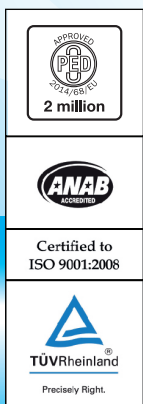


# NDS Series

NDS-3000 to NDS-7500

## NITROGEN DIE SEPARATION GAS SPRINGS

*IDEAL FOR DIE  
SEPARATION*



**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 predefined 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 the 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 PED (2014/68/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.

**GENUINELY HYSON SAFETY APP**

Created to enable safer working environments and fight against unsafe counterfeit springs in manufacturing facilities around the globe, the Genuinely HYSON Safety App authenticates nitrogen gas springs with HYSON labeling have the design and safety features customers have come to expect with the HYSON brand. The app is available for download at [www.HysonSolutions.com](http://www.HysonSolutions.com).



## IDEAL FOR DIE STORAGE

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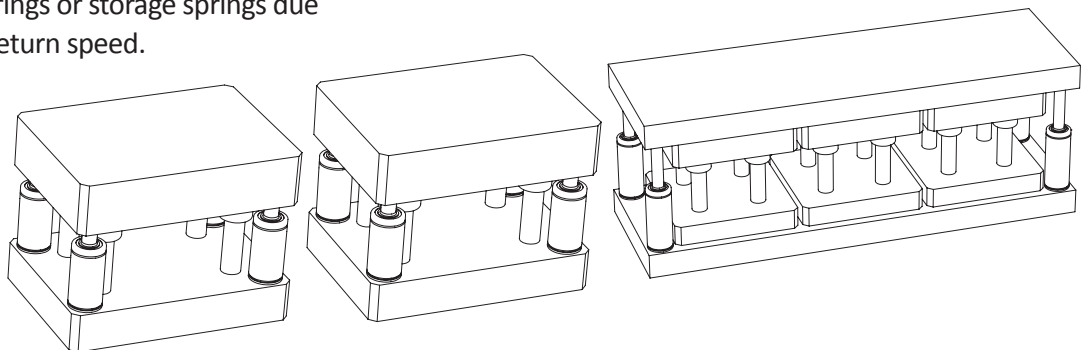
## General Information

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 and motion 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.

### Return Speed Variation

NDS gas springs are suitable for line dies or progressive dies. Some progressive dies with multiple die sets are more sensitive and caution should be taken. NDS is a storage spring and should not be intermixed with other gas springs or storage springs due to differential in return speed.



## 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.

## Product Value

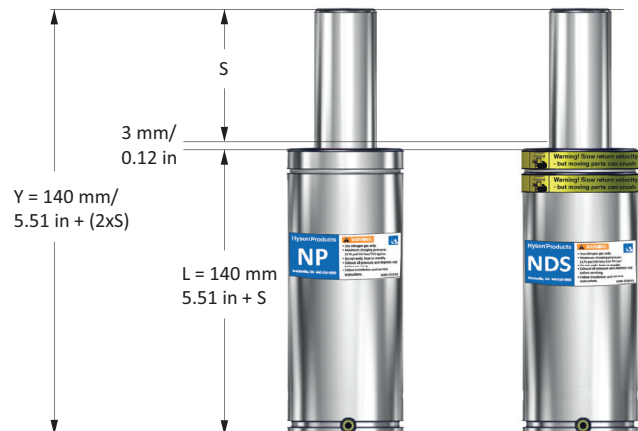
- In addition to preventing wear, NDS Springs aid in the reduction of snap through and unnecessary use of tonnage
- NDS springs allow dies which use cushions to be stacked, in turn freeing up floor space and preventing die pin and die steel damage to storage
- Energy savings of 70-80% when compared to traditional springs

## NDS Series Features

- HYSON Nitrogen Die Separation Gas Springs range from model sizes NDS-3000 to NDS-7500
- Using the new NDS Springs is an excellent way to avoid unnecessary wear of the die, press and gas springs
- Initial forces from 30,000 to 75,000 N
- Stroke lengths of 80mm up to 300mm
- Upper C-groove, lower U-groove and bottom threaded holes allow for various standard mounting possibilities
- Suitable for both top up and bottom up working position in the tool
- NDS Gas Springs have a very slow return speed compared to traditional springs and should not be intermixed with standard gas springs or other storage springs due to return speed differential

