

# T5 Series

T5-500 to T5-1900

Ultra High-Force, Compact-Design Nitrogen Gas Springs



# HYSON

## GENUINELY HYSON

Since 1939 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 that enable our customers to provide safer working environments.

Our nitrogen gas springs, which comply with all major industry standards are designed to reduce risk of tool damage and injuries due to parts separating under high pressure and include at least one vital 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 with drawing fluid, deformation of the safety lip guide or separation of disc will occur.



### Overload Protection:

Reduce injuries and press damage with Overload Protection - In case of jammed tool, part or rod side-load, the piston rod is designed for controlled gas venting between the seal and piston rod with a specially designed guide and fundamental safety stop.

Additionally, the majority of Hyson springs are **PED** (Pressure Equipment Directive) approved to withstand a minimum of 2 million full cycles according to PED97/23/EC. 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.



**T5 Series is ideal for:**

Automotive and electronics applications where space is limited and high force is required.

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**General Information**

Hyson Products, headquartered in Brecksville Ohio, is a world class engineered product and manufacturing company providing high-quality, safety-engineered force control to a wide range of industries and applications. Throughout the years, the company has remained at the forefront of technical innovation, developing forming solutions for critical machine, vehicle and precision metal processing applications. Our success lies with our commitment to continually improve ourselves, our processes and our products to ensure we meet or exceed our customer's expectations. Our AS-9100, ISO-9001 and PED certifications attest to our ongoing commitment to the highest standards of quality.

## PED - Pressure Equipment Directive

Hyson nitrogen 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

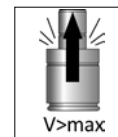
- Highest force per area of any gas spring market ideal for applications where space is limited
- Highest force per area of any gas spring on market.

## Product Features

- Three models with contact forces from 5100 to 19,200 N / 1,150 to 4,320 lbf
- Stroke lengths to 80 mm/3.15 in
- Variety of mounting options available
- Flexible guide absorbs lateral movement and misalignments in the die

## Advanced Safety Features

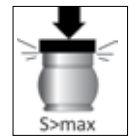
- Guide features built-in pressure relief if assembled upside down
- Secondary piston retaining ring for extra protection
- Overload, Overstroke and Overpressure protection vents internal gas pressure in a controlled manner.



Overload  
Protection



Overpressure  
Protection

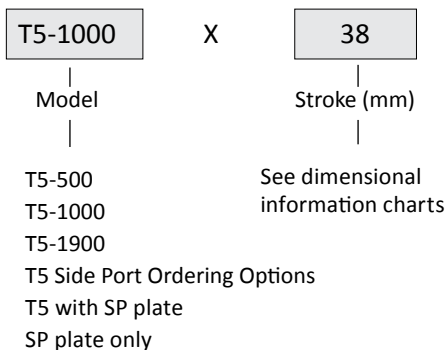


Overstroke  
Protection

## Product Specifications

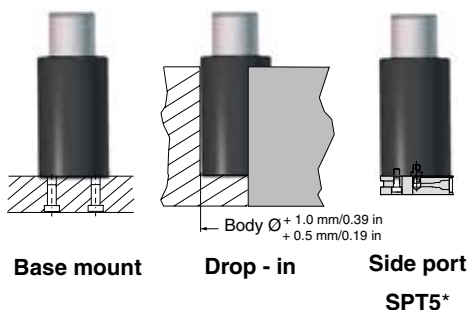
Pressure Medium .....	Nitrogen
Max. Charging Pressure .....	200 bar/2900 psi
Min. Charging Pressure .....	25 bar/365 psi
Operating Temperature .....	0 to 80°C / 32to176°F
Force Increase by Temperature .....	±0.3% per °C/±0.009% per °F
Recommended Max. Strokes/Min. ....	~70-200 (at 20°C)
Max. Piston Rod Velocity .....	96m per min./ 315 ft per min.
Charge fitting .....	T2-770-M6

## T5 Ordering Options



The recommendation is not to use the last 5 mm or 10 % of the nominal stroke length.

