

Associated Spring
RAYMOND

 A business of BARNES GROUP INC

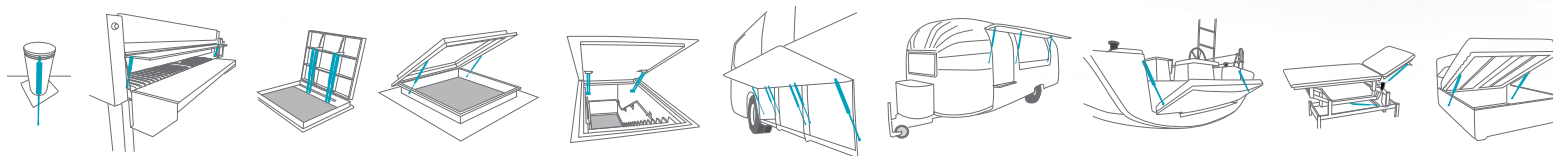
ENGINEERED
SOLUTIONS DELIVERED
ON TIME

Counterbalance Solutions



n-Struts
FLUID PERFORMANCE EVERYTIME

m-Struts
UNMATCHED PERFORMANCE



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Whilst all reasonable efforts are made to ensure the correctness of the information provided, we cannot be held responsible for any inaccuracies in, or omissions from, this brochure.



Introduction

For more than a century, Associated Spring Raymond, a business of Barnes Group Inc., has been a world leader in the design, manufacture, and sale of highly engineered products including springs, precision metal components, assemblies, and custom hardware solutions.

From the 1882 Raymond "baby jumper spring" to the 1910 Wright Brothers' engine valve springs, today Associated Spring Raymond supplies billions of precision parts to industries on a global scale.

With worldwide stock of over 100,000 SKUs, and leading brands like RAYMOND®, m-Struts®, SPEC®, SPD®, and Clover® Dome, we provide quality products with competitive pricing, global service, and on-time delivery to our customers around the world.



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We reserve the right to add, delete or modify components without notification.
All dimensions are stated in mm.
All dimensions are nominal unless tolerance is stated.

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CASE STUDIES

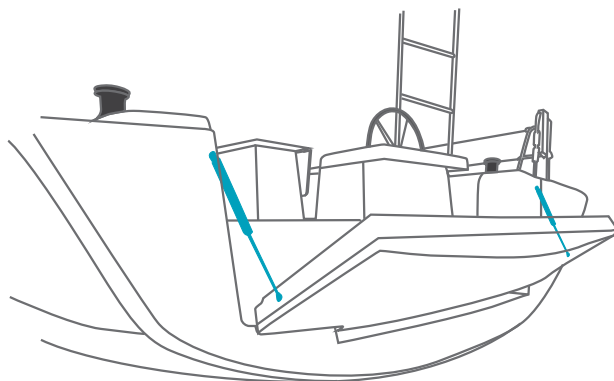
Marine Applications

When fitting a gas strut to a boat or yacht it's very important to get the right product specified that will perform accurately, time and time again.

Our n-Struts® are available in 316 Stainless Steel, with a high quality finish making them resistant to corrosion and ideal for marine applications.

Where the application is set to operate in a more harsh environment, our m-Struts®, manufactured in appropriate grades of stainless steel, are the ideal choice and offer unmatched performance.

Associated Spring Raymond supply to major boat builders in the EU and have extensive experience in Marine applications, so you know that you are in safe hands.

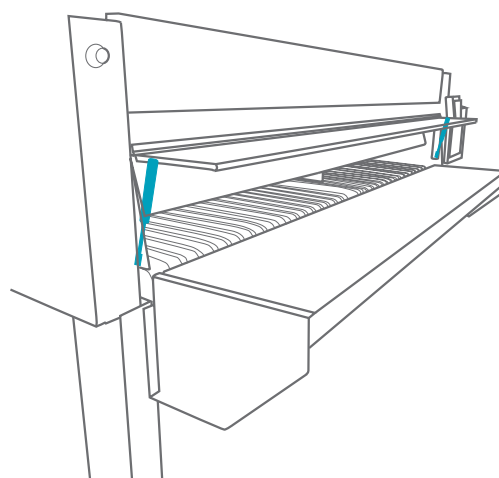


Manufacturing and Machine Applications

With increased responsibility to reduce weight and provide easy access in all aspects of working life, it's important to have a partner that understands the significance of safe and reliable access.

Our considerable knowledge in lift assist applications means that our customers get the perfect product fit to their access requirements, every time.

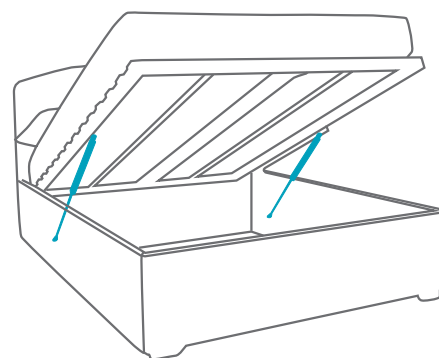
Our Engineering team can supply the optimum fitting points, the right size strut and exactly the right force to get your desired operational movement.



Furniture Manufacturer Applications

As products become more innovative and space becomes more of a premium in day-to-day life, finding a reliable and clean product partner is important.

Our quality control process means that we supply the right product for all applications. To save time and gain efficiencies, our Engineering service can advise on the optimum placement of the struts to get that quality feel that customers demand.

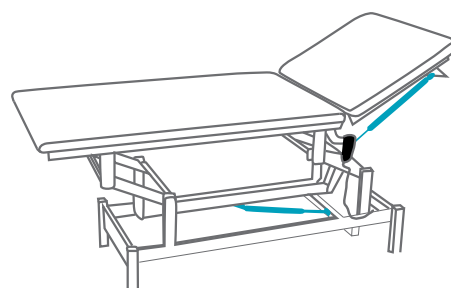


Medical Applications

With a constant push for innovation and improvements to surgical procedure, having the right engineering partner is essential to getting any prototype to market.

As well as a standard stock product offering, Associated Spring Raymond also offers a Custom Engineering Solutions service where we work with the customer from prototype to manufacture and beyond.

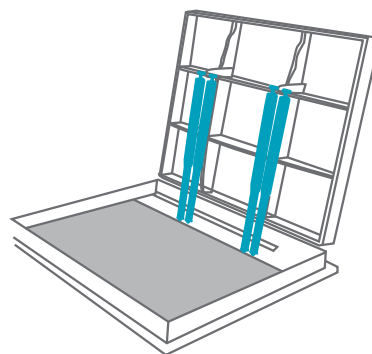
With access to thousands of standard products and our highly experienced engineering team, we offer a service that gives value and momentum to any project.



Heavy Covers and Hatch applications

Cast Covers

Torsion springs have been a traditional solution on cast manhole/ inspection covers to offer support in lift assist, but this solution can be problematic as the springs are prone to open the cover with too much initial force, quickly reducing and stopping the cover when partially open. The failure rate is also quite high and requires high maintenance levels. The time to assemble torsion springs can be considerable and generally require out rigging of the frame.

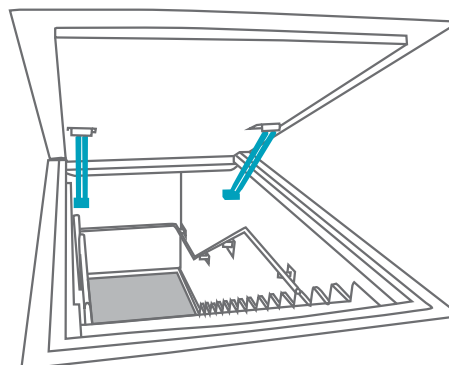


Fitting Mechanical Spring Struts (m-Struts®) provides a linear assist in lifting and lowering the heavy cast covers, removing the risk of the cover springing open and causing injury. The extremely low maintenance levels and high resistance to corrosion promote extensive service life while affording assembly in a confined space.



Harsh Environments & Occasional Access

Gas Springs (Gas Struts) are often used for lift assist applications and within the correct environments are a solid solution for access covers and hatches. Problems start to occur within more harsh environments and where occasional access is required over longer periods of time. Optimum operating temperatures for gas springs (gas struts) are -30°C to 80°C , at the extremes and outside of this range the gas spring will start to underperform and even fail completely due to seal failures and corrosion over long periods of time. This causes further maintenance costs and can cause potential Health & Safety issues.



The Mechanical Spring Strut operates from -40°C to 300°C and gives little to no performance degradation at the extremes of the range, making it an ideal solution in harsh environments. The high corrosion resistance, absence of seals and low maintenance allows the m-Strut® to be left for long periods of time without risk of failure. The 'fit and forget' lift assist solution performs when you need it to.

Clean Water and Single User Access

Due to necessary security around clean water storage, there has been an increase in the need for secure, single person access to remote locations for water authorities worldwide. Gas springs (gas struts) due to their risk of seal failure and subsequent oil leakage, are unsuitable for these applications due to potential contamination.

With its low maintenance, resistance to corrosion and low risk of contamination, the m-Strut® is the ideal solution for this application. Add to this the smooth, linear assist in lifting heavy access covers and hatches, the m-Strut® allows a single user to easily lift/lower and access areas in remote locations with confidence.



NITRIDER® gas strut

Stock gas strut, utilising the latest sealing technology for a longer service life. Black coated body and durable rod with nitrided anti-corrosive surface. This gas strut is an ideal choice where exceptional quality, corrosion resistance and an overall black appearance are important to your application.

Ordering Your Gas Strut:

Example: use the Part Number: N06AAA and then the Newton Force (N) required, so N06AAA0100 = 100N (normal graduations are at steps of 50N unless stated otherwise).

Gas strut selection tools and calculations are available in the Engineering section of this catalogue (page 24).

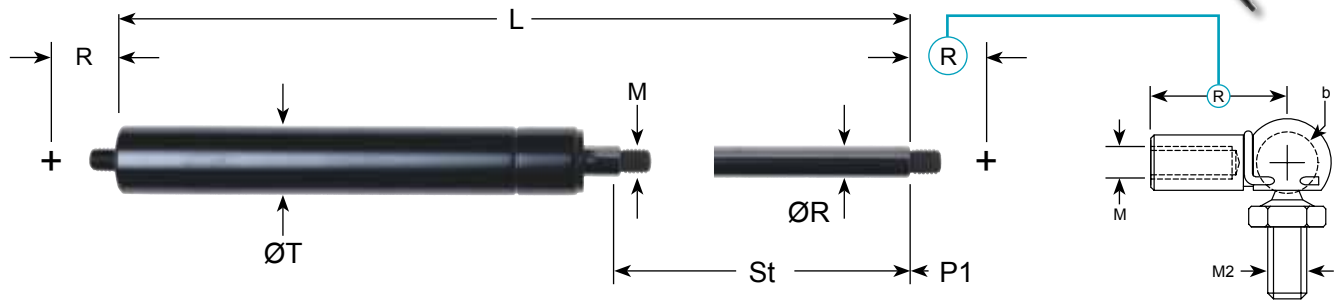
Key of measurements

- Ø R (mm) = Rod Diameter
- Ø T (mm) = Tube Diameter
- St (mm) = Stroke
- L (mm) = Length
- P1 (N) = Force
- M (mm) = Thread Size
- PG = Price Group

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
N04YCY	4	12	20	100	10, 40, 70, 100	M4 x 0.7	N04
N04ZCO	4	12	40	120	10, 40, 70, 100	M4 x 0.7	N05
N04BCZ	4	12	60	152	10, 40, 70, 100	M4 x 0.7	N01
N04EAD	4	12	80	200	10, 40, 70, 100	M4 x 0.7	N02
N04FAH	4	12	100	249	10, 40, 70, 100	M4 x 0.7	N03
N06YCN	6	15	20	86	50 - 400	M6 x 1.0	N20
N06ZCO	6	15	40	126	50 - 400	M6 x 1.0	N21
N06AAA	6	15	50	154	50 - 400	M6 x 1.0	N06
N06BAB	6	15	60	160	50 - 400	M6 x 1.0	N07
N06VBN	6	15	73	183	50 - 400	M6 x 1.0	N19
N06CAF	6	15	75	214	50 - 400	M6 x 1.0	N08
N06DAD	6	15	80	200	50 - 400	M6 x 1.0	N09
N06EAL	6	15	90	269	50 - 400	M6 x 1.0	N10
N06FAG	6	15	100	240	50 - 400	M6 x 1.0	N11
N06GAM	6	15	120	280	50 - 400	M6 x 1.0	N12
N06HAQ	6	15	140	344	50 - 400	M6 x 1.0	N13
N06JAP	6	15	150	340	50 - 400	M6 x 1.0	N14
N06LAU	6	15	170	394	50 - 400	M6 x 1.0	N15
N06MAW	6	15	180	434	50 - 400	M6 x 1.0	N16
N06NAX	6	15	200	440	50 - 400	M6 x 1.0	N17
N06NBA	6	15	200	469	50 - 400	M6 x 1.0	N18
N08AAA	8	18	50	154	100 - 650	M6 x 1.0	N22
N08BAC	8	18	60	169	100 - 650	M6 x 1.0	N23
N08CAF	8	18	75	214	100 - 650	M6 x 1.0	N24
N08DAE	8	18	80	209	100 - 650	M6 x 1.0	N25
N08EAJ	8	18	90	264	100 - 650	M6 x 1.0	N26
N08EAL	8	18	90	269	100 - 650	M6 x 1.0	N26
N08WBO	8	18	95	274	100 - 650	M6 x 1.0	N41
N08FAH	8	18	100	249	100 - 650	M6 x 1.0	N27
N08GAN	8	18	120	289	100 - 650	M6 x 1.0	N28
N08HAO	8	18	140	329	100 - 650	M6 x 1.0	N29
N08HAQ	8	18	140	344	100 - 650	M6 x 1.0	N30
N08HAR	8	18	140	349	100 - 650	M6 x 1.0	N31
N08JAR	8	18	150	349	100 - 650	M6 x 1.0	N32
N08JAU	8	18	150	394	100 - 650	M6 x 1.0	N32
N08JBV	8	18	150	385	100 - 650	M6 x 1.0	N32
N08KAT	8	18	160	369	100 - 650	M6 x 1.0	N33
N08LAU	8	18	170	394	100 - 650	M6 x 1.0	N34
N08MAV	8	18	180	409	100 - 650	M6 x 1.0	N35
N08MAW	8	18	180	434	100 - 650	M6 x 1.0	N36
N08NAY	8	18	200	449	100 - 650	M6 x 1.0	N37
N08NBA	8	18	200	469	100 - 650	M6 x 1.0	N38
N08OBB	8	18	220	489	100 - 650	M6 x 1.0	N39
N08PBC	8	18	250	549	100 - 650	M6 x 1.0	N40



NITRIDER® gas strut



Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
N10FAH	10	23	100	249	150 – 1200	M8 x 1.25	N42
N10GCR	10	23	125	300	150 – 1200	M8 x 1.25	N44
N10JAR	10	23	150	349	150 – 1200	M8 x 1.25	N44
N10LCP	10	23	175	400	150 – 1200	M8 x 1.25	N45
N10NAY	10	23	200	449	150 – 1200	M8 x 1.25	N46
N10OCS	10	23	225	500	150 – 1200	M8 x 1.25	N47
N10PBC	10	23	250	549	150 – 1200	M8 x 1.25	N48
N10XCT	10	23	275	600	150 – 1200	M8 x 1.25	N53
N10QBF	10	23	290	650	150 – 1200	M8 x 1.25	N49
N10RBE	10	23	300	649	150 – 1200	M8 x 1.25	N50
N10SBH	10	23	350	749	150 – 1200	M8 x 1.25	N51
N10TBK	10	23	400	849	150 – 1200	M8 x 1.25	N52
N14FAK	14	28	100	266	150 – 2500	M10 x 1.5	N54
N14JAS	14	28	150	366	150 – 2500	M10 x 1.5	N55
N14NAZ	14	28	200	466	150 – 2500	M10 x 1.5	N56
N14PBD	14	28	250	566	150 – 2500	M10 x 1.5	N57
N14RBG	14	28	300	666	150 – 2500	M10 x 1.5	N58
N14SBJ	14	28	350	766	150 – 2500	M10 x 1.5	N59
N14TBL	14	28	400	866	150 – 2500	M10 x 1.5	N60
N14UBM	14	28	500	1066	150 – 2500	M10 x 1.5	N61
N20FDG	20	40	100	293	150 – 5000	M14 x 2.0	N62
N20NBY	20	40	200	486	150 – 5000	M14 x 2.0	N63
N20RCB	20	40	300	685	150 – 5000	M14 x 2.0	N64

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M	R								
		Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M4 x 0.7	4	✓	✓	✓					
M6 x 1.0	6 & 8	✓	✓	✓	✓	✓	✓	✓	✓
M8 x 1.25	10	✓	✓	✓	✓	✓	✓	✓	✓
M10 x 1.5	14	✓	✓	✓	✓	✓		✓	✓
M14 x 2.0	20	✓	✓	✓		✓	✓	✓	

Other end fitting configurations are available on request. Please see pages 26-29 for complete details and dimensions for stock parts.