## Compatible to Replace NP Series in Die Storage Applications

- Based on NP outside dimension
- Return speed approx. 150mm/ 5.90 in per min
- Saves up to 5 kW / spring depending of used stroke
- Longer life time due to less stroke
- Same mounting possibilities as NP, but should not be intermixed with NP Springs



## Product Specifications

Pressure Medium ..... Nitrogen  
 Max. Charging Pressure ..... 150 bar/2175 psi  
 Min. Charging Pressure ..... 25 bar/365 psi  
 Operating Temperature ..... 0° to 80°C/32° to 176°F  
 Max. Piston Rod Velocity ..... 1.6 m/s / 315 ft per min.  
 Max. Return Speed ..... 3.33 mm per sec / 0.13 in per sec.  
 Return Speed Variation ..... +/- 3%

### ORDERING INSTRUCTIONS

**NDS-XXXX**

**X**

**125**

#### MODEL

NDS-3000, NDS-5000, NDS-7500

#### STROKE (mm)

See Dimensional Information Charts

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

### REPAIR KITS

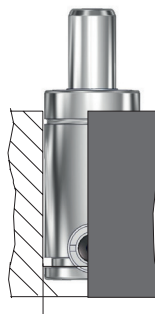
Gas Spring	Order Number
NDS-3000	<b>3226825</b>
NDS-5000	<b>3226826</b>
NDS-7500	<b>3226827</b>

