



Industrial Cylinder Products

Hydraulic and Pneumatic Cylinders

*Catalog 0106-7
(01/11)*



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For additional information – call your local Parker Cylinder Distributor.

Wherever in the world machinery is designed, manufactured or used, Parker is there to meet your hydraulic and pneumatic application requirements – with complete component selection and total systems engineering, worldwide availability and technical assistance.

This catalog contains the information you need to order hydraulic and pneumatic cylinders and accessories. Arranged by product group, it contains complete

specifications, dimensions, and ordering information, including technical data and reference material for designers, builders and users of fluid power machinery. No more shuffling through dozens of separate catalogs from dozens of separate suppliers.

And when you're ready to order, call your local Parker distributor for fast delivery and service. Or call your Parker Sales Office see listing on page VI.

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For Cylinder Division Plant Locations – See Page II.



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Tel.: (860) 749-2215
Fax: (800) 323-0105

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Lithia Springs, GA 30122
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Fax: (800) 437-3498

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Goodland, IN 47948
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Fax: (800) 328-8120

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Plymouth, MI 48170
Tel.: (734) 455-1700
Fax: (734) 455-1007

Oregon

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Eugene, OR 97402-0079
Tel.: (541) 689-9111
Fax: (541) 688-6771
Fax: (800) 624-7996

For additional information – call your local Parker Cylinder Distributor.



Hydraulics

Components & System Solutions

Components and System Solutions



Parker Hannifin is a Fortune 500 corporation listed on the New York Stock Exchange as PH. Parker is the leading global manufacturer of the widest variety of components and systems designed to control motion, flow

and pressure in all types of machinery and other equipment.

We offer over 1,400 product lines that control motion in 1,000 mobile, industrial and aerospace markets. Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, electromechanical and computer motion control solutions. And we have the largest distribution network in our field, with over 7,500 distributors serving more than 400,000 customers worldwide.

Motors

Our full line of high and low speed motors provides power up to 15,000 in-lbs of torque. A complete range of sizes is offered in gear, gerotor and piston style operating configurations. Fixed and variable placement motors are available. Parker hydraulic motors deliver excellent performance with high efficiency, true wear compensation and longer service life.

Power Units

Parker offers the most complete line of standard, pre-engineered, cataloged hydraulic power units in the industry. We offer everything from five gallon vertical to 165 gallon overhead style platforms; Parker also offers custom power units that are designed and built to customer specifications. These units can be accessorized for almost any application, offering the convenience of one stop shopping in one quality unit.



Parker products are found around the globe: in satellites orbiting the earth, machine tools, mobile equipment, oil rigs and refineries, laboratories and hospitals—any place where machines depend on motion or fluid control.

Parker offers one of the world's most extensive hydraulic product lines. From pumps and valves to motors and motion controllers, all of our products share a common heritage of advanced technology for your applications. They incorporate electronic control for precise motion, innovative new designs to reduce size, and a greater choice of functions than ever before. Parker hydraulic components and systems are designed to deliver precise, reliable control in space-saving, weight-saving packages.

Cylinders

Parker is a leading manufacturer of hydraulic cylinders for your most demanding applications. Our cylinders keep on performing like you would only expect from Parker. By offering you more power per pound and more power per dollar over millions of trouble-free cycles, Parker cylinders have proven to be the most reliable and cost effective cylinders available today.

Components and System Solutions

Hydraulic Valves and Controls

We make hydraulic control valves for virtually every equipment application, from simple on/off functions to precise motion control. These include threaded cartridge valves, integrated hydraulic circuit blocks, bankable control valves, control valves, motion controllers, pressure control valves, manifold mounted directional and proportional valves.

Hydrostatic Steering Units

Parker offers a full line of hydrostatic steering units for a wide range of applications. These rugged components are designed to withstand system contaminant and engineered to handle higher oil pressure and temperatures than competitive products. A choice of sizes is offered in open center, closed center and load sense configurations.

Rotary Actuators

Parker is an industry leader in the design and manufacture of hydraulic rack and pinion, and vane style rotary actuators with torque output to 63 million in-lbs. In conjunction with our standard offering of rotary actuators, we work with customers on designs to meet specific application requirements. Rotary actuators provide smooth motion to perform a variety of actions including upending, turning, rolling over, tilting, indexing, transferring, mixing, valve operating, tensioning and clamping.

Pumps

Parker's broad line of energy-efficient hydraulic pumps includes fixed or variable displacement models in piston, vane and gear pumps. Designed to handle a wide range of applications, Parker hydraulic pumps are available with a full complement of electronic and computer controls. Like all Parker products, these pumps are manufactured with the finest materials under strict quality control. The result is a pump that delivers high efficiency and low maintenance under the toughest operating conditions.

Accumulators

Parker is the industry's most complete source for hydraulic accumulators and related products. We offer a complete range of piston, bladder and diaphragm type accumulators, as well as gas bottles, KleenVent reservoir isolators and other accessories. These reliable components improve hydraulic system efficiency by maintaining pressure, supplementing pump flow and absorbing system shocks. Sturdy construction provides years of efficient, reliable service.

Filtration

Filtration products by Parker are designed to maximize the reliability of your hydraulic systems and components with positive protection against fluid contaminants. Our comprehensive line of pressure and return line filters enhances machine life, reduces maintenance and lowers costs. High, medium and low pressure filters are offered, as well as portable filter carts and replacement elements.

Fluid Connectors

Parker has a complete line of fluid connector products and services for hydraulic systems. Products range from high-quality state-of-the-art fittings, valves and quick couplings to pressure hose that is available in a wide range of core-tube materials, reinforcement designs and outer covers. Our global distribution network and strategically located service centers ensure that you can get the products you need when and where you need them.



Your source for complete hydraulic system solutions.

Complete System Solutions

We are putting our 70 years of application engineering expertise to work for you by being the single source solution for your entire hydraulic system. Ordering a complete hydraulic system from Parker brings with it all of the benefits you have come to expect: quality, system integrity, worldwide distribution, extensive field support and premier customer service.

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Parker Actuator Products

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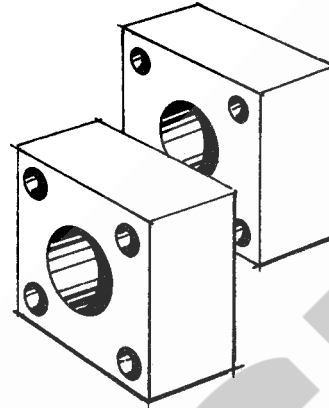
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Quality features, proven reliability Parker cylinders...The Cylinders

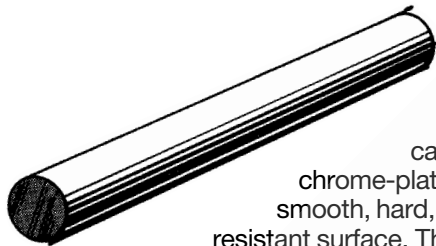
Parker cylinders have proven themselves in the only "test" that matters...the one you give it on the job.

Year after year, in all types of industrial applications, Parker Cylinders give reliability you can count on with minimum maintenance. The benefits to you are increased productivity at lower operating costs.

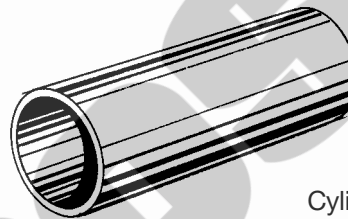
Parker offers an unmatched combination of quality features in the widest selection of industrial cylinders available. All to give you job-matched top performance and proven reliability.



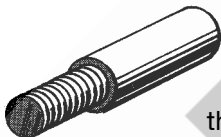
Square Steel heads and caps provide concentricity for mating parts. Both the steel head and cap are bored and grooved to assure concentricity to a common centerline for the cylinder body.



For example, the piston rod is case-hardened and chrome-plated to guarantee a smooth, hard, dent and scratch resistant surface. This increases seal and bearing life, reduces maintenance costs and assures dependable *long-life service*.



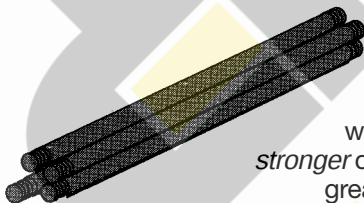
Cylinder bodies Hard chrome plated bore, steel tubing honed to a 15 micro inch finish.



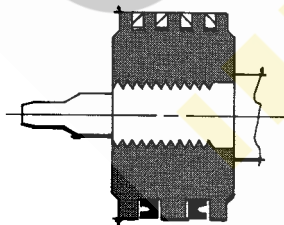
The high strength rod end stud has rolled threads providing threads reducing the possibility of fatigue failure. *Interchangeability*, easy conversion and/or repair of rod ends allow low cost modification or on-the-job repair. Anaerobic adhesive is used to permanently lock the stud to the piston rod.



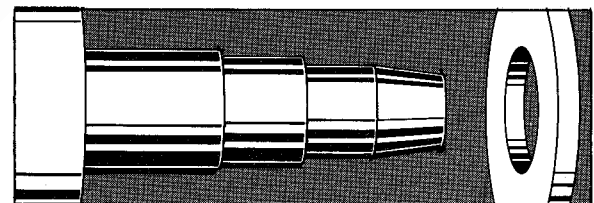
Parker cushions are the *longest* in the industry, providing the finest cushioning control available in a standard cylinder. The floating, self-centering bushing delivers high efficiency by increasing "out-stroke" speed. This all adds up to a no-compromise design that provides longer machine life, safer deceleration and greater reliability. Cushions are furnished when ordered without increasing overall cylinder length.



Tie rods are also high strength material with rolled threads for a *stronger cylinder assembly* and greater *product reliability*.



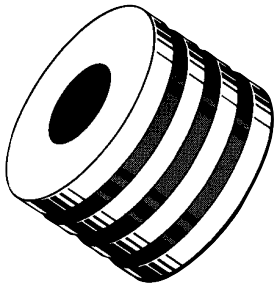
The long, full size piston-to-rod thread *connection* acts as a shock absorber and helps resist side loading. For added strength the piston-to-rod thread increases with the rod diameter thereby increasing the thread strength up to 314% for safety-assured performance in a given bore size.



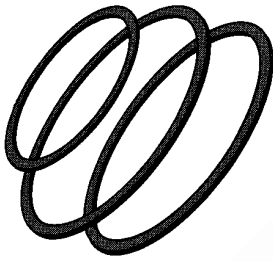
Parker's *new adjustable, floating stepped cushion design* is economical and flexible for even the most demanding applications. It provides superior performance in reducing hydraulic shock. Cushioning time is reduced up to 50%, permitting faster machine operating cycles for increased productivity. It reduces machine noise for less downtime and lower maintenance costs.

For additional information – call your local Parker Cylinder Distributor.

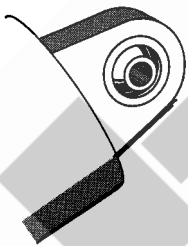
and service are the hallmark of all Preferred Around the World.



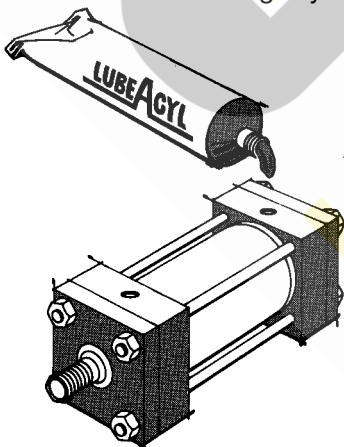
The *one-piece, wide surface*, nodular iron piston reduces bearing loads. The piston is piloted to ensure concentricity. Loctite is used to permanently lock the piston to the rod.



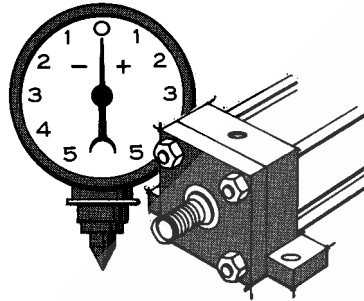
Static O-ring body seals are *pressure energized*, compensating and positive sealing for less maintenance cost and downtime saving oil losses and allowing quick, easy repair.



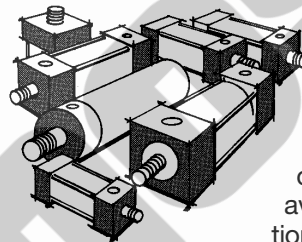
Parker spherical bearings virtually eliminate alignment problems normally associated with the use of pivoting cylinders. Spherical bearings simplify difficulties with machine alignment. Even with misalignment of up to 4.5° performance remains satisfactory without creating any excessive cylinder wear.



