



REVISIONS DATE APPROVED

DESCRIPTION

REV

Ameritool

316 Stainless Steel Gas Springs & Dampers

Adjustable Gas Springs

Fixed Force Gas Springs

Adjustable Dampers

Extension, Compression
and Dual-Rate Dampers

Mounting Hardware

Locking Springs

Tension Springs

Carbon Springs

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Company Overview

With almost 20 years of experience manufacturing stainless steel gas springs and dampers, Ameritool has gained an outstanding reputation through quality, revolutionary solutions, outstanding delivery and exceptional customer service. Being the first and the biggest stainless steel gas spring manufacturer in the North America. Ameritool is a global supplier delivering advanced technological solutions for almost every type of industry.

Here at Ameritool, our business idea is to offer a wide variety of American made stainless steel gas springs and dampers with brilliant design at very competitive prices. Responding to the needs of our customers from all over the world with our groundbreaking sales team. Investing in the latest technology and setting sights on quality improvements we continue to make certain that complete satisfaction is met.

Our business idea is focused on a strong partnership with our customers. Our engineer's strive for better designs and processes to ensure delivery of the best possible product. Our customer's satisfaction is our success!

Ameritool continually strives to provide the widest selection of gas springs, tension springs and damper products in the global market place. Through constant evaluation and testing, we bring our customers the most cost effective products with more features, greater performance and improved ease of use.

Ameritool provides a unique combination of product selection, engineering excellence and technical support to Original Equipment Manufacturers (OEMs) and aftermarket applications. Ameritool products meet the toughest energy absorption and application requirements.

Global Manufacturing and Sales Facilities offer our customers:

- Highly Trained Distribution Network
- State-of-the Art Engineering Capabilities
- Custom Solution Development
- Customer Service Specialists
- Multiple Open Communication Channels

If you are unsure whether one of our standard products meets your requirements, feel free to speak with one of our technical representatives toll-free at **1-888-870-4884**, or contact us via e-mail at **springsales@ameritoolmfg.com**.

Products/Engineering/Technical Support

If you require a size that is not available, Ameritool will build a custom size to fit your application needs.

Gas Spring Guidelines

1. Mount and dismount gas springs according to safety guidelines. To achieve long-life expectancy with reduced fatigue strength, employ sound mounting practices.
2. If gas springs are fitted in applications where failure means risk of health or life, we recommend using additional locking mechanisms. This is a customer responsibility.
3. In FOOD or MEDICAL settings, request food-grade lubricating oils in place of industrial-grade hydraulic fluids, as minor quantities of fluid may leak from gas springs and should not come in contact with food or similar products or with subsoil water.
4. Allow for sufficient movement in the end fittings. Avoid rigid installation. If the mounts are subject to vibration, fittings must be secured. Fittings must be screwed on completely.
5. Gas springs, tension springs and dampers are not safety parts. These units are wear parts and thus be replaced depending on the stress applied and the area of the application.
6. Avoid side loading of gas springs. Long strokes may require additional support to avoid bending and tilting. Avoid non-axial forces.
7. Minor damage, corrosion or paint residue on the shaft may damage the unit's seal and result in rapid failure. Any product change, adjustment or repair through any third party, without written consent from Ameritool will void any warranty or guarantee.
8. Unless specifically designed for tension loads, gas springs must not be loaded with traction forces.
9. Do not extend or retract gas springs beyond their design specifications. Gas springs are not to be used as a dead stop.
10. Use unit only within a temperature range of -40°F to 300°F (-40°C to 148°C). Contact Ameritool if intended use exceeds this range. Do not heat above 300°F (148°C).
11. Extreme temperature variances affect extension and compression forces. Compression force changes occur at a rate of approximately 3% per every 50°F (10°C) change in operating temperature.
12. Warranty is excluded for any installation suggestions/ drawings for gas springs, tension springs and dampers. It must be considered that not all installation parameters can be included in the theoretical suggestions, therefore the installation must be carried out with the utmost care in practice since friction values or accelerations cannot be considered in the theoretical suggestion. In general, all orders must indicate if springs are used under normal conditions, -40°F to 300°F (-40°C to 148°C), or in environments that exceed these conditions (eg: water steam >300°F (148°C), chemicals, detergents, etc.).
13. Test gas springs after installation. Ameritool cannot simulate or anticipate the complete range of situations where our products may be used.
14. Avoid high accelerations or velocities during extension or compression as it could overload the unit. Attention: High stroke speeds or stroke frequencies lead to overheating and thus damage to the seals and the failure of the product.
15. Store gas springs in a shaft-down position to ensure lubrication of seal.
16. For horizontal use, specify Ameritool internal floated piston bearing with oil chamber.
17. Mount non-reservoir gas springs shaft-down, as they remain mostly in a static position.
18. The tolerance for the compression or tension forces is +3-8 pounds for 625, 750 and 400 series, +5-10 pounds for 875 series and +10-20 pounds for the 1165, 1100 and 1750 series from the nominal force. The nominal force is measured statically 1 inch from full extension.

Warranty is excluded for any non-observance of the above instructions.

Specification Worksheet

Fax this sheet completed with your gas spring specifications to 315.668.6853.

Please include estimated annual quantity to assure the best pricing.

name _____ email _____

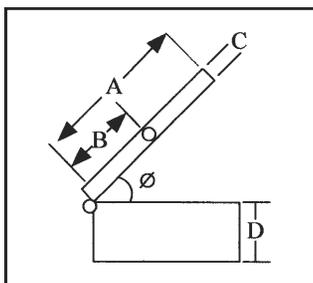
company _____ telephone _____ fax _____

address _____ city _____ state _____ zip code _____

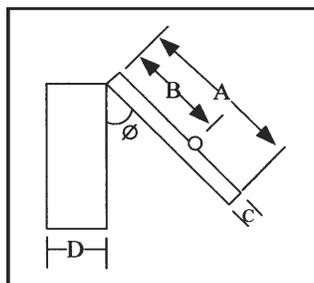
Quantity of product needed _____ Estimated annual quantity _____

Brief description of application _____

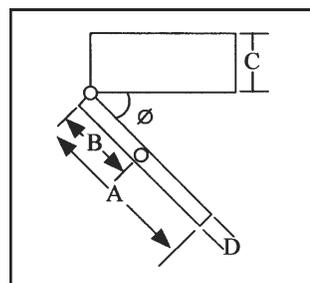
Select the figure below that best represents your application and your current data.



1. Starting horizontal



2. Starting vertical



3. Falling lid

application type 1 2 3 number of springs per lid 1 2

weight of lid _____ lb(s). opening angle _____ degrees

distance from hinge to end of lid, A dimension _____ in.

distance from hinge to center of gravity, B dimension _____ in.

thickness of lid, C dimension _____ in.

maximum mounting position depth, D dimension _____ in.

Lid Behavior

When lid is closed, it should

- stay closed under its own weight automatically open — latch may be needed

When lid is open, it should

- stay open close under its own weight

On average, how often will this application be used?

Ex: 2 cycles per hour, once a week, etc. _____

Operating temperature: from _____ °F to _____ °F

Environment: salt water chemical food processing/medical

316 Stainless Steel Gas Springs Overview

Ameritool offers a wide variety of 316 stainless steel, adjustable and fixed force gas springs, tension springs and dampers at competitive market prices.

Quality Marine, Aerospace, Industrial, Food Service and Farm Equipment manufacturers recognize our products and routinely use Ameritool Gas Springs as original parts in their product lines.

