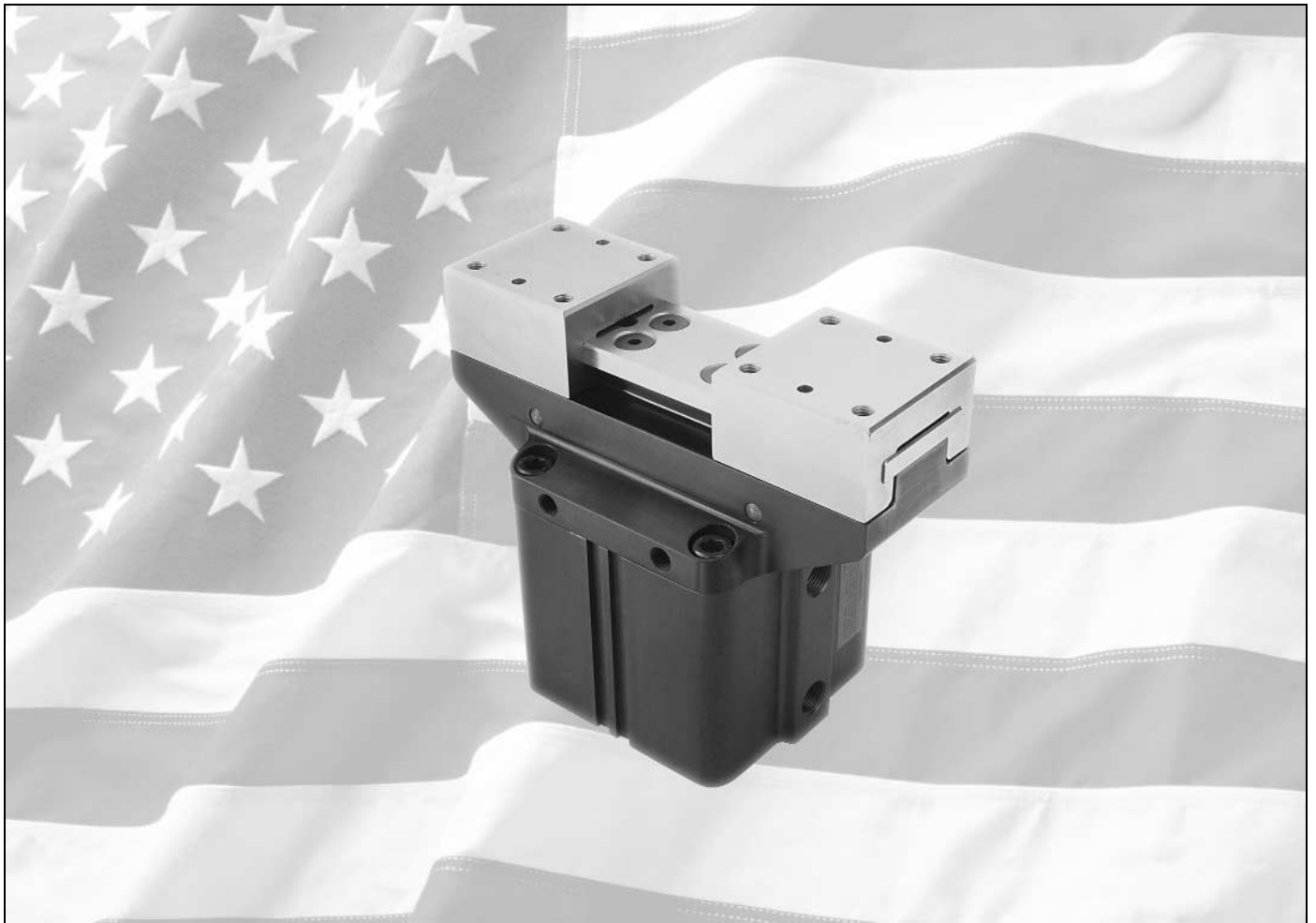


Square Jaw Brute™ Parallel Grippers & COLLET GRIPPERS



RAAD

ROBOTIC ACCESSORIES DIVISION

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ROBOTIC ACCESSORIES DIVISION

6555 State Route 202 • Tipp City, Ohio 45371

937-667-5705 • FAX: 937-667-7602

Square Jaw Brute™ Parallel Grippers

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Collet Grippers Page 16



Robotic Accessories

Square Jaw Brute™ Parallel Grippers

Operating Principle

True Parallel Motion of the fingers is achieved through a toggle mechanism linking the piston of the double acting pneumatic cylinder to the jaws. The jaws remain syn-

chronous and parallel through the normal motion of the piston. This parallel motion provides a consistent grip force throughout the range the stroke.

