

# N-FORCER®

Nitrogen Die Springs

Made in the USA



**N-FORCER**

*GAS Springs Since 1986*

## *Complete Catalog*



Die, Mold & Automation Components, Inc.

14400 Henn Street

Dearborn, MI 48126

Phone : 1.800.220.2242

**N-Forcer.com**



# N-FORCER®

**.75 Ton to 7.5 Tons Nitrogen Gas Springs  
( 7.5 kN to 75 kN )**

## **“IS” Series**

**International Standards (ISO Standards)  
NAAMS Standards**



Detachable mounts shown.

Welded mounts also available as a standard.

Note: We can supply welded mounts to any “IS” series if requested.

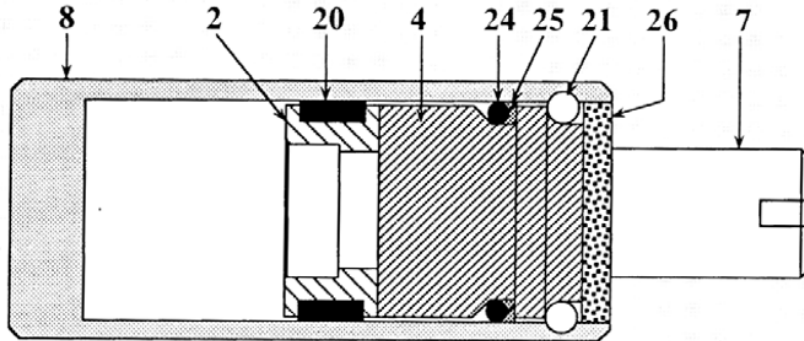
Die, Mold & Automation Components, Inc. 14400 Henn Street Dearborn, MI 48126  
Phone : 1.800.220.2242 [www.n-forcer.com](http://www.n-forcer.com)

# N-FORCER®



## “CN” & "IS" SERIES PARTS LIST

CN & IS Series repair kits & parts are interchangeable.



### Individual repair parts:

- |  |  |
|--|--|
| 8. Tube Assembly P/N: <u><b>N(###)-08(##)</b></u>    | 25. O-ring back-up P/N: <u><b>N(###) -25</b></u> |
| 2. Piston Rod Retainer P/N: <u><b>N(###) -02</b></u> | 21. Retaining Rings P/N: <u><b>N333 -21</b></u>  |
| 20. Wear Ring P/N: <u><b>N(###) -20</b></u>          | 26. End Cover P/N: <u><b>N(###) -26</b></u>      |
| 4. Cartridge P/N: <u><b>N(###) -4C</b></u>           | 7. Piston Rod P/N: <u><b>N(###) -07(##)</b></u>  |
| 24. Cartridge O-ring P/N: <u><b>N(###) -24</b></u>   |  |

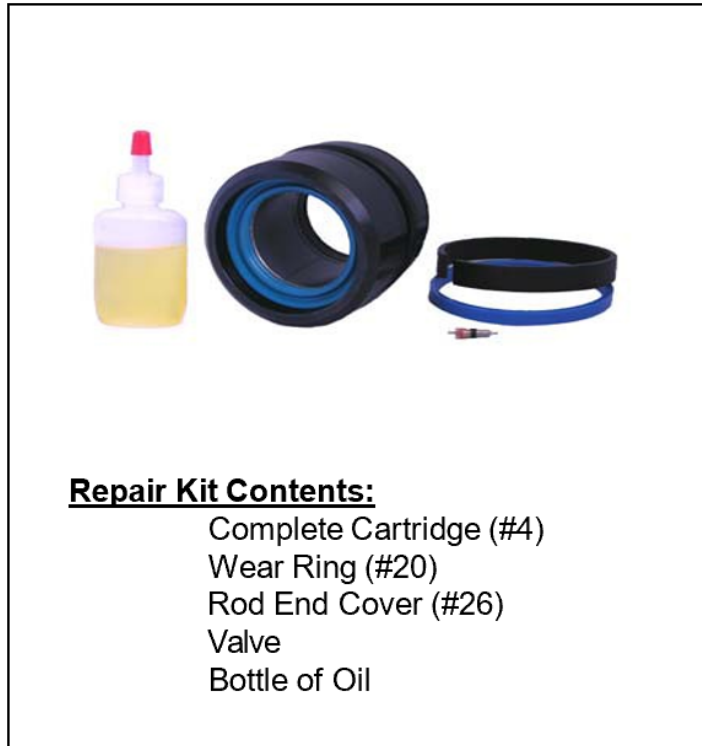
### = (Series Number)  
## = (Stroke)

### REPAIR KITS

#### Standard Repair Kit P/N

CN (##) - RK -21

Example: CN300-RK-21  
This represents a repair kit for a 3 ton cylinders with Garloc Bearing



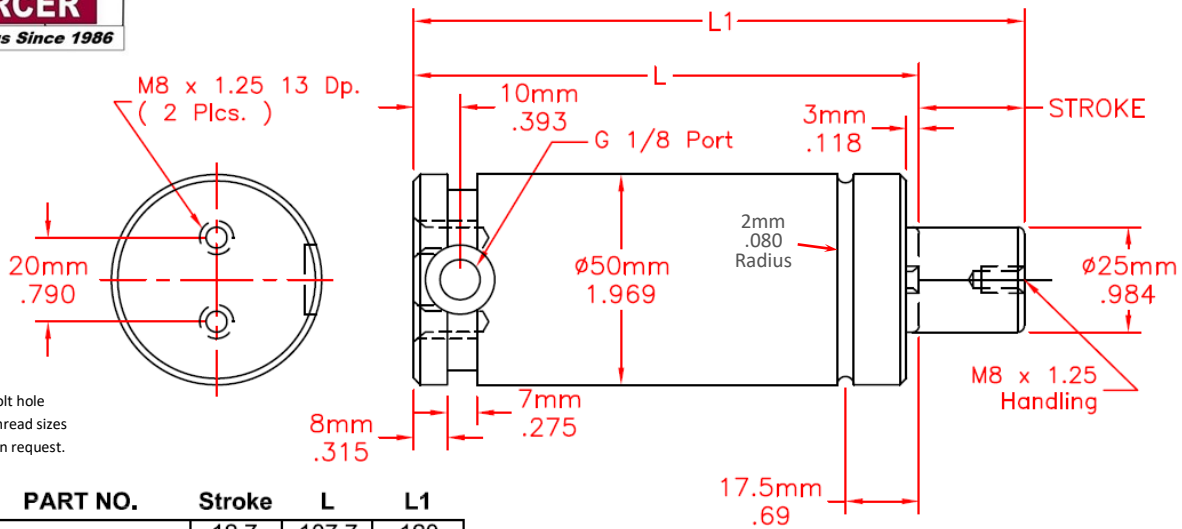
#### Repair Kit Contents:

- Complete Cartridge (#4)
- Wear Ring (#20)
- Rod End Cover (#26)
- Valve
- Bottle of Oil

Made in the USA



# N-FORCER® IS075 - (7.5 kN - .75 Ton) Basic Mount



\*Custom bolt hole patterns and thread sizes are available on request.

PART NO.	Stroke	L	L1
IS075 x 013	12.7	107.7	120
	0.50	4.24	4.74
IS075 x 025	25	120	145
	0.98	4.72	5.71
IS075 x 038	38.1	133.1	171
	1.50	5.24	6.74
IS075 x 050	50	145	195
	1.97	5.71	7.67
IS075 x 063	63.5	158.5	222
	2.50	6.24	8.74
IS075 x 075	75	170	245
	2.95	6.69	9.64
IS075 x 080	80	175	255
	3.15	6.89	10.04
IS075 x 088	88.9	183.9	273
	3.50	7.24	10.74
IS075 x 100	100	195	295
	3.94	7.68	11.61
IS075 x 114	114.3	209.3	324
	4.50	8.24	12.74
IS075 x 125	125	220	345
	4.92	8.66	13.58
IS075 x 138	139.7	234.7	374
	5.50	9.24	14.74
IS075 x 150	150	245	395
	5.91	9.65	15.55
IS075 x 160	160	255	415
	6.30	10.04	16.34
IS075 x 175	175	270	445
	6.89	10.63	17.52
IS075 x 200	200	295	495
	7.87	11.61	19.49
IS075 x 225	225	320	545
	8.86	12.60	21.45
IS075 x 250	250	345	595
	9.84	13.58	23.42
IS075 x 275	275	370	645
	10.83	14.57	25.39
IS075 x 280	280	375	655
	11.02	14.76	25.78
IS075 x 300	300	395	695
	11.81	15.55	27.36

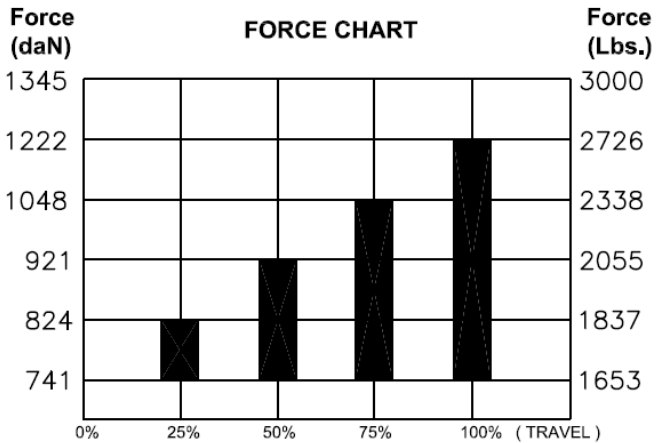


Chart is showing maximum force base on 2175 psl ( 150 bar ) charging pressure. If less than max. the force is reduced proportionally.  
Example: Forces on chart are multiplied by .69 at 1500 psi ( 103 bar ), by .46 at 1000 psi ( 69 bar ), etc.

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

● Denotes NAAMS standard stroke lengths.

### ORDERING EXAMPLE

IS075 x 013 - D - 150

Part No. Series, Model and Stroke

Charging Pressure  
H = open flow or hoses, no pressure, no valve.  
Self contained = 51-150 bar or 750 - 2175 psi. If not specified the 2175 psi is default.

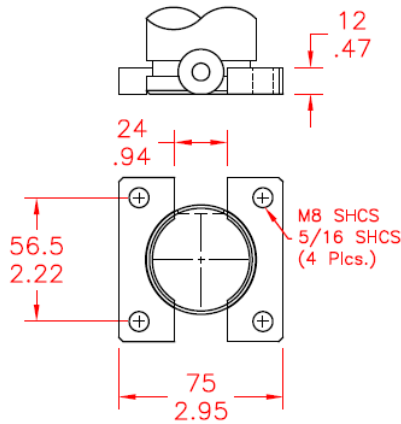
Mounting Option  
"D" Basic, optional mounts on next page

Repair Kits

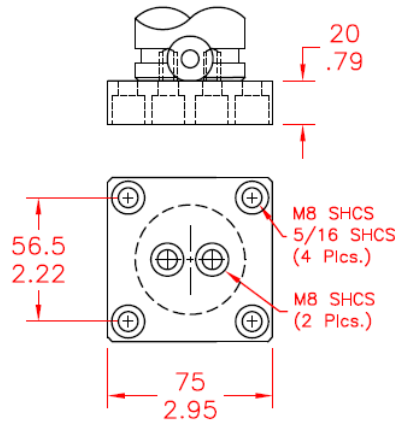
# N-FORCER<sup>®</sup>

## IS075 - (7.5 kN - .75 Ton) Optional Mounts

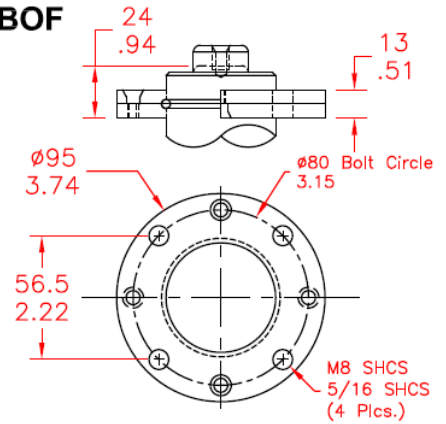
**BSF**



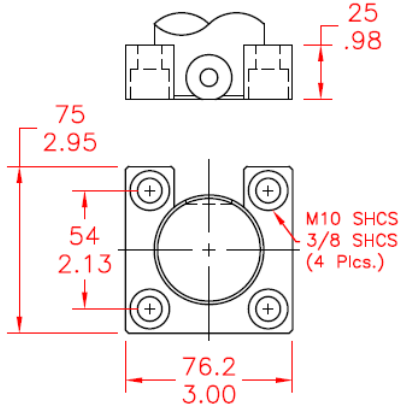
**BF**



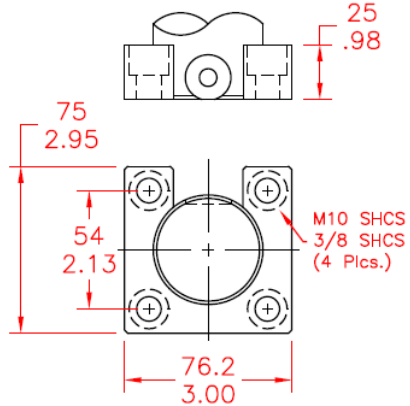
**BOF**



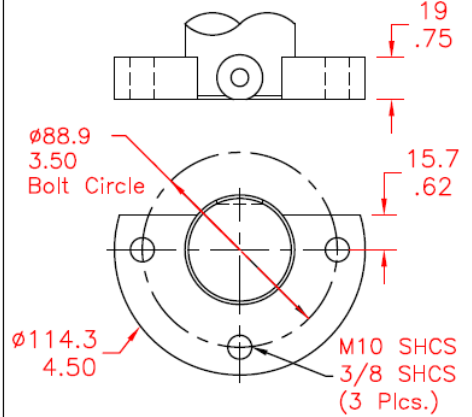
**SF - Welded**



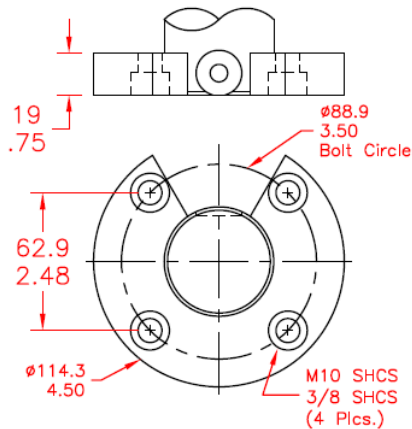
**SF1 - Welded**



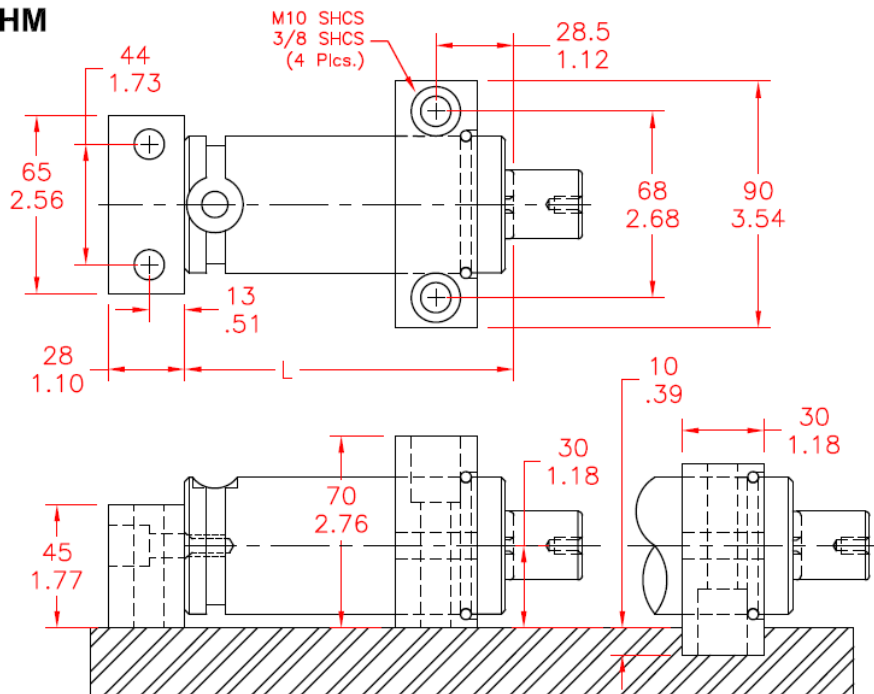
**R2 - Welded**



**RF - Welded**



**HM**

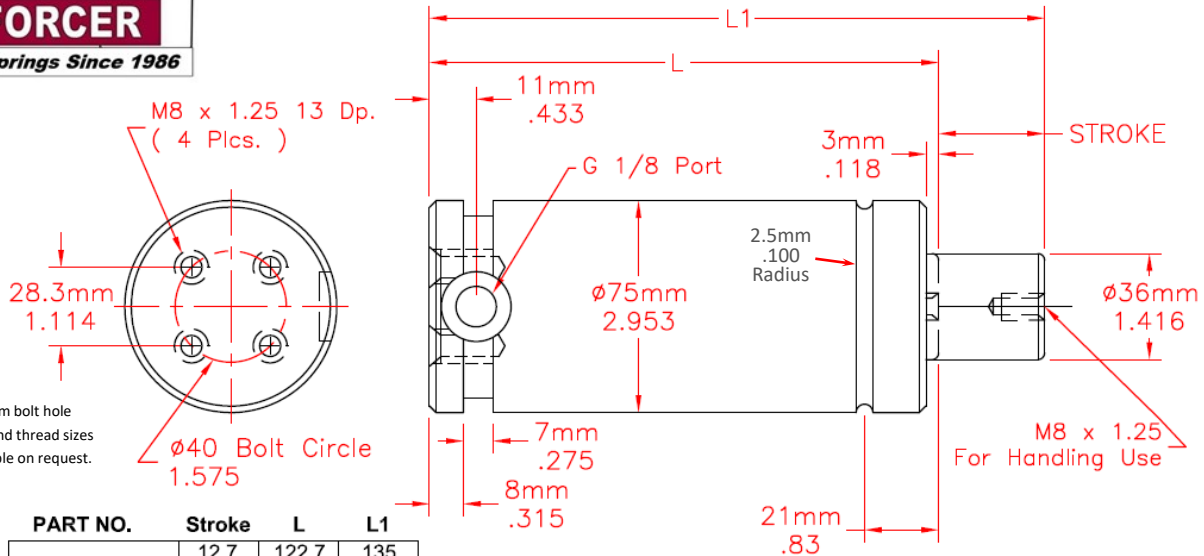


Made in the USA



**N-FORCER**  
GAS Springs Since 1986

# N-FORCER® IS150 - (15 kN - 1.5 Ton) Basic Mount



\*Custom bolt hole patterns and thread sizes are available on request.

PART NO.	Stroke	L	L1
IS150 x 013	12.7	122.7	135
	0.50	4.83	5.33
IS150 x 025	25	135	160
	0.98	5.31	6.30
IS150 x 038	38.1	148.1	186
	1.50	5.83	7.33
IS150 x 050	50	160	210
	1.97	6.30	8.27
IS150 x 063	63.4	173.4	237
	2.50	6.83	9.32
IS150 x 075	75	185	260
	2.95	7.28	10.24
IS150 x 080	80	190	270
	3.15	7.48	10.63
IS150 x 088	88.9	198.9	288
	3.50	7.83	11.33
IS150 x 100	100	210	310
	3.94	8.27	12.20
IS150 x 114	114.3	224.3	339
	4.50	8.83	13.33
IS150 x 125	125	235	360
	4.92	9.25	14.17
IS150 x 139	139.7	249.7	389
	5.50	9.83	15.33
IS150 x 150	150	260	410
	5.91	10.24	16.14
IS150 x 160	160	270	430
	6.30	10.63	16.93
IS150 x 165.1	165.1	275	440.2
	6.5	10.63	17.33
IS150 x 175	175	285	460
	6.89	11.22	18.11
IS150 x 200	200	310	510
	7.87	12.20	20.08
IS150 X 203	203	313	516
	8.00	12.32	20.32
IS150 X 215.9	215.3	215.3	540.6
	8.5	8.05	20.86
IS150 x 225	225	335	560
	8.86	13.19	22.05
IS150 X 228.6	228.6	228.6	567.2
	9.00	9.0	22.33
IS150 x 250	250	360	610
	9.84	14.17	24.02
IS150 x 275	275	385	660
	10.83	15.16	25.98
IS150 x 300	300	410	710
	11.81	16.14	27.95

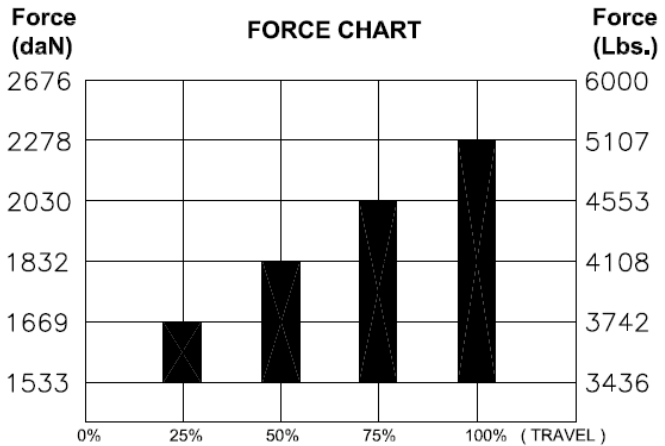


Chart is showing maximum force base on 2175 psi ( 150 bar ) charging pressure. If less than max. the force is reduced proportionally.  
Example: Forces on chart are multiplied by .69 at 1500 psi, ( 103 bar ), by .46 at 1000 psi ( 69 bar ), etc.

**NOTE: MAXIMUM TRAVEL  
RECOMMENDED IS 90% OF STROKE.**

● Denotes NAAMS standard stroke lengths.

### ORDERING EXAMPLE

IS150 x 013 - D - 150

Part No.  
Series, Model  
and Stroke

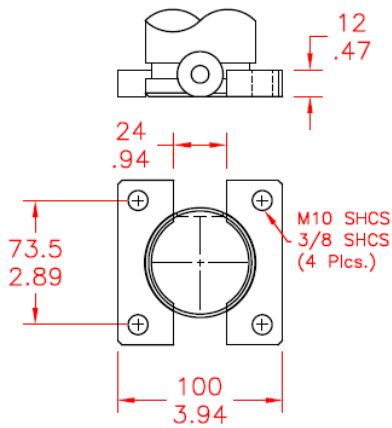
Mounting Option  
"D" Basic, optional  
mounts on next page

Charging Pressure  
H = open flow or hosed, no  
pressure, no valve.  
Self contained = 51-150 bar  
or 750 - 2175 psi. If not  
specified the 2175 psi  
is default.

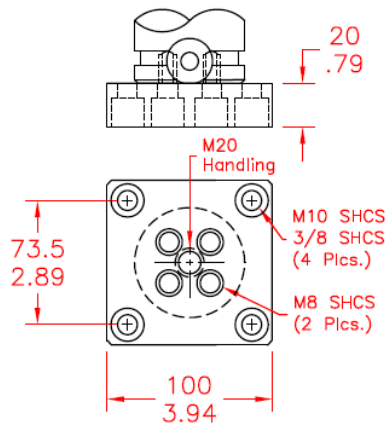
# N-FORCER®

## IS150 - (15 kN - 1.5 Ton) Optional Mounts

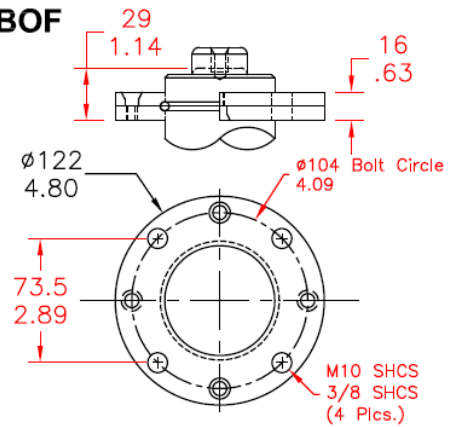
**BSF**



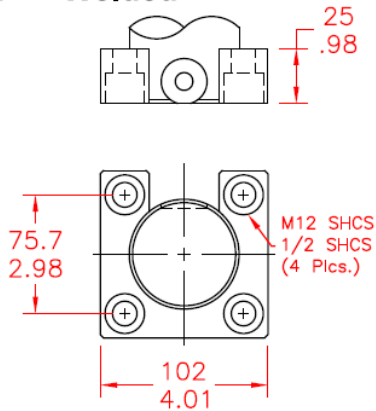
**BF**



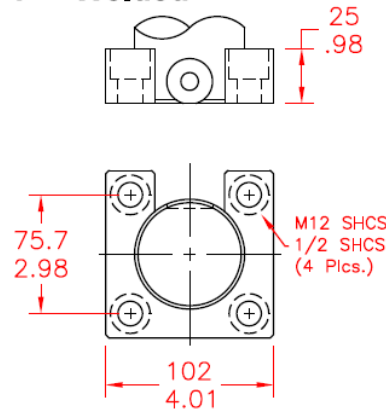
**BOF**



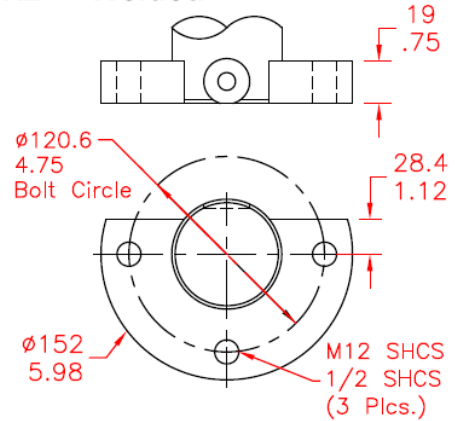
**SF - Welded**



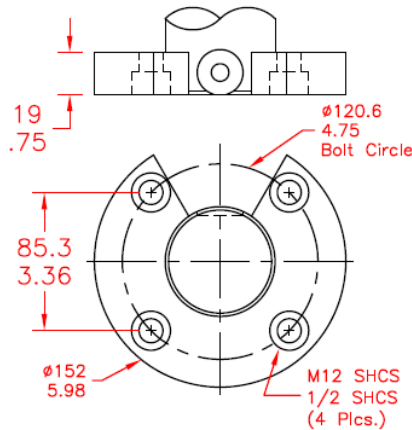
**SF1 - Welded**



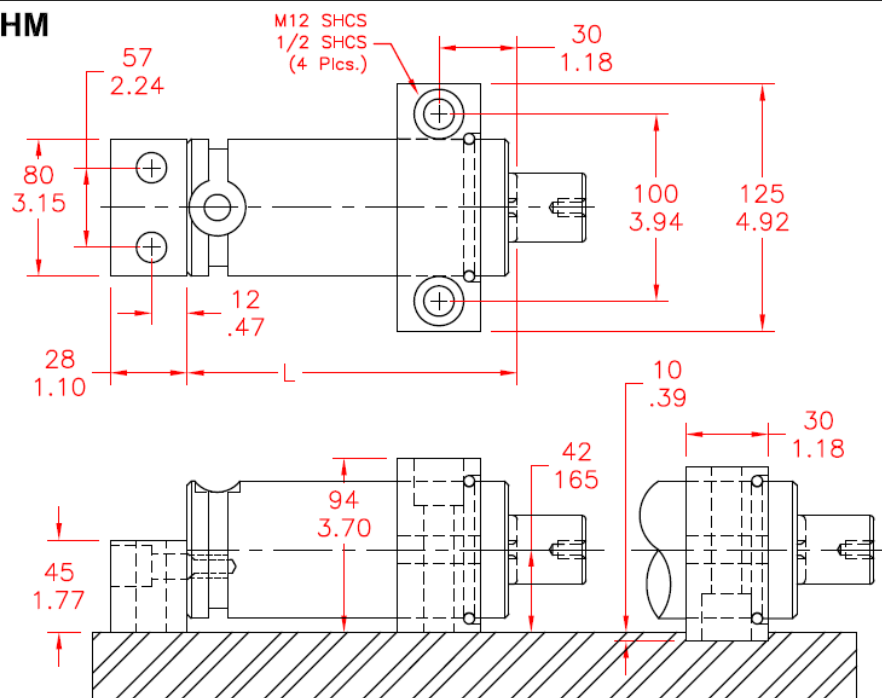
**R2 - Welded**



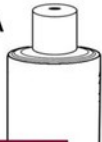
**RF - Welded**



**HM**



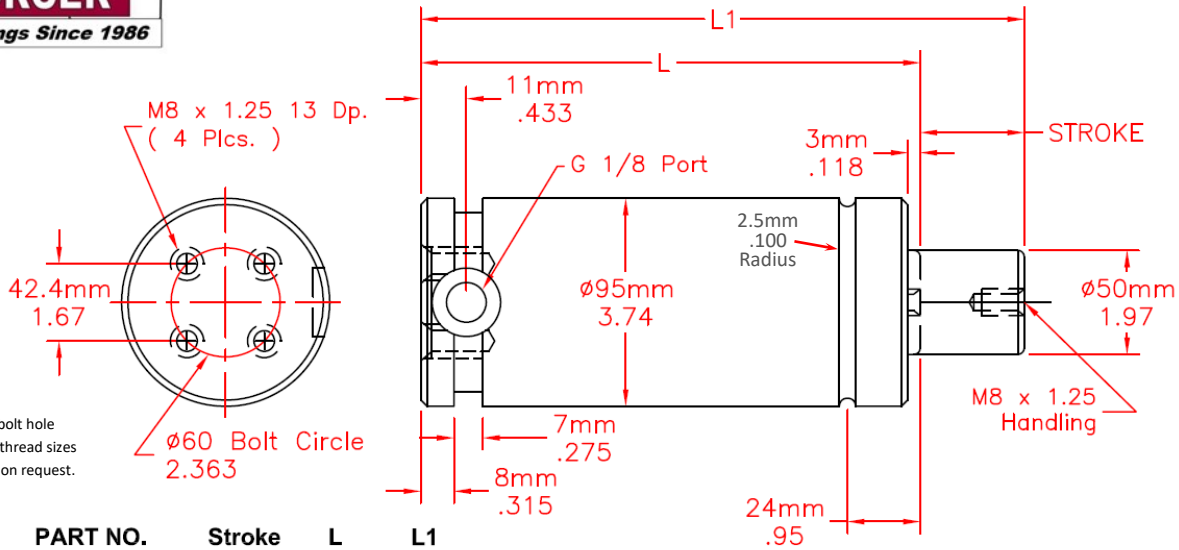
Made in the USA



**N-FORCER**

GAS Springs Since 1986

# N-FORCER® IS300 - (30 kN - 3.0 Ton) Basic Mount



\*Custom bolt hole patterns and thread sizes are available on request.

PART NO.	Stroke	L	L1
IS300 x 013	12.7	132.7	145
IS300 x 025	0.50	5.22	5.72
IS300 x 025	25	145	170
IS300 x 038	0.98	5.71	6.69
IS300 x 038	38.1	158.1	196
IS300 x 038	1.50	6.22	7.72
IS300 x 050	50	170	220
IS300 x 050	1.97	6.69	8.66
IS300 x 063	63.4	183.4	247
IS300 x 063	2.50	7.22	9.72
IS300 x 075	75	195	270
IS300 x 075	2.95	7.68	10.63
IS300 x 080	80	200	280
IS300 x 080	3.15	7.87	11.02
IS300 x 088	88.9	208.9	298
IS300 x 088	3.50	8.22	11.72
IS300 x 100	100	220	320
IS300 x 100	3.94	8.66	12.60
IS300 x 114	114.3	234.3	349
IS300 x 114	4.50	9.22	13.72
IS300 x 125	125	245	370
IS300 x 125	4.92	9.65	14.57
IS300 x 139	139.7	259.7	399
IS300 x 139	5.50	10.22	15.72
IS300 x 150	150	270	420
IS300 x 150	5.91	10.63	16.53
IS300 x 160	160	280	440
IS300 x 160	6.30	11.02	17.32
IS300 x 175	175	295	470
IS300 x 175	6.89	11.61	18.50
IS300 x 200	200	320	520
IS300 x 200	7.87	12.60	20.47
IS300 x 225	225	345	570
IS300 x 225	8.86	13.58	22.44
IS300 x 250	250	370	620
IS300 x 250	9.84	14.57	24.41
IS300 x 275	275	395	670
IS300 x 275	10.83	15.55	26.38
IS300 x 300	300	420	720
IS300 x 300	11.81	16.54	28.35
IS300 x 325	325	445.1	770
IS300 x 325	12.80	17.53	30.32

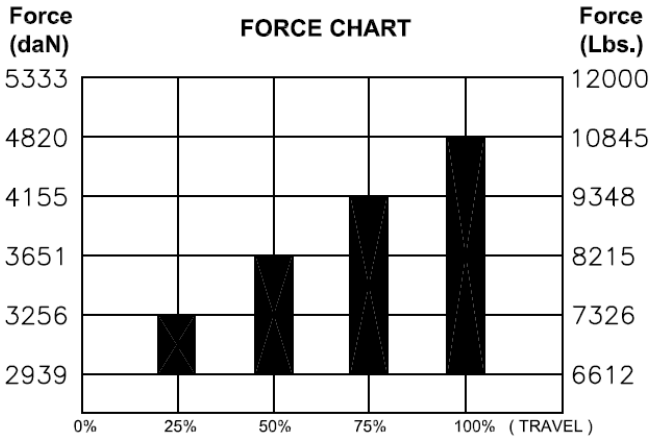


Chart is showing maximum force base on 2175 psi (150 bar) charging pressure. If less than max the force is reduced proportionally.  
Example: Forces on chart are multiplied by .69 at 1500 psi (103 bar), by .46 at 1000 psi (69 bar), etc.

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

● Denotes NAAMS standard stroke lengths.

### ORDERING EXAMPLE

IS300 x 013 - D - 150

Part No. Series, Model and Stroke

Charging Pressure  
H = open flow or hosed, no pressure, no valve.  
Self contained = 51-150 bar or 750 - 2175 psi. If not specified the 2175 psi is default.

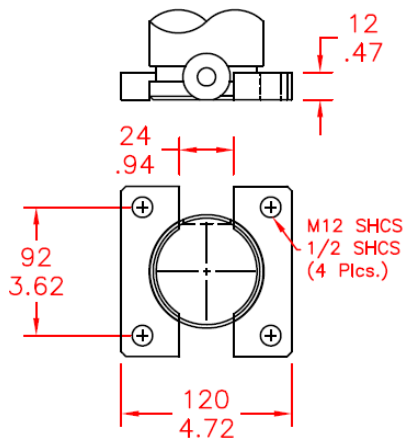
Mounting Option  
"D" Basic, optional mounts on next page



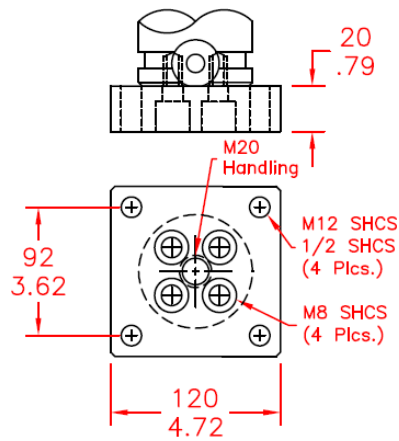
# N-FORCER<sup>®</sup>

## IS300 - (30 kN - 3.0 Ton) Optional Mounts

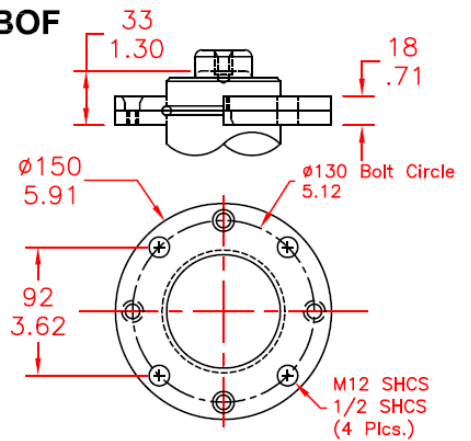
**BSF**



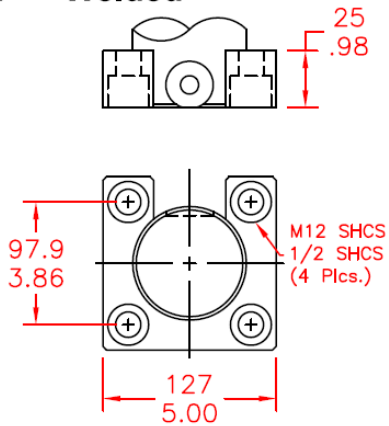
**BF**



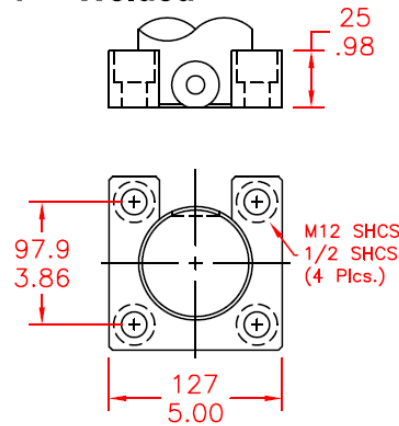
**BOF**



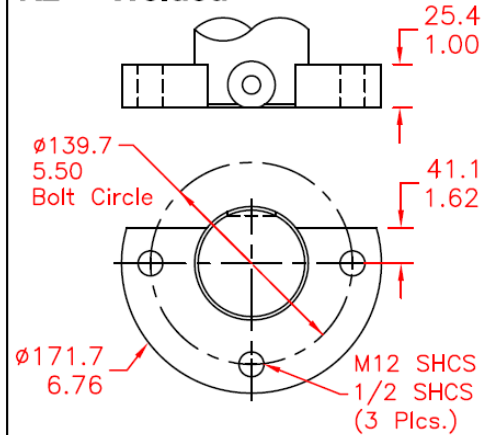
**SF - Welded**



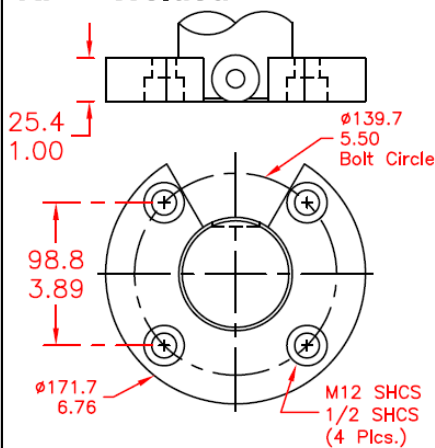
**SF1 - Welded**



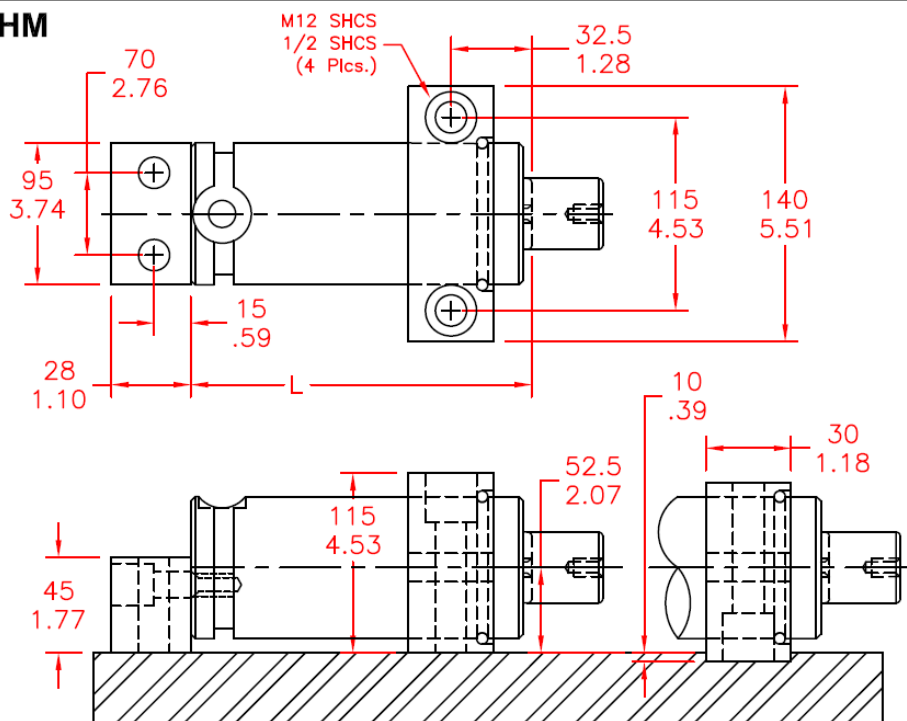
**R2 - Welded**



**RF - Welded**



**HM**



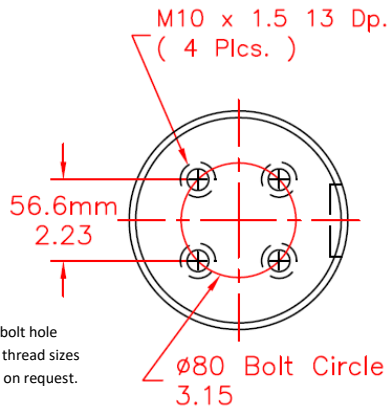
Made in the USA



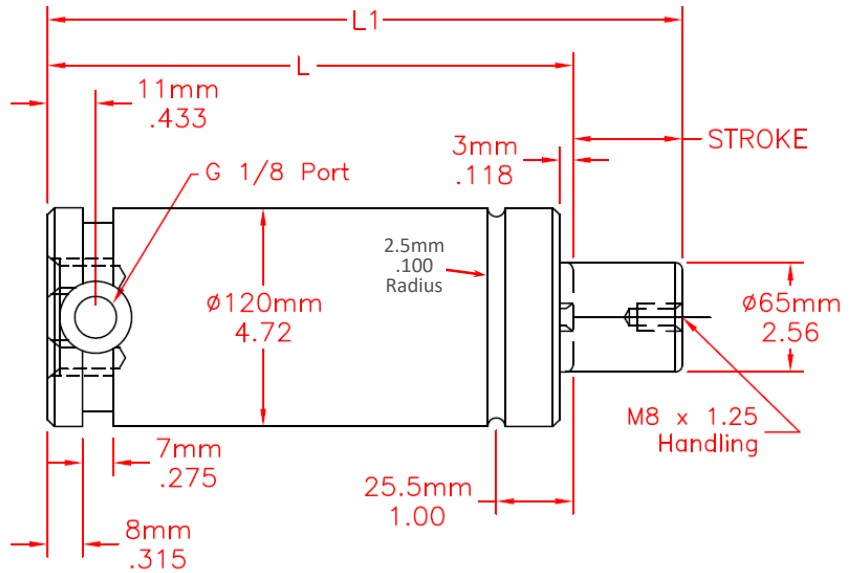
**N-FORCER**

GAS Springs Since 1986

# N-FORCER® IS500 - (50 kN - 5.0 Ton) Basic Mount



\*Custom bolt hole patterns and thread sizes are available on request.



Part No.	Stroke	L	L1
IS500 x 025	25	165.00	190.00
	0.98	6.49	7.47
IS500 x 038	38.1	178.10	216.20
	1.5	7.01	8.51
IS500 x 050	50	190.00	240.00
	1.97	7.48	9.45
IS500 x 063	63.5	203.50	267.00
	2.5	8.01	10.51
IS500 x 075	75	215.00	290.00
	2.95	8.46	11.41
IS500 x 080	80	220.00	300.00
	3.15	8.66	11.81
IS500 x 088	88.9	228.90	317.80
	3.5	9.01	12.51
IS500 x 100	100	240.00	340.00
	3.94	9.45	13.39
IS500 x 114	114.3	254.30	368.60
	4.5	10.01	14.51
IS500 x 125	125	265.00	390.00
	4.92	10.43	15.35
IS500 x 139	139.7	279.70	419.40
	5.500	11.01	16.51
IS500 x 150	150	290.00	440.00
	5.91	11.42	17.33
IS500 x 160	160	300.00	460.00
	6.3	11.81	18.11
is500 x 165	165	305.00	470.00
	6.496	12.01	18.50
IS500 x 175	175	315.00	490.00
	6.89	12.40	19.29
IS500 x 177.8	177.8	317.80	495.60
	7	12.51	19.51
is500 x 190	190	330.00	520.00
	7.5	13.01	20.51
IS500 x 200	200	340.00	539.80
	7.87	13.38	21.25
IS500 x 203.2	203.2	343.20	546.40
	8	13.51	21.51
IS500 x 225	225	365.00	590.00
	8.86	14.37	23.23
IS500 x 228.9	228.9	368.90	597.80
	9	14.51	23.51
IS500 x 250	250	390.00	640.00
	9.84	15.35	25.19
IS500 x 275	275	415.00	690.00
	10.83	16.34	27.17
IS500 x 300	300	440.00	740.00
	11.81	17.32	29.13

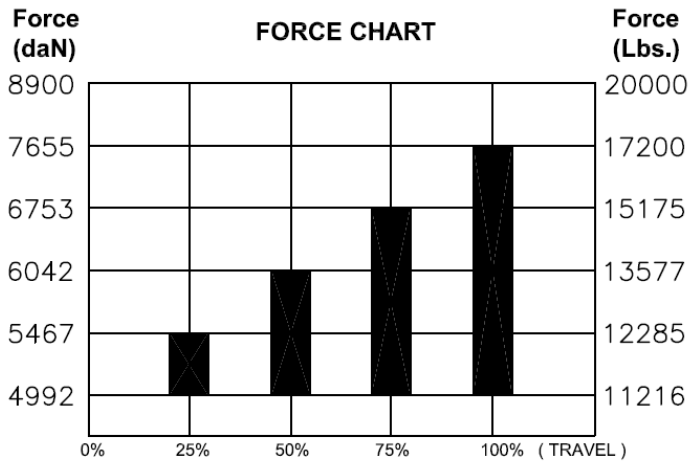


Chart is showing maximum force base on 2175 psi ( 150 bar ) charging pressure. If less than max. the force is reduced proportionally.

