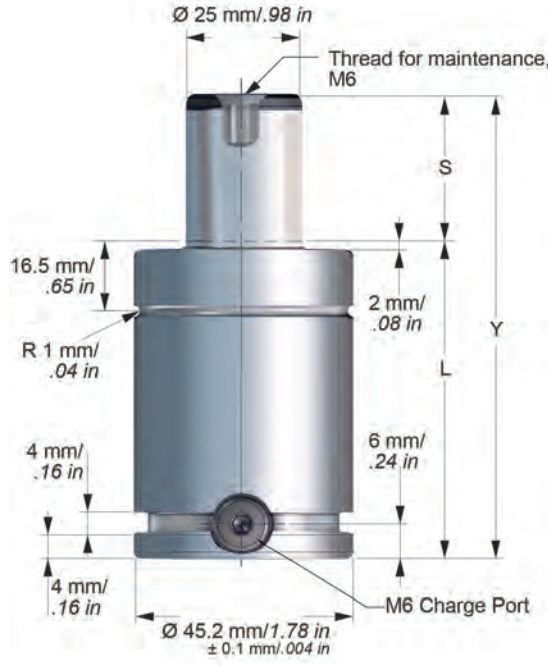


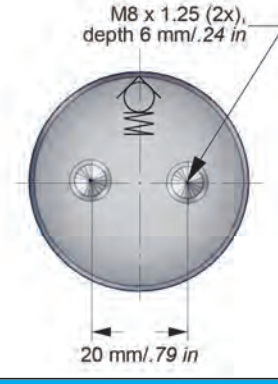
Advanced Safety Features

Overload Protection

Overpressure Protection

Overstroke Protection





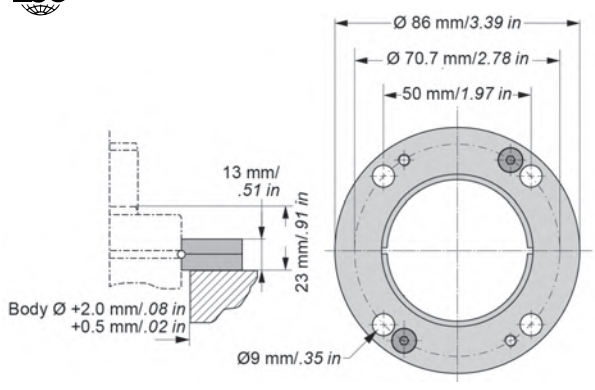
T3M-750 Dimensional Information

Order Number Model X Stroke	Stroke S		Contact Force*		Y		L		Gas Volume	Weight	
					± 0.25	± 0.010					
	mm	in	N	lbf	mm	in	mm	in	ℓ	kg	lbs
T3M-750X10	10	0.39	7,400	1,665	52	2.05	42	1.65	0.02	0.37	0.82
T3M-750X13	13	0.51			58	2.28	45	1.77	0.02	0.39	0.86
T3M-750X16	16	0.63			64	2.52	48	1.89	0.03	0.41	0.90
T3M-750X19	19	0.75			70	2.76	51	2.01	0.03	0.41	0.90
T3M-750X25	25	0.98			82	3.23	57	2.24	0.04	0.45	0.99
T3M-750X32	32	1.26			96	3.78	64	2.52	0.05	0.50	1.10
T3M-750X38	38	1.50			108	4.25	70	2.76	0.05	0.53	1.17
T3M-750X50	50	1.97			132	5.32	82	3.23	0.07	0.61	1.34
T3M-750X63	63	2.48			158	6.22	95	3.74	0.09	0.69	1.52
T3M-750X75	75	2.95			182	7.17	107	4.21	0.10	0.77	1.70
T3M-750X80	80	3.15			192	7.56	112	4.41	0.11	0.80	1.76

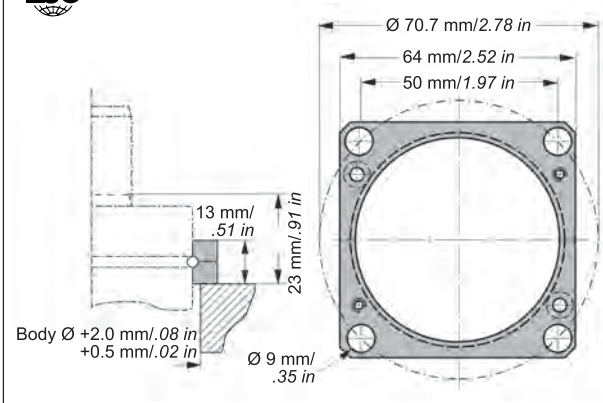
* = at full charge
Longer stroke lengths are available on request.