Can't find the strut you're looking for? Send us an enquiry.



We reserve the right to add, delete or modify components without notification.
All dimensions are stated in mm.
All dimensions are nominal unless tolerance is stated.

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VariForce™ Nitrider®

A user adjustable version of the Nitrider Gas Strut. A bleed valve is fitted to enable the user to adjust the P1 force of the spring. Each size is pressurised to the maximum available P1 force for that range. Once installed, the adjustment may be made without removing the spring, saving considerable time and effort. This is ideal for prototyping new applications and those which cater for varying weights. Black coated body and durable rod with nitrided anti corrosive surface.

Ordering Your Gas Strut:

Choose the VariForce™ strut that best fits your application, once fitted you will be able to release the pressure to get the ideal setting.

Gas strut selection tools and calculations are available in the Engineering section of this catalogue (page 24).

Key of measurements

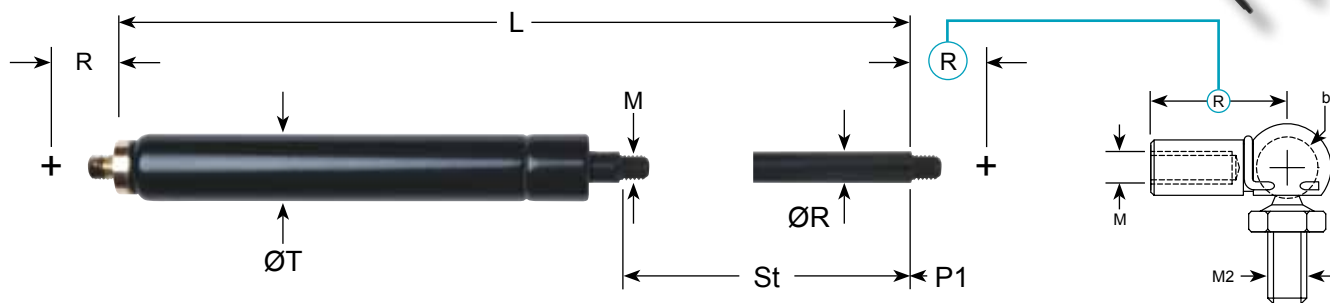
- Ø R (mm) = Rod Diameter
- Ø T (mm) = Tube Diameter
- St (mm) = Stroke
- L (mm) = Length
- P1 (N) = Force
- M (mm) = Thread Size
- PG = Price Group

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
V06AAA0400	6	15	50	154	400	M6 x 1.0	NV01
V06BAB0400	6	15	60	168	400	M6 x 1.0	NV02
V06VBN0400	6	15	73	180	400	M6 x 1.0	NV03
V06CAF0400	6	15	75	214	400	M6 x 1.0	NV04
V06DAD0400	6	15	80	209	400	M6 x 1.0	NV05
V06EAL0400	6	15	90	270	400	M6 x 1.0	NV06
V06FAG0400	6	15	100	248	400	M6 x 1.0	NV07
V06GAM0400	6	15	120	282	400	M6 x 1.0	NV08
V06HAQ0400	6	15	140	350	400	M6 x 1.0	NV09
V06JAP0400	6	15	150	349	400	M6 x 1.0	NV10
V06LAU0400	6	15	170	396	400	M6 x 1.0	NV11
V06MAW0400	6	15	180	435	400	M6 x 1.0	NV12
V06NAX0400	6	15	200	442	400	M6 x 1.0	NV13
V06NBA0400	6	15	200	477	400	M6 x 1.0	NV14
V08AAA0650	8	18	50	154	650	M6 x 1.0	NV15
V08BAC0650	8	18	60	169	650	M6 x 1.0	NV16
V08CAF0650	8	18	75	213	650	M6 x 1.0	NV17
V08DAE0650	8	18	80	209	650	M6 x 1.0	NV18
V08EAJ0650	8	18	90	266	650	M6 x 1.0	NV19
V08EAL0650	8	18	90	275	650	M6 x 1.0	NV20
V08WBO0650	8	18	95	271	650	M6 x 1.0	NV22
V08FAH0650	8	18	100	254	650	M6 x 1.0	NV21
V08GAN0650	8	18	120	286	650	M6 x 1.0	NV23
V08HAO0650	8	18	140	329	650	M6 x 1.0	NV24
V08HAQ0650	8	18	140	346	650	M6 x 1.0	NV25
V08HAR0650	8	18	140	350	650	M6 x 1.0	NV27
V08JAR0650	8	18	150	355	650	M6 x 1.0	NV28
V08JAU0650	8	18	150	394	650	M6 x 1.0	NV29
V08KAT0650	8	18	160	366	650	M6 x 1.0	NV30
V08LAU0650	8	18	170	394	650	M6 x 1.0	NV26
V08MAV0650	8	18	180	415	650	M6 x 1.0	NV31
V08MAW0650	8	18	180	435	650	M6 x 1.0	NV32
V08NAY0650	8	18	200	455	650	M6 x 1.0	NV33
V08NBA0650	8	18	200	475	650	M6 x 1.0	NV34
V08OBB0650	8	18	220	495	650	M6 x 1.0	NV35
V08PBC0650	8	18	250	555	650	M6 x 1.0	NV36

gas struts

n-struts
FLUID PERFORMANCE EVERYTIME





Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
V10FAH1200	10	23	100	246	1200	M8 x 1.25	NV37
V10GCR1200	10	23	125	306	1200	M8 x 1.25	NV38
V10JAR1200	10	23	150	346	1200	M8 x 1.25	NV39
V10LCP1200	10	23	175	406	1200	M8 x 1.25	NV40
V10NAY1200	10	23	200	455	1200	M8 x 1.25	NV41
V10NAZ1200	10	23	200	471	1200	M8 x 1.25	NV57
V10OCS1200	10	23	225	506	1200	M8 x 1.25	NV42
V10PBC1200	10	23	250	555	1200	M8 x 1.25	NV43
V10XCT1200	10	23	275	606	1200	M8 x 1.25	NV44
V10QBF1200	10	23	290	649	1200	M8 x 1.25	NV46
V10RBE1200	10	23	300	649	1200	M8 x 1.25	NV45
V10SBH1200	10	23	350	749	1200	M8 x 1.25	NV47
V10TBK0800	10	23	370	849	800	M8 x 1.25	NV48
V14FAK2500	14	28	100	264	2500	M10 x 1.5	NV49
V14JAS2500	14	28	150	366	2500	M10 x 1.5	NV50
V14NAZ2500	14	28	200	466	2500	M10 x 1.5	NV51
V14PBD2500	14	28	250	566	2500	M10 x 1.5	NV52
V14XDR2500	14	28	250	616	2500	M10 x 1.5	NV58
V14RBG2500	14	28	300	664	2500	M10 x 1.5	NV53
V14SBJ2500	14	28	350	766	2500	M10 x 1.5	NV54
V14TBL2500	14	28	400	864	2500	M10 x 1.5	NV55
V14UBM2500	14	28	500	1060	2500	M10 x 1.5	NV56

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M	R	Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6 x 1.0	6 & 8	✓	✓	✓	✓	✓	✓	✓	✓
M8 x 1.25	10	✓	✓	✓	✓	✓	✓	✓	✓
M10 x 1.5	14	✓	✓	✓	✓	✓		✓	✓

Other end fitting configurations are available on request. Please see pages 26-29 for complete details and dimensions for stock parts.

Can't find the strut you're looking for? Send us an enquiry.

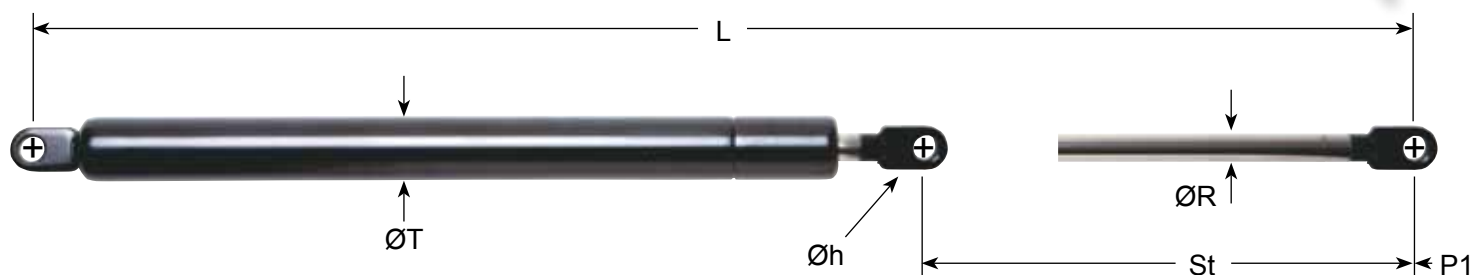


We reserve the right to add, delete or modify components without notification.
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All dimensions are nominal unless tolerance is stated.

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NITRIDER® Welded Ends



Key of measurements

- Ø R (mm) = Rod Diameter
- Ø T (mm) = Tube Diameter
- Ø h (mm) = Hole Diameter (welded)
- t (mm) = Thickness (welded ends)
- St (mm) = Stroke
- L (mm) = Length
- P1 (N) = Force
- PG = Price Group

Mounting eyes are welded to each end and are also coated black. This gas strut is ideally suited to applications where space is limited. This is a stock gas strut, utilising the latest sealing technology for a longer service life. Featuring a black coated body and durable rod with nitrided anti-corrosive surface.

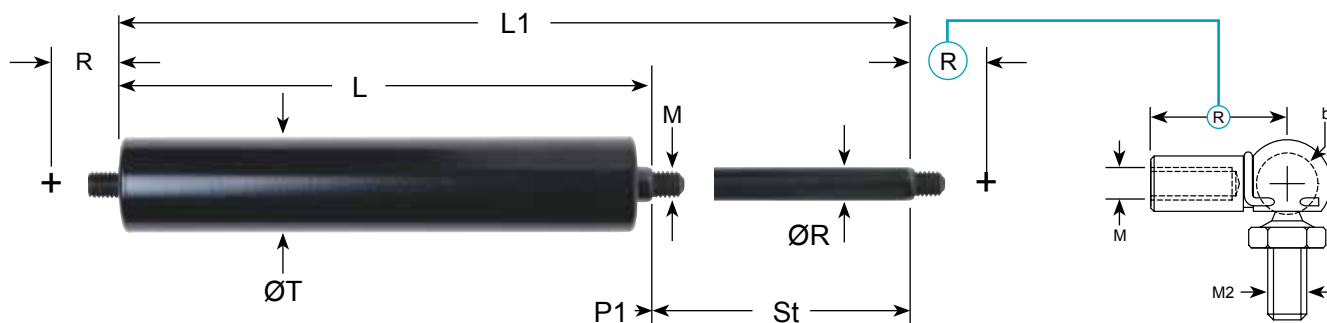
Ordering Your Gas Strut:

Please use the Part Number e.g. W06YBO and then the Newton Force required: e.g. 10 = 0010 & 100 = 0100

Gas strut selection tools and calculations are available in the Engineering section of this catalogue (page 24)

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	t (mm)	Øh (mm)	PG
W06YBO	6	15	20	106	50 – 400	3	6.1	NW06
W06ZBP	6	15	40	146	50 – 400	3	6.1	NW06
W06ADQ	6	15	50	166	50 – 400	3	6.1	NW25
W06BBR	6	15	60	186	50 – 400	3	6.1	NW01
W06DBS	6	15	80	226	50 – 400	3	6.1	NW02
W06FAJ	6	15	100	265	50 – 400	3	6.1	NW03
W06GBT	6	15	120	305	50 – 400	3	6.1	NW04
W06JAS	6	15	150	366	50 – 400	3	6.1	NW05
W08BBQ	8	18	60	206	100 – 800	5	8.1	NW07
W08DBV	8	18	80	246	100 – 800	5	8.1	NW08
W08FBU	8	18	100	286	100 – 800	5	8.1	NW09
W08GBW	8	18	120	326	100 – 800	5	8.1	NW10
W08HAP	8	18	130	340	100 – 800	5	8.1	NW26
W08HAS	8	18	140	366	100 – 800	5	8.1	NW11
W08KCE	8	18	160	406	100 – 800	5	8.1	NW12
W08MBX	8	18	180	446	100 – 800	5	8.1	NW13
W08NBY	8	18	200	486	100 – 800	5	8.1	NW14
W08OBZ	8	18	220	526	100 – 800	5	8.1	NW15
W08OBC	8	18	230	550	100 – 800	5	8.1	NW27
W08PCA	8	18	250	586	100 – 800	5	8.1	NW16
W10WBU	10	22	95	286	150 – 1200	5	8.1	NW24
W10HAP	10	22	130	340	150 – 1200	5	8.1	NW17
W10JBV	10	22	145	385	150 – 1200	5	8.1	NW18
W10NBY	10	22	195	486	150 – 1200	5	8.1	NW19
W10PCA	10	22	245	586	150 – 1200	5	8.1	NW20
W10RCB	10	22	295	685	150 – 1200	5	8.1	NW21
W10SCC	10	22	345	785	150 – 1200	5	8.1	NW22
W10TCD	10	22	395	885	150 – 1200	5	8.1	NW23





Key of measurements

Ø R (mm)	= Rod Diameter
Ø T (mm)	= Tube Diameter
St (mm)	= Stroke
L (mm)	= Length
L1 (mm)	= Extended Length
P1 (N)	= Force
M (mm)	= Thread Size
PG	= Price Group

Traction struts are great for systems where a tensional load, similar to an extension spring, needs to be applied to hold a system open or hold a lid closed. This gas strut compliments the existing range by giving the user the ability to operate in traction rather than in compression. The rod maintains a nitrided surface that compliments the black painted body similar to the standard series of struts.

