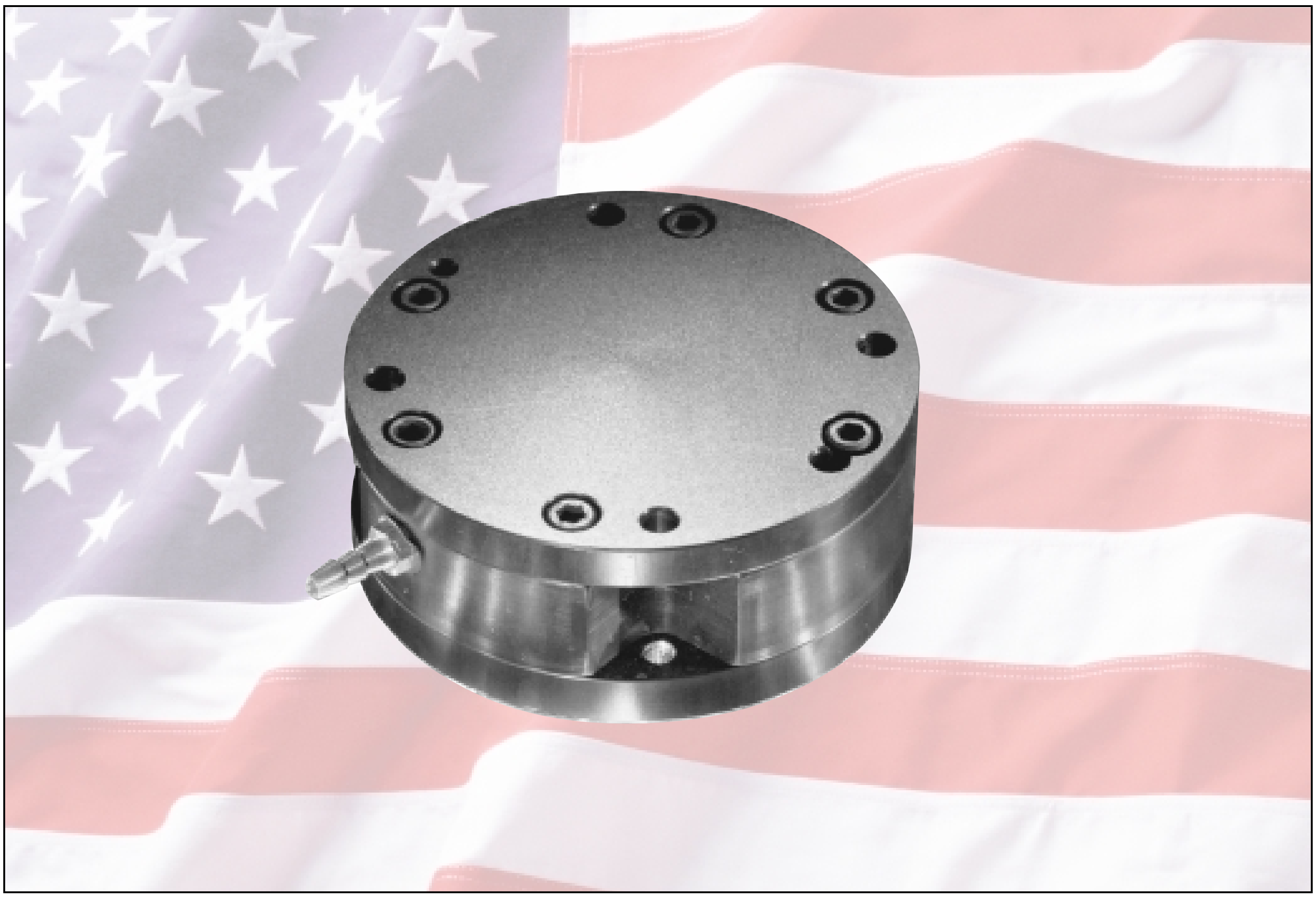
Alignment Devices



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Alignment Devices

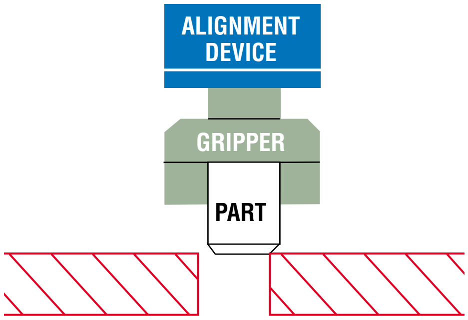
Spring Loaded and Pneumatic

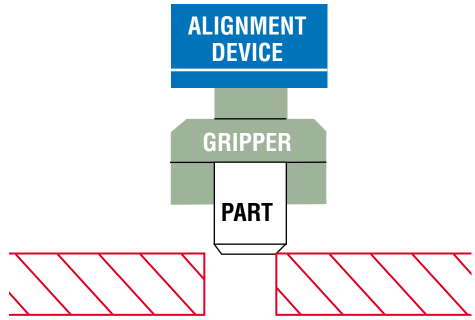
Operating Principle

The Alignment Device provides lateral and rotational motion resulting from externally applied forces. It utilizes a series of bearings which ride on hardened ground rings offering long life and wear resistance to the unit. Mechanical springs or pneumatic pistons provide the means of resistance.

Features

- Available in three basic spring model sizes and four pneumatic model sizes ranging from 3″ to 8″ in diameter.
- Compensates for both lateral and rotary misalignments between parts.
- Utilizes springs or pneumatic pistons as the means of force resistance which offer greater durability than elastomers.
- Provides no compression making it ideal for applications requiring moderate insertion forces through the center line of unit.
- Positive stops protect against overload in all directions.
- Heavy-duty bearings on hardened surfaces minimize wear.
- Offers ±5 degrees of rotation and ±0.10″ lateral movement for misalignments.
- The pneumatic version alignment device may be used without air for smooth compliance with little resistance. Air may then be supplied to self-center and provide rigidity for repositioning.
- Completely field repairable for minimum downtime.
- Constructed of anodized aluminum and hardened steel for high strength and light weight.
- Due to the reduction of parts wedging, downtime and machine wear are reduced and assembly speed is increased.
- Adapter plates are available for any robot model or end effector.





RAD Alignment Devices are used in a variety of applications