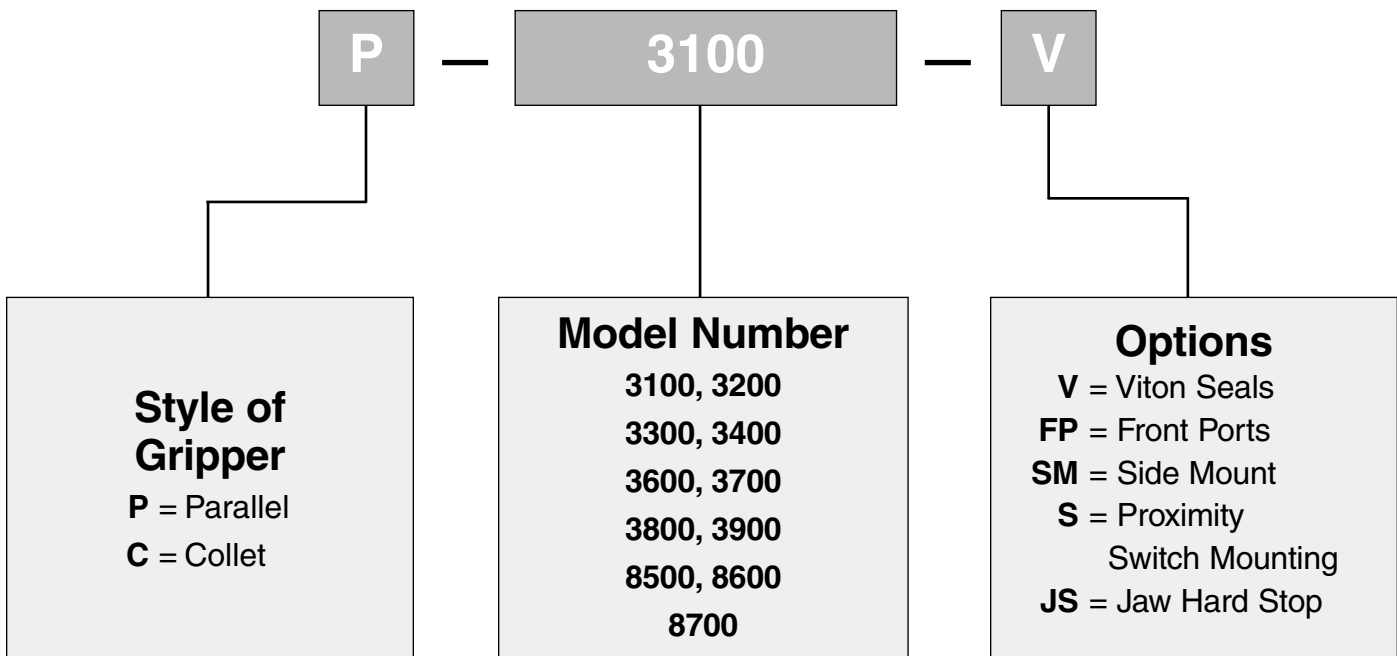
Features

- The Square Jaw Brute™ is field repairable for minimum downtime. Most replacement parts are available the same day, to be shipped from our facility.
- The Square Jaw Brute™ Gripper has been designed to provide long life with trouble free operation. Beta test site applications have achieved over 10 million loaded cycles with minimal wear. Actual life cycle of the gripper may vary depending on the application, maintenance and environment. Contact our Technical Sales department for actual case studies.
- The customer interface mounting holes are metric. See specific model in the catalog for sizes and locations.
- Hardened tool steel wear surfaces allow the Square Jaw Brute™ to operate for millions of cycles in dirty environments where anodized aluminum wear surfaces have failed.
- The cylinders come standard with a magnetic piston which enables mid-stroke signaling and exact end of stroke sensing. A sensor can be positioned anywhere in any of the standard 6 dovetail slots and is locked into position with an integral screw. Multiple sensors can be installed in one or more of the dovetails. Sensors are ordered separately (see Sensor section).
- Standard seals are internally lubricated modified Buna N O-rings. All units are factory lubricated with Magnalube®-G (a grease loaded with microscopic size particles of TFE in suspension). This combination has been found suitable for long life in most non-lube service applications.

Application Guidelines

- The maximum load the gripper can handle will vary based on the size, shape and texture of the part, texture and shape of the fingers, acceleration and speed of the system and air line pressure.
- Design the tooling fingers as short as possible to maximize grip force and extend the life of the gripper. See loading charts specific to each gripper.
- All grippers are factory lubricated for service under normal operating conditions. Periodic lubrication of the slide and jaws is required. The frequency is dependent on the application and environmental conditions.
- The gripper is designed for use in temperatures from -25°F to 250°F (-32°C to 121°C). Viton Seals are optional for high temperature environments (up to 400°F/204°C) and are resistant to many hostile fluids.
- A four way solenoid valve is required to control the gripper.
- Always key and/or dowel fingers onto the jaws.
- The grip force can be adjusted by varying the air pressure.
- Use dry air only, not to exceed 120 psi/8.3 bar.

How to Order



Options

Viton Seals (-V) these seals are optional for high temperature environments (up to 400°F/204°C) and are resistant to many hostile fluids.

Front Ports (-FP) The location of the air ports can be rotated in 90° increments relative to the jaws at your request.

Side Mounting (-SM) A side mounting plate is available for all 2 Jaw Square Jaw Brute™ Grippers.

Proximity Switches (-S) Proximity Switches thread directly into the housing of the gripper

offering protection from dirt and debris. Contact Robotic Accessories for model availability.

Hard Stop (-JS) A pneumatically actuated hard stop is available at any location along the stroke in the close direction on 2 jaw models. This creates a third close/open position. Contact Robotic Accessories for model availability.

Adapter Plates can be ordered separately and are available for any model.

Sensors

Sensors are mounted in the dovetail slots in the wall of the gripper cylinder. They are actuated by the magnetic piston. The sensors are 1/4" with a 3/8" boot and can be mounted in or removed from the gripper at any time. These sensors are encased in a plastic housing

and are corrosion resistant. The 45° wire outlet allows close mounting. Each sensor is furnished complete with a hex socket screw, mounting clamp and a hex wrench for secure installation. The table below lists the sensor specifications and ordering information.

Ordering Guide – Dovetail Style Magnetic Sensors

Sensor Type	Prewired 9 ft. Part No.	Quick Disconnect Part No.*	Wire Leads	LED	Electrical Characteristics	
Electronic	4008	4009	3	Yes	Sourcing PNP 6-24 VDC, 0.20 Amp Max Current 0.5 Voltage Drop	<p>Do Not Reverse Polarity Brown 6-24 VDC (+) Black (-) Blue (-) Electronic Sensor Sourcing</p> <p>Do Not Reverse Polarity Brown 6-24 VDC (+) Black (-) Blue (-) Electronic Sensor Sinking</p> <p>Brown (DC+) Blue (DC-) Reed Switch with LED</p>
Electronic	4010	4011	3	Yes	Sinking NPN 6-24 VDC, 0.20 Amp Max Current 0.5 Voltage Drop	
Reed	4015	4016	2	Yes	5-120 VDC/VAC, 0.03 Amp Max current, 4 Watt Max, 2.0 Voltage Drop	

*Quick Disconnect Styles are supplied with 6 inch pigtail with male connector. Order Female cordsets separately.

Female Cordsets for Quick Disconnect

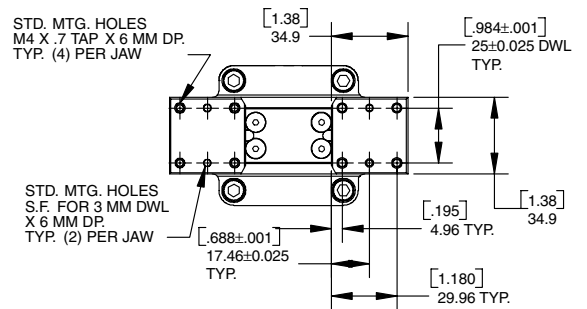
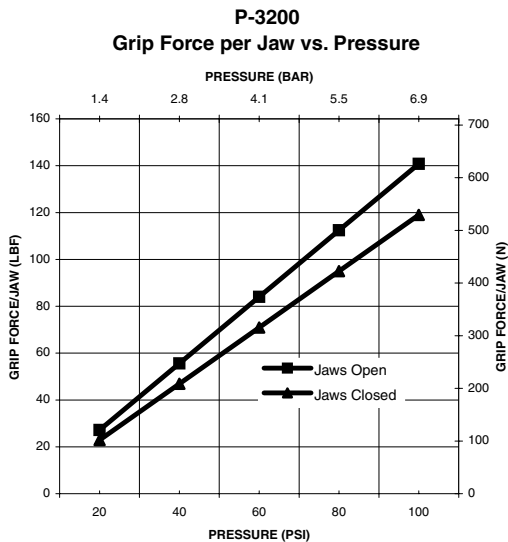
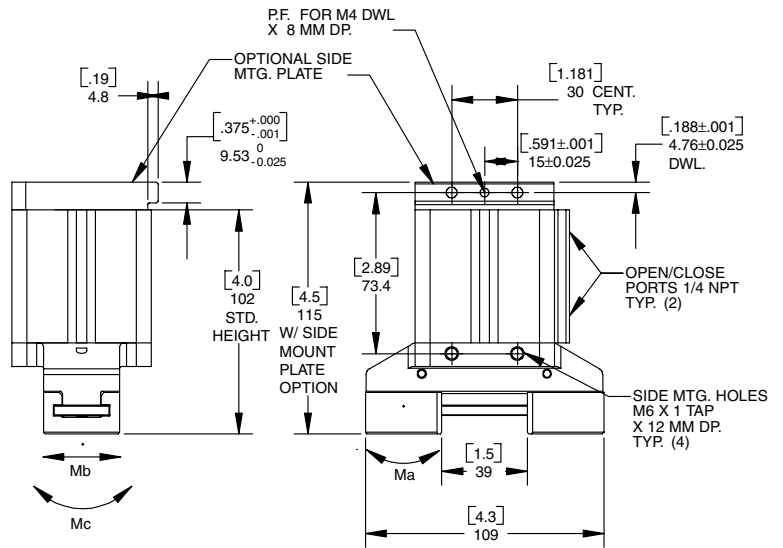
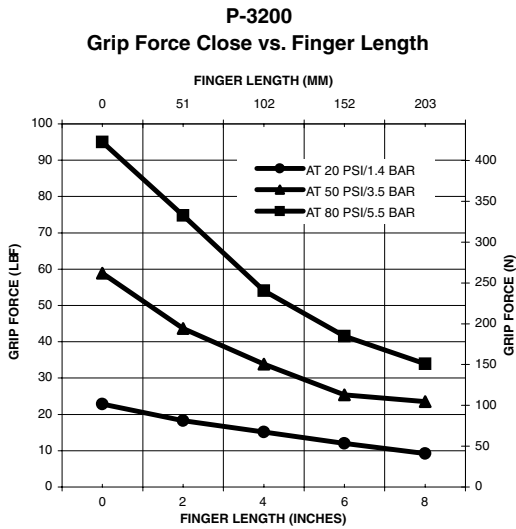
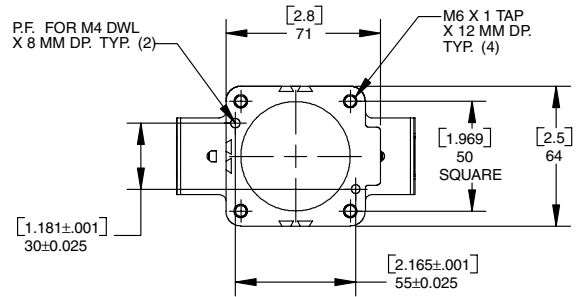
Length	1 Meter	2 Meters	5 Meters
Part No.	4012	4013	4014