## Mounting Options



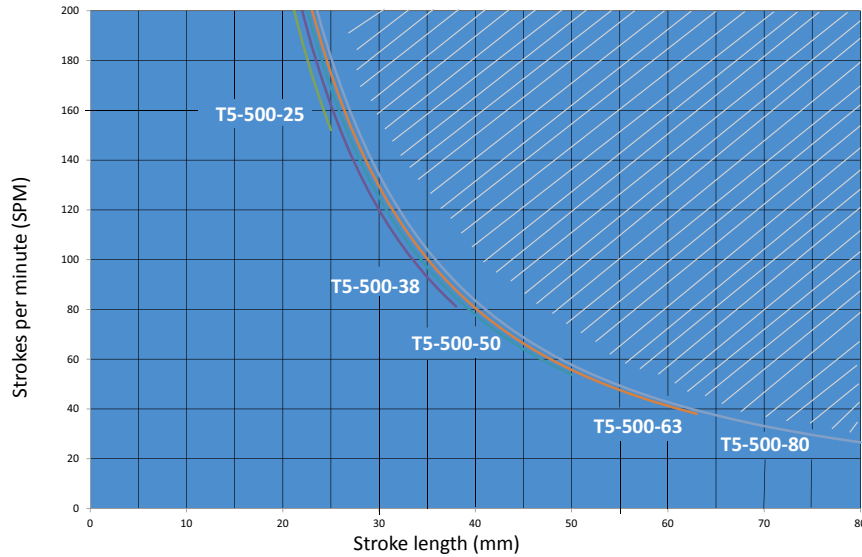
An external stop for the tool is recommended to prevent overstroke in the springs.

\*See page 8 for more information

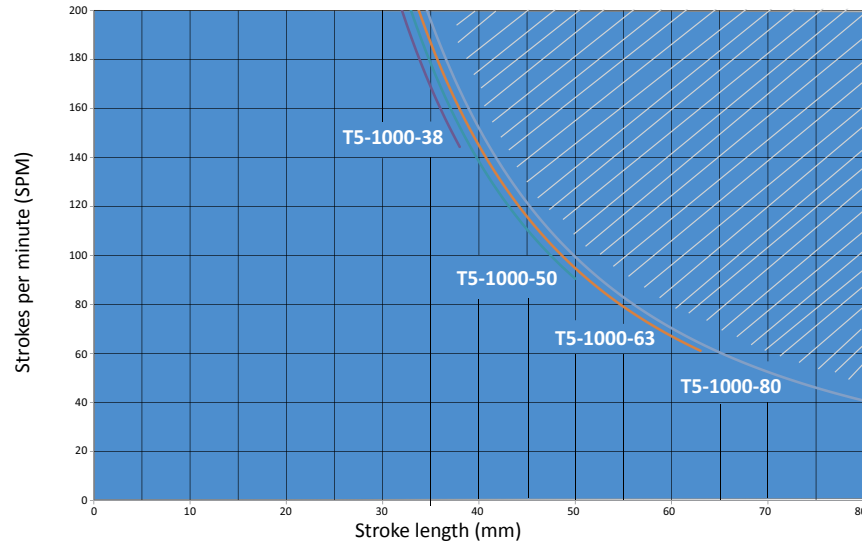
## Stroke per minute (SPM) vs. Stroke Length

The information in the diagram is based on calculations made for T5 gas springs operating at a 200 bar/2900 psi charge pressure in a well-ventilated area with an ambient temperature of 20 °C/ 68°F.