RAD Alignment Devices are used in a variety of applications. This device is well suited for misalignments due to inconsistent fixture locations, shifting parts and irregular part tolerances. We recommend a lead chamfer on parts and fixtures to act as a guide during insertion. Sharp edges can limit the function of the device. Below are several real life examples of use of the Alignment Device.

- Inserting caps into compressor housings – RAD's pneumatic Alignment Device mounted to a 3-Jaw chuck offers lateral compliance during manual insertion of large bearing caps. The reduced cycle time has generated significant cost savings.
- Reduced set up time in automated Plastic Injection Molding lines. – RAD's Alignment Devices mounted to gantry style robots (pickers) reduced down time. The need to accurately repeat the rotational position of molds was eliminated. Several hours of scheduled down time were saved per week.
- Compensating for irregularities in material removal – RAD's Alignment Device mounted to a 40-KG 6-Axis robot compensates for burr irregularity and belt wear in the grinding and deburring of motor cycle windshields. Set up and cycle times were improved while material costs were reduced.
- Light insertion of components during assembly of appliances – RAD's pneumatic Alignment Device is used to locate, then lightly press dials onto consumer goods in a fixed automation process. Cycle times and scrap were reduced.

Ordering Information:

To size the unit, you will need to provide system payload, additional loads (i.e. insertion forces), maximum acceleration or deceleration of robot, center of gravity of part and tooling in the x, y and z axis. Using the sizing information on the following pages, select the model number you need based on your application requirements.

2D Drawings and 3D Models of all the Alignment Devices are available on our website: www.robotic-accessories.com.