Temperature range for Sensors: -4° to +176°F / -20° to +80°C

MODEL P-3200

Specifications

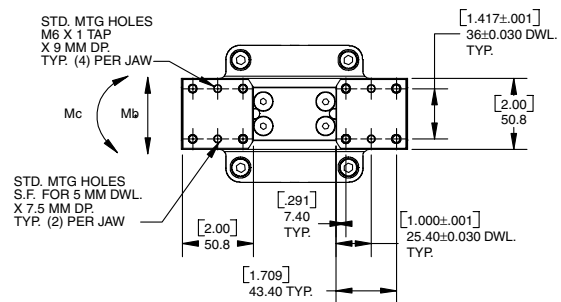
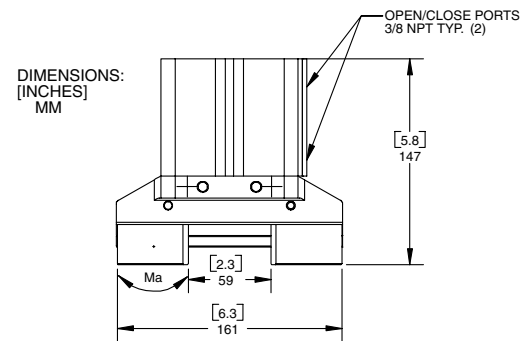
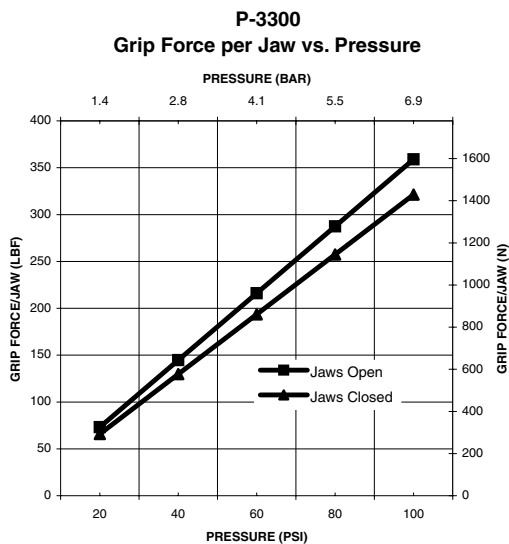
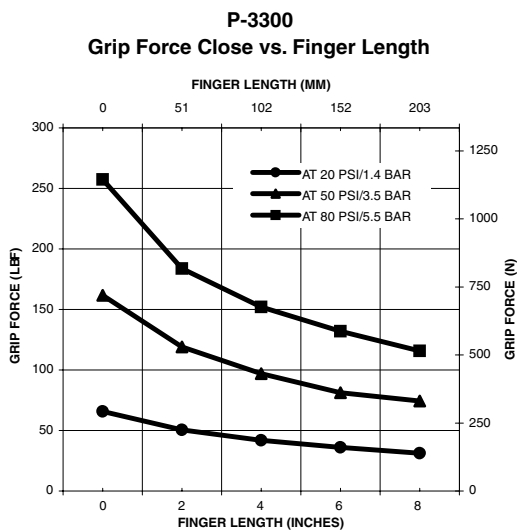
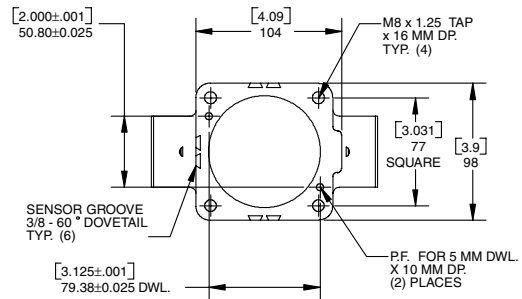
Total Stroke 39 mm (1.5 in)
 Total Grip Force at 6.2 bar/90 psi
 Open 1126 N (254 lbf)
 Close 952 N (214 lbf)
 Grip Force per Jaw at 6.2 bar/90 psi
 Open 563 N (127 lbf)
 Close 476 N (107 lbf)
 Mass 1.1 kg (2.4 lb)
 Bore Diameter 50 mm (1.97 in)
 Max. Operating Pressure 8.3 bar (120 psi)



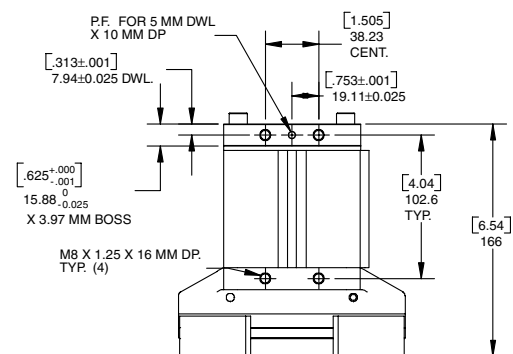
MODEL P-3300

Specifications

Total Stroke 60 mm (2.4 in)
 Total Grip Force at 6.2 bar/90 psi
 Open 2876 N (626 lbf)
 Close 2574 N (578 lbf)
 Grip Force per Jaw at 6.2 bar/90 psi
 Open 1438 N (323 lbf)
 Close 1287 N (289 lbf)
 Mass 3.0 kg (6.6 lb)
 Bore Diameter 80 mm (3.15 in)
 Max. Operating Pressure 8.3 bar (120 psi)