**NOTE:** Applicable only for models with identification groove.

### MOUNTING OPTIONS

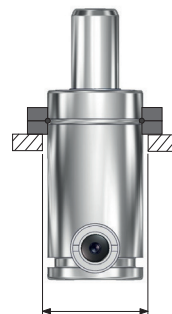


**BASE MOUNT**



Body Ø  $\begin{smallmatrix} +1.0 \\ +0.5 \end{smallmatrix}$

**DROP-IN**



Body Ø  $\begin{smallmatrix} +2.0 \\ +0.5 \end{smallmatrix}$

**TOP MOUNT**



**FOOT MOUNT**

## Advanced Safety Features



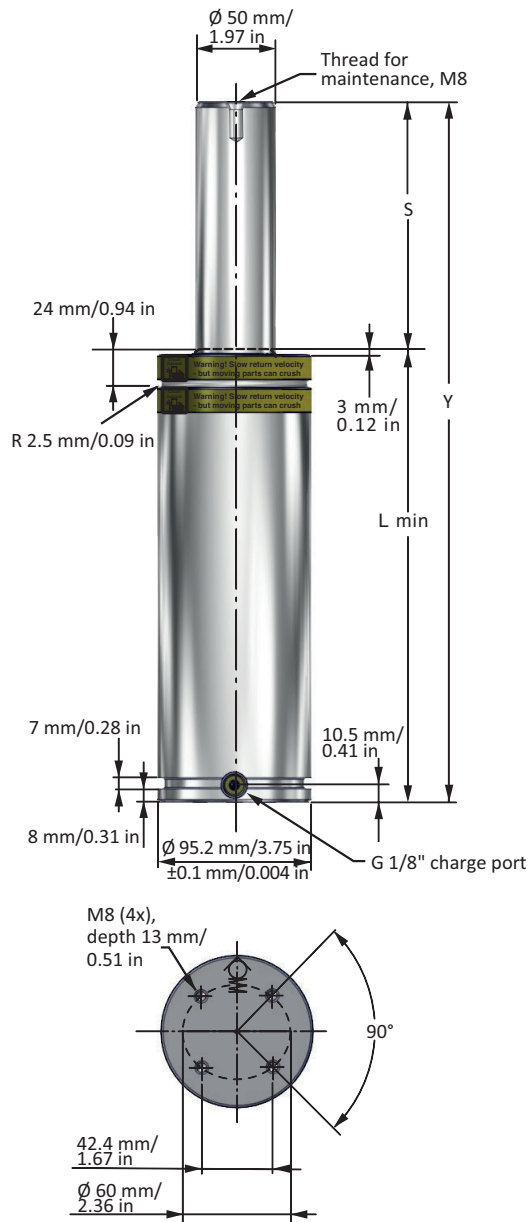
Overload Protection



Overpressure Protection



Overstroke Protection



## NDS-3000 Dimensional Information

Order Number	S Stroke		Contact Force 2175 psi at 68°F		Full Stroke Force		Y ± 0.25	Y ± 0.010	L	L
	mm	in	N	lbf	N	lbf	mm	in	mm	in
NDS-3000x80	80	3.15	30,000	6,750	46,000	10,340	280	11.02	200	7.87
NDS-3000x100	100	3.94			47,000	10,570	320	12.60	220	8.66
NDS-3000x125	125	4.92			47,000	10,570	370	14.57	245	9.65
NDS-3000x160	160	6.30			47,000	10,570	440	17.32	280	11.02
NDS-3000x200	200	7.87			48,000	10,790	520	20.47	320	12.60
NDS-3000x250	250	9.84			48,000	10,790	620	24.41	370	14.57
NDS-3000x300	300	11.81			48,000	10,790	720	28.35	420	16.54

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

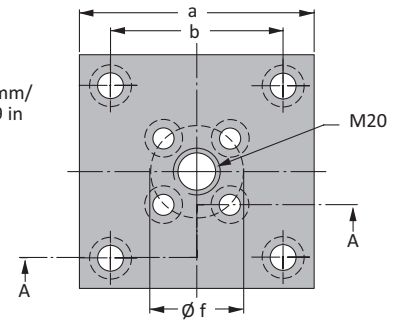
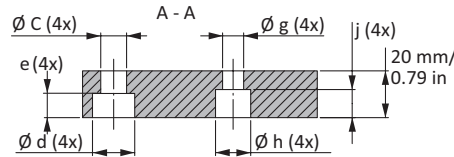
**NOTE:** All flanges ordered separately.

## MP BOTTOM MOUNTING PLATE

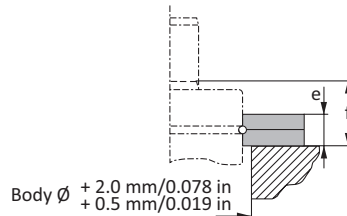
**Note!** Comes complete with screws to mount gas spring.

Order No.	a		b	
	mm	in	mm	in
MP-3000	120	4.72	92.0	3.62

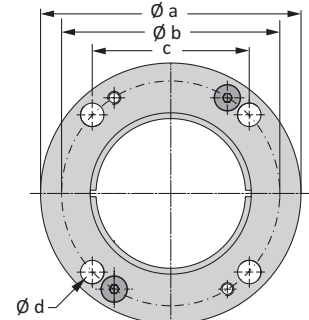
c		d		e		f		g		h		j	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
13.5	0.53	20	0.79	13	0.51	60	2.36	9	0.35	15	0.59	14	0.55



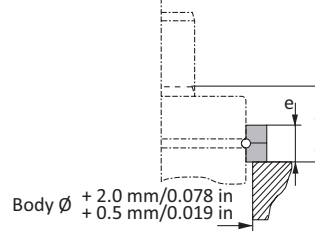
## FC CIRCULAR FLANGE



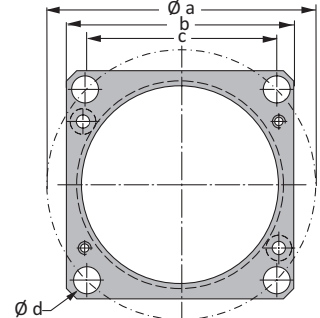
Order No.	Ø a		Ø b		c		Ø d		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FC-3000	150	5.91	130	5.12	92.0	3.62	13.5	0.53	18	0.71	33	1.30