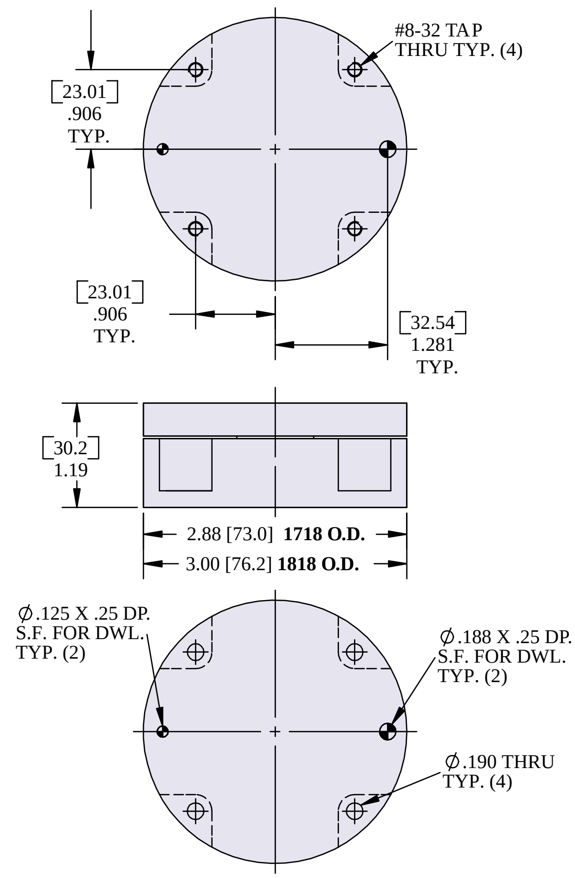
Not sure if this unit is what you need? Try an Alignment Device on Consigment. Contact Robotic Accessories Sales Team for details.

MODELS 1718 Spring-Loaded
1818 Pneumatic

Specifications

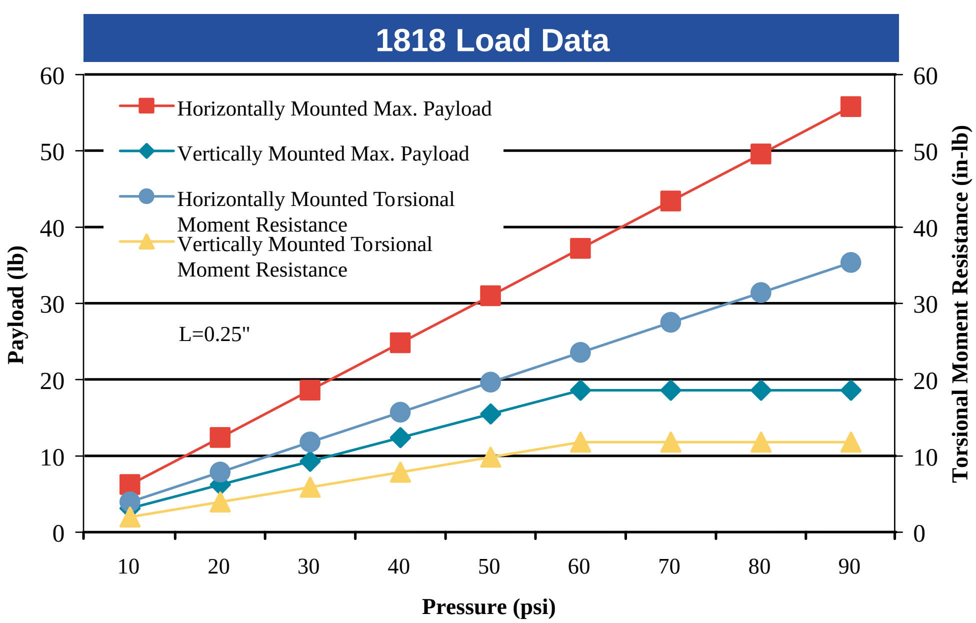
Unit Weight . . . . 1 lb.
Maximum Lateral Misalignment . . . . ±0.10 in.
Maximum Rotary Misalignment. . . . . ±5°