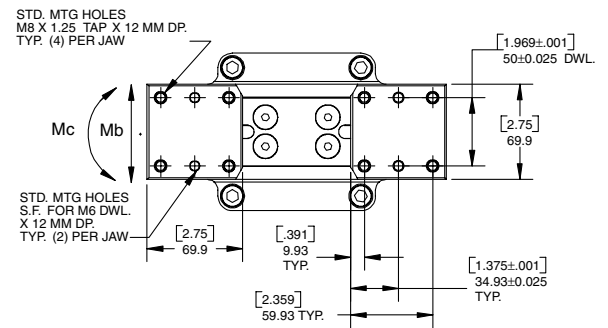
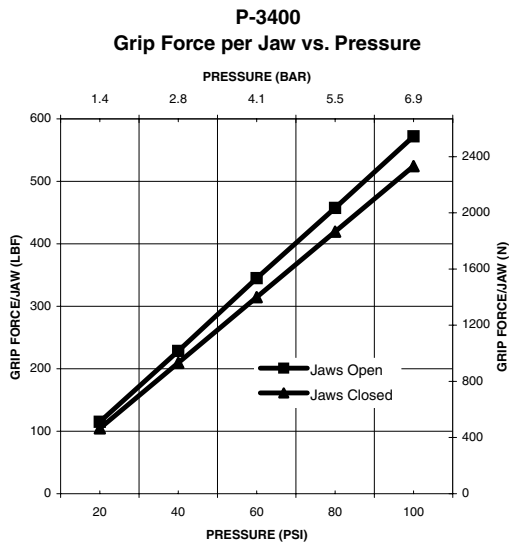
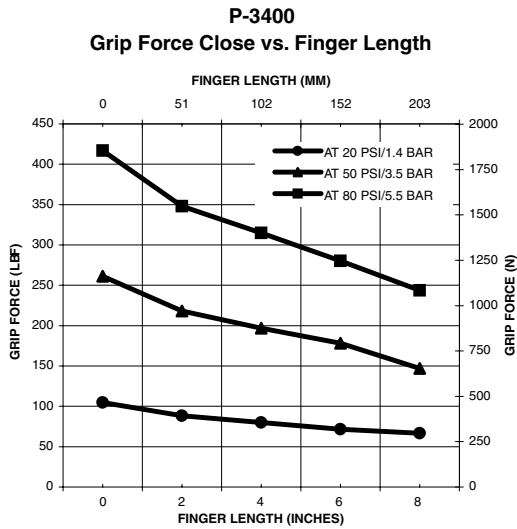
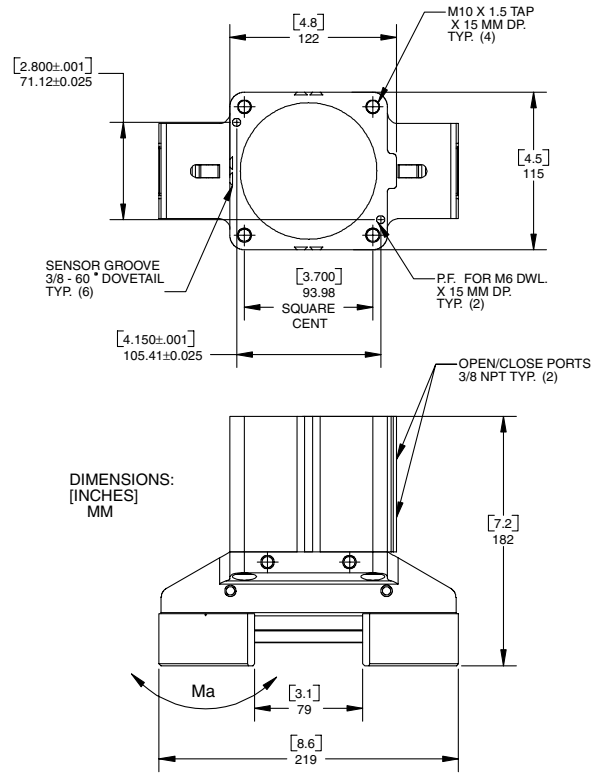
SIDE MOUNT VIEW



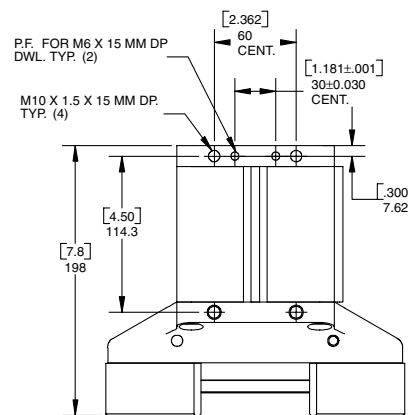
MODEL P-3400

Specifications

Total Stroke	75 mm (3.0 in)
Total Grip Force at 6.2 bar/90 psi	
Open	4580 N (1030 lbf)
Close	4198 N (940 lbf)
Grip Force per Jaw at 6.2 bar/90 psi	
Open	2290 N (515 lbf)
Close	2099 N (470 lbf)
Mass	7.0 kg (15.5 lb)
Bore Diameter	100 mm (3.94 in)
Max. Operating Pressure	8.3 bar (120 psi)



SIDE MOUNT VIEW

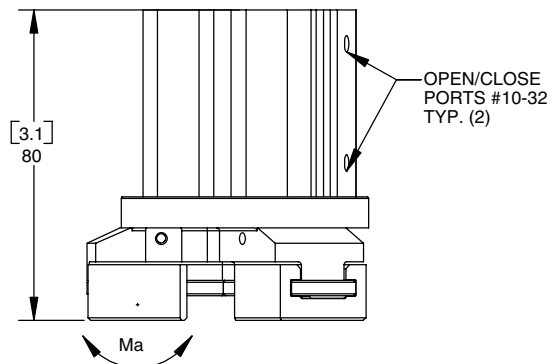
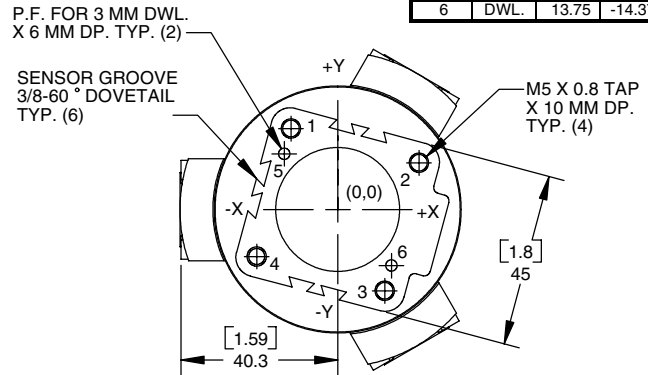