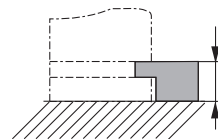
## FCS UPPER SQUARE FLANGE



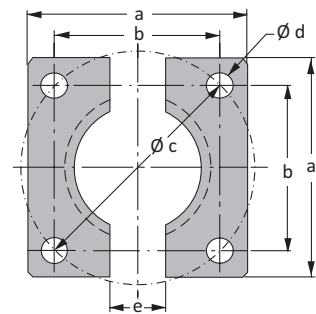
Order No.	Ø a		b		c		Ø d		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FCS-3000	130	5.12	110	4.33	92	3.62	13.5	0.53	18	0.71	33	1.30



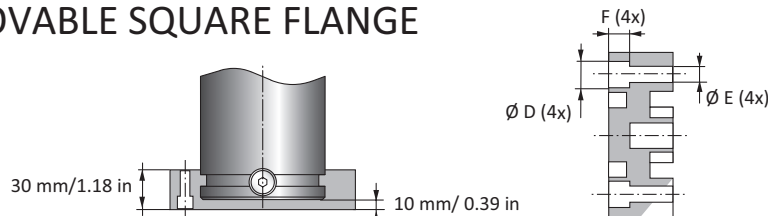
## FFC LOWER SQUARE FLANGE



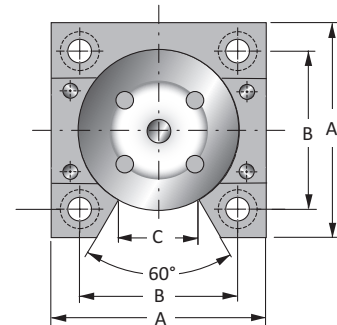
Order No.	a		b		c		Ø d		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FFC-3000	120	4.72	92.0	3.62	130	5.12	13.5	0.53	24	0.94	12	0.47



## RM REMOVABLE SQUARE FLANGE



Order No.	A		B		C		Ø D		Ø E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
RM-3000	120	4.72	92	3.62	43.2	1.70	20	0.78	13.5	0.53	13	0.51