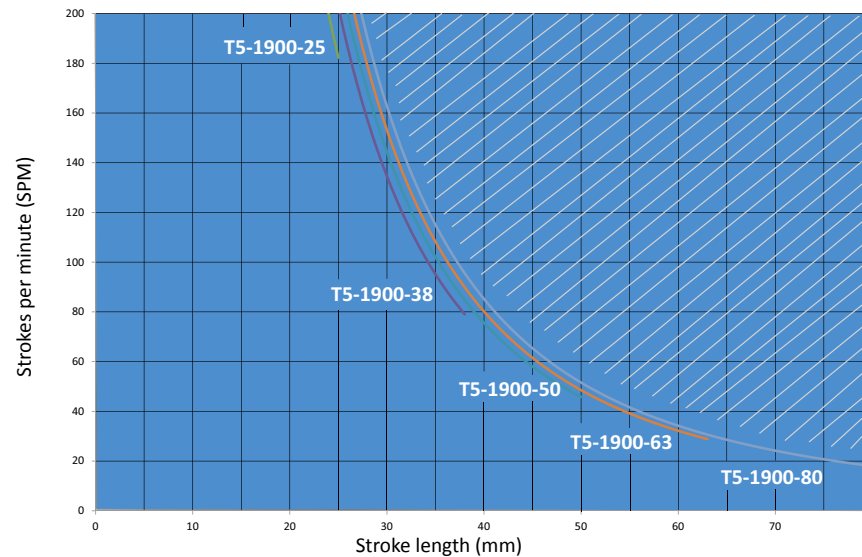
T5-500



T5-1000



T5-1900



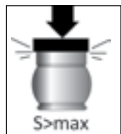
### Advanced Safety Features



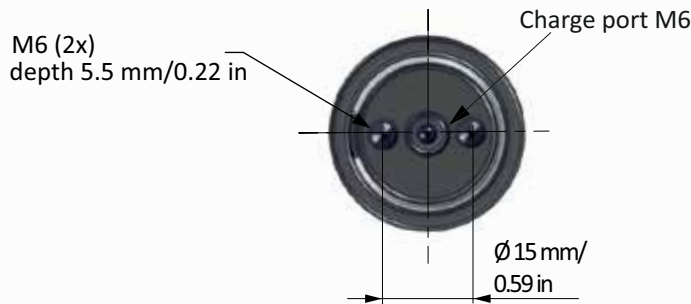
**Overload Protection**



**Overpressure Protection**



**Overstroke Protection**



Order No.	S stroke		Contact Force**		Full Stroke Force**		Y ±0.25 mm	Y ±0.010 in	L mm	L in	Gas volume l	Weight kg
	mm	in	N	lbf	N	lbf						
T5-500x10	10	0.39	5100	1150	6600	1490	75	2.95	65	2.56	0.01	0.27
T5-500x15	15	0.59			7100	1610	85	3.35	70	2.76	0.02	0.29
T5-500x25	25	0.98			7900	1780	105	4.13	80	3.15	0.02	0.33
T5-500x38	38*	1.50			8700	1960	130	5.12	92	3.62	0.03	0.37
T5-500x50	50*	1.97			9100	2040	155	6.10	105	4.13	0.04	0.42
T5-500x63	63*	2.48			8800	1990	190	7.48	127	5.00	0.05	0.50
T5-500x80	80*	3.15			9200	2060	225	8.86	145	5.71	0.06	0.56

Note! \* For stroke lengths over 25 mm / 0.98 in, the spring should be attached to the tool using the threaded holes in the bottom.

All dimensions are nominal. Data shown are typical. Actual data for any particular unit may vary.

\*\* At full charge pressure

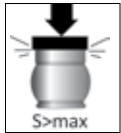
**Advanced Safety Features**



**Overload Protection**



**Overpressure Protection**



**Overstroke Protection**



Order No.	S stroke		Contact Force**		Full Stroke Force**		Y ±0.25 mm	Y ±0.010 in	L mm	L in	Gas volume l	Weight kg
	mm	in	N	lbf	N	lbf						
T5-1000x10	10	0.39	9800	2200	13300	2980	75	2.95	65	2.56	0.03	0.36
T5-1000x15	15	0.59			14400	3240	85	3.35	70	2.75	0.03	0.39
T5-1000x25	25	0.98			16100	3620	105	4.13	80	3.15	0.04	0.43
T5-1000x38	38*	1.50			16900	3800	135	5.31	97	3.82	0.06	0.50
T5-1000x50	50*	1.97			17700	3990	160	6.30	110	4.33	0.07	0.56
T5-1000x63	63*	2.48			16500	3710	205	8.07	142	5.60	0.10	0.67
T5-1000x80	80*	3.15			17300	3880	240	9.44	160	6.30	0.12	0.75

Note! \* For stroke lengths over 25 mm / 0.98 in, the spring should be attached to the tool using the threaded holes in the bottom.

All dimensions are nominal. Data shown are typical. Actual data for any particular unit may vary.