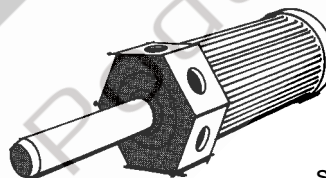
Air cylinders are factory pre-lubricated with Parker Lube-A-Cyl for normal operation and provide *millions of trouble-free cycles*. This greatly reduces both operating and maintenance costs.



Feature after feature, the Parker story is the same. Parker cylinders are premium quality cylinders and have what it takes to give you the top performance you require. Cylinders designed and engineered for *greater production profitability* to save you unnecessary cost in downtime. To make sure every cylinder is premium quality, we subject each one, not just batch samples to tough inspection and performance tests.



More selection and availability. Parker offers you the largest selection of sizes, bores, strokes, mountings, options, and accessories available. The kind of selection that lets you "customize" cylinders to fit your application. There are over 5 million different cylinders in our standard line alone. Parker's engineering capabilities are backed by over 60 years of manufacturing experience to meet all your cylinder requirements of today...and tomorrow.



Specials? Absolutely! Parker has the Sales, Engineering and Manufacturing capability and experience to provide special cylinders to meet your custom specifications and requirements. Let your imagination be your guide. We're ready to give you any technical assistance you might need. We will help turn your ideas into reality by providing special cylinder designs for you to create new machinery...solve a difficult production problem...or improve existing equipment.



The best in factory-trained fluidpower technical help is available from your Parker distributor's servicemen who are as close as your phone. They receive intensive training in cylinder design, application and maintenance at Parker facilities and regional training centers. They're always ready, eager and able to service all your cylinder requirements.

For Cylinder Division Plant Locations – See Page II.

Parker Pneumatic Check Seal Cushion

New Series MA air cylinder check seal cushions provides fast response, low wear, and low pressure drop.



Parker engineers have developed a new concept in air cylinder cushions...the “check seal”. The new Parker check seal cushion combines the sealing capabilities of a lipseal for efficient capture of air for effective cushioning with check valve action for quick stroke reversal.

The lipseal design also provides “floating cushions” to assure cushion repeatability and long life. At the start of the stroke in each direction, the check valve design allows full fluid flow to piston face with a minimum pressure drop for maximum power stroke.

Additional benefits of the new check seal cushions are increased productivity and top performance for faster cycle time, minimum wear, easy adjustment, and low pressure drop.

The basic cushion design, is optional on the Series “MA” cylinder and is available on either the head end, cap end or both ends without change in envelope or mounting dimensions. A cushion adjusting needle is supplied for easy, precise adjustment on all bore sizes.

At the **head end** of the cylinder, the check seal is assembled into a groove in the central bore of the head, with the groove being slightly wider and larger in diameter than the check seal, so that it floats laterally and radially within predetermined limits. The check seal has four grooves molded into the face to provide flow passages; the assembly is put together with the lip of the seal facing toward the inside of the cylinder.

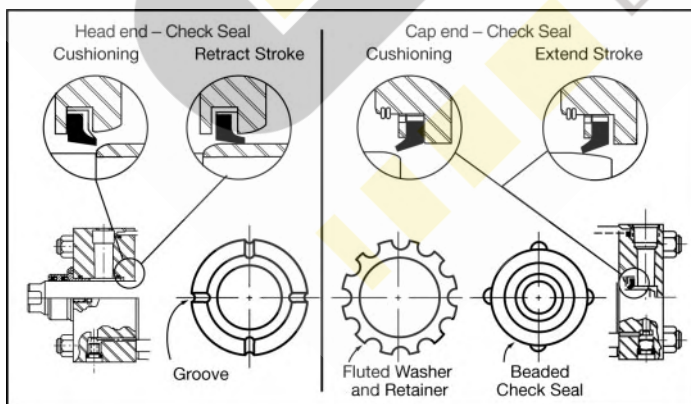
A cushion sleeve is mounted on the piston rod, so that as the rod extends, air ahead of the piston flows freely out the head-end port. When the end of the cushion sleeve reaches the lip of the check seal, it seals on the wall of the groove, trapping air for cushioning.

As pressure is applied to the head-end port on retraction, the air forces the seal towards the inside of the cylinder. The air then flows around the O.D. of the seal and through the flutes of the seal washer. Full-flow, quick starts with little or no pressure drop is just one of the major benefits of the design.

At the **cap end** of the cylinder, the check seal is assembled into a cavity in the face of the cap with four beads molded on the O.D. to provide a flow passage. A fluted washer and retaining ring, rather than a groove, and a cushion spear which extends from the rear face of the piston complete the cap end assembly. When the rounded, tapered portion of the cushion spear reaches the lip of the seal, the seal seats against the rear wall of the cavity, trapping air for cushioning.

The configuration of the check-seal lip, and the controlled shape of the cushion sleeve together prevent the lip from rolling over or extruding. A check seal used at both ends provides the benefits of floating cushions with check valve action for maximum cushion effectiveness and quick stroke reversal. This new check-seal design has been tested in millions of cycles, in the lab and in the field.

Series MA cushions are the longest in the industry and are designed for maximum customer benefit.



For additional information – call your local Parker Cylinder Distributor.



A

the **Great Shape**

a new
cushion design
that makes
Parker hydraulic cylinders
perform even better

- Faster cushioning time
- Reduced hydraulic shock
- Reduced machine noise
- Lower machine maintenance

Hydraulic Cylinder Cushioning:

The control of kinetic energy

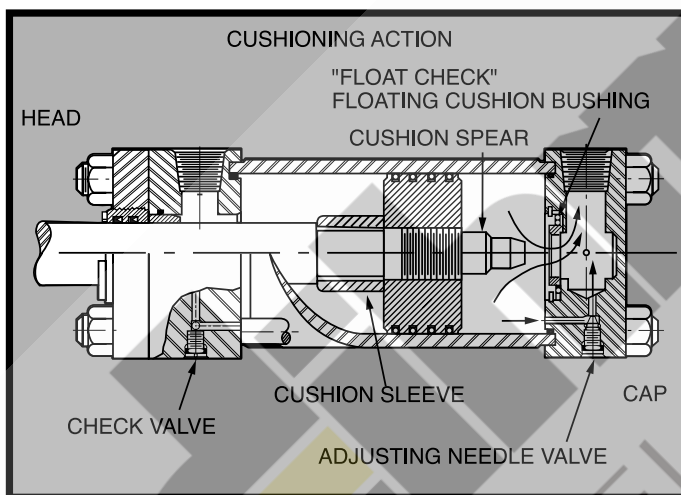
Moving loads faster with heavy-duty hydraulic cylinders

– In today's machinery and machine tools, hydraulic cylinders are required to stop heavy loads at increasingly faster rates. Every second saved can increase productivity and reduce costs. So the machine designer must find ways to operate cylinders as fast as possible.

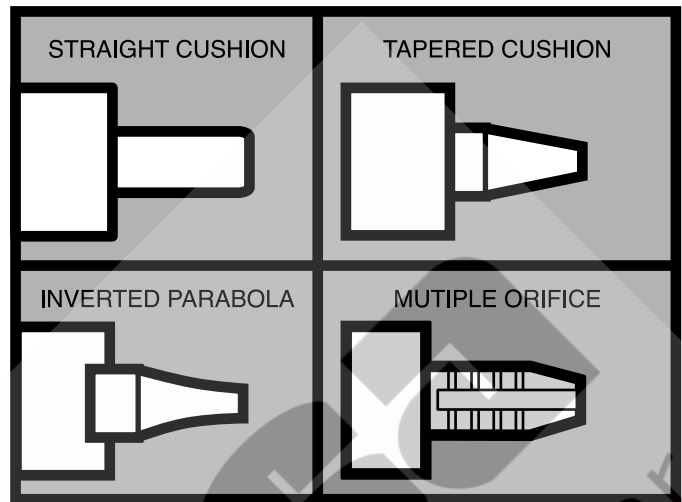
Merely speeding up a cylinder eventually leads to unacceptable hydraulic shock loads. The high inertial forces developed at the end of the stroke must be stopped without damaging the cylinder or the load.

Cushioning to control kinetic energy – One way to maintain a higher average velocity in cylinders is to incorporate cushions at the end of the stroke. These integral deceleration devices are designed to minimize excessive deceleration forces and peak hydraulic pressures which result from a sudden change of velocity.

Ideally, the cushion should achieve constant deceleration by developing constant pressure during the time of deceleration. In hydraulic cylinders, special shaping or contouring of the cushion spear or sleeve has been employed to provide programmed deceleration for the unit.



Design of Cylinder Cushions – In cushioning of hydraulic cylinders, the spear or sleeve closes the main exhaust passage in the cylinder head or cap, confining the fluid between the piston and the head or cap. The trapped fluid is metered at a somewhat controlled rate around the cushion spear and through bypass orifice that is adjusted with a needle valve. In the reverse direction, fluid bypasses the needle valve by means of check valve in the cylinder. The cushion must center itself properly regardless of the piston and bore clearance situation. To facilitate mechanical engagement with the mating orifice, a short taper is used on the leading portion of the cushion spear or sleeve. In



addition, the clearance annulus must be concentric so the fluid flow characteristics remain consistent from one stroke to the next. Parker cylinders use floating bushings and floating cushion sleeves to assure concentricity of the flow annuli. Some designs, however, do not provide the floating feature, thereby increasing the chances of eccentricity of mating cushion parts. When cushion parts do not mate concentrically on each cycle, undercushioning or erratic cushioning results.

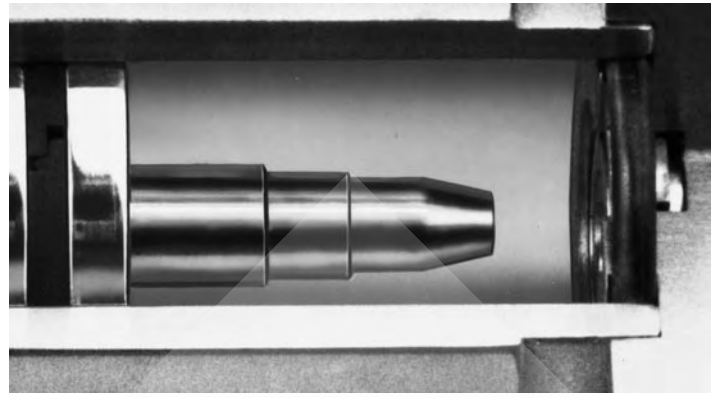
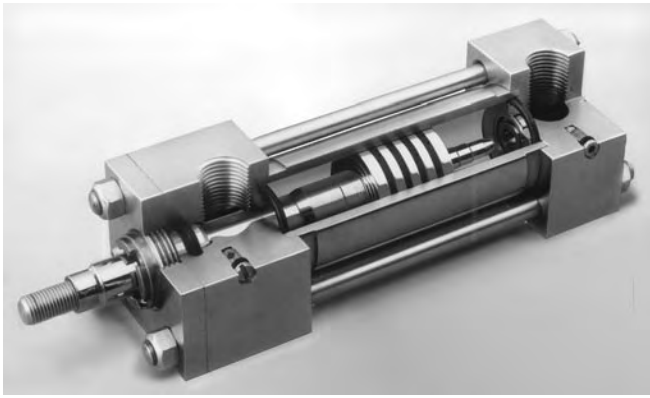
The most common cushion design is a straight spear or sleeve with a fixed clearance. The straight cushion has been used in a broad range of cylinder applications. It is economical to produce, but provides cushioning in a relatively narrow combination of loads and speeds.

Another common cushion design is the tapered configuration. Most often, it consists of a 1/2 degree taper for 2/3 the length of the cushion stroke, followed by a straight diameter for the last 1/3 of the stroke. Although economical to produce, the tapered cushion normally requires a series of multiple tapers to achieve the desired performance.

In conventional hydraulic cylinders, the theoretical shape for a constant deceleration cushion is an inverted parabola properly sized for the cylinder. This design is extremely expensive to machine, so cannot be economically used on a broad range of products.

Another design, using a series of orifice holes in the cushion sleeve or spear, can also achieve constant deceleration. This multiple orifice or piccolo type cushion is also very expensive to machine and control. As a result, it is only used on specially engineered cylinders.

For additional information – call your local Parker Cylinder Distributor.



A

The Stepped Cushion

A new shape with great performance advantages

Stepped cushions combine the best features of known cushion technology – The stepped cushion is a totally new approach in cushioning of hydraulic cylinders. By engineering a new design configuration, Parker has developed a cushion that increases performance over conventional straight and tapered cushions used in heavy duty cylinders.