These traits make Ameritool the number one choice for your gas spring needs:

- 316 Stainless Steel Shaft and Body
- Hard chromed over the 316 stainless steel shaft for longevity.
- Rod wiper keeps contaminants off the rod to prevent them from entering the spring and harming the sealing system.
- Major internal components are brass or bronze for better strength.
- Low lead-time: 2-week turn-around on regular orders with rush ordering available.
- Gas springs are built to order for maximum life expectancy.
- Ameritool offers a 1 year limited liability warranty on our gas springs.
- Capable of producing forces from 5 lbs. up to 1200 lbs.

Typical Applications

- | | |
|-------------------------------|------------------|
| • Engine Room Doors & Hatches | • Awnings |
| • Fish Boxes & Anchor Lockers | • Lift Equipment |
| • Livewell Compartments | • Storage Chests |
| • Electronic Box Compartments | • Tool Boxes |
| • Storage Hatches | • Conveyors |
| • Davit Systems | • Gull Wing Door |
| • Heavy Equipment | |



Gas Springs



Gas Spring End Mounts



Features and Benefits

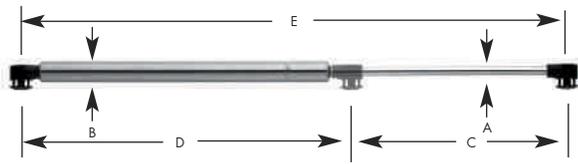
- **Reliable** — Proven life of 125,000 cycles
- **Durable** — Unique Rod Seal & Wiper Design
- **High Quality 316 Stainless Steel**
- **Low Maintenance**
- **Quick Delivery**



316 Stainless Steel Fixed Force and Locking Gas Springs

High Quality 316 Stainless Steel Fixed Force Gas Springs are self-contained pneumatic devices capable of producing very large forces. Used in opening or closing apparatus either by a vertical or horizontal travel for lifting, counterbalancing and motion control of doors, hatches, safety lids, hoods, cargo doors and access panels.

- Extreme duty; tested range: -40°F to 300°F (-40°C to 148°C)



The Locking Mechanism accessory mechanically locks the gas spring in the fully extended position providing assurance of safety. Locking mechanisms are available on the 750 Series gas springs. Adding locking mechanism loses 0.45" stroke. To order add "09" to the part number when ordering. Ex 750-3-XX-09

625 Series Forces (F1) can be factory set from 5# to 90# (22N - 400N)

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread	F1 Force lbs. (N)
625-2	0.250 (6.4)	0.625 (15.9)	2.25 (57.2)	5.25 (133.4)	7.5 (190.5)	M6 X1	5-90 (22-400)
625-3			3.0 (76.2)	7.0 (177.8)	10.0 (254.0)		
625-4			4.0 (101.6)	8.0 (203.2)	12.0 (304.8)		
625-6			6.0 (152.4)	9.0 (228.6)	15.0 (381.0)		
625-6L			7.0 (177.8)	10.0 (254.0)	17.0 (431.8)		
625-7			7.25 (190.5)	11.25 (285.8)	18.5 (469.9)		
625-8			8.0 (203.2)	12.0 (304.8)	20.0 (508.0)		

Note: See page 8 for Series End Mounts and Ball Stud Mounts.

750 Series Forces (F1) can be factory set from 10# to 150# (44N - 667N)

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread	F1 Force lbs. (N)
750-2	0.312 (7.9)	0.75 (19.1)	2.25 (57.2)	5.25 (133.4)	7.5 (190.5)	M6 X1	10-150 (44-667)
750-3			3.0 (76.2)	7.0 (177.8)	10.0 (254.0)		
750-4			4.0 (101.6)	8.0 (203.2)	12.0 (304.8)		
750-6			6.0 (152.4)	9.0 (228.6)	15.0 (381.0)		
750-6L			7.0 (177.8)	10.0 (254.0)	17.0 (431.8)		
750-7			7.25 (190.5)	11.25 (285.8)	18.5 (469.9)		
750-8			8.0 (203.2)	12.0 (304.8)	20.0 (508.0)		
750-10S			9.6 (243.8)	13.4 (340.4)	23.0 (584.2)		
750-10			11.0 (279.4)	15.0 (381.0)	26.3 (668.0)		

Notes:

1. Force increments of 5 pounds for 625 and 750 series.
2. Product length tolerance is ± .08 in. (2.0 mm).
3. Force tolerance is 3-8 pounds over the nominal force.
4. Maximum piston speed is approximately 12 in./sec. (.3 m/sec). Fast operation rates lead to excessive heat build-up resulting in internal seal damage.
5. Gas springs are filled with oil and are under pressure. Please dispose of properly. Do not puncture or open.
6. Contact Ameritool for modified standards or for engineered specials that meet your exact needs.
7. EE denotes no end mounts on spring.

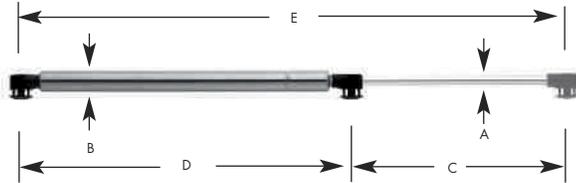
Ordering number example: 750-6-20-09-D2D2



Fixed Force Tension Gas Springs

Tension gas springs, also known as reverse acting gas springs, are constructed from 316 stainless steel. The force on these springs pulls the piston rod inward, operating in the opposite direction of other gas springs. Great for use on doors, lids, hatches and hoods that need to stay closed. In it's relaxed state, the spring is compressed; you must pull to extend it.

- Extreme duty; tested temperature range: -40°F to 300°F (-40°C to 148°C)



400 Series Tension Springs

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread	F1 Force lbs. (N)
400-2	.312 (7.9mm)	.750 (19.1mm)	2.11 (53.59)	7.28 (184.91)	9.44 (239.78)	M6 X1	35-85 (156-378)
400-3			3.11 (78.99)	9.28 (235.78)	12.44 (315.98)		
400-4			4.11 (104.39)	11.28 (286.51)	15.44 (392.18)		
400-6			6.11 (155.19)	15.28 (388.11)	21.44 (544.58)		
400-7			7.11 (180.59)	17.28 (438.91)	24.44 (620.78)		
400-8			8.11 (205.99)	19.28 (489.71)	27.44 (696.98)		
400-10			10.11 (256.79)	23.28 (591.31)	33.44 (849.38)		

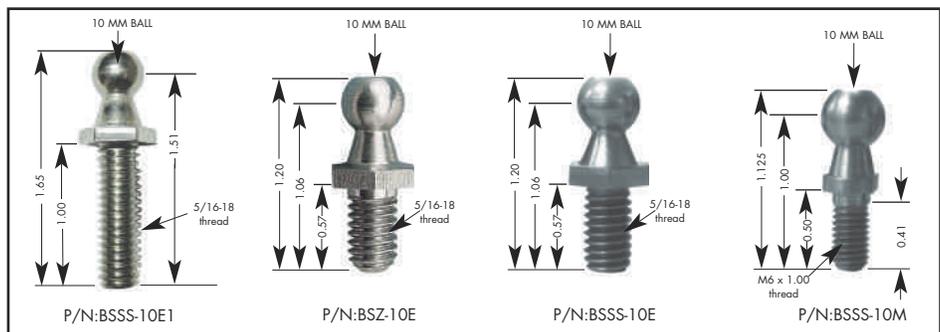
Notes:

1. Required Force (F1) must be within the catalog limits and in increments of 10 lbs. (45N).
2. EE denotes no end mounts on spring.