MODEL P-3600

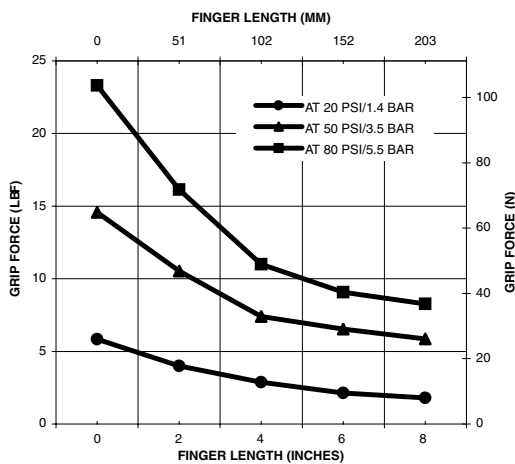
Specifications

Total Stroke 9.4 mm (0.37 in)
 Total Grip Force at 6.2 bar/90 psi
 Open 466 N (104 lbf)
 Close 350 N (78 lbf)
 Grip Force per Jaw at 6.2 bar/90 psi
 Open 155 N (35 lbf)
 Close 117 N (26 lbf)
 Mass 0.7 kg (1.5 lb)
 Bore Diameter 32 mm (1.26 in)
 Max. Operating Pressure 8.3 bar (120 psi)

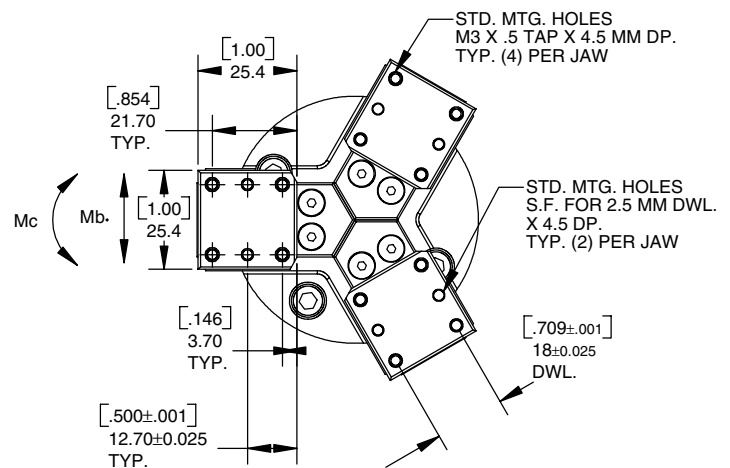
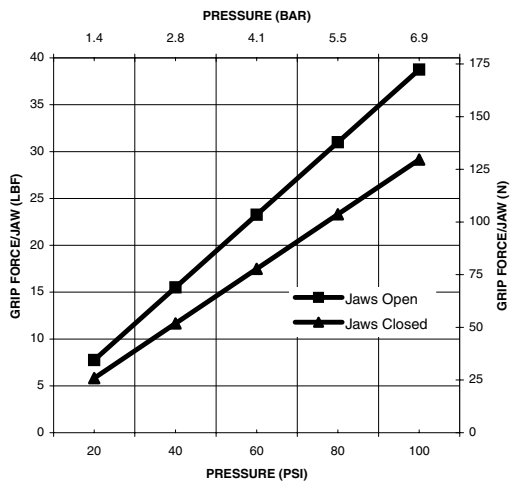
HOLE #	TYPE	X	Y
		mm	mm
1	TAP	-12.02	20.83
2	TAP	20.83	12.02
3	TAP	12.02	-20.83
4	TAP	-20.83	-12.02
5	DWL.	-13.75	14.37
6	DWL.	13.75	-14.37



P-3600
Grip Force Close vs. Finger Length



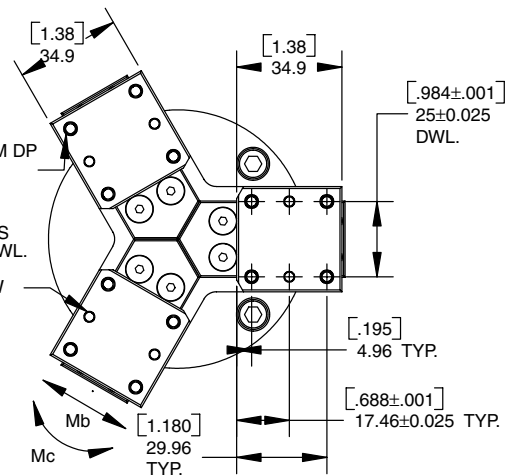
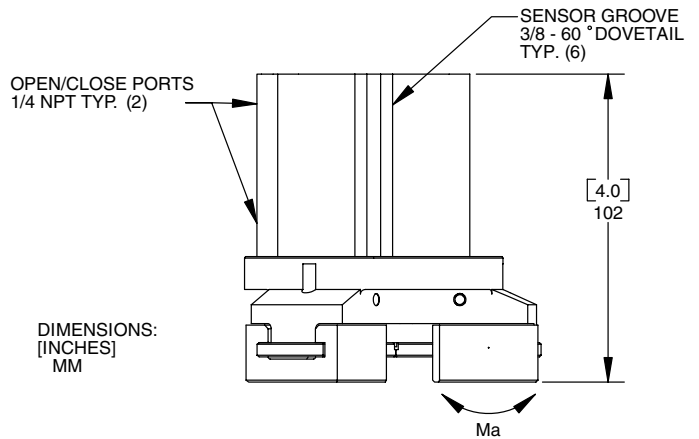
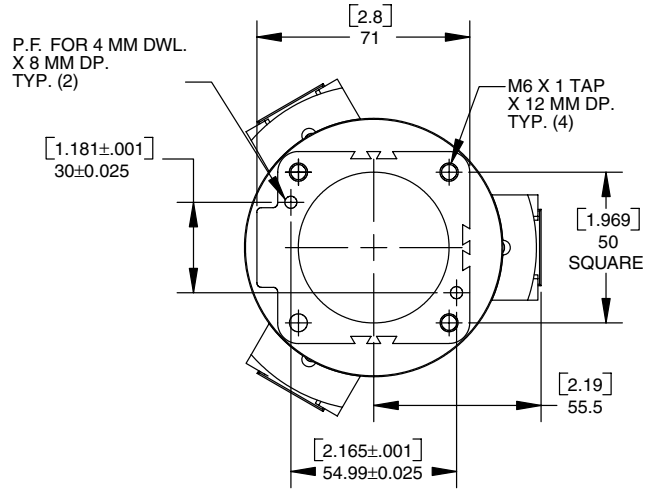
P-3600
Grip Force per Jaw vs. Pressure