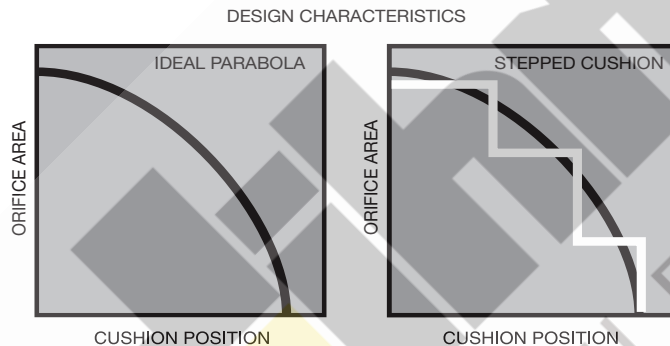
Advantages of hydraulic cylinders equipped with the Parker stepped cushion include:

- Faster cushioning time
- Reduced internal and external shock
- Reduced machine noise
- Lower machine maintenance

cushion as a standard option on Parker Series 2H heavy duty hydraulic cylinders. And they're available at the same price as the previous straight cushions.

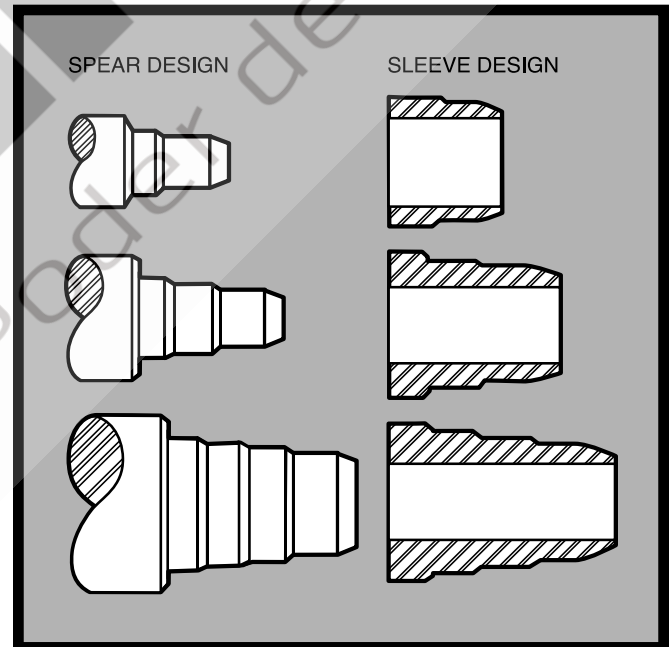
The new cushions can be supplied at the head end, cap end or on both ends. The cushion spear or sleeve is machined to close tolerances, assuring that the steps provide the proper deceleration characteristics.

Three types of spear and sleeve designs are employed on Series 2H cylinders. They are required, because in analyzing bore sizes to maximize performance, tests showed that more steps were needed for the higher energy absorption common to larger bore cylinders.



Success of the new design lies in a stepped spear or sleeve which for specific load and velocity conditions, achieves deceleration curves that come very close to the ideal performance curve. The ideal cushioning curve is one which is developed through the use of an inverted parabola cushion which achieves rapid reduction of orifice area near the end of the cushion stroke. With the stepped cushion, a series of steps are calculated to approximate the theoretical orifice area curve. The shape of the cushion allows kinetic energy to be absorbed gradually and smoothly over the entire cushioning stroke.

New standard option in Parker heavy duty hydraulic cylinders – The stepped cushion replaces the straight



Specify the Stepped Cushion to meet demanding performance requirements – Evaluate all the facts about the new stepped cushion from Parker. And consider its performance advantages when you specify heavy duty hydraulic cylinders.

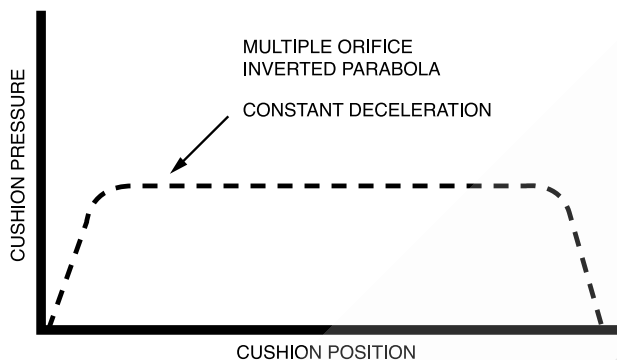
More details are available in the Parker Series 2H Catalog.

Cushion Performance:

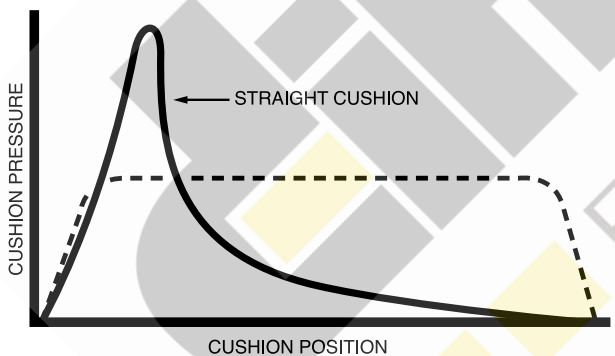
Designing for effective deceleration

Performance of the various cushion designs can be measured by the pressure changes that occur as the cushion stroke takes place. Since cushion pressure is a measure of the retarding force, it shows the resulting deceleration forces.

Pressure curves developed by the various cushion designs demonstrate cushioning performance. The theoretically ideal pressure-stroke curve is a straight line, showing that cushion action had constant pressure characteristics. The total area under the curve represents the kinetic energy absorbed. This constant deceleration curve can be produced with the ideal inverted parabola and multiple orifice cushion designs. However, neither of these designs are economical for most hydraulic cylinder applications in industry today.

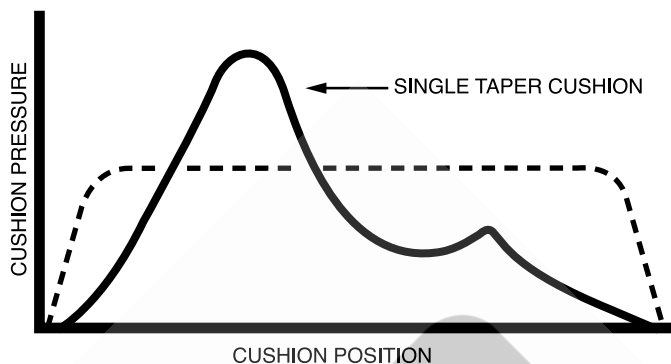


The straight cushion typically develops a very high initial pressure peak. Then, it degrades gradually as the stroke continues with fluid being metered through the fixed clearance annulus. As a result of high peak pressure, the straight cushion produces high shock levels, contributing to machine vibration, noise, and wear.

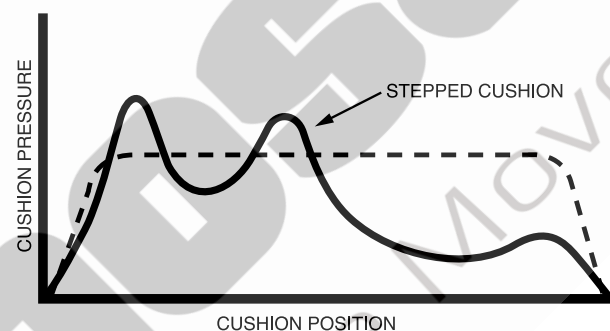


A single taper cushion develops lower initial shock than the straight design, but often delays pressure development, resulting in under cushioning.

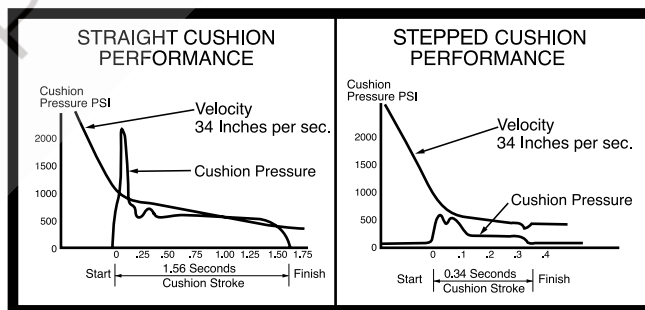
The new Parker stepped cushion design (with a three-step spear) develops three pressure pulses which more closely



approximate the constant deceleration curve. Pressure peaks are lower than those of both the straight and tapered cushions, resulting in significantly lower hydraulic shock.



A comparison of actual pressure traces produced by a stepped cushion versus a straight cushion under the same conditions further demonstrates advantages of the new design. The stepped cushion not only reduces internal and external shock, it also saves time during the cushion stroke. It can reduce shock up to 90% and reduce cushioning time up to 50% — a dramatic performance improvement. As a result, faster machine operating cycles are possible. And lower shock reduces machine noise and maintenance.



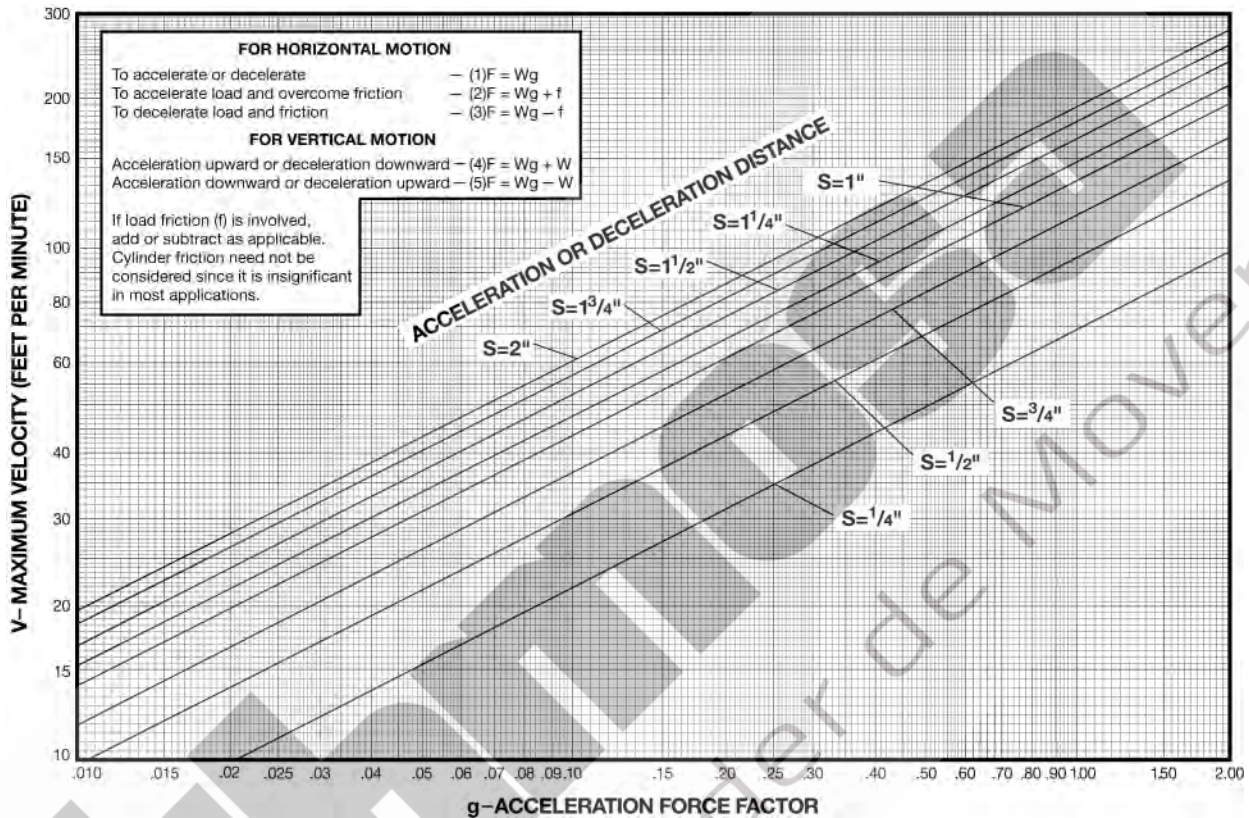
For additional information – call your local Parker Cylinder Distributor.

Acceleration and Deceleration Force Determination

The uniform acceleration force factor chart and the accompanying formula can be used to rapidly determine the forces required to accelerate and decelerate a cylinder load. To determine these forces, the following factors must be known: total weight to be moved, maximum piston speed, distance available to start or stop the weight (load), direction of movement, i.e. horizontal or vertical, and load friction. By use of the known factors and the "g" factor from the chart, the force necessary to

accelerate or decelerate a cylinder load may be found by solving the formula (as shown in chart below) applicable to a given set of conditions.

