

DADCO®

The global leader in nitrogen gas spring technology



Fourth Edition

DADCO®

WORLD HEADQUARTERS

43850 Plymouth Oaks Blvd. • Plymouth, MI • 48170 • USA
Tel: +1(734) 207-1100 • Fax: +1(734) 207-2222 • Toll Free: (800) DADCO-USA
www.dadco.net

DADCO GmbH

Johann-Liesenberger-Str.23
78078 Niedereschach, Germany
Tel: +49 (772) 864-530
Fax: +49 (772) 864-5350

DADCO CANADA

2530 Meadowpine Blvd., Mississauga
Ontario, Canada L5N 6C4
Tel: +1 (905) 567-9100
Fax: +1(905) 567-8900
Toll Free: (800) 268-2064

DADMEX®

Nicolás Copérnico No. 102, Parque Inn
San Mateo Otzacatipan
Toluca, México CP 50200 Mexico
Tel: +52 (722) 276-9660
Fax: +52 (722) 249-7449

DADCO ASIA

#1005/1006 Innoplex I
371-47 Gasan-Dong, Geumcheon-Gu
Seoul, Korea
Tel: +82 (26) 679-0088
Fax: +82 (26) 679-0084

DADCO® FERRAMENTAS do BRASIL LTDA.

Rua Botucatu, 39
São Caetano Do Sul, São Paulo
CEP 09550-060, Brasil
Tel: +55 (11) 4221-4690

DADCO ASIA TIANJIN REPRESENTATIVE OFFICE

19-1-1714 Aocheng Commercial Square,
Binshui West Rd. & Lingbin St. Nankai District,
Tianjin 300381 China
Tel: +86 (22) 5900-9058

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DADCO Nitrogen Gas Spring Selection

Model	Can Diameter (mm / inch)	Rod Diameter (mm / inch)	Stroke Lengths (mm)	Overall Length (mm)	Max Force on Contact (daN / lb.)	Max Charging Pressure (bar / psi)	Port Size
C.045	12 .472	6 .24	7-50 63.5-80	(2 x S) + 42 (2 x S) + 45	50 112	177 2560	M6
C.070	15 .591	7 .28	7-50 63.5-125	(2 x S) + 42 (2 x S) + 45	68 154	177 2560	M6
C.090	19 .748	8 .31	7-50 63.5-125 150-200	(2 x S) + 42 (2 x S) + 45 (2 x S) + 53	89 200	177 2560	M6
U.0175	19 .748	11 .43	7-63.5 75-125	(2 x S) + 30 (2 x S) + 35	171 383	180 2600	M6
C.180	25 .984	12 .47	7-50 63.5-125 150-200	(2 x S) + 42 (2 x S) + 45 (2 x S) + 53	200 450	177 2560	M6
U.0325	25 .984	15 .59	7-63.5 75-125	(2 x S) + 30 (2 x S) + 35	320 715	180 2600	M6
SC.00420	25 .984	12 .47	10, 16, 25	70, 91, 120	425 956	150 2175	M6
C.250	32 1.260	15 .59	7-50 63.5-125	(2 x S) + 42 (2 x S) + 45	313 701	177 2560	M6
U.0400	32 1.260	16 .63	10-125	2 x Stroke + 30	362 810	180 2600	M6
UH.0400	32 1.260	16 .63	10-125	2 x Stroke + 40	362 810	180 2600	G 1/8
90.10.00170	32 1.260	12 .47	10-125	2 x Stroke + 50	170 381	150 2175	M6
SCR.0500	32 1.260	18 .71	10-80	2 x Stroke + 55	458 1026	180 2600	M6
SC.00740	32 1.260	20 .79	6-50	63-195	736 1655	150 2175	M6
LJ.300	38 1.496	16 .63	12.5-125	2 x Stroke + 30	302 678	150 2175	M6
L.300	38 1.496	16 .63	6.3-125	2 x Stroke + 50.5	302 678	150 2175	M6
U.0600	38 1.496	20 .79	10-125	2 x Stroke + 30	471 1059	150 2175	M6
UH.0600	38 1.496	20 .79	10-125	2 x Stroke + 40	471 1059	150 2175	G 1/8
SCR.0800	38 1.496	25 .98	10-80	2 x Stroke + 55	884 1978	180 2600	M6
SC.01000	38 1.496	20 .79	6-50	61-230	1060 2383	150 2175	M6
FCL.503	44.5 1.750	16 .63	24-124	2 x Stroke + 52.5	302 678	150 2175	M6
LJ.500	44.5 1.750	20 .79	12.5-125	2 x Stroke + 32	471 1059	150 2175	M6
L.500	44.5 1.750	20 .79	6.3-125	2 x Stroke + 50.5	471 1059	150 2175	M6
90.10.00500	44.5 1.750	20 .79	12.5-200	2 x Stroke + 85	471 1059	150 2175	G 1/8
U.0800	44.5 1.750	25 .98	10-125	2 x Stroke + 32	736 1655	150 2175	M6
UH.0800	44.5 1.750	25 .98	12.5-125	2 x Stroke + 47	736 1655	150 2175	G 1/8
UX.0800	44.5 1.750	25 .98	12.5-200	2 x Stroke + 85	736 1655	150 2175	G 1/8
FCL.755	50 1.968	20 .79	24-124	2 x Stroke + 52.5	471 1059	150 2175	M6
LJ.750	50 1.968	25 .98	12.5-125	2 x Stroke + 38	736 1655	150 2175	M6
L.750	50 1.968	25 .98	6.3-125	2 x Stroke + 50.5	736 1655	150 2175	M6
90.8.00750	50 1.968	25 .98	12.5-250	2 x Stroke + 70	736 1655	150 2175	G 1/8
90.10.00750	50 1.968	25 .98	12.5-300	2 x Stroke + 95	736 1655	150 2175	G 1/8
UX.1000	50 1.968	28 1.10	12.5-300	2 x Stroke + 93	924 2076	150 2175	G 1/8
U.1000	50 1.968	28 1.10	12.5-125	2 x Stroke + 38	924 2076	150 2175	M6
UH.1000	50 1.968	28 1.10	12.5-125	2 x Stroke + 52	924 2076	150 2175	G 1/8
UT.1000	50 1.968	28 1.10	12.5-125	2 x Stroke + 52	924 2076	150 2175	G 1/8
U.1200	50 1.968	30 1.18	10-125	2 x Stroke + 38	1060 2383	150 2175	M6
SCR.1900	50 1.968	35 1.38	10-80	2 x Stroke + 80	1732 3877	180 2600	M6
SC.01800	50 1.968	30 1.18	6-50	66-220	1885 4236	150 2175	G 1/8

Micro – C Series



- Pre-set and adjustable force models
- Color-coded for easy identification
- Threaded body styles available
- Operate self-contained or linked using *MINILink*® System
- Application Examples: Part Ejectors, Strippers, Lifting, Cams, High Speed and Part Pushers

Ultra Force® – U Series



- High Force and Compact Height
- Application Examples: Part Ejectors, Strippers, Lifting, Cams, Part Pushers, Work Holding, Forming, Draw Dies, Balancing and Stripper Pad Force

Mini – LJ / L Series



- Operate self-contained or linked using *MINILink*® System
- Variety of bolt-on mounts available
- L Series backed by DADCO's Two Year/Two Million Stroke Select Guarantee
- Application Examples: Deep Draw, Cam Slides, Part Strippers and Work Holding

Model	Can Diameter (mm / inch)		Rod Diameter (mm / inch)		Stroke Lengths (mm)	Overall Length (mm)	Max Force on Contact (daN / lb.)		Max Charging Pressure (bar / psi)		Port Size
UX.1600	63	2.480	36	1.42	12.5-200	2 x Stroke + 95	1527	3432	150	2175	G 1/8
U.1600	63	2.480	36	1.42	10-125	2 x Stroke + 44	1527	3432	150	2175	M6
UH.1600	63	2.480	36	1.42	12.5-125	2 x Stroke + 52	1527	3432	150	2175	G1/8
SCR.3200	63	2.480	45	1.77	16-80	2 x Stroke + 80	2863	6409	180	2600	M6
SC.03500	63	2.480	45	1.77	10-50	85-205	3185	7160	150	2175	G 1/8
90.8.01500	75	2.953	36	1.42	12.5-250	2 x Stroke + 85	1527	3432	150	2175	G 1/8
90.10.01500	75	2.953	36	1.42	12.5-300	2 x Stroke + 110	1527	3432	150	2175	G 1/8
UX.2600	75	2.953	45	1.77	25-300	2 x Stroke + 108	2386	5362	150	2175	G 1/8
U.2600	75	2.953	45	1.77	16-125	2 x Stroke + 45	2386	5362	150	2175	M6
UH.2600	75	2.953	45	1.77	16-125	2 x Stroke + 59	2386	5362	150	2175	G 1/8
UT.2600	75	2.953	45	1.77	16-125	2 x Stroke + 59	2386	5362	150	2175	G 1/8
SC.04700	75	2.953	50	1.97	10-50	80-240	4676	10509	150	2175	G 1/8
90.8.03000	95	3.740	50	1.97	12.5-250	2 x Stroke + 95	2945	6619	150	2175	G 1/8
90.10.03000	95	3.740	50	1.97	12.5-300	2 x Stroke + 120	2945	6619	150	2175	G 1/8
90.10RX.03000	95	3.740	50	1.97	25-300	2 x Stroke + 120	2945	6619	150	2175	G 1/8
UX.4600	95	3.740	60	2.36	25-200	2 x Stroke + 120	4241	9532	150	2175	G 1/8
U.4600	95	3.740	60	2.36	16-125	2 x Stroke + 58	4241	9532	150	2175	G 1/8
UH.4600	95	3.740	60	2.36	16-125	2 x Stroke + 62	4241	9532	150	2175	G 1/8
UT.4600	95	3.740	60	2.36	16-125	2 x Stroke + 62	4241	9532	150	2175	G 1/8
SC.07500	95	3.740	63	2.48	10-50	90-255	7540	16946	150	2175	G 1/8
90.8.05000	120	4.724	65	2.56	25-250	2 x Stroke + 102.5	4977	11187	150	2175	G 1/8
90.10.05000	120	4.724	65	2.56	25-300	2 x Stroke + 140	4977	11187	150	2175	G 1/8
90.10RX.05000	120	4.724	65	2.56	25-300	2 x Stroke + 140	4977	11187	150	2175	G 1/8
UX.6600	120	4.724	75	2.95	25-200	2 x Stroke + 140	6627	14894	150	2175	G 1/8
U.6600	120	4.724	75	2.95	16-125	2 x Stroke + 68	6627	14894	150	2175	G 1/8
UH.6600	120	4.724	75	2.95	16-125	2 x Stroke + 72	6627	14894	150	2175	G 1/8
UT.6600	120	4.724	75	2.95	16-125	2 x Stroke + 72	6627	14894	150	2175	G 1/8
SC.11800	120	4.724	80	3.15	10-50	100-260	11781	26478	150	2175	G 1/8
90.8.07500	150	5.906	80	3.15	25-250	2 x Stroke + 105	7540	16946	150	2175	G 1/8
90.10.07500	150	5.906	80	3.15	25-300	2 x Stroke + 155	7540	16946	150	2175	G 1/8
90.10RX.07500	150	5.906	80	3.15	25-300	2 x Stroke + 155	7540	16946	150	2175	G 1/8
UX.9600	150	5.906	90	3.54	25-200	2 x Stroke + 155	9543	21447	150	2175	G 1/8
U.9600	150	5.906	90	3.54	25-125	2 x Stroke + 78	9543	21447	150	2175	G 1/8
UT.9600	150	5.906	90	3.54	25-125	2 x Stroke + 78	9543	21447	150	2175	G 1/8
SC.18300	150	5.906	100	3.94	10-50	110-270	18408	41372	150	2175	G 1/8
90.10.10000	195	7.677	95	3.74	50-250	2 x Stroke + 160	10632	23896	150	2175	G 1/8
90.10RX.10000	195	7.677	95	3.74	50-250	2 x Stroke + 160	10632	23896	150	2175	G 1/8
U.20000	195	7.677	130	5.12	25-125	2 x Stroke + 110	19910	44747	150	2175	G 1/8
UX.20000	195	7.677	130	5.12	25-200	2 x Stroke + 160	19910	44747	150	2175	G 1/8

Refer to DADCO product catalogs for exact dimensions and complete list of stroke lengths.

Ultra Force Extended® – UX Series



- High Force
- Matches ISO Standard Diameter and Height
- Application Examples: Blanking, Deep Drawing, Work Holding, Forming, Draw Dies, Balancing, Stripping, High Strength Steel and High Speed Applications

Super Compact – SC Series



- High Force, Compact Height
- Bore seal design
- Optional side port with addition of sub plates
- Application Examples: Absorbing Breakthrough, Draw Dies, Blanking, Flanging, Forming, Part Stripping, Work Holding, Balancing, Stripper Pad Force and Large Cams

ISO / 90.10 Series



- Match ISO Standards
- Welded or bolt-on mounts available
- Application Examples: Blanking, Deep Drawing, Forming, Part Stripping, Work Holding, Balancing, Stripper Pad Force, Strike Plate Return and High Speed Applications

Nitrogen Gas Lifter Selection

Model	Can Diameter (mm / inch)		Stroke Lengths S (mm)	Overall Length (mm)	Max Force on Contact (daN / lb.)		Max Charging Pressure (bar / psi)		Port Size
SL.16	14	.55	10-100	2 x Stroke + 60	50.9	114	180	2611	M6
SLN.090	38	1.496	25-125	112-330	89	200	177	2560	—
SLN.180*	50	1.968	25-125	145-369	200	450	177	2560	—
SLN.300	75	2.953	50-150	2 x Stroke + 96	296	667	150	2175	M6
SLC.500	50	1.96	50-200	2 x Stroke + 122.5	236	487	70	1000	G 1/8
SLC.800	75	2.95	50-200	2 x Stroke + 204	712	1580	70	1000	G 1/8
Model	Rail Width		Stroke Lengths	Overall Length	Max Force on Contact		Max Charging Pressure		Port Size
SL2.090	160	6.30	23-198	105-466	89	200	177	2560	M6
SL2.180	180	7.09	23-198	105-466	200	450	177	2560	M6
SL2.300	180	7.09	23-198	105-466	302	678	150	2175	M6

Refer to DADCO product catalogs for exact dimensions and complete list of stroke lengths. *Available Flange Model (FA / FB) for stripper applications

Air Cylinder Selection

Model	Bore Size (mm)	Stroke Lengths S (mm)	Cylinder Body Length (mm)	PUSH Force* 6 bar / 80 psi (kN / lb.)		Max Charging Pressure (bar / psi)		Port Style
HP.Z / HP.W	32-250	25-500	varies by bore size (see catalog)	.483-29.45	100-6087	10	140	BSPP/NPT
HP.N	32-100	25-500	varies by bore size (see catalog)	.483-4.71	100-974	10	140	BSPP/NPT
HP.TDL2C	40-100	25-400	varies by bore size (see catalog)	.754-4.71	156-974	10	140	BSPP/NPT
HP.TDL4	40	25-250	Stroke + 171	.754	156	10	140	BSPP/NPT
HPS	50	50-200	Stroke + 161	1.18	243	10	140	BSPP

Refer to DADCO product catalogs for exact dimensions and complete list of stroke lengths. *Reference HP Series product catalog for PULL force

Guide Retainer Sets (GRS) Selection

Model	Rod Diameter (mm/inch)	Retainer Diameter (mm/inch)	Stroke Lengths (mm)	Overall Length (mm)	Attachment SHCS (Metric/Imperial)	Fastener Quantity
GRS.25	25 .984	38 1.496	20-150	Stroke + 50	M12 1/2"-13	1
GRS.30	30 1.181	43 1.693	20-150	Stroke + 50	M8 5/16"-18	4
GRS.36	36 1.417	50 1.968	20-150	Stroke + 65	M10 3/8"-16	4
GRS.50	50 1.968	68 2.677	20-150	Stroke + 80	M12 1/2"-13	4
GRS.36.HD	36 1.417	50 1.968	30-120	145-235	M10 -	4
GRS.50.HD	50 1.969	70 2.756	30-120	190-280	M16 -	3
GRS.65.HD	65 2.559	90 3.543	30-120	225-315	M16 -	4

Chart shows Flange and Wide Toe Clamp models.

GRS.30 and GRS.36 are available with Narrow Toe Clamps, see product catalog for more information.

Micro Nitrogen Gas Lifters – SL Series



- Non-rotating and internal cushion options. Built-in guidance
- Force provided by Micro and Mini Series gas springs
- Single, multi-point or rail lift applications
- Ideal for progressive stamping dies, rail lifters and work holding applications

Guide Retainer Sets – GRS Series



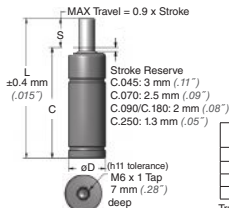
- Robust design with combined guidance and retention
- Various stroke lengths to suit application requirements
- Replaces common pins, bushings and spools

ISO Air Cylinders – HP Series



- Standard male (HP.Z), optional female (HP.W) and non-rotating (HP.N) rod ends
- Two post lifters (TDL2C / TDL4)
- Adjustable cushioning
- Meets or exceeds most NAAMS, ISO and VDMA standards

Micro and Ultra Force® Series (U.0175/U.0325) Installation and Operation Specifications



Operating Specifications	
Charging Medium:	Nitrogen Gas
Max Charging Pressure C.045/C.070/C.090/C.180/C.250:	177 bar (2560 psi)
Max Charging Pressure E.16/E.24:	150 bar (2175 psi)
Max Charging Pressure U.0175/U.0325/SL.16:	180 bar (2600 psi)
Maximum Speed:	1.6 m/s (63 in/sec)
Operating Temperature:	4°C - 71°C (40°F - 160°F)

Stroke (mm)	SPM Limit
7-16	200
25-38	120
50-63	80
> 80	50

Travel 90% of nominal stroke

General Information

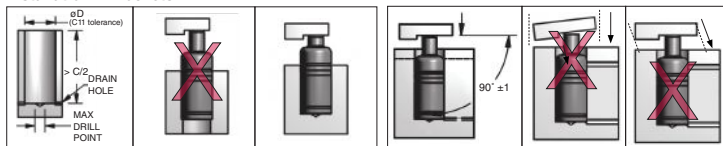
- DO NOT exceed 90% of stroke
- Stripping applications require a slight preload 0.5 mm - 1 mm (.02" - .04")
- Use enough force to strip the part
- Design adequate safety so spring is not over stroked

PRESSURE WARNING

Nitrogen Gas Springs are charged up to 180 bar.

- Do not weld
- Do not machine or modify
- Protect from damage
- Dispose of properly

Installation in Pockets



It is necessary to have a flat surface against the base of the spring in all circumstances. Maximum drill point for C.045, C.070 is ø8 mm, C.090, C.180, C.250 is ø10 mm, U.0175 and U.0325 is < øD/2. Incorrect pockets may cause structural damage or reduced life.

Side loading from axial or contact misalignment should be minimized, < 1°.

Recommended Mount Installation

END SUPPORT NOT REQUIRED

THREAD LOCK COMPOUND
C.045:
3.4 N-m (30 lb.-in.) MAX
C.070/C.090/
C.180/C.250
U.0175/U.0325:
7 N-m (62 lb.-in.) MAX

DADCO-LOK/RM mount may be used to retain the spring from rod end. If possible use a positive stop. Using spacers makes setup easier.

All properly installed mounts (RM, NF, FA, RF, TB) support the load. No back-up is required.

Retain inverted cylinders as shown with M6 cap screw, in pocket. A close tolerance hole is required, depth > C/2.

Threaded Body Installation Recommendations

LOCKING ELEMENT MUST ENGAGE IN THREADED HOLE

Model	A	B	F	Model	A	B	F
E.16	M16 x 1.5	24	12	C.045...TB3	M16 x 2	35	5
E.24	M24 x 1.5	35	25	C.045...TB4	M16 x 2	24	5
SL.16	M16 x 1.5	24	20	C.090...TB1	1" x 8	38	13
C.045...TB1	5/8" x 1.5	24	5	C.090...TB2	M24 x 1.5	142	51
C.045...TB2	M16 x 1.5	24	20	C.090...TB3	M24 x 1.5	35	13

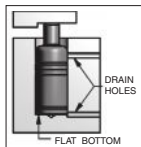
Maximum Installation Torque*

C.045...TB1	200 lb-in (23 N-m)
C.045...TB3	300 lb-in (34 N-m)
C.045...TB4	300 lb-in (34 N-m)
GC.045.15 TB5	400 lb-in (45 N-m)
C.045...TB2	
C.090...TB1	
C.090...TB2	
C.090...TB3	500 lb-in (56 N-m)
E.16	
E.24	
SL.16	

A minimum thread engagement of 1.5 x thread diameter is recommended for threaded body (TB) style gas springs. Use the torque specification for proper installation. Torque specification varies if using a RT Ratcheting Tool, refer to Bulletin No. B04139B.

* Based on strength of threads

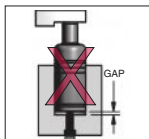
Draw Die and Other Contaminants



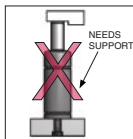
Protect gas springs by providing adequate drainage in gas spring pockets. This is especially important if the spring will be exposed to draw die lubricants or oils.

Direct contact with certain die lubricants and cleaners can be harmful to gas springs or can cause pressure increase. The Duralene® rod wiper, standard in Micro Series springs, will help prevent lubricant contamination. If lubricant exposure is still a problem, contact DADCO.

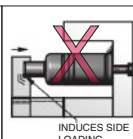
Improper Installation Examples



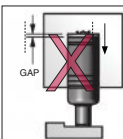
Verify cap screw length. Do not exceed M6 x 1 Tap depth. Incorrect installation of cap screw may cause damage.



Do not use the bottom mount in an unsupported or open mounting application.

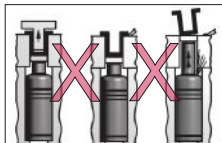


Do not constrain the rod end.

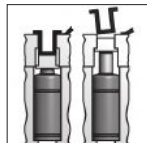


Avoid large gaps in upper. Use tapped hole in base to secure and pre-load if possible.

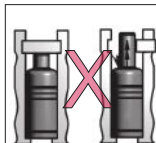
Uncontrolled Release



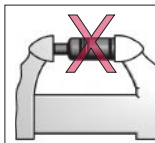
Jammed parts are very dangerous. If parts are jamming, determine the root cause and repair it before production continues. Failure to repair the problem will cause failure or damage of the gas spring.



Pre-loading the pad will prevent gas spring damage from "snap action" or sudden release.



Sudden release will cause gas spring to exhaust. Restricting rod travel will help prevent gas spring damage.



Do not compress gas springs in an unsafe manner. Never compress in a vice or clamp outside a die; damage can result. Never strike the rod with a hammer to test for pressure.

Proper Disposal

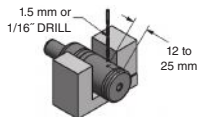
CAUTION:

Always wear safety goggles and use extreme care when handling a damaged gas spring.

Before throwing out damaged or worn out gas springs be sure to discharge all pressure.



Valve Bleed Tool 90.360.4



1. Discharge through the adjustable valve using the Valve Bleed Tool or Charging Adapter, 90.315.5.
2. If spring is damaged and cannot be discharged using the Valve Bleed Tool then drill a hole to discharge.

Gas Spring Installation Design and Operation

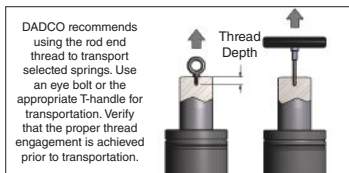
Nitrogen Gas Spring Technical Data

DADCO has established operating specifications and installation requirements for its Mini (L, LJ), **Ultra Force®** (U.0400 – U.20000), UH, SCR and Large (90.8, 90.5B2, 90.10, UX and SC) Series Nitrogen Gas Springs to help ensure customer safety and optimize product performance. Review the guidelines in this bulletin carefully.

Operating Specifications

Charging Medium	Nitrogen Gas	Nitrogen is an abundant gas that does not react easily with other elements. These properties make it the ideal charging medium for gas springs. No other gas should be used.
Charging Pressure Range	SCR Series / U.0400 / UH.0400: 15 – 180 bar (220 – 2600 psi) Mini / U.0600 – U.20000 / UH.0600 – UH.6600 / Large: 15 – 150 bar (220 – 2175 psi)	The maximum charging pressure for self-contained and linked nitrogen gas springs is indicated at the left. Do not exceed maximum charging pressure.
Operating Temperature	4°C – 71°C (40°F – 160°F)	Operating the gas spring within the specified temperature range is important to extend gas spring life. For high-temperature operations, contact DADCO for assistance. After prolonged operation, the outside of the gas spring may be hot to touch, handle with care.
Maximum Speed	1.6 m/s (63 in/s)	Operating the gas spring within speed limits is required for safe operation. For estimating operation rate/temperature, please refer to the web-based calculator at www.dadco.net .

Transport Thread



Gas Spring Models	Rod End Thread	Required Thread Engagement
90.10.03000, 90.10.05000, 90.10.07500	M8	12 mm
90.10.10000	M10	15 mm
U.9600, UX.6600, UX.9600	M8	12 mm
U.20000, UX.20000	M10	15 mm

Tools for Charging and Discharging



Valve Bleed Tool
90.360.4



Port Servicing Tool
90.320.8



Quick Disconnect Charging Assembly
Standard 90.310.040 • High Pressure 90.310.041 or 90.310.044 • European 90.310.045



G1/8 Charging Nipple
90.310.111



M6 Charging Nipple
90.310.143



NOTE: DADCO recommends that customers identify tools containing high pressure nitrogen gas springs to ensure their proper handling. Contact DADCO for Safety Plate ordering information.

Charging Nitrogen Gas Springs

Self-Contained Gas Springs typically arrive charged. *The instructions below apply to an uncharged gas spring.*

1. Before charging, verify the rod is fully extended to its proper stroke length, ensuring that the housing is seated properly. Use a DADCO T-Handle to extend the rod.
2. Prepare the Filling Port

Self-Contained Operation

- a. Remove the protective screw/flush plug.
- b. Thread the appropriate DADCO Filler Valve into the port.
- c. Connect the female quick disconnect adapter on the charging assembly to the filler valve.

Linked System Operation

- a. Pipe all gas springs to the control panel or multi panel following proper assembly guidelines.
- b. Make sure all hoses and fittings are tight.
- c. Attach the charging assembly to the filler valve on the control panel or multi panel.

3. Open the main valve on the nitrogen tank.
4. Set the desired charging pressure on the regulator.
5. Slowly open the shut-off valve and allow each spring to reach the desired charging pressure.
6. After each spring has been charged to the desired pressure, **CLOSE THE HOSE SHUT-OFF VALVE AND THE TANK SHUT-OFF VALVE.** Disconnect the charging assembly from the filler valve. The small amount of nitrogen trapped between the shut-off valve and filler valve will bleed off as you disconnect the fitting.

NOTE: If you're not using a DADCO Charging Assembly, make sure your charging assembly consists of a high pressure thermo plastic hose, o-ring face seal fittings and a high pressure valve.

7. For self-contained units, verify the internal pressure using a DADCO Load Cell, contact DADCO for load cell instructions and additional information. DADCO recommends periodic checking of internal gas spring pressure as a preventive maintenance measure.

Discharging

CAUTION: Before disposing of damaged or worn out gas springs, be sure to discharge all pressure. Contact DADCO for additional information.

Self-Contained Operation

1. When discharging a DADCO Nitrogen Gas Spring position the gas spring horizontally with the port up for safety.
2. Remove the port plug.
3. Keeping face and hands clear of the port, use the Valve Bleed Tool (90.360.4) or Port Servicing Tool (90.320.8) to depress the valve. Cover the port with a cloth to absorb discharge.
4. After all of the gas pressure is exhausted, be sure that the piston rod will freely extend and retract into the tube manually. If not, try depressing the valve again. If still unsuccessful, STOP and contact DADCO.
5. If damage should occur to your gas spring, handle with care. Take spring out of service and discharge immediately. If unable to discharge through the port, contact DADCO for assistance.

Linked System Operation

1. Exhaust the nitrogen gas by opening the bleed valve on the control panel.
2. Verify that all pressure is relieved by manually retracting the piston rod into the tube. If the rod will not fully retract release the remaining pressure. If still unsuccessful, STOP and contact DADCO.

Service

DADCO's Mini (L, LJ), **Ultra Force®** (U.0400 – U.20000), UH, SCR and Large (90.8, 90.5B2, 90.10, UX and SC) Series Nitrogen Gas Springs are repairable. DADCO supplies detailed repair instructions with its repair and seal kits. After reviewing the maintenance guides, if you require additional training or have any questions, please contact DADCO. Contact DADCO for SCR Series spring repair.

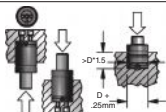


CAUTION
Always wear safety glasses when performing maintenance on nitrogen gas springs.



Mounting

DADCO offers a wide selection of mounts to meet specific customer applications. As a general rule, installation and fastening of the gas spring should take into consideration load support, fastener selection and torque values. DADCO recommends using medium strength serviceable thread locking compound on mounting screws. Refer to DADCO's product catalogs for mount compatibility with each series and model of nitrogen gas spring.



TO / AO
Basic Mount

Drop in, flat bottom pocket. Mount from base. Choose proper length screws to maximize thread engagement. Always use thread locking compound.

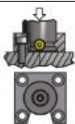


F12 / B12 / 90.12 / 90.112 / 90.212 / 90.312 Model

Mount from top only.
Back-up is required to support the full load.

CAUTION!

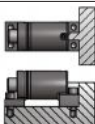
- Do not weld
- Do not machine or modify
- Protect from damage



TNF1 (Welded)

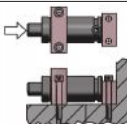


TR2 (Welded)

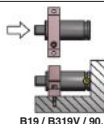


TK (Welded)

Mount from top only. Back-up is required to support the full load.
Welded mounts available on large gas springs only.

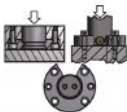


B26 / 90.26 Model

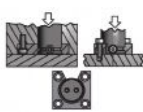


B19 / B319V / 90.19 / 90.319 Model

Mount from top only. Back-up is required to support the full load.

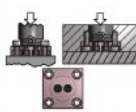


TFM (Welded)



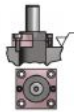
TSW (Welded)

Mount from the top or base. Back-up is required to support the full load. Welded mounts available on large gas springs only.



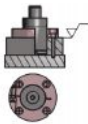
F11 / B11 / 90.11 / 90.911 Model

Mount from top or base. Back-up is required to support full load.
NOTE: Mount 90.11.07500 from top only.



B322 / 90.322 Model

Mount from top only. Wire ring retained mount supports the full load. No back-up required. L/LJ only.



B27 / 90.27 Model

Mount from the top only.
Back-up is required to support the full load. L/LJ only.

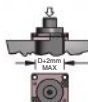


B28 / 90.28 Model
(Threaded Body)

DADCO recommends using anti-seize on threaded body springs, especially when utilizing a mount. L Series Only.



B29 / 90.29 Model
(Threaded Body)



B25 / 90.25 / 90.325 Model

Mount from top only. Wire ring retained mount supports the full load. No back-up is required.



F21 / B21 / 90.21 / 90.321 Model

Standard Installation Principles

0.9 x S = MAX Travel
Stroke Reserve Not For Travel

OT 1
OT 2 C

DADCO recommends at least 10% stroke reserve to achieve optimal safety. Two types of overtravel can occur, OT 1 may cause a crushed spring, OT 2 may cause internal damage. Over stroking the rod or impacting the top of the cylinder will cause permanent damage. A high travel percentage may also cause the maximum operating temperature to be exceeded. 10% stroke reserve is recommended for optimal performance (20% for **Ultra Force®** Series Springs).

A-A
A-A

>1°
(SC Series >0.2°)

Avoid side loading when possible. Side loading resulting from press action or worn guide components causes increased wear on the bearing, seal, and piston rod. Rod end may wear onto soft die components, use hardened contact surface (RC 25-40). The end of the piston rod has a construction thread intended for assembly and disassembly purposes only, and should never be used to mount or secure the gas spring. Die vibration and/or misalignment will damage the spring.

Improper Installation

Drain Hole

Avoid direct contact with certain die lubricants and cleaners. Protect gas springs by providing adequate drainage in gas spring pockets.

Gap

Verify cap screw length.

Induces side loading

Ensure the rod end is not constrained. Use the bottom mount in a supported application and not one of open mounting.

Gap

Avoid large gaps in upper. Use tapped holes in base to secure and pre-load if possible.

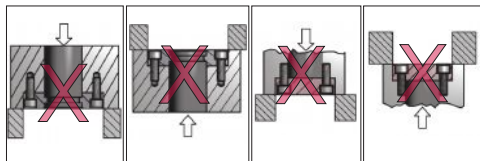
Choose proper length screw to maximize thread engagement. A screw that is too long will damage the spring and one that is too short does not provide enough support. Always use thread locking compound.

Uncontrolled Release

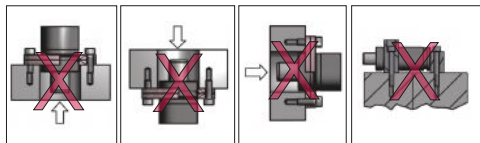
Jammed parts are very dangerous. If parts are jamming, determine the root cause and repair it before production continues. Slightly pre-loading gas spring prevents damage from sudden release.

Mounting screws are not capable of supporting the full gas spring load. Tapped holes are provided to secure the cylinder.

Improper Installation (Continued)



Do not use welded mounts without proper back up.



Do not use mounting screws to support the full load. Install top flange mounts from top only.

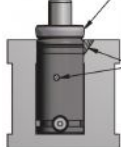
Do not rely on fasteners for shear loading. Always back up.

Safe Removal of Damaged Nitrogen Gas Springs

- Discharge gas spring before removal.
- Do not use a slide hammer or similar method to remove a gas spring. Slide hammer forces exceed design limits and will damage internal components.



Sign of over stroking. Potentially unsafe gas spring.



If the port is not accessible, drill through the body of the gas spring to safely discharge. It may be necessary to drill through die components. Die disassembly may also be required.

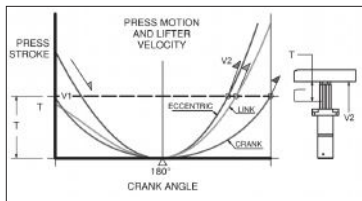
DADCO has established operating specifications and installation requirements for its Nitrogen Gas Lifters to help ensure customer safety and to optimize product performance. Review the guidelines in this bulletin carefully.

Operating Specifications

- Nitrogen is an abundant gas that does not react easily with other elements. These properties make it the ideal charging medium for gas spring lifters.
No other gas should be used.
- Refer to the chart for the maximum charging pressure for the different gas spring lifter models. Do not exceed the maximum charging pressure.
- Operating the gas spring lifter within the specified temperature range is important to extend gas spring lifter life. For high-temperature operations, contact DADCO for assistance. Immediately after prolonged operation, the outside of the gas spring lifter may be hot to touch; handle with care.
- Operating the gas spring lifters within speed limits prevents heat build-up and prolongs gas spring lifter life. For applications outside of the speed limits contact DADCO.
- TRAVEL SHOULD NOT EXCEED 90% OF STROKE.
- DESIGN ADEQUATE SAFETY SO LIFTER IS NOT OVER-STROKED.

Lifter Model	Gas Spring Used	Maximum Charging Pressure	Operating Temperature Range	Maximum Speed
SL2.090	C.090	177 bar (2560 psi)	4° C -71°C (40°F - 160°F)	.8 m/sec (31 in/sec)
SL2.180	C.180	177 bar (2560 psi)		
SL2.300	L.300	150 bar (2175 psi)		
SLN.090	C.090	177 bar (2560 psi)		
SLN.180	C.180	177 bar (2560 psi)		
SLN.300	Integral	150 bar (2175 psi)		
SLC.500	Integral	150 bar (2175 psi)		
SLC.800	Integral	70 bar (1000 psi)		

Maximum Velocity and Attachment Capacity Per Lifter



Ram extension velocity varies by strokes per minute, press stroke and press type. For link or eccentric type presses, the extension velocity may exceed 0.8 m/s (32 in/s). Using the press manufacturer's data, verify that the attachment mass does not exceed recommended limits.

Determine ram velocity and reference the recommended attachment mass per lifter. Attachment mass assumes balanced load and actuation force. Do not exceed the ram velocity per lifter. For increased capacity, install external positive stops or add more lifter units to prevent lifter damage.

*SLC.800 may have production rate limits depending upon charging pressure.

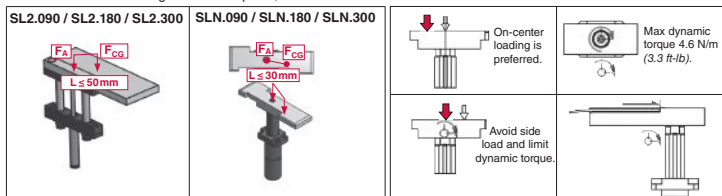
All Lifters			SL2.090 / SLN.090 / SLC.500		SL2.180 / SLN.180 / SLN.300 / SLC.800*		SL2.300	
Ram Velocity			Attachment Mass		Attachment Mass		Attachment Mass	
mm/s	fpm	in/s	kg	lbs-mass	kg	lbs-mass	kg	lbs-mass
300	59	12	20	44	31	68	46	102
400	79	16	11	25	17	38	26	57
500	98	20	7.3	16	11	24	17	37
600	118	24	5.0	11	7.7	17	12	25
700	138	28	3.7	8	5.6	12	8	19
800	157	31	2.8	6	4.3	10	6	14

Nitrogen Gas Lifter Installation and Operation

Nitrogen Gas Lifter Technical Data

Lifter Loading and Center of Gravity

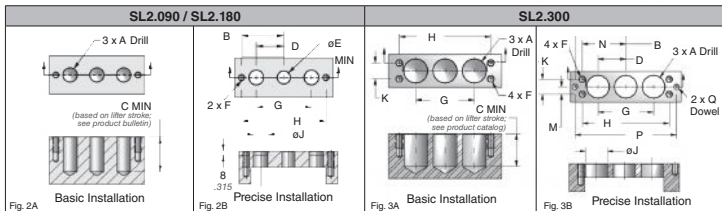
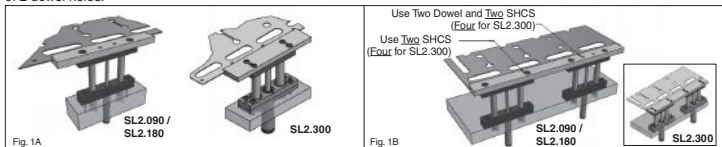
To maximize the reliability of a stand-alone lifter, actuate as close to **FA** as possible. Good design practice should minimize **L** and locate **FCG** on the centerline of the lifter. Increased wear on the bearing will occur if **L** is exceeded or if **FA** is offset from the centerline. If a large offset is required, reduce the attachment load or add a second lifter.



Dynamic Moment Loading					
	SL2.090	SL2.180	SL2.300	SLN.090	SLN.180 / SLN.300
lb-in max	122	163	131	127	269
lb-ft	10	14	11	11	22
N.m	14	18	15	14	30

SL2 Installation Guidelines

Rails may be attached to the SL2 lifters with the two or four tapped holes on the top rail plate (Figure 1A). When using multiple lifters, key or dowel the location on only one lifter, to prevent binding (Figure 1B). The SL2 lifters may be installed using the basic installation (Figures 2A and 3A). For higher precision, install using the dimensions given in the Precise Installation (Figures 2B and 3B). The bearings will serve as dowels for the SL2.090 and SL2.180, while the SL2.300 needs the addition of 2 dowel holes.



Model	A	B	D	E	F	G	H	J	K	M	N	P	Q
SL2.090	mm inch	22.5 7/8	65 2.559	42.5 1.673	19.1 .751	M10 3/8"	85 3.346	130 5.118	22H7 .8665	-	-	-	-
SL2.180	mm inch	26.5 1-1/32	75 2.953	50 1.969	25.1 .988	M12 1/2"	100 3.937	150 5.906	26H7 1.024	-	-	-	-
SL2.300	mm inch	ø40 1-9/16	78 3.071	50 1.969	-	M12 1/2"	100 3.937	156 6.142	38H7 1.496	27 1.063	13.5 .531	91 3.583	182 7.165
												182 7.165	ø10 0.394

Service

DADCO's Nitrogen Gas Spring Lifters are repairable. DADCO supplies detailed repair instructions with each repair kit. After reviewing maintenance guide, if you require additional training or have any questions please contact DADCO.

Lifter Model	Repair Kit
SL2.090	SL2.RK.090 (25-125 mm stroke) or SL2.RL.090 (150-200 mm stroke) Repair kit includes bearings with snap rings (2), dampening devices (2) and a maintenance manual.
SL2.180	SL2.RK.180 (25-125 mm stroke) or SL2.RL.180 (150-200 mm stroke) Repair kit includes bearings with snap rings (2), dampening devices (2) and a maintenance manual.
SL2.300	SL2.RK.300 Repair kit includes bearing assemblies with snap rings (2), dampening devices (2) and a maintenance manual.
SLN.090	SLN.RK.090 Repair kit includes bearing, piston rider, rod keys (2), assembly grease and a maintenance manual.
SLN.180	SLN.RK.180 Repair kit includes bearing, piston rider, rod keys (2), assembly grease and a maintenance manual.
SLN.300	SLN.RK.300 Repair kit includes dust cover, bearing, cartridge assembly, piston rider, set screws, bottle of assembly oil, assembly grease and a maintenance manual.
SLC.500	SLC.RK.500 Repair kit includes dust cover, cushion collar assembly, cartridge assembly, bottle of assembly oil and a maintenance manual.
SLC.800	SLC.RK.800 Repair kit includes dust cover, cushion collar assembly, cartridge assembly, bottle of assembly oil and a maintenance manual.

SL2.090/SL2.180/SL2.300 Gas Spring Replacement



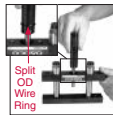
1. Remove the Mount Screws from the bottom of the lifter using an allen wrench. If necessary, wrap the lifter in a soft cloth and clamp it in a vise.



2. Pull the mount apart and slide the Lower Mount off the Gas Spring, (**Micro 90°/ Micro 180°/ L.300**).



3. Slide the Gas Spring out of the Upper Mount. For additional maintenance refer to the complete maintenance manual included in the repair kits.



4. Install the Gas Spring with Split OD Wire Ring (and mount spacer for the SL2.300) into the Upper Mount.



5. Install the Lower Mount over the Gas Spring.



6. Install the Mount Screws. Using an allen wrench tighten to:

SL2.090/ SL2.180	180 lb.-in / 20 N-m
SL2.300	250 lb.-in / 28 N-m

SLN.090/SLN.180 Gas Spring Replacement

CAUTION!

Do not remove rear head if the rod is stuck in the down position. If the rod cannot be pulled up, the gas spring inside may be under pressure. Contact DADCO for assistance.

The gas spring inside is preloaded 1 mm.



1. Wrap the SLN.090/SLN.180 cylinder body in a soft cloth. Clamp the cylinder face down in a vise so that the cylinder is secured. Remove the Rear Head using the Rear Head Removal Tool with a wrench or the Removal Kit.



2. Slide the gas spring (**Micro 90°/ Micro 180°**) out of the lifter Tube. For additional maintenance refer to the complete maintenance manual included in the repair kits.



3. Lightly oil the body of the gas spring (**Micro 90°/ Micro 180°**) and install it into the Tube. Add 2-3 drops of serviceable threadlocker to the threads of the rear head. Replace the rear head. Tighten using the Rear Head Removal Tool with a wrench or the Removal Kit to **180 lb-in / 20 N-m**.

Rear Head Removal Tools:

SLN.090	90.380
SLN.180	SLN.HR.180

Notes

DADCO®

Micro Nitrogen Gas Springs

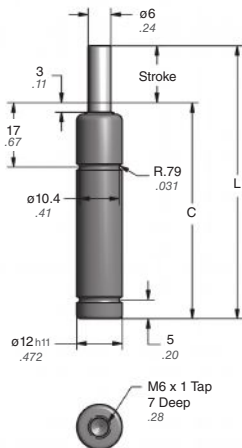
Micro Series

PED

2014/68/EU
COMPLIANT



Ideal for Coil Spring Replacement



Part No.	Stroke mm inch	C	L ±0.4 ±0.015
•C.045.007	07 .28	49 1.93	56 2.205
C.045.010	10 .39	52 2.05	62 2.441
C.045.013	12.7 .50	54.7 2.15	67.4 2.654
•C.045.015	15 .59	57 2.24	72 2.835
•C.045.025	25 .98	67 2.64	92 3.622
•C.045.038	38 1.50	80 3.15	118 4.646
•C.045.050	50 1.97	92 3.62	142 5.591
C.045.063	63.5 2.50	108.5 4.27	172 6.772
C.045.080	80 3.15	125 4.92	205 8.071

• Preferred Sizes

On-Contact Force – Adjustable Black Model
Imperial **Metric**

Force Chart	Initial lb. daN	Final lb. daN	Pressure psi bar
Yellow - YW	112 50	166 74	2560 177
Red - RD	84 37	124 55	1920 132
Blue - BU	56 25	83 37	1280 88
Green - GR	28 12	41 18	640 44
Black - BK	See Charts		

Pressure (psi)	Force (lb.-f)
2560	112
2200	96
2000	88
1750	77
1500	66
1000	44
500	22
260	11

$$P = F \div .044 \quad F = P \times .044$$

Pressure (bar)	Force (daN)
177	50
150	42
125	35
100	28
75	21
50	14
35	10
18	5

$$P = F \div .283 \quad F = P \times .283$$

Ordering Example:

C.045.007. GR

Part Number:

Includes Series, Model and Stroke Length

Force:

YW, RD, BU, GR

BK – Black adjustable model - specify pressure:
18 – 177 bar (260 – 2560 psi).

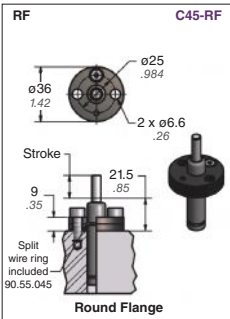
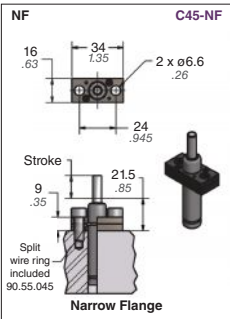
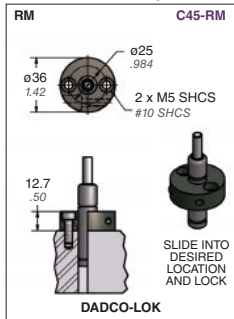
Adjustable Model Ordering Example:

C.045.007.BK.150

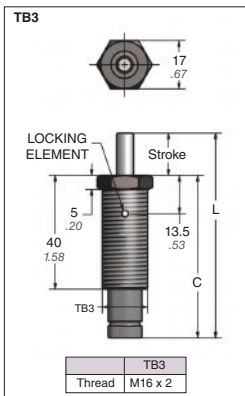
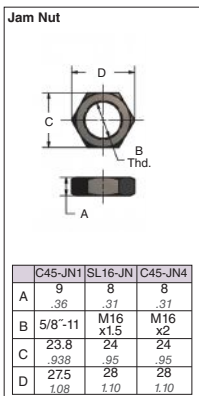
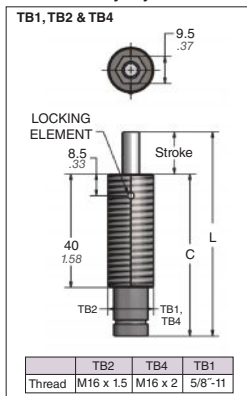
Micro 45® Mounts

Micro Series Nitrogen Gas Springs

Attachable Mount Options



Threaded Body Styles



Ordering Example:

C.045.007. TB1. GR

Part Number:

Includes Series, Model and Stroke Length

Mount Option:

RM, NF, RF, TB1, TB2, TB3, TB4

Mount Only Ordering Example: **C45-RM**

Force:

YW, RD, BU, GR

BK – Black adjustable model - specify pressure:
18 – 177 bar (260 – 2560 psi).

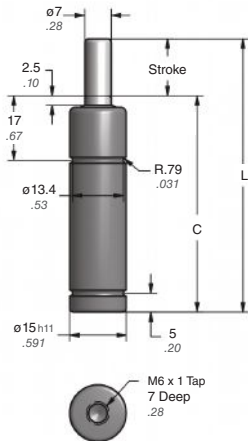
Adjustable Model Ordering Example:

C.045.007.TB1.BK.150

Refer to Bulletin #B04120 for GC.045.015.TB5 information.

Micro Series Nitrogen Gas Springs

Micro 70®



Part No.	Stroke mm inch	C	L ±0.4 ±0.015
•C.070.007	07 .28	49 1.93	56 2.205
C.070.010	10 .39	52 2.05	62 2.441
C.070.013	12.7 .50	54.7 2.15	67.4 2.654
•C.070.015	15 .59	57 2.24	72 2.835
•C.070.025	25 .98	67 2.64	92 3.622
•C.070.038	38 1.50	80 3.15	118 4.646
•C.070.050	50 1.97	92 3.62	142 5.591
C.070.063	63.5 2.50	108.5 4.27	172 6.772
•C.070.080	80 3.15	125 4.92	205 8.071
C.070.100	100 3.94	145 5.71	245 9.646
C.070.125	125 4.92	170 6.69	295 11.614

•Preferred Sizes

Force Chart	Initial lb. daN	Final lb. daN	Pressure psi bar
Yellow - YW	154 68	208 93	2560 177
Red - RD	115 51	156 69	1920 132
Blue - BU	77 34	104 46	1280 88
Green - GR	38 17	52 23	640 44
Black - BK	See Charts		

On-Contact Force – Adjustable Black Model

Imperial	
Pressure (psi)	Force (lb.-f)
2560	154
2200	132
2000	120
1750	105
1500	90
1000	60
500	30

Metric	
Pressure (bar)	Force (daN)
177	68
150	57
125	48
100	38
75	29
50	19
35	13

$$P = F \div .060 \quad F = P \times .060$$

$$P = F \div 0.38 \quad F = P \times 0.38$$

Ordering Example:

C.070.007. GR

Part Number:

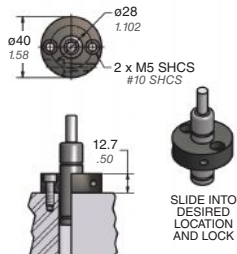
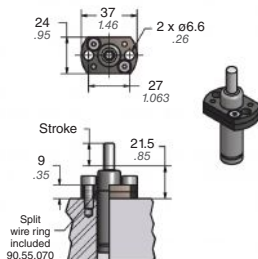
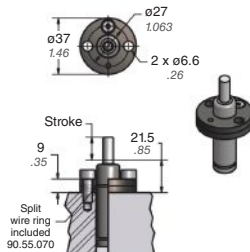
Includes Series, Model and Stroke Length

Force:

YW, RD, BU, GR

BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

Ordering Example: **C.070.007.BK.150**

RM
C70-RM

DADCO-LOK
FA
C70-FA

Narrow Flange
RF
C70-RF

Round Flange

Ordering Example:

C.070.007. RM. GR

Part Number:

Includes Series, Model and Stroke Length

Mount Option:

RM, FA, RF

Mount Only Ordering Example: C70-RM

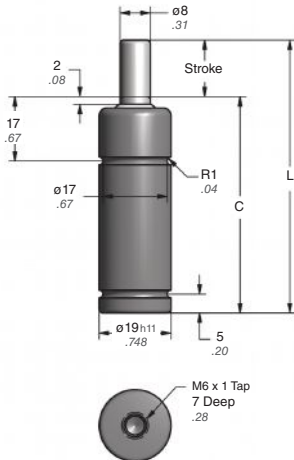
Force:

YW, RD, BU, GR

BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

Adjustable Model Ordering Example:

C.070.007.RM.BK.150

Micro 90®

Part No.	Stroke mm inch	C	L ±0.4 ±0.015
•C.090.007	07 <i>.28</i>	49 <i>1.93</i>	56 <i>2.205</i>
C.090.010	10 <i>.39</i>	52 <i>2.05</i>	62 <i>2.441</i>
C.090.013	12.7 <i>.50</i>	54.7 <i>2.15</i>	67.4 <i>2.654</i>
•C.090.015	15 <i>.59</i>	57 <i>2.24</i>	72 <i>2.835</i>
•C.090.025	25 <i>.98</i>	67 <i>2.64</i>	92 <i>3.622</i>
•C.090.038	38 <i>1.50</i>	80 <i>3.15</i>	118 <i>4.646</i>
•C.090.050	50 <i>1.97</i>	92 <i>3.62</i>	142 <i>5.591</i>
C.090.063	63.5 <i>2.50</i>	108.5 <i>4.27</i>	172 <i>6.772</i>
•C.090.080	80 <i>3.15</i>	125 <i>4.92</i>	205 <i>8.071</i>
C.090.100	100 <i>3.94</i>	145 <i>5.71</i>	245 <i>9.646</i>
C.090.125	125 <i>4.92</i>	170 <i>6.69</i>	295 <i>11.614</i>
C.090.150	150 <i>5.91</i>	203 <i>7.99</i>	353 <i>13.898</i>
C.090.160	160 <i>6.30</i>	213 <i>8.39</i>	373 <i>14.685</i>
C.090.175	175 <i>6.89</i>	228 <i>8.98</i>	403 <i>15.866</i>
C.090.200	200 <i>7.87</i>	253 <i>9.96</i>	453 <i>17.835</i>

- *Preferred Sizes*

Force Chart	Initial lb. daN	Final lb. daN	Pressure psi bar
Yellow - YW	200 89	256 114	2560 177
Red - RD	150 66	192 85	1920 132
Blue - BU	100 44	128 57	1280 88
Green - GR	50 22	64 28	640 44
Purple - PR	20 9	26 12	260 18
Orange - OR	10 5	13 6	130 9
Black - BK	See Charts		

On-Contact Force – Adjustable Black Model

Pressure (psi)	Force (lb.-f)
2560	200
2200	172
2000	156
1750	136
1500	117
1000	78
500	39

$$P = F \div .078 \quad F = P \times .078$$

Metric	
Pressure (bar)	Force (daN)
177	89
150	75
125	63
100	50
75	38
50	25
35	17

$$P = F \div 0.50 \quad F = P \times 0.50$$

Ordering Example:

C.090.007. GR

Part Number:

Includes Series, Model and Stroke Length
150 mm – 200 mm strokes; contact DADCO
for application evaluation.

- Force:

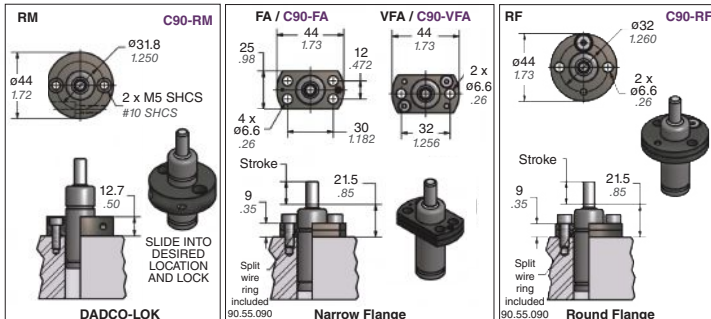
YW, RD, BU, GR, PR, OR
BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

Ordering Example: C.090.007.BK.150

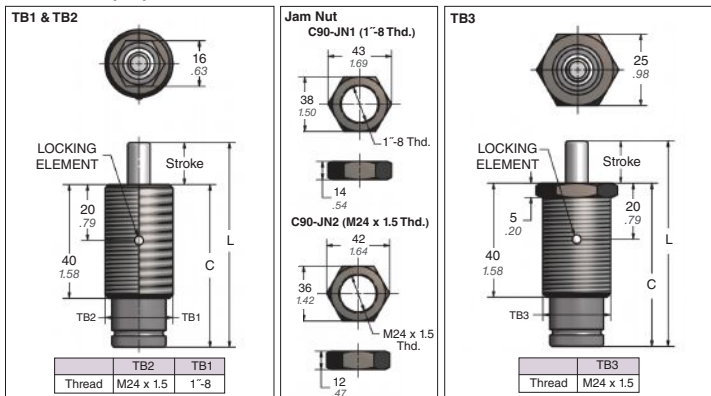
Micro 90® Mounts

Micro Series Nitrogen Gas Springs

Attachable Mount Options



Threaded Body Styles



Ordering Example:

C.090.007. TB1. GR

Part Number:

Includes Series, Model and Stroke Length

Mount Option:

RM, FA, VFA, RF, TB1, TB2, TB3

Mount Only Ordering Example: **C90-RM**

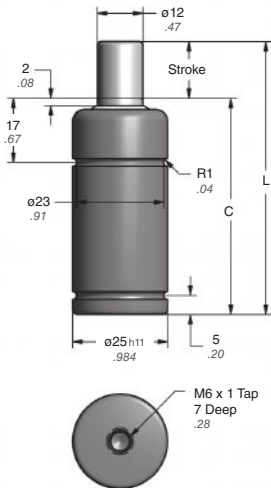
Force:

YW, RD, BU, GR, PR, OR

BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

Adjustable Model Ordering Example:

C.090.007.TB1.BK.150



Part No.	Stroke mm inch	C mm inch	L mm inch ±0.4 ±0.015
•C.180.007	07 .28	49 1.93	56 2.205
C.180.010	10 .39	52 2.05	62 2.441
C.180.013	12.7 .50	54.7 2.15	67.4 2.654
•C.180.015	15 .59	57 2.24	72 2.835
•C.180.025	25 .98	67 2.64	92 3.622
•C.180.038	38 1.50	80 3.15	118 4.646
•C.180.050	50 1.97	92 3.62	142 5.591
C.180.063	63.5 2.50	108.5 4.27	172 6.772
•C.180.080	80 3.15	125 4.92	205 8.071
C.180.100	100 3.94	145 5.71	245 9.646
C.180.125	125 4.92	170 6.69	295 11.614
C.180.150	150 5.91	203 7.99	353 13.898
C.180.160	160 6.30	213 8.39	373 14.685
C.180.175	175 6.89	228 8.98	403 15.866
C.180.200	200 7.87	253 9.96	453 17.835

• Preferred Sizes

Force Chart	Initial lb. daN	Final lb. daN	Pressure psi bar
Yellow - YW	450 200	612 272	2560 177
Red - RD	337 149	459 204	1920 132
Blue - BU	224 100	306 136	1280 88
Green - GR	112 50	153 68	640 44
Black - BK	See Charts		

On-Contact Force – Adjustable Black Model

Imperial

Pressure (psi)	Force (lb.-f)
2560	450
2200	387
2000	351
1750	307
1500	263
1000	175
500	88

$$P = F \div .175 \quad F = P \times .175$$

Metric

Pressure (bar)	Force (daN)
177	200
150	170
125	141
100	113
75	85
50	57
35	39

$$P = F \div 1.13 \quad F = P \times 1.13$$

Ordering Example:

C.180.007. GR

Part Number:

Includes Series, Model and Stroke Length
150 mm – 200 mm strokes; contact DADCO
for application evaluation.

Force:

YW, RD, BU, GR
BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

Ordering Example: C.180.007.BK.150

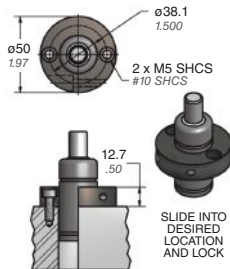
Micro 180® Mounts

Micro Series Nitrogen Gas Springs

1

RM

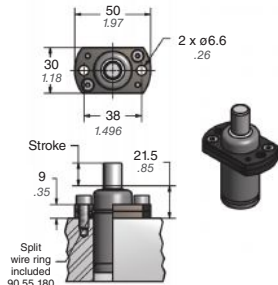
C180-RM



DADCO-LOK

VFA

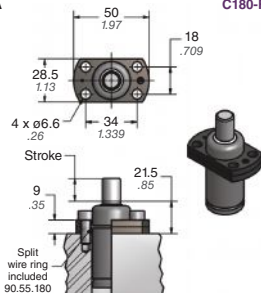
C180-VFA



Narrow Flange

FA

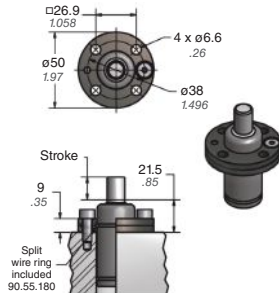
C180-FA



Narrow Flange

RF

C180-RF



Round Flange

Ordering Example:

C.180.007. RM. GR

Part Number:

Includes Series, Model and Stroke Length

Mount Option:

RM, FA, VFA, RF

Mount Only Ordering Example: **C180-RM**

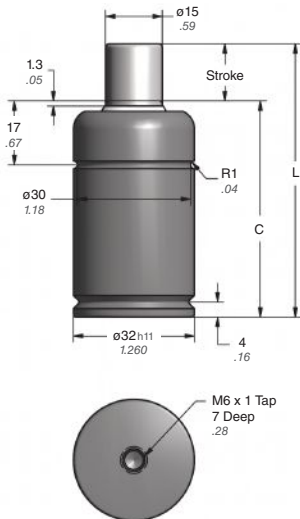
Force:

YW, RD, BU, GR

BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

Adjustable Model Ordering Example:

C.180.007.RM.BK.150



Part No.	Stroke mm inch	C	L ±0.4 ±0.015
•C.250.007	07 .28	49 1.93	56 2.205
C.250.010	10 .39	52 2.05	62 2.441
C.250.013	12.7 .50	54.7 2.15	67.4 2.654
•C.250.015	15 .59	57 2.24	72 2.835
•C.250.025	25 .98	67 2.64	92 3.622
•C.250.038	38 1.50	80 3.15	118 4.646
•C.250.050	50 1.97	92 3.62	142 5.591
C.250.063	63.5 2.50	108.5 4.27	172 6.772
•C.250.080	80 3.15	125 4.92	205 8.071
C.250.100	100 3.94	145 5.71	245 9.646
C.250.125	125 4.92	170 6.69	295 11.614

• Preferred Sizes

Force Chart	Initial lb. daN	Final lb. daN	Pressure psi bar
Yellow - YW	701 313	940 418	2560 177
Red - RD	526 233	705 314	1920 132
Blue - BU	351 156	470 209	1280 88
Green - GR	175 78	235 105	640 44
Black - BK	See Charts		

On-Contact Force – Adjustable Black Model

Imperial

Pressure (psi)	Force (lb.-f)
2560	701
2200	603
2000	548
1750	479
1500	411
1000	274
500	137

$$P = F \div .274 \quad F = P \times .274$$

Metric

Pressure (bar)	Force (daN)
177	313
150	265
125	221
100	177
75	133
50	88
35	60

$$P = F \div 1.77 \quad F = P \times 1.77$$

Ordering Example:

C.250.007. GR

Part Number:

Includes Series, Model and Stroke Length

Force:

YW, RD, BU, GR

BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

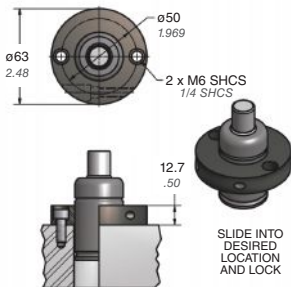
Ordering Example: C.250.007.BK.150

Micro 250® Mounts

Micro Series Nitrogen Gas Springs

RM

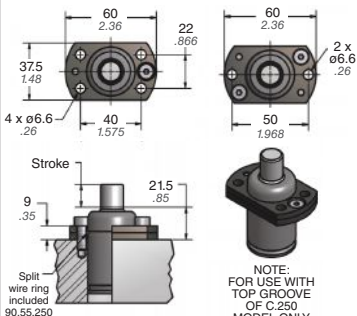
C250-RM



DADCO-LOK

FA / C250-FA

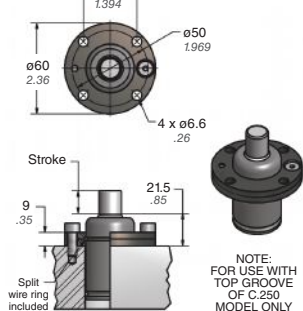
VFA / C250-VFA



Narrow Flange

RF

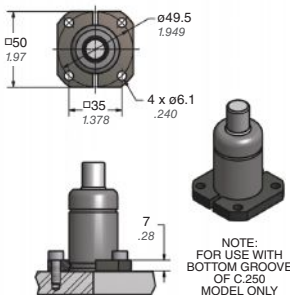
C250-RF



Round Flange

SF

C250-SF



Split Flange

Ordering Example:

C.250.007. RM. GR

Part Number:

Includes Series, Model and Stroke Length

Mount Option:

RM, FA, VFA, RF, SF

Mount Only Ordering Example: C250-RM

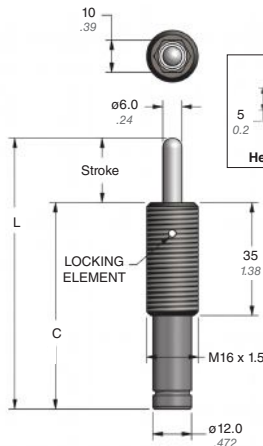
Force:

YW, RD, BU, GR

BK – Black adjustable model - specify pressure:
35 – 177 bar (500 – 2560 psi).

Adjustable Model Ordering Example:

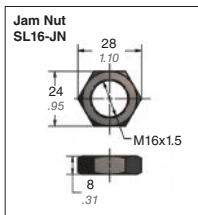
C.250.007.RM.BK.150



Part No.	Stroke mm inch	C	L ±0.4 ±0.015
E.16.020	20 .79	64 2.52	84 3.307
E.16.030	30 1.18	74 2.91	104 4.094
E.16.040	40 1.57	84 3.31	124 4.882
E.16.050	50 1.97	94 3.70	144 5.669
E.16.060	60 2.36	107 4.21	167 6.575
E.16.070	70 2.76	117 4.61	187 7.362
E.16.080	80 3.15	127 5.00	207 8.150

DADCO's E.16 Nitrogen Gas Stock Lifter matches the European VDI-BAK standard and the Ford WDX35-70 standard.

	TB2	TB4
Thread	M16 x 1.5	M16 x 2



On-Contact Force

Imperial

Pressure (psi)	Force (lb.-f)
2175	95
1088	48
580	25
290	13

$$P = F \div .044 \quad F = P \times .044$$

Metric

Pressure (bar)	Force (daN)
150	42
75	21
40	11
20	6

$$P = F \div .283 \quad F = P \times .283$$

Ordering Example:

E.16.020, TB2, 150

Part Number:

Includes Series, Model and Stroke Length

Thread Option:

TB2, TB4

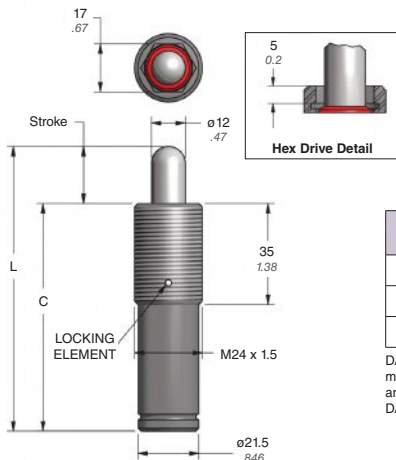
Charging Pressure:

Specify pressure: 20–150 bar (290 psi – 2175 psi).
When not specified, default is 150 bar.

E.24 Stock Lifter

Micro Series Nitrogen Gas Springs

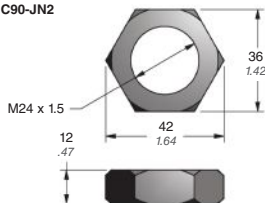
1



Part No.	Stroke mm inch	C	L ±0.4 ±0.015
E.24.020	20 .79	80 3.15	100 3.937
E.24.050	50 1.97	110 4.33	160 6.299
E.24.080	80 3.15	140 5.51	220 8.661

DADCO's E.24 Nitrogen Gas Stock Lifter matches the European VDI-BAK standard and the Ford WDX35-70 standard. Contact DADCO for additional stroke lengths.

**Jam Nut
C90-JN2**



On-Contact Force

Imperial

Pressure (psi)	Force (lb.-f)
2175	381
1088	191
580	102
290	51

$$P = F \div .175 \quad F = P \times .175$$

Metric

Pressure (bar)	Force (daN)
150	170
75	85
40	45
20	23

$$P = F \div 1.13 \quad F = P \times 1.13$$

Ordering Example:

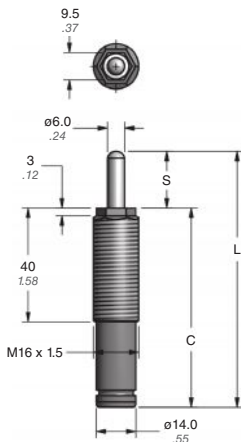
E.24.020. 150

Part Number:

Includes Series, Model and Stroke Length

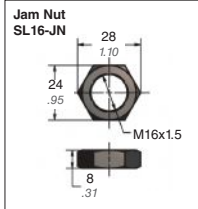
Charging Pressure:

Specify pressure: 20-150 bar (290 psi – 2175 psi).
When not specified, default is 150 bar.



Part No.	Stroke mm inch	C	L ±0.4 ±0.015
SL.16.010	10 .39	70 2.76	80 3.150
• SL.16.020	20 .79	80 3.15	100 3.937
SL.16.030	30 1.18	90 3.54	120 4.724
SL.16.040	40 1.57	100 3.94	140 5.512
• SL.16.050	50 1.97	110 4.33	160 6.299
SL.16.060	60 2.36	120 4.72	180 7.087
SL.16.070	70 2.76	130 5.12	200 7.874
• SL.16.080	80 3.15	140 5.51	220 8.661
SL.16.100	100 3.94	160 6.30	260 10.236

• Preferred Sizes



On-Contact Force

Imperial

Pressure (psi)	Force (lb.-f)
2611	114
2175	95
1088	48
580	25
290	13

$$P = F \div .044 \quad F = P \times .044$$

Metric

Pressure (bar)	Force (daN)
180	51
150	42
75	21
40	11
20	6

$$P = F \div .283 \quad F = P \times .283$$

Ordering Example:

SL.16.020. 150

Part Number:

Includes Series, Model and Stroke Length

For optional integrated locking element, add .LK.

Charging Pressure:

Specify pressure: 20–180 bar (290 psi – 2611 psi).
When not specified, default is 150 bar.

Operating Specifications

Charging Medium:	Nitrogen Gas
Maximum Charging Pressure:	
(Micro 45® – Micro 250®):	177 bar (2560 psi)
(E.16 and E.24):	150 bar (2175 psi)
(SL.16):	180 bar (2600 psi)
Operating Temperature:	4°C – 71°C (40°F – 160°F)
Maximum Speed:	1.6 m/sec (63 in/sec)

CAUTION:

Always wear safety goggles when performing any maintenance work on gas springs.

RT-24-A (for use with E.24)

RT-90-A (for use with Micro 90® TB1 and TB2)

When placed over the piston rod, the installation and removal tool engages the hex socket for easy installation and removal of the threaded body micros.



RT-Ratcheting Tool

RT-45 (for use with Micro 45® TB1, TB2 and TB4)

RT-16-B (for use with Micro 90® TB1 and TB2)

RT-16-D (for use with SL.16)

RT-16-F (for use with E.16)

Ratcheting tool with internal hex drive for easy installation and removal of the threaded body Micros and stock lifters.

For complete list of Ratcheting Tools refer to Bulletin No. B04139B.



Specialized Mounts

For customers with special applications that have space constraints or require return force, DADCO offers custom mount options. Contact DADCO for additional information.



Micro Wiper Cap

For customers with applications where aggressive draw die compound is used, DADCO offers the Micro Wiper Cap. The wiper cap can be ordered in a variety of materials and is installed at the factory to guard against draw die contamination, request Bulletin No. B03102A. Alternatively, DADCO offers an internal wiper in different materials. Contact DADCO for additional information.



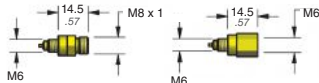
Linked Micro System

Typically DADCO Micro Series Nitrogen Gas Springs are operated self-contained, however they may also be linked. When operated as a linked system, adjustment, monitoring, draining and refilling can be performed from a central control panel mounted outside the die, request Bulletin No. B03103D.



Micro Series Port Adapters

DADCO's Micro Series Port Adapters are designed specifically to work with DADCO's Micro Series Nitrogen Gas Springs. These port adapters may be used with DADCO's MINIFLEX® Hose and Fittings; refer to Catalog No. C09118E.



90.607.122
Micro Service Fitting

90.607.038
Micro Port Adapter Extension

Notes

DADCO®

Mini Nitrogen Gas Springs

LJ and L Series



1/3, 1/2 and 3/4 Ton Compact Height Gas Springs!

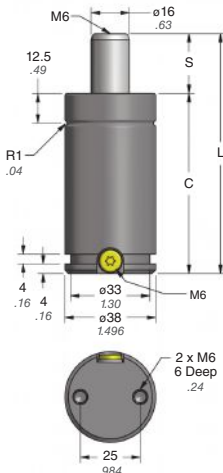




LJ.300
TO - Basic Model

Part No.	S mm inch	C mm inch	L mm inch ±0.25 ±0.010
• LJ.300.013	12.5 0.49	42.5 1.67	55 2.165
LJ.300.015	15 0.59	45 1.77	60 2.362
LJ.300.019	19 0.75	49 1.93	68 2.677
• LJ.300.025	25 0.98	55 2.17	80 3.150
LJ.300.032	33 1.30	63 2.48	96 3.780
• LJ.300.038	37.5 1.48	67.5 2.66	105 4.134
• LJ.300.050	50 1.97	80 3.15	130 5.118
LJ.300.063	62.5 2.46	92.5 3.64	155 6.102
LJ.300.075	75 2.95	105 4.13	180 7.087
• LJ.300.080	80 3.15	110 4.33	190 7.480
LJ.300.100	100.5 3.96	130.5 5.14	231 9.094
LJ.300.125	125 4.92	155 6.10	280 11.024

• Preferred Sizes



L.300
TO - Basic Model

Part No.	S* mm inch	C mm inch	L mm inch ±0.25 ±0.010
L.300.006	6.3 0.25	56.8 2.24	63.1 2.484
L.300.010	10 0.39	60.5 2.38	70.5 2.775
• L.300.013	12.5 0.49	63 2.48	75.5 2.972
L.300.016	16 0.63	66.5 2.62	82.5 3.248
L.300.019	19 0.75	69.5 2.74	88.5 3.484
• L.300.025	25 0.98	75.5 2.97	100.5 3.957
• L.300.038	37.5 1.48	88 3.46	125.5 4.941
• L.300.050	50 1.97	100.5 3.96	150.5 5.925
L.300.063	62.5 2.46	113 4.45	175.5 6.909
L.300.075	75 2.95	125.5 4.94	200.5 7.894
• L.300.080	80 3.15	130.5 5.14	210.5 8.287
L.300.100	100 3.94	150.5 5.93	250.5 9.862
L.300.125	125 4.92	175.5 6.91	300.5 11.831

• Preferred Sizes

• Extended stroke lengths available in L Series Springs, contact DADCO.

Ordering Example:

LJ.300.025. TO. 150

Part Number:

Includes Series (LJ or L),
Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified,
default is TO. L Series springs are
available in Threaded Body (TB1/TB2).

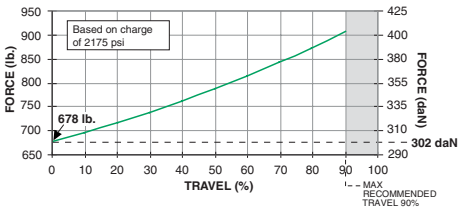
Charging Pressure:

15–150 bar (220–2175 psi).
When not specified, default
is 150 bar.

Force Charts

On-Contact Force

psi	lb.
2175	678
2000	623
1750	545
1500	467
1000	312
500	156
250	78



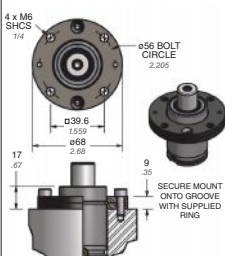
On-Contact Force

bar	daN
150	302
125	251
100	201
75	151
50	101
25	50
20	40

Mount Options

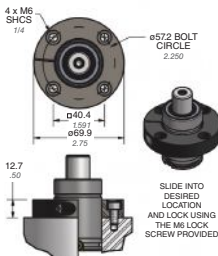
B21

90.21.00300



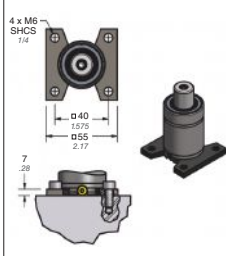
B27

90.27.00300



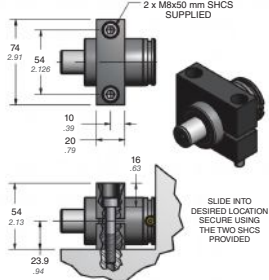
B312

90.312.00300



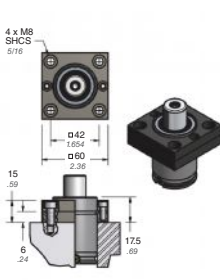
B319V

90.319V.0600



B322

90.322.00300



TC1 & TC3



Ordering Example:

Cylinder with Mount: LJ.300.025.B21.150

Mount Only: 90.21.00300

5 kN / ½ ton



- Preferred Sizes



L.500
TO – Basic Model

* Extended stroke lengths available in L Series Springs, contact DADCO.

LJ.500.025. TO. 150

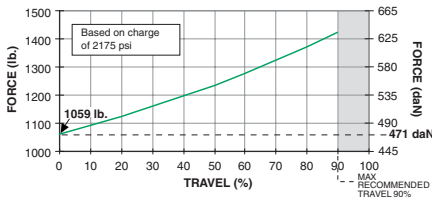
TO = Basic Model. When not specified, default is TO. L Series springs are available in Threaded Body (TB1/TB2).

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

Force Charts

On-Contact Force

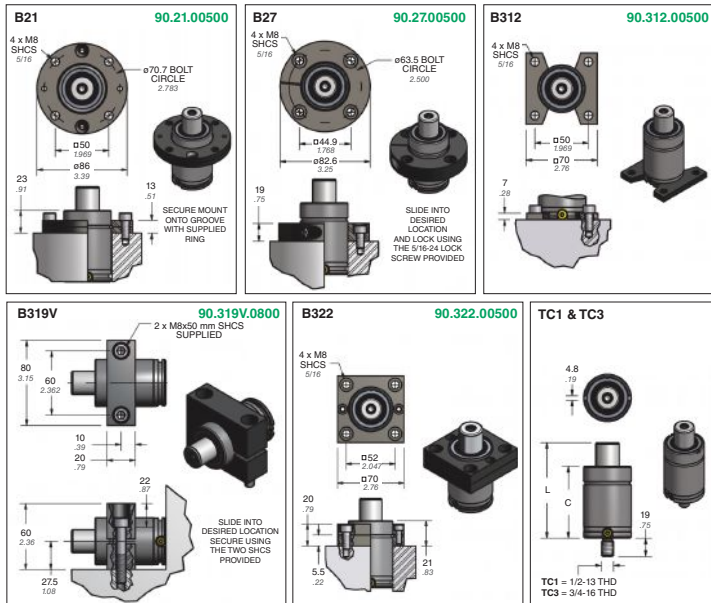
psi	lb.
2175	1059
2000	974
1750	852
1500	730
1000	487
500	243
250	122



On-Contact Force

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

Mount Options



Ordering Example:

Cylinder with Mount: LJ.500.025.B21.150

Mount Only: 90.21.00500

7.5 kN / $\frac{3}{4}$ ton



L.750
TO – Basic Model

Technical drawing of a 1/2" 20 TPI 6 Deep Hex Bolt. The drawing shows a side view and a top view. The side view includes dimensions: M8 thread, 17.5 (.68) height, S (shank length), C (hex length), L (total length), 1.77 (hex width), 1.968 (hex width), 4 (.16) chamfer, 4 (.16) chamfer, 25 (.98) hex width, and M6 thread. The top view shows a 20 TPI thread, 6 Deep hex, 2 x M8 6 Deep (.24) holes, and a 20 (787) diameter.

Part No.	S* mm inch	C	L ±0.25 ±0.010
L.750.006	6.3 0.25	56.8 2.24	63.1 2.48
• L.750.013	12.5 0.49	63 2.48	75.5 2.972
L.750.019	19 0.75	69.5 2.74	88.5 3.484
• L.750.025	25 0.98	75.5 2.97	100.5 3.957
• L.750.038	37.5 1.48	88 3.46	125.5 4.941
• L.750.050	50 1.97	100.5 3.96	150.5 5.925
L.750.063	62.5 2.46	113 4.45	175.5 6.909
L.750.075	75 2.95	125.5 4.94	200.5 7.894
• L.750.080	80 3.15	130.5 5.14	210.5 8.287
L.750.100	100 3.94	150.5 5.93	250.5 9.862
L.750.125	125 4.92	175.5 6.91	300.5 11.831

- *Preferred Sizes*

* Extended stroke lengths available in L Series Springs, contact DADCO.

Ordering Example:

LJ.750.025. TO. 150

Part Number:

Includes Series (LJ or L),
Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO. L Series springs are available in Threaded Body (TB1/TB2).

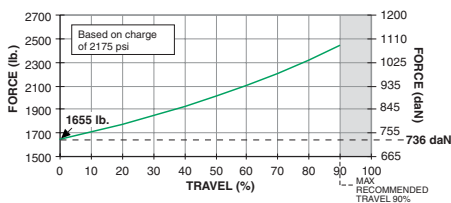
Charging Pressure:

15–150 bar (220–2175 psi).
When not specified, default
is 150 bar.

Force Charts

On-Contact Force

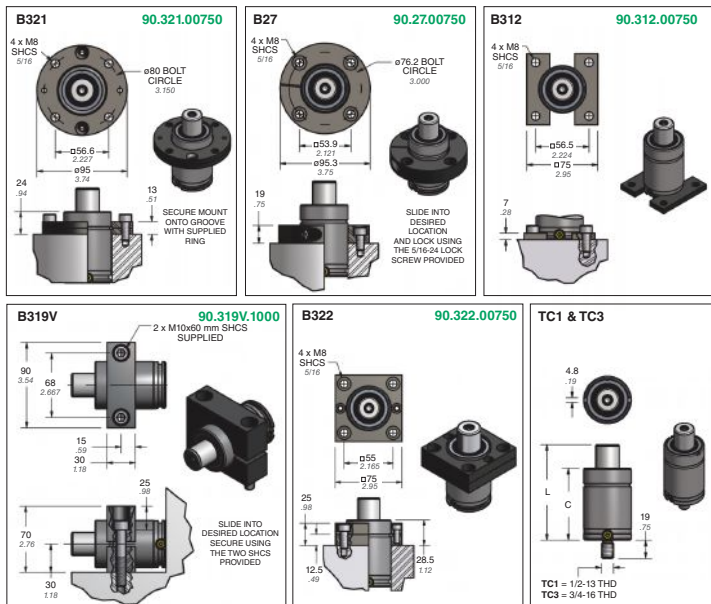
psi	lb.
2175	1655
2000	1522
1750	1331
1500	1141
1000	761
500	380
250	190



On-Contact Force

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

Mount Options

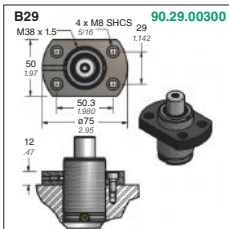
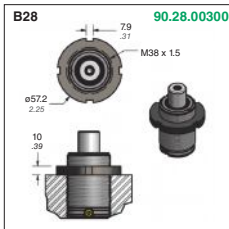


Ordering Example:

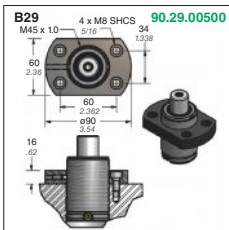
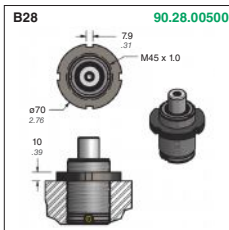
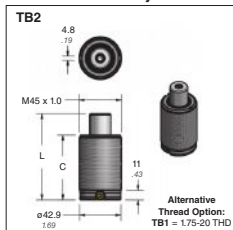
Cylinder with Mount: LJ.750.025.B321.150

Mount Only: 90.321.00750

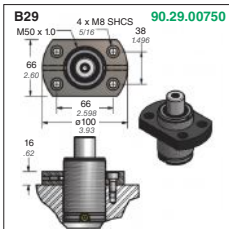
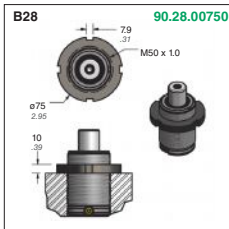
L.300 Threaded Body



L.500 Threaded Body



L.750 Threaded Body



Ordering Example: Threaded Body: L.750.025.TB2.150 Threaded Body w/ Mount: L.750.025.B28.150

Use the Cinch-Lock to secure DADCO gas springs in a pocket without additional mounting components.
See bulletin B08105A for details.