Ordering Your Gas Strut:

Please use the Part Number e.g. T08BAB and then the Newton Force required: e.g. 10 = 0010 & 100 = 0100

Gas strut selection tools and calculations are available in the Engineering section of this catalogue (page 24)

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	L1 (mm)	P1 (N)	M (mm)	PG
T08BAB	8	22	60	160	220	100 – 800	M6 x 1.0	NT01
T08DCX	8	22	80	180	260	100 – 800	M6 x 1.0	NT02
T08FAD	8	22	100	200	300	100 – 800	M6 x 1.0	NT03
T08GCW	8	22	120	220	340	100 – 800	M6 x 1.0	NT04
T08KCV	8	22	160	260	420	100 – 800	M6 x 1.0	NT05
T08NCR	8	22	200	300	500	100 – 800	M6 x 1.0	NT06
T08PAR	8	22	250	349	599	100 – 800	M6 x 1.0	NT07
T08YCY	8	22	20	100	120	100 – 800	M6 x 1.0	NT08
T10ACM	10	28	50	150	200	150 – 1200	M8 x 1.25	NT09
T10FAD	10	28	100	200	300	150 – 1200	M8 x 1.25	NT10
T10JAH	10	28	150	249	399	150 – 1200	M8 x 1.25	NT11
T10NCR	10	28	200	300	500	150 – 1200	M8 x 1.25	NT12
T10PAR	10	28	250	349	599	150 – 1200	M8 x 1.25	NT13
T10RCP	10	28	300	400	700	150 – 1200	M8 x 1.25	NT14

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M	R	Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6 x 1.0	6 & 8	✓	✓	✓	✓	✓	✓	✓	✓
M8 x 1.25	10	✓	✓	✓	✓	✓	✓	✓	✓

Other end fitting configurations are available on request. Please see pages 26-29 for complete details and dimensions for stock parts.

Can't find the strut you're looking for? Send us an enquiry.



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STAINLESS STEEL gas struts

Made from 316 Stainless Steel, these gas struts are suited to exposure to harsh environmental conditions and will not rust or corrode. Ideal for marine, food and chemical industry applications.

Ordering Your Gas Strut:

Example: use the Part Number: S06AAA and then the Newton Force (N) required, so S06AAA0100 = 100N (normal graduations are at steps of 50N unless stated otherwise).

Gas strut selection tools and calculations are available in the Engineering section of this catalogue (page 24).

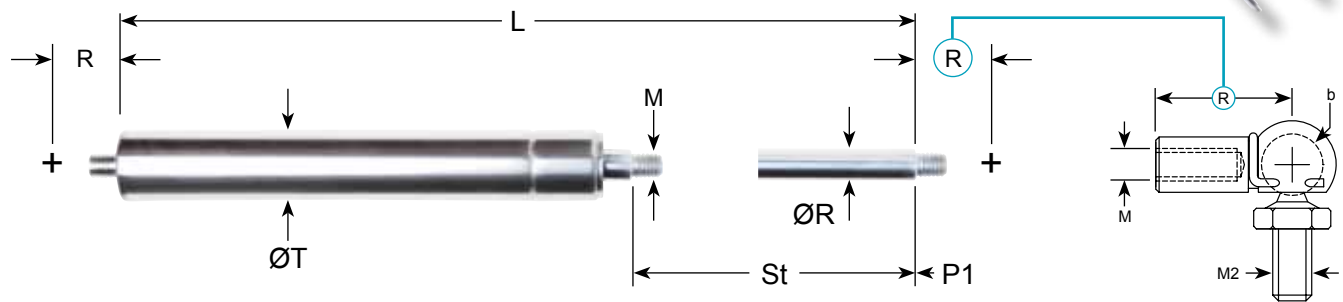
Key of measurements

Ø R (mm)	= Rod Diameter
Ø T (mm)	= Tube Diameter
St (mm)	= Stroke
L (mm)	= Length
P1 (N)	= Force
M (mm)	= Thread Size
PG	= Price Group

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
S06YCN	6	15	20	86	50 - 400	M6 x 1.0	S14
S06ZCO	6	15	40	126	50 - 400	M6 x 1.0	S15
S06AAA	6	15	50	154	50 - 400	M6 x 1.0	S01
S06BAB	6	15	60	160	50 - 400	M6 x 1.0	S02
S06VBN	6	15	73	183	50 - 400	M6 x 1.0	S13
S06CAF	6	15	75	214	50 - 400	M6 x 1.0	S03
S06DAD	6	15	80	200	50 - 400	M6 x 1.0	S04
S06EAL	6	15	90	269	50 - 400	M6 x 1.0	S05
S06FAG	6	15	100	240	50 - 400	M6 x 1.0	S06
S06GAM	6	15	120	280	50 - 400	M6 x 1.0	S07
S06HAQ	6	15	140	344	50 - 400	M6 x 1.0	S08
S06JAP	6	15	150	340	50 - 400	M6 x 1.0	S09
S06LAU	6	15	170	394	50 - 400	M6 x 1.0	S09
S06MAW	6	15	180	434	50 - 400	M6 x 1.0	S10
S06NAX	6	15	200	440	50 - 400	M6 x 1.0	S11
S06NBA	6	15	200	469	50 - 400	M6 x 1.0	S12
S08AAA	8	18	50	154	100 - 650	M6 x 1.0	S16
S08BAC	8	18	60	169	100 - 650	M6 x 1.0	S18
S08CAF	8	18	75	214	100 - 650	M6 x 1.0	S19
S08DAE	8	18	80	209	100 - 650	M6 x 1.0	S20
S08EAJ	8	18	90	264	100 - 650	M6 x 1.0	S21
S08EAL	8	18	90	269	100 - 650	M6 x 1.0	S21
S08WB	8	18	95	274	100 - 650	M6 x 1.0	S37
S08FAH	8	18	100	249	100 - 650	M6 x 1.0	S23
S08GAN	8	18	120	289	100 - 650	M6 x 1.0	S24
S08HAO	8	18	140	329	100 - 650	M6 x 1.0	S25
S08HAQ	8	18	140	344	100 - 650	M6 x 1.0	S26
S08HAR	8	18	140	349	100 - 650	M6 x 1.0	S27
S08JAR	8	18	150	349	100 - 650	M6 x 1.0	S28
S08JAU	8	18	150	394	100 - 650	M6 x 1.0	S28
S08KAT	8	18	160	369	100 - 650	M6 x 1.0	S29
S08LAU	8	18	170	394	100 - 650	M6 x 1.0	S30
S08MAV	8	18	180	409	100 - 650	M6 x 1.0	S31
S08MAW	8	18	180	434	100 - 650	M6 x 1.0	S32
S08NAY	8	18	200	449	100 - 650	M6 x 1.0	S33
S08NBA	8	18	200	469	100 - 650	M6 x 1.0	S34
S08OBB	8	18	220	489	100 - 650	M6 x 1.0	S35
S08PBC	8	18	250	549	100 - 650	M6 x 1.0	S36



STAINLESS STEEL gas struts



Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
S10FAH	10	23	100	249	150 – 1200	M8 x 1.25	S38
S10JAR	10	23	150	349	150 – 1200	M8 x 1.25	S39
S10NAY	10	23	200	449	150 – 1200	M8 x 1.25	S40
S10PBC	10	23	250	549	150 – 1200	M8 x 1.25	S41
S10QBF	10	23	290	650	150 – 1200	M8 x 1.25	S42
S10RBE	10	23	300	649	150 – 1200	M8 x 1.25	S43
S10SBH	10	23	350	749	150 – 1200	M8 x 1.25	S45
S10TBK	10	23	400	849	150 – 1200	M8 x 1.25	S46
S14FAK	14	28	100	266	150 – 2500	M10 x 1.5	S47
S14JAS	14	28	150	366	150 – 2500	M10 x 1.5	S48
S14NAZ	14	28	200	466	150 – 2500	M10 x 1.5	S49
S14PBD	14	28	250	566	150 – 2500	M10 x 1.5	S50
S14RBG	14	28	300	666	150 – 2500	M10 x 1.5	S51
S14SBJ	14	28	350	766	150 – 2500	M10 x 1.5	S52
S14TBL	14	28	400	866	150 – 2500	M10 x 1.5	S53
S14UBM	14	28	500	1066	150 – 2500	M10 x 1.5	S54

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M	R	Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6 x 1.0	6 & 8	✓	✓	✓	✓	✓	✓	✓	✓
M8 x 1.25	10	✓	✓	✓	✓	✓	✓	✓	✓
M10 x 1.5	14	✓	✓	✓	✓	✓		✓	✓

Other end fitting configurations are available on request. Please see pages 26-29 for complete details and dimensions for stock parts.

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VariForce™ Stainless Steel

User adjustable version of the Stainless Steel Gas Strut. A bleed valve is fitted to enable the user to adjust the P1 force of the spring. Each size is pressurised to the maximum available P1 force for that range. Once installed, the adjustment may be made without removing the strut, saving considerable time and effort. This is ideal for prototyping new applications and those which cater for varying weights.

Ordering Your Gas Strut:

Choose the VariForce™ strut that best fits your application, once fitted you will be able to release the pressure to get the ideal setting.

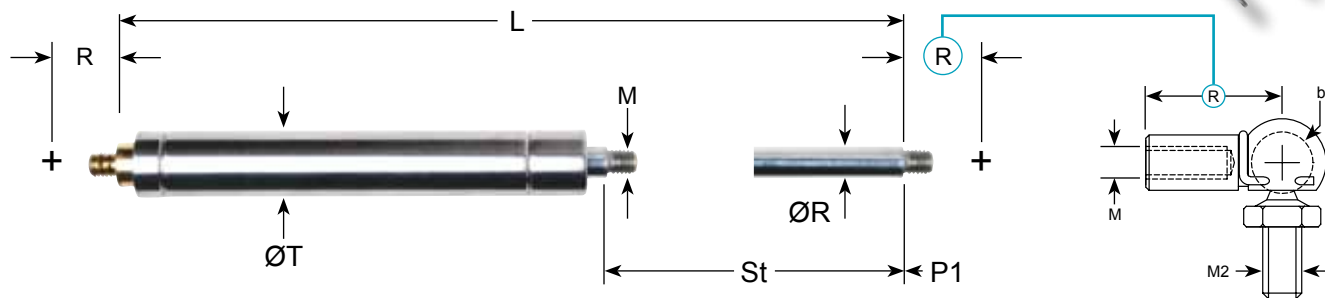
Gas strut selection tools and calculations are available in the Engineering section of this catalogue (page 24).

Key of measurements

Ø R (mm)	= Rod Diameter
Ø T (mm)	= Tube Diameter
St (mm)	= Stroke
L (mm)	= Length
P1 (N)	= Force
M (mm)	= Thread Size
PG	= Price Group

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
X06AAA0400	6	15	50	154	400	M6 x 1.0	SV01
X06BAB0400	6	15	60	168	400	M6 x 1.0	SV02
X06VBN0400	6	15	73	180	400	M6 x 1.0	SV14
X06CAF0400	6	15	75	214	400	M6 x 1.0	SV03
X06DAD0400	6	15	80	206	400	M6 x 1.0	SV04
X06EAL0400	6	15	90	270	400	M6 x 1.0	SV05
X06FAG0400	6	15	100	248	400	M6 x 1.0	SV06
X06GAM0400	6	15	120	282	400	M6 x 1.0	SV07
X06HAQ0400	6	15	140	350	400	M6 x 1.0	SV08
X06JAP0400	6	15	150	349	400	M6 x 1.0	SV09
X06LAU0400	6	15	170	400	400	M6 x 1.0	SV10
X06MAW0400	6	15	180	435	400	M6 x 1.0	SV11
X06NAX0400	6	15	200	442	400	M6 x 1.0	SV12
X06NBA0400	6	15	200	477	400	M6 x 1.0	SV13
X08AAA0650	8	18	50	154	650	M6 x 1.0	SV15
X08BAC0650	8	18	60	169	650	M6 x 1.0	SV16
X08CAF0650	8	18	75	213	650	M6 x 1.0	SV17
X08DAE0650	8	18	80	209	650	M6 x 1.0	SV18
X08EAJ0650	8	18	90	266	650	M6 x 1.0	SV19
X08EAL0650	8	18	90	275	650	M6 x 1.0	SV20
X08WBO0650	8	18	95	271	650	M6 x 1.0	SV36
X08FAH0650	8	18	100	254	650	M6 x 1.0	SV21
X08GAN0650	8	18	120	286	650	M6 x 1.0	SV22
X08HAQ0650	8	18	140	329	650	M6 x 1.0	SV23
X08HAQ0650	8	18	140	346	650	M6 x 1.0	SV24
X08HAR0650	8	18	140	350	650	M6 x 1.0	SV25
X08JAR0650	8	18	150	355	650	M6 x 1.0	SV26
X08JAU0650	8	18	150	394	650	M6 x 1.0	SV27
X08KAT0650	8	18	160	366	650	M6 x 1.0	SV28
X08LAU0650	8	18	170	394	650	M6 x 1.0	SV29
X08MAV0650	8	18	180	415	650	M6 x 1.0	SV30
X08MAW0650	8	18	180	435	650	M6 x 1.0	SV31
X08NAY0650	8	18	200	455	650	M6 x 1.0	SV32
X08NBA0650	8	18	200	475	650	M6 x 1.0	SV33
X08OBB0650	8	18	220	495	650	M6 x 1.0	SV34
X08PBC0650	8	18	250	555	650	M6 x 1.0	SV35

VariForce™ Stainless Steel



Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	M (mm)	PG
X10FAH1200	10	23	100	246	1200	M8 x 1.25	SV37
X10JAR1200	10	23	150	346	1200	M8 x 1.25	SV38
X10NAY1200	10	23	200	455	1200	M8 x 1.25	SV39
X10PBC1200	10	23	250	555	1200	M8 x 1.25	SV40
X10QBF1200	10	23	290	649	1200	M8 x 1.25	SV41
X10RBE0900	10	23	300	649	900	M8 x 1.25	SV42
X10SBH0800	10	23	350	749	800	M8 x 1.25	SV43
X10TBK0700	10	23	370	849	700	M8 x 1.25	SV44
X14FAK2000	14	28	100	264	2000	M10 x 1.5	SV45
X14JAS2000	14	28	150	366	2000	M10 x 1.5	SV46
X14NAZ2000	14	28	200	466	2000	M10 x 1.5	SV47
X14PBD2000	14	28	250	566	2000	M10 x 1.5	SV48
X14RBG2000	14	28	300	664	2000	M10 x 1.5	SV49
X14SBJ1800	14	28	350	766	1800	M10 x 1.5	SV50
X14TBL1500	14	28	400	864	1500	M10 x 1.5	SV51
X14UBM1500	14	28	500	1066	1500	M10 x 1.5	SV52

gas struts

n-struts
FLUID PERFORMANCE EVERYTIME

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M	R								
		Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6 x 1.0	6 & 8	✓	✓	✓	✓	✓	✓	✓	✓
M8 x 1.25	10	✓	✓	✓	✓	✓	✓	✓	✓
M10 x 1.5	14	✓	✓	✓	✓	✓		✓	✓

Other end fitting configurations are available on request. Please see pages 26-29 for complete details and dimensions for stock parts.