The chart represents ideal conditions and makes no allowance for losses. Possible losses due to leakage past the cushion fits or through the adjustable needle valve result in a .85 efficiency factor for deceleration in cushioning.



Nomenclature

- V = Velocity in feet per minute
- S = Distance in inches
- F = Force in pounds
- W = Weight of load in pounds
- g = Force factor
- f = Friction of load on machine ways in pounds

To determine the force factor "g" from the chart, locate the intersection of the maximum piston velocity line and the line representing the available distance. Project downward to locate "g" on the horizontal axis. To calculate the "g" factor for distances and velocities exceeding those shown on the chart, the following formula can be used:

$$g = \frac{V^2}{S} \times .0000517$$

EXAMPLE: Horizontal motion of a free moving 6,000 pound load is required with a distance of $1'/4"$ to a maximum speed of 120 feet per minute. Formula (1) $F = Wg$ should be used.

$$F = 6,000 \text{ pounds} \times 1.50 \text{ (from chart)} = 9,000 \text{ pounds}$$

Assuming a maximum available pump pressure of 1,000 pounds p.s.i., a 4" bore cylinder should be selected, operating on push stroke at approximately 750 p.s.i. pressure at the cylinder to allow for pressure losses from the pump to the cylinder.

Assume the same load to be sliding on ways with a coefficient of friction of 0.15. The resultant friction load would be $6,000 \times 0.15 = 900$ lbs. Formula (2) $F = Wg + f$ should be used.

$$F = 6,000 \text{ pounds} \times 1.5 \text{ (from chart)} + 900 = 9,900 \text{ lbs.}$$

Again allowing 750 p.s.i. pressure at the cylinder, a 5" bore cylinder is indicated.

EXAMPLE: Horizontal deceleration of a 6,000 pound load is required by using a 1" long cushion in a 5" bore cylinder having a 2" diameter piston rod. Cylinder bore area (19.64 Sq. In.) minus the rod area (3.14 Sq. In.) results in a minor area of 16.5 Sq. In. at head end of cylinder. A 1,000 p.s.i. pump delivering 750 p.s.i. at the cylinder is being used to push the load at 120 feet per minute. Friction coefficient is 0.15 or 900 lbs.

In this example, the total deceleration force is the sum of the force needed to decelerate the 6,000 pound load, and the force required to counteract the thrust produced by the pump.

- W = Load in pounds = 6,000
- S = Deceleration distance in inches = 1"
- V = Maximum piston speed in feet per minute = 120
- g = .74 (from chart)
- f = 900 pounds

Use formula (3) $F = Wg - f$

$$(F = Wg - f) = (F = 6,000 \times .74 - 900) = 3,540 \text{ Pounds}$$

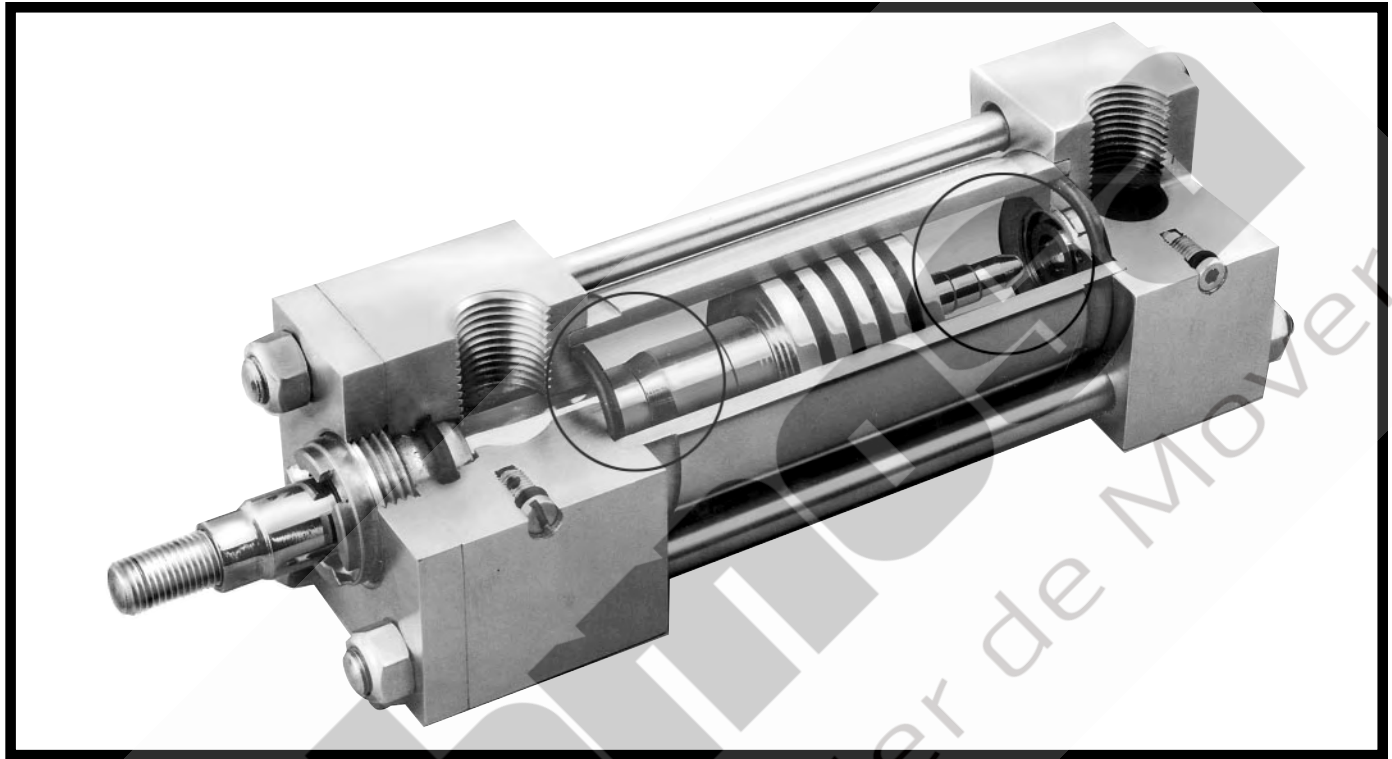
The pump is delivering 750 p.s.i. acting on the 19.64 Sq. In. piston area producing a force (F_2) of 14,730 pounds. This force must be included in our calculations. Thus $F + F_2 = 3,540 + 14,730 = 18,270$ pounds total force to be decelerated. Correct for cushion delivery of .85 or $18,270 \div .85 = 21,495$.

The total deceleration force is developed by the fluid trapped between the piston and the head. The fluid pressure is equal to the force (21,495 pounds) divided by the minor area (16.5 Sq. In.) equals 1303 p.s.i. This pressure should not exceed the non-shock rating of the cylinder.

Cushioning practice is to select a "g" factor of between .2 and 1.5.

For Cylinder Division Plant Locations – See Page II.

Specify The Parker Stepped Cushion



For

- reduced shock up to 90%
- less noise
- less maintenance
- cushioning time reduced up to 50%

We're In **Great Shape** To Serve You!

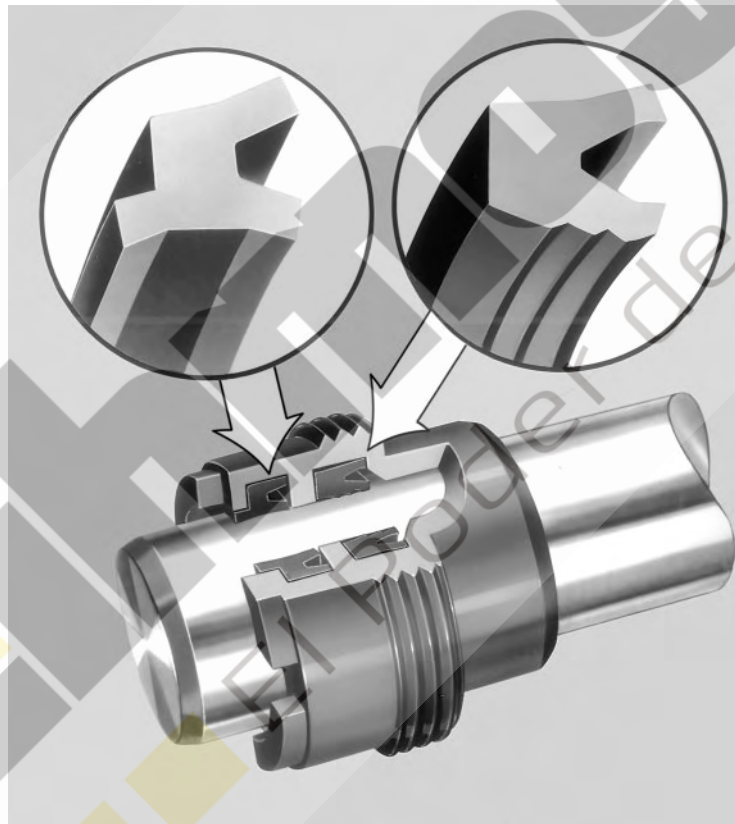
For additional information – call your local Parker Cylinder Distributor.

The “Jewel” Gland

An exclusive feature of Parker cylinders

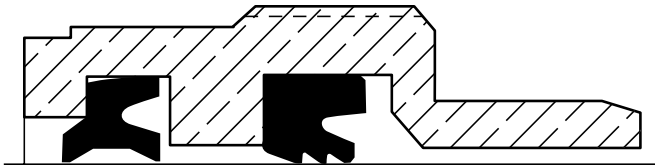
Now with Parker Cylinder’s Exclusive
TS-2000 Rod Sealing System

- What Is It? • Why Is It Required? • How Does It Work?



For Cylinder Division Plant Locations – See Page II.

What Is It?



The Parker "Jewel" gland cartridge is a combination of elements designed exclusively for sealing fluids when used in conjunction with reciprocating shafts.

Why Is It Required?

Throughout the history of fluid power, the one seemingly insurmountable problem faced by the user of reciprocating hydraulic equipment was a "wet rod". The problem had been lived with for so many years that the sight of a puddle of oil under the rod end of the cylinder was almost characteristic, and no one seemed to be doing anything about it. With the increase in demand for the advantages of fluid power in such industries as food, medical instruments, etc, plus the increasing costs of maintenance, it became obvious that the old, previously accepted standards were no longer acceptable.

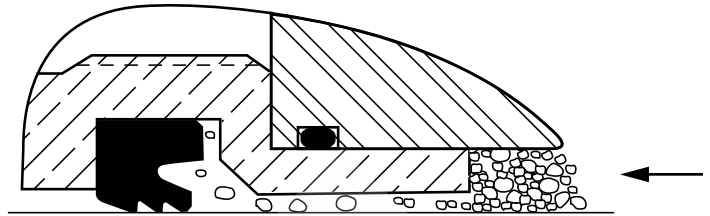
How Does It Work?

The "Jewel" gland assembly consists of the cartridge gland, serrated TS-2000 rod seal, and Wiperseal. Each has a multiple job to perform.

Let's start from the beginning. The fluid approaches the rod end of the cylinder and tends to follow the rod out. The fluid has a natural tendency to grip the rod (adhesion) with a force depending upon the viscosity (among other factors) of the fluid. Now note that the gland bearing is inboard of the sealing members. This not only keeps the bearing lubricated, which is in itself an important feature, but it also results in an initial shearing of the viscous fluid which occurs as the rod passes through the bearing.

This leading edge of the bearing also acts as a pressure snubber when subjected to high hydraulic shocks from the system, and it tends to tame the pressure variations felt by the TS-2000 rod seal.

The serrated TS-2000 rod seal is a truly pressure compensating unitary rod seal. Look for a moment at the conventional seals.

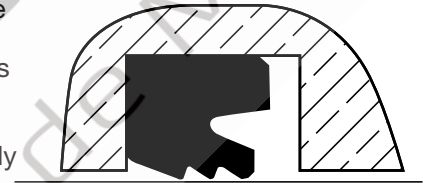


The block vee and hat packing are both low friction type seals and depend upon fine line contact with the rod to effect the seal at a minimum friction value. By scientific optical methods, investigation has indicated this "theory" is short lived as pressure increases. As the pressure increases, the critical edge lifts from the rod, or you might say the line of contact moves away from the pressure.



Essentially, what you now have is an O-ring type contact. The critical shearing edge is gone.