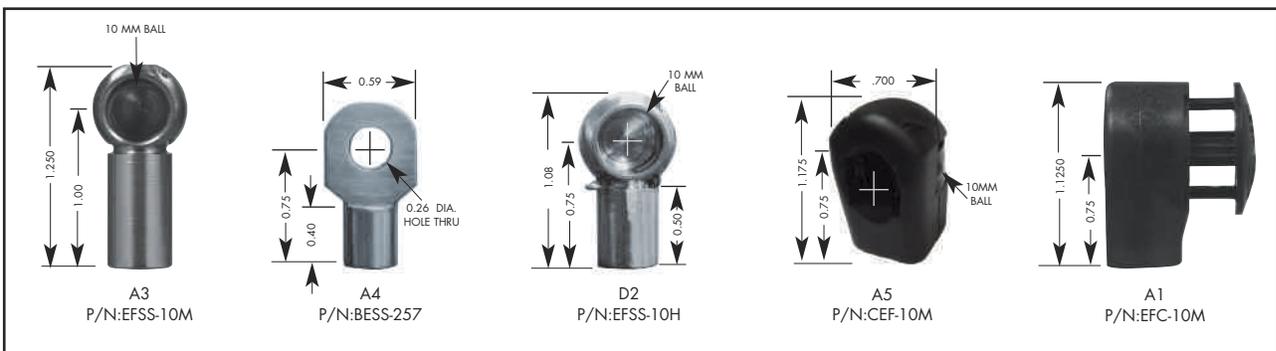
Ordering number example: 400-6-20-D2D2

400, 625, 700 and 750 Ball Stud Mounts

Fixed Force Gas Springs and Damper End Mounts



400, 625, 700 and 750 Series End Mounts



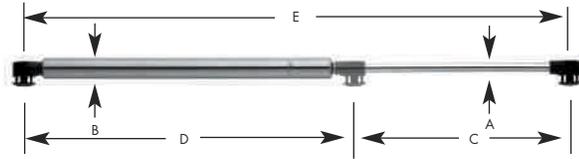
Extension, Compression and Dual-Rate Dampers

Extension Dampers: controlled damping speed while rod extends out of the cylinder.

Compression Dampers: controlled damping speed while rod compresses into the cylinder.

Dual-rate Dampers: equal amount of damping speed in both directions.

Dampers can be custom designed to match specific applications. Call Ameritool for details.



EDP = Damping on extension, Free on compression
 CDP = Damping on compression, Free on extension
 DDP = Dual direction damper, Dampens in both direction

700 Series Extension Dampers

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread
700-2-EDP	.25 (6.4)	.75 (19.1)	2.25 (57.2)	5.25 (133.4)	7.5 (190.5)	M6 X1
700-3-EDP			3.0 (76.2)	7.0 (177.8)	10.0 (254.0)	
700-4-EDP			4.0 (101.6)	8.0 (203.2)	12.0 (304.8)	
700-6-EDP			6.0 (152.4)	9.0 (228.6)	15.0 (381.0)	
700-6L-EDP			7.0 (177.8)	10.0 (254.0)	17.0 (431.8)	
700-7-EDP			7.5 (190.5)	11.25 (285.8)	18.5 (469.9)	
700-8-EDP			8.0 (203.2)	12.0 (304.8)	20.0 (508.0)	

700 Series Compression Dampers

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread
700-2-CDP	.25 (6.4)	.75 (19.1)	2.25 (57.2)	5.25 (133.4)	7.5 (190.5)	M6 X1
700-3-CDP			3.0 (76.2)	7.0 (177.8)	10.0 (254.0)	
700-4-CDP			4.0 (101.6)	8.0 (203.2)	12.0 (304.8)	
700-6-CDP			6.0 (152.4)	9.0 (228.6)	15.0 (381.0)	
700-6L-CDP			7.0 (177.8)	10.0 (254.0)	17.0 (431.8)	
700-7-CDP			7.5 (190.5)	11.25 (285.8)	18.5 (469.9)	
700-8-CDP			8.0 (203.2)	12.0 (304.8)	20.0 (508.0)	

700 Series Dual Direction Dampers

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread
700-2-DDP	.25 (6.4)	.75 (19.1)	2.10 (53.3)	4.85 (123.2)	7.50 (190.5)	M6 X1
700-3-DDP			3.00 (71.1)	7.0 (167.6)	10.00 (254.0)	
700-4-DDP			4.00 (94.7)	8.0 (193.0)	12.00 (304.8)	
700-6-DDP			5.60 (142.24)	8.6 (218.4)	15.00 (381.0)	
700-6L-DDP			6.525 (165.7)	9.6 (243.8)	17.00 (431.8)	
700-7-DDP			7.000 (177.8)	10.85 (269.2)	18.50 (469.9)	
700-8-DDP			7.500 (190.5)	11.6 (294.6)	20.00 (508.0)	

Note: EE denotes no end mounts on spring.

Ordering number example: 700-4-EDP-09-D2D2



Fixed Force Gas Springs and Dampers - Stainless Steel Brackets

400, 625, 700 and 750 Brackets

P/N:BR-202

Also Available in Zinc: P/N:BR-202-Z
Also Available in Black Powder coat: P/N:BR-202-B

P/N:BR-205L

Also Available in Zinc: P/N:BR-211-Z
Also Available in Black Powder coat: P/N:BR-211-B

P/N:BR-211

Also Available in Zinc: P/N:BR-211-Z
Also Available in Black Powder coat: P/N:BR-211-B

P/N:BR-203

Also Available in Zinc: P/N:BR-204-Z
Also Available in Black Powder Coat: P/N:BR-204-B

P/N:BR-208

Also Available in Zinc: P/N:BR-212
Also Available in Black Powder coat: P/N:BR-213-B

P/N:BR-211R

Also Available in Zinc: P/N:BR-213-Z
Also Available in Black Powder coat: P/N:BR-213-B

P/N:BR-204

Also Available in Zinc: P/N:BR-204R-Z
Also Available in Black Powder Coat: P/N:BR-204R-B

P/N:BR-209R

Also Available in Zinc: P/N:BR-209L-Z
Also Available in Black Powder coat: P/N:BR-209L-B

P/N:BR-212

Also Available in Zinc: P/N:BR-213-Z
Also Available in Black Powder coat: P/N:BR-213-B

P/N:BR-204R

Also Available in Zinc: P/N:BR-204R-Z
Also Available in Black Powder coat: P/N:BR-204R-B

P/N:BR-209L

Also Available in Zinc: P/N:BR-210-Z
Also Available in Black Powder coat: P/N:BR-210-B

P/N:BR-213

Also Available in Zinc: P/N:BR-213-Z
Also Available in Black Powder coat: P/N:BR-213-B

P/N:BR-205R

Also Available in Zinc: P/N:BR-210-Z
Also Available in Black Powder coat: P/N:BR-210-B