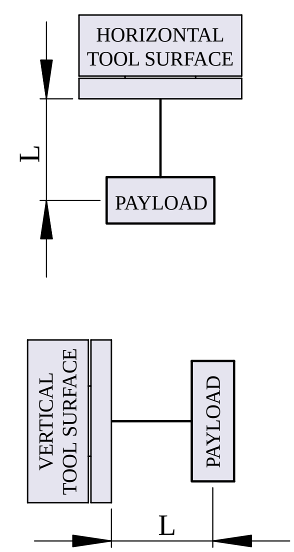
	Unit Horizontal		Unit Vertical	
Model #	Max Payload	Torsional Resistance	Max Payload	Torsional Resistance
	lb	in-lb	lb	in-lb
1718 B	14.5	13.0	4.8	3.1
1718 C	23.4	21.0	7.8	5.1
1818 S	55.8 @90 psi	35.3 @90 psi	18.6 @60 psi	11.8 @60 psi



To find Total Payload:

SL	=	Static Payload	=	Mass of all tooling & parts
DL	=	Dynamic Payload	=	Max. Accel/Decel (G's) x SL
TL	=	Total Payload	=	SL + DL



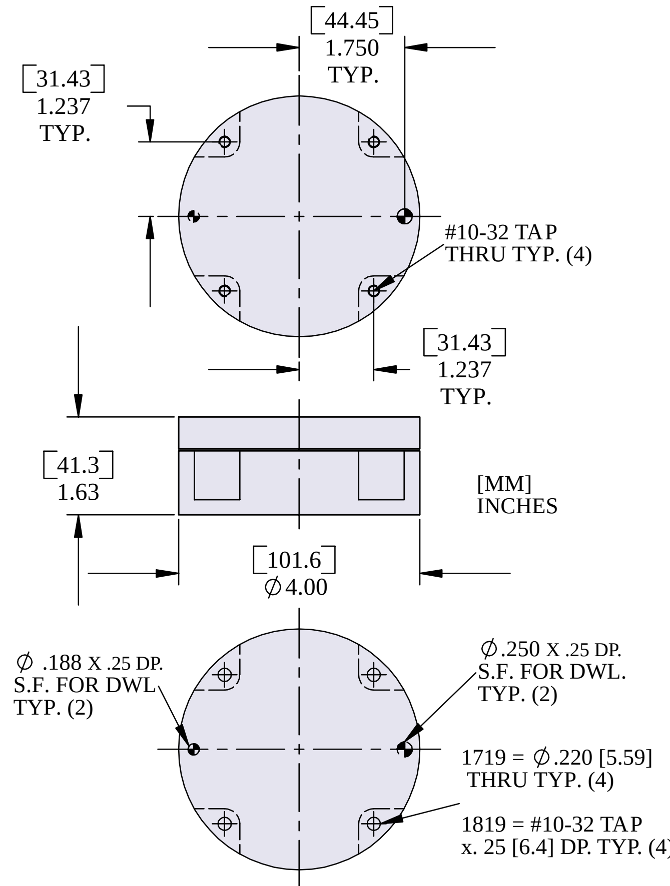


MODELS 1719 Spring-Loaded
1819 Pneumatic

Specifications

Unit Weight . . . . 2.5 lbs.
Maximum Lateral Misalignment . . . . ±0.10 in.
Maximum Rotary Misalignment. . . . . ±5°

	Unit Horizontal		Unit Vertical	
Model #	**Max Payload**	**Torsional Resistance**	**Max Payload**	**Torsional Resistance**
	lb	**in-lb**	**lb**	**in-lb**
1719 A	21.8	22.0	7.3	7.2
1719 B	50.8	55.0	17.1	16.6
1719 C	65.9	71.0	22.1	21.6
1819 S	100.0 @90 psi	91.3 @90 psi	33.6 @60 psi	30.7 @60 psi