Example: Forces on chart are multiplied by .69 at 1500 psi ( 103 bar ), by .46 at 1000 psi ( 69 bar ), etc.

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

● Denotes NAAMS standard stroke lengths.

### ORDERING EXAMPLE

IS500 x 025 - D - 150

Part No. Series, Model and Stroke

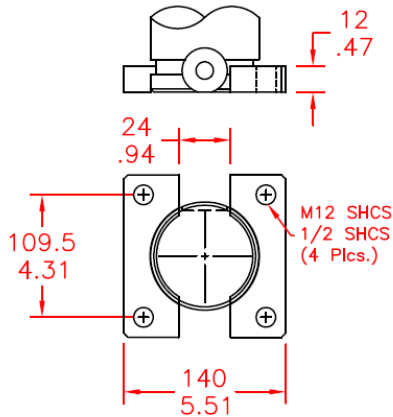
Mounting Option "D" Basic, optional mounts on next page

Charging Pressure H = open flow or hosed, no pressure, no valve. Self contained = 51-150 bar or 750 - 2175 psi. If not specified the 2175 psi is default.

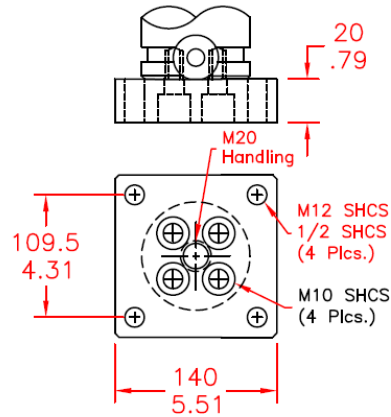
# N-FORCER<sup>®</sup>

## IS500 - (50 kN - 5.0 Ton) Optional Mounts

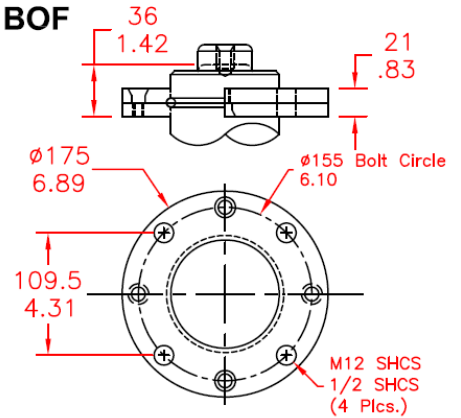
**BSF**



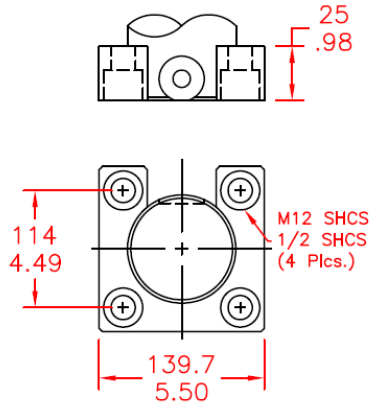
**BF**



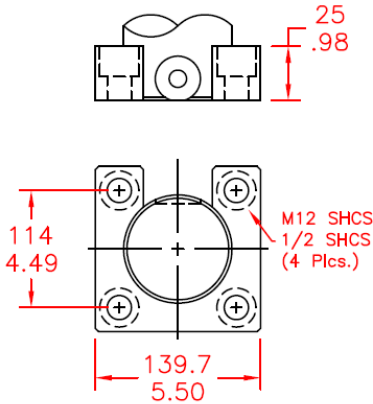
**BOF**



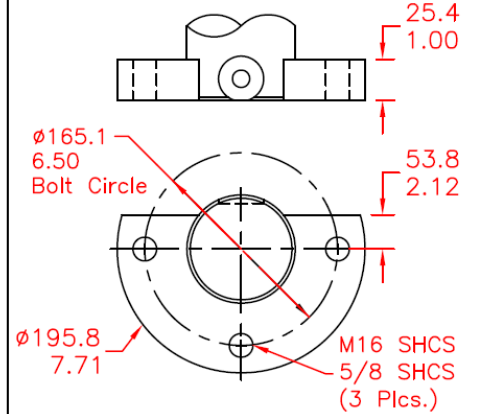
**SF - Welded**



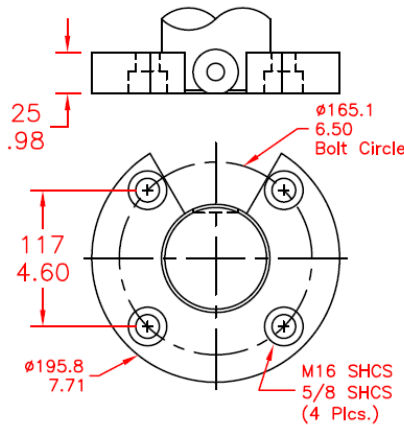
**SF1 - Welded**



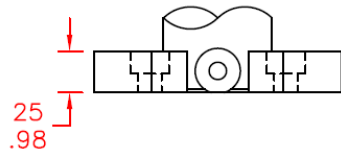
**R2 - Welded**



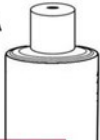
**RF - Welded**



**RF1 - Welded**



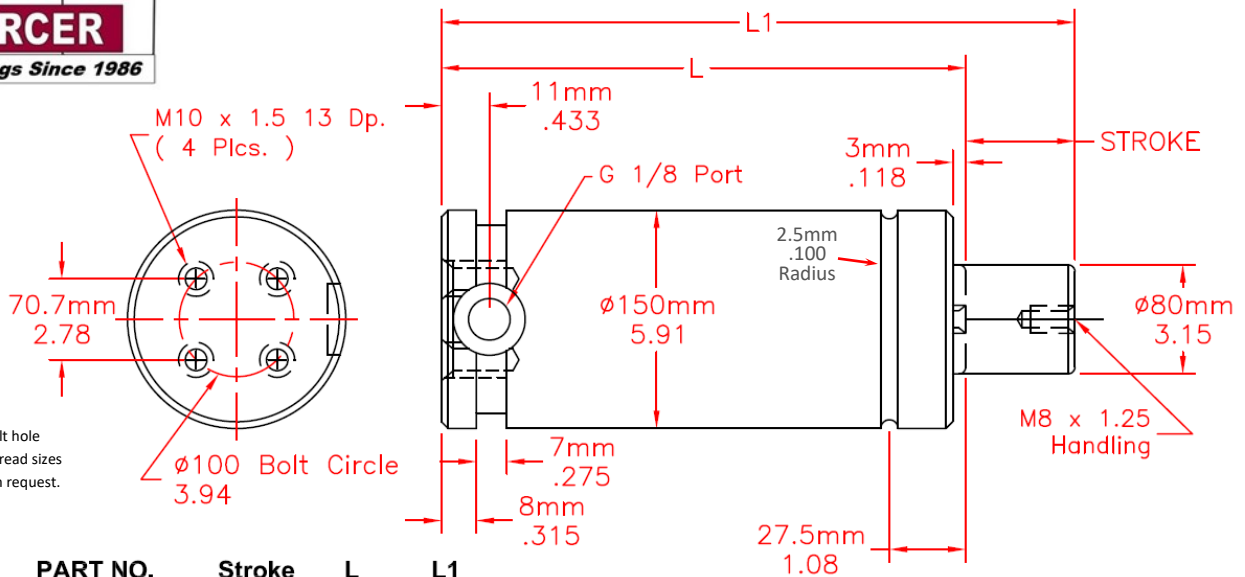
Made in the USA



**N-FORCER**

GAS Springs Since 1986

# N-FORCER® IS800 - (75 kN - 7.5 Ton) Basic Mount



\*Custom bolt hole patterns and thread sizes are available on request.

PART NO.	Stroke	L	L1
● IS800 x 025	25	180	205
	0.98	7.09	8.07
● IS800 x 038	38.1	193.1	231
	1.50	7.60	9.10
● IS800 x 050	50	205	255
	1.97	8.07	10.04
IS800 x 063	63.5	218.5	282
	2.50	8.60	11.10
IS800 x 075	75	230	305
	2.95	9.06	12.01
● IS800 x 080	80	235	315
	3.15	9.25	12.40
IS800 x 088	88.9	243.9	333
	3.50	9.60	13.10
● IS800 x 100	100	255	355
	3.94	10.04	13.98
IS800 x 114	114.3	269.3	384
	4.50	10.60	15.10
● IS800 x 125	125	280	405
	4.92	11.02	15.95
IS800 x 139	139.7	294.7	434
	5.50	11.60	17.10
IS800 x 150	150	305	455
	5.91	12.01	17.91
● IS800 x 160	160	315	475
	6.30	12.40	18.70
IS800 x 175	175	330	505
	6.89	12.99	19.88
● IS800 x 200	200	355	555
	7.87	13.98	21.85
IS800 x 225	225	380	605
	8.86	14.96	23.82
IS800 x 250	250	405	655
	9.84	15.94	25.79
IS800 x 275	275	430	705
	10.83	16.93	27.76
IS800 x 300	300	455	755
	11.81	17.91	29.72

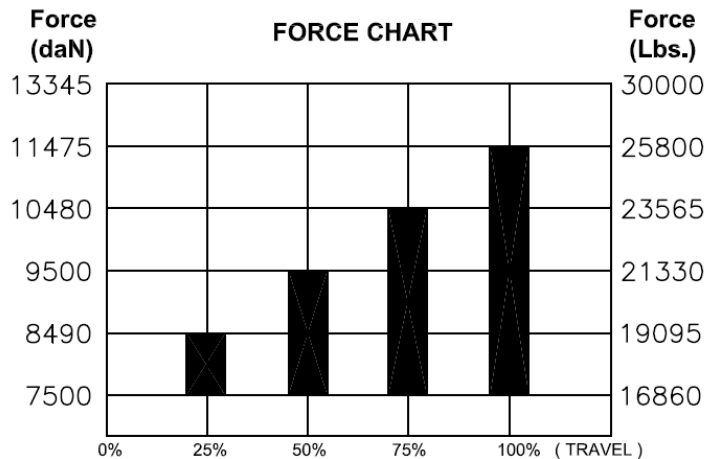


Chart is showing maximum force base on 2175 psi ( 150 bar ) charging pressure. If less than max. the force is reduced proportionally.  
Example: Forces on chart are multiplied by .69 at 1500 psi ( 103 bar ), by .46 at 1000 psi ( 69 bar ), etc.

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

● Denotes NAAMS standard stroke lengths.

### ORDERING EXAMPLE

IS800 x 025 - D - 150

Part No.  
Series, Model  
and Stroke

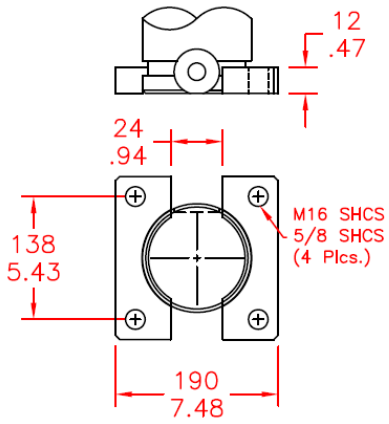
Mounting Option  
"D" Basic, optional  
mounts on next page

Charging Pressure  
H = open flow or hoses, no  
pressure, no valve.  
Self contained = 51-150 bar  
or 750 - 2175 psi. If not  
specified the 2175 psi  
is default.

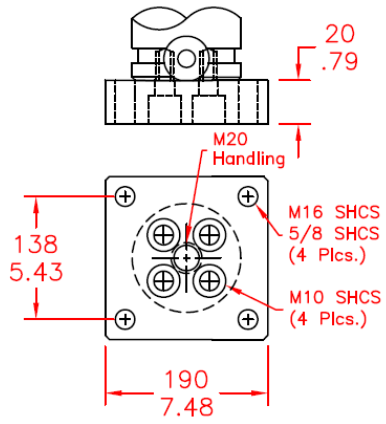
# N-FORCER<sup>®</sup>

## IS800 - (75 kN - 7.5 Ton) Optional Mounts

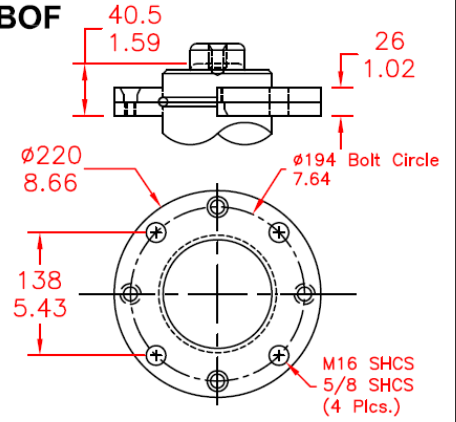
**BSF**



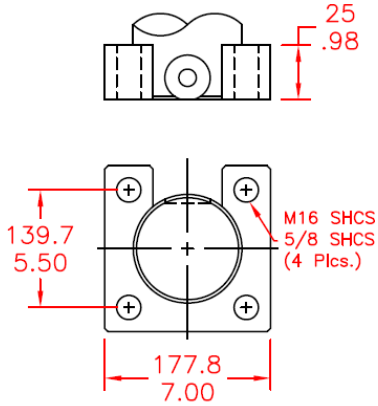
**BF**



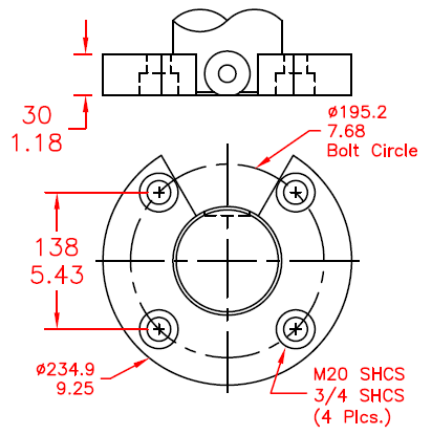
**BOF**



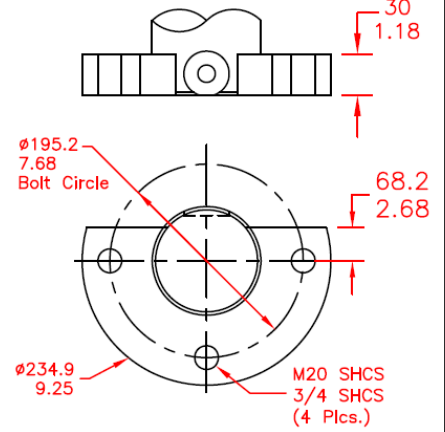
**SF2 - Welded**



**RF - Welded**



**R2 - Welded**



# **N-FORCER®**

## **CN Series 7/16 - 20 Port**

**3/4 TON TO 8 TONS OF FORCE ON CONTACT**

**NO GROW -- CARTRIDGE DESIGN**

**SELF CONTAINED AND HOSED SYSTEMS**

**WELDED MOUNT CONSTRUCTION**  
(old Ford & GM standard)

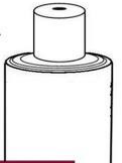
See "IS" Series for NAMMS Standard with G1/8 Port



**Die, Mold & Automation Components, Inc. 14400 Henn Street Dearborn, MI 48126**  
**Phone : 1.800.220.2242 www.n-forcer.com**

# N-FORCER®

Made in the USA

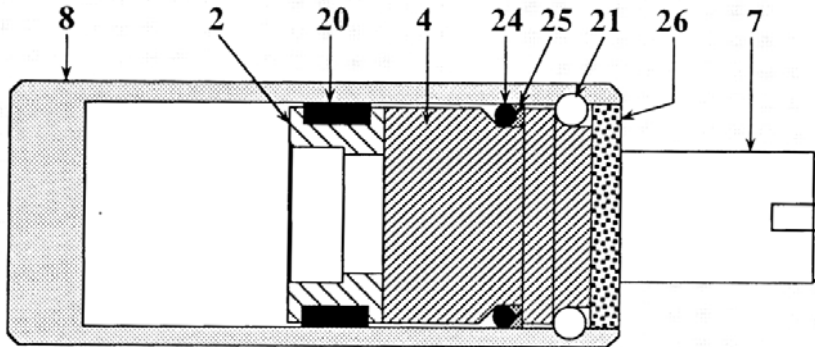


**N-FORCER**

*GAS Springs Since 1986*

## “CN” & "IS" SERIES PARTS LIST

CN & IS Series repair kits & parts are interchangeable.



### Individual repair parts:

- |  |  |
|--|--|
| 8. Tube Assembly P/N: <u><b>N(###)-08(##)</b></u>    | 25. O-ring back-up P/N: <u><b>N(###) -25</b></u> |
| 2. Piston Rod Retainer P/N: <u><b>N(###) -02</b></u> | 21. Retaining Rings P/N: <u><b>N333 -21</b></u>  |
| 20. Wear Ring P/N: <u><b>N(###) -20</b></u>          | 26. End Cover P/N: <u><b>N(###) -26</b></u>      |
| 4. Cartridge P/N: <u><b>N(###) -4C</b></u>           | 7. Piston Rod P/N: <u><b>N(###) -07(##)</b></u>  |
| 24. Cartridge O-ring P/N: <u><b>N(###) -24</b></u>   |  |

### = (Series Number)  
## = (Stroke)

## STANDARD REPAIR KITS

### Standard Repair Kit P/N: **CN (###) - RK-21**

Example: CN300-RK-21  
This represents a repair kit for a 3 ton cylinder with a Garloc Bearing



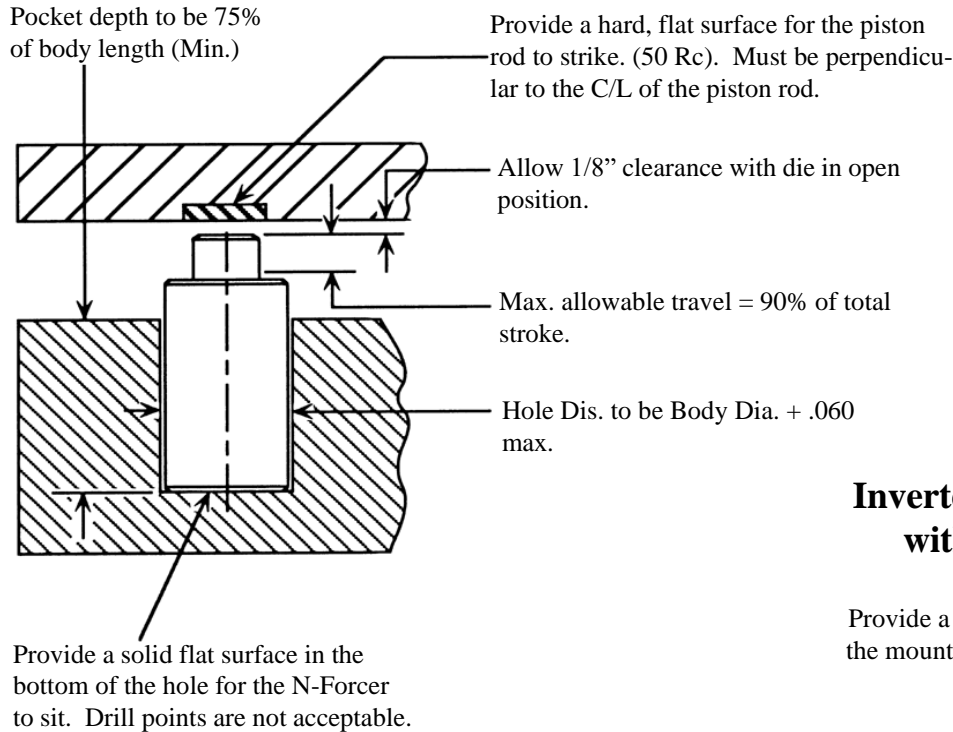
### Repair Kit Contents:

- Complete Cartridge (#4)
- Wear Ring (#20)
- Rod End Cover (#26)
- Valve
- Bottle of Oil

# MOUNTING RECOMMENDATIONS

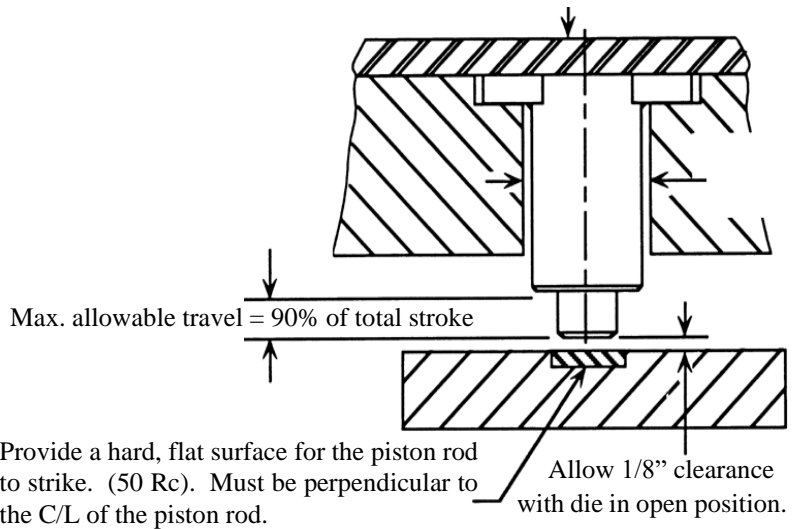


## Drop in Model - Vertical Mount

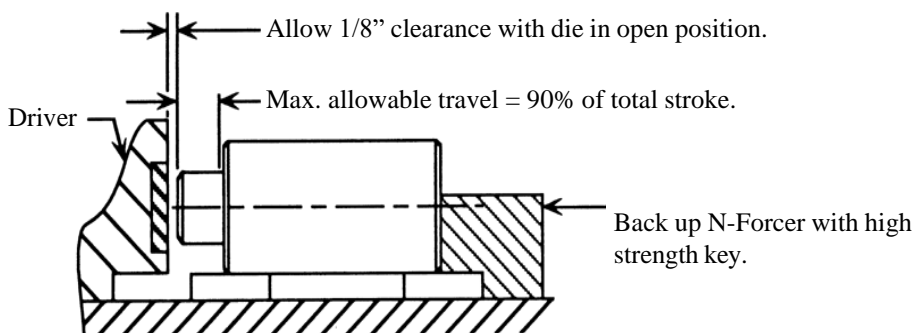


## Inverted Vertical Mount with Welded Lugs

Provide a solid plate to reinforce the mounting lugs of the N-Forcer.



## Horizontal Mount for Cam Slide Application

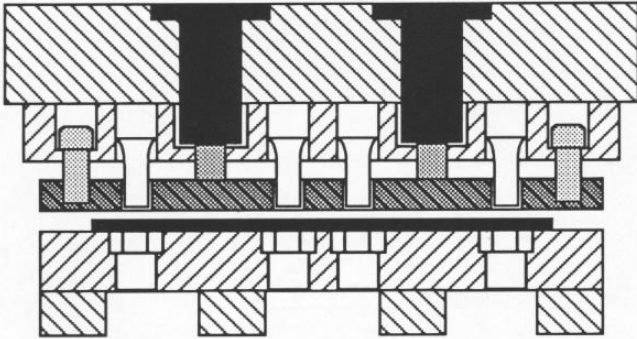




# PRACTICAL APPLICATIONS



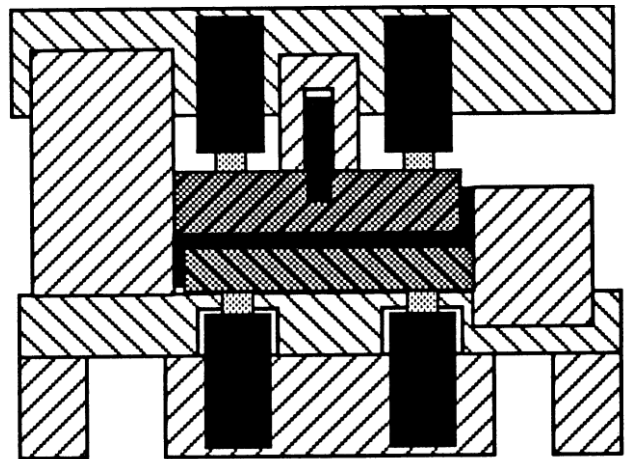
## STRIPPING



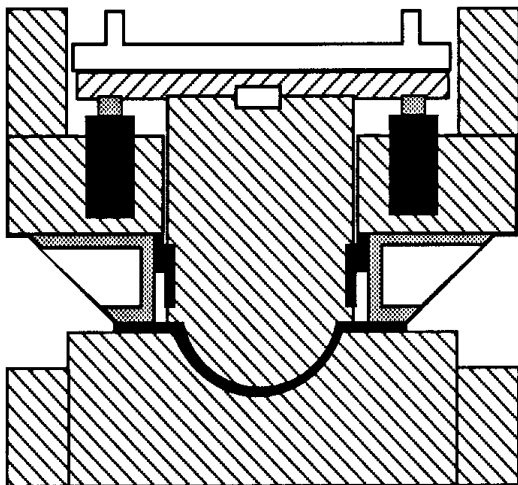
Nitrogen die springs curtail that ever present situation of broken punches due to uneven pressures on the stripper plates. They also give the high pressures needed on those difficult stripping jobs.

This is a very common use for nitrogen cylinders in the upper half of die as many progressive dies require the parts to be drawn in this manner.

## CONVENTIONAL DRAW



## FLOATING PUNCH



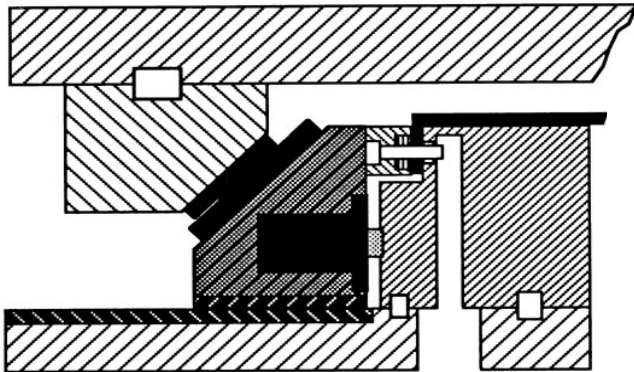
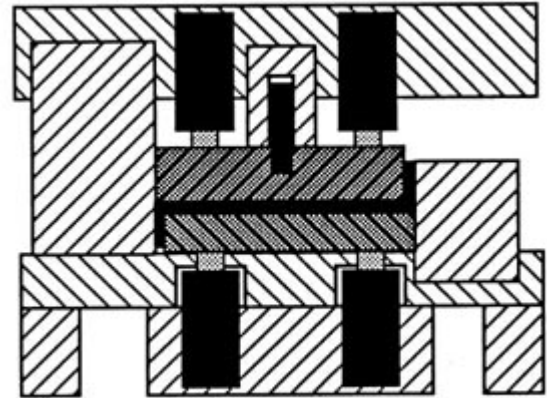
In this application the draw punch is not attached to the inner slide. Instead, the punch is suspended on self-contained cylinders mounted into the blank holder plate or the upper shoe. This reduces die setting time and makes the punch more accessible for refinishing in the press.

# PRACTICAL APPLICATIONS



## **DOUBLE ACTION FORMING**

Forming in two directions is accomplished very easily using nitrogen die springs. By varying the pressure in the cylinders, you can attain the correct forces needed to produce quality parts.

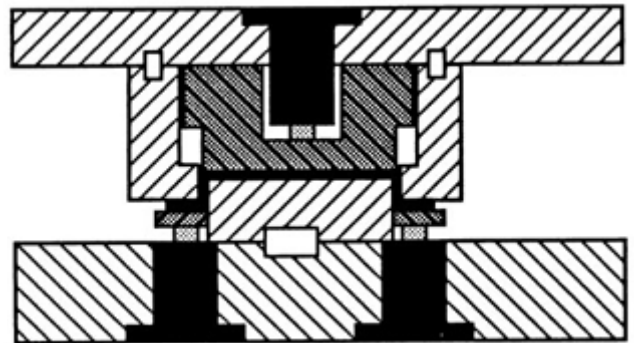


## **CAM RETURN**

Cam returns are an excellent application for nitrogen die springs. As the nitrogen die springs eliminate the sometimes-awkward long coil springs required to produce enough pressure to return the cams.

## **INVERTED DRAW**

With the high forces available on contact the nitrogen die springs are an excellent alternative to coil die springs. The ability to vary the forces generated by the nitrogen die springs also gives you better control over your final products.



# FORCE CHARTS

## Maximum Force Based On 2000 PSI Charge

If charging pressure is less than 2000 PSI, force is reduced proportionately (EXAMPLE: Forces listed on chart are multiplied by .75 at 1500PSI, by .50 at 1000 PSI etc.)

### CN075

Cylr. Stroke	Nominal Travel												
	.0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
.5	1520	2507											
1.0	1520	1893	2507										
1.5	1520	1750	2061	2507									
2.0	1520	1686	1893	2157	2507								
2.5	1520	1650	1804	1990	2219	2507							
3.0	1520	1627	1750	1893	2061	2262	2057						
3.5	1520	1611	1713	1829	1961	2115	2294	2507					
4.0	1520	1599	1686	1783	1893	2016	2157	2319	2507				
4.5	1520	1590	1666	1750	1842	1946	2061	2191	2339	2507			
5.0	1520	1582	1650	1724	1804	1893	1990	2098	2219	2354	2507		
5.5	1520	1576	1637	1703	1774	1851	1936	2028	2130	2243	2368	2507	
6.0	1520	1572	1627	1686	1750	1818	1893	1973	2061	2157	2262	2379	2507

### CN150

Cylr. Stroke	Nominal Travel												
	.0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
.5	3160	4696											
1.0	3160	3778	4696										
1.5	3160	3547	4041	4696									
2.0	3160	3441	3778	4187	4696								
2.5	3160	3381	3636	3932	4280	4696							
3.0	3160	3342	3547	3778	4041	4344	4696						
3.5	3160	3315	3486	3675	3886	4123	4391	4696					
4.0	3160	3295	3441	3602	3778	3972	4187	4427	4696				
4.5	3160	3279	3408	3547	3698	3862	4041	4238	4456	4696			
5.0	3160	3267	3381	3504	3636	3778	3932	4098	4280	4479	4696		
5.5	3160	3257	3360	3470	3587	3712	3846	3991	4146	4315	4497	4696	
6.0	3160	3249	3342	3441	3547	3659	3778	3905	4041	4187	4344	4513	4696

### CN300

Cylr. Stroke	Nominal Travel												
	.0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
.5	6080	9971											
1.0	6080	7554	9971										
1.5	6080	6989	8216	9971									
2.0	6080	6737	7554	8596	9971								
2.5	6080	6595	7205	7939	8840	9971							
3.0	6080	6503	6989	7554	8218	9010	9971						
3.5	6080	6439	6843	7301	7825	8430	9136	9971					
4.0	6080	6392	6737	7122	7554	8041	8596	9233	9971				
4.5	6080	6356	6657	6989	7356	7763	8218	8730	9309	9971			
5.0	6080	6327	6595	6886	7205	7554	7939	8365	8840	9371	9971		
5.5	6080	6304	6544	6804	7085	7391	7724	8089	8489	8932	9423	9971	
6.0	6080	6284	6503	6737	6989	7261	7554	7872	8218	8596	9010	9466	9971

### CN500

Cylr. Stroke	Nominal Travel												
	.0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
.5	10314	13670											
1.0	10314	12100	14643										
1.5	10314	11531	13073	15092									
2.0	10314	11237	12341	13686	15352								
2.5	10314	11096	12006	13079	14356	15517							
3.0	10314	10936	11638	12436	13347	14408	15651						
3.5	10314	10849	11442	12104	12845	13685	14642	15744					
4.0	10314	10783	11297	11862	12485	13178	13954	14827	15816				
4.5	10314	10732	11185	11678	12214	12804	13454	14174	14975	15871			
5.0	10314	10691	11096	11533	12004	12517	13076	13687	14357	15098	15918		
5.5	10314	10657	11023	11416	11836	12289	12779	13309	13885	14514	15202	15955	
6.0	10314	10629	10963	11319	11697	12104	12539	13007	13511	14056	14646	15286	15987

**CN800 SERIES  
INFO ON PG18**

**LONGER STROKES ARE AVAILABLE IN "IS" SERIES. CUSTOM STROKES ARE ALSO AVAILABLE.**



# N-FORCER®

## ORDERING PROCEDURE “CN” CARTRIDGE SERIES

**WHEN ORDERING CYLINDERS, PLEASE USE THE FOLLOWING FORMAT.**

<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>4.</u>	<u>5.</u>	<u>6.</u>
CN	300	X 4	- RF	- 2000	21

**NOTE: CYLINDERS WILL BE SPECIFIED AS NOMINAL INCH STROKES  
ON ALL PACKING SLIPS AND INVOICES.**

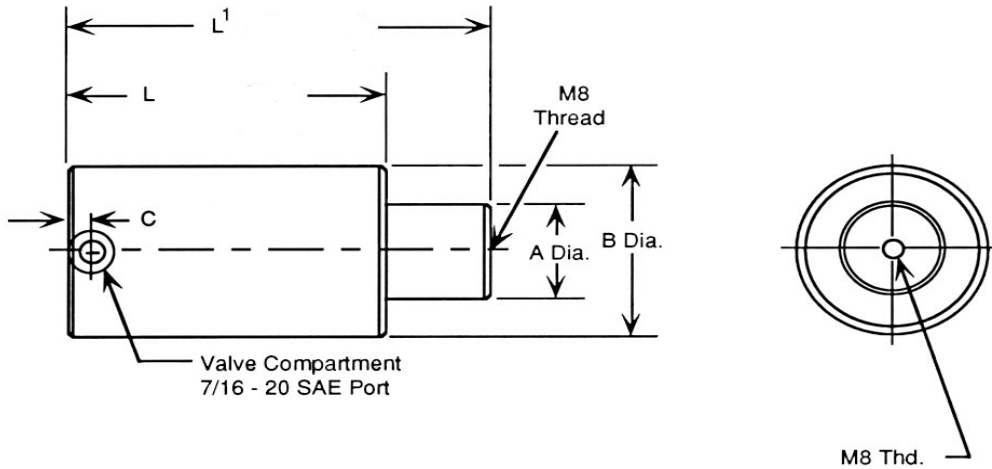
- Series:** CN (Self contained specify charging pressure)  
CNB (7/16-20 SAE Port for hosed system, no pressure specified, shipped without a valve)  
CNF \*Special Order (Modified to 1/2" - 20 SAE port for hosed systems no pressure specified).
- Tonnage:** 075 (3/4 ton) - 150 (1 1/2 ton) - 300 (3 ton) - 500 (5 ton)
- Stroke Length:** Inch - Nominal Strokes (1/2" to 6" in 1/2" increments)  
Available Strokes (mm) ~ 12.5, 25, 38.1, 50, 63.5, 75, 88.9  
100, 114.3, 125, 139.7, 150
- Mounting Style:** Detailed on pages 10 through 13.
- Charging Pressure:** (specify) 200 PSI minimum to 2000 PSI maximum  
Metric - 150 Bar maximum.
- Rod Bearing** – 21 (or Blank) Garloc Bearing (standard).

**REPAIR KITS:** Specify series, tonnage:

**EXAMPLE: CN300-RK-21**

This represents a repair kit for a 3 ton cylinder

# MOUNTING SYLE "O" Basic Drop - In Cylinder



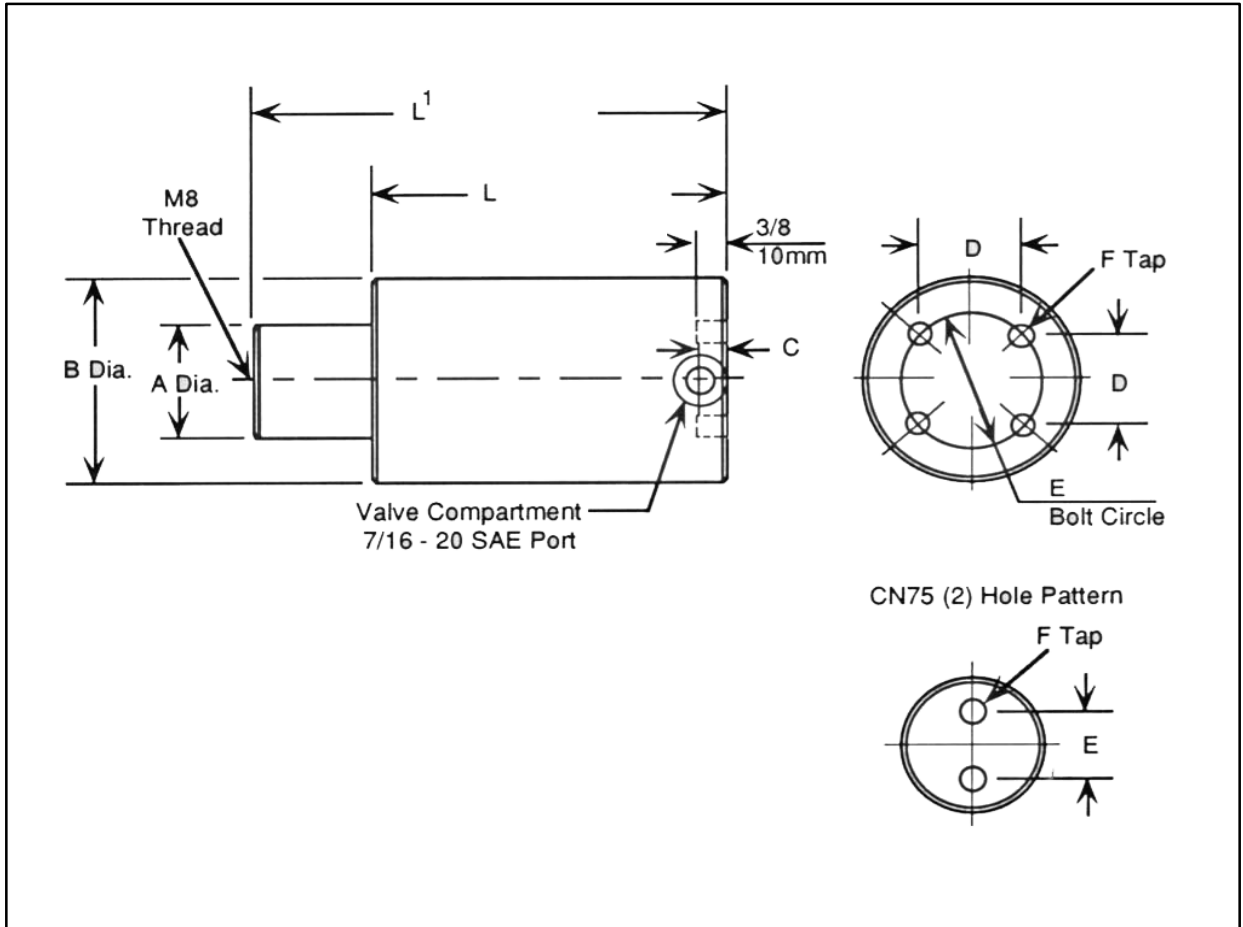
See page 16 for Stroke Dimension Charts

MODEL	A	B	C
CN075	.98	1.98	.407
	25	50	10.3
CN150	1.42	2.98	.407
	36	75	10.3
CN300	1.97	3.73	.427
	50	95	10.8
CN500	2.56	4.72	.427
	65	120	10.8

CN800 Series information is on Page 18.

**METRIC DIMENSIONS ARE IN SHADED AREA**

# MOUNTING SYLE "D" Drilled Base



See page 16 for Stroke Dimension Charts  
 \*\*Other bolt hole patterns and thread styles available on request.

"D" = English Threads.  
 "DM" = Metric Threads.

MODEL	A	B	D	E	F	C	Threaded holes
CN075-D	.98	1.98	N/A	.79	1/4-20	.407	2
CN075-DM	25	50	N/A	20	M6x1	10.3	2
CN150-D	1.42	2.98	1.11	1.57	5/16-18	.407	4
CN150-DM	36	75	28	40	M8x1.25	10.3	4
CN300-D	1.97	3.73	1.67	2.36	3/8-16	.427	4
CN300-DM	50	95	42.5	60	M10x1.5	10.8	4
CN500-D	2.56	4.72	2.12	3.00	3/8-16	.427	4
CN500-DM	65	120	54	76	M10x1.5	10.8	4

**METRIC DIMENSIONS ARE IN SHADED AREA**

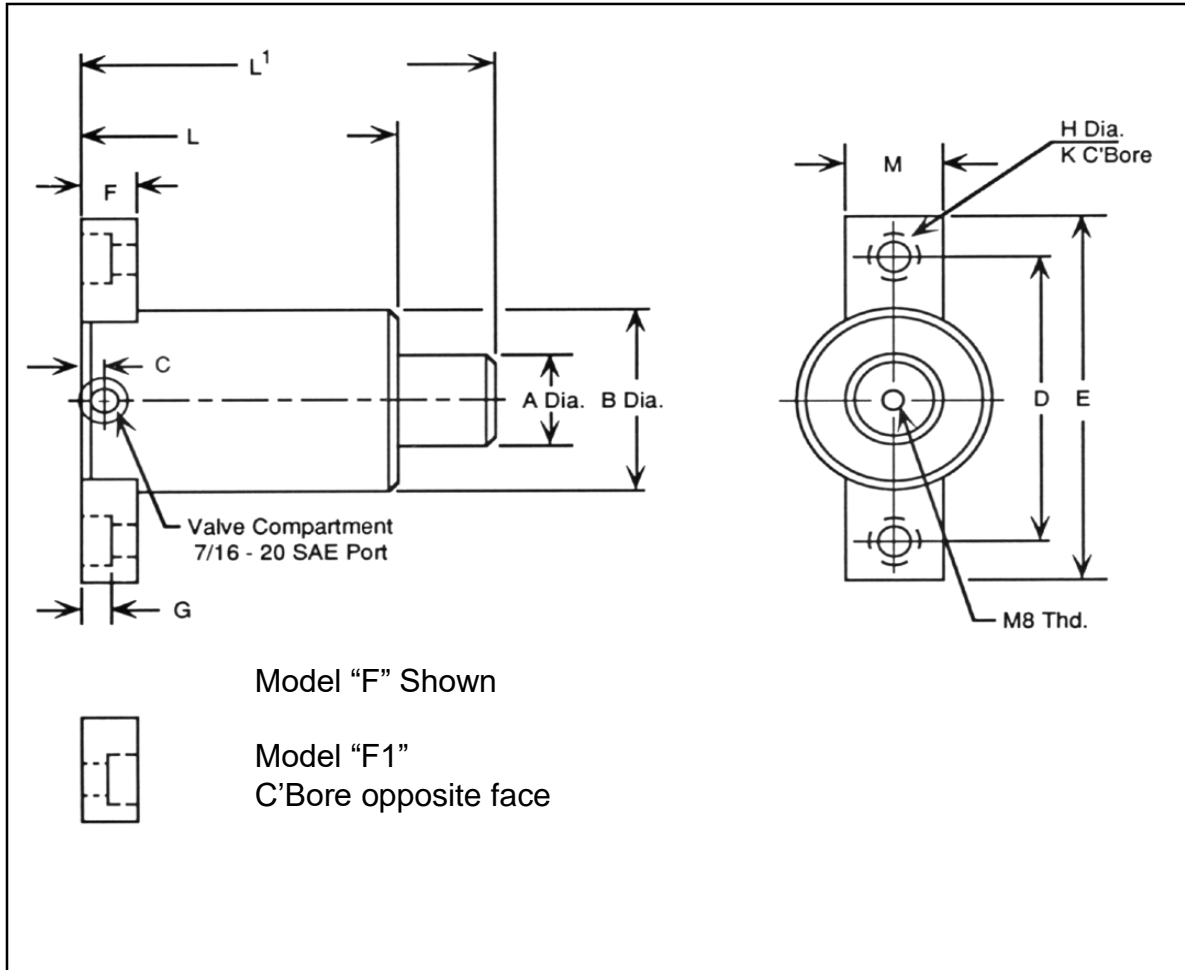
# MOUNTING SYLE "F" Rear Lug Mount

Made in the USA



**N-FORCER**

*GAS Springs Since 1986*



See page 16 for Stroke Dimension Charts

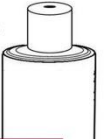
MODEL	A	B	D	E	F	G	H	K	M	C
CN075	.98	1.98	3.50	4.25	.75	.41	.43	.70	1.25	.407
	25	50	89	110	19	11	11.0	18	32	10.3
CN150	1.42	2.98	4.75	6.00	.75	.53	.53	.78	1.50	.407
	36	75	121	152	19	13	13.5	20	38	10.3
CN300	1.97	3.73	5.75	7.00	.75	.53	.53	.78	1.50	.427
	50	95	146	178	19	13	13.5	20	38	10.8
CN500	2.56	4.72	6.50	7.75	.75	.53	.53	.78	1.50	.427
	65	120	165	196	19	13	13.5	20	38	10.8

**METRIC DIMENSIONS ARE IN SHADED AREA**

# MOUNTING SYLE "OF"

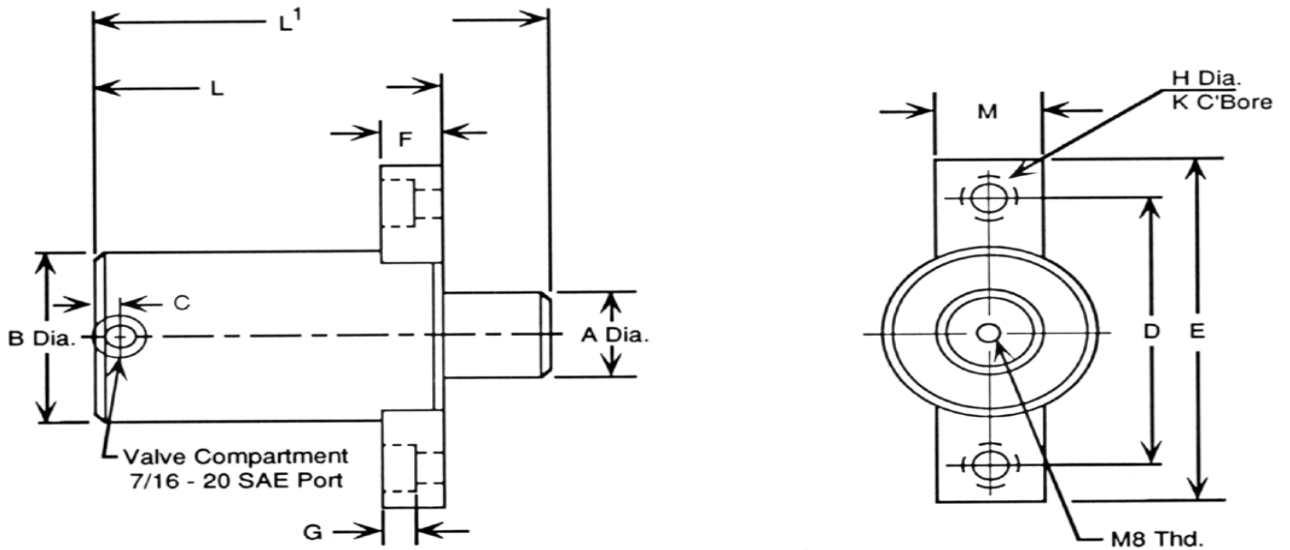
## Front Lug Mount

Made in the USA

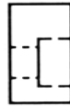


**N-FORCER**

GAS Springs Since 1986



Model "OF" Mount Shown  
Model "OF1" C'Bore Opposite Face.



