

# DAPCO®

Full and Compact Height Nitrogen Gas Springs

90.10 / 90.8 Series

*New Combined Catalog!*



90.10 Series  
Full Height /  
Matches ISO Standards

90.8 Series  
Compact Height  
Alternative

# DADCO®

The global leader in nitrogen gas spring technology

### Introduction

DADCO produces top quality products at competitive prices and provides a superior level of customer service. Founded in 1958, DADCO is the highest volume producer of gas springs for press tools. DADCO's products are widely approved and used in global operations for many industries including metal stamping, automotive and plastic injection molding.



### 90.10 and 90.8 Series

DADCO's full height 90.10 Series matches the ISO Standard specifications and offers the widest choice of sizes, stroke lengths and accessories available. All international automotive standard mounts (welded and attachable) are offered, as well as legacy mounts for replacement of older springs, see pages 4-18.

Using technology from the popular 90.9 Series, DADCO's compact 90.8 Series is 25 mm – 50 mm (0.98" – 1.97") shorter than ISO Standard Nitrogen Gas Springs. It is available in several models with stroke lengths up to 250 mm.

Model	Diameter	Maximum Force on Contact
90.10.00500	44.5 mm (1.750")	5 kN (1059 lb.)
90.10 / 90.8.00750	50 mm (1.968")	7.5 kN (1655 lb.)
90.10 / 90.8.01500	75 mm (2.953")	15 kN (3432 lb.)
90.10 / 90.8.03000	95 mm (3.740")	30 kN (6619 lb.)
90.10 / 90.8.05000	120 mm (4.724")	50 kN (11187 lb.)
90.10 / 90.8.07500	150 mm (5.906")	75 kN (16946 lb.)
90.10.10000	195 mm (7.677")	100 kN (23896 lb.)

### High Quality Construction

DADCO's 90.10 and 90.8 Series Gas Springs feature: a one-piece body (base-to-tube welding process verified ultrasonically); impact fatigue-resistant alloy steel super finished piston rod; rod cartridge with a proprietary double-lip rod seal; low friction rod bearings; a glass-filled, nylon guide ring on the piston retainer and special high temperature synthetic lubricant. The result of this combination is a superior design that ensures low friction, sealability and excellent wear characteristics essential for optimum gas spring life.

### Customer Satisfaction

DADCO's motto is "Whatever It Takes To Satisfy Our Customers." DADCO will assist in any way possible to ensure that customers are completely satisfied. DADCO's salespeople and distributors are solution-oriented, product-knowledgeable and eager to assist customers. DADCO's engineers are available to help customers with specific applications.

### Numerous Piping Options

With DADCO's 90.10 and 90.8 Series, piping gas springs is easy because every necessary tool or component is readily available. For more information, refer to DADCO's Nitrogen Gas Spring Linked System Components Catalog. Training and technical assistance are also offered by DADCO.

### SMS®

For those instances when a customer prefers to have DADCO provide a finished system, several options are available. A popular option, DADCO's Sectional Mounting System (SMS®) includes cylinders mounted to a SMS® plate and linked using hose, fittings and a control panel. Shipped ready to install, customers find the SMS® to be a trouble free, cost-effective option. For additional information, refer to bulletin B09114.

### SMS-i®

Another option is the Sectional Mounting System-Internal (SMS-i®). The SMS-i® consists of an internally piped plate with mounted cylinders. DADCO recommends using the SMS-i® as a cost-effective alternative to traditional manifold systems. For more information, request bulletin B07104A.

### Guaranteed Long Life

In factory testing and field experience, the service life of DADCO's 90.10 and 90.8 Series Gas Springs consistently exceeds one million strokes. This is supported by DADCO's written One Year/One Million Stroke *Gold Guarantee*. Contact DADCO for more information.

### Warranty

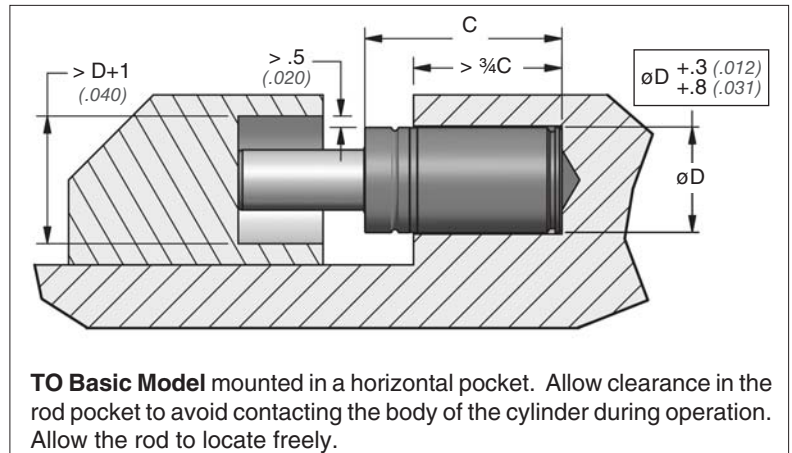
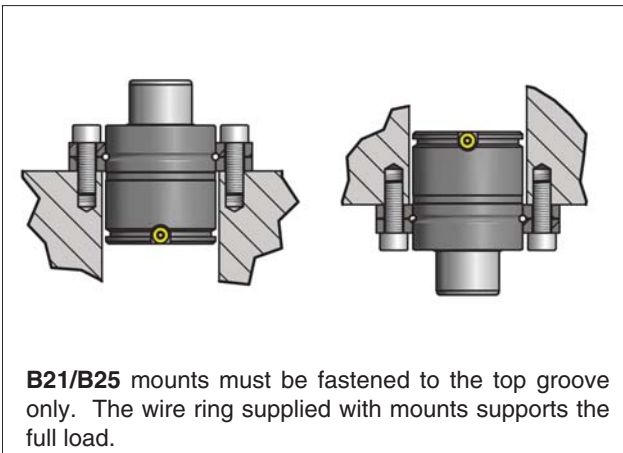
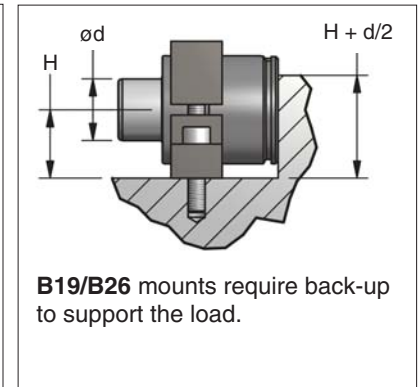
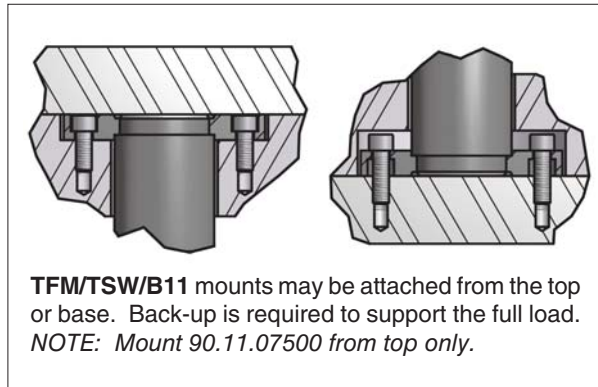
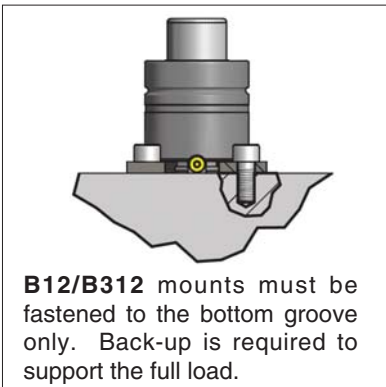
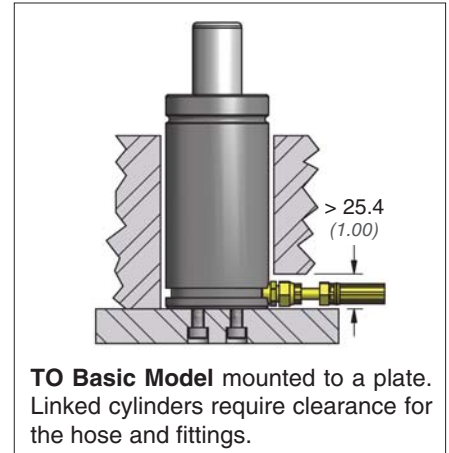
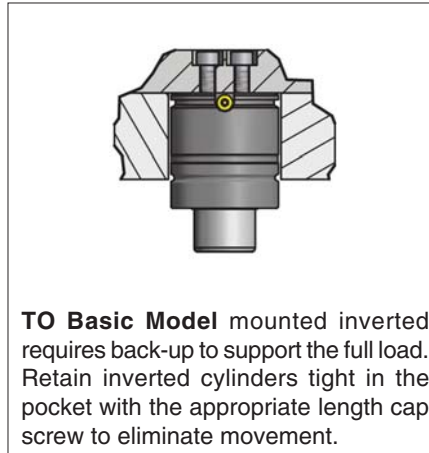
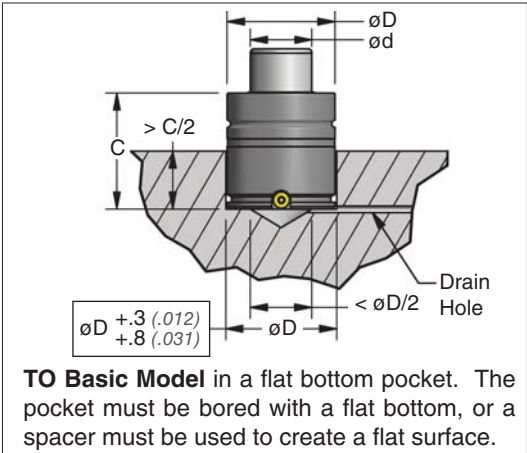
DADCO warrants its products to be free from defects in workmanship or materials for a period of one year from date of manufacture.

### CAD Templates

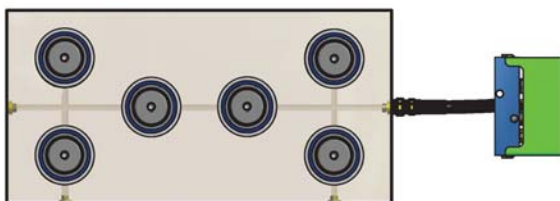
DADCO's entire product line is available on-line in solid models and 2D CAD formats. For more information, visit our website, [www.dadco.net](http://www.dadco.net), or contact DADCO.

## Application Examples

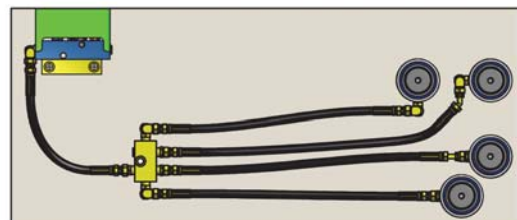
DADCO offers a variety of mount options to meet specific customer applications. Installation and fastening of the gas springs should take into consideration load support, fastener selection and torque values. For additional information on installation requirements see page 23. Cylinder and mount dimensions are shown on pages 4-18.



**SMS® / SMS-i®** DADCO offers customized Sectional Mounting Systems (SMS® and SMS-i®) which are fabricated to customer specifications, pressure tested and shipped ready to install.



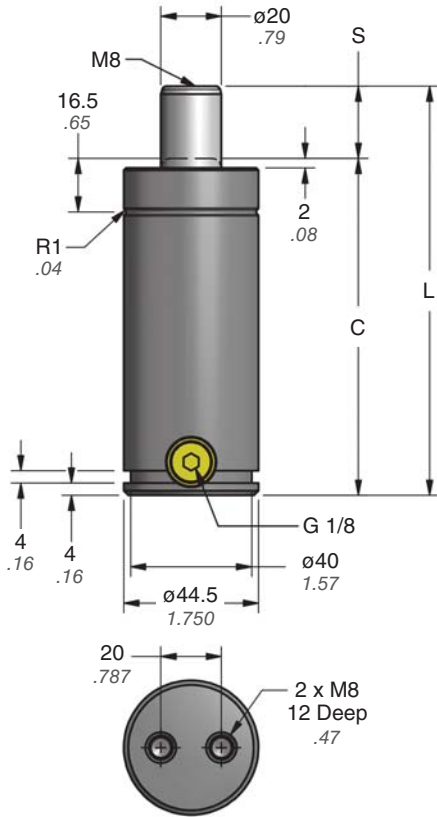
DADCO SMS-i® with (6) 90.10.05000 gas springs plumbed internally and connected to a control panel.



DADCO SMS® with (4) 90.10.03000 gas springs linked using 90.400 (Y-400) hose, fittings and a control panel.

# 90.10 and 90.8 Series Nitrogen Gas Springs

## 5 kN / 0.5 ton



**TO – Basic Model**

Model Not Available in 90.8 Series

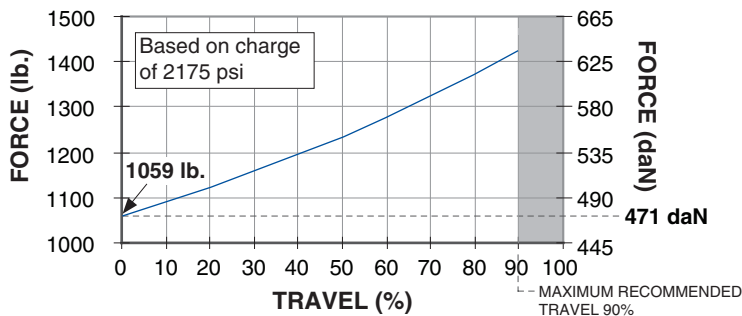
90.10.00500			
Part No.	S mm inch	C	L ±0.25 ±.010
90.10.00500.013	12.5 0.49	97.5 3.84	110 4.331
• 90.10.00500.025	25 0.98	110 4.33	135 5.315
90.10.00500.038	37.5 1.48	122.5 4.82	160 6.299
• 90.10.00500.050	50 1.97	135 5.31	185 7.283
90.10.00500.063	62.5 2.46	147.5 5.81	210 8.268
• 90.10.00500.080	80 3.15	165 6.50	245 9.646
90.10.00500.100	100 3.94	185 7.28	285 11.220
90.10.00500.125	125 4.92	210 8.27	335 13.189
90.10.00500.160	160 6.30	245 9.65	405 15.945