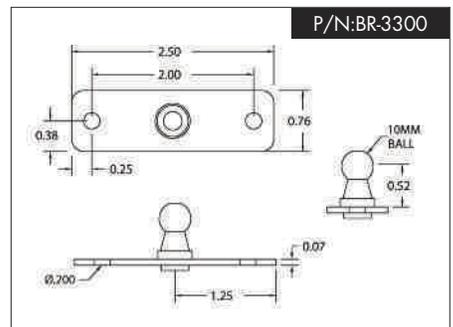
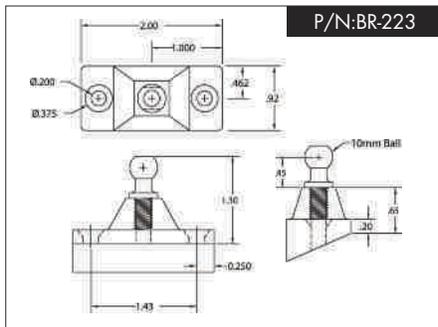
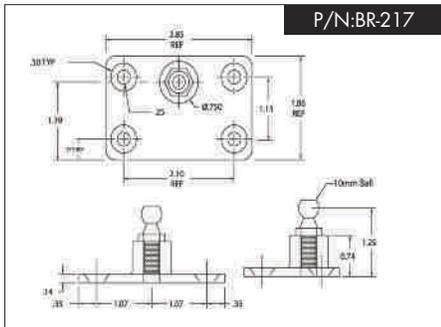
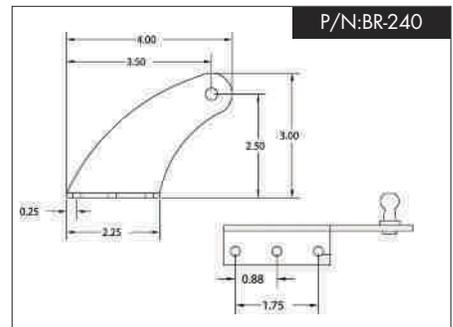
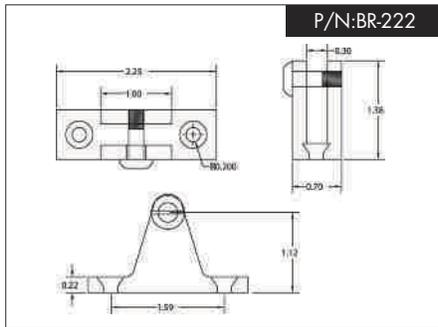
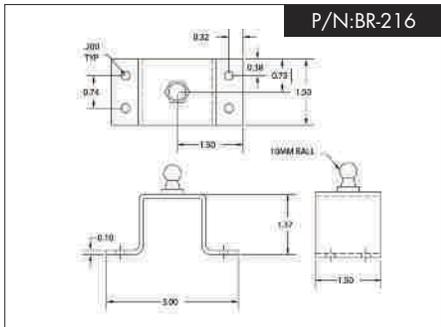
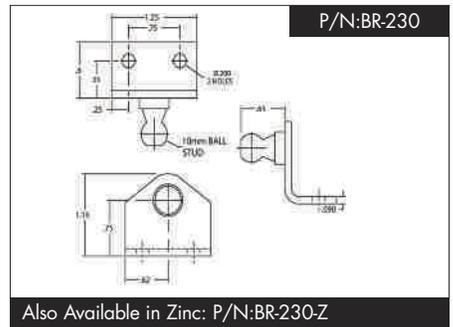
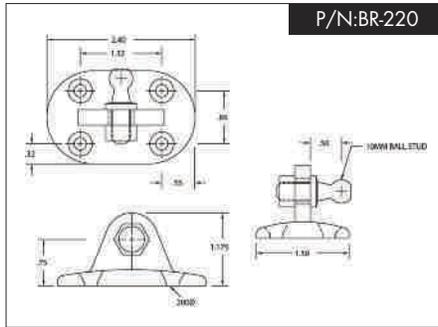
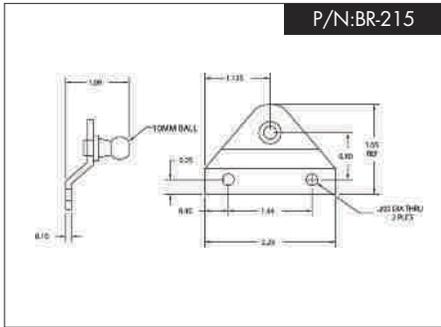
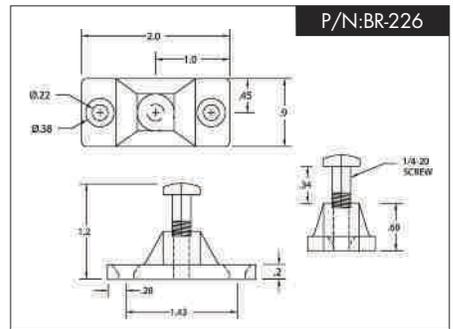
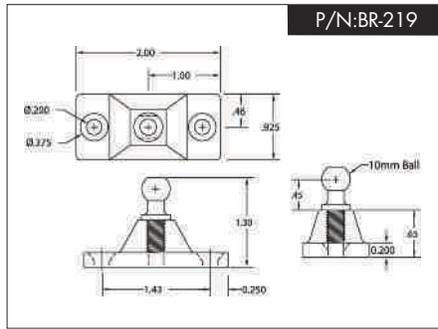
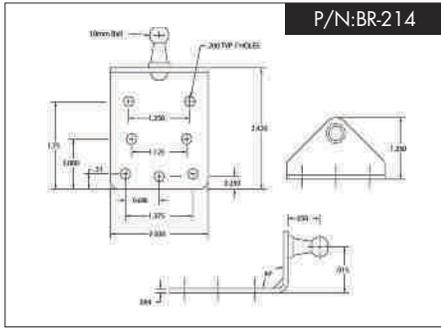
P/N:BR-210

Also Available in Zinc: P/N:BR-210-Z
Also Available in Black Powder coat: P/N:BR-210-B

Note: All End Mount thread sizes M6 x 1

Fixed Force Gas Springs and Dampers - Stainless Steel Brackets

400, 625, 700 and 750 Brackets cont'd.

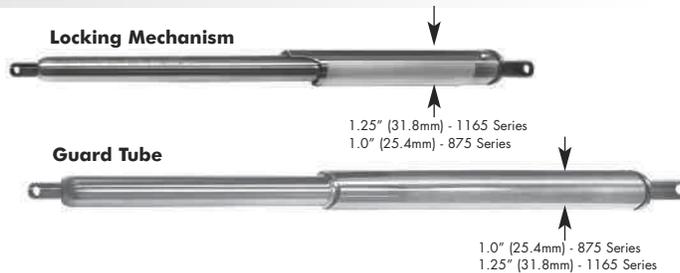
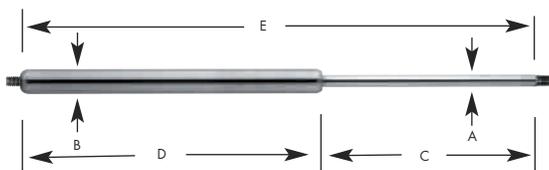


Note: All End Mount thread sizes M6 x 1



Adjustable Gas Springs, Guard Tubes and Locking Springs

High quality 316 stainless steel adjustable-force gas springs offer a powerhouse of lifting capacity up to 1,200 pounds – no tools required to install, trouble-free, reliable lifting support.



The Locking Mechanism accessory mechanically locks the gas spring in the fully extended position. Locking mechanisms are available on the 875 and 1165 Series gas springs.

To order add "09" to the end of your ordering number and add .090 to extended length. EX. 875-8-XX#-09

The Guard Tube accessory protects the piston rod from damage due to incidental impacts. This accessory adds 0.1 inches to the extended length of the gas springs, please review the "E" dimension. Guard Tubes are available on the 875 and 1165 series gas springs. To order add "08" to the end of your ordering number.