See page 16 for Stroke Dimension Charts

MODEL	A	B	D	E	F	G	H	K	M	C
CN075	.98	1.98	3.50	4.25	.75	.41	.43	.70	1.25	.407
	25	50	89	110	19	11	11.0	18	32	10.3
CN150	1.42	2.98	4.75	6.00	.75	.53	.53	.78	1.50	.407
	36	75	121	152	19	13	13.5	20	38	10.3
CN300	1.97	3.73	5.75	7.00	.75	.53	.53	.78	1.50	.427
	50	95	146	178	19	13	13.5	20	38	10.8
CN500	2.56	4.72	6.50	7.75	.75	.53	.53	.78	1.50	.427
	65	120	165	196	19	13	13.5	20	38	10.8

**METRIC DIMENSIONS ARE IN SHADED AREA**



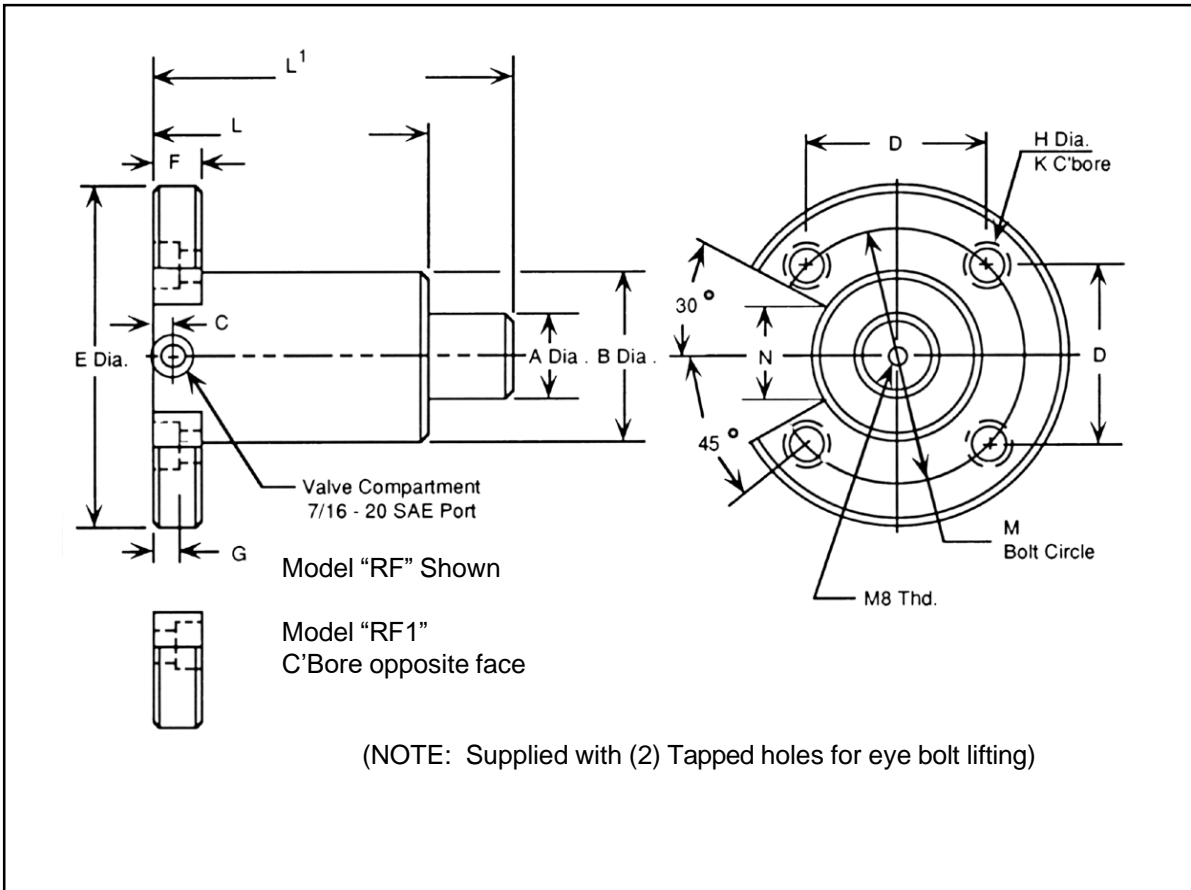
# MOUNTING SYLE "RF"

## Rear Flange Mount

Made in the USA



**N-FORCER**  
GAS Springs Since 1986



See page 16 for Stroke Dimension Charts

MODEL	A	B	D	E	F	G	H	K	M	N	C
CN075	.98	1.98	2.48	4.50	.75	.41	.43	.70	3.50	1.75	.407
	25	50	63	114	19	11	11.0	18	88.9	45	10.3
CN150	1.42	2.98	3.36	5.98	.75	.53	.53	.78	4.75	1.87	.407
	36	75	85	151	19	13.5	13.5	20	120.6	51	10.3
CN300	1.97	3.73	3.89	6.75	1.00	.53	.53	.78	5.50	1.87	.427
	50	95	99	171	25	13.5	13.5	20	139.7	51	10.8
CN500	2.56	4.72	4.60	7.7	1.00	.66	.69	1.02	6.50	1.87	.427
	65	120	117	195	25	17	17.5	26	165.1	51	10.8

**METRIC DIMENSIONS ARE IN SHADED AREA**

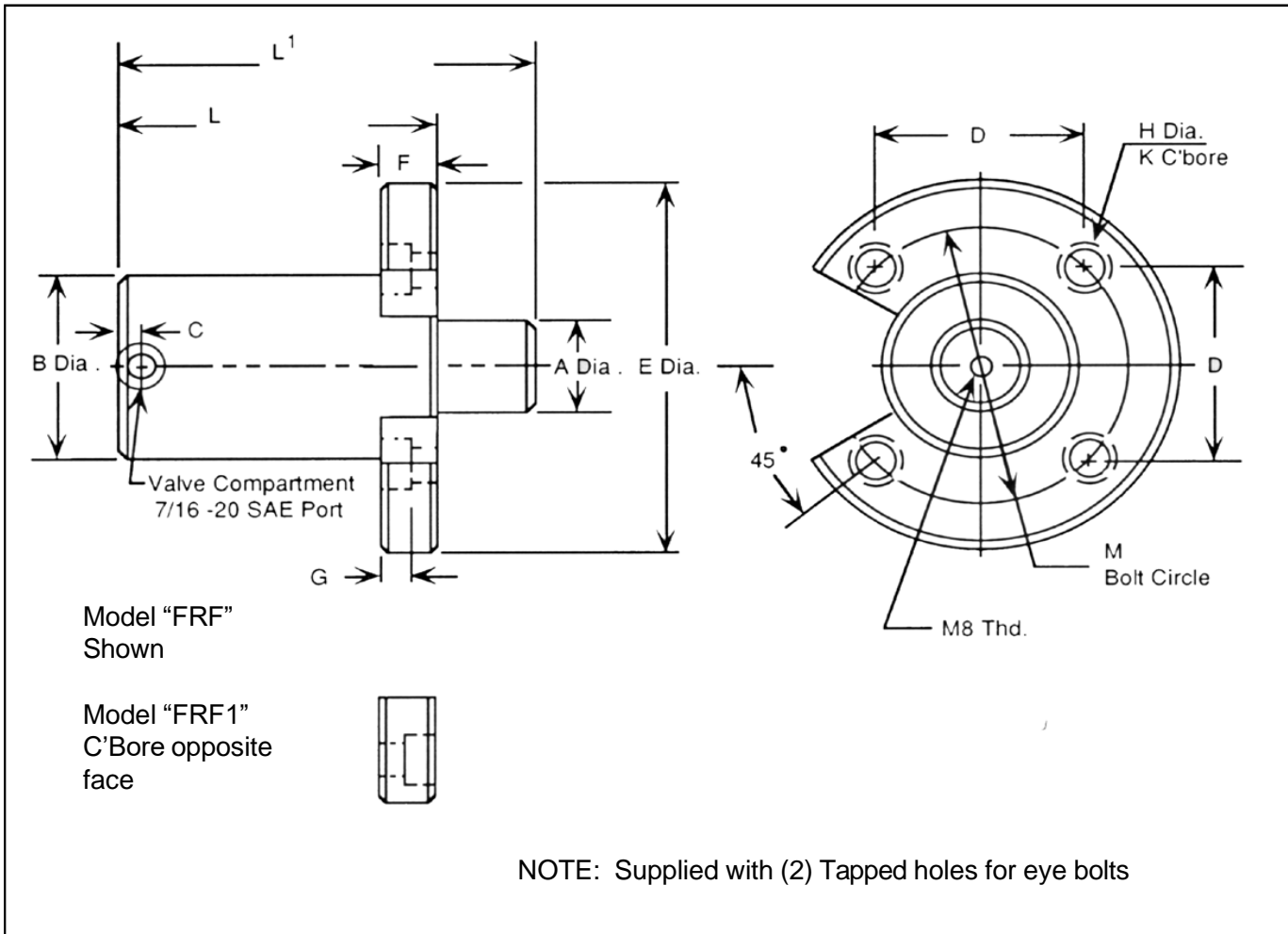
Made in the USA



**N-FORCER**

GAS Springs Since 1986

## MOUNTING SYLE "FRF" Front Flange Mount

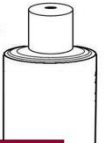


See page 16 for Stroke Dimension Charts

MODEL	A	B	D	E	F	G	H	K	M	N	C
CN075	.98	1.98	2.48	4.50	.75	.41	.43	.70	3.50	1.75	.407
	25	50	63	114	19	11	11.0	18	88.9	45	10.3
CN150	1.42	2.98	3.36	5.98	.75	.53	.53	.78	4.75	1.87	.407
	36	75	85	151	19	13.5	13.5	20	120.6	51	10.3
CN300	1.97	3.73	3.89	6.75	1.00	.53	.53	.78	5.50	1.87	.427
	50	95	99	171	25	13.5	13.5	20	139.7	51	10.8
CN500	2.56	4.72	4.60	7.71	1.00	.66	.69	1.02	6.50	1.87	.427
	65	120	117	195	25	17	17.5	26	165.1	51	10.8

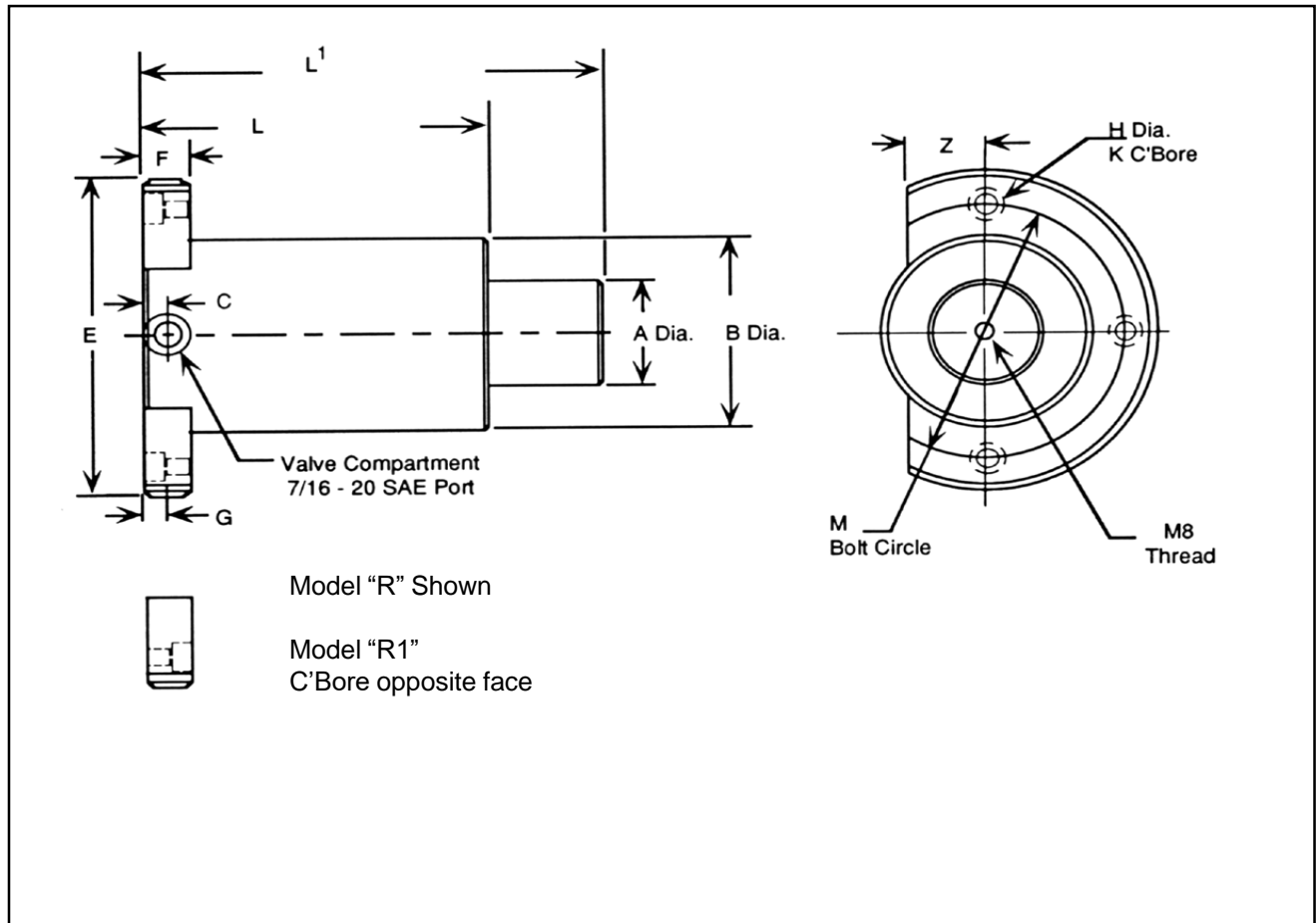
**METRIC DIMENSIONS ARE IN SHADED AREA**

Made in the USA



**N-FORCER**  
GAS Springs Since 1986

## MOUNTING SYLE "R" Three Hole Rear Flange Mount



See page 16 for Stroke Dimension Charts

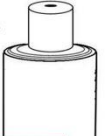
MODEL	A	B	D	E	F	G	H	K	M	N	C
CN075	.98	1.98	2.48	4.50	.75	.41	.43	.70	3.50	1.75	.407
	25	50	63	114	19	11	11.0	18	88.9	45	10.3
CN150	1.42	2.98	3.36	5.98	.75	.53	.53	.78	4.75	1.87	.407
	36	75	85	151	19	13.5	13.5	20	120.6	51	10.3
CN300	1.97	3.73	3.89	6.75	1.00	.53	.53	.78	5.50	1.87	.427
	50	95	99	171	25	13.5	13.5	20	139.7	51	10.8
CN500	2.56	4.72	4.60	7.71	1.00	.66	.69	1.02	6.50	1.87	.427
	65	120	117	195	25	17	17.5	26	165.1	51	10.8

**METRIC DIMENSIONS ARE IN SHADED AREA**

# MOUNTING SYLE "SK"

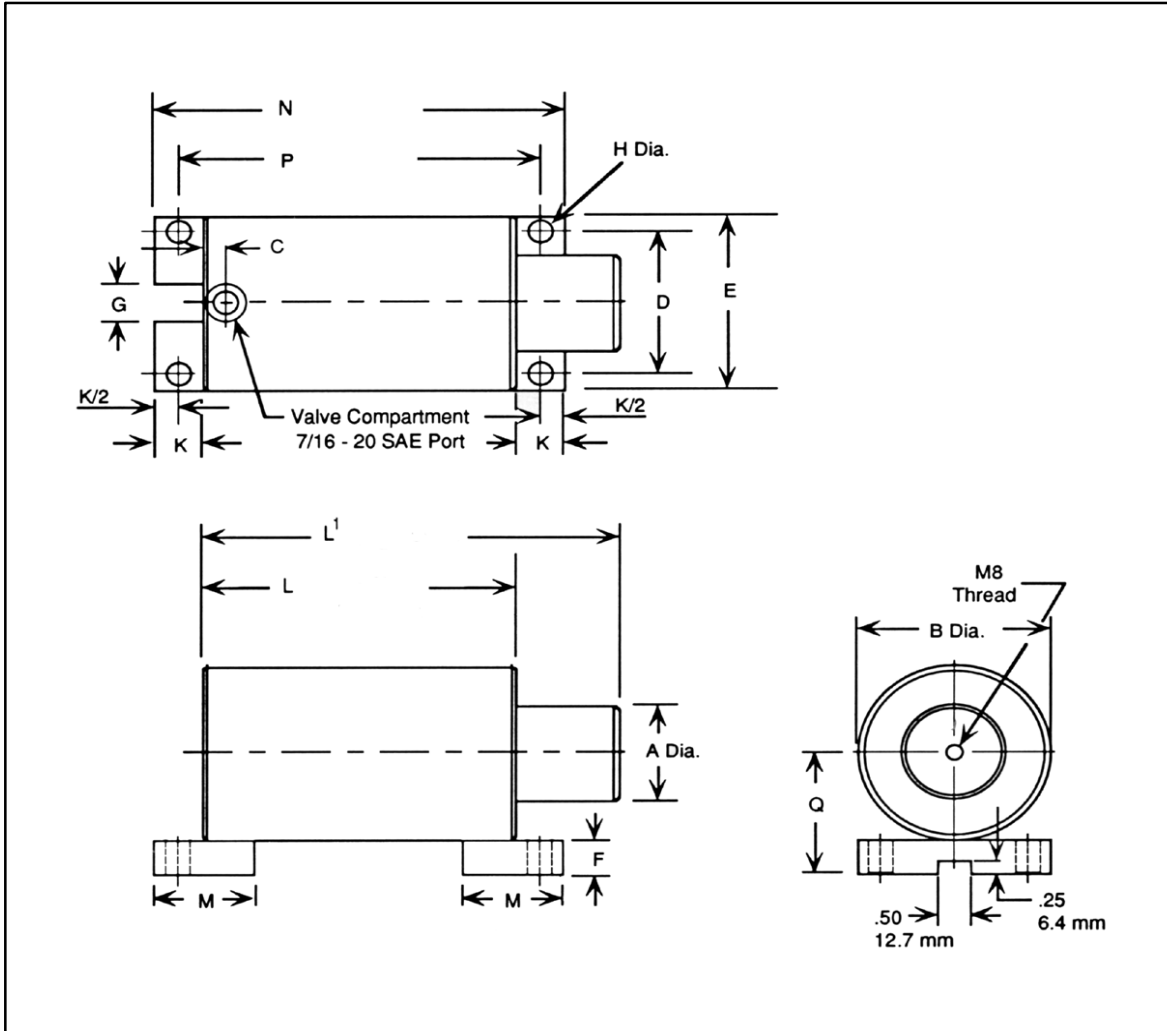
Side Mount – Keyed

Made in the USA



**N-FORCER**

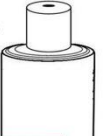
GAS Springs Since 1986



See page 17 for Stroke Dimension Charts (L, L1, N, P)

MODEL	A	B	D	E	F	G	H	K	M	Q	C
CN075	.98	1.98	1.6	2.36	.50	.86	.43	.87	2.0	1.5	.407
	25	50	42	60	13	22	11.0	22	51	38	10.3
CN150	1.42	2.98	2.25	3.00	.75	1.26	.53	1.12	2.0	2.2	.407
	36	75	57	75	19	32	13.5	28	51	56	10.3
CN300	1.97	3.73	3.00	3.75	.75	1.65	.53	1.12	2.0	2.6	.427
	50	95	76	95	19	42	13.5	28	51	66	10.8
CN500	2.56	4.72	3.75	4.75	.75	2.04	.53	1.12	2.0	3.1	.427
	65	120	95	120	19	52	13.5	28	51	79	10.8

**METRIC DIMENSIONS ARE IN SHADED AREA**



# Stroke Dimension Charts

## Stroke Length - Inches (Metric is Shaded Blue)

<b>CN075</b>	<b>Nominal</b>	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
	<b>Actual</b>	(12.7)	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
<b>(Tube Length)</b>	L	4.25	4.73	5.25	5.72	6.25	6.70	7.25	7.69	8.25	8.67	9.25	9.66
		107.9	120.0	133.3	145.0	158.7	170.0	184.1	195.0	209.5	220.0	234.9	245.0
<b>(Overall Length)</b>	L <sub>1</sub>	4.74	5.71	6.74	7.68	8.74	9.65	10.74	11.62	12.74	13.58	14.74	15.56
		120.4	145.0	171.2	195.0	222.0	245.0	272.8	295.0	323.6	345.0	374.4	395.0

## Stroke Length - Inches (Metric is Shaded Blue)

<b>CN150</b>	<b>Nominal</b>	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
	<b>Actual</b>	12.7	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
<b>(Tube Length)</b>	L	4.83	5.31	5.83	6.30	6.83	7.28	7.28	8.27	8.83	9.25	9.83	10.24
		122.7	135.0	148.1	160.0	173.5	185.0	198.0	210.0	224.3	235.0	249.6	260.0
<b>(Overall Length)</b>	L <sub>1</sub>	5.33	6.30	7.33	8.27	9.33	10.24	11.33	12.21	13.33	14.17	15.33	16.14
		135.4	160.0	186.2	210.0	237.0	260.0	287.8	310.0	338.6	360.0	420.0	410.0

## Stroke Length - Inches (Metric is Shaded Blue)

<b>CN300</b>	<b>Nominal</b>	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
	<b>Actual</b>	12.7	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
<b>(Tube Length)</b>	L	5.22	5.70	6.22	6.69	7.22	7.67	8.22	8.66	9.22	9.64	10.22	10.63
		132.6	145.0	158.0	170.0	183.4	195.0	208.8	220.0	234.2	245.0	259.6	270.0
<b>(Overall Length)</b>	L <sub>1</sub>	5.72	6.69	7.72	8.66	9.72	10.63	11.72	12.60	13.72	14.56	15.72	16.53
		145.4	170.0	196.2	220.0	247.0	270.0	297.8	320.0	348.6	370.0	399.4	420.0

## Stroke Length - Inches (Metric is Shaded Blue)

<b>CN500</b>	<b>Nominal</b>	.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
	<b>Actual</b>	12.7	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
<b>(Tube Length)</b>	L	6.00	6.48	7.00	7.47	8.00	8.45	9.00	9.44	10.00	10.42	11.00	11.41
		152.4	165.0	177.8	190.0	203.2	215.0	228.6	240.0	254.0	265.0	279.4	290.0
<b>(Overall Length)</b>	L <sub>1</sub>	6.51	7.48	8.51	9.45	10.51	11.41	12.51	13.38	14.51	15.35	16.51	17.32
		165.4	190.0	216.2	240.0	267.0	290.0	317.8	340.0	368.6	390.0	419.4	440.0

# Stroke Dimension Charts



“N” & “P” dimensions are only for “SK” type mounts shown on Page 15.

## Stroke Length - Inches (Metric is Shaded Blue)

CN075 Nominal Actual		.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
		12.7	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
Tube Length	L	4.25	4.73	5.25	5.72	6.25	6.70	7.25	7.69	8.25	8.67	9.25	9.66
		107.9	120.0	133.3	145.0	158.7	170.0	184.1	195.0	209.5	220.0	234.9	245.3
Overall Length	L 1	4.74	5.71	6.74	7.68	8.74	9.65	10.74	11.61	12.74	13.58	14.74	15.55
		120.4	145.0	171.2	195.0	222.0	244.0	272.8	295.0	323.6	345.0	374.4	395.0
Mount Length	N	5.94	6.42	6.94	7.41	7.94	8.39	8.94	9.38	9.94	10.36	10.94	11.35
		150.8	163.0	176.3	188.2	201.7	213.1	227.0	238.4	252.4	263.1	277.8	288.3
Hole Center Distance	P	5.10	5.59	6.10	6.57	7.10	7.56	8.10	8.54	9.10	9.52	10.10	10.51
		129.7	142	155.1	167	180.5	192	205.9	217	231.3	242	256.7	267

## Stroke Length - Inches (Metric)

CN150 Nominal Actual		.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
		12.7	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
Tube Length	L	4.83	5.31	5.83	6.30	6.83	7.28	7.83	8.27	8.83	9.25	9.83	10.24
		122.7	135.0	148.2	160.0	173.5	185.0	198.9	210.0	224.2	234.9	249.6	260.0
Overall Length	L 1	5.33	6.30	7.33	8.27	9.33	10.24	11.33	12.21	13.33	14.17	15.33	16.14
		135.4	160.0	186.2	210.0	237.0	260.0	287.8	310.0	338.6	360.0	389.4	410.0
Mount Length	N	6.94	7.42	7.94	8.41	8.94	9.39	9.94	10.38	10.94	11.36	11.94	12.35
		176.2	188.4	201.7	213.6	227.0	238.5	252.4	263.6	277.8	288.5	303.2	313.7
Hole Center Distance	P	5.93	6.41	6.93	7.40	7.93	8.38	8.93	9.37	9.93	10.35	10.93	11.34
		150.7	163	176.1	188	201.5	213	226.9	238	252.3	263	277.7	288

## Stroke Length - Inches (Metric)

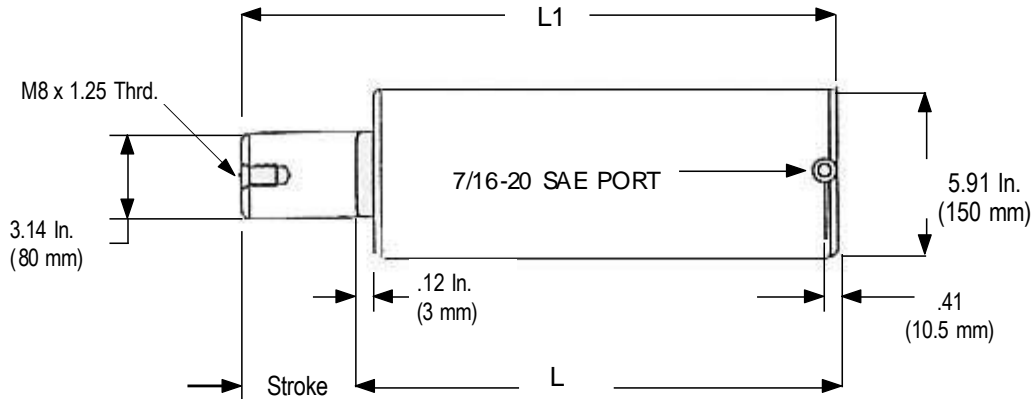
CN300 Nominal Actual		.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
		12.7	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
Tube Length	L	5.22	5.70	6.22	6.69	7.22	7.67	8.22	8.66	9.22	9.64	10.22	10.63
		132.6	145.0	158.0	170.0	183.4	195.0	208.8	220.0	234.2	245.0	259.6	270.0
Overall Length	L 1	5.72	6.69	7.72	8.66	9.72	10.63	11.72	12.60	13.72	14.56	15.72	16.53
		145.4	170.0	196.2	220.0	247.0	270.0	297.8	320.0	348.6	370.0	399.4	420.0
Mount Length	N	7.38	7.86	8.38	8.85	9.38	9.83	10.38	10.82	11.38	11.80	12.38	12.79
		187.4	199.6	212.8	224.8	238.2	249.6	263.6	275.0	289.0	299.7	314.4	324.8
Hole Center Distance	P	6.32	6.81	7.32	7.79	8.32	8.78	9.33	9.76	10.32	10.74	11.28	11.73
		160.7	173	186.1	198	211.5	223	236.9	248	262.3	273	286.7	298

## Stroke Length - Inches (Metric)

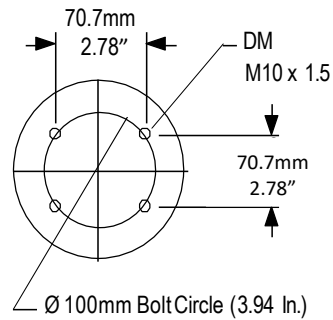
CN500 Nominal Actual		.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
		12.7	25	38.1	50	63.5	75	88.9	100	114.3	125	139.7	150
Tube Length	L	6.00	6.48	7.00	7.47	8.00	8.45	9.00	9.44	10.00	10.42	11.00	11.41
		152.4	165.0	177.8	190.0	203.2	215.0	228.6	240.0	254.0	265.0	279.4	290.0
Overall Length	L 1	6.51	7.48	8.51	9.45	10.51	11.41	12.51	13.38	14.51	15.35	16.51	17.32
		165.4	190.0	216.2	240.0	267.0	290.0	317.8	340.0	368.6	390.0	419.4	440.0
Mount Length	N	8.25	8.73	9.25	9.72	10.25	10.70	11.25	11.69	12.25	12.67	13.25	13.66
		209.5	221.7	234.9	246.9	260.3	271.7	285.7	296.9	311.1	321.8	336.5	346.9
Hole Center Distance	P	7.11	7.60	8.11	8.58	9.11	9.56	10.11	10.55	11.11	11.53	12.07	12.52
		180.7	193.0	206.1	218.0	231.5	243.0	256.9	268.0	282.3	293.0	306.7	318.0

# N-FORCER®

## CN800 ~ 8 Ton Basic Mount Style



DM – Metric Tapped Holes in Base



ORDER NO. Model mm	Spring Force In lbs. at 2000 PSI		Max Stroke		L	L	L1	L1
	Initial	Full Stroke	mm	In.	mm	In.	mm	In.
CN800 X 25		24550	25	.98	180	7.10	205	8.07
CN800 X 38.1		25090	38.1	1.50	193	7.60	231	9.10
CN800 X 50		25370	50	1.97	205	8.07	255	10.04
CN800 X 63.5		25560	63.5	2.50	218.5	8.60	282	11.10
CN800 X 75	15580	25675	75	2.95	230	9.06	305	12.01
CN800 X 88.9		25780	88.9	3.50	243.8	9.60	332.7	13.10
CN800 X 100		25840	100	3.94	255	10.04	355	13.98
CN800 X 125		25940	125	4.92	280	11.02	405	15.95
CN800 X 150		26000	150	5.90	305	12.01	455	17.92
CN800 X 203.2		26090	203.2	8.00	357.8	14.09	561	22.10

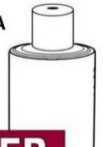
Force is proportional to charging pressure. Chart shown is based on 2000 psi charging pressure. To obtain the force at 1000 psi multiply chart force by (.5), to obtain force at 1500 psi multiply chart force by (.75).

ORDERING EXAMPLE:

CN800 x 38.1 - DM - 2000

MODEL      STROKE      MOUNT      CHARGING  
8 TON      Metric/In.      STYLE      PRESSURE

Made in the USA



**N-FORCER**

*GAS Springs Since 1986*

## ACCESSORIES

### CA-2000 QD - Charging Assembly with quick disconnect coupling.

Please specify your tank pressure of 4,000 or 6,000 psi. The fittings are unique to each tanks pressure.



### HC-1QD - Female Quick Disconnect Coupling



**FA-4 Threaded filling adapter**  
Install 7/16-20 threaded end into valve compartment of cylinder.  
Thread high pressure hose coupling onto .305-32 end.



### FA-4QCD - Quick Disconnect Filling adapter

Install 7/16-20 threaded end into valve compartment of cylinder. Attach high pressure hose coupling to male end.



### CA-2000 ~ Threaded Goose Neck Only.

With .305 - 32 threaded coupling.





# N-FORCER®

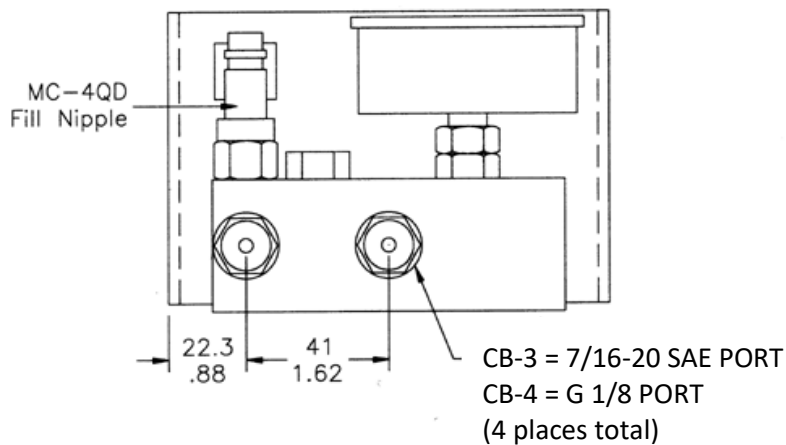
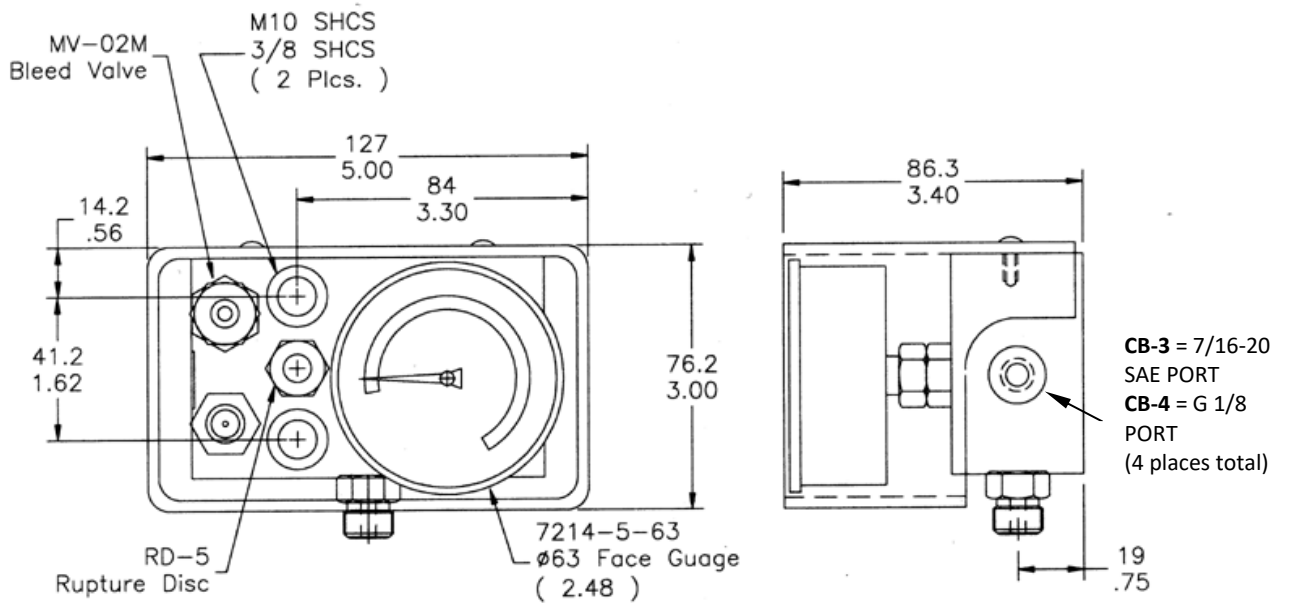
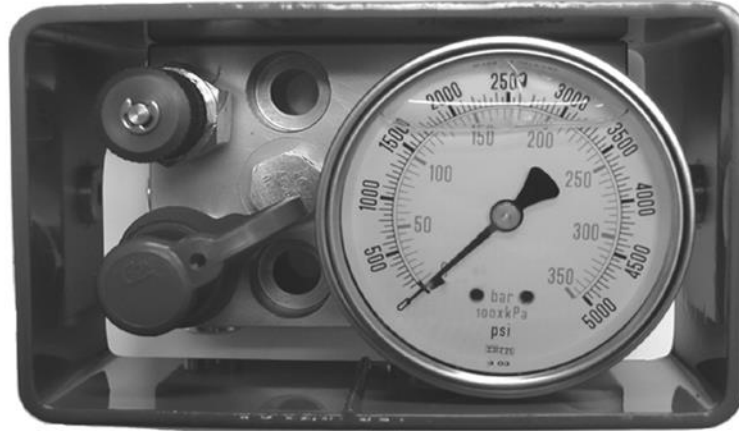
Made in the USA



**N-FORCER**

*GAS Springs Since 1986*

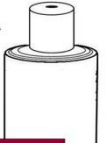
**CB-3 Control Panel (7/16-20 SAE PORT)**  
**CB-4 Control Panel (G 1/8 PORT)**



# N-FORCER®

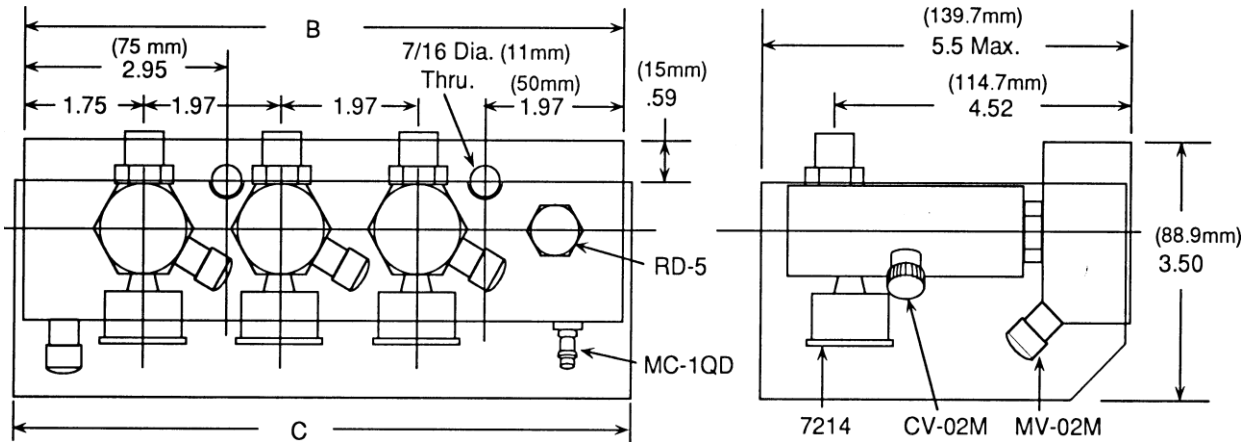
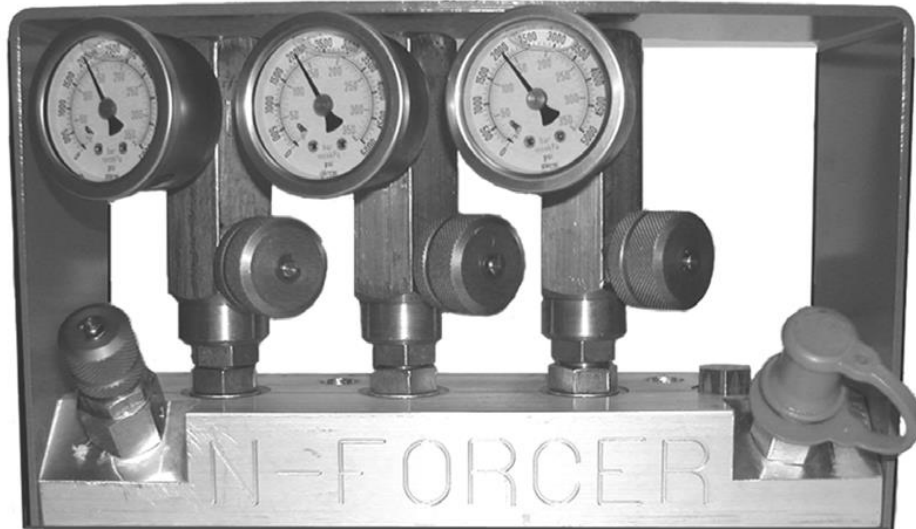
## MCB -- Multiple Port Control Block

Made in the USA



**N-FORCER**

*GAS Springs Since 1986*



	B	C
<b>MCB-3</b> (Three Station)	8.657" 219.9mm	8.905" 226.2mm
<b>MCB-4</b> (Four Station)	10.625" 269.9mm	10.878" 276.3mm
<b>MCB-5</b> (Five Station)	12.598" 320mm	12.846" 326.3mm
<b>MCB-6</b> (Six Station)	14.567" 370mm	14.815" 376.3mm

### Multiple Station Control Block

This control block offers from 3 to 6 individual port stations which operate independent from each other. Each station has two 7/16-20 SAE ports for hosing nitrogen die springs. All stations can be set for different pressures, or they can all be the same pressure but isolate different sections of the die for maintenance purposes. All stations have a pressure gage and an opening and closing valve.