• ISO standard stroke lengths

### Force Charts

#### On-Contact Force

psi	lb.
2175	1059
2000	974
1750	852
1500	730
1000	487
500	243
250	122



#### On-Contact Force

bar	daN
150	471
125	393
100	314
75	236
50	157
25	79
20	63

### Ordering Example:

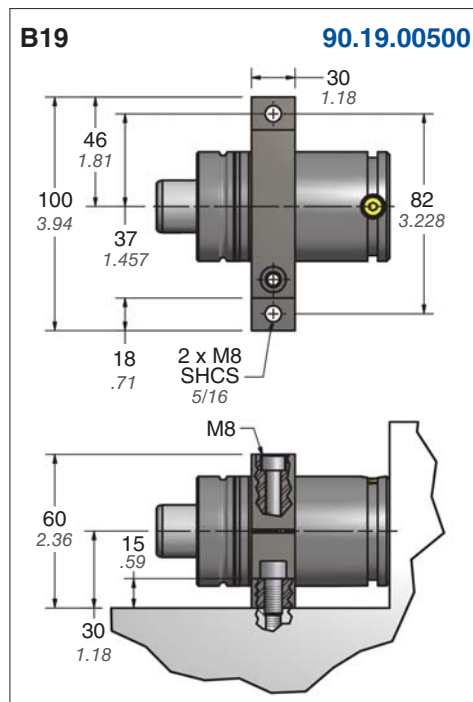
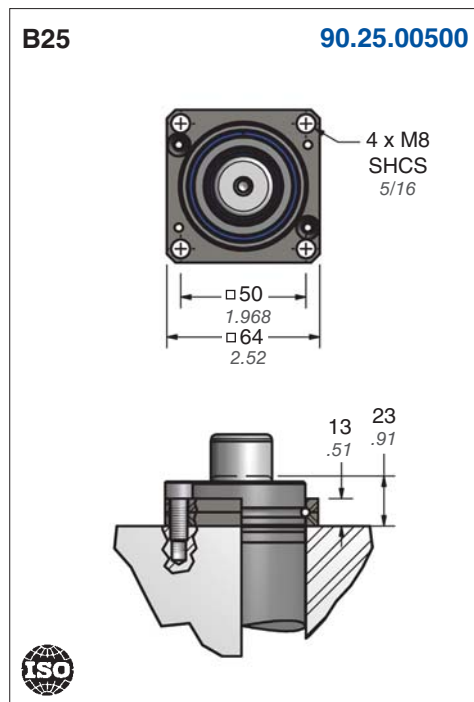
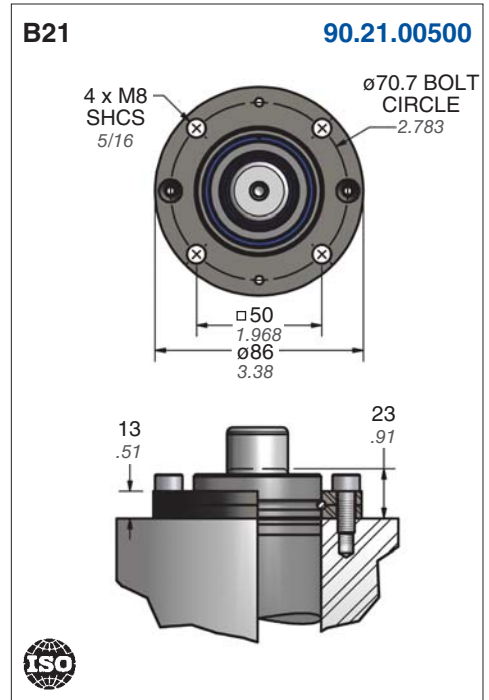
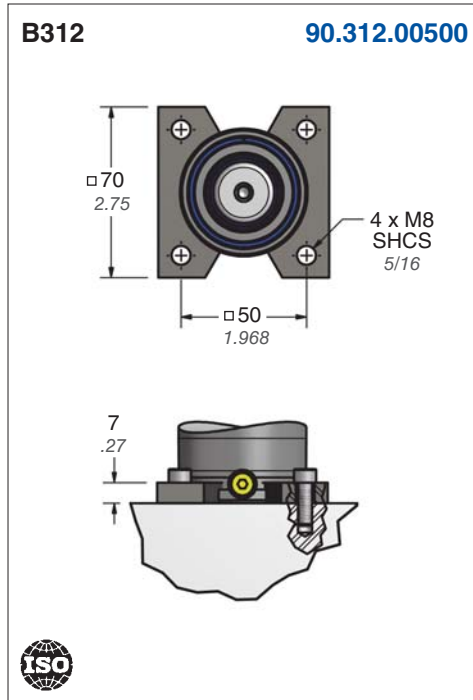
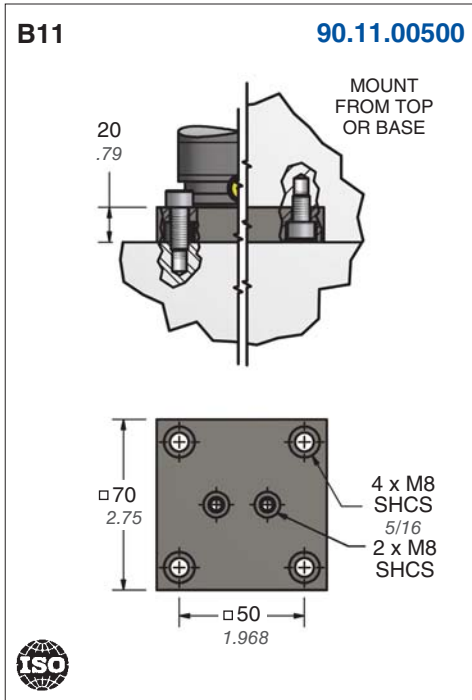
**90.10.00500.025. TO. C. 150**

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar (220-2175 psi). When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

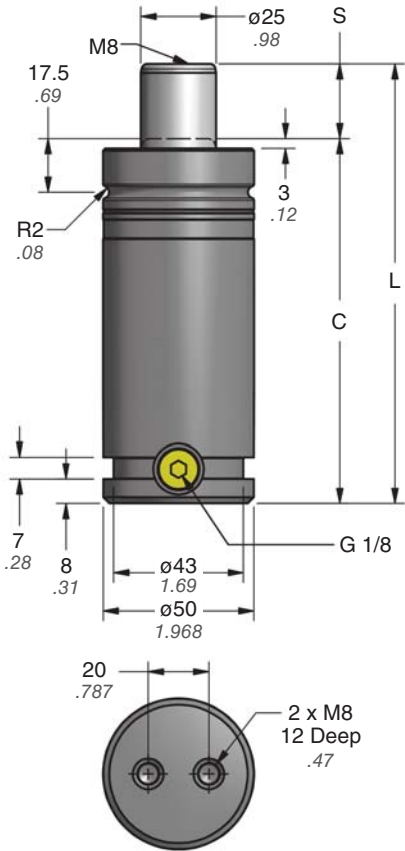


Ordering Example: Cylinder with Mount: 90.10.00500.025.B21.C.150 Mount Only: 90.21.00500

# 90.10 and 90.8 Series Nitrogen Gas Springs

## 7.5 kN / 0.75 ton

*25 mm shorter!*



**TO – Basic Model**

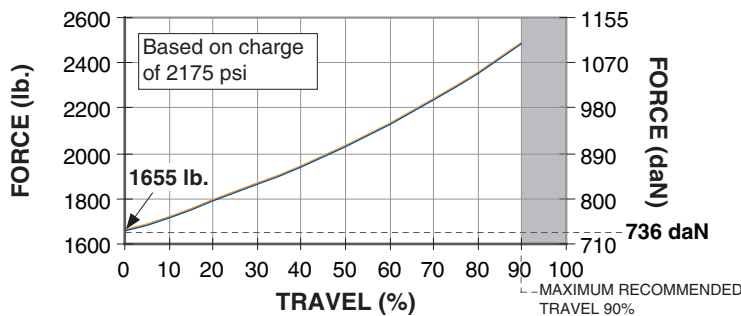
Part No.	S mm inch	90.10.00750		90.8.00750	
		C	L ±0.25 ±.010	C	L ±0.25 ±.010
90.__.00750.013	12.5 0.49	107.5 4.23	120 4.724	82.5 3.25	95 3.740
• 90.__.00750.025	25 0.98	120 4.72	145 5.709	95 3.74	120 4.724
90.__.00750.038	37.5 1.48	132.5 5.22	170 6.693	107.5 4.23	145 5.709
• 90.__.00750.050	50 1.97	145 5.71	195 7.677	120 4.72	170 6.693
90.__.00750.063	62.5 2.46	157.5 6.20	220 8.661	132.5 5.22	195 7.677
90.__.00750.075	75 2.95	170 6.69	245 9.646	145 5.71	220 8.661
• 90.__.00750.080	80 3.15	175 6.89	255 10.039	150 5.91	230 9.055
90.__.00750.088	87.5 3.44	182.5 7.19	270 10.630	157.5 6.20	245 9.646
• 90.__.00750.100	100 3.94	195 7.68	295 11.614	170 6.69	270 10.630
90.__.00750.113	112.5 4.43	207.5 8.17	320 12.598	182.5 7.19	295 11.614
• 90.__.00750.125	125 4.92	220 8.66	345 13.583	195 7.68	320 12.598
90.__.00750.138	137.5 5.41	232.5 9.15	370 14.567	207.5 8.17	345 13.583
90.__.00750.150	150 5.91	245 9.65	395 15.551	220 8.66	370 14.567
• 90.__.00750.160	160 6.30	255 10.04	415 16.339	230 9.06	390 15.354
90.__.00750.175	175 6.89	270 10.63	445 17.520	245 9.65	420 16.535
90.__.00750.200	200 7.87	295 11.61	495 19.488	270 10.63	470 18.504
90.__.00750.225	225 8.86	320 12.60	545 21.457	295 11.61	520 20.472
90.__.00750.250	250 9.84	345 13.58	595 23.425	320 12.60	570 22.441
90.__.00750.275	275 10.83	370 14.57	645 25.394	N/A	N/A
90.__.00750.300	300 11.81	395 15.55	695 27.362	N/A	N/A

• ISO standard stroke lengths (90.10.00750 only)

### Force Charts

#### On-Contact Force

psi	lb.
2175	1655
2000	1522
1750	1331
1500	1141
1000	761
500	380
250	190



#### On-Contact Force

bar	daN
150	736
125	614
100	491
75	368
50	245
25	123
20	98

### Ordering Example:

**90.10.00750.025. TO. C. 150**

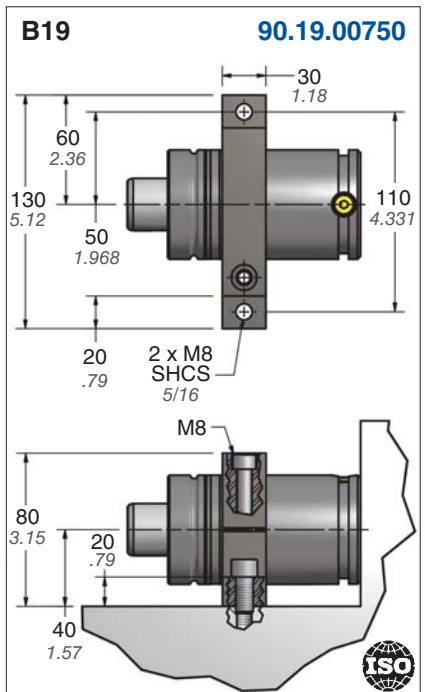
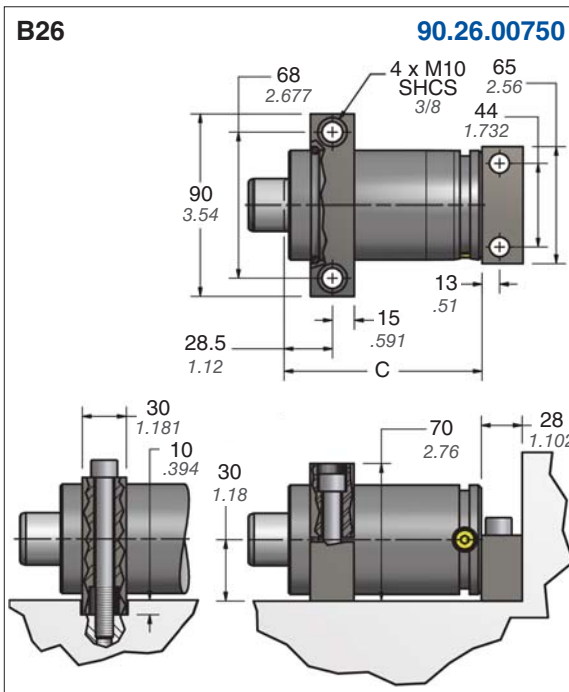
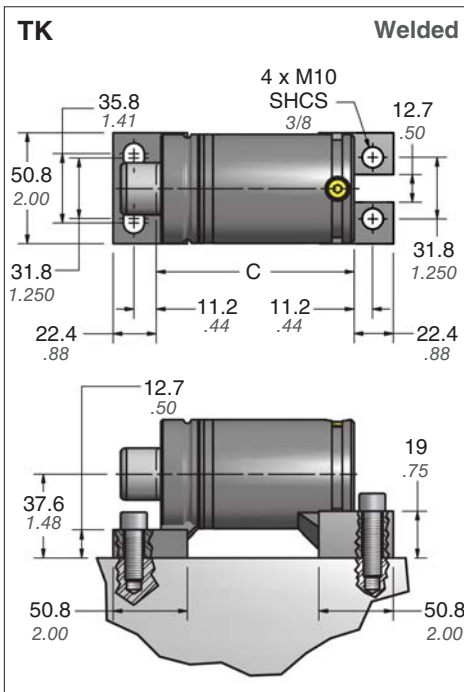
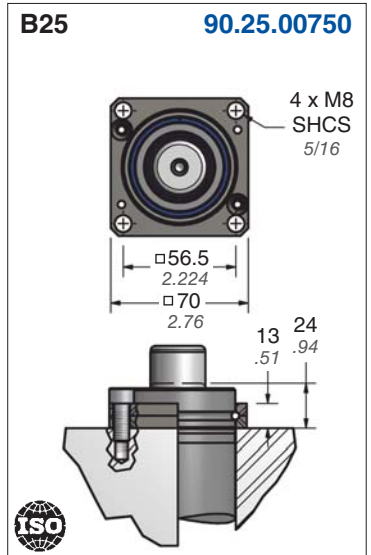
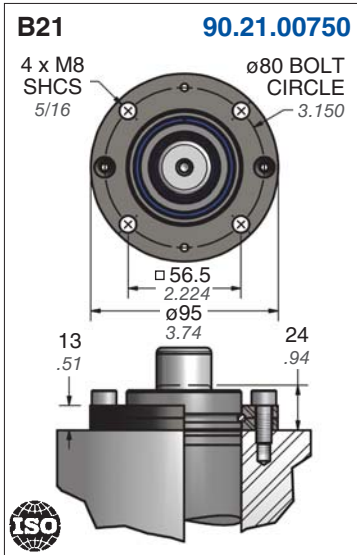
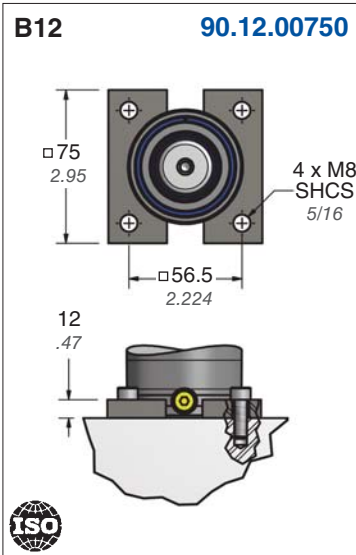
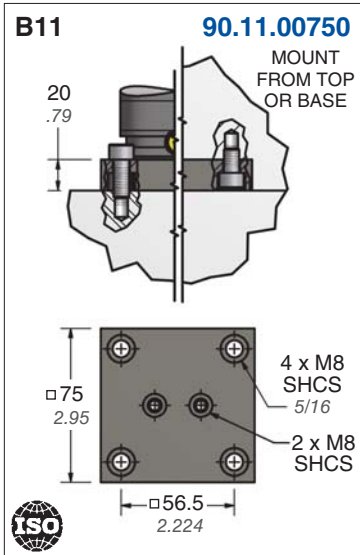
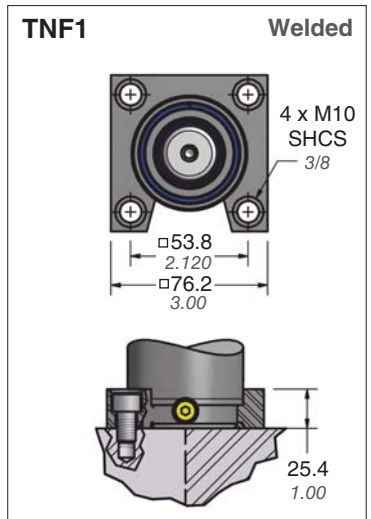
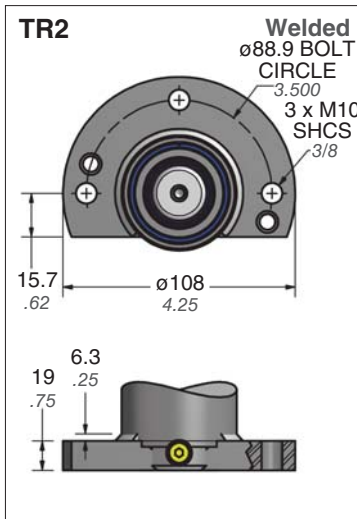
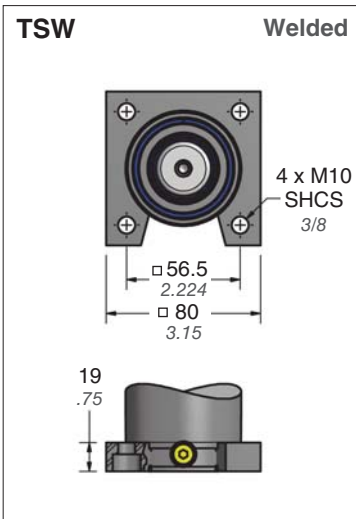
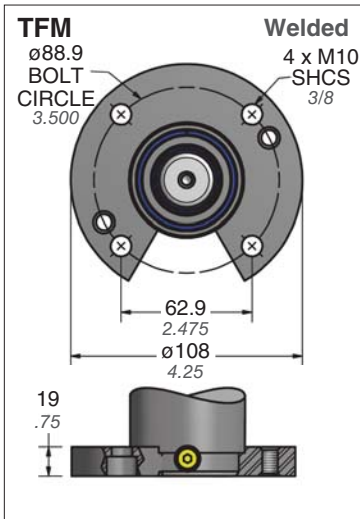
**Part Number:** Includes Series (90.10 or 90.8), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar (220-2175 psi). When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