875 Series Forces (F1) can be factory set from 20# to 240# (87N - 1045N)

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread	F1 Force lbs. (N)
875-2	0.375 (9.5)	0.875 (22.2)	2.0 (50.8)	4.75 (120.6)	6.75 (171.4)	8 mm	20-240 (87-1045)
875-4			4.0 (101.6)	6.75 (171.4)	10.75 (273.0)		
875-6			6.0 (152.4)	8.75 (222.2)	14.75 (374.6)		
875-8			8.0 (203.2)	10.75 (273.0)	18.75 (476.2)		
875-10			10.0 (254.0)	12.75 (323.8)	22.75 (577.8)		
875-12			12.0 (304.8)	14.75 (374.6)	26.75 (679.4)		
875-14			14.0 (355.6)	16.75 (425.4)	30.75 (781.0)		
875-16			16.0 (406.4)	18.75 (476.2)	34.75 (882.6)		

1165 Series Forces (F1) can be factory set from 75# to 500# (334N - 2224N)

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread	F1 Force lbs. (N)
1165-2	0.562 (14.3)	1.165 (29.6)	2.0 (50.8)	6.00 (152.4)	8.00 (203.2)	10 mm	75-500 (334-2224)
1165-4			4.0 (101.6)	8.00 (203.2)	12.00 (304.8)		
1165-6			6.0 (125.4)	10.00 (254.0)	16.00 (406.4)		
1165-8			8.0 (203.2)	12.00 (304.8)	20.00 (508.0)		
1165-10			10.0 (254.0)	14.00 (355.6)	24.00 (609.6)		
1165-12			12.0 (304.8)	16.00 (406.4)	28.00 (711.2)		
1165-14			14.0 (355.6)	18.00 (457.2)	32.00 (812.8)		
1165-16			16.0 (406.4)	20.00 (508.0)	36.00 (914.4)		
1165-20			20.0 (508.0)	24.00 (609.6)	44.00 (1117.6)		
1165-24			24.0 (609.6)	28.00 (711.2)	52.00 (1230.8)		

1750 Series Forces (F1) can be factory set from 200# to 1200# (900N - 5338N)

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread	F1 Force lbs. (N)
1750-4	0.875 (22.2)	1.75 (44.5)	4.0 (101.6)	8.75 (222.3)	12.75 (323.9)	5/8-11	200-1200 (900-5338)
1750-6			6.0 (152.4)	10.75 (273.0)	16.75 (425.5)		
1750-8			8.0 (203.2)	12.75 (328.8)	20.75 (527.1)		
1750-12			12.0 (304.8)	16.75 (425.4)	28.75 (730.3)		
1750-16			16.0 (406.4)	20.75 (527.1)	36.75 (933.5)		
1750-20			20.0 (508.0)	24.75 (628.7)	44.75 (1136.7)		
1750-24			24.0 (609.6)	28.75 (730.3)	52.75 (1339.9)		
1750-30			30.0 (762.0)	34.75 (882.7)	62.75 (1593.9)		

Notes:

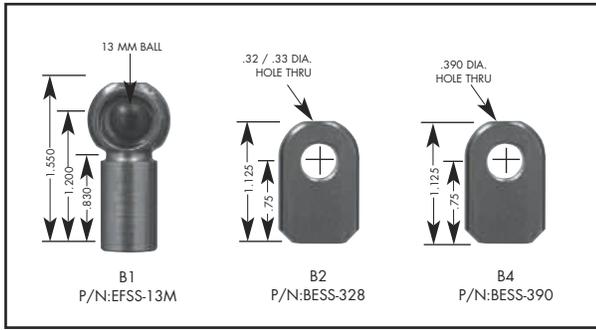
- Required Force (F1) must be within the catalog limits and in increments of 10 lbs. (45N).
- Product length tolerance is ±.08 in. (2.0 mm).
- Force tolerance is 5-10 pounds over the nominal force.
- Maximum piston speed is approximately 12 in./sec. (.3m/sec). Fast operation rates lead to excessive heat build-up resulting in internal seal damage.

- Gas springs are filled with oil and are under pressure. Please dispose of properly. Do not puncture or open.
- Contact Ameritool for modified standards or for engineered specials that meet your exact needs.
- EE denotes no end mounts on spring.

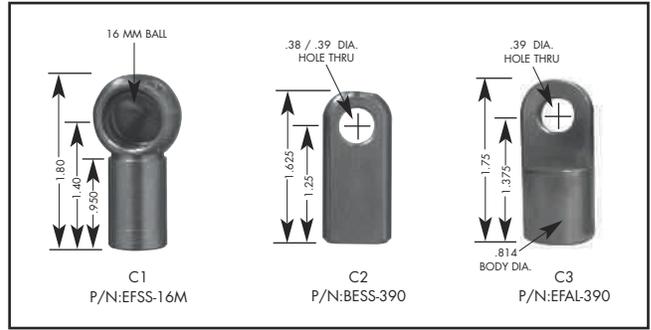
Ordering number example: 875-4-XX-09-B1B1

Adjustable Gas Spring Series End Mounts

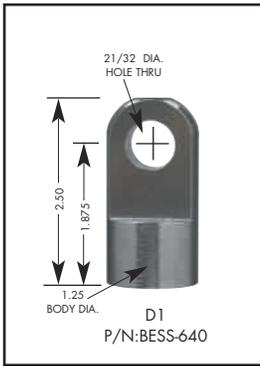
875 Series End Mounts



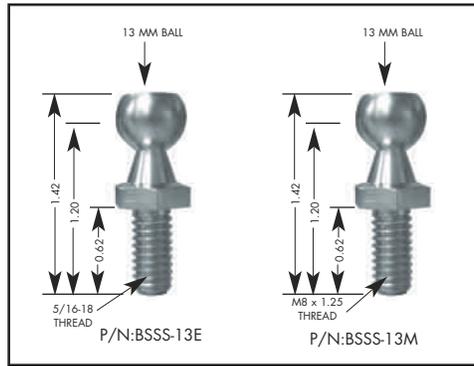
1165 Series End Mounts



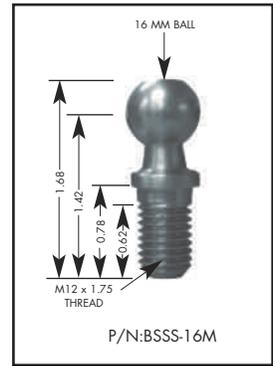
1750 Series End Mounts



875 Ball Stud Mounts



1165 Ball Stud Mounts



Bleed Kit

Once you release gas from your gas spring, you can't go back! Attaching a kit lets you monitor how much gas you're releasing. Each kit contains a pressure gauge, manifold, and fittings to connect to your gas spring. Instructions are included.