Rod End Installation Tool

90.386.____(00300, 00500, 00750)

Place over the piston rod for easy installation and removal of Threaded Body L Series Springs and Mini Springs with TC Stud Mount.



Base Installation Tool

90.387.1 (L.300)

90.387.2 (L.500, L.750)

Place into holes in base of TB Threaded Body L Springs for easy installation and removal.



Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

CAUTION

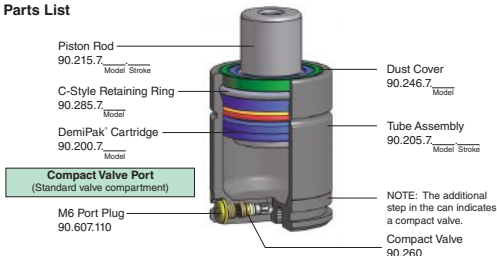
DO NOT attempt maintenance on spring until internal pressure is exhausted.

Operating Specifications

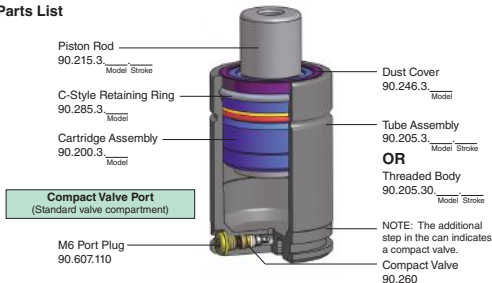
Charging Medium: Nitrogen Gas
Charging Pressure Range: 15 – 150 bar (220 – 2175 psi)
Operating Temperature: 4°C – 71°C (40°F – 160°F)*
Maximum Speed: 1.6 m/sec (63 in/sec)

*For extended range applications, contact DADCO.

LJ Series Parts List

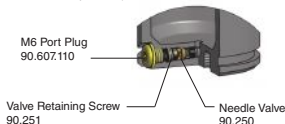


L Series Parts List



Tire Valve Port

(Classic valve compartment)



Replacement Part Ordering Example:

Piston Rod: 90.215. 7. 00500. 025

Part Number
Series
LJ=7, L=3

Stroke
Model 00300,
00500, 00750

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

Notes



Cushion Series Nitrogen Gas Springs

FCL Series



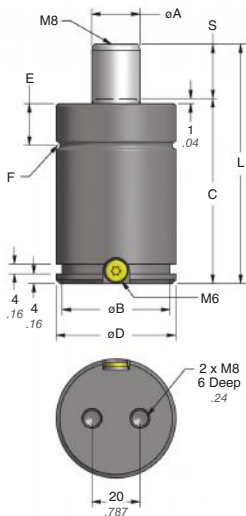
FCL.503.050.TO.150

FCL.755.050.TO.150

Mini Gas Springs with Cushioned Return

- Reduced return force, ideal for press driven cams
- Reduced force increase during travel
- Stroke lengths up to 125 mm





TO – Basic Model

Model	FCL.503	FCL.755
A	16 .63	20 .79
B	40 1.58	45 1.77
D	44.5 1.750	50 1.968
E	16.5 .65	17.5 .68
F	R1 .04	R1.5 .06

Part No.	S* mm inch	C	L ± 0.25 $\pm .010$
FCL____.025	24 0.94	76.5 3.01	100.5 3.957
FCL____.038	36.5 1.44	89 3.50	125.5 4.941
FCL____.050	49 1.93	101.5 4.00	150.5 5.925
FCL____.063	61.5 2.42	114 4.49	175.5 6.909
FCL____.075	74 2.91	126.5 4.98	200.5 7.894
FCL____.080	79 3.11	131.5 5.18	210.5 8.287
FCL____.100	99 3.90	151.5 5.96	250.5 9.862
FCL____.125	124 4.88	176.5 6.95	300.5 11.831

*Gas Spring has a 1 mm stroke reduction.

Ordering Example:

FCL.503.025. TO. 150

Part Number: Includes Series, Model (503 or 755) and Stroke Length.

Mount Option: TO = Basic Model.
When not specified, default is TO. See next page for mount options.

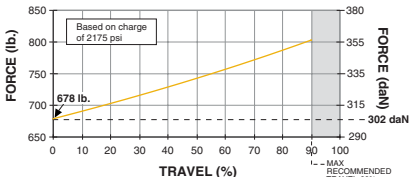
Charging Pressure: 15–150 bar (220–2175 psi). When not specified, default is 150 bar.

Force Charts

FCL 503

On-Contact Force

psi	lb.
2175	678
2000	623
1750	545
1500	467
1000	312
500	156
250	78



Note: Pressure rise is lower than a typical ø44.5 mm gas spring.

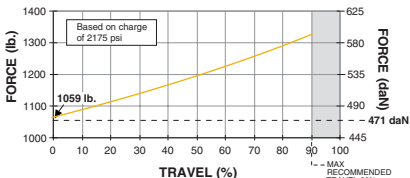
On-Contact Force

bar	daN
150	302
125	251
100	201
75	151
50	101
25	50
15	30

FCL 755

On-Contact Force

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



Note: Pressure rise is lower than a typical ø50 mm gas spring.

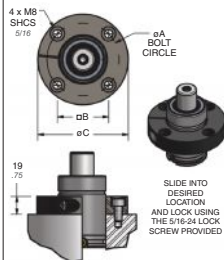
On-Contact Force

bar	daN
150	471
125	393
100	314
75	236
50	157
25	79
15	47

Mount Options

B27

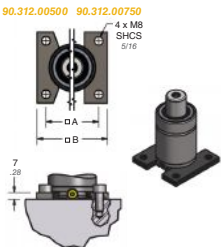
90.27



Part No.	A	B	C
90.27.00500 (FCL 503)	63.5 2.500	44.9 1.768	82.6 3.25
90.27.00750 (FCL 755)	76.2 3.000	53.9 2.121	95.3 3.75

B312

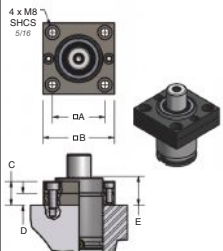
90.312



Part No.	A	B
90.312.00500 (FCL 503)	50 1.969	70 2.76
90.312.00750 (FCL 755)	56.5 2.224	75 2.95

B322

90.322



Part No.	A	B	C	D	E
90.322.00500 (FCL 503)	52 2.047	70 2.76	20 .79	5.5 .22	22 .87
90.322.00750 (FCL 755)	55 2.165	75 2.95	25 .98	12.5 .49	29.5 1.16

Additional mount options available, refer to the Mini Nitrogen Gas Spring Catalog.

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

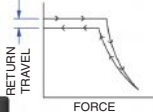
Operating Specifications

Charging Medium:	Nitrogen Gas	Maximum Speed:	500 mm/sec (20 in/sec)*
Charging Pressure Range:	15 – 150 bar (220 – 2175 psi)	*For FCL755 models charged >100 bar (>1500 psi), maximum speed is 330 mm/sec (13 in/sec).	
Operating Temperature:	4°C – 71°C (40°F – 160°F)		

DO NOT EXCEED 90% OF STROKE

Internal Cushion

Distance of cushion
on return travel:
2 mm – 4 mm
.08" – .16"

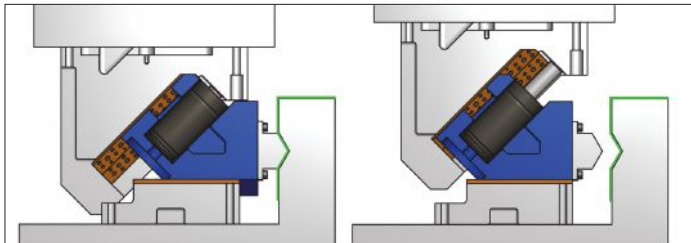


Maximum Strokes Per Minute

bar charging pressure	psi charging pressure	strokes per minute
150	2175	42
125	1800	50
100	1450	60
75	1100	60*

*Do not exceed 60 strokes per minute.

Application Example



A FCL 755 cushioned nitrogen gas spring is installed in a cam that forms a part with a tool attached to the cam slide, illustrated above. FCL series gas springs are well suited for die driven cam applications. The built-in cushion provides a decelerated force on the return travel and a reduction in the overall pressure rise during operation.

Ultra Force® Nitrogen Gas Spring Selection Chart

Use the information below to select an **Ultra Force®** Nitrogen Gas Spring Series and Model for your application. Reference the individual series catalogs for more details.

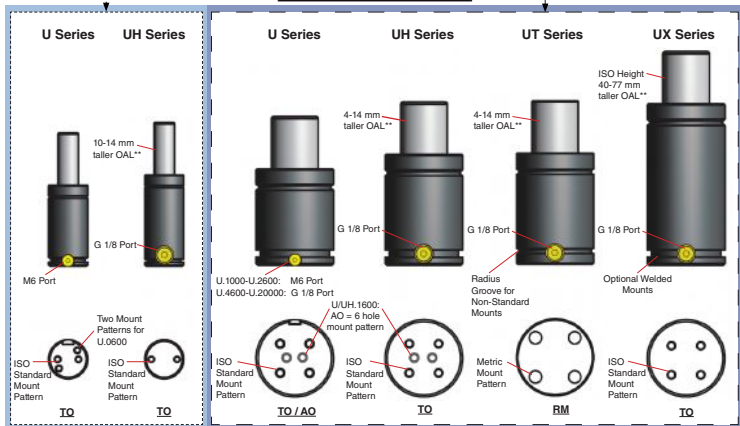


Max Force on Contact													
kN	1.7	3.2	3.6	5	7.3	10	15	24	42	66	95	199	
ton	.19	.35	.4	.5	.7	1.0	1.7	2.6	4.7	7.4	10.7	22	
Can Diameter	19 mm	25 mm	32 mm	38 mm	44.5 mm	50 mm	63 mm	75 mm	95 mm	120 mm	150 mm	195 mm	
U Series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
UH Series			✓	✓	✓	✓	✓	✓	✓	✓			
UT Series						✓		✓	✓	✓	✓		
UX Series					✓	✓	✓	✓	✓	✓	✓	✓	
Model	U.0175	U.0325	_.0400	_.0600	_.0800	_.1000/ U.1200*	_.1600	_.2600	_.4600	_.6600	_.9600	_.20000	

Series Comparison

*U.1200 has 12 kN/1.2 ton

**Comparison to U Series



Notes

DADCO®

Ultra Force® Nitrogen Gas Springs

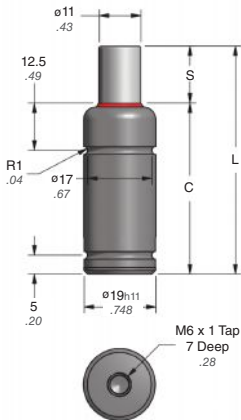
U Series



Ultra Force, Low Profile Gas Springs!

- Up to 22 tons of force on contact
- UltraPak® cartridge for long life
- Operates self-contained or linked




TO - Basic Model

Part No.	S mm inch	C	L ±0.4 ±0.015
U.0175.007	7 0.28	37 1.46	44 1.732
• U.0175.010	10 0.39	40 1.57	50 1.969
U.0175.013	12.7 0.50	42.7 1.68	55.4 2.181
• U.0175.015	15 0.59	45 1.77	60 2.362
U.0175.019	19 0.75	49 1.93	68 2.677
• U.0175.025	25 0.98	55 2.17	80 3.150
• U.0175.038	38 1.50	68 2.68	106 4.173
• U.0175.050	50 1.97	80 3.15	130 5.118
U.0175.063	63.5 2.50	93.5 3.68	157 6.181
U.0175.075	75 2.95	110 4.33	185 7.283
• U.0175.080	80 3.15	115 4.53	195 7.677
U.0175.100	100 3.94	135 5.31	235 9.252
U.0175.125	125 4.92	160 6.30	285 11.220

• Preferred Sizes

Ordering Example:
U.0175.025. TO. 180
Part Number:

Includes Series, Model and Stroke Length.

Mount Option:
Charging Pressure:

15–180 bar (220–2600 psi).

When not specified, default is 180 bar.

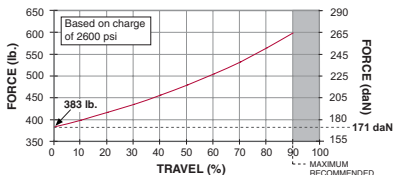
TO = Basic Model. When not specified, default is TO.

 RM, FA, VFA and RF mounts ordered with cylinder
will be attached at the factory.

Force Charts

On-Contact Force

psi	lb.
2600	383
2175	320
2000	295
1750	258
1500	221
1000	147
500	74
250	37



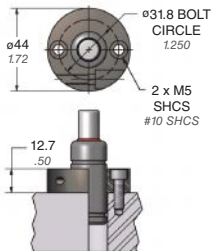
On-Contact Force

bar	daN
180	171
150	143
125	119
100	95
75	71
50	48
25	24
20	19

Mount Options

RM

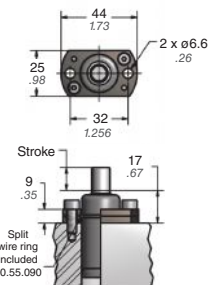
C90-RM



SLIDE MOUNT INTO DESIRED LOCATION AND LOCK

VFA

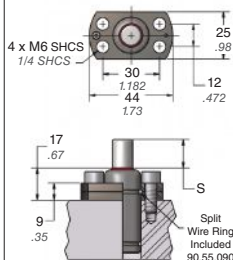
C90-VFA



SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS

FA

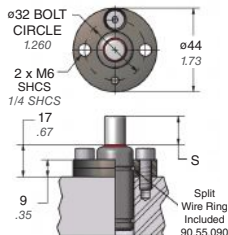
C90-FA



SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS

RF

C90-RF

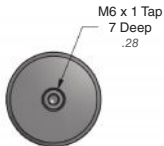
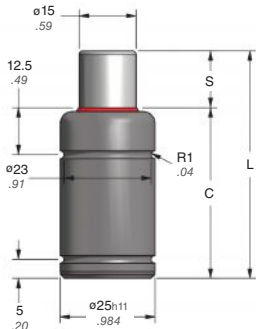


SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS

Ordering Example:

Cylinder with Mount: U.0175.025.RM.180

Mount Only: C90-RM



TO - Basic Model

Part No.	S mm inch	C	L ±0.4 ±0.015
U.0325.007	7 0.28	37 1.46	44 1.732
• U.0325.010	10 0.39	40 1.57	50 1.969
U.0325.013	12.7 0.50	42.7 1.68	55.4 2.181
• U.0325.015	15 0.59	45 1.77	60 2.362
U.0325.019	19 0.75	49 1.93	68 2.677
• U.0325.025	25 0.98	55 2.17	80 3.150
• U.0325.038	38 1.50	68 2.68	106 4.173
• U.0325.050	50 1.97	80 3.15	130 5.118
U.0325.063	63.5 2.50	93.5 3.68	157 6.181
U.0325.075	75 2.95	110 4.33	185 7.283
• U.0325.080	80 3.15	115 4.53	195 7.677
U.0325.100	100 3.94	135 5.31	235 9.252
U.0325.125	125 4.92	160 6.30	285 11.220

• Preferred Sizes

Ordering Example:

U.0325.025. TO. 180

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

Charging Pressure:

15–180 bar (220–2600 psi).

When not specified, default is 180 bar.

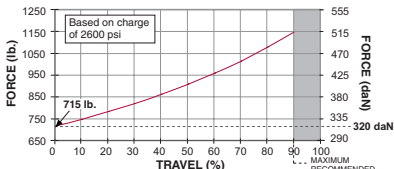
TO = Basic Model. When not specified, default is TO.

RM, FA, VFA and RF mounts ordered with cylinder will be attached at the factory.

Force Charts

On-Contact Force

psi	lb.
2600	715
2175	596
2000	548
1750	479
1500	411
1000	274
500	137
250	68



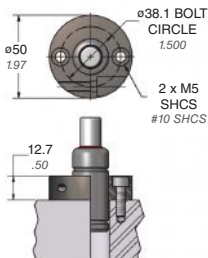
On-Contact Force

bar	daN
180	320
150	265
125	221
100	177
75	133
50	88
25	44
20	35

Mount Options

RM

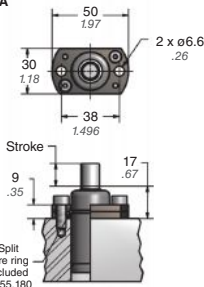
C180-RM



SLIDE MOUNT INTO DESIRED LOCATION AND LOCK

VFA

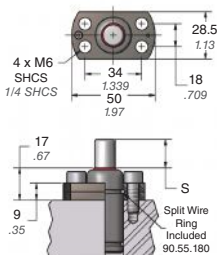
C180-VFA



SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS

FA

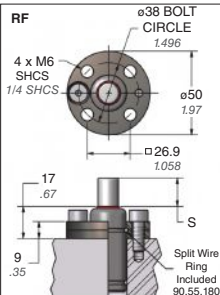
C180-FA



SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS

RF

C180-RF

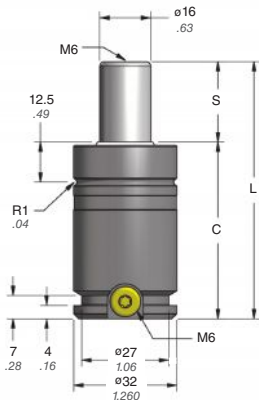


SECURE MOUNT ONTO TOP GROOVE WITH SUPPLIED RING AND SCREWS

Ordering Example:

Cylinder with Mount: U.0325.025.RM.180

Mount Only: C180-RM



Top view of the PCB showing dimensions and mounting holes. The dimensions are: 20 (width), 787 (length), 2 x M6 (mounting holes), 6 Deep (hole depth), and .24 (hole diameter).

TO - Basic Model

- ### Ordering Example:

U.0400.025. TO. C. 180

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO.

B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

- **Charging Pressure:**

15–180 bar (220–2600 psi).

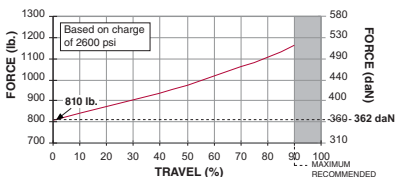
When not specified, default is 180 bar.

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

Force Charts

On-Contact Force

psi	lb.
2600	810
2175	678
2000	623
1750	545
1500	467
1000	312
500	156
250	78



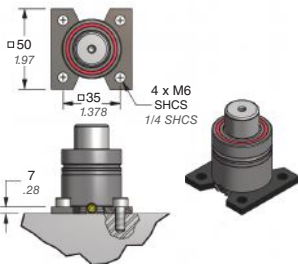
On-Contact Force

bar	daN
180	362
150	302
125	251
100	201
75	151
50	101
25	50
20	40

Mount Options

B12

90.12.0400

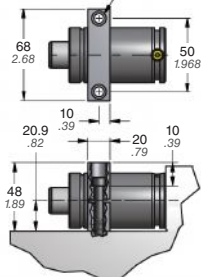


B319V

2X M8x50 mm SHCS SUPPLIED

90.319V.0400

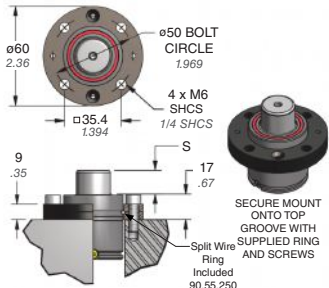
Replaces 90.319 Mount, contact DADCO.



SLIDE MOUNT INTO DESIRED LOCATION AND SECURE USING THE TWO SHCS PROVIDED

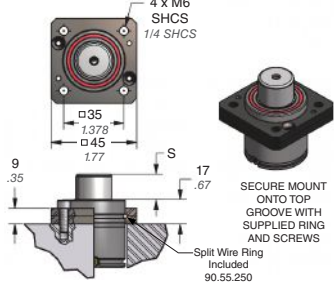
B21

C250-RF



B25

90.25.0400

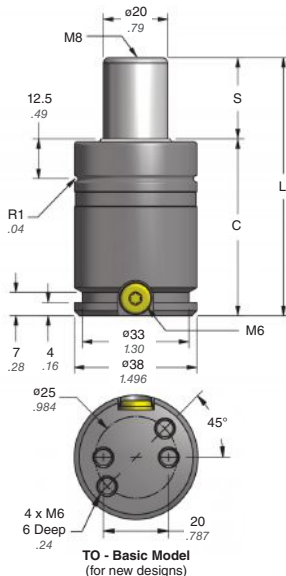


Ordering Example:

Cylinder with Mount: U.0400.025.B12.C.180

Mount Only: 90.12.0400

U.0600 — 5 kN / 0.5 ton



Part No.	S mm <i>inch</i>	C	L ±0.25 ±0.10
U.0600.010	10 0.39	40 1.57	50 1.969
• U.0600.013	12.5 0.49	42.5 1.67	55 2.165
U.0600.015	15 0.59	45 1.77	60 2.362
U.0600.016	16 0.63	46 1.81	62 2.441
U.0600.019	19 0.75	49 1.93	68 2.677
• U.0600.025	25 0.98	55 2.17	80 3.150
U.0600.032	32 1.26	62 2.44	94 3.701
• U.0600.038	37.5 1.48	67.5 2.66	105 4.134
• U.0600.050	50 1.97	80 3.15	130 5.118
U.0600.063	62.5 2.46	92.5 3.64	155 6.102
U.0600.075	75 2.95	105 4.13	180 7.087
• U.0600.080	80 3.15	110 4.33	190 7.480
U.0600.100	100 3.94	130 5.12	230 9.055
U.0600.125	125 4.92	155 6.10	280 11.024

- Preferred Sizes

Ordering Example:

U.0600.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model, TP = Previous Model. *When not specified, default is TO.* B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

- **Charging Pressure:**

15–150 bar (220–2175 psi).

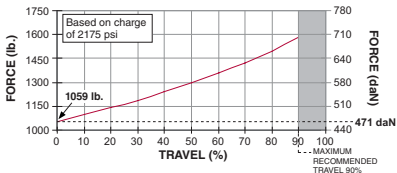
When not specified, default is 150 bar.

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

Force Charts

On-Contact Force

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



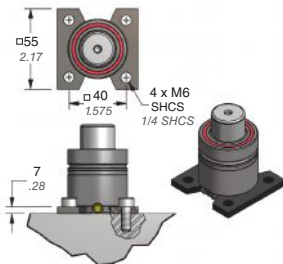
On-Contact Force

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

Mount Options

B312

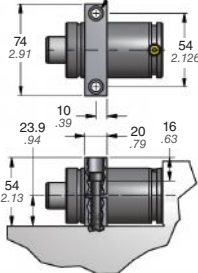
90.312.00300



B319V

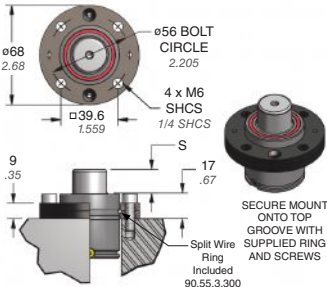
2X M8x50 mm SHCS SUPPLIED

90.319V.0600



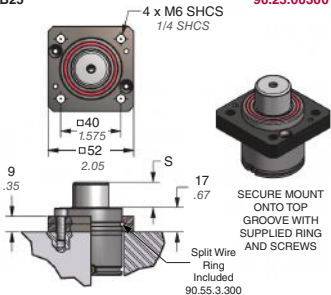
B21

90.21.00300



B25

90.25.00300



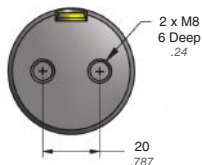
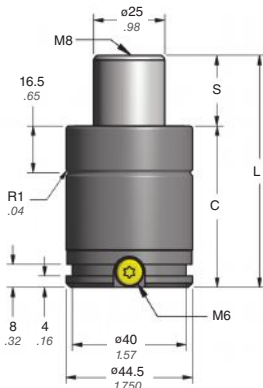
Ordering Example:

Cylinder with Mount: U.0600.025.B312.C.150

Mount Only: 90.312.00300

U.0800 — 7.3 kN / 0.7 ton

Refer to Catalog C16115 for
VDI conforming model, U.0845VS.



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
U.0800.010	10 0.39	42 1.65	52 2.047
• U.0800.013	12.5 0.49	44.5 1.75	57 2.244
U.0800.016	16 0.63	48 1.89	64 2.520
U.0800.019	19 0.75	51 2.01	70 2.756
• U.0800.025	24.8 0.98	56.8 2.24	81.6 3.213
U.0800.032	32 1.26	64 2.52	96 3.780
• U.0800.038	37.5 1.48	69.5 2.74	107 4.213
• U.0800.050	50 1.97	82 3.23	132 5.197
U.0800.063	62.5 2.46	94.5 3.72	157 6.181
U.0800.075	75 2.95	107 4.21	182 7.165
• U.0800.080	80 3.15	112 4.41	192 7.559
U.0800.100	100 3.94	132 5.20	232 9.134
U.0800.125	125 4.92	157 6.18	282 11.102

• Preferred Sizes

Ordering Example:

U.0800.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*

B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–150 bar (220–2175 psi).

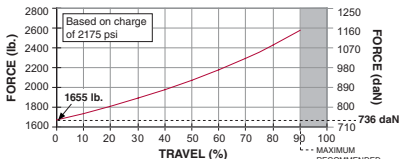
When not specified, default is 150 bar.

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

Force Charts

On-Contact Force

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



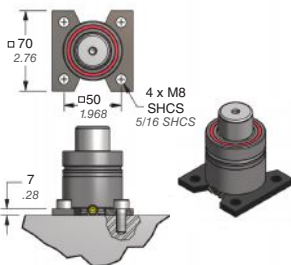
On-Contact Force

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

Mount Options

B312

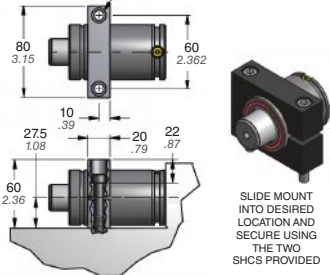
90.312.00500



B319V

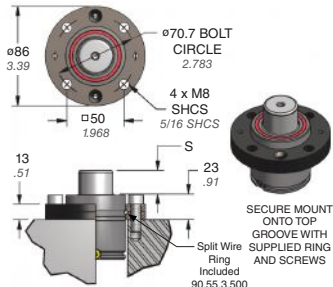
2X M8x50 mm SHCS SUPPLIED

90.319V.0800



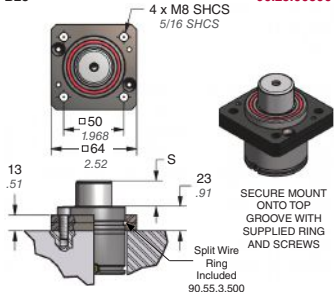
B21

90.21.00500



B25

90.25.00500



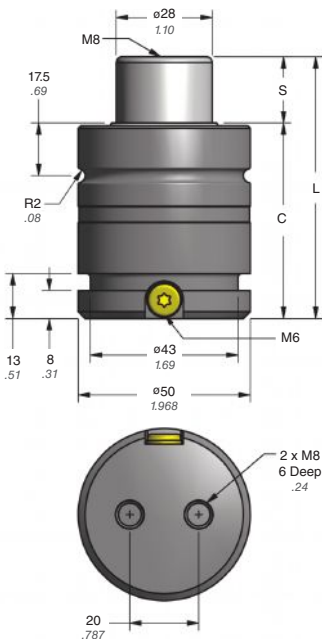
Ordering Example:

Cylinder with Mount: U.0800.025.B312.C.150

Mount Only: 90.312.00500

U.1000 — 10 kN / 1.0 ton

*For more force in the same diameter
body refer to the U.1200.*



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
• U.1000.013	12.5 0.49	50.5 1.99	63 2.480
U.1000.016	16 0.63	54 2.13	70 2.756
U.1000.019	19 0.75	57 2.24	76 2.992
• U.1000.025	25 0.98	63 2.48	88 3.465
U.1000.032	32 1.26	70 2.76	102 4.016
• U.1000.038	37.5 1.48	75.5 2.97	113 4.449
• U.1000.050	50 1.97	88 3.46	138 5.433
U.1000.063	62.5 2.46	100.5 3.96	163 6.417
U.1000.075	75 2.95	113 4.45	188 7.402
• U.1000.080	80 3.15	118 4.65	198 7.795
U.1000.100	100 3.94	138 5.43	238 9.370
U.1000.125	125 4.92	163 6.42	288 11.339

• Preferred Sizes

Ordering Example:

U.1000.025, TO, C, 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*

B319V, B21 and B25 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.

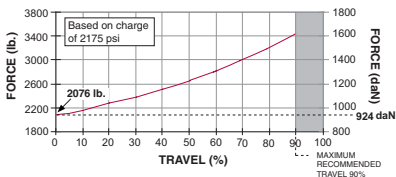
Operating System: C = Self-contained,

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

Force Charts

On-Contact Force

psi	lb.
2175	2076
2000	1909
1750	1670
1500	1432
1000	954
500	477
250	239



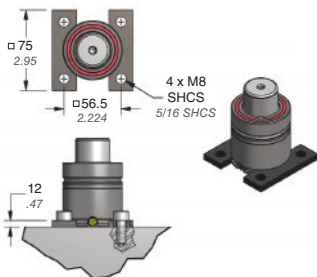
On-Contact Force

bar	daN
150	924
125	770
100	616
75	462
50	308
25	154
20	123

Mount Options

B12

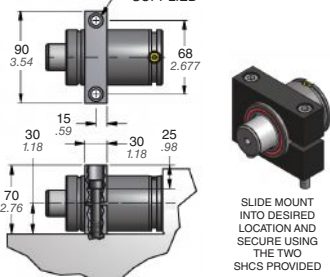
90.12.00750



B319V

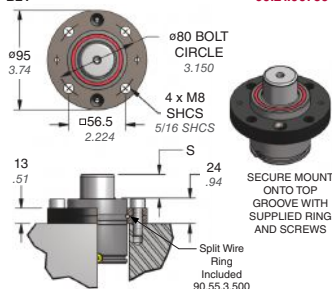
2X M10x60 mm SHCS
SUPPLIED

90.319V.1000



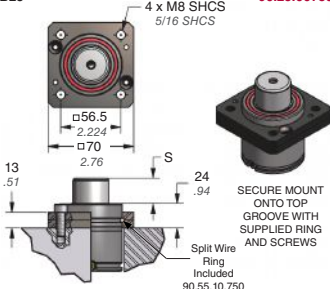
B21

90.21.00750



B25

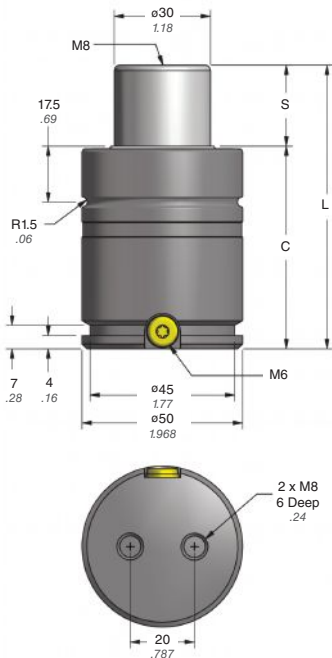
90.25.00750



Ordering Example:

Cylinder with Mount: U.1000.025.B12.C.150

Mount Only: 90.12.00750



Part No.	S mm inch	C	L ±0.25 ±0.10
U.1200.010	10 0.39	48 1.89	58 2.283
• U.1200.013	12.5 0.49	50.5 1.99	63 2.480
U.1200.015	15 0.59	53 2.09	68 2.677
U.1200.019	19 0.75	57 2.24	76 2.992
• U.1200.025	25 0.98	63 2.48	88 3.465
U.1200.032	32 1.26	70 2.76	102 4.016
• U.1200.038	37.5 1.48	75.5 2.97	113 4.449
• U.1200.050	50 1.97	88 3.46	138 5.433
U.1200.063	62.5 2.46	100.5 3.96	163 6.417
U.1200.075	75 2.95	113 4.45	188 7.402
• U.1200.080	80 3.15	118 4.65	198 7.795
U.1200.100	100 3.94	138 5.43	238 9.370
U.1200.125	125 4.92	163 6.42	288 11.339

- Preferred Sizes

Ordering Example:

U.1200.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO.
B319V, B321 and B322 mounts ordered with cylinder
will be attached at the factory.

- **Charging Pressure:**

15–150 bar (220–2175 psi).

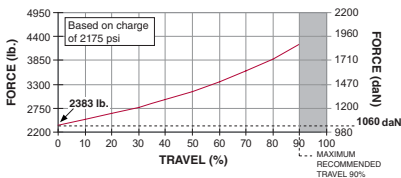
When not specified, default is 150 bar.

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

Force Charts

On-Contact Force

psi	lb.
2175	2383
2000	2191
1750	1917
1500	1643
1000	1096
500	548
250	274



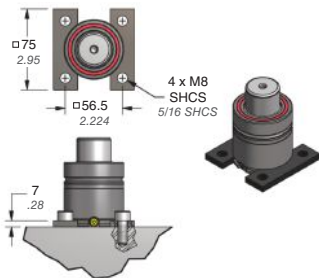
On-Contact Force

bar	daN
150	1060
125	884
100	707
75	530
50	353
25	177
20	141

Mount Options

B312

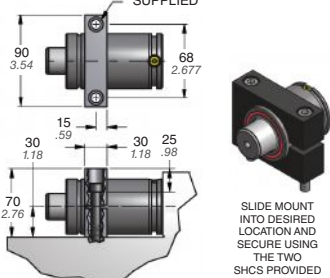
90.312.00750



B319V

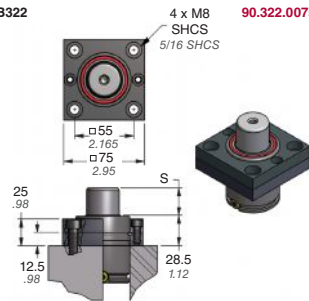
2X M10x60 mm SHCS SUPPLIED

90.319V.1000



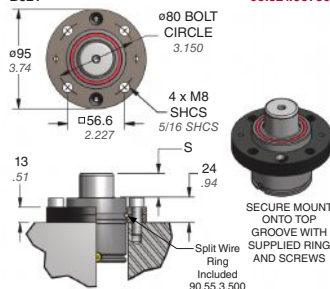
B322

90.322.00750



B321

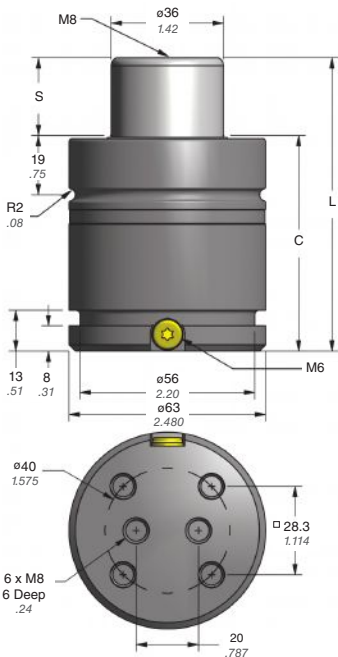
90.321.00750



Ordering Example:

Cylinder with Mount: U.1200.025.B312.C.150

Mount Only: 90.312.00750



Part No.	S mm inch	C	L ±0.25 ±0.010
U.1600.010	10 0.39	54 2.13	64 2.520
• U.1600.013	12.5 0.49	56.5 2.22	69 2.717
U.1600.015	15 0.59	59 2.32	74 2.915
U.1600.016	16 0.63	60 2.36	76 2.992
U.1600.019	19 0.75	63 2.48	82 3.228
• U.1600.025	25 0.98	69 2.72	94 3.701
U.1600.032	32 1.26	76 2.99	108 4.252
• U.1600.038	37.5 1.48	81.5 3.21	119 4.685
• U.1600.050	50 1.97	94 3.70	144 5.669
U.1600.063	62.5 2.46	106.5 4.19	169 6.654
U.1600.075	75 2.95	119 4.69	194 7.638
• U.1600.080	80 3.15	124 4.88	204 8.031
U.1600.100	100 3.94	144 5.67	244 9.606
U.1600.125	125 4.92	169 6.65	294 11.575

• Preferred Sizes

AO - Basic Model*

*For base mounting secure with a minimum of 4 fasteners.

Ordering Example:

U.1600.025. AO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

AO = Basic Model. When not specified, default is AO. B319V, B21, B25 and B325 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.

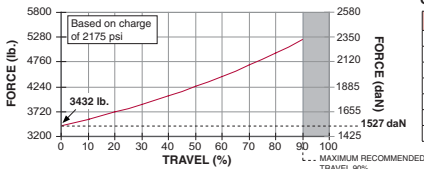
Operating System: C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

U.1600 — 15 kN / 1.7 ton

Force Charts

On-Contact Force

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



On-Contact Force

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

Mount Options

B212 / 90.212.1600



Part No.	A	B
90.212.1600	100 (3.94)	73.5 (2.894)
90.112.1600	85 (3.35)	60 (2.362)

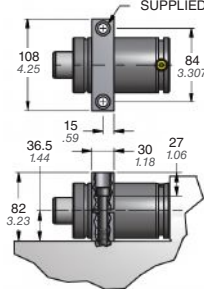
B112 / 90.112.1600



B319V

2X M10x70 mm SHCS
SUPPLIED

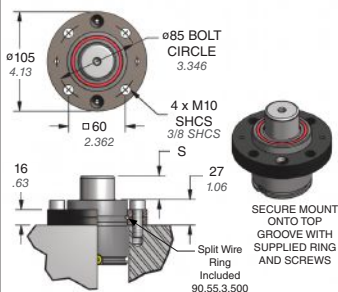
90.319V.1600



SLIDE MOUNT
INTO DESIRED
LOCATION AND
SECURE USING
THE TWO
SHCS PROVIDED

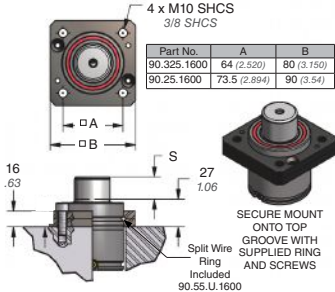
B21

90.21.1600



B325 / B25

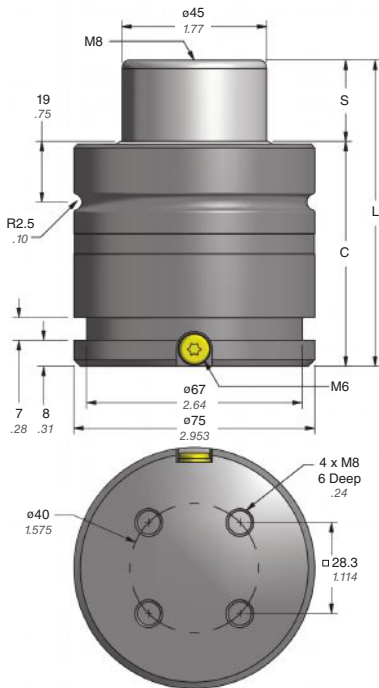
90.325.1600 / 90.25.1600



Ordering Example:

Cylinder with Mount: U.1600.025.B112.C.150

Mount Only: 90.112.1600



Part No.	S mm inch	C	L ±0.25 ±0.010
U.2600.016	16 0.63	61 2.40	77 3.031
U.2600.019	19 0.75	64 2.52	83 3.268
• U.2600.025	25 0.98	70 2.76	95 3.740
U.2600.032	32 1.26	77 3.03	109 4.291
• U.2600.038	37.5 1.48	82.5 3.25	120 4.724
• U.2600.050	50 1.97	95 3.74	145 5.709
U.2600.063	62.5 2.46	107.5 4.23	170 6.693
U.2600.075	75 2.95	120 4.72	195 7.677
• U.2600.080	80 3.15	125 4.92	205 8.071
U.2600.100	100 3.94	145 5.71	245 9.646
U.2600.125	125 4.92	170 6.69	295 11.614

• Preferred Sizes

TO - Basic Model

Ordering Example:

U.2600.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.* B319V, B21, B25 and B325 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–150 bar (220–2175 psi).

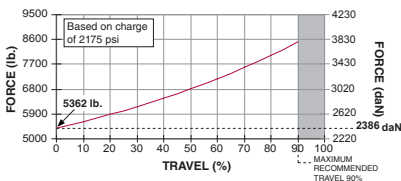
When not specified, default is 150 bar.

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

Force Charts

On-Contact Force

psi	lb.
2175	5362
2000	4930
1750	4314
1500	3698
1000	2465
500	1233
250	616



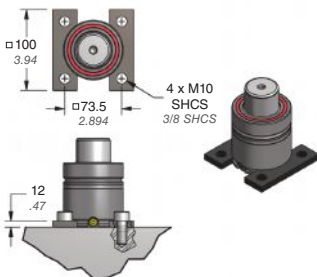
On-Contact Force

bar	daN
150	2386
125	1988
100	1590
75	1193
50	795
25	398
20	318

Mount Options

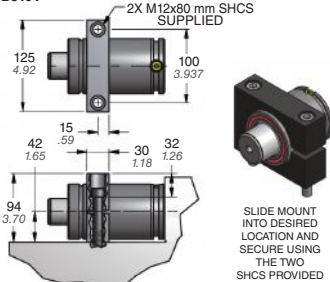
B12

90.12.01500



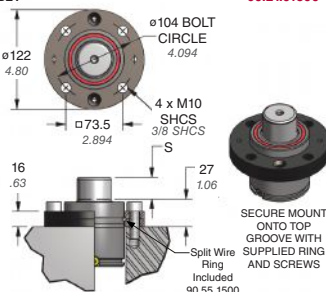
B319V

90.319V.2600



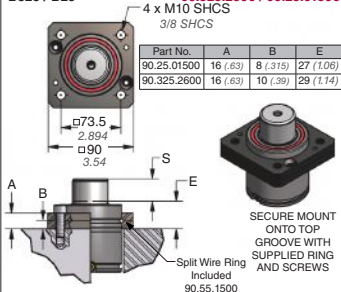
B21

90.21.01500



B325 / B25

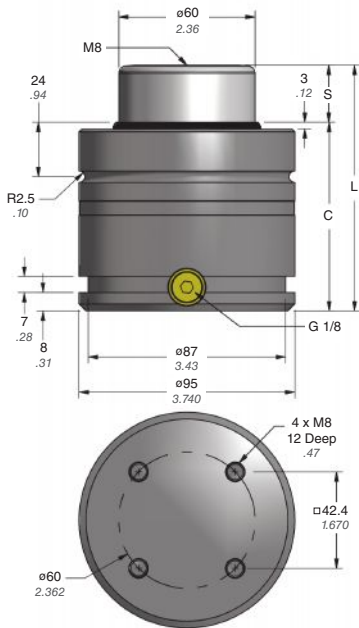
90.325.2600 / 90.25.01500



Ordering Example:

Cylinder with Mount: U.2600.025.B12.C.150

Mount Only: 90.12.01500



Part No.	S mm inch	C	L ±0.25 ±0.010
U.4600.016	16 0.63	74 2.91	90 3.543
U.4600.019	19 0.75	77 3.03	96 3.780
• U.4600.025	25 0.98	83 3.27	108 4.252
U.4600.032	32 1.26	90 3.54	122 4.803
• U.4600.038	37.5 1.48	95.5 3.76	133 5.236
• U.4600.050	50 1.97	108 4.25	158 6.220
U.4600.063	62.5 2.46	120.5 4.74	183 7.205
U.4600.075	75 2.95	133 5.24	208 8.189
• U.4600.080	80 3.15	138 5.43	218 8.583
U.4600.100	100 3.94	158 6.22	258 10.157
U.4600.125	125 4.92	183 7.20	308 12.126

- Preferred Sizes

Ordering Example:

U.4600.025, TO, C, 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO.
B319V, B21 and B25 mounts ordered with cylinder will
be attached at the factory.

- **Charging Pressure:**

15–150 bar (220–2175 psi).

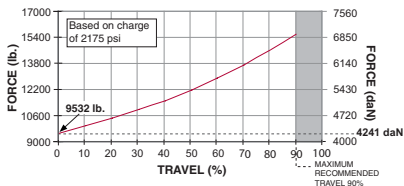
When not specified, default is 150 bar.

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

Force Charts

On-Contact Force

psi	lb.
2175	9532
2000	8765
1750	7669
1500	6574
1000	4383
500	2191
250	1096



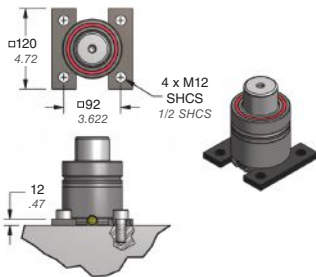
On-Contact Force

bar	daN
150	4241
125	3534
100	2827
75	2121
50	1414
25	707
20	565

Mount Options

B12

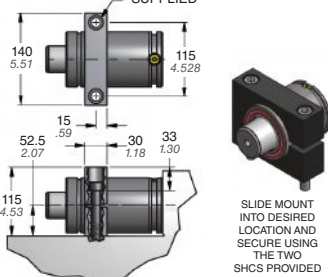
90.12.03000



B319V

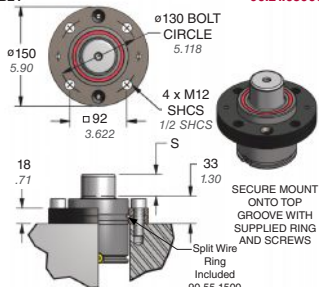
2X M12x100 mm SHCS SUPPLIED

90.319V.4600



B21

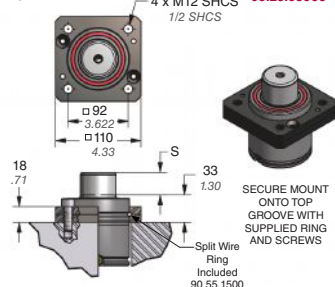
90.21.03000



B25

4 x M12 SHCS 1/2 SHCS

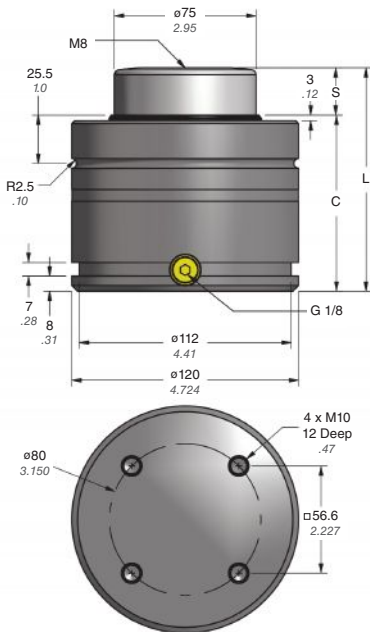
90.25.03000



Ordering Example:

Cylinder with Mount: U.4600.025.B12.C.150

Mount Only: 90.12.03000



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
U.6600.016	16 0.63	84 3.31	100 3.937
U.6600.019	19 0.75	87 3.43	106 4.173
• U.6600.025	25 0.98	93 3.66	118 4.646
U.6600.032	32 1.26	100 3.94	132 5.197
• U.6600.038	37.5 1.48	105.5 4.15	143 5.630
• U.6600.050	50 1.97	118 4.65	168 6.614
U.6600.063	62.5 2.46	130.5 5.14	193 7.598
U.6600.075	75 2.95	143 5.63	218 8.583
• U.6600.080	80 3.15	148 5.83	228 8.976
U.6600.100	100 3.94	168 6.61	268 10.551
U.6600.125	125 4.92	193 7.60	318 12.520

• Preferred Sizes

Ordering Example:

U.6600.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*
B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–150 bar (220–2175 psi).

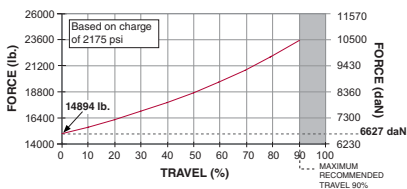
When not specified, default is 150 bar.

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

Force Charts

On-Contact Force

psi	lb.
2175	14894
2000	13695
1750	11983
1500	10272
1000	6848
500	3424
250	1712



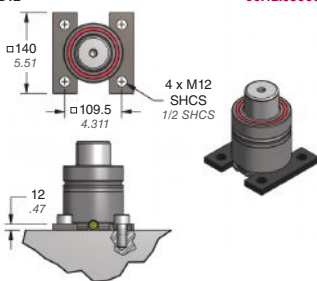
On-Contact Force

bar	daN
150	6627
125	5522
100	4418
75	3313
50	2209
25	1104
20	884

Mount Options

B12

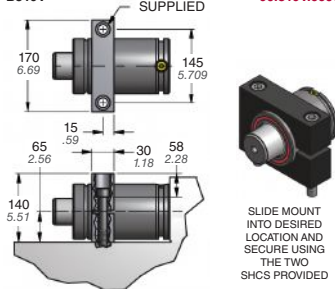
90.12.05000



B319V

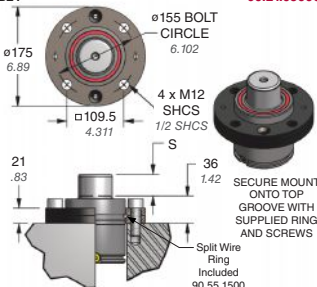
2X M12x100 mm SHCS SUPPLIED

90.319V.6600



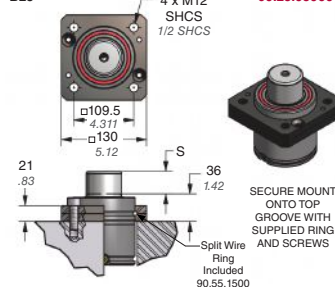
B21

90.21.05000



B25

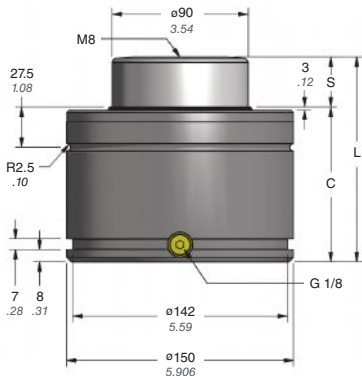
90.25.05000



Ordering Example:

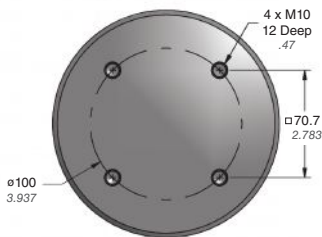
Cylinder with Mount: U.6600.025.B12.C.150

Mount Only: 90.12.05000



Part No.	S mm inch	C	L mm inch
U.9600.025	25 0.98	103 4.06	128 5.039
U.9600.032	32 1.26	110 4.33	142 5.591
U.9600.038	37.5 1.48	115.5 4.55	153 6.025
• U.9600.050	50 1.97	128 5.04	178 7.008
U.9600.063	62.5 2.46	140.5 5.53	203 7.992
U.9600.075	75 2.95	153 6.02	228 8.976
U.9600.080	80 3.15	158 6.22	238 9.370
U.9600.100	100 3.94	178 7.01	278 10.945
U.9600.125	125 4.92	203 7.99	328 12.913

• Preferred Sizes



TO - Basic Model

Ordering Example:

U.9600.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*

B319V, B21 and B25 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,

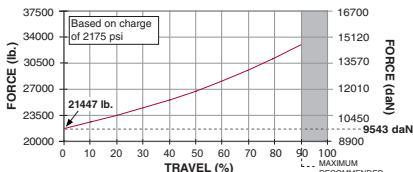
F = Open Flow Fitting. *When not specified, default is C, self-contained.*

U.9600 — 95 kN / 10.7 ton

Force Charts

On-Contact Force

psi	lb.
2175	21447
2000	19721
1750	17256
1500	14791
1000	9861
500	4930
250	2465



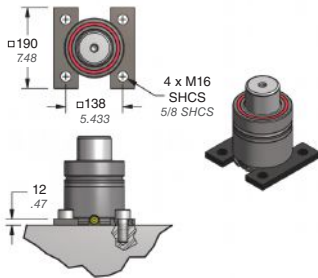
On-Contact Force

bar	daN
150	9543
125	7952
100	6362
75	4771
50	3181
25	1590
20	1272

Mount Options

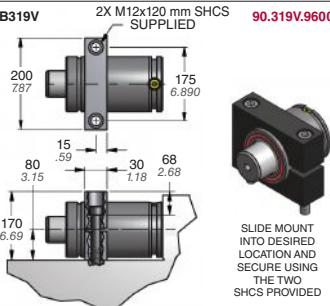
B12

90.12.07500



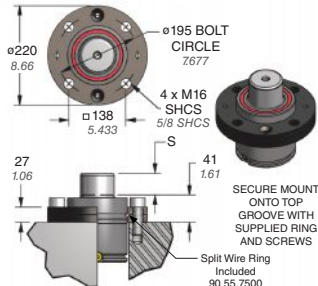
B319V

90.319V.9600



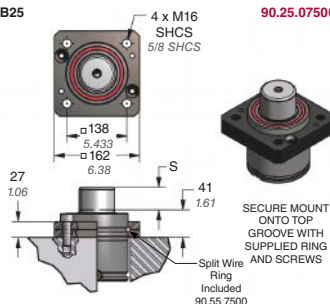
B21

90.21.07500



B25

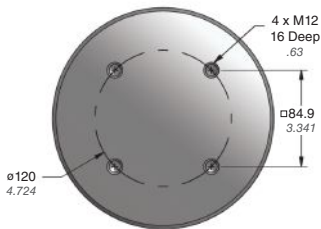
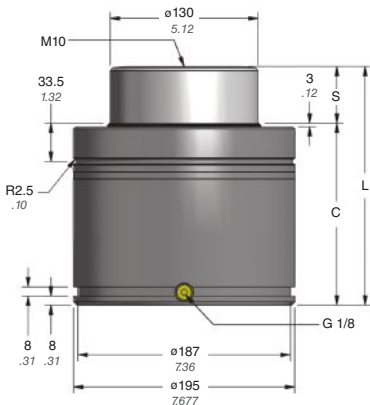
90.25.07500



Ordering Example:

Cylinder with Mount: U.9600.025.B12.C.150

Mount Only: 90.12.07500



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
U.20000.025	25 0.98	135 5.31	160 6.299
U.20000.038	37.5 1.48	147.5 5.81	185 7.283
• U.20000.050	50 1.97	160 6.30	210 8.268
U.20000.063	62.5 2.46	172.5 6.79	235 9.252
U.20000.080	80 3.15	190 7.48	270 10.630
U.20000.100	100 3.94	210 8.27	310 12.205
U.20000.125	125 4.92	235 9.25	360 14.173

• Preferred Sizes

Ordering Example:

U.20000.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*

B21 and B25 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–150 bar (220–2175 psi).

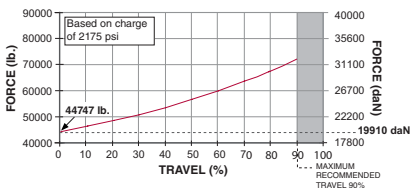
When not specified, default is 150 bar.

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

Force Charts

On-Contact Force

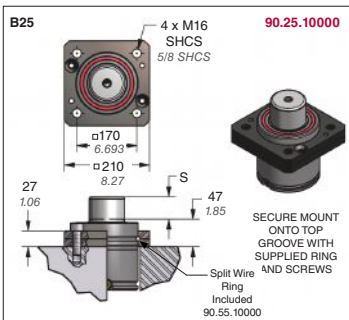
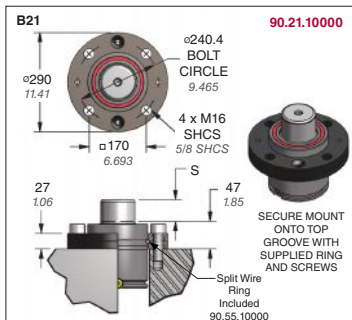
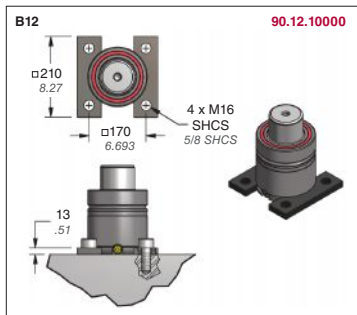
psi	lb.
2175	44747
2000	41147
1750	36004
1500	30860
1000	20574
500	10287
250	5143



On-Contact Force

bar	daN
150	19910
125	16592
100	13273
75	9955
50	6637
25	3318
20	2655

Mount Options



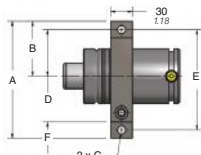
Ordering Example:

Cylinder with Mount: U.20000.025.B12.C.150

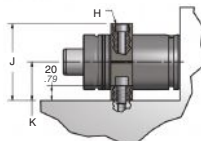
Mount Only: 90.12.10000

B19

90.19. _____



SLIDE MOUNT
INTO DESIRED
LOCATION AND
LOCK



Model	0600	0800	1000	2600	4600	6600	9600
Part No.	00300	00500	00750	01500	03000	05000	07500
A	95 3.74	100 3.94	130 5.12	160 6.30	195 7.68	220 8.66	260 10.24
B	43 1.69	46 1.81	60 2.36	75 2.95	92.5 3.64	105 4.13	125 4.92
D	34 1.34	37 1.457	50 1.97	63.5 2.50	80 3.15	92.5 3.64	110 4.33
E	77 3.031	82 3.228	110 4.331	137 5.394	170 6.693	195 7.677	230 9.055
F	18 .71	18 .71	20 .79	22.5 .89	25 .98	27.5 1.08	30 1.18
G	M8 5/16	M8 5/16	M8 5/16	M10 3/8	M12 1/2	M12 1/2	M12 1/2
H	M8	M8	M8	M10	M12	M12	M12
J	50.3 1.98	60 2.36	80 3.15	105 4.13	125 4.92	148 5.83	200 7.87
K	27.5 1.08	30 1.18	40 1.57	52.5 2.06	62.5 2.46	74 2.91	100 3.94

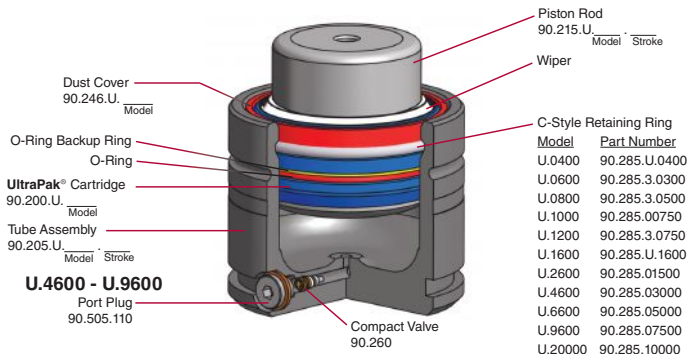
Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

Operating Specifications

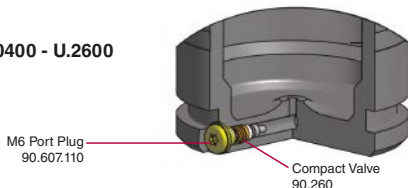
Charging Medium:	Nitrogen Gas	Operating Temperature:	4°C – 71°C (40°F – 160°F)
U.0175 – U.0400 Charging Pressure:	15 – 180 bar (220 psi – 2600 psi)	Maximum Speed:	1.6 m/sec (63 in/sec)
U.0600 – U.20000 Charging Pressure:	15 – 150 bar (220 psi – 2175 psi)		

U.0400 - U.20000 Parts List

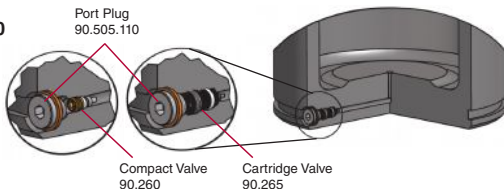
Ultra Force® Nitrogen Gas Springs



U.0400 - U.2600



U.20000



Part Ordering Example:

Piston Rod: 90.215.U. 0400 025

Part Number

Series

Stroke (mm)

Model: 0400, 0600, 0800, 1000, 1200, 1600, 2600, 4600, 6600, 9600, 20000

Note: The U Series Nitrogen Gas Springs are permanently marked with model number, serial number and repair kit number. Please refer to these when ordering replacement parts.

U.0175 and U.0325 gas springs may be recharged, but not disassembled.

Notes

DAPCO®

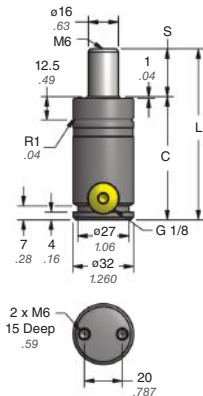
High Force Nitrogen Gas Springs

UH Series



- Up to 7.4 tons of force on contact
- UltraPak® cartridge for long life
- Operates self-contained or linked





TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
UH.0400.010	10 0.39	50 1.97	60 2.362
• UH.0400.013	12.5 0.49	52.5 2.07	65 2.559
UH.0400.016	16 0.63	56 2.20	72 2.835
UH.0400.019	19 0.75	59 2.32	78 3.071
• UH.0400.025	25 0.98	65 2.56	90 3.543
UH.0400.032	32 1.26	72 2.83	104 4.094
• UH.0400.038	37.5 1.48	77.5 3.05	115 4.528
• UH.0400.050	50 1.97	90 3.54	140 5.512
UH.0400.063	62.5 2.46	102.5 4.04	165 6.496
UH.0400.075	75 2.95	115 4.53	190 7.480
• UH.0400.080	80 3.15	120 4.72	200 7.874
UH.0400.100	100 3.94	140 5.51	240 9.449
UH.0400.125	125 4.92	165 6.50	290 11.417

• Preferred Sizes

Ordering Example:

UH.0400.025. TO. C. 180

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*
B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

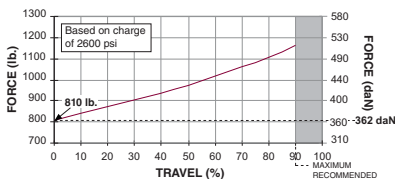
15–180 bar (220–2600 psi).
When not specified, default is 180 bar.

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

UH.0400 Force Charts

On-Contact Force

psi	lb.
2600	810
2175	678
2000	623
1750	545
1500	467
1000	312
500	156
250	78



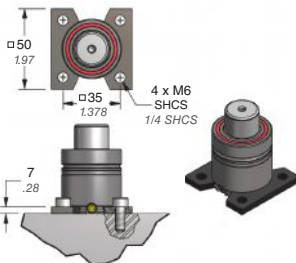
On-Contact Force

bar	daN
180	362
150	302
125	251
100	201
75	151
50	101
25	50
20	40

Mount Options

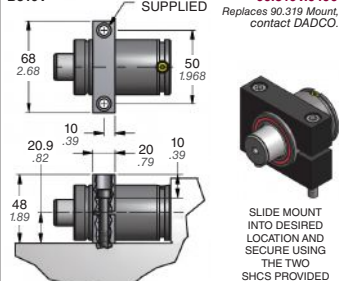
B12

90.12.0400



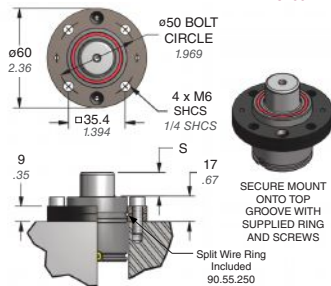
B319V

90.319V.0400



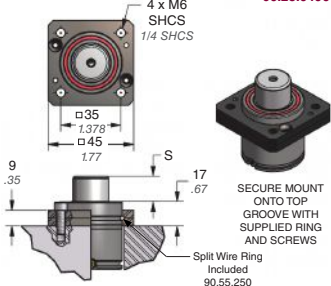
B21

C250-RF



B25

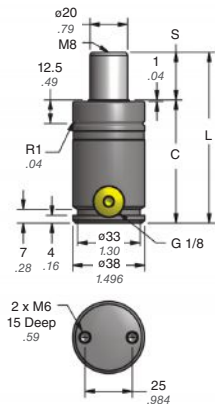
90.25.0400



Ordering Example:

Cylinder with Mount: UH.0400.025.B12.C.180

Mount Only: 90.12.0400



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
UH.0600.010	10 0.39	50 1.97	60 2.362
• UH.0600.013	12.5 0.49	52.5 2.07	65 2.559
UH.0600.016	16 0.63	56 2.20	72 2.835
UH.0600.019	19 0.75	59 2.32	78 3.071
• UH.0600.025	25 0.98	65 2.56	90 3.543
UH.0600.032	32 1.26	72 2.83	104 4.094
• UH.0600.038	37.5 1.48	77.5 3.05	115 4.528
• UH.0600.050	50 1.97	90 3.54	140 5.512
UH.0600.063	62.5 2.46	102.5 4.04	165 6.496
UH.0600.075	75 2.95	115 4.53	190 7.480
• UH.0600.080	80 3.15	120 4.72	200 7.874
UH.0600.100	100 3.94	140 5.51	240 9.449
UH.0600.125	125 4.92	165 6.50	290 11.417

• Preferred Sizes

Ordering Example:

UH.0600.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO.
B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

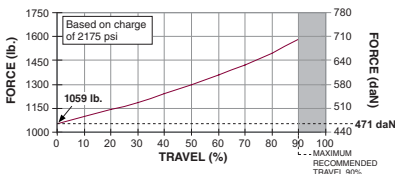
15–150 bar (220–2175 psi).
When not specified, default is 150 bar.

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

UH.0600 Force Charts

On-Contact Force

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



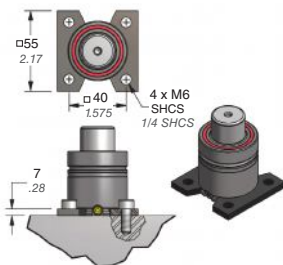
On-Contact Force

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

Mount Options

B312

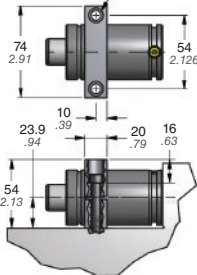
90.312.00300



B319V

2X M8x50 mm SHCS
SUPPLIED

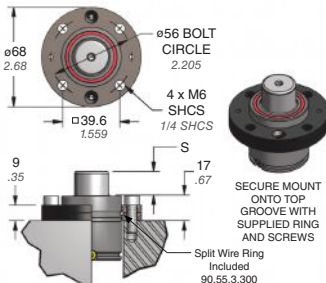
90.319V.0600



SLIDE MOUNT
INTO DESIRED
LOCATION AND
SECURE USING
THE TWO
SHCS PROVIDED

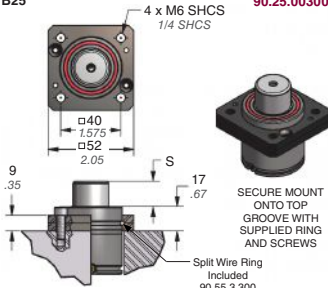
B21

90.21.00300



B25

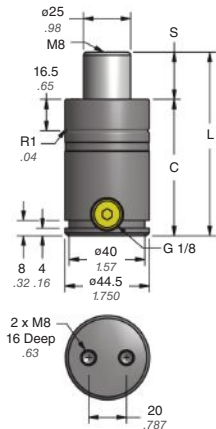
90.25.00300



Ordering Example:

Cylinder with Mount: UH.0600.025.B312.C.150

Mount Only: 90.312.00300



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
• UH.0800.013	12.5 0.49	59.5 2.34	72 2.835
UH.0800.016	16 0.63	63 2.48	79 3.110
UH.0800.019	19 0.75	66 2.60	85 3.346
• UH.0800.025	25 0.98	72 2.83	97 3.819
UH.0800.032	32 1.26	79 3.11	111 4.370
• UH.0800.038	37.5 1.48	84.5 3.33	122 4.803
• UH.0800.050	50 1.97	97 3.82	147 5.787
UH.0800.063	62.5 2.46	109.5 4.31	172 6.772
UH.0800.075	75 2.95	122 4.80	197 7.756
• UH.0800.080	80 3.15	127 5.00	207 8.150
UH.0800.100	100 3.94	147 5.79	247 9.724
UH.0800.125	125 4.92	172 6.77	297 11.693

• Preferred Sizes

Ordering Example:

UH.0800.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*
B319V, B21 and B25 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.

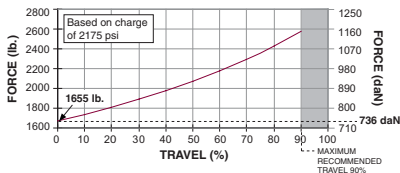
Operating System: C = Self-contained,
F = Open Flow Fitting. *When not specified, default is C, self-contained.*

UH.0800 — 7.3 kN / 0.7 ton

UH.0800 Force Charts

On-Contact Force

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



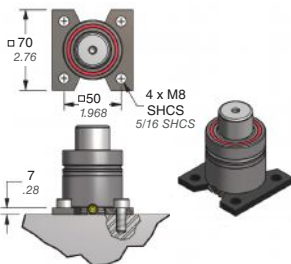
On-Contact Force

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

Mount Options

B312

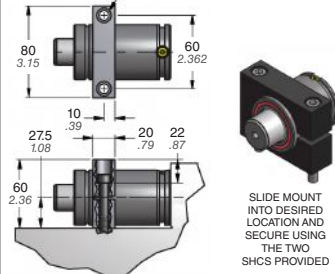
90.312.00500



B319V

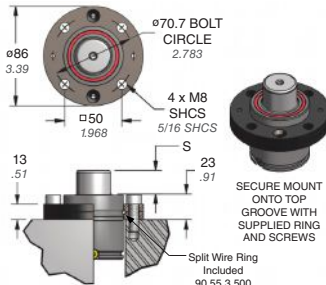
2X M8x50 mm SHCS SUPPLIED

90.319V.0800



B21

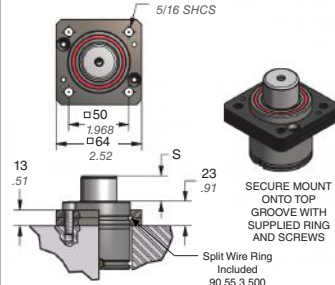
90.21.00500



B25

4 x M8 SHCS 5/16 SHCS

90.25.00500



Ordering Example:

Cylinder with Mount: UH.0800.025.B312.C.150

Mount Only: 90.312.00500



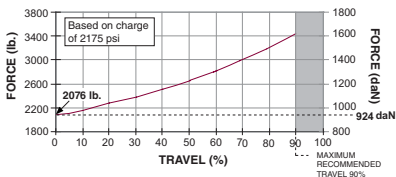
- Preferred Sizes

DADCO

UH.1000 Force Charts

On-Contact Force

psi	lb.
2175	2076
2000	1909
1750	1670
1500	1432
1000	954
500	477
250	239



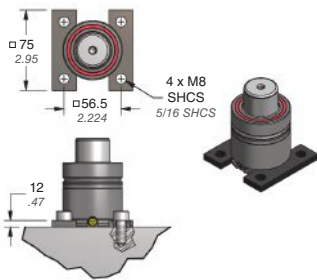
On-Contact Force

bar	daN
150	924
125	770
100	616
75	462
50	308
25	154
20	123

Mount Options

B12

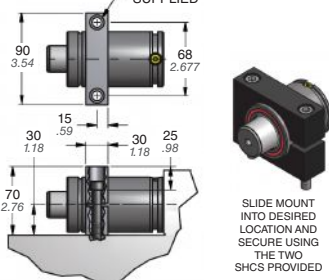
90.12.00750



B319V

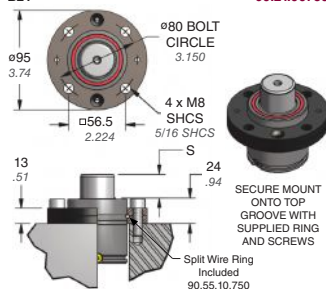
2X M10x60 mm SHCS
SUPPLIED

90.319V.1000



B21

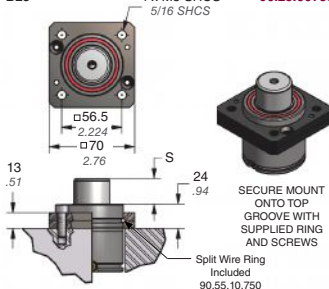
90.21.00750



B25

4 x M8 SHCS
5/16 SHCS

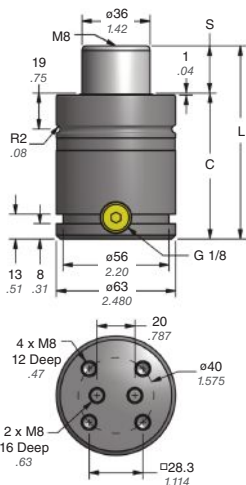
90.25.00750



Ordering Example:

Cylinder with Mount: UH.1000.025.B12.C.150

Mount Only: 90.12.00750



AO - Basic Model*

*For base mounting secure with a minimum of 4 fasteners.

Part No.	S mm inch	C	L ±0.25 ±0.010
• UH.1600.013	12.5 0.49	64.5 2.54	77 3.031
UH.1600.016	16 0.63	68 2.68	84 3.307
UH.1600.019	19 0.75	71 2.80	90 3.543
• UH.1600.025	25 0.98	77 3.03	102 4.016
UH.1600.032	32 1.26	84 3.31	116 4.567
• UH.1600.038	37.5 1.48	89.5 3.52	127 5.000
• UH.1600.050	50 1.97	102 4.02	152 5.984
UH.1600.063	62.5 2.46	114.5 4.51	177 6.969
UH.1600.075	75 2.95	127 5.00	202 7.953
• UH.1600.080	80 3.15	132 5.20	212 8.346
UH.1600.100	100 3.94	152 5.98	252 9.921
UH.1600.125	125 4.92	177 6.97	302 11.890

• Preferred Sizes

Ordering Example:

UH.1600.025. AO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

AO = Basic Model. When not specified, default is AO.
B319V, B21, B25 and B325 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.

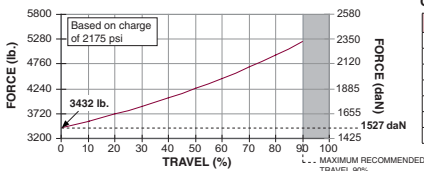
Operating System: C = Self-contained,
F = Open Flow Fitting. When not
specified, default is C, self-contained.

UH.1600 — 15 kN / 1.7 ton

UH.1600 Force Charts

On-Contact Force

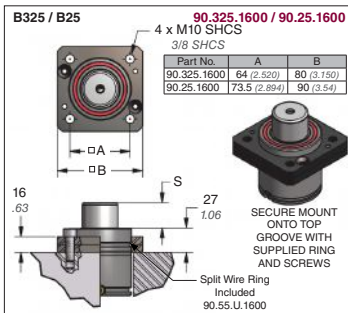
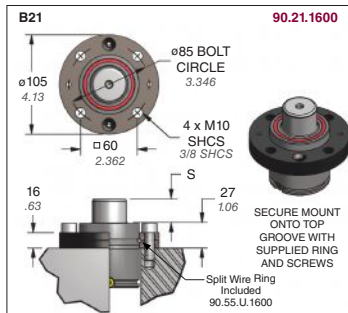
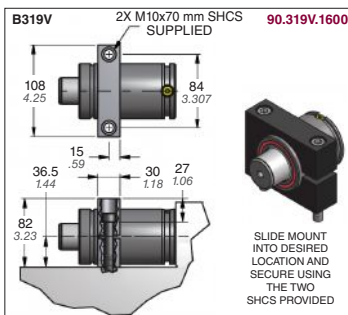
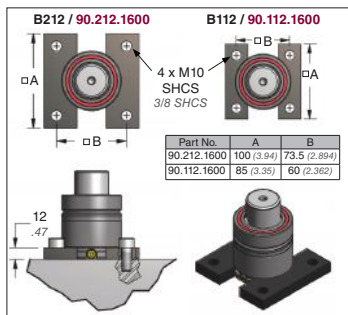
psi	lb.
2175	3432
2000	3155
1750	2761
1500	2367
1000	1578
500	789
250	394



On-Contact Force

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

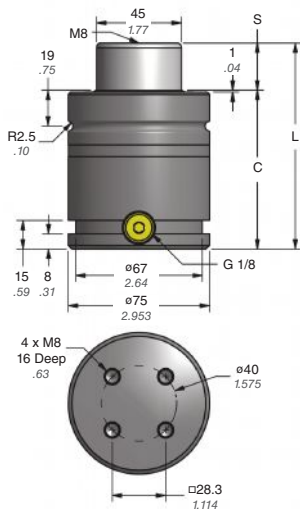
Mount Options



Ordering Example:

Cylinder with Mount: UH.1600.025.B112.C.150

Mount Only: 90.112.1600



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
UH.2600.016	16 0.63	75 2.95	91 3.583
UH.2600.019	19 0.75	78 3.07	97 3.819
• UH.2600.025	25 0.98	84 3.31	109 4.291
UH.2600.032	32 1.26	91 3.58	123 4.843
• UH.2600.038	37.5 1.48	96.5 3.80	134 5.276
• UH.2600.050	50 1.97	109 4.29	159 6.260
UH.2600.063	62.5 2.46	121.5 4.78	184 7.244
UH.2600.075	75 2.95	134 5.28	209 8.228
• UH.2600.080	80 3.15	139 5.47	219 8.622
UH.2600.100	100 3.94	159 6.26	259 10.197
UH.2600.125	125 4.92	184 7.24	309 12.165

• Preferred Sizes

Ordering Example:

UH.2600.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.* B319V, B21, B25 and B325 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.*

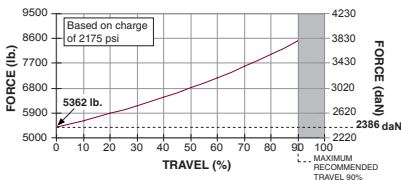
UH.2600 — 24 kN / 2.6 ton

UH Series Nitrogen Gas Springs

UH.2600 Force Charts

On-Contact Force

psi	lb.
2175	5362
2000	4930
1750	4314
1500	3698
1000	2465
500	1233
250	616



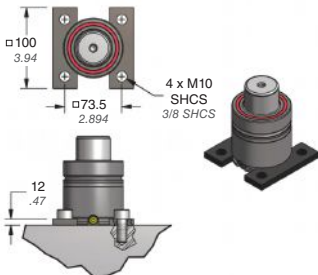
On-Contact Force

bar	daN
150	2386
125	1988
100	1590
75	1193
50	795
25	398
20	318

Mount Options

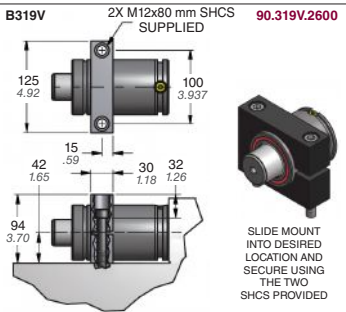
B12

90.12.01500



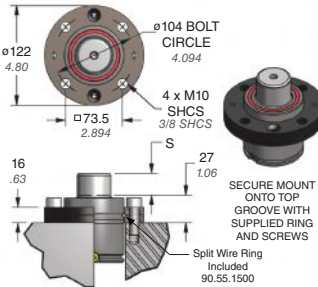
B319V

90.319V.2600



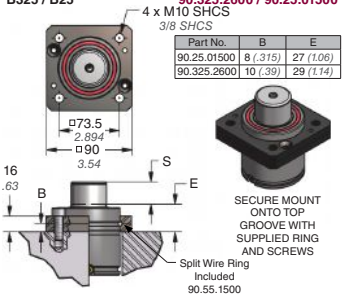
B21

90.21.01500



B325 / B25

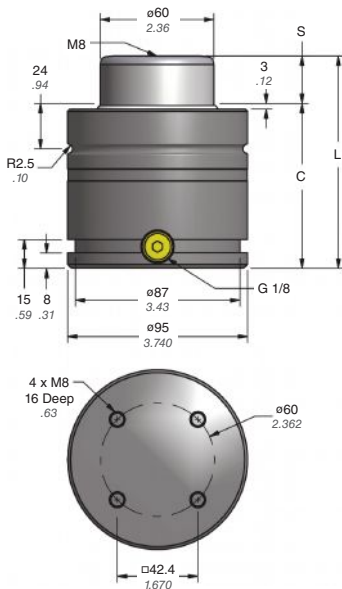
90.325.2600 / 90.25.01500



Ordering Example:

Cylinder with Mount: UH.2600.025.B12.C.150

Mount Only: 90.12.01500



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
UH.4600.016	16 0.63	78 3.07	94 3.701
UH.4600.019	19 0.75	81 3.19	100 3.937
• UH.4600.025	25 0.98	87 3.43	112 4.409
UH.4600.032	32 1.26	94 3.70	126 4.961
• UH.4600.038	37.5 1.48	99.5 3.92	137 5.394
• UH.4600.050	50 1.97	112 4.41	162 6.378
UH.4600.063	62.5 2.46	124.5 4.90	187 7.362
UH.4600.075	75 2.95	137 5.39	212 8.346
• UH.4600.080	80 3.15	142 5.59	222 8.740
UH.4600.100	100 3.94	162 6.38	262 10.315
UH.4600.125	125 4.92	187 7.36	312 12.283

• Preferred Sizes

Ordering Example:

UH.4600.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO.
B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

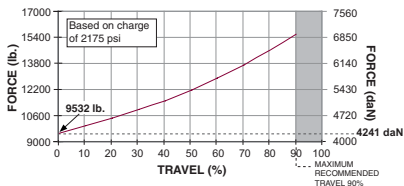
15–150 bar (220–2175 psi).
When not specified, default is 150 bar.

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

UH.4600 Force Charts

On-Contact Force

psi	lb.
2175	9532
2000	8765
1750	7669
1500	6574
1000	4383
500	2191
250	1096



On-Contact Force

bar	daN
150	4241
125	3534
100	2827
75	2121
50	1414
25	707
20	565

Mount Options

B12 90.12.03000

B319V 90.319V.4600

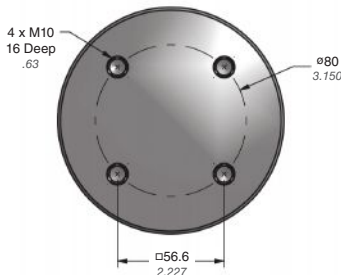
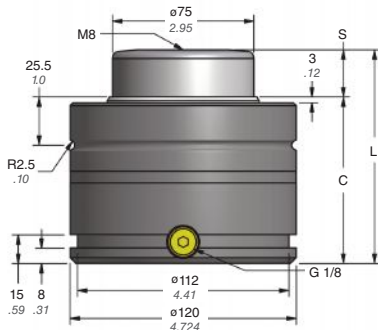
B21 90.21.03000

B25 90.25.03000

Ordering Example:

Cylinder with Mount: UH.4600.025.B12.C.150

Mount Only: 90.12.03000



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
UH.6600.016	16 0.63	88 3.46	104 4.094
UH.6600.019	19 0.75	91 3.58	110 4.331
• UH.6600.025	25 0.98	97 3.82	122 4.803
UH.6600.032	32 1.26	104 4.09	136 5.354
• UH.6600.038	37.5 1.48	109.5 4.31	147 5.787
• UH.6600.050	50 1.97	122 4.80	172 6.772
UH.6600.063	62.5 2.46	134.5 5.30	197 7.756
UH.6600.075	75 2.95	147 5.79	222 8.740
• UH.6600.080	80 3.15	152 5.98	232 9.134
UH.6600.100	100 3.94	172 6.77	272 10.709
UH.6600.125	125 4.92	197 7.76	322 12.677

• Preferred Sizes

Ordering Example:

UH.6600.025, TO, C, 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*
B319V, B21 and B25 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

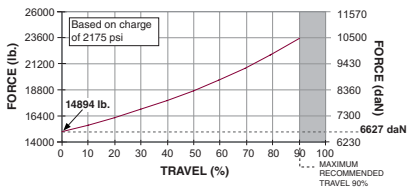
15–150 bar (220–2175 psi).
When not specified, default is 150 bar.