7.5 kN / 0.75 ton

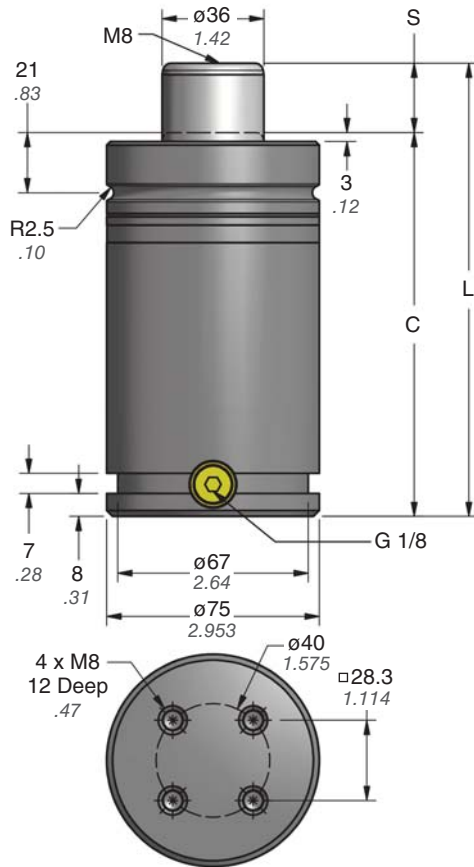


Ordering Example: Cylinder with Mount: 90.10.00750.025.B21.C.150 Mount Only: 90.21.00750

# 90.10 and 90.8 Series Nitrogen Gas Springs

## 15 kN / 1.5 ton

25 mm shorter!



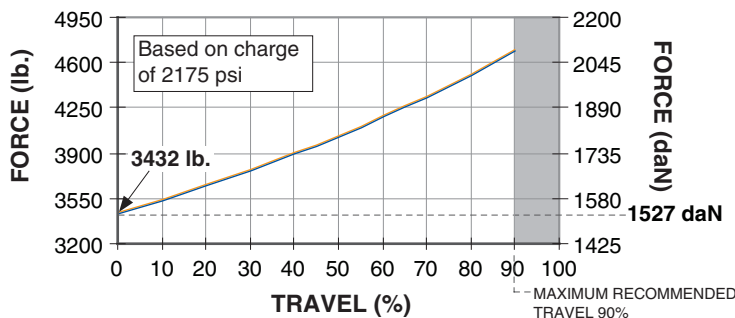
TO – Basic Model

Part No.	S mm inch	90.10.01500		90.8.01500	
		C	L ±0.25 ±.010	C	L ±0.25 ±.010
90.__.01500.013	12.5 0.49	122.5 4.82	135 5.315	97.5 3.84	110 4.331
• 90.__.01500.025	25 0.98	135 5.31	160 6.299	110 4.33	135 5.315
90.__.01500.038	37.5 1.48	147.5 5.81	185 7.283	122.5 4.82	160 6.299
• 90.__.01500.050	50 1.97	160 6.30	210 8.268	135 5.32	185 7.283
90.__.01500.063	62.5 2.46	172.5 6.79	235 9.252	147.5 5.81	210 8.268
90.__.01500.075	75 2.95	185 7.28	260 10.236	160 6.30	235 9.252
• 90.__.01500.080	80 3.15	190 7.48	270 10.630	165 6.50	245 9.646
90.__.01500.088	87.5 3.44	197.5 7.78	285 11.220	172.5 6.79	260 10.236
• 90.__.01500.100	100 3.94	210 8.27	310 12.205	185 7.28	285 11.220
90.__.01500.113	112.5 4.43	222.5 8.76	335 13.189	197.5 7.78	310 12.205
• 90.__.01500.125	125 4.92	235 9.25	360 14.173	210 8.27	335 13.189
90.__.01500.138	137.5 5.41	247.5 9.74	385 15.157	222.5 8.76	360 14.173
90.__.01500.150	150 5.91	260 10.24	410 16.142	235 9.25	385 15.157
• 90.__.01500.160	160 6.30	270 10.63	430 16.929	245 9.65	405 15.945
90.__.01500.175	175 6.89	285 11.22	460 18.110	260 10.24	435 17.126
90.__.01500.200	200 7.87	310 12.20	510 20.079	285 11.22	485 19.094
90.__.01500.225	225 8.86	335 13.19	560 22.047	310 12.21	535 21.063
90.__.01500.250	250 9.84	360 14.17	610 24.016	335 13.19	585 23.031
90.__.01500.275	275 10.83	385 15.16	660 25.984	N/A	N/A
90.__.01500.300	300 11.81	410 16.14	710 27.953	N/A	N/A

• ISO standard stroke lengths (90.10.01500 only)

### Force Charts

psi	lb.
2175	3432
2000	3155
1750	2761
1500	2367
1000	1578
500	789
250	394



bar	daN
150	1527
125	1272
100	1018
75	763
50	509
25	254
20	204

### Ordering Example:

**90.10.01500.025. TO. C. 150**

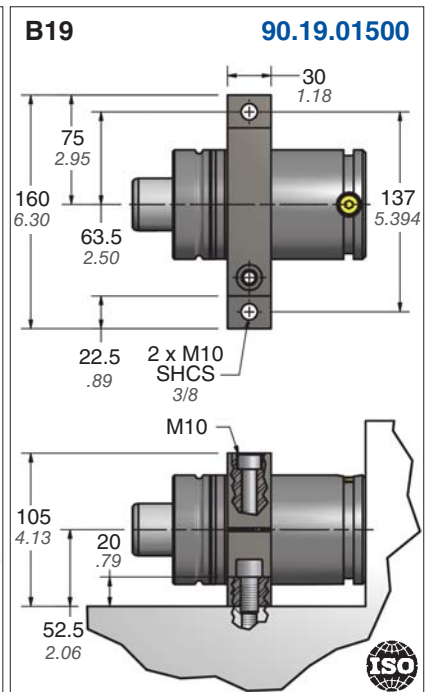
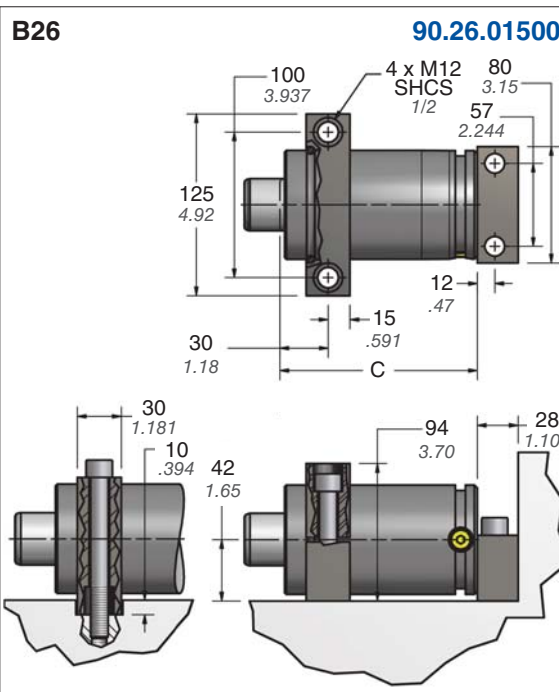
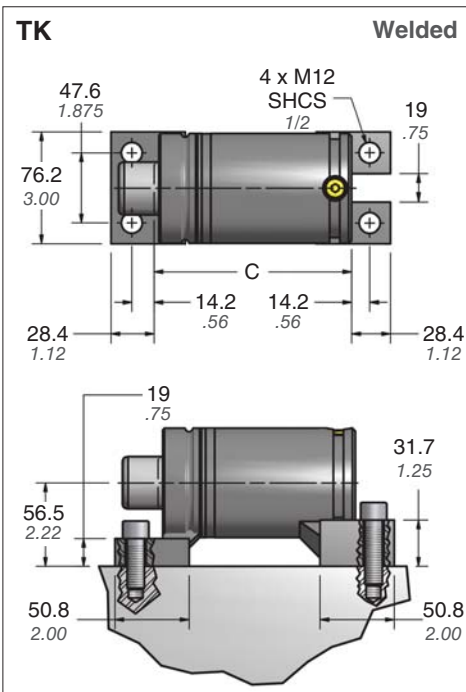
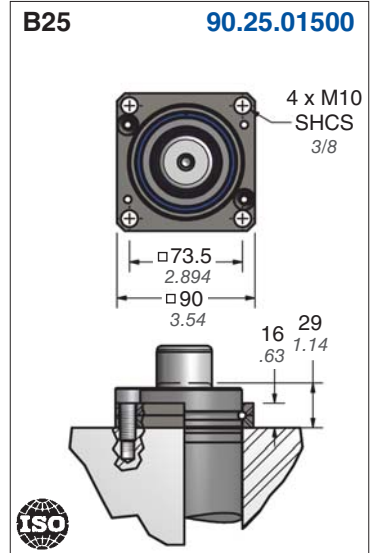
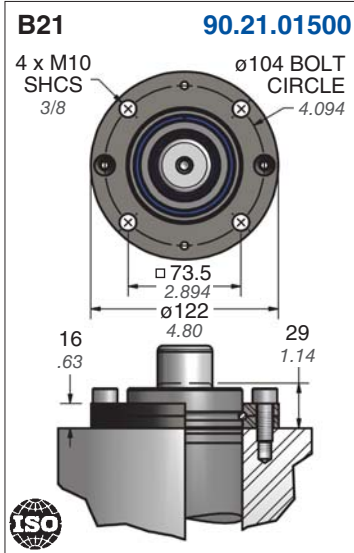
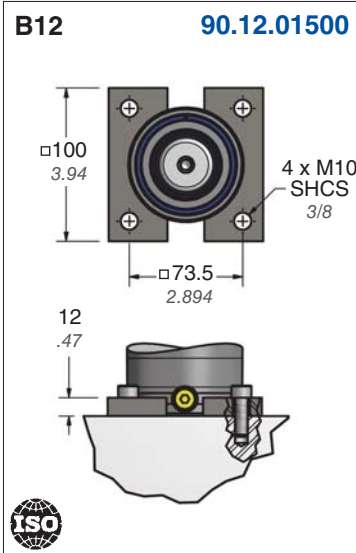
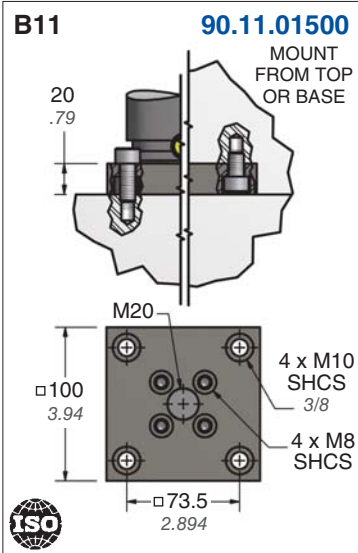
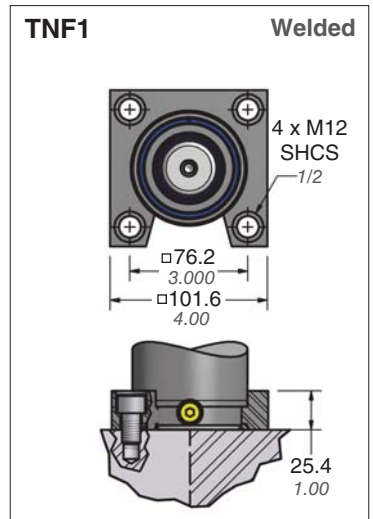
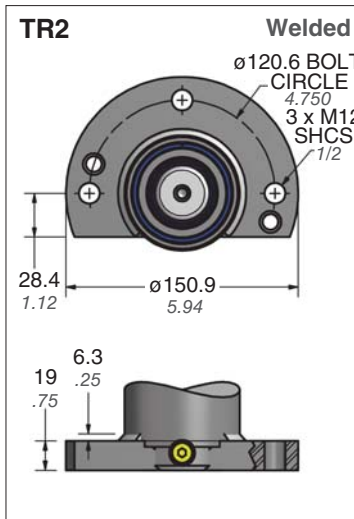
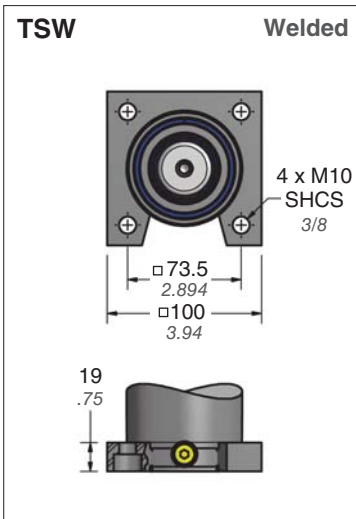
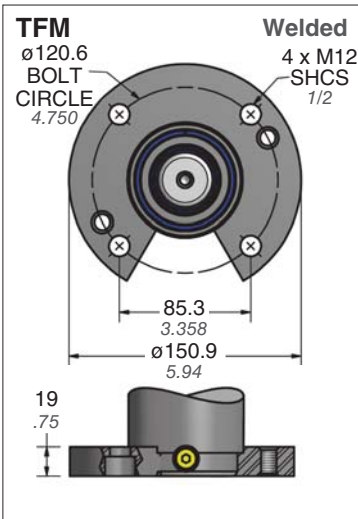
**Part Number:** Includes Series (90.10 or 90.8), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar (220-2175 psi). When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