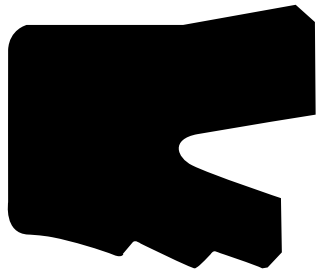
As an example of this, hold a tablet of paper with one edge on the desk. A single sheet of paper will not pass under. Roll the edge of the tablet up and the single sheet easily passes under.



In the compression type packing, (multiple vee) the natural inclination of the maintenance man is to increase the compressive force on the seal gland in an effort to seal off the leak, but this only makes matters worse. The additional friction adds to the wear and the seals quickly wear out and have to be replaced. Multiple vee's tend to wedge open and throw the point of maximum contact pressure of the seal against the rod, away from the theoretical sealing edge.

For additional information – call your local Parker Cylinder Distributor.

The serrated TS-2000 rod seal, on the other hand, has three shearing edges on a common lip. As the pressure increases and the line contact moves forward, a “new” shearing edge takes over. The increase in friction with increase in pressure is held to a minimum, yet the sealing qualities of the unitary seal are constant throughout the pressure range.

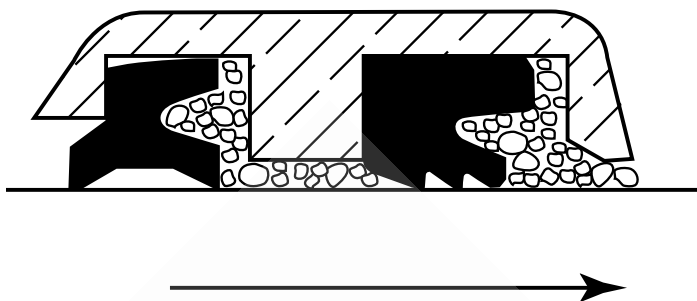


The only fluid adhering to the rod at this point is that very thin layer which is usually “scraped” off the rod on the return stroke by the rugged rod wiper. The solution to this is relatively simple. Don’t let it get out.

We can accomplish this with the Parker developed double-lip Wiperseal. Note the sturdy inner lip. This, in essence, is a scraper. It removes the “last” layer of oil that clings to the bitter end, and traps it between the Wiperseal and TS-2000 rod seal. The rod emerges from the cylinder dry. (Note: “Dry” is a relative term. In our usage, we mean that there is not enough excess oil left on the rod to be scraped off and “collar”. In reality, due to the mirror-structure of the ground, polished and plated surface of the rod, some lubrication remains, which cannot be wiped off.) There is nothing left to be removed by the wiper lip on the return stroke except the dirt and grit which it is designed to remove.



Let’s look at the return stroke now. What happens to the fluid trapped between the Wiperseal and TS-2000 rod seal? (Note the general configuration of the TS-2000 rod seal.)



With the rod extending, the seal is rigid, digging in, resisting the motion of the rod. Now look at it from the other direction, with the rod retracting. It is flexible, able to move out of the way and ride over the oil clinging to the rod on the way back. It acts like a built-in check valve. The fluid trapped in the chamber between the seal is thus carried back into the cylinder on the return stroke. In addition to the oil “carried” back, if sufficient oil gets past the TS-2000 on the way out to build up a pressure between the seals, the pressure “pops” the oil back at the end of the stroke in normal applications when pressure in the head end of the cylinder drops to a low value during reversal.

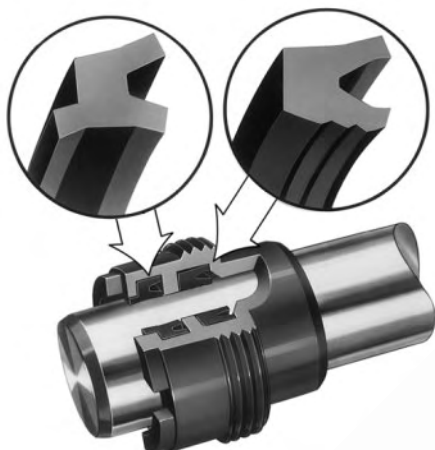
Now, let’s look at the gland in general. The O-ring seal provided for the O.D. of the gland also serves as a prevailing torque locking device, to prevent rotation of the gland when in service.

Realizing that the gland and seal combination is subject to normal wear and will eventually need attention, the gland has been designed to minimize down time and maintenance costs. The threaded design is far superior for several reasons. The snap ring retained type always has some end play. This results in wipeage of the hydraulic fluid past the O.D. sealing ring. The totally retained type requires the cylinder tie rod nuts to be removed and, in reality, the cylinder almost disassembled. With the threaded design, the gland assembly can be removed without disturbing the rest of the cylinder, and yet is securely held during service.



Why Is The Parker “Jewel” The Best Gland On The Market?

Because it is designed with superior oil and water resisting seals of the fully dynamic type. The TS-2000 Rod Seal compensates automatically for pressure, temperature and wear conditions. This feature, coupled with our method of retaining these seals in the gland, results in a practically tamper-proof seal.



Look at a cross-section of the “JEWEL.” As the rod strokes out from the seal, the rod motion and its friction tend to dynamically flex the inner edge of the TS-2000 rod seal in contact with the rod. This provides a cutting action to shear the oil from the rod, allowing the rod to pass out of the TS-2000 rod seal practically dry. Imagine that some oil wipes past the TS-2000 rod seal as the piston rod strokes out. It won't get far for it is stopped by the inner lip of the Wiperseal and is held between it and the TS-2000 rod seal. As the rod returns, any dirt or foreign matter which has collected on the rod is wiped off by the leading edge, or outer lip of the Wiperseal.

At the same time, any oil which may be trapped between the Wiperseal and the TS-2000 rod seal tends to adhere to the rod; and because of the rod motion, a dynamic flexing action of the TS-2000 rod seal occurs which causes the oil to be returned past the TS-2000 rod seal into the cylinder proper. In other words, we have an automatic check valve that prevents any appreciable amount of oil to leak past the seals, and then returns any that has managed to wipe by the TS-2000 rod seal.

The location of the bearing area of this remarkable gland is unique. Note that the major bearing surface is on the *cylinder* side of the seals. This assures optimum lubrication and cooling of this vital surface by the fluid used in the cylinder.

The O-ring seal on the O.D. of the gland also serves as a prevailing torque locking device to prevent rotation of the gland when in service.

Realizing that even the best gland and seal combination will eventually need attention, Parker-Hannifin engineers have designed the gland to minimize down time and maintenance costs. A threaded gland is more expensive to make than a snap ring retained type. However, we feel that the threaded design is far superior for at least two reasons. First, the snap ring retained type always has some end play. This results in wipeage of the hydraulic fluid past the O.D. sealing ring. Second, the threaded construction is preferred by hydraulic maintenance men. They prefer to unscrew a part rather than to “fish it out” (providing they have managed to locate the tools to remove a snap ring.)

Almost every hydraulic engineer to whom we have shown the “Jewel” has exclaimed... “This makes SENSE!”

For additional information – call your local Parker Cylinder Distributor.

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Parker Series 2A Air Cylinder

When the job calls for reliable, heavy-duty performance, specify Series 2A. A 100,000 psi yield strength chrome-plated, case-hardened piston rod. A 125,000 psi yield strength rod-end stud with rolled threads. 100,000 psi yield strength tie rods. With construction like this, the Parker Series 2A is rated for air service to 250 psi. This is one heavy-duty air cylinder that's really heavy duty.

They're truly premium quality cylinders, factory prelubricated for millions of maintenance-free cycles. And to make sure every cylinder is premium quality, we subject each and every one – not just batch samples – to tough inspection and performance tests. See pages 18 and 19 for the inside story on all the features that make Series 2A the high performance, long lasting choice for all your heavy-duty air applications.



For additional information – call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Specifications/ Mountings

Standard Specifications

- Heavy Duty Service – ANSI/NFPA T3.6.7R2-1996 Specifications and Mounting Dimension Standards
- Standard Construction – Square Head – Tie Rod Design
- Nominal Pressure – Up to 250 PSI Air Service
- Standard Fluid – Filtered Air
- Standard Temperature – -10°F. to +165°F.
- Bore Sizes – 1" through 14" (Larger sizes available)

In line with our policy of continuing product improvement, specifications in this catalog are subject to change.

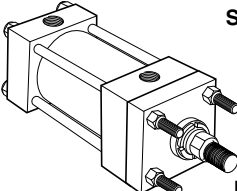
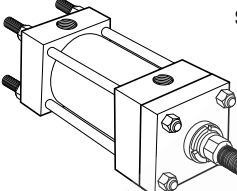
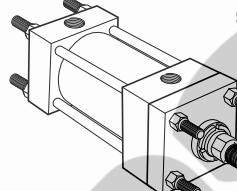
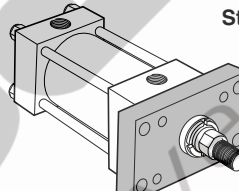
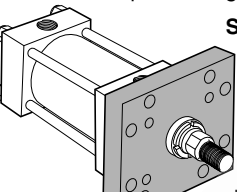
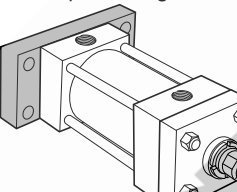
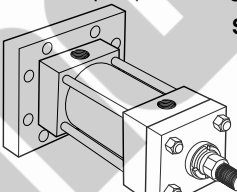
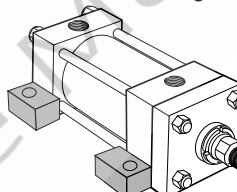
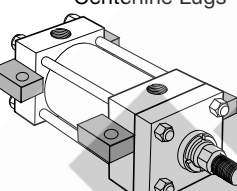
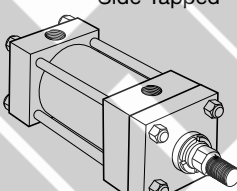
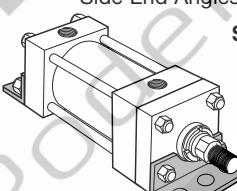
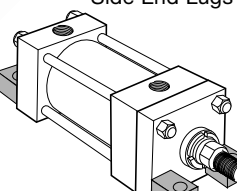
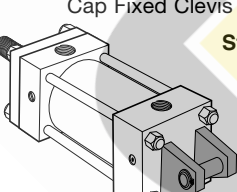
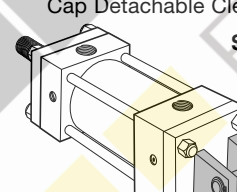
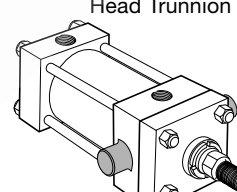
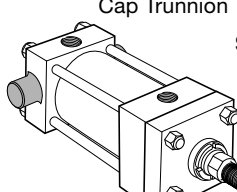
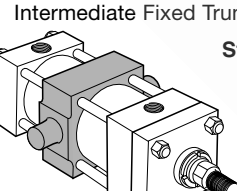
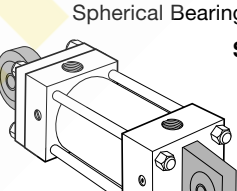
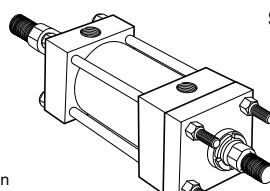
Note: Series 2A Air Cylinders fully meet ANSI/NFPA T3.6.7R2-1996 Specifications and Mounting Dimension Standards for Square Head Industrial Fluid Power Cylinders.

Parker Style TB, JB, HB, C, DB, and BB are available in 7" bore size, see page 32.

- Piston Rod Diameter – 1/2" through 5 1/2"
- Mounting Styles – 17 standard styles at various application ratings
- Strokes – Available in any practical stroke length
- Cushions – Optional at either end or both ends of stroke. "Float Check" at cap end.
- Rod Ends – Three Standard Choices – Specials to Order

*See section C, "Operating Fluids and Temperature Range" for higher temperature service.