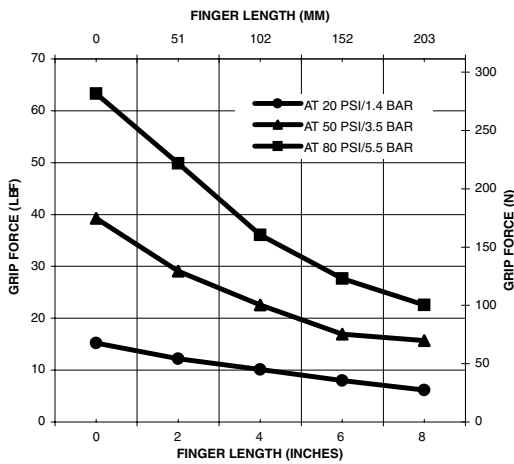
MODEL P-3700

Specifications

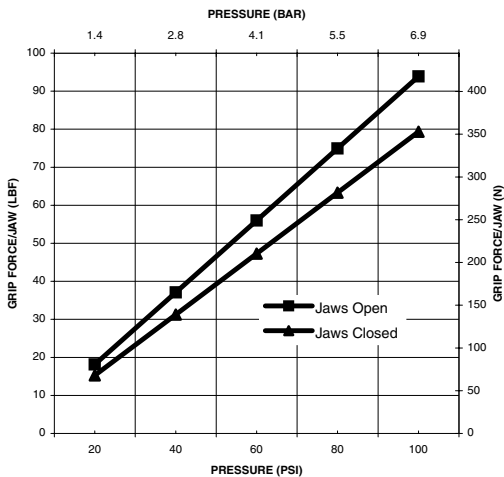
Total Stroke 12 mm (0.46 in)
 Total Grip Force at 6.2 bar/90 psi
 Open 1126 N (254 lbf)
 Close 952 N (214 lbf)
 Grip Force per Jaw at 6.2 bar/90 psi
 Open 375 N (85 lbf)
 Close 317 N (71 lbf)
 Mass 1.4 kg (3.1 lb)
 Bore Diameter 50 mm (1.97 in)
 Max. Operating Pressure 8.3 bar (120 psi)



P-3700
Grip Force Close vs. Finger Length



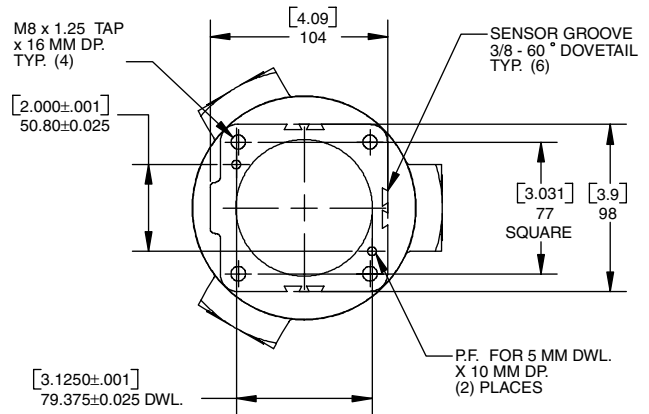
P-3700
Grip Force per Jaw vs. Pressure



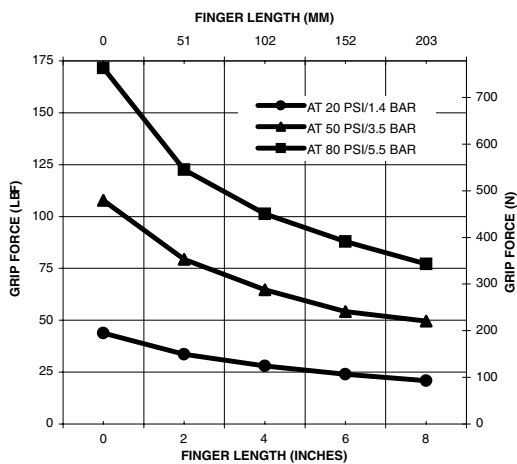
MODEL P-3800

Specifications

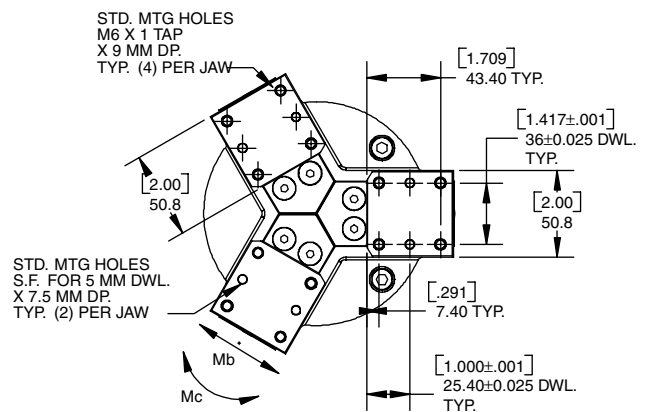
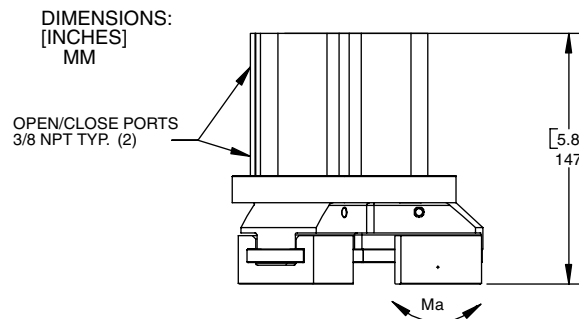
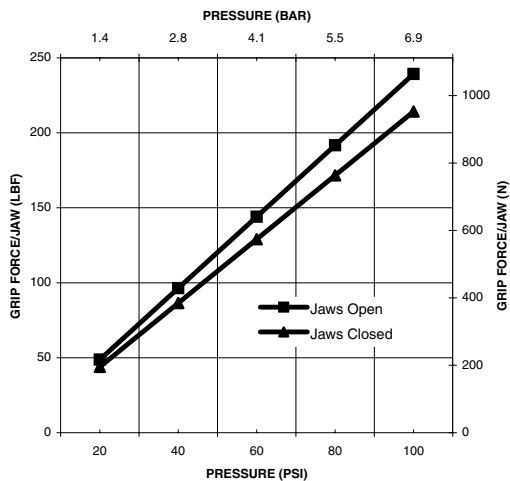
Total Stroke 18 mm (7.2 in)
 Total Grip Force at 6.2 bar/90 psi
 Open 2876 N (626 lbf)
 Close 2574 N (578 lbf)
 Grip Force per Jaw at 6.2 bar/90 psi
 Open 959 N (209 lbf)
 Close 858 N (193 lbf)
 Mass 4.3 kg (9.5 lb)
 Bore Diameter 80 mm (3.15 in)
 Max. Operating Pressure 8.3 bar (120 psi)