15 kN / 1.5 ton

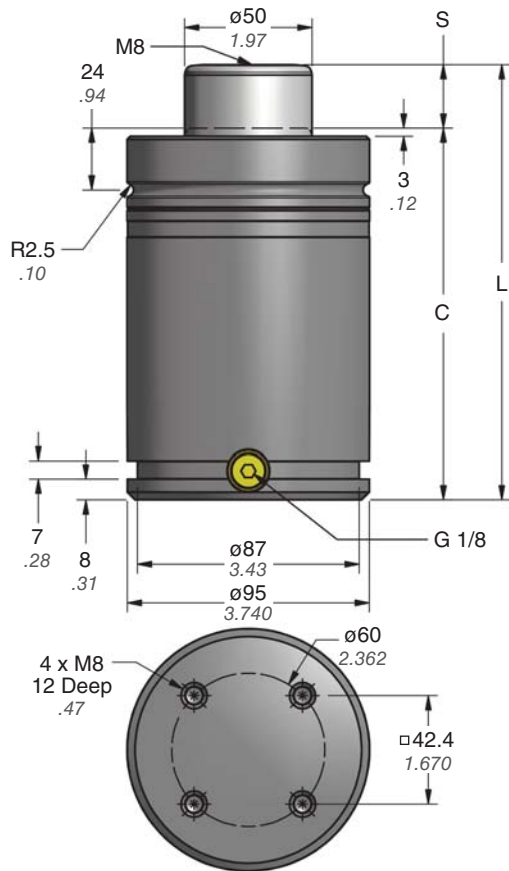


Ordering Example: Cylinder with Mount: 90.10.01500.025.B21.C.150 Mount Only: 90.21.01500

# 90.10 and 90.8 Series Nitrogen Gas Springs

## 30 kN / 3 ton

*25 mm shorter!*



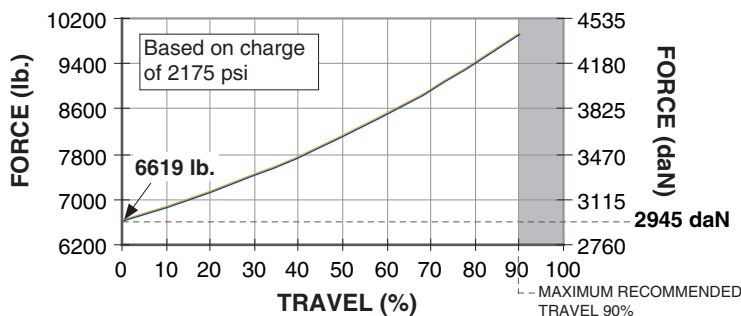
**TO – Basic Model**

Part No.	S mm inch	90.10.03000		90.8.03000	
		C	L ±0.25 ±.010	C	L ±0.25 ±.010
90.__.03000.013	12.5 0.49	132.5 5.22	145 5.709	107.5 4.23	120 4.724
• 90.__.03000.025	25 0.98	145 5.71	170 6.693	120 4.72	145 5.709
90.__.03000.038	37.5 1.48	157.5 6.20	195 7.677	132.5 5.22	170 6.693
• 90.__.03000.050	50 1.97	170 6.69	220 8.661	145 5.71	195 7.677
90.__.03000.063	62.5 2.46	182.5 7.19	245 9.646	157.5 6.20	220 8.661
90.__.03000.075	75 2.95	195 7.68	270 10.630	170 6.69	245 9.646
• 90.__.03000.080	80 3.15	200 7.87	280 11.024	175 6.89	255 10.039
90.__.03000.088	87.5 3.44	207.5 8.17	295 11.614	182.5 7.19	270 10.630
• 90.__.03000.100	100 3.94	220 8.66	320 12.598	195 7.68	295 11.614
90.__.03000.113	112.5 4.43	232.5 9.15	345 13.583	207.5 8.17	320 12.598
• 90.__.03000.125	125 4.92	245 9.65	370 14.567	220 8.66	345 13.583
90.__.03000.138	137.5 5.41	257.5 10.14	395 15.551	232.5 9.15	370 14.567
90.__.03000.150	150 5.91	270 10.63	420 16.535	245 9.65	395 15.551
• 90.__.03000.160	160 6.30	280 11.02	440 17.323	255 10.04	415 16.339
90.__.03000.175	175 6.89	295 11.61	470 18.504	270 10.63	445 17.520
90.__.03000.200	200 7.87	320 12.60	520 20.472	295 11.61	495 19.488
90.__.03000.225	225 8.86	345 13.58	570 22.441	320 12.60	545 21.457
90.__.03000.250	250 9.84	370 14.57	620 24.409	345 13.58	595 23.425
90.__.03000.275	275 10.83	395 15.55	670 26.378	N/A	N/A
90.__.03000.300	300 11.81	420 16.54	720 28.346	N/A	N/A

• ISO standard stroke lengths (90.10.03000 only)

### Force Charts

psi	lb.
2175	6619
2000	6087
1750	5326
1500	4565
1000	3043
500	1522
250	761



bar	daN
150	2945
125	2454
100	1963
75	1473
50	982
25	491
20	393

### Ordering Example:

**90.10.03000.025. TO. C. 150**

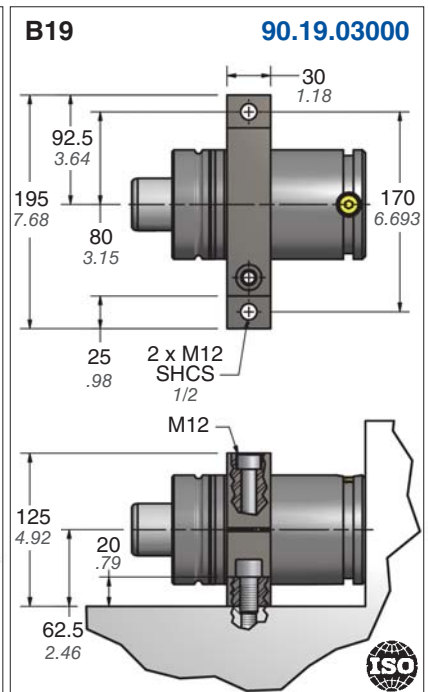
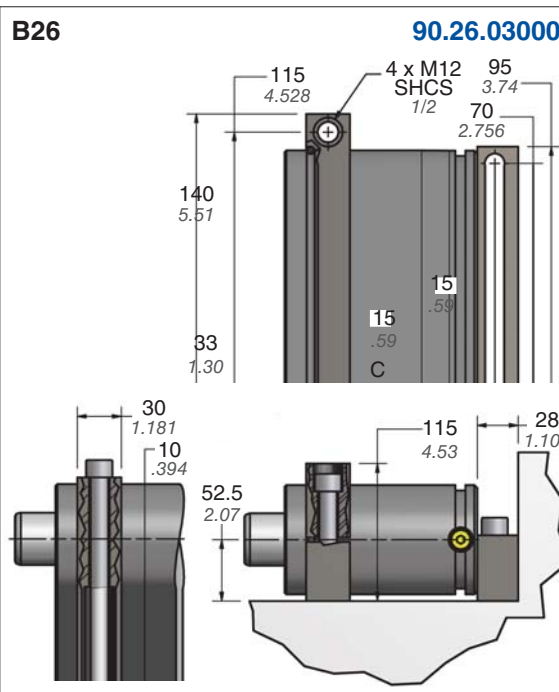
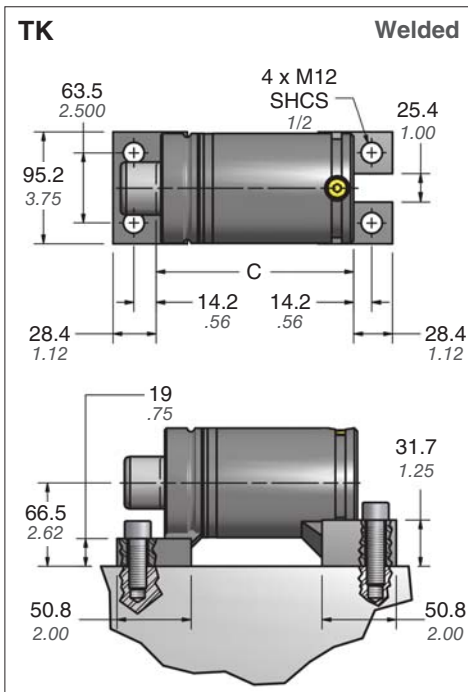
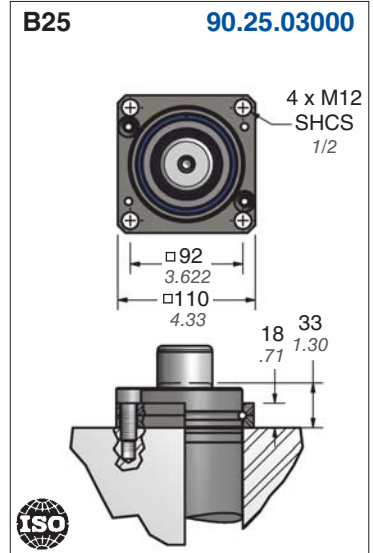
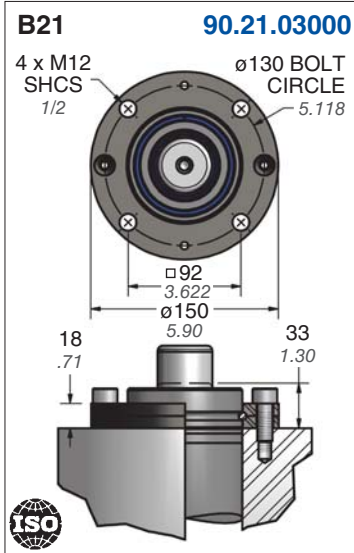
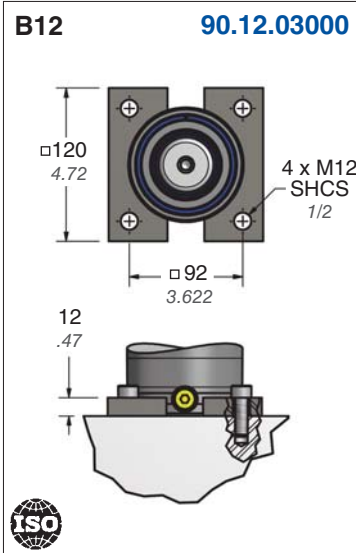
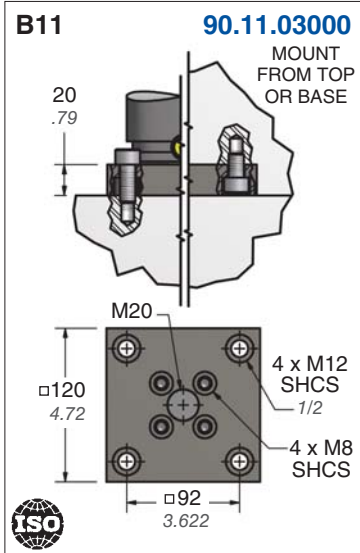
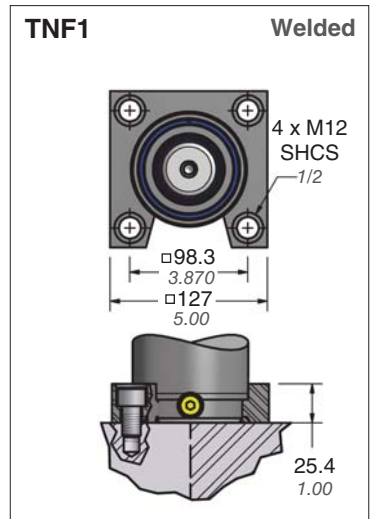
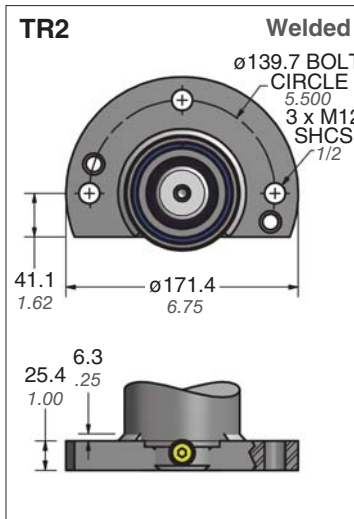
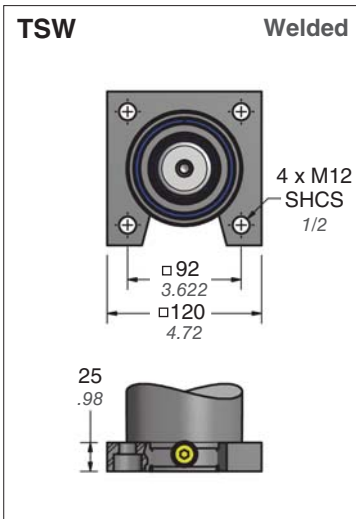
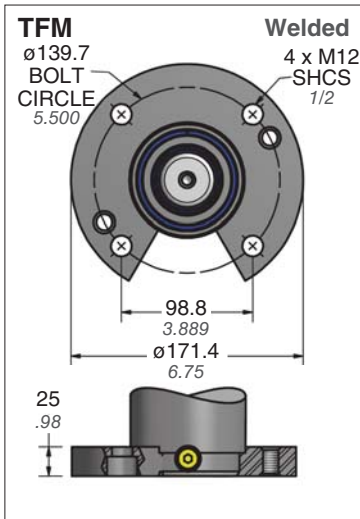
**Part Number:** Includes Series (90.10 or 90.8), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar (220-2175 psi). When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

30 kN / 3 ton

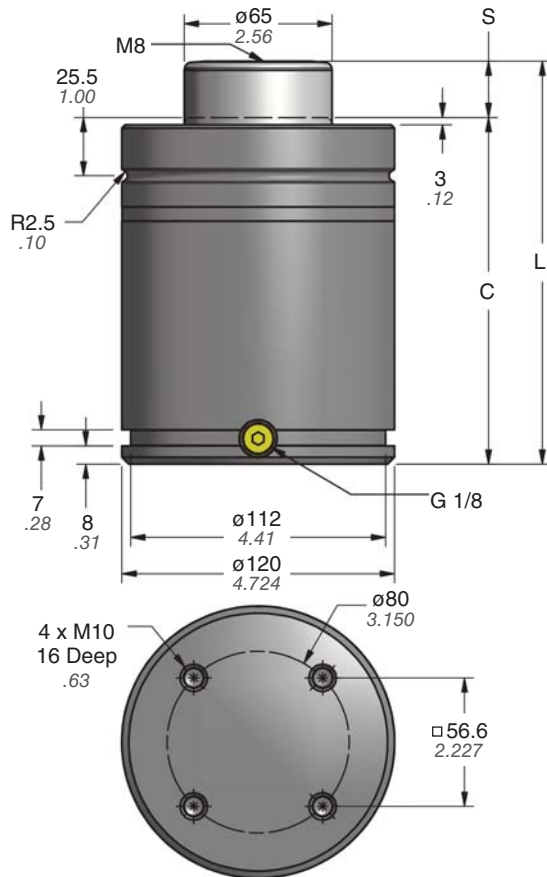


Ordering Example: Cylinder with Mount: 90.10.03000.025.B21.C.150 Mount Only: 90.21.03000

# 90.10 and 90.8 Series Nitrogen Gas Springs

## 50 kN / 5 ton

37.5 mm shorter!