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

UH.6600 Force Charts

On-Contact Force

psi	lb.
2175	14894
2000	13695
1750	11983
1500	10272
1000	6848
500	3424
250	1712



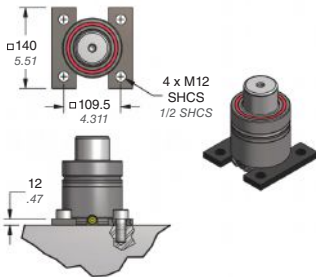
On-Contact Force

bar	daN
150	6627
125	5522
100	4418
75	3313
50	2209
25	1104
20	884

Mount Options

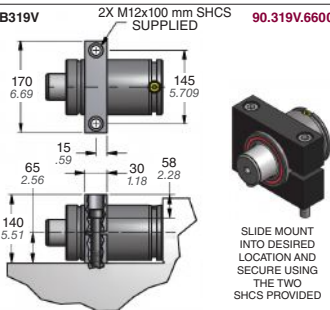
B12

90.12.05000



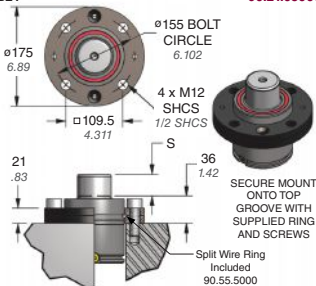
B319V

90.319V.6600



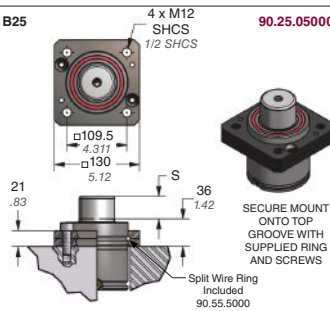
B21

90.21.05000



B25

90.25.05000

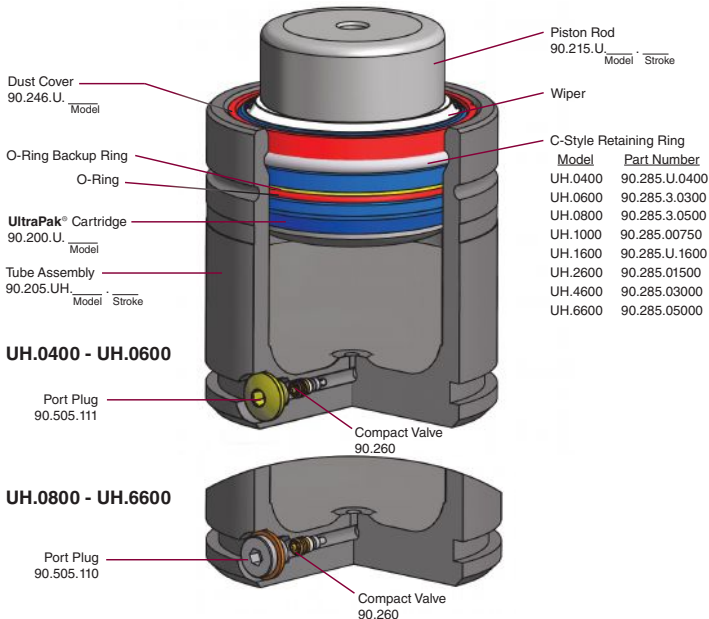


Ordering Example:

Cylinder with Mount: UH.6600.025.B12.C.150

Mount Only: 90.12.05000

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.



Part Ordering Example:

Piston Rod: 90.215.U.0400.025

Part Number _____ Stroke (mm)
Series _____ Model: 0400, 0600, 0800, 1000, 1600, 2600, 4600, 6600

Note: The UH Series Nitrogen Gas Springs are permanently marked with model number, serial number and repair kit number. Please refer to these when ordering replacement parts.

Operating Specifications

Charging Medium:	Nitrogen Gas	Maximum Speed:	1.6 m/sec (63 in/sec)
UH.0400 Charging Pressure:	15 – 180 bar (220 psi – 2600 psi)	Operating Temperature:	4°C – 71°C
UH.0600 – UH.6600 Charging Pressure:	15 – 150 bar (220 psi – 2175 psi)		(40°F – 160°F)

DADCO®

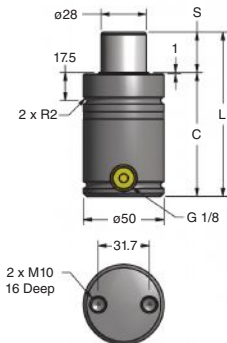
Nitrogen Gas Springs

UT Series



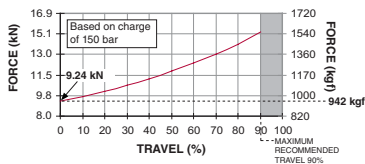
- Up to 95 kN of force on contact
- UltraPak® cartridge for long life
- Operates self-contained or linked





RM - Radius Groove

Force Graph



Part No.	S mm	On-Contact Force kN (kgf)	Max Force* kN (kgf)	C	L ±0.25	Pressure Increase* %	Weight kg
UT.1000.013	12.5	9.24 (942)	15.29 (1559)	64.5	77.0	65	0.79
UT.1000.016	16.0			68.0	84.0		0.82
UT.1000.019	19.0			71.0	90.0		0.85
• UT.1000.025	25.0			77.0	102.0		0.91
UT.1000.032	32.0			84.0	116.0		0.97
UT.1000.038	37.5			89.5	127.0		1.03
• UT.1000.050	50.0			102.0	152.0		1.14
UT.1000.063	62.5			114.5	177.0		1.26
• UT.1000.075	75.0			127.0	202.0		1.38
UT.1000.080	80.0			132.0	212.0		1.42
• UT.1000.100	100.0			152.0	252.0		1.61
• UT.1000.125	125.0			177.0	302.0		1.84

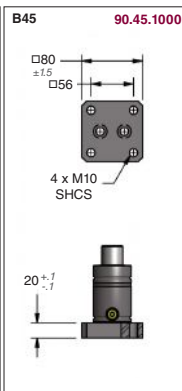
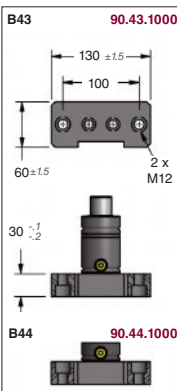
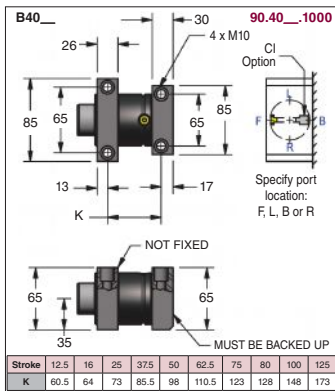
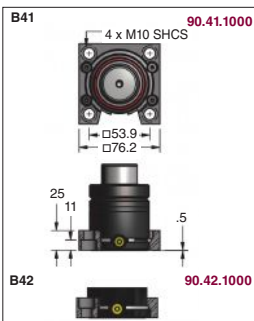
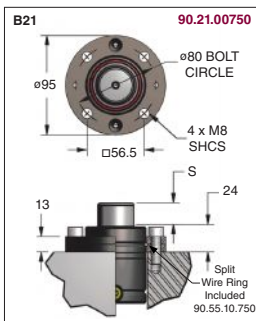
• Preferred Sizes

On-Contact Force

bar	MPa	kN	kgf
150	15.0	9.24	942
125	12.5	7.70	785
100	10.0	6.16	628
75	7.5	4.62	471
50	5.0	3.08	314
25	2.5	1.54	157
20	2.0	1.23	126

*Based on maximum recommended
travel, 90% stroke

Mount Options



Ordering Example:

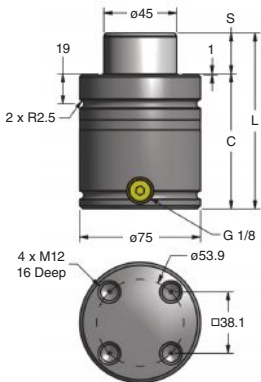
Model	Stroke	Mount	Operating System	Charging Pressure (bar)
UT.1000	025	B21	C	150

Part Number

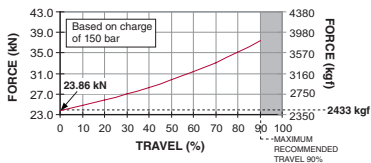
RM: Radius Groove

C: Self-contained
FB: Open Flow Fitting
(90.805.115)
CI__: Self-contained
with Indicator

15~150 bar (1.5~15 MPa)
When not specified, default is
150 bar (15 MPa).



Force Graph



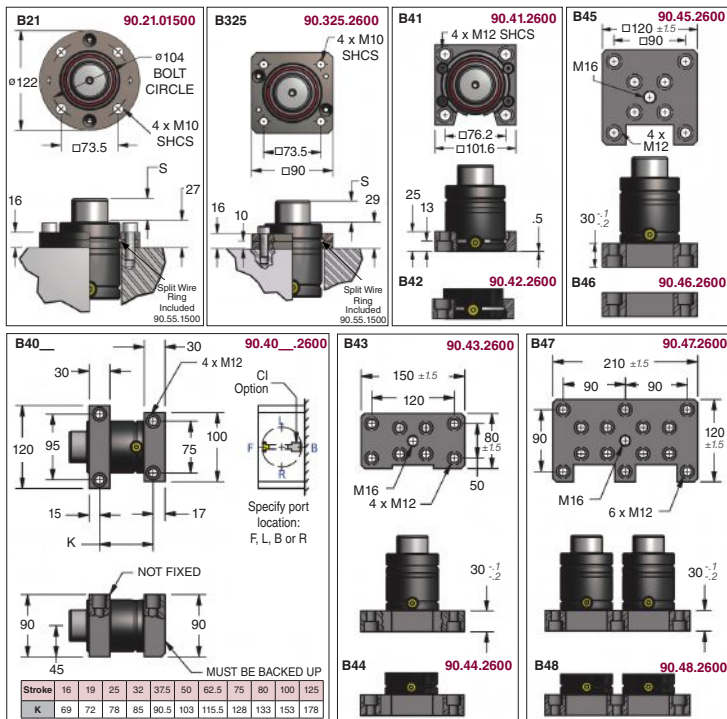
Part No.	S mm	On-Contact Force kN (kgf)	Max Force* kN (kgf)	C	L ±0.25	Pressure Increase* %	Weight kg
UT.2600.016	16.0	23.86 (2433)	37.52 (3826)	75.0	91.0	57	2.01
UT.2600.019	19.0			78.0	97.0		2.06
• UT.2600.025	25.0			84.0	109.0		2.16
UT.2600.032	32.0			91.0	123.0		2.28
UT.2600.038	37.5			96.5	134.0		2.37
• UT.2600.050	50.0			109.0	159.0		2.58
UT.2600.063	62.5			121.5	184.0		2.79
• UT.2600.075	75.0			134.0	209.0		3.01
UT.2600.080	80.0			139.0	219.0		3.09
• UT.2600.100	100.0			159.0	259.0		3.43
• UT.2600.125	125.0			184.0	309.0		3.85

- Preferred Sizes

*Based on maximum recommended travel, 90% stroke

bar	MPa	kN	kgf
150	15.0	23.86	2433
125	12.5	19.88	2027
100	10.0	15.90	1622
75	7.5	11.93	1216
50	5.0	7.95	811
25	2.5	3.98	405
20	2.0	3.18	324

Mount Options



Ordering Example:

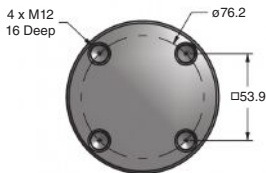
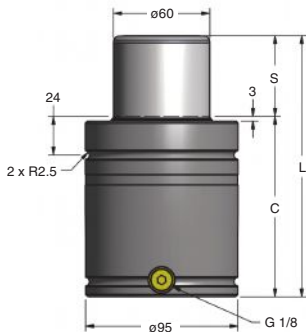
Model	Stroke	Mount	Operating System	Charging Pressure (bar)
UT.2600	025	B21	C	150

Part Number

RN: Radius Groove

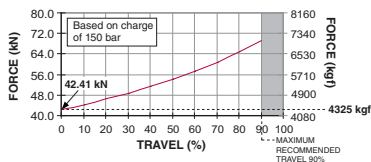
C: Self-contained
 FB: Open Flow Fitting (90.805.115)
 CI: Self-contained with Indicator

15~150 bar (1.5~15 MPa)
 When not specified, default is 150 bar (15 MPa).



RM - Radius Groove

Force Graph



Part No.	S mm	On-Contact Force kN (kgf)	Max Force* kN (kgf)	C	L ±0.25	Pressure Increase* %	Weight kg
UT.4600.016	16.0	42.41 (4325)	69.34 (7070)	78.0	94.0	63	3.26
UT.4600.019	19.0			81.0	100.0		3.35
• UT.4600.025	25.0			87.0	112.0		3.52
UT.4600.032	32.0			94.0	126.0		3.73
UT.4600.038	37.5			99.5	137.0		3.89
• UT.4600.050	50.0			112.0	162.0		4.25
UT.4600.063	62.5			124.5	187.0		4.62
• UT.4600.075	75.0			137.0	212.0		4.98
UT.4600.080	80.0			142.0	222.0		5.13
• UT.4600.100	100.0			162.0	262.0		5.71
• UT.4600.125	125.0			187.0	312.0		6.44

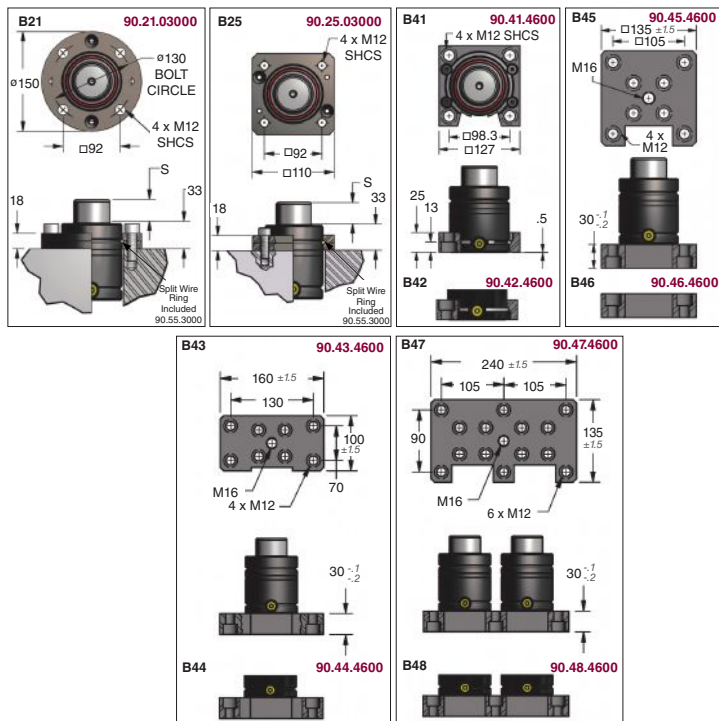
• Preferred Sizes

On-Contact Force

bar	MPa	kN	kgf
150	15.0	42.41	4325
125	12.5	35.34	3604
100	10.0	28.27	2883
75	7.5	21.21	2162
50	5.0	14.14	1442
25	2.5	7.07	721
20	2.0	5.65	577

*Based on maximum recommended travel, 90% stroke

Mount Options



Ordering Example:

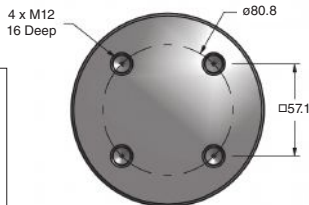
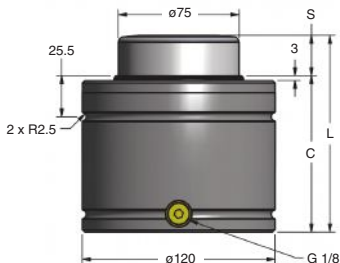
Model	Stroke	Mount	Operating System	Charging Pressure (bar)
UT.4600	025	B21	C	150

Part Number

RM: Radius Groove

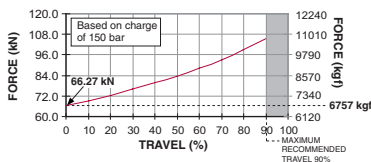
C: Self-contained
 FB: Open Flow Fitting
 (90.805.115)

15~150 bar (1.5~15 MPa)
 When not specified, default is 150 bar (15 MPa).



RM - Radius Groove

Force Graph



Part No.	S mm	On-Contact Force kN (kgf)	Max Force* kN (kgf)	C	L ±0.25	Pressure Increase* %	Weight kg
UT.6600.016	16.0	66.27 (6757)	104.14 (10619)	88.0	104.0	57	6.00
UT.6600.019	19.0			91.0	110.0		6.14
• UT.6600.025	25.0			97.0	122.0		6.41
UT.6600.032	32.0			104.0	136.0		6.73
UT.6600.038	37.5			109.5	147.0		6.98
• UT.6600.050	50.0			122.0	172.0		7.56
UT.6600.063	62.5			134.5	197.0		8.13
• UT.6600.075	75.0			147.0	222.0		8.70
UT.6600.080	80.0			152.0	232.0		8.93
• UT.6600.100	100.0			172.0	272.0		9.84
• UT.6600.125	125.0			197.0	322.0		10.99

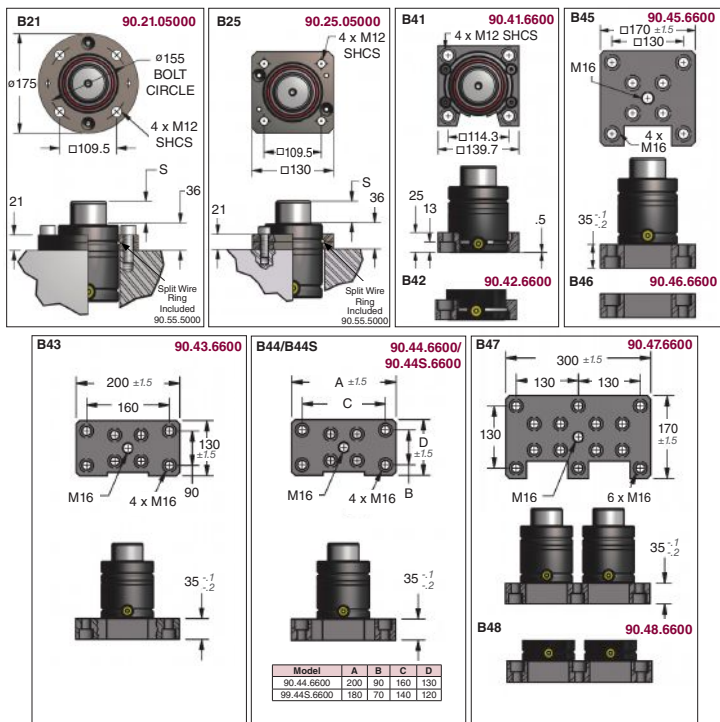
• Preferred Sizes

*Based on maximum recommended travel, 90% stroke

On-Contact Force

bar	MPa	kN	kgf
150	15.0	66.27	6757
125	12.5	55.22	5631
100	10.0	44.18	4505
75	7.5	33.13	3379
50	5.0	22.09	2252
25	2.5	11.04	1126
20	2.0	8.84	901

Mount Options



Ordering Example:

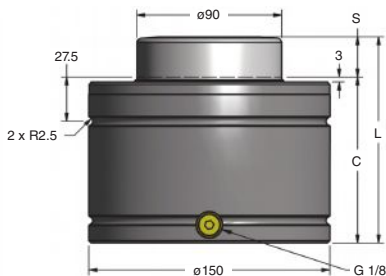
Model	Stroke	Mount	Operating System	Charging Pressure (bar)
UT.6600	025	B21	C	150

Part Number

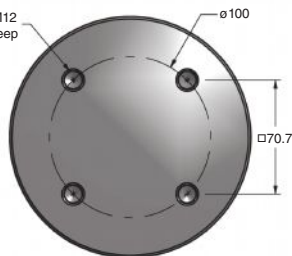
RM: Radius Groove

C: Self-contained
 FB: Open Flow Fitting
 (90.805.115)

15–150 bar (1.5–15 MPa)
 When not specified, default is
 150 bar (15 MPa).

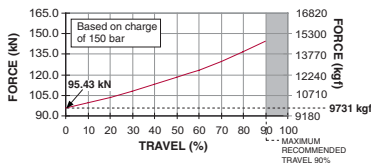


4 x M12
16 Deep



RM - Radius Groove

Force Graph



Part No.	S mm	On-Contact Force kN (kgf)	Max Force* kN (kgf)	C	L ±0.25	Pressure Increase* %	Weight kg
• UT.9600.025	25.0	95.43 (9731)	144.32 (14717)	103.0	128.0	51	10.68
UT.9600.032	32.0			110.0	142.0		11.17
UT.9600.038	37.5			115.5	153.0		11.55
• UT.9600.050	50.0			128.0	178.0		12.42
UT.9600.063	62.5			140.5	203.0		13.29
• UT.9600.075	75.0			153.0	228.0		14.16
UT.9600.080	80.0			158.0	238.0		14.51
• UT.9600.100	100.0			178.0	278.0		15.90
• UT.9600.125	125.0			203.0	328.0		17.64

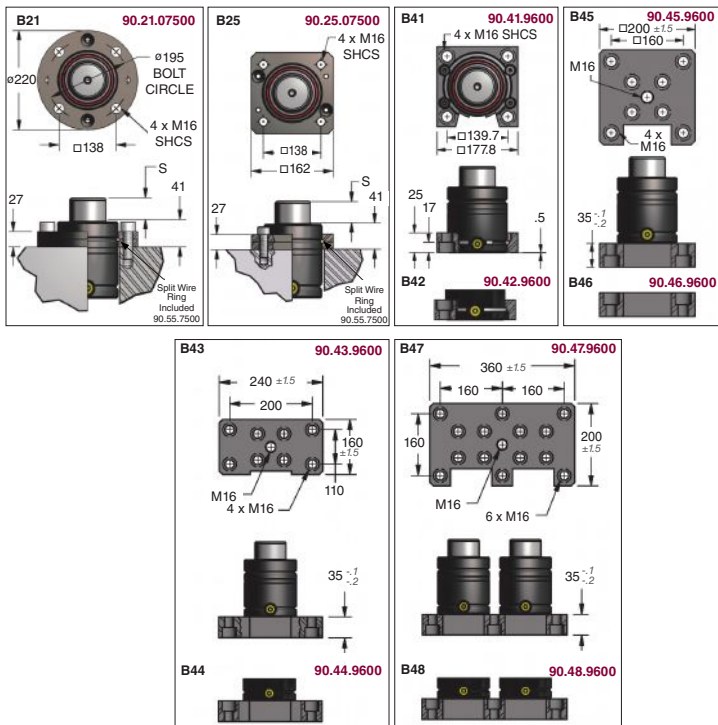
• Preferred Sizes

On-Contact Force

bar	MPa	kN	kgf
150	15.0	95.43	9731
125	12.5	79.52	8109
100	10.0	63.62	6487
75	7.5	47.71	4865
50	5.0	31.81	3244
25	2.5	15.90	1622
20	2.0	12.72	1297

*Based on maximum recommended travel, 90% stroke

Mount Options



Ordering Example:

Model	Stroke	Mount	Operating System	Charging Pressure (bar)
UT.9600	025	B21	C	150

Part Number

RM: Radius Groove

C: Self-contained
 FB: Open Flow Fitting (90.805.115)

15~150 bar (1.5~15 MPa)
 When not specified, default is 150 bar (15 MPa).

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

Control Panel with Pressure Monitor 90.406.421

The 90.406.421. Control Panel with Pressure Monitor is used to fill and monitor the pressure of linked nitrogen gas springs from outside the die. The panel is adjustable to read pressure in bar, psi or MPa and includes a digital pressure sensor with programmable output to signal if pressure drops below a preset level. This panel conforms to Toyota standard number D-PACPS-B, and is Listed to applicable UL Standards and requirements by UL. Refer to Section 5, Linked System Components, for more information.



Compact G 1/8 Distribution Blocks 90.416.____

DADCO's distribution blocks are used in linked systems to simplify piping of multiple cylinders with a uniform system pressure. The Compact Distribution Blocks have 6 to 12 G 1/8 ports. These blocks conform to Toyota standard number D-FBS-A. Refer to Section 5, Linked System Components, for more information.



Pressure Indicator

90.243.____ (08 = 80 MPa, 10 = 100 MPa)

DADCO offers an optional pressure indicator for the UT.1000 and UT.2600 self-contained models. This indicator is preset and installed in a special G 1/8 port to designate that the gas spring pressure is above the preset value. The charging pressure must be a minimum of 20 bar/2 MPa above the preset value when the indicator is installed; refer to ordering example. The pressure indicator requires manual reset upon recharging. The UT.1000 and UT.2600 may be ordered with the port prepped for a pressure indicator to be installed; gas springs will be provided with a port plug (CIP option). Contact DADCO for more information.



Operation Example:



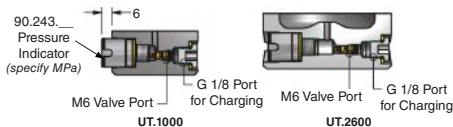
Green indicates pressure is greater than 80 bar/8 MPa.



Red indicates pressure is less than 80 bar/8 MPa.

Pressure Indicator Removal Tool 90.243.RT

Use the Pressure Indicator Removal Tool to remove and install the Pressure Indicator.



Ordering Example:

Model	Stroke	Mount*	Pressure Indicator	Charging Pressure (bar)
UT.1000	025	B40F	CI08	100
Part Number UT.1000 or UT.2600				Must be charged at a minimum of 20 bar/2 MPa above preset pressure indicator value.

*When ordered with the B40 horizontal mount option the letter specifies the Pressure Indicator (CI) port location. Refer to the UT.1000 and UT.2600 mount pages for more information.

CAUTION

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

Operating Specifications

Charging Medium:	Nitrogen Gas	Maximum Speed:	1.6 m/sec
Charging Pressure:	15 – 150 bar (1.5 – 15 MPa)	Operating Temperature:	4°C – 71°C (40°F – 160°F)

DADCO®

Ultra Force Extended® Nitrogen Gas Springs

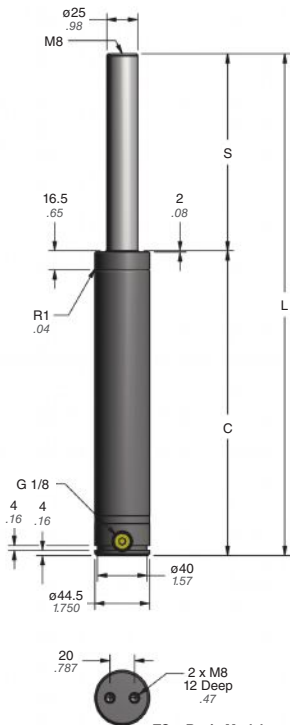
UX Series



Patented

- Reduce die construction costs
- Long stroke lengths – up to 300 mm
- Directly upgrade ISO 500-10000 models
- Variety of attachable and welded mounts





TO – Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
UX.0800.013	12.5 0.49	97.5 3.84	110 4.331
• UX.0800.025	25 0.98	110 4.33	135 5.315
• UX.0800.038	37.5 1.48	122.5 4.82	160 6.299
• UX.0800.050	50 1.97	135 5.31	185 7.283
UX.0800.063	62.5 2.46	147.5 5.81	210 8.268
UX.0800.075	75 2.95	160 6.30	235 9.252
• UX.0800.080	80 3.15	165 6.50	245 9.646
• UX.0800.100	100 3.94	185 7.28	285 11.220
• UX.0800.125	125 4.92	210 8.27	335 13.189
UX.0800.150	150 5.91	235 9.25	385 15.157
• UX.0800.160	160 6.30	245 9.65	405 15.945
UX.0800.175	175 6.89	260 10.24	435 17.126
UX.0800.200	200 7.87	285 11.22	485 19.094

• Preferred Sizes

Ordering Example:

UX.0800.080, TO, C, 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.00500

Charging Pressure:

15–150 bar (220–2175 psi). *When not specified, default is 150 bar.*

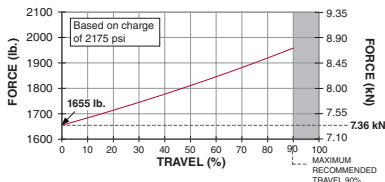
Operating System:

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

Force Charts

On-Contact Force

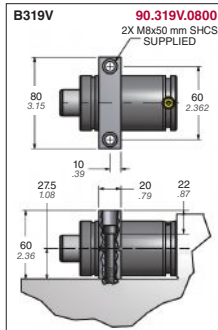
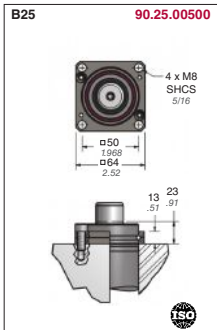
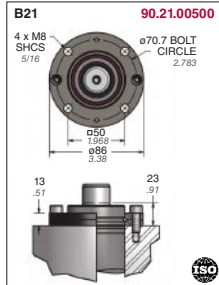
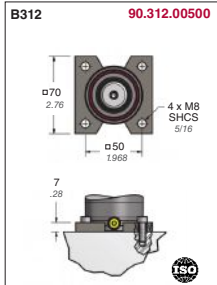
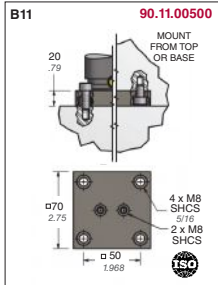
psi	lb.
2175	1655
2000	1522
1750	1331
1500	1141
1000	761
500	380
250	190



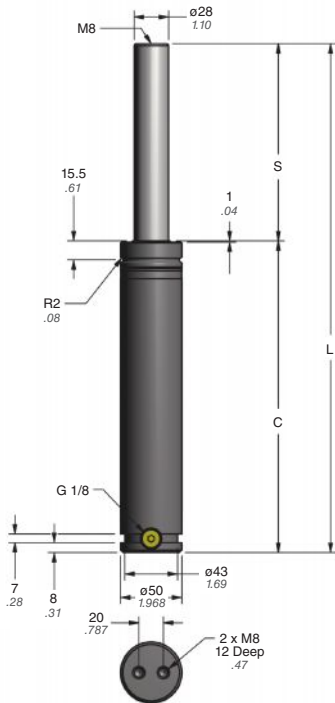
On-Contact Force

bar	kN
150	7.36
125	6.14
100	4.91
75	3.68
50	2.45
25	1.23
20	0.98

Mount Options



DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



TO – Basic Model

**Refer to UX.1000V for model matching
 European Standards.**

Part No.	S mm inch	C	L ±0.25 ±0.010
UX.1000.013	12.5 .49	105.5 4.15	118 4.646
• UX.1000.025	25 0.98	118 4.65	143 5.630
• UX.1000.038	37.5 1.48	130.5 5.14	168 6.614
• UX.1000.050	50 1.97	143 5.63	193 7.598
UX.1000.063	62.5 2.46	155.5 6.12	218 8.583
UX.1000.075	75 2.95	168 6.61	243 9.567
• UX.1000.080	80 3.15	173 6.81	253 9.961
• UX.1000.100	100 3.94	193 7.60	293 11.535
• UX.1000.125	125 4.92	218 8.58	343 13.504
UX.1000.150	150 5.91	243 9.57	393 15.472
• UX.1000.160	160 6.30	253 9.96	413 16.260
UX.1000.175	175 6.89	268 10.55	443 17.441
UX.1000.200	200 7.87	293 11.54	493 19.409
UX.1000.225	225 8.86	318 12.52	543 21.378
UX.1000.250	250 9.84	343 13.50	593 23.346
UX.1000.275	275 10.83	368 14.49	643 25.315
UX.1000.300	300 11.81	393 15.47	693 27.283

• Preferred Sizes

Ordering Example:

UX.1000.080, TO, C, 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.00750

Charging Pressure:

15–150 bar (220–2175 psi). When not
 specified, default is 150 bar.

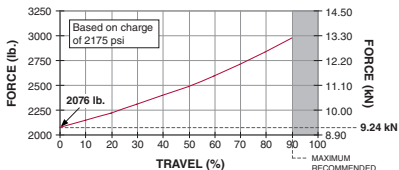
Operating System:

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

Force Charts

On-Contact Force

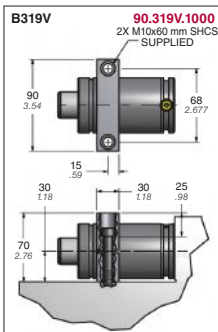
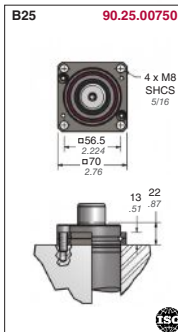
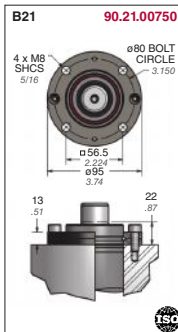
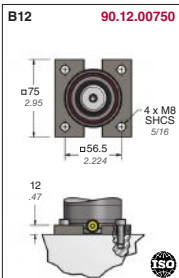
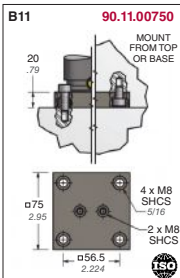
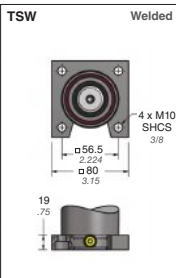
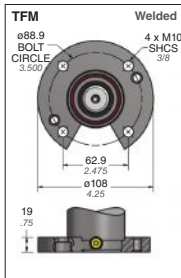
psi	lb.
2175	2076
2000	1909
1750	1670
1500	1432
1000	954
500	477
250	239



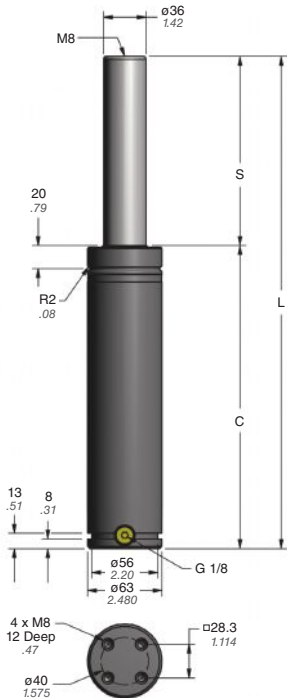
On-Contact Force

bar	kN
150	9.24
125	7.70
100	6.16
75	4.62
50	3.08
25	1.54
20	1.23

Mount Options



DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



TO – Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
UX.1600.013	12.5 0.49	107.5 4.23	120 4.724
• UX.1600.025	25 0.98	120 4.72	145 5.709
• UX.1600.038	37.5 1.48	132.5 5.22	170 6.693
• UX.1600.050	50 1.97	145 5.71	195 7.677
UX.1600.063	62.5 2.46	157.5 6.20	220 8.661
UX.1600.075	75 2.95	170 6.69	245 9.646
• UX.1600.080	80 3.15	175 6.89	255 10.039
• UX.1600.100	100 3.94	195 7.68	295 11.614
• UX.1600.125	125 4.92	220 8.66	345 13.583
UX.1600.150	150 5.91	245 9.65	395 15.551
• UX.1600.160	160 6.30	255 10.04	415 16.339
UX.1600.175	175 6.89	270 10.63	445 17.520
UX.1600.200	200 7.87	295 11.61	495 19.488
UX.1600.225	225 8.86	320 12.60	545 21.457
UX.1600.250	250 9.84	345 13.58	595 23.425
UX.1600.275	275 10.83	370 14.57	645 25.394
UX.1600.300	300 11.81	395 15.55	695 27.362

• Preferred Sizes

Ordering Example:

UX.1600.080. TO. C. 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.1600

Charging Pressure:

15–150 bar (220–2175 psi). When not specified, default is 150 bar.

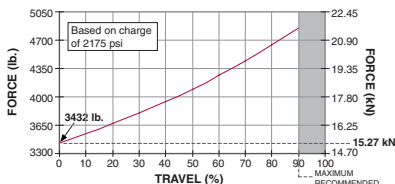
Operating System:

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

Force Charts

On-Contact Force

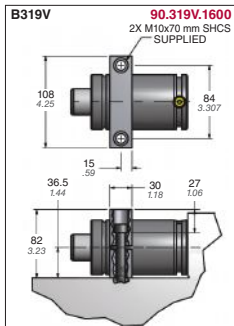
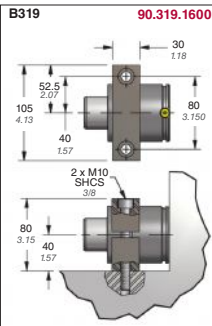
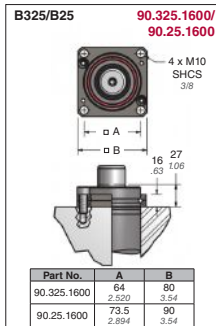
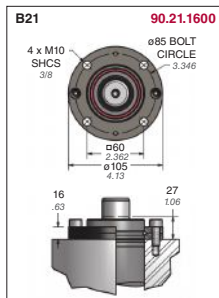
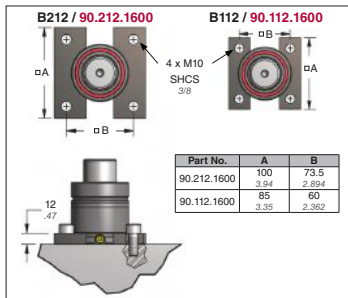
psi	lb.
2175	3432
2000	3155
1750	2761
1500	2367
1000	1578
500	789
250	394



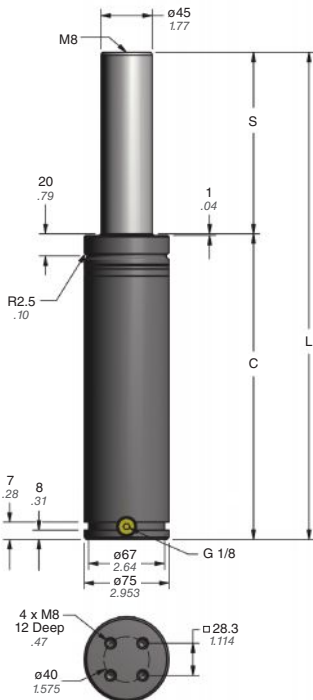
On-Contact Force

bar	kN
150	15.27
125	12.72
100	10.18
75	7.63
50	5.09
25	2.54
20	2.04

Mount Options



DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



TO – Basic Model

*Refer to UX.2600V for model matching
European Standards.*

Part No.	S mm inch	C	L ±0.25 ±0.010
• UX.2600.025	25 0.98	133 5.24	158 6.220
• UX.2600.038	37.5 1.48	145.5 5.73	183 7.205
• UX.2600.050	50 1.97	158 6.22	208 8.189
UX.2600.063	62.5 2.46	170.5 6.71	233 9.173
UX.2600.075	75 2.95	183 7.20	258 10.157
• UX.2600.080	80 3.15	188 7.40	268 10.551
• UX.2600.100	100 3.94	208 8.19	308 12.126
• UX.2600.125	125 4.92	233 9.17	358 14.094
UX.2600.150	150 5.91	258 10.16	408 16.063
• UX.2600.160	160 6.30	268 10.55	428 16.850
UX.2600.175	175 6.89	283 11.14	458 18.031
UX.2600.200	200 7.87	308 12.13	508 20.000
UX.2600.225	225 8.86	333 13.11	558 21.968
UX.2600.250	250 9.84	358 14.09	608 23.937
UX.2600.275	275 10.83	383 15.08	658 25.906
UX.2600.300	300 11.81	408 16.06	708 27.874

• Preferred Sizes

Ordering Example:

UX.2600.080. TO. C. 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.01500

Charging Pressure:

15–150 bar (220–2175 psi). *When not specified, default is 150 bar.*

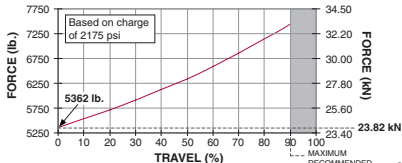
Operating System:

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

Force Charts

On-Contact Force

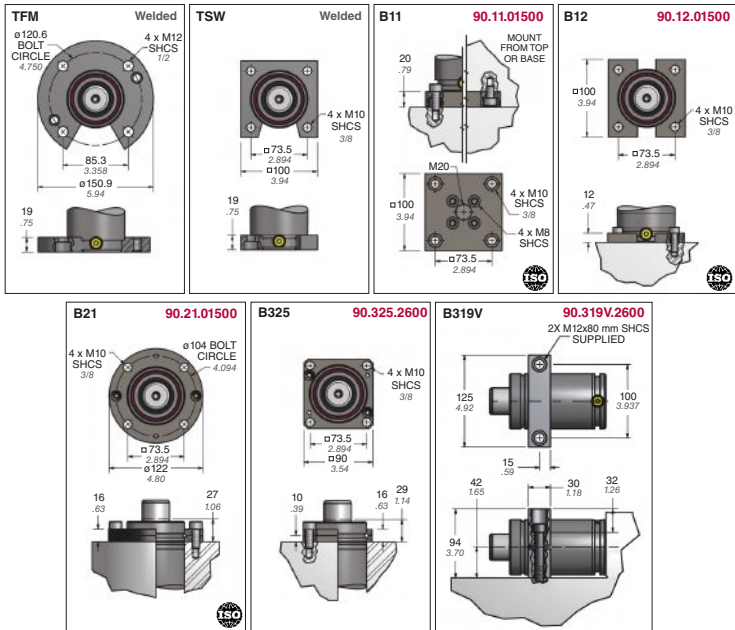
psi	lb.
2175	5362
2000	4930
1750	4314
1500	3698
1000	2465
500	1233
250	616



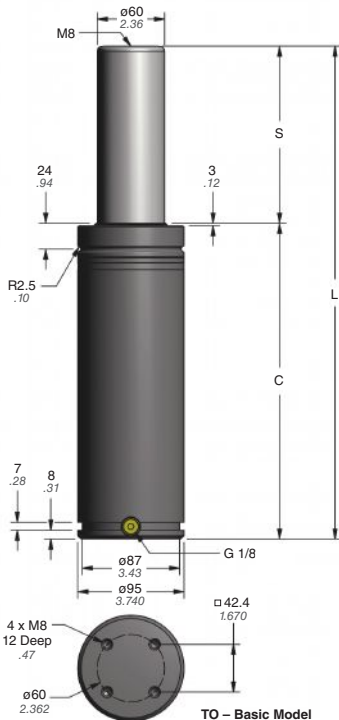
On-Contact Force

bar	kN
150	23.86
125	19.88
100	15.90
75	11.93
50	7.95
25	3.98
20	3.18

Mount Options



DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



Part No.	S mm inch	C	L ±0.25 ±0.010
• UX.4600.025	25 0.98	145 5.71	170 6.693
• UX.4600.038	37.5 1.48	157.5 6.20	195 7.677
• UX.4600.050	50 1.97	170 6.69	220 8.661
UX.4600.063	62.5 2.46	182.5 7.19	245 9.646
UX.4600.075	75 2.95	195 7.68	270 10.630
• UX.4600.080	80 3.15	200 7.87	280 11.024
• UX.4600.100	100 3.94	220 8.66	320 12.598
• UX.4600.125	125 4.92	245 9.65	370 14.567
UX.4600.150	150 5.91	270 10.63	420 16.535
• UX.4600.160	160 6.30	280 11.02	440 17.323
UX.4600.175	175 6.89	295 11.61	470 18.504
UX.4600.200	200 7.87	320 12.60	520 20.472
UX.4600.225	225 8.86	345 13.58	570 22.441
UX.4600.250	250 9.84	370 14.57	620 24.409
UX.4600.275	275 10.83	395 15.55	670 26.378
UX.4600.300	300 11.81	420 16.54	720 28.346

• Preferred Sizes

Ordering Example:

UX.4600.080. TO. C. 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.03000

Charging Pressure:

15–150 bar (220–2175 psi). When not specified, default is 150 bar.

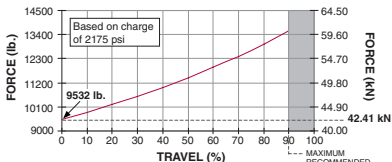
Operating System:

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

Force Charts

On-Contact Force

psi	lb.
2175	9532
2000	8765
1750	7669
1500	6574
1000	4383
500	2191
250	1096



On-Contact Force

bar	kN
150	42.41
125	35.34
100	28.27
75	21.21
50	14.14
25	7.07
20	5.65

Mount Options

TFM Welded

TSW Welded

B11 90.11.03000

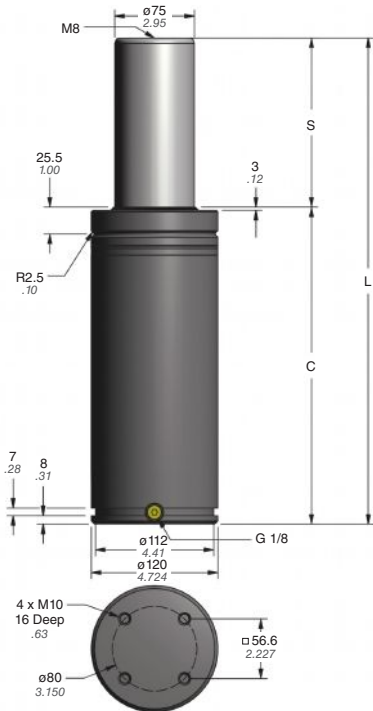
B12 90.12.03000

B21 90.21.03000

B25 90.25.03000

B319V 90.319V.4600

DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



TO – Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
• UX.6600.025	25 0.98	165 6.50	190 7.480
• UX.6600.038	37.5 1.48	177.5 6.99	215 8.465
• UX.6600.050	50 1.97	190 7.48	240 9.449
UX.6600.063	62.5 2.46	202.5 7.97	265 10.433
UX.6600.075	75 2.95	215 8.46	290 11.417
• UX.6600.080	80 3.15	220 8.66	300 11.811
• UX.6600.100	100 3.94	240 9.45	340 13.386
• UX.6600.125	125 4.92	265 10.43	390 15.354
UX.6600.150	150 5.91	290 11.42	440 17.323
• UX.6600.160	160 6.30	300 11.81	460 18.110
UX.6600.175	175 6.89	315 12.40	490 19.291
UX.6600.200	200 7.87	340 13.39	540 21.260
UX.6600.225	225 8.86	365 14.37	590 23.228
UX.6600.250	250 9.84	390 15.35	640 25.197
UX.6600.275	275 10.83	415 16.34	690 27.165
UX.6600.300	300 11.81	440 17.32	740 29.134

• Preferred Sizes

Ordering Example:

UX.6600.080. TO. C. 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.05000

Charging Pressure:

15–150 bar (220–2175 psi). When not specified, default is 150 bar.

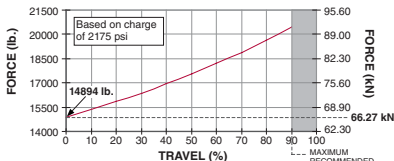
Operating System:

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

Force Charts

On-Contact Force

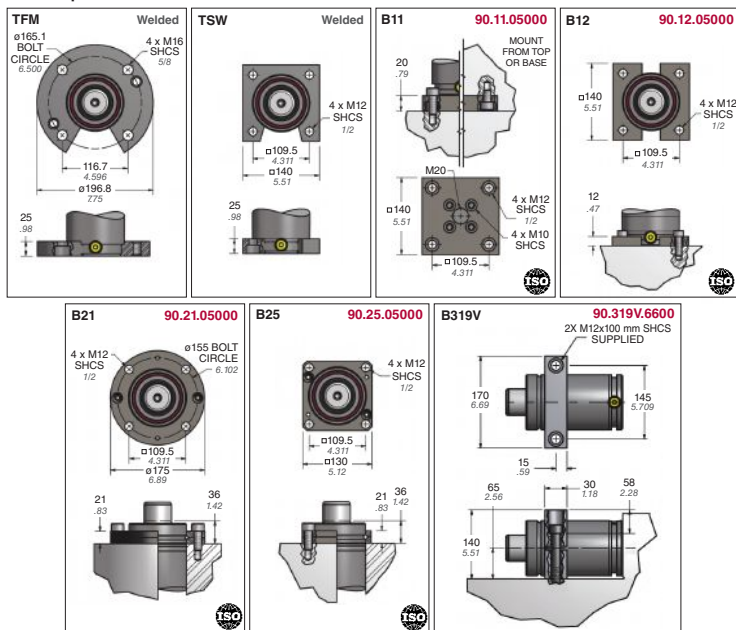
psi	lb.
2175	14894
2000	13695
1750	11983
1500	10272
1000	6848
500	3424
250	1712



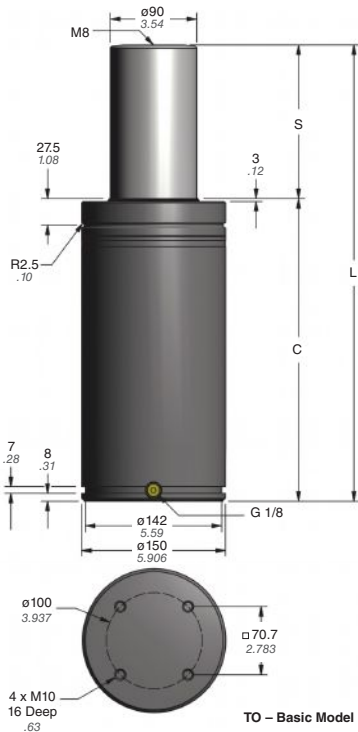
On-Contact Force

bar	kN
150	66.27
125	55.22
100	44.18
75	33.13
50	22.09
25	11.04
20	8.84

Mount Options



DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



Part No.	S mm inch	C	L ±0.25 ±0.010
• UX.9600.025	25 0.98	180 7.09	205 8.071
UX.9600.038	37.5 1.48	192.5 7.58	230 9.055
• UX.9600.050	50 1.97	205 8.07	255 10.039
UX.9600.063	62.5 2.46	217.5 8.56	280 11.024
UX.9600.075	75 2.95	230 9.06	305 12.008
• UX.9600.080	80 3.15	235 9.25	315 12.402
• UX.9600.100	100 3.94	255 10.04	355 13.976
• UX.9600.125	125 4.92	280 11.02	405 15.945
UX.9600.150	150 5.91	305 12.01	455 17.913
• UX.9600.160	160 6.30	315 12.40	475 18.701
UX.9600.175	175 6.89	330 12.99	505 19.882
UX.9600.200	200 7.87	355 13.98	555 21.850
UX.9600.225	225 8.86	380 14.96	605 23.819
UX.9600.250	250 9.84	405 15.94	655 25.787
UX.9600.275	275 10.83	430 16.93	705 27.756
UX.9600.300	300 11.81	455 17.91	755 29.724

• Preferred Sizes

Ordering Example:

UX.9600.080. TO. C. 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.07500

Charging Pressure:

15–150 bar (220–2175 psi). When not specified, default is 150 bar.

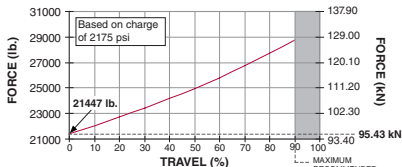
Operating System:

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

Force Charts

On-Contact Force

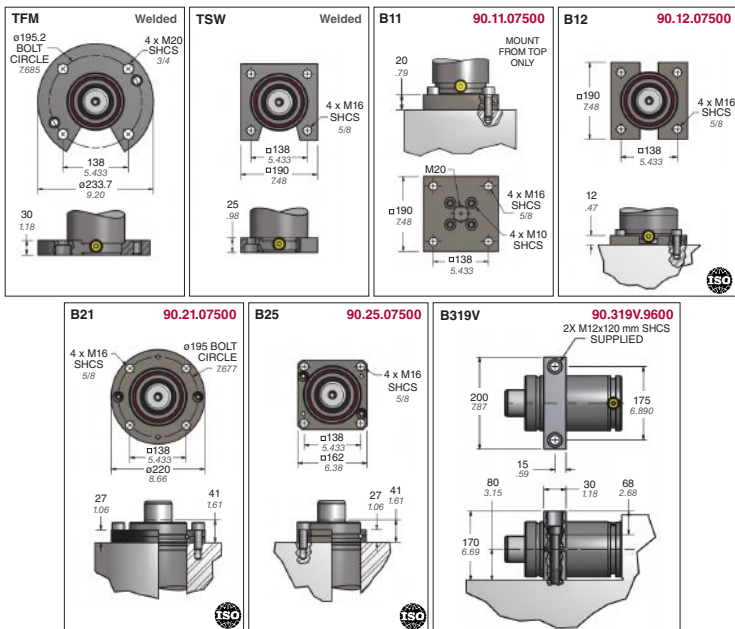
psi	lb.
2175	21447
2000	19721
1750	17256
1500	14791
1000	9861
500	4930
250	2465



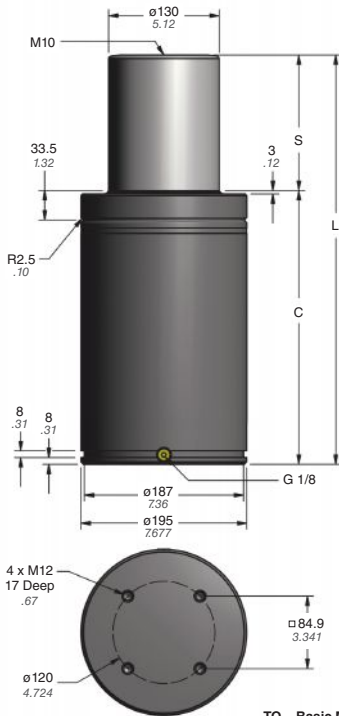
On-Contact Force

bar	kN
150	95.43
125	79.52
100	63.62
75	47.71
50	31.81
25	15.90
20	12.72

Mount Options



DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



TO – Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
• UX.20000.025	25 0.98	185 7.28	210 8.268
UX.20000.038	37.5 1.48	197.5 7.78	235 9.252
• UX.20000.050	50 1.97	210 8.27	260 10.236
UX.20000.063	62.5 2.46	222.5 8.76	285 11.220
UX.20000.075	75 2.95	235 9.25	310 12.205
• UX.20000.080	80 3.15	240 9.45	320 12.598
• UX.20000.100	100 3.94	260 10.24	360 14.173
• UX.20000.125	125 4.92	285 11.22	410 16.142
UX.20000.150	150 5.91	310 12.20	460 18.110
• UX.20000.160	160 6.30	320 12.60	480 18.898
UX.20000.175	175 6.89	335 13.19	510 20.079
UX.20000.200	200 7.87	360 14.17	560 22.047
UX.20000.225	225 8.86	385 15.16	610 24.016
UX.20000.250	250 9.84	410 16.14	660 25.984
UX.20000.275	275 10.83	435 17.13	710 27.953
UX.20000.300	300 11.81	460 18.11	760 29.921

• Preferred Sizes

Ordering Example:

UX.20000.080. TO. C. 150

Part Number:

Includes Series, 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.

Mount Only Ordering Example: 90.21.10000

Charging Pressure:

15–150 bar (220–2175 psi). When not specified, default is 150 bar.

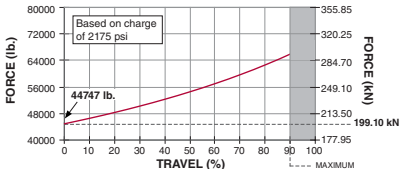
Operating System:

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

Force Charts

On-Contact Force

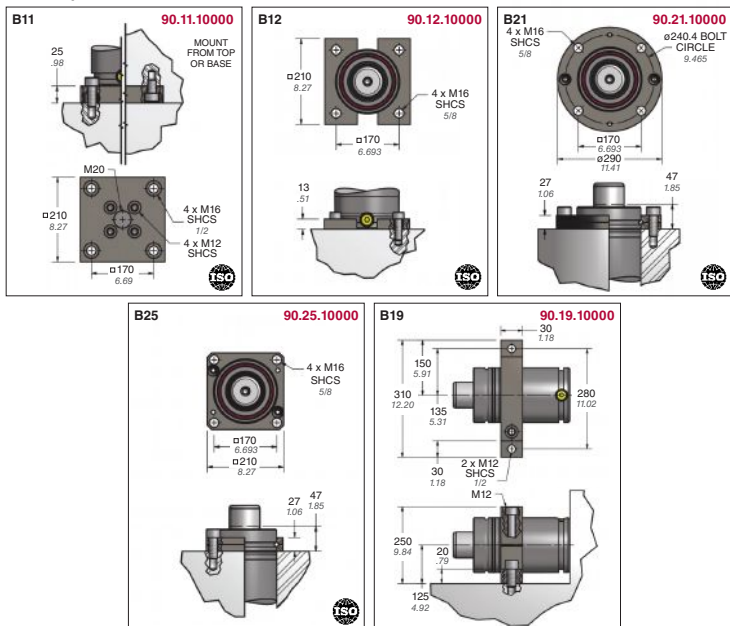
psi	lb.
2175	44747
2000	41147
1750	36004
1500	30860
1000	20574
500	10287
250	5143



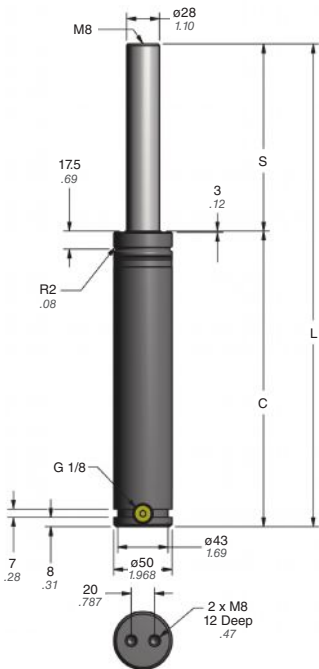
On-Contact Force

bar	kN
150	199.10
125	165.92
100	132.73
75	99.55
50	66.37
25	33.18
20	26.55

Mount Options



DADCO offers a wide variety of mounts. If the mounts above are not suitable for the application, contact DADCO.



TO – Basic Model

Matches European Standards

Part No.	S mm inch	C	L ± 0.25 ± 0.010
UX.1000V.013	12.5 .49	107.5 4.23	120 4.724
UX.1000V.025	25 0.98	120 4.72	145 5.709
UX.1000V.038	37.5 1.48	132.5 5.22	170 6.693
UX.1000V.050	50 1.97	145 5.71	195 7.677
UX.1000V.063	62.5 2.46	157.5 6.20	220 8.661
UX.1000V.080	80 3.15	175 6.89	255 10.039
UX.1000V.100	100 3.94	195 7.68	295 11.614
UX.1000V.125	125 4.92	220 8.66	345 13.583
UX.1000V.160	160 6.30	255 10.04	415 16.339
UX.1000V.200	200 7.87	295 11.61	495 19.488
UX.1000V.250	250 9.84	345 13.58	595 23.425
UX.1000V.300	300 11.81	395 15.55	695 27.362

On-Contact Force

psi	lb.	bar	kN
2175	2076	150	9.24
2000	1909	125	7.70
1750	1670	100	6.16
1500	1432	75	4.62
1000	954	50	3.08
500	477	25	1.54
250	239	20	1.23

Ordering Example:

UX.1000V.080, TO, C, 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model.

Refer to UX.1000 mount options. *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.*

Ultra Force Extended® Nitrogen Gas Springs



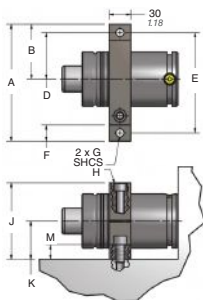
Part No.	S mm inch	C	L ±0.25 ±0.010
UX.2600V.025	25 0.98	135 5.31	160 6.299
UX.2600V.038	37.5 1.48	147.5 5.81	185 7.283
UX.2600V.050	50 1.97	160 6.30	210 8.267
UX.2600V.063	62.5 2.46	172.5 6.80	235 9.251
UX.2600V.080	80 3.15	190 7.48	270 10.629
UX.2600V.100	100 3.94	210 8.27	310 12.204
UX.2600V.125	125 4.92	235 9.25	360 14.173
UX.2600V.160	160 6.30	270 10.63	430 16.929
UX.2600V.200	200 7.87	310 12.20	510 20.079
UX.2600V.250	250 9.84	360 14.17	610 24.016
UX.2600V.300	300 11.81	410 16.14	710 27.953

psi	lb.	bar	kN
2175	5362	150	23.86
2000	4930	125	19.88
1750	4314	100	15.60
1500	3698	75	11.93
1000	2465	50	7.95
500	1233	25	3.98
250	616	20	3.18

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

B19

90.19.



SLIDE MOUNT
 INTO DESIRED
 LOCATION AND
 LOCK

Model	0800	1000	2600	4600	6600	9600
Part No.	00500	00750	01500	03000	05000	07500
A	100 3.94	130 5.12	160 6.30	195 7.68	220 8.66	260 10.24
B	46 1.81	60 2.36	75 2.95	92.5 3.64	105 4.13	125 4.92
D	37 1.46	50 1.97	63.5 2.50	80 3.15	92.5 3.64	110 4.33
E	82 3.228	110 4.331	137 5.394	170 6.693	195 7.677	230 9.055
F	18 .71	20 .79	22.5 .89	25 1.08	27.5 1.08	30 1.18
G	M8 5/16	M8 5/16	M10 3/8	M12 1/2	M12 1/2	M12 1/2
H	M8	M8	M10	M12	M12	M12
J	60 2.36	80 3.15	105 4.13	125 4.92	148 5.83	200 7.87
K	30 1.18	40 1.57	52.5 2.06	62.5 2.46	74 2.91	100 3.94
M	15 .59	20 .79	20 .79	20 .79	20 .79	20 .79

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

Operating Specifications

Charging Medium: Nitrogen Gas Operating Temperature: 4°C – 71°C (40°F – 160°F)*
 Charging Pressure Range: 15 – 150 bar (220 – 2175 psi) Maximum Speed: 1.6 m/sec (63 in/sec)

*For extended range applications contact DADCO.

DADCO®

Full and Compact Height Nitrogen Gas Springs

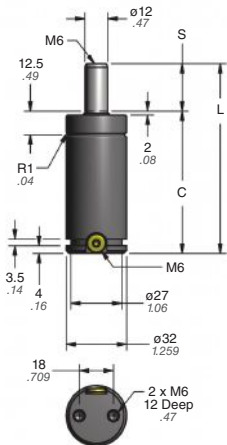
90.10 / 90.8 Series



90.10 Series
Full Height /
Matches ISO Standards

90.8 Series
Compact Height
Alternative





TO – Basic Model

Model Not Available in 90.8 Series

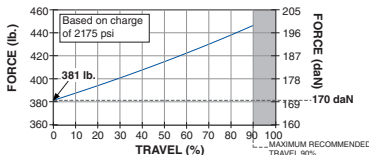
90.10.00170			
Part No.	S mm inch	C	L ±0.25 ±0.010
90.10.00170.010	10 0.39	60 2.36	70 2.756
90.10.00170.013	12.7 0.50	62.7 2.47	75.4 2.969
90.10.00170.016	16 0.63	66 2.60	82 3.228
• 90.10.00170.025	25 0.98	75 2.95	100 3.937
90.10.00170.038	38 1.50	88 3.46	126 4.961
• 90.10.00170.050	50 1.97	100 3.94	150 5.906
90.10.00170.063	63.5 2.50	113.5 4.47	177 6.969
• 90.10.00170.080	80 3.15	130 5.12	210 8.268
90.10.00170.100	100 3.94	150 5.91	250 9.843
90.10.00170.125	125 4.92	175 6.89	300 11.811

• ISO standard stroke lengths

Force Charts

On-Contact Force

psi	lb.
2175	381
2000	351
1750	307
1500	263
1000	175
500	88
250	44



On-Contact Force

bar	daN
150	170
125	141
100	113
75	85
50	57
25	40
20	23

Ordering Example:

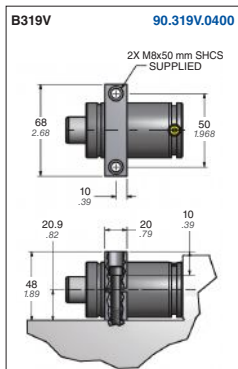
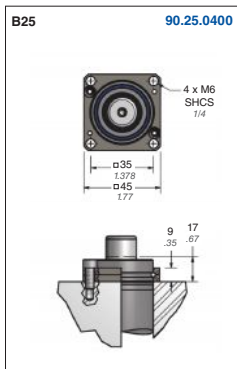
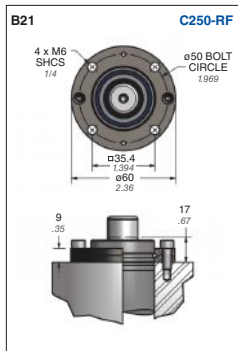
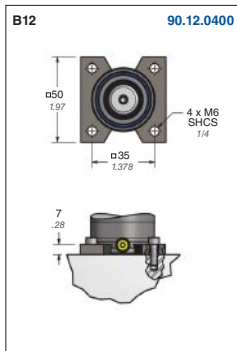
90.10.00170.025, TO, C, 150

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.

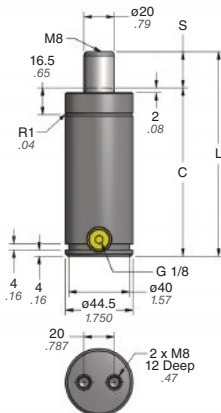
Charging Pressure: 15-150 bar (220-2175 psi). When not specified, default is 150 bar.

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



Ordering Example: Cylinder with Mount: 90.10.00170.025.B21.C.150

Mount Only: C250-RF



TO – Basic Model

Model Not Available in 90.8 Series

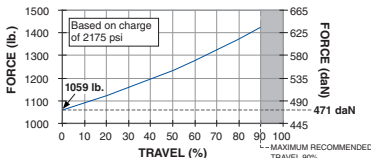
90.10.00500 			
Part No.	S mm inch	C	L ±0.25 ±0.010
90.10.00500.013	12.5 0.49	97.5 3.84	110 4.331
• 90.10.00500.025	25 0.98	110 4.33	135 5.315
90.10.00500.038	37.5 1.48	122.5 4.82	160 6.299
• 90.10.00500.050	50 1.97	135 5.31	185 7.283
90.10.00500.063	62.5 2.46	147.5 5.81	210 8.268
• 90.10.00500.080	80 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
90.10.00500.200	200 7.87	285 11.22	485 19.094

• 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

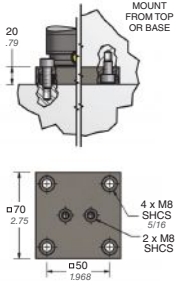
Part Number: Includes Series (90.10), Model and Stroke Length.
Mount Option: TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

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.

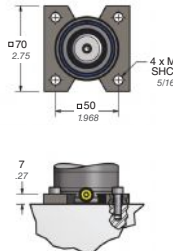
B11

90.11.00500



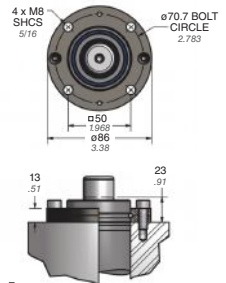
B312

90.312.00500



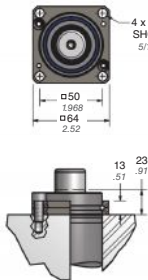
B21

90.21.00500



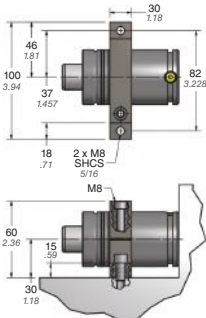
B25

90.25.00500



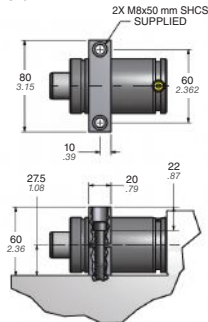
B19

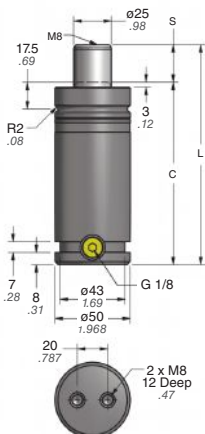
90.19.00500



B319V

90.319V.0800





TO – Basic Model

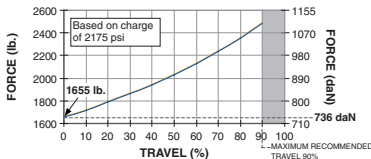
Part No.	S mm inch	90.10.00750		90.8.00750	
		C	L ±0.25 ±0.010	C	L ±0.25 ±0.010
90___00750.013	12.5 0.49	107.5 4.23	120 4.724	82.5 3.25	95 3.740
* 90___00750.025	25 0.98	120 4.72	145 5.709	95 3.74	120 4.724
90___00750.038	37.5 1.48	132.5 5.22	170 6.693	107.5 4.23	145 5.709
* 90___00750.050	50 1.97	145 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

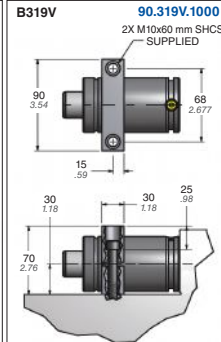
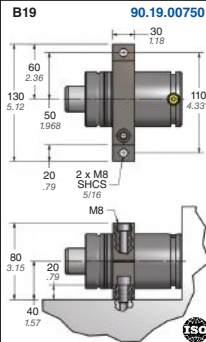
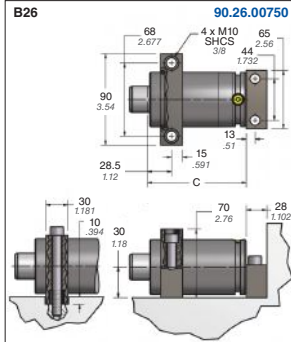
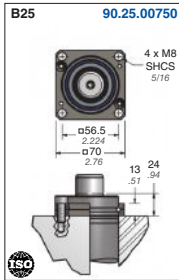
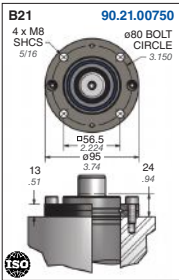
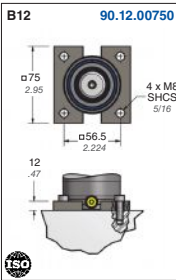
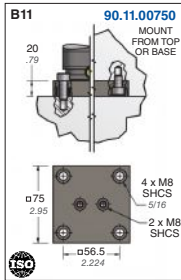
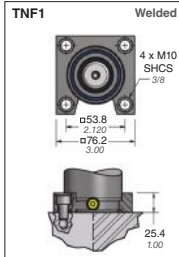
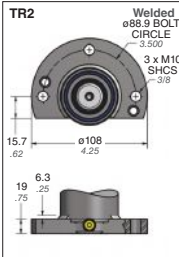
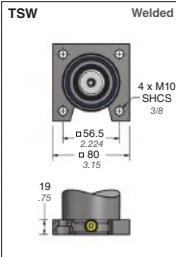
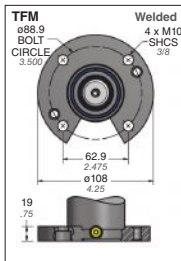
Part Number: Includes Series (90.10 or 90.8), Model and Stroke Length.

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.

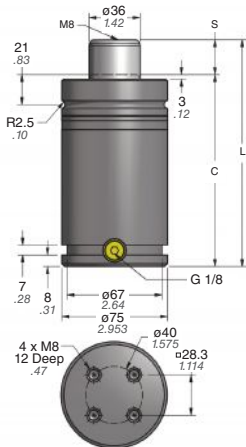
7.5 kN / 0.75 ton



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

15 kN / 1.5 ton

25 mm shorter!



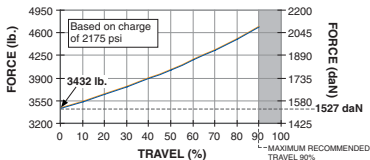
TO – Basic Model

		90_10.01500		90_8.01500	
Part No.	S mm inch	C	L ±0.25 ±0.010	C	L ±0.25 ±0.010
90_01500.013	12.5 0.49	122.5 4.82	135 5.315	97.5 3.84	110 4.31
• 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

On-Contact Force	
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.

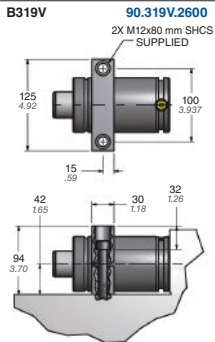
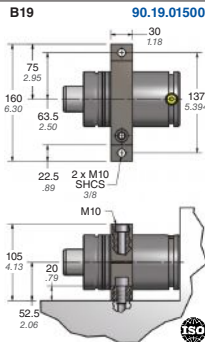
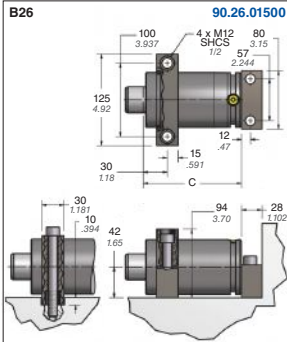
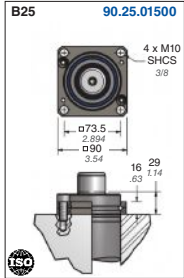
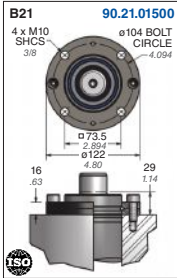
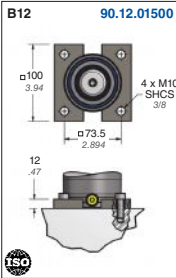
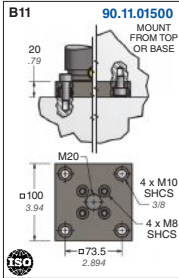
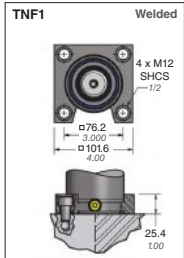
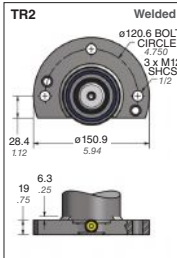
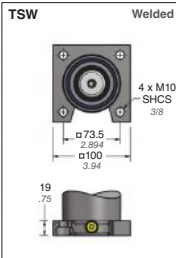
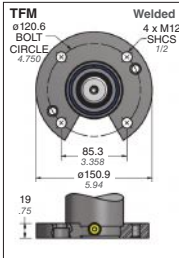
Mount Option: TO = Basic Model. *When not specified, default is TO.* Mounts ordered with cylinder will be attached at the factory.

- 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

90.10 and 90.8 Series
Nitrogen Gas Springs

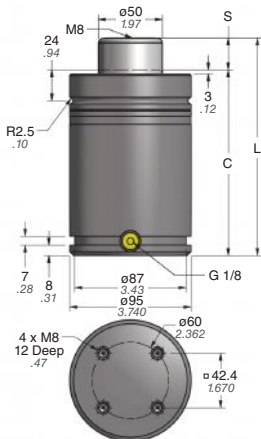


Ordering Example: Cylinder with Mount: 90.10.01500.025.B21.C.150 Mount Only: 90.21.01500

90.10 and 90.8 Series Nitrogen Gas Springs

30 kN / 3 ton

25 mm shorter



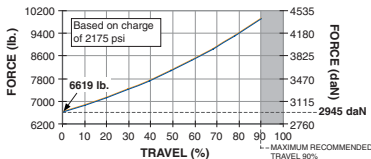
TO - Basic Model

Part No.	S mm inch	90.10.03000 ISO		90.8.03000	
		C	L ±0.25 ±0.010	C	L ±0.25 ±0.010
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

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



On-Contact Force	
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

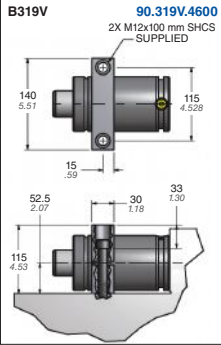
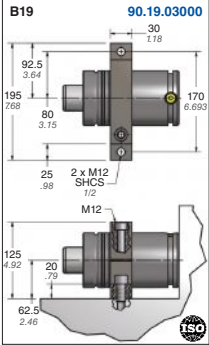
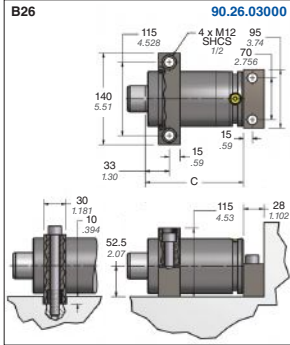
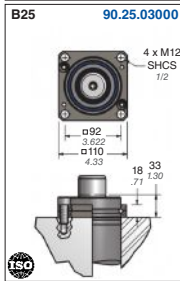
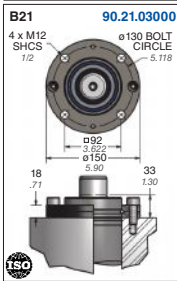
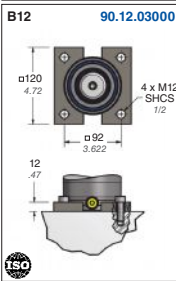
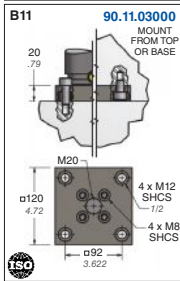
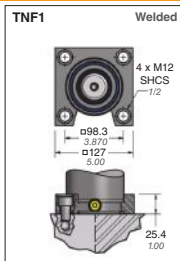
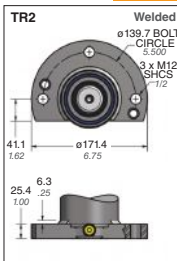
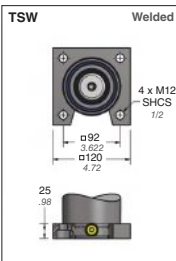
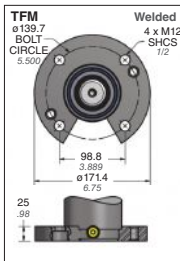
Part Number: Includes Series (90.10 or 90.8), Model and Stroke Length.
Mount Option: TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

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

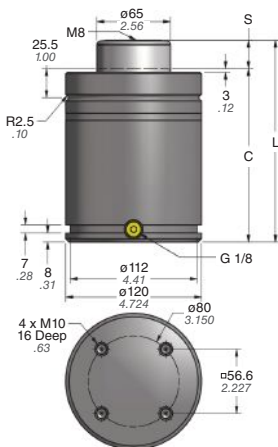
Operating System: C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

30 kN / 3 ton

90.10 and 90.8 Series
Nitrogen Gas Springs



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



TO - Basic Model

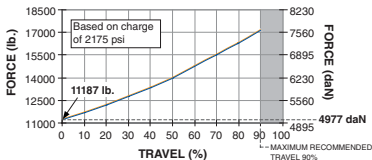
Part No.	S mm inch	90.10.05000 ISO		90.8.05000	
		C	L ±0.25 ±0.010	C	L ±0.25 ±0.010
• 90__05000.025	25 0.98	165 6.50	190 7.480	127.5 5.02	152.5 6.004
90__05000.038	37.5 1.48	177.5 6.99	215 8.465	140 5.51	177.5 6.988
• 90__05000.050	50 1.97	190 7.48	240 9.449	152.5 6.00	202.5 7.972
90__05000.063	62.5 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

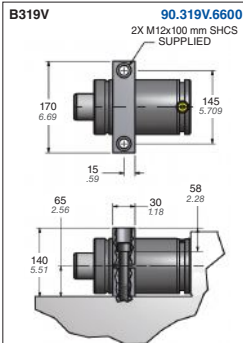
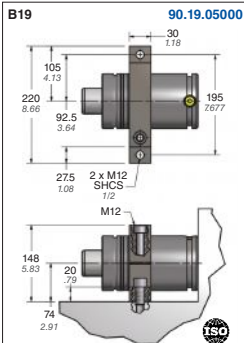
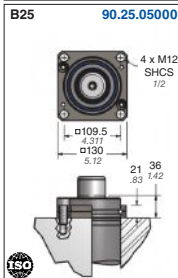
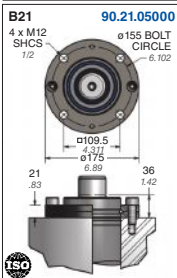
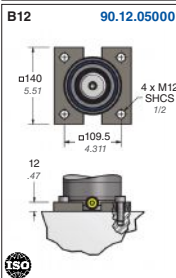
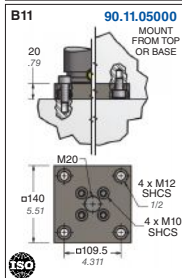
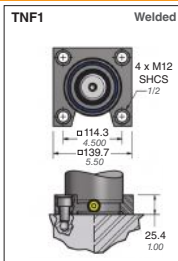
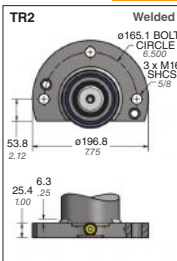
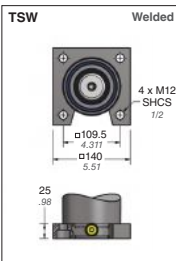
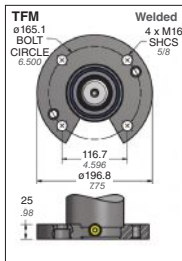
Ordering Example:

90.10.05000.025. TO. C. 150

Part Number: Includes Series (90.10 or 90.8), 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.

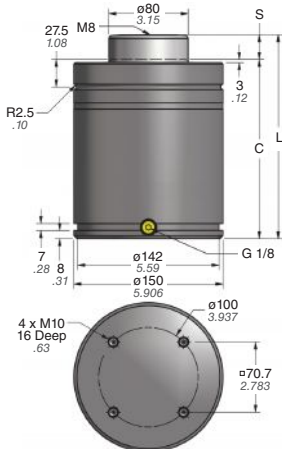


Ordering Example: Cylinder with Mount: 90.10.05000.025.B21.C.150 Mount Only: 90.21.05000

90.10 and 90.8 Series Nitrogen Gas Springs

75 kN / 7.5 ton

50 mm shorter!



TO - Basic Model

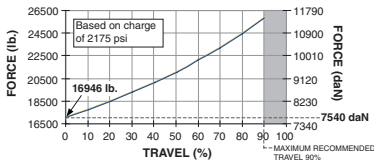
Part No.	S mm inch	90.10.07500		90.8.07500	
		C	L ±0.25 ±0.010	C	L ±0.25 ±0.010
* 90__07500.025	25 0.98	180 7.09	205 8.071	130 5.12	155 6.102
90__07500.038	37.5 1.48	192.5 7.58	230 9.055	142.5 5.61	180 7.087
* 90__07500.050	50 1.97	205 8.07	255 10.039	155 6.10	205 8.071
90__07500.063	62.5 2.46	217.5 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

On-Contact Force

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



On-Contact Force

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

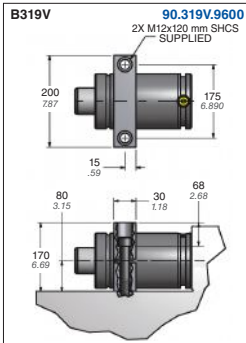
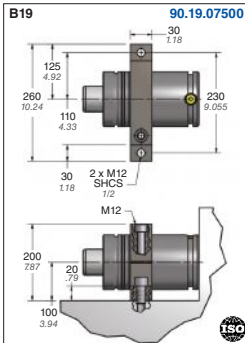
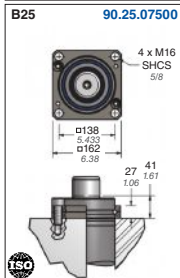
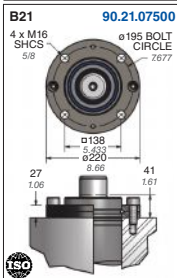
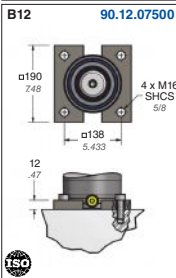
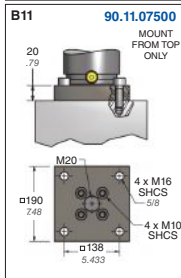
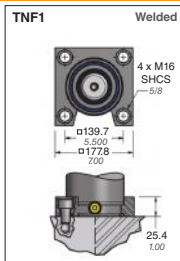
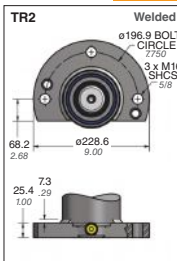
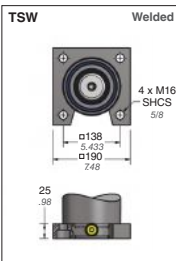
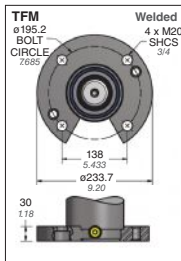
Part Number: Includes Series (90.10 or 90.8), Model and Stroke Length.
Mount Option: TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

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

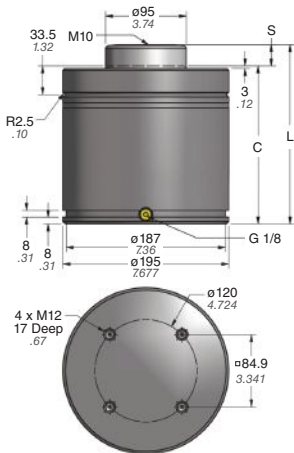
Operating System: C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

75 kN / 7.5 ton

90.10 and 90.8 Series
Nitrogen Gas Springs



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



TO – Basic Model

Model Not Available in 90.8 Series

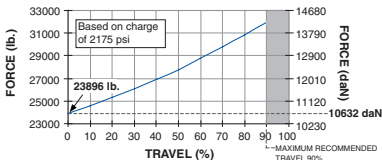
90.10.10000 ISO			
Part No.	S mm inch	C	L ±0.25 ±0.010
90.10.10000.025	25 0.98	185 7.28	210 8.268
90.10.10000.038	37.5 1.48	197.5 7.78	235 9.252
• 90.10.10000.050	50 1.97	210 8.27	260 10.236
90.10.10000.063	62.5 2.46	222.5 8.76	285 11.220
• 90.10.10000.080	80 3.15	240 9.45	320 12.598
• 90.10.10000.100	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.