P-3800
Grip Force Close vs. Finger Length



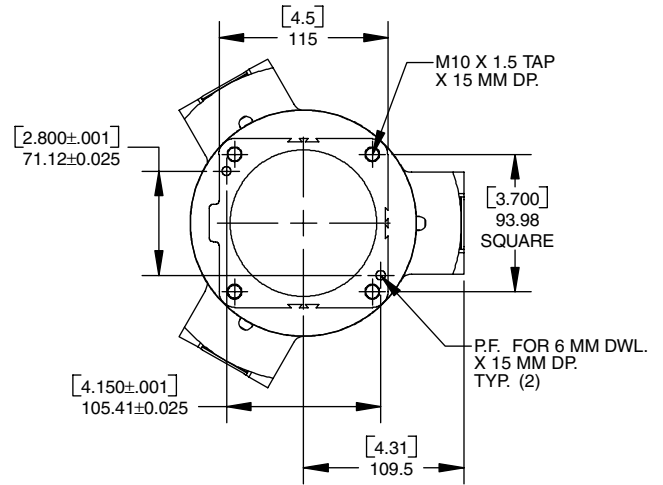
P-3800
Grip Force per Jaw vs. Pressure



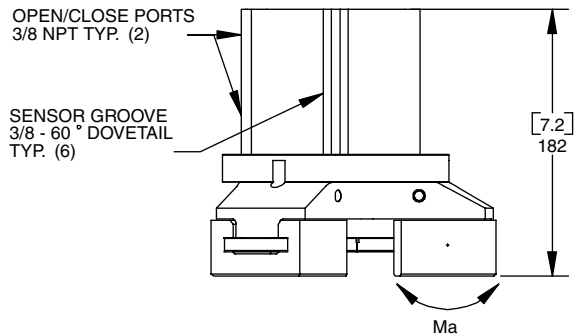
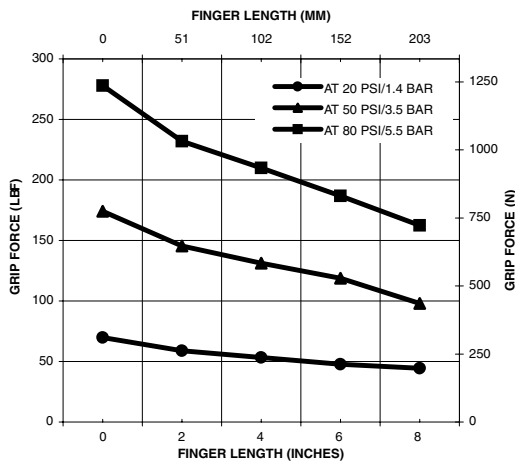
MODEL P-3900

Specifications

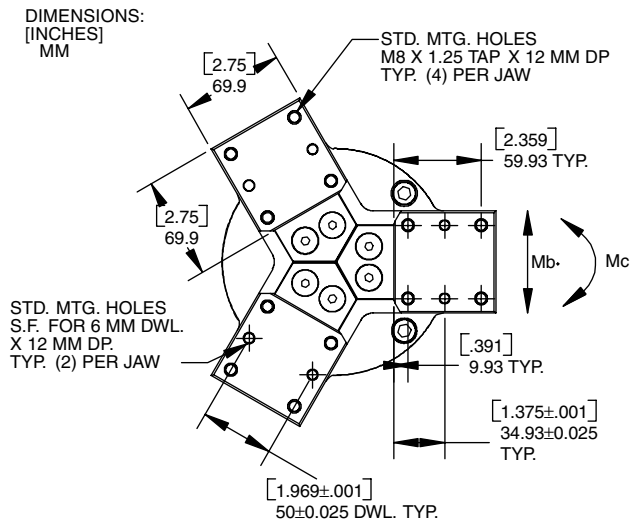
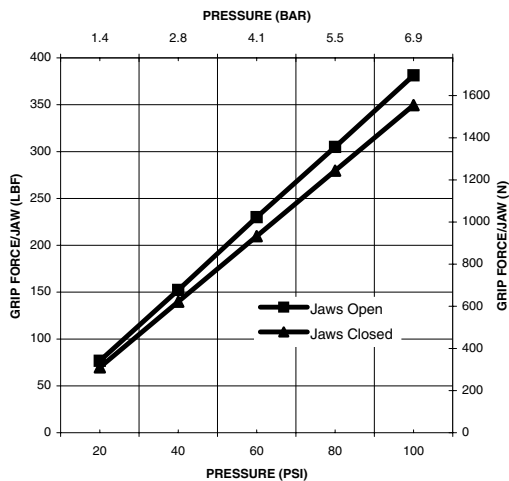
Total Stroke 30 mm (1.2 in)
 Total Grip Force at 6.2 bar/90 psi
 Open 4580 N (1030 lbf)
 Close 4198 N (940 lbf)
 Grip Force per Jaw at 6.2 bar/90 psi
 Open 1527 N (343 lbf)
 Close 1399 N (313 lbf)
 Mass 9.4 kg (20.8 lb)
 Bore Diameter 100 mm (3.94 in)
 Max. Operating Pressure 8.3 bar (120 psi)



P-3900
Grip Force Close vs. Finger Length



P-3900
Grip Force per Jaw vs. Pressure



Robotic Accessories

Collet Grippers

Operating Principle

A precision collet is enclosed in a housing that is tapered to conform to the outside diameter of the collet. The collet is linked to a double-

acting piston and as the piston actuates, the collet is forced to either open and extend or close and retract.

Ideal Applications

This Collet Gripper is the ideal device for picking and placing cylindrical parts which are uniform in size. It offers good clamping

force for rapid part transfer and precise centering of parts.

Application Guidelines

- The maximum load that the grippers can handle will vary based on the size, shape and texture of the part, acceleration and speed of the system, and air line pressure.
- Due to the precise manufacturing of the collet for a particular part dimension, this gripper is best suited for those parts having tight tolerances.
- Do not over-tighten the collet alignment screw. Very little pressure is necessary to effectively maintain the collet position.
- The gripper is designed for use in temperatures from -25° to 150° Fahrenheit.
- The listed Grip Force is per Collet Finger. This is based on 3 fingers per collet. In a pull-out or push-in application, multiply grip force by the coefficient of friction. In a twisting application, multiply pull-out force by the radius of the part.
- The collet alignment screw may require adjustment to accommodate expansion or contraction of materials.
- All grippers are factory lubricated for service under normal operating conditions. Periodic lubrication may be required, depending upon the application.
- A four-way solenoid valve is required to control the gripper.
- For applications where an external torsional force is present a non-rotational cylinder option is required. Contact Technical Sales for additional information.

Features

- Collet Grippers use standard off-the-shelf industrial series 1C, 3C and 5C collets available with round, square or hexagon shaped through-holes.
- This high precision gripper offers 360° of clamping contact on the part.
- The gripper offers precise centering of parts and the narrow profile allows gripper access into tight places.
- By varying the air pressure, the clamping force may be adjusted to grasp and hold delicate items such as glass bottles or rugged heavy parts such as machined assemblies.
- This pneumatically controlled gripper is constructed of aluminum for light weight and the collets are constructed of hardened steel for long life.
- The grippers are field repairable for minimum downtime. Most replacement parts are available the same day, to be shipped from our facility.
- Excellent repeatability within .0005 of the collets original centered position. Adjustable alignment screw insures minimum rotation of the collet to less than .5° throughout the stroke.
- Adapter plates are available for any robot model.