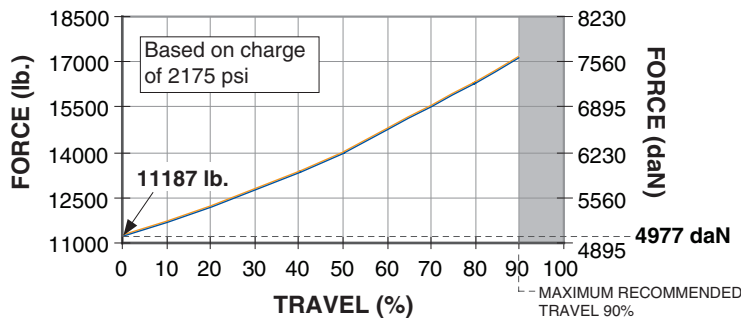
TO – Basic Model

Part No.	S mm inch	90.10.05000		90.8.05000	
		C	L ±0.25 ±.010	C	L ±0.25 ±.010
• 90.__.05000.025	25 0.98	165 6.50	190 7.480	127.5 5.02	152.5 6.004
90.__.05000.038	37.5 1.48	177.5 6.99	215 8.465	140 5.51	177.5 6.988
• 90.__.05000.050	50 1.97	190 7.48	240 9.449	152.5 6.00	202.5 7.972
90.__.05000.063	62.5 2.46	202.5 7.97	265 10.433	165 6.50	227.5 8.957
90.__.05000.075	75 2.95	215 8.46	290 11.417	177.5 6.99	252.5 9.941
• 90.__.05000.080	80 3.15	220 8.66	300 11.811	182.5 7.19	262.5 10.335
90.__.05000.088	87.5 3.44	227.5 8.96	315 12.402	190 7.48	277.5 10.925
• 90.__.05000.100	100 3.94	240 9.45	340 13.386	202.5 7.97	302.5 11.909
90.__.05000.113	112.5 4.43	252.5 9.94	365 14.370	215 8.47	327.5 12.894
• 90.__.05000.125	125 4.92	265 10.43	390 15.354	227.5 8.96	352.5 13.878
90.__.05000.138	137.5 5.41	277.5 10.93	415 16.339	240 9.45	377.5 14.862
90.__.05000.150	150 5.91	290 11.42	440 17.323	252.5 9.94	402.5 15.846
• 90.__.05000.160	160 6.30	300 11.81	460 18.110	262.5 10.34	422.5 16.634
90.__.05000.175	175 6.89	315 12.40	490 19.291	277.5 10.93	452.5 17.815
90.__.05000.200	200 7.87	340 13.39	540 21.260	302.5 11.91	502.5 19.783
90.__.05000.225	225 8.86	365 14.37	590 23.228	327.5 12.89	552.5 21.752
90.__.05000.250	250 9.84	390 15.35	640 25.197	352.5 13.88	602.5 23.720
90.__.05000.275	275 10.83	415 16.34	690 27.165	N/A	N/A
90.__.05000.300	300 11.81	440 17.32	740 29.134	N/A	N/A

• ISO standard stroke lengths (90.10.05000 only)

### Force Charts

On-Contact Force	
psi	lb.
2175	11187
2000	10287
1750	9001
1500	7715
1000	5143
500	2572
250	1286



On-Contact Force	
bar	daN
150	4977
125	4148
100	3318
75	2489
50	1659
25	830
20	664

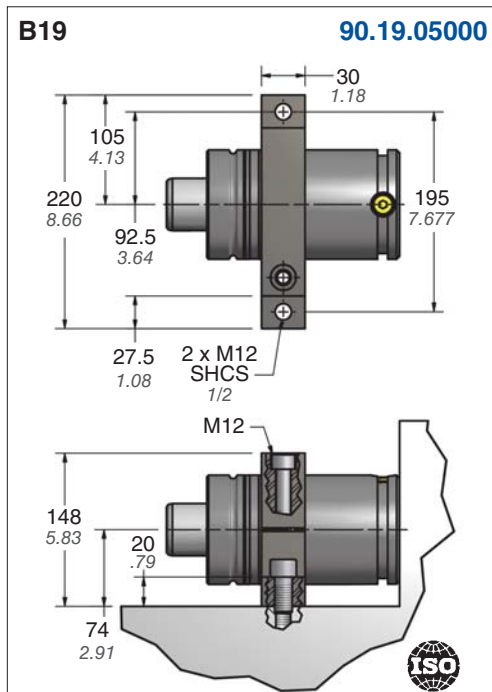
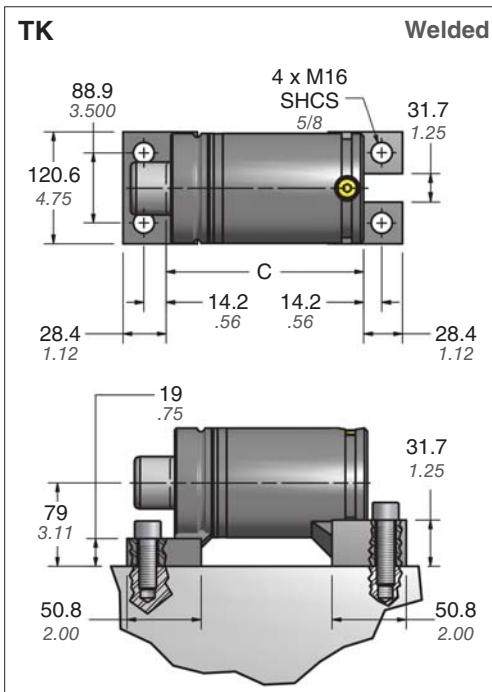
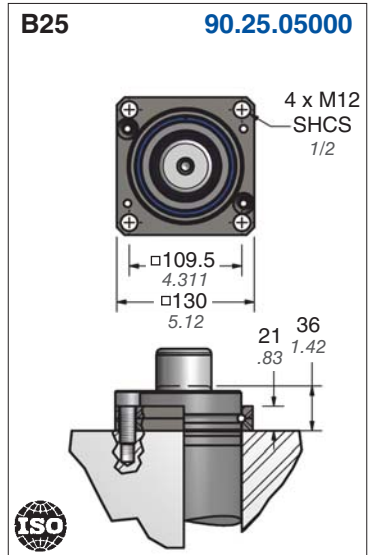
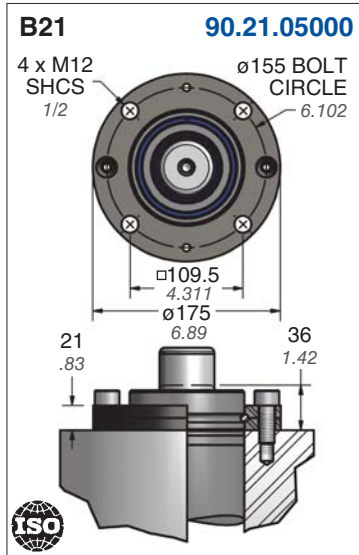
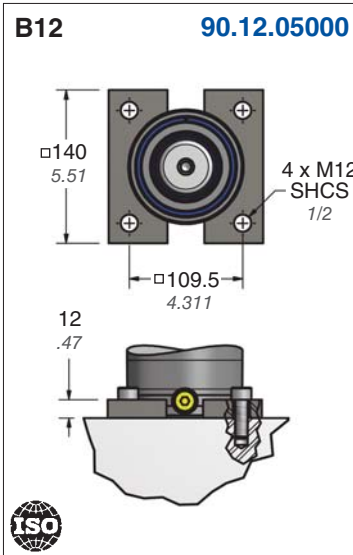
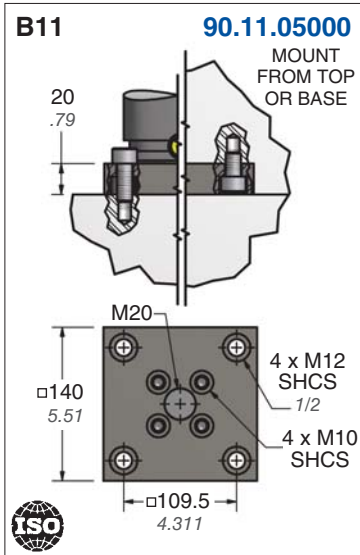
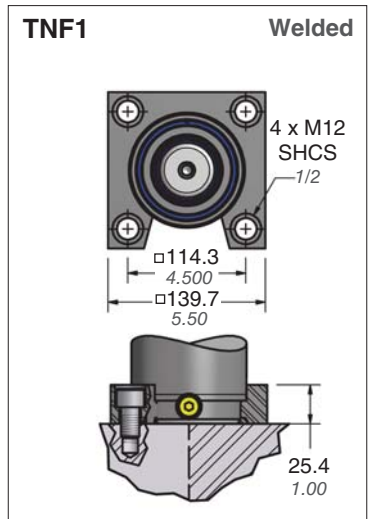
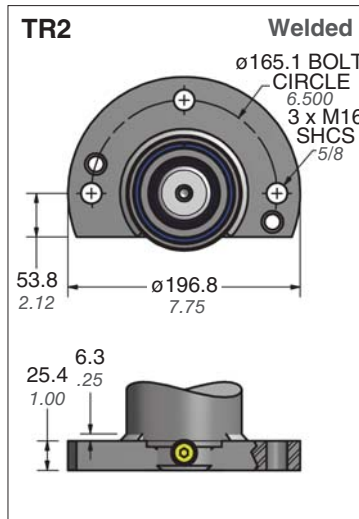
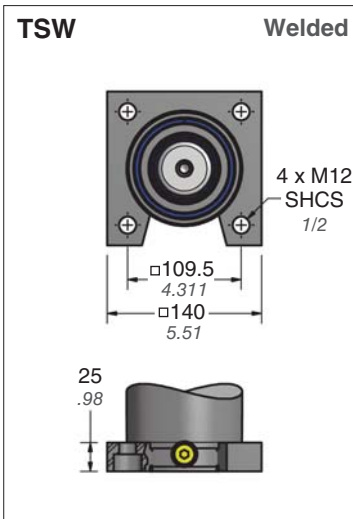
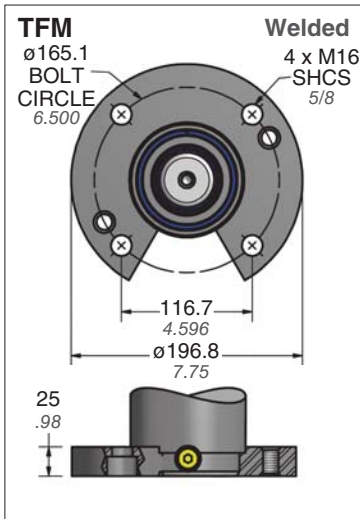
### Ordering Example:

**90.10.05000.025. TO. C. 150**

**Part Number:** Includes Series (90.10 or 90.80), Model and Stroke Length.  
**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar (220-2175 psi). When not specified, default is 150 bar.  
**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

50 kN / 5 ton

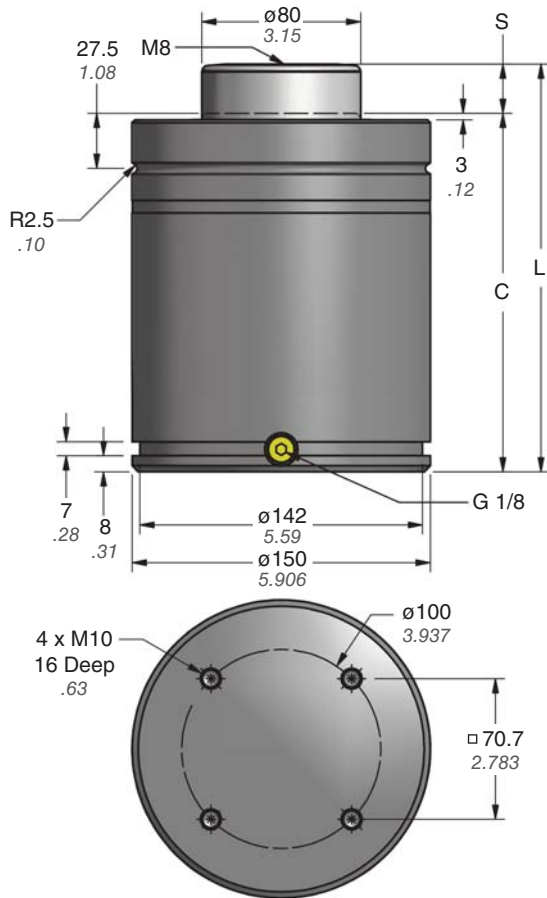


Ordering Example: Cylinder with Mount: 90.10.05000.025.B21.C.150 Mount Only: 90.21.05000

# 90.10 and 90.8 Series Nitrogen Gas Springs

## 75 kN / 7.5 ton

50 mm shorter!