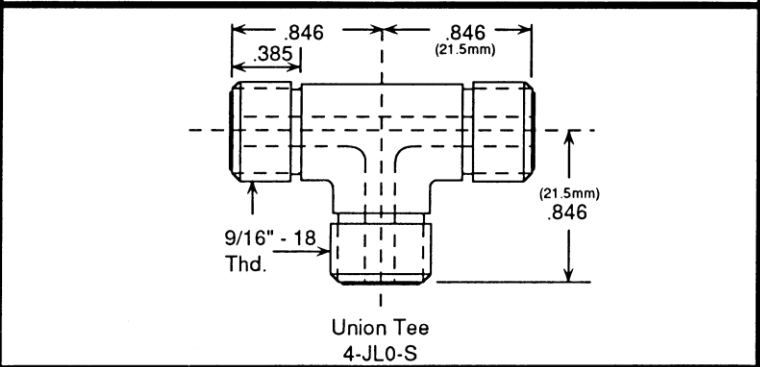
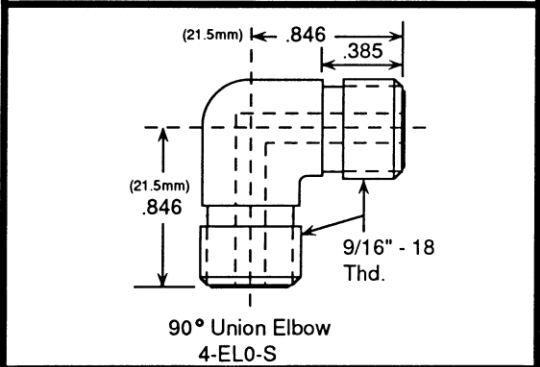
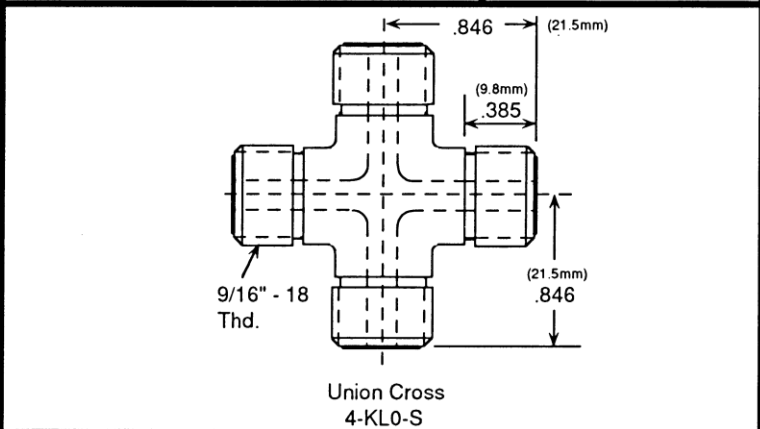
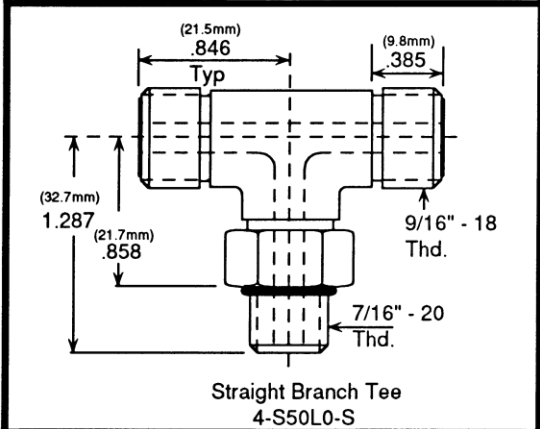
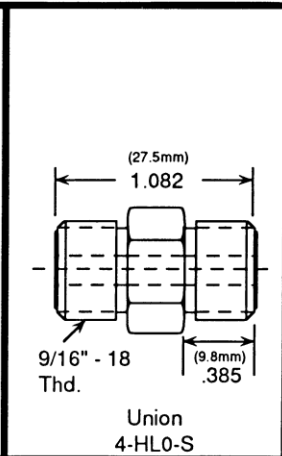
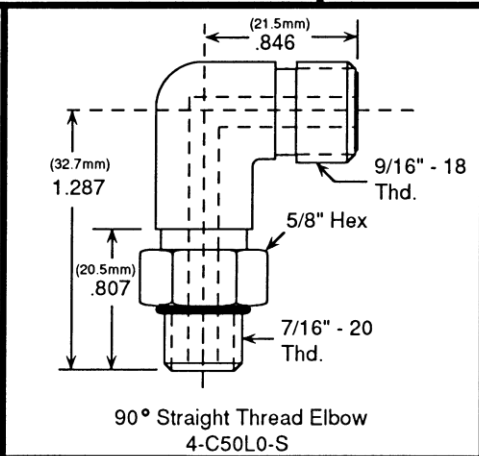
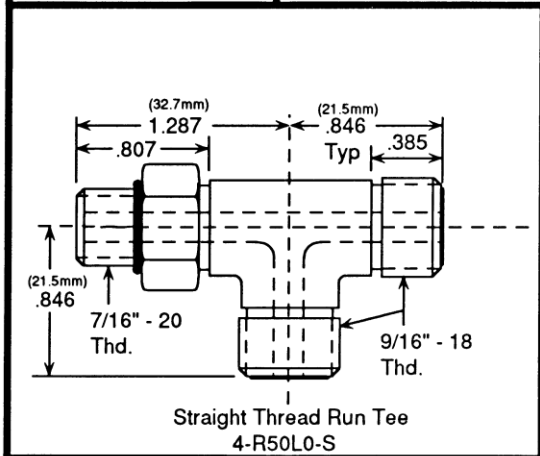
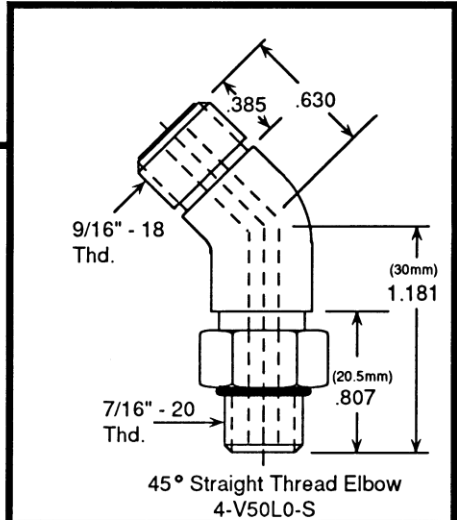
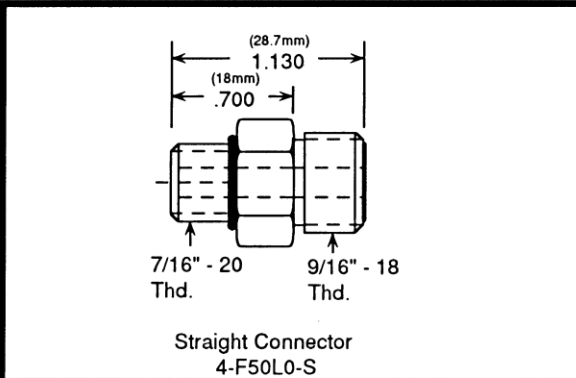
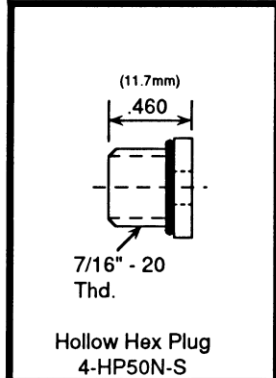
Made in the USA

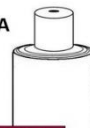


**N-FORCER**

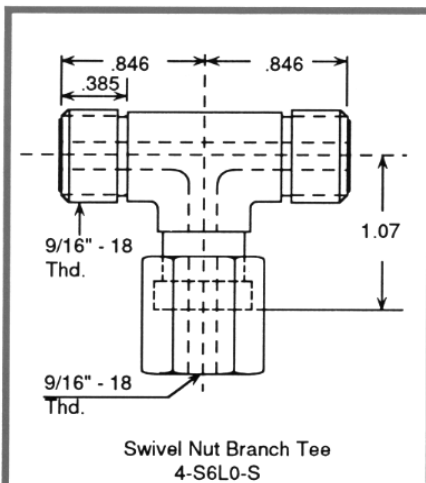
GAS Springs Since 1986

# O-RING FACE SEAL HOSE FITTINGS 7/16" - 20 Threads

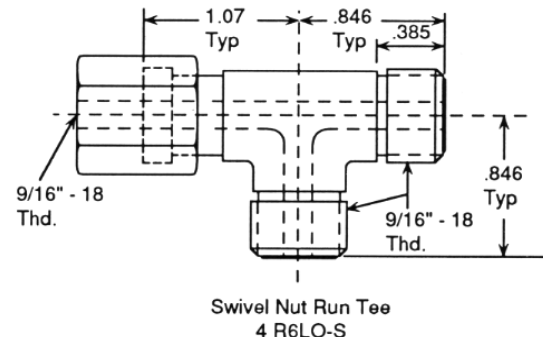




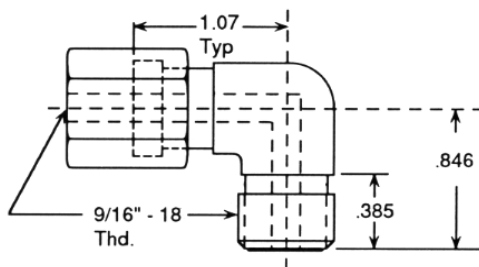
# O-RING FACE SEAL HOSE FITTINGS



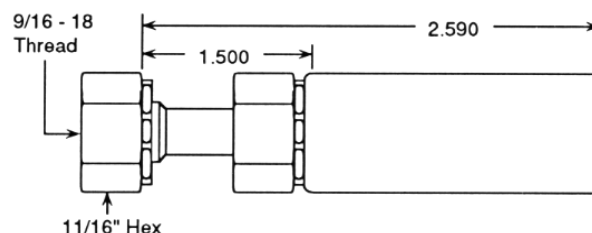
Swivel Nut Branch Tee  
4-S6L0-S



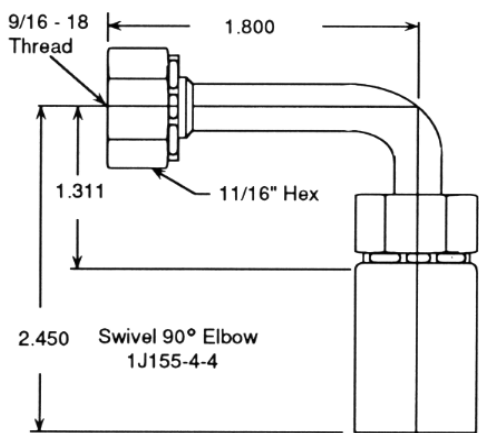
Swivel Nut Run Tee  
4 R6L0-S



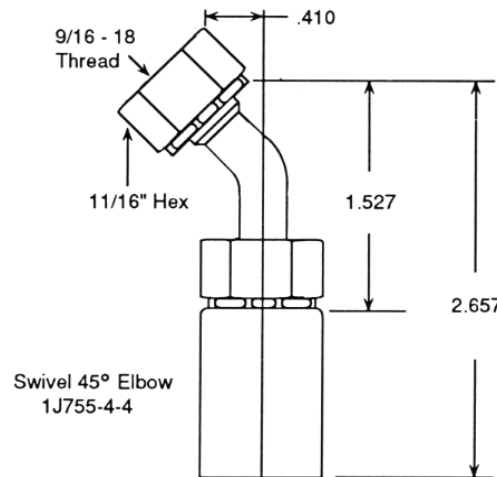
Swivel Nut Elbow  
4 C6L0-S



Swivel Straight  
1JS55-4-4



Swivel 90° Elbow  
1J155-4-4



Swivel 45° Elbow  
1J755-4-4



Medium Pressure Hose  
518B-4

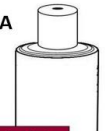
Hose I.D 1/4 In.  
Hose O.D. .47 In.  
Maximum Working Pressure 2750 PSI  
Minimum Burst Pressure 11,000 PSI  
Minimum Bend Radius 1 1/2 In.

**\*Optional Hose Fittings**

**½-20 Threads**

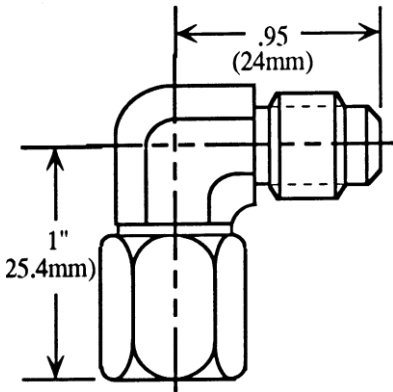
This size has been phase out and is being offered as replacement only for older systems.

Made in the USA

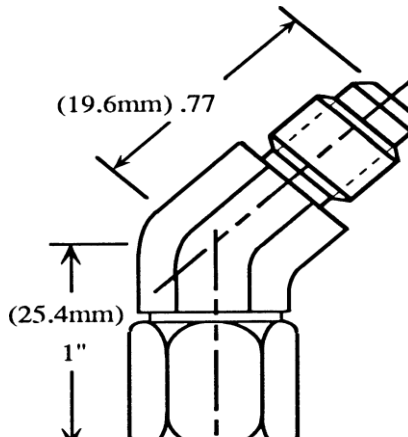


**N-FORCER**

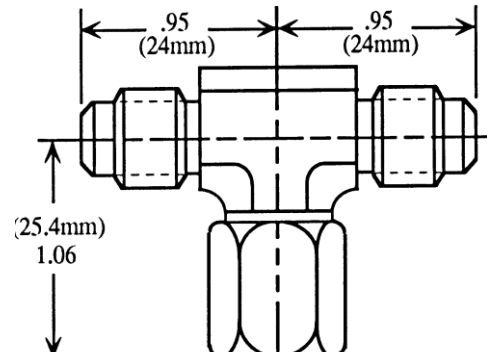
GAS Springs Since 1986



SWIVEL NUT 90° ELBOW  
PART NO. 5-3903

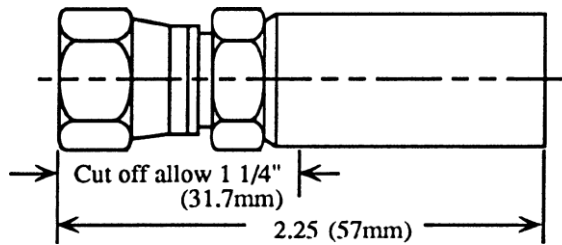


SWIVEL NUT 90° ELBOW  
PART NO. 5-3703



SWIVEL NUT RUN TEE  
PART NO. 5-393T

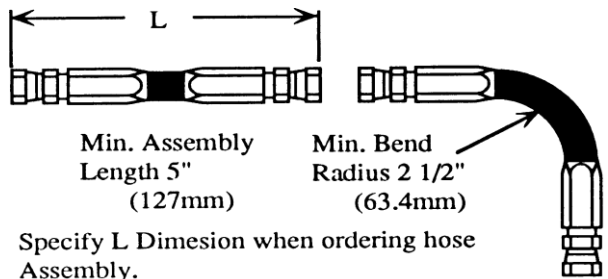
PERMANENT SWIVEL  
PART NO. 5-3-10655



**OPTIONAL HOSE FITTINGS  
For Reusable and Permanent Couplings**

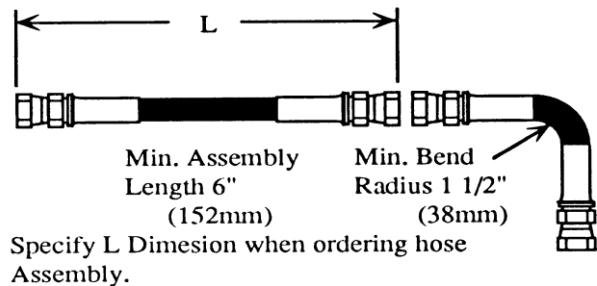
**Medium Pressure Hose For Reusable Couplings**

Part Number	ID in. mm	Max OD in mm	Max Working Pressure psi	Min Burst Pressure psi	Min Bend Radius in./mm	Weight Lbs/ 100ft.
NH-025	1/4	.47	2750	11000	2 1/2"	5.2
Metric	6.3	12	190 Bar	758 Bar	63.4	

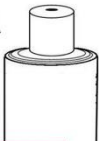


**High Pressure Hose For Permanent Couplings**

Part Number	ID in. mm	Max OD in mm	Max Working Pressure psi	Min Burst Pressure psi	Min Bend Radius in./mm	Weight Lbs/ 100ft.
NH-018	3/16	.42	5000	20000	1 1/2"	5.8
Metric	4.7	10.6	345 Bar	1379 Bar	38	



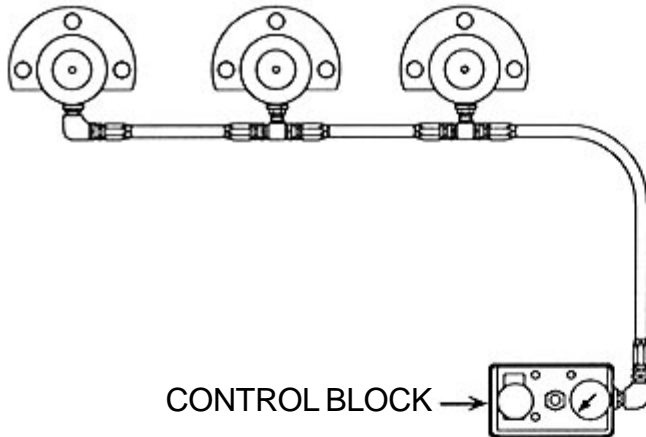
Made in the USA



**N-FORCER**

*GAS Springs Since 1986*

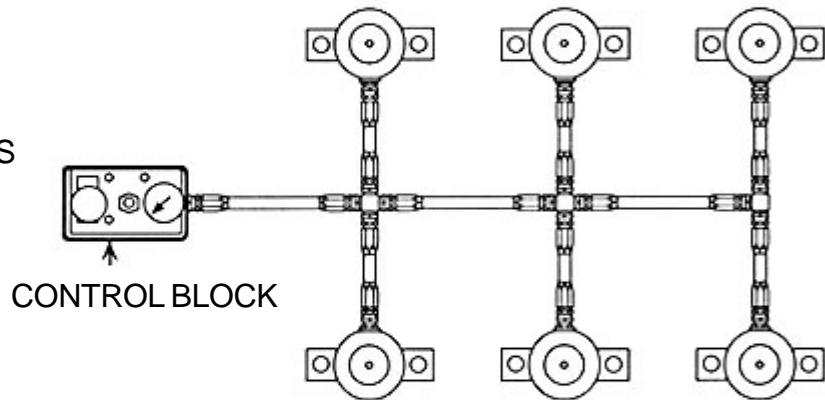
# TYPICAL HOSE SYSTEM EXAMPLES



- (3) "R" MOUNT CYLINDERS
- (6) HOSE SWIVEL FITTINGS  
PART NO 4-5-20651
- (2) 90 DEGREE ELBOW FITTINGS  
PART NO 5-2503
- (2) BRANCH TEE FITTINGS  
PART NUMBER 5-253T
- (1) CONTROL BLOCK

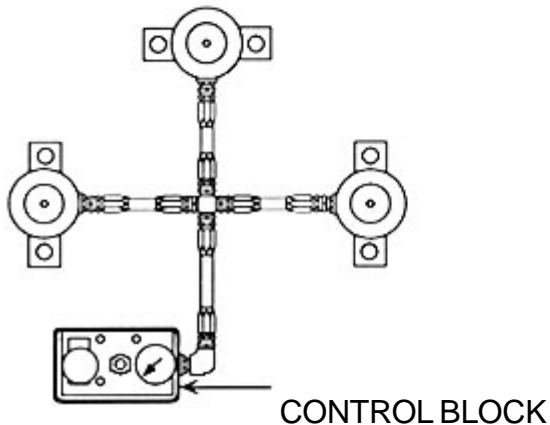
A MINIMUM OF 3 FEET HOSE

- (6) "F" MOUNT CYLINDERS
- (18) HOSE SWIVEL FITTINGS  
PART NO 4-5-20651
- (7) STRAIGHT CONNECTORS  
PART NO 5-0503
- (2) UNION CROSS FITTINGS  
PART NO 5-033X
- (1) UNION TEE FITTING  
PART NO 5-033T
- (1) CONTROL BLOCK

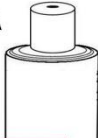


- (3) "F" MOUNT CYLINDERS
- (8) HOSE SWIVEL FITTINGS  
PART NO 4-5-20651
- (3) STRAIGHT CONNECTORS  
PART NO 5--5-3
- (1) UNION CROSS FITTINGS  
PART NO 5-033X
- (1) 90 DEGREE ELBOW FITTING  
PART NO 5-2503
- (1) CONTROL BLOCK

A MINIMUM OF 2 FEET HOSE



Made in the USA



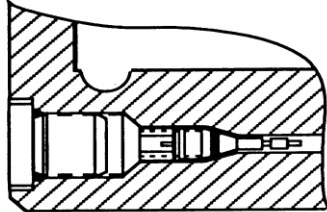
**N-FORCER**

*GAS Springs Since 1986*

## OPTIONAL VALVING & CONNECTIONS

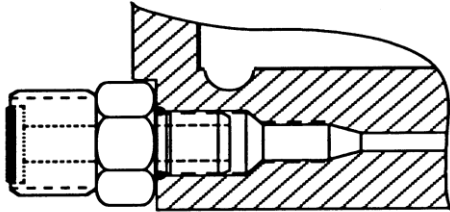
### Basic Self-Contained and Hose Ports

For G 1/8 Port -See "IS" Series



#### Series "CN"

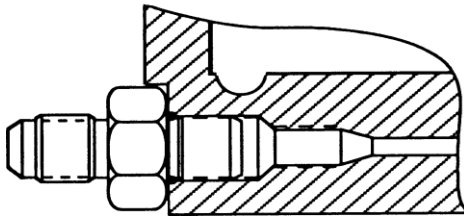
Standard 7/16 - 20 port supplied with a plug and a valve to allow cylinders to be used as self-contained. May also be used as a hosed system without valve installed.



#### Series "CNB"

Standard 7/16 - 20 port to be used in a hosed system. Order fittings separately.

-No valve supplied unless requested.



#### Series "CNF"

\*Optional 1/2 - 20 port to be used in a hosed system. Order fittings separately.

-No valve supplied unless requested.

When ordering compact nitrogen die springs, please use the following format:

1.      2.      3.      4.      5.  
CN    075 X    25    - SF1    - 138 (This die spring will be used as a self-contained unit.)

1.      2.      3.      4.      5.  
CN    075 X    25    - SF1    -      (This die spring will be used as a self-contained unit.)

1. Series = Compact Series
2. Model = Tonnage (6.76 KN)
3. Stroke Length = Length of Stroke (25mm)
4. Mounting Style - Square Rear Flange with Counter Bore Toward Rod End.
5. Charging Pressure = 138 Bar Internal Charging Pressure.

**NOTE: IF NO CHARGING PRESSURE IS SPECIFIED - DIE SPRINGS WILL BE SHIPPED FOR HOSED SYSTEM AND WILL NOT HAVE A VALVE INSTALLED.**

# N-FORCER®

“CSN” SERIES 7/16 Port  
“CISN” SERIES G1/8 Port  
Compact Nitrogen Die Springs  
3/4 Ton to 5 Ton of Force on Contact  
Welded Mounts



Die, Mold & Automation Components, Inc. 14400 Henn Street Dearborn, MI 48126  
Phone : 1.800.220.2242 [www.n-forcer.com](http://www.n-forcer.com)



# N-FORCER<sup>®</sup>

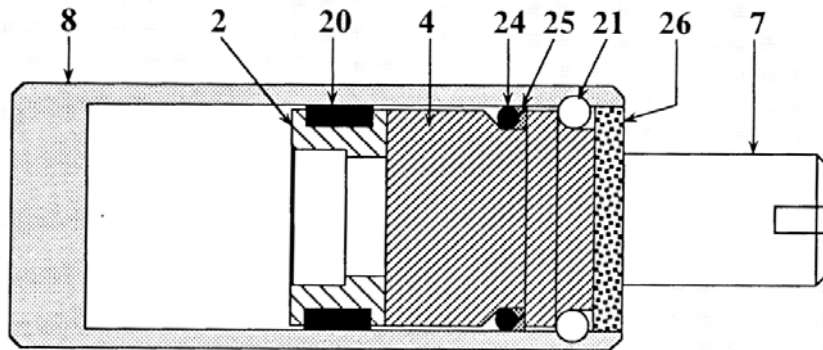
Made in the USA



**N-FORCER**

*GAS Springs Since 1986*

## “CSN/CISN” SERIES PARTS LIST



**Series = (# # #)**  
**Stroke = (# #)**

### Individual Repair Parts:

- |   |   |
|---|---|
| 8. Tube Assembly P/N: <u>N(# # #)- 88 (# #)</u><br>(please note port type for #8) | 25. O-ring back-up P/N: <u>N(# # #)-25</u>    |
| 20. Wear Ring P/N: <u>N(# # #) -20</u>  | 21. Retaining Rings P/N: <u>N(# # #) -21</u>  |
| 4. Cartridge P/N: <u>N(# # #) -04S</u>  | 26. Protective Ring P/N: <u>N(# # #) -26S</u> |
| 2. Piston Rod Retainer P/N: <u>N(# # #) -02</u>                                   | 7. Piston Rod P/N: <u>N(# # #) -77(# #)</u>   |
|   | 24. Cartridge O-ring P/N: <u>N(# # #) -24</u> |

## REPAIR KITS

### Standard Repair Kit Order P/N: **CSN (# # #) - RK**

Example: CSN300-RK  
This represents a repair kit for a 3 ton cylinder with a Garloc bearing.

Both CSN and CISN cylinders use the same repair kits. The only difference between the two is the port size for charging/hosing the gas cylinder. Repair kits will be one of the following:  
CSN75-RK  
CSN150-RK  
CSN300-RK  
CSN500-RK



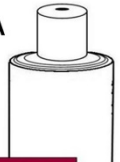
### Repair Kit Contents:

Complete Cartridge (#4)  
Wear Ring (#20)  
Rod End Cover (#26)  
Valve  
Bottle of Oil

# N-FORCER®

## MOUNTING RECOMMENDATIONS

Made in the USA

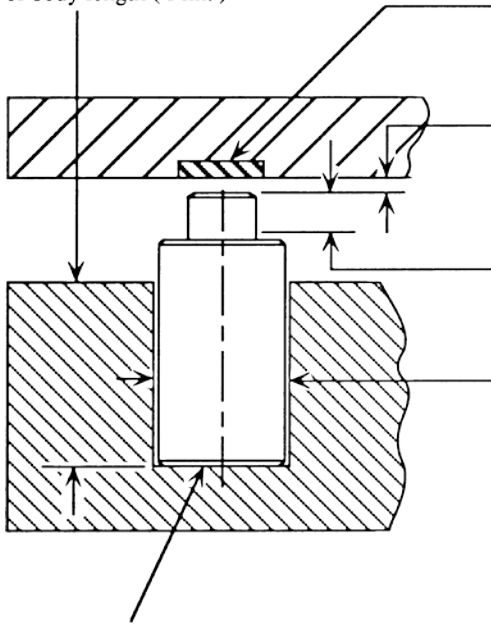


**N-FORCER**

*GAS Springs Since 1986*

### Drop in Model - Vertical Mount

Pocket depth to be 75% of body length ( Min. )



Provide a hard, flat surface for the piston rod to strike. ( 50 Rc ) Must be perpendicular to the C/L of the piston rod.

Allow 1mm clearance with die in open position.

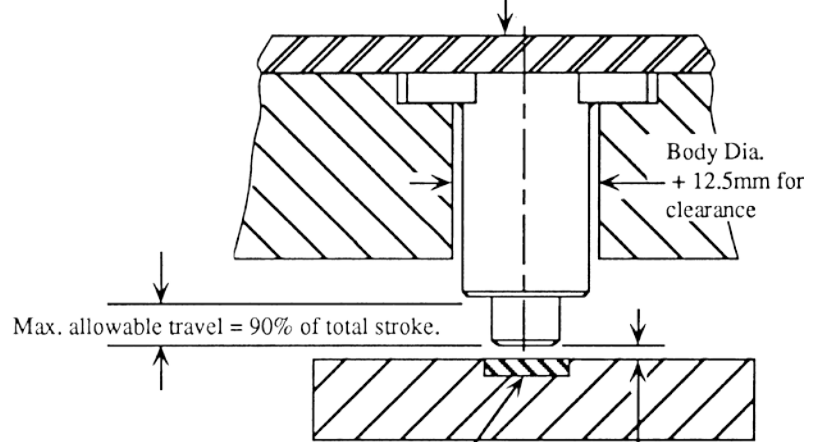
Max. allowable travel = 90% of total stroke.

Hole Dia. to be Body Dia. + 1.5mm max.

Provide a solid flat surface in the bottom of the hole for the N-FORCER to sit. Drill points are not acceptable.

### Inverted Vertical Mount with Welded Lugs

Provide a solid plate to reinforce the mounting lugs of the N-FORCER.



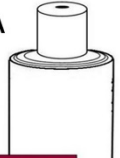
Provide a hard, flat surface for the piston rod to strike. ( 50 Rc ) Must be perpendicular to the C/L of the piston rod.

Allow 1mm clearance with die in open position.

# N-FORCER®

## PRACTICAL APPLICATIONS

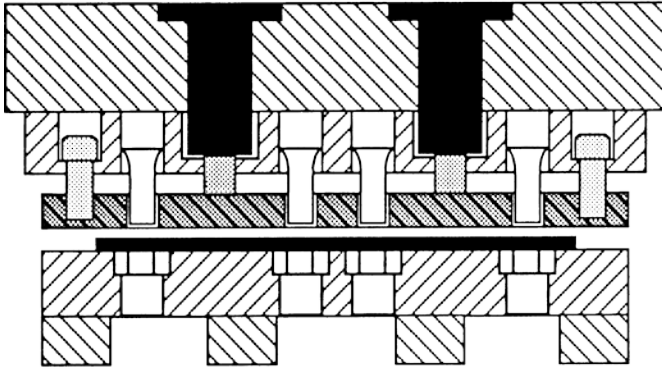
Made in the USA



**N-FORCER**

*GAS Springs Since 1986*

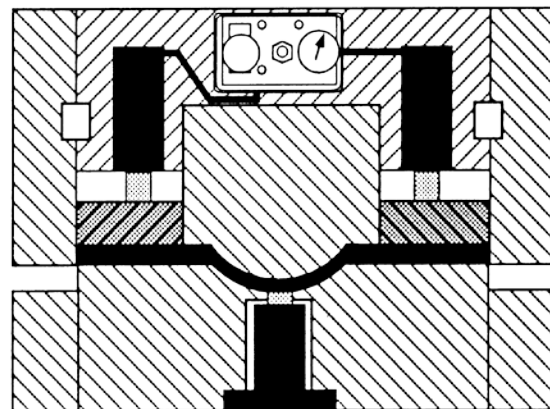
### STRIPPING



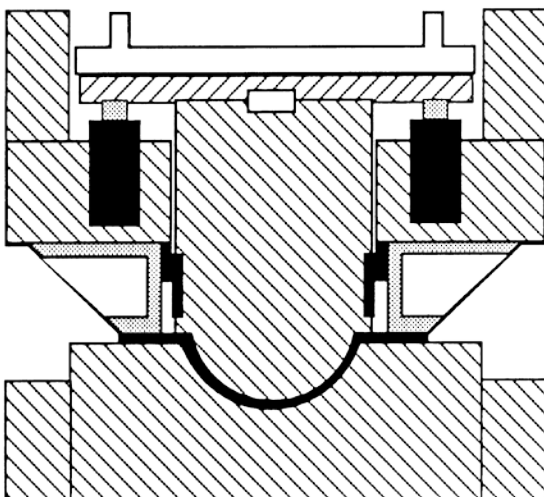
Nitrogen die springs curtail that ever present situation of broken punches due to uneven pressures on stripper plates. They also give the high pressures needed on those difficult stripping jobs.

This is a very common use for nitrogen cylinders in the upper half of die as many progressive dies require the parts to be drawn in this manner.

### CONVENTIONAL DRAW



### FLOATING PUNCH

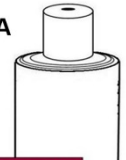


In this application the draw punch is not attached to the inner slide. Instead the punch is suspended on self-contained cylinders mounted into the blankholder plate or the upper shoe. This reduces die setting time and makes the punch more accessible for refinishing in the press.

# N-FORCER®

## PRACTICAL APPLICATIONS

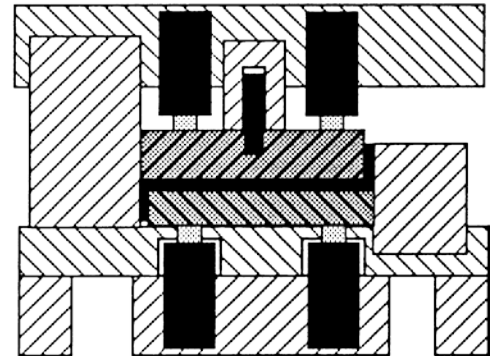
Made in the USA



**N-FORCER**  
*GAS Springs Since 1986*

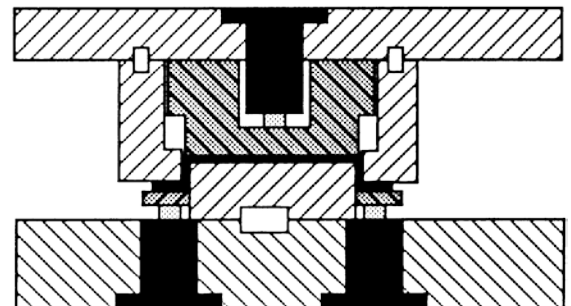
Forming in two direction is accomplished very easily using nitrogen die springs. By varying the pressures in the cylinders, you can attain the correct forces needed to produce quality parts.

### DOUBLE ACTION FORMING



With the high forces available on contact the nitrogen die springs are an excellent alternative to coil die springs. The ability to vary the forces generated by the nitrogen die springs also gives you better control over your final product.

### INVERTED DRAW



# N-FORCER®



## FORCE CHARTS

**Maximum Force in KN based on 150 Bar Charge (2175psi)**

If changing pressure is less than 150 Bar, force is reduced proportionally. EXAMPLE: Forces listed on chart are multiplied by .75 at 112.5 Bar, by .50 at 75 Bar, etc.

<b>CSN / CISN 075</b>		
CHARGING PRESSURE	DIE OPEN	DIE CLOSED
	FORCE	FORCE
500 PSI	380 Lbs	626 Lbs
34 Bar	1.69 KN	2.78 KN
750 PSI	570 Lbs	940 Lbs
52 Bar	2.53 KN	4.18 KN
1000 PSI	760 Lbs	1253 Lbs
69 Bar	3.38 KN	5.57 KN
1500 PSI	1140 Lbs	1880 Lbs
103 Bar	5.07 KN	8.36 KN
1750 PSI	1330 Lbs	2193 Lbs
120 Bar	5.91 KN	9.75 KN
2000 PSI	1520 Lbs	2507 Lbs
138 Bar	6.76 KN	11.1 KN
2175 PSI	1653 Lbs	2725 Lbs
150 bar	73.8 KN	12.18 KN

<b>CSN / CISN 150</b>		
CHARGING PRESSURE	DIE OPEN	DIE CLOSED
	FORCE	FORCE
500 PSI	790 Lbs	1174 Lbs
34 Bar	3.51 KN	5.22 KN
750 PSI	1185 Lbs	1761 Lbs
52 Bar	5.27 KN	7.83 KN
1000 PSI	1580 Lbs	2348 Lbs
69 Bar	7.03 KN	10.4 KN
1500 PSI	2370 Lbs	3522 Lbs
103 Bar	10.5 KN	15.7 KN
1750 PSI	2765 Lbs	4109 Lbs
120 Bar	12.3 KN	18.3 KN
2000 PSI	3160 Lbs	4696 Lbs
138 Bar	14.0 KN	20.9 KN
2175 PSI	3436.50 Lbs	5107 Lbs
150 bar	16.3 KN	22.65 KN

<b>CSN / CISN 300</b>		
CHARGING PRESSURE	DIE OPEN	DIE CLOSED
	FORCE	FORCE
500 PSI	1520 Lbs	2492 Lbs
34 Bar	6.76 KN	11.1 KN
750 PSI	2280 Lbs	3739 Lbs
52 Bar	10.1 KN	16.6 KN
1000 PSI	3040 Lbs	4985 Lbs
69 Bar	13.5 KN	22.2 KN
1500 PSI	4560 Lbs	7478 Lbs
103 Bar	20.3 KN	33.3 KN
1750 PSI	5320 Lbs	8724 Lbs
120 Bar	23.7 KN	38.8 KN
2000 PSI	6080 Lbs	9971 Lbs
138 Bar	27.0 KN	44.3 KN
2175 PSI	6612 Lbs	10843 Lbs
150 bar	29.4 KN	48.3KN

<b>CSN / CISN 500</b>		
CHARGING PRESSURE	DIE OPEN	DIE CLOSED
	FORCE	FORCE
500 PSI	2578 Lbs	3912 Lbs
34 Bar	11.5 KN	17.4 KN
750 PSI	3867 Lbs	5869 Lbs
52 Bar	17.2 KN	26.1 KN
1000 PSI	5157 Lbs	7825 Lbs
69 Bar	22.9 KN	34.8 KN
1500 PSI	7735 Lbs	11738 Lbs
103 Bar	34.4 KN	52.2 KN
1750 PSI	9024 Lbs	13694 Lbs
120 Bar	40.1 KN	60.9 KN
2000 PSI	10314 Lbs	15651 Lbs
138 Bar	45.9 KN	69.7 KN
2175 PSI	11216 Lbs	17019 Lbs
150 bar	49.95 KN	75.9 KN

# N-FORCER®

## ORDERING PROCEDURE

### “CSN / CISN” COMPACT SERIES



WHEN ORDERING CYLINDERS, PLEASE USE THE FOLLOWING FORMAT.

1. CSN      2. 300      X      3. 4      -      4. RD      -      5. 2000

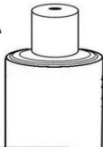
**NOTE: CYLINDERS WILL BE SPECIFIED AS NOMINAL INCH STROKES ON ALL PACKING SLIPS AND INVOICES.**

- Series:** CSN = 7/16-20 Port, Compact Series  
CISN = G 1/8 Port, Compact Series  
\*CSNF = ½-20 Port (Special Order Item), Compact Series
- Tonnage:** 075 (6.7 KN) - 150 (14KN) - 300 (27KN) - 500 (45.8 KN)
- Stroke Length:** Available Strokes (mm) ~ 12.5, 25, 38.1, 50, 63.4, 75, 80, 88.9  
100, 144.3, 125, 150, 139.7, 160.
- Mounting Style:** Detailed on pages 10 through 13.
- Charging Pressure:** (specify) 14 Bar minimum to 138 Bar maximum. If no pressure is specified, the die spring will be shipped with no valve installed.

**REPAIR KITS:** Specify series, tonnage:

- EXAMPLE for 300 Series Cylinder Repair Kit: CSN/CISN 300-RK**

Made in the USA



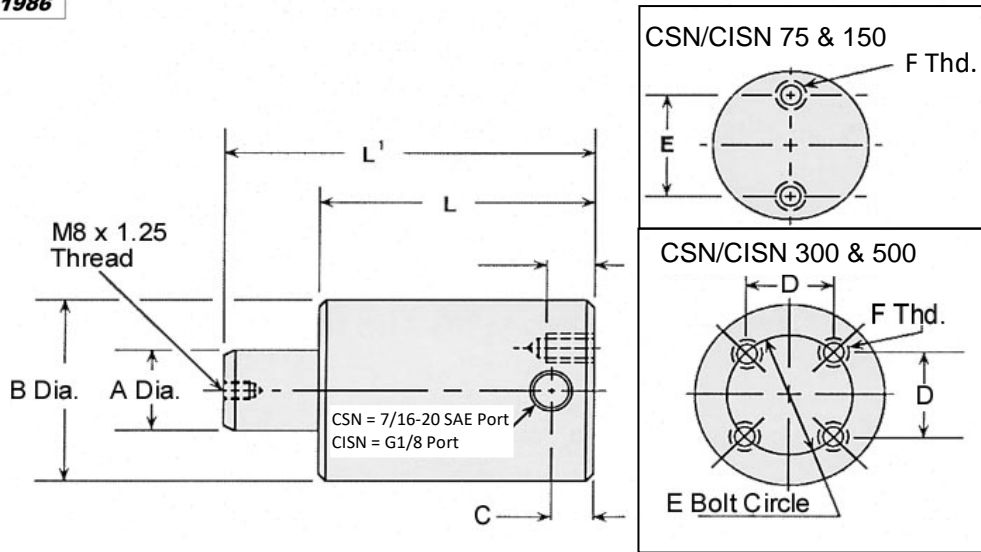
**N-FORCER**

GAS Springs Since 1986

# N-FORCER®

## MOUNTING STYLE "D" BASIC DROP -

May also be fastened in place using threaded holes.



CSN = 7/16 PORT

CISN = G1/8 PORT

MODEL	A	B	C	D	E	F
CSN/CISN 075D	.98" (25)	1.97" (50)	.407" (10.3)	~	1.25" (31.7)	3/8 - 16
CSN/CISN 075-DM	.98" (25)	1.97" (50)	.407" (10.3)	~	1.25" (31.7)	M10X1.5
CSN/CISN 150-D	1.42" (36)	2.97" (75)	.407" (10.3)	~	1.50" (38.1)	1/2 - 13
CSN/CISN 150-DM	1.42" (36)	2.97" (75)	.407" (10.3)	~	1.50" (38.1)	M12X1.75
CSN/CISN 300-D	1.97" (50)	3.72" (95)	.43" (11)	2.13" (54.1)	3.00" (76.2)	1/2 - 13
CSN/CISN 300-DM	1.97" (50)	3.72" (95)	.43" (11)	2.13" (54.1)	3.00" (76.2)	M12X1.75
CSN/CISN 500-D	2.56" (65)	4.72" (120)	.43" (11)	2.25" (57.1)	3.18" (80.8)	1/2 - 13
CSN/CISN 500-DM	2.56" (65)	4.72" (120)	.43" (11)	2.25" (57.1)	3.18" (80.8)	M12X1.75

### CSN/CISN 075

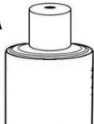
stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.25	4.73	5.25	5.72	6.25	6.70	6.89	7.25	7.69	8.25	8.67	9.25	9.66	10.04
	107.9	120.0	133.3	145.0	158.7	170.0	175.0	184.1	195.0	209.5	220.0	234.9	245.0	255.0
L <sub>1</sub>	4.74	5.71	6.74	7.68	8.74	9.65	10.04	10.74	11.62	12.74	13.58	14.74	15.56	16.34
	120.4	145.0	171.2	195.0	222.0	245.0	255.0	272.8	295.0	323.6	345.0	374.4	395.0	415.0

### CSN/CISN 150 ~ CSN/CISN 300 ~ CSN/CISN 500

stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.50	4.98	5.50	5.97	6.50	6.95	7.15	7.50	7.94	8.50	8.92	9.50	9.91	10.30
	114.3	126.5	139.7	151.6	165.1	176.5	181.6	190.5	201.6	215.9	226.5	241.3	251.7	261.6
L <sub>1</sub>	5.00	5.96	7.00	7.94	9.00	9.90	10.30	11.00	11.88	13.00	13.84	15.00	15.82	16.60
	127.0	151.4	177.8	201.6	228.6	251.4	261.6	279.4	301.7	330.2	351.5	381.0	401.8	421.6

Note: CSN/CISN 75 thru 500, We have manufactured strokes up to 325mm.

Made in the USA

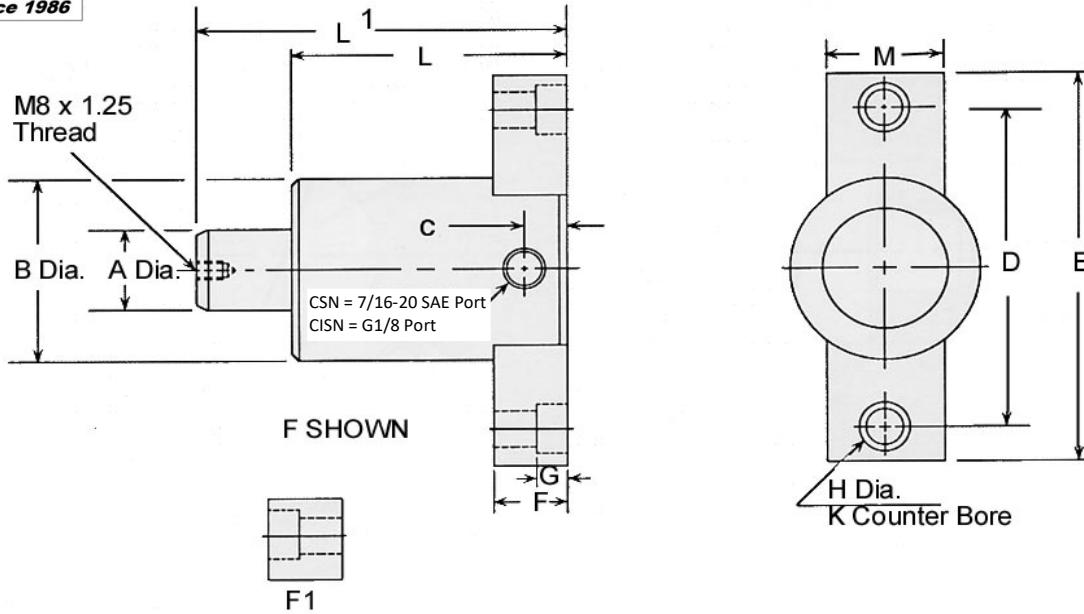


**N-FORCER**

GAS Springs Since 1986

# N-FORCER®

## MOUNTING STYLE "F" Rear Lug Mount



MODEL	A	B	C	D	E	F	G	H	K	M
<b>CSN/C1SN 075</b>	.98	1.98	.407	3.50	4.25	.748	.43	.43	.71	1.25
<b>CSN/C1SN 075</b>	25	50	10.3	89	108	19	11.0	11.0	18	31.7
<b>CSN/C1SN 150</b>	1.42	2.98	.407	4.75	6.00	.748	.53	.53	.78	1.50
<b>CSN/C1SN 150</b>	36	75	10.3	120	152.3	19	13.5	13.5	20	38.0
<b>CSN/C1SN 300</b>	1.97	3.73	.43	5.75	7.00	.748	.53	.53	.78	1.50
<b>CSN/C1SN 300</b>	50	95	11	146	178	19	13.5	13.5	20	38.0
<b>CSN/C1SN 500</b>	2.56	4.72	.43	6.50	7.75	.748	.53	.53	.78	1.50
<b>CSN/C1SN 500</b>	65	120	11	165	197	19	13.5	13.5	20	38.0

### CSN/C1SN 075

stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.25	4.73	5.25	5.72	6.25	6.70	6.89	7.50	7.69	8.25	8.67	9.25	9.66	10.04
	107.9	120.0	133.3	145.0	158.7	170.0	175.0	184.1	195.0	209.5	220.0	234.9	245.0	255.0
L <sub>1</sub>	4.74	5.71	67.4	7.68	8.74	9.65	10.04	10.74	11.62	12.74	13.58	14.74	15.56	16.34
	120.4	145.0	171.2	195.0	222.0	245.0	255.0	272.8	295.0	326.6	345.0	374.4	395.0	415.0

### CSN/C1SN 150 ~ CSN/C1SN 300 ~ CSN/C1SN 500

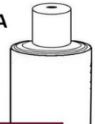
stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.50	4.98	5.50	5.97	6.50	6.95	7.15	7.50	7.94	8.50	8.92	9.50	9.91	10.30
	114.3	126.5	139.7	151.6	165.1	176.5	181.6	190.5	201.6	215.9	226.5	241.3	251.7	261.6
L <sub>1</sub>	5.00	5.96	7.00	7.94	9.00	9.90	10.30	11.00	11.8	13.00	13.84	15.00	15.82	16.60
	127.0	151.4	177.8	201.6	228.6	251.4	261.6	279.4	301.7	330.2	351.5	381.0	401.8	421.6

Note: CSN/C1SN 75 thru 500, We have manufactured strokes up to 325mm.