Can't find the strut you're looking for? Send us an enquiry.



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Designed for a long life while maintaining consistent, repeatable loads, mechanical struts are the ideal choice to replace conventional gas struts in harsh or low-maintenance applications.

m-Struts® will withstand difficult environments and wide temperature ranges and offer a variety of loads, strokes and end configurations. The units utilise advanced spring technology, along with engineered components to provide a low-friction, highly reliable product.



The Better Choice

mStruts® - are the better choice for your application:

- Long life and consistent loads over time
- Corrosion-resistant stainless steel construction
- No internal gases or seals – no hazardous material concerns
- Robust design
- Various end configurations available
- Operating temperatures from -40°C to 300°C

Operational Environment

m-Struts® are suitable for many environments. The stainless steel construction will cope with operating temperatures between -40°C to +300°C without noticeable degradation in performance.

Cycling frequency has little effect and applications may be either static or dynamic. They are particularly suited to long term static applications, providing confidence in lifting access and service covers.

To date; m-Struts® have been successfully deployed globally, without failure, in refrigerated, desert, mining, utility and sub-sea environments. The standard configuration of 304 stainless outer tube and end plugs, combined with a precipitation hardened stainless spring provides good resistance to most forms of attack, including Hydrogen Sulphide gas.

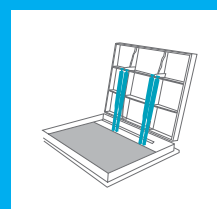
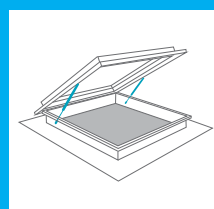
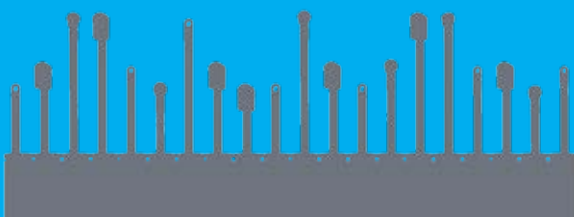
Converting from n-Struts® to m-Struts®

Successful conversion projects range from manhole/ inspection covers and panels to refrigerated vehicle applications where low maintenance, repeatable loads and temperature are a particular concern.

With their proven long life, m-Struts® are showing that they are a long term cost saver for their customers when compared with gas struts in similar applications.

Custom Engineered Solutions

As well as our stock product offering, we also offer an engineering design service to solve application issues and provide prototypes to customer specifications. If you need a unique product for a particular specification, we can produce a wide range of components – from springs to complex assemblies – all designed to meet the demands of your application. Tell us what you need: engineering@assocspring.co.uk

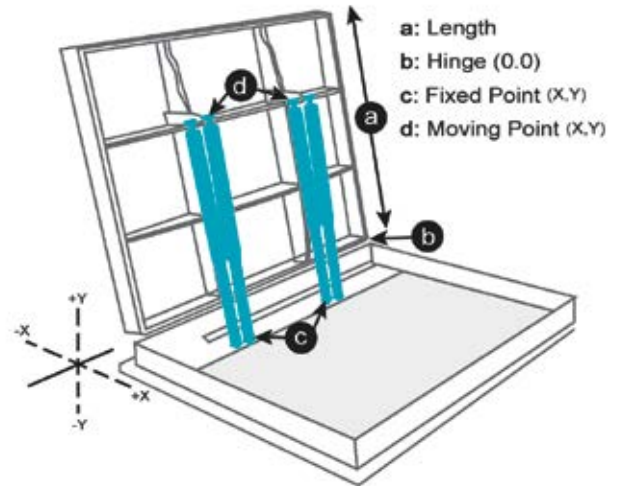


Ground Access Covers; Assisted Lift Matrix

Length (mm)	Weight (Kg)									
	25	50	75	100	125	150	175	200	225	250
	600	EP(1)*	EP	EP	EP	TZ2(3)*	TZ2(3)*	TZ2(3)*		
	650	EP(1)*	EP	EP	TZ2	TZ2(3)*	TZ2(4)*	TZ3		
	700	EP	TZ1	TZ1	TZ2	TZ2(3)*	TZ3	TZ3	TZ3	TZ3(3)*
	750	EP	TZ1	TZ2	TZ2(3)*	TZ3	TZ3	TZ3	TZ3(3)*	TZ3(3)*
	800	TZ1	TZ1	TZ2	TZ3	TZ3	TZ3	TZ3	TZ3(3)*	TZ3(3)*
	850	TZ1	TZ1	TZ2	TZ3	TZ3	TZ3	TZ3	TZ3(3)*	TZ3(3)*
	900	TZ1	TZ2	TZ2	TZ3	TZ3	TZ3	TZ3	TZ3(3)*	TZ4
	1000	TZ2	TZ2	TZ3	TZ3	TZ3	TZ3	TZ3(3)*	TZ4	TZ4
	1100	TZ2	TZ2	TZ3	TZ3	TZ3	TZ3	TZ3(3)*	TZ4	TZ4
	1200	TZ2	TZ3	TZ3	TZ3	TZ3	TZ3	TZ4	TZ4	TZ4

Key:

Code	Part No.	Centre Length (mm)		Force	
		Extended	Closed	Ext (N)	(N/mm)
EP	MST-1-173-032	473	300	311	1.79
TZ1	MST-2-280-027	725	442	266	1.18
TZ2	MST-2-280-054	725	445	530	4.46
TZ3	MST-3-250-043	841	610	423	9.70
TZ4	MST-4-296-132	995	699	1300	7.77



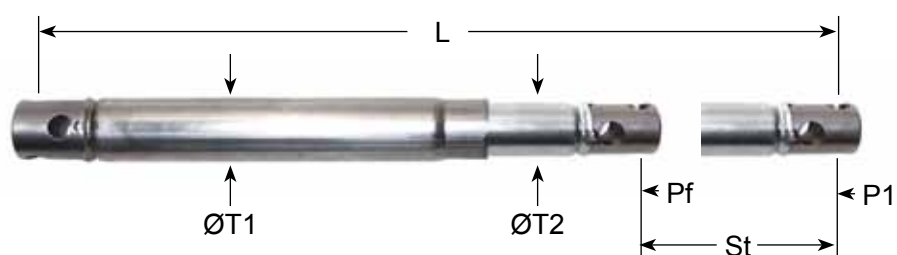
Part No.	Cover Size	Weight	Qty	Fixed X	Fixed Y	Moving X	Moving Y
MST-1-173-032	500△	30kg	1	+95	-80	+395	-75
	600 x 600	50kg	2	+120	-100	+610	+10
MST-2-280-027	600 x 600	40kg	2	+80	-125	+600	-50
MST-2-280-054	750 x 650	60kg	2	+120	-90	+622	+10
MST-3-250-043	750 x 750	150kg	2	+90	-135	+705	-100
MST-4-296-132	900 x 900	150kg	2	+90	-147	+694	-100
	800 x 800	180kg	2	+100	-150	+690	-130
	1400△	250kg	2	+100	-190	+790	-80



We reserve the right to add, delete or modify components without notification.
All dimensions are stated in mm.
All dimensions are nominal unless tolerance is stated.

call: 01386 443 366
email: sales@assocspring.co.uk





Key of measurements

Ø T1 (mm)	=	Tube Diameter
Ø T2 (mm)	=	Tube Diameter
St (mm)	=	Stroke
L (mm)	=	Length
P1 (N)	=	Force
Pf (N)	=	Final Force
PG	=	Price Group

Our Telescopic mechanical struts were designed to meet the needs of heavier steel and cast iron applications where maximum flexibility is needed for lift/close assist. As to be expected, they show excellent counterbalancing capabilities and give superior performance in demanding, maintenance free applications.

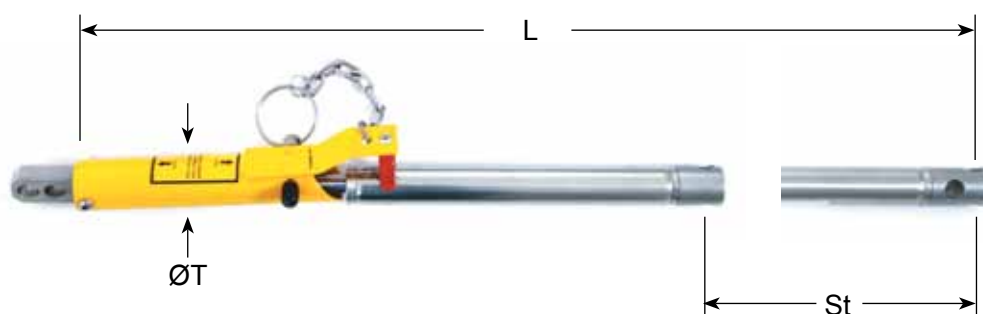
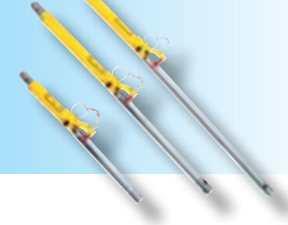
Part Number	Ø T1 (mm)	Ø T2 (mm)	St (mm)	L (mm)	P1 (mm)	Pf (mm)	PG
MST1173032	38.1	31.8	173	473	311	622	ZC01
MST2280027	38.1	31.8	280	725	266	600	ZC02
MST2280054	38.1	31.8	280	725	530	1780	ZC03
MST3250043	51.0	44.5	250	841	423	2713	ZC04
MST4296132	51.0	44.5	296	995	1300	3600	ZC05



GATIC® assist lift covers incorporating m-Struts® technology



Can't find the strut you're looking for? Send us an enquiry.



Key of measurements

Ø T1 (mm)	=	Tube Diameter
Ø T2 (mm)	=	Tube Diameter
St (mm)	=	Stroke
L (mm)	=	Length
PG	=	Price Group

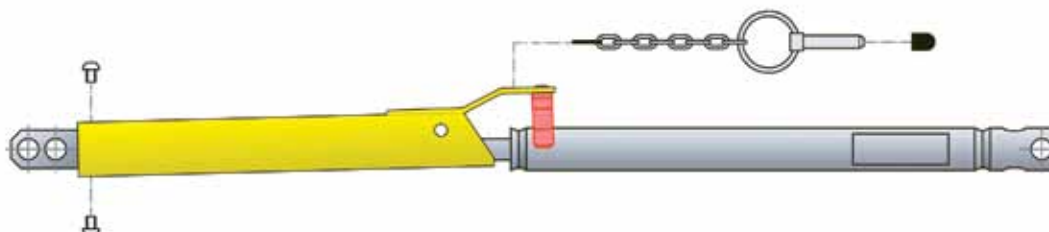
The Prop-Lock® was developed to replace the standard 'stay-bar' solution that typically requires the user to disengage the lock with one hand, whilst closing the cover with the other hand.

The self-locking on opening of the Prop-Lock® permits the user to disengage the lock and close the cover separately. The closing operation resets the lock for the next opening requirement.

- Manufactured in stainless steel making it suitable for all ground access applications.
- Can be mounted on a common axle to the m-Strut® or front offset depending on the application
- Can be used as a stand-alone system when the cover weight is within acceptable lift parameters
- Designed to match its corresponding m-Strut®

Part Number	Ø T1 (mm)	Ø T2 (mm)	St (mm)	L (mm)	PG
PLK1173001	35.0	28.0	173	473	PLK01
PLK2280001	35.0	28.0	280	725	PLK02
PLK3250001	35.0	28.0	250	841	PLK03
PLK4296001	35.0	28.0	296	995	PLK04

Associated Spring recommend that the Prop-Lock® be used in conjunction with 2 m-Struts® in a typical application. Weight restrictions do apply. Further information is available through our Engineering department: engineering@assocspring.co.uk



Can't find the strut you're looking for? Send us an enquiry.

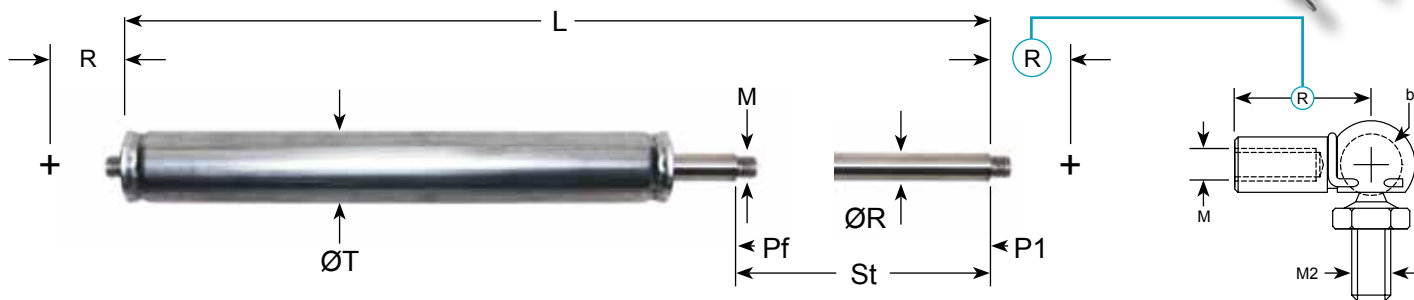


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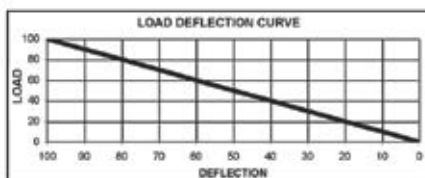
m-Struts® standard



Key of measurements

- Ø R (mm) = Rod Diameter
- Ø T (mm) = Tube Diameter
- St (mm) = Stroke
- L (mm) = Length
- P1 (N) = Force
- Pf (N) = Final Force
- M (mm) = Thread Size
- PG = Price Group

Associated Spring Raymond offers a complete line of mechanical coil spring struts, m-Struts®. These struts were designed to meet demanding, maintenance free applications where conventional gas struts fail. Provides a linear increasing load during compression and fast return speed to original extended position. See graphs below:



Application & system balance ultimately controls the return speed in both compression and extension.