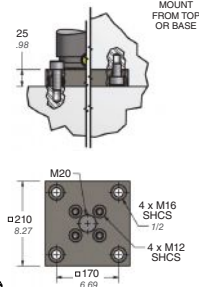
Mount Option: TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

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.

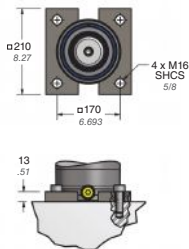
B11

90.11.10000



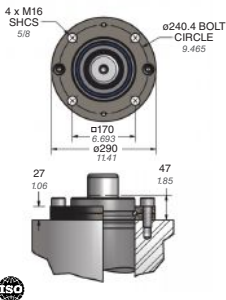
B12

90.12.10000



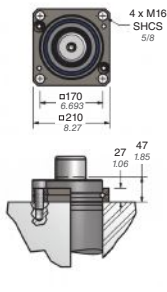
B21

90.21.10000



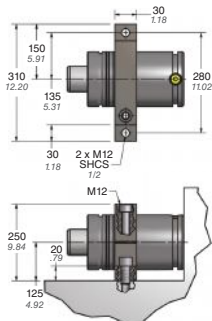
B25

90.25.10000



B19

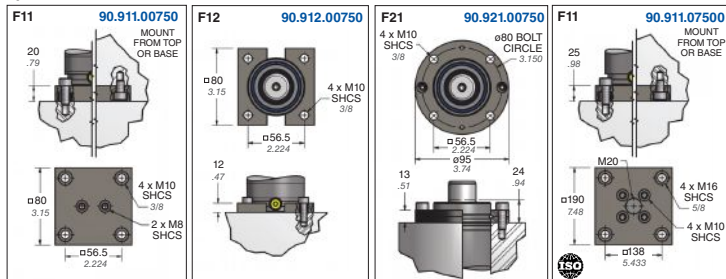
90.19.10000



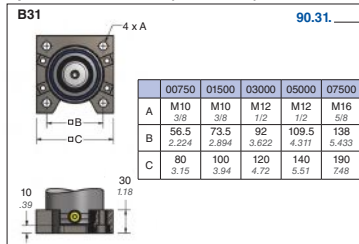
Ordering Example: Cylinder with Mount: 90.10.10000.050.B21.C.150 Mount Only: 90.21.10000

90.10 Miscellaneous Mounts

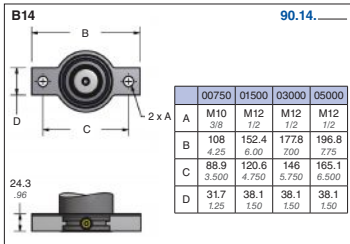
Special WDX Mounts



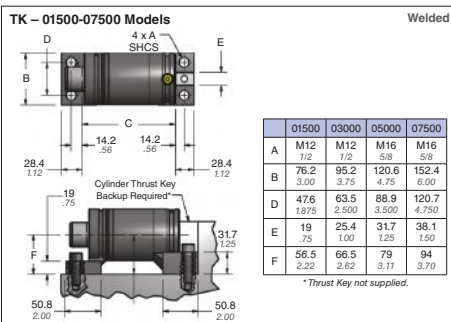
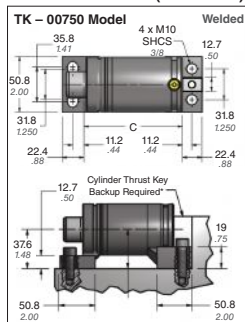
Special WDX Mounts (Continued)



Alternative Mounts



Alternative Mounts (Continued)



Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

CAUTION

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

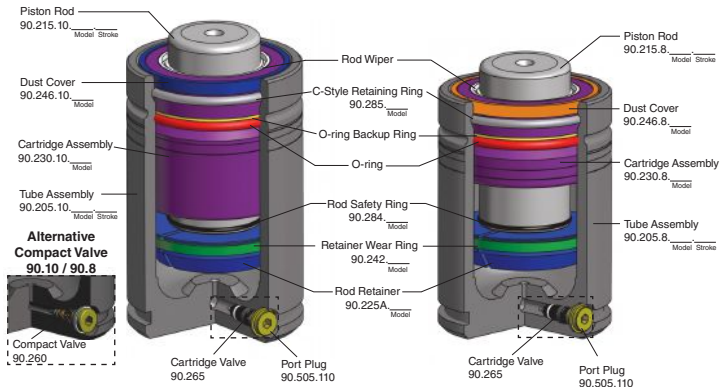
Operating Specifications

Charging Medium:	Nitrogen Gas
Charging Pressure Range:	15 – 150 bar (220 – 2175 psi)
Operating Temperature:	4°C – 71°C (40°F – 160°F)*
Maximum Speed:	1.6 m/sec (63 in/sec)

*For extended range applications contact DADCO.

90.10 Series Parts List

90.8 Series Parts List



Part Ordering Example:

Models: 00170, 00500, 00750, 01500, 03000, 05000, 07500, 10000 (00170, 00500 and 10000 models available in 90.10 Series only)

Piston Rod: 90.215. 10. 00750. 025

Part Number _____ Stroke _____

Series _____ Model _____

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.

Notes

DADCO®

Compact Nitrogen Gas Springs

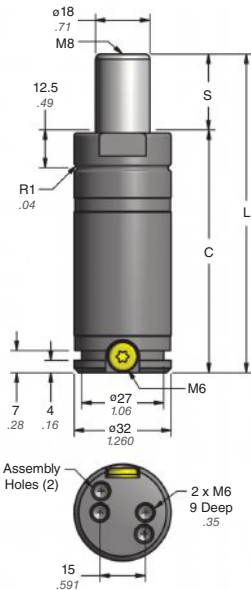
SCR Series



High Force in a Compact Package!

- Up to 3.2 tons of force on contact
- Completely serviceable
- Operates self-contained or linked





TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
SCR.0500.010	10 0.39	65 2.56	75 2.953
SCR.0500.015	15 0.59	70 2.76	85 3.346
SCR.0500.025	25 0.98	80 3.15	105 4.134
SCR.0500.032	32 1.26	87 3.43	119 4.685
SCR.0500.038	37.5 1.48	92.5 3.64	130 5.118
SCR.0500.050	50 1.97	105 4.13	155 6.102
SCR.0500.063	62.5 2.46	117.5 4.63	180 7.087
SCR.0500.080	80 3.15	135 5.31	215 8.465

Ordering Example:

SCR.0500.025, TO, C, 180

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO.
B319V and B21 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–180 bar (220–2600 psi).

When not specified, default is 180 bar.

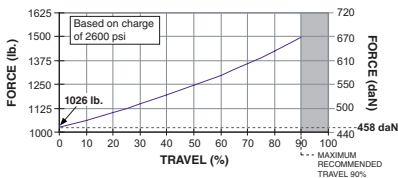
Operating System: C = Self-contained,

F = Open Flow Fitting. When not specified, default is C, self-contained.

Force Charts

On-Contact Force

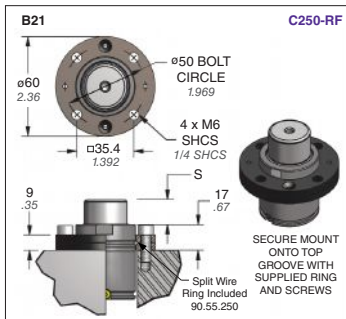
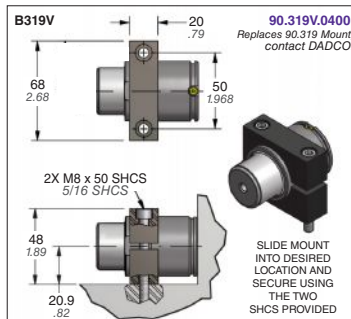
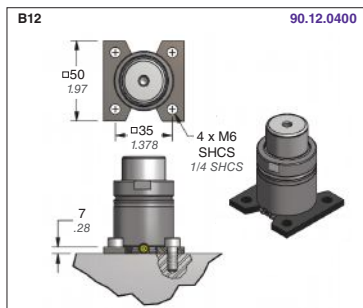
psi	lb.
2600	1026
2175	858
2000	789
1750	690
1500	592
1000	394
500	197
250	99



On-Contact Force

bar	daN
180	458
150	382
125	318
100	254
75	191
50	127
25	64
20	51

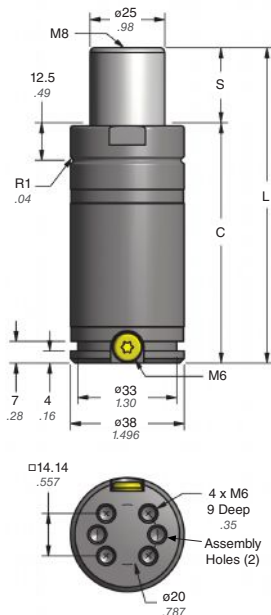
Mount Options



Ordering Example:

Cylinder with Mount: SCR.0500.025.B12.C.180

Mount Only: 90.12.0400



Part No.	S mm inch	C	L ± 0.25 ± 0.010
SCR.0800.010	10 0.39	65 2.56	75 2.953
SCR.0800.015	15 0.59	70 2.76	85 3.346
SCR.0800.025	25 0.98	80 3.15	105 4.134
SCR.0800.032	32 1.26	87 3.43	119 4.685
SCR.0800.038	37.5 1.48	92.5 3.64	130 5.118
SCR.0800.050	50 1.97	105 4.13	155 6.102
SCR.0800.063	62.5 2.46	117.5 4.63	180 7.087
SCR.0800.080	80 3.15	135 5.31	215 8.465

TO - Basic Model

Ordering Example:

SCR.0800.025. TO. C. 180

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO. B319V and B21 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–180 bar (220–2600 psi).

When not specified, default is 180 bar.

Operating System: C = Self-contained,

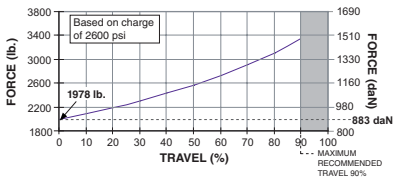
F = Open Flow Fitting. When not

specified, default is C, self-contained.

Force Charts

On-Contact Force

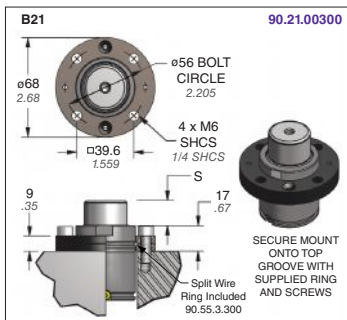
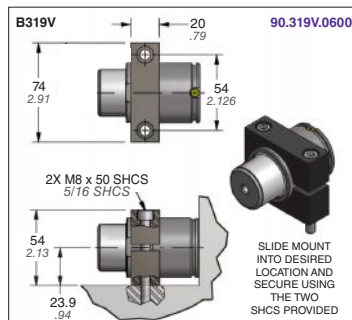
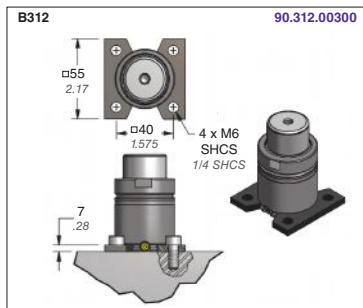
psi	lb.
2600	1978
2175	1655
2000	1522
1750	1331
1500	1141
1000	761
500	380
250	190



On-Contact Force

bar	daN
180	883
150	736
125	613
100	491
75	368
50	245
25	123
20	98

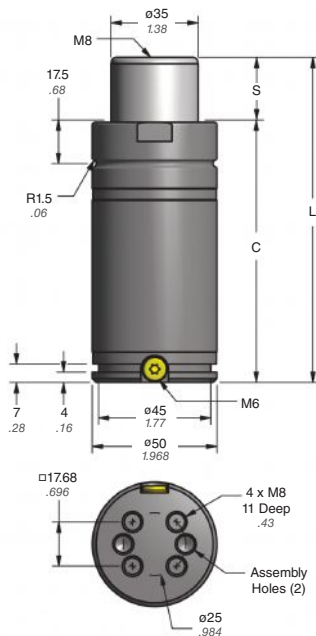
Mount Options



Ordering Example:

Cylinder with Mount: SCR.0800.025.B312.C.180

Mount Only: 90.312.00300



Part No.	S mm inch	C	L mm inch ±0.25 ±0.010
SCR.1900.010	10 0.39	90 3.54	100 3.937
SCR.1900.015	15 0.59	95 3.74	110 4.331
SCR.1900.025	25 0.98	105 4.13	130 5.118
SCR.1900.032	32 1.26	112 4.41	144 5.669
SCR.1900.038	37.5 1.48	117.5 4.63	155 6.102
SCR.1900.050	50 1.97	130 5.12	180 7.087
SCR.1900.063	62.5 2.46	142.5 5.61	205 8.071
SCR.1900.080	80 3.15	160 6.30	240 9.449

TO - Basic Model

Ordering Example:

SCR.1900.025. TO. C. 180

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. When not specified, default is TO.
B319V and B321 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–180 bar (220–2600 psi).

When not specified, default is 180 bar.

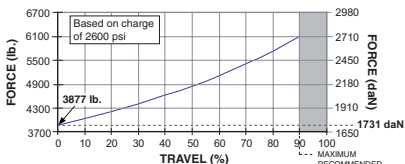
Operating System: C = Self-contained,

F = Open Flow Fitting. When not specified, default is C, self-contained.

Force Charts

On-Contact Force

psi	lb.
2600	3877
2175	3244
2000	2983
1750	2610
1500	2237
1000	1491
500	746
250	373



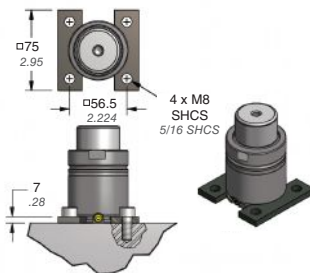
On-Contact Force

bar	daN
180	1731
150	1443
125	1202
100	962
75	721
50	481
25	240
20	192

Mount Options

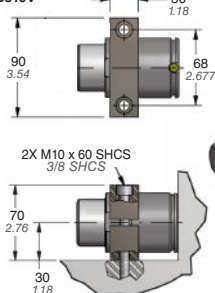
B312

90.312.00750



B319V

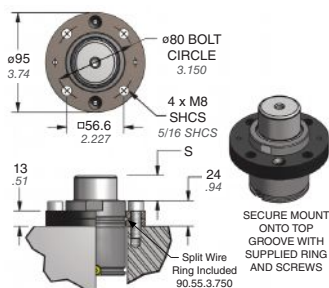
90.319V.1000



SLIDE MOUNT INTO DESIRED LOCATION AND SECURE USING THE TWO SHCS PROVIDED

B321

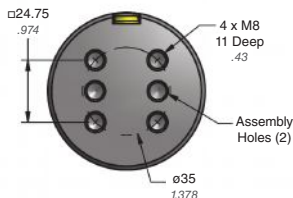
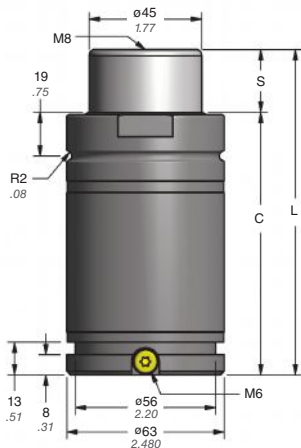
90.321.00750



Ordering Example:

Cylinder with Mount: SCR.1900.025.B312.C.180

Mount Only: 90.312.00750



TO - Basic Model

Part No.	S mm inch	C	L ±0.25 ±0.010
SCR.3200.016	16 0.63	96 3.78	112 4.409
SCR.3200.025	25 0.98	105 4.13	130 5.118
SCR.3200.032	32 1.26	112 4.41	144 5.669
SCR.3200.038	37.5 1.48	117.5 4.63	155 6.102
SCR.3200.050	50 1.97	130 5.12	180 7.087
SCR.3200.063	62.5 2.46	142.5 5.61	205 8.071
SCR.3200.080	80 3.15	160 6.30	240 9.449

Ordering Example:

SCR.3200.025. TO. C. 180

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. *When not specified, default is TO.*
B319V and B21 mounts ordered with cylinder will be attached at the factory.

Charging Pressure:

15–180 bar (220–2600 psi).

When not specified, default is 180 bar.

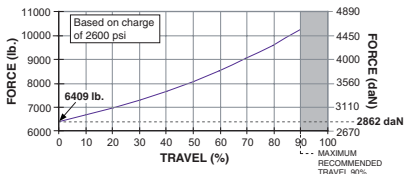
Operating System: C = Self-contained,

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

Force Charts

On-Contact Force

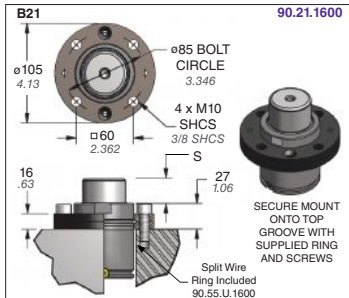
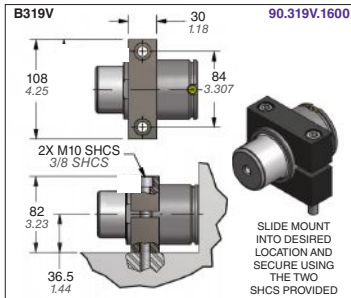
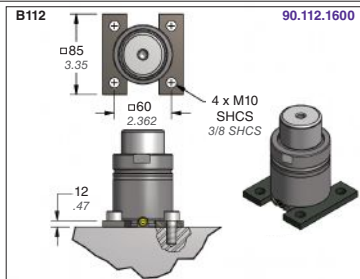
psi	lb.
2600	6409
2175	5362
2000	4930
1750	4314
1500	3698
1000	2465
500	1233
250	616



On-Contact Force

bar	daN
180	2862
150	2385
125	1987
100	1590
75	1192
50	795
25	397
20	318

Mount Options



Ordering Example:

Cylinder with Mount: SCR.3200.025.B112.C.180

Mount Only: 90.112.1600

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

Operating Specifications

Charging Medium:
Charging Pressure:

Nitrogen Gas
15 – 180 bar (220 psi – 2600 psi)

Operating Temperature: 4°C – 71°C (40°F – 160°F)
Maximum Speed: .5 m/sec (20 in/sec)

For information on the repair of DADCO's Compact Series, contact DADCO.

Notes

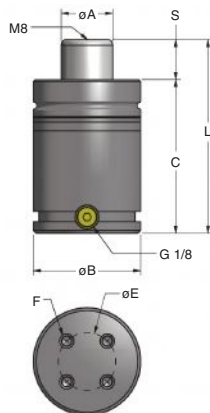
90.5B2 Series

Compact Height Nitrogen Gas Springs

DADCO offers the 90.5B2.01500 and 90.5B2.03000 Models as replacements for the corresponding 90.5B Models. For new designs and to update 90.5B.00750, 90.5B.05000 or 90.5B.07500 Models, DADCO recommends using the 90.8 Series. For information on the 90.8 Series, refer to the 90.10/90.8 Catalog.

— For Retrofit Only —

Part No.	S mm inch	01500 – 03000	
		C	L
90.5B2____.013	12.5 0.49	114.1 4.492	126.6 4.984
90.5B2____.025	25 0.98	126.6 4.984	151.6 5.969
90.5B2____.038	37.5 1.48	139.1 5.476	176.6 6.953
90.5B2____.050	50 1.97	151.6 5.969	201.6 7.937
90.5B2____.063	62.5 2.46	164.1 6.461	226.6 8.921
90.5B2____.075	75 2.95	176.6 6.953	251.6 9.906
90.5B2____.080	80 3.15	181.6 7.150	261.6 10.299
90.5B2____.088	87.5 3.44	189.1 7.445	276.6 10.890
90.5B2____.100	100 3.94	201.6 7.937	301.6 11.874
90.5B2____.113	112.5 4.43	214.1 8.429	326.6 12.858
90.5B2____.125	125 4.92	226.6 8.921	351.6 13.843
90.5B2____.138	137.5 5.41	239.1 9.413	376.6 14.827
90.5B2____.150	150 5.91	251.6 9.906	401.6 15.811
90.5B2____.160	160 6.30	261.6 10.299	421.6 16.598
90.5B2____.175	175 6.89	276.6 10.890	451.6 17.780
90.5B2____.200	200 7.87	301.6 11.874	501.6 19.748
90.5B2____.225	225 8.86	326.6 12.858	551.6 21.717
90.5B2____.250	250 9.84	351.6 13.843	601.6 23.685



TO – Basic Model

Model	90.5B2.01500	90.5B2.03000
Contact Force	daN lb.	1527 3432
90% Travel	daN lb.	2046 4599
A	36 1.42	50 1.97
B	75 2.953	95 3.740
E	40 1.575	60 2.362
F	4 x M8	4 x M8

Ordering Example:

90.5B2.01500.025. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Option:

TO = Basic Model. See 90.10/90.8 Catalog for additional mount options. *When not specified, default is TO. Mount 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.*

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

Operating Specifications

Charging Medium: Nitrogen Gas Operating Temperature: 4°C – 71°C (40°F – 160°F)*
Charging Pressure Range: 15 – 150 bar (220 – 2175 psi) Maximum Speed: 1.6 m/sec (63 in/sec)

*For extended range applications contact DADCO.

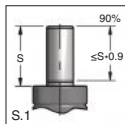
90.5B2.01500 On-Contact Force

Imperial		Metric	
psi	lb.	bar	daN
2175	3432	150	1527
2000	3155	125	1272
1750	2761	100	1018
1500	2367	75	763
1000	1578	50	509
500	789	25	254
250	394	20	204

90.5B2.03000 On-Contact Force

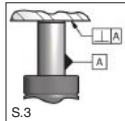
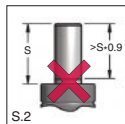
Imperial		Metric	
psi	lb.	bar	daN
2175	6619	150	2945
2000	6087	125	2454
1750	5326	100	1963
1500	4565	75	1473
1000	3043	50	982
500	1522	25	491
250	761	20	393

Standard Installation Principles



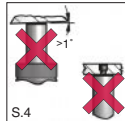
Provide Stroke Reserve

- DADCO's 90.5B2 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.



Avoid Side Loading

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



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.



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).



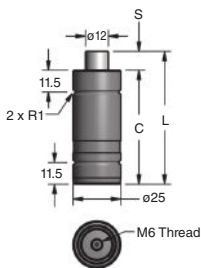
DADCO®

Super Compact Nitrogen Gas Springs

SC Series



PED
2014/68/EU
COMPLIANT

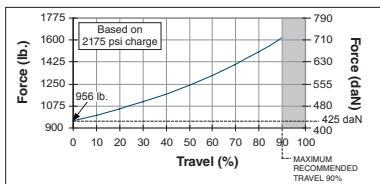


TO – Basic Mount

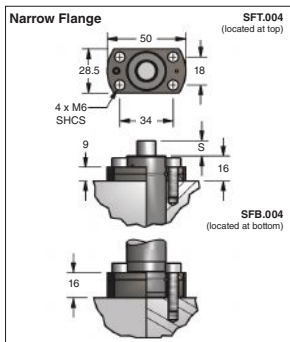
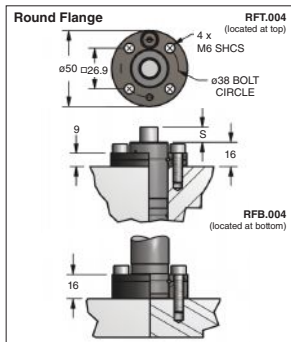
Part No.	S	C	L
SC.00420.10	10	60	70
SC.00420.16	16	75	91
SC.00420.25	25	95	120

On-Contact Force

psi	lb.	bar	daN
2175	956	150	425
2000	879	125	354
1750	769	100	284
1500	659	75	213
1000	439	50	142
500	220	25	71
250	110	20	57



Mount Options



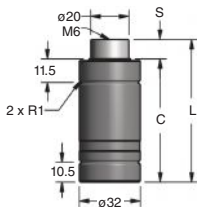
Ordering Examples:

Cylinder Only: SC.00420.25.TO.150

Cylinder w/Mount: SC.00420.25.RFT.150

SC.00740 – 7.4 kN

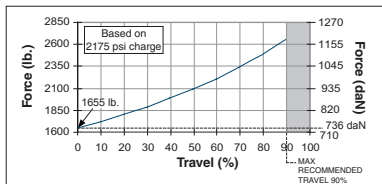
Super Compact Nitrogen Gas Springs



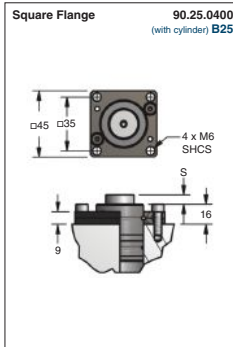
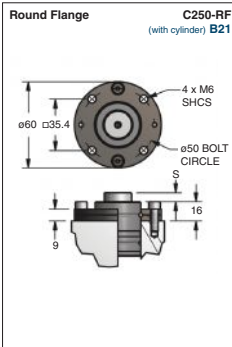
Part No.	S	C	L
SC.00740.06	6	57	63
SC.00740.10	10	65	75
SC.00740.16	16	77	93
SC.00740.25	25	95	120
SC.00740.32	32	108	140
SC.00740.40	40	125	165
SC.00740.50	50	145	195

On-Contact Force

psi	lb.	bar	daN
2175	1655	150	736
2000	1522	125	614
1750	1331	100	491
1500	1141	75	368
1000	761	50	245
500	380	25	123
250	190	20	98



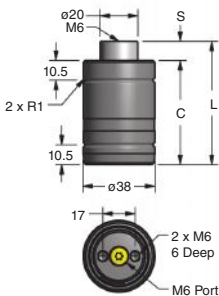
Mount Options



Ordering Examples:

Cylinder Only: SC.00740.25.TO.150

Cylinder w/Mount: SC.00740.25.B21.150

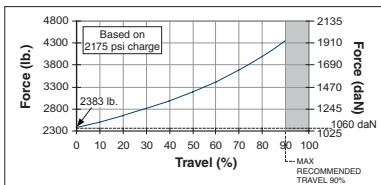


TO – Basic Mount

Part No.	S	C	L
SC.01000.06	6	55	61
SC.01000.10	10	68	78
SC.01000.16	16	84	100
SC.01000.25	25	110	135
SC.01000.32	32	135	167
SC.01000.40	40	155	195
SC.01000.50	50	180	230

On-Contact Force

psi	lb.	bar	daN
2175	2383	150	1060
2000	2191	125	884
1750	1917	100	707
1500	1643	75	530
1000	1096	50	353
500	548	25	177
250	274	20	141

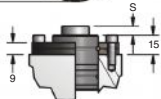
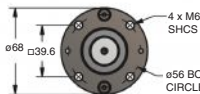


Mount Options

Round Flange

RFT.010

(located at top)



RFB.010

(located at bottom)



Square Flange

SFT.010

(located at top)



SFB.010

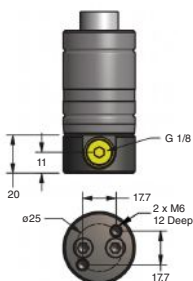
(located at bottom)



Sub Plate

CSP.01000

(with cylinder) **SCL.01000**



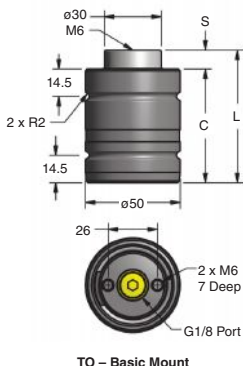
Ordering Examples:

Cylinder Only: SC.01000.25.TO.150
Cylinder w/Mount: SC.01000.25.RFT.150

Cylinder w/Sub Plate: SCL.01000.25.TO.0
Sub Plate Only: CSP.01000

SC.01800 – 19 kN

Super Compact Nitrogen Gas Springs

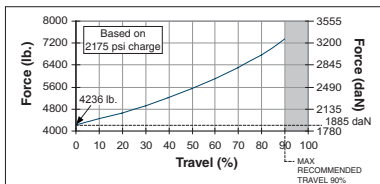


Part No.	S	C	L
SC.01800.06	6	60	66
SC.01800.10	10	70	80
SC.01800.16	16	90	106
SC.01800.25	25	110	135
SC.01800.32	32	130	162
SC.01800.40	40	150	190
SC.01800.50	50	170	220

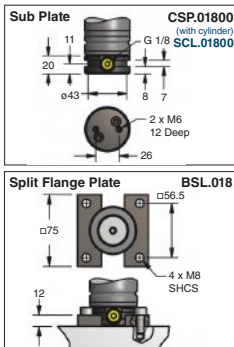
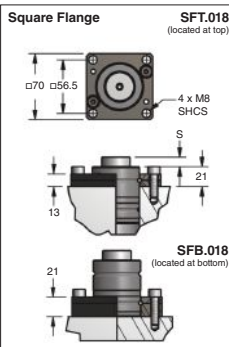
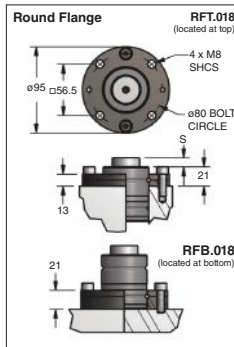
On-Contact Force

psi	lb.
2175	4236
2000	3896
1750	3409
1500	2922
1000	1948
500	974
250	487

bar	daN
150	1885
125	1571
100	1257
75	942
50	628
25	314
20	251



Mount Options



Ordering Examples:

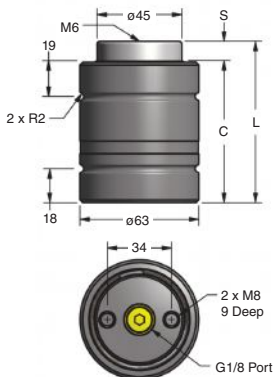
Cylinder Only: SC.01800.25.TO.150
Cylinder w/Mount: SC.01800.25.RFT.150

Cylinder w/Sub Plate:

Cylinder w/Sub Plate and Mount: SCL.01800.25.BSL.0
Sub Plate Only: CSP.01800

Super Compact Nitrogen Gas Springs

SC.03500 – 32 kN

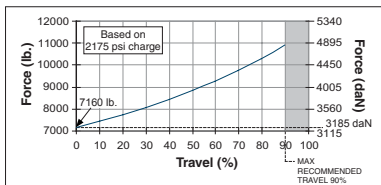


TO – Basic Mount

Part No.	S	C	L
SC.03500.10	10	75	85
SC.03500.16	16	87	103
SC.03500.25	25	105	130
SC.03500.32	32	118	150
SC.03500.40	40	135	175
SC.03500.50	50	155	205

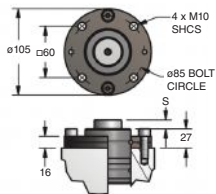
On-Contact Force

psi	lb.	bar	daN
2175	7160	150	3185
2000	6584	125	2655
1750	5761	100	2124
1500	4938	75	1593
1000	3292	50	1062
500	1646	25	531
250	823	20	425

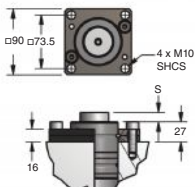


Mount Options

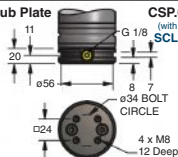
Round Flange 90.21.1600 (with cylinder) B21



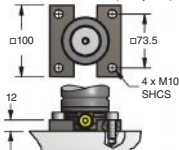
Square Flange 90.25.1600 (with cylinder) B25



Sub Plate CSP.03500 (with cylinder) SCL.03500



Split Flange Plate 90.212.1600 (with cylinder) B212



Ordering Examples:

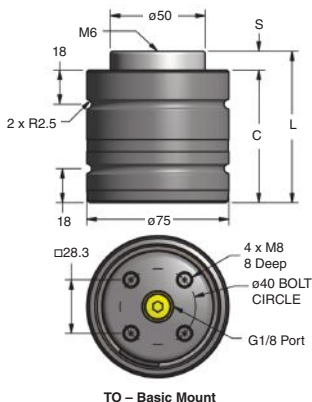
Cylinder Only: SC.03500.25.TO.150
Cylinder w/Mount: SC.03500.25.B21.150

Cylinder w/Sub Plate:

Cylinder w/Sub Plate and Mount:

Sub Plate Only:

SCL.03500.25.TO.0
SCL.03500.25.B212.0
CSP.03500

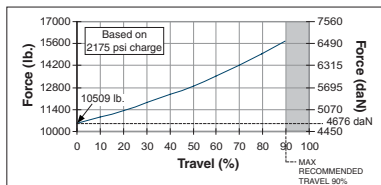


Part No.	S	C	L
SC.04700.10	10	70	80
SC.04700.16	16	90	106
SC.04700.25	25	110	135
SC.04700.32	32	135	167
SC.04700.40	40	160	200
SC.04700.50	50	190	240

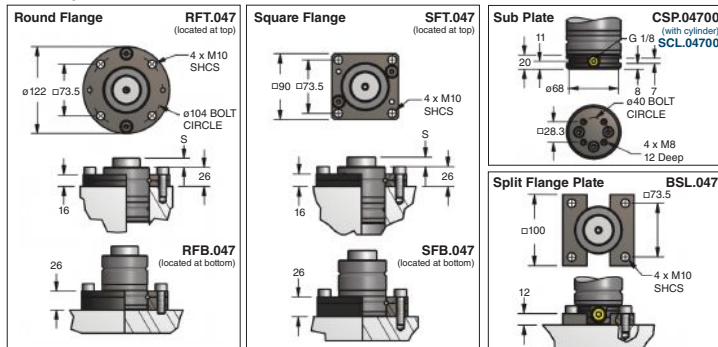
On-Contact Force

psi	lb.
2175	10509
2000	9663
1750	8456
1500	7248
1000	4832
500	2416
250	1208

bar	daN
150	4676
125	3896
100	3117
75	2338
50	1559
25	779
20	623



Mount Options



Ordering Examples:

Cylinder Only: SC.04700.25.TO.150
Cylinder w/Mount: SC.04700.25.RFT.150

Cylinder w/Sub Plate:

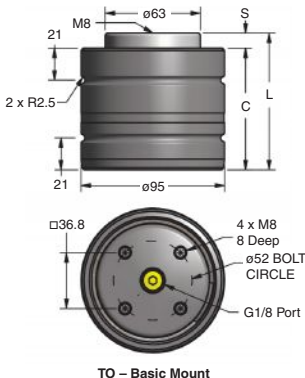
Cylinder w/Sub Plate and Mount:

Sub Plate Only:

SCL.04700.25.TO.0

SCL.04700.25.BSL.0

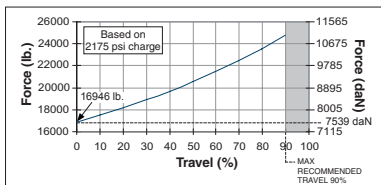
CSP.04700



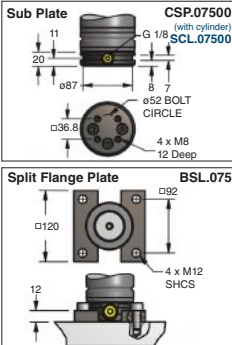
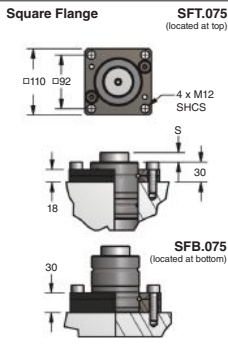
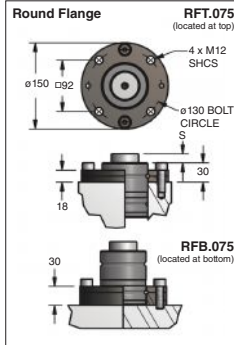
Part No.	S	C	L
SC.07500.10	10	80	90
SC.07500.16	16	100	116
SC.07500.25	25	120	145
SC.07500.32	32	150	182
SC.07500.40	40	170	210
SC.07500.50	50	205	255

On-Contact Force

psi	lb.	bar	daN
2175	16946	150	7539
2000	15582	125	6283
1750	13635	100	5026
1500	11687	75	3770
1000	7791	50	2513
500	3896	25	1257
250	1948	20	1005



Mount Options



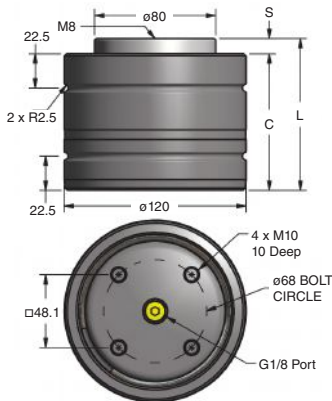
Ordering Examples:

Cylinder Only: SC.07500.25.TO.150
Cylinder w/Mount: SC.07500.25.RFT.150

Cylinder w/Sub Plate: SCL.07500.25.TO.0
Cylinder w/Sub Plate and Mount: SCL.07500.25.BSL.0
Sub Plate Only: CSP.07500

SC.11800 – 118 kN

Super Compact Nitrogen Gas Springs

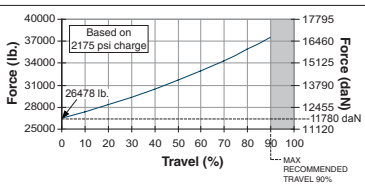


TO – Basic Mount

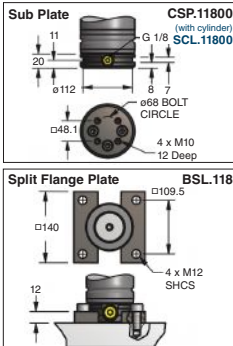
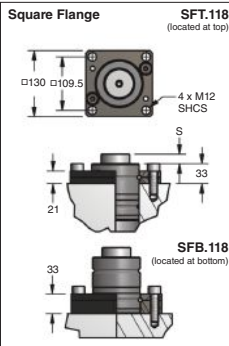
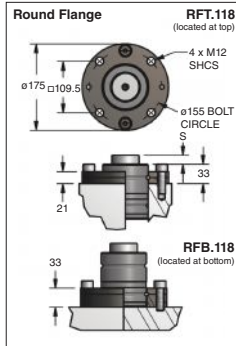
Part No.	S	C	L
SC.11800.10	10	90	100
SC.11800.16	16	110	126
SC.11800.25	25	130	155
SC.11800.32	32	155	187
SC.11800.40	40	180	220
SC.11800.50	50	210	260

On-Contact Force

psi	lb.	bar	daN
2175	26478	150	11780
2000	24347	125	9817
1750	21304	100	7854
1500	18261	75	5890
1000	12174	50	3927
500	6087	25	1963
250	3043	20	1571



Mount Options



Ordering Examples:

Cylinder Only: SC.11800.25.TO.150
Cylinder w/Mount: SC.11800.25.RFT.150

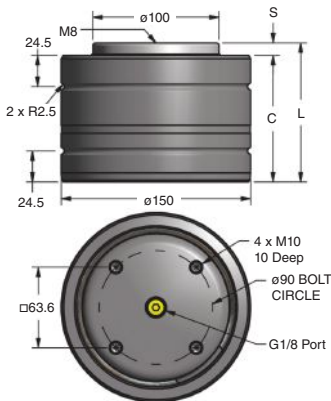
Cylinder w/Sub Plate:

Cylinder w/Sub Plate and Mount:
Sub Plate Only:

SCL.11800.25.TO.0
SCL.11800.25.BSL.0
CSP.11800

Super Compact Nitrogen Gas Springs

SC.18300 – 184 kN



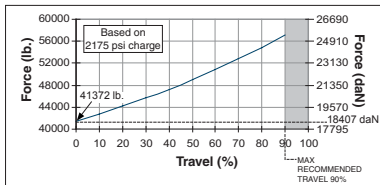
TO – Basic Mount

Part No.	S	C	L
SC.18300.10	10	100	110
SC.18300.16	16	120	136
SC.18300.25	25	140	165
SC.18300.32	32	165	197
SC.18300.40	40	195	235
SC.18300.50	50	220	270

On-Contact Force

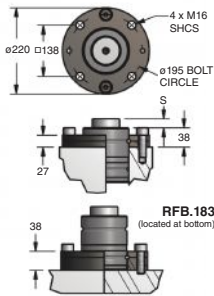
psi	lb.
2175	41372
2000	38043
1750	33287
1500	28532
1000	19021
500	9511
250	4755

bar	daN
150	18407
125	15339
100	12271
75	9203
50	6136
25	3068
20	2454

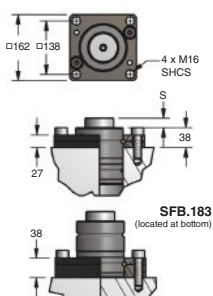


Mount Options

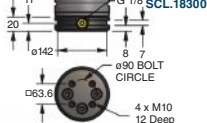
Round Flange



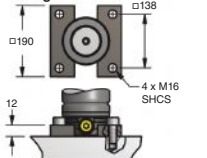
Square Flange



Sub Plate



Split Flange Plate



Ordering Examples:

Cylinder Only: SC.18300.25.TO.150
Cylinder w/Mount: SC.18300.25.RFT.150

Cylinder w/Sub Plate:

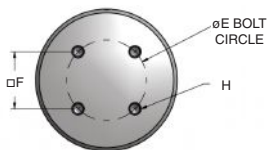
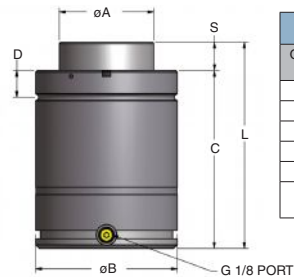
Cylinder w/Sub Plate and Mount: SCL.18300.25.BSL.0
Sub Plate Only: CSP.18300

SCL.18300.25.TO.0
SCL.18300.25.BSL.0
CSP.18300

SCLW Super Compact for Linked Applications

Super Compact Nitrogen Gas Springs

The SCLW option provides an integral G 1/8 side port to facilitate linked operation of SC 07500, 11800 and 18300 model sizes with 25-50 mm stroke lengths.



TO – Basic Mount

Model	SCLW.07500	SCLW.11800	SCLW.18300
On-Contact Force at 150 bar	7539 daN	11780 daN	18407 daN
A	63	80	100
B	95	120	150
D	21	22.5	24.5
E	52	68	90
F	36.8	48.1	63.6
H	4 x M8 12 DEEP	4 x M10 16 DEEP	4 x M10 17 DEEP

Part No.	S mm	07500		11800		18300	
		C	L ± 0.25	C	L ± 0.25	C	L ± 0.25
SCLW...025	25	140	165	150	175	160	185
SCLW...032	32	170	202	175	207	185	217
SCLW...040	40	190	230	200	240	215	255
SCLW...050	50	225	275	230	280	240	290

On-Contact Force				
Model No.	psi	lb.	bar	daN
SCLW.07500	2175	16946	150	7539
SCLW.11800	2175	26478	150	11780
SCLW.18300	2175	41372	150	18407

Ordering Example:

SCLW.11800.25. TO. C. 150

Part Number:

Includes Series, Model and Stroke Length.

Mount Options:

TO = Basic Model, BSL = Split Flange Plate, RFT = Round Flange, SFT = Square Flange. Refer to specific model pages for mount dimensions. When not specified, default is TO.

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.

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

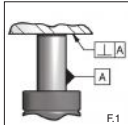
CAUTION

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

Operating Specifications

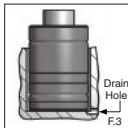
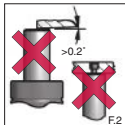
Charging Medium:	Nitrogen Gas
Maximum Charging Pressure:	15 – 150 bar (220 – 2175 psi)
Operating Temperature:	4°C – 71°C (40°F – 160°F)
Maximum Speed:	1.6 m/sec (63 in/sec)

Installation Requirements



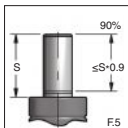
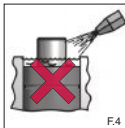
Avoid Side Loading

- The striking surface should encompass the full diameter of the rod (F.1).
- A misaligned press or die will lead to side loading. This condition increases wear on the bearing, seal and cylinder wall. Any damage to the cylinder wall renders the product irreparable (F.1). Therefore, avoid side loading when possible (F.2).



Protect From Fluids

- Direct contact with certain die lubricants and cleaners should be avoided (F.4). Protect gas springs by providing adequate drainage in gas spring pockets (F.3).

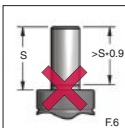


Rod End Thread

- The end of the piston rod has a construction thread intended for assembly and disassembly purposes only, and should never be used to mount or secure the gas spring (F.2). DADCO's SC.00420 does not have a rod end thread and should be sent to DADCO for repair.

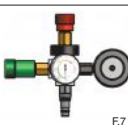
Provide Stroke Reserve

- DADCO Super Compact Gas Springs will permit travel of the full nominal stroke; however, at least a 10% stroke reserve is recommended to achieve optimal performance (F.5 and F.6).



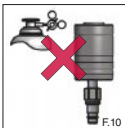
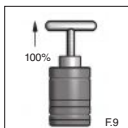
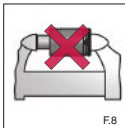
Discharging Self-Contained Gas Spring

- The DADCO Pressure Analyzer (90.315.5) allows for charging, discharging and gauging of the pressure in the SC Series Gas Springs (F.7). For information on completely exhausting the gas spring contact DADCO.



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 (F.8).
- Prior to recharging, assure that (1) the rear head is seated against the c-ring and (2) the rod is fully extended (F.9). Never charge the gas spring with the rod down or the rear head not seated against the c-ring (F.10). To seat the rear head, thread two bolts into the tapped holes in the rear head and depress the valve stem while pulling the rear head back against the c-ring. Thread the T-handle (90.320.1 or 90.320.2) into the rod end and depress the valve stem with the Valve Bleed Tool (90.360.4) or Port Servicing Tool (90.320.8). Pull the piston rod up until it is firmly seated. Remove the T-handle from the rod and charge the gas spring to the desired pressure.



Repair

- For information on the repair of DADCO's Super Compact Series contact DADCO.

1.734.207.1100 • fax 1.734.207.2222 • www.dadco.net

DADCO

DAPCO®

Nitrogen Gas Spring Linked System Components



Everything You Need to Construct a Linked System

Numerous Piping Options

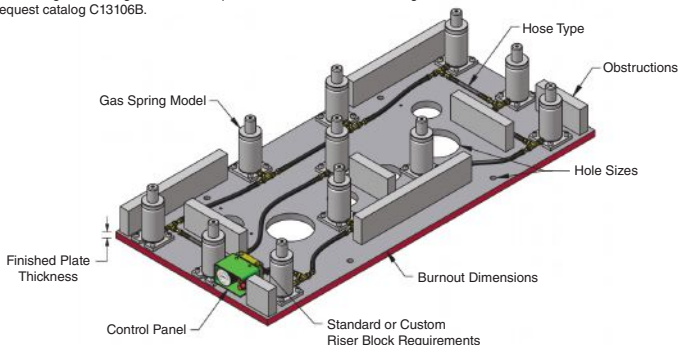
Many customers recognize the benefits of linking nitrogen gas springs; linked systems allow users to easily monitor, control and adjust pressure from outside the die. In this catalog DADCO has brought together all of the components necessary to easily configure a linked system. Choose from the various types of fittings, hose, control panels and specialty components to design a linked system best suited for your application.

DADCO also offers ready-to-install complete linked systems built to customer specifications.

Complete Linked Systems from DADCO

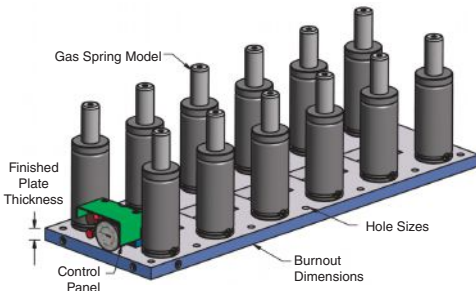
SMS®

For those instances where a customer prefers to have DADCO provide a finished system, DADCO offers several options. First is the Sectional Mounting System (SMS®) where DADCO will mount cylinders to a SMS® plate and link them using hose, fittings and a control panel based on a customer design. For more information on DADCO's SMS® request catalog C13106B.

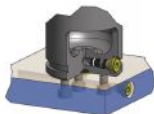


SMS-i®

Another option is the Sectional Mounting System - Internal (SMS-i®). DADCO will mount cylinders to a plate that has been piped internally. DADCO recommends using the SMS-i® as an alternative to traditional manifold systems. For more information on DADCO's SMS-i® request catalog C13106B.



SMS-i® Connection



DADCO gas springs used in a SMS-i® have a bottom port and are attached to the base plate with a sealing washer and standard mounting hardware.

Overview

DADCO Gas Springs are grouped by two main classifications: Mini Springs with a M6 Port and Large Springs with a G 1/8 BSPP Port. DADCO recommends choosing control panels, fittings and hose type based on port style and application requirements.

Port Style

M6 Mini Port



Gas Springs with M6 Port:

Micro Series

U.0175 – U.2600

LJ and L Series

SCR Series

FCL Series

90.10.00170

G 1/8 Large Port



Gas Springs with G 1/8 Port:

U.4600 – U.20000

UH Series

UX Series

90.8 Series

90.10.00500 – 90.10.10000

SC Series



Control Panels



Distribution Blocks



Surge Tanks



Tools

Compatible Fitting Styles

Preferred

DADCO MINILink®
(M8 x 1)



D-24 Tapered
(M12 x 1.5)



Zip (CNOMO)
(S12.65 x 1.5)



Preferred

O-Ring Face Seal (ORFS)
(9/16-18)



Hose System

90.700 (Y-700) Hose
90.705 (Y-705) Hose

Preferred



90.500 (Y-500) Hose

Preferred



90.400 (Y-400) Hose



90.250 (Y-250) Hose



Converting from Self-Contained to Linked Mode

The following basic steps show how to easily convert DADCO gas springs from self-contained to linked mode.

For more detailed instructions, refer to the appropriate product bulletins: **Ultra Force®** (B04151), Micro (B03103D) and Mini (L/LJ)(B00107G). For gas springs with a large port, refer to the relevant product catalog.

CAUTION

Always wear safety goggles when performing maintenance on nitrogen gas springs.

1. Remove Protective Screw



2. Safely Exhaust Gas Spring



3. Remove Valve



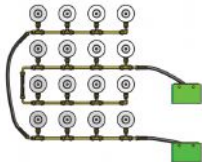
4. Install Port Adapter



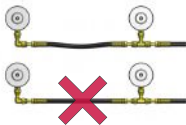
Recommendations for Linked Systems



Allow ample space to secure hoses to plate. It is preferred that hoses rest side by side.



Arrange gas springs to provide uniformity and balance within the die. Use multiple panels for large systems to allow faster filling and discharging.



When linking cylinders allow for ample hose to avoid taut connections.

Torque Specifications

Tighten fittings to the following torque specifications to prevent damage and loosening from vibration during operation.

Type	Thread	lb-in	lb-ft	N-m
M6 Port Adapter	M6 x 1	25	2.1	3
MINILink® Hose Adapter	M8 x 1	25	2.1	3
G 1/8 Port Adapter	BSPP	168	14	19
ORFS Hose Adapter	9/16-18	204	17	23
D-24 Hose Adapter	M12 x 1.5	Hand-tight then ¼ turn with wrench		
Zip Hose Adapter	S12.65 x 1.5	Hand-tight		

Use two wrenches, one on the port adapter and one on the hose adapter, to avoid over-tightening. The drawings below depict the importance of torque specifications in common port and hose adapter combinations.



Mini Port Adapter + MINILink® Hose Adapter
Mini fittings and hose adapters have low torque values. Refer to the chart above to avoid possible damage from over-tightening.



Mini Port Adapter + 9/16-18 ORFS Hose Adapter
The torque requirement for the Mini Port Adapter is smaller than the ORFS Hose Adapter. Refer to the chart above. Do not torque port fitting with larger hose adapter nut.

NOTE: It is important to adhere to these guidelines for the following fittings: 90.505.116 and 90.508.116.

Components: Control Panels

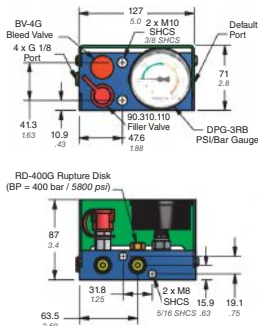
Convertible Control Panel



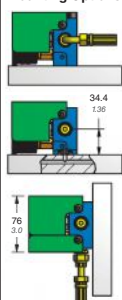
The DADCO Convertible Control Panel is used to fill, drain and monitor the pressure of linked DADCO nitrogen gas springs from outside the die. The panel consists of four G 1/8 BSPP ports, a high pressure 63 mm diameter gauge, a quick disconnect fill valve, a bleed valve and a rupture disk to prevent overpressurization. For maximum versatility, the panel is available with a variety of fitting connections. See below for information on the riser blocks available for use with the control panel.



Shown with optional bottom guard.



Mounting Options



Ordering Example:

90.406. P 1 N

Convertible Control Panel

Gauge Style

PSI/Bar Gauge (DPG-3RB) = P

Bar/MPa Gauge (DPG-3RM) = A

When not specified, default is P.

Guard

Top Guard = 1

Top and Bottom Guards = 2

When not specified, default is 1.

Fitting Connection

N = No Fitting Supplied,

M = Manifold Seal,

S = ORFS Fitting,

D = D-24 Fitting,

B = Zip Fitting,

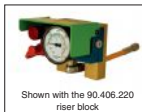
L = MINILink® Fitting

When not specified, default is N.

NOTE: The 90.406.P2S is a direct replacement of DADCO's 90.406.03.

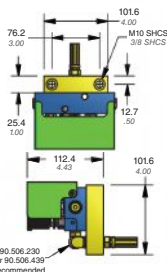
Riser Block for Convertible Control Panel

DADCO offers the 90.406.220, 90.406.555, and the 90.406.758 Riser Blocks for use with the Convertible Control Panel for maximum mounting versatility. It allows for easy mounting of the Control Panel to SMS® plates.

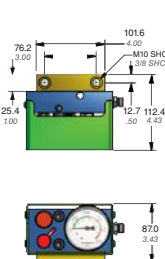


Shown with the 90.406.220 riser block

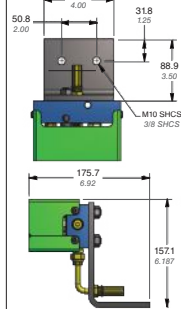
90.406.220



90.406.555



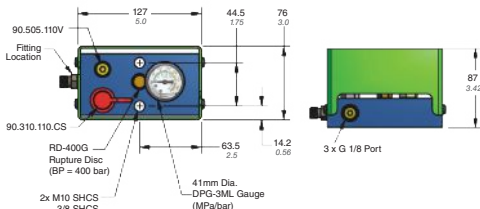
90.406.758



Common Control Panel



The DADCO Common Control Panel is used to fill and monitor the pressure of linked DADCO Nitrogen Gas Springs from outside the die. The panel consists of a high pressure gauge (MPa and bar), quick disconnect fill valve, and a rupture disk to prevent overpressurization. This Control Panel conforms to the Toyota standard.



Ordering Example:

90.416. A 2 B

Common Control Panel

Gauge Style
Bar/MPa Gauge = A
PSI/Bar Gauge = P

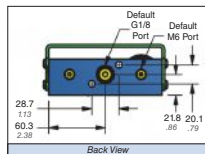
Fitting Connection
No Fitting = N
Zip Fitting = B

Guard Options
None = N
Top Only = 1
Top and Bottom = 2

Mini Convertible Control Panel



The DADCO Mini Convertible Control Panel is used to fill, drain and monitor the pressure of linked DADCO nitrogen gas springs from outside the die. The panel is compatible with SMS-i® and traditional linked systems and has five M6 ports, a high pressure gauge, a quick disconnect fill valve, a bleed valve and a rupture disk to prevent overpressurization. To allow for maximum versatility when linking, the panel is available with a variety of fitting connections.



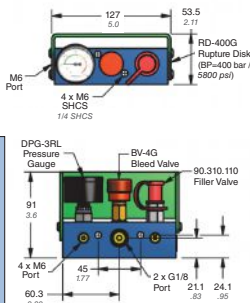
Ordering Example:

90.407. P N

Mini Control Panel

Gauge Style
PSI/Bar Gauge = P

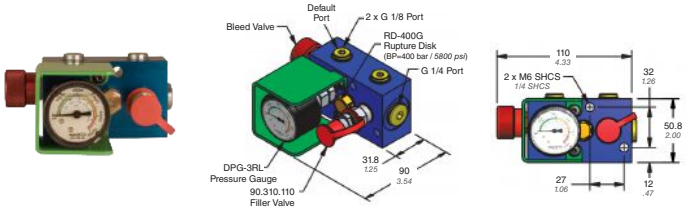
Fitting Connection
N = No Fitting Supplied,
M = Manifold Seal,
S = ORFS Fitting,
D = D-24 Fitting,
B = Zip Fitting,
L = MINILink® Fitting
When not specified,
default is N.



Mounting Options



The smallest of our control panels, the DADCO Compact Control Panel is used to fill, drain and monitor the pressure of linked DADCO nitrogen gas springs from outside the die. The panel consists of two G 1/8 BSPF ports, a high pressure gauge, a quick disconnect fill valve, a bleed valve and a rupture disk to prevent overpressurization. To allow for connection to Electronic Pressure Monitors, the panel comes standard with a G 1/4 BSPF port.



90.405. P N.

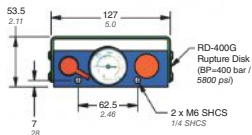
Gauge Style
PSI/Bar Gauge = P
Bar/MPa Gauge = A
If not specified, default is P

Pressure Monitor Sensor Options (optional)
EDS = Electronic Pressure Switch, DSK = Piston Pressure Switch, DPS= Dial Pressure Switch,
DPT = Electronic Pressure Transmitter

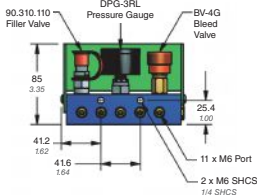
N = No Fitting Supplied,
S = ORFS Fitting,
D = D-24 Fitting,
B = Zip Fitting,
L = MINILink® Fitting
When not specified, default is N.

90.407.11G

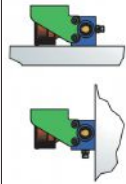
— For Retrofit Only —



The DADCO 90.40711G Mini Control Panel is used to fill, drain and monitor the pressure of linked DADCO nitrogen gas springs from outside the die. The panel consists of a high pressure gauge, a quick disconnect fill valve, a bleed valve and a rupture disk to prevent overpressurization. To allow for maximum versatility when linking, the panel also contains eleven different port locations.

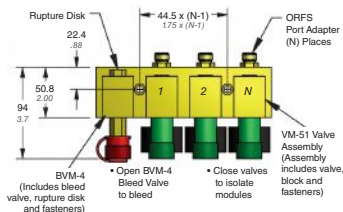


Mounting Options



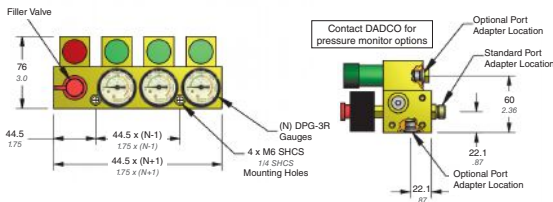
Multi Panel

The DADCO Multi Panel features modules that may be filled, monitored, adjusted and vented from outside the die, either commonly or individually. No other control panel offers the advantages of the DADCO Multi Panel. For replacement parts refer to bulletin B04105B.

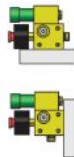


Features

- Each module features a simple two position valve for easy operation.
- Three port locations on each module give maximum piping flexibility.
- Each module is supplied with a straight service fitting.
(For unused ports, DADCO recommends closing the module off before filling or using tube end caps, 90.506.112, on the unused port.)
- The panel can be flush mounted on the bottom or back.
- An optional tilt-guard protects all control valves and gauges during operation.



Mounting Options



Top Guard – 90.402



Bottom Guard – 90.403



Both Guards – 90.404



Ordering Example:

90.401. 3.

Guard Location:

Standard (No Guard) = 401, Top = 402,
Bottom = 403, Both = 404

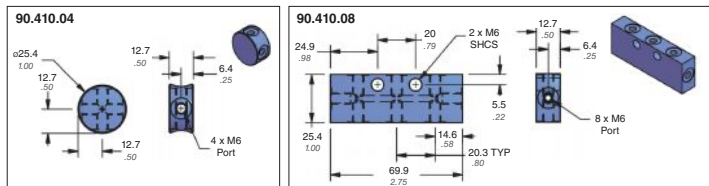
For optional reversed mounting, add R.

Number of Modules:
2-6, 8 or 10

DADCO's distribution blocks are used with a control panel to simplify piping to multiple cylinders with a uniform system pressure. M6 and G 1/8 port options are available.

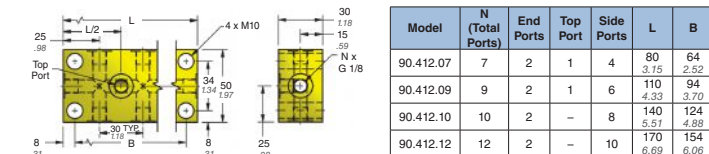
Mini M6 Distribution Blocks

The Mini Distribution Blocks feature four or eight M6 port locations. Plug unused ports with 90.607.110 Port Plug before charging the system.



Compact G 1/8 Distribution Blocks

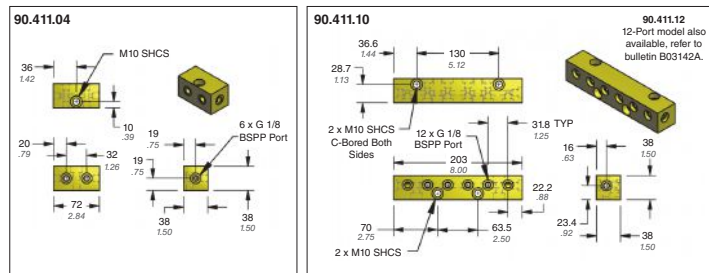
The Compact Distribution Block has 6-12 G 1/8 ports. Plug unused ports with 90.505.110 Port Plug before charging the system.



Standard G 1/8 Distribution Blocks

90.411.04 / 90.411.10 / 90.411.12

The Standard Distribution Block features 4, 10 or 12 G 1/8 ports. Plug unused ports with 90.505.110 Port Plug before charging the system. Refer to bulletin B03142A for more information.

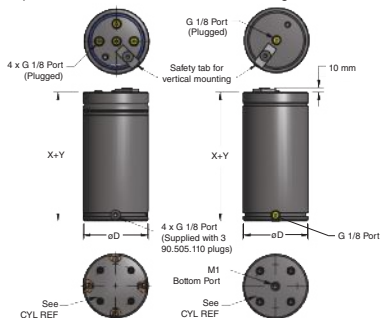


Components: Surge Tanks

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. The Surge Tank is offered in two Models: F – Free Flow Model has multiple open ports supplied as standard for maximum flexibility when piping; M1– SMS-i® Model has a bottom port to attach to a base plate. Gauges and shut-off ball valves are available upon request.

For assistance in determining appropriate surge tank size for your system, use the DADCO Force Calculator from our website, www.dadco.net.

90.400 (Y-400) hose is the preferred hose to use with surge tanks. 90.700 (Y-700)/ 90.705 (Y-705) hose is not recommended for use with surge tanks due to restricted flow capability.

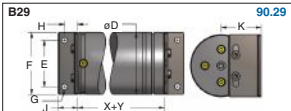
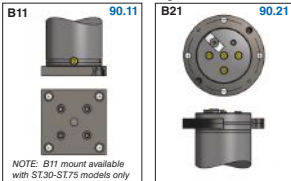


F – Free Flow Model

M1 – SMS-i® Model

ST	30	50	75	100
D	95 3.74	120 4.72	150 5.91	195 7.67
X	117 4.61	137 5.39	152 5.98	157 6.18
Y	50 1.97	0.59 36	1.05 64	1.71 105
50	0.85 3.94	1.44 52	2.33 88	3.99 142
100	1.10 5.91	1.83 67	2.94 112	5.06 180
150	1.35 7.87	2.22 82	3.56 136	6.13 217
200	1.60 9.54	2.62 98	4.17 160	7.20 254
250	1.85 11.81	3.01 113	4.78 184	8.27 292
300	2.10 13.78	3.40 129	5.40 209	9.34 329
350	2.35 15.74	3.79 144	6.01 232	10.41 367
400				635

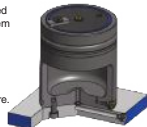
Preferred Mounts for Surge Tanks. See the 90.10 / 90.8 Series Catalog for mount details.



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

SMS-i® Surge Tank Connection

DADCO surge tanks ordered with the M1 operating system are used in a SMS-i® and have a bottom port. These tanks are attached to the base plate with a sealing washer and standard mounting hardware.



Ordering Example:

ST.30. 150. TO. F

Size:

30, 50, 75, 100

Length (Y):

50, 100, 150, 200, 250, 300, 350, 400

Operating System:

F = Free Flow Fitting, M1 = SMS-i® (Bottom port + sealing component)

Mount Option:

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

Charging Medium: Nitrogen Gas

Operating Temperature: 4°C – 71°C (40°F – 160°F)*

Charging Pressure Range: 15 – 150 bar (220 – 2175 psi)

*Note: Surge Tank pressure should not exceed 264 bar (3828 psi) at maximum temperature.

MINIFLEX®

90.700 (Y-700) Hose

Preferred

- + Offers the smallest possible bend radius available for flexible hose
- + Compatible with Mini, ORFS, D-24 and Zip style fittings
- Cannot be linked with a surge tank



MINIFLEX®

90.705 (Y-705) Hose

- + Compatible with Mini, ORFS, D-24 and Zip style fittings
- + High burst pressure
- Cannot be linked with a surge tank
- Large bend radius

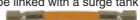


DADCOFLEX®

90.500 (Y-500) Hose

Preferred

- + Higher working pressure than 90.250 (Y-250) without sacrificing bend radius or flow rate
- + Compatible with ORFS and D-24 style fittings
- + Can be linked with a surge tank



DADCOFLEX®

90.400 (Y-400) Hose

- + Can withstand high pressures while maintaining a good flow rate
- + Can be linked with a surge tank
- Least flexible bend radius



DADCOFLEX®

90.250 (Y-250) Hose

- + Assemble in field without additional tools using non-crimped adapters
- 190 bar (2750 psi) is maximum for surging pressure



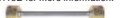
DF Tubing

DF

Length (mm)

- + Extremely durable and compact
- Dimensions critical, no flexibility

NOTE: To order straight lengths of DF Tubing, use the part number above. For curved pieces, it is necessary to provide a drawing. Refer to Bulletin B02118B for more information.



Part No.	OD	ID	Working Pressure	Burst Pressure	Bend Radius	Crimp Die
90.700 (Y-700)	.20	.08	500 bar 7250 psi	1890 bar 27405 psi	15 .59	Mini-Crimp 90.710.8 No Ring Required
90.705 (Y-705)	.20	.08	500 bar 7250 psi	1940 bar 28130 psi	20 .79	
90.500 (Y-500)	.11	.5	345 bar 5000 psi	1380 bar 20000 psi	38 1.50	80C-P03 Gray Die 82C-R01 Ring
90.400 (Y-400)	.13	.65	345 bar 5000 psi	1380 bar 20000 psi	50 1.97	80C-P04 Red Die 82C-R01 Ring
90.250 (Y-250)	.12	.64	190 bar 2750 psi	758 bar 11000 psi	38 1.50	80C-P04J Red Die 82C-R01 Ring
DF Tubing	.64 .25	4.5 .18	260 bar 3750 psi	1000 bar 15000 psi	15.9 .625	Assembly at DADCO

DADCO offers hydraulically or pneumatically operated crimping units.

Hose Assembly

A DADCO hose assembly consists of a length of hose with a hose adapter on each end. Refer to bulletin 99B105E for more information on ordering a hose assembly.

Hose Assembly

Ordering Example: 90.500. S843. S854. 600. I

Hose Type

(700, 705, 500, 400 or 250)

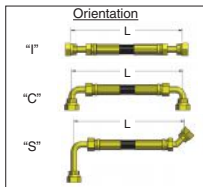
Hose Adapters

Sealing Type	Example
ORFS	S943
D-24	D843
Mini	L943
Zip	B943

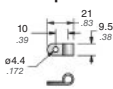
Reference appropriate sealing type prefix (S, D, L or B).

Orientation
Hose adapter
orientation:
I, C or S

Length of Hose
Assembly (L) in mm
Distance between
sealing faces



Hose Straps



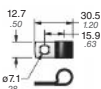
90.504.701 (HS-701)
for use with 90.700 and
90.705 hose types



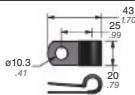
90.504.700 (HS-700)
for use with 90.700 and
90.705 hose types



90.504.250 (HS-250)
for use with 90.500, 90.400
and 90.250 hose types



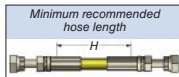
90.504.500 (HS-500)
for use with 90.500 and
90.250 hose types



90.504.400 (HS-400)
for use with 90.500, 90.400
and 90.250 hose types

Components: ORFS Hose Adapters

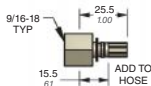
DADCO was the first gas spring manufacturer to offer 9/16-18 O-Ring Face Seals (ORFS). DADCO's ORFS fittings prevent any loss of high pressure nitrogen gas by providing elastomeric seals at every joint. DADCO recommends using DADCO brand hoses with the adapters shown throughout this catalog. If the length of hose required is less than the H Value, use DF Tubing or Solid Hose Fittings. DADCO also offers a variety of stainless steel fittings to be paired with Y-705 or Y-500 hose for linked operation in extreme condition environments.



[SS] = Stainless Steel Option Available

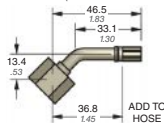
Crimped Hose Adapters for 90.700 or 90.705 (Y-700 or Y-705)

H Value = 75 (2.95)



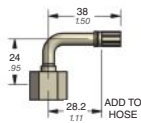
90.504.943 [SS]

Straight Swivel



90.504.954

(S-954)
45° Swivel

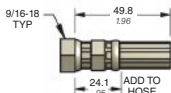


90.504.959

(S-959)
90° Swivel

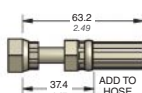
Crimped Hose Adapters for 90.500 (Y-500)

H Value = 80 (3.15)



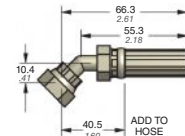
90.504.843 [SS]

(S-843)
Compact Swivel



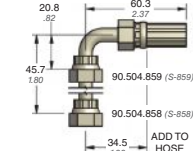
90.504.851

(S-851)
Retractable Swivel



90.504.854

(S-854)
45° Female Face Seal



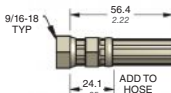
90.504.859 (S-859)

90.504.858 (S-858)

90.504.859 (S-859) Short Neck
90.504.858 (S-858) Long Neck

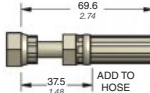
Crimped Hose Adapters for 90.250 or 90.400 (Y-250 or Y-400)

H Value = 85 (3.35)



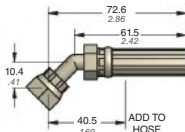
90.504.743

(S-743)
Compact Swivel



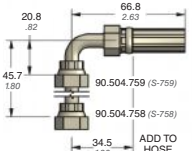
90.504.751

(S-751)
Retractable Swivel



90.504.754

(S-754)
45° Female Face Seal



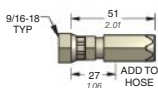
90.504.759 (S-759)

90.504.758 (S-758)

90.504.759 (S-759) Short Neck
90.504.758 (S-758) Long Neck

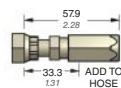
Non-Crimped Hose Adapters for 90.250 (Y-250)

H Value = 85 (3.35)



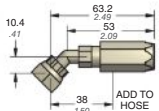
90.504.643

(S-643)
Compact Swivel



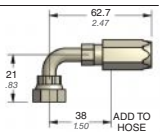
90.504.651

(S-651)
Retractable Swivel



90.504.654

(S-654)
45° Female Face Seal



90.504.659

(S-659)
90° Female Face Seal

Components: ORFS Fittings

Solid Hose Fittings

Solid hose fittings come in predetermined lengths and are ideal for limited space applications. They can replace traditional hose assemblies, particularly when the length of hose required is shorter than DADCO's recommended minimum hose length. For custom lengths of solid hose, see DF Tubing option.

Metric

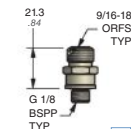
Part No.	A	B
90.503.xxxx (S-9xxx)	mm	A - 43.2
9075	75	31.8
9100	100	56.8
9120	120	76.8
9125	125	81.8
9130	130	86.8
9140	140	96.8
9150	150	106.8

English

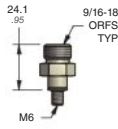
Part No.	A	B
90.503.xxx (S-8xx)	in.	A - 1.70
830	3.00	1.30
832	3.25	1.55
835	3.50	1.80
837	3.75	2.05
840	4.00	2.30
845	4.50	2.80
850	5.00	3.30
855	5.50	3.80
860	6.00	4.30



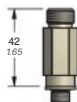
Port Adapters



90.505.115
(S-115)
Straight



90.505.116
(S-116)
M6 → 9/16-18

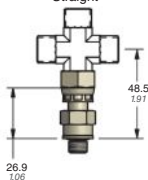


90.505.117
(S-117)
Extended Straight

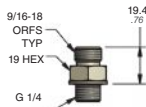
DADCO's O-Ring Face Seal (ORFS) Fittings have elastomeric seals at every joint.



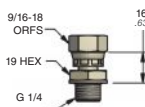
SS = Stainless Steel Option Available



90.505.121
(S-121)
Swivel Straight



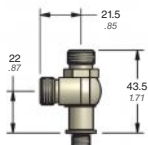
90.505.122
(S-122)
Straight



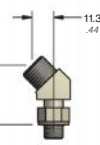
90.505.123
(S-123)
Swivel Straight



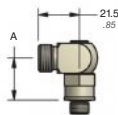
90.505.110
(G-109)
Flush Plug



90.505.438
(S-438)
Run Tee

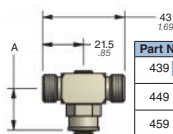


90.505.330
(S-330)
45° Elbow



90.506.230
(S-230)
90°

Part No.	A
230 SS	22 (.87)
240	36 (1.42)
250	43 (1.69)



90.506.439
(S-439)
Branch Tee

Part No.	A
439 SS	22 (.87)
449	36 (1.42)
459	43 (1.69)

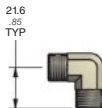
Fittings



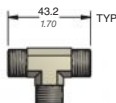
90.506.112
(S-112)
Tube End Cap



90.506.303
(S-303)
Union



90.506.201
(S-201)
Elbow

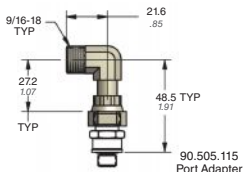


90.506.401
(S-401)
Tee



90.506.501
(S-501)
Cross

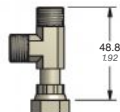
Standard Swivel Nut Fittings



90.506.221
(S-221)
90° Elbow

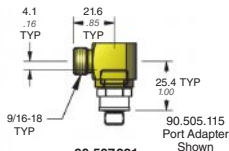


90.506.433
(S-433)
Branch Tee



90.506.432
(S-432)
Run Tee

Compact Swivel Nut Fittings



90.507.221
(S-J-221)
90° Elbow

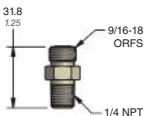


90.507.433
(S-J-433)
Branch Tee

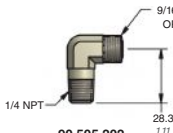


90.507.321
(S-J-321)
45° Elbow

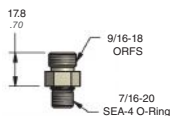
Retrofit Port Adapters



90.505.102
(S-102)
Straight Port Adapter



90.505.202
(S-202)
90° Swivel Port Adapter



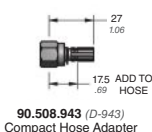
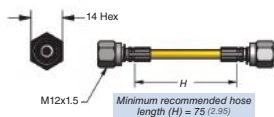
90.505.120
(S-120)
Straight Port Adapter



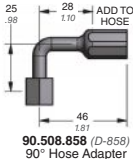
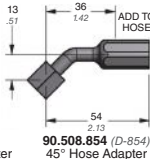
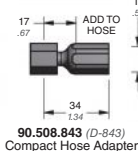
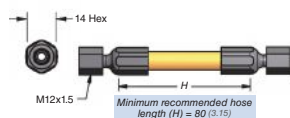
90.505.104
(D-104)
Flush Plug

Components: D-24 Tapered Fittings

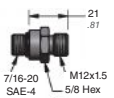
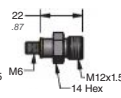
D-24 Hose System with 90.700 or 90.705 (Y-700 or Y-705)



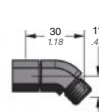
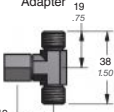
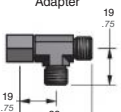
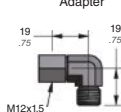
D-24 Hose System with 90.500 (Y-500)



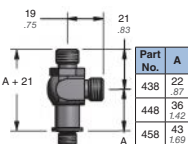
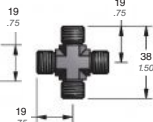
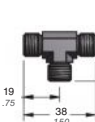
Fittings



Part No.	A
439	22 .87
449	36 1.42
459	43 1.69



Part No.	A
230	22 .87
240	36 1.42
250	43 1.69



Part No.	A
438	22 .87
448	36 1.42
458	43 1.69



MINIFLEX® Hose System with 90.700 or 90.705 (Y-700 or Y-705)

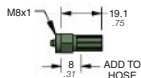
.SS = Stainless Steel Option Available



Minimum recommended distance
between sealing faces (L) = 75 (2.95)

90.700.L943.L943.____.I
L (mm)

Hose Assembly



90.601.943 **.SS**
(L-943)

Permanent Hose Adapter

MINILink® Fittings

Micro Series (C.045 – C.250) and small
Ultra Force® Series (U.0175/U.0325) Port Adapters



90.607.122
(L-122)

Micro Service Fitting



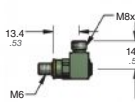
90.607.038
(L-38)

Micro Port Adapter
Extension



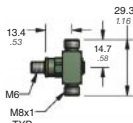
90.607.120 **.SS**
(L-120)

Straight Port
Adapter



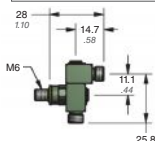
90.607.220 **.SS**
(L-220)

90° Port Adapter



90.607.429 **.SS**
(L-429)

Branch Tee Port
Adapter



90.607.428
(L-428)

Run Tee Port
Adapter



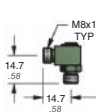
90.607.035
(L-35)

Port Adapter
Extension



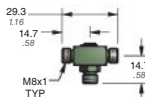
90.505.116
(S-116)

Reducer
M6 → 9/16-18



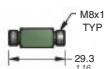
90.607.201
(L-201)

Elbow



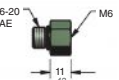
90.607.401
(L-401)

Union Tee



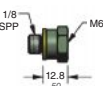
90.606.303
(L-303)

Union



90.607.055
(L-55)

Reducer
7/16-20 → M6



90.607.065
(L-65)

Reducer
G 1/8 → M6



90.607.115
(L-115)

Reducer
G 1/8 → M8x1



90.607.110
(L-110)

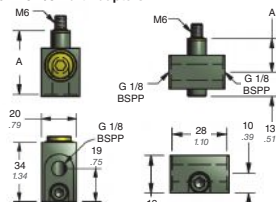
Port Plug



90.605.109
(L-109)

Fitting Plug

M6 → G 1/8 Port Adapters



90.607.116
Straight

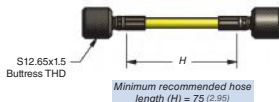
Part No.	A
116	33 1.30
126	46 1.81

90.607.439
Branch Tee

Part No.	A
439	18 .71
449	31 1.22

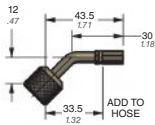
Components: Zip (CNOMO) Fittings

Zip Hose System with 90.700 or 90.705 (Y-700 or Y-705)



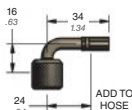
90.804.943
(B-943)

Straight Hose Adapter



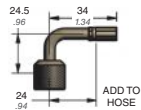
90.804.954
(B-954)

45° Hose Adapter



90.804.958
(B-958)

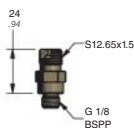
90° Short Neck
Hose Adapter



90.804.959
(B-959)

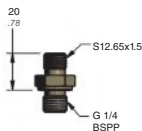
90° Long Neck
Hose Adapter

Fittings



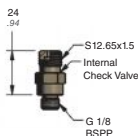
90.805.115
(B-115)

Straight Port Adapter



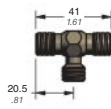
90.805.122
(B-122)

Straight Port Adapter



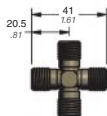
90.805.190
(B-190)

Port Adapter with Valve



90.806.401
(B-401)

Tee



90.806.501
(B-501)
Cross



90.806.230
(B-230)
Angle Swivel Adapter

Part No.	A
230	22 .87
240	36 1.42
250	43 1.69



90.806.439
(B-439)
Two-Way Swivel Adapter

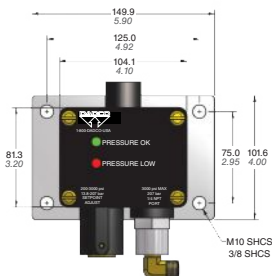
Part No.	A
439	22 .87
449	36 1.42
459	43 1.69

Pressure Monitors

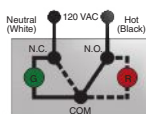
DADCO offers a variety of pressure monitor options to alert press controllers to changes in system pressure. The 90.421.1 and 90.421.2 models visually alert the user whether the pressure is at good standing or low while the 90.421.2D model is capable of shutting the press down if it drops below the minimum operating pressure.