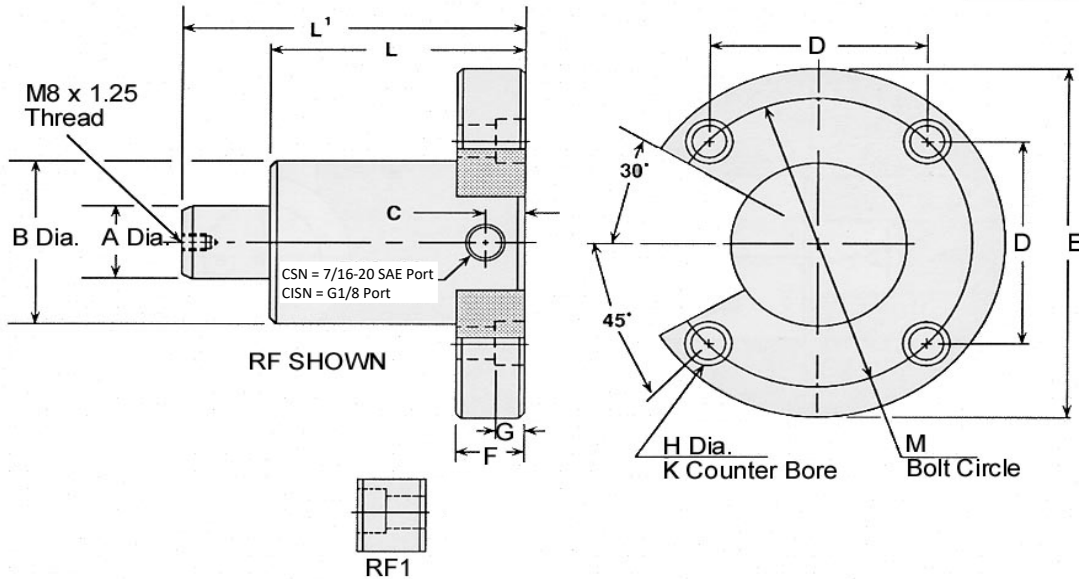
# N-FORCER®

Made in the USA



**N-FORCER**  
GAS Springs Since 1986

## MOUNTING STYLE "RF" Rear Flange Mount



Model	A	B	C	D	E	F	G	H	K	M
CSN/CISN 075	.98	1.97	.407	2.48	4.50	.748	.43	.43	.71	3.50
CSN/CISN 075	25	50	10.3	62.9	114.3	19	11.0	11.0	18	88.9
CSN/CISN 150	1.42	2.97	.407	3.36	5.98	.748	.53	.53	.79	4.75
CSN/CISN 150	36	75.4	10.3	85.3	152	19	13.5	13.5	20	120.6
CSN/CISN 300	1.97	3.72	.43	3.89	6.76	.984	.53	.53	.79	5.50
CSN/CISN 300	50	94.4	11	99	171.6	25	13.5	13.5	20	139.7
CSN/CISN 500	2.56	4.72	.43	4.60	7.70	.984	.67	.69	1.02	6.50
CSN/CISN 500	65	120	11	117	195.5	25	17	17.5	26	165.1

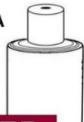
### CSN/CISN 075

stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.25	4.73	5.25	5.72	6.25	6.70	6.89	7.25	7.69	8.25	8.67	9.25	9.66	10.04
	107.9	120.0	133.3	145.0	158.7	170.0	175.0	184.1	195.0	209.5	220.0	234.9	245.0	255.0
L <sub>1</sub>	4.74	5.71	6.74	7.68	8.74	9.65	10.04	10.74	11.62	12.74	13.58	14.74	15.56	16.34
	120.4	145.0	171.2	195.0	222.0	245.0	255.0	272.8	295.0	326.6	345.0	374.4	395.0	415.0

### CSN/CISN 150 ~ CSN/CISN 300 ~ CSN/CISN 500

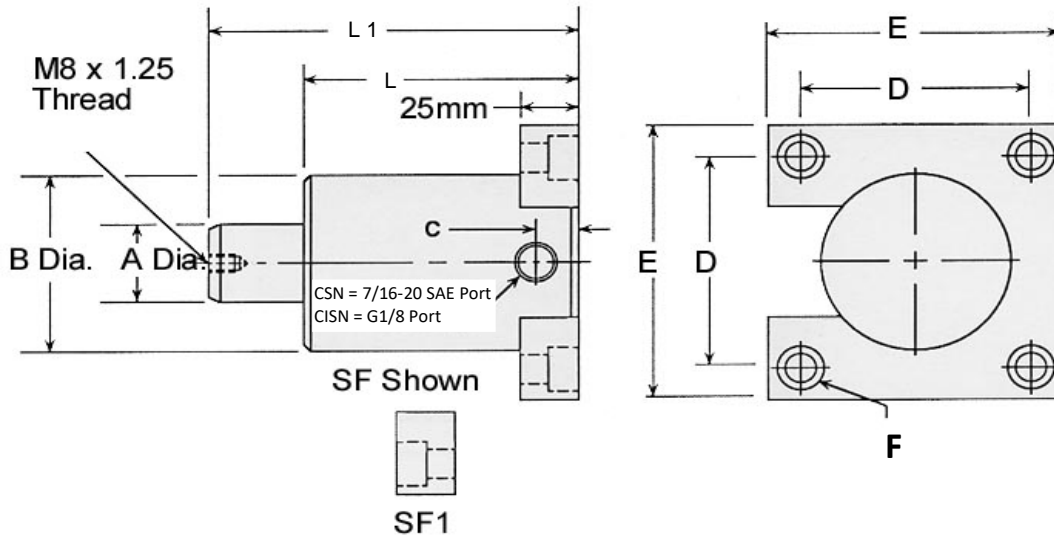
stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.50	4.98	5.50	5.97	6.50	6.95	7.15	7.50	7.94	8.50	8.92	9.50	9.91	10.30
	114.3	126.5	139.7	151.6	165.1	176.5	181.6	190.5	201.6	215.9	226.5	241.3	251.7	261.6
L <sub>1</sub>	5.00	5.96	7.00	7.94	9.00	9.90	10.30	11.00	11.8	13.00	13.84	15.00	15.82	16.60
	127.0	151.4	177.8	201.6	228.6	251.4	261.6	279.4	301.7	330.2	351.5	381.0	401.8	421.6

Note: CSN/CISN 75 thru 500, We have manufactured strokes up to 325mm.



# N-FORCER®

## MOUNTING STYLE "SF" Square Rear Flange



MODEL	A	B	C	D	E	G	H	K
CSN/CISN 075	.98	1.97	.407	2.13	2.95	.53	.44	.71
CSN/CISN 075	25	50	10.3	54	75	13.5	11.0	18
CSN/CISN 150	1.42	2.97	.407	2.99	4.01	.53	.53	.79
CSN/CISN 150	36	75	10.3	76	102	13.5	13.5	20
CSN/CISN 300	1.97	3.72	.43	3.85	5.00	.53	.53	.79
CSN/CISN 300	50	94.4	11	98	126.9	13.5	13.5	20
CSN/CISN 500	2.56	4.72	.43	4.49	5.51	.53	.53	.79
CSN/CISN 500	65	120	11	114	139.9	13.5	13.5	20

### CSN/CISN 075

stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.25	4.73	5.25	5.72	6.25	6.70	6.89	7.25	7.69	8.25	8.67	9.25	9.66	10.04
	107.9	120.0	133.3	145.0	158.7	170.0	175.0	184.1	195.0	209.5	220.0	234.9	245.0	255.0
L <sub>1</sub>	4.74	5.71	6.74	7.68	8.74	9.65	10.04	10.74	11.62	12.74	13.58	14.74	15.56	16.34
	120.4	145.0	171.2	195.0	222.0	245.0	255.0	272.8	295.0	323.6	345.0	374.4	395.0	415.0

### CSN/CISN 150 ~ CSN/CISN 300 ~ CSN/CISN 500

stroke	.50	.98	1.50	1.97	2.50	2.95	3.15	3.50	3.94	4.50	4.92	5.50	5.91	6.30
	12.7	25	38.1	50	63.5	75	80	88.9	100	114.3	125	139.7	150	160
L	4.50	4.98	5.50	5.97	6.50	6.95	7.15	7.50	7.94	8.50	8.92	9.50	9.91	10.30
	114.3	126.5	139.7	151.6	165.1	176.5	181.6	190.5	201.6	215.9	226.5	241.3	251.7	261.6
L <sub>1</sub>	5.00	5.96	7.00	7.94	9.00	9.90	10.30	11.00	11.88	13.00	13.84	15.00	15.82	16.60
	127.0	151.4	177.8	201.6	228.6	251.4	261.6	279.4	301.7	330.2	351.5	381.0	401.8	421.6

Note: CSN/CISN 75 thru 500, We have manufactured strokes up to 325mm.

# ACCESSORIES



**CA-2000 QD- Charging Assembly with quick disconnect coupling.**  
Please specify your charging tanks max pressure when ordering as connection types vary with tank pressure.



**HC-1QD - Female Quick Disconnect Coupling**



**FA-4 Threaded filling adapter**

Thread 7/16-20 Threaded end into valve compartment of cylinder.  
Thread high pressure hose coupling onto .305-32 end. (CSN type)



**FA-4QD - Quick Disconnect Filling adapter**

Thread 7/16-20 Thd. end into valve compartment of cylinder. Attach high pressure hose coupling to male end.



**CA-2000 ~ Threaded Goose Neck Only.**

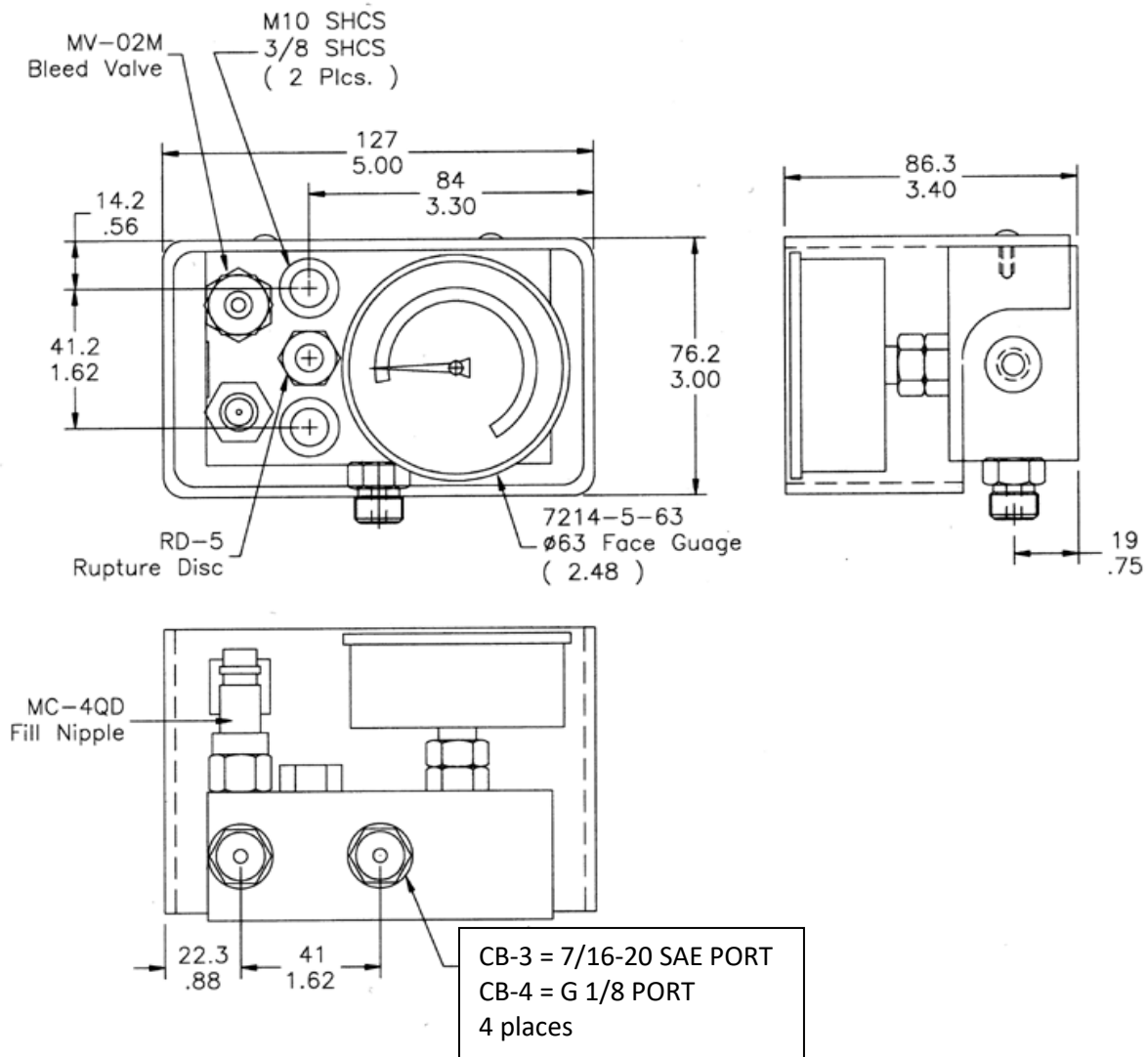
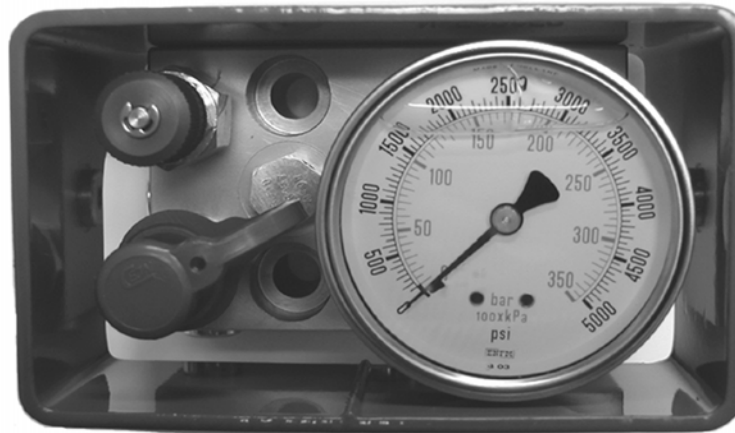
With .305 - 32 threaded coupling.



# N-FORCER®



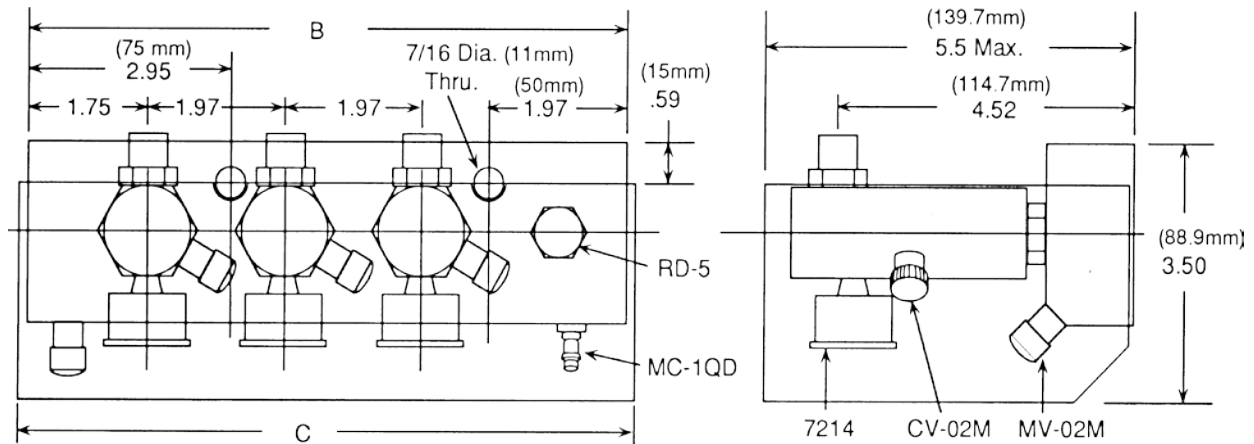
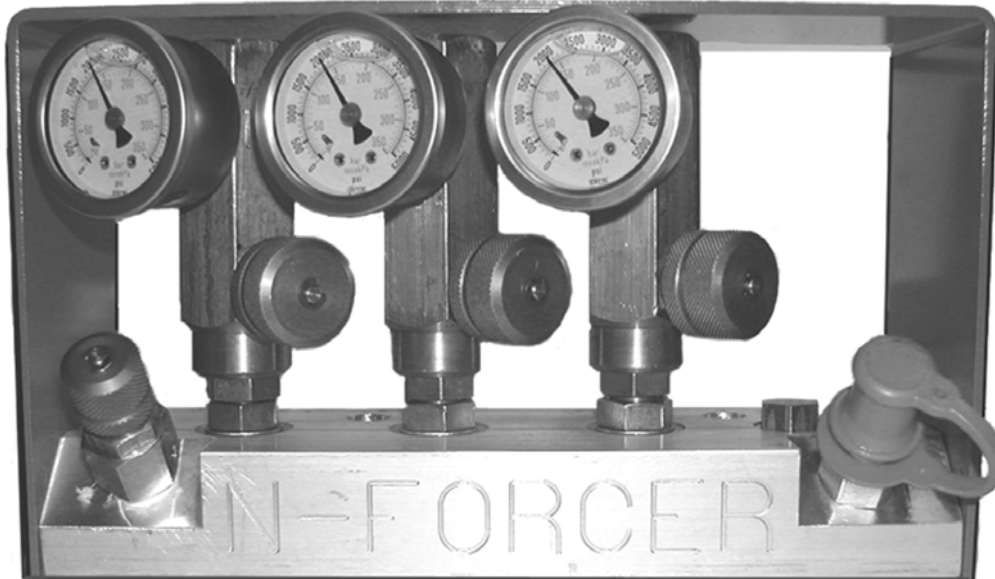
**CB-4 Control Panel (G1/8 BSPP)  
&  
CB-3 Control Panel (7/16-20 SAE PORT)**



# N-FORCER®



## MCB -- Multiple Port Control Block



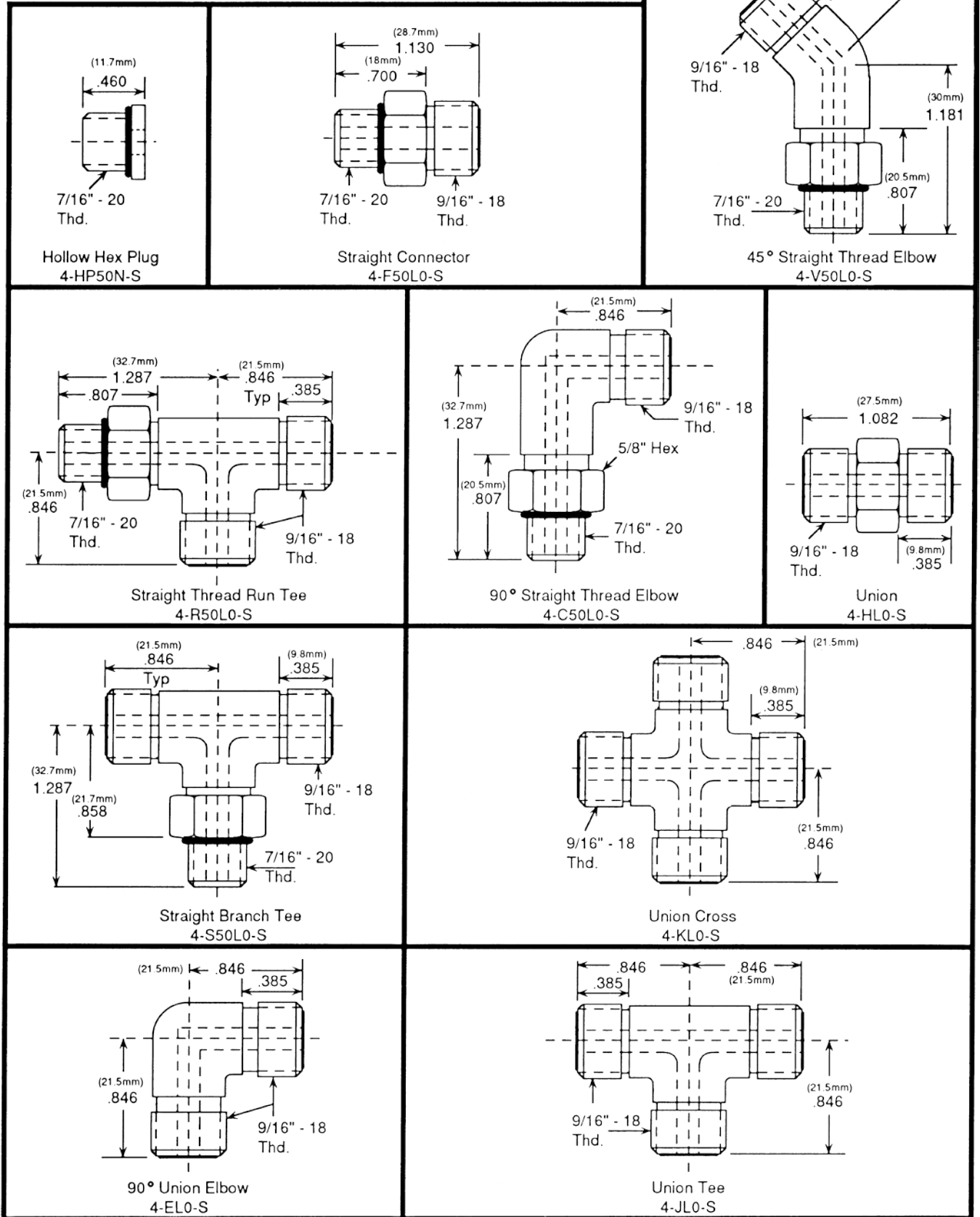
	B	C
<b>MCB-3</b> (Three Station)	8.657" (219.9)	8.905" (226.2)
<b>MCB-4</b> (Four Station)	10.626" (269.9)	10.878" (276.3)
<b>MCB-5</b> (Five Station)	12.598" (320)	12.846" (326.3)
<b>MCB-6</b> (Six Station)	14.567" (370)	14.815" (376.3)

### Multiple Station Control Block

This control block offers from 3 to 6 individual port stations which operate independent from each other. Each station has two 7/16-20 SAE ports for hosing nitrogen die springs. All stations can be set for different pressures, or they can all be the same pressure but isolate different sections of the die for maintenance purposes. All stations have a pressure gauge and an opening and closing valve.

# O-RING FACE SEAL HOSE FITTINGS

## 7/16" - 20 Threads

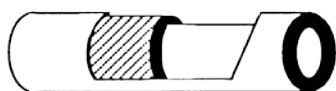
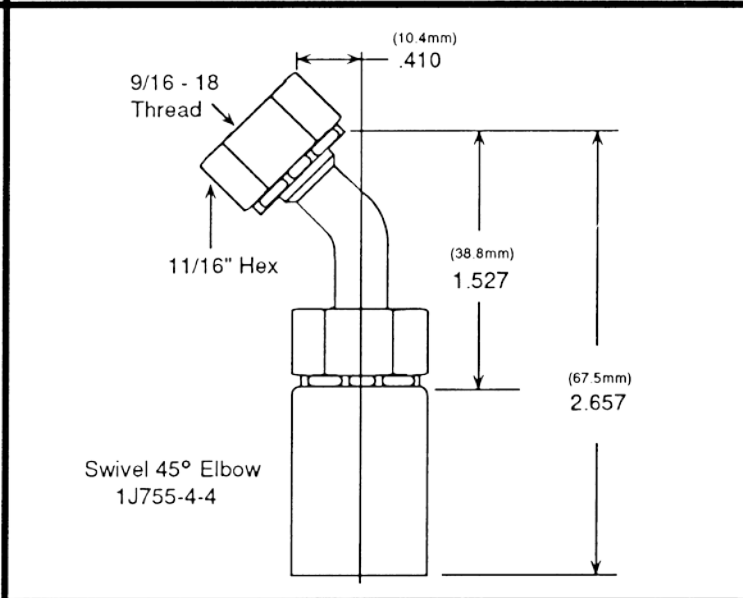
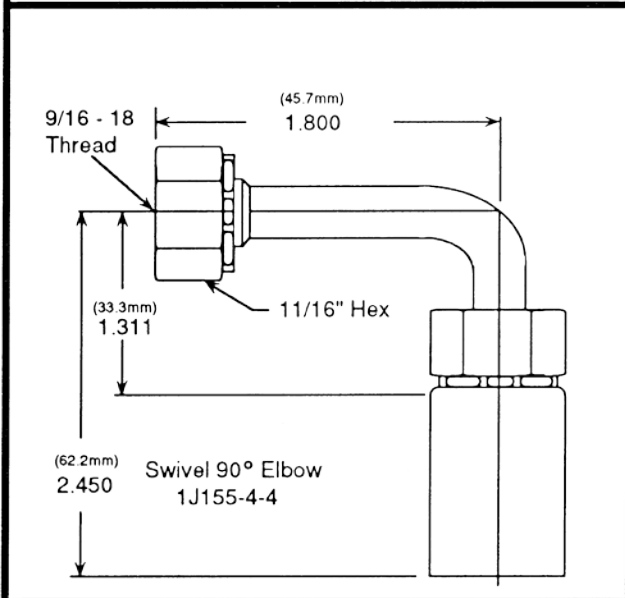
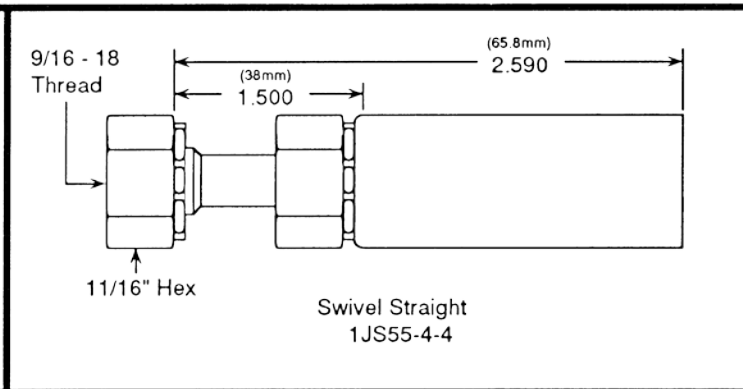
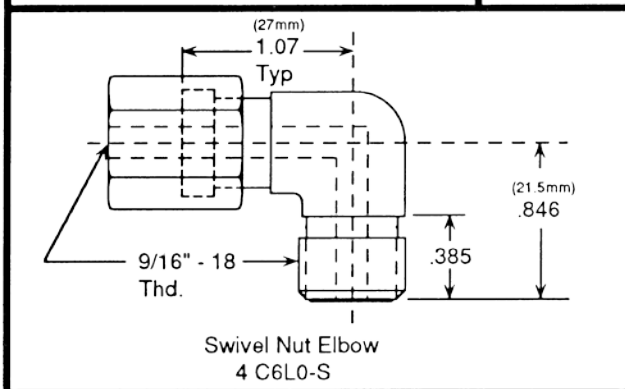
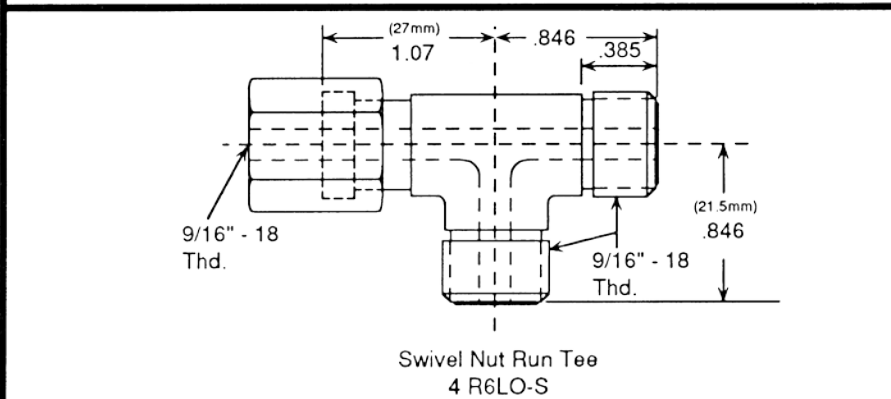
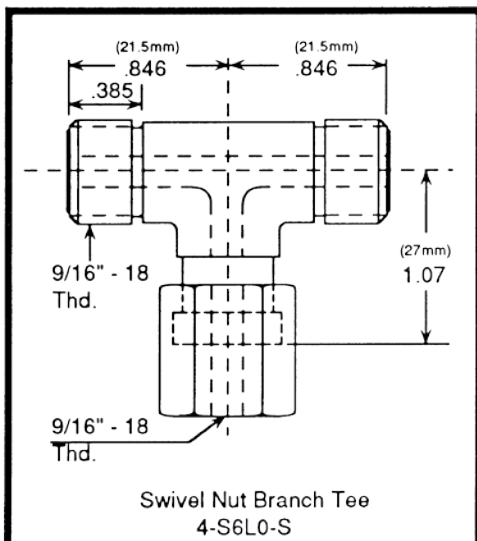


# O-RING FACE SEAL HOSE FITTINGS

Made in the USA



**N-FORCER**  
GAS Springs Since 1986

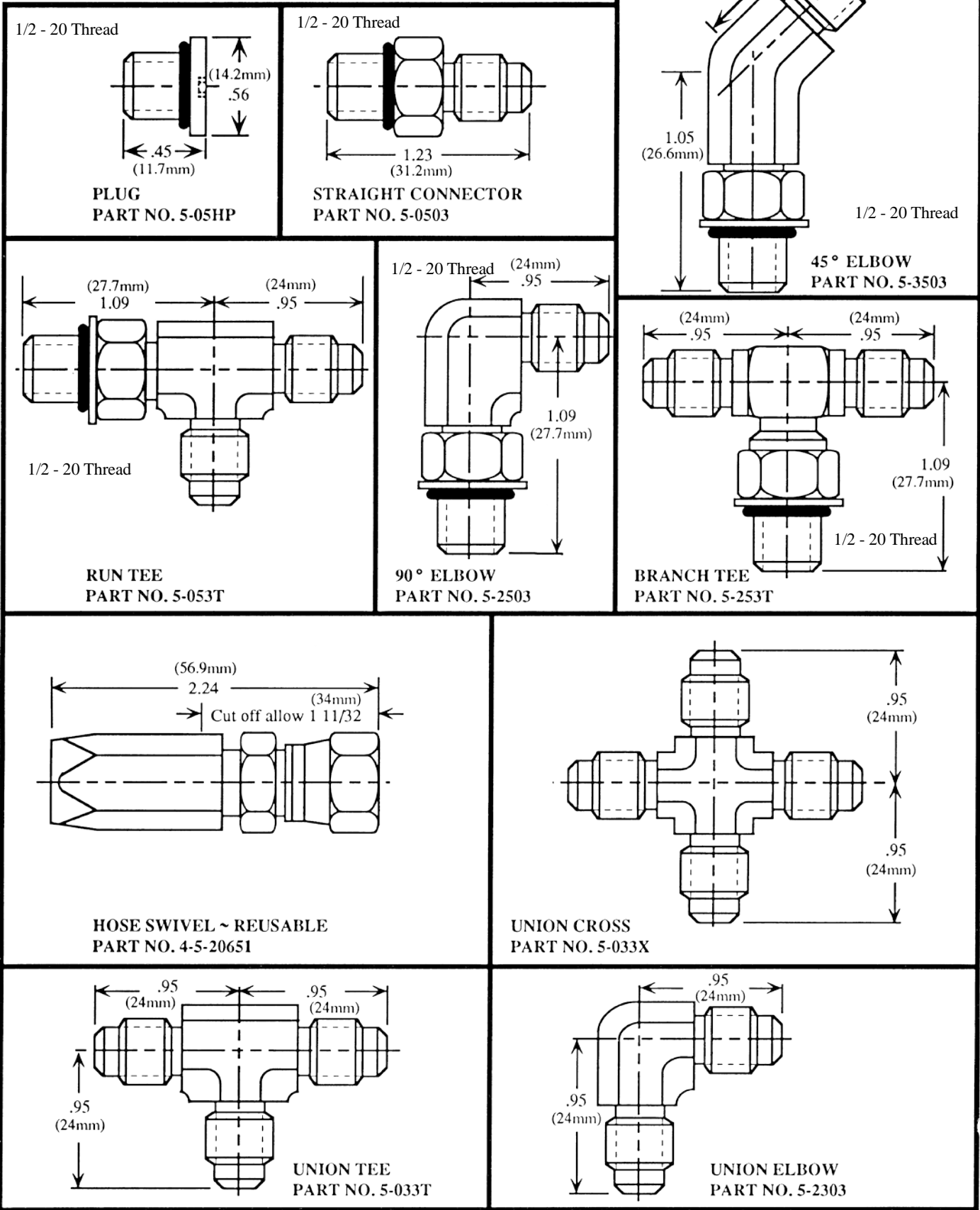


Medium Pressure Hose  
518B-4

Hose I.D 6.3mm Hose O.D. 11.9mm  
Maximum Working Pressure 189 Bar  
Minimum Burst Pressure 758 Bar.  
Minimum Bend Radius 38mm

# OPTIONAL HOSE FITTINGS

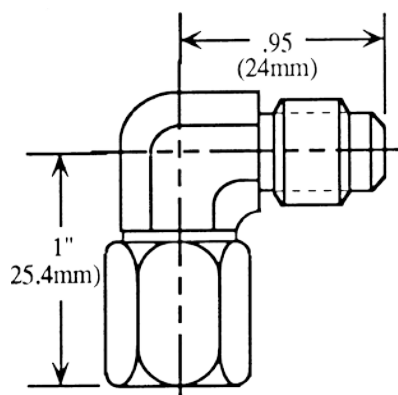
## 1/2" - 20 Threads



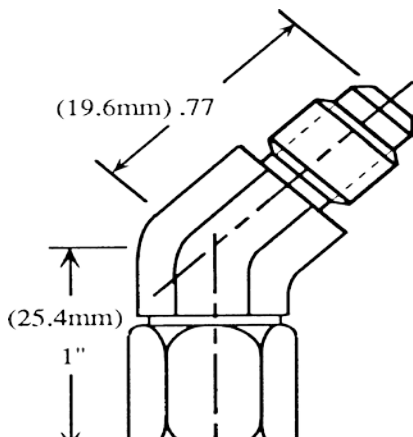




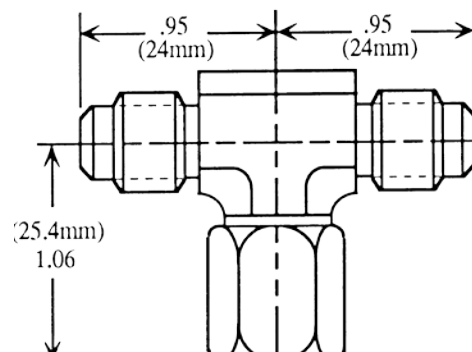
# Optional Hose Fittings 1/2"-20 Threads



SWIVEL NUT 90° ELBOW  
PART NO. 5-3903

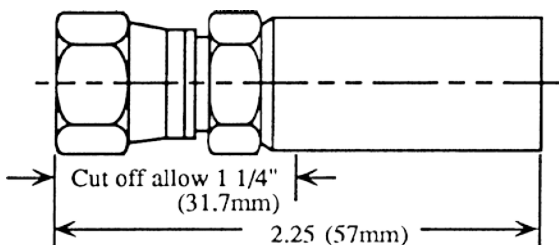


SWIVEL NUT 90° ELBOW  
PART NO. 5-3703



SWIVEL NUT RUN TEE  
PART NO. 5-393T

PERMANENT SWIVEL  
PART NO. 5-3-10655



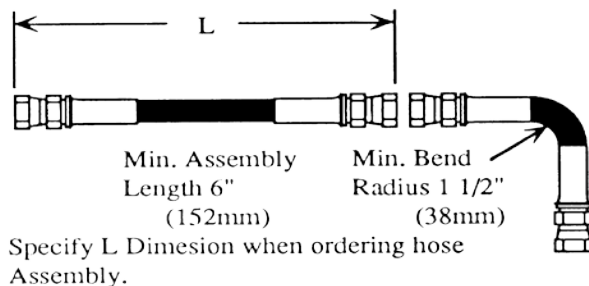
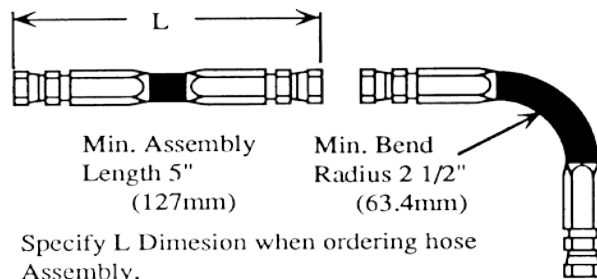
## OPTIONAL HOSE FITTINGS For Reusable and Permanent Couplings

Part Number	ID in. mm	Max OD in mm	Max Working Pressure psi	Min Burst Pressure psi	Min Bend Radius in./mm	Weight Lbs/100ft.
NH-025	1/4	.47	2750	11000	2 1/2"	5.2
Metric	6.3	12	190 Bar	758 Bar	63.4	

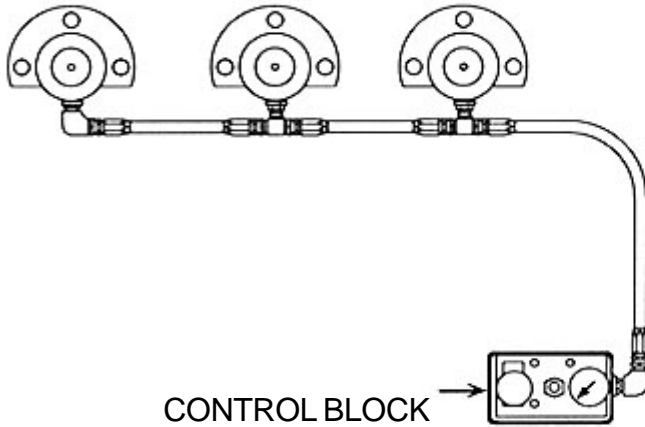
### Medium Pressure Hose For Resuable Couplings

Part Number	ID in. mm	Max OD in mm	Max Working Pressure psi	Min Burst Pressure psi	Min Bend Radius in./mm	Weight Lbs/100ft.
NH-018	3/16	.42	5000	20000	1 1/2"	5.8
Metric	4.7	10.6	345 Bar	1379 Bar	38	

### High Pressure Hose For Permanent Couplings



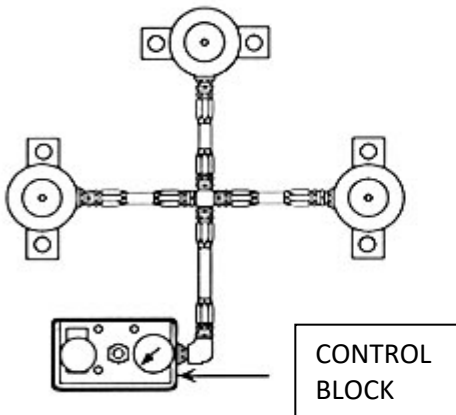
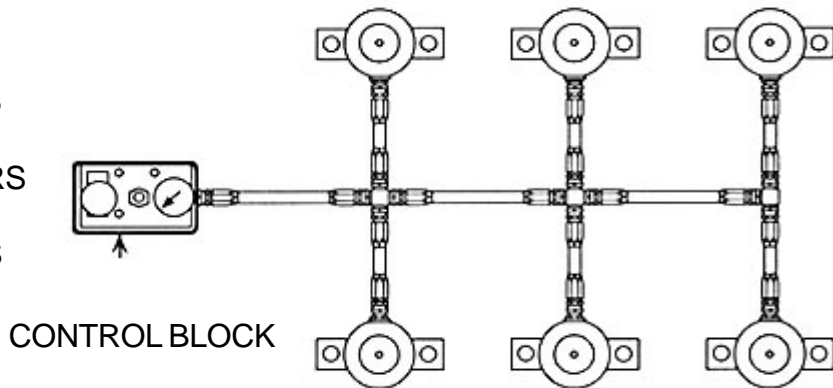
# TYPICAL HOSE SYSTEM EXAMPLES



- (3) "R" MOUNT CYLINDERS
- (6) HOSE SWIVEL FITTINGS  
PART NO 4-5-20651
- (2) 90 DEGREE ELBOW FITTINGS  
PART NO 5-2503
- (2) BRANCH TEE FITTINGS  
PART NUMBER 5-253T
- (1) CONTROL BLOCK

A MINIMUM OF 3 FEET HOSE  
(914mm)

- (6) "F" MOUNT CYLINDERS
- (18) HOSE SWIVEL FITTINGS  
PART NO 4-5-20651
- (7) STRAIGHT CONNECTORS  
PART NO 5-0503
- (2) UNION CROSS FITTINGS  
PART NO 5-033X
- (1) UNION TEE FITTING  
PART NO 5-033T
- (1) CONTROL BLOCK



- (3) "F" MOUNT CYLINDERS
- (8) HOSE SWIVEL FITTINGS  
PART NO 4-5-20651
- (3) STRAIGHT CONNECTORS  
PART NO 5--5-3
- (1) UNION CROSS FITTINGS  
PART NO 5-033X
- (1) 90 DEGREE ELBOW FITTING  
PART NO 5-2503
- (1) CONTROL BLOCK

A MINIMUM OF 2 FEET HOSE OR 610mm



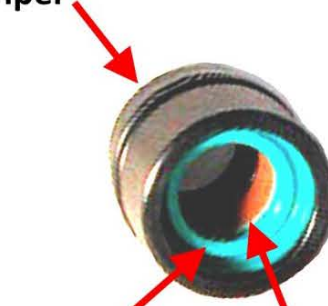
# N-FORCER®

## MINI-Forcer MF19 & MF25 Series



Cylinders are rebuildable.

Rod Wiper



Seal

Garloc Material Bearing



Our Mini Cylinder (1"/25mm) MF25 & MF19 (3/4"/19mm) Series are available in all standard strokes. Also available in (1-1/4"/32mm) stroke



Offered in a Bottom Threaded Mount (BTM) or Bottom Flange Mount (BSFM or FM), as well as "drop in" and standard top mount.



Bottom Threaded Mount and Bottom Flange can be hosed, the Threaded Mount can be threaded in a block for use as manifold by adding an oring.



Special heights and strokes are available. Rebuild kits are available or factory rebuild is available.



Made in the U.S.A.

[www.n-forcer.com](http://www.n-forcer.com)

Die, Mold & Automation Components, Inc.