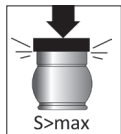
## Advanced Safety Features



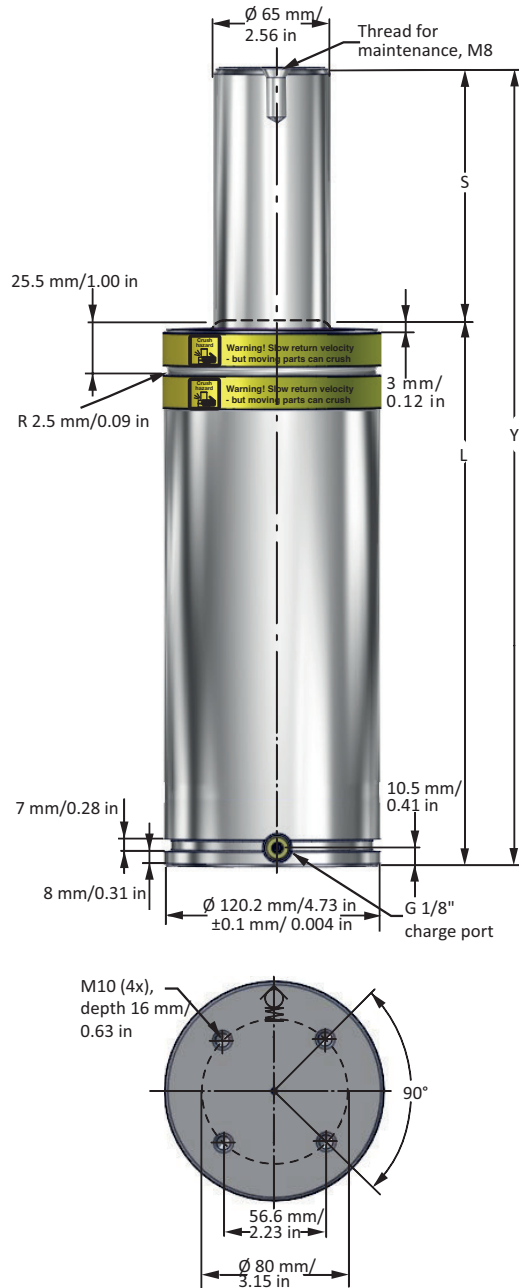
Overload Protection



Overpressure Protection



Overstroke Protection



Certified to  
ISO 9001:2008



## NDS-5000 Dimensional Information

Order Number	S Stroke		Contact Force 2175 psi at 68°F		Full Stroke Force		Y ± 0.25	Y ± 0.010	L	L
	mm	in	N	lbf	N	lbf	mm	in	mm	in
NDS-5000x80	80	3.15	50,000	11,240	81,000	18,210	300	11.81	220	8.66
NDS-5000x100	100	3.94			82,000	18,430	340	13.39	240	9.45
NDS-5000x125	125	4.92			82,000	18,430	390	15.35	265	10.43
NDS-5000x160	160	6.30			83,000	18,660	460	18.11	300	11.81
NDS-5000x200	200	7.87			84,000	18,880	540	21.26	340	13.39
NDS-5000x250	250	9.84			84,000	18,880	640	25.20	390	15.35
NDS-5000x300	300	11.81			84,000	18,880	740	29.13	440	17.32

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

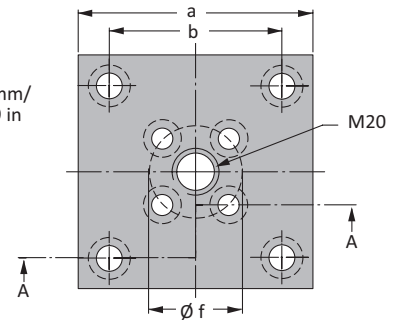
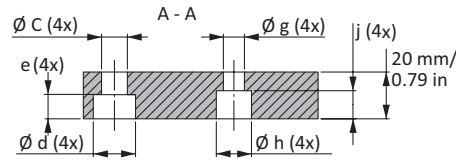
**NOTE:** All flanges ordered separately.

## MP BOTTOM MOUNTING PLATE

**Note!** Comes complete with screws to mount gas spring.

Order No.	a		b	
	mm	in	mm	in
MP-5000	140	5.51	109.5	4.31

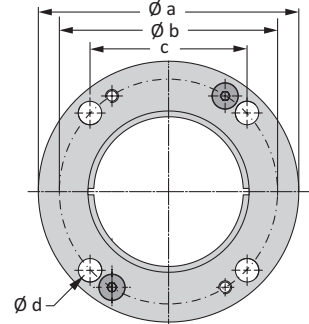
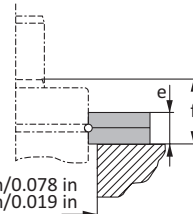
c		d		e		f		g		h		j	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
13.5	0.53	20	0.79	13	0.51	80	3.15	11	0.43	18	0.71	15	0.59



## FC CIRCULAR FLANGE

Body Ø + 2.0 mm / 0.078 in  
+ 0.5 mm / 0.019 in

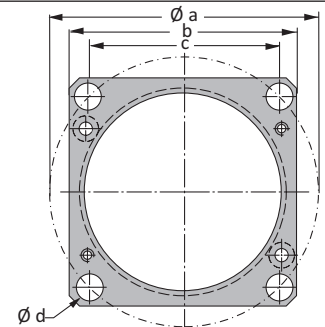
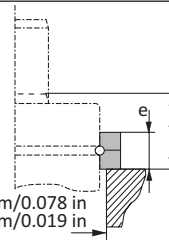
Order No.	Ø a		Ø b		c		Ø d		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FC-5000	175	6.89	155	6.10	109.5	4.31	13.5	0.53	21	0.83	36	1.42