Model No.	Supply Voltage	Switch Rating	Output	Electrical Connection	Pressure Range	Bulletin No.
90.421.1 (DPM-1)	120 VAC	-	Indicator Light	1/2 NPS	15 – 200 bar 220 – 3000 psi	B00136
90.421.2 (DPM-2)	24 VDC	-	Indicator Light	1/2 NPS	15 – 200 bar 220 – 3000 psi	B01115A
90.421.2D (DPM-2D)	24 VDC	0.4 A	Indicator Light + SPDT	4-Pin Mini-Change Connector	15 – 200 bar 220 – 3000 psi	B00134

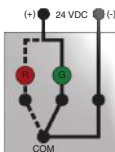
90.421.1 (DPM-1)
90.421.2 (DPM-2)



DPM-1 Circuit



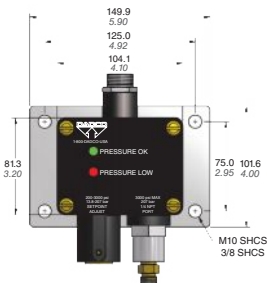
DPM-2 Circuit



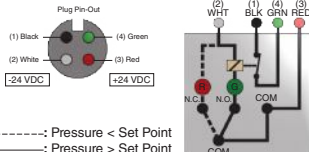
-----: Pressure < Set Point
-----: Pressure > Set Point

The DPM-1 and DPM-2 models both visually inform the press operator of their Nitrogen Gas Spring system's pressure status. See table for supply voltage.

90.421.2D (DPM-2D)



DPM-2D Circuit



-----: Pressure < Set Point
-----: Pressure > Set Point

The DPM-2D model visually informs the press operator of the system status, and can be wired into the press controller to automatically shut down or alert the operator when pressure drops below a set point.

Ordering Example:

90.421.2D. *BH1. BP. 102

Model Number

90.421.1, 90.421.2 or 90.421.2D

Connector

BH1 – Right

BH2 – Left

BH3 – Straight Connector

(*Connector options are for 90.421.2D Model only.)

Fitting

90.505.102–Straight

90.505.202–90°

Backing Plate

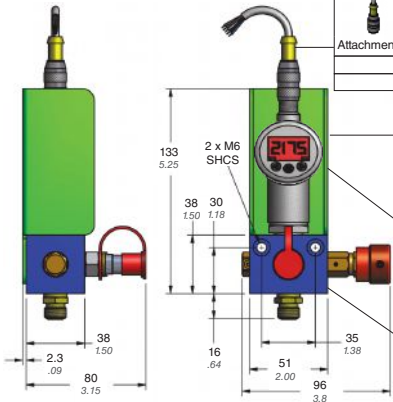
(optional)

Electronic Pressure Monitors

DADCO offers two types of Electronic Pressure Monitors to monitor nitrogen gas pressure during operation: An Electronic Pressure Monitor Sensor or a Control Panel with Pressure Monitor. For maximum versatility both types have multiple configurations to best suit your application.

Electronic Pressure Monitor Configuration

To customize your Electronic Pressure Monitor, select the base, sensor and cable accessory that best suits your application.



Dimensions:

- 133 (5.25)
- 38 (1.50)
- 30 (1.18)
- 2.3 (.09)
- 80 (3.15)
- 16 (.64)
- 51 (2.00)
- 96 (3.8)
- 35 (1.38)

Example shown:
90.421.CP.S.EDS.G
 With 90.454.M12.S Cable

Cable Accessory

 90.454.M12.S.____	 90.454.M12.L.____
Attachment Orientation: S = Straight	Attachment Orientation: L = Elbow
Cable Length: 02 = 2 m, 05 = 5 m, 10 = 10 m	
Applicable for EDS, DPS & DPT sensor options	

Guard Option

 G

Pressure Monitor Sensor Options

 EDS	 DSK	 DPS	 DPT
---	---	---	---

Base Options

 JB	 CP
--	--

GM specific option available, reference bulletin B16106.

Ordering Example:

90.421. CP. S. EDS. G

Model Number — 90.421.

Base Option — CP

Pressure Monitor Sensor Options — S

Fitting Connection — EDS

Guard Option — G

CP = Block with Bleed Valve, Filler Valve and Rupture Disk
 JB = Block only (Bleed Valve, Filler Valve and Rupture Disk not included)

EDS = Electronic Pressure Switch, DSK = Piston Pressure Switch, DPS = Dial Pressure Switch, DPT = Electronic Pressure Transmitter

N = No Fitting Supplied, S = 90.505.115 (ORFS),
 D = 90.508.115 (D-24), B = 90.805.115 (Zip),
 L = MINILink® Fitting. Default is N.

Electronic Pressure Monitor Sensors

The Electric Pressure Monitor has four sensor options available: EDS, DSK, DPS and DPT. Review the details provided below to select the correct option for your application.

EDS – Electronic Pressure Switch

The EDS switch features an LED digital display that reads pressure value in bar, psi or MPa. The EDS models display face rotates 270° while the body rotates 340° for added versatility, the sensor also features two switching outputs that can be easily set with face mounted push buttons. *Note: EDS uses 90.454.M12 style cable accessory.*



- Features:**
- Measuring Range: 0-400 bar (0-5800 psi)
 - Supply Voltage: 9 – 35 VDC
 - Switch Rating: 1.2 A max

- Output: (2) PNP Pin 2, 4
- Electrical Connection: 4 – pole M12 x 1
- Current Consumption: 35 mA max

DSK – Piston Pressure Switch

The DSK switch uses a pressure input to operate a SPDT switch as the pressure rises or falls across a set value. The manually adjusted switch monitors a preset pressure. This switch can be set at the factory and wired to shut down a press operation or activate an alarm once pressure is above or below the set-point. *Note: DSK includes a DIN 43650 cable adapter.*

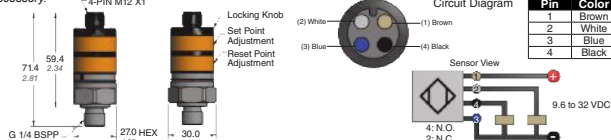


- Features:**
- Max Pressure Rating: 600 bar (8700 psi)
 - Output: SPDT Switch
 - Electrical Connection: DIN 43650

- Range Tolerance: ± 5 bar (± 72.5 psi)
- Switch Adjustment Range: 50-200 bar (725-2900 psi)
- Switch Rating: 1 AMP at 250 VAC, 4 AMP at 24 VDC

DPS – Dial Pressure Switch

The DPS switch features two manually adjustable dials. The upper dial is the set pressure and the lower dial is the reset pressure. When the system pressure increases to the set value, Output 1 (pin 4) turns on, and Output 2 (pin 2) turns off. When the system pressure decreases to the Reset Pressure, Output 1 turns off and Output 2 turns on. *Note: DPS uses 90.454.M12 style cable accessory.*



- Features:**
- Measuring Range: 0-400 bar (0-5800 psi)
 - Operating Voltage: 9.6 - 32 VDC
 - Setting Point Range: 20-400 bar (290-5800 psi)
 - Reset Point Range: 12-392 bar (175-5685 psi)
 - Switch Rating: 500 mA

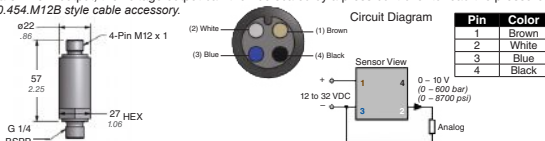
- Electrical Connection: 4 - Pole M12 x 1
- Current Consumption: <25 mA
- Switch Output: PnP (1 N.O. & 1 N.C. Complementary)
- Switch Point Accuracy: $< \pm 2.5\%$

Components: Pressure Monitors

DPT – Electronic Pressure Transducer

DADCO's DPT unit is a pressure transducer, emitting an analogue signal that provides a range of voltage. The DPT converts pressure input to a 0 – 10 V output, the voltage output can then be scaled by a press controller to read the pressure value.

Note: DPT uses 90.454.M12B style cable accessory.



- | | |
|---|---|
| Features: <ul style="list-style-type: none"> Supply Voltage: 12 – 32 VDC Accuracy: 0.5% Full Scale Output Signal: Analog (0-10 Volts) | <ul style="list-style-type: none"> Max Pressure Rating: 600 bar (8700 psi) Electrical Connection: 4 – Pin M12 x 1 Current Consumption: <15 mA |
|---|---|

90.406.421 Control Panel with Pressure Monitor

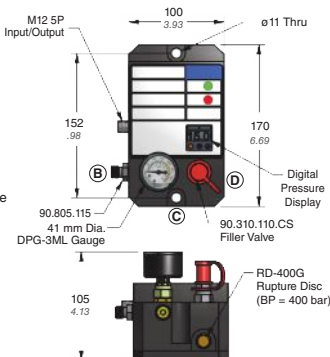


The 90.406.421. Control Panel with Pressure Monitor is used to fill and monitor the pressure of linked nitrogen gas springs from outside the die. The panel is adjustable to read pressure in bar, psi or MPa and includes a digital pressure sensor with programmable output to signal if pressure drops below a preset level. This panel conforms to Toyota standard number D-PACPS-B.

DADCO 90.406.421 Digital Control Panel		 UL LISTED Process Control Equipment Assembled in the USA with foreign and domestic parts																						
M12B Connect Only 90.454.M12B																								
 Green LED = Output 24 Closed	<table><tr><th>Voltage</th><th>12 - 24 DC</th><th>100 - 120 AC</th></tr><tr><td>Current<td>80 - 40 mA<td>60 mA</td></td></td></tr><tr><td>1 BRN</td><td></td><td>L1</td></tr><tr><td>3 BLU</td><td></td><td>L2</td></tr><tr><td>2 WHI</td><td>12 - 24 DC</td><td>100 - 120 AC</td></tr><tr><td>4 BLK</td><td>2A</td><td>1A</td></tr><tr><td>5 GR/YW</td><td></td><td>Ground</td></tr></table>			Voltage	12 - 24 DC	100 - 120 AC	Current <td>80 - 40 mA<td>60 mA</td></td>	80 - 40 mA <td>60 mA</td>	60 mA	1 BRN		L1	3 BLU		L2	2 WHI	12 - 24 DC	100 - 120 AC	4 BLK	2A	1A	5 GR/YW		Ground
Voltage	12 - 24 DC	100 - 120 AC																						
Current <td>80 - 40 mA<td>60 mA</td></td>	80 - 40 mA <td>60 mA</td>	60 mA																						
1 BRN		L1																						
3 BLU		L2																						
2 WHI	12 - 24 DC	100 - 120 AC																						
4 BLK	2A	1A																						
5 GR/YW		Ground																						
Nitrogen Only: Pcharge = 15 MPa at 20°C TS = 4° - 7°C. PS = 35 MPa																								

This product is Listed to applicable UL Standards and requirements by UL.

Reference B10143 for additional information.



Cable Accessory	
90.454.M12B.S Attachment Orientation: S = Straight	90.454.M12B.L Attachment Orientation: L = Elbow
Cable Length: 02 = 2 m, 05 = 5 m, 10 = 10 m	

Ordering Example:

Plate Style
 B = English plate style

90.406.421. B

Fitting Location
 B, C, D, BD

*For Japanese plate order 90.406.421. A

- | | |
|---|---|
| <ul style="list-style-type: none"> Output: SPST N.O. (Normally Open) Supply Voltage: 12 – 24 VDC, 80 – 130 VAC (50 – 60 Hz) | <ul style="list-style-type: none"> Max Pressure Rating: 350 bar (5076 psi) Electrical Connection: M12 (B – Code), 5 Wire, Reverse Key |
|---|---|

Tools for Hose Assembly Construction

DADCO carries a variety of tools for Hose Assembly Construction, please refer to bulletin B11110B for more information on the selection shown below.

Hose Cutter 90.320.7

Used to cut hose to appropriate length. The 90.320.7 works with all hose sizes.



Mini Hose Cutter
90.320.7

Portable Crimping Unit 90.720

Used with appropriate die ring to create permanent hose assemblies. For more information, request bulletin B04112B.



Hose Assembly Clamp

Used to secure hose while installing hose adapters. The 90.320.9 is for use with the 90.700 / 90.705 (Y-700 / Y-705) hoses, and the 90.320.6 is compatible with all hose sizes.



Mini Hose Assembly Clamp
90.320.9



Hose Assembly Clamp
90.320.6 (HAC)

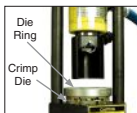
Mini-Crimp 90.710.8

Used in a crimping machine to construct hose assemblies using 90.700 / 90.705 (Y-700 / Y-705) hose.



Crimp Dies

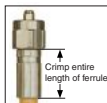
Used in Portable Crimping Unit to construct hose assemblies. For information on constructing hose assemblies, refer to bulletin B00120D.



Part No.	Crimp Die	Crimp Diameter mm / inch
90.700 / 90.705 (Y-700 / Y-705)	Mini-Crimp 90.710.8 No Ring Required	7.00 – 7.25 .276 – .285
90.500 (Y-500)	80C-P03 Gray Die 82C-R01 Ring	12.19 – 12.70 .480 – .500
90.400 (Y-400)	80C-P04 Red Die 82C-R01 Ring	14.22 – 14.73 .560 – .580
90.250 (Y-250)	80C-P04J Red Die 82C-R01 Ring	13.59 – 14.10 .535 – .555

Using DADCO's Mini-Crimp

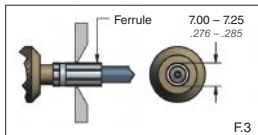
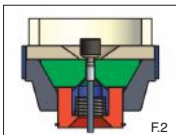
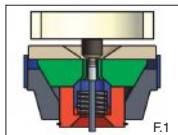
- Place the Mini-Crimp 90.710.8 into the crimping machine. No die ring is required.
- Insert the hose assembly from below through the center of the Mini-Crimp (F.1). For instructions on constructing a Mini Hose Assembly request bulletin B11110A.
- Activate the hydraulic or pneumatic crimping machine to permanently crimp fitting to the hose (F.1).



- As the DADCO Mini-Crimp begins to close, position the fitting to ensure the entire length of the ferrule is crimped (F.2).

- Remove completed hose assembly from the Mini-Crimp.

- Measure the crimped ferrule diameter across the flats to verify it is within the crimp dimension range (F.3).



Charging Accessories

Quick Disconnect Charging Hardware

Use the DADCO Quick Disconnect Charging Assembly, 90.310.040, with the 90.310.143 or 90.310.111 Charging Nipple or the 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 90.310.044 Quick Disconnect Filling Assembly with self-venting capabilities releases residual pressure after charging self-contained or linked nitrogen gas spring systems for easy decoupling between the filling assembly and charging nipple or filler valve.

DADCO also offers the 90.310.041 High Pressure Charging Assembly to charge Micro Series, SCR Series and U.0175 – U.0400 nitrogen gas springs to maximum pressure.



Quick Disconnect Filling Assembly with Gauge, 90.310.339 is also available.

90.310.040

Standard Pressure Regulator
90.310.201



Hose Assembly
90.310.252
3 m / 10 ft

Quick Disconnect
Filling Assembly
90.310.338

90.310.044 (Self-Venting)

High Pressure Regulator
90.310.205



Hose Assembly
90.310.252
3 m / 10 ft

Quick Disconnect
Filling Assembly
90.310.340*

*Not recommended with 90.416.A2B or 90.406.421

Quick Disconnect Charging Nipple

90.310.143 (M6 Port)

90.310.111 (G 1/8 Port)

Use the appropriate Quick Disconnect Charging Nipple to charge DADCO Nitrogen Gas Springs. For additional information request bulletin B01122C.



90.310.143



90.310.111

Safety Plates

DADCO recommends customers identify tools containing high pressure nitrogen gas springs to ensure proper handling of the cylinders. DADCO offers several caution tags to meet specific application needs. For more information request bulletin B01103A.

Compact Nitrogen Gas Booster
DGB.100

DADCO's Compact Nitrogen Gas Booster System, DGB.100, is a lightweight, cost-effective way to extend the life of your nitrogen supply tanks. Using the DGB.100, tanks with low pressure can be boosted to a higher pressure that is suitable for charging the gas spring. For more information refer to bulletin B13105.

Nitrogen Gas Booster System
DGB.150

DADCO's Nitrogen Gas Booster System, DGB-150, is an all-in-one solution to the problems of low pressure supply tanks and lost nitrogen gas during discharge. For more information on the booster, refer to bulletin B07101.



Notes

DADCO®

Sectional Mounting Systems

SMS® and SMS-i®



Alternatives to Traditional Manifolds

PED

2014/68/EU
COMPLIANT

DADCO's Sectional Mounting System (SMS®) is an established way to link DADCO nitrogen gas springs using a variety of available hose and fittings. Each system utilizes nitrogen gas springs mounted to a base plate, with the plumbing located on top of the plate, for unlimited mounting configurations. Each SMS® is assembled and tested at the factory to assure leak-free operation and is shipped ready to install.

Features

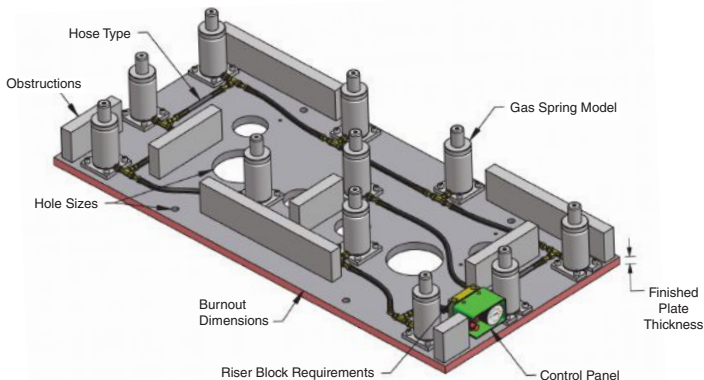
- Unlimited design configurations
- Uniform pressure in system
- Cost effective
- Quick delivery
- Easy installation and removal
- Simplified maintenance

DADCO applies the following standards for Sectional Mounting System (SMS®) layouts unless otherwise specified.

SMS® Layout	DADCO Standard
Plate Thickness	25 mm (.98") Recommended +0/-0.13 mm (+.000/-0.005")
Plate Material	A36 HRS, Normalized Blanchard Ground
Plate Edges	Burned out and Painted ±2 mm (±.08")
Fasteners	Metric SHCS
Hose	90.500 (Y-500) or best fit
Hose Adapters	Crimped
Fittings	Standard swivel nut or best fit
Panel Mounting	DADCO riser blocks
Risers/Parallels	Customer specified

Sample SMS® Layout

Send DADCO your new system specifications or your current manifold design to discover the advantages. When quoting a SMS®, please provide CAD files and detailed plate information including gas spring model, finished plate thickness, burnout dimensions, hole sizes, control panel, hose type, riser block requirements and any obstructions; refer to the sample provided below.



DADCO Gas Springs are grouped by two main classifications: Mini Springs with a M6 Port and Large Springs with a G 1/8 BSPP Port. DADCO recommends choosing control panels, fittings and hose type based on port style and application requirements. Refer to the Linked System Components Catalog for more information. To determine the force and pressure rise for your system use the **DADCO Force Calculator** from our website at www.dadco.net.

Port Style

M6 Mini Port



Gas Springs with M6 Port:

U.0400 – U.2600

LJ and L Series

SCR Series

90.10.00170

G 1/8 Large Port



Gas Springs with G 1/8 Port:

U.4600 – U.20000

UH Series

UX Series

90.8 Series

90.10.00500 – 90.10.10000

SCL.01000 – SCL.18300

Control Panels

Surge Tanks



Distribution Blocks



Tools

Compatible Fitting Styles

DADCO MINILink®
(M8 x 1)



D-24 Tapered
(M12 x 1.5)



Zip (CNOMO)
(S12.65 x 1.5)



**SMS®
Preferred**

O-Ring Face Seal (ORFS)
(9/16-18)



Hose System

90.700 (Y-700) Hose
90.705 (Y-705) Hose



**SMS®
Preferred**

90.500 (Y-500) Hose



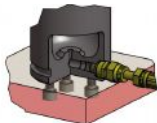
90.400 (Y-400) Hose



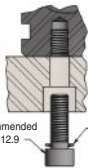
SMS® Cylinder Mounting

Cylinders must be secured to the base plate according to the proper torque specification indicated below. Use a serviceable thread locking compound when installing socket head cap screws.

SMS® Connection

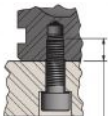


DADCO gas springs used in a SMS® are attached to the base plate with standard mounting hardware and piped through the side port. Refer to the port type of your springs to determine the best hose and fittings to use.



Recommended Grade 12.9 SHCS Lock Washer

Use a serviceable thread locking compound and lock washers when installing socket head cap screws.



Thread Engagement

Refer to the preferred engagement range when determining the length of SHCS.

Series	Model	Port Type	SHCS		Torque		Preferred Thread Engagement Range	
			Thread Size	Lock Washer	N-m	lb-in	mm	inch
L/LJ	300	M6	M6	UMR06	8.5	75	5 - 5.5	.20 - .22
	500		M8	UMR08	15.3	135	5 - 5.5	.20 - .22
	750		M8	UMR08	15.3	135	5 - 5.5	.20 - .22
U	0400	M6	M6	UMR06	8.5	75	5 - 5.5	.20 - .22
	0600		M6	UMR06	8.5	75	5 - 5.5	.20 - .22
	0800		M8	UMR08	15.3	135	5 - 5.5	.20 - .22
	1000		M8	UMR08	15.3	135	5 - 5.5	.20 - .22
	1200		M8	UMR08	15.3	135	5 - 5.5	.20 - .22
	1600		M8	UMR08	15.3	135	5 - 5.5	.20 - .22
	2600	G 1/8	M8	UMR08	15.3	135	5 - 5.5	.20 - .22
	4600		M8	UMR08	36	321	10 - 11	.40 - .44
	6600		M10	UMR10	72	635	10 - 11	.40 - .44
	9600		M10	UMR10	72	635	10 - 11	.40 - .44
UH	20000	G 1/8	M12	UMR12	125	1108	11 - 15	.44 - .60
	0400		M6	UMR06	15	132	13 - 14	.51 - .55
	0600	G 1/8	M6	UMR06	15	132	13 - 14	.51 - .55
	0800		M8	UMR08	36	321	14 - 15	.55 - .60
	1000		M8	UMR08	36	321	14 - 15	.55 - .60
	1600		M8	UMR08	36	321	10 - 11	.40 - .44
	2600		M8	UMR08	36	321	14 - 15	.55 - .60
	4600		M8	UMR08	36	321	14 - 15	.55 - .60
	6600		M10	UMR10	72	635	10 - 11	.40 - .44
	0800	G 1/8	M8	UMR08	36	321	10 - 11	.40 - .44
UX	1000		M8	UMR08	36	321	10 - 11	.40 - .44
	1600		M8	UMR08	36	321	10 - 11	.40 - .44
	2600		M8	UMR08	36	321	10 - 11	.40 - .44
	4600		M8	UMR08	36	321	10 - 11	.40 - .44
	6600		M10	UMR10	72	635	10 - 11	.40 - .44
	9600		M10	UMR10	72	635	10 - 11	.40 - .44
	20000		M12	UMR12	125	1108	11 - 15	.44 - .60
90.8	00750	G 1/8	M8	UMR08	36	321	10 - 11	.40 - .44
	01500		M8	UMR08	36	321	10 - 11	.40 - .44
	03000		M8	UMR08	36	321	10 - 11	.40 - .44
	05000		M10	UMR10	72	635	10 - 11	.40 - .44
	07500		M10	UMR10	72	635	10 - 11	.40 - .44
90.10	00170	M6	M6	UMR06	15	132	10 - 11	.40 - .44
	00500		M8	UMR08	36	321	10 - 11	.40 - .44
	00750	G 1/8	M8	UMR08	36	321	10 - 11	.40 - .44
	01500		M8	UMR08	36	321	10 - 11	.40 - .44
	03000		M8	UMR08	36	321	10 - 11	.40 - .44
	05000		M10	UMR10	72	635	10 - 11	.40 - .44
	07500		M10	UMR10	72	635	10 - 11	.40 - .44
	10000		M12	UMR12	125	1108	11 - 15	.44 - .60
SCR	00500	M6	M6	UMR06	8.5	75	7 - 8	.28 - .32
	00800		M6	UMR06	8.5	75	7 - 8	.28 - .32
	01900		M8	UMR08	36	321	9 - 10	.36 - .40
	03200		M8	UMR08	36	321	9 - 10	.36 - .40
SCL (SC Series with Sub Plate)	01000	G 1/8	M6	UMR06	15	132	10 - 11	.40 - .44
	01800		M6	UMR06	15	132	10 - 11	.40 - .44
	03500		M8	UMR08	36	321	10 - 11	.40 - .44
	04700		M8	UMR08	36	321	10 - 11	.40 - .44
	07500		M8	UMR08	36	321	10 - 11	.40 - .44
	11800		M10	UMR10	72	635	10 - 11	.40 - .44
	18300		M10	UMR10	72	635	10 - 11	.40 - .44

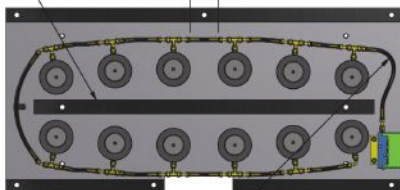
Below are examples of SMS® layouts as guidelines for the different configurations that can maximize cost-savings. To determine the force and pressure rise for your system use the **DADCO Force Calculator** from our website at www.dadco.net.

Standard System Configuration

Cylinders are linked in series with hose and fittings to a single control panel for a clean design and uniform force. Provide details about obstructions in the die to help with the routing of the hose assemblies so they do not interfere with operation. Hose Straps may be used to help hold the hose assemblies in place. To avoid taut connections and kinks in the hose adhere to the recommended hose length and bend radius. The bend radius is measured to the inside of the hose bend, not the centerline of the hose. Refer to catalog C09118E for hose specifications.

Provide die information for hose routing.

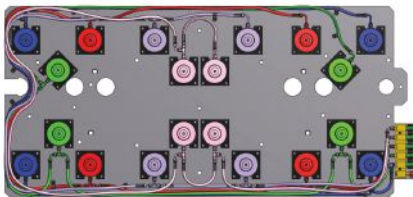
Verify hose lengths meet or exceed the minimum recommendation.



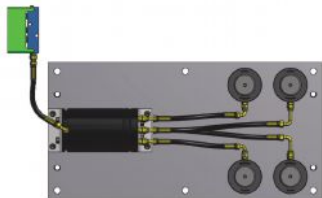
Verify the inside hose bend radius is not exceeded.

Multiple Force Zones

With the use of a Multi Panel, an SMS® can be designed to create different zones. Each color in the drawing represents a different force zone that is controlled by a different module. This type of layout can add additional versatility to the plate.

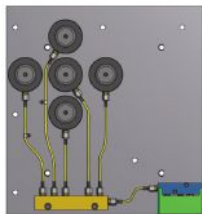


Reduced Pressure Rise



Link multiple cylinders to a surge tank to increase the volume of gas and reduce the pressure rise in the system. Use Y-400 hose and direct connections from each cylinder to the surge tank for optimum gas flow.

Tight Configurations



SMS® designs can utilize distribution blocks to create tight cylinder configurations and uniform force.

DADCO's Sectional Mounting System - Internal (SMS-i®) is a popular alternative to conventional manifold systems. SMS-i® utilizes DADCO gas springs mounted to a base plate and all of the connecting passages are drilled within the plate, obviating the need for external hose and fittings. DADCO's SMS-i® is less expensive, performs better and is easier to maintain than conventional manifold systems. Each SMS-i® is factory tested to assure leak-free operation and is shipped ready to install. Contact DADCO Engineering for a proposal.

Features

- Simplifies design with internal plumbing
- Uniform pressure in system
- Cost effective
- Tight configurations possible
- Quick delivery
- Less machining in the die
- Easy maintenance and installation

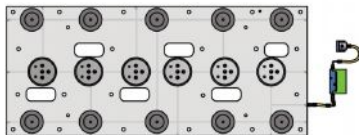
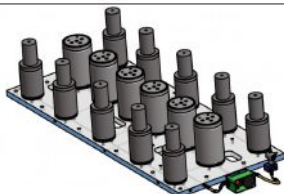
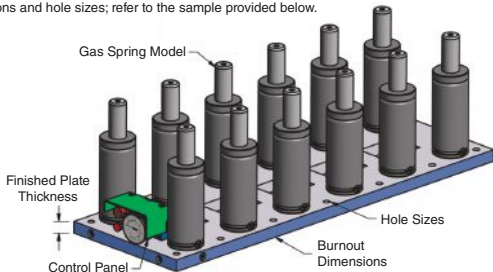
DADCO applies the following standards for Sectional Mounting System - Internal (SMS-i®) layouts unless otherwise specified.

SMS-i® Layout	DADCO Standard
Plate Thickness*	25 mm (.98") Minimum Recommended +0/-0.13 mm (+.000/-0.005")
Plate Material	A36 HRS, Normalized Blanchard Ground
Plate Edges	Burned out and Painted ±2 mm (±.08")
Fasteners	Metric SHCS

*Varies by system configuration

Sample SMS-i® Layout

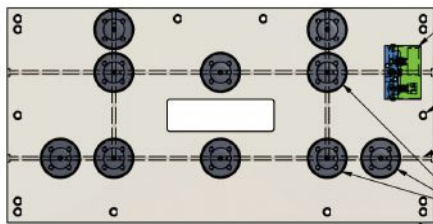
Send DADCO your new system specifications or your current manifold design to discover the advantages. When quoting a SMS-i®, please provide CAD files and detailed plate information including gas spring model, finished plate thickness, burnout dimensions and hole sizes; refer to the sample provided below.



The SMS-i® facilitates filling, draining and monitoring from a control panel mounted directly to the plate or from outside the die. A pressure monitor may be included to alert press controllers of changes to the system pressure. Surge tanks increase the volume in the system thereby reducing the pressure rise, lowering the heat produced during operation and extending the life of the cylinders.

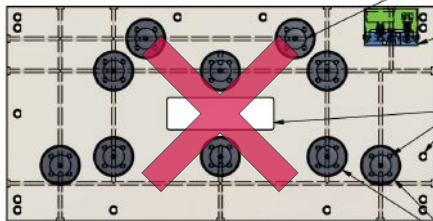
DADCO recommends following the guidelines below when designing SMS-i® layouts to maximize cost-savings. To determine the force and pressure rise for your system use the **DADCO Force Calculator** from our website at www.dadco.net.

Recommended Layout



- ✓ **Control Panel Location**
Mount the control panel to the plate using an existing port.
- ✓ **Thru-Hole / Feature Placement**
Make sure thru-holes and other plate features are clear of nitrogen ports.
- ✓ **Drill Location**
Drills should run completely through the plate or intersect another drilled port.
- ✓ **Gas Spring Arrangement**
Align gas springs where possible so they share G 1/8 ports.
- ✓ **Machining on Plate Sides**
Place ports on as few sides of the plate as possible to reduce machining requirements. Plates must be machined on every edge that contains a G 1/8 port.

Items that Increase the Complexity of SMS-i® Machining



- ✗ **Blind Holes**
Avoid drilling G 1/8 ports as blind holes since it makes clean-up and deburring difficult.
- ✗ **Control Panel Location**
Refrain from isolating a control panel to its own G 1/8 port to minimize cost and complexity.
- ✗ **Thru-Hole / Feature Placement**
Avoid interior burnouts, thru-holes and cylinder mounting holes where there is not adequate clearance around G 1/8 ports.
- ✗ **Machining on Plate Sides**
Adding G 1/8 ports to all four sides of the plate is costly. Plates must be machined on every edge that contains a G 1/8 port.
- ✗ **Gas Spring Arrangement**
Avoid offset placement of gas springs. It requires individual G 1/8 ports, increasing cost and complexity.

Additional Recommendations

Plate Thickness

25 mm (0.98") Minimum Recommended

Maximum Drill Depth for G 1/8 Ports

42" per port

(NOTE: For two G 1/8 ports drilled from opposite ends that meet in the middle, the combined port length becomes 84".)

Control Panel Location

Control panels can be mounted to a plate or piped externally using hose and fittings.

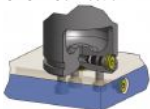
Long Stroke Gas Springs

Choose longer stroke gas springs mounted directly to the plate (over increased plate thickness) to achieve the desired contact point and to gain more volume in the system.

SMS-i® Cylinder Mounting

Cylinders must be secured to the base plate according to the proper torque specification indicated below. Use a serviceable thread locking compound when installing socket head cap screws. Contact DADCO for information on gas springs not listed below.

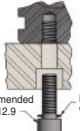
SMS-i® Connection



DADCO gas springs used in a SMS-i® have a bottom port and are attached to the base plate with a sealing washer and mounting holes.



Sealing Washer
Sealing Washer is installed between the bottom port and the SMS-i® Plate.



Recommended Grade 12.9 SHCS Lock Washer

Use a serviceable thread locking compound and lock washers when installing socket head cap screws.

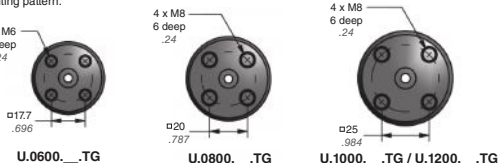


Thread Engagement
Refer to the preferred engagement range when determining the length of SHCS.

Series	Model	SHCS		Torque		Preferred Thread Engagement Range		SMS-i® Plate Sealing Component	
		Thread Size	Lock Washer	N-m	lb-in	mm	inch	M	M1
UH	0400	M6	UMR06	15	132	13 - 14	.51 - .55	90.252	EZ451441
	0600	M6	UMR06	8.5	75	5 - 5.5	.20 - .22	90.252	EZ451441
	0800	M8	UMR08	15.3	135	5 - 5.5	.20 - .22	90.252	EZ451441
	1000	M8	UMR08	15.3	135	5 - 5.5	.20 - .22	90.252	EZ451441
	1200	M8	UMR08	15.3	135	5 - 5.5	.20 - .22	90.252	EZ451441
	1600	M8	UMR08	15.3	135	5 - 5.5	.20 - .22	90.252	EZ451441
	2600	M8	UMR08	15.3	135	5 - 5.5	.20 - .22	EZ451443	EZ451441
	4600	M8	UMR08	36	321	10 - 11	.40 - .44	EZ451443	EZ457238
	6600	M10	UMR10	72	635	10 - 11	.40 - .44	EZ451443	EZ457238
	9600	M10	UMR10	72	635	10 - 11	.40 - .44	EZ451443	EZ457238
UX	20000	M12	UMR12	125	1108	11 - 15	.44 - .60	EZ451443	EZ457238
	0800	M8	UMR08	36	321	10 - 11	.40 - .44	90.252	EZ451441
	1000	M8	UMR08	36	321	10 - 11	.40 - .44	90.252	EZ451441
	1600	M8	UMR08	36	321	10 - 11	.40 - .44	EZ451443	EZ451441
	2600	M8	UMR08	36	321	10 - 11	.40 - .44	EZ451443	EZ451441
	4600	M8	UMR08	36	321	10 - 11	.40 - .44	EZ451443	EZ457238
	6600	M10	UMR10	72	635	10 - 11	.40 - .44	EZ451443	EZ457238
	9600	M10	UMR10	72	635	10 - 11	.40 - .44	EZ451443	EZ457238
	20000	M12	UMR12	125	1108	11 - 15	.44 - .60	EZ451443	EZ457238
	00500	M8	UMR08	36	321	10 - 11	.40 - .44	90.252	EZ451441
90.10	00750	M8	UMR08	36	321	10 - 11	.40 - .44	90.252	EZ451441
	01500	M8	UMR08	36	321	10 - 11	.40 - .44	EZ451443	EZ451441
	03000	M8	UMR08	36	321	10 - 11	.40 - .44	EZ451443	EZ457238
	05000	M10	UMR10	72	635	10 - 11	.40 - .44	EZ451443	EZ457238
	07500	M10	UMR10	72	635	10 - 11	.40 - .44	EZ451443	EZ457238
	10000	M12	UMR12	125	1108	11 - 15	.44 - .60	EZ451443	EZ457238
SC	03500	M8	UMR08	15.3	135	7 - 8	.28 - .32	90.270	N/A
	04700	M8	UMR08	15.3	135	6 - 7	.24 - .28	90.270	N/A
	07500	M8	UMR08	15.3	135	6 - 7	.24 - .28	90.270	N/A
	11800	M10	UMR10	72	635	8 - 9	.32 - .36	90.270	N/A

U Series Mount Pattern for SMS-i® Gas Springs

DADCO's U.0600-U.1200 gas springs installed in a SMS-i® have additional bottom mounting holes used to attach to the base plate. Replacement springs ordered with the 'TG' mount option will have this mounting pattern.



Replacement SMS-i® Gas Spring Ordering Example:

90.10.00750.025. TO. M

Part Number: Includes Series, Model and Stroke Length.

Mount Option: TO = Basic Model or TG = Additional Mounting Holes (U.0600-U.1200 only).

Fitting Connection:

M = SMS-i® (bottom port + sealing component).

M1 = SMS-i® (larger bottom port for increased flow + sealing component).

Reference the laser mark on the cylinder when ordering replacement springs.

Components: Control Panels

SMS® and SMS-i®

DADCO offers a variety of control panels that are used to fill, drain and monitor the pressure of linked nitrogen gas springs from outside the die. For a control panel that may be mounted directly to a SMS-i® plate order 90.406.P1M or 90.407.PM. Optionally, DADCO offers a variety of pressure monitors to alert controllers to changes in system pressure. Refer to the Linked System Components Catalog for detailed information on pressure monitors and more information on the control panels.

Convertible Control Panel



Note: Convertible Control Panel dimensions are
H = 77 mm, W = 127 mm, D = 87 mm

Ordering Example:

90.406. P 1 N

Convertible Control Panel ——— P ——— N

Gauge Style ———
PSI/Bar Gauge (DPG-3RB) = P,
Bar/MPa Gauge (DPG-3RM) = A
When not specified, default is P

Guard ———
Top Guard = 1, Top and Bottom
Guards = 2
When not specified, default is 1

Fitting Connection
N = No Fitting Supplied,
M = Manifold Seal,
S = ORFS Fitting,
D = D-24 Fitting,
B = Zip Fitting,
L = MINILink® Fitting
When not specified,
default is N.

NOTE: The 90.406.P2S is a direct replacement of DADCO's 90.406.03.

Compact Control Panel



Note: Compact Control Panel dimensions are
H = 50.8 mm, W = 110 mm, D = 90 mm

Ordering Example:

90.405. P N

Compact Control Panel ——— P ——— N

Gauge Style ———
PSI/Bar Gauge = P

Fitting Connection
N = No Fitting Supplied,
S = ORFS Fitting,
D = D-24 Fitting,
B = Zip Fitting,
L = MINILink® Fitting
When not specified, default is N.

Mini Convertible Control Panel



Note: Mini Convertible Control Panel dimensions are
H = 53.5 mm, W = 127 mm, D = 91 mm

Ordering Example:

90.407. P N

Mini Control Panel ——— P ——— N

Gauge Style ———
PSI/Bar Gauge = P

Fitting Connection
N = No Fitting Supplied,
M = Manifold Seal,
S = ORFS Fitting,
D = D-24 Fitting,
B = Zip Fitting,
L = MINILink® Fitting
When not specified, default is N.

Mini Control Panel



Note: Mini Control Panel dimensions are
H = 53.5 mm, W = 127 mm, D = 85 mm

Ordering Example:

90.407. 11G

Mini Control Panel ——— 11 M6 Ports

Multi Panel



Note: Multi Panel dimensions are
H = 76 mm, W = 44.5 x (N+1) mm, D = 94 mm

90.401.3 Shown

Ordering Example:

90.401. 3.

Guard Location ———
Standard
(No Guard) = 401,
Top = 402,
Bottom = 403,
Both = 404

For optional reversed mounting,
add R.

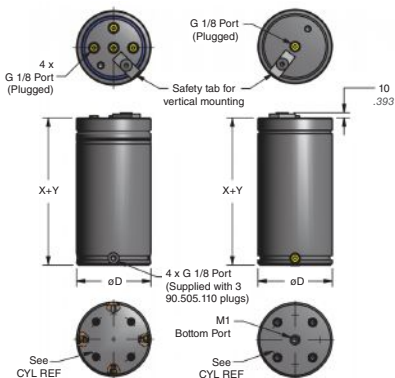
Number of Modules
2-6, 8 or 10

Components: 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. The Surge Tank is offered in two Models: F – Free Flow Model with multiple open ports supplied as standard for maximum flexibility when piping; M1 – SMS-i® Model with a bottom port to attach to a base plate. Gauges and shut-off ball valves are available upon request. For assistance in determining appropriate surge tank size for your system, use the **DADCO Force Calculator** from our website at www.dadco.net. 90.400 (Y-400) hose is the preferred hose to use with surge tanks. 90.700 (Y-700) / 90.705 (Y-705) hose is generally not recommended for use due to restricted flow capability.



ST.50.150.B29



F – Free Flow Model

M1 – SMS-i® Model

ST	30	50	75	100
D	95	120	150	195
X	3.74	4.72	5.91	7.67
Y	117	137	152	157
	4.61	5.39	5.98	6.18
Volume of Tank L (in ³)				
50	0.59	1.05	1.71	2.92
	1.97	36	64	105
100	0.85	1.44	2.33	3.99
	3.94	52	88	142
150	1.10	1.83	2.94	5.06
	5.91	67	112	180
200	1.35	2.22	3.56	6.13
	7.87	82	136	217
250	1.60	2.62	4.17	7.20
	9.84	98	160	254
300	1.85	3.01	4.78	8.27
	11.81	113	184	292
350	2.10	3.40	5.40	9.34
	13.78	128	208	329
400	2.35	3.79	6.01	10.41
	15.74	144	232	367

Preferred Mounts for Surge Tanks.

See the 90.110/90.8 Series Catalog for mount details.

B11 90.11

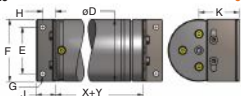


NOTE: B11 mount available with ST.30-ST.75 models only

B21 90.21



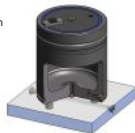
B29 90.29



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

SMS-i® Surge Tank Connection

DADCO surge tanks ordered with the M1 operating system are used in a SMS-i® and have a bottom port. These tanks are attached to the base plate with a sealing washer and standard mounting hardware.



Ordering Example:

ST.30. 150. TO. F

Size:

30, 50, 75, 100

Length (Y):

50, 100, 150, 200, 250, 300, 350, 400

Operating System:

F = Free Flow Fitting (for SMS®).

M1 = SMS-i® (Bottom port + sealing component).

Mount Option:

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

Safety Plates for SMS® & SMS-i®

DADCO supplies a safety plate with every SMS® and SMS-i® to ensure proper handling of the cylinders. For information on the different plates available or to order a replacement refer to bulletin B01130B.



Shut-Off Valve MV-3G

DADCO's Shut-off Valve (MV-3G) is used with SMS-i® allowing for cut-off of nitrogen gas from the control panel while enabling the SMS-i® to remain charged. For more information refer to bulletin B14136.



Pressure Monitors

DADCO offers a variety of pressure monitor options to alert press controllers to changes in system pressure. Some models, including the 90.421.2D, are capable of shutting the press down if it drops below the minimum operating pressure. The new electronic pressure monitors are available in several configurations with different cable, base and fitting options to best suit the application. For more information refer to catalog C09118E.



Quick Disconnect Charging Assembly

Use the DADCO Quick Disconnect Charging Assembly, 90.310.040, with the 90.310.143 or 90.310.111 Charging Nipple or the 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 90.310.044 Quick Disconnect Filling Assembly with self-venting capabilities releases residual pressure after charging self-contained or linked nitrogen gas spring systems for easy decoupling between the filling assembly and charging nipple or filler valve.

DADCO recommends using the 90.310.044 or the 90.310.041 High Pressure Charging Assembly to charge SCR Series and U.0400 nitrogen gas springs to maximum pressure. For more information refer to bulletin B16118.

90.310.040

Pressure Regulator
90.310.201



Hose Assembly
90.310.252
3 m / 10 ft

Quick Disconnect Filling
Assembly - 90.310.338

90.310.044 (Self-Venting)

Pressure Regulator
90.310.205



Hose Assembly
90.310.252
3 m / 10 ft

Quick Disconnect Filling
Assembly - 90.310.340*

*Not recommended with 90.416.A2B or 90.406.421

Compact Nitrogen Gas Booster DGB.100

DADCO's Compact Nitrogen Gas Booster System, DGB.100, is a lightweight, cost-effective way to extend the life of your nitrogen supply tanks. Using the DGB.100, tanks with low pressure can be boosted to a higher pressure suitable for gas spring charging. For more information refer to bulletin B13105.



Nitrogen Gas Booster System DGB.150

DADCO's Nitrogen Gas Booster System, DGB-150, is an all-in-one solution to the problems of low pressure supply tanks and lost nitrogen gas during discharge. For more information on the booster, refer to bulletin B07101.



Notes

DADCO provides repair kits for DADCO Nitrogen Gas Springs. To choose the appropriate repair kit examine the laser mark on the cylinder for the repair kit number. Instructions specific to each product are included in each kit and training classes are also available. Contact DADCO for more information.

Ultra Force® / Ultra Force Extended® Series Nitrogen Gas Spring Repair Kits

Model	U.0400	U.0600	U.0800	-	U.1000	-	U.1200
	UH.0400	UH.0600	UH.0800	-	UH.1000	-	-
	-	-	-	-	UT.1000	-	-
	-	-	-	UX.0800	UX.1000	UX.1000V	-
Kit Number	90.108.00400	90.108.00600	90.108.00800	90.108V.00800	90.108.01000	90.108V.01000	90.108.01200
Model	U.1600	U.2600	-	U.4600	U.6600	U.9600	U.20000
	UH.1600	UH.2600	-	UH.4600	UH.6600	-	-
	-	UT.2600	-	UT.4600	UT.6600	UT.9600	-
	UX.1600	UX.2600	UX.2600V	UX.4600	UX.6600	UX.9600	UX.20000
Kit Number	90.108.01600	90.108.02600	90.108V.02600	90.108.04600	90.108.06600	90.108.09600	90.108.20000

Mini Series Nitrogen Gas Spring Repair Kits

Model	LJ.300	LJ.500	LJ.750
Kit Number	90.107.00300	90.107.00500	90.107.00750
Model	L.300	L.500	L.750
Kit Number	90.103.00300	90.103.00500	90.103.00750
Model	LW.300	LW.500	LW.750
Kit Number*	90.103W.00300	90.103W.00500	90.103W.00750

*W refers to repair kits that contain a Duralene® Rod Wiper.

Model	FCL.503	FCL.755
Kit Number	FCL.RK.503	FCL.RK.755

Compact and Large Series Nitrogen Gas Spring Repair Kits

Model	90.8.00750	90.8.01500	90.8.03000	90.8.05000	90.8.07500
	-	90.5B2.01500	90.5B2.03000	-	-
Kit Number	90.208.00750	90.208.01500	90.208.03000	90.208.05000	90.208.07500
Model	90.10.00170	90.10.00500	90.10.00750	90.10.01500	90.10.03000
Kit Number	90.201.00170	90.201A.00500	90.201.00750	90.201.01500	90.201.03000
Model	90.10.05000	90.10.07500	90.10.10000		
Kit Number	90.201.05000	90.201.07500	90.201.10000		
Model	90.10DS.03000	90.10DS.05000	90.10DS.07500		
Kit Number	90.201DS.03000	90.201DS.05000	90.201DS.07500		
Model	90.10RX.03000	90.10RX.05000	90.10RX.07500	90.10RX.10000	
Kit Number	90.201RX.03000	90.201RX.05000	90.201RX.07500	90.201RX.10000	

Super Compact Nitrogen Gas Spring Repair Kits

Model	SC.00740	SC.01000	SC.03500	SC.04700	SC.07500
Kit Number*	98.801.00740	98.801.01000	98.801.03500	98.801.04700	98.801.07500
		98.801D.01000	98.801D.03500	98.801D.04700	98.801D.07500
Model	SC.11800	SC.18300			
Kit Number*	98.801.11800	90.801.18300			
	98.801D.11800	98.801D.18300			

*Contact DADCO for proper repair kit.

Nitrogen Gas Spring Tools

Tools Guide

Use this Tools Guide to help determine which tools to use in the charging or repair of DADCO nitrogen gas springs. DADCO also offers our most popular tools in boxed sets for our three classifications of nitrogen gas springs: Micro, Mini and Large Series. For more information request bulletin B05143B.

Micro (C) Series

Gas Spring Model	Port Size	Charging			
		Charging Nipple	Charging Assembly	Analog Load Cell	Digital Load Cell
C.045	M6	90.310.143	90.310.041/ 90.310.044	90.300.00045	90.305.LC.05A
C.070				90.300.00070	
C.090				90.300.00090	
C.180				90.300.00180	
C.250				90.300.00250	

Bulletin Key:

U.R. = Manufactured Upon Request;

N/A = Not Applicable

LJ / L Series

Gas Spring Model	Port Size	Charging				Standard Repair			
		Charging Nipple	Charging Assembly	Analog Load Cell	Digital Load Cell	Removal Sleeve	C-Ring Removal Tool	T-Handle	C-Ring Installation Tool
LJ.300	M6	90.310.143	90.310.040/ 90.310.041/ 90.310.044	90.300.0300	90.305.LC.05A	90.340.00300	90.355	90.320.1	90.351.00300
LJ.500				90.300.0500		90.340.00500		90.320.2	90.351.00500
LJ.750				90.300.0750		90.340.00750		90.320.2	90.350.00750
L.300				90.340.00300		90.340.00300		90.320.1	90.351.00300
L.500				90.300.0500		90.340.00500		90.320.2	90.351.00500
L.750				90.300.0750		90.340.00750		90.320.2	90.350.00750

Ultra Force® Series / UH Series

Gas Spring Model	Port Size	Charging				Standard Repair					
		Charging Nipple	Charging Assembly	Analog Load Cell	Digital Load Cell	Removal Sleeve	C-Ring Removal Tool	T-Handle	Assembly Cap	Cartridge Starter Kit	C-Ring Installation Tool
U.0175	M6	90.310.143	90.310.041/ 90.310.044	90.300.0175	90.305.LC.05A	N/A	N/A	N/A	N/A	N/A	N/A
U.0325	M6	90.310.143		90.300.0325		N/A	N/A	N/A	N/A	N/A	N/A
U.0400 / UH.0400	M6 / G 1/8	90.310.143/ 90.310.111		90.300.0300		90.340.00400	90.355	90.320.1	90.330.0400	U.R.	90.351.00400
U.0600 / UH.0600	M6 / G 1/8	90.310.143/ 90.310.111		90.300.0500		90.340.00600	90.355	90.320.2	90.330.0600	U.R.	90.351.00300
U.0800 / UH.0800	M6 / G 1/8	90.310.143/ 90.310.111		90.300.0750		90.340.00750	90.355	90.320.2	90.330.0800	U.R.	90.351.00500
U.1000 / UH.1000	M6 / G 1/8	90.310.143/ 90.310.111	90.310.040/ 90.310.041/ 90.310.044	90.300.1000	90.305.LC.50A	90.340.01200	90.356	90.320.2	90.330.1000	U.R.	90.352
U.1200	M6	90.310.143		90.300.1200		90.340.01200	90.355/ 90.356	90.320.2	90.330.1200	U.R.	90.350.00750
U.1600 / UH.1600	M6 / G 1/8	90.310.143/ 90.310.111		90.300.01500		90.340.01600	90.355/ 90.356	90.320.2	90.330.1600	U.R.	90.352/ 90.351.01600
U.2600 / UH.2600	M6 / G 1/8	90.310.143/ 90.310.111		90.300.2600		90.340.01500	90.355/ 90.356	90.320.2	90.330.2600	U.R.	90.352
U.4600 / UH.4600	G 1/8	90.310.111		90.300.4600		90.340.03000	90.355/ 90.356	90.320.2	90.330.4600	U.R.	90.352
U.6600 / UH.6600	G 1/8	90.310.111	90.305.LC.50A	90.300.6600	90.305.LC.50A	90.340.05000	90.356	90.320.2	90.330.6600	U.R.	90.352
U.9600	G 1/8	90.310.111		90.300.9600		90.340.07500	90.356	90.320.2	90.330.9600	90.335.9600	90.352
U.20000	G 1/8	90.310.111		90.300.20000		90.340.10000	90.356	90.320.10	90.330.20000	90.335.20000	90.352.10000

Ultra Force Extended® Series

Gas Spring Model	Port Size	Charging				Standard Repair					
		Charging Nipple	Charging Assembly	Analog Load Cell	Digital Load Cell	Removal Sleeve	C-Ring Removal Tool	T-Handle	Assembly Cap	Cartridge Starter Kit	C-Ring Installation Tool
UX.0800	G 1/8	90.310.111	90.310.040/ 90.310.041/ 90.310.044	90.300.0750	90.305.LC.05A	90.340.00750	90.355	90.320.2	90.330.0800	U.R.	90.351.00500
UX.1000				90.300.1000		90.340.01200	90.356	90.320.2	90.330.01000	U.R.	90.350.00750
UX.1600				90.300.01500		90.340.01600	90.355/ 90.356	90.320.2	90.330.01600	U.R.	90.352/ 90.351.01600
UX.2600				90.300.2600	90.305.LC.50A	90.340.01500	90.355/ 90.356	90.320.2	90.330.2600	U.R.	90.352
UX.4600				90.300.4600		90.340.03000	90.355/ 90.356	90.320.2	90.330.4600	U.R.	90.352
UX.6600				90.300.6600		90.340.05000	90.356	90.320.2	90.330.6600	U.R.	90.352
UX.9600				90.300.9600		90.340.07500	90.356	90.320.2	90.330.9600	90.335.9600	90.352
UX.20000				90.300.20000		90.340.10000	90.356	90.320.10	90.330.20000	90.335.20000	90.352.10000

90.10 / 90.8 Series

Gas Spring Model	Port Size	Charging				Standard Repair					
		Charging Nipple	Charging Assembly	Analog Load Cell	Digital Load Cell	Removal Sleeve	C-Ring Removal Tool	T-Handle	Assembly Cap	Cartridge Starter Kit	C-Ring Installation Tool
90.10.00170	M6	90.310.143	90.310.040/ 90.310.041/ 90.310.044	90.300.00250	90.305.LC.05A	90.340.00400	90.355	90.320.1	N/A	N/A	90.351.00400
90.10.00500	G 1/8	90.310.111		90.300.0500		90.340.00500	90.355	90.320.2	90.330.00500	U.R.	90.351.00500
90.10.00750				90.300.0750		90.340.00750	90.355/ 90.356	90.320.2	90.330.00750	U.R.	90.350.00750
90.10.01500				90.300.01500	90.340.01500	90.355/ 90.356	90.320.2	90.330.01500	U.R.	90.352	
90.10.03000				90.300.03000	90.340.03000	90.355/ 90.356	90.320.2	90.330.03000	U.R.	90.352	
90.10.05000				90.300.05000	90.340.05000	90.356	90.320.2	90.330.05000	U.R.	90.352	
90.10.07500				90.300.07500	90.340.07500	90.356	90.320.2	90.330.07500	90.335.07500	90.352	
90.10.10000				90.300.10000	90.310.10000	90.356	90.320.10	90.330.10000	90.335.10000	90.352.10000	
90.8.00750				90.300.00750	90.340.00750	90.355/ 90.356	90.320.2	90.330.00750	U.R.	90.350.00750	
90.8.01500				90.300.01500	90.340.01500	90.355/ 90.356	90.320.2	90.330.01500	U.R.	90.352	
90.8.03000				90.300.03000	90.340.03000	90.355/ 90.356	90.320.2	90.330.03000	U.R.	90.352	
90.8.05000				90.300.05000	90.340.05000	90.356	90.320.2	90.330.05000	U.R.	90.352	
90.8.07500				90.300.07500	90.340.07500	90.356	90.320.2	90.330.07500	90.335.07500	90.352	

Common Tools

DADCO offers a set of common tools that may be used across all series of DADCO nitrogen gas springs. *Note: Digital Meter 90.305.BGA must be used with either Digital Load Cell 90.305.LC.05A or 90.305.LC.50A for a proper reading.*



Valve Bleed Tool
90.360.4



Port Servicing Tool
90.320.8



Pressure Analyzer
90.315.5



Digital Meter
90.305.BGA

SC Series

Gas Spring Model	Port Size	Charging				Standard Repair				
		Charging Nipple	Charging Assembly	Analog Load Cell	Digital Load Cell	C-Ring Removal Tool	T-Handle	Rear Head Tool*	Seal Installation Tool	C-Ring Installation Tool
SC.00420	M6	90.310.143		98.300.00420	90.305.LC.05A	N/A	N/A	N/A	N/A	N/A
SC.00740				90.300.0750		90.355	90.320.1	90.320.1	98.357D.00740	90.351.00400
SC.01000				98.300.01000		90.355	90.320.1	90.320.1	98.357D.01000	90.351.00300
SC.01800	G 1/8	90.310.111	90.310.040/ 90.310.041/ 90.310.044	98.300.01800	90.305.LC.50A	90.355/ 90.356	90.320.2	98.328	U.R.	90.352
SC.03500				98.300.03500		90.355/ 90.356	90.320.2	98.328	U.R.	90.352
SC.04700				98.300.04700		90.355/ 90.356	90.320.2	98.328	U.R.	90.352
SC.07500				98.300.07500		90.355/ 90.356	90.320.2	98.328	U.R.	90.352
SC.11800				98.300.11800		90.355	90.320.2	98.328	U.R.	90.352
SC.18300				98.300.18300		90.356	90.320.2	98.328	U.R.	90.352

*Note: DADCO's Rear Head Tool (98.328) is similar in look to the T-Handles pictured below and is only used in conjunction with SC Series nitrogen gas springs.

SCR Series

Gas Spring Model	Port Size	Charging			
		Charging Nipple	Charging Assembly	Analog Load Cell	Digital Load Cell
SCR.0500	M6	90.310.143	90.310.041/ 90.310.044	90.301.0500	90.305.LC05A
SCR.0800				90.300.0750	90.305.LC05A
SCR.1900				98.300.1900	90.305.LC05A
SCR.3200				98.300.2600	90.305.LC50A

Specific Repair Tools

DADCO offers specific tools for individual models or series. Pictured below are examples of each tool. *Note: Tools may vary in size, the tools shown below are not to scale. Charging Assembly, 90.310.041 and 90.310.044, are high pressure models used for charging pressures above 2200 psi (152 bar). DADCO offers a variety of Test Stands to suite your needs; please see the individual bulletins for detailed information on which Test Stand to use with your gas spring.*

 90.340____ Removal Sleeve	 90.356 90.355 C-Ring Removal Tool	 98.357D____ Seal Installation Tool	 90.330____ Assembly Cap	 90.335____ Cartridge Starter Kit	 90.351____ C-Ring Installation Tool	 90.352 / 90.352.10000 C-Ring Installation Tool
 90.310.143 90.310.111 Charging Nipple	 90.320____ T-Handle	 90.310.040 Charging Assembly	 90.310.041 high pressure Charging Assembly	 90.310.044 high pressure Charging Assembly	 90.305.LC.05A Digital Load Cell	 90.305.LC50A Digital Load Cell
 90.300____ / 98.300____ Analog Load Cell	 MTS.125 Test Stand	 90.305.2 Test Stand	 90.305.20 Integrated Test Stand	 90.305.3 Test Stand		

Adjustable Pressure Analyzer – 90.315.5

Features

- DADCO's Adjustable Pressure Analyzer includes three interchangeable bits designed to work with the greatest range of DADCO Nitrogen Gas Springs.
- Quick and easy tool for charging, discharging and gauging the pressure in DADCO's Mini, U (with the exception of the U.0175, U.0325 and U.0400) and Large Series Nitrogen Gas Springs.
- DADCO's interchangeable bits are engineered to work specifically with DADCO's ports, allowing the valves to be opened without damage.
- When not in use, thread all bits onto the depressor end for convenient storage (Fig. 2).



Fig. 2

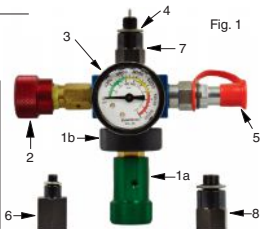


Fig. 1

Components		
1. Valve Depressor (90.315.505) <i>Includes Valve Depressor Knob [1a] & Port Engagement Knob [1b]</i>	3. High Pressure Gauge (DPG-3R)	Interchangeable Bits: 6. M6 Thread (90.315.501) 7. G 1/8 BSPP (90.315.502) 8. G 1/8 BSPP (90.315.504)
2. Bleed Valve (BV-4G)	5. Male Quick Disconnect (90.310.110)	

Operation

Please follow the guidelines below for proper operation:

Charging:

Note: Do not use 90.315.5 to charge Micro Series Nitrogen Gas Springs.

- Be sure the valve depressor knob [1a] is fully retracted (CCW) and the bleed valve [2] is closed (CW).
- Determine the appropriate bit to use. Mini (L/LJ) Series, U.0600 - U.2600 and 90.10.00170 Gas Springs use the M6 Thread (90.315.501); Large (U.4600 - U.20000, UH, UT, 90.5B2, 90.8, 90.10RX and 90.10.00500 - 90.010.10000) Series Gas Springs manufactured after week 49 of 2004 (md4904) and SC Series Gas Springs manufactured after week 43 of 2004 (md4304) use the G1/8 BSPP (90.315.504); prior models use G 1/8 BSPP (90.315.502). Verify the manufacture date on the Large Series cylinders before use.
- Thread the appropriate interchangeable bit [6, 7 or 8] onto the 90.315.5 Adjustable Pressure Analyzer.
- Fasten the bit [6, 7 or 8] into the gas spring port by rotating the port engagement knob [1b] (CW) until it is tight against the face seal [4].
- Connect a quick disconnect charging assembly to the male quick disconnect [5].
- Open the nitrogen supply and verify the charging pressure on the regulator gauge [3] is correct.
- Tighten the valve depressor knob [1a] (CW) until you feel resistance, then back off a half turn (CCW). When the valve is open, there will be a sound indicating a pressure change in the cylinder.
- When the pressure in the cylinder reaches the desired charging pressure, close the nitrogen supply. Disconnect the charging assembly from the male quick disconnect [5].
- Retract the valve depressor knob (CCW) [1a].
- Bleed off the excess pressure in the 90.315.5 using the bleed valve [2].
- Unfasten the 90.315.5 from the gas spring using the port engagement knob [1b].

Gauging:

Note: The 90.315.5 is not recommended for gauging pressure in short stroke nitrogen gas springs (<25 mm stroke) or in Micro Series Nitrogen Gas Springs because it will reduce the pressure in the cylinder.

- Repeat steps A – D above.
- Extend the valve depressor by rotating (CW) the valve depressor knob [1] until the gauge [3] reads the pressure in the cylinder.
- Retract the valve depressor by rotating it (CCW). Bleed the sampling pressure by opening the bleed valve [2].

Discharging:

- Repeat steps A – D above.
- Extend the valve depressor knob [1a] by rotating (CW) until the gauge [3] reads the pressure. Slowly open the bleed valve [2] to discharge pressure from spring until desired pressure is shown on the gauge [3].

DADCO offers Charging Assemblies to fill self-contained nitrogen gas springs or linked systems. Three varieties of Standard Assemblies are available along with Custom Assemblies for all tank connections and pressure ranges.

Standard Charging Assemblies

The Standard Charging Assemblies are offered in three varieties and are distinguished by the Pressure Regulators included. Each assembly also includes a 90.250 Hose Assembly with 3 meters of hose and a 90.310.338 Standard Quick Disconnect Filling Assembly.



Standard Charging Assembly

Order Code: 90.310.040

90.310.040 Charging Assembly fills to 3000 psi (200 bar) and connects to standard domestic nitrogen gas tanks.

90.310.040 Charging Assembly Includes:

90.310.201 Standard Pressure Regulator

90.310.252 Hose Assembly (3 m / 10 ft)

90.310.338 Standard Quick Disconnect Filling Assembly



European Charging Assembly

Order Code: 90.310.045

90.310.045 Charging Assembly fills to 3000 psi (200 bar) and attaches to standard European thread nitrogen gas tanks.

90.310.045 Charging Assembly Includes:

90.310.203 European Pressure Regulator

90.310.252 Hose Assembly (3 m / 10 ft)

90.310.338 Standard Quick Disconnect Filling Assembly



High Pressure Charging Assembly

Order Code: 90.310.044

90.310.044 High Pressure Quick Disconnect Charging Assembly fills to 4500 psi (310 bar) and connects to standard domestic high pressure nitrogen gas tanks.

90.310.044 Charging Assembly Includes:

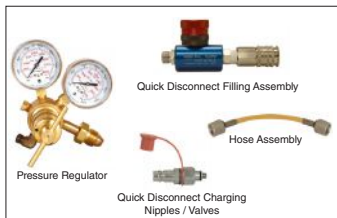
90.310.205 High Pressure Regulator

90.310.252 Hose Assembly (3 m / 10 ft)

90.310.340 Quick Disconnect Filling Assembly

Build your Own Custom Charging Assembly:

DADCO offers custom Quick Disconnect Filling Hardware by selecting the Pressure Regulator, Hose Assembly, Quick Disconnect Filling Assembly and Charging Nipples to suit customer needs. To create a custom assembly follow the steps outlined below to properly order your individual components, will then be shipped to you for easy assembly at your facility.



Fill-in each below to complete your order:

Steps:	Page:	Order Code:
1. Choose a Pressure Regulator	2	
2. Choose a Hose Option	3	
3. Choose a Quick Disconnect Filling Assembly	3	
4. Choose Quick Disconnect Charging Nipples	4	

Step One: Choose a Pressure Regulator

Pressure Regulators display the tank pressure and control the charging pressure. The three regulators are easily distinguished from each other by their connection types for attachment to various nitrogen tanks. Verify the maximum charging pressure of the nitrogen gas spring or linked system before pressurizing.

9/16-18 Seal-Lok CGA-580 (960-14-RH-EXT)

Standard Pressure Regulator
Order Code: 90.310.201
 Pressure Range: Up to 200 bar (3000 psi)

9/16-18 Seal-Lok DIN-477 #10 (24.32 mm x 1/14"-RH-EXT)

European Pressure Regulator
Order Code: 90.310.203
 Pressure Range: Up to 200 bar (3000 psi)

9/16-18 Seal-Lok CGA-680 (1040-14-RH-EXT)

High Pressure Regulator
Order Code: 90.310.205
 Pressure Range: Up to 310 bar (4500 psi)

Nitrogen Gas Spring Accessories

Charging Assemblies

Step Two: Choose a Hose Option

DADCO offers four different Hose Assembly options. Each customized assembly features O-Ring Face Seal (ORFS) hose adapters at each end of your specified hose length.



MINIFLEX® 90.700 (Y-700) Hose Assembly

Order Code: 90.700, S943, S943, _____, |
Length

OD	ID	Working Pressure	Burst Pressure	Bend Radius	Min. Hose Length
5 .20	2 .08	500 bar 7250 psi	1890 bar 27405 psi	6.4 .25	75 mm



DADCOFLEX® 90.500 (Y-500) Hose Assembly

Order Code: 90.500, S843, S843, _____, |
Length

OD	ID	Working Pressure	Burst Pressure	Bend Radius	Min. Hose Length
11 .43	5 .19	345 bar 5000 psi	1380 bar 20000 psi	38 1.50	80 mm



DADCOFLEX® 90.400 (Y-400) Hose Assembly

Order Code: 90.400, S743, S743, _____, |
Length

OD	ID	Working Pressure	Burst Pressure	Bend Radius	Min. Hose Length
13 .51	6.5 .25	345 bar 5000 psi	1380 bar 20000 psi	50 1.97	85 mm



DADCOFLEX® 90.250 (Y-250) Hose Assembly

Order Code: 90.250, S743, S743, _____, |
Length

OD	ID	Working Pressure	Burst Pressure	Bend Radius	Min. Hose Length
12 .47	6.4 .25	190 bar 2750 psi	758 bar 11000 psi	38 1.50	85 mm

Step Three: Choose a Quick Disconnect Filling Assembly

DADCO offers three different Quick Disconnect Filling Assemblies to charge self-contained and linked nitrogen gas springs.



Standard Quick Disconnect Filling Assembly

Order Code: 90.310.338

DADCO's 90.310.338 Quick Disconnect Filling Assembly is easily connected to the appropriate Charging Nipple or Filler Valve to charge self-contained gas springs up to 180 bar (2600 psi). The Quick Disconnect Filling Assembly can also be used with a DADCO control panel for charging linked systems.



Quick Disconnect Filling Assembly with Gauge

Order Code: 90.310.339

DADCO's 90.310.339 Quick Disconnect Filling Assembly with Gauge easily connects to the appropriate Charging Nipple or Filler Valve to charge self-contained gas springs and linked systems up to 180 bar (2600 psi). A DPG-3R gauge is included for displaying pressure during charging.



Quick Disconnect Filling Assembly (Self-Venting Capable)

Order Code: 90.310.340

DADCO's 90.310.340 Quick Disconnect Filling Assembly (Self-Venting Capable) easily connects to the appropriate Charging Nipple or Filler Valve to charge self-contained and linked systems up to 180 bar (2600 psi). DADCO recommends using the self-venting option when charging high pressure, self-contained nitrogen gas springs and to fill linked systems.

Charging Assemblies

Step Four: Choose one or more Quick Disconnect Charging Nipples / Filler Valves

Choose the appropriate Quick Disconnect Charging Nipple and/or Quick Disconnect Filler Valve to charge DADCO nitrogen gas springs and linked systems.

Quick Disconnect Charging Nipples



G 1/8
BSPP

G 1/8 Quick Disconnect Charging Nipple

Order Code: 90.310.111

- No internal valve
- G 1/8 Thread
- For use with self-contained nitrogen gas springs

Used with DADCO's G 1/8 Port Gas Springs:					
U.4600 - U.20000	UX	90.8	90.10	90.5B2	SC.01800 - SC.18300



M6

M6 Quick Disconnect Charging Nipple

Order Code: 90.310.143

- No internal valve
- M6 Thread
- For use with self-contained nitrogen gas springs

Used with DADCO's M6 Port Gas Springs:					
Micro (C)	U.0175 - U.2600	LJ/L	SCR	90.5B2	SC.00420 - SC.01000

Quick Disconnect Filler Valves



G 1/8
BSPP

G 1/8 Quick Disconnect Filler Valve

Order Code: 90.310.110

- Internal valve
- G 1/8 Thread
- For use with open-flow nitrogen gas springs

Used with DADCO's G 1/8 Port Gas Springs:					
U.4600 - U.20000	UX	90.8	90.10	90.5B2	SC.01800 - SC.18300

Used with DADCO's Multi-Panel:	
90.401.X (block etched with "MPX" where X is the number of ports)	



7/16-20

7/16-20 Quick Disconnect Filler Valve

Order Code: FV-4

- Internal valve
- 7/16-20 Thread
- For use with linked nitrogen gas springs

Used with DADCO's Common Control Panel:	
Common Control Panel (90.406.3)	Mini Control Panel (90.40711)



1/8 NPT

1/8 NPT Quick Disconnect Filler Valve

Order Code: FE-3

- Internal valve
- 1/8 NPT
- For use with linked nitrogen gas springs

Used with DADCO's Multi-Panel:	
90.401.X (block etched with "MPX" where X is the number of ports)	



M6

M6 Quick Disconnect Filler Valve

Order Code: CN-5

- Internal valve
- M6 Thread
- For use with open-flow nitrogen gas springs

Used with DADCO's M6 Port Gas Springs:					
Micro (C)	U.0175 - U.2600	LJ/L	SCR	90.5B2	SC.00420 - SC.01000

Nitrogen Gas Spring Technical Data

Nitrogen Gas Spring Force Charts (Imperial)

Micro – C Series



		Charging Pressure (psi)											
		2560	2175	1920	1750	1500	1280	1000	750	640	500	260	130
Model	A(in ²)	Yellow		Red			Blue			Green		Purple	Orange
C.045	0.044	112	95	84	77	66	56	44	33	28	22	–	–
C.070	0.060	154	131	115	105	90	77	60	45	38	30	–	–
C.090	0.078	200	169	150	136	117	100	78	58	50	39	20	10
C.180	0.175	450	381	337	307	263	224	175	131	112	88	–	–
C.250	0.274	701	596	526	479	411	351	274	205	175	137	–	–

Force (lb.)

Force (lb.)

To calculate forces at pressures other than those listed use the following formula: $F(lb.) = A(in^2) \cdot P(psi)$

Mini – LJ / L Series



		Charging Pressure (psi)										
		2175	2000	1750	1500	1250	1000	750	500	250		
Series	Model	A(in ²)										
LJ	L	300	0.312	678	623	545	467	390	312	234	156	78
LJ	L	500	0.487	1059	974	852	730	609	487	365	243	122
LJ	L	750	0.761	1655	1522	1331	1141	951	761	571	380	190

Force (lb.)

To calculate forces at pressures other than those listed use the following formula: $F(lb.) = A(in^2) \cdot P(psi)$

Ultra Force® and Ultra Force Extended® – U / UH / UX Series



					Charging Pressure (psi)										Force (lb.)		
Series			Model	A(in ²)	2600	2175	2000	1750	1500	1250	1000	750	500	250			
—	—	—	U	0175	0.147	383	320	295	258	221	184	147	110	74		37	
—	—	—	U	0325	0.274	715	596	548	479	411	342	274	205	137		68	
UH	—	—	U	0400	0.312	810	678	623	545	467	390	312	234	156		78	
UH	—	—	U	0600	0.487	—	1059	974	852	730	609	487	365	243		122	
UH	UX	UX	U	0800	0.761	—	1655	1522	1331	1141	951	761	571	380		190	
UH	UT	UX	U	1000	0.954	—	2076	1909	1670	1432	1193	954	716	477		239	
—	—	—	U	1200	1.096	—	2383	2191	1917	1643	1370	1096	822	548		274	
UH	—	UX	U	1600	1.578	—	3432	3155	2761	2367	1972	1578	1183	789		394	
UH	UT	UX	U	2600	2.465	—	5362	4930	4314	3698	3081	2465	1849	1233		616	
UH	UT	UX	U	4600	4.383	—	9532	8765	7669	6574	5478	4383	3287	2191		1096	
UH	UT	UX	U	6600	6.848	—	14894	13695	11983	10272	8560	6848	5136	3424		1712	
—	—	UT	UX	U	9600	9.861	—	21447	19721	17256	14791	12326	9861	7396		4930	2465
—	—	UX	U	20000	20.574	—	44747	41147	36004	30860	25717	20574	15430	10287		5143	

Force (lb.)

To calculate forces at pressures other than those listed use the following formula: $F(lb.) = A(in^2) \cdot P(psi)$

Large – 90.8 / 90.5B2 / 90.10 Series



					Charging Pressure (psi)								
		Model	A (in ²)		2175	2000	1750	1500	1250	1000	750	500	250
–	–	90.10 00170	0.175		381	351	307	263	219	175	131	88	44
–	–	90.10 00500	0.487		1059	974	852	730	609	487	365	243	122
90.8	90.5B2	90.10 00750	0.761		1655	1522	1331	1141	951	761	571	380	190
90.8	90.5B2	90.10 01500	1.578		3432	3155	2761	2367	1972	1578	1183	789	394
90.8	90.5B2	90.10 03000	3.043		6619	6087	5326	4565	3804	3043	2283	1522	761
90.8	–	90.10 05000	5.143		11187	10287	9001	7715	6429	5143	3858	2572	1286
90.8	–	90.10 07500	7.791		16946	15582	13635	11687	9739	7791	5843	3896	1948
–	–	90.10 10000	10.987		23896	21974	19227	16480	13733	10987	8240	5493	2747

Force (lb.)

To calculate forces at pressures other than those listed use the following formula: **F(lb.) = A(in²) • P(psi)**

Super Compact – SC and SCR Series



				Charging Pressure (psi)									
Series	Model	A (in ²)		2600	2175	2000	1750	1500	1250	1000	750	500	250
–	SC	00420	0.439	–	956	879	769	659	549	439	330	220	110
SCR	–	00500	0.394	1026	858	789	690	592	493	394	296	197	99
–	SC	00740	0.761	–	1655	1522	1331	1141	951	761	571	380	190
SCR	–	00800	0.761	1978	1655	1522	1331	1141	951	761	571	380	190
–	SC	01000	1.096	–	2383	2191	1917	1643	1370	1096	822	548	274
–	SC	01800	1.948	–	4236	3896	3409	2922	2435	1948	1461	974	487
SCR	–	01900	1.491	3877	3244	2983	2610	2237	1864	1491	1118	746	373
SCR	–	03200	2.465	6409	5362	4930	4314	3698	3081	2465	1849	1233	616
–	SC	03500	3.292	–	7160	6584	5761	4938	4115	3292	2469	1646	823
–	SC	04700	4.832	–	10509	9663	8456	7248	6040	4832	3624	2416	1208
–	SC	07500	7.791	–	16946	15582	13635	11687	9739	7791	5843	3896	1948
–	SC	11800	12.174	–	26478	24347	21304	18261	15217	12174	9130	6087	3043
–	SC	18300	19.021	–	41372	38043	33287	28532	23777	19021	14266	9511	4755

Force (lb.)

To calculate forces at pressures other than those listed use the following formula: **F(lb.) = A(in²) • P(psi)**

Miscellaneous Conversions

A = Area

F = Force

P = Pressure

$$\mathbf{F\ (kgf) = F(lb.) \cdot .4536}$$

$$\mathbf{F\ (daN) = F(lb.) \cdot .4448}$$

$$\mathbf{P\ (bar) = P(kg/cc^2) \cdot .9807}$$

$$\mathbf{P\ (kg/cc^2) = P(ksi) \cdot .0703}$$

$$\mathbf{F\ (kN) = F(lb.) \cdot .004448}$$

$$\mathbf{F\ (N) = F(lb.) \cdot 4.448}$$

$$\mathbf{P\ (bar) = P(ksi) \cdot .06895}$$

Micro – C Series



		Charging Pressure (bar)											
		177	150	132	125	100	88	80	75	50	44	18	9
Model	A(cm ²)	Yellow		Red			Blue				Green	Purple	Orange
C.045	0.28	50	42	37	35	28	25	23	21	14	12	–	–
C.070	0.38	68	57	51	48	38	34	31	29	19	17	–	–
C.090	0.50	89	75	66	63	50	44	40	38	25	22	9	5
C.180	1.13	200	170	149	141	113	100	90	85	57	50	–	–
C.250	1.77	313	265	233	221	177	156	141	133	88	78	–	–

Force (daN)

To calculate forces at pressures other than those listed use the following formula: **F(daN) = A(cm²) • P(bar)**

Mini – LJ / L Series



		Charging Pressure (bar)											
		150	125	110	100	80	75	50	30	25	20		
Series	Model	A(cm ²)											
LJ	L	300	2.01	302	251	221	201	161	151	101	60	50	40
LJ	L	500	3.14	471	393	346	314	251	236	157	94	79	63
LJ	L	750	4.91	736	614	540	491	393	368	245	147	123	98

Force (daN)

To calculate forces at pressures other than those listed use the following formula: **F(daN) = A(cm²) • P(bar)**

Ultra Force® and Ultra Force Extended® – U / UH / UX / UT Series



		Charging Pressure (bar)											
		180	150	125	110	100	80	75	50	25	20		
Series	Model	A(cm ²)											
–	–	U	0175	0.95	171	143	119	105	95	76	71	48	19
–	–	U	0325	1.77	320	265	221	194	177	141	133	88	35
UH	–	U	0400	2.01	362	302	251	221	201	161	151	101	40
UH	–	U	0600	3.14	–	471	393	346	314	251	236	157	63
UH	UX	UX	U	0800	4.91	–	736	614	540	491	393	368	98
UH	UT	UX	U	1000	6.16	–	9.24	7.70	6.77	6.16	4.93	4.62	1.23
–	–	U	1200	7.07	–	10.60	8.84	7.78	7.07	5.65	5.30	3.53	1.41
UH	–	UX	U	1600	10.18	–	15.27	12.72	11.20	10.18	8.14	7.63	2.04
UH	UT	UX	U	2600	15.90	–	23.86	19.88	17.49	15.90	12.72	11.93	3.18
UH	UT	UX	U	4600	28.27	–	42.41	35.34	31.10	28.27	22.62	21.21	5.65
UH	UT	UX	U	6600	44.18	–	66.27	55.22	48.60	44.18	35.34	33.13	8.84
–	UT	UX	U	9600	63.62	–	95.43	79.52	69.98	63.62	50.89	47.71	12.72
–	–	UX	U	20000	132.73	–	199.10	165.92	146.01	132.73	106.19	99.55	26.55

Force (daN)

Force (kN)

To calculate forces at pressures other than those listed use the following formula: **F(daN)=A(cm²)•P(bar)** **F(kN)= A(cm²)•P(bar)•.01**

Large – 90.8 / 90.5B / 90.5B2 / 90.10 Series

Charging Pressure (bar)

				Loading (kN) (kN)									
		Model	A (cm ²)	150	125	110	100	80	75	50	25	20	
		90.10	00170	1.13	1.70	1.41	1.24	1.13	0.90	0.85	0.57	0.28	0.23
—	—	90.10	00500	3.14	4.71	3.93	3.46	3.14	2.51	2.36	1.57	0.79	0.63
90.8	90.5B2	90.10	00750	4.91	7.36	6.14	5.40	4.91	3.93	3.68	2.45	1.23	0.98
90.8	90.5B2	90.10	01500	10.18	15.27	12.72	11.20	10.18	8.14	7.63	5.09	2.54	2.04
90.8	90.5B2	90.10	03000	19.63	29.45	24.54	21.60	19.63	15.71	14.73	9.82	4.91	3.93
90.8	90.5B	90.10	05000	33.18	49.77	41.48	36.50	33.18	26.55	24.89	16.59	8.30	6.64
90.8	90.5B	90.10	07500	50.27	75.40	62.83	55.29	50.27	40.21	37.70	25.13	12.57	10.05
—	—	90.10	10000	70.88	106.32	88.60	77.97	70.88	56.71	53.16	35.44	17.72	14.18

Force (kN)

Force (kN)

To calculate forces at pressures other than those listed use the following formula: **F(daN)** = A (cm²) • P (bar) **F(kN)** = A (cm²) • P (bar) • .01

Super Compact – SC and SCR Series

Charging Pressure (bar)

Series		Model	A(cm²)	180	150	125	110	100	80	75	50	25	20
–	SC	00420	2.84	–	425	354	312	284	227	213	142	71	57
SCR	–	00500	2.54	458	382	318	280	254	204	191	127	64	51
–	SC	00740	4.91	–	736	614	540	491	393	368	245	123	98
SCR	–	00800	4.91	884	736	614	540	491	393	368	245	123	98
–	SC	01000	7.07	–	10.60	8.84	7.78	7.07	5.65	5.30	3.53	1.77	1.41
–	SC	01800	12.57	–	18.85	15.71	13.82	12.57	10.05	9.42	6.28	3.14	2.51
SCR	–	01900	9.62	17.32	14.43	12.03	10.58	9.62	7.70	7.22	4.81	2.41	1.92
SCR	–	03200	15.90	28.63	23.86	19.88	17.49	15.90	12.72	11.93	7.95	3.98	3.18
–	SC	03500	21.24	–	31.86	26.55	23.36	21.24	16.99	15.93	10.62	5.31	4.25
–	SC	04700	31.17	–	46.76	38.97	34.29	31.17	24.94	23.38	15.59	7.79	6.23
–	SC	07500	50.27	–	75.40	62.83	55.29	50.27	40.21	37.70	25.13	12.57	10.05
–	SC	11800	78.54	–	117.81	98.17	86.39	78.54	62.83	58.90	39.27	19.63	15.71
–	SC	18300	122.72	–	184.08	153.40	134.99	122.72	98.17	92.04	61.36	30.68	24.54

Force (dN)

Force (kN)

Force (daN)

Force (kN)

To calculate forces at pressures other than those listed use the following formula: **F(daN)** = A (cm²) • P (bar) **F(kN)** = A (cm²) • P (bar) • .01

Miscellaneous Conversions

A = Area
F = Force
P = Pressure

$$F \text{ (lb)} = F \text{ (N)} \cdot 2.248$$

$$F \text{ (lbs)} = F \text{ (daN)} \cdot 2.248$$

$$P \text{ (kg/cc}^2\text{)} = P \text{ (bar)} \cdot 1.0197$$

$$F \text{ (lb)} = F \text{ (kN)} \cdot 224.8$$

$$F \text{ (lb)} = F \text{ (kgf)} \cdot 2.2046$$

$$P \text{ (psi)} = P \text{ (bar)} \cdot 14.50$$

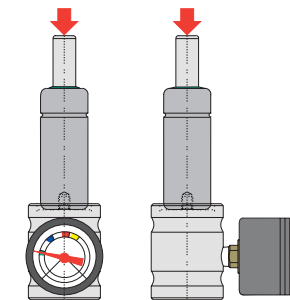
Micro and Ultra Force® (U.0175/U.0325) Load Cells

With a DADCO Micro Load Cell or small **Ultra Force®** Load Cell, you can check the contact force of DADCO's C.045/ SL.16/ E.16, C.070, C.090, C.180/ E.24, C.250/90.10.00170, U.0175, U.0325, and 90.10.00170 Nitrogen Gas Springs and quickly determine if the gas springs are charged to the desired force.