**N-Forcer**

14400 Henn St. Dearborn MI, 48126

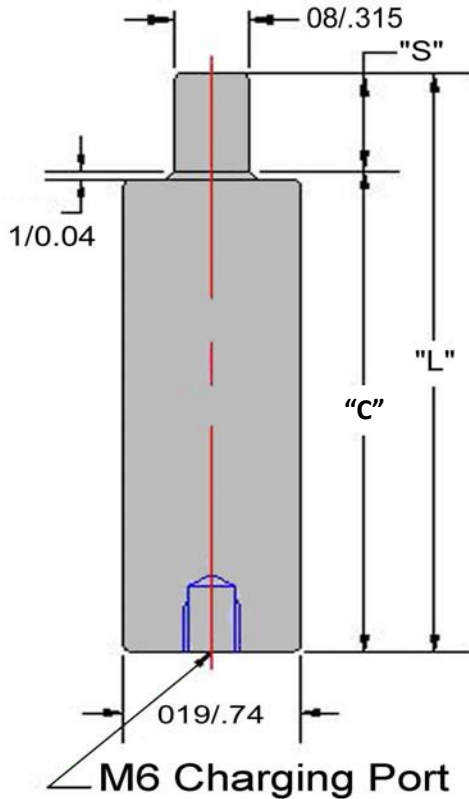
Ph: 313.581.6510 Web: [www.n-forcer.com](http://www.n-forcer.com)

Email: [Customerservice@n-forcer.com](mailto:Customerservice@n-forcer.com)



# N-FORCER® Mini-Forcerc MF19 Series - Standard

All MF19 Cylinders are rebuildable & available with multiple charging pressures.



Variable Force on Contact			
Pressure (psi)	Force (lb.-f)	Pressure (bar)	Force (daN)
2560	200	177	89
2200	172	150	75
2000	156	125	63
1750	137	100	50
1500	117	75	38
1000	78	50	25
500	39	34	17
$P=(F/.078)$	$F=(P \times .078)$	$P=(F/0.50)$	$P=(F \times 0.50)$

Order Number	"S" Maximum Stroke	"L"	"C"
MF19-007	7 0.28	56.0 2.20	49.0 1.93
MF19-010	10 0.39	62.0 2.44	52.1 2.05
MF19-012	12.7 0.50	67.4 2.65	54.6 2.15
MF19-015	15.0 0.59	72.0 2.83	56.9 2.24
MF19-025	25.0 0.98	92.0 3.62	67.0 2.64
MF19-032	32.0 1.26	106.0 4.17	74.0 2.91
MF19-038	38.1 1.50	118.2 4.65	80.1 3.15
MF19-050	50.0 1.97	142.0 5.59	92.0 3.62
MF19-063	63.5 2.50	172.0 6.77	108.5 4.27
MF19-080	80.0 3.15	205.0 8.07	125.0 4.92
MF19-100	100.0 3.94	245.0 9.65	145.0 5.71
MF19-125	125.0 4.92	295.0 11.61	170.0 6.69

### Order Force by Color Code

Color Coding	Initial Force Lb. daN	Final Force Lb. daN	Pressure Psi Bar
Yellow - YW	200 89	260 166	2560 177
Red - RD	150 67	195 87	1920 132
Blue - BL	100 44	130 58	1280 88
Green - GR	50 22	65 29	640 44
Black - BK	Customer Specified, Non-Standard Pressure		

Ordering Example: MF19-025-(Color)

- MF19-025 is the part number
- (Color) is the required charging pressure.

**Mounts Are Ordered Separately (see next Page)**

### --All MF-19's are Pressure Adjustable--

To increase pressure a charged nitrogen tank must be used.

**To Increase Pressure:** Connect nitrogen to charging port at bottom of gas spring and charge to correct pressure. 2560 PSI is maximum charge pressure.

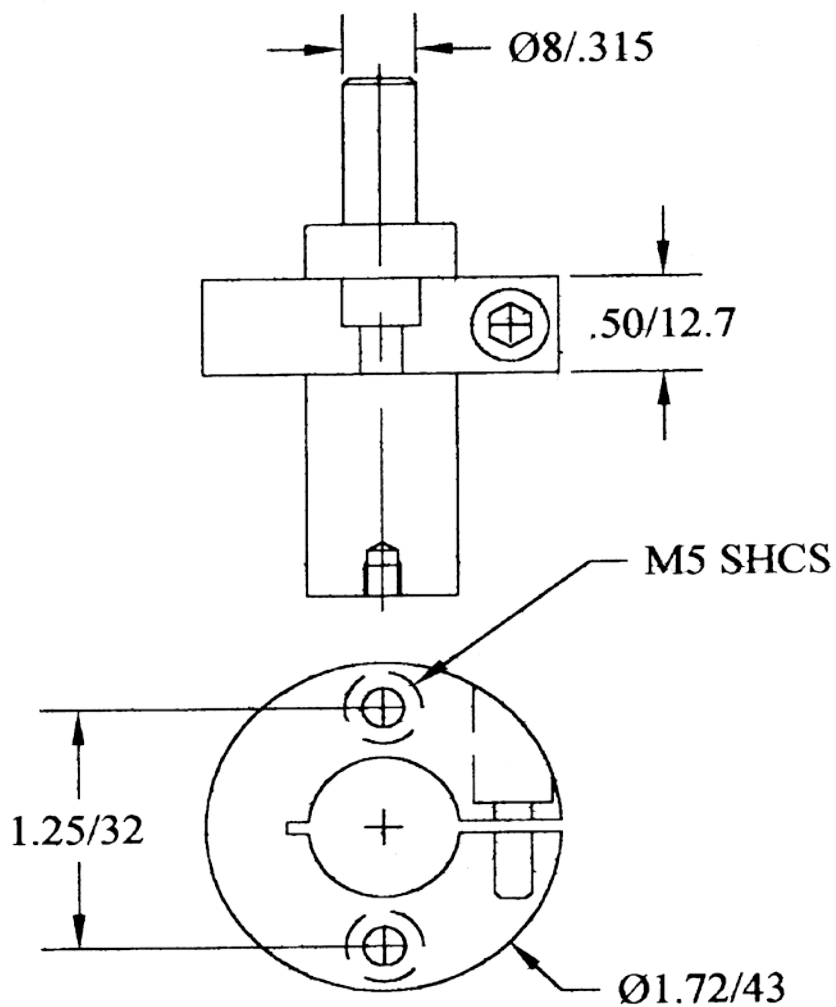
**To Decrease Pressure:** Insert 3mm Hex Key into tapped hole in bottom of gas spring. Turn clockwise (maximum of 3 turns), making sure opening is away from your face and body. After all pressure is exhausted, turn the screw in the bottom of the gas spring **counterclockwise** until tight. You can now recharge the gas spring to a lower pressure.

# N-FORCER® Mini-Forcer



## Optional Mount for MF19 Mount Part Number is BNF19

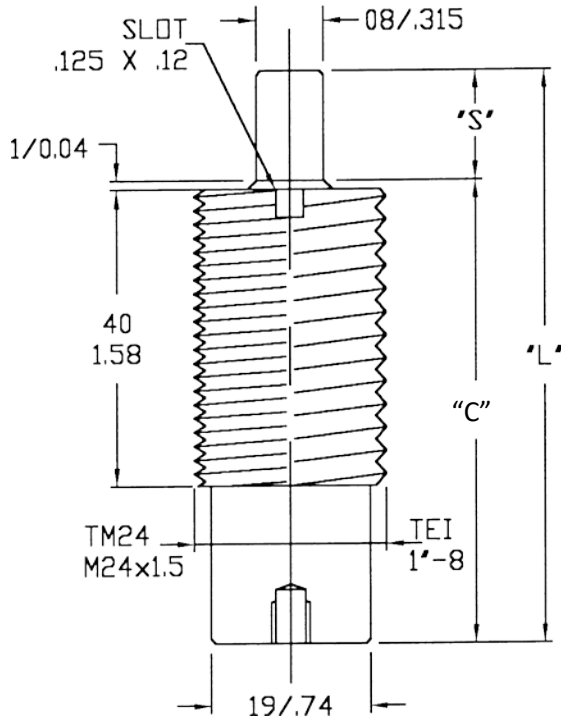
The cylinder can be mounted from 3 different locations, but the bottom should be supported when either of the two top locations are utilized.



# N-FORCER® Mini Forcer



## Mini-Forcer - MF19 THREADED



Variable Force on Contact			
Pressure (psi)	Force (lb.-f)	Pressure (bar)	Force (daN)
2560	200	177	89
2200	172	150	75
2000	156	125	63
1750	137	100	50
1500	117	75	38
1000	78	50	25
500	39	34	17
$P=(F / .078)$	$F=(P \times .078)$	$P=(F / .50)$	$P=(F \times 0.50)$

Order Number	"S" Maximum Stroke	"L"	"C"
MF19-007	7 0.28	56.0 2.20	49.0 1.93
MF19-010	10 0.39	62.0 2.44	52.0 2.05
MF19-012	12.7 0.50	67.3 2.65	54.6 2.15
MF19-015	15.0 0.59	71.9 2.83	56.9 2.24
MF19-025	25.0 0.98	92.0 3.62	67.0 2.64
MF19-032	32.0 1.26	106.0 4.17	74.0 2.91
MF19-038	38.1 1.50	118.2 4.65	80.1 3.15
MF19-050	50.0 1.97	142.0 5.59	92.0 3.62
MF19-063	63.5 2.50	172.0 6.77	108.5 4.27
MF19-080	80.0 3.15	205.0 8.07	125.0 4.92
MF19-100	100.0 3.94	245.0 9.65	145.0 5.71
MF19-125	125.0 4.92	295.0 11.61	170.0 6.69

Order Force by Color Code			
Color Coding	Initial Force Lb. daN	Final Force Lb. daN	Pressure Psi Bar
Yellow - YW	200 89	260 166	2560 177
Red - RD	150 67	195 87	1920 132
Blue - BL	100 44	130 58	1280 88
Green - GR	50 22	65 29	640 44
Black - BK	Customer Specified, Non-Standard Pressure		

Ordering Example: MF19-025-(TM or TE)-(Color)

1. MF19-025 is the part number
2. TM is for Metric - TE is for English Thread
3. (Color) is the required charging pressure.

Matching nuts and install tools are ordered separately. See page 6.

**--All MF-19's are Pressure Adjustable--**  
To increase pressure a charged nitrogen tank must be used.

**To Increase Pressure:** Connect nitrogen to charging port at bottom of gas spring and charge to correct pressure.  
**To Decrease Pressure:** Insert 3mm Hex Key into tapped hole in bottom of gas spring. Turn clockwise (maximum of 3 turns), making sure opening is away from your face and body. After all pressure is exhausted, turn the screw in the bottom of the gas spring **counterclockwise** until tight. You can now recharge the gas spring to a lower pressure.

# N-FORCER® Mini Forcer

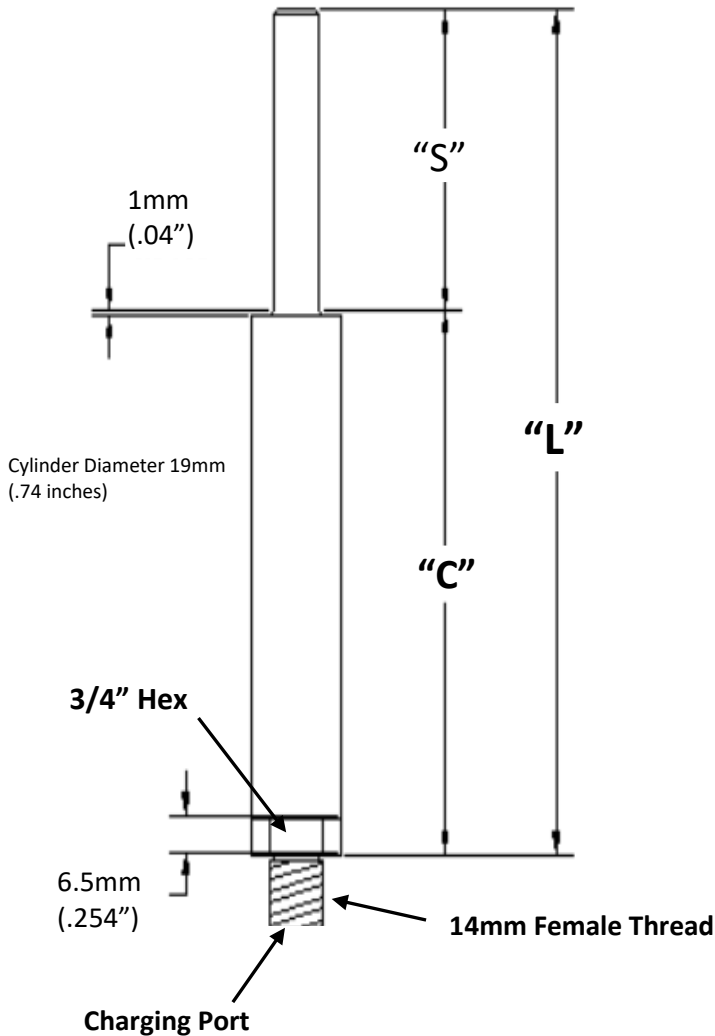


## MF19 Threaded Bottom 14mm Male Thread



Order Force by Color Code			
Color Coding	Initial Force Lb. daN	Final Force Lb. daN	Pressure Psi Bar
Yellow - YW	200 89	260 166	2560 177
Red - RD	150 67	195 87	1920 132
Blue - BL	100 44	130 58	1280 88
Green - GR	50 22	65 29	640 44
Black - BK	Customer Specified, Non-Standard Pressure		

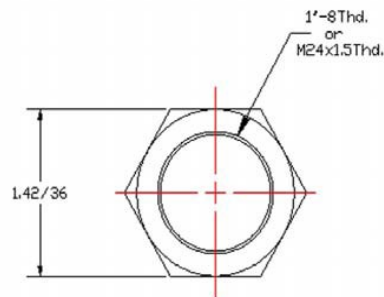
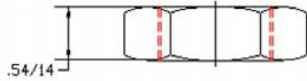
Order Number	Maximum Stroke "S"	"L"	"C"
MF19-007-BTM	7.00	60.0	53.0
	0.28	2.36	2.09
MF19-010-BTM	10.00	66.0	56.0
	0.39	2.60	2.21
MF19-012-BTM	12.70	71.4	58.7
	0.50	2.81	2.31
MF19-015-BTM	15.00	76.0	61.0
	0.59	2.99	2.40
MF19-025-BTM	25.00	96.0	71.0
	0.98	3.78	2.80
MF19-032-BTM	32.00	110.0	78.0
	1.26	4.34	3.08
MF19-038-BTM	38.10	122.2	84.1
	1.50	4.81	3.31
MF19-050-BTM	50.00	146.0	96.0
	1.97	5.75	3.78
MF19-063-BTM	63.50	175.9	112.4
	2.50	6.93	4.43
MF19-080-BTM	80.00	209.0	129.0
	3.15	8.23	5.08
MF19-100-BTM	100.00	249.0	149.0
	3.94	9.81	5.87
MF19-125-BTM	125.00	298.9	173.9
	4.92	11.77	6.85



# N-FORCER® Mini-Forcer



## MF19 Threaded Nuts



Part #: 1"-8 Nut  
Part #: M24 x 1.5 Nut



## N-FORCER® MF19 Theaded Tool Installer

## REPAIR KITS

1 Kit repairs 6 cylinders



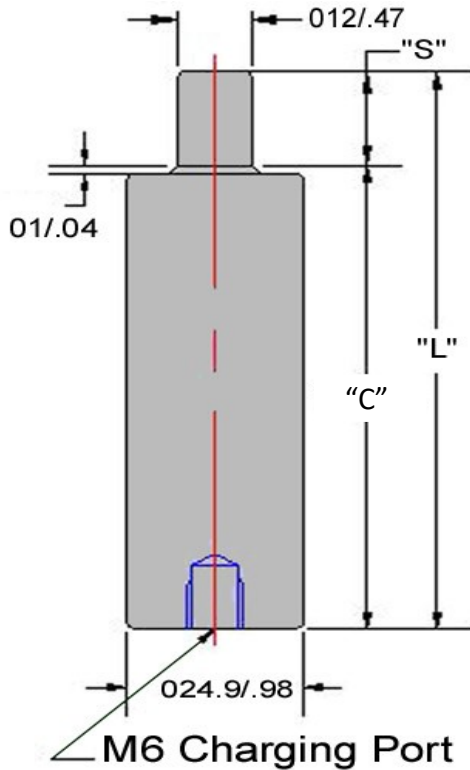
- 1x Bottle of Oil
- 6x Cartridges
- 6x Charging Caps
- 6x Retaining Rings
- 6x ID Color Rings

For MF25 repair kit, PN: MF25-RK-(Color)  
For MF19 repair kit, PN: MF19-RK-(Color)  
Please select color of Yellow, Red, Blue, Green, or Black



# N-FORCER® Mini-Forcer MF25 Series – Standard

Rebuildable cylinders and with multiple charging pressures.



Variable Force on Contact			
Pressure (psi)	Force (lb.-f)	Pressure (bar)	Force (daN)
2560	450	177	201
2200	387	150	170
2000	351	125	142
1750	307	100	113
1500	264	75	85
1000	176	50	57
500	88	34	39
P=FE .176 F=PX.1176		P=FE 1.13 P=FX 1.13	

Order Number	"S" Maximum Stroke	"L"	"C"
MF25-007	7.0 .27	56.0 2.20	49.0 1.93
MF25-010	10.0 0.39	62.0 2.44	52.0 2.05
MF25-012	12.7 0.50	67.4 2.65	54.7 2.15
MF25-015	15.0 0.59	72.0 2.83	57.0 2.24
MF25-016	16.0 0.625	74.0 2.91	58.0 2.28
MF25-025	25.0 0.98	92.0 3.62	67.0 2.64
MF25-032	32.0 1.26	106.0 4.17	74.0 2.91
MF25-038	38.1 1.50	118.2 4.65	80.1 3.15
MF25-050	50.0 1.97	142.0 5.59	92.0 3.62
MF25-063	63.5 2.50	172.0 6.77	108.5 4.27
MF25-080	80.0 3.15	205.0 8.07	125.0 4.92
MF25-100	100.0 3.94	245.0 9.65	145.0 5.71
MF25-125	125.0 4.92	295.0 11.61	170.0 6.69
** MF25-178	177.8 7.0	400.6 15.77	223.0 8.77

\*\*

\*\* Limited speed and stroke life.

Order Force by Color Code			
Color Coding	Initial Force Lbf daN	Final Force Lbf daN	Pressure Psi Bar
Yellow - YW	450 lbf. 200 daN	612 272	2560 177
Red - RD	337 150	459 204	1920 132
Blue - BL	225 100	305 136	1280 88
Green - GR	112 50	153 68	640 44
Black - BK	Customer Specified, Non-Standard Pressure		

Ordering Example: MF25-025-(Color)

1. MF25-025 is the part number
2. (Color) is the required charging pressure.

**Repair Kit: MF25-RK**

**For charging, use adaptor# FA1QD**

**Mounts Are Ordered Separately (see next Page)**

**--All MF-25's are Pressure Adjustable--**  
To increase pressure a charged nitrogen tank must be used.

**To Increase Pressure:** Connect nitrogen to charging port at bottom of gas spring and charge to correct pressure.

**To Decrease Pressure:** Insert 3mm Hex Key into tapped hole in bottom of gas spring. Turn clockwise (maximum of 3 turns), making sure opening is away from your face. After all pressure is exhausted, turn the screw in the bottom of the gas spring **counterclockwise** until tight. You can now recharge the gas spring to a lower pressure.

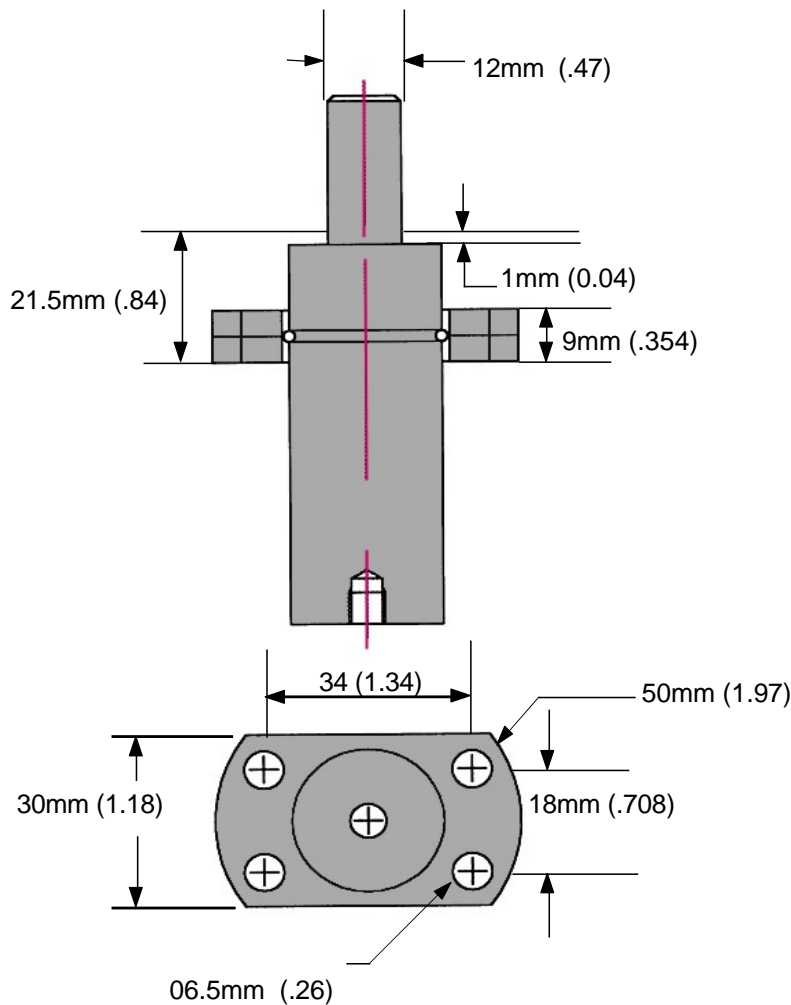
# N-FORCER® Mini-Forcer

Optional Mount for MF 25.  
Mount Part Number is BCF25



The bottom of the cylinder should be supported at all times. Do not use this mount as the main means of support.

This mount consists of two plates compressing around a snap ring. If purchased, a snap ring groove will be added to the cylinder tube. The snap ring will be installed before shipping, which will be difficult to remove once installed. The two mounting plates will have a small gap until compressed together at the time of installation.



# N-FORCER® Mini-Forcer

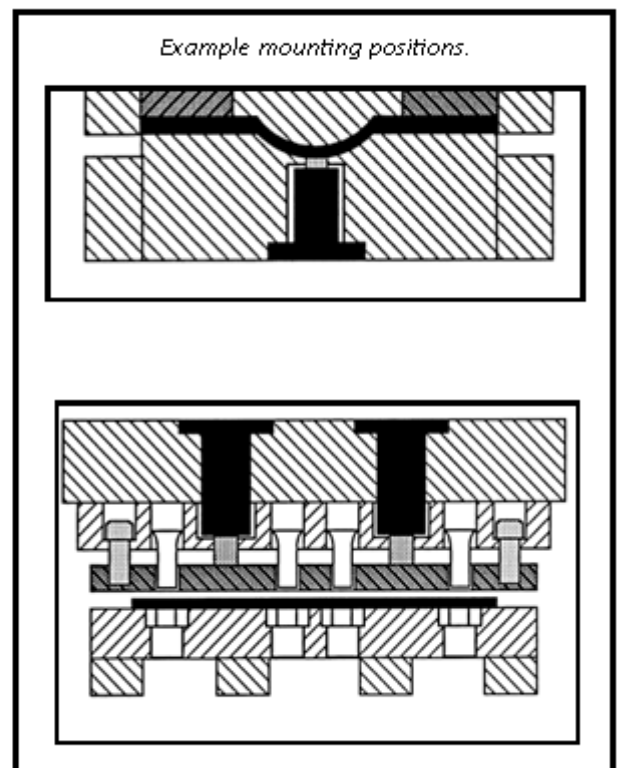
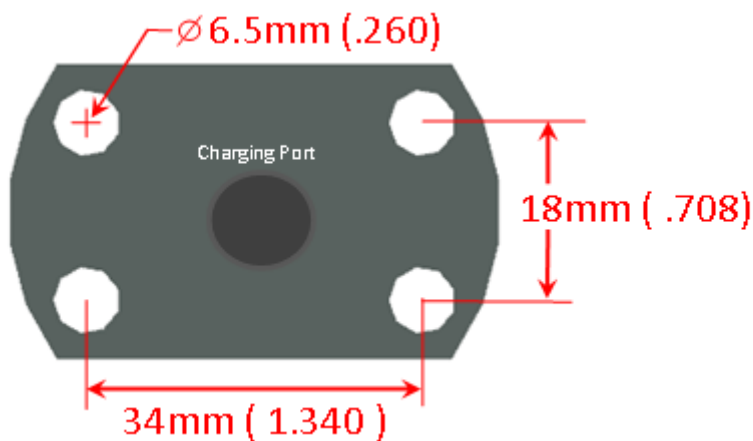


## Optional Mount for MF25 series.

Mount Part Number is  
“ **BSFM** ”

Add BSFM to end of part  
number when ordering.

*This mount will add 8mm (.314) to  
the over all length of the assembly  
to a standard MF25 gas spring.*



# N-FORCER® Mini-Forcer



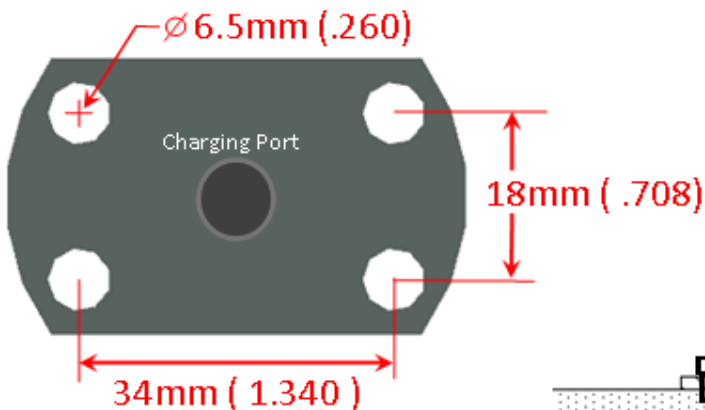
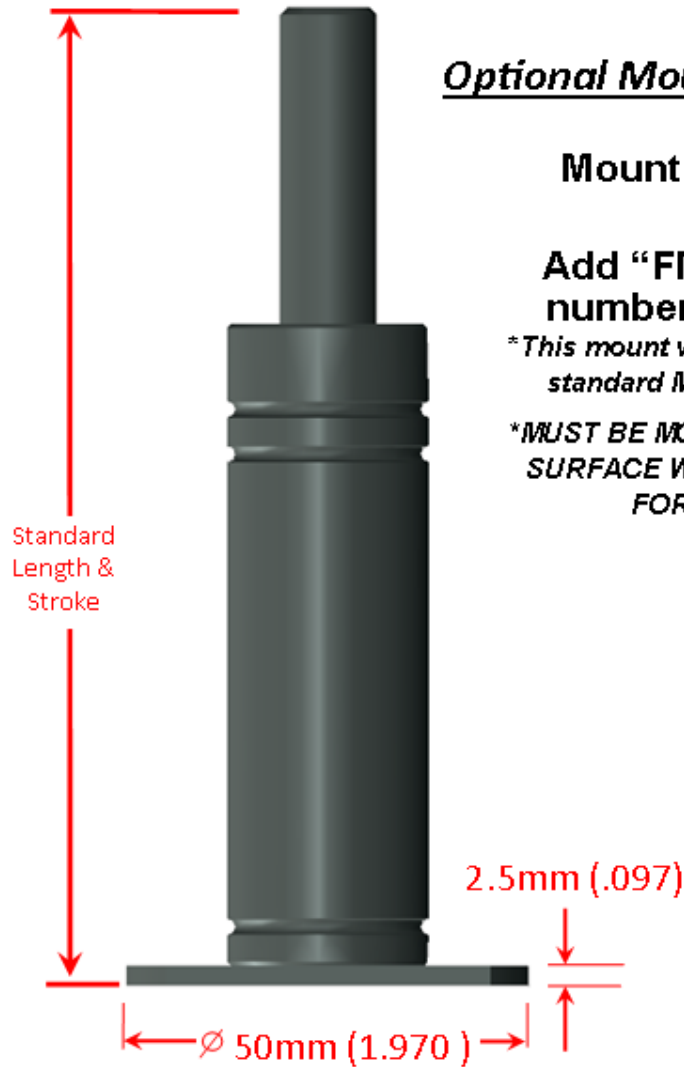
## Optional Mount for MF25 series.

Mount Part Number is  
**“FM”**

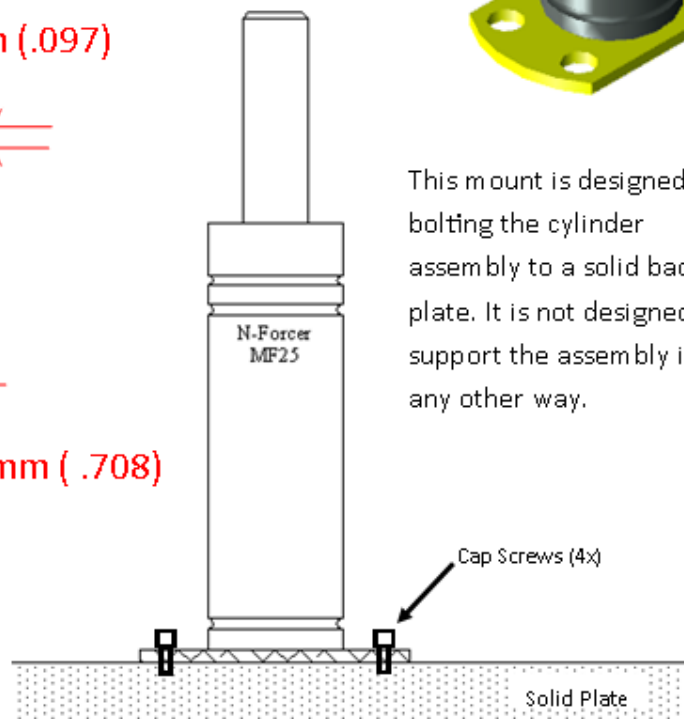
Add “FM” to end of part  
number when ordering.

*\*This mount will not add any height to a  
standard MF25 cylinder assembly.*

*\*MUST BE MOUNTED TO A RIGID FLAT  
SURFACE WHICH WILL FULLY REIN-  
FORCE THE MOUNT.*



This mount is designed for  
bolting the cylinder  
assembly to a solid backing  
plate. It is not designed to  
support the assembly in  
any other way.



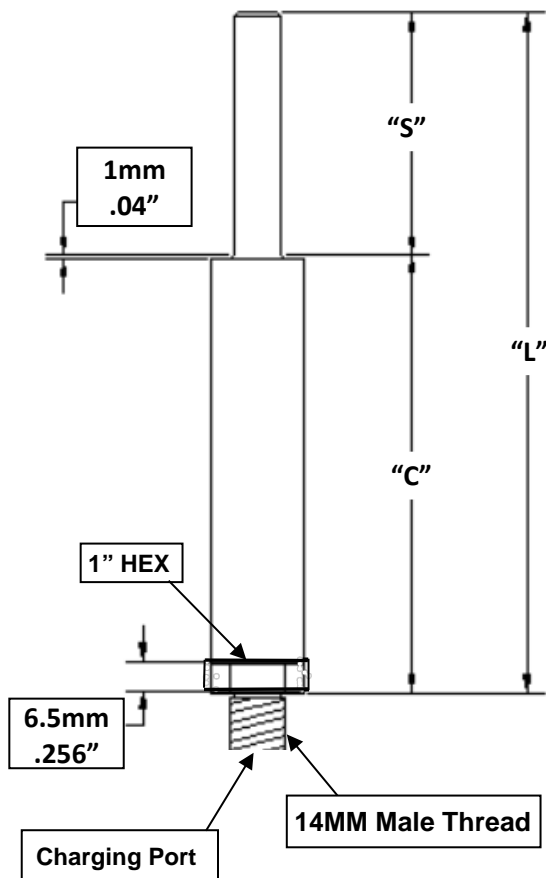


# N-FORCER® Mini-Forcerc Threaded MF25 bottom 14mm thread



Order Force by Color Code			
Color Coding	Initial Force Lb. daN	Final Force Lb. daN	Pressure Psi Bar
Yellow - YW	200 89	260 166	2560 177
Red - RD	150 67	195 87	1920 132
Blue - BL	100 44	130 58	1280 88
Green - GR	50 22	65 29	640 44
Black - BK	Customer Specified, Non-Standard Pressure		

Max Stroke "S"	"L"	"C"
7	60	53
0.27	2.36	2.09
10	66	56
0.39	2.60	2.21
12.7	71.4	58.7
0.5	2.81	2.31
15	76	61
0.59	2.99	2.40
16	78	62
0.625	3.07	2.44
25	96	71
0.98	3.78	2.80
32	110	78
1.26	4.33	3.07
38.1	122.2	84.1
1.5	4.81	3.31
50	146	96
1.97	5.75	3.78
63.5	176	112.5
2.5	6.93	4.43
80	209	129
3.15	8.23	5.08
100	249	149
3.94	9.81	5.87
125	299	174
4.92	11.77	6.85
177.8	404.6	227
7	15.93	8.93



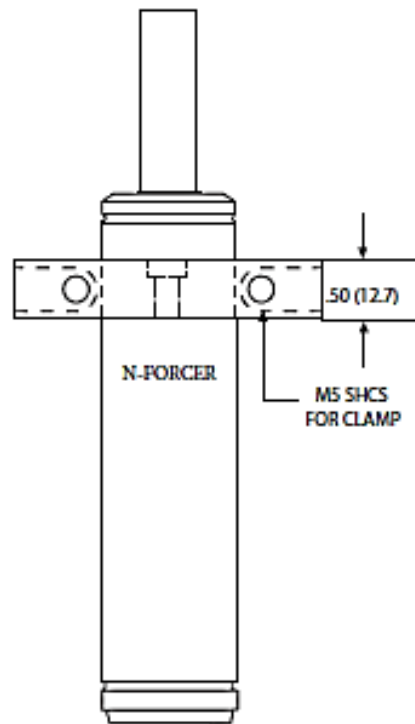
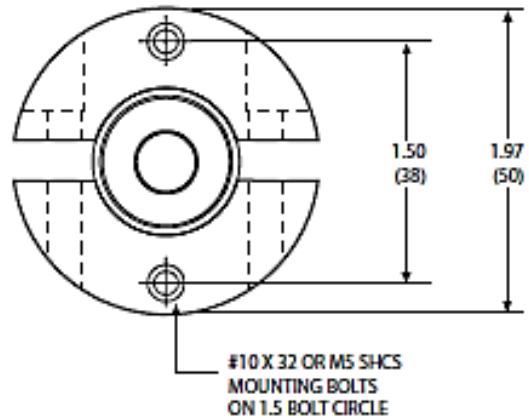
FYI: This mount adds .160" (4mm) to the tube length "C" & thus the overall length "L" when compared to a standard MF25. This is shown in the chart above.

# N-FORCER® Mini-Forcer



**MF25 “LOCKING COLLAR”**  
The MF25 Locking Collar is adjustable  
to any position on the O.D of The  
Cylinder.

To order: Specify “BNF-25”



# **N-FORCER®**

## **Junior Series**

**UC025, CL025 / UC075, UCL75, & CLN75 Threaded**



**Die, Mold & Automation Components, Inc. 14400 Henn Street Dearborn, MI 48126**  
**Phone : 1.800.220.2242 www.n-forcer.com**



# Introduction

We at Die Mold & Automation Components, Inc have dedicated our resources to produce the most trouble-free nitrogen gas springs on today's market. Our goal is to simply supply our customers with the products they need to help them excel in today's highly competitive market.

## N-FORCER® JR BENEFITS

### QUALITY CONSTRUCTION

Bodies - Machined from solid bar stock on CNC equipment. Rods - Machined from alloy steel on CNC equipment. Rods are hardened, ground, nitride or chromed plated and superfinished.

### ECONOMICAL

- Replaces many die springs.
- Can eliminate costly manifolds.
- Eliminate downtime caused by broken or fatigued die springs.
- Rebuildable and rechargeable.

### CUSTOMER SERVICE

N-FORCER dedicates all its resources to supply the customers with the best service and support.

### LEAK PROOF DESIGN

N-FORCER uses a cartridge that contains a double lip rod seal. This unique seal prevents contaminants from entering the gas springs which may cause premature gas spring wear.

### VERSATILE

- Use in pressure pads.
- Use as strippers.
- Use in cam returns.

### DEPENDABLE

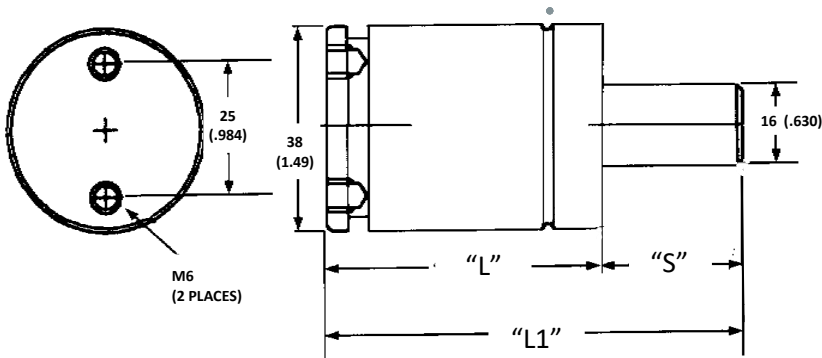
Long service life.  
Proven in the field.  
Providing reliable products since 1986.





# N-FORCER®

## Ultra Compact UC025 1/4 Ton



## Standard Mount

ORDER REPAIR KIT EXAMPLE: UC025-RK-76

FILLING ADAPTER: FA2QD (QUICK DISCONNECT)

### ORDERING EXAMPLE

UC025 X 013 - O - 150

Part No.  
Series, Model  
Stroke

Mounting Option  
"O" is standard mount

Charging Pressure  
Self contained = 35-150 bar and  
or 500 - 2175 psi. **If not  
specified the 2175 psi is default.**

Part Number	"S" MM Inch	L	L1
UC025 x 013	12.5 0.49	42.42 1.67	55.0 2.16
UC025 x 015	15.0 0.59	45.0 1.77	60.0 2.36
UC025 x 019	19.0 0.75	49.0 1.93	68.0 2.68
UC025 x 025	25.0 0.98	55.0 2.17	80.0 3.15
UC025 x 032	33.0 1.30	63.0 2.48	96.0 3.78
UC025 x 038	37.5 1.48	67.5 2.66	105.0 4.13
UC025 x 050	50.0 1.97	80.0 3.15	130.0 5.12
UC025 x 063	62.5 2.46	92.45 3.64	155.0 6.10
UC025 x 075	75.0 2.95	105.0 4.13	180.0 7.09
UC025 x 080	80.0 3.15	110.0 4.33	190.0 7.48
UC025 x 088	88.0 3.46	117.5 4.626	205.5 8.086
UC025 x 100	100.0 3.96	130.5 5.14	230.5 9.1
UC025 x 125	125.0 4.92	155 6.102	280 11.022

### Force on Contact - English

Pressure (psi)	Force (lb.-f)
2175	667
2000	613
1750	537
1500	460
1250	383
1000	307
500	155

### Force on Contact - Metric

Pressure (bar)	Force (daN)
150	297
125	247
100	198
75	148
50	99
35	70

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

# N-FORCER®

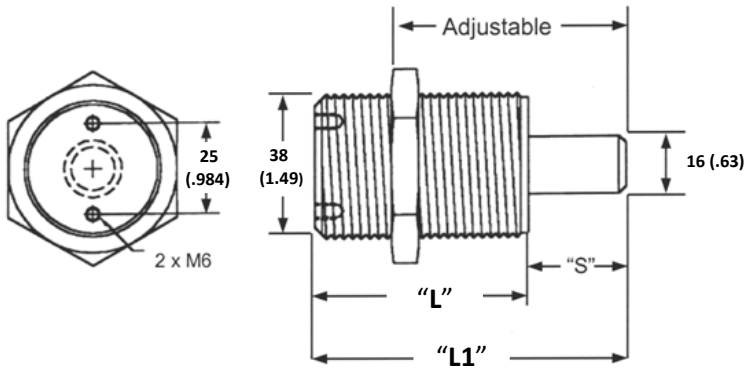
Made in the USA



## Ultra Compact UC025 1/4 Ton

**N-FORCER**

GAS Springs Since 1986



### THREADED TUBE

REPAIR KIT P/N: UC025-RK-76

FILLING ADAPTER: FA2QD (QUICK DISCONNECT)

### ORDERING EXAMPLE

UC025 X 013 - TE - 150

**Part Number:**

Series, Model, Stroke

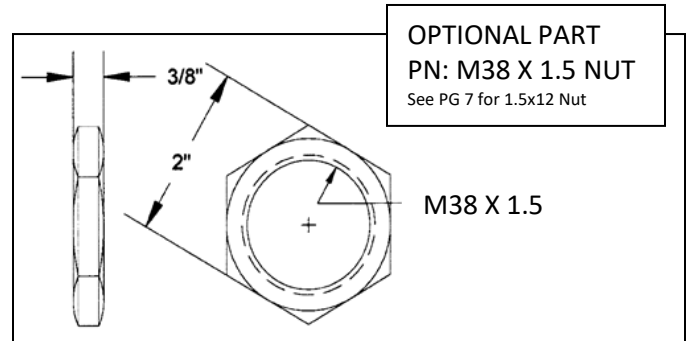
**Mounting Option**

TE = 1 1/2-12 Threaded

TM = M38 x 1.5 Threaded

Self contained = 35-150 bar and  
or 500 - 2175 psi. **If not  
specified the 2175 psi is default.**

Part Number	"S" MM Inch	L	L1
UC025 x 013	12.5 0.49	42.5 1.67	55.0 2.16
UC025 x 015	15.0 0.59	45.0 1.77	60.0 2.36
UC025 x 019	19.0 0.75	49.0 1.93	68.0 2.68
UC025 x 025	25.0 0.98	55.0 2.17	80.0 3.15
UC025 x 032	33.0 1.30	63.0 2.48	96.0 3.78
UC025 x 038	37.5 1.48	67.5 2.66	105.0 4.13
UC025 x 050	50.0 1.97	80.0 3.15	130.0 5.12
UC025 x 063	62.5 2.46	92.5 3.64	155.0 6.10
UC025 x 075	75.0 2.95	105.0 4.13	180.0 7.09
UC025 x 080	80.0 3.15	110.0 4.33	190.0 7.48
UC025 x 088	88.0 3.46	118 4.65	206 8.11
UC025 x 100	100.0 3.96	130 5.11	231.0 9.09
UC025 x 125	125.0 4.92	155 6.10	280.0 11.02



### FORCE ON CONTACT ENGLISH

Pressure (psi)	Force (lb.-f)
2175	667
2000	613
1750	537
1500	460
1250	383
1000	307
500	155

### FORCE ON CONTACT METRIC

Pressure (bar)	Force (daN)
150	297
125	247
100	198
75	148
50	99
35	70

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

Made in the USA



**N-FORCER**

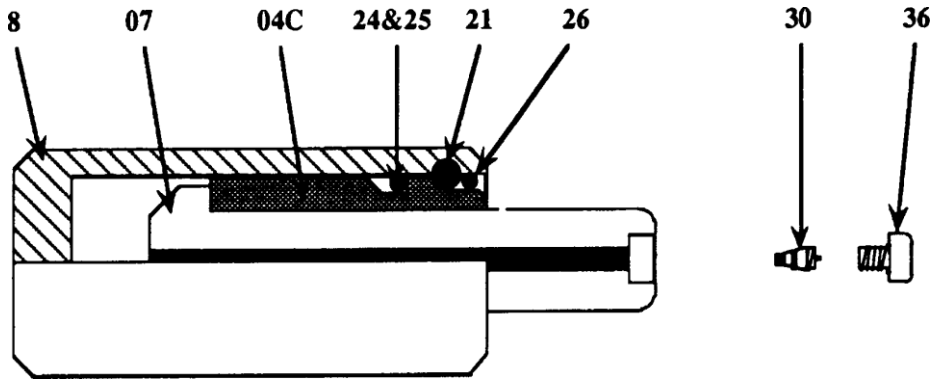
GAS Springs Since 1986

# N-FORCER® JR. CL025 (1/4 Ton of Force On Contact) Cylinder Body diameter of 1 1/2"

Featuring the "NO GROW" Cartridge for efficient  
"NO HASSLE" Repairs.