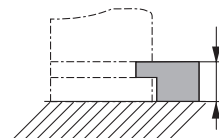
## FCS UPPER SQUARE FLANGE

Body Ø + 2.0 mm / 0.078 in  
+ 0.5 mm / 0.019 in

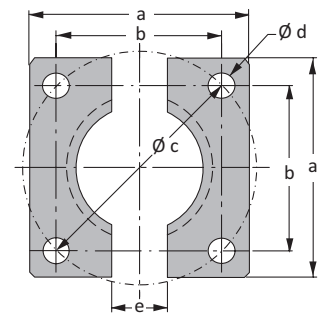
Order No.	Ø a		b		c		Ø d		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FCS-5000	155	6.10	130	5.12	109.5	4.31	13.5	0.53	21	0.83	36	1.42



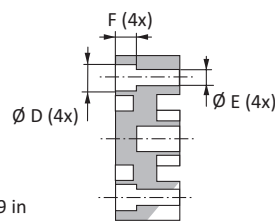
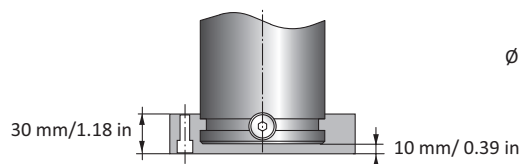
## FFC LOWER SQUARE FLANGE



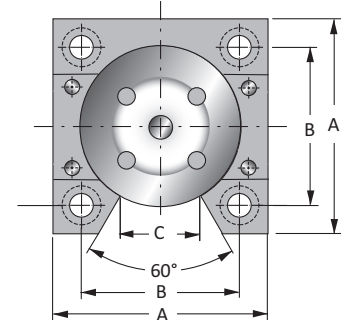
Order No.	a		b		c		Ø d		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FFC-5000	140	5.51	109.5	4.31	155	6.10	13.5	0.53	24	0.94	12	0.47



## RM REMOVABLE SQUARE FLANGE



Order No.	A		B		C		Ø D		Ø E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
RM-5000	140	5.51	109.5	4.31	55.7	2.19	20	0.78	13.5	0.53	13	0.51



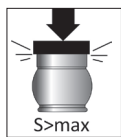
## Advanced Safety Features



Overload Protection



Overpressure Protection



Overstroke Protection



Certified to  
ISO 9001:2008



## NDS-7500 Dimensional Information

Order Number	S Stroke		Contact Force 2175 psi at 68°F		Full Stroke Force		Y ± 0.25	Y ± 0.010	L	L
	mm	in	N	lbf	N	lbf	mm	in	mm	in
NDS-7500x80	80	3.15	75,000	16,860	117,000	26,300	315	12.40	235	9.25
NDS-7500x100	100	3.94			119,000	26,750	355	13.98	255	10.04
NDS-7500x125	125	4.92			121,000	27,200	405	15.94	280	11.02
NDS-7500x160	160	6.30			122,000	27,430	475	18.70	315	12.40
NDS-7500x200	200	7.87			123,000	27,650	555	21.85	355	13.98
NDS-7500x250	250	9.84			124,000	27,880	655	25.79	405	15.94
NDS-7500x300	300	11.81			124,000	27,880	755	29.72	455	17.91

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

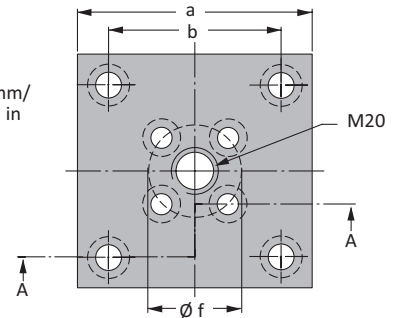
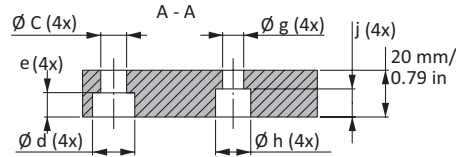
**NOTE:** All flanges ordered separately.