Operating Instructions

1. Select the appropriate DADCO Micro Load Cell or **Ultra Force®** Load Cell. Using the improper load cell will cause damage to the load cell.
2. Place the Micro Gas Spring or **Ultra Force®** Gas Spring on top of the appropriate load cell (Fig. 1).
3. Place both the load cell and gas spring beneath a Micro Test Stand-125 (MTS-125), an Arbor press or other press.
4. **Apply the load to the gas spring, depressing the gas spring rod only 2 mm (1/16")** (longer stroking may damage the load cell) and read the gauge on the front of the load cell. The gauge reflects the contact force of the spring. Use the color-coding to identify the force requirements for Micro Gas Spring models (the reading should not exceed the end of the yellow region).



Front and side view of a green **Micro 180°** Micro Gas Spring in testing position on top of the C.180 load cell.

Fig. 1

Gas Spring Model	DADCO Load Cell
C.045 SL.16 E.16	90.300.00045
C.070	90.300.00070
C.090	90.300.00090
C.180 E.24	90.300.00180
C.250 90.10.00170	90.300.00250
U.0175	90.300.0175
U.0325	90.300.0325

Standard Load Cell

Nitrogen Gas Spring Accessories

A DADCO Standard Load Cell may be used to check the internal pressure of a DADCO Nitrogen Gas Spring and quickly determine if the gas spring is charged to the desired pressure.

Operating Instructions

1. Position the DADCO Standard Load Cell with its counterbored base on top of the gas spring.
2. Place both the load cell and gas spring beneath a DADCO Test Stand. Use the Mini Test Stand, 90.305.2, for up to 2 tons (178 kN) of force and the Standard Test Stand, 90.305.3, for up to 12 tons (107 kN) of force. An Arbor press or another press may be used.
3. **Apply the load to the gas spring, depressing the gas spring rod only 2 mm** (additional travel may damage the load cell) and read the gauge on the front of the load cell. The gauge reflects the precise pressure inside the spring. Reading should not exceed 2175 psi (150 bar) for most gas springs, and should not exceed 2600 psi (180 bar) for the U.0400 and SCR Series.



Determining Force

To determine the force (F) that a DADCO Nitrogen Gas Spring will deliver at the start of the stroke, use one of the following formulas:

$$F \text{ (lbs)} = A \text{ (in}^2\text{)} \times P \text{ (psi)}$$

U.S. Customary Unit Example:

Calculating a L.750 gas spring at 2000 psi:

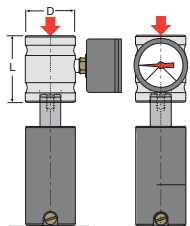
$$0.761 \text{ in}^2 \times 2000 \text{ psi} = 1522 \text{ lbs.}$$

$$F \text{ (N)} = A \text{ (cm}^2\text{)} \times P \text{ (bar)} \times 10$$

Metric Example:

Calculating a 90.10.05000 gas spring at 150 bar:

$$33.18 \text{ cm}^2 \times 150 \text{ bar} \times 10 = 49770 \text{ N or } 49.77 \text{ kN.}$$



Side and front views of a DADCO Load Cell in testing position on top of a DADCO Nitrogen Gas Spring.

Gas Spring Model	DADCO Load Cell	Rod Dia. mm/in	Piston Area (A) cm ² /in ²	D mm/in	L mm/in
L.300 / L.J.300 / U.0400 UH.0400	90.300.0300	16 0.63	1.97 0.306	38 1.50	51 2.00
SCR.0500	90.301.0500	18 0.71	2.54 0.394	38 1.50	51 2.00
L.500 / L.J.500 U.0600 / UH.0600 90.10.00500	90.300.0500	20 0.79	3.14 0.487	38 1.50	51 2.00
L.750 / L.J.750 / U.0800 UH.0800 / UX.0800 / SCR.0800 90.5B2.00750 / 90.8.00750 90.10.00750	90.300.0750	25 0.98	4.91 0.761	38 1.50	51 2.00
U.1000 / UH.1000 / UT.1000 UX.1000	90.300.1000	28 1.10	6.15 0.954	43 1.70	51 2.00
U.1200	90.300.1200	30 1.18	7.05 1.093	43 1.70	51 2.00
SCR.1900	90.300.1900	35 1.38	9.62 1.491	48 1.90	51 2.00
U.1600 / UH.1600 / UX.1600 90.5B2.01500 / 90.8.01500 90.10.01500	90.300.01500	36 1.42	10.18 1.578	48 1.90	51 2.00
U.2600 / UH.2600 / UT.2600 UX.2600 / SCR.3200 90.5B2.03000 90.8.03000 / 90.10RX.03000	90.300.2600	45 1.77	15.90 2.465	64 2.50	70 2.75
U.4600 / UH.4600 / UT.4600 UX.4600	90.300.4600	60 2.36	28.30 4.390	83 3.25	70 2.75
90.5B.05000 / 90.8.05000 90.10.05000 90.10RX.05000	90.300.05000	65 2.56	33.18 5.143	83 3.25	70 2.75
U.6600 / UH.6600 / UT.6600 UX.6600	90.300.6600	75 2.95	44.20 6.860	95 3.75	70 2.75
90.5B.07500 / 90.8.07500 90.10.07500 / 90.10RX.07500	90.300.07500	80 3.15	50.27 7.791	95 3.75	70 2.75
U.9600 / UT.9600 / UX.9600	90.300.9600	90 3.54	63.60 9.870	120 4.73	70 2.75
90.10.10000 / 90.10RX.10000	90.300.10000	95 3.74	70.95 11.000	120 4.73	70 2.75
U.20000 / UX.20000	90.300.20000	130 5.12	132.73 20.573	151.5 5.97	70 2.75

Nitrogen Gas Spring Accessories

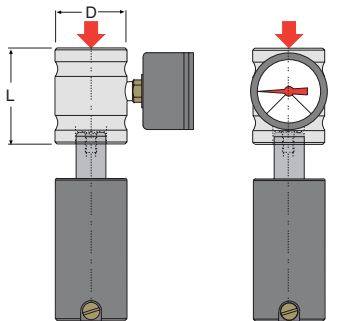


Operating Instructions

1. Position the DADCO Super Compact Load Cell with its counterbored base on top of the gas spring.
2. Place both the load cell and gas spring on the plate of the DADCO Standard Test Stand, 90.305.3. An Arbor press or another press may be used.
Note: 90.300.11800 and 90.300.18300 load cells cannot be used with the Standard Test Stand.
3. **Apply the load to the gas spring, depressing the gas spring rod only 2 mm** (additional travel may damage the load cell) and read the gauge on the front of the load cell. The gauge reflects the precise pressure inside the spring. Reading should not exceed 2175 psi (150 bar).

Super Compact Load Cell

A DADCO Super Compact Load Cell may be used to check the internal pressure of a DADCO Super Compact (SC Series) Nitrogen Gas Spring and quickly determine if the gas spring is charged to the desired pressure.



Side and front views of a DADCO Load Cell in testing position on top of a DADCO Nitrogen Gas Spring.

Determining Force

To determine the force (F) that a DADCO Super Compact Nitrogen Gas Spring will deliver at the start of the stroke, use one of the following formulas:

$$F \text{ (lbs.)} = A \text{ (in}^2\text{)} \times P \text{ (psi)}$$

U.S. Customary Unit Example:

If testing an SC.01000 gas spring at 2000 psi, the force is calculated as follows:

$$1.097 \text{ in}^2 \times 2000 \text{ psi} = 2194 \text{ lbs.}$$

$$F \text{ (N)} = A \text{ (cm}^2\text{)} \times P \text{ (bar)} \times 10$$

Metric Example:

If testing an SC.01000 gas spring at 150 bar, the force is calculated as follows:

$$7.08 \text{ cm}^2 \times 150 \text{ bar} \times 10 = 10620 \text{ N or } 10.62 \text{ kN.}$$

Gas Spring Model	DADCO Load Cell	Rod Dia. mm/in	Piston Area (A) cm ² /in ²	D mm/in	L mm/in
SC.00420	98.300.00420	12 0.47	2.828 0.438	34.3 1.35	40.1 1.58
SC.00740	90.300.0750	20 0.79	4.91 0.761	38 1.50	51 2.00
SC.01000	98.300.01000	20 0.79	7.08 1.097	48 1.89	55 2.17
SC.01800	98.300.01800	30 1.18	12.59 1.951	59.9 2.36	60 2.26
SC.03500	98.300.03500	45 1.77	21.24 3.292	66.7 2.63	65 2.56
SC.04700	98.300.04700	50 1.97	31.19 4.834	74.9 2.95	65 2.56
SC.07500	98.300.07500	63 2.48	50.31 7.798	95 3.74	65 2.56
SC.11800	98.300.11800	80 3.15	78.60 12.183	119.9 4.72	70 2.76
SC.18300	98.300.18300	100 3.94	122.78 19.031	150.1 5.91	75 2.96

This bulletin provides instruction on how to use the digital load cells and meters. The Digital Load Cell Meter displays the **force value** of the load cell attached to it. When used with DADCO's Portable Test Stand, Mini Test Stand or a standard arbor press, the Digital Load Cell gives precise measurement of gas spring force value. The Digital Load Cell displays force in the following units: **kN, kg, or lb**. For more information contact DADCO.

Digital Load Cell and Meter 90.305.LC.05A / 90.305.BGA

DADCO offers the 90.305.LC.05A Digital Load Cell in conjunction with the 90.305.BGA Digital Load Cell Meter for use with the Micro / **Ultra Force®** / Mini Nitrogen Gas Springs with force rating up to 5,000 lb (22.2 kN). DADCO recommends using this load cell and meter with the Mini Test Stand. Both parts are supplied with the 90.205.2D when purchased.



Digital Load Cell and Meter 90.305.LC.50A / 90.305.BGA

DADCO offers the 90.305.LC.50A Digital Load Cell in conjunction with the 90.305.BGA Digital Load Cell Meter for use with Compact/Large Nitrogen Gas Springs with force ratings up to 50,000 lb (222 kN). This load cell and meter can only be used with DADCO's 90.305.3 Test Stand.

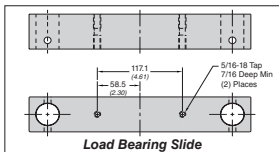


General Information

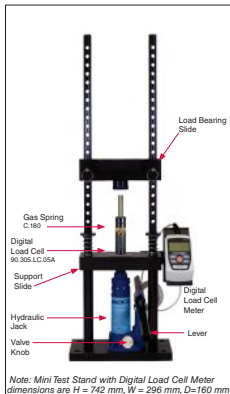
- The Digital Load Cell Meter operates with a rechargeable battery. An AC Adapter is also included.
- Five digit display.
- Size Specific Information:
 - 90.305.LC.05A - 5,000 lb. (22.2 kN) capacity - do not exceed
 - 90.305.LC.50A - 50,000 lb. (222 kN) capacity - do not exceed
- Portable Test Stand capacity = 17,000 lb. (75 kN) - do not exceed
- Mini Test Stand capacity = 4,000 lb. (18 kN) - do not exceed
- Do not drop or impact the Digital Load Cell
- Return the Digital Load Cell to DADCO for calibration or verification

Mounting

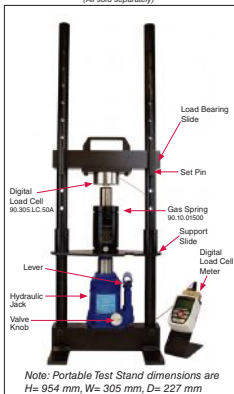
The 90.305.LC.50A Digital Load Cell includes a mounting bracket for easy attachment to the Portable Test Stand. Newer Portable Test Stand models have tapped holes designed for attachment of this bracket. To attach the bracket to an older model Portable Test Stand, two tapped holes must be added to the load bearing slide (see drawing for dimensional information). Once the Digital Load Cell is mounted to the Portable Test Stand it is ready to be operated. The 90.305.LC.05A Digital Load Cell sits on the support slide and does not need to be mounted.



90.305.2D
Digital Load Cell and Meter
integrated with Mini Test Stand



90.305.LC.50A / Digital Load Cell
90.305.BGA / Digital Load Cell Meter
90.305.3 / Portable Test Stand
(All sold separately)



90.305.LC.05A / Digital Load Cell
90.305.BGA / Digital Load Cell Meter
90.305.3 / Portable Test Stand
(All sold separately)



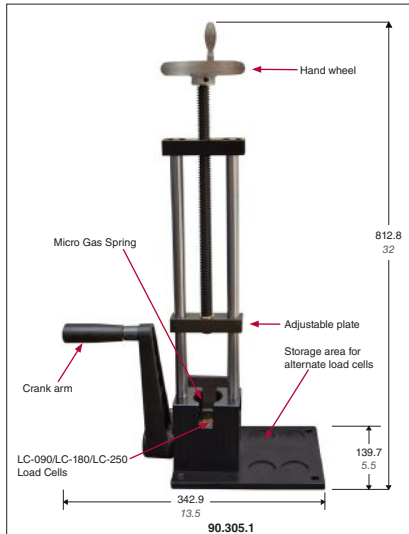
Operation

1. Press the orange POWER button to turn the unit on and off.
2. Pressing the MENU button then scrolling to UNITS and selecting ENTER will change the unit readout to lbf, kgf or N.
3. Pressing the ZERO button "tares" or zeros the meter when there is no force on it.
4. Release the jack to its lowest position by opening the release valve slowly (counterclockwise) using the Valve Knob.
5. Remove the set pins and clear the load bearing slide to accommodate the gas spring.
6. Center the gas spring on the support slide. The 90.305.LC.50A load cell impacts the gas spring from the rod end. For the 90.305.LC.05A load cell the gas spring sits on top of the load cell and impact occurs from the can end.
7. Lower the load bearing slide to the last height adjustment position above the gas spring and reinsert the set pins.
8. Close the release valve on the jack by turning it clockwise using the Valve Knob.
9. Hand pump the jack until the spring and load cell are fully loaded (compress no more than 2 mm (1/16") for accurate reading).
10. Again, using the lever, open the release valve on the jack to lower the support slide and remove the gas spring.
11. Turn the Digital Load Cell Meter off.

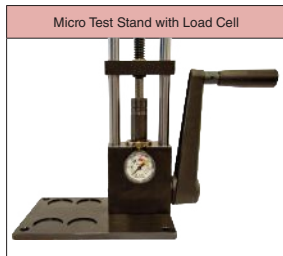
Micro Test Stand-125 (MTS-125)

MTS-125 Test Stand Features

- Quick, easy and accurate method for measuring the force of DADCO's Micro Nitrogen Gas Springs.
- Indirect gauging with load cells, no nitrogen lost.
- Accommodates DADCO's Micro Nitrogen Gas Springs with stroke lengths of up to 125 mm (4.92").
Contact DADCO for additional stroke lengths.



Test Stand Compatibility	
Gas Spring Model	DADCO Load Cell
C.045 SL.16 E.16	90.300.00045
C.070	90.300.00070
C.090	90.300.00090
C.180 E.24	90.300.00180
C.250 90.10.00170	90.300.00250
U.0175	90.300.0175
U.0325	90.300.0325



Operation

Please follow guidelines below for proper operation:

1. Place DADCO Load Cell into recess in base
(Note: Load cell must be compatible with gas spring to be tested.)
2. Rotate crank arm to vertical position.
3. Seat gas spring on load cell with its rod upwards.
4. Lower adjustable plate with hand wheel until it rests on the gas spring's rod
5. Rotate crank arm to a horizontal position to raise the gas spring against the plate and depress the rod.
6. Read the force indicated on the gauge. The gauge indicates force in pound and daN units.

Maintenance

Keep slide rods and thread rod lightly lubricated

90.305.2/2D Test Stand Features

- Rugged, solid steel construction with adjustable plate and easy to operate hydraulic hand pump.
- Use with DADCO's Standard or Digital Load Cells for quick and accurate method of gauging the internal pressure or on-contact force of DADCO Nitrogen Gas Springs
- Sized specifically for mid-size gas springs: accommodates Gas Springs through 453 mm (17.83") overall length and up to 17.8 kN (4,000 lb.) of force. *See chart for models.*
- Mounting holes in base allow for bench installation.

Test Stand Compatibility			
Gas Spring		Stroke (mm)	
Series	Model	Standard Load Cell	Digital Load Cell
Micro	C.045 – C.250	7 – 160	7 – 200
L/ LJ	L/LJ.300 – L/LJ.750	6.3 – 125	
Ultra Force®	U.0175 – U.1600	7 – 125	
UH	UH.0400 – UH.1600	10 – 125	
Ultra Force Extended®	UX.0800 – UX.1600, UX.1000V, UX.2600V	12.5 – 150	12.5 – 200
UT	UT.1000	12.5 – 125	
90.10/ 90.10RX	90.10.00500 – 90.10.01500	12.5 – 137.5	12.5 – 160
90.8	90.80.00750 – 90.8.01500	12.5 – 150	12.5 – 175
SC	SC.00420 – SC.01000	10 – 50	
SCR	SCR.0500 – SCR.1900	10 – 80	

If your model and stroke are not listed, contact DADCO for additional options.

Standard Configuration



90.305.2

Note: 90.305.2 Mini Test Stand dimensions are
H = 742 mm, W = 250 mm, D = 127 mm

Digital Configuration



90.305.2D

Note: 90.305.2D Mini Test Stand with Digital Load Cell Meter
dimensions are H = 742 mm, W = 296 mm, D = 160 mm

Ordering Options:

90.305.2

Standard Configuration

Test Stand configured for use with Standard DADCO Load Cells. *(Standard Load Cells sold separately)*

90.305.2D

Digital Configuration

Test Stand configured with DADCO's Digital Load Cell. *(Digital Load Cell and Meter included)*

90.305.3 Standard Test Stand Features

- Quick, easy and accurate method for gauging the internal pressure of DADCO Nitrogen Gas Springs.
- Indirect gauging with load cells, no nitrogen lost.
- Load bearing slide adjustable in eleven 51 mm (2") increments.
- Jack ram extends 95 mm (3 1/4") including 25 mm (1") extension screw adjustment.
- Accommodates DADCO Nitrogen Gas Springs through 203 mm (8") of stroke length and up to 107 kN (12 tons) of force. *See chart for models.*
- Furnished with mounting holes in the base for M10 or 3/8" screws.

Test Stand Compatibility		
Series	Model	Stroke (mm)
Micro	C.045 – C.250	7-200
LJ / L	LJ.300 – LJ.750 / L.300 – L.750	6.3-125
Ultra Force®	U.0175 – U.6600	7-125
UH	UH.0400 – UH.6600	10-125
UT	UT.1000 – UT.6600	12.5-125
Ultra Force Extended®	UX.0800 – UX.6600	12.5-200
90.10 / 90.10RX	90.10.00500 – 90.10.07500 / 90.10RX.03000 – 90.10RX.07500	12.5-200
90.8	90.8.00750 – 90.8.07500	12.5-200
90.5B2	90.5B2.01500 – 90.5B2.03000	12.5-200
SCR	SCR.00500 – SCR.03200	10-80
SC	SC.00420 – SC.07500	10-50

If your model and stroke are not listed here you may use an arbor press.



90.305.3

*Note: 90.305.3 dimensions are
H = 991 mm, W = 305 mm, D = 229 mm
Not designed for use as an arbor press.*

Standard Load Cells

DADCO's analog load cells may be used to check the internal pressure of a nitrogen gas spring to quickly determine if the gas spring is charged to the desired pressure.



90.300.(model) or 98.300.(model)



Digital Load Cells

DADCO's Digital Load Cells and Meter may be used with the Standard Test Stand to measure nitrogen gas spring pressure. The 90.305.BGA meter can display force in N, Kg or lbs. When paired with the 90.305.LC.05A load cell it may be used to measure force up to 22 kN (5,000 lbs). When paired with the 90.305.LC.50A load cell it may be used to measure force up to 222 kN (50,000 lbs).



90.305.BGA 90.305.LC.05A 90.305.LC.50A



Notes

DADCO®

Extreme Condition Solutions



**IMPROVE PERFORMANCE IN
HARSH ENVIRONMENTS**

PED

2014/68/EU
COMPLIANT

DADCO offers a variety of nitrogen gas spring solutions for extreme condition applications where draw die compounds and other contaminants are used. These options are designed to wipe away or shield the cylinder from caustic fluid to ensure proper operation and extend gas spring life. This catalog details the standard options that DADCO provides. Contact DADCO with your specific application for additional assistance.



																									
	✓				UH.0400							SC.00420	SC.00740												
	✓				UH.0600									✓											
	✓				UH.0800					SCR.0500				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	✓				UH.1000					SCR.0800				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	✓				UH.2600					SCR.1900				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	✓				UH.4600					SCR.3200				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		✓	✓	✓	UH.6600																				
		✓	✓	✓	UH.9600																				
			✓	✓	UX.20000	✓																			
		✓	✓	✓	90.8.00750																				
		✓	✓	✓	90.8.01500																				
		✓	✓	✓	90.8.03000																				
		✓	✓	✓	90.8.05000																				
		✓	✓	✓	90.8.07500																				
		✓	✓	✓	90.10.00500																				
		✓	✓	✓	90.10.00750																				
		✓	✓	✓	90.10.01500																				
		✓	✓	✓	90.10.03000																				
		✓	✓	✓	90.10.05000																				
		✓	✓	✓	90.10.07500																				
		✓	✓	✓	90.10.10000																				
		✓	✓	✓	90.10RX.03000																				
		✓	✓	✓	90.10RX.05000																				
		✓	✓	✓	90.10RX.07500																				
		✓	✓	✓	90.10RX.10000																				

*Top groove mounts cannot be used in conjunction with this wiper/rod cover.

Secondary Wiper

Nitrogen Gas Spring Extreme Condition Solutions

DADCO offers secondary urethane wipers designed to wipe away contaminants from the gas spring rod. The wipers are available in various styles depending on the gas spring construction. Refer to the drawings below and reference the series product catalog for more information. Reference the charts for the appropriate ordering code based on the gas spring model.

Advantages:

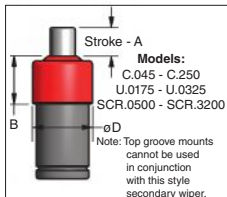
- Extra protection from ingestion of fluid
- Long-lasting urethane material resistant to lubricant damage
- Minimal stroke loss after installation



Cylinders with Secondary Wipers

C, U.0175-U.0325 and SCR Series

For the Micro, **Ultra Force®** (U.0175 and U.0325 only) and the SCR Series, DADCO provides an external urethane wiper cap (UC) that slides over the rod and snaps into the top ring groove at any time. When a secondary wiper is installed on these gas spring models the top mount groove cannot be used.



Model	A mm	B mm	øD mm	Secondary Wiper Part No.
C.045	.6	22	15	90.346.4.UC.00045
C.070	.6	22	19	90.346.4.UC.00070
C.090	1.4	23	23	90.346.4.UC.00090
C.180	1.4	23	28.5	90.346.4.UC.00180
C.250	4	25.4	36	90.346.4.UC.00250

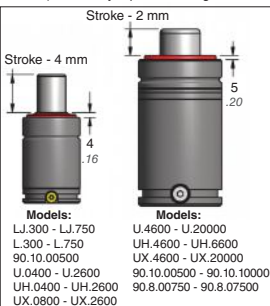
Model	A mm	B mm	øD mm	Secondary Wiper Part No.
U.0175	2	19	23	90.346.4.UC.00175
U.0325	2	19	28.5	90.346.4.UC.00325
SCR.0500	4	18	36	90.346.6.UC.00500
SCR.0800	4	18	42	90.346.6.UC.00800
SCR.1900	4	24	54	90.346.6.UC.01900
SCR.3200	4	26	67	90.346.6.UC.03200

Ordering Example (C.180 Model):
90.346.4.UC.00180

Secondary wiper ordered with cylinder will be attached at the factory.

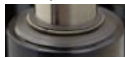
LJ, L, U.0400-U.20000, UH, UX, 90.10 and 90.8 Series

For gas spring series that have a removable dust cap, DADCO offers either a combined urethane dust cap and wiper (UW) or, where additional scraping capability is required, the spring-loaded PTFE (TW) wiper (available for many models) can easily replace the original dust cap when installed at the factory.



Secondary wiper ordered with cylinder will be attached at the factory.

Ordering Example (U.4600 Model):
90.346.3.UW.04600



Wiper option (TW)

Model			Secondary Wiper Part No.	
			UW Wiper Option	TW Wiper Option
LJ.300	L.300		90.346.2.UW.00300	90.346.2.TW.00300
LJ.500	L.500	90.10.00500	90.346.2.UW.00500	90.346.2.TW.00500
LJ.750	L.750		90.346.2.UW.00750	90.346.2.TW.00750
U.0400	UH.0400		90.346.3.UW.00400	90.346.3.TW.00400
U.0600	UH.0600		90.346.3.UW.00600	90.346.3.TW.00600
U.0800	UH.0800	UX.0800	90.346.3.UW.00800	90.346.3.TW.00800
U.1000	UH.1000	UX.1000	90.346.3.UW.01000	90.346.3.TW.01000
U.1200			90.346.3.UW.01200	90.346.3.TW.01200
U.1600	UH.1600	UX.1600	90.346.3.UW.01600	90.346.3.TW.01600
U.2600	UH.2600	UX.2600	90.346.3.UW.02600	90.346.3.TW.02600
U.4600	UH.4600	UX.4600	90.346.3.UW.04600	Contact DADCO for availability
U.6600	UH.6600	UX.6600	90.346.3.UW.06600	
U.9600		UX.9600	90.346.3.UW.09600	
U.20000		UX.20000	90.346.3.UW.20000	
90.10.00750	90.8.00750		90.346.1.UW.00750	
90.10.01500	90.8.01500		90.346.1.UW.01500	
90.10.03000	90.8.03000		90.346.1.UW.03000	
90.10.05000	90.8.05000		90.346.1.UW.05000	
90.10.07500	90.8.07500		90.346.1.UW.07500	
90.10.10000			90.346.1.UW.10000	

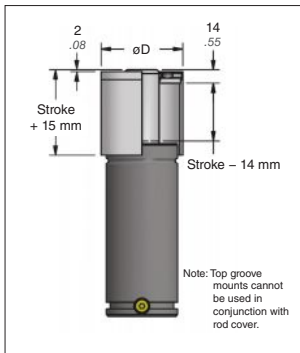
DADCO has been offering rod covers of various types, including bellows, dating back to 1983 and initially offered rod covers of this style to customers in 2000. This rod cover attaches to the top of the gas spring rod with a retaining screw and can be installed in the field or at the factory. The rod cover length varies depending on the gas spring stroke length. Refer to the chart for the appropriate ordering code based on gas spring model and refer to the drawing for more details. When a rod cover is installed, the top mount groove on the gas spring tube assembly cannot be used.

Advantages:

- Extra rod protection in harsh environments
- Durable aluminum cover may be used on various gas springs with same rod diameter
- Easily installed in the field with no modification to the gas spring and no special tools required



90.10.001500 Cylinders with Rod Covers



Model			øD mm	Rod Cover Part No.
LJ.300	L.300		45	90.346.2.AR.00300.(stroke)
LJ.500	L.500	90.10.00500	55	90.346.2.AR.00500
LJ.750	L.750		60	90.346.2.AR.00750
U.0400	UH.0400		45	90.346.3.AR.00400
U.0600	UH.0600		45	90.346.3.AR.00600
U.0800	UH.0800	UX.0800	55	90.346.3.AR.00800
U.1000	UH.1000	UX.1000	60	90.346.3.AR.01000
U.1200			60	90.346.3.AR.01200
U.1600	UH.1600	UX.1600	73	90.346.3.AR.01600
U.2600	UH.2600	UX.2600	86	90.346.3.AR.02600
U.4600	UH.4600	UX.4600	106	90.346.3.AR.04600
U.6600	UH.6600	UX.6600	131	90.346.3.AR.06600
U.9600		UX.9600	170	90.346.3.AR.09600
U.20000		UX.20000	210	90.346.3.AR.20000
	SCR.0500		45	90.346.6.AR.00500
	SCR.0800		45	90.346.6.AR.00800
	SCR.1900		60	90.346.6.AR.01900
	SCR.3200		73	90.346.6.AR.03200
	SC.00740		45	90.346.5.AR.00740
	SC.01000		45	90.346.5.AR.01000
	SC.01800		60	90.346.5.AR.01800
	SC.03500		73	90.346.5.AR.03500
	SC.04700		76	90.346.5.AR.04700
	SC.07500		106	90.346.5.AR.07500
	SC.11800		131	90.346.5.AR.11800
	SC.18300		170	90.346.5.AR.18300
90.10.00750	90.8.00750		60	90.346.1.AR.00750
90.10.01500	90.8.01500		86	90.346.1.AR.01500
90.10.03000	90.8.03000		106	90.346.1.AR.03000
90.10.05000	90.8.05000		131	90.346.1.AR.05000
90.10.07500	90.8.07500		170	90.346.1.AR.07500
90.10.10000			210	90.346.1.AR.10000

Ordering Example:

90.346.3.AR.04600. 080

Part Number: Refer to chart for part number based on gas spring model.
Rod cover ordered with cylinder will be attached at the factory.

Stroke: Varies depending on gas spring model, refer to series product catalog for more information.

Usable Stroke After Installation:
Stroke length - 14 mm
Example: 80 - 14 = 66 mm

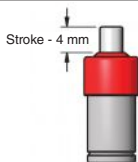
Plated Cylinder with Secondary Wiper

Nitrogen Gas Spring Extreme Condition Solutions

For the ultimate solution, DADCO offers cylinders with both a special plated finish and a secondary wiper installed. See below for details on the wiper caps and ordering information. For more information on a particular DADCO gas spring series, refer to the relevant product catalog. For high temperature applications, contact DADCO.

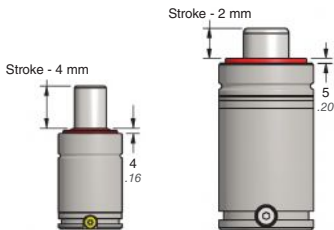
Advantages:

- Plated rod and can for extreme condition performance
- Secondary wiper for protection against external contamination
- Extra corrosion resistance in harsh environments
- Easy to order: Add "Q" to the DADCO part number



Models:

SCR.0500 - SCR.3200
SC.00420 - SC.18300



Models:

LJ.300 - LJ.750
L.300 - L.750
90.10.00500
U.0400 - U.2600
UH.0400 - UH.2600
UX.0800 - UX.2600

Models:

U.4600 - U.20000
UH.4600 - UH.6600
UX.4600 - UX.20000
90.10.00500 - 90.10.10000
90.8.00750 - 90.8.07500

NOTE: To calculate usable stroke length, subtract the value provided in the appropriate drawing.



Plated Cylinders
with Secondary Wipers

Series	Plated Cylinder + Secondary Wiper Part No.
LJ Series (LJ.300 - LJ.750)	Q.LJ.300.(stroke)
L Series (L.300 - L.750)	Q.L.300.____
U Series (U.0400 - U.20000)	Q.U.0400.____
UH Series (UH.0400 - UH.6600)	Q.UH.0400.____
UX Series (UX.0800 - UX.20000)	Q.UX.0800.____
SCR Series (SCR.0500 - SCR.3200)	Q.SCR.0500.____
90.8 Series (90.8.00750 - 90.8.07500)	Q.90.8.00750.____
90.10 Series (90.10.00500 - 90.10.10000)	Q.90.10.00500.____

Ordering Example:

Q. L.750.080. TO. 150

Plated Rod and Can with Secondary Wiper

Gas Spring Part Number

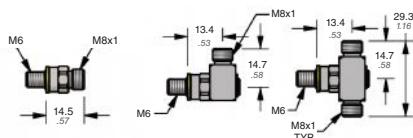
Charging Pressure

Mount Option

Refer to relevant product catalog for more information on individual gas spring models.

DADCO offers a variety of stainless steel fittings to be paired with Y-705 or Y-500 hose when linked operation in extreme condition environments is necessary. Refer to the Linked System Components Catalog for more information on all of DADCO's piping options.

MINILink® Port Adapters

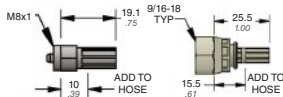


90.607.120.SS
(L-120-SS)
Straight

90.607.220.SS
(L-220-SS)
90° Elbow

90.607.429.SS
(L-429-SS)
Branch Tee

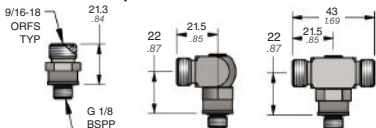
**MINILink® Hose Adapters
for 90.705 (Y-705)**



90.601.943.SS
(L-943-SS)
Permanent Straight

90.504.943.SS
(S-943-SS)
Straight Swivel

ORFS Port Adapters

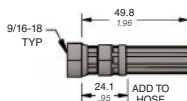


90.505.115.SS
(S-115-SS)
Straight

90.506.230.SS
(S-230-SS)
90° Swivel

90.506.439.SS
(S-439-SS)
Branch Tee

**ORFS Permanent Hose Adapter
for 90.500 (Y-500)**



90.504.843.SS
(S-843-SS)
Compact Swivel

Control Panels

DADCO Control Panels are used to fill, drain and monitor the pressure of linked DADCO nitrogen gas springs from outside the die. Each panel consists of a high pressure gauge, rupture disk, a quick disconnect fill valve and a bleed valve. For maximum versatility, the panel is available with a variety of fitting connections. For extreme condition applications the panel may be ordered with stainless steel components: quick disconnect valve (90.310.110.SS) and fitting connection (90.607.120.SS or 90.505.115.SS). Refer to the Linked System Components Catalog for more information on each of these panels.

Convertible Control Panel



Compact Control Panel



Mini Convertible Control Panel



Ordering Examples:

90.406. P 1 N .SS Convertible Control Panel Gauge Style PSI/Bar Gauge = P Bar/MPa Gauge = A Guard Top = 1, Top and Bottom = 2 Stainless Steel Components Fitting Connection N = No Fitting, S = ORFS Fitting, L = MINILink® Fitting When not specified, default is N.	90.405. P N .SS Compact Control Panel Gauge Style PSI/Bar Gauge = P Stainless Steel Components Fitting Connection N = No Fitting, S = ORFS Fitting, When not specified, default is N.	90.407. P N .SS Mini Control Panel Gauge Style PSI/Bar Gauge = P Stainless Steel Components Fitting Connection N = No Fitting, S = ORFS Fitting, L = MINILink® Fitting When not specified, default is N.
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DADCO

Extreme Condition Solutions

High Temperature Options



NEW MODELS EXTEND MAXIMUM TEMPERATURE RANGE

PED
2014/68/EU
COMPLIANT

DADCO offers a selection of Micro Nitrogen Gas Springs with high temperature components for applications where temperatures will exceed standard operating temperature. The H1 model is well suited for applications up to 230°F (110°C) while the H2 model allows for applications up to 392°F (200°C). Other gas springs may be ordered as H1 or H2; contact DADCO for assistance assessing your specific application requirements.

Standard Model Micro

(C.090 / C.180):

- Max Operating Temperature: 160°F (71°C)
- Max Charging Pressure: 2560 psi (177 bar)
- Standard Product, stocked for fast delivery
- Full range of stroke lengths
- Backed by *Gold Guarantee*
- Should not operate above normal operating temperature of 160°F (71°C)



H1 Option

(C.H1.090 / C.H1.180):

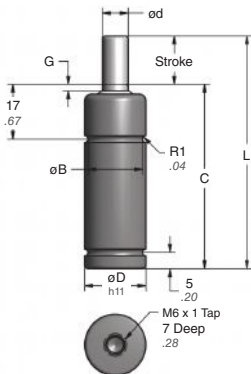
- Max Operating Temperature: 230°F (110°C)
- Max Charging Pressure: 1966 psi (136 bar)
- Best option between 160°F–230°F (71°C–110°C)
- May operate at normal operating temperature without sacrificing performance



H2 Option

(C.H2.090 / C.H2.180):

- Max Operating Temperature: 392°F (200°C)
- Max Charging Pressure: 1592 psi (110 bar)
- Best option between 230°F–392°F (110°C–200°C)
- Highest operating temperature available
- Only recommended for applications above 230°F (110°C)



Model	ød mm inch	øB	øD	G	A Rod Area cm ² in ²
C. <u>H1</u> .090	8	.17	.19	.2	.50
C. <u>H2</u> .090	.31	.67	.748	.08	0.078
C. <u>H1</u> .180	12	.23	.25	.2	1.13
C. <u>H2</u> .180	.47	.91	.984	.08	0.175

Part Numbers		Stroke* mm inch	C	L ±0.4 ±0.015
C. __090.015	C. __180.015	15 .59	57 2.24	72 2.835
C. __090.025	C. __180.025	25 .98	67 2.64	92 3.622
C. __090.038	C. __180.038	38 1.50	80 3.15	118 4.646
C. __090.050	C. __180.050	50 1.97	92 3.62	142 5.591
C. __090.080	C. __180.080	80 3.15	125 4.92	205 8.071

*Extended stroke lengths available, contact DADCO.

Note: Overall performance of high temperature products compared to standard product will vary depending on application.

Ordering Example:

C. H1. 090. 025. RM. BK. 1500

Gas Spring Series

High Temperature Option:

H1 or H2

Model:

090 or 180

Stroke Length

Charging Pressure:

BK - Black Adjustable Model specify pressure. Refer to next page.

H1 Range: 500-1966 psi (35-136 bar),

H1 Default is 1500 psi (103 bar);

H2 Range: 800-1592 psi (55-110 bar),

H2 Default is 1200 psi (83 bar)

Mount Option:

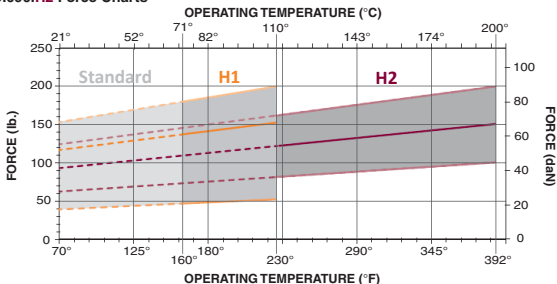
Leave blank for no mount attached.

High Temperature Options

Nitrogen Gas Spring Extreme Condition Solutions

Charging pressure for DADCO's H1/H2 High Temperature Nitrogen Gas Springs must be reduced from the normal charging pressure range due to increased operating temperature. The initial pressure in the gas spring will increase to a higher pressure at the increased operating temperature; therefore the same on-contact force will be achieved with a lower charging pressure. Refer to the charts below for the maximum, minimum and recommended charging pressure to find the resultant force on-contact. Refer to the next page for additional charging pressure calculations and examples.

C.090.H1 / C.090.H2 Force Charts



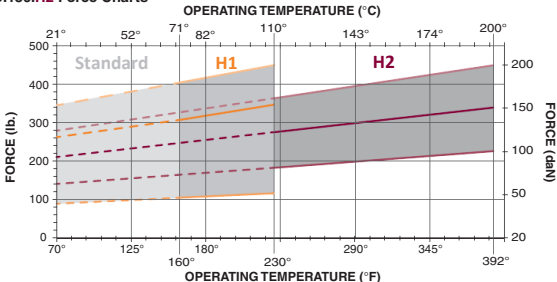
C.H1.090

Charging Pressure (psi)	Temperature (°F) 70° 160° 230° Force On-Contact (lb.)			Charging Pressure (bar)	Temperature (°C) 21° 71° 110° Force On-Contact (daN)		
500	39	46	51	35	17	20	23
1500	117	137	152	103	52	61	68
1966	153	179	199	136	68	80	89

C.H2.090

Charging Pressure (psi)	Temperature (°F) 70° 230° 392° Force On-Contact (lb.)			Charging Pressure (bar)	Temperature (°C) 21° 110° 200° Force On-Contact (daN)		
800	62	81	100	55	28	36	45
1200	93	122	150	83	42	54	67
1592	124	162	199	110	55	72	89

C.180.H1 / C.180.H2 Force Charts



C.H1.180

Charging Pressure (psi)	Temperature (°F) 70° 160° 230° Force On-Contact (lb.)			Charging Pressure (bar)	Temperature (°C) 21° 71° 110° Force On-Contact (daN)		
500	88	103	114	35	39	46	51
1500	263	308	342	103	117	137	152
1966	345	403	449	136	153	180	200

C.H2.180

Charging Pressure (psi)	Temperature (°F) 70° 230° 392° Force On-Contact (lb.)			Charging Pressure (bar)	Temperature (°C) 21° 110° 200° Force On-Contact (daN)		
800	140	183	225	55	62	81	100
1200	210	274	338	83	94	122	150
1592	279	363	449	110	124	162	200

Charging Pressure Calculation

For those instances where the recommended or maximum charging pressures are not suitable for your application you can use the information below to determine the required charging pressure and resultant force for your application.

Imperial		Metric	
P1 = Charging Pressure at Room Temperature (psi)		P1 = Charging Pressure at Room Temperature (bar)	
F1 = On-Contact Force at Room Temperature (lb-f)		F1 = On-Contact Force at Room Temperature (daN)	
F2 = On-Contact Force at Operating Temperature (lb-f)		F2 = On-Contact Force at Operating Temperature (daN)	
A = Rod Area of Nitrogen Gas Spring (in ²)		A = Rod Area of Nitrogen Gas Spring (cm ²)	
T = Operating Temperature (°F)		T = Operating Temperature (°C)	
Charging Pressure:	P1 = $(F2 \div A) \times [530 \div (T + 460)]$	Charging Pressure:	P1 = $(F2 \div A) \times [295 \div (T + 273)]$
	P1 = F1 ÷ A		P1 = F1 ÷ A
On-Contact Force at Room Temperature:	F1 = P1 x A	On-Contact Force at Room Temperature:	F1 = P1 x A

Application Examples

H1 Option:

C.H1.090.050 requires 190 lb-f on-contact force and will be installed in an operation that has an operating temperature of 230° F.

Using the equation given, the C.H1.090.050 will need to be ordered with a charging pressure of **1871 psi**.

$$P1 = (F2 \div A) \times [530 \div (T + 460)]$$

$$P1 = (190 \div .078) \times [530 \div (230 + 460)]$$

$$P1 = 1871 \text{ psi}$$

Order Code: C.H1.090.050.BK.1871

H2 Option:

C.H2.180.050 requires 350 lb-f on-contact force and will be installed in an operation that has an operating temperature of 390° F.

Using the equation given, the C.H2.180.050 will need to be ordered with a charging pressure of **1248 psi**.

$$P1 = (F2 \div A) \times [530 \div (T + 460)]$$

$$P1 = (350 \div .175) \times [530 \div (390 + 460)]$$

$$P1 = 1248 \text{ psi}$$

Order Code: C.H2.180.050.BK.1248

Mount Options

RM	DADCO-LOK	FA or VFA	RF	TB2
				

C.090 Only

Refer to the Micro Series Catalog for more information on individual gas spring models and mounts.

DADCO®

Nitrogen Gas Spring Lifters

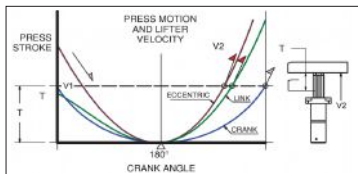
SL Series



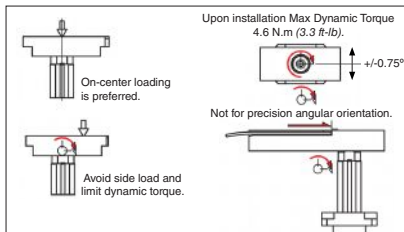
*Lifters for Single-Point, Multi-Point and
Rail Lift Applications*

Maximum Velocity and Attachment Capacity Per Lifter

Ram extension velocity varies by strokes per minute, press stroke and press type. For link or eccentric type presses, the extension velocity may exceed 0.8 m/s (32 in/s). Using the press manufacturer's data, verify that the attachment mass does not exceed recommended limits. Determine ram velocity and reference the recommended attachment mass per lifter. Attachment mass assumes balanced load and actuation force. Do not exceed the ram velocity per lifter. For increased capacity, install external positive stops or add more lifter units to prevent lifter damage.

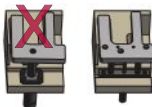


All Lifters			SLN.090		SLN.180 / SLN.300	
Ram Velocity			Attachment Mass			
mm/s	fpm	in/s	kg	lbs-mass	kg	lbs-mass
300	59	12	20	44	31	68
400	79	16	11	25	17	38
500	98	20	7.3	16	11	24
600	118	24	5.0	11	7.7	17
700	138	28	3.7	8	5.6	12
800	157	31	2.8	6	4.3	10



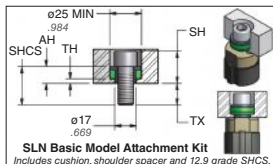
Dynamic Moment Loading		
Torque Max	SLN.090	SLN.180 / SLN.300
lb-in	127	269
lb-ft	11	22
N.m	14	30

Single point lift is not recommended for critical alignment. Use multiple lift points or SL2 Lifter.



Rail Application for Basic Model Lifters

Rigid attachment is acceptable for single point lifts but should be avoided for rail or plate applications. Use a floating attachment method to avoid binding. Use attachment kit shown below or a similar method. Cushioned shoulder adapters may be used on any SLN lifter. The kit allows for slight misalignment and offset forces in operation. Contact DADCO for more information.



Models (SLN...)	Part No.*	SHCS	AH	TH	SH	TX
090	SLN.090.CB25	M10 x 25	13 0.51	3.5 0.14	23 0.93	12 0.47
090	SLN.090.CB30	M10 x 30	18 0.71	8.5 0.33	28 1.10	12 0.47
090	SLN.090.CB35	M10 x 35	23 0.91	13.5 0.53	33 1.30	12 0.47
180 / 300	SLN.180.CB30	M12 x 30	13 0.51	3.5 0.14	25 0.98	17 0.67
180 / 300	SLN.180.CB35	M12 x 35	18 0.71	8.5 0.33	30 1.18	17 0.67
180 / 300	SLN.180.CB40	M12 x 40	23 0.91	13.5 0.53	35 1.38	17 0.67
180	SLN.180.CE12	½UNC x 1.25"	13 0.51	3.5 0.14	25.7 1.01	18.8 0.74
180	SLN.180.CE15	½UNC x 1.50"	23 0.91	13.5 0.53	35.7 1.41	15.1 0.59

*May be used in SL2 Lifter Applications.

Rail Application for Slotted Model Lifters

The slot allows for angular misalignment. Locate the pins to provide maximum angular compensation.



Dampening Sleeve Kits:

SLN.090...
SKM = 8 mm Pin
SKE = 3/8" Pin



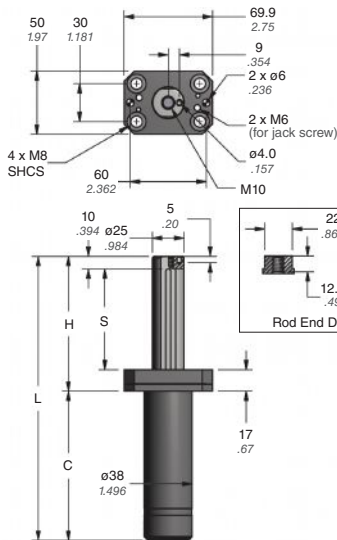
SLN.180.SKM
SKM = 10 mm Pin



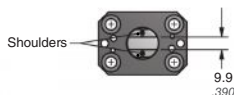
SLN.180.SK
SK = 10 mm or 3/8" Pin



SLN.090 – 90 daN / 200 lb.



Basic Model (B)



Slotted Model (S)

Part No.	S mm inch	C	Basic		Slotted		Micro Gas Spring
			H	L	HH	LL	
SLN.090...025	25 .98	60 2.36	2.047	4.41	1.850	5.00	C.090.025.BK
SLN.090...038	38 1.50	73 2.87	2.559	5.43	2.362	6.02	C.090.038.BK
SLN.090...050	50 1.97	85 3.35	3.031	6.38	2.835	6.97	C.090.050.BK
SLN.090...063.5	63.5 2.50	101.5 4.00	3.563	7.56	3.366	8.15	C.090.063.BK
SLN.090...080	80 3.15	118 4.65	4.213	8.86	4.016	9.45	C.090.080.BK
SLN.090...100	100 3.94	138 5.43	5.000	10.43	4.803	11.02	C.090.100.BK
SLN.090...125	125 4.92	163 6.42	5.984	12.40	5.787	12.99	C.090.125.BK

On-Contact Force

Metric		Imperial	
bar	daN	psi	lb.
charging pressure	theoretical lifting force	charging pressure	theoretical lifting force
177	89	2560	200
150	75	2200	172
125	63	2000	156
100	50	1750	136
75	38	1500	117
50	25	1000	78
35	17	500	39

See back cover for attachment limitations.

Ordering Example:

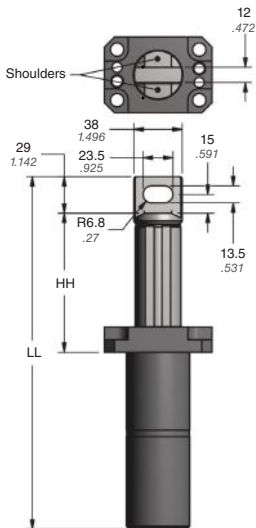
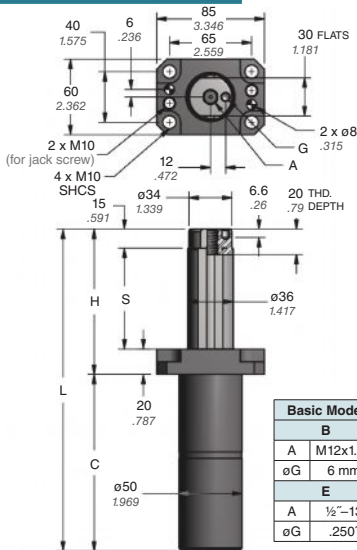
Part Number: SLN.090. B. 050. B32. 150
Includes Series and Model
Rod End Type:
B or S. When not specified, default is B.
Stroke Length:
025, 038, 050, 063, 080, 100 and 125

SLN.090. B. 050. B32. 150

Charging Pressure of Micro Gas Spring:
35–177 bar (500–2560 psi). When not specified, default is 150 bar.

Mount Option:
B32 = Keyed Narrow Flange Mount

SLN.180 – 200 daN / 450 lb. *Patented*



Basic Model (B or E)

Slotted Model (S)

Part No.	S mm inch	C	Basic		Slotted		Micro Gas Spring
			H	L	HH	LL	
SLN.180.____025	25 <i>.98</i>	85 <i>3.35</i>	60 <i>2.362</i>	145 <i>5.71</i>	55 <i>2.165</i>	169 <i>6.65</i>	C.180.025.BK
SLN.180.____038	38 <i>1.50</i>	98 <i>3.86</i>	73 <i>2.874</i>	171 <i>6.73</i>	68 <i>2.677</i>	195 <i>7.68</i>	C.180.038.BK
SLN.180.____050	50 <i>1.97</i>	110 <i>4.33</i>	85 <i>3.346</i>	195 <i>7.68</i>	80 <i>3.150</i>	219 <i>8.62</i>	C.180.050.BK
SLN.180.____063	63.5 <i>2.50</i>	123.5 <i>4.86</i>	98 <i>3.878</i>	222 <i>8.74</i>	93.5 <i>3.681</i>	246 <i>9.69</i>	C.180.063.BK
SLN.180.____080	80 <i>3.15</i>	140 <i>5.51</i>	115 <i>4.528</i>	255 <i>10.04</i>	110 <i>4.331</i>	279 <i>10.98</i>	C.180.080.BK
SLN.180.____100	100 <i>3.94</i>	160 <i>6.30</i>	135 <i>5.315</i>	295 <i>11.61</i>	130 <i>5.118</i>	319 <i>12.56</i>	C.180.100.BK
SLN.180.____125	125 <i>4.92</i>	185 <i>7.28</i>	160 <i>6.299</i>	345 <i>13.58</i>	155 <i>6.102</i>	369 <i>14.53</i>	C.180.125.BK

On-Contact Force

Metric		Imperial	
bar <i>charging pressure</i>	daN <i>theoretical lifting force</i>	psi <i>charging pressure</i>	lb. <i>theoretical lifting force</i>
177	200	2560	450
150	170	2200	387
125	141	2000	351
100	113	1750	307
75	85	1500	263
50	57	1000	175
35	39	500	88

See back cover for attachment limitations.

Ordering Example:

SLN,180. B. 050. B32. 150

Part Number:
Includes Series and Model

Rod End Type:

fied, default is B.

Stroke Length:
025, 038, 050, 063, 080, 100 and 125

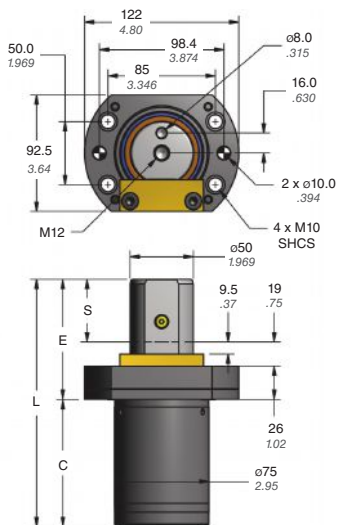
Charging Pressure of Micro Gas Spring:
35-177 bar (500-2560 psi). When not specified, default is 150 bar.

Mount Option:

B32 = Keyed Narrow Flange Mount

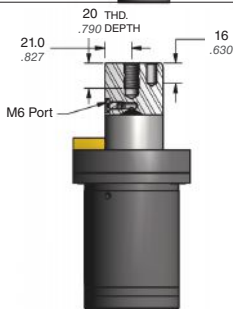
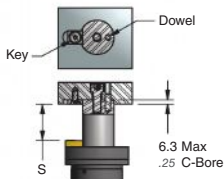
SLN.300 – 3 kN / 1/3 ton

Nitrogen Gas Lifters



Rod Extension Detail

Guide rod has a small extension for ease of attaching lifting structure. Attachment may be keyed using the rod flat or rod end dowel.



Part No.	S mm <i>inch</i>	C	E	L
SLN.300.050	50 <i>1.97</i>	101 <i>3.98</i>	95 <i>3.740</i>	196 <i>7.717</i>
SLN.300.080	80 <i>3.15</i>	131 <i>5.16</i>	125 <i>4.921</i>	256 <i>10.079</i>
SLN.300.100	100 <i>3.94</i>	151 <i>5.94</i>	145 <i>5.709</i>	296 <i>11.654</i>
SLN.300.125	125 <i>4.92</i>	176 <i>6.93</i>	170 <i>6.693</i>	346 <i>13.622</i>
SLN.300.150	150 <i>5.91</i>	201 <i>7.91</i>	195 <i>7.677</i>	396 <i>15.591</i>

On-Contact Force

Metric		Imperial	
bar <i>charging pressure</i>	daN <i>theoretical lifting force</i>	psi <i>charging pressure</i>	lb. <i>theoretical lifting force</i>
150	302	2175	678
125	251	2000	623
100	201	1750	545
75	151	1500	467
50	101	1000	312
35	68	500	156

See back cover for attachment limitations.

Ordering Example:

SLN.300. 050. B33. 150

Part Number:
Includes Series and Model

Stroke Length:

050, 080, 100, 125 and 150

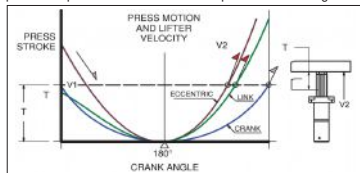
Charging Pressure of Micro Gas Spring:
35-150 bar (500-2175 psi). When not specified, default is 150 bar.

Mount Option:

B33 = Keyed Narrow Flange Mount

Maximum Velocity and Attachment Capacity Per Lifter

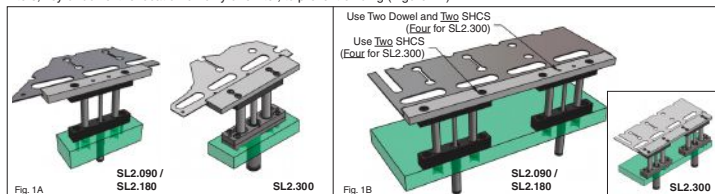
Ram extension velocity varies by strokes per minute, press stroke and press type. For link or eccentric type presses, the extension velocity may exceed 0.8 m/s (32 in/s). Using the press manufacturer's data, verify that the attachment mass does not exceed recommended limits. Determine ram velocity and reference the recommended attachment mass per lifter. Attachment mass assumes balanced load and actuation force. Do not exceed the ram velocity per lifter. For increased capacity, install external positive stops or add more lifter units to prevent lifter damage.



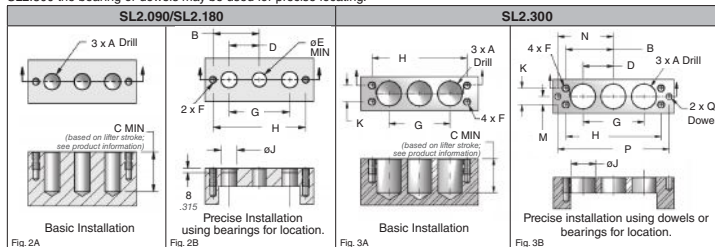
All Lifters			SL2.090		SL2.180		SL2.300	
Ram Velocity			Attachment Mass					
mm/s	fpm	in/s	kg	lbs-mass	kg	lbs-mass	kg	lbs-mass
300	59	12	20	44	31	68	46	102
400	79	16	11	25	17	38	26	57
500	98	20	7.3	16	11	24	17	37
600	118	24	5.0	11	7.7	17	12	25
700	138	28	3.7	8	5.6	12	8	19
800	157	31	2.8	6	4.3	10	6	14

SL2 Installation Guidelines

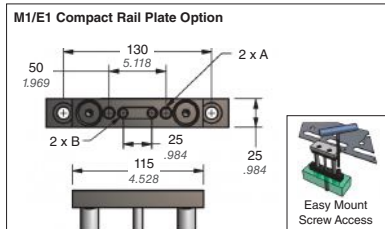
Rails may be attached to the SL2 lifters with the two or four tapped holes on the top rail plate (Figure 1A). When using multiple lifters, key or dowel the location on only one lifter, to prevent binding (Figure 1B).



The SL2 lifters may be installed using the basic installation (Figures 2A and 3A). For higher precision, install using the dimensions given in the Precise Installation (Figures 2B and 3B). The bearings will serve as dowels for the SL2.090 and SL2.180. For the SL2.300 the bearing or dowels may be used for precise locating.



Model	A	B	D	E	F	G	H	J	K	M	N	P	Q
SL2.090	mm	ø22.5	65	42.5	19.1	M10	85	130	22H7	-	-	-	-
	inch	7/8	2.559	1.673	.751	3/8"	3.346	5.118	.8665	-	-	-	-
SL2.180	mm	ø26.5	75	50	25.1	M12	100	150	26H7	-	-	-	-
	inch	1-1/32	2.953	1.969	.988	1/2"	3.937	5.906	1.024	-	-	-	-
SL2.300	mm	ø40	78	50	-	M12	100	156	38H7	27	13.5	91	182
	inch	1-9/16	3.071	1.969	-	1/2"	3.937	6.142	1.496	1.063	.531	3.583	7.165



* Gas spring has a 2 mm preload.
** Only available with M1/E1 Rail Plate Option.

Rail Plate	A	øB Dowel
M/M1	M10 x 1.5	8 mm x 12 Deep
E/E1	3/8"-16 UNC	5/16" x .47 Deep

Metric		Imperial	
bar charging pressure	daN theoretical lifting force	psi charging pressure	lb. theoretical lifting force
177	89	2560	200
150	75	2200	172
125	63	2000	156
100	50	1750	136
75	38	1500	117
50	25	1000	78
35	17	500	39

See back cover for attachment limitations.

SL2.090, 050, B5, M, 150

Part Number:
Includes Series and Model

Stroke Length:
025, 038, 050, 063, 080, 100, 125,
150, 175 and 200.

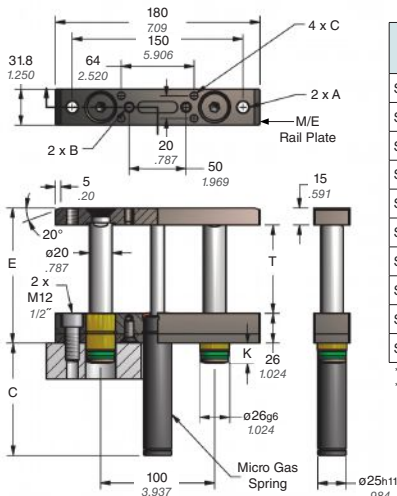
*Other stroke lengths are available,
contact DADCO for more information.*

35-177 bar (500-2560 psi). When not specified, default is 150 bar.

M, E, M1 or E1. When not specified, default is M.

B5 = Vertical Mount

SL2.180 – 200 daN / 450 lb. *Patented*



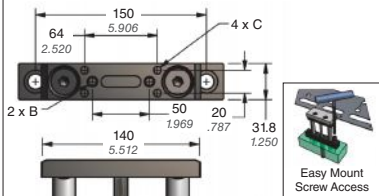
Part No.	T ⁺ mm inch	C	E	K	Micro Gas Spring
SL2.180.025**	23 <i>0.91</i>	41 <i>1.61</i>	64 <i>2.520</i>	18 <i>.71</i>	C.180.025.BK
SL2.180.038	36 <i>1.42</i>	54 <i>2.13</i>	77 <i>3.031</i>	18 <i>.71</i>	C.180.038.BK
SL2.180.050	48 <i>1.89</i>	66 <i>2.60</i>	89 <i>3.504</i>	18 <i>.71</i>	C.180.050.BK
SL2.180.063	61.5 <i>2.42</i>	82.5 <i>3.25</i>	105.4 <i>4.035</i>	18 <i>.71</i>	C.180.063.BK
SL2.180.080	78 <i>3.07</i>	99 <i>3.90</i>	119 <i>4.685</i>	18 <i>.71</i>	C.180.080.BK
SL2.180.100	98 <i>3.86</i>	119 <i>4.69</i>	139 <i>5.472</i>	18 <i>.71</i>	C.180.100.BK
SL2.180.125	123 <i>4.84</i>	144 <i>5.67</i>	164 <i>6.457</i>	18 <i>.71</i>	C.180.125.BK
SL2.180.150	148 <i>5.83</i>	177 <i>6.97</i>	189 <i>7.441</i>	26 <i>1.02</i>	C.180.150.BK
SL2.180.175	173 <i>6.81</i>	202 <i>7.95</i>	214 <i>8.425</i>	26 <i>1.02</i>	C.180.175.BK
SL2.180.200	198 <i>7.80</i>	227 <i>8.94</i>	239 <i>9.409</i>	26 <i>1.02</i>	C.180.200.BK

* Gas spring has a 2 mm preload.

**** Only available with M1/E1 Rail Plate Option.**

Rail Plate	A	øB Dowel	C
M/M1	M12 x 1.75	10 mm x 12 Deep	M8 x 1.25
E/E1	1/2"-13 UNC	3/8" x .47 Deep	5/16"-18

M1/E1 Compact Rail Plate Option



On-Contact Force

Metric		Imperial	
bar charging pressure	daN theoretical lifting force	psi charging pressure	lb. theoretical lifting force
177	200	2560	450
150	170	2200	387
125	142	2000	351
100	113	1750	307
75	85	1500	263
50	57	1000	175
35	39	500	88

See back cover for attachment limitations.

Ordering Example:

SL2.180. 050. B5. M. 150

Part Number:

Includes Series and Model

Stroke Length:

025, 038, 050, 063, 080, 100, 125,
150, 175 and 200.

Other stroke lengths are available,
contact DADCO for more information.

Charging Pressure of Micro Gas Spring:

35-177 bar (500-2560 psi). When not specified, default is 150 bar.

Rail Plate

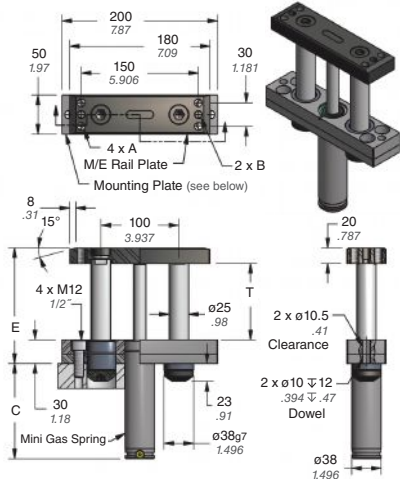
M, E, M1 or E1. When not specified, default is M.

Mount Option:

B5 = Vertical Mount

SL2.300 – 3 kN / 1/3 ton

Nitrogen Gas Lifters



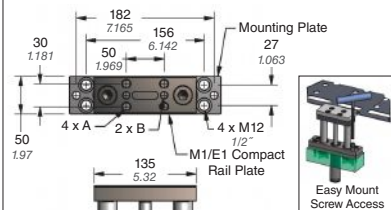
Part No.	T* mm inch	C	E	Mini Gas Spring
SL2.300.025**	23 0.91	47 1.85	73 2.874	L.300.025
SL2.300.038	35.5 1.40	59.5 2.34	85.5 3.366	L.300.038
SL2.300.050	48 1.89	72 2.83	98 3.858	L.300.050
SL2.300.063	60.5 2.38	84.5 3.33	110.5 4.350	L.300.063
SL2.300.080	78 3.07	102 4.02	128 5.039	L.300.080
SL2.300.100	98 3.86	122 4.80	148 5.827	L.300.100
SL2.300.125	123 4.84	147 5.79	173 6.811	L.300.125
SL2.300.150	148 5.83	172 6.77	198 7.795	L.300.150
SL2.300.175	173 6.81	197 7.76	223 8.780	L.300.175
SL2.300.200	198 7.80	222 8.74	248 9.764	L.300.200

* Available gas spring travel.

** Only available with M1/E1 Rail Plate Option.

Rail Plate	A	øB Dowel
M/M1	M12 x 1.75	10 mm x 15 Deep
E/E1	1/2"-13 UNC	3/8" x .59 Deep

Mounting Plate Detail and M1/E1 Compact Rail Plate Option



On-Contact Force

Metric		Imperial	
bar charging pressure	daN theoretical lifting force	psi charging pressure	lb. theoretical lifting force
150	302	2175	678
125	251	2000	623
100	201	1750	545
75	151	1500	467
50	101	1000	312
35	68	500	156

See back cover for attachment limitations.

Ordering Example:

SL2.300. 050. B5. M. 150

Part Number:

Includes Series and Model

Stroke Length:

025, 038, 050, 063, 080, 100, 125, 150, 175 and 200.

Other stroke lengths are available, contact DADCO for more information.

Charging Pressure of Micro Gas Spring:

35-150 bar (500-2175 psi). When not specified, default is 150 bar.

Rail Plate:

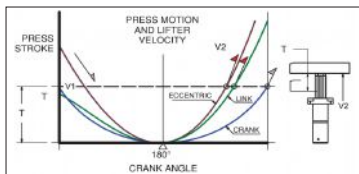
M, E, M1 or E1. When not specified, default is M.

Mount Option:

B5 = Vertical Mount

Maximum Velocity and Attachment Capacity Per Lifter

Ram extension velocity varies by strokes per minute, press stroke and press type. For link or eccentric type presses, the extension velocity may exceed 0.8 m/s (32 in/s). Using the press manufacturer's data, verify that the attachment mass does not exceed recommended limits. Determine ram velocity and reference the recommended attachment mass per lifter. Attachment mass assumes balanced load and actuation force. Do not exceed the ram velocity per lifter. For increased capacity, install external positive stops or add more lifter units to prevent lifter damage.

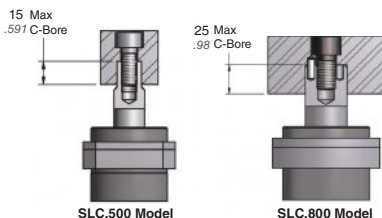


All Lifters			SLC.500		SLC.800*	
Ram Velocity			Attachment Mass			
mm/s	fpm	in/s	kg	lbs-mass	kg	lbs-mass
300	59	12	20	44	31	68
400	79	16	11	25	17	38
500	98	20	7.3	16	11	24
600	118	24	5.0	11	7.7	17
700	138	28	3.7	8	5.6	12
800	157	31	2.8	6	4.3	10

*SLC.800 may have production rate limits depending upon charging pressure.

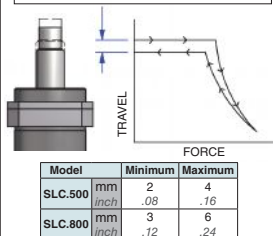
Rod Extension Detail

Guide Rod has a small extension for ease of attaching lifting structure.



SLC Internal Cushion

Distance of cushion travel is dependent on attachment mass and charging pressure.



SLC.500 On-Contact Force

Metric

bar charging pressure	daN theoretical lifting force
70	220
50	157
40	126
25	79

Imperial

psi charging pressure	lb. theoretical lifting force
1000	487
750	365
500	244
250	122

SLC.800 On-Contact Force

Metric

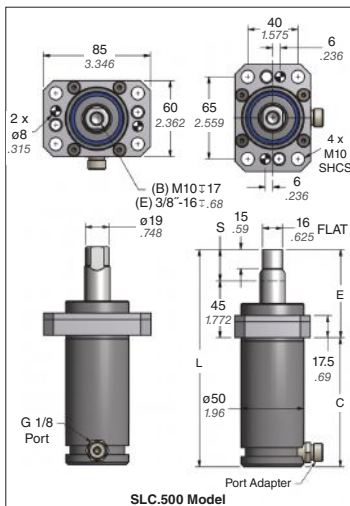
bar charging pressure	daN theoretical lifting force
70	712
50	509
40	407
25	254

Imperial

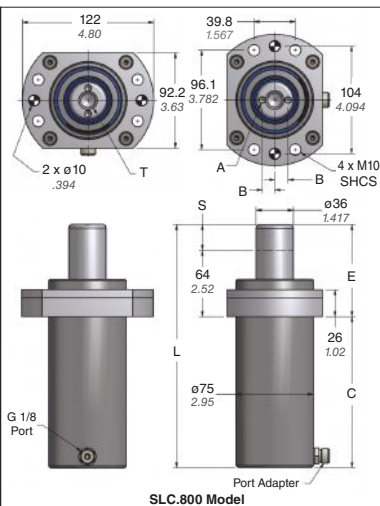
psi charging pressure	lb. theoretical lifting force
1000	1578
750	1184
500	789
250	395

Higher charging pressures are available for non-attachment loading, please contact DADCO for application and installation evaluation.

SLC.500 – 5 kN / 1/2 ton & SLC.800 – 7 kN / 3/4 ton



SLC.500 Model



SLC.800 Model

Part No.	S mm inch	SLC.500 Model			SLC.800 Model		
		C	E	L	C	E	L
SLC.____.050	50 1.97	127.5 5.02	95 3.740	222.5 8.760	190 7.48	114 4.488	304 11.969
SLC.____.080	80 3.15	157.5 6.20	125 4.921	282.5 11.122	220 8.66	144 5.669	364 14.331
SLC.____.100	100 3.94	177.5 6.99	145 5.709	322.5 12.697	240 9.45	164 6.457	404 15.906
SLC.____.125	125 4.92	202.5 7.97	170 6.693	372.5 14.665	265 10.43	189 7.441	454 17.874
SLC.____.150	150 5.91	227.5 8.96	195 7.677	422.5 16.634	290 11.42	214 8.425	504 19.843
SLC.____.175	175 6.89	252.5 9.94	220 8.661	472.5 18.602	315 12.40	239 9.409	554 21.811
SLC.____.200	200 7.87	277.5 10.93	245 9.646	522.5 20.571	340 13.39	264 10.394	604 23.780

SLC.800			
Rod End Tap	A	B	T
B	ø6 .236	13 .512	M16
M	ø6 .236	12 .472	M12
E	ø6.35 .250	12 .472	1/2"-13
K	ø6.35 .250	13 .512	5/8"-11

Ordering Example:

SLC.800. B. 050. B34. E

Part Number:

Includes Series and Model (500 or 800)

Rod End Tap:

B, M, E or K

When not specified, default is B.

Stroke Length:

050, 080, 100, 125, 150, 175 and 200.

Specify Open Flow Fitting:

F = 90.505.115 (ORFS)

FD = 90.508.115 (D-24)

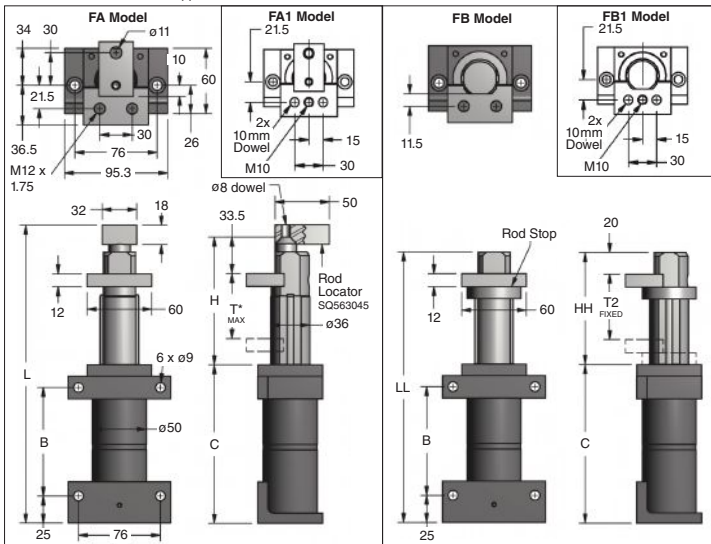
When not specified, default is F.

Mount Option:

B34 = Narrow Flange Mount

SLN.180 Flange Model *Special Application*

DADCO's SLN.180 Flange Model Micro Nitrogen Gas Lifter meets Ford Die Standards (WDX06-80M) for stamping components. Two models are available to accommodate flange stripper applications: FA with a conical rod and rod locator for attachment to the upper die; and FB with a flat rod end.



Part No.	C mm	B	FA / FA1 Model			FB / FB1 Model			Micro Gas Spring
			T*	H	L	T2	HH	LL	
SLN.180.___063	146	100	60	117.5	275	60	104	250	C.180.063.BK
SLN.180.___080	162.5	116.5	72	134	308	72	120.5	283	C.180.080.BK
SLN.180.___100	182.5	136.5	90	154	348	90	140.5	323	C.180.100.BK
SLN.180.___125	207.5	161.5	112	179	398	112	165.5	373	C.180.125.BK
SLN.180.___150	240.5	194.5	135	204	456	135	190.5	431	C.180.150.BK
SLN.180.___175	265.5	219.5	157	229	506	157	215.5	481	C.180.175.BK
SLN.180.___200	290.5	244.5	180	254	556	180	240.5	531	C.180.200.BK

*Maximum recommended travel

Ordering Example:

SLN.180. FA1. 063. B35. BK.20

Part Number:

Includes Series and Model

Rod End Type:

Specify Flange Style FA, FA1, FB or FB1

Stroke Length:

063, 080, 100, 125, 150, 175 and 200

- Charging Pressure of Micro Gas Spring:

RD. BU. GR.

BK = 20-135 bar (290-1920 psi).

When not specified, default is BK.20 = 20 bar.

Mount Option:

B35 = Keyed Vertical Mount

Force Chart	Initial lb. daN	Final lb. daN	Pressure psi bar
Red - RD	337 149	459 204	1920 132
Blue - BU	224 100	306 136	1280 88
Green - GR	112 50	153 68	640 44
Black - BK	See Charts		

Metric		Imperial	
bar charging pressure	daN theoretical lifting force	psi charging pressure	lb.-f theoretical lifting force
30	34	450	79
20	23	290	51

Application Examples

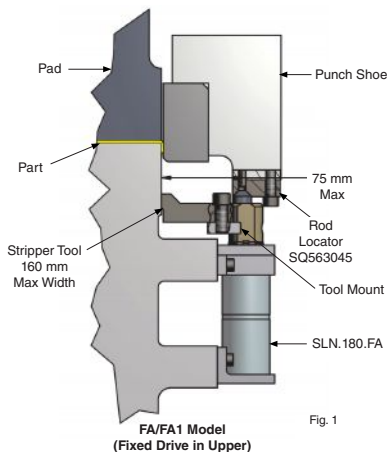


Fig. 1

The SLN.180.FA is installed in a flange application with the Stripper Tool mounted to the lifter's Tool Mount, shown in Figure 1. As the Punch Shoe retracts, the tool strips the part from the die. The lifter's Rod Locator (SQ563045) is attached to the Punch Shoe and is used for guidance of the lifter's rod during operation. To maximize reliability do not exceed an offset of 75 mm from the edge of the die to the centerline of the rod and keep the Stripper Tool width under 160 mm.

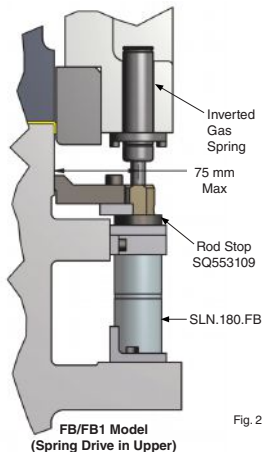


Fig. 2

The SLN.180.FB is used in a flange application when the pad travel is greater than the flange stripper travel, shown in Figure 2. The Rod Stop (SQ553109) is provided to prevent over-travel of the guide rod. An inverted nitrogen gas spring mounted in the upper makes direct contact with the rod end during operation.

The SLN.180.FB model may also be used in conventional lifter applications with modification to the rod end, contact DADCO for more information.

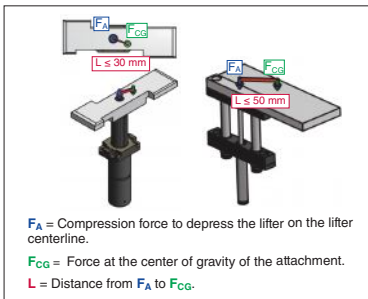
Lifter Model	Gas Spring Used	Maximum Charging Pressure	Operating Temperature Range	Maximum Speed		
SL2.090	C.090	177 bar (2560 psi)	4°C –71°C (40°F –160°F)	1.6 m/sec (63 in/sec)		
SL2.180	C.180					
SLN.090	C.090					
SLN.180	C.180					
SL2.300	L.300	150 bar (2175 psi)				
SLN.300	Integral					
SLC.500	Integral	70 bar (1000 psi)				
SLC.800	Integral					

Lifter Loading and Center of Gravity

To maximize reliability of stand-alone lifters, actuate as close to F_A as possible. Good design practice should minimize L and locate F_{CG} on the centerline of the lifter. Increased wear on the bearing will occur if L exceeded 50 mm or if F_A is offset from the centerline. If large offset is required, reduce attachment load or add additional lifters.

- On-center loading is preferred
- Avoid side load and limit dynamic torque

Dynamic Moment Loading					
Torque Max	SLN.090	SLN.180 / SLN.300	SL2.090	SL2.180	SL2.300
lb-in	127	269	122	163	131
lb-ft	11	22	10	14	11
N.m	14	30	14	18	15



Repair Kits

Lifter Model	Kit Number	Description
SL2.090	SL2.RK.090 (25-125 mm strokes) SL2.RL.090 (150, 175 and 200 mm strokes)	Repair kit includes bearing with snap rings (2), dampening devices (2) and a maintenance manual.
SL2.180	SL2.RK.180 (25-125 mm strokes) SL2.RL.180 (150, 175 and 200 mm strokes)	Repair kit includes bearing with snap rings (2), dampening devices (2) and a maintenance manual.
SL2.300	SL2.RK.300	Repair kit includes bearing assemblies with snap rings (2), dampening devices (2) and a maintenance manual.
SLN.090	SLN.RK.090	Repair kit includes bearing, piston rider, rod keys (2), assembly grease, threadlocker capsule, and a maintenance manual.
SLN.180	SLN.RK.180	Repair kit includes bearing, piston rider, rod keys (2), assembly grease, threadlocker capsule, and a maintenance manual.
SLN.300	SLN.RK.300	Repair Kit includes dust cover, bearing, cartridge assembly, piston rider, set screws, bottle of assembly oil, assembly grease and a maintenance manual.
SLC.500	SLC.RK.500	Repair Kit includes dust cover, cushion collar assembly, cartridge assembly, bottle of assembly oil and a maintenance manual.
SLC.800	SLC.RK.800	Repair Kit includes dust cover, cushion collar assembly, cartridge assembly, bottle of assembly oil and a maintenance manual.

DADCO®

Delay Return System

DRS Series



*Custom Systems
for Delayed Return
Operation*



PED
2014/68/EU
COMPLIANT

Delay Return System (DRS) Introduction

Patented Technology

DRS System Features

- Modular accumulator system
- Reliable leak-free operation
- Controlled travel on return stroke
- No filling or bleeding during installation
- 115 VAC, 230 VAC or 24 VDC operation
- Reliable nitrogen pressure control
- Quick connect hydraulic hose and fittings
- Numerous cylinder options
- Optional fan accessory for cooling
- Optional No Spring-Back accessory (*patented*)

System Components



Control Panel with Hose Assembly

Control panel is connected to the accumulator allowing for filling, draining and monitoring of the nitrogen gas pressure in the system.



Die Tag

The tag includes all operating specifications.

Hydraulic Cylinder

Cylinder is filled with hydraulic oil. When the rod is actuated by the press the oil flows to the accumulator.



Hydraulic Hose and Fittings

Highly durable hose and o-ring face seal fittings connect the hydraulic cylinder to the accumulator.

Quick Disconnects

Zero-leakage quick disconnects facilitate installation and service.



Accumulator

Nitrogen gas-over-hydraulic oil accumulator converts nitrogen pressure to oil pressure.



Solenoid Valve

Solenoid valve is connected to the accumulator and controls the flow of hydraulic oil to the hydraulic cylinders. An electrical signal from a press or die controller maintains the system delay.

No Spring-Back

Optional no-spring back (SBE) accessory is available for thin or fragile parts where zero force at the bottom of the stroke is required. This accessory is attached to the accumulator to remove the typical 1-4% spring-back that occurs during operation.

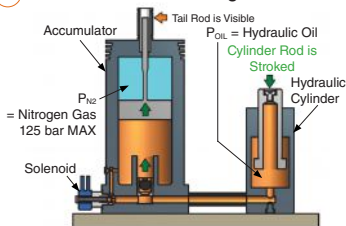


Active Cooling

Optional electric fan accessory is installed onto the accumulator to dissipate the heat generated in the accumulator during operation. Other custom cooling solutions are available, contact DADCO.

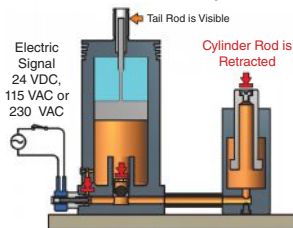


1 Down Stroke: Part Forming



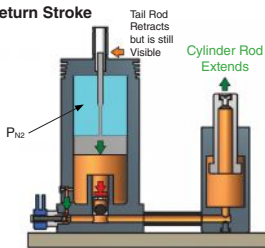
The accumulator is pressurized with nitrogen gas to energize the hydraulic oil to the pressure required for the forming application. The hydraulic cylinder and accumulator have equivalent pressure ($P_{N_2} = P_{OIL}$). During the downstroke of the die, the hydraulic cylinder delivers force like a typical nitrogen gas spring. The oil in the hydraulic cylinder is transferred through the accumulator's main check valve.

2 Bottom of Stroke: Part Complete



The solenoid valve is energized before the part is completely formed. The main check valve holds the pressurized oil in the accumulator. The hydraulic cylinder's rod will stay retracted as the press opens. A 1-4% spring-back may occur during the delayed action. An optional No Spring-Back accessory is available.