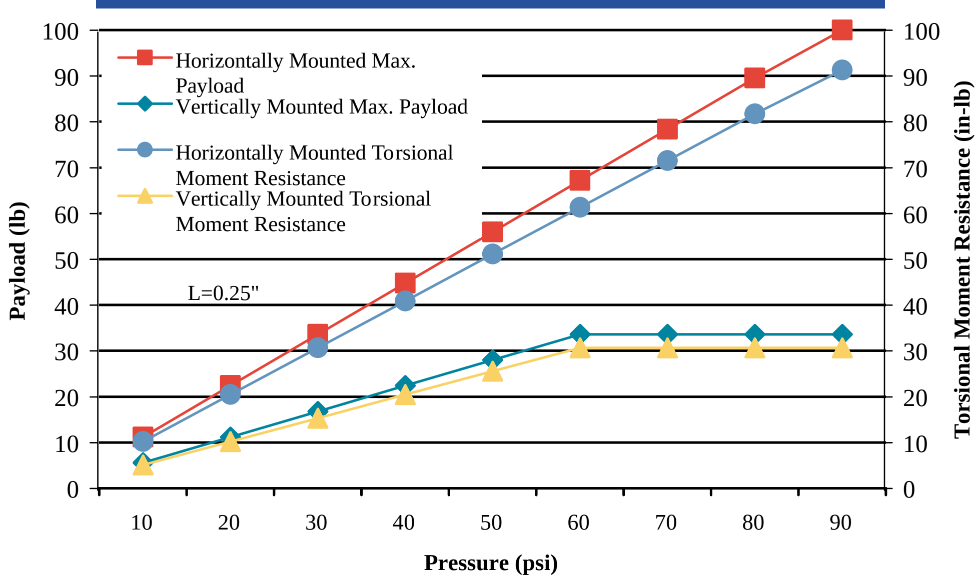
To find Total Payload:

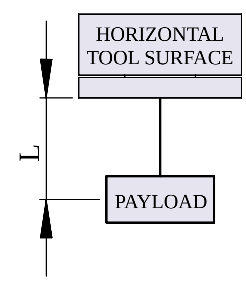
SL = Static Payload = Mass of all tooling & parts

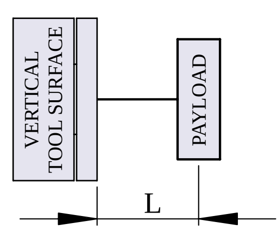
DL = Dynamic Payload = Max. Accel/Decel (G's) x SL

TL = Total Payload = SL + DL

1819 Load Data





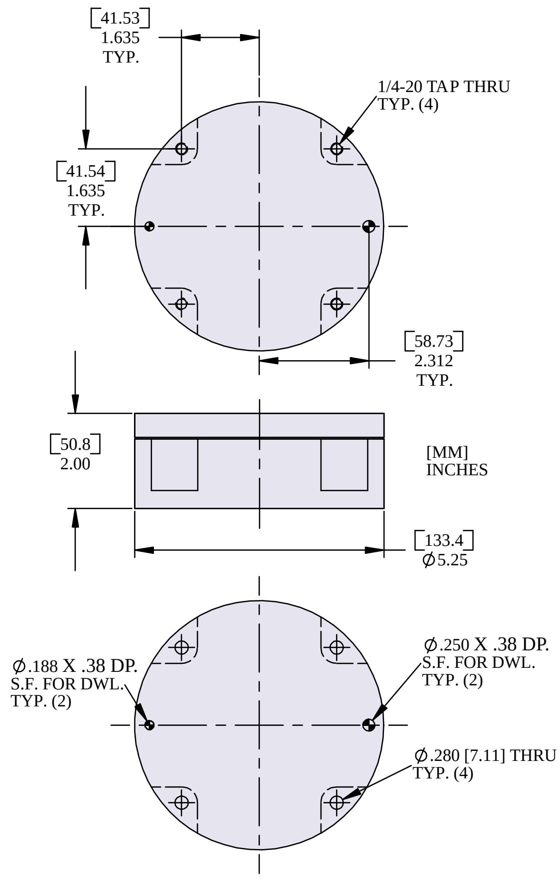


MODELS 1720 Spring-Loaded
1820 Pneumatic

Specifications

Unit Weight . . . . 6.5 lbs.
Maximum Lateral Misalignment . . . . ±0.10 in.
Maximum Rotary Misalignment. . . . . ±5°