CL025-8 (Tube Assembly)
LN025-07 (Piston Rod)
LN025-24&25 (O-ring & Backup)
LN025-04C (Seal Cartridge)
LN025-21 (Retaining Ring)
N000-30 (Valve)
LN000-36 (Protective Screw)
LN025-26 (Dust Cover)

### CL025 Replacement Parts List



## Repair Kit Part number: CL025-RK-66



- Repair Kit Contents:
1. Complete Cartridge
  2. Wear Ring
  3. Rod End Cover
  4. Valve
  5. Bottle of Oil

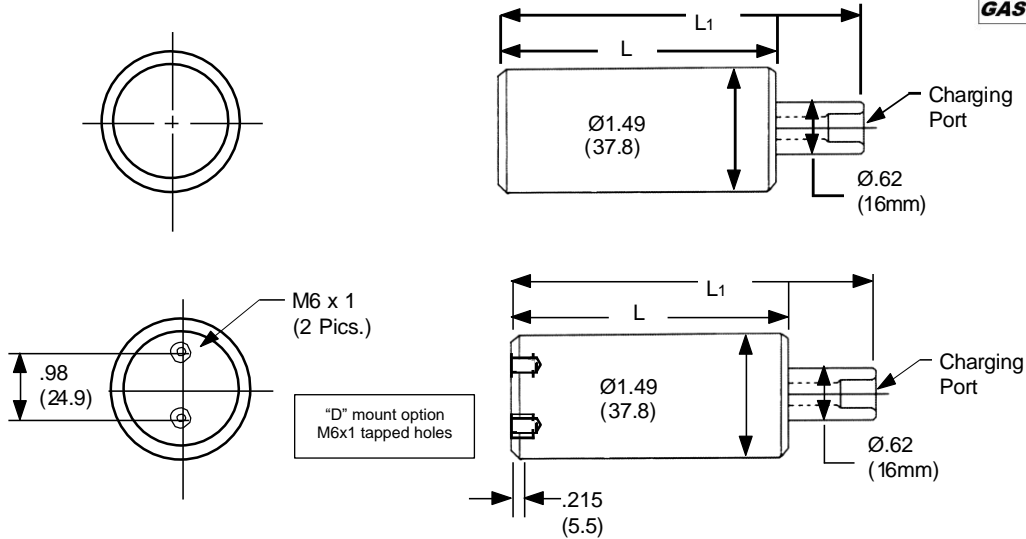
# N-FORCER® JR.

## CL025 (1/4 Ton of Force On Contact)

Made in the USA

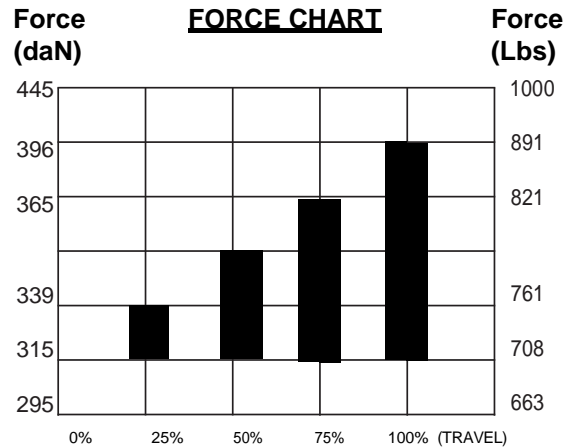


**N-FORCER**  
GAS Springs Since 1986



PART NO.	Stroke	L	L1
CL025 x 0.50	12.7	63.5	76.2
	0.50	2.50	3.00
CL025 x 1.00	25	76.2	101.6
	1.00	3.00	4.00
CL025 x 1.50	38.1	88.9	127
	1.50	3.50	5.00
CL025 x 2.00	50	101.8	152.4
	2.00	4.00	6.00
CL025 x 2.50	63.5	114.3	177.8
	2.50	4.50	7.00
CL025 x 3.00	75	127	203.2
	3.00	5.00	8.00

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**



Stroke lengths up to 8.5" have been machined as special requests.

Initial Force @ 2175 psi is 663 Lbs.

Chart is showing maximum force base on 2175 psi (150 bar) charging pressure. If less than max. the force is reduced proportionally.

Example: Forces on chart are multiplied by .69 @ 1500 psi (103 bar), by .46 @ 1000 psi (69 bar), etc

### ORDERING EXAMPLE

**CL025 X 0.50 - O - 150**

**Part No.**  
Series Model x Stroke

#### Mounting Option

"O" or "Blank" = Basic, no holes (default)  
"D" Mount, optional M6x1 tapped holes  
"T" THREADED (SEE PAGE 7)

#### Charging Pressure

\*Self Contained = 51-150 bar or 750-2175 psi. **If not specified the 2175 psi is default**

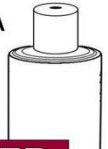
#### ORDER REPAIR KIT EXAMPLE

CL025-RK-66

#### FILLING ADAPTER

FA-2QD (Quick Disconnect)

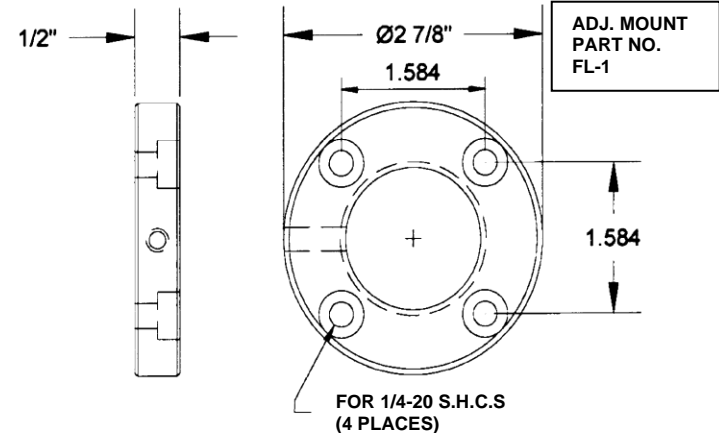
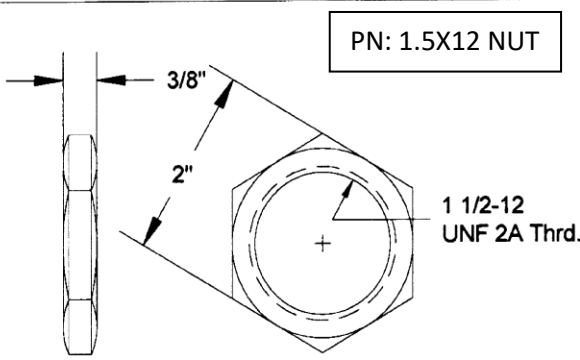
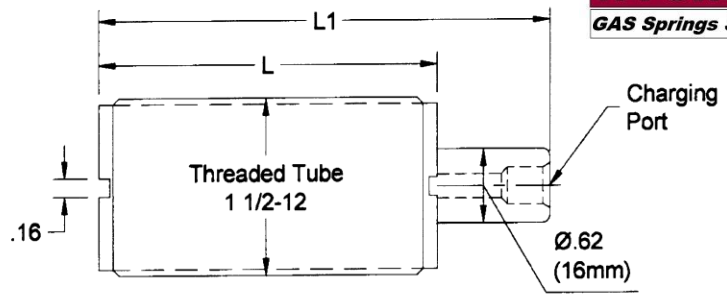
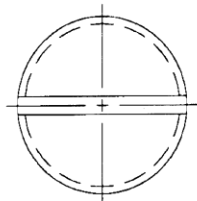
Made in the USA



**N-FORCER**  
GAS Springs Since 1986

# N-FORCER® CL025 - (1/4 Ton) Threaded Tube

Threaded Tube  
Installation Tool  
Part Number: UCCL25THR



PART NO.	Stroke	L	L1
CL025 x 0.50	12.7	63.5	76.2
	0.50	2.50	3.00
CL025 x 1.00	25	76.2	101.6
	1.00	3.00	4.00
CL025 x 1.50	38.1	88.9	127
	1.50	3.50	5.00
CL025 x2.00	50	101.8	152.4
	2.00	4.00	6.00
CL025 x 2.50	63.5	114.3	177.8
	2.50	4.50	7.00
CL025 x 3.00	75	127	203.2
	3.00	5.00	8.00

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

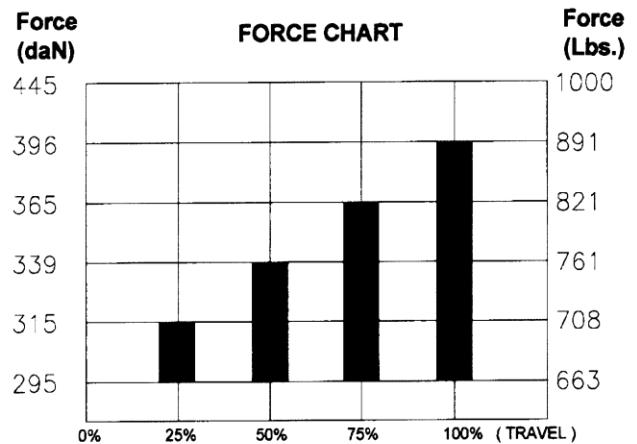


Chart is showing maximum force base on 2175 psi ( 150 bar ) charging pressure. If less than max. the force is reduced proportionally.  
Example: Forces on chart are multiplied by .69 at 1500 psi ( 103 bar ), by .46 at 1000 psi ( 69 bar ), etc.

**ORDERING EXAMPLE**

CL025 x 0.50 - T - 150

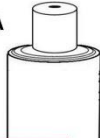
Part No. Series, Model and Stroke

Mounting Option "T" Threaded Tube

Charging Pressure Self contained = 51-150 bar or 750 - 2175 psi. If not specified the 2175 psi is default.

**RELATED MISC. PART NUMBERS**  
 (REPAIR KIT) P/N: CL025-RK-66  
 (FILLING ADAPTER) P/N: FA-2QD (QUICK DISCONNECT)  
 (THREADED TUBE INSTALL TOOL) P/N: UCCL25THR  
 (NUT) P/N: 1.5 X 12 NUT  
 (ADJUSTABLE MOUNT) P/N: FL-1

Made in the USA



**N-FORCER**

*GAS Springs Since 1986*

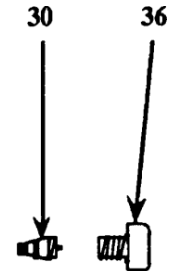
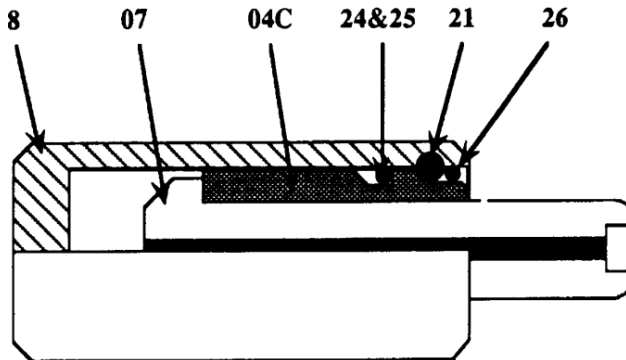
# N-FORCER® JR. UC075 (3/4 Ton Initial Contact Force) Cylinder Body Diameter of 2”

Featuring the “NO GROW” Cartridge for efficient  
“NO HASSLE” Repairs.

Complete Repair Kit Part Number: UC075-RK-42

## UC075 Replacement Parts List

UC075-8 (Tube Assembly)
UC075-07 (Piston Rod)
UC075-24 & 25 (O-ring & Backup)
UC075-04C (Seal Cartridge)
UC075-21 (Retaining Ring)
N000-30 (Valve)
LN000-36 (Protective Screw)
LN025-26 (Large Protective Ring)



Made in the USA

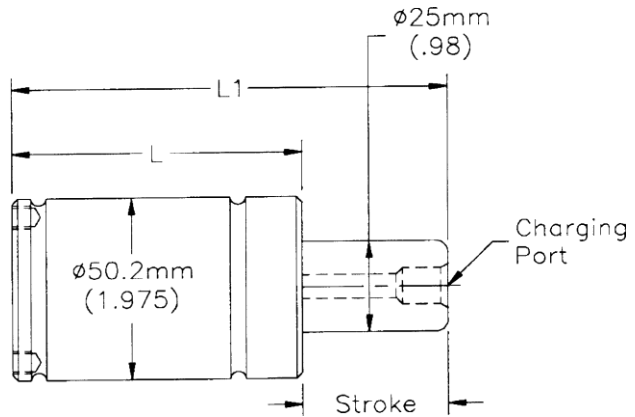
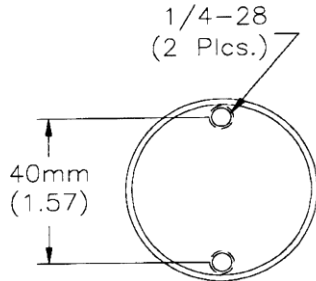


**N-FORCER**

GAS Springs Since 1986



# N-FORCER® UC075 - (3/4 Ton) Basic Mount



Part No.	Stroke	L	L1
UC075 x 012	12.7	50.8	63.5
	.50	2.00	2.50
UC075 x 019	18.8	56.8	75.6
	0.74	2.236	2.976
UC075 x 025	25	63.2	88.1
	0.98	2.49	3.47
UC075 x 032	32	70.2	102.1
	1.26	2.76	4.02
UC075 x 038	38.1	76.2	114.63
	1.50	3.00	4.50
UC075 x 050	50	88.1	138.1
	1.97	3.47	5.44
UC075 x 063	63.5	101.6	165.1
	2.50	4.00	6.50
UC075 x 075	75	113	187.9
	2.95	4.45	7.40
UC075 x 080	80	118.1	197.8
	3.15	4.65	7.79
UC075 x 088	88.9	127	215.9
	3.50	5.00	8.50
UC075 x 100	100	137.9	237.9
	3.94	5.43	9.37

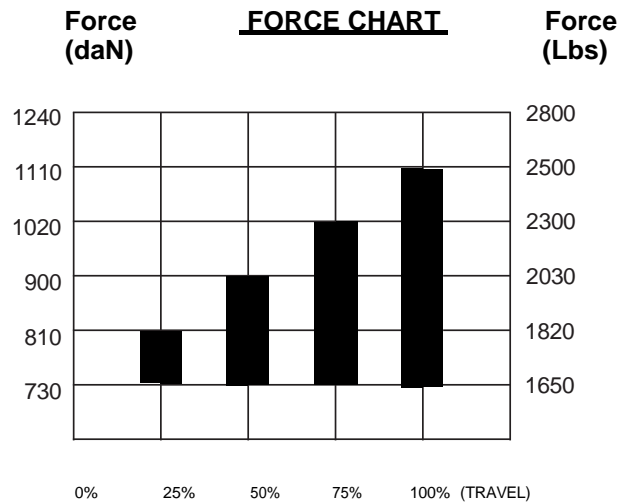


Chart is showing maximum force base on 2175 psi (150 bar) charging pressure. If less than max. the force is reduced proportionally.

Example: Forces on chart are multiplied by .69 @ 1500 psi (103 bar), by .46 @ 1000 psi (69 bar), etc.

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

ORDERING EXAMPLE  
**UC075 X 012 - O - 150**

Part No.  
Series, Model  
and Stroke

Mounting type:  
"O" or Blank =  
1/4-28 Standard

Charging Pressure  
Self contained = 51-150 bar  
or 750 - 2175 psi. **If not  
specified the 2175 psi  
is default.**

**ORDER REPAIR KIT EXAMPLE**  
UC075-RK-42

**FILLING ADAPTER**  
FA-2QD (Quick Disconnect)

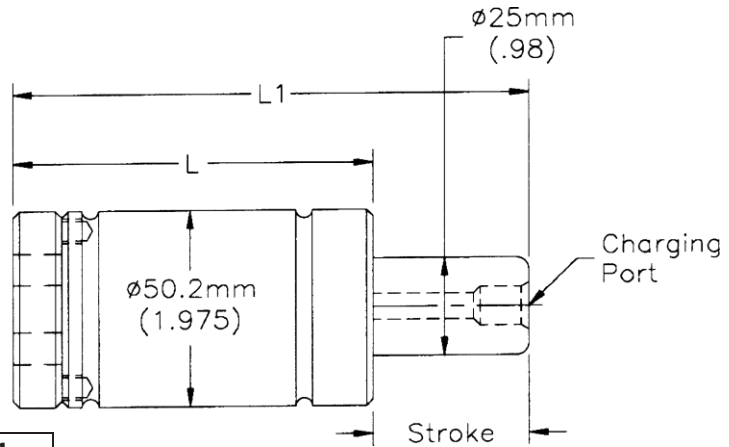
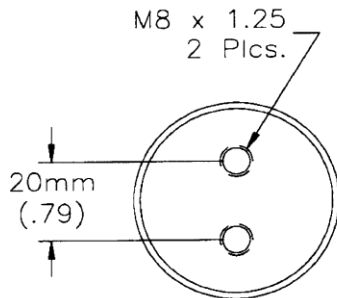
Made in the USA



**N-FORCER**

GAS Springs Since 1986

# N-FORCER® UCL75 - (3/4 Ton) Basic Mount



Part No.	Stroke	L	L1
UCL075 x 012	12.7	62.7	75.4
	.50	2.47	2.97
UCL075 x 019	19.0	69.5	88.5
	0.75	2.736	3.484
UCL075 x 025	25	75.2	100.1
	0.98	2.96	3.94
UCL075 x 032	32	82	114
	1.26	3.23	4.49
UCL075 x 038	38.1	88.1	126.2
	1.50	3.47	4.97
UCL075 x 050	50	101.1	150.1
	1.97	3.94	5.91
UCL075 x 063	63.5	113.5	177.0
	2.50	4.47	6.97
UCL075 x 075	75	124.9	199.9
	2.95	4.92	7.87
UCL075 x 080	80	130.0	209.8
	3.15	5.12	8.26
UCL075 x 088	88.9	138.9	227.8
	3.50	5.47	8.97
UCL075 x 100	100	149.8	249.9
	3.94	5.90	9.84

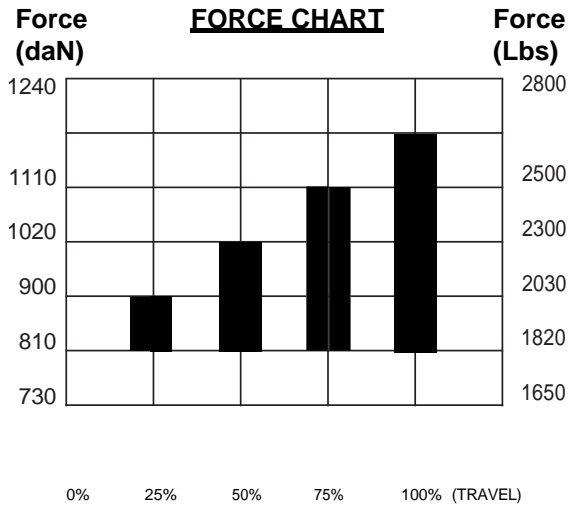


Chart is showing maximum force base on 2175 psi (150 bar) charging pressure. If less than max. the force is reduced proportionally.

Example: Forces on chart are multiplied by .69 @ 1500 psi (103 bar), by .46 @ 1000 psi (69 bar), etc.

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

### ORDERING EXAMPLE

**UCL075 X 012 - O -150**

Part No.  
Series, Model  
and Stroke

Charging Pressure  
Self contained = 51-150 bar  
or 750 - 2175 psi. **If not  
specified the 2175 psi  
is default.**

Mounting type:  
"O" or Blank =  
M8x1.25 Standard

### ORDER REPAIR KIT EXAMPLE

UCL075-RK-42

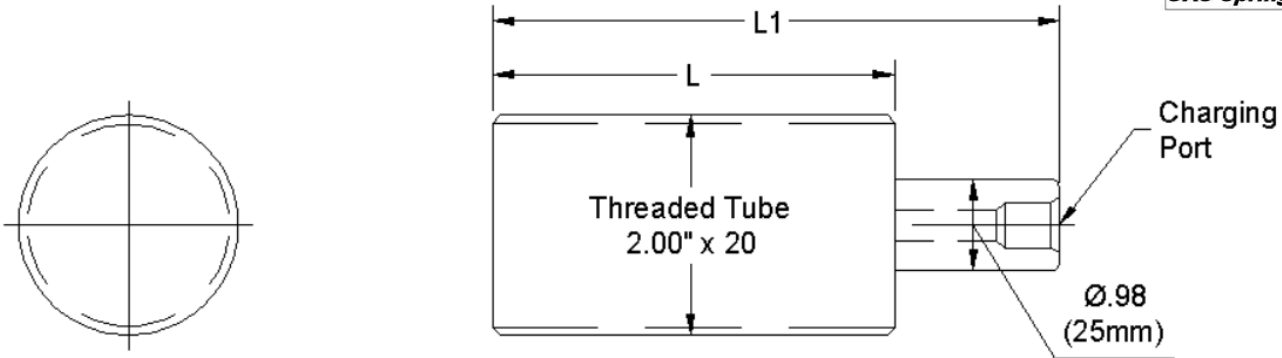
### FILLING ADAPTER

FA-2QD (QUICK DISCONNECT)



# N-FORCER®

## CLN75 Threaded Body



Part NO.	Stroke	L	L1
CLN75 x .5	12.7	82.6	96.8
	0.5	3.25	3.81
CLN75 x 1.00	25.4	95.3	122.2
	1	3.75	4.81
CLN75 x 1.50	38.1	108.0	147.6
	1.5	4.25	5.81
CLN75 x 2.00	50.8	120.7	173.0
	2	4.75	6.81
CLN75 x 2.50	63.5	133.4	198.4
	2.5	5.25	7.81
CLN75 x 3.00	76.2	146.1	223.8
	3	5.75	8.81

**NOTE: MAXIMUM TRAVEL RECOMMENDED IS 90% OF STROKE.**

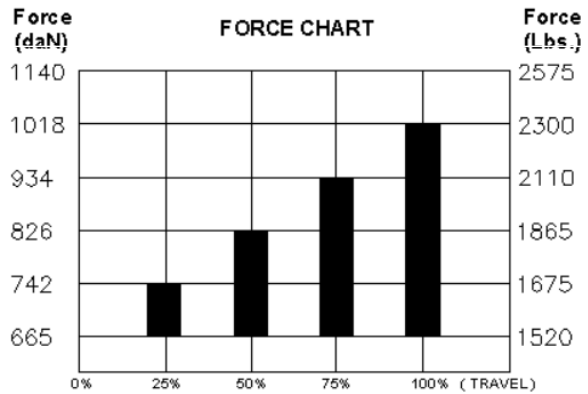
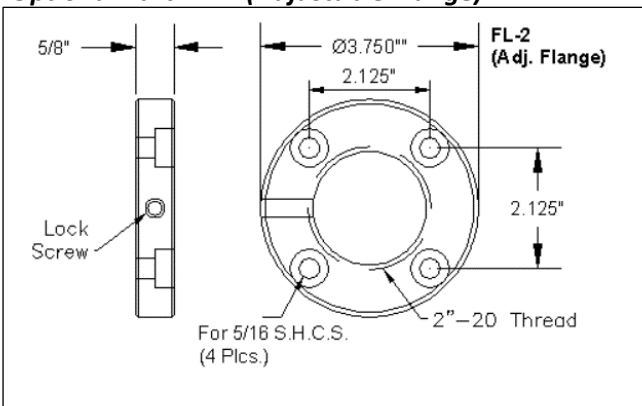


Chart is showing maximum force based on 2000 psi (138 bar) charging pressure. If charging pressure is less, the force is reduced proportionally.  
 Example: Forces on the chart are multiplied by .75 at 1500 psi (103 bar), by .5 at 1000 psi (69 bar), etc.

### Optional Part: FL-2 (Adjustable Flange)



### REPAIR KIT EXAMPLE: CLN75-RK-42

### FILLING ADAPTER: FA-2QD (Quick Disconnect)

ORDERING EXAMPLE: **CLN75 X 1.0 x 750**

**Series Model**

**Stroke**

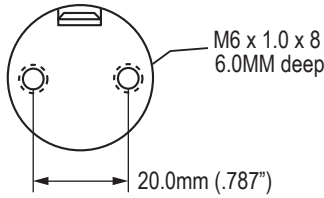
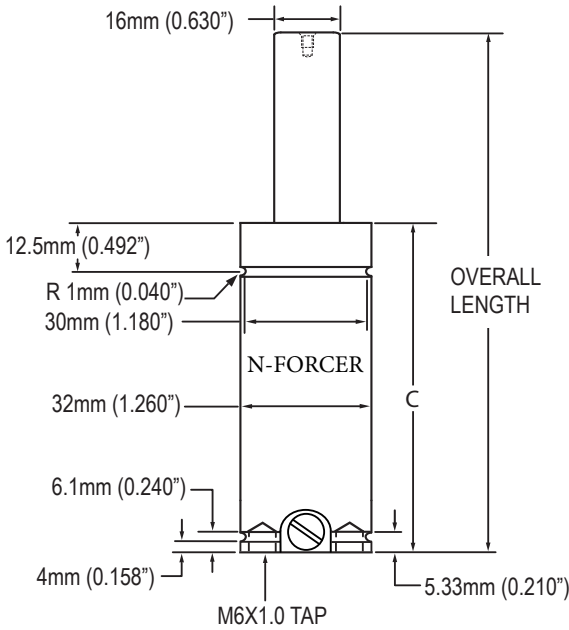
#### Charging Pressure

Self Contained = 750 to 2000psi  
 If not specified, 2000 psi default



## NHP400 TAPPED BASE STYLE

Specify "TB" when ordering



# NHP400 SERIES

Our NHP400 offers a greater force in a smaller envelope than previous 32mm (1.260") cylinders yet still contains steel rod bearing supports and offers multiple mounting options.

**Self contained or hoses systems.** Our NHP400 can be used in hoses applications using the M6 threaded side port. Order using "no valve" option for hoses systems.

We always recommend that all cylinders be backed-up during operation.

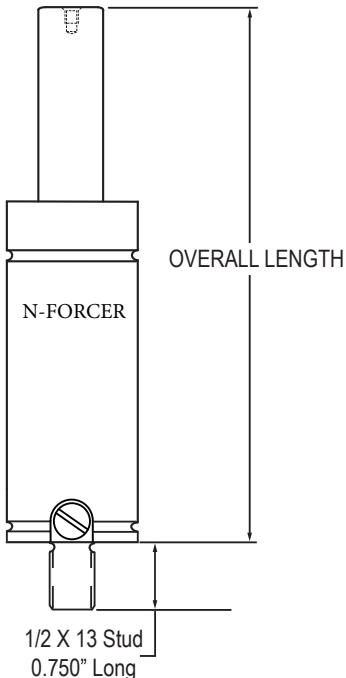
## NHP400 STROKE CHART

STROKE LENGTH		MAX.ALLOW. STROKE		C		OVERALL LENGTH		WEIGHT
MM	INCHES	MM	INS.	MM +/-5	INS +/-02	MM +/-5	INS +/-02	LBS.
10.0	0.394	8.5	0.334	40.0	1.544	50.0	1.937	0.22
12.5	0.492	11.0	0.432	42.5	1.621	54.0	2.113	0.25
15.0	0.591	13.5	0.531	45.0	1.741	60.0	2.331	0.28
19.0	0.748	17.5	0.688	49.0	1.898	68.0	2.650	0.33
25.0	0.984	23.5	0.924	55.0	2.156	80.0	3.140	0.40
32.0	1.260	30.5	1.200	62.0	2.410	94.0	3.660	0.48
37.5	1.476	36.0	1.416	67.5	2.626	104.0	4.102	0.55
50.0	1.969	48.5	1.909	80.0	3.119	130.0	5.087	0.70
62.5	2.461	61.0	2.401	92.5	3.611	155.0	6.071	0.85
75.0	2.953	73.5	2.893	105.0	4.103	180.0	7.055	0.90
80.0	3.150	78.5	3.090	110.0	4.300	190.0	7.450	0.96
100.0	3.937	98.5	3.877	130.0	5.087	230.0	9.024	1.20
125.0	4.921	123.5	4.861	155.0	6.071	280.0	10.990	1.35

Recommended tolerance on Machined Pocket in the die is 34.0/36.0mm (1.338"/1.417") for maximum NHP400 performance.

## NHP400 STUD MOUNT STYLE

Specify "STUD" when ordering



### ORDERING CODE:

### NHP400 X STROKE LENGTH - MOUNT STYLE - CHARGE PRESSURE

For hoses systems requiring no valve, request "no valve" as charge pressure.

STROKE		TRAVEL												
	MM	10.0	12.5	15.0	19.0	25.0	32.0	37.5	50.0	62.5	75.0	80.0	100.0	125.0
MM	INCHES	0.394	0.492	0.591	0.748	0.984	1.260	1.476	1.969	2.461	2.953	3.150	3.937	4.921
10.0	0.394	1042												
12.5	0.492	1042	1059											
15.0	0.591	998	1059	1129										
19.0	0.748	954	999	1047	1136									
25.0	0.984	917	948	982	1040	1143								
32.0	1.260	892	916	940	982	1052	1148							
37.5	1.476	880	899	919	953	1009	1084	1150						
50.0	1.969	862	876	890	914	952	1001	1044	1154					
62.5	2.461	851	862	873	892	921	957	988	1066	1157				
75.0	2.953	844	853	862	877	901	930	954	1013	1084	1158			
80.0	3.150	842	850	859	873	895	921	943	998	1059	1129	1159		
100.0	3.937	836	842	849	860	877	897	914	954	999	1047	1068	1160	
125.0	4.921	831	836	841	850	863	878	891	922	955	990	1005	1069	1162

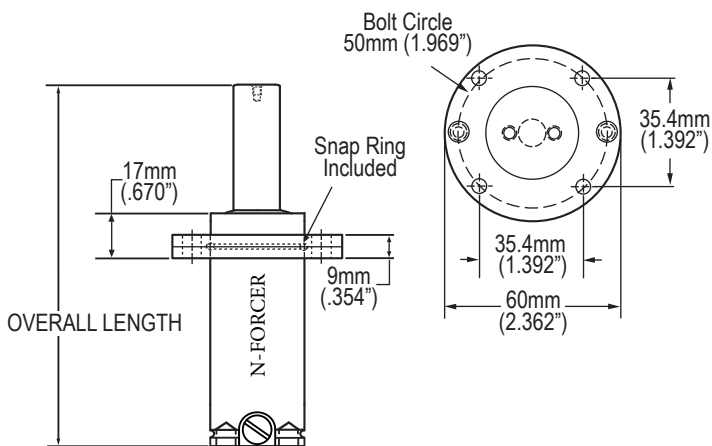
Formula to calculate charge pressure for ANY contact pressure is: FORCE REQUIRED x 3.208 = PSI (ex. 500 x 3.663 = 1832 psi charge in cylinder).

Note: English dimensions in black / Metric dimens ons in blue

## MOUNT STYLES

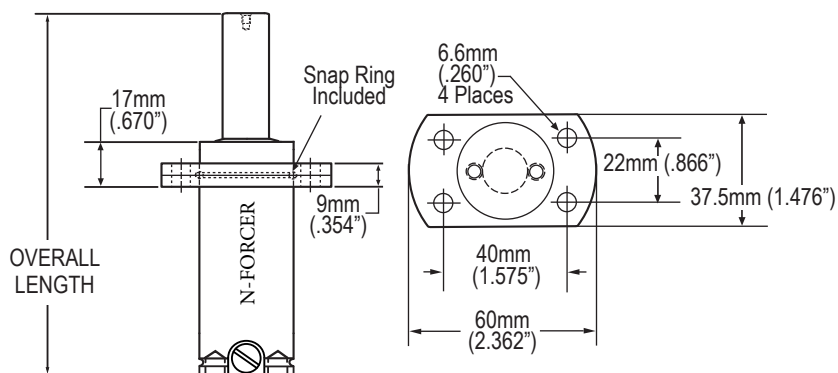
### TOP ROUND FLANGE

To order: specify "CH132TR"



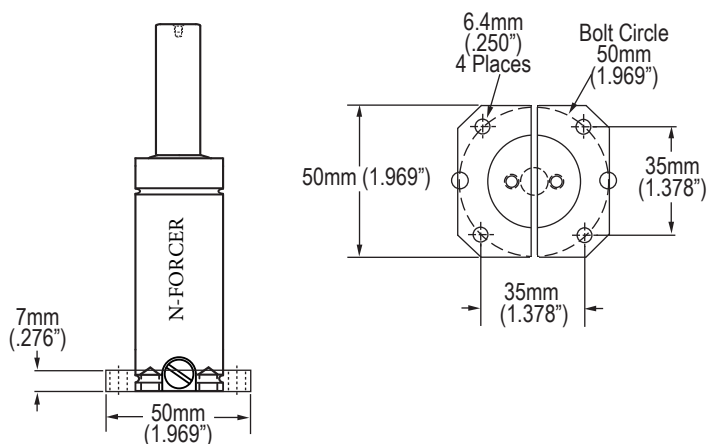
### TOP SQUARED OFF FLANGE

To order: specify "CH132TSO"



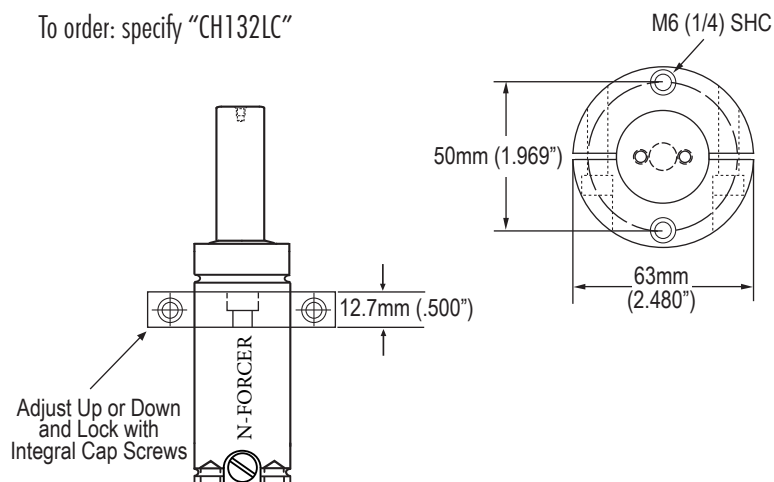
### SQUARED BOTTOM FLANGE

To order: specify "CH132SB"



### LOCKING COLLAR

To order: specify "CH132LC"

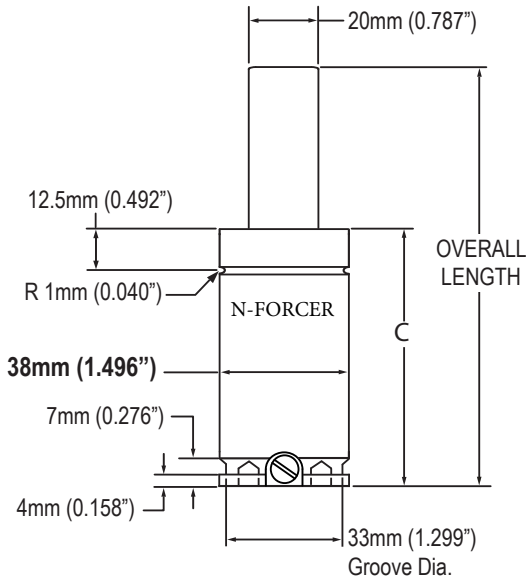


# NHP500 SERIES



## NHP500 TAPPED BASE STYLE

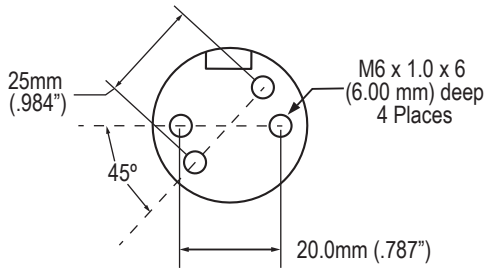
Specify "TB" when ordering



Our NHP500 offers greater force in a smaller envelope than previous 38mm (1.496") cylinders yet still contains a steel rod bearing support and offers multiple mounting options.

**Self contained or hoses systems.** Our NHP500 can be used in hoses applications using the M6 threaded side port. Order using "no valve" option for hoses systems.

We recommend that all cylinders be backed-up during operation.



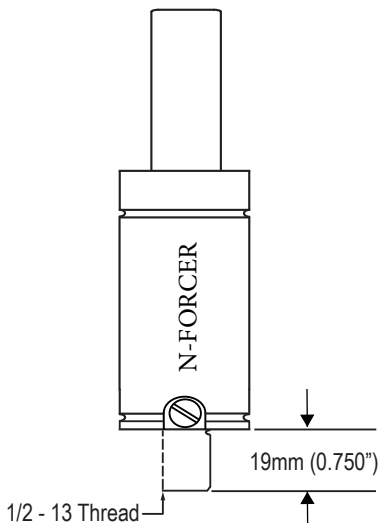
## NHP500 STROKE CHART

STROKE LENGTH		MAX.ALLOW. STROKE		C		OVERALL LENGTH		WEIGHT
MM	INCHES	MM	INS.	MM +/- .5	INS +/- .02	MM +/- .5	INS +/- .02	LBS.
10.0	0.394	8.5	0.334	40.0	1.575	50.0	1.968	0.25
13.0	0.492	11.0	0.432	42.5	1.673	55.0	2.165	0.28
15.0	0.591	13.5	0.531	45.0	1.772	60.0	2.362	0.31
19.0	0.748	17.5	0.688	49.0	1.929	68.0	2.677	0.36
25.0	0.984	23.5	0.924	55.0	2.165	80.0	3.150	0.43
32.0	1.260	30.5	1.200	62.0	2.441	94.0	3.701	0.51
38.0	1.476	36.0	1.416	67.5	2.657	105.0	4.134	0.58
50.0	1.969	48.5	1.909	80.0	3.150	130.0	5.118	0.73
63.0	2.461	61.0	2.401	92.5	3.642	155.0	6.102	0.88
75.0	2.953	73.5	2.893	105.0	4.134	180.0	7.087	0.93
80.0	3.150	78.5	3.090	110.0	4.331	190.0	7.480	0.99
100.0	3.937	98.5	3.877	130.0	5.118	230.0	9.055	1.23
125.0	4.921	123.5	4.861	155.0	6.102	280.0	11.024	1.38

Recommended Tolerance on the Machined Pocket in the die is 40.0/42.0mm (1.575"/1.653") for maximum HP500 performance.

## NHP500 STUD MOUNT STYLE

Specify "STUD" when ordering



### ORDERING CODE: NHP500 X STROKE LENGTH - MOUNT STYLE - CHARGE PRESSURE

For hoses systems requiring no valve, request "no valve" as charge pressure.

# NHP 500 SERIES -MOUNT STYLES-



NHP500 FORCE CHART based on 2,175 PSI

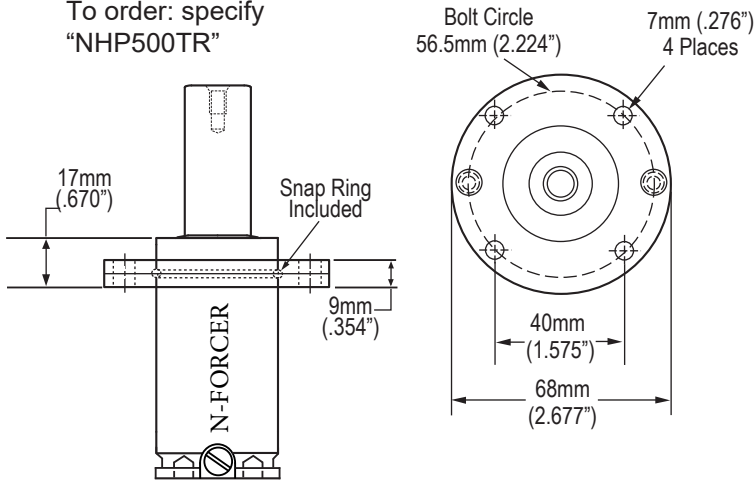
Stroke		Initial Contact Force		Force at Full Stroke	
MM	INS.	LBS	DaN	LBS	DaN
10.0	0.394	1061	472	1499	667
13.0	0.492			1529	680
15.0	0.591			1552	690
19.0	0.748			1578	702
25.0	0.984			1604	713
32.0	1.260			1624	722
38.0	1.476			1635	727
50.0	1.969			1652	735
63.0	2.461			1662	739
75.0	2.953			1669	742
80.0	3.150			1672	744
100.0	3.937			1678	746
125.0	4.921			1684	749

Formula to calculate charge pressure for ANY contact pressure is: FORCE REQUIRED X 2.050 = PSI

Note: English dimensions in black / Metric dimensions in blue

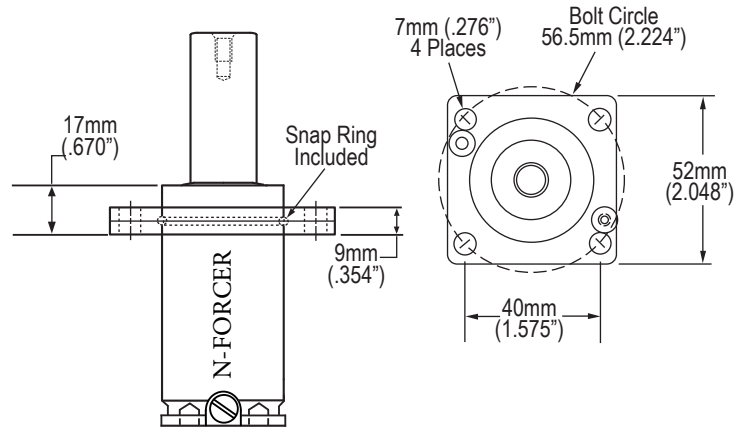
## NHP500 TOP ROUND FLANGE

To order: specify "NHP500TR"



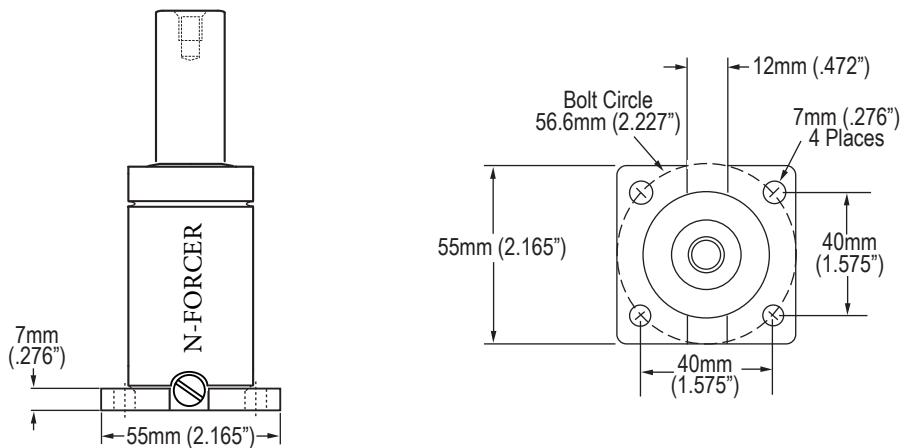
## NHP500 TOP SQUARED OFF FLANGE

To order: specify "NHP500TSO"



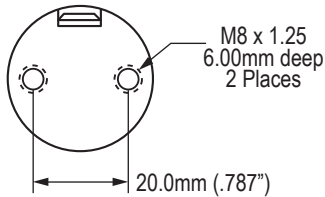
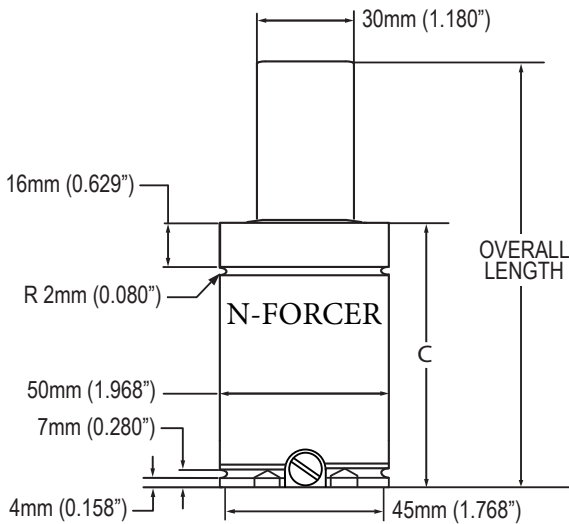
## HP500 SQUARED BOTTOM FLANGE

To order: specify "NHP500SB"



## NHP1200 TAPPED BASE STYLE

Specify "TB" when ordering



# NHP1200 SERIES



Our NHP1200 offers greater force in a smaller envelope than previous 50mm (1.968") cylinders yet still contains a steel rod bearing support and offers multiple mounting options.

**Self contained or hoses systems.** Our NHP1600 can be used in hoses applications using the M6 threaded side port. Order using "no valve" option for hoses systems.

We recommend that all cylinders be backed-up during operation.