Available Mounting Styles

Tie Rods Extended Head End Style TB  1"-6", Page 20 (NFPA MX3) 8"-14", Page 34	Tie Rods Extended Cap End Style TC  1"-6", Page 20 (NFPA MX2) 8"-14", Page 34	Tie Rods Extended Both Ends Style TD  1"-6", Page 20 (NFPA MX1) 8"-14", Page 34	Head Rectangular Flange Style J  1"-6", Page 20 (NFPA MF1)
Head Square Flange Style JB  1"-6", Page 22 (NFPA MF5) 8"-14", Page 34	Cap Rectangular Flange Style H  1"-6", Page 20 (NFPA MF2)	Cap Square Flange Style HB  1"-6", Page 22 (NFPA MF6) 8"-14", Page 34	Side Lug Style C  1"-6", Page 24 (NFPA MS2) 8"-14", Page 36
Centerline Lugs Style E  1 1/2"-6", Page 24 (NFPA MS3) 8"-14", Page 36	Side Tapped Style F  1"-6", Page 24 (NFPA MS4) 8"-14", Page 38	Side End Angles Style CB  1"-6", Page 26 (NFPA MS1) 8"-14", Page 40	Side End Lugs Style G  1"-6", Page 26 (NFPA MS7) 8"-14", Page 38
Cap Fixed Clevis Style BB  1"-6", Page 30 (NFPA MP1) 8"-14", Page 40	Cap Detachable Clevis Style BC  1"-6", Page 30 (NFPA MP2)	Head Trunnion Style D  1"-6", Page 28 (NFPA MT1) 8"-14", Page 42	Cap Trunnion Style DB  1"-6", Page 28 (NFPA MT2) 8"-14", Page 42
Intermediate Fixed Trunnion Style DD  1 1/2"-6", Page 28 (NFPA MT4) 8"-14", Page 42	Spherical Bearing Style SB  1 1/2"-6", Page 44 (NFPA MT4) 8"-14", Page 45	Double Rod Cylinders Style KTB Shown  Most of the above illustrated mounting styles are available in double rod cylinders. See Catalog Page 46.	

For Cylinder Division Plant Locations – See Page II.

The inside story on why Series 2A is your best choice in heavy duty pneumatic cylinders

Primary Seal – Unique Serrated Lipseal™ is a proven leakproof design, completely self-compensating and self-relieving to withstand variations and conform to mechanical deflection that may occur.

Piston Rod Stud – Furnished on 2" diameter rods and smaller when standard style #4 rod end threads are required or on 1 3/8" diameter rods and smaller when style #8 threads are required. Also available in 2 times the catalog "A" dimension length. Studs have rolled threads and are made from high strength steel. Anaerobic adhesive is used to permanently lock the stud to the piston rod.

"Jewel" Rod Gland Assembly – Externally removable without cylinder disassembly. Long bearing surface is inboard of the seals, assuring positive lubrication from within the cylinder. An "O" ring is used as a seal between gland and head, and also serves as a prevailing torque-type lock.

Secondary Seal – Double-Service Wiperseal™ – acts as a secondary pressure seal on the extend stroke and cleans the rod on the return stroke.

High Strength Tie Rods – Made from 100,000 psi minimum yield steel with rolled threads for added strength.

Adjustable Floating Cushions – Cushions are optional and can be supplied at head end, cap end, or both ends without change in envelope or mounting dimensions.

Steel Head – Bored and grooved to provide concentricity for mating parts.

Ports – NPTF ports are standard.

End Seals – Pressure-actuated cylinder body-to-head and cap "O" rings.

The Cylinder Body – Hard chrome-plated bore, steel tubing honed to a 15 micro inch finish on 1 1/2" through 14" bore sizes. 1" bore size is aluminum with hard-coated bore.

Adjustable floating cushions

Cushions are optional, and can be supplied at head end, cap end, or both ends without change in envelope or mounting dimensions. All Parker cushions are adjustable. The Series 2A cylinder design incorporates the longest cushion sleeve and cushion spear that can be provided in the standard envelope without decreasing the rod bearing and piston bearing lengths.

adjacent to the needle valve except on certain bores of mounting style C where it is mounted opposite the needle valve. It may be identified by the fact that it is slotted.

(1) When a cushion is specified at the head end:

- A self-centering sleeve is furnished on the piston rod assembly.
- A needle valve is provided that is flush with the side of the head when wide open. It may be identified by the fact that it is socket-keyed. It is located on side number 2, in all mounting styles except D, DB, DD, and E. In these styles it is located on side number 3.
- A springless check valve is provided that is also flush with the side of the head and is mounted

- The check and needle valves are interchangeable in the head.

(2) When a cushion is specified at the cap end:

- A cushion spear is provided on the piston rod assembly.
- A "float check" self-centering bushing is provided which incorporates a large flow check valve for fast "out-stroke" action.
- A socket-keyed needle valve is provided that is flush with the side of the cap when wide open. It is located on side number 2 in all mounting styles except D, DB, DD, and E. In these styles it is located on side number 3.

For additional information – call your local Parker Cylinder Distributor.

Piston Rod – Medium carbon steel, induction case-hardened, hard chrome-plated and polished to 10 RMS finish. Piston rods are made from 90,000 to 100,000 psi minimum yield material in 1/2" through 4" diameters. Larger diameters vary between 57,000 and 90,000 psi minimum material, depending on rod diameter. The piston thread equals the catalog style #4 rod end thread for each rod diameter to assure proper piston-to-rod thread strength. Two wrench flats are provided for rod end attachment.

Ports – NPTF ports are standard.

Steel Cap – Bored and grooved to provide concentricity for mating parts.

Alloy Steel Tie Rod Nuts

Align-A-Groove – A 3/16" wide surface machined at each end of the cylinder body. Makes precise mounting quick and easy.

One-Piece Nodular Iron Piston – The wide piston surface contacting cylinder bore reduces bearing loads. Anaerobic adhesive is used to permanently lock and seal the piston to the rod.

Piston Lipseal – Fully dynamic and self-compensating for variations in pressure, mechanical deflections and wear.

The exclusive "Jewel" gland gives you longer cylinder life, better performance and lower costs.

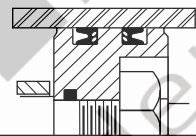


An extra-long inboard bearing surface insures lubrication from within the cylinder. Outboard of the bearing surface are two leakproof seals – The Lipseal and Wiperseal. The serrated Lipseal (primary seal) is completely self-compensating and self-relieving. It adjusts to mechanical deflections or any pressure variation from near-zero to rated operating pressure. The result is positive, no-leak sealing – regardless of conditions.

The Wiperseal does double duty. On the advance stroke, it acts as a secondary pressure seal. On the return, it wipes away any dirt on the rod. This means less wear on bearing surfaces and internal parts. Longer life for working parts. And, less loss of fluid. Plus, you can replace a "Jewel" gland without removing the tie rods or the retainer. Just a few twists with a spanner wrench does the job.

Prelubricated Wearing Surfaces

Parker Series 2A Air Cylinders are factory prelubricated. Lube-A-Cyl applied to seals, piston, cylinder bore, piston rod and gland surfaces provides lubrication for normal operation. Lube-A-Cyl has been field and laboratory tested, and is recommended by Parker for air cylinders where lubricant should remain in the cylinder and not be expelled into the atmosphere.



Piston with Retainer Nut – Optional at extra charge.

Cushion Length

Cylinder Bore (Inches)	Rod Diameter* (Inches)	Rod Number	Cushion Length (Inches)	
			Head*	Cap
1 1/2	5/8	1	7/8	13/16
	1	2	7/8	13/16
2	5/8	1	7/8	13/16
	1 3/8	2	7/8	13/16
2 1/2	5/8	1	7/8	13/16
	1 3/4	2	7/8	13/16
3 1/4	1	1	1 1/8	1
	2	2	13/16	1
4	1	1	1 1/8	1
	2 1/2	2	13/16	1
5	1	1	1 1/8	1
	3 1/2	2	13/16	1

Cylinder Bore (Inches)	Rod Diameter* (Inches)	Rod Number	Cushion Length (Inches)	
			Head*	Cap
6	1 3/8	1	1 3/8	1 1/4
	4	2	1 1/16	1 1/4
7	1 3/8	1	1 1/16	1 1/4
	2	4	1 1/16	1 1/4
8	1 3/8	1	1 1/16	1 1/4
	5 1/2	2	15/16	1 1/4
10	1 3/4	1	1 5/16	1 3/4
	5 1/2	0	1 3/16	1 3/4
12	2	1	1 5/16	1 3/4
	5 1/2	9	1 3/16	1 3/4
14	2 1/2	1	1 3/4	2
	5 1/2	8	1 11/16	2

*Head end cushions for rod diameters not listed have cushion lengths with the limits shown. For cushion selection and sizing see Section C.

For Cylinder Division Plant Locations – See Page II.

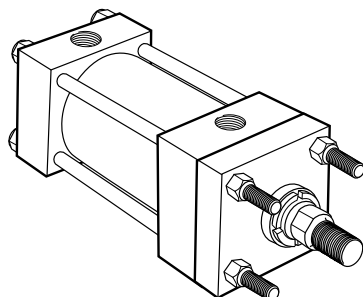


A

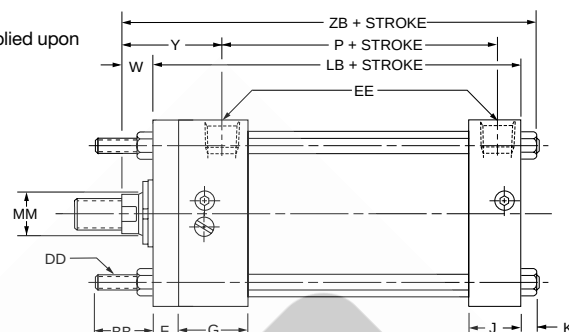
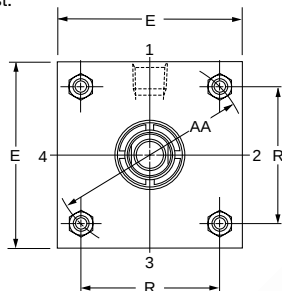
Tie Rod and Rectangular Flange Mountings 1" to 6" Bore Sizes

Series 2A Heavy Duty Air Cylinders

Tie Rods Extended Style TB (NFA Style MX3)

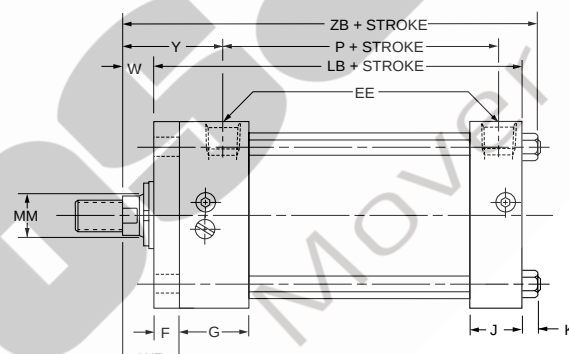
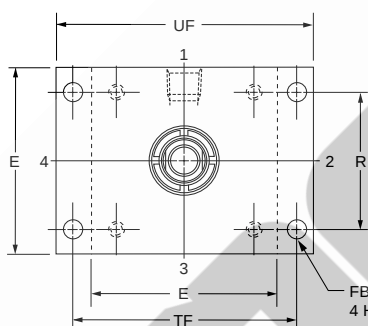
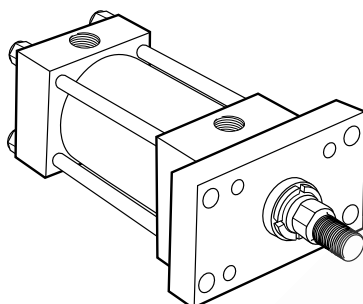


Basic Mounting (T) —
NFA MX0 — no tie rods extended can be supplied upon request.

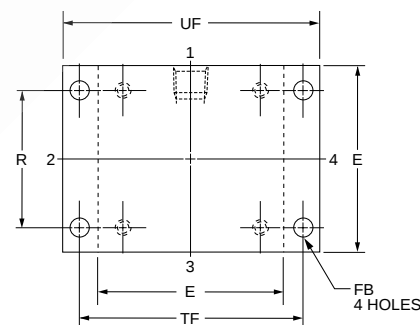
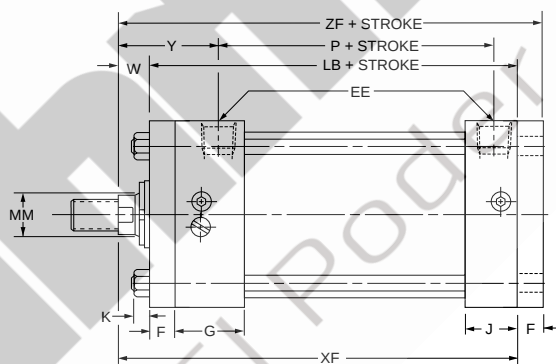
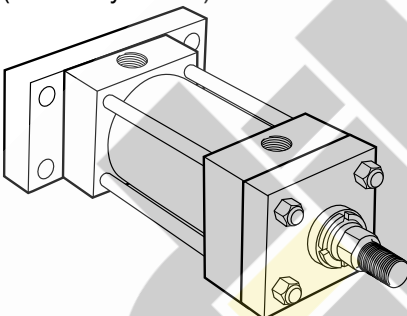


Style TB (NFA MX3). Head Tie Rods Extended, illustrated: Style TC (NFA MX2), Cap Tie Rods Extended; and Style TD (NFA MX1). Both Ends Tie Rods Extended are also available. All "T" styles can be dimensioned from Style TB drawing at right.