875 Series Bleed Kit P/N: 875-BOK

1100 Series Bleed Kit P/N: 1100-BOK

1165 Series Bleed Kit P/N: 1165-BOK

1750 Series Bleed Kit P/N: 1750-BOK

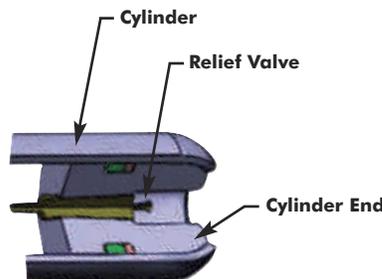
Fittings Only

875 Series Fitting P/N: 875-ADP

1100 Series Fitting P/N: 1100-ADP

1165 Series Fitting P/N: 1165-ADP

1750 Series Fitting P/N: 1750-ADP

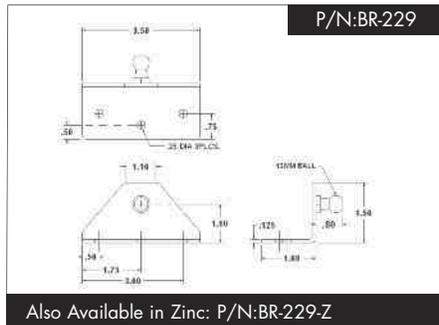
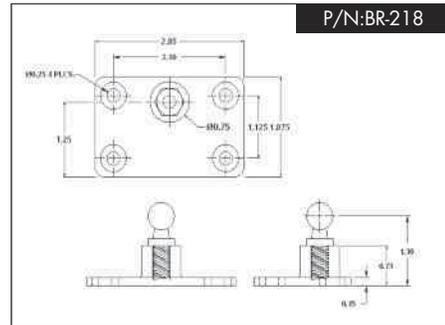


Adjustable Gas Spring Brackets

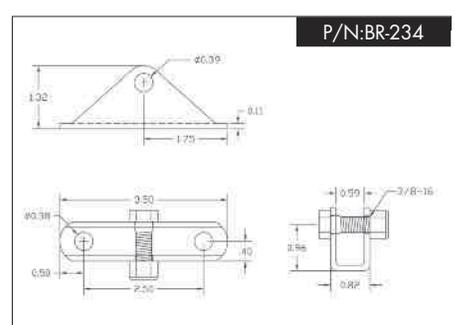
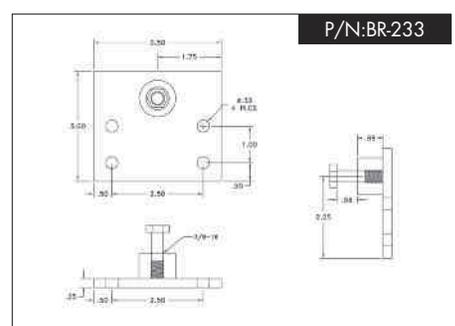
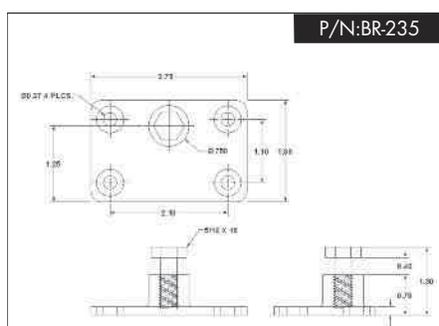
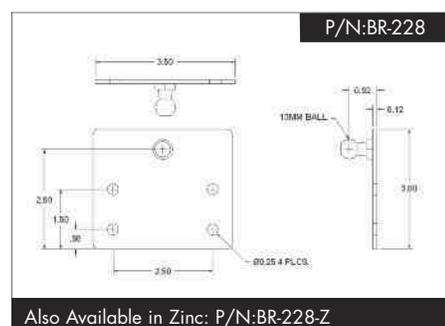
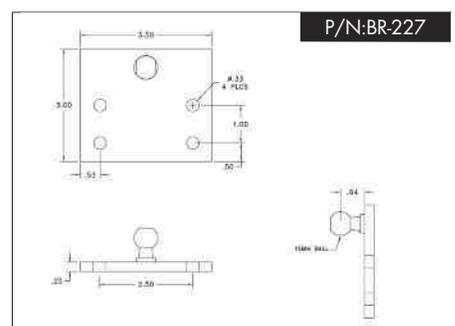
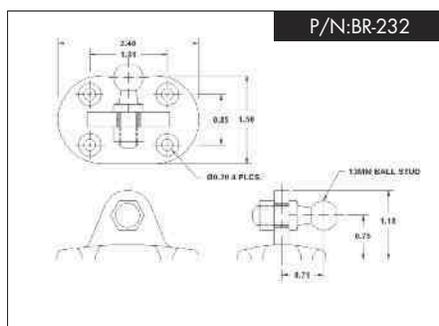
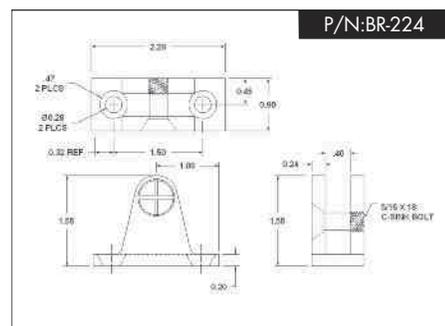
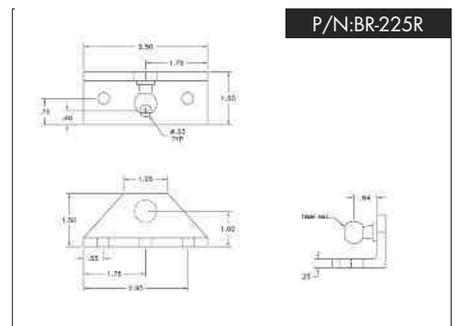
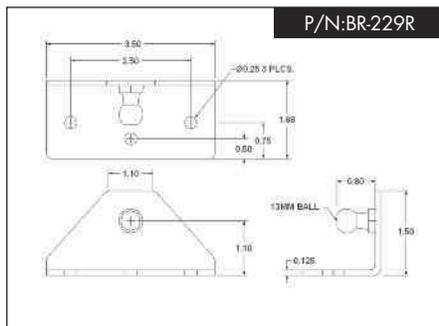
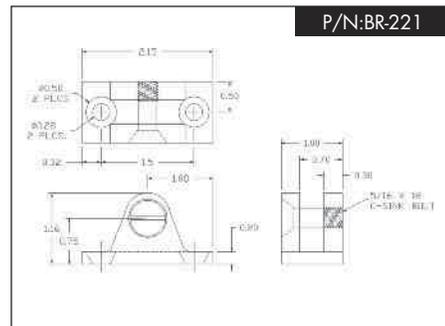
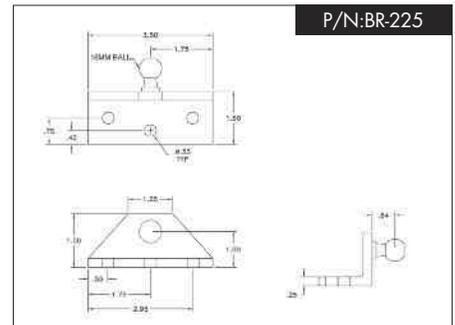
Ameritool offers a variety of brackets for 800, 875, 1100, and 1165 Series Gas Springs. All brackets are made from high quality stainless steel.

Adjustable Gas Spring Bracket Specifications

875 Brackets



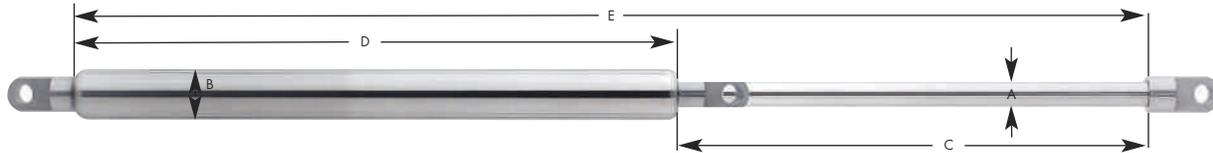
1100 & 1165 Brackets



Adjustable Force Tension Springs

Ameritool Adjustable Force Tension Springs are made from 316 stainless steel. Just like the adjustable force gas springs the pressure on these can be reduced down by the user with no tools required. The force on these springs pulls the piston rod inward, operating in the opposite direction of standard gas springs. Great for use on doors, lids, hatches and hoods that need to stay closed or would use assistance while closing. In its relaxed state, the spring is compressed, you must pull to extend.