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	Pf (N)	M	PG
MSBD0510076	9.5	31.8	51	177	35	76	M6	MSB01
MSBD0510116	9.5	31.8	51	214	85	116	M6	MSB02
MSBD0510173	9.5	31.8	51	254	133	173	M6	MSB03
MSBD0510280	9.5	31.8	51	295	200	280	M6	MSB04
MSBD0760102	9.5	31.8	76	243	44	102	M6	MSB05
MSBD0760156	9.5	31.8	76	262	67	156	M6	MSB06
MSBD0760262	9.5	31.8	76	311	133	262	M6	MSB07
MSBD1270133	9.5	31.8	127	432	80	133	M6	MSB08
MSBD1270173	9.5	31.8	127	474	111	173	M6	MSB09
MSBD1270222	9.5	31.8	127	482	133	222	M6	MSB10
MSBD1270271	9.5	31.8	127	506	156	271	M6	MSB11
MSCD0261057	12.7	31.8	26	189	782	1057	M8	MSB12
MSCD0261240	12.7	31.8	26	151	369	1240	M8	MSB13
MSCD0331069	12.7	31.8	33	159	446	1069	M8	MSB14
MSCD0391072	12.7	31.8	40	166	236	1072	M8	MSB15
MSCD0391111	12.7	31.8	39	202	622	1111	M8	MSB16
MSCD0412354	12.7	31.8	41	346	1075	2354	M8	MSB17
MSCD0432187	12.7	31.8	43	246	417	2187	M8	MSB18
MSCD0551170	12.7	31.8	56	259	181	1170	M8	MSB19
MSCD0771150	12.7	31.8	78	384	355	1150	M8	MSB20
MSCD0781111	12.7	31.8	79	282	127	1111	M8	MSB21
MSCD1171067	12.7	31.8	118	422	244	1067	M8	MSB22

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

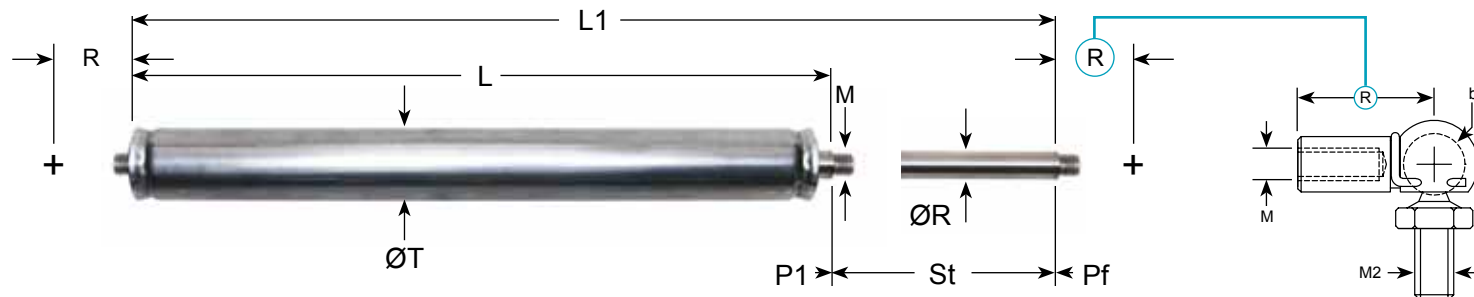
M	Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6	✓	✓	✓	✓	✓	✓	✓	✓
M8	✓	✓	✓	✓	✓	✓	✓	✓

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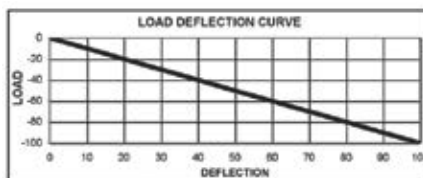
m-Struts® extension



Key of measurements

- Ø R (mm) = Rod Diameter
- Ø T (mm) = Tube Diameter
- St (mm) = Stroke
- L (mm) = Length
- L1 (mm) = Extended Length
- P1 (N) = Force
- Pf (N) = Final Force
- M (mm) = Thread Size
- PG = Price Group

Extension mechanical struts are suitable for lowering ramps or dropdown hatches. They show superior counterbalancing capabilities and can easily replace conventional gas struts to better meet demanding, maintenance free applications.



Application & system balance ultimately controls the return speed in both compression and extension.

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	L1 (mm)	P1 (N)	Pf (N)	M	PG
MEBD0510076	9.5	31.8	51	126	177	35	76	M6	MEB01
MEBD0510116	9.5	31.8	51	164	214	85	116	M6	MEB02
MEBD0510173	9.5	31.8	51	203	254	133	173	M6	MEB03
MEBD0510280	9.5	31.8	51	244	295	200	280	M6	MEB04
MEBD0760102	9.5	31.8	76	167	243	44	102	M6	MEB05
MEBD0760156	9.5	31.8	76	185	262	67	156	M6	MEB06
MEBD0760262	9.5	31.8	76	235	311	133	262	M6	MEB07
MEBD1270133	9.5	31.8	127	305	432	80	133	M6	MEB08
MEBD1270173	9.5	31.8	127	347	474	111	173	M6	MEB09
MEBD1270222	9.5	31.8	127	355	482	133	222	M6	MEB10
MEBD1270271	9.5	31.8	127	379	506	156	271	M6	MEB11
MECD0261057	12.7	31.8	25	164	189	782	1057	M8	MEB12
MECD0261240	12.7	31.8	25	126	151	369	1240	M8	MEB13
MECD0331069	12.7	31.8	33	126	159	446	1069	M8	MEB14
MECD0391072	12.7	31.8	41	126	166	236	1072	M8	MEB15
MECD0391111	12.7	31.8	38	164	202	622	1111	M8	MEB16
MECD0412354	12.7	31.8	41	305	346	1075	2354	M8	MEB17
MECD0432187	12.7	31.8	43	203	246	417	2187	M8	MEB18
MECD0551170	12.7	31.8	56	203	259	181	1170	M8	MEB19
MECD0771150	12.7	31.8	79	305	384	355	1150	M8	MEB20
MECD0781111	12.7	31.8	79	203	282	127	1111	M8	MEB21
MECD1171067	12.7	31.8	117	305	422	244	1067	M8	MEB22

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M	Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6	✓	✓	✓	✓	✓	✓	✓	✓
M8	✓	✓	✓	✓	✓	✓	✓	✓

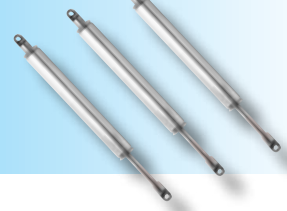


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m-Struts® self centering



Our Self Centering mechanical struts are suitable for over-center applications and provide a balanced force on moving alternative axes. Mechanical struts easily replace conventional gas struts to better meet demanding, maintenance free applications.

Provides linear increasing loads in both directions from a neutral/centred position with an unrestricted return speed to the neutral/centred position.

Note: Application & system balance ultimately controls the return speed in both compression and extension.

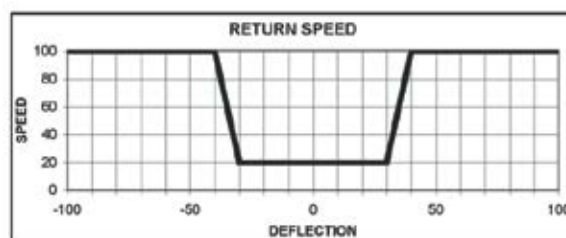
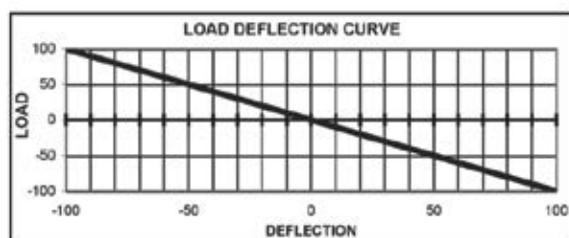
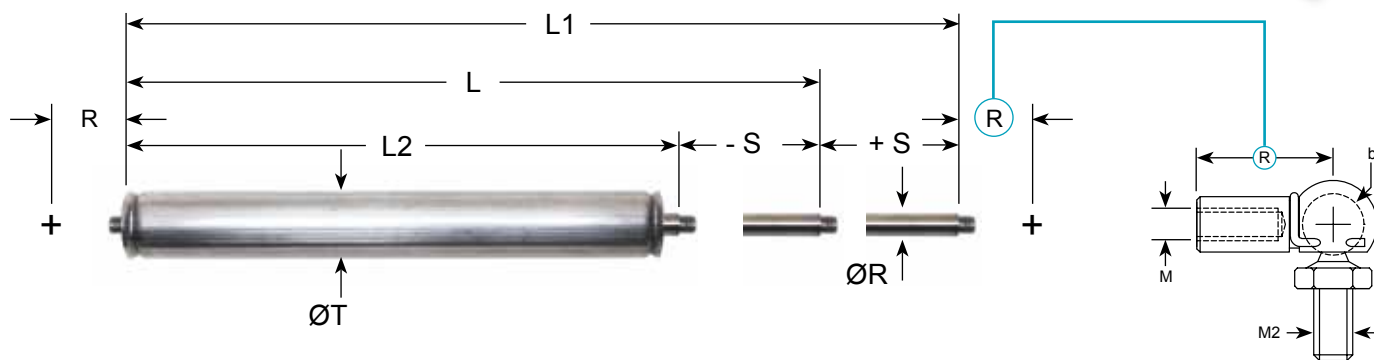
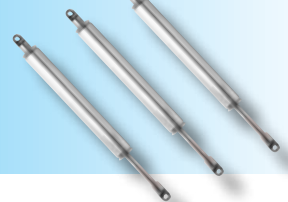
Key of measurements

Ø R (mm)	= Rod Diameter
Ø T (mm)	= Tube Diameter
St (mm)	= Stroke
L (mm)	= Neutral Length
L1 (mm)	= Neutral +S
L2 (mm)	= Neutral - S
P1 (N)	= Force
Pf (N)	= Final Force
M (mm)	= Thread Size
PG	= Price Group

Part Number	Ø R (mm)	Ø T (mm)	St (+/-) (mm)	L (mm)	L1 (mm)	L2 (mm)	P1 (N)	Pf (N)	M	PG
MCBD0510076	9.5	31.8	51	265	316	215	35	76	M6	MCB01
MCBD0510116	9.5	31.8	51	341	392	290	85	116	M6	MCB02
MCBD0510173	9.5	31.8	51	252	303	201	133	173	M6	MCB03
MCBD0510280	9.5	31.8	51	502	553	451	200	280	M6	MCB04
MCBD0760102	9.5	31.8	76	373	449	296	44	102	M6	MCB05
MCBD0760156	9.5	31.8	76	410	486	334	67	156	M6	MCB06
MCBD0760262	9.5	31.8	76	510	586	434	133	262	M6	MCB07
MCBD1270133	9.5	31.8	127	701	828	574	80	133	M6	MCB08
MCBD1270173	9.5	31.8	127	785	912	658	111	173	M6	MCB09
MCBD1270222	9.5	31.8	127	799	926	672	133	222	M6	MCB10
MCBD1270271	9.5	31.8	127	847	974	720	156	271	M6	MCB11
MCCD0261057	12.7	31.8	25	315	341	290	782	1057	M8	MCB12
MCCD0261240	12.7	31.8	25	240	265	215	369	1240	M8	MCB13
MCCD0331069	12.7	31.8	33	248	281	215	446	1069	M8	MCB14
MCCD0391072	12.7	31.8	41	255	296	215	236	1072	M8	MCB15
MCCD0391111	12.7	31.8	38	328	366	290	622	1111	M8	MCB16
MCCD0412354	12.7	31.8	41	614	655	574	1075	2354	M8	MCB17
MCCD0432187	12.7	31.8	43	412	455	369	417	2187	M8	MCB18
MCCD0551170	12.7	31.8	56	425	481	369	181	1170	M8	MCB19
MCCD0771150	12.7	31.8	79	652	731	574	355	1150	M8	MCB20
MCCD0781111	12.7	31.8	79	448	526	369	127	1111	M8	MCB21
MCCD1171067	12.7	31.8	117	691	807	574	244	1067	M8	MCB22

Can't find the strut you're looking for? Send us an enquiry.





Application & system balance ultimately controls the return speed in both compression and extension.

Whether it is resistance against environmental contamination, high temperature (200°C+), high humidity, corrosion, or simply life cycle, our struts offer unmatched performance.

END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M								
	Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6	✓	✓	✓	✓	✓	✓	✓	✓
M8	✓	✓	✓	✓	✓	✓	✓	✓

Other end fitting configurations are available on request. Please see pages 26-29 for complete details and dimensions for stock parts.

Can't find the strut you're looking for? Send us an enquiry.



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All dimensions are nominal unless tolerance is stated.

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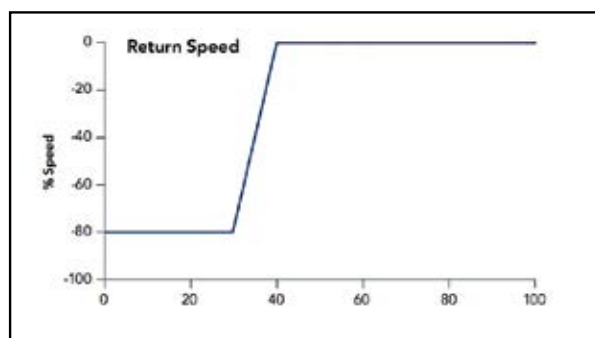
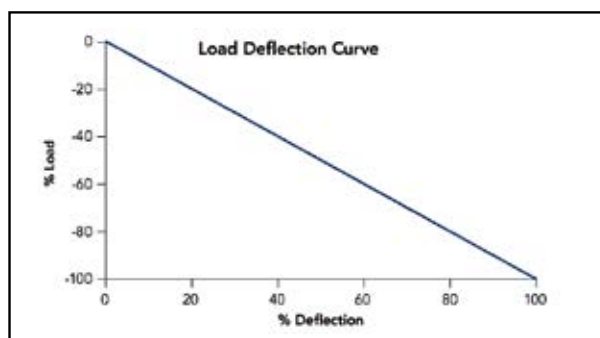
m-Struts® generation II

Gen-II mechanical struts are an economical version of m-Struts® offering the same proprietary solution as the original in a more compact form. The struts are available in black nitride finish or optional corrosion resistant stainless steel.

- Same great features
- Same end fitting options
- Smaller bodies
- Ideal for limited space applications
- Cost saving steel
- Nitride version offered
- Full stainless steel option available

Key of measurements

- Ø R (mm)** = Rod Diameter
Ø T (mm) = Tube Diameter
St (mm) = Stroke
L (mm) = Length
P1 (N) = Force
Pf (N) = Final Force
M (mm) = Thread Size
PG = Price Group

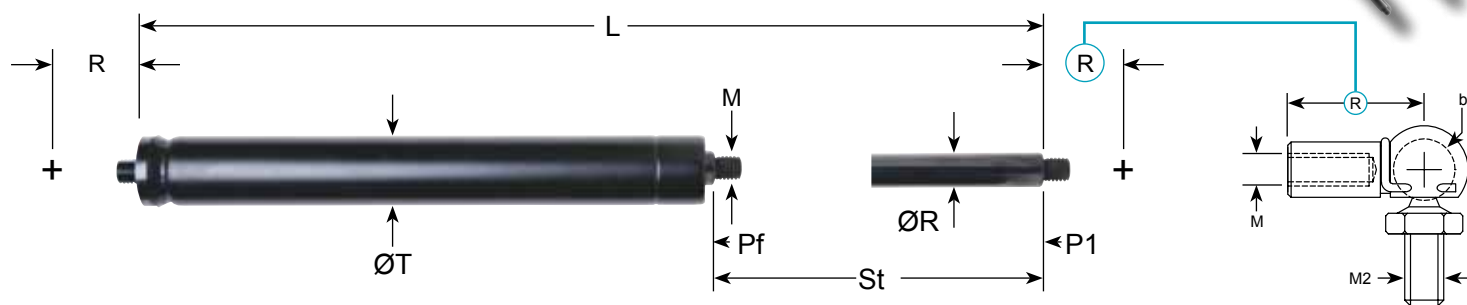


Application & system balance ultimately controls the return speed in both compression and extension.