Head Rectangular Flange Style J (NFA Style MF1)

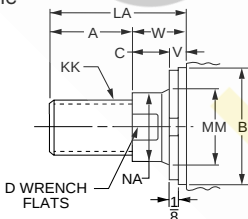


Cap Rectangular Flange Style H (NFA Style MF2)



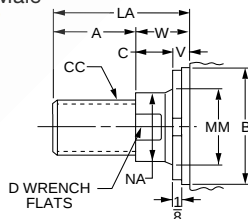
Rod End Dimensions — see table 2

Thread Style 4 (NFA Style SM) Small Male



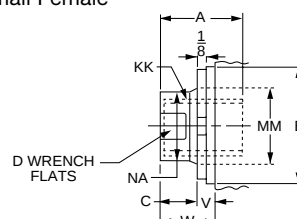
A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8 (NFA Style IM) Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9 (NFA Style SF) Small Female



"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

For additional information — call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Tie Rod and
Rectangular Flange Mountings
1" to 6" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	AA	BB	DD	E	EE NPTF	F	FB	G	J	K	R	TF	UF	Add Stroke	
														LB	P
1*	1.53	3/4	10-24	■	1/4	3/8	1/4	11/2	1	3/16	1.08	2	2 1/2	37/8	2 1/8
1 1/2	2.02	1	1/4-28	2	3/8**	3/8	5/16	11/2	1	1/4	1.43	2 3/4	3 3/8	4	2 1/4
2	2.6	1 1/8	5/16-24	2 1/2	3/8**	3/8	3/8	11/2	1	5/16	1.84	3 3/8	4 1/8	4	2 1/4
2 1/2	3.1	1 1/8	5/16-24	3	3/8**	3/8	3/8	11/2	1	5/16	2.19	3 7/8	4 5/8	4 1/8	2 3/8
3 1/4	3.9	1 3/8	3/8-24	3 3/4	1/2	5/8	7/16	1 3/4	1 1/4	3/8	2.76	4 11/16	5 1/2	4 7/8	2 5/8
4	4.7	1 3/8	3/8-24	4 1/2	1/2	5/8	7/16	1 3/4	1 1/4	3/8	3.32	5 7/16	6 1/4	4 7/8	2 5/8
5	5.8	1 13/16	1/2-20	5 1/2	1/2	5/8	9/16	1 3/4	1 1/4	7/16	4.10	6 5/8	7 5/8	5 1/8	2 7/8
6	6.9	1 13/16	1/2-20	6 1/2	3/4	3/4	9/16	2	1 1/2	7/16	4.88	7 5/8	8 5/8	5 3/4	3 1/8

* Cushions not available on 1" bore.

** On 1", 1 1/2", 2" and 2 1/2" bore sizes, the head-end (only) pipe thread is not full depth on cylinders with No. 2 rods. Minimum of three full threads available.

■ 1" bore head dimension is 1 3/4" x 1 1/2". See page B20.

Table 3 — Envelope and Mounting Dimensions

Table 2—Rod Dimensions

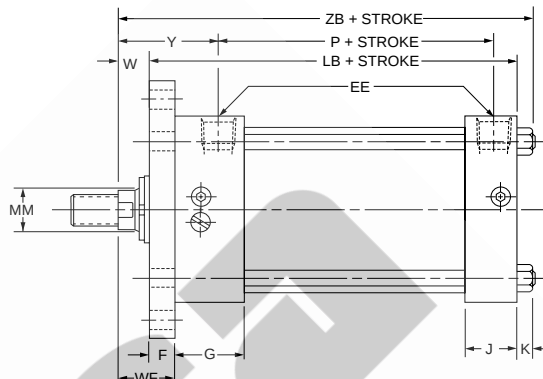
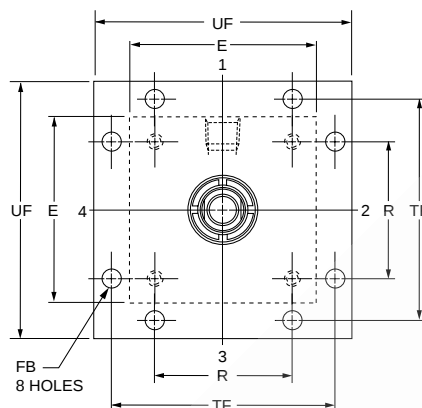
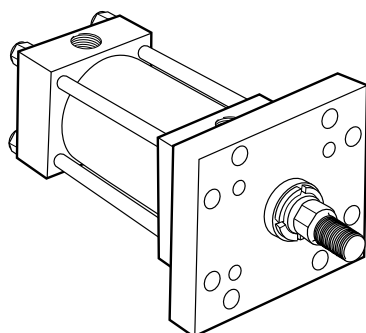
Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions								Add Stroke				
			Style 8 CC	Style 4 & 9 KK	A	+0.000 -0.002 B	C	D	LA	NA	V	W	WF	Y	XF	ZB	ZF
1	1(Std.)	1/2	7/16-20	5/16-24	5/8	.999	3/8	3/8	11/4	7/16	1/4	5/8	1	1 15/16	4 1/2	4 11/16	4 7/8
	2	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1	1 15/16	4 1/2	4 11/16	4 7/8
1 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1	1 15/16	4 5/8	4 7/8	5
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	1 3/8	2 5/16	5	5 1/4	5 3/8
2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1	1 15/16	4 5/8	4 15/16	5
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	1 5/8	2 9/16	5 1/4	5 9/16	5 5/8
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	1 3/8	2 5/16	5	5 5/16	5 3/8
2 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1	1 15/16	4 3/4	5 1/16	5 1/8
	2	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/2	1 11/16	3/4	1 1/2	1 7/8	2 13/16	5 5/8	5 15/16	6
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	1 3/8	2 5/16	5 1/8	5 7/16	5 1/2
	4	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	1 5/8	2 9/16	5 3/8	5 11/16	5 3/4
3 1/4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1 3/8	2 7/16	5 5/8	6	6 1/4
	2	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2	3 1/16	6 1/4	6 5/8	6 7/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	1 5/8	2 11/16	5 7/8	6 1/4	6 1/2
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	1 7/8	2 15/16	6 1/8	6 1/2	6 3/4
4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1 3/8	2 7/16	5 5/8	6	6 1/4
	2	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	2 1/4	3 5/16	6 1/2	6 7/8	7 1/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	1 5/8	2 11/16	5 7/8	6 1/4	6 1/2
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	1 7/8	2 15/16	6 1/8	6 1/2	6 3/4
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2	3 1/16	6 1/4	6 5/8	6 7/8
5	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1 3/8	2 7/16	5 7/8	6 5/16	6 1/2
	2	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 1/8	3 3/8	5/8	1 5/8	2 1/4	3 5/16	6 3/4	7 3/16	7 3/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	1 5/8	2 11/16	6 1/8	6 9/16	6 3/4
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	1 7/8	2 15/16	6 3/8	6 13/16	7
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2	3 1/16	6 1/2	6 15/16	7 1/8
	6	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	2 1/4	3 5/16	6 3/4	7 3/16	7 3/8
	7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 1/8	2 7/8	5/8	1 5/8	2 1/4	3 5/16	6 3/4	7 3/16	7 3/8
6	1(Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	1 5/8	2 13/16	6 5/8	7 1/16	7 3/8
	2	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/2	3 7/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	1 7/8	3 1/16	6 7/8	7 5/16	7 5/8
	4	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 1/2	1 15/16	3/8	1 1/4	2	3 3/16	7	7 7/16	7 3/4
	5	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/2	2 3/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8
	6	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5	2 7/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8
	7	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5	3 3/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8

For Cylinder Division Plant Locations – See Page II.

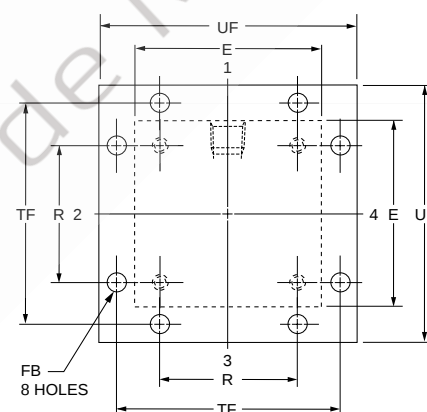
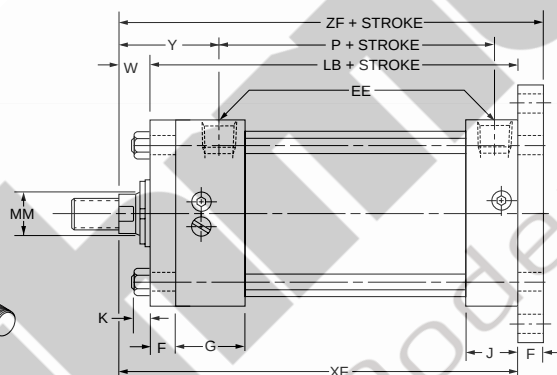
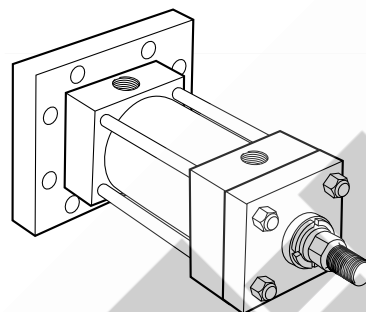
Square Flange Mountings 1" to 6" Bore Sizes

Series 2A Heavy Duty Air Cylinders

Head Square Flange Style JB (NFPA Style MF5)

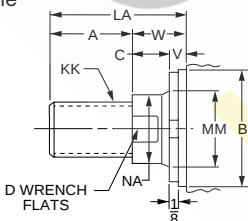


Cap Square Flange Style HB (NFPA Style MF6)

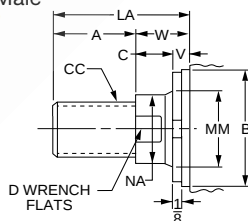


Rod End Dimensions — see table 2

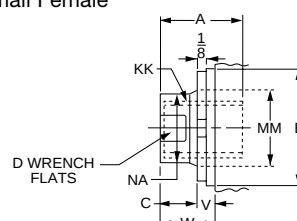
Thread Style 4 (NFPA Style SM) Small Male



Thread Style 8 (NFPA Style IM) Intermediate Male



Thread Style 9 (NFPA Style SF) Small Female



“Special” Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available. To order, specify “Style 3” and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

For additional information – call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Square Flange Mountings
1" to 6" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	E	EE NPTF	F	FB	G	J	K	R	TF	UF	Add Stroke	
											LB	P
1*	■	1/4	3/8	1/4	1 1/2	1	3/16	1.08	2	2 1/2	3 7/8	2 1/8
1 1/2	2	3/8**	3/8	5/16	1 1/2	1	1/4	1.43	2 3/4	3 3/8	4	2 1/4
2	2 1/2	3/8**	3/8	3/8	1 1/2	1	5/16	1.84	3 3/8	4 1/8	4	2 1/4
2 1/2	3	3/8**	3/8	3/8	1 1/2	1	5/16	2.19	3 7/8	4 5/8	4 1/8	2 3/8
3 1/4	3 3/4	1/2	5/8	7/16	1 3/4	1 1/4	3/8	2.76	4 11/16	5 1/2	4 7/8	2 5/8
4	4 1/2	1/2	5/8	7/16	1 3/4	1 1/4	3/8	3.32	5 7/16	6 1/4	4 7/8	2 5/8
5	5 1/2	1/2	5/8	9/16	1 3/4	1 1/4	7/16	4.10	6 5/8	7 5/8	5 1/8	2 7/8
6	6 1/2	3/4	3/4	9/16	2	1 1/2	7/16	4.88	7 5/8	8 5/8	5 3/4	3 1/8

* Cushions not available on 1" bore.

** On 1", 1 1/2", 2" and 2 1/2" bore sizes, the head-end (only) pipe thread is not full depth on cylinders with No. 2 rods. Minimum of three full threads available.

■ 1" bore head dimension is 1 3/4" x 1 1/2". See page B20.