3 Return Stroke



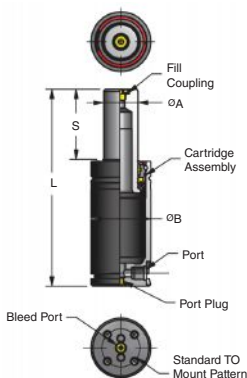
After the part is completed and the ram retracts, the solenoid valve is deactivated allowing the cylinder rod to extend at a controlled rate. During extension, the heat generated by the accumulator dissipates and the tail rod will retract into the indicator tube. An electrical fan or other options may be installed with the accumulator to facilitate cooling.

Note: Systems with higher tonnage, rapid production rates or long pad travel may require additional cooling components.

General Operating Specifications

Charging Medium:	Nitrogen Gas	Maximum Velocity:	1 m/sec (39 inch/sec)
Maximum Charging Pressure:	125 bar (1800 psi)	System Oil:	ISO viscosity of 32, index of 95
Maximum Operating Temperature:	63°C (145°F)	Specific operating conditions will be assigned per system.	

Hydraulic Cylinders

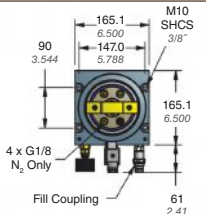


Refer to the UH Series Catalog for cylinder and mount information. Cylinder height may vary for alternate port sizes.

Model	ØA	ØB	S mm	L	On-Contact Force* kN	lb.
UD.1000_G1	28 1.10	50 1.968	025 038	(2 x S) + 52	7.70	1,730
UD.1600_F6	36 1.42	63 2.480	050 050	(2 x S) + 58	12.72	2,860
UD.2600_F6	45 1.77	75 2.953	063 075	(2 x S) + 59	19.88	4,470
UD.4600_F8	60 2.36	95 3.740	080 100	(2 x S) + 72	35.34	7,945
UD.6600_F10	75 2.95	120 4.724	125	(2 x S) + 87	55.22	12,410

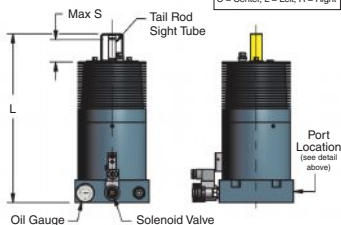
*Maximum Charging Pressure is 125 bar.

Accumulators



Port Detail (Size, Quantity and Location)
F6, P4C
F8, P2C
F10, P1C
F10, P1C

F6 = SAE-6, F8 = SAE-8,
F10 = SAE-10
P... = Number of Ports
C = Center, L = Left, R = Right



Accumulator Example:
AC.50.24.F6.P4C.115
Vol. Port G1/2" Volt

Model	Vol. cu in liter	S mm inch	L
AC.50.12	12 0.20	25 0.98	325 12.79
AC.50.24	24 0.40	50 1.97	375 14.76
AC.50.36	36 0.60	75 2.95	400 15.75

Options (available with all models)		
Port	Quantity and Location	Voltage
F6	P4C	24 VDC
F8	P2C	115 VAC
F10	P1C	230 VAC

Custom System Requirements

Each DRS is designed based on customer requirements and is factory tested to ensure proper operation prior to shipment. To request a quote for a system, details about the tonnage, travel and production rate of the application are required. Contact DADCO Engineering for a proposal.

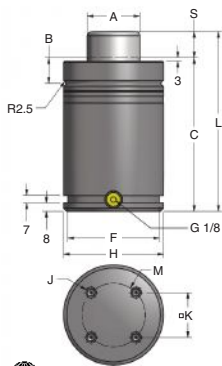
Tonnage	Estimate tonnage required for the holding force on-contact. If particular cylinder sizes are known, provide the quantity, model, stroke and pressure. Advise of any special requirements.
Travel	Actual pad travel is required. The travel is used to determine the volume of the system, system pressure and maximum operating speed of the system. Provide information about potential spring-back issues.
Production Rate Estimate	PR = Production Rate in Parts per Minute The DRS can be designed to meet a wide range of production rates. Additional cooling features may be required depending on the system requirements. Use the formulas to the right to determine the maximum acceptable rate of production. Imperial $PR = \frac{400,000 \times A}{(S \times F)}$ Metric $PR = \frac{46,000 \times A}{(S \times F)}$ F = On-Contact Force (lb.) F = On-Contact Force (kN) S = Pad Stroke (inch) S = Pad Stroke (mm) A = Number of Accumulators Required Formulas based on system with active cooling option.

90.10RX Series

RX Series Nitrogen Gas Springs

The patented 90.10RX Series replaces the 90.10R – RIC Series utilizing concepts from DADCO's ISO Series. A direct replacement for the 90.10R, the 90.10RX Series matches the ISO envelope, reduces overall impact forces and emphasizes a robust design for long life.

TO – Basic Model



Patented



- Mechanical shock and noise are reduced on initial impact.
- Matches ISO envelope.

Model	A	B	F	H	J	K	M
90.10RX.03000	ø50	24.0	ø87	ø95	4 x M8	42.4	ø60
90.10RX.05000	ø65	25.5	ø112	ø120	4 x M10	56.6	ø80
90.10RX.07500	ø80	27.5	ø142	ø150	4 x M10	70.7	ø100
90.10RX.10000	ø95	33.5	ø187	ø195	4 x M12	84.9	ø120

	Model	90.10RX.03000 30 kN / 3 ton	90.10RX.05000 50 kN / 5 ton	90.10RX.07500 75 kN / 7.5 ton	90.10RX.10000 100 kN / 10 ton
Part No.	S mm	C L ±0.25	C L ±0.25	C L ±0.25	C L ±0.25
90.10RX...025	25.0	145.0 170.0	165.0 190.0	180.0 205.0	N/A N/A
90.10RX...038	37.5	157.5 195.0	177.5 215.0	192.5 230.0	N/A N/A
90.10RX...050	50.0	170.0 220.0	190.0 240.0	205.0 255.0	210.0 260.0
90.10RX...063	62.5	182.5 245.0	202.5 265.0	217.5 280.0	N/A N/A
90.10RX...080	80.0	200.0 280.0	220.0 300.0	235.0 315.0	240.0 320.0
90.10RX...100	100.0	220.0 320.0	240.0 340.0	255.0 355.0	260.0 360.0
90.10RX...125	125.0	245.0 370.0	265.0 390.0	280.0 405.0	285.0 410.0
90.10RX...160	160.0	280.0 440.0	300.0 460.0	315.0 475.0	320.0 480.0
90.10RX...200	200.0	320.0 520.0	340.0 540.0	355.0 555.0	360.0 560.0
90.10RX...300	300.0	420.0 720.0	440.0 740.0	455.0 755.0	N/A N/A

Ordering Example:

90.10RX.05000.025. TO. C. 150

Part Number: Includes Series, _____
Model and Stroke Length.

Mount Option: TO = Basic Model. _____

For complete mount selection, refer to the 90.10/90.8 Catalog. When not specified, default is TO.

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.

For information on other products from DADCO that reduce pad bounce, refer to bulletin B02107A on DADCO's Pad Bounce Reducers.

Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

Operating Specifications

Charging Medium:	Nitrogen Gas	Operating Temperature:	4°C – 71°C (40°F – 160°F)*
Charging Pressure Range:	15 – 150 bar (220 – 2175 psi)	Maximum Speed:	1.6 m/sec (63 in/sec)

*For extended range applications contact DADCO.

Comparison of DADCO 90.10 and 90.10RX Gas Springs

To assess the ability of RX Series Springs to reduce overall impact forces, it is necessary to take into account the other dynamic forces acting within the press tool.

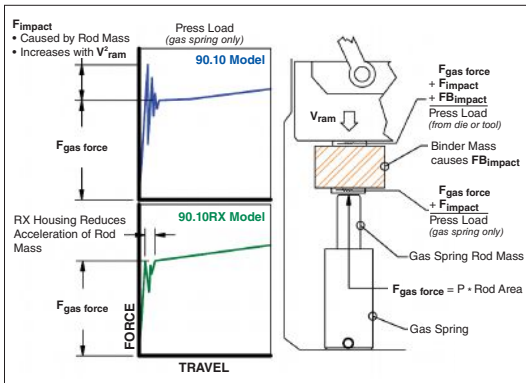
F_{gas force} = Nominal gas spring force required for forming

F_{impact} = Impact force caused by rod mass

FB_{impact} = Impact force caused by binder or pad mass

V_{ram} = Ram Velocity

NOTE: The RX Series will not reduce impact to press caused by binder mass (FB_{impact}).



Mount Options

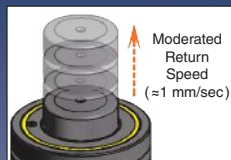


DADCO offers a wide variety of mounts. Refer to the 90.10/90.8 Catalog for DADCO's full line of mounts and accessories.

DADCO®

Die Storage Gas Springs

90.10 DS Series



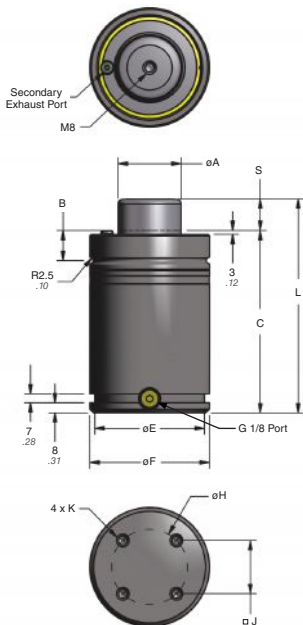
- Long spring life
- Lower operating temperature
- Directly interchanges with ISO models



Die Storage Nitrogen Gas Springs

90.10 DS Series

DS Springs are designed specifically for die storage applications. The DS models return at a moderated speed, unlike standard gas springs that return at the speed of the ram. After the initial hit, only a small portion of the DS stroke is engaged during each press stroke resulting in reduced operating temperature, minimal wear, and longer spring life.



TO – Basic Model 

Part No.	S mm inch	Model					
		03000		05000		07500	
		C	L ±0.25 ±.010	C	L ±0.25 ±.010	C	L ±0.25 ±.010
90.10DS.....050	50 1.97	170 6.69	220 8.661	190 7.48	240 9.449	205 8.07	255 10.039
90.10DS.....080	80 3.15	200 7.87	280 11.024	220 8.66	300 11.811	235 9.25	315 12.402
90.10DS.....100	100 3.94	220 8.66	320 12.598	240 9.45	340 13.386	255 10.04	355 13.976
90.10DS.....125	125 4.92	245 9.65	370 14.567	265 10.43	390 15.354	280 11.02	405 15.945
90.10DS.....160	160 6.30	280 11.02	440 17.323	300 11.81	460 18.110	315 12.40	475 18.701
90.10DS.....200	200 7.87	320 12.60	520 20.472	340 13.39	540 21.260	355 13.98	555 21.850
90.10DS.....250	250 9.84	370 14.57	620 24.409	390 15.35	640 25.197	405 15.94	655 25.787
90.10DS.....300	300 11.81	420 16.54	720 28.346	440 17.32	740 29.134	455 17.91	755 29.724

Other stroke lengths available.

Model	03000	05000	07500
A	50 1.97	65 2.56	80 3.15
B	24 .94	25.5 1.00	27.5 1.08
E	87 3.43	112 4.41	142 5.59
F	95 3.740	120 4.724	150 5.906
H	60 2.362	80 3.150	100 3.937
J	42.4 1.670	56.6 2.227	70.7 2.783
K	M8 x 12 Deep .47	M10 x 16 Deep .63	M10 x 16 Deep .63

On-Contact Force

Model No.	psi	lb.	bar	daN
90.10DS.03000	2175	6619	150	2945
90.10DS.05000	2175	11187	150	4977
90.10DS.07500	2175	16946	150	7540

Ordering Example:

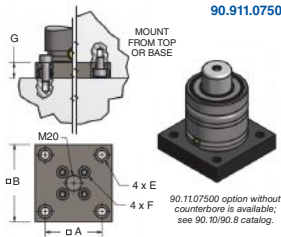
90.10DS.05000.100. TO. C. 150

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

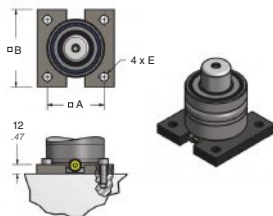
Mount Option: TO = Basic Model. When not specified, default is TO. Mounts ordered with cylinder will be attached at the factory.

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

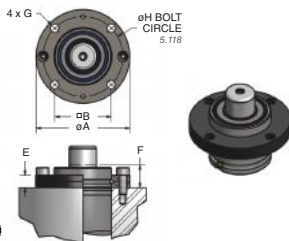
Operating System: C = Self-contained, F = Open Flow Fitting. When not specified, default is C, self-contained.

B11 / F11
90.11.03000 / 90.11.05000 / 90.11.07500


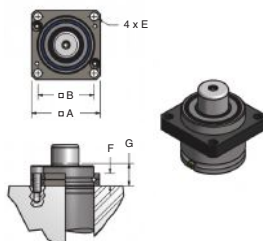
Model No.	A	B	E	F	G
90.10DS.03000	92 3.622	120 4.72	M12 SHCS 1/2	M8 SHCS	20 .79
90.10DS.05000	109.5 4.311	140 5.51	M12 SHCS 1/2	M10 SHCS	20 .79
90.10DS.07500	138 5.433	190 7.48	M16 SHCS 5/8	M10 SHCS	25 .98

B12
90.12._____


Model No.	A	B	E
90.10DS.03000	92 3.622	120 4.72	M12 SHCS 1/2
90.10DS.05000	109.5 4.311	140 5.51	M12 SHCS 1/2
90.10DS.07500	138 5.433	190 7.48	M16 SHCS 5/8

B21
90.21._____


Model No.	A	B	E	F	G	H
90.10DS.03000	150 5.90	92 3.622	18 .71	33 1.30	M12 SHCS 1/2	130 5.118
90.10DS.05000	175 6.89	109.5 4.311	21 .83	36 1.42	M12 SHCS 1/2	155 6.102
90.10DS.07500	220 8.66	138 5.433	27 1.06	41 1.61	M16 SHCS 5/8	195 7.677

B25
90.25._____


Model No.	A	B	E	F	G
90.10DS.03000	110 4.33	92 3.622	M12 SHCS 1/2	18 .71	33 1.30
90.10DS.05000	130 5.12	109.5 4.311	M12 SHCS 1/2	21 .83	36 1.42
90.10DS.07500	162 6.38	138 5.433	M16 SHCS 5/8	27 1.06	41 1.61

Ordering Example: Cylinder with Mount: 90.10DS.05000.100.B12.C.150

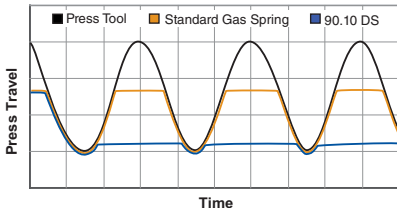
Mount Only: 90.12.05000

Welded mounts available, contact DADCO for more information.

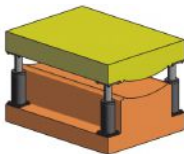
Refer to Section 6 for all Nitrogen Gas Spring Repair Kits, Tools & Accessories.

Technical Data

The 90.10 DS nitrogen gas springs are designed with a reduced rate of return (≈ 1 mm/sec) making them an ideal choice for die separation. Following the initial contact, only a small portion of the 90.10 DS total stroke length is engaged during each cycle. The reduced travel per cycle results in lower overall operating temperature and decreased wear on the gas spring and press components.

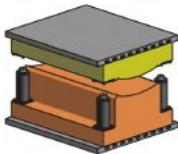


Application Examples

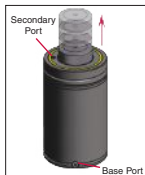


F.1

DADCO recommends using 90.10 DS cylinders in each corner of the die for well balanced die separation, F.1. 90.10 DS cylinders are a direct replacement for traditional die storage components and do not need to be removed from the die before installation into the press. When installed in corners, striker plates provide a flat, hardened surface for impact. Refer to the Recommended Max Lifting Load table below to verify the load does not exceed the recommended limit.



F.2



During operation 90.10 DS cylinders return at a slower rate than traditional gas springs, F.2. Before servicing the die, verify rods are fully extended (may take up to 3 minutes). **If rods do not fully extend, gas spring requires service. Pressure must be exhausted at the Base Port before venting the Secondary Port. For more information contact DADCO.**

Recommended Max Lifting Load

Model	90.10DS.03000		90.10DS.05000		90.10DS.07500	
# of Units	kg	lb.	kg	lb.	kg	lb.
4	9600	21180	16230	35790	24600	54220
6	14410	31770	24350	53690	36890	81340

Operating Specifications

Charging Medium: Nitrogen Gas
Charging Pressure Range: 15 – 150 bar (220 – 2175 psi)
Operating Temperature: 4°C – 71°C (40°F – 160°F)
Maximum Speed: 1.6 m/sec (63 in/sec)

CAUTION

- Slow return stroke: may take 3 minutes for full rod extension.
- DO NOT attempt maintenance on spring until internal pressure is exhausted.
- Exhaust pressure at Base Port first.
- Release any remaining pressure from Secondary Port to verify complete exhaust.

DADCO®

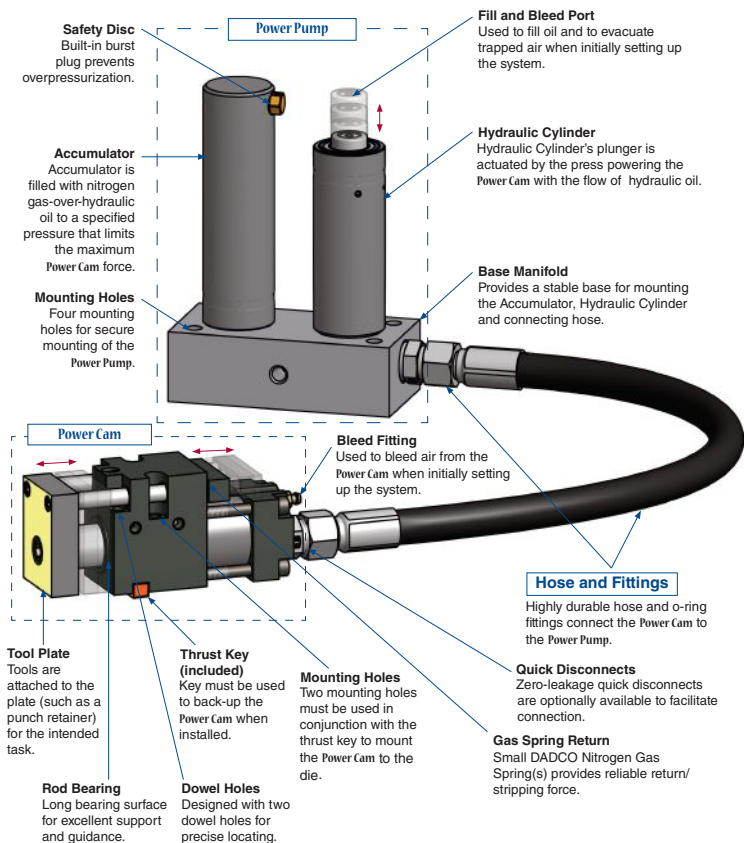
Power Cam and Power Pump System



- Ideal for secondary operations such as punching, piercing, forming or flanging
- Power Cam may be installed and operated in any orientation
- 15 kN and 40 kN force models

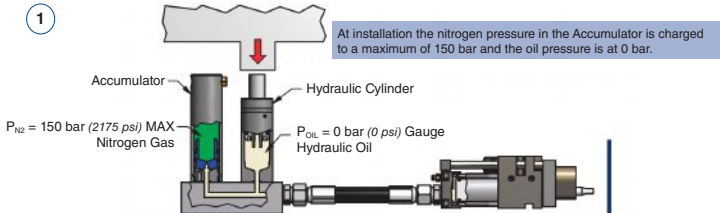


Guided Hydraulic Die Cam with Nitrogen Return

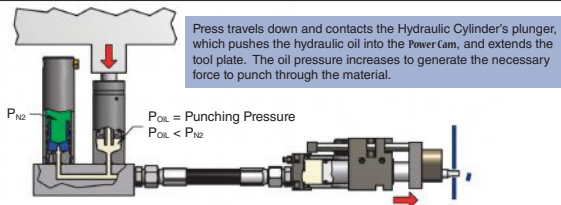


Operation Overview

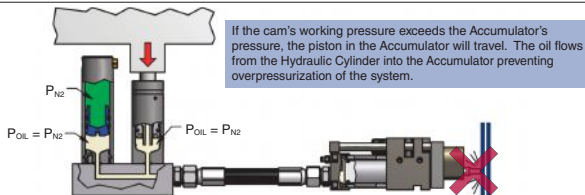
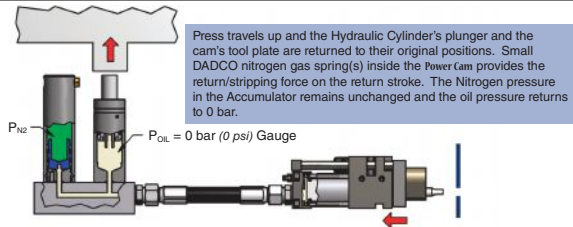
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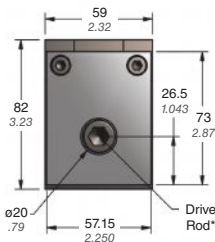
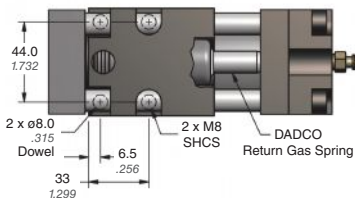


2

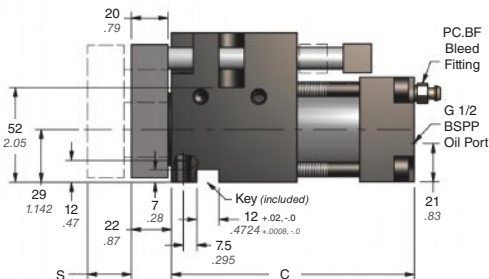


3





*For best performance mount tool
in the center of the drive rod.



Maximum Force

Imperial

Pressure (psi)	Force (lb.)
2175	3463
1750	2635
1500	2148
1000	1174
750	687

Metric

Pressure (bar)	Force (kN)
150	15.40
125	12.26
100	9.12
75	5.98
50	2.84

Based on Accumulator's nitrogen charging pressure.

Part No.	S mm inch	C	Return Gas Spring
PC.C.015.024	24.0 0.94	133.5 5.26	C.180.025.YW
PC.C.015.049	49.0 1.93	158.5 6.24	C.180.050.YW

Return/Stripping Force	1.55 kN 348 lb.
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Ordering Example:

PC.C.015. 024

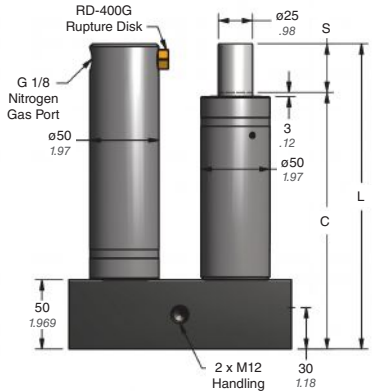
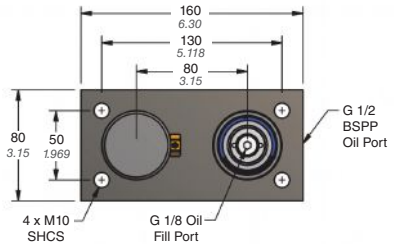
Part Number:

Includes Series and Model

Stroke Length (mm):

24 or 49

Note: System ships unfilled. Refer to Bulletin #B11100 for system setup instructions.



Part No.	S mm inch	C	L
PP.B.015.035	35.0 1.38	185.0 7.28	220.0 8.661
PP.B.015.060	60.0 2.36	210.0 8.27	270.0 10.630
PP.B.015.110	110.0 4.33	260.0 10.24	370.0 14.567

Ordering Example:

PP.B.015. 035

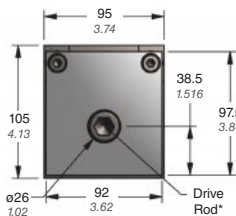
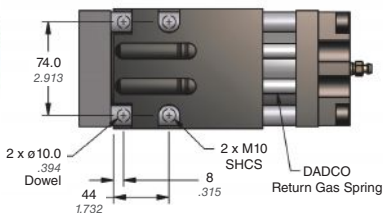
Part Number:

Stroke Length (mm):

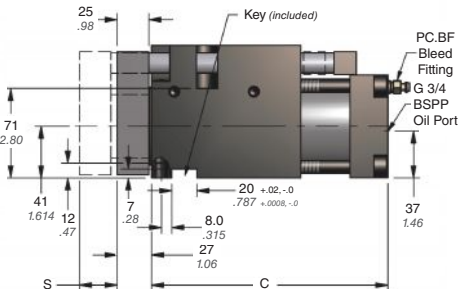
Includes Series and Model

035, 060 or 110

Note: System ships unfilled. Refer to Bulletin #B11100 for system setup instructions.



*For best performance mount tool
in the center of the drive rod.



Maximum Force

Imperial

Pressure (psi)	Force (lb.)
2175	9062
1750	7009
1500	5801
1000	3385
750	2177

Metric

Pressure (bar)	Force (kN)
150	40.31
125	32.52
100	24.73
75	16.94
50	9.15

Based on Accumulator's nitrogen charging pressure.

Part No.	S mm inch	C	(2) Return Gas Spring
PC.C.040.024	24.0 0.94	187 7.36	C.180.025.YW
PC.C.040.049	49.0 1.93	212 8.35	C.180.050.YW
PC.C.040.099	99.0 3.90	262 10.31	C.180.100.YW
PC.C.040.124	124.0 4.88	287 11.30	C.180.125.YW

Return/Stripping Force	3.55 kN 800 lb.
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Ordering Example:

PC.C.040. 024

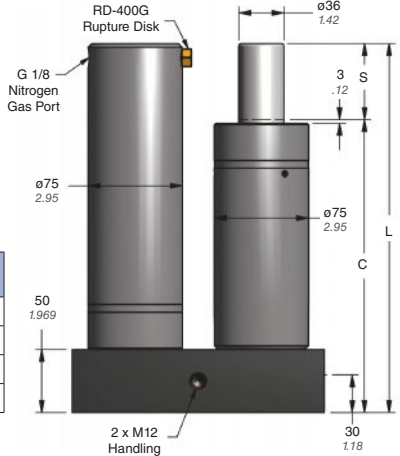
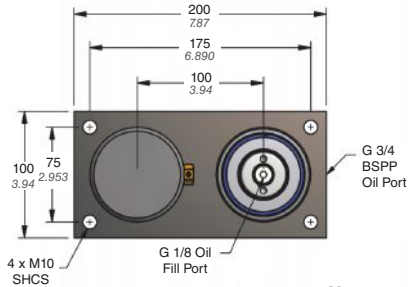
Part Number:

Includes Series and Model

Stroke Length (mm):

24, 49, 99 or 124

Note: System ships unfilled. Refer to Bulletin #B11100 for system setup instructions.



Part No.	S mm inch	C	L
PP.B.040.035	35.0 1.38	207.0 8.15	242.0 9.528
PP.B.040.060	60.0 2.36	232.0 9.13	292.0 11.496
PP.B.040.110	110.0 4.33	282.0 11.10	392.0 15.433
PP.B.040.160	160.0 6.30	332.0 13.07	492.0 19.370

Ordering Example:

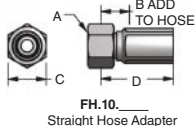
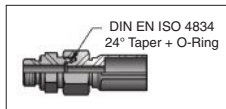
PP.B.040. 035

Part Number: _____
Includes Series and Model

Stroke Length (mm): _____
035, 060, 110 or 160

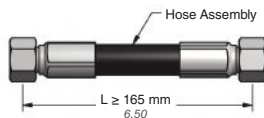
Note: System ships unfilled. Refer to Bulletin #B11100 for system setup instructions.

Hydraulic Hose and Adapter



Part No.	FH.10.C08.D16 (for 90.800 Hose)	FH.10.C12.D20 (for 90.1200 Hose)
A	M24 x 1.5	M30 x 2.0
B	24 .94	25 .98
C	30 1.18	36 1.42
D	56 2.20	64 2.52

	For use with PPB.015 and P.C.C.015	For use with PPB.040 and P.C.C.040
	90.800 (Y-800) Hose	90.1200 (Y-1200) Hose
OD	24 .93	31 1.21
ID	12.5 .50	19 .75
Working Pressure	280 bar 4000 psi	280 bar 4000 psi
Burst Pressure	1100 bar 16000 psi	1100 bar 16000 psi
Bend Radius	90 3.50	120 4.75
Crimp Die	83C-D08	83C-D12

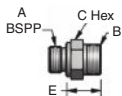


Hose Assembly Ordering Codes:

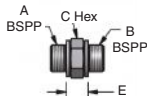
90.800.D16.D16.....L L (mm)
90.1200.D20.D20.....L L (mm)

Do not exceed 2000 mm hose length.

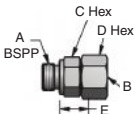
Port Adapters



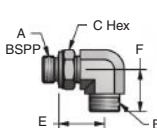
Part No.	FP.10.G08.D16	FP.10.G12.D20
A	G 1/2	G 3/4
B	M24 x 1.5	M30 x 2.0
C	27 1.06	32 1.26
E	27 1.06	31 1.22



Part No.	FP.10.G08.G08	FP.10.G12.G12
A	G 1/2	G 3/4
B	G 1/2	G 3/4
C	27 1.06	32 1.26
E	19.3 .76	15 .59



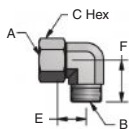
Part No.	FP.13.G08.D16	FP.13.G12.D20
A	G 1/2	G 3/4
B	M24 x 1.5	M30 x 2.0
C	27 1.06	32 1.26
D	30 1.18	36 1.42
E	28.5 1.12	34 1.34



Part No.	FP.20.G08.D16	FP.20.G12.D20
A	G 1/2	G 3/4
B	M24 x 1.5	M30 x 2.0
C	27 1.06	36 1.42
E	36 1.42	39 1.54
F	33 1.30	38 1.50

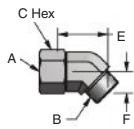
Hose and Fittings

Fittings



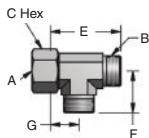
FS.20.
Swivel Nut 90° Elbow

Part No.	FS.20.ZZZ.D16	FS.20.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
B	M24 x 1.5	M30 x 2.0
C	30 1.18	36 1.42
E	28 1.10	35.5 1.40
F	33 1.30	37 1.46



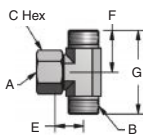
FS.30.
Swivel Nut 45° Elbow

Part No.	FS.30.ZZZ.D16	FS.30.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
B	M24 x 1.5	M30 x 2.0
C	30 1.18	36 1.42
E	45.5 1.79	54.5 2.15
F	17 .67	19 .75



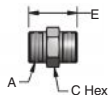
FS.50.
Run Tee

Part No.	FS.50.ZZZ.D16	FS.50.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
B	M24 x 1.5	M30 x 2.0
C	30 1.18	36 1.42
E	61 2.40	72.5 2.85
F	33 1.30	37 1.46
G	28 1.10	35.5 1.40



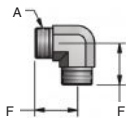
FS.40.
Branch Tee

Part No.	FS.40.ZZZ.D16	FS.40.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
B	M24 x 1.5	M30 x 2.0
C	30 1.18	36 1.42
E	28 1.10	35.5 1.40
F	33 1.30	37 1.46
G	66 2.60	74 2.91



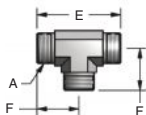
FN.10.
Union

Part No.	FN.10.ZZZ.D16	FN.10.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
C	27 1.06	32 1.26
E	38 1.50	44 1.73



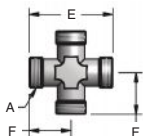
FN.20.
Union Elbow

Part No.	FN.20.ZZZ.D16	FN.20.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
F	33 1.30	37 1.46



FN.40.
Union Tee

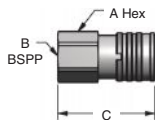
Part No.	FN.40.ZZZ.D16	FN.40.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
E	66 2.60	74 2.91
F	33 1.30	37 1.46



FN.60.
Union Cross

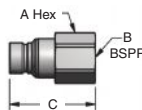
Part No.	FN.60.ZZZ.D16	FN.60.ZZZ.D20
A	M24 x 1.5	M30 x 2.0
E	66 2.60	74 2.91
F	33 1.30	37 1.46

Quick Disconnects (Zero Leakage)



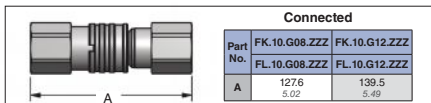
Female Quick Disconnect

Part No.	FK.10.G08.ZZZ	FK.10.G12.ZZZ
A	36 1.42	41 1.61
B	G 1/2	G 3/4
C	76.8 3.02	84 3.31



Male Quick Disconnect

Part No.	FL.10.G08.ZZZ	FL.10.G12.ZZZ
A	36 1.42	36 1.42
B	G 1/2	G 3/4
C	68 2.68	73 2.87



Connected

Part No.	FK.10.G08.ZZZ	FK.10.G12.ZZZ
A	127.6 5.02	139.5 5.49

Hose Protectors

Shield

90.550.080

Protective shields are used to extend the life of the 90.800 or 90.1200 hose by preventing wear. Each shield is 203 mm (8 inches) long and includes tie wraps for attaching to the hose at any position.



Guard

90.551.800 (for use with 90.800 hose)

90.551.1200 (for use with 90.1200 hose)
L (mm)

Protective guard is used to extend the life of the hose by preventing wear. The polyethylene guard wraps around the hose for installation and removal at any time and is cut to a specified length.



Coil

90.552.800 (for use with 90.800 hose)

90.552.1200 (for use with 90.1200 hose)
L (mm)

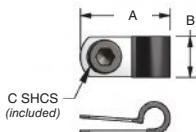
Protective coil is used to extend the life of the hose by preventing wear. This rugged steel coil is plated to resist rust and must be installed on the hose prior to attaching the hose ends and is cut to a specified length.



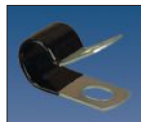
Hose Strap

90.504.800 (for use with 90.800 hose)

90.504.1200 (for use with 90.1200 hose)

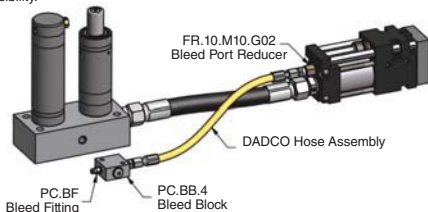


Part No.	90.504.800	90.504.1200
A	52 2.05	67.5 2.66
B	20 .79	26.5 1.04
C	M10	M12



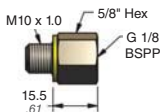
Hydraulic Accessories

DADCO provides a variety of accessories for the Power Cam and Power Pump System. The figure below shows the proper use of the Bleed Port Reducer, Bleed Fitting and Bleed Block; used to bleed the air out of the Power Cam prior to operation when the cam lacks accessibility.



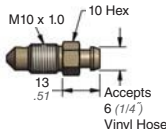
Bleed Port Reducer FR.10.M10.G02

Use the Bleed Port Reducer to connect the Power Cam to the Bleed Block.



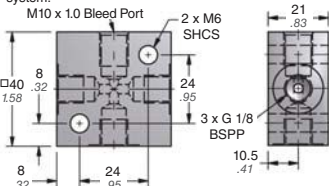
Bleed Fitting PC.BF

Use the Bleed Fitting to evacuate air from the system.



Bleed Block PC.BB.4

Use the Bleed Block to remotely bleed the air out of the system.



Spanner Wrench

SW-3 (for use with PP.B.015)
SW-55 (for use with PP.B.040)

Use the Spanner Wrench in conjunction with a 5 mm hex key to remove the oil fill port plug from the hydraulic cylinder.



Power Pump Filler PPF-6

Use the PPF-6 with the DRS. FPA6 Oil Pump to fill and bleed the hydraulic oil from the System. Includes 10 ft. of low pressure vinyl hose.



Oil Pump DRS.FPA6

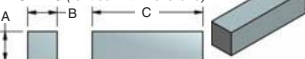
Air powered oil pump with 7.5 L (2 gallon) plastic reservoir used for filling and replacing system oil. The assembly comes with hose and coupling and a high pressure filter on the outlet line.



Air Supply: 3-8 bar (40-150 psi)
Reservoir: 7.5 L (2 gallon)
Flow: 1.2 L/min (75 in³/min)
at 7 bar (100 psi) inlet pressure

Thrust Key

PCK-15 (for use with PC.C.015)
PCK-40 (for use with PC.C.040)



Part No.	PCK-15	PCK-40
A	12 +.00, -.05 .472 +.00, -.002	17 +.00, -.05 .669 +.00, -.002
B	12 +.00, -.05 .472 +.00, -.002	20 +.00, -.05 .787 +.00, -.002
C	45 1.77	95 3.74

Operating Specifications

Medium:	Nitrogen Gas ISO VG 32 Hydraulic Oil	Maximum Velocity:	0.8 m/s (2.6 ft/s)
Operating Temperature:	10°C – 60°C (50°F – 140°F)	Max. Nitrogen Gas Pressure:	150 bar (2175 psi)

See Bulletin #B11100 for system setup instructions.

Power Pump Design Consideration

The Power Pump is connected to the Power Cam using a hydraulic hose assembly. Typically, hydraulic systems experience hose expansion during operation caused by an increase in hydraulic pressure. Hose expansion may be compensated in the Power Cam and Power Pump System by adjusting the travel of the Power Pump. Use the equations below to calculate the additional travel required for the Power Pump to achieve the desired Power Cam travel.

Power Cam and Power Pump System – 15	Power Cam and Power Pump System – 40
$T = .00009 \times (F + 3.4) \times L$	$T = .000029 \times (F + 114) \times L$

T = Additional Power Pump Travel (mm)

F = Force to Perform Operation (kN)

L = Hose Length (mm)



Example:

The Power Cam (PC.C.015) must travel 35 mm to punch a hole that requires **12 kN** of force and is connected to the Power Pump using a **1800 mm** long hose.

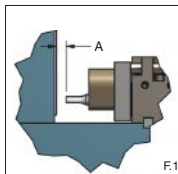
Using the equation given, the Power Pump (PP.B.015) will need to travel an additional **2.5 mm** (37.5 mm total) to make certain that the Power Cam (PP.C.015) travels 35 mm.

$$T = .00009 \times (12 + 3.4) \times 1800$$

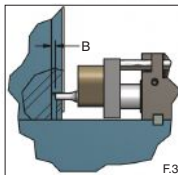
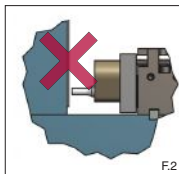
$$T = 2.5 \text{ mm}$$

Power Pump Travel = 35 mm + 2.5 mm
Power Pump Travel = 37.5 mm

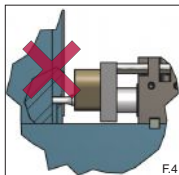
Power Cam Design Considerations



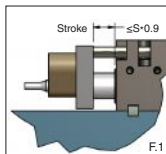
- Allow adequate clearance (A) for the tool prior to operation to achieve best results (F.1). DADCO recommends a clearance of 10% of the stroke length.
- Setting up the Power Cam without adequate clearance between the tool and the work piece may result in contact, causing damage (F.2) to the system.



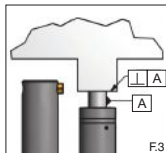
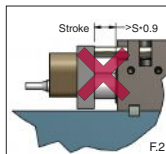
- Allow for clearance (B) at the end of the travel of the cam's tool to achieve optimal performance (F.3).
- Designs without adequate clearance for the travel of the tool, will result in overpressurization of the Power Cam and Power Pump System, which may lead to premature failure (F.4).



Installation Recommendations

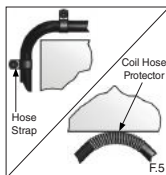
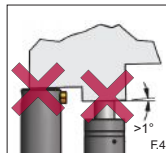


- DADCO's Power Cam and Power Pump System will permit travel of the full nominal stroke; however, a 10% stroke reserve is recommended to achieve optimal performance and safety (F.1, F.2).
- Verify that all air is bled out of the Power Cam and Power Pump System to ensure proper operation.
- Contact DADCO when linking multiple cams to one Power Pump.
- Never compress the Accumulator in a vice or clamp outside of the die as damage can result.



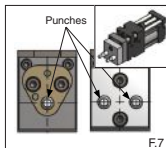
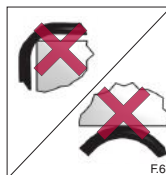
Avoid Side Loading

- Verify that there is adequate clearance in the die for the Accumulator. **DO NOT** impact the top of the Accumulator (F.3).
- Side loading resulting from press action or die construction causes increased wear on the bearing, seal and plunger of the Hydraulic Cylinder (F.4). Therefore, avoid side loading when possible (F.3).



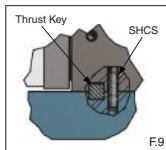
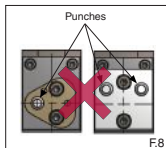
Hose Installation

- Use hose clamps to secure the hose in place and add hose protectors to the hose when necessary to protect against abrasion, thus extending hose life (F.5).
- Unprotected or improperly installed hydraulic hose may rub against rough surfaces causing wear and reducing hose life (F.6).



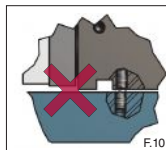
Punch Installation

- DADCO recommends locating a single punch on center of the drive rod on the tool plate for optimal performance (F.7).
- Punch(es) must be installed symmetrically, spaced through the centerline of the drive rod (F.7). Contact DADCO for more information.
- Punch(es) that are installed off-center or not placed symmetrically through the centerline of the drive rod will cause side load, increasing wear on the cam and reducing life (F.8).



Power Cam Mounting

- Choose proper length screws to maximize thread engagement.
- A Thrust Key installed at the base of the cam must be used in addition to the two mounting screws to secure the cam to the die (F.9).
- Mounting screws are not capable of supporting the full load of the Power Cam (F.10).



Notes



Guide Retainer Sets

GRS Series



Combined Guidance and Retention

- Cost savings over common pins, bushings and spools
- Four rod diameters: 25 mm, 30 mm, 36 mm and 50 mm
- Robust one-piece housing with top and bottom wipers
- Various stroke lengths to suit application requirements



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.

Guide Retainer Sets

Designed for use in dies as a replacement for common pins, bushings and spools the Guide Retainer Set (GRS) Series features high quality guided components to ensure exceptionally long service life.

DADCO offers GRS in four models, designated by Guide Rod diameter, to accommodate different load capacities: GRS.25, GRS.30, GRS.36 and GRS. 50.

Retainer Mount Choices

To provide additional mounting flexibility, Guide Retainer Sets are available in two different retainer mount options; Flange Mount and Toe Clamp.

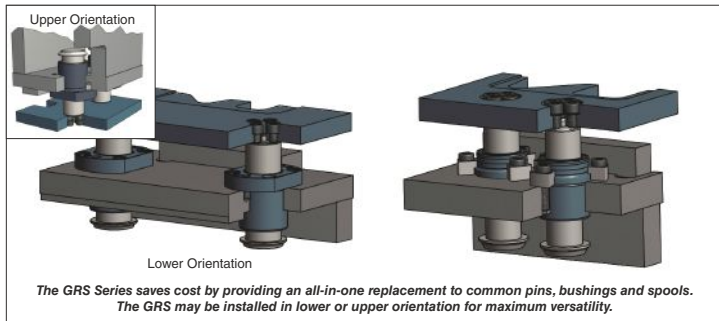
The Flange Mount option, offered for all four rod diameters, has a one-piece Mount and Guide Retainer that is machined to close tolerances. Each Flange Mount has four mount holes and two dowel holes to facilitate installation.

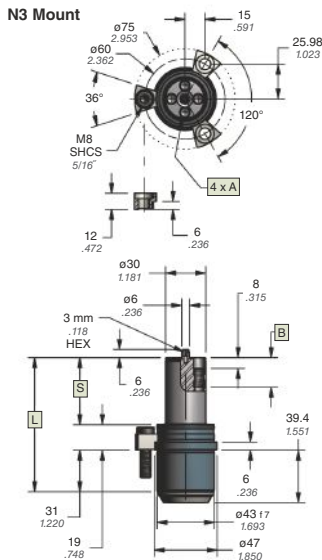
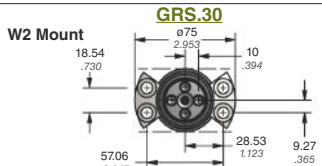
The Toe Clamp option, offered for the GRS.30 and GRS.36 models, permits tight mounting configurations. Wide Toe Clamps in sets of two or Narrow Toe Clamps in sets of three may be ordered with the Guide Rod and Guide Retainer. Additional Toe Clamps may be purchased separately to accommodate personalized mount configurations.



Model	Guide Rod Diameter	FM Flange	W2 Wide (Qty. 2) Toe Clamps	N3 Narrow (Qty. 3) Toe Clamps
GRS.25	25 mm .984"	✓		
GRS.30	30 mm 1.181"	✓	✓	✓
GRS.36	36 mm 1.417"	✓	✓	✓
GRS.50	50 mm 1.968"	✓		

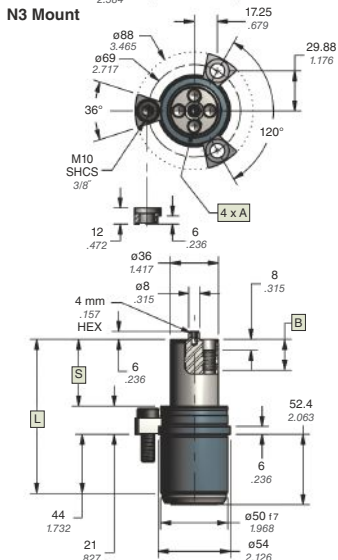
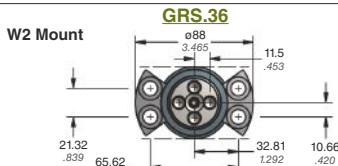
Installation Examples





Guide Pin	A Thread	B Depth
M	M8	22
E	5/16"-18	.87"

L (mm) = S (mm) + 50
L (inch) = S (inch) + 1.968



Guide Pin	A Thread	B Depth
M	M10	23
E	3/8"-16	.91"

L (mm) = S (mm) + 65
L (inch) = S (inch) + 2.559

Ordering Example:

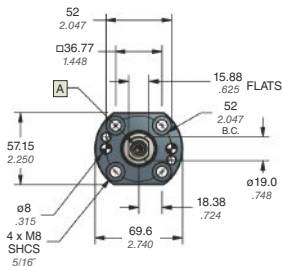
Part Number:
GRS.30 or GRS.36
Guide Rod Option

GRS.30, M, .0250, W2

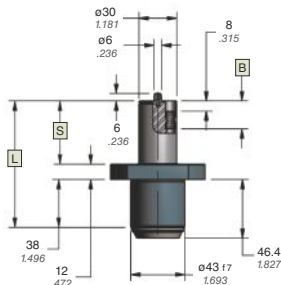
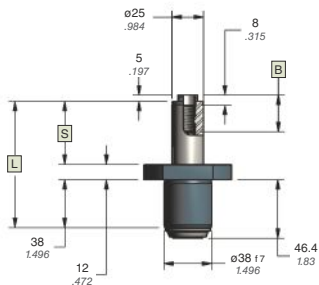
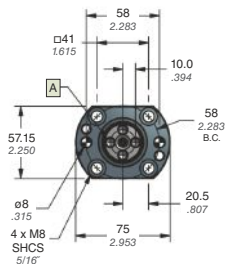
Guide Retainer Mount Option: W2 or N3

Stroke Length: 20.0 mm to 150.0 mm (0.75" to 6.00") in increments of 0.1 mm

GRS.25



GRS.30



Guide Pin	A Thread	B Depth
M	M12	29
E	1/2"-13	1.14"

L (mm) = S (mm) + 50
L (inch) = S (inch) + 1.968

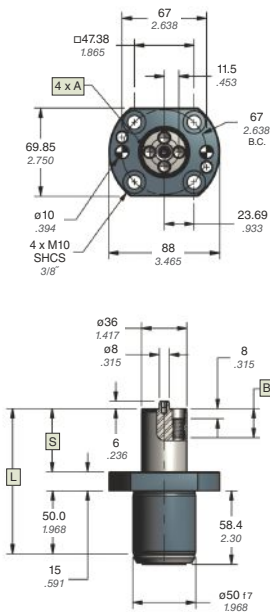
Guide Pin	A Thread	B Depth
M	M8	22
E	5/16"-18	.87"

L (mm) = S (mm) + 50
L (inch) = S (inch) + 1.968

Ordering Example:

Part Number: GRS.30 M .0250 FM Guide Retainer Mount Option: FM
GRS.25 or GRS.30 Stroke Length: 20.0 mm to 150.0 mm (0.75" to 6.00") in increments of 0.1 mm
Guide Rod Option

GRS.36

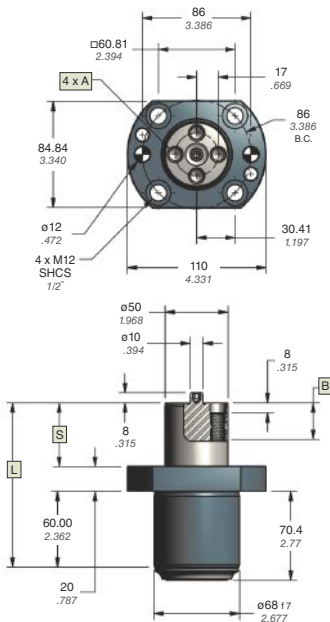


Guide Pin	A Thread	B Depth
M	M10	23
E	3/8 -16	.91"

$$L \text{ (mm)} = S \text{ (mm)} + 65$$

$$L \text{ (inch)} = S \text{ (inch)} + 2.559$$

GRS.50



Guide Pin	A Thread	B Depth
M	M12	29
E	1/2 -13	1.14"

$$L \text{ (mm)} = S \text{ (mm)} + 80$$

$$L \text{ (inch)} = S \text{ (inch)} + 3.149$$

Ordering Example:

Part Number: _____

GRS.36 or GRS.50

Guide Rod Option _____

GRS.36 M. 0250 FM

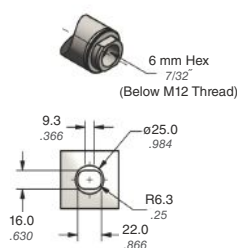
Guide Retainer Mount Option: FM

Stroke Length: 20.0 mm to 150.0 mm (0.75" to 6.00") in increments of 0.1 mm

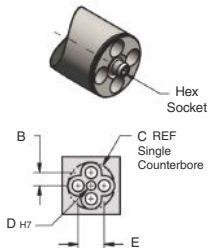
Guide Rod Attachment Details

GRS.25

(When used with Plate Adapter Cap, see below)



GRS.30 / GRS.36 / GRS.50



Part No.	GRS.30	GRS.36	GRS.50
B	10 .394	11.5 .453	17.0 .669
C	ø34.0 1.339	ø41.0 1.614	ø54.0 2.126
D	ø6.0 .236	ø8.0 .315	ø10.0 .394
E	20.0 .787	23.0 .906	34.0 1.339

Design Considerations

GRS.25

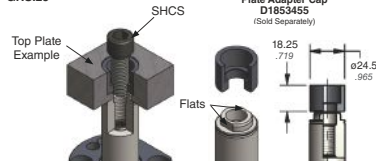
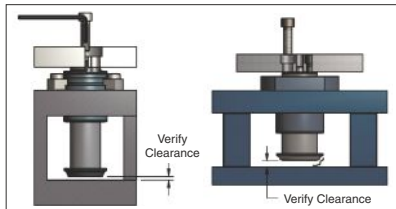


Plate Adapter Cap D1853455 (Sold Separately)

GRS.30 / GRS.36 / GRS.50



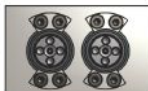
The GRS series requires machining from only one side of the plate. All models have a small hex socket located in the center of the Guide Rod that facilitates alignment through the plate during installation and removal. The GRS.25 Guide Rod has flats to prevent rotation and may be installed with the Plate Adapter Cap (sold separately).



Examples of GRS Secured with Toe Clamps



Two GRS.30__N3's
mounted to a plate.



Two GRS.30__W2's
mounted to a plate.

Verify that there is adequate clearance for travel during operation. Overstroking the rod or impacting the bottom of the Guide Retainer Set will cause permanent damage.

DADCO Toe Clamp Mounts are compact, permitting GRS to be located in close proximity to one another. Toe Clamps should be evenly spaced around the retainer to balance the load.

Maximum Attachment Capacity Per Guide Retainer Set

Consider the dynamic load factors on the guide unit fasteners. The guidelines below show attachment limits per GRS based on the press ram velocity. For increased capacity, install additional Guide Retainer Sets.

Guide Retainer Mount Option:						Guide Retainer Mount Option:					
FM / W2			N3			FM / W2			N3		
Model:	GRS.25	GRS.30	GRS.36	GRS.50	GRS.30	GRS.36	GRS.50	GRS.30	GRS.36	GRS.50	GRS.36
Ram Velocity	Metric Attachment Mass (kg)					Ram Velocity	Imperial Attachment Mass (lb.-mass)				
mm/s						fpm					
250	44	58	116	177	44	87	50	10	95	124	378
500	11	15	29	44	11	22	100	20	24	31	95
750	4.9	6.4	13	20	4.8	9.7	150	30	11	14	28
1000	2.8	3.6	7.3	11	2.7	5.4	200	40	5.9	7.8	16
Force (kN)						Force (tons)					
Static Load Rating (Mechanical Strength)	10	17	28	41	13	21	1.2	2.0	3.2	4.6	1.5

Stroke Length Recommendations

DADCO offers the Guide Retainer Sets in stroke lengths from 20.0 mm to 150.0 mm (0.75" to 6.00") in increments of 0.1 mm; DADCO recommends ordering stroke lengths in 5.0 mm or 0.25" increments when possible. Refer to charts below for the appropriate stroke length ordering code based on these suggestions. For more information contact DADCO.

Metric

Stroke Length			Stroke Length		
S	Order		S	Order	
mm	inch	Code	mm	inch	Code
20.0	0.787	0200	85.0	3.346	0850
25.0	0.984	0250	90.0	3.543	0900
30.0	1.181	0300	95.0	3.740	0950
35.0	1.378	0350	100.0	3.937	1000
40.0	1.575	0400	105.0	4.134	1050
45.0	1.772	0450	110.0	4.331	1100
50.0	1.969	0500	115.0	4.528	1150
55.0	2.165	0550	120.0	4.724	1200
60.0	2.362	0600	125.0	4.921	1250
65.0	2.559	0650	130.0	5.118	1300
70.0	2.756	0700	135.0	5.315	1350
75.0	2.953	0750	140.0	5.512	1400
80.0	3.150	0800	150.0	5.906	1500

Imperial

Stroke Length			Stroke Length		
S	Order		S	Order	
inch	mm	Code	inch	mm	Code
0.75	19.1	0191	3.25	82.6	0826
0.90	22.9	0229	3.50	88.9	0889
1.00	25.4	0254	3.60	91.4	0914
1.25	31.8	0318	3.75	95.3	0953
1.50	38.1	0381	4.00	101.6	1016
1.75	44.5	0445	4.25	108.0	1080
1.80	45.7	0457	4.50	114.3	1143
2.00	50.8	0508	4.75	120.7	1207
2.25	57.2	0572	5.00	127.0	1270
2.50	63.5	0635	5.25	133.4	1334
2.70	68.6	0686	5.40	137.2	1372
2.75	69.9	0699	5.50	139.7	1397
3.00	76.2	0762	6.00	152.4	1524

Ordering Example:

Series: _____
Guide Retainer Set

Guide Rod Diameter: _____
025, 030, 036 or 050

Guide Rod Option: _____
M = Metric or E = Imperial

Guide Retainer Mount Option:

FM = Flange Mount

W2 = Wide Toe Clamps (Qty. 2) or N3 = Narrow Toe Clamps (Qty.3); GRS.30 and GRS.36 only

Stroke Length:

20.0 mm to 150.0 mm (0.75" to 6.00"); specified in 0.1 mm Increments

Example: 25.0 mm = 0250 or 1.00" = 0254

Replacement Part Ordering Information:

Guide Rod: GRS.36.M.0250.RO

Guide Retainer: GRS.36 = Flange Mount, GRS.36T = Toe Clamp Mount

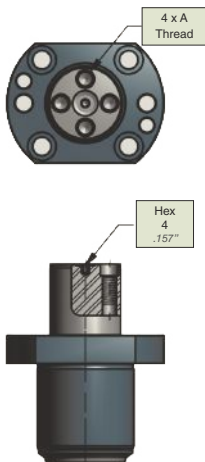
Lock Washer:

Wide Toe Clamp:

Narrow Toe Clamp:

GRS.30	GRS.36
UMR08	UMR10
GRS.WM8	GRS.WM10
GRS.NM8	GRS.NM10

DADCO offers an alternative Guide Rod Option for the GRS.30, GRS.36 and GRS.50 for applications where the rod end dowel is not desired. In the absence of the rod end dowel, a small internal hex is located in the center of the guide rod for alignment during installation.



Model	Guide Rod	A
GRS.30	J	M8
	K	5/16"-18
GRS.36	J	M10
	K	3/8"-16
GRS.50	J	M12
	K	1/2"-13

Ordering Example:

Series: GRS. 30. J. 0250. FM
 Guide Retainer Set
 Guide Rod Diameter: 025, 030, 036 or 050
 Guide Rod Option: M = Metric, E = Imperial, J = Metric without Rod End Dowel or K = Imperial without Rod End Dowel

Guide Retainer Mount Option:

FM = Flange Model

W2 = Wide Toe Clamps (Qty. 2) or N3 = Narrow Toe Clamps (Qty.3); GRS.30 and GRS.36 only

Stroke Length (S):

20.0 mm to 150.0 mm (0.75" to 6.00"); specified in 0.1 mm increments

Example: 25.0 mm = 0250 or 1.00" = 0254

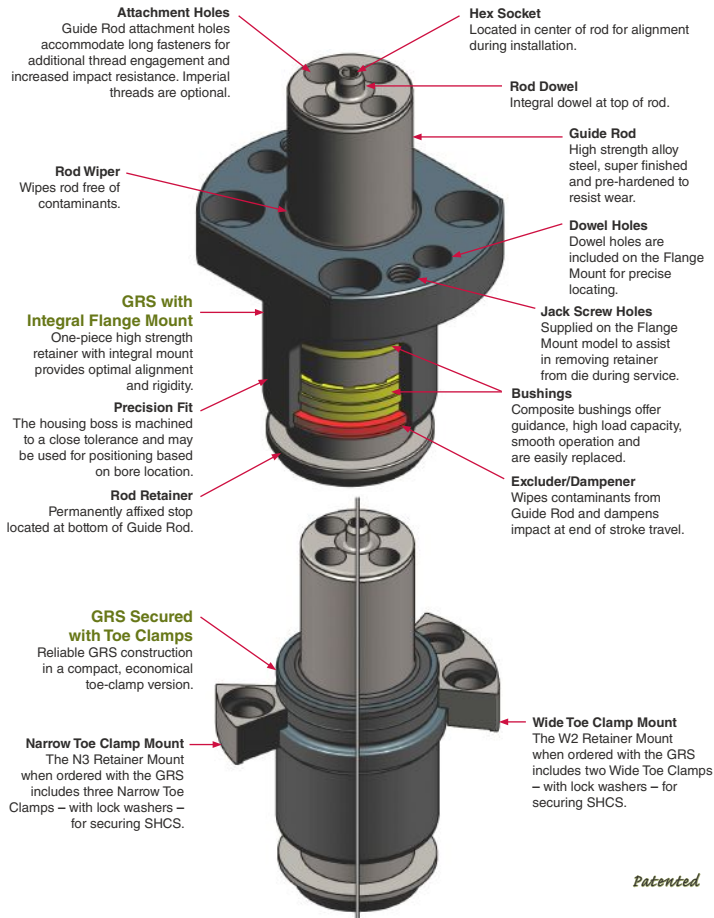
Replacement Part Ordering Information:



Guide Rod: GRS.36 M.0250.RO = Standard Metric Guide Rod
 GRS.36 E.0250.RO = Standard Imperial Guide Rod
 GRS.36 J.0250.RO = Metric Guide Rod without Rod End Dowel
 GRS.36 K.0250.RO = Imperial Guide Rod without Rod End Dowel

GRS Series Features

Guide Retainer Set



Patented

Notes

DAPCO®

Heavy Duty Guide Retainer Sets

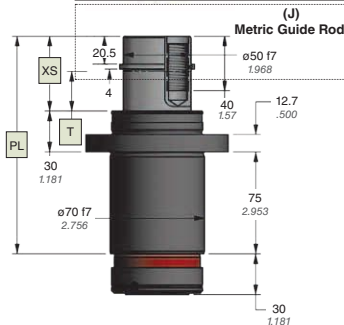
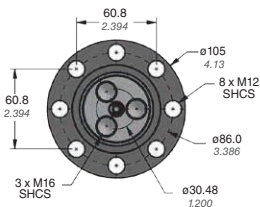
GRS.HD Series

NEW!

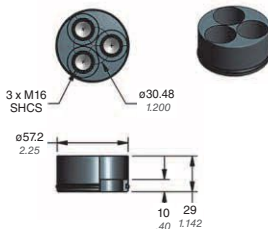


Heavy Duty Guidance and Retention with Increased Load Capacity

- Robust one-piece guide retainer with extended composite bushings
- High capacity guide rod dampener
- 50 mm and 65 mm rod diameter models
- Conforms to automotive standard specifications



GRS.50.AC Optional Plate Adapter



The Optional Plate Adapter may be used to facilitate attachment to the Guide Rod.

Pin Length Code	XS		PL		Max Travel (T)	
	mm	inch	mm	inch	mm	inch
0550	55.0	2.165	160.0	6.299	30.0	1.181
0650	65.0	2.559	170.0	6.693	40.0	1.574
0750	75.0	2.953	180.0	7.087	50.0	1.968
0850	85.0	3.346	190.0	7.480	60.0	2.362
0950	95.0	3.740	200.0	7.874	70.0	2.756
1050	105.0	4.134	210.0	8.268	80.0	3.149
1150	115.0	4.528	220.0	8.661	90.0	3.543
1250	125.0	4.921	230.0	9.055	100.0	3.937
1350	135.0	5.315	240.0	9.449	110.0	4.330
1450	145.0	5.709	250.0	9.843	120.0	4.724

Ordering Example:

GRS. 50. HD. J. 0550. FH.

Series: Guide Retainer Set
 Guide Rod Diameter: ø50
 Guide Rod Type: Heavy Duty
 Guide Rod Option: J = Metric
 M = Metric with Rod End Dowel

For optional plate adapter add AC.

Guide Retainer Mount Option:
 FH = Flange Mount

Pin Extension Length:
 Use order code listed above.
 Example: 0550 = 55.0 mm (XS Dimension)

Replacement Part Ordering Information:



Guide Rod:
 GRS.50HD.J.0550.RO
 GRS.50HD.M.0550.RO

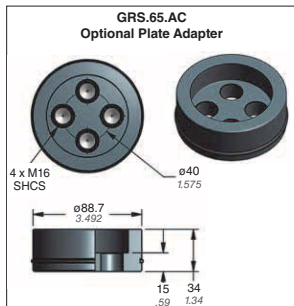


Guide Retainer:
 GRS.50HD



Plate Adapter:
 GRS.50.AC

Repair Kit:
 GRS.50HD.RK
 Includes bushings, rod wiper, dampener and a maintenance manual.



Pin Length Code	XS		PL		Max Travel (T)	
	mm	inch	mm	inch	mm	inch
0550	55.0	2.165	185.0	7.283	30.0	1.181
0650	65.0	2.559	195.0	7.677	40.0	1.574
0750	75.0	2.953	205.0	8.071	50.0	1.968
0850	85.0	3.346	215.0	8.465	60.0	2.362
0950	95.0	3.740	225.0	8.858	70.0	2.756
1050	105.0	4.134	235.0	9.252	80.0	3.149
1150	115.0	4.528	245.0	9.646	90.0	3.543
1250	125.0	4.921	255.0	10.039	100.0	3.937
1350	135.0	5.315	265.0	10.433	110.0	4.330
1450	145.0	5.709	275.0	10.827	120.0	4.724

DADCO

Maximum Attachment Capacity

The guidelines below show attachment limits per GRS based on press ram velocity. For increased capacity, install additional Guide Retainer Sets.

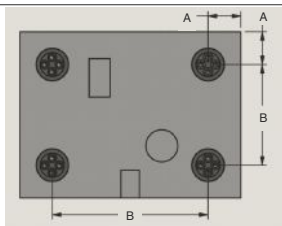
GRS.50.HD

Velocity Estimate (m/sec)		0.50	0.60	0.65	0.75	0.80	0.90	0.95	1.00	1.05	1.10
Per GRS	max (lb.)	1058	735	626	470	413	327	293	265	240	219
	max (kg)	480	333	284	213	188	148	133	120	109	99
Pad Mass		GRS.50.HD Quantity									
lb.	kg										
250	113	2	2	2	2	2	2	2	2	3	3
500	227	2	2	2	3	3	3	3	3	4	4
750	340	2	3	3	3	3	4	4	4	5	5
1000	454	2	3	3	4	4	5	5	5	6	6
1250	567	3	3	3	4	5	5	6	6	7	7
1500	680	3	4	4	5	5	6	7	7	8	8
1750	794	3	4	4	5	6	7	7	8		
2000	907	3	4	5	6	6	8	8			
2250	1021	4	5	5	6	7	8				
2500	1134	4	5	5	7	8					

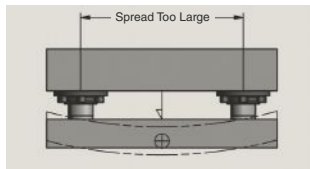
GRS.65.HD

Velocity Estimate (m/sec)		0.50	0.60	0.65	0.75	0.80	0.90	0.95	1.00	1.05	1.10
Per GRS	max (lb.)	1411	980	835	627	551	435	391	353	320	292
	max (kg)	640	444	379	284	250	198	177	160	145	132
Pad Mass		GRS.65.HD Quantity									
lb.	kg										
250	113	2	2	2	2	2	2	2	2	2	2
500	227	2	2	2	2	2	3	3	3	3	3
750	340	2	2	2	3	3	3	3	4	4	4
1000	454	2	3	3	3	3	4	4	4	5	5
1250	567	2	3	3	3	4	4	5	5	6	6
1500	680	3	3	3	4	4	5	5	6	6	7
1750	794	3	3	4	4	5	6	6	6	7	8
2000	907	3	4	4	5	5	6	7	7	8	8
2250	1021	3	4	4	5	6	7	7	8		
2500	1134	3	4	4	5	6	7	8			

Pin Spacing



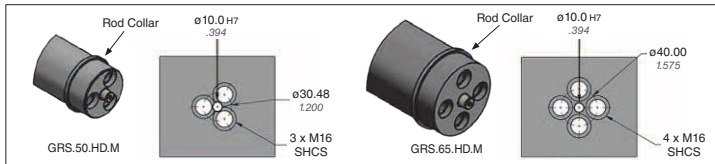
Model	Minimum Distance (mm)	
	A	B
GRS.50.HD	70	115
GRS.65.HD	90	150



Deceleration of the pad may cause pad flexing to occur. Add additional GRS to support load and prevent side load from inertial deflection at end of stroke travel. Lighter pads may result in a flexible structure requiring center support. Heavier pads will require additional GRS to distribute the weight, according to shape and die steel attachments.

Guide Rod Details

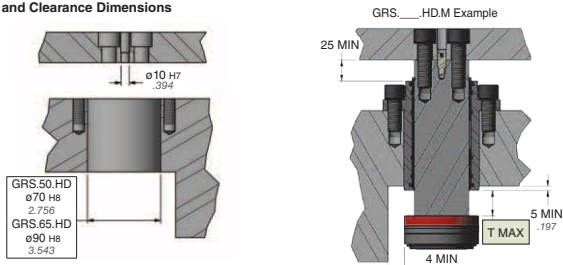
The GRS requires machining from only one side of the plate when ordered with the M Guide Rod Option. These GRS models have a small hex socket located in the center of the Guide Rod that facilitates alignment through the plate during installation and removal.



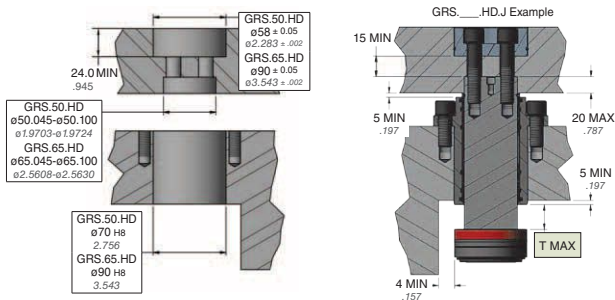
Machining Details

Verify that there is adequate clearance for the GRS during operation. Verify there is sufficient space at the bottom of the stroke and above the Guide Retainer. Overstroking the rod or impacting the Guide Retainer will cause permanent damage.

Pocket and Clearance Dimensions

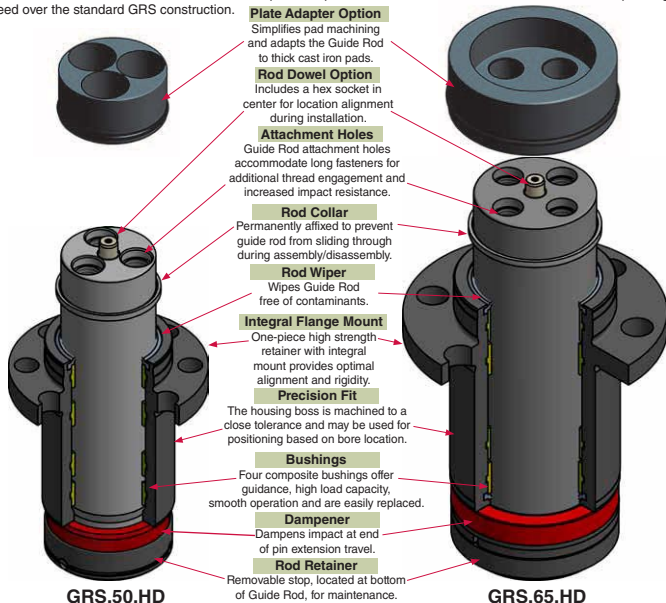


Pocket and Clearance Dimensions when using Optional Plate Adapter

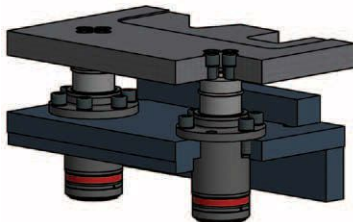


Heavy Duty Guide Retainer Sets

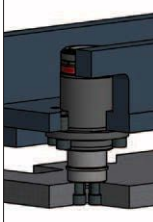
DADCO offers Heavy Duty Guide Retainer Sets in two sizes (GRS.50 and GRS.65) to meet automotive standard specifications. The construction of these models permits up to 10 times the attachment mass and increased operating speed over the standard GRS construction.



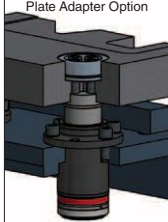
Lower Orientation



Upper Orientation



Lower Orientation with Plate Adapter Option



The GRS Series saves cost by providing an all-in-one replacement to common pins, bushings and spools. The GRS may be installed in upper or lower orientation for maximum versatility.

DADCO

Air Cylinders

HP Series



Bore Sizes from 32 – 250 mm



Introduction

DADCO's HP Series Air Cylinders meet or exceed most worldwide standards. These products comply with the North American Automotive Metric Standards (NAAMS), the International Standards Organization (ISO 15552), and the German Automotive Standards (Verband Deutscher Maschinen - und Anlagenbau e.V. - VDMA 24-562).

DADCO's air cylinders are quite versatile and, because of a wide array of options, can be supplied to conform to most individual metric cylinder customers' requirements. The HP Series provides force from .27 kN to 49 kN (64 lb. to 9100 lb.).



Mount Options

DADCO HP Series Air Cylinders feature steel bolt-on mounts which fully conform to NAAMS, ISO, and VDMA standards, and are available for each bore size, ranging from 32 - 250 mm.

Mounts can be easily attached or removed in the field to accommodate different needs, such as changing the mount style or rotating the port location, without altering other features of the cylinder.

Fittings

DADCO now offers BSPP fittings. A variety of push-in fittings are available for 32 mm-125 mm bore cylinders. BSPP and NPT adapters are available for all bore sizes. For more detailed fitting information contact DADCO.

Position Sensing Capability

The HP Series Air Cylinders can be prepped to accommodate most popular types of sensors. DADCO has a variety of switches available, including magnetic reed switches and proximity switches.

Introduction

Non-lube Operation

DADCO HP Cylinders are manufactured to exacting standards and are prelubed at assembly with a high quality, non-dissipating, pneumatic cylinder lubricant to eliminate the need for further lubricants during operation. Special low friction materials are employed to reduce heat and wear. Each cylinder is fully tested to give long, trouble-free operation. When properly applied, field tests have demonstrated that HP Series Air Cylinders often operate for years without requiring service. If the product ever fails to perform to expectation, contact your DADCO service representative for assistance.

Non-Rotating Option

DADCO's HP Non-Rotating Air Cylinders have all the features of DADCO's standard air cylinders, while the piston square rod prevents rotation. DADCO offers the HPN model in bore sizes from 32 mm to 100 mm with a variety of stroke lengths to meet customer requirements.



Two Post Lifters

DADCO offers two post direct lifters utilizing the HP Series. These lifters deliver smooth, consistent, non-lube lifting. They are available in a variety of bore sizes and stroke lengths to accommodate different applications. For more information refer to Two Post Direct Lifter.



Delivery

DADCO's modern 13,150 m² main production facility as well as satellite facilities, provide worldwide support. Products are available both directly and through a network of distributors.

CAD Templates On-line



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, or contact DADCO.

Adjustable Cushioning

Every HP Series Cylinder is equipped with adjustable cushion control at each end as standard.

Precision Cast Heads

DADCO's HP Series Cylinder heads are precision die cast and contain several built-in features.

Corrosion Resistant Tube

Non-corrosive, high strength, clear anodized aluminum tubing is supplied as standard on the DADCO HP Cylinder. Chrome plated steel tubing is optionally available.

Multiple Port Capability

The HP series has BSPP ports as standard, NPT ports are optional. The HP Series Air Cylinders can also be ordered with multiple ports.

Tie Rod Nuts

DADCO's long, multi-purpose tie rod nuts feature a full length internal thread below the allen key slot. One end secures the tie rods while the other end accepts bolts for attaching mounts to the cylinder. In addition, the large flange diameter of the tie rod nuts provides an excellent mounting surface.

Rod Seal and Wiper Ring

The HP Cylinder's highly effective rod seal/wiper ring combination retains lubricant, seals air pressure, and wipes the rod free of contaminants.

Piston Rod Construction

All standard piston rods are produced from alloy steel with a smooth finish and hard chrome plating to resist wear, optionally available in alternative finishes. Contact DADCO for more information.

Long Life Piston Seals

High quality block vee piston seals are used on all bore sizes for superior performance.

Built-in Lubrication System

Rod bushing provides continual lubrication and minimizes bearing, seal and rod wear.

Rolled Threads

All piston rod end threads through M27 are rolled to ensure maximum durability. A female rod end model and special rod end stud (ISO 12.9) optionally can be provided.

Dampening and Tube Seal

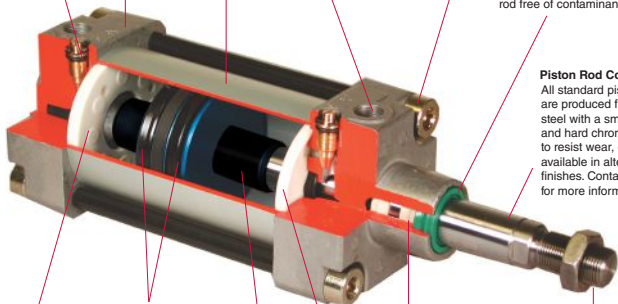
The inner face of each head is covered by a polyurethane bumper which counters impact wear, prevents spalling, and reduces noise from piston-to-head contact. The bumpers also act to retain the cushion seals and provide a positive tube-to-head seal, superior to o-rings, which can cut or pinch.

Durable Piston

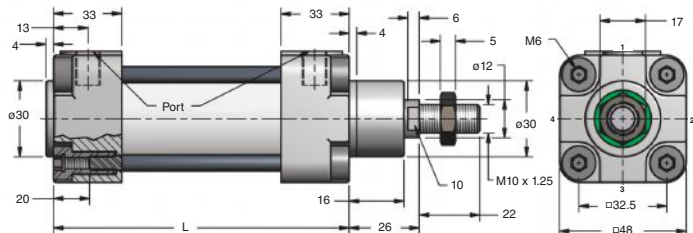
DADCO's three piece piston is constructed out of non-corrosive, high strength, anodized aluminum with plastic cushion spears.

Cushion Seals

A floating cushion seal engages each cushion spear as it enters the head, thereby completely sealing off the main exhaust orifice. The trapped air is metered past the cushion regulating screw, providing a highly repeatable deceleration effect. The cushion seal also operates in place of a cushion ball check so that, even at low pressure, it opens to allow full air flow through the main orifice to facilitate immediate, unrestricted piston movement.

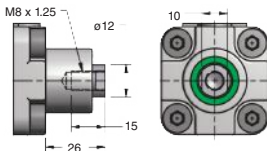


ø32 Air Cylinder



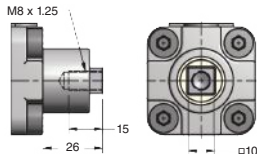
HP.Z = Standard Model

Rod Options



HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.



HP.N = Non-Rotating Model

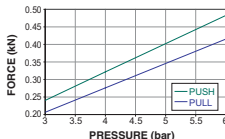
Square piston rod with a female thread prevents rotation. DADCO offers rod end studs to convert the female thread to the standard male rod end. HP.N standard stroke lengths available up to 200 mm.

Contact DADCO for more information.

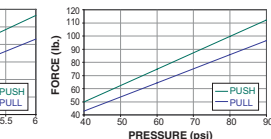
Part No.	Stroke	L (mm)
HP...32.25	25	119
HP...32.50	50	144
HP...32.80	80	174
HP...32.100	100	194
HP...32.125	125	219
HP...32.160	160	254
HP...32.200	200	294
HP...32.250	250	344

Contact DADCO for special stroke lengths.

Force Charts



PUSH Force: $P(\text{bar}) = F(\text{kN}) \div 0.080$
 $P(\text{psi}) = F(\text{lb.}) \div 1.25$
PULL Force: $P(\text{bar}) = F(\text{kN}) \div 0.069$
 $P(\text{psi}) = F(\text{lb.}) \div 1.07$



PUSH Force: $F(\text{kN}) = P(\text{bar}) \times 0.080$
 $F(\text{lb.}) = P(\text{psi}) \times 1.25$
PULL Force: $F(\text{kN}) = P(\text{bar}) \times 0.069$
 $F(\text{lb.}) = P(\text{psi}) \times 1.07$

NOTE:
A cylinder's theoretical force should be 50-100% greater than the force required.

Ordering Example:

Series **HP**, Z, 32, 100, G, 1, TO
Rod Option
Z = Standard Model, N = Non-Rotating Model,
W = Female Rod End Model
When not specified, default is HP.Z
Bore
Stroke Length
Port Style
G = 1/8 BSPP, P = 1/8 NPT

Mount Option (TO-T8)

TO = Basic Mount.

When not specified default is TO. Mount ordered with cylinder will be attached at the factory.

Mount Only Example: 32T1

Port Location (1-4)

Standard = 1.

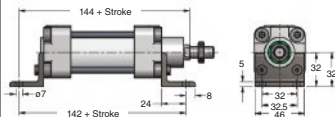
When not specified, default is 1.

T1 Foot Mount

Part No. 32T1

NFPA Style MS1

Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



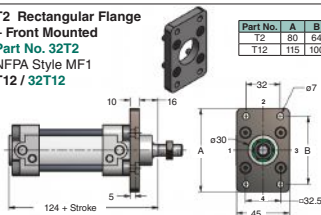
T2 Rectangular Flange – Front Mounted

Part No. 32T2

NFPA Style MF1

T12 / 32T12

Part No.	A	B
T12	80	64
T12	115	100



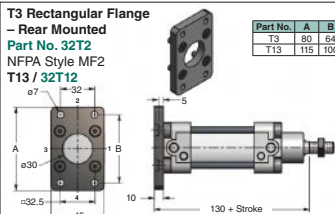
T3 Rectangular Flange – Rear Mounted

Part No. 32T2

NFPA Style MF2

T13 / 32T12

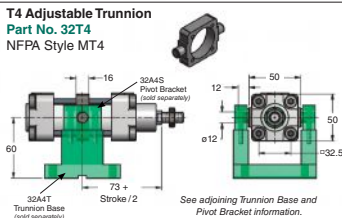
Part No.	A	B
T3	80	64
T13	115	100



T4 Adjustable Trunnion

Part No. 32T4

NFPA Style MT4

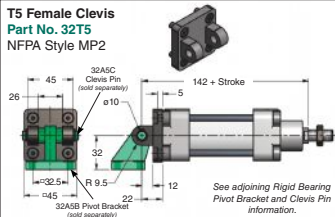


See adjoining Trunnion Base and
Pivot Bracket information.

T5 Female Clevis

Part No. 32T5

NFPA Style MP2

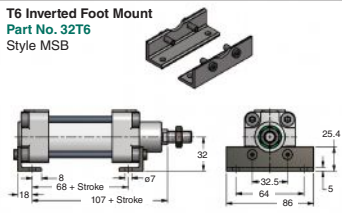


See adjoining Rigid Bearing
Pivot Bracket and Clevis Pin
information.

T6 Inverted Foot Mount

Part No. 32T6

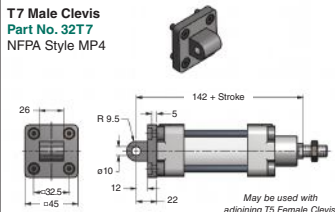
Style MSB



T7 Male Clevis

Part No. 32T7

NFPA Style MP4

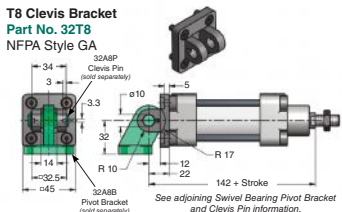


May be used with
adjoining T5 Female Clevis.

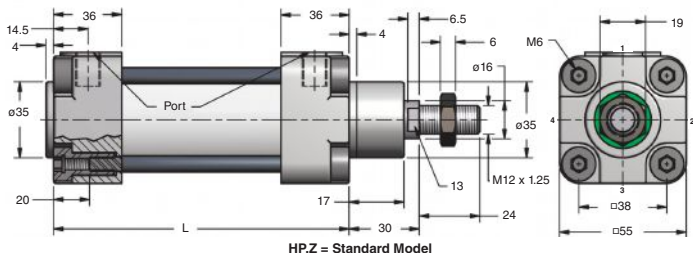
T8 Clevis Bracket

Part No. 32T8

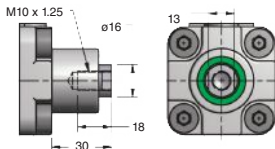
NFPA Style GA



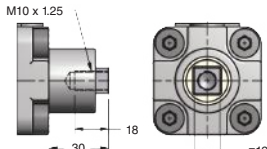
See adjoining Swivel Bearing Pivot Bracket
and Clevis Pin information.



Rod Options



Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.

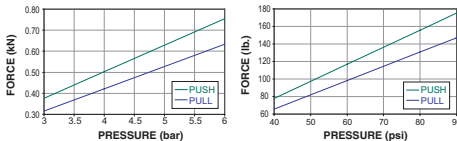


Square piston rod with a female thread prevents rotation. DADCO offers rod end studs to convert the female thread to the standard male rod end. HP.N standard stroke lengths available up to 200 mm. Contact DADCO for more information.

Part No.	Stroke	L (mm)
HP_40.25	25	130
HP_40.50	50	155
HP_40.80	80	185
HP_40.100	100	205
HP_40.125	125	230
HP_40.160	160	265
HP_40.200	200	305
HP_40.250	250	355

Contact DADCO for special stroke lengths.