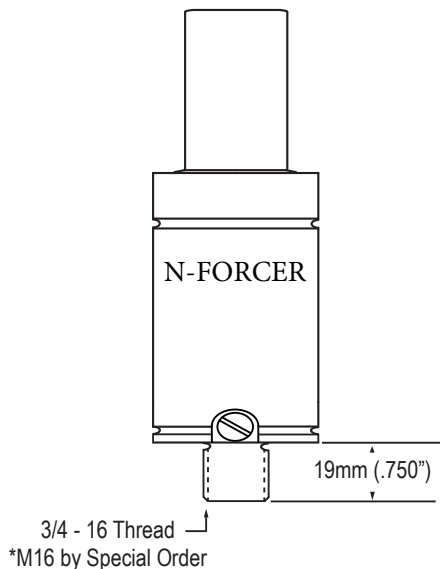
## NHP1200 STROKE CHART

STROKE LENGTH		MAX.ALLOW. STROKE		C		OVERALL LENGTH		WEIGHT
MM	INCHES	MM	INCHES	MM +/- .5	INS +/- .02	MM +/- .5	INS +/- .02	LBS.
10.0	0.394	8.5	0.334	46.5	1.830	58.0	2.283	1.25
13.0	0.492	11.0	0.432	49.0	1.928	63.0	2.480	1.28
15.0	0.591	13.5	0.531	51.5	2.027	68.0	2.677	1.31
19.0	0.748	17.5	0.688	55.5	2.184	76.0	2.992	1.36
25.0	0.984	23.5	0.924	61.5	2.420	88.0	3.465	1.43
32.0	1.260	30.5	1.200	68.5	2.696	102.0	4.016	1.51
38.0	1.476	36.0	1.416	74.0	2.912	113.0	4.449	1.58
50.0	1.969	48.5	1.909	86.5	3.405	138.0	5.433	1.73
63.0	2.461	61.0	2.401	99.0	3.897	163.0	6.417	1.88
75.0	2.953	73.5	2.893	111.5	4.389	188.0	7.402	1.93
80.0	3.150	78.5	3.090	116.5	4.586	198.0	7.795	1.99
100.0	3.937	98.5	3.877	136.5	5.373	238.0	9.370	2.23
125.0	4.921	123.5	4.861	161.5	6.357	288.0	11.339	2.38

Recommended tolerance on machined pocket in the die is 52.0/54.0mm (2.047"/2.125") for maximum NHP1200 performance.

## NHP1200 STUD MOUNT STYLE

Specify "STUD" when ordering



**ORDERING CODE: NHP1200 X STROKE LENGTH - MOUNT STYLE - CHARGE PRESSURE**

**HOSED SYSTEM ORDERING CODE: NHP1200 x STROKE LENGTH-MOUNT STYLE- "No Valve"**

# NHP1200 SERIES

## NHP1200 FORCE CHART based on 2,175 PSI

Stroke		Initial Contact Force		Force at Full Stroke	
MM	INS.	LBS	DaN	LBS	DaN
10.0	0.394	2379	1058	3825	1702
13.0	0.492			3902	1736
15.0	0.591			3958	1761
19.0	0.748			4022	1789
25.0	0.984			4084	1817
32.0	1.260			4129	1837
38.0	1.476			4154	1848
50.0	1.969			4192	1865
63.0	2.461			4215	1875
75.0	2.953			4231	1882
80.0	3.150			4236	1884
100.0	3.937			4251	1891
125.0	4.921			4263	1896

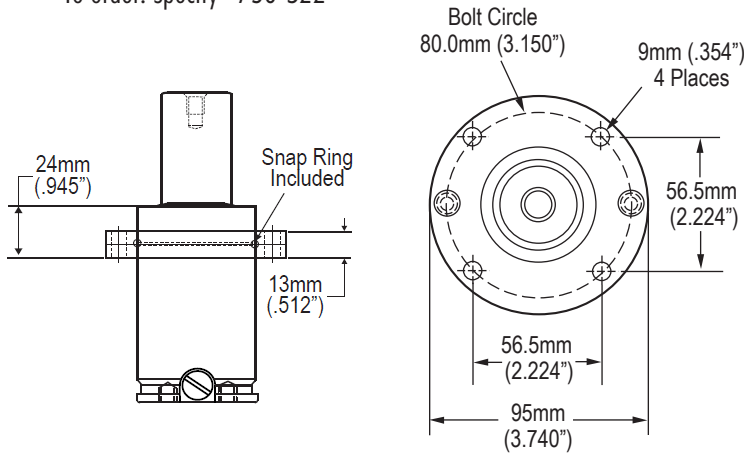
Formula to calculate charge pressure for ANY contact pressure is: FORCE REQUIRED X 0.914 = PSI

Note: English dimensions in black / Metric dimensions in blue

## MOUNT STYLES

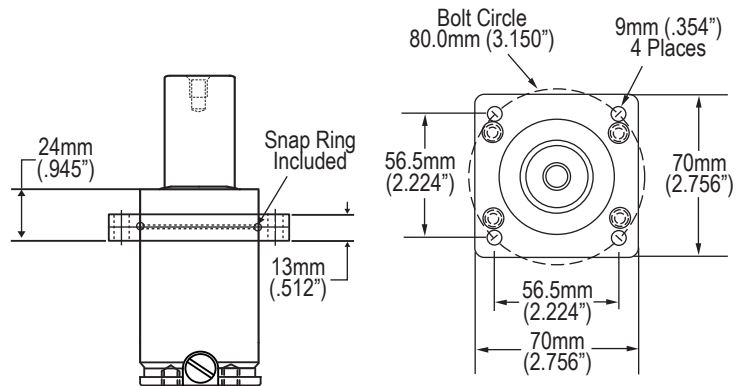
### TOP ROUND FLANGE

To order: specify "750-S22"



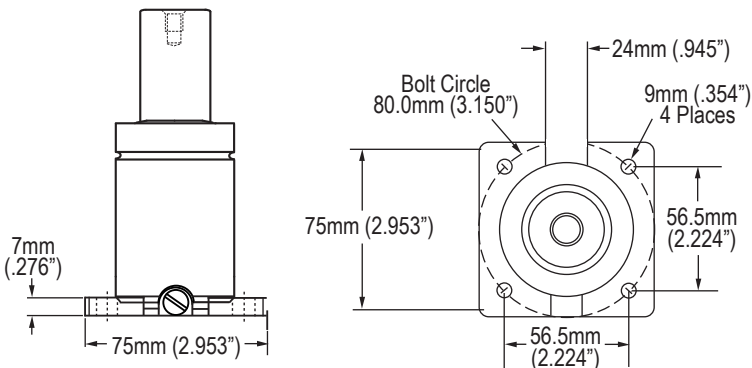
### TOP SQUARED FLANGE

To order: specify "750-S78"



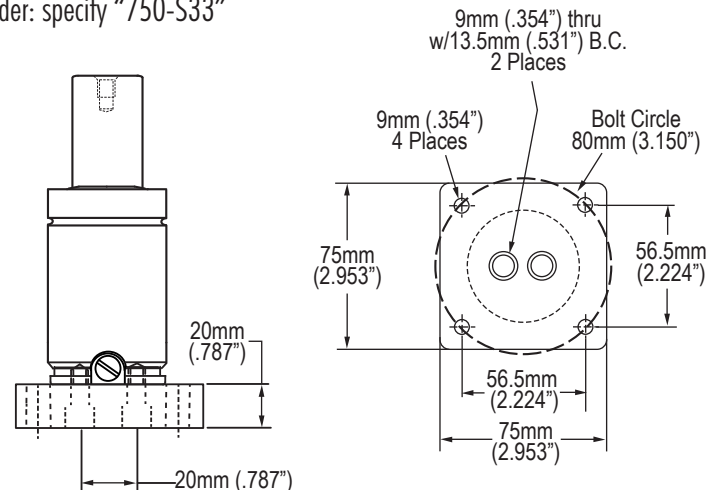
### NHP1200 SQUARED BOTTOM FLANGE

To order: specify "NHP1200SB"



### MOUNTING PLATE

To order: specify "750-S33"

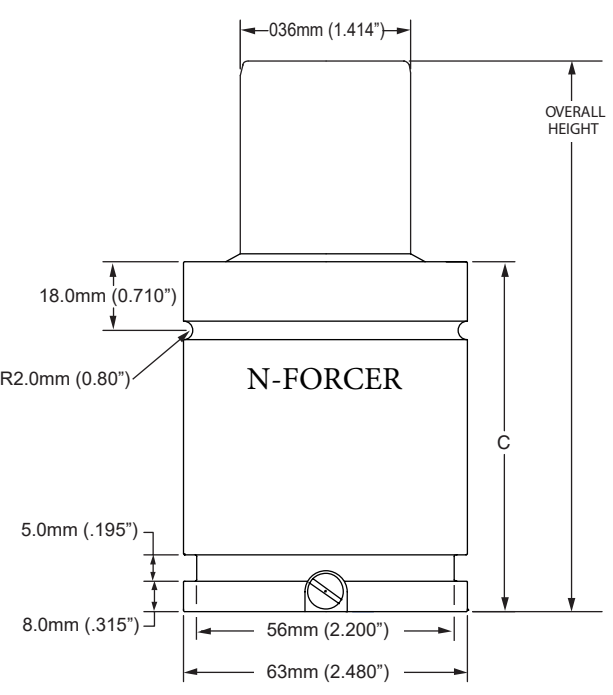




# NHP1600 SERIES

## NHP1600 STANDARD MOUNT

Specify "STD" when ordering



Our NHP1600 is a 63mm (2.480") cylinder. As an addition to our High Pressure series it offers a low profile with high forces and contains a steel rod bearing support.

**Self contained or hoses systems.** Our NHP1600 can also be used in hoses applications using the M6 threaded side port. Order using "no valve" option for hoses systems.

We recommend that all cylinders be backed-up during operation.

## NHP1600 STROKE CHART

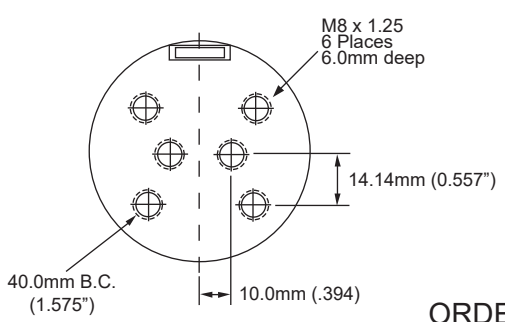
STROKE LENGTH		MAX.ALLOW. STROKE		C		OVERALL LENGTH		WEIGHT
MM	INCHES	MM	INCHES	MM +/- .5	INS +/- .02	MM +/- .5	INS +/- .02	LBS.
10.0	0.394	8.0	0.315	54.0	2.126	64.0	2.520	2.34
13.0	0.492	10.5	0.413	55.5	2.185	69.0	2.717	2.41
15.0	0.591	13.0	0.512	58.0	2.283	74.0	2.913	2.48
16.0	0.630	14.0	0.551	59.0	2.322	76.0	2.992	2.51
19.0	0.748	17.0	0.669	62.0	2.441	82.0	3.228	2.60
25.0	0.984	23.0	0.906	68.0	2.677	94.0	3.700	2.78
32.0	1.260	30.0	1.181	75.0	2.953	108.0	4.252	2.98
38.0	1.476	35.5	1.398	81.0	3.189	119.0	4.685	3.12
50.0	1.969	48.0	1.890	93.0	3.661	144.0	5.670	3.50
63.0	2.461	60.5	2.382	105.5	4.154	169.0	6.654	3.86
75.0	2.953	73.0	2.874	118.0	4.646	194.0	7.638	4.22
80.0	3.150	78.0	3.071	123.0	4.843	204.0	8.031	4.37
100.0	3.937	98.0	3.858	143.0	5.630	244.0	9.606	4.95
125.0	4.921	123.0	4.843	168.0	6.614	294.0	11.575	5.67

Recommended tolerance on machined pocket in the die is 65.0/67.0mm (1519 OaN) for maximum NHP1600 performance.

Please Note: Contact Force @2175 PSI (ISO Bar) : 3415 lbs. (1519 OaN)  
 Pressurerised @ full stroke (Depending on stroke length: 46 +/- 5%  
 Contact Force (lbs.) desired x 0.637 = PSI charge pressure

## NHP1600 TAPPED BASE MOUNT STYLE

Specify "TB" when ordering



### ORDERING CODE:

**NHP1600 X STROKE LENGTH - MOUNT STYLE - CHARGE PRESSURE**

For hoses systems requiring no valve, request "no valve" as charge pressure.

**WARNING: UNCONTROLLED ACCELEARTION WILL CAUSE CYLINDER DAMAGE.**

Note: English dimensions in black / Metric dimensions in blue





# NHP1600 SERIES FORCE CHART

NHP1600 FORCE CHART based on 2,175 PSI

Stroke		Initial Contact Force		Force at Full Stroke	
MM	INS.	LBS	DaN	LBS	DaN
10.0	0.394	3415	1519	4826	2146
13.0	0.492			4850	2157
15.0	0.591			4874	2168
16.0	0.630			4898	2178
19.0	0.748			4923	2189
25.0	0.984			4948	2200
32.0	1.260			4973	2212
38.0	1.476			4997	2222
50.0	1.969			5022	2233
63.0	2.461			5048	2245
75.0	2.953			5073	2256
80.0	3.150			5098	2267
100.0	3.937			5124	2279
125.0	4.921			5149	2290

Formula to calculate charge pressure for ANY contact pressure is: FORCE REQUIRED X 0.637 = PSI

Note: English dimensions in black / Metric dimensions in blue

# NHP2400 SERIES



**N-FORCER is pleased to introduce our High Performance NHP2400 Series nitrogen gas cylinder.** This ultra compact, high performance cylinder has the highest forces and shortest profile available in a 75.0mm (2.953”) diameter cylinder.

We have incorporated our superior rod bearing support system in the NHP2400. Our steel bearing support is a design feature we have incorporated in all of our high pressure nitrogen cylinder designs, and a feature that allows our customers to realize extended cylinder life and reduced downtime.

**Available as self contained or hosed systems.** Our NHP1600 can also be used in hosed applications using the M6 threaded side port. For hosed systems, simply add "no valve" to the charging pressure location of your order. See bottom of the page for order information.

As always, we recommend that all cylinders be backed-up during operation.

**Please see next page for more details.**

## **NHP2400 STROKE CHART**

STROKE LENGTH		MAX.ALLOW. STROKE		C	OVERALL LENGTH		WEIGHT	
MM	INCHES	MM	INCHES		MM+/-0.5	INS+/-0.02		MM+/-0.5
16.0	0.6	14.0	0.551	58.0	2.284	77.0	3.031	3.1
19.0	0.7	17.0	0.669	61.0	2.402	83.0	3.266	3.2
25.0	1.0	23.0	0.906	67.0	2.638	95.0	3.740	3.4
32.0	1.3	30.0	1.181	74.0	2.914	109.0	4.291	3.7
38.0	1.5	36.0	1.417	80.0	3.150	121.0	4.764	3.9
50.0	2.0	48.0	1.890	92.0	3.623	145.0	5.709	4.3
63.0	2.5	61.0	2.402	105.0	4.134	171.0	6.732	4.8
75.0	3.0	73.0	2.874	117.0	4.607	195.0	7.677	5.2
80.0	3.1	78.0	3.071	122.0	4.804	205.0	8.071	5.3
100.0	3.9	98.0	3.858	142.0	5.591	245.0	9.646	6.0
125.0	4.9	123.0	4.843	167.0	6.575	295.0	11.614	6.9

Recommended tolerance on machined pocket in the die is 77.0/79.0 mm (3.03”/3.11”) for maximum NHP2400 performance.

**SELF-CONTAINED ORDERING CODE: NHP2400 x STROKE LENGTH-MOUNT STYLE-CHARGE PRESSURE**  
**HOSED SYSTEM ORDERING CODE: NHP2400 x STROKE LENGTH-MOUNT STYLE- "No Valve"**

# NHP2400 SERIES



NHP2400 FORCE CHART based on 2,000 psi Initial contact pressure for the HP2400 is 4920 lbs.

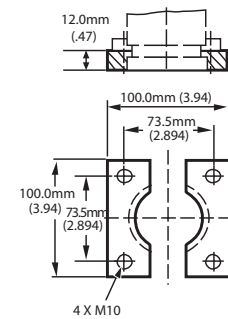
		16.0	19.0	25.0	32.0	38.0	50.0	63.0	75.0	80.0	100.0	125.0
<b>MM</b>	<b>INCHES</b>	<b>0.63</b>	<b>0.75</b>	<b>0.98</b>	<b>1.26</b>	<b>1.50</b>	<b>1.97</b>	<b>2.48</b>	<b>2.95</b>	<b>3.15</b>	<b>3.94</b>	<b>4.92</b>
16.0	0.63	6850										
19.0	0.75	6547	6980									
25.0	0.98	6159	6463	7173								
32.0	1.26	5889	6114	6621	7330							
38.0	1.50	5737	5920	6326	6876	7429						
50.0	1.97	5541	5675	5964	6340	6702	7567					
63.0	2.48	5414	5517	5736	6015	6277	6875	7667				
75.0	2.95	5335	5420	5600	5824	6032	6495	7084	7731			
80.0	3.15	5309	5389	5555	5763	5954	6377	6908	7484	7753		
100.0	3.94	5232	5294	5424	5584	5728	6041	6421	6817	6997	7821	
125.0	4.92	5170	5219	5321	5444	5555	5791	6069	6351	6477	7033	7878

Formula to calculate charge pressure for lower initial contact pressure is: FORCE REQUIRED X .406 (ex. 3500 x .406 = 1421 psi charge in cylinder).  
PLEASE NOTE: A max. charge pressure of 2175 PSI/150 Bar is available upon request. Initial contact force at 2175 PSI/150 bar will be 5353 lbs (2381 daN).

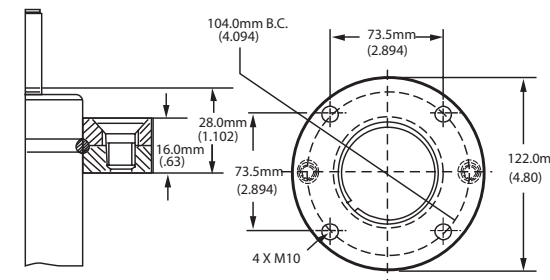
## Additional Mount Styles Available for the NHP2400:



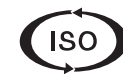
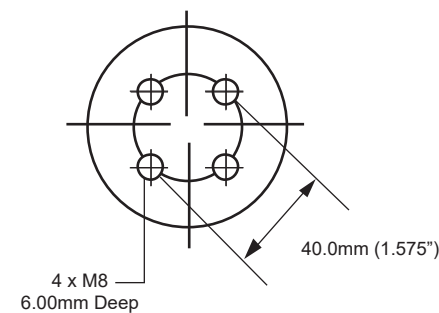
**S16**  
To order: Specify "S16"



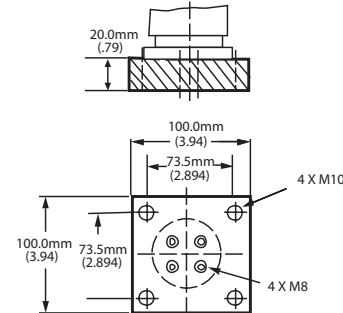
**S22**  
To order: Specify "S22"



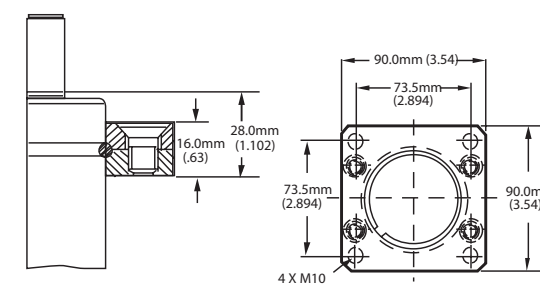
**TAPPED BASE MOUNT STYLE**  
Specify "MTB2" when ordering



**S33**  
To order: Specify "S33"



**S78**  
To order: Specify "S78"



Made in the USA



**N-FORCER**

GAS Springs Since 1986

## Accessories



**MCB-6**



**MCB-3**

### **MCB-6 (six station Control Block)**

N-Forcer offers different sizes of control blocks, from 3 to 6 individual port stations which operate independent from each other. All stations can be set for different pressures or they can all have the same pressure but isolate different sections of the die for maintenance purposes. All stations have a pressure gage and an opening and closing valve.

**MCB-3, MCB-4, MCB-5, MCB-6**  
For Specifications—see page 4

## **Control Panels**

**CB-4** G1/8 BSPP Ports in 4 Places  
**CB-3** 7/16-20SAE Ports in 3 Places  
Specifications—see page 5



## **6 & 12 Port Distribution Blocks**



**DCB-6 & DCB-12**  
1/2" 20 SAE Ports  
**DCB-6-4 & DCB-12-4**  
7/16" 2- SAE Ports— See page 6

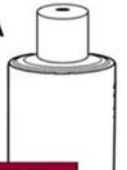
For G 1/8 BSPP Ports—See page 7



### **Flex ratcheting wrench: FRW-1** **Wrench removal Sleeve: RSTM-1**

Used to position the cartridge correctly and to assemble and disassemble threaded mini cylinders

Made in the USA



**N-FORCER**  
GAS Springs Since 1986

## T-HANDLE

For removing the piston rod when disassembling and to reassembling correctly. M8 Thread. (P/N: M8-T-Handle)



## FILLING ADAPTERS

**HC-1QD—Female Quick Disconnect Coupling— Fits all FA filling adapters.**

### **CN & CSN Series**

**FA-4QD—Quick Disconnect Filling Adapter—7/16-20 threads. Threaded into valve compartment of cylinder port. Attach high pressure hose coupling to male end.**

### **(MINI) MF Series**

**FA-1MFQD for M6 Ports**

### **(JUNIOR) UC025, CL025, UC075, & UCL75 Models**

**FA-2QD for (.206-36 Ports)**

### **IS & CISN SERIES**

**FA-G1/8QD for G 1/8 Ports**



## SPRING RETAINERS

See drawings

Specifications: page 8





### **PRESSURE TESTERS**

Available with either 12.5" hydraulic hose for hard to get to locations, or the compact model (6" shown) with solid fittings.

Available in 500# to 10,000# capacity glycerin filled gauges. All have a re-settable maximum indicator needle.

Specifications: page 9 & 10



### **FORCE TESTER**

Quick, Accurate, Easy way to check the condition of your small series nitrogen die springs.

Diameter 3/4" (19 mm) to 1-1/2" (38.1mm)  
Length 0-15" (380MM) 0-600 psi.

Specifications: page 11

### **CA-2000 QD—Charging Assembly.**

\*Must Specify 4000 or 6000 PSI Tank.  
Comes with a quick disconnect coupling.

**NH-025** — Medium pressure hose for use with reusable swivels.

**520N-4**—High pressure hose for permanent swivels

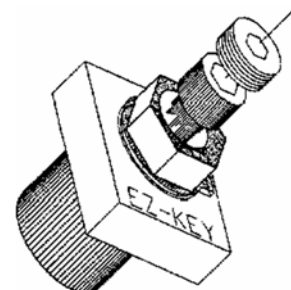
**Spaghetti or Flexible** hose is also available. We don't recommend these options as drainage is very time consuming



### **EZ-KEY**

Adjustable key for Tools—Dies—Fixtures

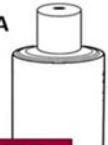
EZ-KEY operates on an eccentric cam with a floating pressure plate. Rotation of the hex nut (attached to the cam) shifts the pressure plate providing the necessary key force. The C/L of the bore in the pressure plate is located so that it is variable in relation to each face. This allows for a wide range of adjustments.



Specifications: page 12 & 13



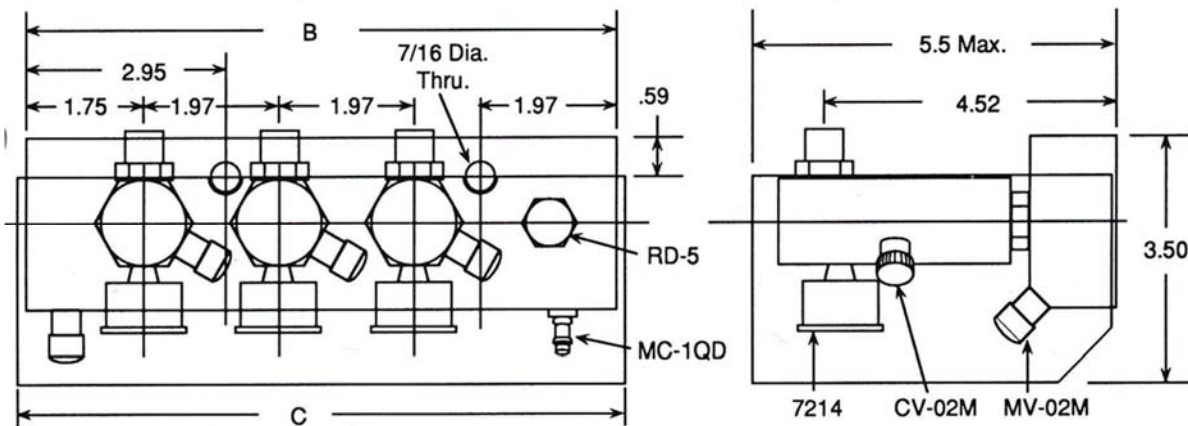
Made in the USA



**N-FORCER**

GAS Springs Since 1986

## Multiple Station Control Block



	B	C
<b>MCB-3</b> (Three Station)	219.9mm	226.2mm
<b>MCB-4</b> (Four Station)	269.9mm	276.3mm
<b>MCB-5</b> (Five Station)	320mm	326.3mm
<b>MCB-6</b> (Six Station)	370mm	376.3mm

## Multiple Station Control Block

This control block offers from 3 to 6 individual port stations which operate independent from each other. Each station has two 7/16-20 SAE ports for hosing nitrogen die springs. All stations can be set for different pressures or they can all be the same pressure but isolate different sections of the die for maintenance purposes. All stations have a pressure gage and an opening and closing valve.

# Control Panels

## CB-3

with 7/16-20 Ports  
&

## CB-4

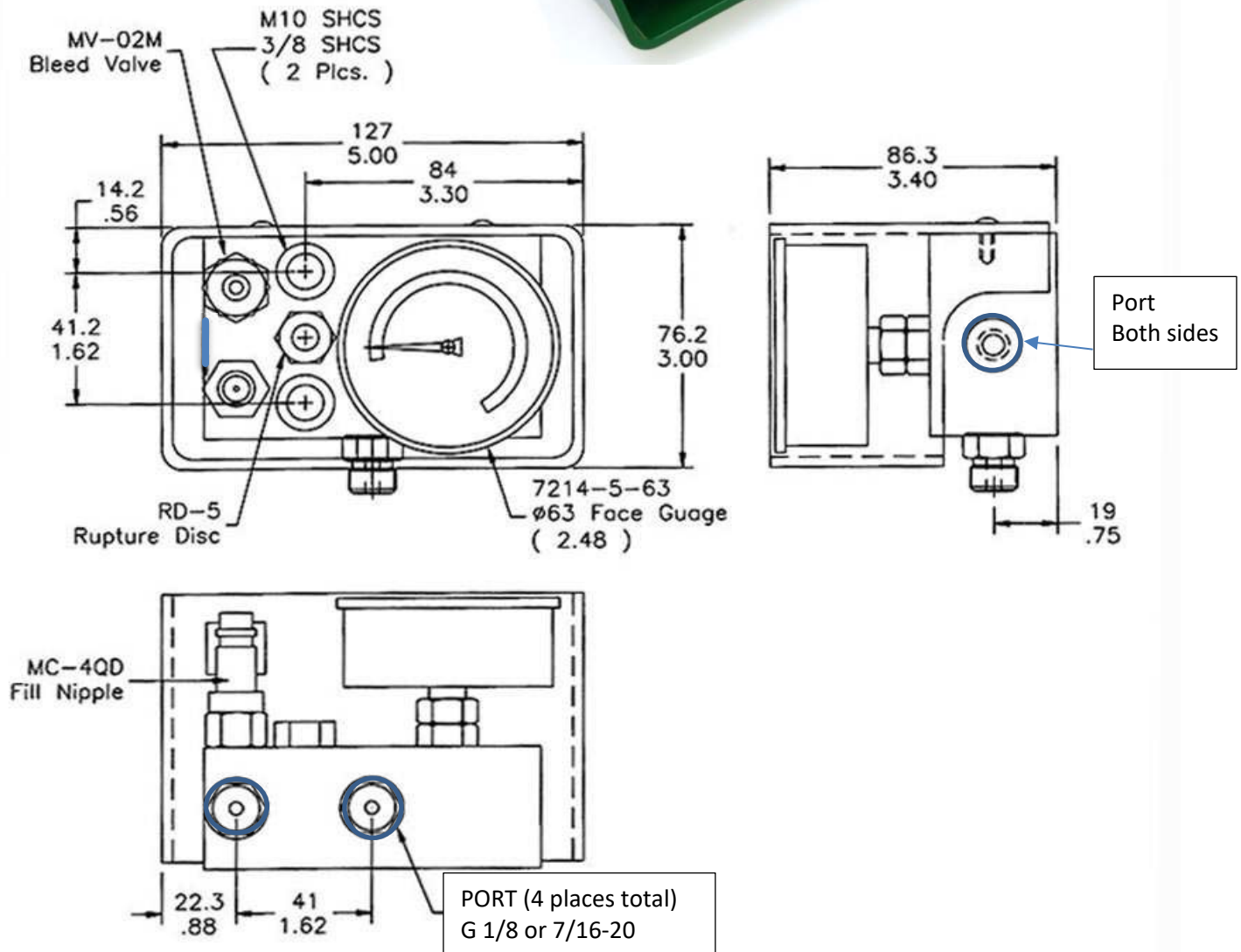
with G 1/8 Ports

Made in the USA



**N-FORCER**

GAS Springs Since 1986





Made in the USA



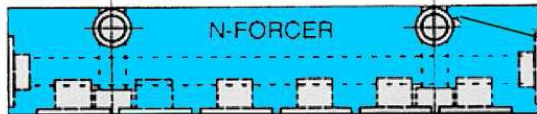
**N-FORCER**

GAS Springs Since 1986

# N-FORCER

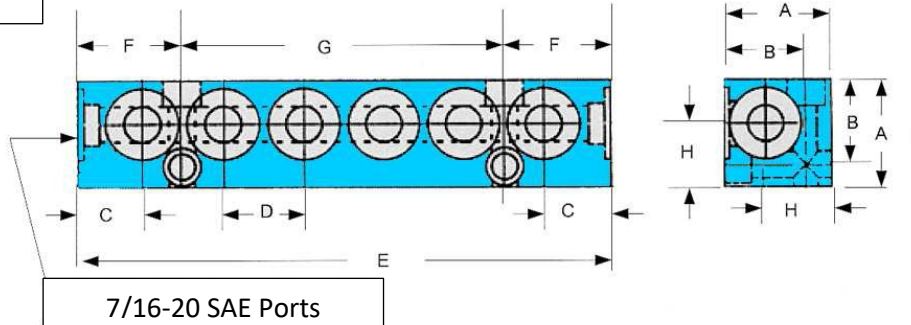
## Six & Twelve Port Distribution Blocks DCB-6-4 and DCB-12-4 (7/16" - 20 SAE Ports) DCB-6 and DCB-12 (1/2" 20 SAE Ports) For G 1/8 BSPP Ports - see next page

Distribution blocks allow cylinders to be hoses to a control block with fewer hose connections. Every hose connection is a potential leak. These blocks eliminate all tee fittings by hoses cylinders directly to the distribution block. There are two ports on the ends of the blocks to hose to a control block and / or a pressure monitor. Order straight fittings for each cylinder to be connected to block and plugs for ports not to be used.

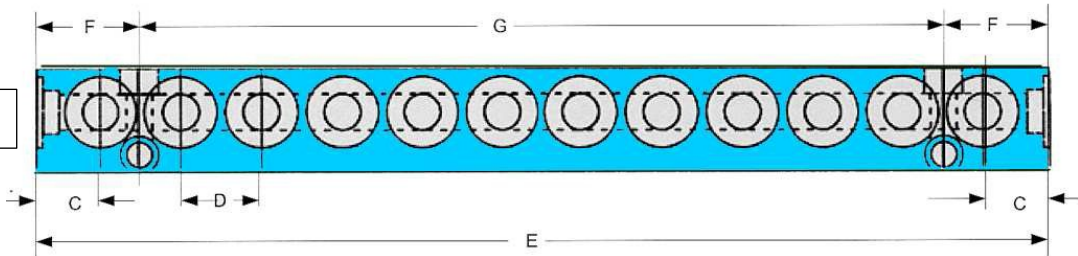


4 Holes drilled and C'bored for 3/8" S.H.C.S Or M10 X 1.5 S.H.C.S.

**DCB-6-4**



**DCB-12-4**



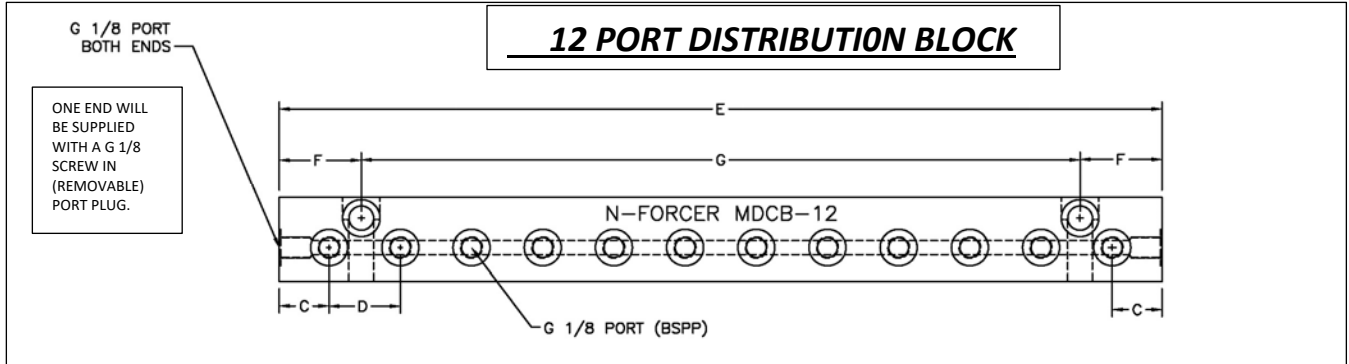
Part No.		A	B	C	D	E	F	G	H
<b>DCB-6</b>	in.	1.50	1.18	.865	1.13	7.38	1.1440	4.50	.90
	mm	38	30	22	29	187	36.5	114	23
<b>DBC-12</b>	in.	1.50	1.18	.850	1.13	14.13	1.440	11.25	.90
	mm	38	30	21.5	29	359	359	286	23



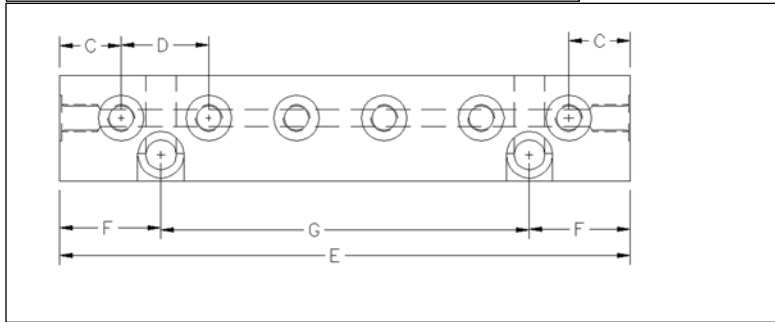
# N-FORCER® Distribution Blocks

## For Hosed Systems with 1/8 BSPP Ports

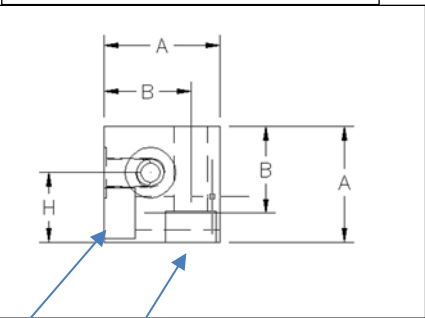
Distribution blocks are used with a control panel for multiple hose options



### 6 PORT DISTRIBUTION BLOCK



### SIDE VIEW ( 6 & 12 PORT )



C'BORE FOR M10 (OR 3/8") SHCS (4) HOLES.

	P/N:	PORT COUNT	UNITS	A	B	C	D	E	F	G	H
GM	M-1630-6	6 PORT	MM	38	29	22	29	187	37	114	25
			IN	1.49	1.14	0.86	1.14	7.36	1.45	4.48	0.98
GM	M-1630-12	12 PORT	MM	38	29	22	29	359	37	286	25
			IN	1.49	1.14	0.86	1.14	14.13	1.45	11.25	0.98
Nforcer Standard	MDCB-6	6 PORT	MM	38	28.6	22.2	31.7	203.2	36.6	130	22.9
			IN	1.49	1.12	0.87	1.24	8	1.44	5.11	0.9
Nforcer Standard	MDCB-12	12 PORT	MM	38	28.6	22.2	31.7	393	36.6	320.5	22.9
			IN	1.49	1.12	0.87	1.24	15.47	1.44	12.61	0.9

MDCB-6 & 12 allow room for 90 degree elbow fittings to be rotated without interference with fitting in the next port.

\*NAAMS N520121 fittings maybe ordered separately to adapter the female G1/8 thread to a male 9/16-18 thread for easy hosing.

Made in the USA

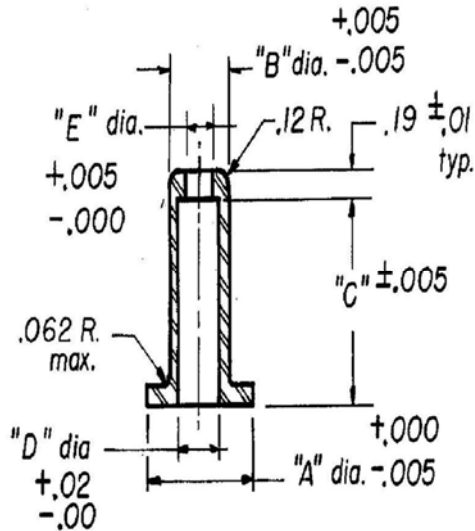
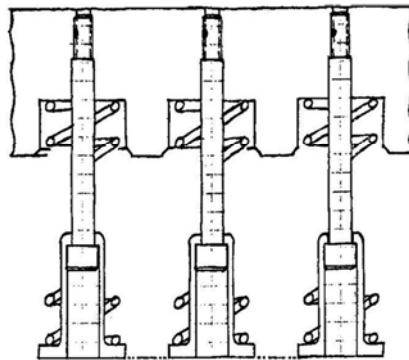


**N-FORCER**

GAS Springs Since 1986

# N-Forcer SPRING RETAINERS

These are CNC machined from bar stock and heavy walled. **Not a thin wall stamping.**



Part No.	A	B	C	D	E	STRIPPER BOLT SIZE	CROSS REF DANLY ITEM #
SR-1	1.25	0.625	1.50	0.442	0.315	5/16	SR125150
SR-2	1.25	0.625	2.00	0.442	0.315	5/16	SR125200
SR-3	1.25	0.625	2.50	0.442	0.315	5/16	SR125250
SR-4	1.50	0.75	1.50	0.566	0.378	3/8	SR150150
SR-5	1.50	0.75	2.00	0.566	0.378	3/8	SR150200
SR-6	1.50	0.75	2.50	0.566	0.378	3/8	SR150250
SR-7	2.00	1.00	1.5	0.754	0.503	1/2	SR200150
SR-8	2.00	1.00	2.00	0.754	0.503	1/2	SR200200
SR-9	2.00	1.00	2.50	0.754	0.503	1/2	SR200250

DIRECT READING **FORCE GAUGES**

6.25" or 12.5" lengths.

Available with either 12.5" hydraulic hose for hard to get to locations, or the compact model with solid fittings.

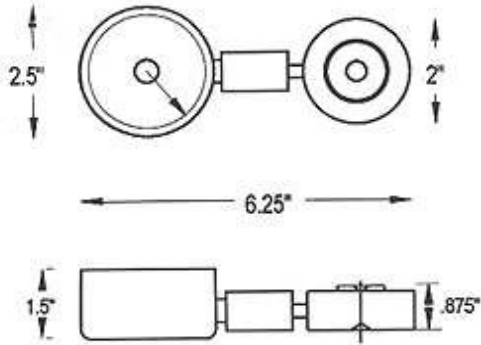
Available in 500# to 10,000# capacity glycerin filled gauges. All have resettable maximum indicator needle. The direct reading feature is helpful in setting up rocker arm welders with various pivot movements.



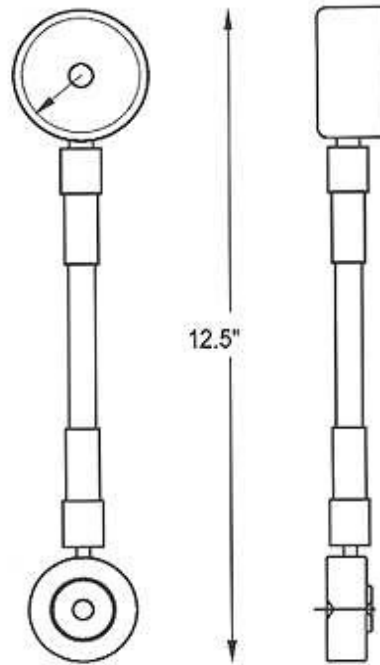
**FOR USE IN READING PRESSURE IN NITROGEN SPRINGS. COMES WITH UNDER CUT IN CENTER ON BOTH SIDES. CAN ALSO BE USED FOR CHECKING SPOT WELDER CLAMPING PRESSURE.**

# FORCE GAGE SPECIFICATIONS

Solid Fitting Design (SP5-SP100)



Hydr. Hose Design (HP5-HP100)



Components are machined of non-magnetic stainless and brass. The chamfered détente assists in alignment of tips to the center of the puck.

Solid Fittings	Maximum Gauge Reading	Hydraulic Hose
SP5	500#	HP5
SP10	1000	HP10
SP15	1500	HP15
SP20	2000	HP20
SP30	3000	HP30
SP50	5000	HP50
SP60	6000	HP60
SP75	7500	HP75
SP100	10000	HP100

# Force Tester

Made in the USA



**N-FORCER**

*GAS Springs Since 1986*



THE QUICK, ACCURATE\*, EASY WAY TO CHECK  
THE CONDITION OF YOUR  
SMALL Jr. SERIES NITROGEN DIE SPRINGS.

Diameter 3/4"(19mm) to 1-1/2" (38.1mm )

Length 0-15" (380mm) 0-600 psi.

Please be safety conscious when working with nitrogen cylinders. Carefully align charged cylinder when placing in tester.

Can be mounted on table or vertically.

\*Accurate to plus or minus 2% in midrange.

Made in the USA

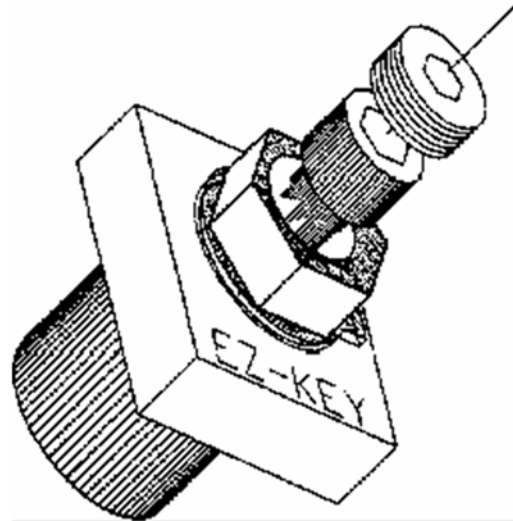
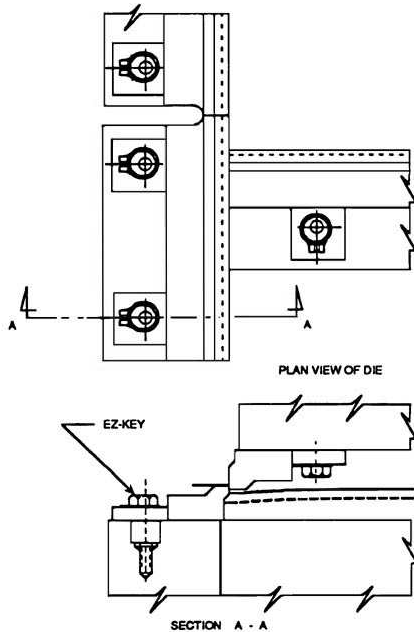


**N-FORCER**

*GAS Springs Since 1986*

# EZ - KEY

## ADJUSTABLE KEY FOR TOOLS - DIE - FIXTURES



**How it works** - EZ-Key operates on an eccentric cam with a floating pressure plate. Rotation of the hex nut (attached to the cam) shifts the pressure plate providing the necessary key force. The C/L of the bore in the pressure plate is located so that it is variable in relation to each face. This allows for a wide range of adjustment.

## ADVANTAGES

EZ-Key is adjustable and designed for easy installation on sections or details needing secure locking forces.

EZ-Key provides adjustability when maintaining or resharpening trim steels or details subject to wear.

EZ-Key eliminates the need for traditional milling of keyway slots and provides instant adjustability once installed.

No more shimming required.

Saves time and costs during maintenance, adjustments, and initial setup.

Safety lock screw securely locks EZ-Key in position.

# EZ - KEY

Continued...

## Use Example:

Locate Ez-Keys 4-5 inches apart.  
Minimum of 2 keys per detail.

The pressure plate of Ez-Key increases by .06 inches on each side.

Rotate the hex screw counterclockwise to adjust face of key to detail. Hold hex in position with wrench while tightening socket head cap screw. After the socket head cap screw is tight, insert lock screw and tighten. Note: Do not over torque the hex nut when adjust the key face.