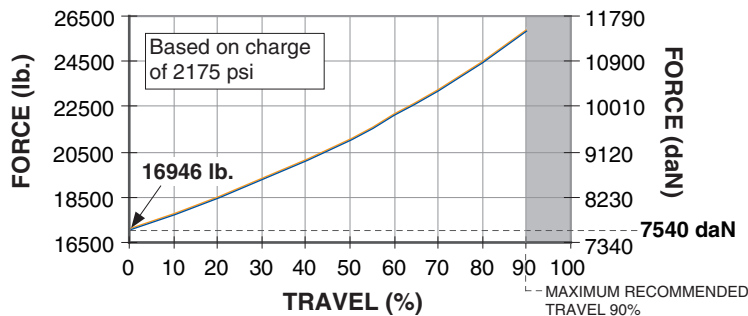
TO – Basic Model

Part No.	S mm inch	90.10.07500		90.8.07500	
		C	L ±0.25 ±.010	C	L ±0.25 ±.010
• 90.07500.025	25 0.98	180 7.09	205 8.071	130 5.12	155 6.102
90.07500.038	37.5 1.48	192.5 7.58	230 9.055	142.5 5.61	180 7.087
• 90.07500.050	50 1.97	205 8.07	255 10.039	155 6.10	205 8.071
90.07500.063	62.5 2.46	217.5 8.56	280 11.024	167.5 6.59	230 9.055
90.07500.075	75 2.95	230 9.06	305 12.008	180 7.09	255 10.039
• 90.07500.080	80 3.15	235 9.25	315 12.402	185 7.28	265 10.433
90.07500.088	87.5 3.44	242.5 9.55	330 12.992	192.5 7.58	280 11.024
• 90.07500.100	100 3.94	255 10.04	355 13.976	205 8.07	305 12.008
90.07500.113	112.5 4.43	267.5 10.53	380 14.961	217.5 8.56	330 12.992
• 90.07500.125	125 4.92	280 11.02	405 15.945	230 9.06	355 13.976
90.07500.138	137.5 5.41	292.5 11.52	430 16.929	242.5 9.55	380 14.961
90.07500.150	150 5.91	305 12.01	455 17.913	255 10.04	405 15.945
• 90.07500.160	160 6.30	315 12.40	475 18.701	265 10.43	425 16.732
90.07500.175	175 6.89	330 12.99	505 19.882	280 11.02	455 17.913
90.07500.200	200 7.87	355 13.98	555 21.850	305 12.01	505 19.882
90.07500.225	225 8.86	380 14.96	605 23.819	330 12.99	555 21.850
90.07500.250	250 9.84	405 15.94	655 25.787	355 13.98	605 23.819
90.07500.275	275 10.83	430 16.93	705 27.756	N/A	N/A
90.07500.300	300 11.81	455 17.91	755 29.724	N/A	N/A

• ISO standard stroke lengths (90.10.07500 only)

### Force Charts

psi	lb.
2175	16946
2000	15582
1750	13635
1500	11687
1000	7791
500	3896
250	1948



bar	daN
150	7540
125	6283
100	5027
75	3770
50	2513
25	1257
20	1005

### Ordering Example:

**90.10.07500.025. TO. C. 150**

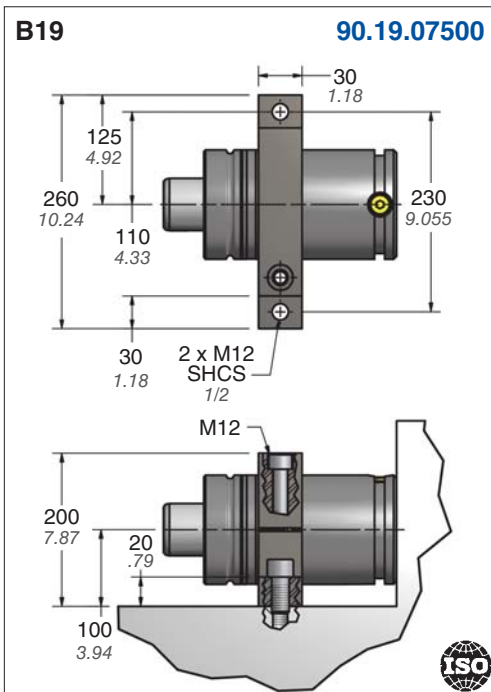
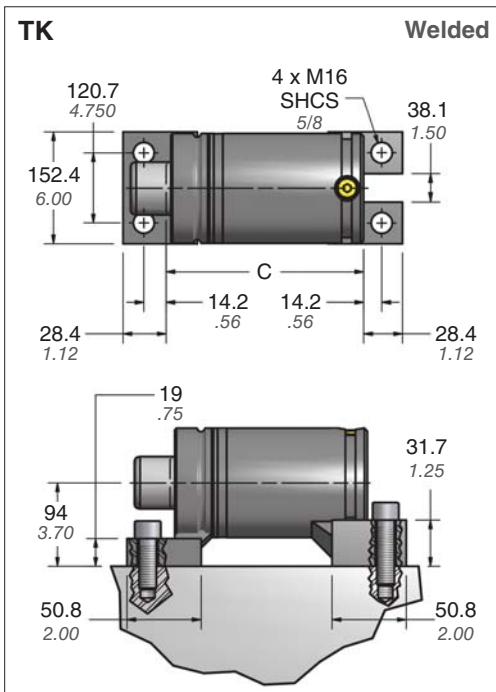
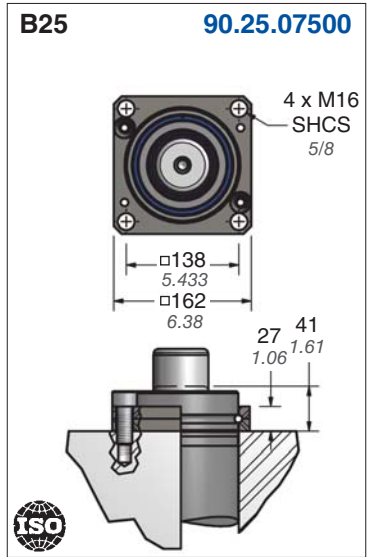
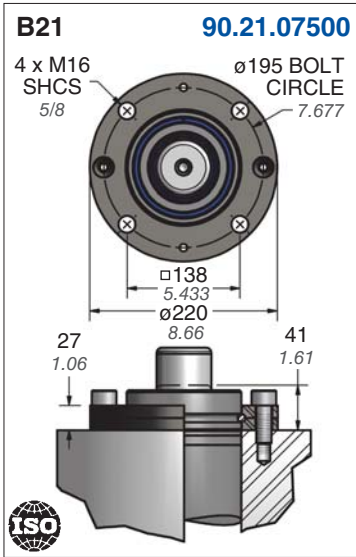
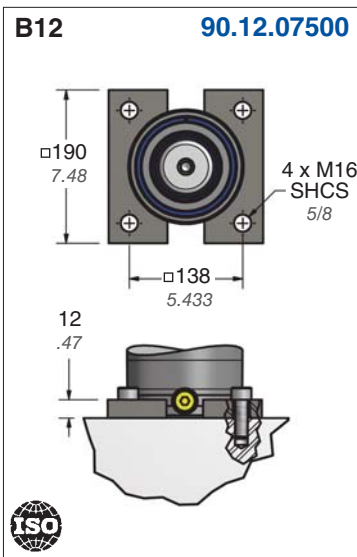
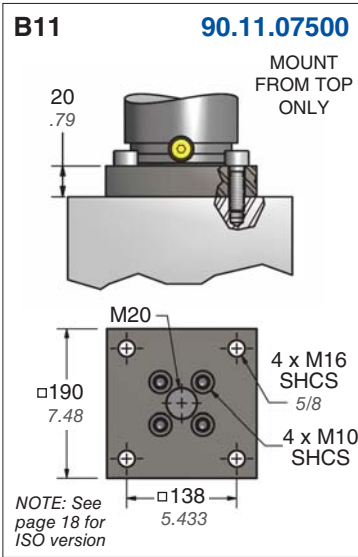
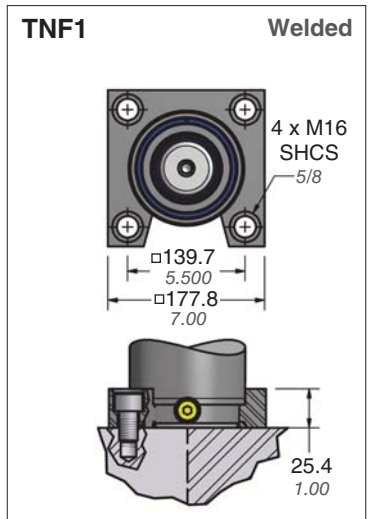
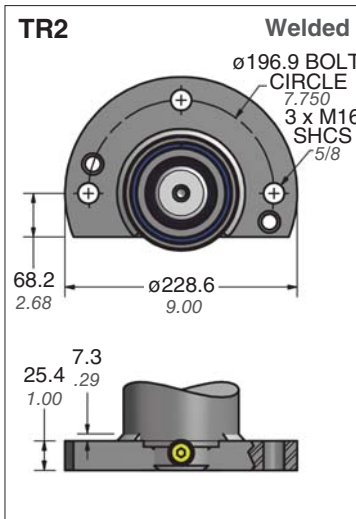
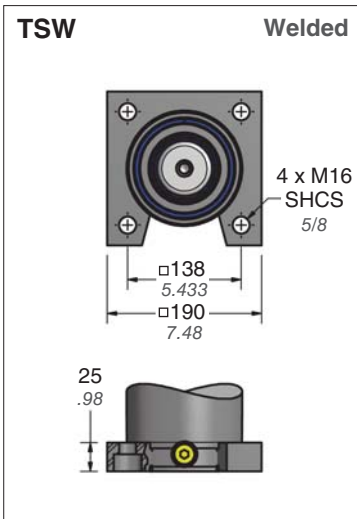
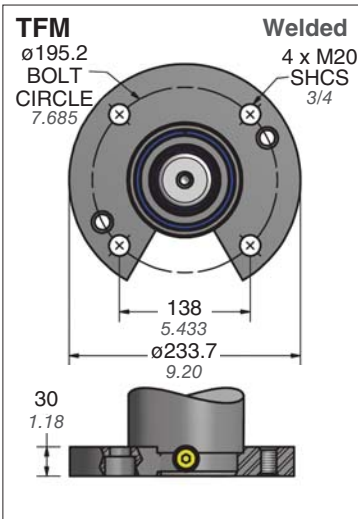
**Part Number:** Includes Series (90.10 or 90.8), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

**Charging Pressure:** 15-150 bar (220-2175 psi). When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

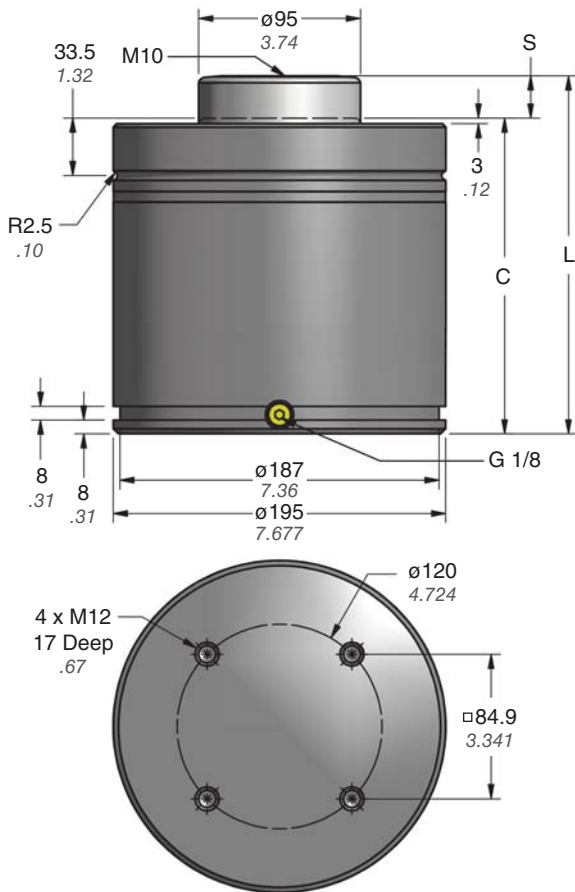
75 kN / 7.5 ton



Ordering Example: Cylinder with Mount: 90.10.07500.025.B21.C.150 Mount Only: 90.21.07500

# 90.10 and 90.8 Series Nitrogen Gas Springs

## 100 kN / 10 ton



TO – Basic Model

Model Not Available in 90.8 Series

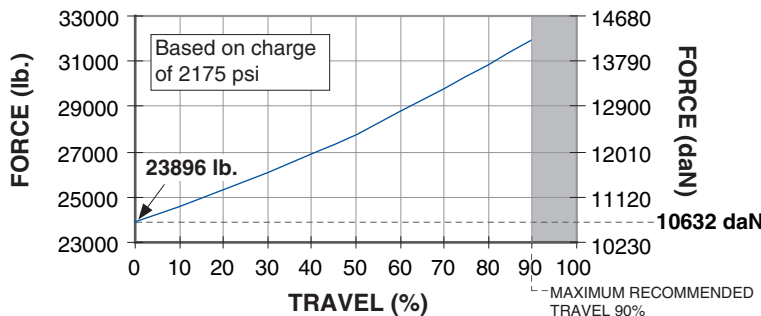
90.10.10000			
Part No.	S mm inch	C	L ±0.25 ±.010
• 90.10.10000.050	50 1.97	210 8.27	260 10.236
• 90.10.10000.080	80 3.15	240 9.45	320 12.598
• 90.10.10000.100	100 3.94	260 10.24	360 14.173
• 90.10.10000.125	125 4.92	285 11.22	410 16.142
• 90.10.10000.160	160 6.30	320 12.60	480 18.898
• 90.10.10000.200	200 7.87	360 14.17	560 22.047
• 90.10.10000.250	250 9.84	410 16.14	660 25.984

• ISO standard stroke lengths

### Force Charts

#### On-Contact Force

psi	lb.
2175	23896
2000	21974
1750	19227
1500	16480
1000	10987
500	5493
250	2747



#### On-Contact Force

bar	daN
150	10632
125	8860
100	7088
75	5316
50	3544
25	1772
20	1418

### Ordering Example:

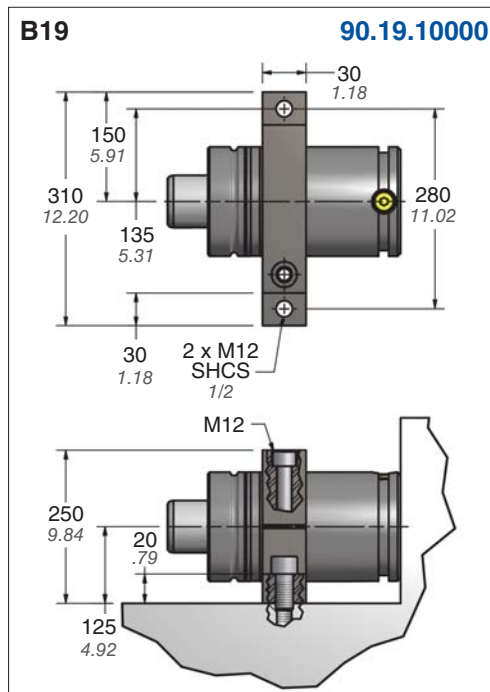
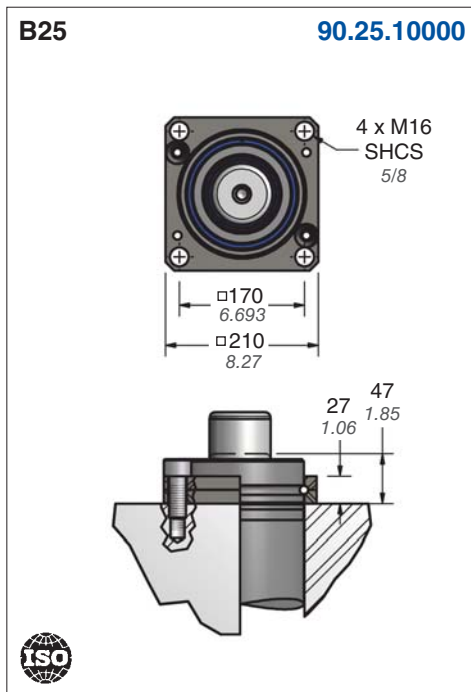
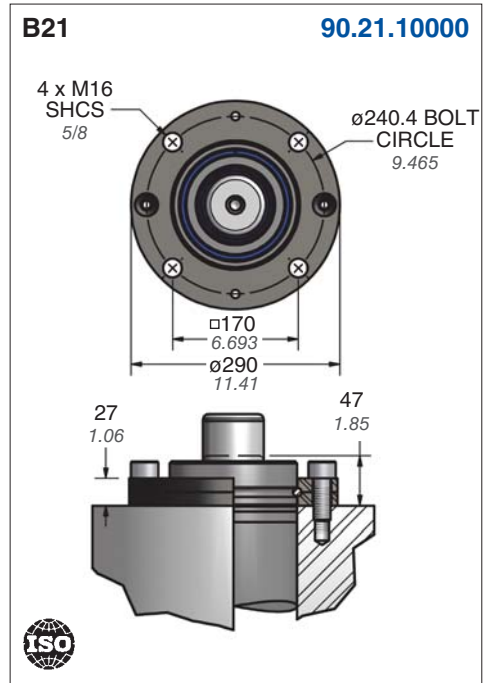
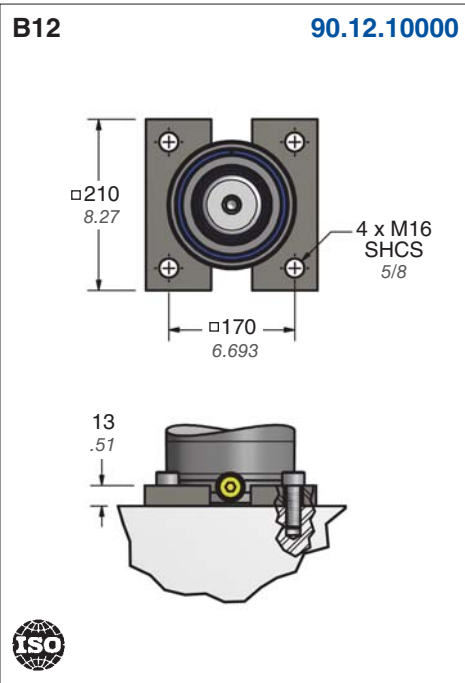
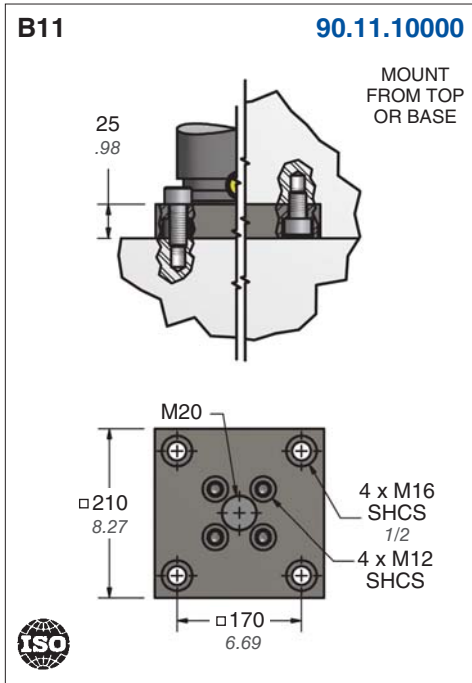
**90.10.10000.025. TO. C. 150**