These units can withstand a wide range of temperatures from -40° F to 300° F.



The Guard Tube accessory protects the piston rod from damage due to incidental impacts. This accessory adds 0.1 inches to the extended length of the gas springs, please review the "E" dimension. To order add "08" to the end of your ordering number.

1100 Series

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	F1 Force lbs. (N)
1100-2			2.25 (57.15)	5.9 (149.86)	8.15 (207.01)	25-500 (111-2224)
1100-4			4.25 (107.95)	7.9 (200.66)	12.15 (308.61)	
1100-6			6.25 (158.75)	9.9 (251.46)	16.15 (410.21)	
1100-8			8.25 (290.55)	11.9 (302.26)	20.15 (511.81)	
1100-10	0.562	1.165	10.25 (260.35)	13.9 (353.06)	24.15 (613.41)	
1100-12	(14.3)	(29.6)	12.25 (311.15)	15.9 (403.86)	28.15 (75.01)	
1100-14			14.52 (356.195)	17.9 (454.66)	32.15 (816.61)	
1100-16			16.25 (412.75)	19.9 (505.46)	36.15 (918.21)	
1100-20			20.25 (514.35)	23.9 (607.06)	44.15 (1121.41)	
1100-24			24.25 (615.95)	27.9 (708.66)	52.15 (1324.61)	

Ordering number example: 1100-8-500-C2C2

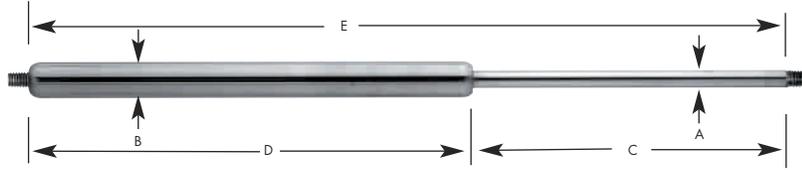
Notes:

- Force increments of 10 pounds for 1100 series.
- Product length tolerance is ± .08 in. (2.0 mm).
- Force tolerance is 5-10 pounds over nominal force.
- Maximum piston speed is approximately 12 in./sec. (.3 m/sec). Fast operation rates lead to excessive heat build-up resulting in internal seal damage.
- Tension springs are under pressure. Please dispose of properly. Do not puncture or open.
- Contact Ameritool for modified standards or for engineered specials to meet your exact needs.
- EE denotes no end mounts on spring.



Adjustable Dampers

Ameritool's Adjustable Dampers are self-contained, maintenance free units that are 100% American made. Ameritool dampers are durable and feature damping on compression or extension. The travel speed can be easily adjusted and remains constant throughout the stroke. The single direction version is controllable in one direction only, with the free flow in the opposite direction. Adjustment is easily achieved by extending out fully and turning the rod until the desired speed is achieved. These dependable units offer long life cycle performance and are available for QUICK DELIVERY.



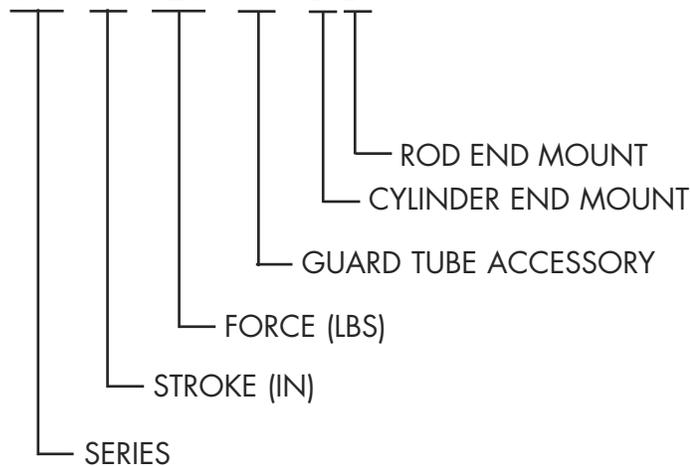
800 Series Adjustable Dampers

Model Number	A Rod Dia. in. (mm)	B Body Dia. in. (mm)	C Stroke in. (mm)	D Compressed Length in. (mm)	E Extended Length in. (mm)	End Mount Thread
800-4	.375 (9.5)	1.165 (29.6)	4.0 (101.6)	6.5 (165.1)	10.5 (266.7)	8mm
800-6			6.0 (152.4)	8.5 (215.9)	14.5 (368.3)	
800-8			8.0 (203.2)	10.5 (266.7)	18.5 (469.9)	
800-10			10.0 (254.0)	12.5 (317.5)	22.5 (571.5)	
800-12			12.0 (304.8)	14.5 (368.3)	26.5 (673.1)	
800-14			14.0 (355.6)	16.5 (419.1)	30.5 (774.7)	
800-16			16.0 (406.4)	18.5 (469.9)	34.5 (876.3)	

Notes:

1. Product length tolerance is $\pm .08$ (2.0mm)
2. Maximum piston speed is approximately 12in./sec. Fast operation rates lead to excessive heat buildup resulting in internal seal damage.
3. Do not puncture or open. Please dispose of properly.
4. Contact Ameritool for modified standards or for engineered specials that meet your exact needs.
5. EE denotes no end mounts on spring.

Ordering Number Example: 875 - 4 - 120 - 08 - B1B1



Carbon Steel Gas Springs

Ameritool Carbon Steel Gas Springs offer optimum weight compensation and force support in lifting, moving and adjusting-type applications. Our wide range of standard product allows Ameritool to offer different strokes and force variations to meet all your application requirements.

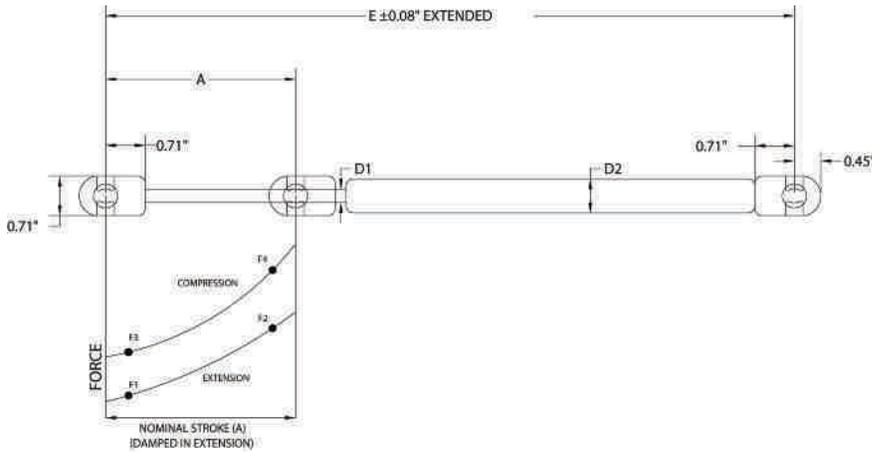
To obtain optimum service life of an Ameritool Carbon Steel Gas Spring, you should always mount the piston rod pointing down to ensure lubrication of the guide and seal system. Never apply a twisting or lateral force to the gas spring. Ameritool offers a series of mounting brackets to assist in limiting any undesirable twist or lateral forces.