	Unit Horizontal		Unit Vertical	
Model #	Max Payload	Torsional Resistance	Max Payload	Torsional Resistance
	lb	in-lb	lb	in-lb
1720 A	24.4	29.0	11.0	13.1
1720 B	47.0	56.0	14.1	16.8
1720 C	76.4	90.0	22.9	27.3
1820 ZR	149.1 @90 psi	172.2 @90 psi	44.7 @90 psi	51.7 @90 psi



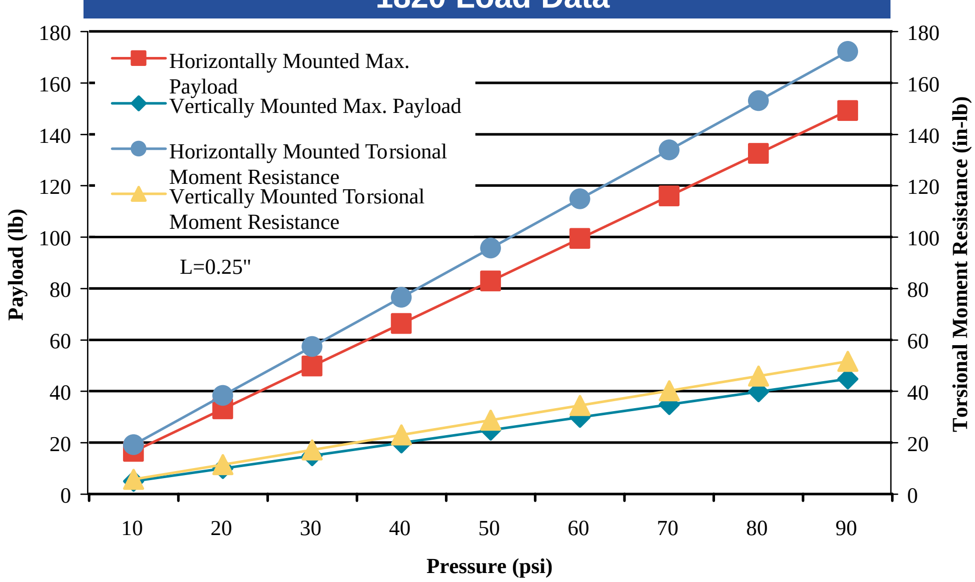
To find Total Payload:

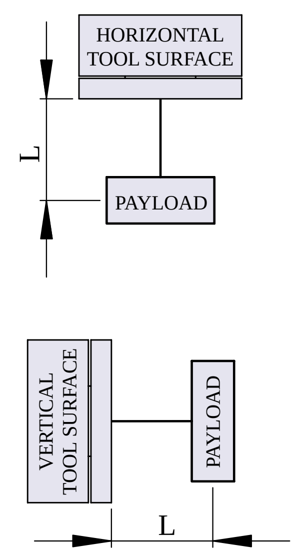
SL = Static Payload = Mass of all tooling & parts