**Part Number:** Includes Series (90.10), Model and Stroke Length.

**Mount Option:** TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

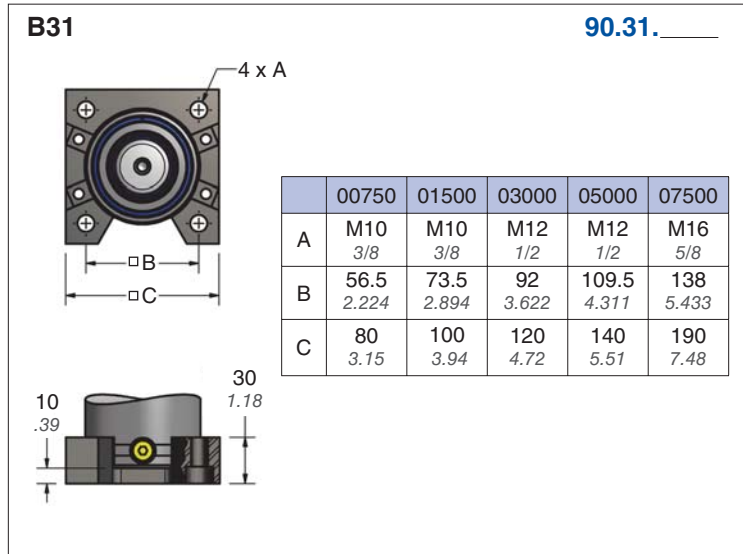
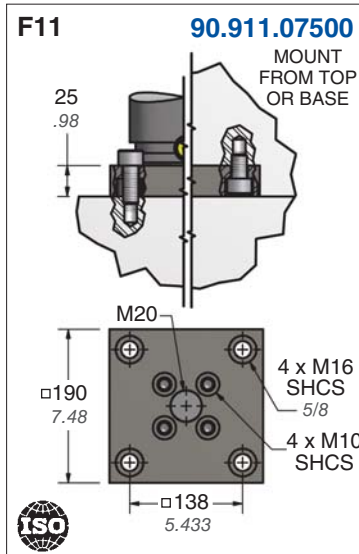
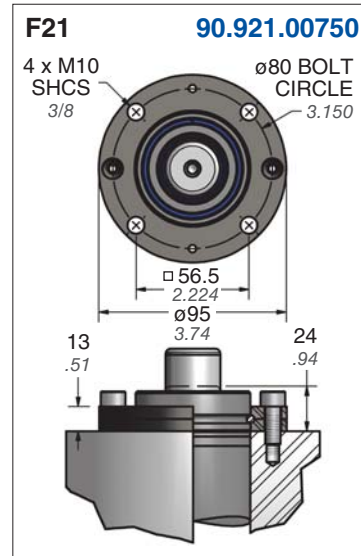
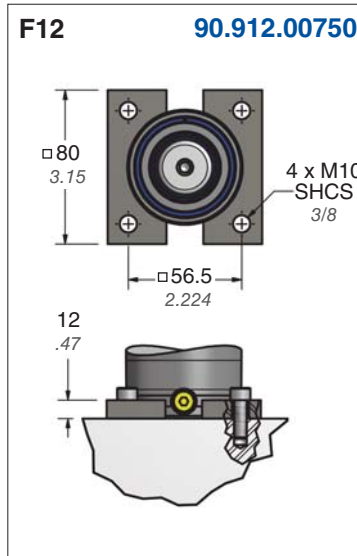
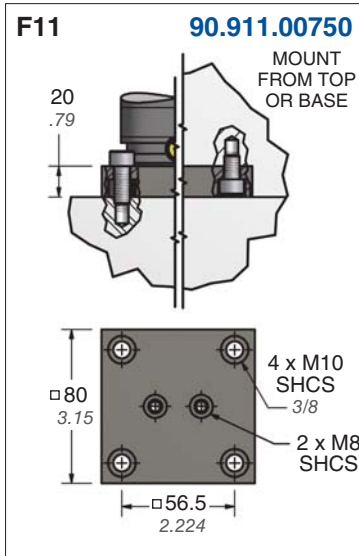
**Charging Pressure:** 15-150 bar (220-2175 psi). When not specified, default is 150 bar.

**Operating System:** C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

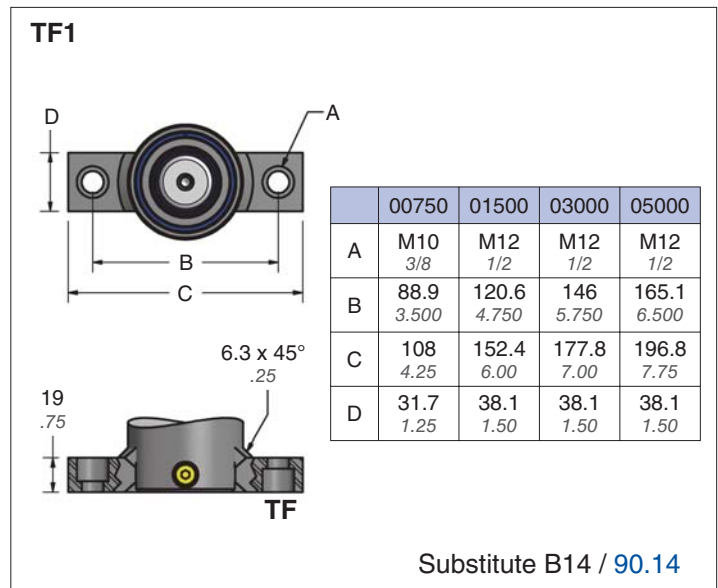
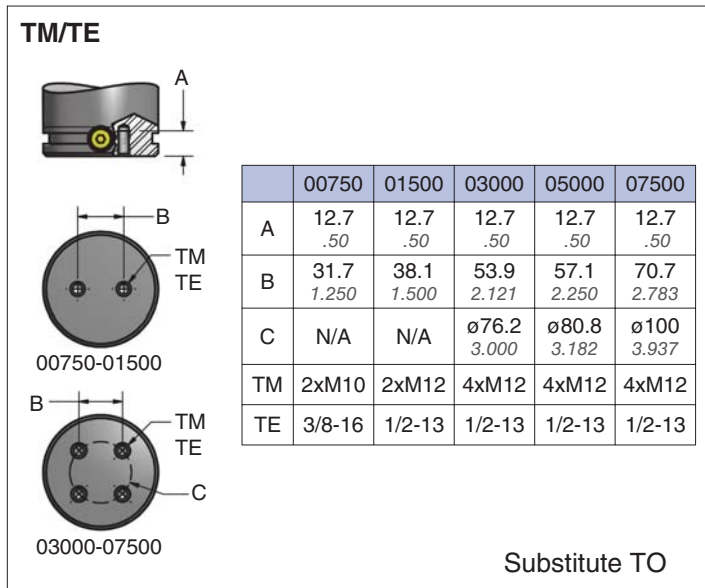


Ordering Example: Cylinder with Mount: 90.10.10000.050.B21.C.150 Mount Only: 90.21.10000

### Special WDX Mounts



### Obsolete Mounts (not for new designs)



## Surge Tanks

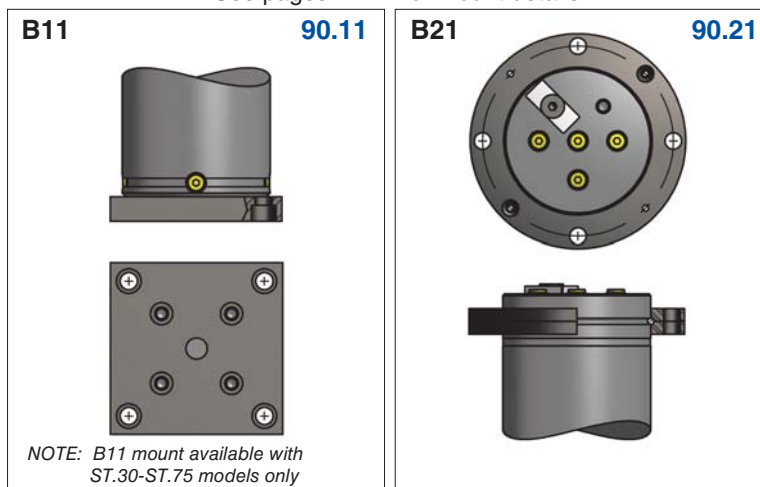
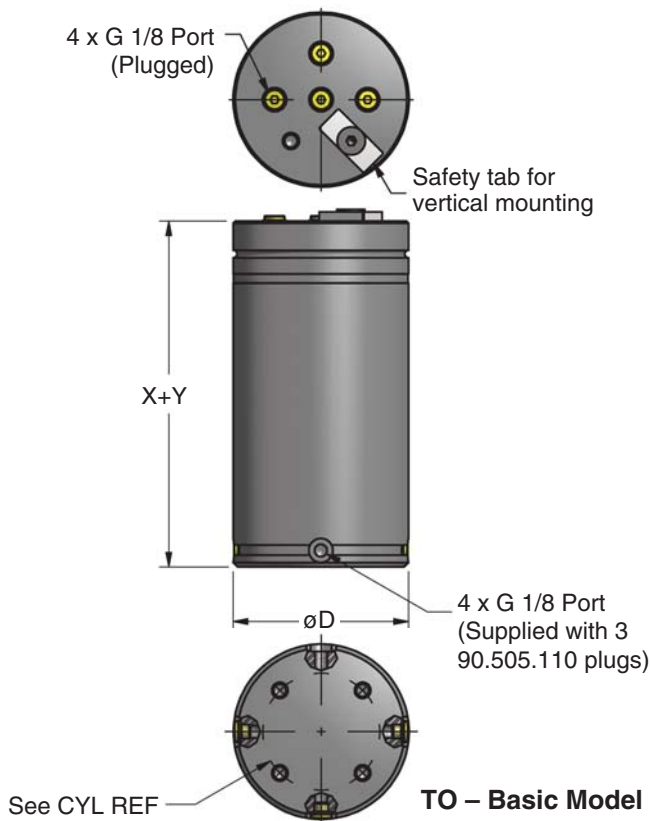
DADCO surge tanks are used with open-flow systems to increase the volume in the system thereby reducing the pressure rise when cylinders are stroked. Both ends have multiple open ports supplied as standard for maximum flexibility when piping. Gauges and shut-off ball valves are available upon request.

For assistance in determining appropriate surge tank size for your system, contact DADCO with the cylinder size, length of stroke being used and amount of pressure rise desired.

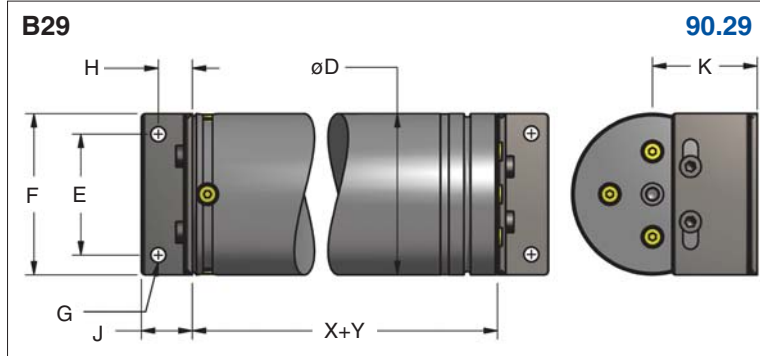
*The 90.700 (Y-700) hose is generally not recommended for use with surge tanks due to restricted flow capability.*



Preferred Mounts for Surge Tanks.  
See pages 11-17 for mount details.



NOTE: B11 mount available with ST.30-ST.75 models only



ST	30	50	75	100
X	117 4.61	137 5.39	152 5.98	157 6.18
Y	Volume of Tank L (in <sup>3</sup> )			
50	0.59 1.97	0.99 60.4	1.62 98.8	2.89 176.2
100	0.84 3.94	1.38 84.4	2.23 136.3	3.96 241.5
150	1.09 5.91	1.78 108.4	2.85 173.8	5.03 306.9
200	1.34 7.87	2.17 132.4	3.46 211.3	6.10 372.2
250	1.60 9.84	2.56 156.4	4.08 248.8	7.17 437.6
300	1.85 11.81	2.96 180.4	4.69 286.3	8.24 503
400	N/A 15.74	3.74 228.4	5.92 361.3	10.38 633.7

Ex. ST.30.150 Vol. = 1.09L (67 in<sup>3</sup>)

Surge Tank	30	50	75	100
CYL REF	3000	5000	7500	10000
D	95 3.74	120 4.72	150 5.91	195 7.67
E	50 1.97	90 3.54	90 3.54	100 3.94
F	75 2.95	120 4.72	120 4.72	150 5.91
G	4 x M10 3/8	4 x M10 3/8	4 x M10 3/8	4 x M12 1/2
H	25.4 1.00	25.4 1.00	25.4 1.00	31.8 1.25
J	38 1.50	38 1.50	38 1.50	50.8 2.00
K	50.5 1.99	78 3.07	85 3.35	98.5 3.88

### Ordering Example:

**ST.30. 150. TO**

Size:

30, 50, 75, 100

Length (Y):

50, 100, 150, 200, 250, 300, 400

Mount Option:

TO = Basic Model. When not specified, default is TO. Mount ordered with cylinder will be attached at factory. **NOTE: B11 mount is only available with ST.30-ST.75 models.**

### Assembly Cap

**90.330.**\_\_\_\_\_  
(00500, 00750, 01500,  
03000, 05000, 07500)

Used to hold the rod and position the cartridge below the C-ring groove when assembling the gas spring.