Typical Applications

- Fish Boxes
- Electronic Console Cabinets
- Cargo Doors
- Safety Lids
- Hatches
- Trailers
- Truck Caps



Fixed Force Carbon Steel Gas Springs



6 X 15 Carbon Steel - Fixed Force Gas Spring Forces (F1) can be factory set from 5# to 90# (22N - 400N)

Model Number	D1 Rod Dia. in. (mm)	D2 Tube Dia. in. (mm)	A Stroke in. (mm)	E Extended Length in. (mm)	F1 Force lbs. (N)
ML11			2.25 (57.0)	7.5 (190.5)	10-90 (50-400)
ML10			3 (76.0)	10 (254.0)	
ML15	.24 (6.0)	.60 (15.0)	3.5 (89.0)	12 (305.0)	
ML13			5.5 (140.0)	15 (381.0)	
ML16			7 (178.0)	17.2 (437.0)	
ML14			8 (203.5)	20 (508.0)	

8 X 18 Carbon Steel - Fixed Force Gas Spring Forces (F1) can be factory set from 10# to 150# (44N - 667N)

Model Number	D1 Rod Dia. in. (mm)	D2 Tube Dia. in. (mm)	A Stroke in. (mm)	E Extended Length in. (mm)	F1 Force lbs. (N)
ML31			2.25 (57.0)	7.5 (190.5)	20-150 (100-670)
ML30			3 (76.0)	10 (254.0)	
ML32			3 (76.0)	10.4 (266.5)	
ML35	.31 (8.0)	.71 (18.0)	3.6 (91.0)	12 (306.0)	
ML33			5.5 (140.0)	15 (381.0)	
ML36			7 (178.0)	17.2 (437.0)	
ML34			8 (203.5)	20 (508.0)	
ML38			9.8 (250.0)	23 (585.0)	
ML37			10.2 (260.0)	26.3 (669.0)	

10 X 22 Carbon Steel - Fixed Force Gas Spring

Model Number	D1 Rod Dia. in. (mm)	D2 Tube Dia. in. (mm)	A Stroke in. (mm)	E Extended Length in. (mm)	F1 Force lbs. (N)
ML26			11.7 (299.0)	26.9 (299.0)	30-180 (135-800)
ML27	.39 (10.0)	.87 (22.0)	11.5 (292.0)	27.99 (711.0)	
ML28			13.75 (349.5)	30.9 (785.0)	
ML29			15.00 (381.0)	36.3 (922.00)	

Notes:

1. Required F1 must be within the catalog limits and in increments of 10lbs. (50N)
2. Carbon Steel Gas Springs are charged in Newtons vs. Lbs.
3. F₁ Tolerance: 6x15 = ± 20N, 8x18 = ± 30N, 10x22 = ± 40N
4. Maximum piston speed is approximately 12 in. /sec. (.3 m/sec). Fast-operation rates lead to excessive heat build-up resulting in internal seal damage.
5. Gas springs are filled with oil and are under pressure. Please dispose of properly. Do not puncture or open.
6. Contact Ameritool for modified standards or for engineered specials that meet your exact needs.
7. ML29 comes with 13mm steel ball sockets.
8. End fittings are non-removable on 6 x 15 and 8 x 18 springs.
9. EE denotes no end mounts on spring.

Brackets and Bracket Specifications for Carbon Steel Gas Springs

Mounting Brackets

P/N:BR-202

Also Available in Zinc: P/N:BR-202-Z
 Also Available in Black Powder coat: P/N:BR-202-B

P/N:BR-204R

Also Available in Zinc: P/N:BR-204R-Z
 Also Available in Black Powder coat: P/N:BR-204R-B

P/N:BR-213

Also Available in Zinc: P/N:BR-213-Z
 Also Available in Black Powder coat: P/N:BR-213-B

P/N:BR-204

Also Available in Zinc: P/N:BR-204-Z
 Also Available in Black Powder coat: P/N:BR-204-B

P/N:BR-211

Also Available in Zinc: P/N:BR-211-Z
 Also Available in Black Powder coat: P/N:BR-211-B

P/N:BR-230

Also Available in Zinc: P/N:BR-230-Z

Carbon Steel Gas Spring with Mounting Brackets



Zinc Bracket Option



Black Bracket Option

What is a Gas Spring?

Ameritool Gas Springs are self-contained, pneumatic devices capable of producing very large forces (5 - 1,200 lbs.) from a compacted piece. A gas spring consists of a piston attached to a shaft moving within a sealed cylinder charged with nitrogen. The piston has an orifice which allows gas pressure to pass through and act equally on both sides. It is the pressure acting on the shaft cross-sectional area which provides the spring its force.

The output forces are the result of the differential between the pressure in the cylinder and the atmospheric pressure outside the cylinder acting on the cross section of the piston/shaft. As the piston/shaft is compressed into the cylinder the internal pressure increases according to the volume of gas displaced by the rod. This increase in force is called the K-Factor.

Because they operate on simple pressure differentials, gas springs will perform as well in the vacuum of space as they do on land.

What is K-Factor?

K-factor is the ratio of the compressed force (P2) and the extended force (P1). As governed by Boyle's Law, P2 force is always greater than the P1 force. During compression, the volume of the piston/shaft introduced in the cylinder displaces an equal volume of gas, increasing the pressure in the cylinder which increase the force of the spring.

What is Gas Spring Force?

Gas spring force is often designated as P1 which is the force measured 1 inch from full extension. Force is a function of the charge pressure in the cylinder acting on the cross section of the rod. The smaller the diameter of the piston/rod the lower the force at the same pressure. For example, a gas spring with a 9/16 (14mm) rod charged to 1000 psi will have a P1 force of 200 pounds while a spring with a 5/16 (8mm) rod charged to the same pressure will have a P1 force of 65 pounds.

How does Temperature affect the Life and Performance of Gas Springs?

Temperature affects gas springs in two ways. As the temperature of the gas spring changes, the internal pressure also changes. As internal pressure changes, so does the output force.

Very high or very low temperatures can adversely affect the gas spring's ability to retain its gas charge. At very high temperatures, the permeability of the seal increases and gas molecules may diffuse through the seal more quickly. Ameritool Gas Springs can support and perform reliably at temperatures ranging from -40°F to 300°F (-40°C to 148°C).

How does Temperature affect Gas Spring Force?

The force produced by a gas spring varies linearly by .19% for each degree F change from ambient temperature of 70 degree F. For example, a 30 degree change in temperature results in a 5.7% change in spring force (30 x .19% =5.7%).

What is the preferred Mounting Orientation of a Gas Spring?

The type of damping designed into the unit determines the mounting orientation of a damper. Extension and compression dampers require specific orientations.

How does a Tension Spring Work?

Tension gas springs work by keeping the piston rod in the closed position, operating in the opposite direction of other gas springs. Since a tension gas spring is compressed in its relaxed state, it always returns to its relaxed state once extension is stopped. Extension dampers should be mounted shaft down to provide consistent damping for the full stroke. If mounted with the shaft pointing up, the unit may experience inconsistent damping or no damping at all.

Compression dampers should be mounted shaft up to provide consistent damping for the full stroke. If mounted with the shaft pointing down, the unit may experience inconsistent damping or no damping at all. Lubrication of the seal is not a problem due to the high volume of oil contained in a damper.

What is the expected Life of a Gas Spring?

When calculating the approximate life of a gas spring, one must first determine how much force the support can lose before the user considers the support too weak in the application. The time it takes to lose this amount of force is considered to be the life of the gas spring.

All gas springs lose output force over time. The rate at which force loss occurs varies greatly by application. Factors which affect the rate of force loss include size of the support, orientation, number of cycles, ambient temperature, vibration and the geometry of the application. Considering all of the variables, it is very difficult to estimate life accurately without actual testing of the application. Gas springs manufactured at Ameritool have surpassed 125,000 strokes in a certified test lab environment.

Please note Ameritool reserves the right to change products without notice.



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