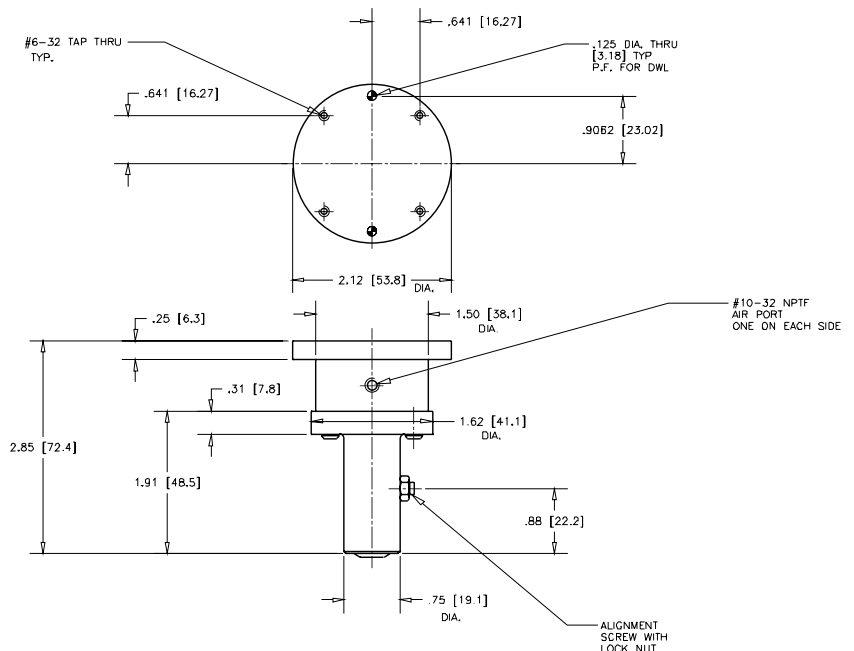
MODEL C-8500

Specifications

Unit Weight 6 oz.
 Max. Air Pressure 120 psi
 Gripping Force at 90 psi 12 lbs.
 Collet Size. 1C Series
 Total Displacement 0.027 in³
 Cylinder Bore 3/4 in.
 Maximum Diameter (Std) 0.25 in.
Special sizes are available upon request.

Collet Sizes

Fractional 1/64 to 1/4 in.
 (1/64 in. increments)
 Decimal 0.016 through 0.250 in.
 (0.001 in. increments)
 Metric 0.050mm through 6.35mm
 (0.5mm increments)



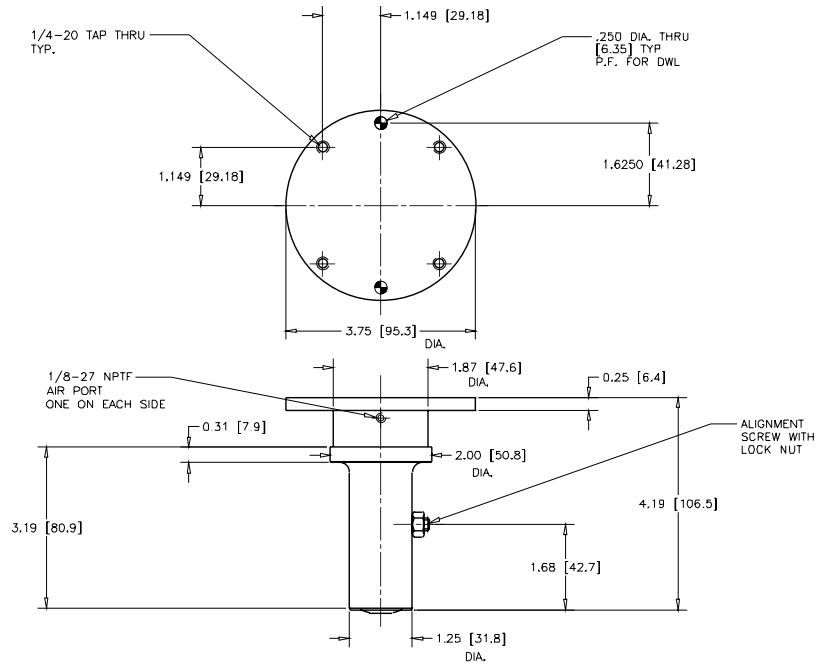
MODEL C-8600

Specifications

Unit Weight 1.2 lbs.
 Max. Air Pressure 120 psi
 Gripping Force at 90 psi 32 lbs.
 Collet Size. 3C Series
 Total Displacement 0.124 in³
 Cylinder Bore 1-8 in.
 Maximum Diameter (Std) 0.50 in.
Special sizes are available upon request.

Collet Sizes

Fractional 1/4 to 1/2 in.
 (1/64 in. increments)
 Decimal 0.25 through 0.50 in.
 (0.001 in. increments)
 Metric 6.35mm through 12.7mm
 (0.5mm increments)



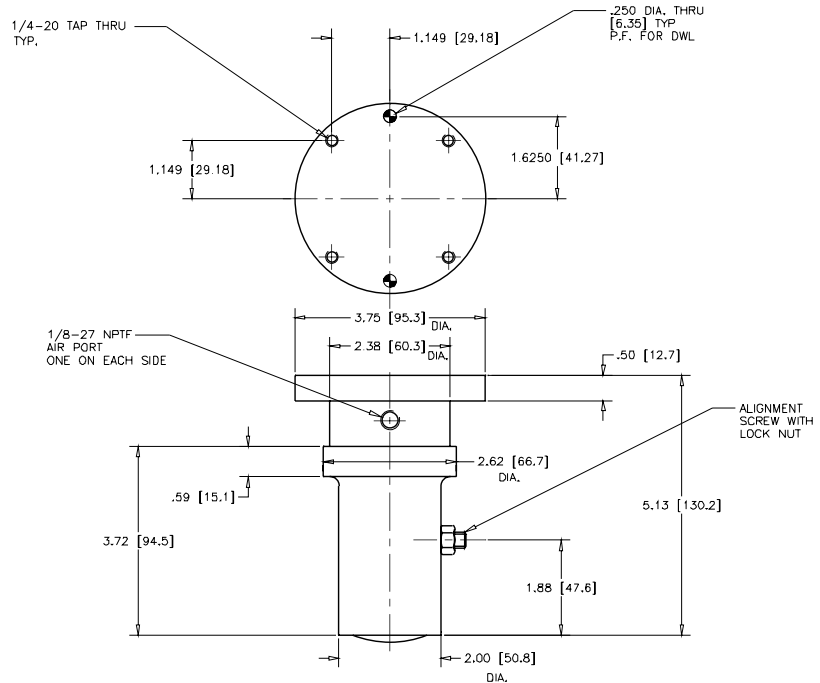
MODEL C-8700

Specifications

Unit Weight 2.5 lbs.
 Max. Air Pressure 120 psi
 Gripping Force at 90 psi 62 lbs.
 Collet Size. 5C Series
 Total Displacement 0.392 in³
 Cylinder Bore 1-5/8 in.
 Maximum Diameter (Std) 1.06 in.
Special sizes are available upon request.

Collet Sizes

Fractional 1/2 to 1-1/16 in.
 (1/64 in. increments)
 Decimal 0.50 through 1.06 in.
 (0.001 in. increments)
 Metric 12.7mm through 26.92mm
 (0.5mm increments)



Other Products:

Collision Sensors

•

Alignment Devices

•

Tool Changers

•

Variety of Grippers

RAD

ROBOTIC ACCESSORIES DIVISION

6555 State Route 202 • Tipp City, Ohio 45371
937-667-5705 • FAX: 937-667-7602

E-mail us at: robotic@processeq.com • Visit us at: www.robotic-accessories.com