### Removal Sleeve

**90.340.**\_\_\_\_\_  
(00500, 00750, 01500,  
03000, 05000, 07500)

To position the cartridge below the C-ring groove when assembling or disassembling a gas spring.



### C-Ring Installation Tool

**90.351.00500 (00500 Model)**  
**90.350.00750 (00750 Model)**

To insert the C-Style Retaining Ring into the retaining ring groove of 500 and 750 Models.



### C-Ring Installation Tool

**90.352 (01500 – 07500 Models)**  
**90.352.10000 (10000 Model)**

To insert the C-Style Retaining Ring into the retaining ring groove of 01500 – 10000 Models. For more information request bulletin B01101B.



### C-Ring Removal Tool

**90.356**

To remove the C-Style Retaining Ring safely in a single controlled motion. For more information request bulletin 97B110.



*Patented*

### T-Handle

**90.320.2 – M8 Thread**  
**90.320.10 – M10 Thread**

To remove the piston rod when disassembling and position correctly when reassembling.



### Quick Disconnect Charging Assembly

**90.310.040**

Use the DADCO Quick Disconnect Charging Assembly, 90.310.040, with the 90.310.111 Charging Nipple or 90.315.5 Pressure Analyzer to charge self-contained gas springs. The 90.310.040 can also be used with a DADCO control panel to charge linked systems. The 90.310.040 includes the 90.310.201 Pressure Regulator, 90.310.252 Hose Assembly and the 90.310.338 Quick Disconnect Filling Assembly.



### Quick Disconnect Charging Nipple

**90.310.111**

Use the DADCO Quick Disconnect Charging Nipple to charge the 90.10 and 90.8 Series gas springs. For more information, contact DADCO.



**Repair Tools and Accessories**

**Standard Load Cell**

**90.300.**\_\_\_\_\_  
(00500, 00750, 01500, 03000,  
05000, 07500, 10000)

The Standard Load Cell gives precise measurement of gas spring charging pressure. Each model requires its specified load cell. Load cells for 00500 – 07500 Models may be used with the Portable Test Stand; the load cell for the 90.10.10000 may be used with an arbor press.



**Digital Load Cell**

**90.305.BG (Meter)**  
**90.305.LC.50 (222 kN / 50,000 lb. Load Cell)**

The DADCO Digital Load Cell Meter can display force in Newtons, Kg or lbs. The 90.305.LC.50 Load Cell (supplied with connector) may be used to measure gas spring force up to 50,000 lbs. Other digital load cell units are available. For more information, request bulletin B04106A or contact DADCO.



**DADCO Pressure Analyzer**  
**90.315.5**

DADCO's Pressure Analyzer includes two interchangeable bits to easily charge, discharge and gauge the pressure in any DADCO Nitrogen Gas Spring. For more information request bulletin B01133D.



**Portable Test Stand**  
**90.305.3**

Use the Portable Test Stand in conjunction with a Standard Load Cell for precise measurement of gas spring force. Excludes use with 90.10.10000. For more information request bulletin 97B121.



**DADCO Pressure Monitor**  
**90.421.1 (120 VAC) – Bulletin B00136**  
**90.421.2 (24 VDC) – Bulletin B01115A**  
**90.421.2D (24 VDC, SPDT) – Bulletin B00134**

The DADCO Pressure Monitor indicates if pressure drops below a preset level, alerting the press controller to shut down the press. The shutdown point is adjustable between 15 – 200 bar (200 – 3000 psi). Contact DADCO for literature and additional information.



**Valve Bleed Tool**  
**90.360.4**

Use the DADCO Valve Bleed Tool to slowly discharge a spring to the desired pressure. For more information contact DADCO.



**Port Servicing Tool**  
**90.320.8**

To perform all necessary servicing to the valve compartment.



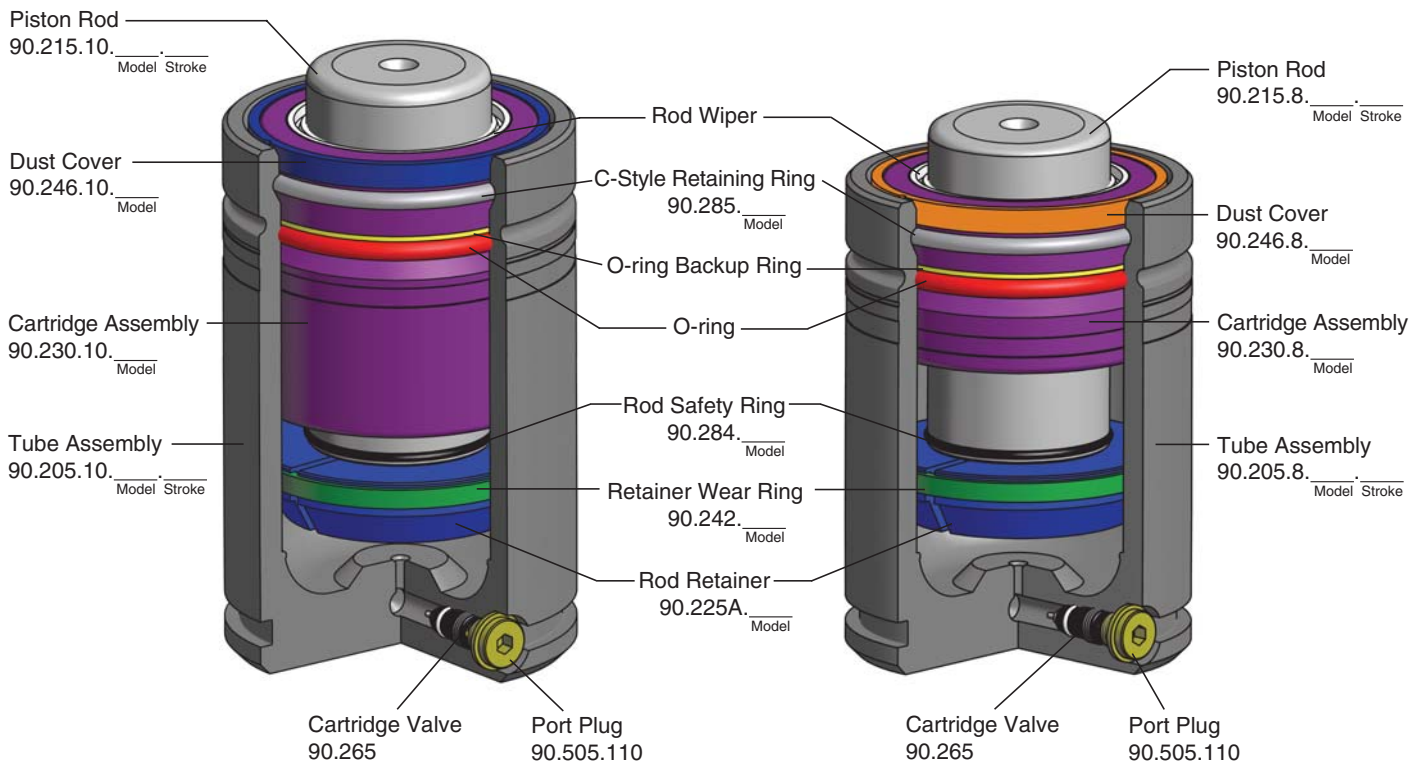
**DADCO Repair Tool Kits**

DADCO's most popular repair tools are now available in boxed sets for each of our three main classifications of nitrogen gas springs: Micro, Mini and Large Series. Kits may include DADCO load cells, charging nipples and various repair tools. Separate repair tool and load cell sets are also available. For more information request bulletin B05143A.



### 90.10 Series Parts List

### 90.8 Series Parts List



### Replacement Part Ordering Example:

**Piston Rod: 90.215. 10. 00750. 025**

Part Number \_\_\_\_\_ Stroke (mm)  
 Series: \_\_\_\_\_ Model: 00500, 00750, 01500,  
 90.10 = 10 or 90.8 = 8 03000, 05000, 07500, 10000  
 (00500 and 10000 models  
 available in 90.10 Series only)

**NOTE:** DADCO's 90.10 and 90.8 Series Nitrogen Gas Springs are permanently marked with model number, serial number and repair kit number. Please refer to these when ordering replacement parts.

### Repair Kits

Include a fully assembled cartridge, dust cover, bottle of assembly oil and a maintenance manual.

90.10 Series	
Model	Repair Kit No.
90.10.00500	90.201A.00500
90.10.00750	90.201.00750
90.10.01500	90.201.01500
90.10.03000	90.201.03000
90.10.05000	90.201.05000
90.10.07500	90.201.07500
90.10.10000	90.201.10000

90.8 Series	
Model	Repair Kit No.
90.8.00750	90.208.00750
90.8.01500	90.208.01500
90.8.03000	90.208.03000
90.8.05000	90.208.05000
90.8.07500	90.208.07500



## Technical Data

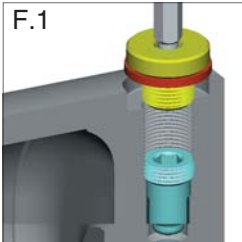
### CAUTION

DO NOT attempt maintenance on spring until internal pressure is exhausted.

### Operating Specifications

Charging Medium:	Nitrogen Gas
Charging Pressure Range:	15 – 150 bar (220 – 2175 psi)
Operating Temperature:	-6°C – 71°C (20°F – 160°F)*
Maximum Speed:	.5 m/sec (20 in/sec)

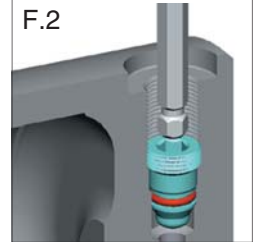
\*For extended range applications contact DADCO.



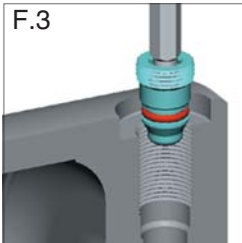
F.1

### Self-contained to Linked Operation

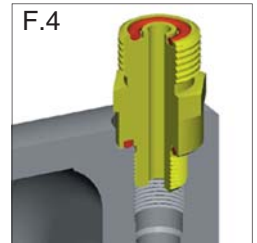
- Always wear safety glasses when maintaining gas springs. When exhausting pressure, place the gas spring horizontally with the port up for safety.
- Remove port plug, 90.505.110 (F.1).
- With the cylinder in the horizontal position, depress the valve stem using the appropriate tool (F.2). Cover the port with a cloth to absorb discharge.
- After all of the gas pressure is exhausted, be sure that the piston rod will retract into the tube manually. If not, try depressing the valve again. If still unsuccessful, stop and contact your DADCO Service Representative.
- Remove the valve using the appropriate tool (F.3). Lubricate the threads and o-ring of the port adapter being installed (F.4).
- Install port adapter in open port (F.4). A wide variety of port adapters are available, refer to DADCO's Nitrogen Gas Spring Linked System Components Catalog.



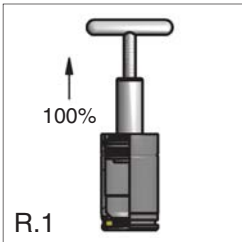
F.2



F.3



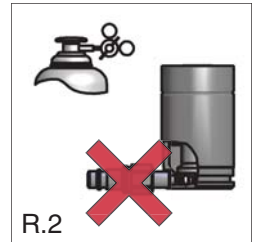
F.4



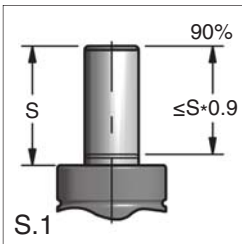
R.1

### Recharging Self-contained Gas Spring

- Hold the spring vertically at all times during filling. Never compress the gas spring in a vice or clamp outside of the die or application as damage to the gas spring can result.
- Never fill a gas spring unless the rod is in the fully extended position (R.1). Filling a gas spring with its rod down can result in improper retaining ring seating (R.2). Thread the T-handle 90.320.2 or 90.320.10 into the rod end and depress the valve stem with the appropriate tool, then pull the rod cartridge assembly up until it is seated firmly against the retaining ring (R.1).
- Charge the gas spring to the desired pressure. Refer to DADCO's 90.8/90.10 Series Maintenance Instructions B06124B for complete step-by-step instruction.



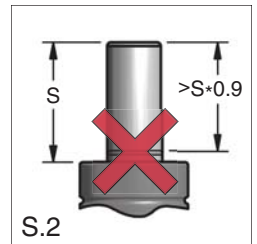
R.2



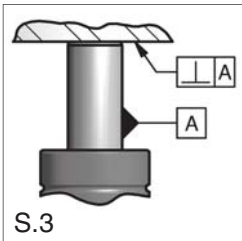
S.1

### Provide Stroke Reserve

- DADCO's 90.8 and 90.10 Series Gas Springs will permit travel of the full nominal stroke; however, at least a 10% stroke reserve is recommended to achieve optimal performance and safety (S.1, S.2).
- Overstroking the rod or impacting the top of the gas spring will cause permanent damage.



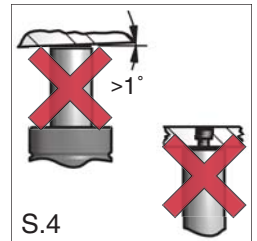
S.2



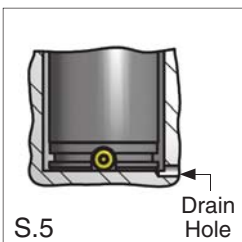
S.3

### Avoid Side Loading

- Side loading resulting from press action or die construction causes increased wear on bearing, seal and piston rod (S.4). Therefore, avoid side loading when possible (S.3).



S.4



S.5

Drain Hole

### Rod End Thread

- The end of the piston rod has a construction thread intended for assembly and disassembly only and should never be used to mount or secure the gas spring (S.4). Die vibration and/or misalignment will damage the spring.



S.6

### Protect From Fluids

- Direct contact with certain die lubricants and cleaners should be avoided (S.6). Protect gas springs by providing adequate drainage in gas spring pockets (S.5).

## Other DADCO Products



### SL2.090 and SL2.180 – Nitrogen Gas Spring Two Post Lifters

- 160 mm and 180 mm rail widths
- Powered by the **Micro 90™** and **Micro 180™**
- Stroke lengths available from 23 mm to 198 mm
- Two post for rail lift applications
- Compact Rail Plate available



### SLN.090 and SLN.180 – Micro Nitrogen Gas Lifters

- Non-rotating design; provides lift and guidance
- Two guide rod options for single point, multipoint or rail lift applications
- Compact design powered by the **Micro 90™** and **Micro 180™**
- Stroke lengths available from 25 mm to 125 mm



### SCR Series

- From 32 mm to 63 mm in diameter
- Forces up to 28.6 kN
- Full range of standard stroke lengths up to 80 mm
- Completely serviceable



### Mini – LJ and L Series

- 38 mm, 45 mm and 50 mm diameters
- Force models: 3 kN, 5 kN, and 7.5 kN
- Full range of standard stroke lengths up to 125 mm



### Ultra Force® – U Series

- 19 mm to 195 mm in diameter
- Forces up to 199 kN
- Full range of standard stroke lengths up to 125 mm
- **UltraPak®** cartridge for long life



### Ultra Force Extended® – UX Series

- 25-55% more force on-contact than ISO Standard Nitrogen Gas Springs
- From 50 mm to 195 mm in diameter
- Up to 199 kN of force on contact
- Matches ISO Envelope

# DADCO®

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