\*\* At full charge pressure



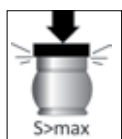
### Advanced Safety Features



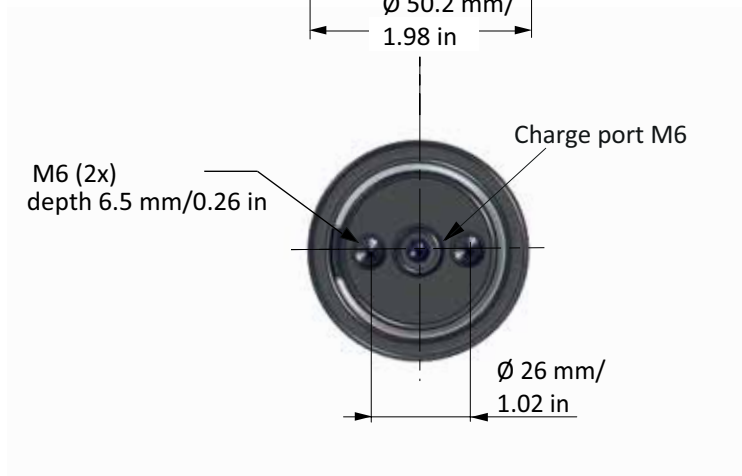
**Overload Protection**



**Overpressure Protection**



**Overstroke Protection**



Order No.	S stroke		Contact Force**		Full Stroke Force**		Y ±0.25 mm	Y ±0.010 in	L mm	L in	Gas vol. l	Weight kg
	mm	in	N	lbf	N	lbf						
T5-1900x10	10	0.39	19200	4320	26300	5920	80	3.15	70	2.76	0.05	0.69
T5-1900x15	15	0.59			31800	7140	95	3.74	80	3.15	0.05	0.76
T5-1900x25	25	0.98			30900	6950	115	4.53	90	3.54	0.08	0.84
T5-1900x38	38*	1.50			31900	7160	150	5.91	112	4.41	0.12	0.98
T5-1900x50	50*	1.97			33800	7600	175	6.89	125	4.92	0.14	1.08
T5-1900x63	63*	2.48			34800	7820	205	8.07	142	5.59	0.17	1.21
T5-1900x80	80*	3.15			35600	8000	245	9.65	165	6.50	0.21	1.37

Note! \* For stroke lengths over 25 mm / 0.98 in, the spring should be attached to the tool using the threaded holes in the bottom. All dimensions are nominal. Data shown are typical. Actual data for any particular unit may vary.

\*\* At full charge pressure



## SPT5 Adapter Plates

T5SP-500 can only be used in hoses systems due to lack of valve, however SPT5-1000 and SPT5-1900 can operate in both hoses systems and as self contained solution. For use in hoses systems we recommend using our Micro EO24™ hose system in combination with our high pressure control block (4717241).

**SPT5-500**

**Note!**  
SPT5-500 must be used in hoses systems only due to lack of valve.

Top view dimensions: 52° angle, Ø 15 mm/0.59 in, M6 (2x) depth 12 mm/0.47 in.

Side view dimensions: 20 mm/0.79 in, 5 mm/0.14 in, 4 mm/0.16 in, Ø 31.9 mm/1.26 in, M6 Port, Ø 16.4 mm/0.65 in, 10.5 mm/0.41 in.

For model	Order No.	For U-groove mounts on SPT5
T5-500	SPT5-500	U-groove mount is equal to T3-350

To foot mount T5 gas spring series when using SPT5 side port adapter plate, use FFC flange:

- \* SPT5-500 use FFC - 350
- \* SPT5-1000 use FFC - 250
- \* SPT5-1900 use FFC - 750

**SPT5-1000**

Top view dimensions: 45° angle, M6 (2x) depth 12 mm/0.47 in, Ø 25 mm/0.98 in.

Side view dimensions: 20 mm/0.79 in, 4 mm/0.16 in, 4 mm/0.16 in, Ø 38 mm/1.50 in, G1/8" Port, Ø 16.4 mm/0.65 in, 10.5 mm/0.41 in.

For model	Order No.	For U-groove mounts on SPT5
T5 1000	SPT5-1000	U-groove mount is equal to T3- 500

**SPT5-1900**

Top view dimensions: 45° angle, M6 (4x) depth 12 mm/0.47 in, Ø 26 mm/0.24 in.

Side view dimensions: 20 mm/0.79 in, 7 mm/0.28 in, 8 mm/0.31 in, Ø 50.2 mm/1.98 in, G1/8" Port, Ø 16.4 mm/0.65 in, 10.5 mm/0.41 in.

For model	Order No.	For U-groove mounts on SPT5
T5 1900	SPT5-1900	U-groove mount is equal to T3-1000



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