## MP BOTTOM MOUNTING PLATE

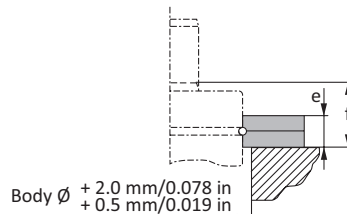
**Note!** Comes complete with screws to mount gas spring.

Order No.	a		b	
	mm	in	mm	in
MP-7500	190	7.48	138	5.43

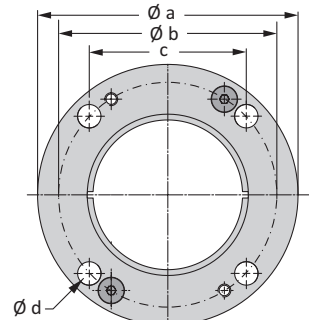
c		d		e		f		g		h		j	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
17.5	0.69	26	1.02	17	0.67	100	3.94	11	0.43	18	0.71	15	0.59



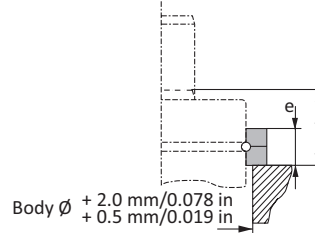
## FC CIRCULAR FLANGE



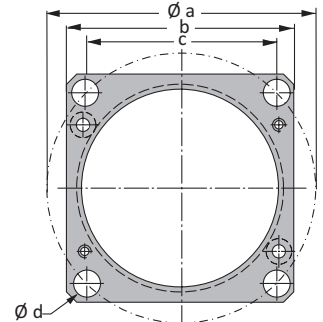
Order No.	$\varnothing a$		$\varnothing b$		c		$\varnothing d$		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FC-7500	220	8.66	195	7.68	138	5.43	17.5	0.69	27	1.06	41	1.61



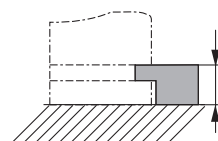
## FCS UPPER SQUARE FLANGE



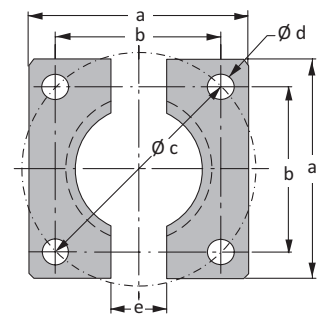
Order No.	$\varnothing a$		b		c		$\varnothing d$		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FCS-7500	195	7.68	162	6.38	138	5.43	17.5	0.69	27	1.06	41	1.61



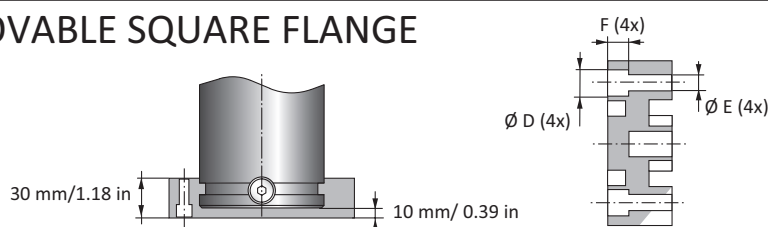
## FFC LOWER SQUARE FLANGE



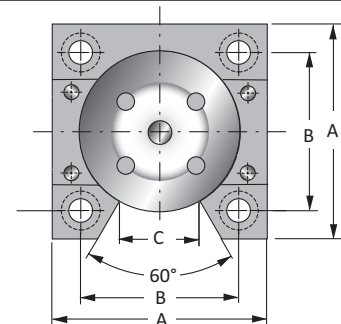
Order No.	a		b		c		$\varnothing d$		e		f	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
FFC-7500	190	7.48	138	5.43	195.2	7.69	17.5	0.69	24	0.94	12	0.47



## RM REMOVABLE SQUARE FLANGE



Order No.	A		B		C		$\varnothing D$		$\varnothing E$		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
RM-7500	190	7.48	138	5.43	70.7	2.78	26	1.02	18	0.71	17	0.67





**[www.HysonSolutions.com](http://www.HysonSolutions.com)**  
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