Part Number	Ø R (mm)	Ø T (mm)	St (mm)	L (mm)	P1 (N)	Pf (N)	M	PG
MSE-0200-002-01-15	6	15	51	156	9	27	M6	LMS01
MSE-0400-005-01-15	6	15	102	309	22	67	M6	LMS02
MSE-0600-005-01-15	6	15	152	461	22	67	M6	LMS03
MSE-0800-006-01-15	6	15	203	613	27	80	M6	LMS04
MSE-1000-007-01-15	6	15	254	766	31	93	M6	LMS05
MSE-1200-007-01-15	6	15	305	918	31	93	M6	LMS06
MSE-0200-003-01-18	8	18	51	166	13	40	M6	LMS07
MSE-0400-007-01-18	8	18	102	319	31	93	M6	LMS08
MSE-0600-009-01-18	8	18	152	471	40	120	M6	LMS09
MSE-0800-009-01-18	8	18	203	623	40	120	M6	LMS10
MSE-1000-009-01-18	8	18	254	776	40	120	M6	LMS11
MSE-1200-010-01-18	8	18	305	928	44	133	M6	LMS12
MSE-0200-008-01-22	10	22	51	166	36	107	M8	LMS13
MSE-0400-015-01-22	10	22	102	319	67	200	M8	LMS14
MSE-0600-017-01-22	10	22	152	471	76	227	M8	LMS15
MSE-0800-019-01-22	10	22	203	623	85	254	M8	LMS16
MSE-1000-020-01-22	10	22	254	776	89	267	M8	LMS17
MSE-1200-021-01-22	10	22	305	928	93	280	M8	LMS18
MSE-0200-010-01-28	14	28	51	171	44	133	M10	LMS19
MSE-0400-025-01-28	14	28	102	324	111	334	M10	LMS20
MSE-0600-030-01-28	14	28	152	476	133	400	M10	LMS21
MSE-0600-077-02-28	14	28	152	630	340	1655	M10	LMS22
MSE-0800-032-01-28	14	28	203	628	142	427	M10	LMS23
MSE-1000-035-01-28	14	28	254	781	156	467	M10	LMS24
MSE-1200-010-01-28	14	28	305	930	45	1470	M10	LMS25
MSE-1200-035-01-28	14	28	305	930	156	467	M10	LMS26
MSE-1200-085-01-28	14	28	305	930	380	950	M10	LMS27



m-Struts® generation II



END FITTINGS (pages 26 - 29) Zinc Plated, Stainless Steel, Plastic

M								
	Ball Joint	Clevis	Eye	Axial Ball Joint	Ball Socket	Ball Stud	Rod End Bearing	Spacer
M6	✓	✓	✓	✓	✓	✓	✓	✓
M8	✓	✓	✓	✓	✓	✓	✓	✓
M10	✓	✓	✓	✓	✓		✓	✓

Other end fitting configurations are available on request. Please see pages 26-29 for complete details and dimensions for stock parts.

Can't find the strut you're looking for? Send us an enquiry.



We reserve the right to add, delete or modify components without notification.
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All dimensions are nominal unless tolerance is stated.

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Calculating required forces:

Example for lifting from vertical to horizontal position:

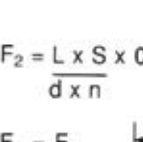
Fig 1

$$F_1 = \frac{L \times S \times 1.1}{d \times n}$$

Example for lifting from horizontal to vertical position:

Fig 2

$$F_2 = \frac{L \times S \times 0.9}{d \times n}$$
$$F_1 = \frac{F_2}{Rc}$$



Should you require replacement Gas Struts for your existing equipment, please provide us with the following information

- Diameter of Tube and Rod
- Extended length
- Type of end fittings used
- Stroke length
- Any information given on the side of the existing Gas Strut
- Force if known.

Quality Management
BS EN ISO 9001: 2008

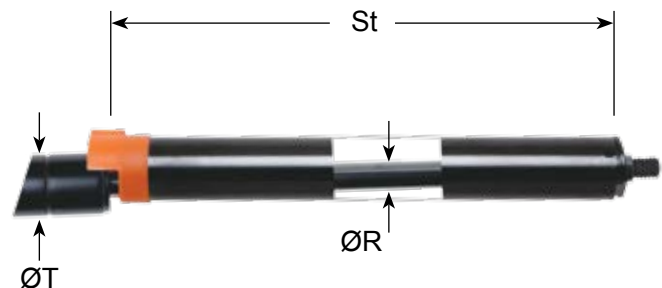
NOTES:

Locking Tubes LTN series

Part Number	Ø R (mm)	Ø T (mm)	St (mm)
LTN-6-80	6	15	80
LTN-6-100	6	15	100
LTN-6-150	6	15	150
LTN-6-200	6	15	200
LTN-8-100	8	18	100
LTN-8-150	8	18	150
LTN-8-200	8	18	200
LTN-8-250	8	18	250
LTN-10-100	10	22	100
LTN-10-150	10	22	150
LTN-10-200	10	22	200
LTN-10-250	10	22	250
LTN-10-290	10	22	290
LTN-10-300	10	22	300
LTN-10-350	10	22	350
LTN-14-100	14	28	100
LTN-14-150	14	28	150
LTN-14-200	14	28	200
LTN-14-250	14	28	250
LTN-14-300	14	28	300
LTN-14-350	14	28	350
LTN-14-400	14	28	400
LTN-14-500	14	28	500

The Locking Tube eliminates the need for a separate safety rod or support in critical lift-assist applications. The locking tube positively locks when the gas spring is fully extended protecting people and critical equipment from injury or harm in the event of gas strut failure due to excessive overload or misuse. The locking tube is easily released by applying thumb pressure to move the tube out of the way so the gas strut can compress.

Locking Tubes are available in Black finish or Stainless Steel to complement our strut ranges.

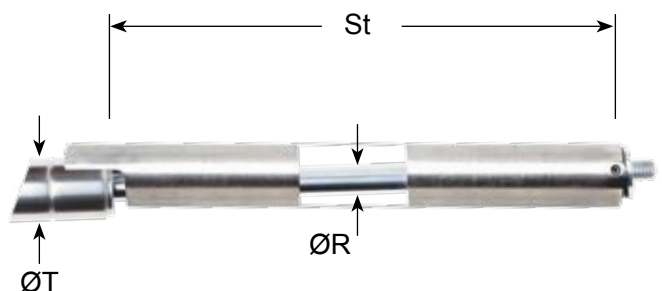


Locking Tubes LTX series

Part Number	Ø R (mm)	Ø T (mm)	St (mm)
LTX-6-80	6	15	80
LTX-6-100	6	15	100
LTX-6-150	6	15	150
LTX-6-200	6	15	200
LTX-8-100	8	18	100
LTX-8-150	8	18	150
LTX-8-200	8	18	200
LTX-8-250	8	18	250
LTX-10-100	10	22	100
LTX-10-150	10	22	150
LTX-10-200	10	22	200
LTX-10-250	10	22	250
LTX-10-290	10	22	290
LTX-10-300	10	22	300
LTX-10-350	10	22	350
LTX-14-100	14	28	100
LTX-14-150	14	28	150
LTX-14-200	14	28	200
LTX-14-250	14	28	250
LTX-14-300	14	28	300
LTX-14-350	14	28	350
LTX-14-400	14	28	400
LTX-14-500	14	28	500

Key of measurements

Ø R (mm) = Rod Diameter
 Ø T (mm) = Tube Diameter
 St (mm) = Stroke



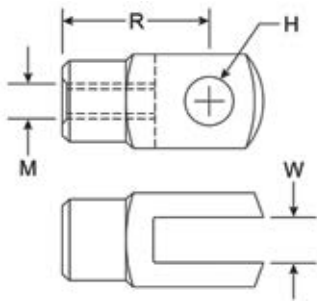
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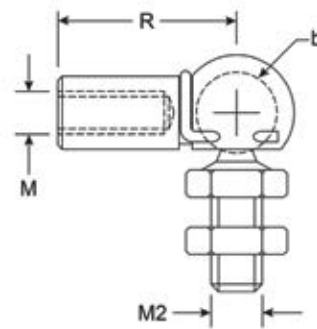
End Fittings

Clevis



	EF-C006Z	EF-C002 Z/S	EF-C003 Z/S	EF-C004 Z/S	EF-C007Z
R	16	24	32	40	56
M	M4	M6	M8	M10	M14
H	4	6	8	10	14
W	4	6	8	10	14
Ø R	4	6 & 8	10	14	20
PG	C01	Z C01 S C02	Z C05 S C04	Z C07 S C05	C08

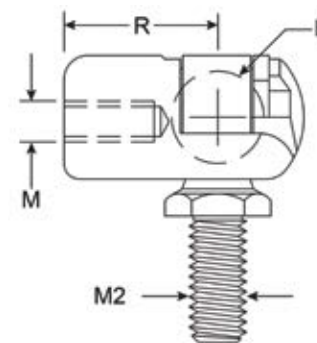
Ball Joint Assembly



	EF-BJ016 Z	EF-BJ012 Z/S	EF-BJ005 Z/S	EF-BJ006 Z
R	16	18	25	25
M	M4	M6	M6	M8
b	8	10	10	13
M2	M4	M8	M8	M8
Ø R	4	6 & 8	6 & 8	10
PG	BJ12	Z BJ10 S BJ09	Z BJ02 S BJ01	BJ03

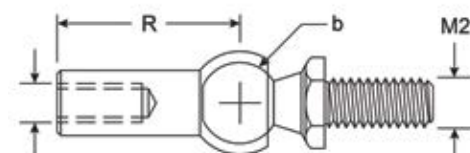
	EF-BJ008 S	EF-BJ007 Z/S	EF-BJ010 Z/S	EF-BJ018 Z
R	25	30	35	45
M	M8	M8	M10	M14
b	13	13	16	19
M2	M8	M8	M10	M14
Ø R	10	10	14	20
PG	BJ06	Z BJ05 S BJ04	Z BJ08 S BJ07	BJ13

Ball Joint Assembly – composite



	EF-BJ014 PN	EF-BJ015 PN
R	18	18
M	M6	M8
b	10	10
M2	M8	M8
Ø R	6 & 8	10
PG	BJ11	BJ11

Axial Ball Joint



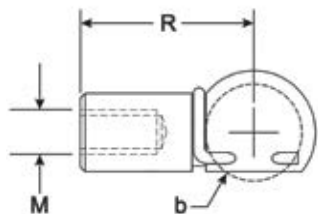
	EF-AJ001 Z	EF-AJ002 Z	EF-AJ003 Z
R	25	30	35
M	M6	M8	M10
b	10	13	16
M2	M6	M8	M10
Ø R	6 & 8	10	14
PG	ABJ01	ABJ02	ABJ03



Key of measurements

$\varnothing R$ (mm) = Rod Diameter	t (mm) = Thickness	S = Stainless
M (mm) = Thread Size	W (mm) = Slot Width	N = Nitride
b (mm) = Ball Size	R (mm) = Fitting Length	P = Plastic
H (mm) = Hole Size	Z = Zinc	PG = Price Group

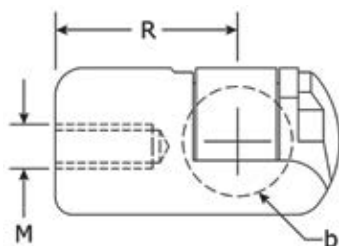
Ball Socket



	EF-BS002 Z/S	EF-BS013 Z/S	EF-BS005 Z/S	EF-BS006 Z/S
R	18	25	30	30
M	M6	M6	M8	M8
b	10	10	13	10
$\varnothing R$	6 & 8	6 & 8	10	10
PG	Z BST03 S BST02	Z BST13 S BST12	Z BST06 S BST05	Z BST08 S BST07

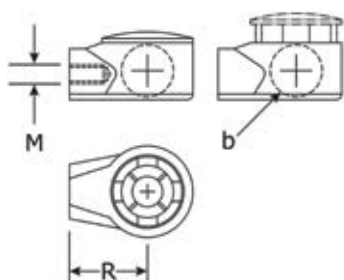
	EF-BS011 Z/S	EF-BS016 Z/S	EF-BS017 Z/S	EF-BS020 Z
R	25	25	35	35
M	M8	M8	M10	M14
b	13	10	16	19
$\varnothing R$	10	10	14	20
PG	Z BST11 S BST10	Z BST16 S BST15	Z BST18 S BST17	BST19

Ball Socket – composite



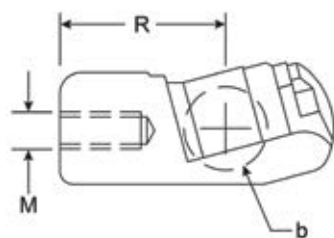
	EF-BS001 PN
R	18
M	M6
b	10
$\varnothing R$	6 & 8
PG	BST01

Ball Socket – plastic



	EF-BS004 P
R	18
M	M6
b	10
$\varnothing R$	6 & 8
PG	BST04

Ball Socket Angled – composite

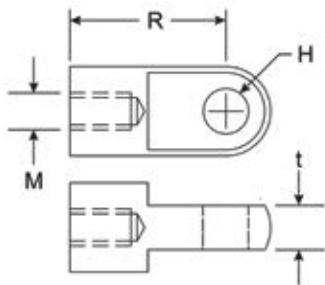


	EF-BS014 PN	EF-BS015 PN
R	18	18
M	M6	M8
b	10	10
$\varnothing R$	6 & 8	10
PG	BST14	BST14



End Fittings

Eyes – round

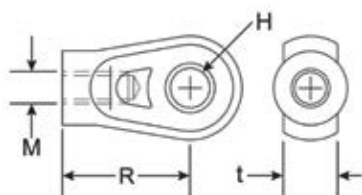


	EF-E059 Z	EF-E044 Z/S	EF-E045 Z/S	EF-E046 Z/S	EF-E047 Z/S
R	12	28	28	28	28
M	M4	M6	M6	M6	M6
H	4.1	6.1	6.1	8.1	8.1
t	4	5	8	8	5
Ø R	4	6 & 8	6 & 8	6 & 8	6 & 8
PG	EY20	Z EY10 S EY09	Z EY11 S EY09	Z EY11 S EY09	Z EY11 S EY09

	EF-E048 Z/S	EF-E049 Z/S	EF-E050 Z/S	EF-E051 Z/S	EF-E015 A/S
R	28	28	28	28	35
M	M8	M8	M8	M8	M10
H	8.1	8.1	10.1	10.1	10.1
t	5	8	5	8	10
Ø R	10	10	10	10	14
PG	Z EY12 S EY09	Z EY12 S EY09	Z EY12 S EY09	Z EY12 S EY09	A EY02 S EY03