Note: All flanges ordered separately.

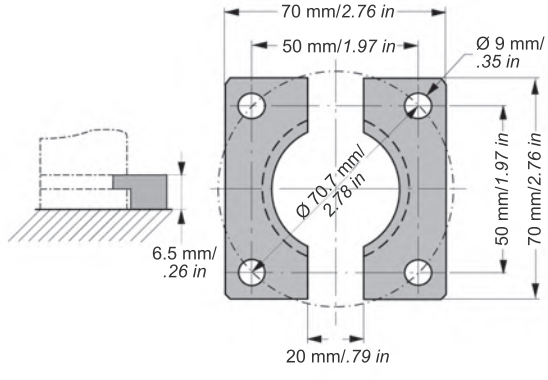
FC - Circular Flange
Order Number FC-500



FCS - Upper Square Flange
Order Number FCS-500



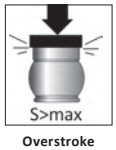
FFC - Lower Square Flange
Order Number FFC-500



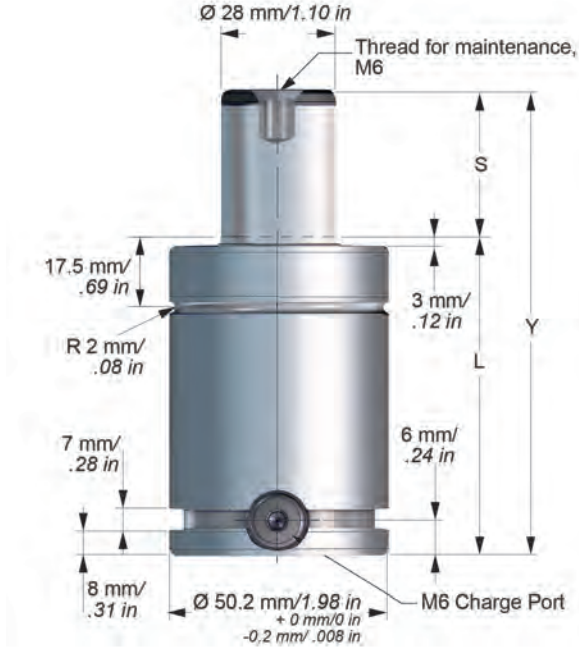
Advanced Safety Features

Overload Protection

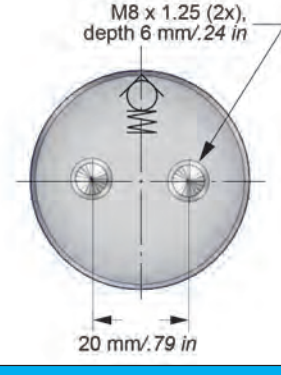
Overpressure Protection



Overstroke Protection



2 million



T3M-1000 Dimensional Information

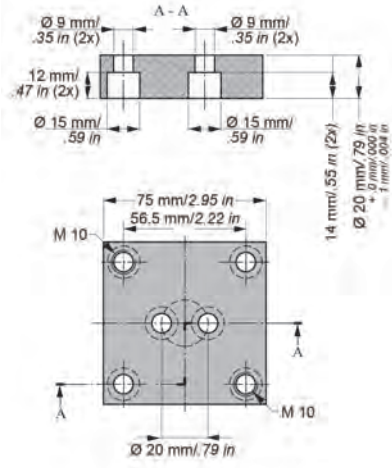
Order Number Model X Stroke	Stroke S		Contact Force*		Y		L		Gas Volume	Weight	
					± 0.25	± 0.010					
	mm	in	N	lbf	mm	in	mm	in	ℓ	kg	lbs
T3M-1000X13	13	0.51	9,200	2,068	64	2.52	51	2.01	0.03	0.52	1.15
T3M-1000X16	16	0.63			70	2.76	54	2.13	0.04	0.54	1.19
T3M-1000X19	19	0.75			76	2.99	57	2.24	0.04	0.56	1.23
T3M-1000X25	25	0.98			88	3.46	63	2.48	0.05	0.61	1.34
T3M-1000X32	32	1.26			102	4.02	70	2.76	0.06	0.66	1.46
T3M-1000X38	38	1.50			114	4.49	76	2.99	0.07	0.71	1.57
T3M-1000X50	50	1.97			138	5.43	88	3.46	0.09	0.81	1.79
T3M-1000X63	63	2.48			164	6.46	101	3.98	0.11	0.91	2.01
T3M-1000X75	75	2.95			188	7.40	113	4.45	0.13	1.02	2.25
T3M-1000X80	80	3.15			198	7.80	118	4.65	0.14	1.05	2.31