DL = Dynamic Payload = Max. Accel/Decel (G's) x SL

TL = Total Payload = SL + DL

1820 Load Data



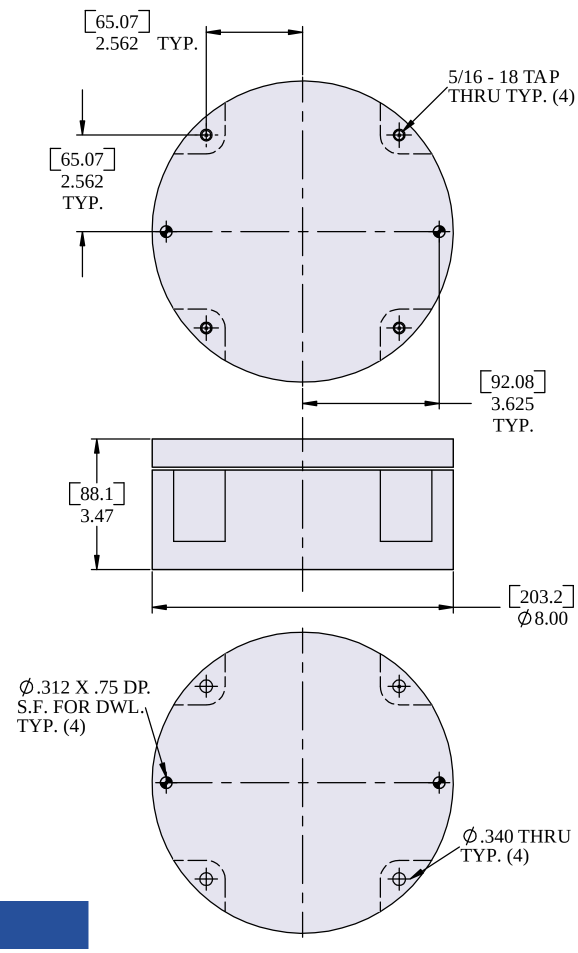


MODEL 1822 Pneumatic

Specifications

Unit Weight . . . . 23 lbs.
Maximum Lateral Misalignment . . . . ±0.10 in.
Maximum Rotary Misalignment. . . . . ±5°

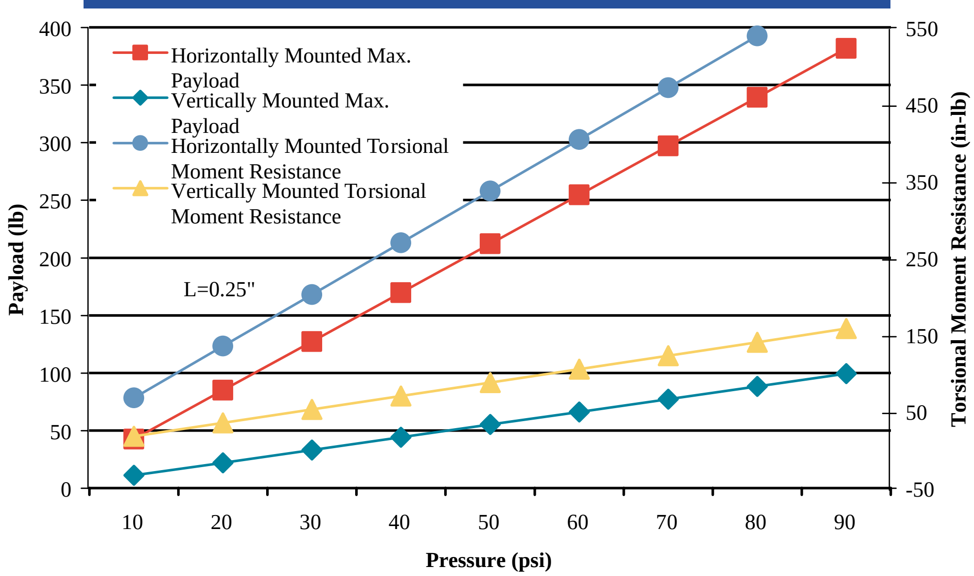
	Unit Horizontal		Unit Vertical	
Model #	Max Payload	Torsional Resistance	Max Payload	Torsional Resistance
	lb	in-lb	lb	in-lb
1822 ZR @90 psi	381.7	606.0	99.2	157.6

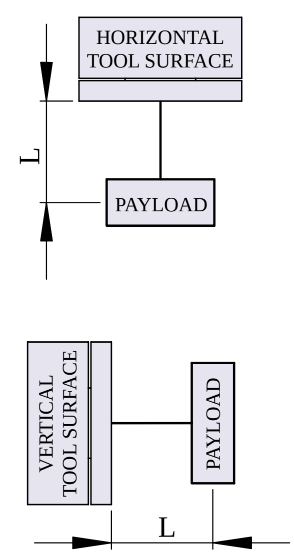


To find Total Payload:

SL = Static Payload = Mass of all tooling & parts
DL = Dynamic Payload = Max. Accel/Decel (G's) x SL
TL = Total Payload = SL + DL

1822 Load Data





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