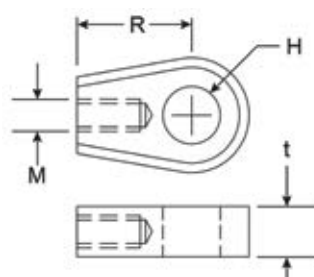
	EF-E026 A/S	EF-E056 A/S	EF-E068 Z
R	35	35	35
M	M10	M10	M14
H	8.1	12.1	14.1
t	10	10	11
Ø R	14	14	20
PG	A EY04 S EY05	A EY14 S EY15	EY21

Eyes – plastic



	EF-E012 P	EF-E042 P	EF-E043 P
R	28	28	28
M	M6	M6	M6
H	8.2	6.2	10.2
t	10	10	10
Ø R	6 & 8	6 & 8	6 & 8
PG	EY01	EY08	EY08

Eyes – diecast



	EF-E037 Z	EF-E038 Z
R	13	13
M	M6	M6
H	6.2	8.2
t	10	10
Ø R	6 & 8	6 & 8
PG	EY06	EY07



Key of measurements

Ø R (mm) = Rod Diameter

t (mm) = Thickness

S = Stainless

M (mm) = Thread Size

W (mm) = Slot Width

N = Nitride

b (mm) = Ball Size

R (mm) = Fitting Length

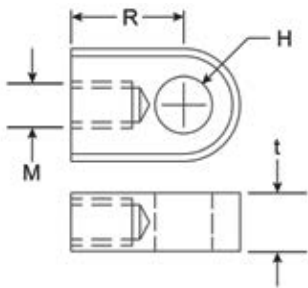
P = Plastic

H (mm) = Hole Size

Z = Zinc

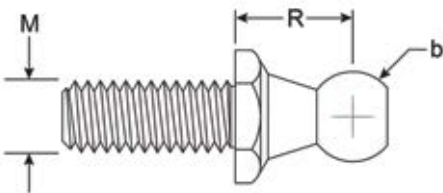
PG = Price Group

Eyes – flat



	EF-E052 Z/S	EF-E053 Z/S	EF-E054 Z/S	EF-E055 Z/S	EF-E057 A/S	EF-E058 A/S
R	16	16	16	16	25	25
M	M6	M6	M8	M8	M10	M10
H	6.1	8.1	8.1	10.1	10.1	8.1
t	8	8	10	10	12	12
Ø R	6 & 8	6 & 8	10	10	14	14
PG	Z EY12 S EY13	Z EY12 S EY13	Z EY12 S EY13	Z EY12 S EY13	A EY16 S EY17	A EY18 S EY19

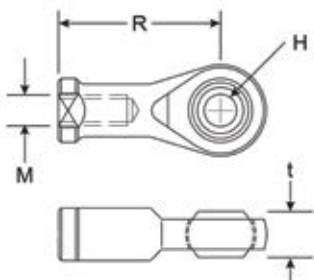
Ball Stud



	EF-B001 Z/S	EF-B002 S	EF-B009 Z	EF-B003 Z
R	14.5	14.5	14.5	14.5
M2	M8 x 12	M6 x 12	M8 x 25	M8 x 15.5
b	10	10	10	13
Ø R	8	8	8	10
PG	Z BS02 S BS01	BS03	BS04	BS05

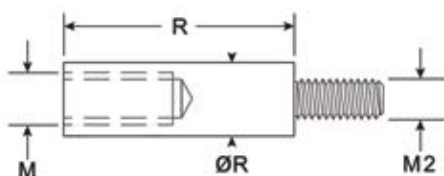
	EF-B004 S	EF-B005 Z	EF-B013 Z
R	13	13	20
M2	M8 x 15.5	M10 x 20	M14
b	13	13	19
Ø R	10	10	20
PG	BS06	BS07	BS08

Rod End Bearings



	EF-REF002 Z	EF-REF003 Z	EF-REF004 Z	EF-REF007 Z/S
R	30	36	43	57
M	M6	M8	M10	M14
H	6	8	10	14
t	9	12	14	19
Ø R	6 & 8	10	12	12
PG	REF01	REF02	REF03	Z REF05 S REF04

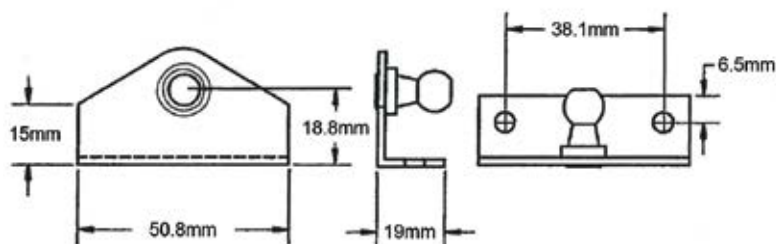
Spacers



	EF-S001S	EF-S002S	EF-S003S	EF-S004S	EF-S005S	EF-S006S
R	20	50	20	50	20	50
M	M6	M6	M8	M8	M10	M10
M2	M6	M6	M8	M8	M10	M10
Ø R	10	10	12	12	16	16
PG	S01	S01	S01	S02	S01	S03



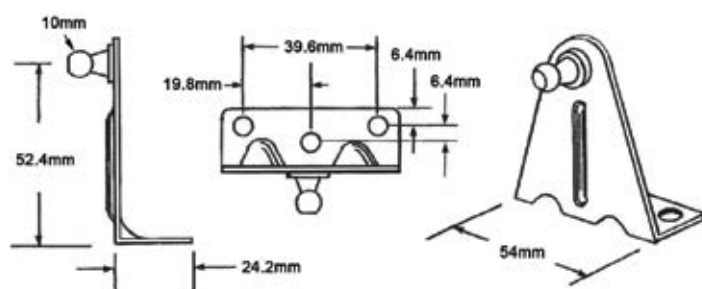
Gas Strut Mounting Hardware



Part Number	Material	PG
EFBR01S	Stainless Steel	BR09
EFBR01Z	Zinc Plated	BR05

* 2mm thick material
* 10mm ball stud

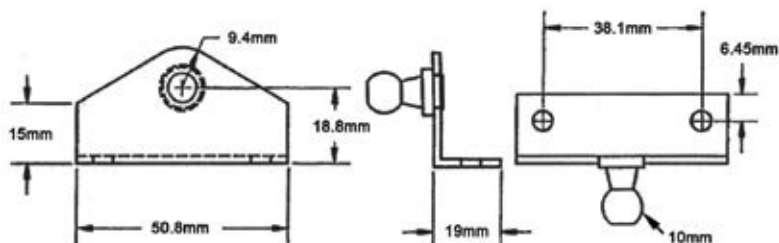
*5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR02S	Stainless Steel	BR11
EFBR02Z	Zinc Plated	BR05

* 3mm thick material
* 10mm ball stud

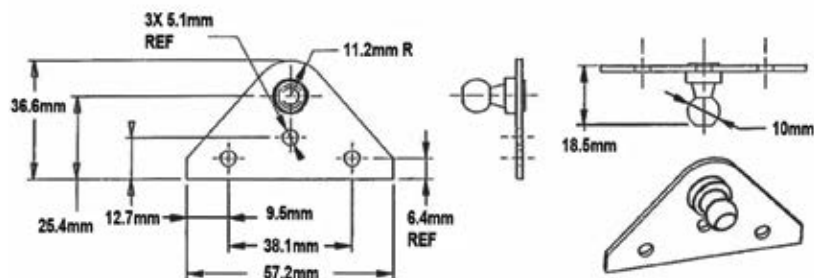
*5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR03S	Stainless Steel	BR08
EFBR03Z	Zinc Plated	BR02

* 2mm thick material
* 10mm ball stud

*5.1mm Dia. mounting holes



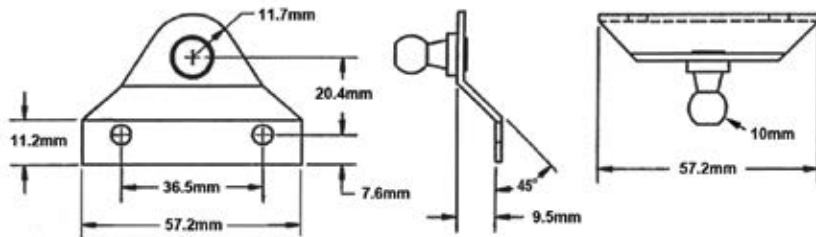
Part Number	Material	PG
EFBR04S	Stainless Steel	BR08
EFBR04Z	Zinc Plated	BR04

* 2mm thick material
* 10mm ball stud

*5.1mm Dia. mounting holes



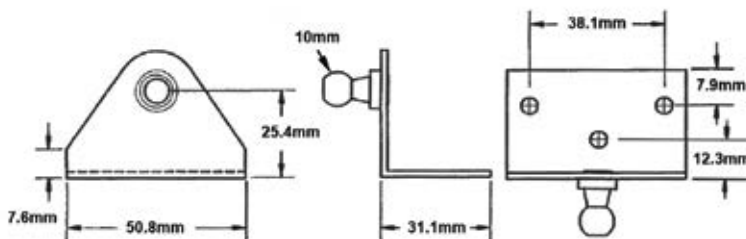
Gas Strut Mounting Hardware



Part Number	Material	PG
EFBR05S	Stainless Steel	BR24

* 2.5mm thick material
* 10mm ball stud

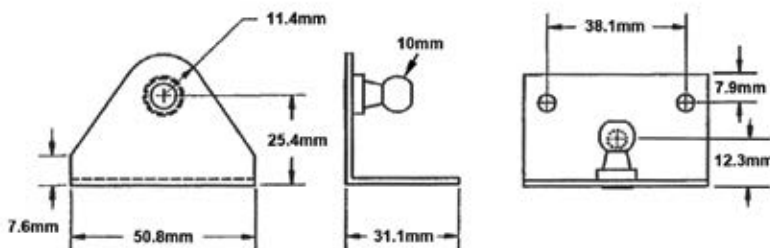
*5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR06S	Stainless Steel	BR10
EFBR06Z	Zinc Plated	BR03

* 3mm thick material
* 10mm ball stud

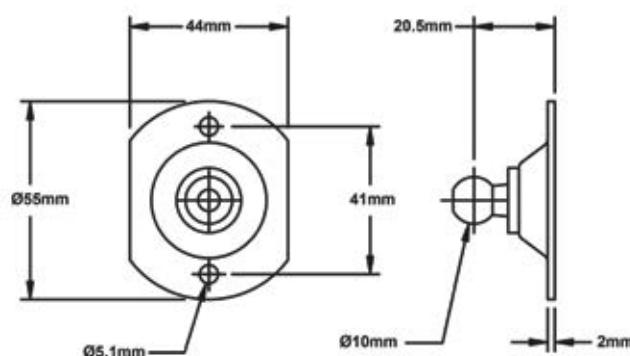
*5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR07S	Stainless Steel	BR12
EFBR07Z	Zinc Plated	BR01

* 3mm thick material
* 10mm ball stud

*5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR08S	Stainless Steel	BR23
EFBR08Z	Zinc Plated	BR20

* 2mm thick material
* 10mm ball stud

*5.1mm Dia. mounting holes

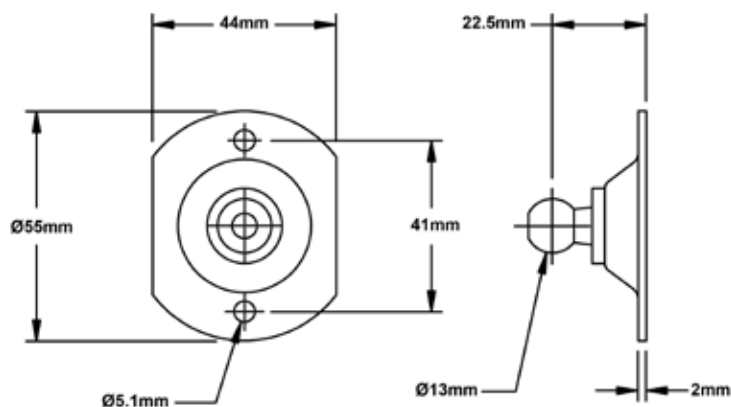


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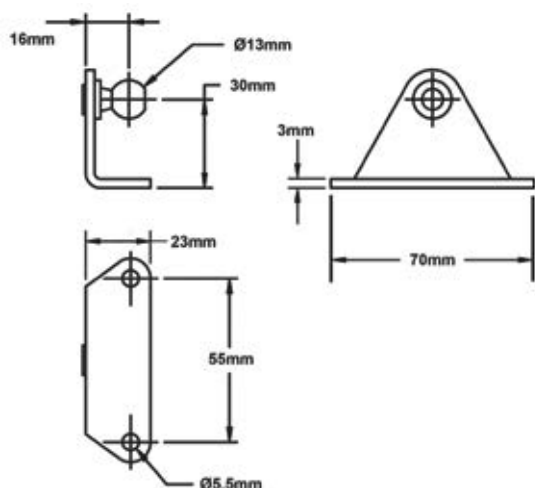
Gas Strut Mounting Hardware



Part Number	Material	PG
EFBR09S	Stainless Steel	BR23
EFBR09Z	Zinc Plated	BR22

* 2mm thick material
* 13mm ball stud

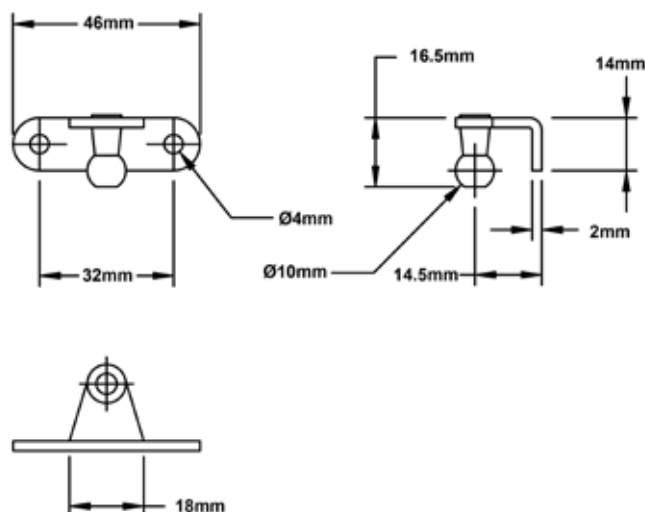
* 5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR10Z	Zinc Plated	BR21