* = at full charge
Longer stroke lengths are available on request.

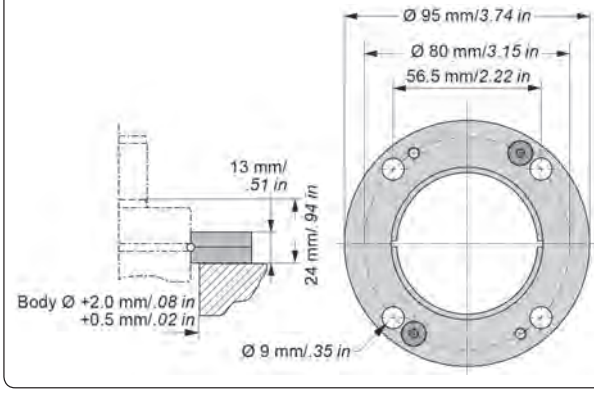
Note: All flanges ordered separately.

MP - Bottom Mounting Plate
Order Number MP-750

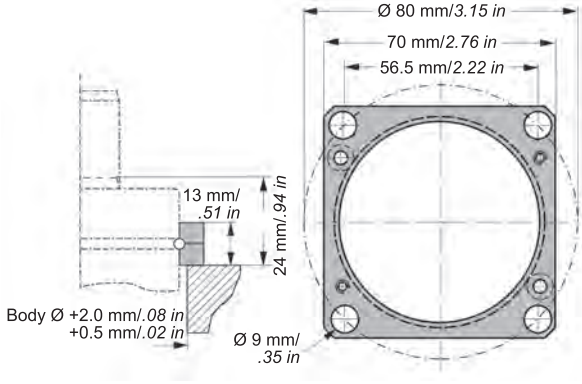
Note: Comes complete with screws to mount gas spring.



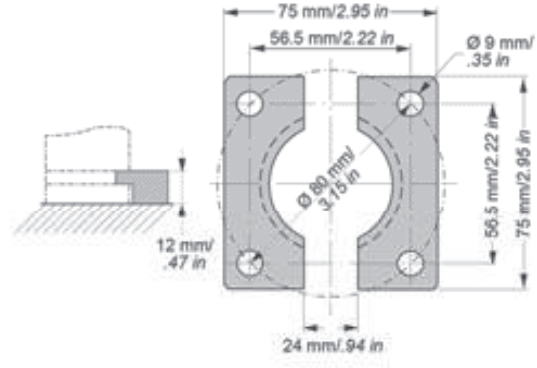
FC - Circular Flange
Order Number FC-750



FCS - Upper Square Flange
Order Number FCS-750



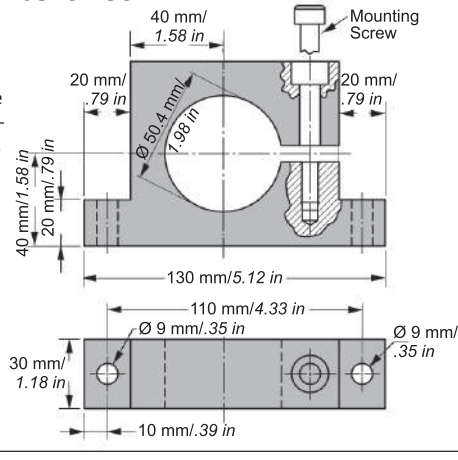
FFC - Lower Square Flange
Order Number FFC-750



S - Support Mount
Order Number S-750

Note: Support S is designed to be used in combination with flanges mounted in the U or C groove.

The mounting screw (M8) should be tightened with torque 25 Nm.



HYSON

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