Force Chart



Ordering Example:

Series **HP. Z. 40. 100. G. 1. TO**

Series
Rod Option
Z = Standard Model, N = Non-Rotating Model, W = Female Rod End Model
 When not specified, default is HP.Z
Bore
Stroke Length
Port Style
G = 1/4 BSPP, P = 1/4 NPT

Mount Option (TO-T8)

TO = Basic Mount.
 When not specified default is TO. Mount ordered with cylinder will be attached at the factory.

Mount Only Example: 40T1

Port Location (1-4)

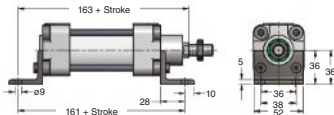
Standard = 1.
 When not specified, default is 1.

T1 Foot Mount

Part No. 40T1

NFPA Style MS1

Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



T2 Rectangular Flange

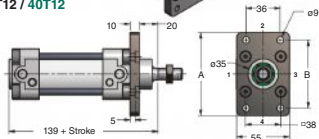
– Front Mounted

Part No. 40T2

NFPA Style MF1

T12 / 40T12

Part No.	A	B
T2	90	72
T12	125	105



T3 Rectangular Flange

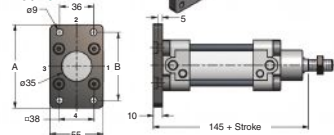
– Rear Mounted

Part No. 40T3

NFPA Style MF2

T13 / 40T12

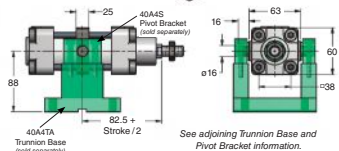
Part No.	A	B
T3	90	72
T13	125	105



T4 Adjustable Trunnion

Part No. 40T4

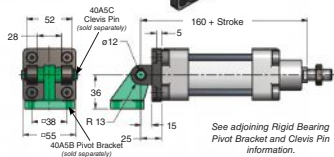
NFPA Style MT4



T5 Female Clevis

Part No. 40T5

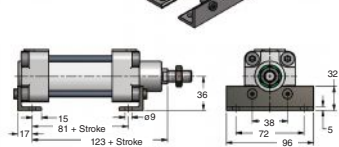
NFPA Style MP2



T6 Inverted Foot Mount

Part No. 40T6

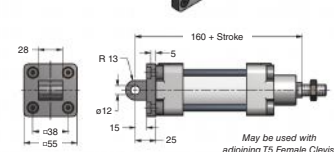
Style MSB



T7 Male Clevis

Part No. 40T7

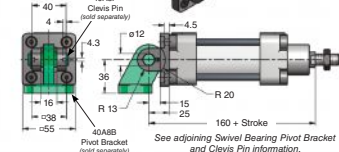
NFPA Style MP4

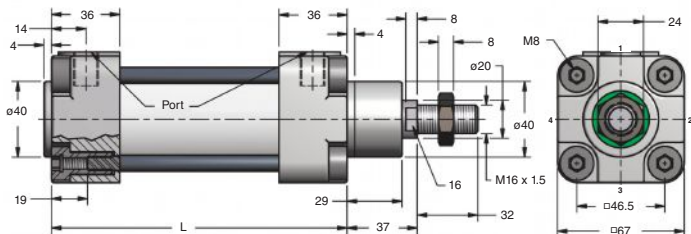


T8 Clevis Bracket

Part No. 40T8

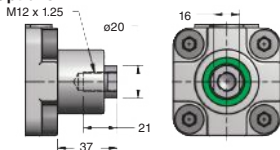
NFPA Style GA





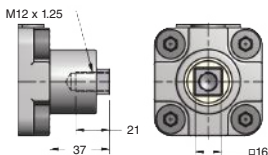
HP.Z = Standard Model

Rod Options



HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.



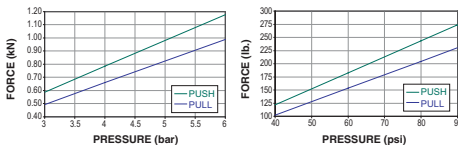
HP.N = Non-Rotating Model

Square piston rod with a female thread prevents rotation. DADCO offers rod end studs to convert the female thread to the standard male rod end. HP.N standard stroke lengths available up to 200 mm. Contact DADCO for more information.

Part No.	Stroke	L (mm)
HP..50.25	25	131
HP..50.50	50	156
HP..50.80	80	186
HP..50.100	100	206
HP..50.125	125	231
HP..50.160	160	266
HP..50.200	200	306
HP..50.250	250	356
HP..50.320	320	426
HP..50.400	400	506

Contact DADCO for special stroke lengths.

Force Chart



PUSH Force: $P(\text{bar}) = F(\text{kN}) \div 0.196$
 $P(\text{psi}) = F(\text{lb.}) \div 3.04$
PULL Force: $P(\text{bar}) = F(\text{kN}) \div 0.165$
 $P(\text{psi}) = F(\text{lb.}) \div 2.56$

$F(\text{kN}) = P(\text{bar}) \times 0.196$
 $F(\text{lb.}) = P(\text{psi}) \times 3.04$
 $F(\text{kN}) = P(\text{bar}) \times 0.165$
 $F(\text{lb.}) = P(\text{psi}) \times 2.56$

NOTE:
 A cylinder's theoretical force should be 50-100% greater than the force required.

Ordering Example:

Series **HP.** Rod Option **Z.** Mount Option **TO.**
 Z = Standard Model, N = Non-Rotating Model,
 W = Female Rod End Model
 When not specified, default is HP.Z
 Bore **50.**
 Stroke Length **100.**
 Port Style **G.**
 G = 1/4 BSPP, P = 1/4 NPT,

Mount Option (TO-T8)

TO = Basic Mount.

When not specified default is TO. Mount ordered with cylinder will be attached at the factory.

Mount Only Example: 50T1

Port Location (1-4)

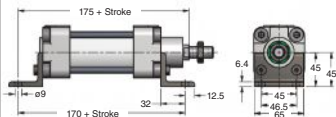
Standard = 1.

When not specified, default is 1.

NFPA Style MS1

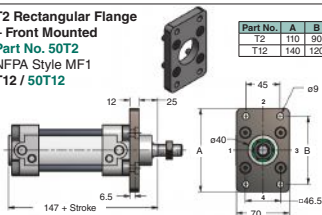


Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



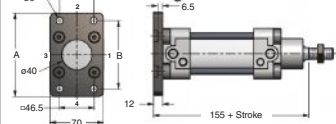
T12 / 50T12

Part No.	A	B
T2	110	90
T12	140	120

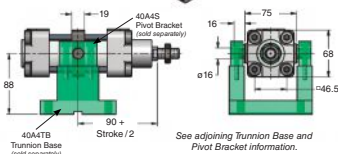


09 45

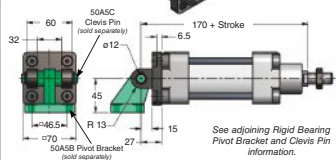
Part No.	A	B
T3	110	90
T13	140	120



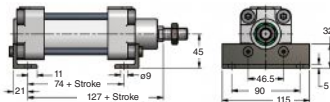
the *Journal of Management Education* and the *Journal of Management Inquiry*.



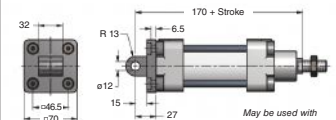
NFPA Style MP2



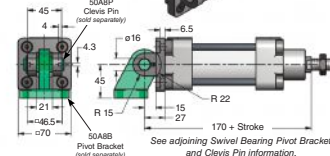
Style MSB

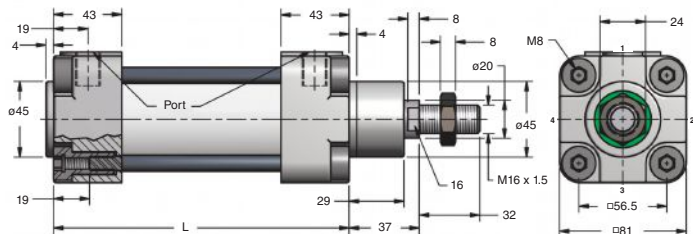


NFPA Style MP4



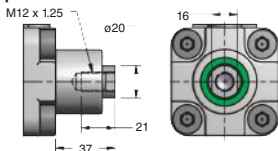
NFPA Style GA





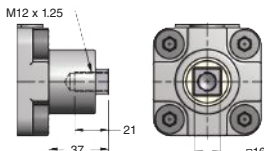
HP.Z = Standard Model

Rod Options



HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.



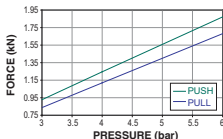
HP.N = Non-Rotating Model

Square piston rod with a female thread prevents rotation. DADCO offers rod end studs to convert the female thread to the standard male rod end. HP.N standard stroke lengths available up to 200 mm. Contact DADCO for more information.

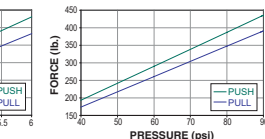
Part No.	Stroke	L (mm)
HP...63.25	25	146
HP...63.50	50	171
HP...63.80	80	201
HP...63.100	100	221
HP...63.125	125	246
HP...63.160	160	281
HP...63.200	200	321
HP...63.250	250	371
HP...63.320	320	441
HP...63.400	400	521
HP...63.500	500	621

Contact DADCO for special stroke lengths.

Force Chart



PUSH Force: $P(\text{bar}) = F(\text{kN}) \div 0.312$
 $P(\text{psi}) = F(\text{lb.}) \div 4.83$
PULL Force: $P(\text{bar}) = F(\text{kN}) \div 0.280$
 $P(\text{psi}) = F(\text{lb.}) \div 4.34$



$F(\text{kN}) = P(\text{bar}) \times 0.312$
 $F(\text{lb.}) = P(\text{psi}) \times 4.83$
 $F(\text{kN}) = P(\text{bar}) \times 0.280$
 $F(\text{lb.}) = P(\text{psi}) \times 4.34$

NOTE:
A cylinder's theoretical force should be 50-100% greater than the force required.

Ordering Example:

Series **HP**, Z, 63, 100, G, 1, TO
 Rod Option
 Z = Standard Model, N = Non-Rotating Model,
 W = Female Rod End Model
 When not specified, default is HP.Z
 Bore
 Stroke Length
 Port Style
 G = 3/8 BSPP, P = 3/8 NPT

Mount Option (TO-T8)

TO = Basic Mount.

When not specified default is TO. Mount ordered with cylinder will be attached at the factory.

Mount Only Example: 63T1

Port Location (1-4)

Standard = 1.

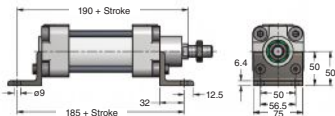
When not specified, default is 1.

T1 Foot Mount

Part No. 63T1

NFPA Style MS1

Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



T2 Rectangular Flange

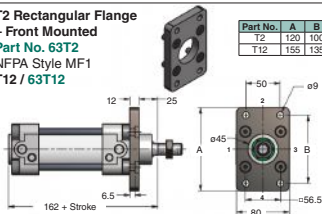
– Front Mounted

Part No. 63T2

NFPA Style MF1

T12 / 63T12

Part No.	A	B
T2	120	100
T12	155	135



T3 Rectangular Flange

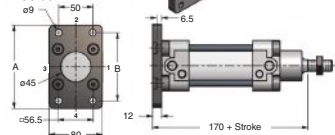
– Rear Mounted

Part No. 63T2

NFPA Style MF2

T13 / 63T12

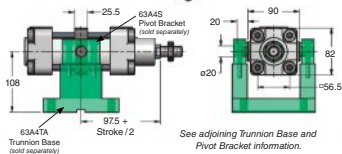
Part No.	A	B
T3	120	100
T13	155	135



T4 Adjustable Trunnion

Part No. 63T4

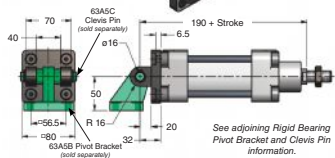
NFPA Style MT4



T5 Female Clevis

Part No. 63T5

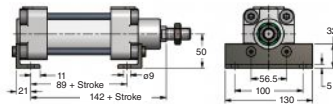
NFPA Style MP2



T6 Inverted Foot Mount

Part No. 63T6

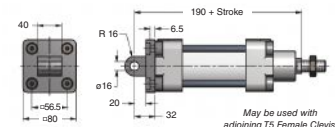
Style MSB



T7 Male Clevis

Part No. 63T7

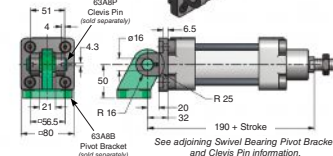
NFPA Style MP4

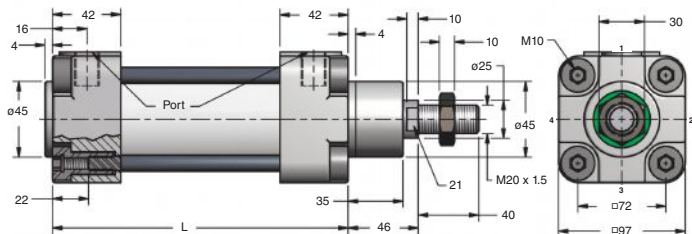


T8 Clevis Bracket

Part No. 63T8

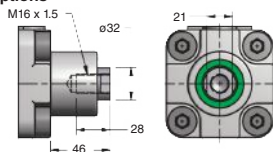
NFPA Style GA





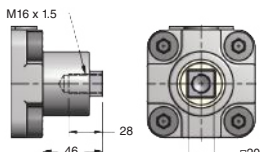
HP.Z = Standard Model

Rod Options



HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.

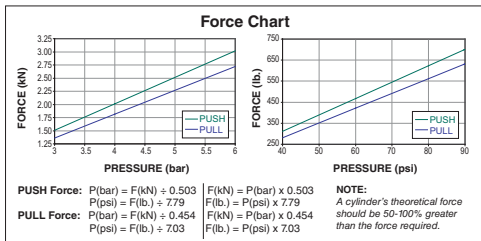


HP.N = Non-Rotating Model

Square piston rod with a female thread prevents rotation. DADCO offers rod end studs to convert the female thread to the standard male rod end. HP.N standard stroke lengths available up to 200 mm. Contact DADCO for more information.

Part No.	Stroke	L (mm)
HP..80.25	25	153
HP..80.50	50	178
HP..80.80	80	208
HP..80.100	100	228
HP..80.125	125	253
HP..80.160	160	288
HP..80.200	200	328
HP..80.250	250	378
HP..80.320	320	448
HP..80.400	400	528
HP..80.500	500	628

Contact DADCO for special stroke lengths.



Ordering Example:

Series **HP. Z. 80. 100. G. 1. TO**

Z = Standard Model, N = Non-Rotating Model
 W = Female Rod End Model
 When not specified, default is HP.Z
 Bore
 Stroke Length
 Port Style
 G = 3/8 BSPP, P = 3/8 NPT

Mount Option (TO-T8)

TO = Basic Mount.

When not specified default is TO. Mount ordered with cylinder will be attached at the factory.

Mount Only Example: 80T1

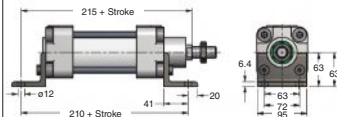
Port Location (1-4)

Standard = 1.

When not specified, default is 1.

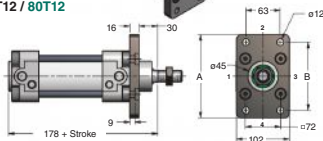
T1 Foot Mount
Part No. 80T1
NFPA Style MS1

Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



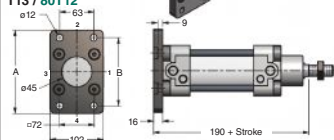
T2 Rectangular Flange
– Front Mounted
Part No. 80T2
NFPA Style MF1
T12 / 80T12

Part No.	A	B
T2	150	126
T12	180	155

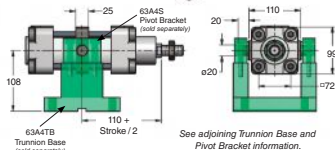


T3 Rectangular Flange
– Rear Mounted
Part No. 80T3
NFPA Style MF2
T13 / 80T13

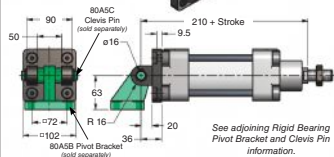
Part No.	A	B
T3	150	126
T13	180	155



T4 Adjustable Trunnion
Part No. 80T4
NFPA Style MT4

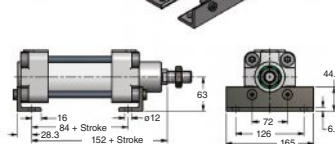


T5 Female Clevis
Part No. 80T5
NFPA Style MP2

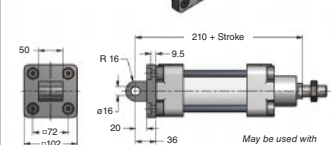


See adjoining Rigid Bearing
Pivot Bracket and Clevis Pin
information.

T6 Inverted Foot Mount
Part No. 80T6
Style MSB

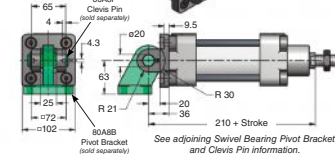


T7 Male Clevis
Part No. 80T7
NFPA Style MP4



May be used with
adjoining T5 Female Clevis.

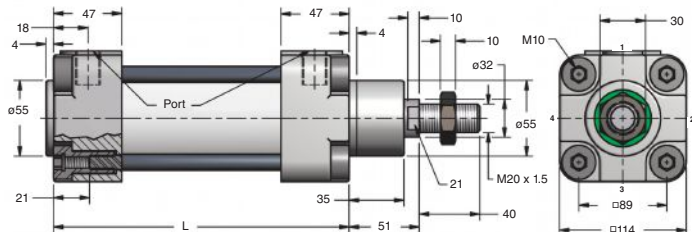
T8 Clevis Bracket
Part No. 80T8
NFPA Style GA



See adjoining Swivel Bearing Pivot Bracket
and Clevis Pin information.

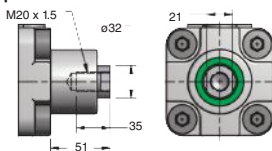
HP Series Air Cylinders

ø100 Air Cylinder



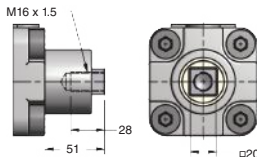
HP.Z = Standard Model

Rod Options



HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.



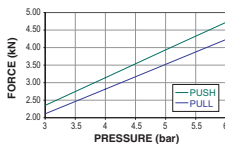
HP.N = Non-Rotating Model

Square piston rod with a female thread prevents rotation. DADCO offers rod end studs to convert the female thread to the standard male rod end. HP.N standard stroke lengths available up to 200 mm. Contact DADCO for more information.

Part No.	Stroke	L (mm)
HP_100.25	25	163
HP_100.50	50	188
HP_100.80	80	218
HP_100.100	100	238
HP_100.125	125	263
HP_100.160	160	298
HP_100.200	200	338
HP_100.250	250	388
HP_100.320	320	458
HP_100.400	400	538
HP_100.500	500	638

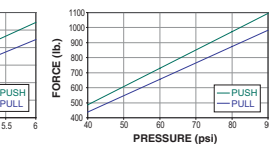
Contact DADCO for special stroke lengths.

Force Charts



PUSH Force: $P(\text{bar}) = F(\text{kN}) \div 0.785$
 $P(\text{psi}) = F(\text{lb.}) \div 12.17$

PULL Force: $P(\text{bar}) = F(\text{kN}) \div 0.705$
 $P(\text{psi}) = F(\text{lb.}) \div 10.93$



PUSH Force: $F(\text{kN}) = P(\text{bar}) \times 0.785$
 $F(\text{lb.}) = P(\text{psi}) \times 12.17$

PULL Force: $F(\text{kN}) = P(\text{bar}) \times 0.705$
 $F(\text{lb.}) = P(\text{psi}) \times 10.93$

NOTE:
 A cylinder's theoretical force should be 50-100% greater than the force required.

Ordering Example:

Series **HP**, Z, 100, 100, G, 1, TO
 Rod Option
 Z = Standard Model, N = Non-Rotating Model,
 W = Female Rod End Model
 When not specified, default is HP.Z
 Bore
 Stroke Length
 Port Style
 G = 1/2 BSPP, P = 1/2 NPT

Mount Option (TO-T8)

TO = Basic Mount.
 When not specified default is TO. Mount ordered with cylinder will be attached at the factory.
Mount Only Example: 100T1

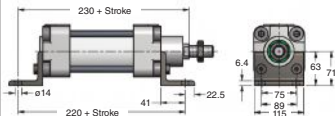
Port Location (1-4)

Standard = 1.
 When not specified, default is 1.

ø100 Mounts

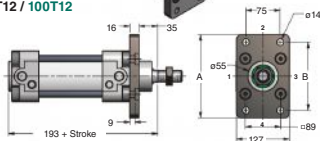
T1 Foot Mount Part No. 100T1 NFPA Style MS1

Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



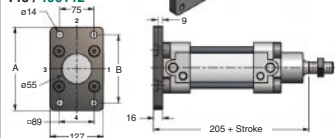
T2 Rectangular Flange – Front Mounted Part No. 100T2 NFPA Style MF1 T12 / 100T12

Part No.	A	B
T2	180	150
T12	210	185

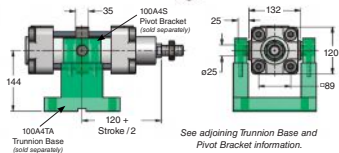


T3 Rectangular Flange – Rear Mounted Part No. 100T2 NFPA Style MF2 T13 / 100T12

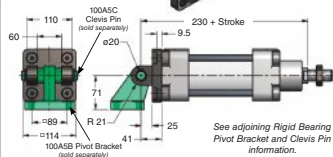
Part No.	A	B
T3	180	150
T13	210	185



T4 Adjustable Trunnion Part No. 100T4 NFPA Style MT4

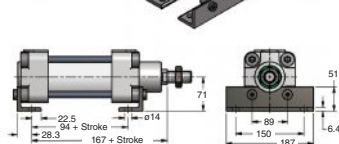


T5 Female Clevis Part No. 100T5 NFPA Style MP2

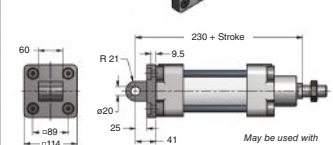


See adjoining Rigid Bearing
Pivot Bracket and Clevis Pin
information.

T6 Inverted Foot Mount Part No. 100T6 Style MSB

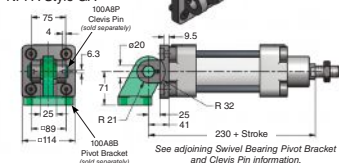


T7 Male Clevis Part No. 100T7 NFPA Style MP4



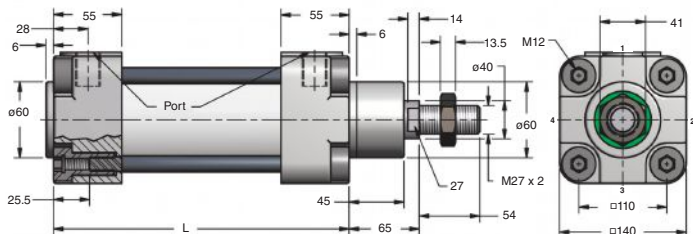
May be used with
adjoining T5 Female Clevis.

T8 Clevis Bracket Part No. 100T8 NFPA Style GA



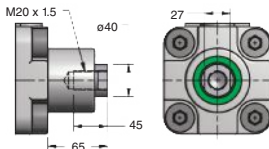
HP Series Air Cylinders

ø125 Air Cylinder



HP.Z = Standard Model

Rod Options



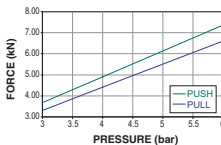
HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.

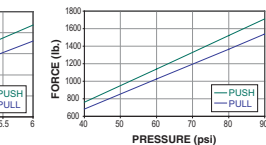
Part No.	Stroke	L (mm)
HP._125.25	25	185
HP._125.50	50	210
HP._125.80	80	240
HP._125.100	100	260
HP._125.125	125	285
HP._125.160	160	320
HP._125.200	200	360
HP._125.250	250	410
HP._125.320	320	480
HP._125.400	400	560
HP._125.500	500	660

Contact DADCO for special stroke lengths.

Force Chart



PUSH Force: $P(\text{bar}) = F(\text{kN}) \times 1.227$
 $P(\text{psi}) = F(\text{lb.}) \times 19.02$
PULL Force: $P(\text{bar}) = F(\text{kN}) \times 1.102$
 $P(\text{psi}) = F(\text{lb.}) \times 17.07$



PUSH Force: $F(\text{kN}) = P(\text{bar}) \times 1.227$
 $F(\text{lb.}) = P(\text{psi}) \times 19.02$
PULL Force: $F(\text{kN}) = P(\text{bar}) \times 1.102$
 $F(\text{lb.}) = P(\text{psi}) \times 17.07$

NOTE:
 A cylinder's theoretical force should be 50-100% greater than the force required.

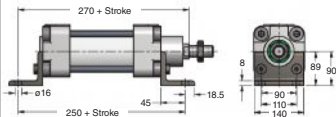
Ordering Example:

Series	HP.	Z.	125.	100.	G.	1.	TO
Rod Option	Z = Standard Model, W = Female Rod End Model When not specified, default is HP.Z						
Bore	ø125						
Stroke Length	100						
Port Style	G = 1/2 BSP, P = 1/2 NPT						
Mount Option (TO-T8)	TO = Basic Mount. When not specified default is TO. Mount ordered with cylinder will be attached at the factory. Mount Only Example: 125T1						
Port Location (1-4)	Standard = 1. When not specified, default is 1.						

T1 Foot Mount **Part No. 125T1** NFPA Style MS1

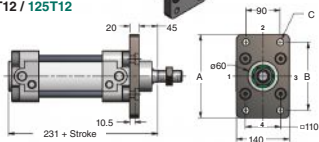


Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



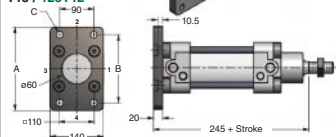
T2 Rectangular Flange – Front Mounted **Part No. 125T2** NFPA Style MF1 **T12 / 125T12**

Part No.	A	B	C
T2	210	180	ø16
T12	235	210	ø14

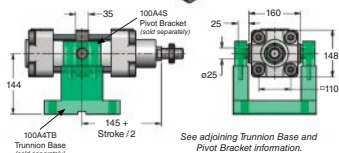


T3 Rectangular Flange – Rear Mounted **Part No. 125T2** NFPA Style MF2 **T13 / 125T12**

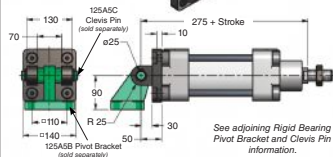
Part No.	A	B	C
T3	210	180	ø16
T13	235	210	ø14



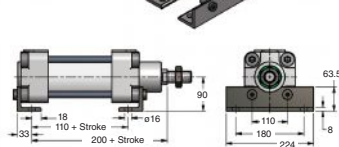
T4 Adjustable Trunnion **Part No. 125T4** NFPA Style MT4



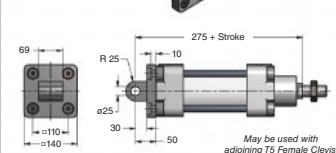
T5 Female Clevis **Part No. 125T5** NFPA Style MP2



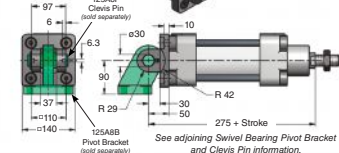
T6 Inverted Foot Mount **Part No. 125T6** Style MSB

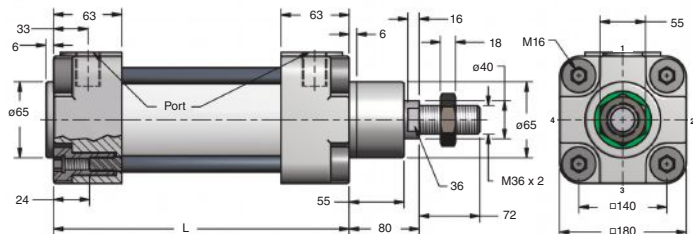


T7 Male Clevis **Part No. 125T7** NFPA Style MP4



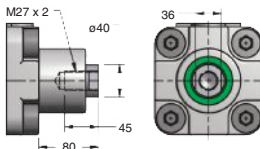
T8 Clevis Bracket **Part No. 125T8** NFPA Style GA





HP.Z = Standard Model

Rod Options



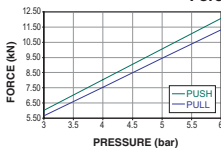
HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.

Part No.	Stroke	L (mm)
HP_160.25	25	205
HP_160.50	50	230
HP_160.80	80	260
HP_160.100	100	280
HP_160.125	125	305
HP_160.160	160	340
HP_160.200	200	380
HP_160.250	250	430
HP_160.320	320	500
HP_160.400	400	580
HP_160.500	500	680

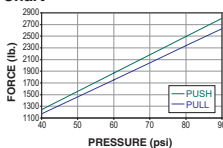
Contact DADCO for special stroke lengths.

Force Chart



PUSH Force: $P(\text{bar}) = F(\text{kN}) \div 2.011$
 $P(\text{psi}) = F(\text{lb.}) \div 31.16$
PULL Force: $P(\text{bar}) = F(\text{kN}) \div 1.885$
 $P(\text{psi}) = F(\text{lb.}) \div 29.22$

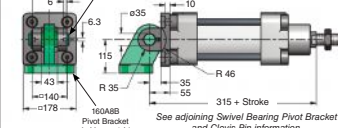
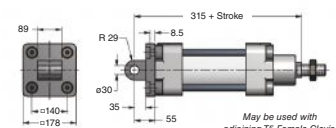
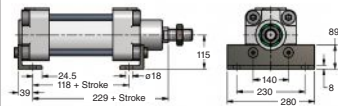
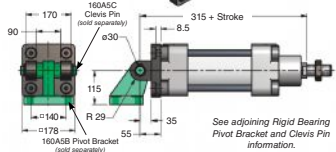
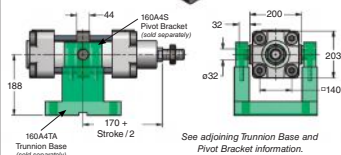
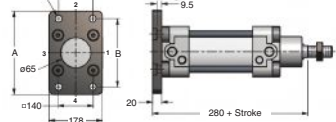
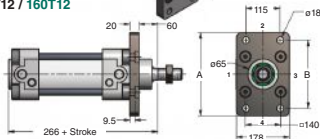
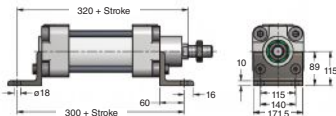
$F(\text{kN}) = P(\text{bar}) \times 2.011$
 $F(\text{lb.}) = P(\text{psi}) \times 31.16$
 $F(\text{kN}) = P(\text{bar}) \times 1.885$
 $F(\text{lb.}) = P(\text{psi}) \times 29.22$



NOTE:
A cylinder's theoretical force should be 50-100% greater than the force required.

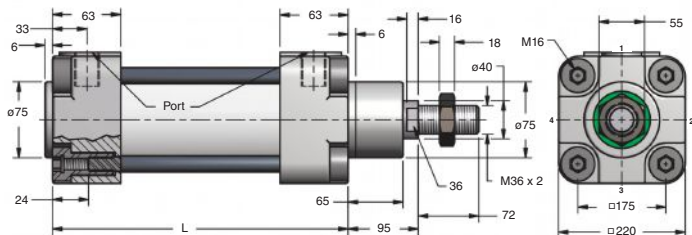
Ordering Example:

Series	HP	Z	160	100	G	1	TO
Rod Option	Z = Standard Model, W = Female Rod End Model When not specified, default is HP.Z						
Bore	ø160						
Stroke Length	100						
Port Style	G = 3/4 BSPP, P = 3/4 NPT						
Mount Option (TO-T8)	TO = Basic Mount. When not specified default is TO. Mount ordered with cylinder will be attached at the factory. Mount Only Example: 160T1						
Port Location (1-4)	Standard = 1. When not specified, default is 1.						



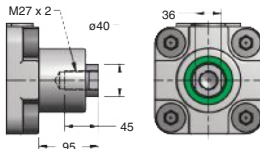
HP Series Air Cylinders

ø200 Air Cylinder



HP.Z = Standard Model

Rod Options



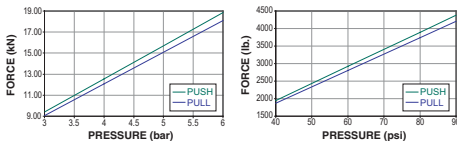
HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.

Part No.	Stroke	L (mm)
HP_200.25	25	205
HP_200.50	50	230
HP_200.80	80	260
HP_200.100	100	280
HP_200.125	125	305
HP_200.160	160	340
HP_200.200	200	380
HP_200.250	250	430
HP_200.320	320	500
HP_200.400	400	580
HP_200.500	500	680

Contact DADCO for special stroke lengths.

Force Chart



PUSH Force: $P(\text{bar}) = F(\text{kN}) \div 3.142$

$P(\text{psi}) = F(\text{lb.}) \div 48.69$

PULL Force: $P(\text{bar}) = F(\text{kN}) \div 3.016$

$P(\text{psi}) = F(\text{lb.}) \div 46.75$

$F(\text{kN}) = P(\text{bar}) \times 3.142$

$F(\text{lb.}) = P(\text{psi}) \times 48.69$

$F(\text{kN}) = P(\text{bar}) \times 3.016$

$F(\text{lb.}) = P(\text{psi}) \times 46.75$

NOTE:

A cylinder's theoretical force should be 50-100% greater than the force required.

Ordering Example:

Series **HP**, Z, 200, 100, G, 1, TO

Rod Option

Stroke Length

Port Style

Z = Standard Model, W = Female Rod End Model
When not specified, default is HP.Z

G = 3/4 BSPP, P = 3/4 NPT

Mount Option (TO-T8)

TO = Basic Mount.

When not specified default is TO. Mount ordered with cylinder will be attached at the factory.

Mount Only Example: 200T1

Port Location (1-4)

Standard = 1.

When not specified, default is 1.

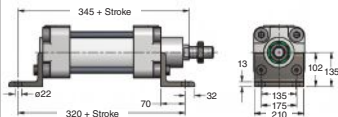
ø200 Mounts

HP Series Air Cylinders

T1 Foot Mount **Part No. 200T1** NFPA Style MS1



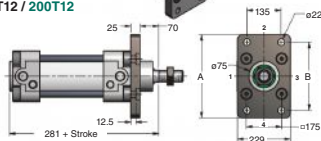
Conforms to NAAMS,
and meets or exceeds
VDMA Requirements.



T2 Rectangular Flange **– Front Mounted** **Part No. 200T2** NFPA Style MF1 **T12 / 200T12**



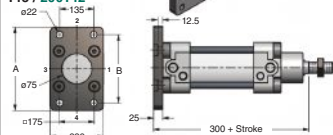
Part No.	A	B
T2	310	270
T12	335	300



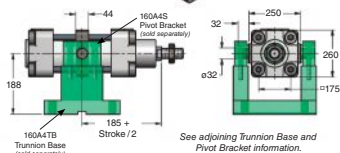
T3 Rectangular Flange – **Rear Mounted** **Part No. 200T2** NFPA Style MF2 **T13 / 200T12**



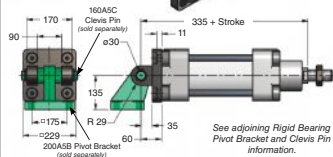
Part No.	A	B
T3	310	270
T13	335	300



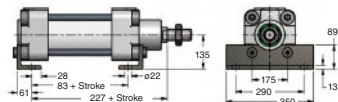
T4 Adjustable Trunnion **Part No. 200T4** NFPA Style MT4



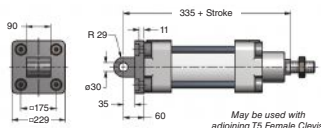
T5 Female Clevis **Part No. 200T5** NFPA Style MP2



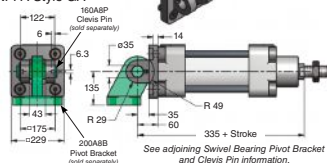
T6 Inverted Foot Mount **Part No. 200T6** Style MSB

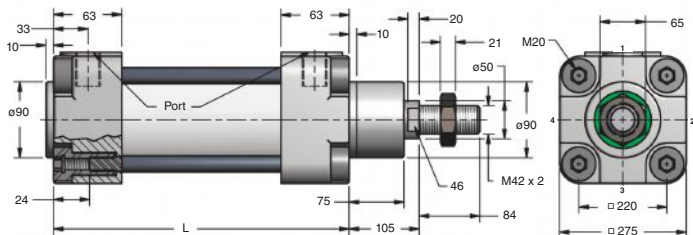


T7 Male Clevis **Part No. 200T7** NFPA Style MP4



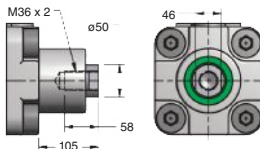
T8 Clevis Bracket **Part No. 200T8** NFPA Style GA





HP.Z = Standard Model

Rod Options



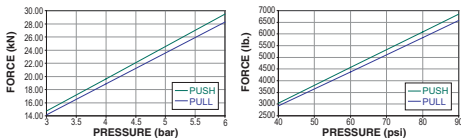
HP.W = Female Rod End Model

Piston rod with a female thread. DADCO offers rod end studs to convert the female thread to the standard male rod end, contact DADCO for more information.

Part No.	Stroke	L (mm)
HP_250.25	25	225
HP_250.50	50	250
HP_250.80	80	280
HP_250.100	100	300
HP_250.125	125	325
HP_250.160	160	360
HP_250.200	200	400
HP_250.250	250	450
HP_250.320	320	520
HP_250.400	400	600
HP_250.500	500	700

Contact DADCO for special stroke lengths.

Force Chart



PUSH Force: $P(\text{bar}) = F(\text{kN}) \div 4.909$ $F(\text{kN}) = P(\text{bar}) \times 4.909$
 $P(\text{psi}) = F(\text{lb.}) \div 76.09$ $F(\text{lb.}) = P(\text{psi}) \times 76.09$

PULL Force: $P(\text{bar}) = F(\text{kN}) \div 4.712$ $F(\text{kN}) = P(\text{bar}) \times 4.712$
 $P(\text{psi}) = F(\text{lb.}) \div 73.04$ $F(\text{lb.}) = P(\text{psi}) \times 73.04$

NOTE:
A cylinder's theoretical force should be 50-100% greater than the force required.

Ordering Example:

Series **HP**, Z, 250, 100, G, 1, TO

Rod Option **Z** = Standard Model, **W** = Female Rod End Model
When not specified, default is HPZ

Bore **250**

Stroke Length **100**

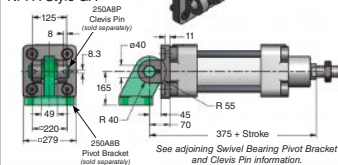
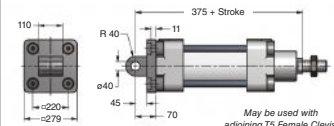
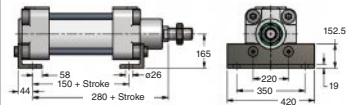
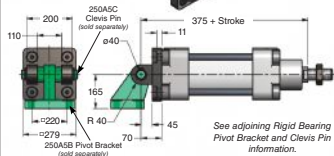
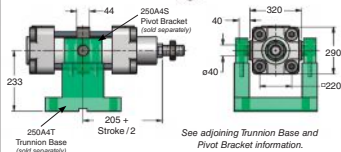
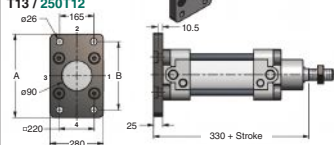
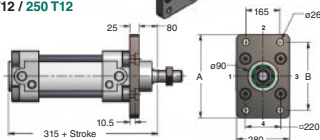
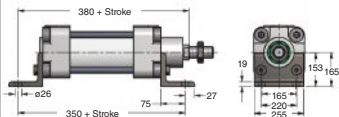
Port Style **G**

Mount Option (TO-T8) **TO** = Basic Mount.
When not specified default is TO. Mount ordered with cylinder will be attached at the factory.

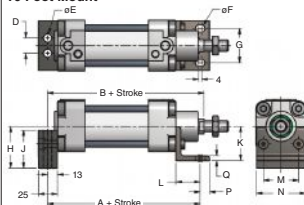
Mount Only Example: 250T1

Port Location (1-4) **1**
Standard = 1.
When not specified, default is 1.

Port Style
G = 1.0 BSPP, P = 1.0 NPT



T9 Foot Mount

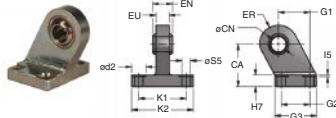
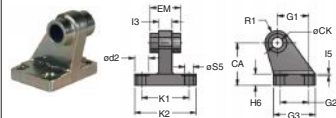


Part No.	Bore	A	B	D	E	F	G	H	J	K	L	M	N	P	Q
32T9	32	131	133	16	9	6.6	32	42	40	32	24	32.5	46	8	5
40T9	40	146	148	20	9	9	36	46	40	36	28	38	52	10	6.4
50T9	50	151	156	20	11	9	45	55	50	45	32	46.5	65	10.5	6.4
63T9	63	166	171	30	11	9	50	60	50	50	32	56.5	75	12.5	6.4
80T9	80	182	187	40	11	11	63	73	70	63	41	72	95	22.5	9.5
100T9	100	192	202	50	11	13.5	75	81	70	71	41	89	115	22.5	9.5
125T9	125	218	238	70	11	13.5	90	100	80	90	45	110	140	18.5	13
160T9	160	253	273	80	13.5	17.5	115	125	90	115	60	140	171.5	29	16
200T9	200	263	288	80	13.5	22	135	145	100	135	70	175	210	32	16
250T9	250	288	318	140	13.5	26	165	175	120	165	75	220	255	36.5	19

A5B Pivot Bracket with Rigid Bearing (for use with the T5 Female Clevis)



A8B Pivot Bracket with Swivel Bearing (for use with the T8 Clevis Bracket)



Note: Optional A5BF and A8BF versions available to comply with Ford Standards. Contact DADCO for more information.

Bore	CA	d2	G1	G2	G3	K1	K2	I5	S5
32	32	11	21	18	31	38	51	1.5	6.6
40	36	11	24	22	35	41	54	1.5	6.6
50	45	15	33	30	44	50	65	1.5	9
63	50	15	37	35	50	52	67	1.5	9
80	63	18	47	40	59	66	86	2.5	11
100	71	18	55	50	70	76	95	2.5	11
125	90	20	70	60	89	94	124	2.5	14
160	115	20	97	88	124	118	152	3	14
200	135	26	105	90	124	122	152	3	18
250	165	33	128	110	159	150	197	4	22

Part No.	CK	EM	H6	I3	R1
32A5B	10	26	8	8	10
40A5B	12	28	10	11	11
50A5B	12	32	12	14	13
63A5B	16	40	12	14	15
80A5B	16	50	14	16	15
100A5B	20	60	15	16	19
125A5B	25	70	20	25	23
160A5B	30	90	25	25	32
200A5B	30	90	30	25	32
250A5B	40	110	35	32	40

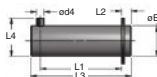
Part No.	CN	EN	ER	EU	H7
32A8B	10	14	14	9.5	10
40A8B	12	16	16	11	10
50A8B	16	21	21	14	12
63A8B	16	21	22	14	12
80A8B	20	25	27	16	14
100A8B	20	25	27	16	15
125A8B	30	37	38	25	20
160A8B	35	43	43	25	25
200A8B	35	43	44	25	30
250A8B	40	49	51	32	35

A5C Clevis Pin (for use with the T5 Female Clevis & T7 Male Clevis)



Part No.	Bore	EK	EL	L2
32A5C	32	10	48	4.5
40A5C	40	12	55	5
50A5C	50	12	63	5
63A5C	63	16	73	5
80A5C	80	16	93	5
100A5C	100	20	113	5
125A5C	125	25	135	7
160A5C	160/200	30	175	7
250A5C	250	40	205	7

A8P Clevis Pin (for use with the T8 Clevis Bracket)



Part No.	Bore	d4	EK	L1	L2	L3	L4
32A8P	32	3	10	32.5	4.5	42	14
40A8P	40	4	12	38	5	48	16
50A8P	50	4	16	43	5	53	20
63A8P	63	4	16	49	5	59	20
80A8P	80	4	20	63	5	73	24
100A8P	100	4	20	73	5	83	24
125A8P	125	6	30	94	7	108	36
160A8P	160/200	6	35	119	7	133	41
250A8P	250	8	40	121	7	135	48

A1M Mounting Screws



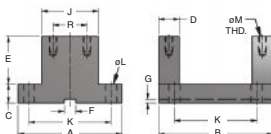
Part No.	Bore	d	d2	K	L	S
32A1M	32/40	M6	10	4	18	4
50A1M	50/63	M8	13	5	20	5
80A1M	80/100	M10	16	6	20	7
125A1M	125	M12	18	7	25	8
160A1M	160/200	M16	24	9	30	12
250A1M	250	M20	30	11	30	14

Trunnion Base & Brackets

DADCO offers a prefabricated base and sideposts that accept standard pivot brackets used to secure a trunnion mounted cylinder. The A4T Trunnion Base will accept either the Single Height Pivot Bracket (A4S) or the Dual Height Pivot Bracket (A4D), both shown below. The Dual Height Pivot Bracket is reversible. When mounted in the "low" position, the pivot centerline coincides with the single height pivot bracket. When mounted in the "high" position, the pivot centerline is doubled.

Trunnion Base

A4T

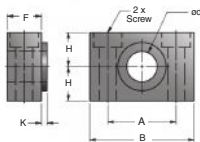


Single Height Pivot Bracket (A4S)
attached to Trunnion Base (A4T).

Part No.	Bore	A	B	C (max)	D	E	F	G	J	K	L	M	R
32A4T	32	90	91	20	20	25	12	4	50	71	9	M6 x 1	32
40A4TA	40	121	110	20	22	50	12	4	60	87	12	M8 x 1.25	36
40A4TB	50	110	121	20	22	50	12	4	60	87	12	M8 x 1.25	36
63A4TA	63	160	140	25	24	63	14	4.5	70	116	14	M10 x 1.5	42
63A4TB	80	140	160	25	24	63	14	4.5	70	116	14	M10 x 1.5	42
100A4TA	100	228	200	30	35	89	14	4.5	90	164	18	M12 x 1.75	50
100A4TB	125	200	228	30	35	89	14	4.5	90	164	18	M12 x 1.75	50
160A4TA	160	332	282	38	37	120	20	6	100	241	18	M16 x 2	60
160A4TB	200	282	332	38	37	120	20	6	100	241	18	M16 x 2	60
250A4TA	250	381	434	38	52	160	20	6	150	330	22	M20 x 2.5	90

Single Height Pivot Bracket

A4S

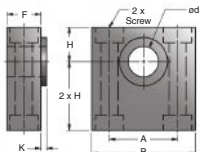


Note: Mounting screws included with pivot bracket.

Part No.	Bore	A	B	F	d	H	K	Screw Size
32A4S	32	32	46	15	12	15	3	M6 x 35
40A4S	40/50	36	55	18	16	18	3	M8 x 40
63A4S	63/80	42	65	20	20	20	3	M10 x 45
100A4S	100/125	50	75	25	25	25	3.5	M12 x 55
160A4S	160/200	60	92	36	32	30	4	M16 x 70
250A4S	250	90	140	51	40	35	5	M20 x 80

Dual Height Pivot Bracket

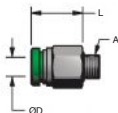
A4D



Note: Mounting screws included with pivot bracket.

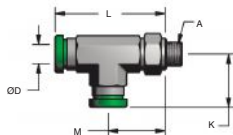
Part No.	Bore	A	B	F	d	H	K	Screw Size
32A4D	32	32	46	15	12	15	3	M6 x 50
40A4D	40/50	36	55	18	16	18	3	M8 x 60
63A4D	63/80	42	65	20	20	20	3	M10 x 65
100A4D	100/125	50	75	25	25	25	3.5	M12 x 80
160A4D	160/200	60	92	36	32	30	4	M16 x 100
250A4D	250	90	140	51	40	35	5	M20 x 120

Straight Port Adapter



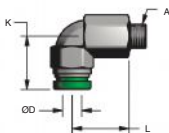
Part No.	Bore	A	D	L
FT.10.G02.T08	32	G 1/8	8	21.4
FT.10.G04.T10	40/50	G 1/4	10	26.4
FT.10.G06.T12	63/80	G 3/8	12	26.7
FT.10.G08.T14	100/125	G 1/2	14	25.4

Run Tee Port Adapter



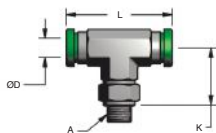
Part No.	Bore	A	D	K	L	M
FT.50.G02.T08	32	G 1/8	8	22	46	24
FT.50.G04.T10	40/50	G 1/4	10	28	58	30
FT.50.G06.T12	63/80	G 3/8	12	30	63	33
FT.50.G08.T14	100/125	G 1/2	14	34	72.5	38.5

Elbow Port Adapter



Part No.	Bore	A	D	K	L
FT.20.G02.T08	32	G 1/8	8	22	24
FT.20.G04.T10	40/50	G 1/4	10	28	30
FT.20.G06.T12	63/80	G 3/8	12	30	33
FT.20.G08.T14	100/125	G 1/2	14	34	38.5

Branch Tee Port Adapter



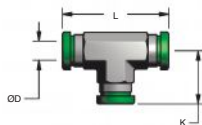
Part No.	Bore	A	D	K	L
FT.40.G02.T08	32	G 1/8	8	24	44
FT.40.G04.T10	40/50	G 1/4	10	30	56
FT.40.G06.T12	63/80	G 3/8	12	33	60
FT.40.G08.T14	100/125	G 1/2	14	38.5	68

BSPP → NPT Port Adapter



Part No.	Bore	A	B	L
FR.10.G02.N02	32	G 1/8	1/8 NPT	25
FR.10.G04.N04	40/50	G 1/4	1/4 NPT	33
FR.10.G06.N06	63/80	G 3/8	3/8 NPT	34
FR.10.G08.N08	100/125	G 1/2	1/2 NPT	44
FR.10.G12.N12	160/200	G 3/4	3/4 NPT	45
FR.10.G16.N16	250	G 1.0	1.0 NPT	55

Union Tee



Part No.	Bore	D	K	L
FT.40.T08	32	8	22	44
FT.40.T10	40/50	10	28	56
FT.40.T12	63/80	12	30	60
FT.40.T14	100/125	14	34	68

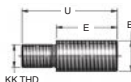
Rod End Studs & Accessories

HP Series Air Cylinders

Rod End Studs

DADCO offers rod end studs (ISO 12.9) to convert the female thread back to a standard male rod end. See ordering example below.

In addition to the standard rod ends, special metric and inch threads are available. Contact DADCO for more information.



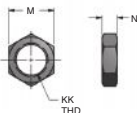
Part Number	HP.WY.50.100	G.	1.	TO	Mount Option
Includes Series, Rod End Style, Bore and Stroke Length					
Rod End Stud Designation					
WY = Female Rod End (HP.W) model with ISO 12.9 Stud Installed.					
NY = Non-Rotating (HP.N) model with ISO 12.9 Stud Installed.					

Stud Part No.	Bore	B	E	KK	U
32RES	32	M10 x 1.25	22	M8 x 1.25	34
40RES	40	M12 x 1.25	24	M10 x 1.25	39
50RES	50/63	M16 x 1.5	32	M12 x 1.25	50
80RES	80	M20 x 1.5	40	M16 x 1.5	64
100RES	100*	M20 x 1.5	40	M20 x 1.5	70
125RES	125	M27 x 2	54	M20 x 1.5	95
160RES	160/200	M36 x 2	72	M27 x 2	113
250RES	250	M42 x 2	84	M36 x 2	138

*For the HP.N. 100 model order Stud Part No. 80RES.

Jam Nuts

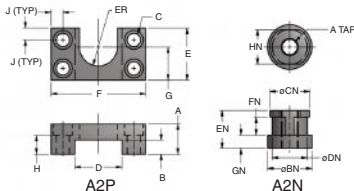
A2J



Part No.	Bore	KK	M	N
32A2J	32	M10 x 1.25	17	5
40A2J	40	M12 x 1.25	19	6
50A2J	50/63	M16 x 1.5	24	8
80A2J	80/100	M20 x 1.5	30	10
125A2J	125	M27 x 2	41	13.5
160A2J	160/200	M36 x 2	55	18
250A2J	250	M42 x 2	65	21

Coupling Nut and Plate

A2K



Set Part No.	Plate Part No.	Nut Part No.	Bore	A	B	C	D	ER	E	F	G	H	J	A Tap	BN	CN	DN	EN	FN	GN	HN
32A2K	32A2P	32A2N	32	25	11	M10	38	14	50	80	30	15	11.5	M10 x 1.25	35	30	25	30	16	10	24
40A2K	32A2P	40A2N	40	25	11	M10	38	14	50	80	30	15	11.5	M12 x 1.25	35	30	25	30	16	10	24
50A2K	50A2P	50A2N	50/63	32	15	M12	50	20	55	100	35	20	12.5	M16 x 1.5	47	42	37	40	19	14	36
80A2K	50A2P	80A2N	80/100	32	15	M12	50	20	55	100	35	20	12.5	M20 x 1.5	47	42	37	40	19	14	36
125A2K	125A2P	125A2N	125	40	20	M16	60	25	65	120	45	24	16	M27 x 2	57	52	47	50	24	19	46
160A2K	125A2P	160A2N	160/200	40	20	M16	60	25	65	120	45	24	16	M36 x 2	57	52	47	50	24	19	46
250A2K	250A2P	250A2N	250	45	20	M20	80	33	100	150	64	19	18	M42 x 2	76	64	59	76	50	19	60

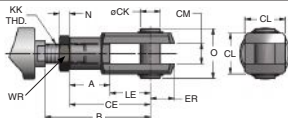
HP Series Air Cylinders

Clevis
A2C



NOTE: Photo above depicts the product as it was at the time this catalog was printed. Slight product changes may occur during the life of this catalog without prior notice, but products supplied will remain functionally interchangeable.

Alternate Rod Ends & Accessories



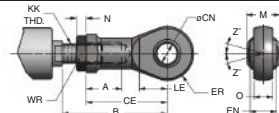
Part No.	Bore	A	B (max)	CE	CK	CL	CM	ER	KK	LE	N	O	WR
32A2C	32	20	52	40	10	20	10	12	M10 x 1.25	20	5	26	17
40A2C	40	24	60	48	12	24	12	14	M12 x 1.25	24	6	31	19
50A2C	50/63	32	80	64	16	32	16	19	M16 x 1.5	32	8	39	24
80A2C	80/100	40	100	80	20	40	20	25	M20 x 1.5	40	10	53	30
125A2C	125	56	137	110	30	55	30	38	M27 x 2	54	13.5	74	41
160A2C	160/200	72	180	144	35	70	35	44	M36 x 2	72	18	90.5	55
250A2C	250	84	210	168	40	86	40	64	M42 x 2	84	21	109.5	65

Swivel Rod Eye

A2E



NOTE: Photo above depicts the product as it was at the time this catalog was printed. Slight product changes may occur during the life of this catalog without prior notice, but products supplied will remain functionally interchangeable.



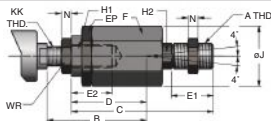
Part No.	Bore	A	B (max)	CE	CN	EN	ER	KK	LE	N	M	O	Z	WR
32A2E	32	20	55	43	10	14	14	M10 x 1.25	15	5	17	10.5	13	17
40A2E	40	22	62	50	12	16	16	M12 x 1.25	17	6	19	12	13	19
50A2E	50/63	28	80	64	16	21	21	M16 x 1.5	22	8	22	15	15	24
80A2E	80/100	33	97	77	20	25	25	M20 x 1.5	26	10	32	18	15	30
125A2E	125	51	137	110	30	37	35	M27 x 2	36	13.5	41	25	15	41
160A2E	160/200	56	161	125	35	43	40	M36 x 2	41	18	50	28	16	55
250A2E	250	60	184	142	40	49	45	M42 x 2	46	21	55	33	16	65

Alignment Coupler

A2L



NOTE: Photo above depicts the product as it was at the time this catalog was printed. Slight product changes may occur during the life of this catalog without prior notice, but products supplied will remain functionally interchangeable.



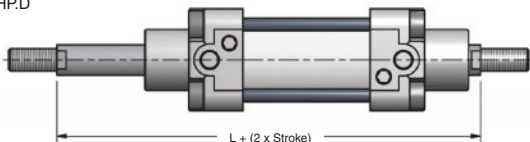
Part No.	Bore	A	B (max)	C	D	E1	E2	EP	F	H1	H2	J	KK	N	WR
32A2L	32	M10 x 1.25	38	70	31	20	23	30	30	19	12	-	M10 x 1.25	5	17
40A2L	40	M12 x 1.25	37	67	31	23	23	30	30	19	12	-	M12 x 1.25	6	19
50A2L	50/63	M16 x 1.5	53	112	45	40	32	41	41	30	19	-	M16 x 1.5	8	24
80A2L	80/100	M20 x 1.5	66	123	56	39	42	41	41	30	19	-	M20 x 1.5	10	30
125A2L	125	M27 x 2	73.5	145	60	48	48	55	55	32	24	-	M27 x 2	13.5	41
160A2L	160/200	M36 x 2	128	250	110	65	50	75	-	50	32	80	M36 x 2	18	55
250A2L	250	M42 x 2	141	271	120	82	88	80	-	60	36	90	M42 x 2	21	65

Optional Cylinder Styles

HP Series Air Cylinders

Double Rod End Cylinder

HP.D



Bore	L (mm)
32	146
40	165
50	180
63	195
80	220
100	240
125	290
160	340
200	370
250	410

Ordering Example:

Series	HP.	Z.	D.	63.	100.	G.	2.	TO	Mount Option
Rod Option		Z, N, NY, W, WY							Port Location
Double Rod End Designation									Port Style
Bore									Stroke

NOTE: Use the PULL work action value in the force chart.

Sensors

Magnetic Reed Switches can be used with HP Cylinders to properly synchronize the timing of motion. Typically, the switch is affixed to the tie rod and rests tightly against the non-magnetic tube. The switch senses a magnetic piston as the piston passes the switch. To receive a magnetic ring mounted within the piston, specify an "M" in the HP ordering code.

Ordering Example:

Series	HP.	Z.	M.	80.	125.	G.	2.	TO	Mount Option
Rod Option		Z, N, NY, W, WY							Port Location
Magnetic Ring on Piston									Port Style
Bore									Stroke

NOTE: Since there is a wide array of switches available, it is best to contact DADCO for information on switch selection and cylinder preparation.

Proximity Switches may also be used to synchronize the timing of motion. Some proximity switches are designed specifically for cylinder use, but most conventional switches can be adapted to pneumatic cylinders. The cylinder must be manufactured with a proximity port for a probe to be installed. The end of the probe must nearly contact the target it is sensing. The target (the cushion spear) must contain ferrous metal to interrupt the radial field of the switch; therefore, modified cushion spears are required. To receive an HP Cylinder prepped for proximity switches, specify an "E" along with the desired proximity port location, and head selection (i.e. front, rear, or both) in the HP ordering code. The proximity switch manufacturer and model number is also required for proper cylinder preparation.

Ordering Example:

Series	HP.	Z.	E11E.	63.	100.	G.	2.	TO	Mount Option
Rod Option		Z, N, NY, W, WY							Port Location
Proximity Switch Designation									Port Style
E Prefix and Suffix = Proximity Switches									Stroke
E1 = Front Head Prep at location 1									Bore
1E = Rear Head Prep at location 1									
(0 = No Prep)									

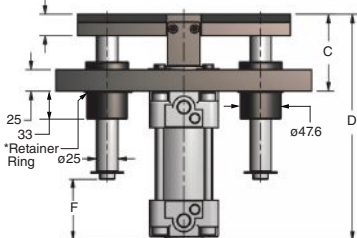
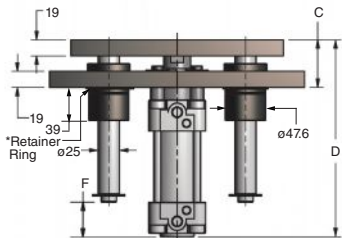
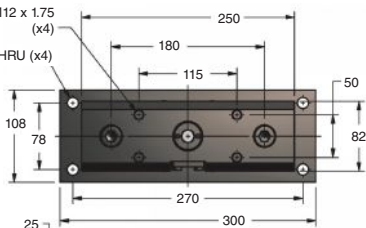
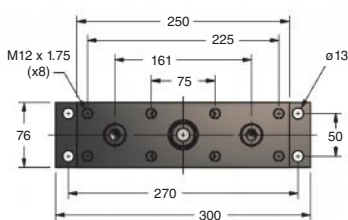
NOTE: Since there is a wide array of switches available, it is best to contact DADCO for information on switch selection and cylinder preparation.

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DADCO

TDL2C - Two Post Direct Lifter

DADCO's TDL2C delivers smooth, consistent lifting action and conforms with the Chrysler (080.90.07-08) and Ford (WDX 18-80) Die Standards. It is available in $\phi 40 - \phi 100$ mm bore sizes with a variety of stroke lengths to accommodate different applications. The TDL2C has M12 bolt holes in the upper plate to easily mount fixtures in place; no welding or extra machining is required.



ø40/ø50 Model

ø63 – ø100 Model

Bore Size	C	D	F	Port Style
				G or P
ø40	56	165 + S	22.1	1/4
ø50	56	181 + S	38.1	1/4
ø63	90	215 + S	68.9	3/8
ø80	90	222 + S	75.9	3/8
ø100	95	237 + S	90.9	1/2

Bore Size	Stroke Availability									
	25	50	80	100	125	160	200	250	320	400
ø40	✓	✓	✓	✓	✓	✓	✓	✓		
ø50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ø63			✓	✓	✓	✓	✓	✓	✓	✓
ø80			✓	✓	✓	✓	✓	✓	✓	✓
ø100			✓	✓	✓	✓	✓	✓	✓	✓

NOTE: Additional stroke lengths available upon request.

Ordering Example:

Example:

Series — HP. Z. 50. 100. G. 1. TDL2C

Rod Option — Z = Standard Model

Bore — TDL2C requires HP.Z configuration.

Stroke Length —

Port Style — G = BSPP, P = NPT

- Mount Option
TDL2C = Two Post Direct Lift with Linear Bearings and Guide Shafts.

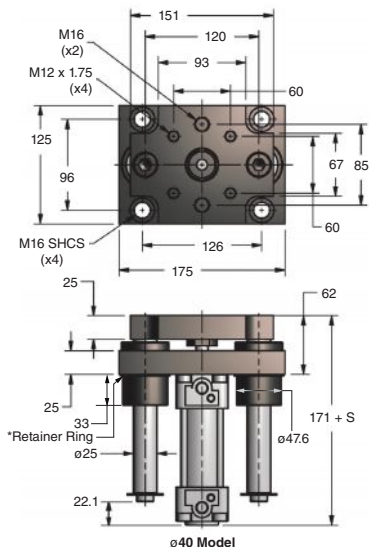
—Port Location (1-4)
Standard = 1.

When not specified, default is 1.

TDL4 - Two Post Direct Lifter

HP Series Air Cylinders

DADCO's TDL4 is available in a $\phi 40$ mm bore size and boasts the same high quality construction as the TDL2C. The TDL4's compact upper and mounting plates, make it ideal for placement in tighter spaces.



*Retainer Ring Installation Detail

Spotface required for retainer ring clearance.



TDL2C and TDL4 Upper Plate Modification

DADCO's HP Two Post Direct Lifters feature an upper plate with a convenient bolt pattern. If necessary, the plate can be removed and machined to accommodate various applications.

DADCO offers Spanner Tools to aid in the removal of the plate. Refer to bulletin #B01126 for step by step instruction on how to use the tools.



Spanner Tools

HP.325 (for use with $\phi 40$, $\phi 50$, $\phi 80$ and $\phi 100$)



Use with a 5/8" (16 mm)
Socket Wrench
(not included)



SW-55 (for use with $\phi 63$)



Ordering Example:

Series HP Z 40 100 G 1 TDL4
 Rod Option Z = Standard Model
 TDL4 requires HP.Z configuration.
 Bore Stroke Lengths 25, 50, 80, 100, 125, 160, 200 and 250
 Port Style G = 1/4 BSPP, P = 1/4 NPT
 Mount Option TDL4 = Two Post Direct Lift with Linear Bearings and Guide Shafts.
 Port Location (1-4) Standard = 1.
 When not specified, default is 1.

Operating Specifications

Charging Medium: Air
Temperature: $20^{\circ}\text{C} - 80^{\circ}\text{C}$ ($4^{\circ}\text{F} - 176^{\circ}\text{F}$)
Max. Working Pressure: 10 bar (140 psi) [1 MPa]

Max. Speed (HP.Z / HP.W): 1 m/sec. (3.28 ft/sec.)
Max. Speed (HP.N): 0.2 m/sec. (0.66 ft/sec.)
NOTE: Refer to cylinder pages for PUSH and PULL Forces.

Force Chart

Model	Work Action	Force (lb.)		Force (kN)	
		60 psi	80 psi	4 bar	6 bar
HP...32	PUSH	75	100	.322	.483
	PULL	64	86	.276	.415
HP...40	PUSH	117	156	.503	.754
	PULL	98	131	.422	.633
HP...50	PUSH	183	243	.785	1.18
	PULL	153	204	.660	.990
HP...63	PUSH	290	387	1.25	1.87
	PULL	261	348	1.12	1.68
HP...80	PUSH	467	623	2.01	3.02
	PULL	422	562	1.81	2.72

Model	Work Action	Force (lb.)		Force (kN)	
		60 psi	80 psi	4 bar	6 bar
HP...100	PUSH	730	974	3.14	4.71
	PULL	656	874	2.82	4.23
HP...125	PUSH	1141	1522	4.91	7.36
	PULL	1024	1366	4.41	6.61
HP...160	PUSH	1870	2493	8.04	12.06
	PULL	1753	2337	7.54	11.31
HP...200	PUSH	2922	3896	12.57	18.85
	PULL	2805	3740	12.06	18.10
HP...250	PUSH	4565	6087	19.64	29.45
	PULL	4383	5843	18.85	28.27

NOTE: A cylinder's theoretical force should be 50-100% greater than the force required.

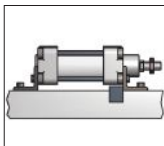
General

Do not use an air cylinder as a single acting spring. DADCO offers a full line of nitrogen gas springs and special single acting air cylinders which are specifically designed to provide concentrated spring forces.

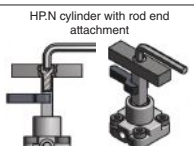
DADCO air cylinders are prelubed at assembly and require only filtered air when operated at under 1 meter/sec.

Lubricated air may be required when operating at speeds exceeding 1 meter/sec. Only provide lubed, compressed air when necessary because the cylinder must be operated with only that type after it is introduced.

Recommendations



When providing key support for the T1 mount use the back of the front mount.

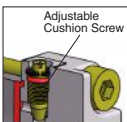


Always use a wrench to hold the rod when attaching items to the rod end. Do not torque against the bearing. Never use channel locks, and be careful not to scratch the rod surface during attachment.

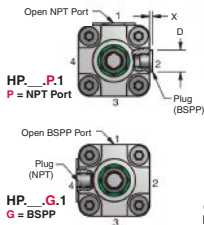
Adjustable Cushions

Every HP Series Cylinder is equipped with adjustable cushion control at each end as standard. The regulating screw in the front head controls cushioning on the extension stroke. The regulating screw in the rear head controls cushioning on the retracting stroke. A clockwise rotation closes the cushioning valve to produce more cushion effect; a counter clockwise rotation opens the cushioning valve to minimize cushion effect. The fully open position will provide no cushion effect. The cushion control can be disabled permanently by removing the cushion seals inside the heads. DADCO provides two cushion lengths; for shorter stroke air cylinders a short cushion is installed, for longer strokes a long cushion is installed, refer to chart for cushion length and availability.

NOTE: When using proximity sensors the cylinder will need to use long cushion spars regardless of stroke size.



Port Orientation



When the NPT Port option is chosen, the BSPP Port will be plugged, see dimensions below.

Bore	X	D
	mm	mm
ø32	5	16
ø40	5	20
ø50	5	20
ø63	5	24
ø80	5	24
ø100	7	29
ø125	7	29
ø160	7	36
ø200	7	36
ø250	5	40

When the BSPP Port option is chosen, the NPT Port will be plugged and is flush to the head.

NOTE: Customers may receive a head with just their individual chosen port option.

Bore	Effective Short Cushion Length	Effective Long Cushion Length	Short Cushion Used Through
	mm	mm	Stroke (mm)
ø32	7	18	63
ø40	7	18	63
ø50	7	22	63
ø63	7	22	63
ø80	7	26	63
ø100	17	30	80
ø125	17	30	80
ø160	17	30	100
ø200	17	43	100
ø250	17	50	100

Maximum Rod Thrust for Long Strokes

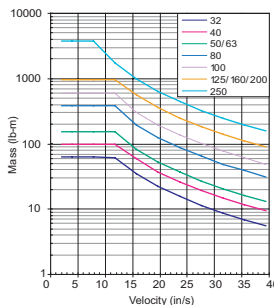
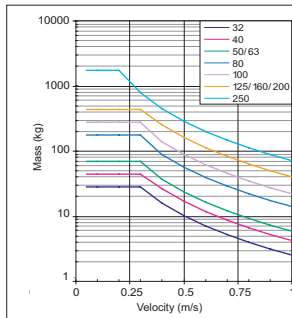
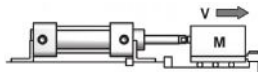
HP Series Cylinders have different load ratings for long strokes based on the mounting style and stroke length. Refer to the table below to determine the maximum thrust by cylinder model, bore size, mounting style and stroke length.

				Model	HP.Z / HP.W				HP.N				
				Bore	ø32	ø40	ø50/ ø63	ø80/ ø100	ø32	ø40	ø50/ ø63	ø80	
				Rod	ø12	ø16	ø20	ø25	□10	□12	□16	□20	
				Max. PUSH Thrust Load - kN (lb.)					Max. PUSH Thrust Load - kN (lb.)				
Mounting Style		T1, T2, T6	1	Stroke - mm (inch)	2000 78.7	0.4 86	OK	OK	OK	0.3 70	0.6 146	2.0 460	5.0 1124
		T1, T2, T6 with A2C or A2E	2		1500 59.1	0.3 78	1.1 246	2.7 601	OK	0.3 64	0.6 132	1.9 418	4.5 1020
					2000 78.7	0.2 44	0.6 138	1.5 338	OK	0.2 36	0.3 74	1.0 235	2.6 574
		T1, T2, T6	3		500 19.7	0.4 86	OK	OK	OK	0.3 70	0.6 146	2.0 460	5.0 1124
					1000 39.4	0.1 21	0.3 68	0.7 166	1.8 404	0.1 18	0.2 36	0.5 115	1.3 281
		T4, T5, T7, T8 with A2C or A2E	4		500 19.7	0.4 86	OK	OK	OK	0.3 70	0.6 146	2.0 460	5.0 1124
					1000 39.4	0.1 21	0.3 68	0.7 166	1.8 404	0.1 18	0.2 36	0.5 115	1.3 281

Dynamic Load Capacity per Cylinder

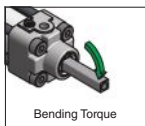
For moving larger masses consider kinetic energy and provide external stops, bumpers or shock absorbers where internal cushioning is insufficient or cushioning cannot be used.

If external stops or cushions cannot be used, reduce the load capacity per cylinder. To avoid damage to the cylinder reference the graphs for the recommended load capacity based on the velocity of operation.



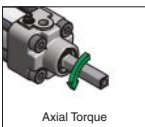
HP.N Load Capacity for Maximum Reliability

To maximize the reliability of the HP.N cylinders, avoid side loading. Good design practice should minimize the length and locate the force on the centerline of the cylinder. Increased wear on the bearing will occur if torque resulting from axial or bending loads exceeds the values referenced below.



Bending Torque

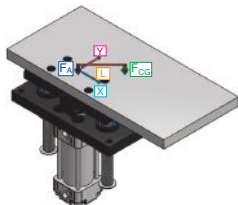
HP.N Bore	Square	Maximum Bending at .25 m/sec (10 in/sec)	
mm	mm	lb-in	Nm
32	10	42	4.7
40	12	100	11
50/60	16	197	22
80/100	20	376	43



Axial Torque

HP.N Bore	Square	Maximum Axial at .25 m/sec (10 in/sec)	
mm	mm	lb-in	Nm
32	10	28	3.1
40	12	40	4.5
50/60	16	71	8.0
80/100	20	110	12

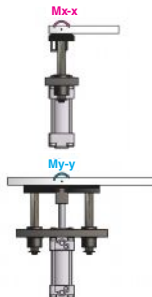
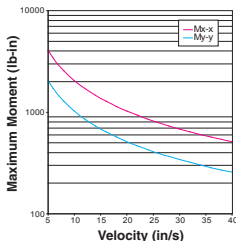
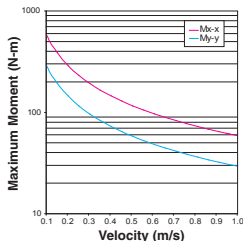
Two Post Direct Lifter Loading Capacity for Maximum Reliability



To maximize the reliability of the lifter, locate F_{CG} as close to F_A as possible. Good design practice should minimize L . As L increases, the likelihood of increased bearing wear and vibration increases. If a large offset is required, reduce the attachment load being lifted or add additional lifters. To determine Maximum Moment at a given velocity, refer to the graphs below.

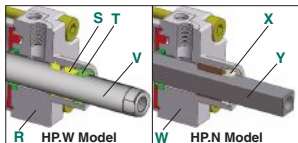
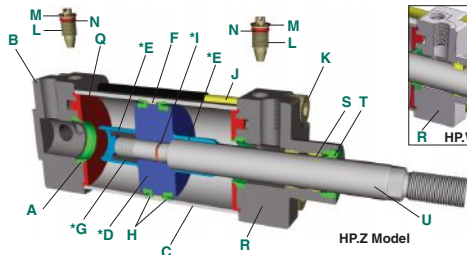
- F_A = Compression force to depress the lifter on the lifter centerline
- F_{CG} = Load caused at the center of gravity of the attachment
- L = Distance from F_A to F_{CG}
- X = Reference axis, use $My-y$ loading for forces on this axis
- Y = Reference axis, use $Mx-x$ loading for forces on this axis

$$\text{Maximum Moment} = F_{CG} \times L$$



Parts List

HP Series Air Cylinders



NOTE: For bore diameters $\phi 60$ - $\phi 250$, please contact DADCO.

Parts List	Quantity Required	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$	$\phi 125$
A Cushion Seal	2	IP470949	IQ470950	IR470951	IR470951	IT470953	IU470954	IV470955
B Rear Head	1	IP600460	IQ600461	IR600462	IS600463	IT600214	IU600215	IV600216
C Tube	1	IP05Z	IQ05Z	IR05Z	IS05Z	IT05Z	IU05Z	IV05Z
F Guide Tape	1	IP417725	IQ417726	IR417727	IS417728	IT417521	IU417467	IV41V360
H Piston Seal	2	IP480969	IQ480970	IR480971	IS480972	IT480973	IU480974	IV47V359
J Tie Rod	4	IP75M	IQ75M	IR75M	IS75M	IT75M	IU75M	IV75M
K Tie Rod Nut	8	IP852201	IQ852201	IR852203	IS852203	IT852205	IU852205	IV850313
L Regulating Screw	2	IP502240	IQ502241	IR502242	IS502243	IT502244	IU502245	IV502246
M Retaining Ring	2	IP857278	IQ857278	IR857279	IS857280	IT857280	IU857281	IV857282
N Adj. Screw O-Ring	2	IP450979	IQ450979	IR450981	IS450982	IT450983	IU450984	IV450985
Q Dampening Washer	2	IP450860	IQ450861	IR450862	IS450863	IT450864	IU450865	IV450866
HP.Z Model								
R Front Head	1	IP600450	IQ600451	IR600452	IS600453	IT600204	IU600205	IV600206
S Rod Bearing	2	IP400939***	90.240.00300	90.240.00500	90.240.00500	90.240.00750	90.240.01500	90.240.02600
T Rod Seal/Wiper/Ring	1	IP47V229	IQ47V230	IR47V231	IS47V231	IT47V232	IU47V233	IV47V234
**U Piston Rod Assembly	1	IP00Z	IQ00Z	IR00Z	IS00Z	IT00Z	IU00Z	IV00Z
HP.W Model								
**V Piston Rod Assembly	1	IP00W	IQ00W	IR00W	IS00W	IT00W	IU00W	IV00W
HP.N Model								
****W Front Head Assembly	1	IP307646	IQ307647	IR307648	IS307648	IT307649	IU307657	---
X Rod Seal/Wiper/Ring	1	IP477646	IQ477647	IR477648	IS477648	IT477649	IT477649	---
**Y Piston Rod Assembly	1	IP00N	IQ00N	IR00N	IS00N	IT00N	IU00N	---

* Not sold separately: Piston (D), Piston O-Ring (I), Piston Nut (G) and Cushion Spears (E).

** Includes D, I, G and E. When ordering, please note the stroke length in addition to the part number.

*** The $\phi 32$ mm bore cylinder uses only one rod bearing.

**** Includes Front Head with Rod Bearing, Rod Seal/Wiper/Ring, Regulating Screw, Retaining Ring, Adj. Screw O-Ring, Dampening Washer, and Cushion Seal.

Every effort has been made to have all illustrations and drawings accurately represent the product as it was at the time this catalog was printed. However, so that we effectively may continue to meet the requirements of DADCO customers, some product changes may occur during the life of this catalog without prior notice.



Foot Mount (T1)



Front Flange (T2)



Rear Flange (T3)



Adjustable
Trunnion (T4)



Female Clevis (T5)



Inverted Foot
Mount (T6)



Male Clevis (T7)



Clevis Bracket (T8)

Ordering Information

HP. Z. . 50. 100. G. 1. TO

Series

Rod Option

Z = Standard Model
N = Non-Rotating Model
NY = ISO 12.9 Stud Installed
W = Female Rod End Model
WY = ISO 12.9 Stud Installed
When not specified, default is HP.Z.

Cylinder Options

D = Double Rod End Cylinder
F = Chrome Plated Steel Tube
R = Stainless Steel Piston Rod
Other tube materials are available,
contact DADCO for more information.
Leave blank for no option selected.

Sensor Designation

E_ E = Prep for Proximity Switches
M = Magnetic Ring on Piston
Leave blank for no option selected.

Bore

Stroke Length

Mount Type

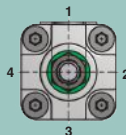
TO = Basic Model
T_ = Attached Mount Code
When not specified, default is TO.
Mount Only Example: 32T1

Port Location

1 = Standard
When not specified, default is 1.

Port Style

G = BSPP
P = NPT
When not specified, default is G.



HP.Z and HP.W Model Repair Kits

Seal Kit

Contains Piston Seals, Cushion Seals, Rod Seal/
Wiper/Ring and Maintenance Instructions.

Repair Kit

Contains Piston Seals, Cushion Seals, Rod Seal/Wiper/
Ring, Rod Bearings and Maintenance Instructions.

Model (Z or W)	Seal Kit Number	Repair Kit Number
HP._32	IP009180	IP009190
HP._40	IQ009181	IQ009191
HP._50	IR009182	IR009192
HP._63	IS009183	IS009193
HP._80	IT009184	IT009194
HP._100	IU009185	IU009195
HP._125	IV009186	IV009196

NOTE: For bore diameters ø160-ø250, please contact DADCO.

HP.N Model Repair Kits

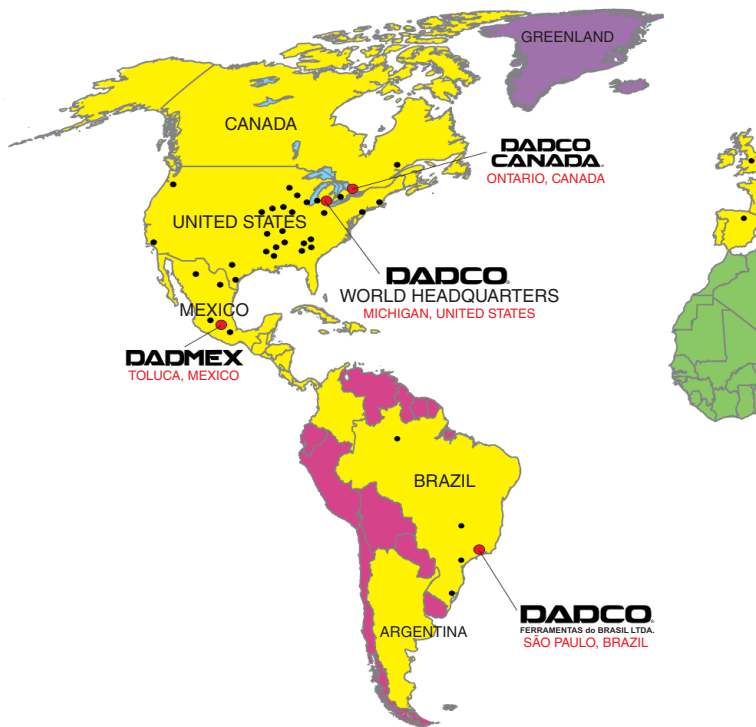
Seal Kit

Contains Piston Seals, Cushion Seals, Rod Seal/
Wiper/Ring and Maintenance Instructions.

Model	Seal Kit Number
HP.N.32	IP007646
HP.N.40	IQ007647
HP.N.50	IR007648
HP.N.63	IS007648
HP.N.80	IT007649
HP.N.100	IU007657

For more information on the repair of HP Series
Air Cylinders, refer to bulletin #B04117B, bulletin
#B04118B and bulletin #B05119A.

Notes



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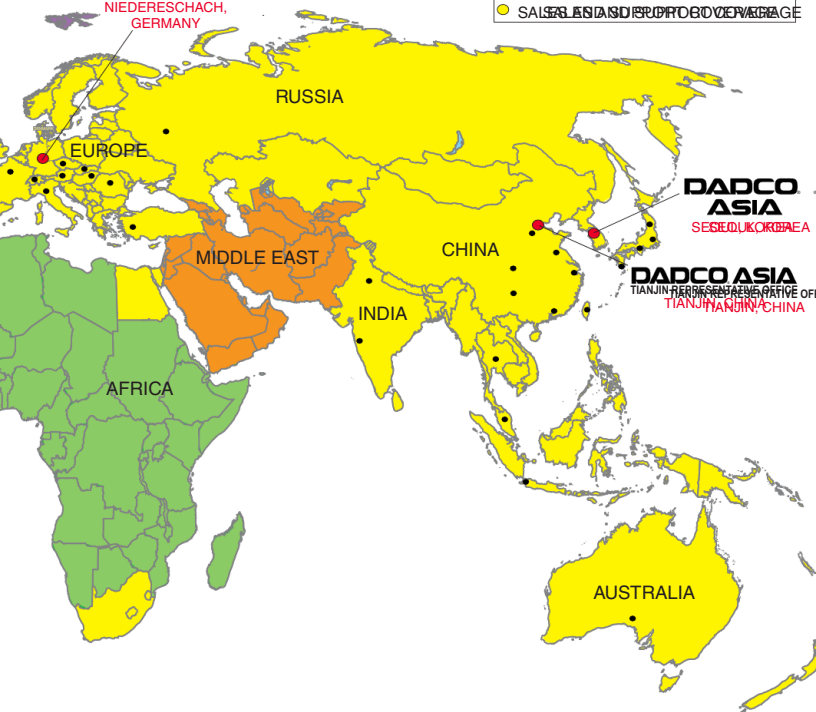
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43850 Plymouth Oaks Blvd. • Plymouth, Michigan • 48170 • USA
Tel: +1 (734) 207-1100 • Fax: +1 (734) 207-2222 • www.dadco.net

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43850 Plymouth Oaks Blvd.
Plymouth, MI 48170 USA
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