* 3mm thick material
* 13mm ball stud

* 5.5mm Dia. mounting holes

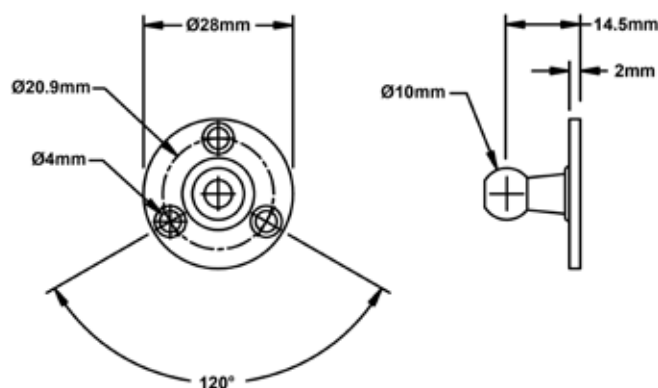


Part Number	Material	PG
EFBR12S	Stainless Steel	BR13
EFBR12Z	Zinc Plated	BR07

* 2mm thick material
* 10mm ball stud

* 4.0mm Dia. mounting holes

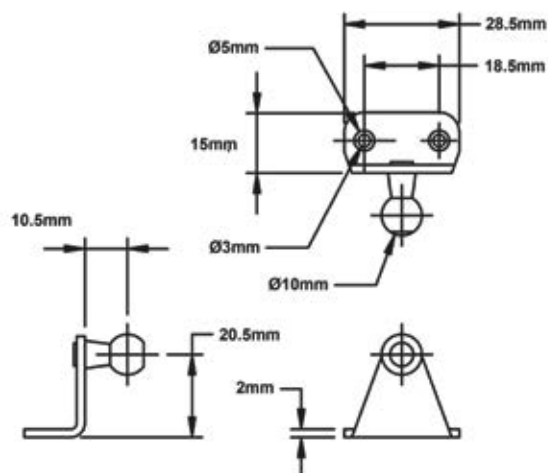
Gas Strut Mounting Hardware



Part Number	Material	PG
EFBR13S	Stainless Steel	BR14
EFBR13Z	Zinc Plated	BR06

* 2mm thick material
* 10mm ball stud

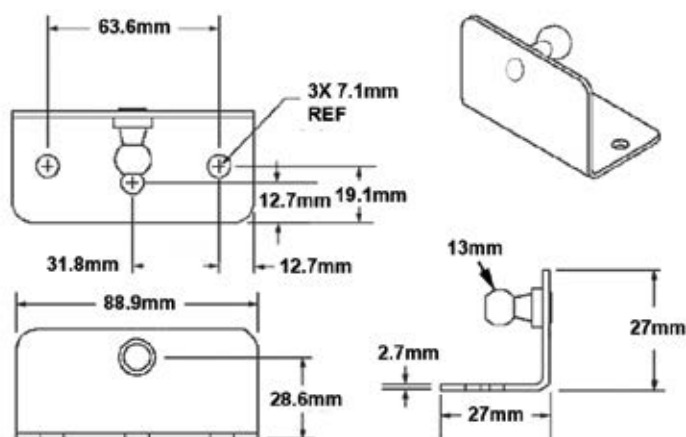
* 4.0mm Dia. mounting holes



Part Number	Material	PG
EFBR14Z	Zinc Plated	BR06

* 2mm thick material
* 10mm ball stud

* 3.0mm Dia. mounting holes



Part Number	Material	PG
EFBR16S	Stainless Steel	BR15
EFBR16Z	Zinc Plated	BR12

* 3mm thick material
* 13mm ball stud

* 7.1mm Dia. mounting holes

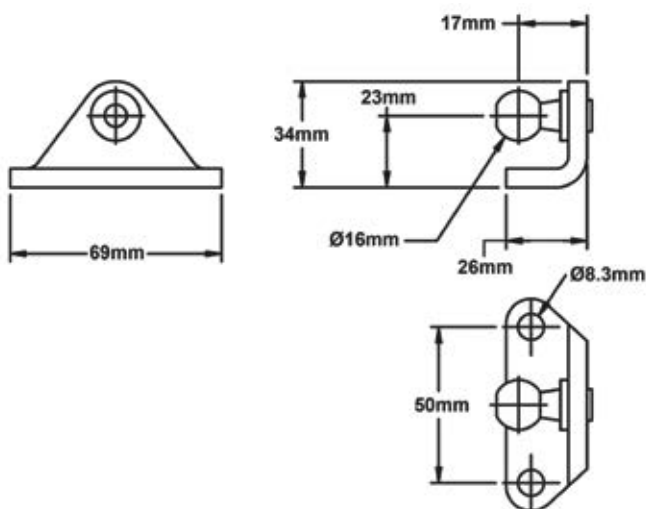


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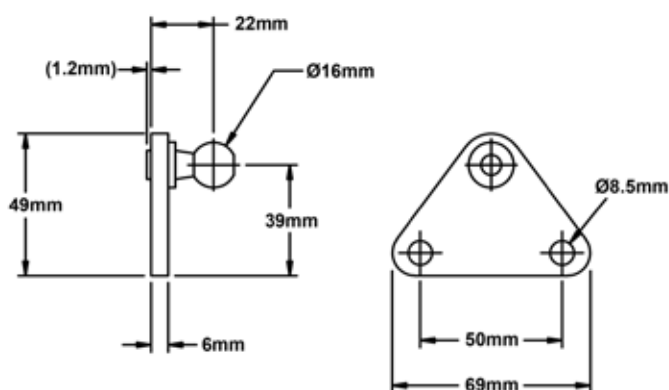
Gas Strut Mounting Hardware



Part Number	Material	PG
EFBR26S	Stainless Steel	BR19
EFBR26Z	Zinc Plated	BR17

* 6mm thick material
* 16mm ball stud

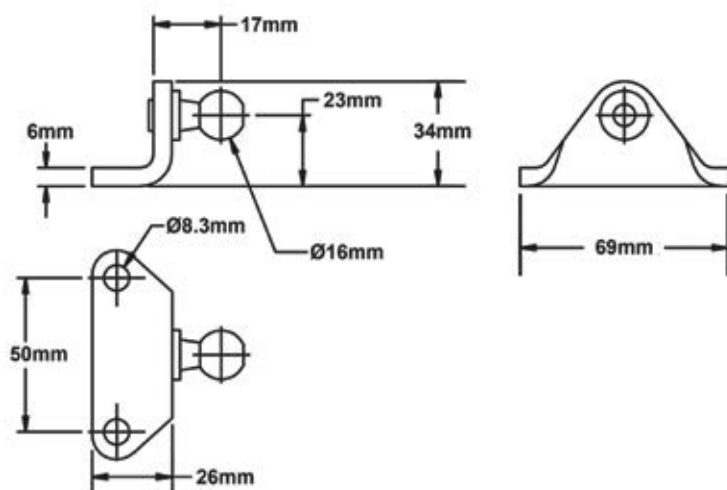
* 8.3mm Dia. mounting holes



Part Number	Material	PG
EFBR27S	Stainless Steel	BR18
EFBR27Z	Zinc Plated	BR16

* 6mm thick material
* 16mm ball stud

* 8.5mm Dia. mounting holes

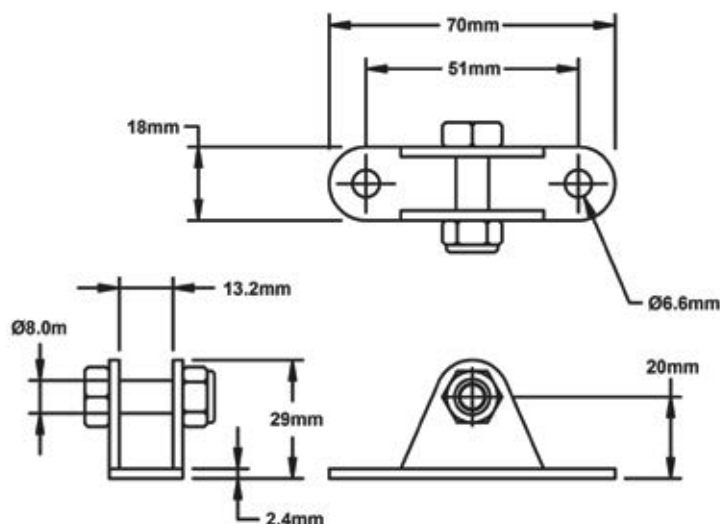


Part Number	Material	PG
EFBR28S	Stainless Steel	BR19
EFBR28Z	Zinc Plated	BR17

* 6mm thick material
* 16mm ball stud

* 8.3mm Dia. mounting holes

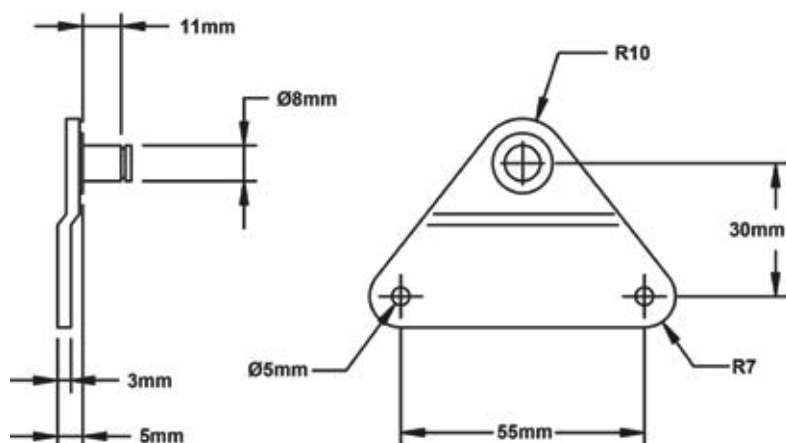
Gas Strut Mounting Hardware



Part Number	Material	PG
EFBR15S	Stainless Steel	BR25
EFBR15Z	Zinc Plated	BR26

* 2.4mm thick material
* 8mm Dia. Spigot

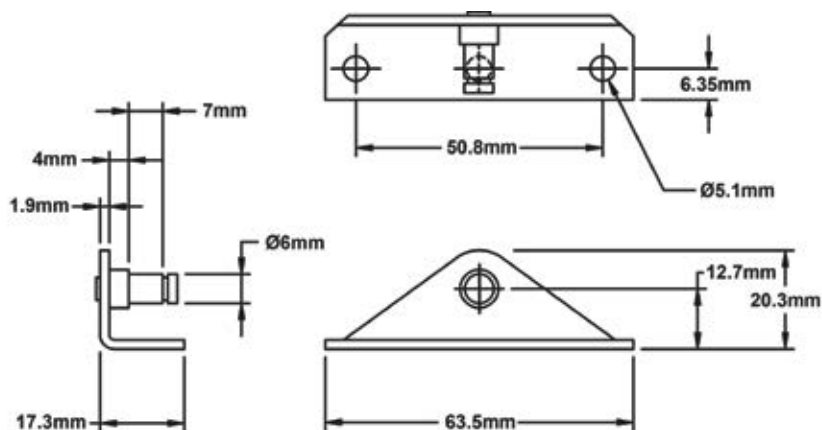
* 6.6mm Dia. mounting holes



Part Number	Material	PG
EFBR17S	Stainless Steel	BR27
EFBR17Z	Zinc Plated	BR28

* 3mm thick material
* 8mm Dia. Spigot

* 5mm Dia. mounting holes



Part Number	Material	PG
EFBR19S	Stainless Steel	BR29
EFBR19Z	Zinc Plated	BR30

* 1.9mm thick material
* 6mm Dia. Spigot

* 5.1mm Dia. mounting holes

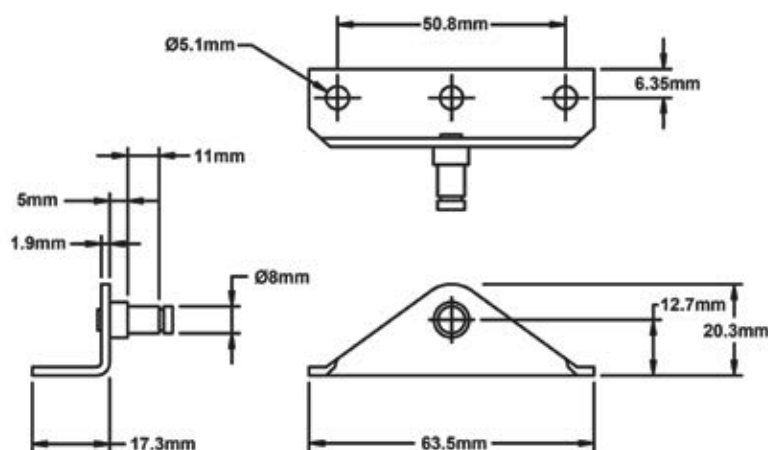


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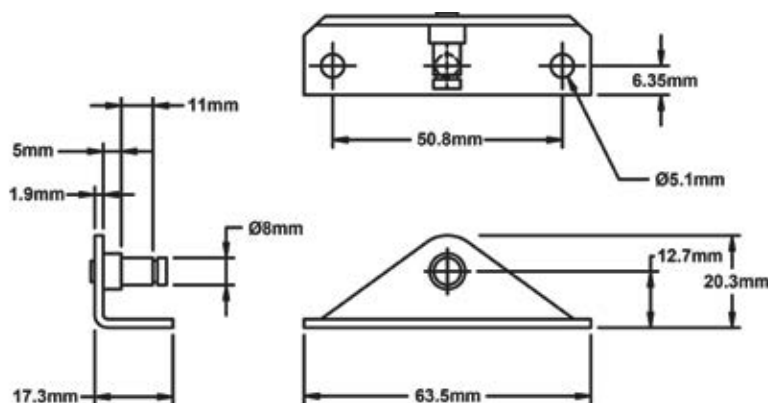
Gas Strut Mounting Hardware



Part Number	Material	PG
EFBR20S	Stainless Steel	BR31
EFBR20Z	Zinc Plated	BR32

* 1.9mm thick material
* 8mm Dia. Spigot

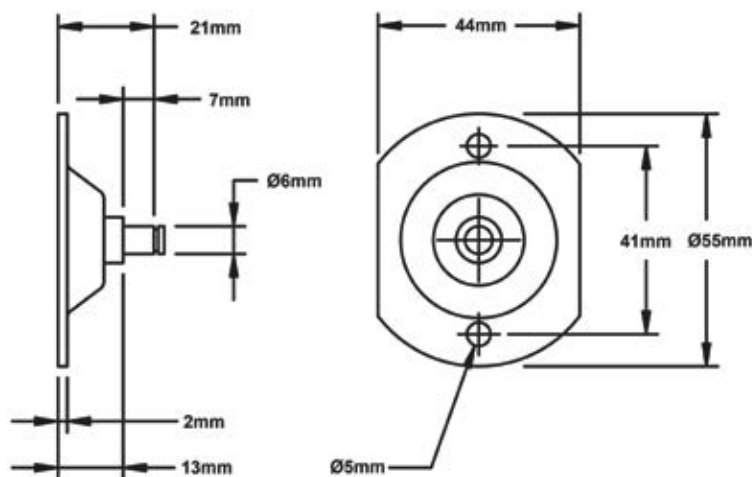
* 5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR21S	Stainless Steel	BR33
EFBR21Z	Zinc Plated	BR34

* 1.9mm thick material
* 8mm Dia. Spigot

* 5.1mm Dia. mounting holes



Part Number	Material	PG
EFBR22S	Stainless Steel	BR35
EFBR22Z	Zinc Plated	BR36

* 2mm thick material
* 6mm Dia. Spigot

* 5mm Dia. mounting holes





Further information...

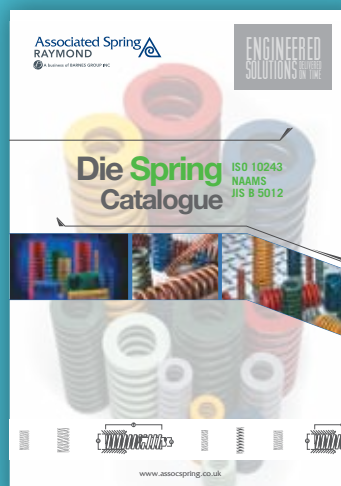


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