Table 3 — Envelope and Mounting Dimensions

Table 2—Rod Dimensions

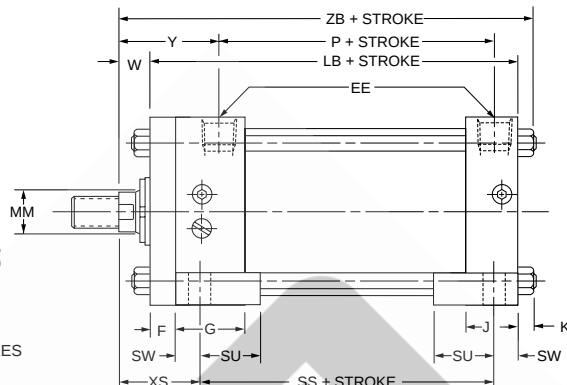
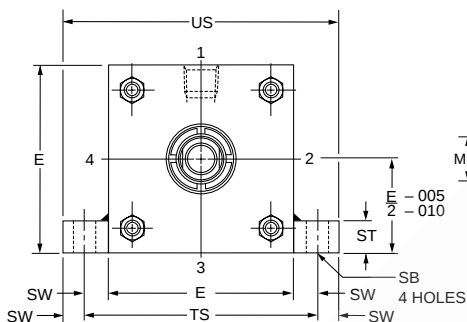
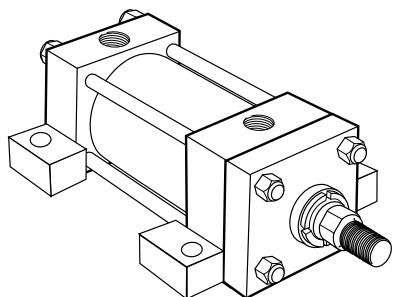
Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions								Add Stroke				
			Style 8 CC	Style 4 & 9 KK	A	+0.000 -0.002 B	C	D	LA	NA	V	W	WF	Y	XF	ZB	ZF
1	1(Std.)	1/2	7/16-20	5/16-24	5/8	.999	3/8	3/8	1 1/4	7/16	1/4	5/8	1	1 15/16	4 1/2	4 11/16	4 7/8
	2	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	1 15/16	4 1/2	4 11/16	4 7/8
1 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	1 15/16	4 5/8	4 7/8	5
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	1 3/8	2 5/16	5	5 1/4	5 3/8
2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	1 15/16	4 5/8	4 15/16	5
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	1 5/16	5/8	1 1/4	1 5/8	2 9/16	5 1/4	5 9/16	5 5/8
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	1 3/8	2 5/16	5	5 5/16	5 3/8
2 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1	1 15/16	4 3/4	5 1/16	5 1/8
	2	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/2	1 11/16	3/4	1 1/2	1 7/8	2 13/16	5 5/8	5 15/16	6
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	1 3/8	2 5/16	5 1/8	5 7/16	5 1/2
	4	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	1 5/16	5/8	1 1/4	1 5/8	2 9/16	5 3/8	5 11/16	5 3/4
3 1/4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	1 3/8	2 7/16	5 5/8	6	6 1/4
	2	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2	3 1/16	6 1/4	6 5/8	6 7/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 11/16	5 7/8	6 1/4	6 1/2
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	1 7/8	2 15/16	6 1/8	6 1/2	6 3/4
4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	1 3/8	2 7/16	5 5/8	6	6 1/4
	2	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	2 1/4	3 5/16	6 1/2	6 7/8	7 1/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 11/16	5 7/8	6 1/4	6 1/2
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	1 7/8	2 15/16	6 1/8	6 1/2	6 3/4
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2	3 1/16	6 1/4	6 5/8	6 7/8
5	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	1 3/8	2 7/16	5 7/8	6 5/16	6 1/2
	2	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 1/8	3 3/8	5/8	1 5/8	2 1/4	3 5/16	6 3/4	7 3/16	7 3/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	1 5/8	2 11/16	6 1/8	6 9/16	6 3/4
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	1 7/8	2 15/16	6 3/8	6 13/16	7
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2	3 1/16	6 1/2	6 15/16	7 1/8
	6	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	2 1/4	3 5/16	6 3/4	7 3/16	7 3/8
	7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 1/8	2 7/8	5/8	1 5/8	2 1/4	3 5/16	6 3/4	7 3/16	7 3/8
6	1(Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	1 5/8	2 13/16	6 5/8	7 1/16	7 3/8
	2	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/2	3 7/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	1 7/8	3 1/16	6 7/8	7 5/16	7 5/8
	4	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 1/2	1 15/16	3/8	1 1/4	2	3 3/16	7	7 7/16	7 3/4
	5	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/2	2 3/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8
	6	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5	2 7/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8
	7	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5	3 3/8	1/2	1 1/2	2 1/4	3 7/16	7 1/4	7 11/16	8

For Cylinder Division Plant Locations – See Page II.

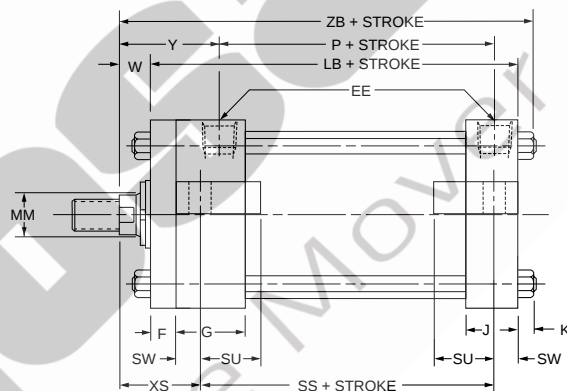
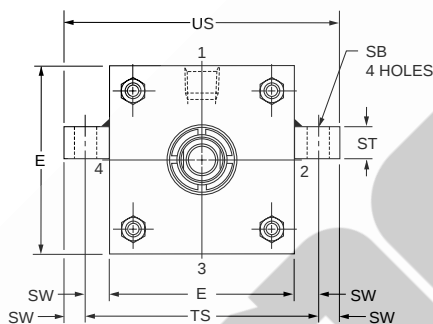
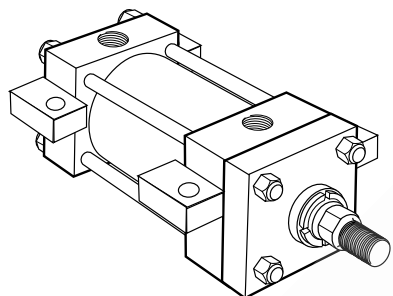
Side Lugs, Centerline Lugs and Side Tapped Mountings 1" to 6" Bore Sizes

Series 2A Heavy Duty Air Cylinders

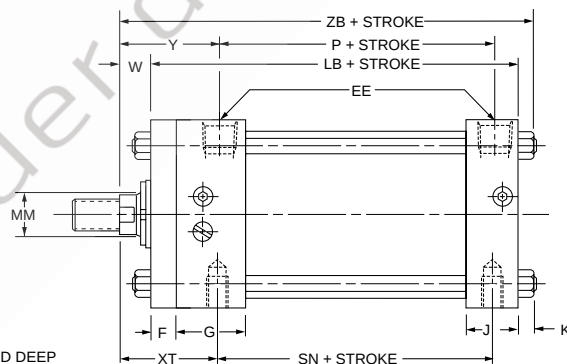
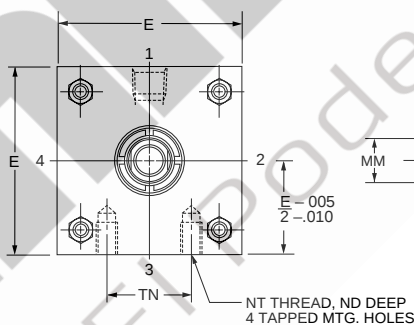
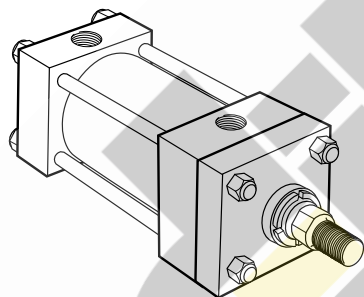
Side Lug Style C (NFA Style MS2)



Centerline Lugs Style E (NFA Style MS3)

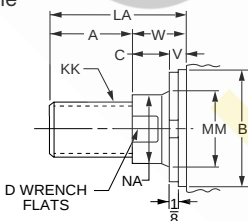


Side Tapped Style F (NFA Style MS4)



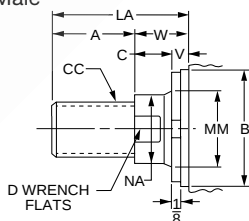
Rod End Dimensions — see table 2

Thread Style 4 (NFA Style SM) Small Male



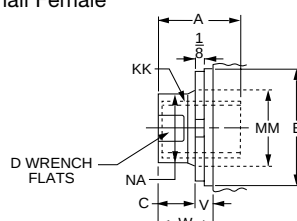
A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8 (NFA Style IM) Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9 (NFA Style SF) Small Female



"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available. To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

For additional information — call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Side Lugs, Centerline Lugs
and Side Tapped Mountings
1" to 6" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	E	EE NPTF	F	G	J	K	NT	SB•	ST	SU	SW	TN	TS	US	Add Stroke			
															LB	P	SN	SS
1*	■	1/4	3/8	1 1/2	1	3/16	10-24	9/32†	5/16†	3/4†	5/16†	9/16	2 1/8†	2 3/4†	37/8	2 1/8	2 1/8	27/8†
1 1/2	2	3/8**	3/8	1 1/2	1	1/4	1/4-20	7/16	1/2	15/16	3/8	5/8	2 3/4	3 1/2	4	2 1/4	2 1/4	27/8
2	2 1/2	3/8**	3/8	1 1/2	1	5/16	5/16-18	7/16	1/2	15/16	3/8	7/8	3 1/4	4	4	2 1/4	2 1/4	27/8
2 1/2	3	3/8**	3/8	1 1/2	1	5/16	3/8-16	7/16	1/2	15/16	3/8	1 1/4	3 3/4	4 1/2	4 1/8	2 3/8	2 3/8	3
3 1/4	3 3/4	1/2	5/8	1 3/4	1 1/4	3/8	1/2-13	9/16	3/4	1 1/4	1/2	1 1/2	4 3/4	5 3/4	47/8	2 5/8	2 5/8	3 1/4
4	4 1/2	1/2	5/8	1 3/4	1 1/4	3/8	1/2-13	9/16	3/4	1 1/4	1/2	2 1/16	5 1/2	6 1/2	47/8	2 5/8	2 5/8	3 1/4
5	5 1/2	1/2	5/8	1 3/4	1 1/4	7/16	5/8-11	13/16	1	1 9/16	1 1/16	2 11/16	6 7/8	8 1/4	5 1/8	27/8	27/8	3 1/8
6	6 1/2	3/4	3/4	2	1 1/2	7/16	3/4-10	13/16	1	1 9/16	1 1/16	3 1/4	7 7/8	9 1/4	5 3/4	3 1/8	3 1/8	3 5/8

* Cushions not available on 1" bore.

** On 1", 1 1/2", 2" and 2 1/2" bore sizes, the head-end (only) pipe thread is not full depth on cylinders with No. 2 rods. Minimum of three full threads available.

• Upper surface spot-faced for socket head screws.

† Mounting style E not available in 1" bore. ■ 1" bore head dimension is 1 3/4" x 1 1/2". See page B20.

Table 3 — Envelope and
Mounting Dimensions

Table 2—Rod Dimensions

Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions									ND	XS	XT	Y	Add Stroke
			Style 8 CC	Style 4 & 9 KK	A	+0.000 -0.002 B	C	D	LA	NA	V	W	ZB					
1	1(Std.)	1/2	7/16-20	5/16-24	5/8	.999	3/8	3/8	1 1/4	7/16	1/4	5/8	1/4	15/16*	1 15/16	1 15/16	4 11/16	
	2	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1/4	15/16*	1 15/16	1 15/16	4 11/16	
1 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	5/16	1 3/8	1 15/16	1 15/16	4 7/8	
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	5/16	1 3/4	2 5/16	2 5/16	5 1/4	
2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	11/32	1 3/8	1 15/16	1 15/16	4 15/16	
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	11/32	2	2 9/16	2 9/16	5 9/16	
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	11/32	1 3/4	2 5/16	2 5/16	5 5/16	
2 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	7/16	1 3/8	1 15/16	1 15/16	5 1/16	
	2	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/2	1 11/16	3/4	1 1/2	7/16	2 1/4	2 13/16	2 13/16	5 15/16	
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	7/16	1 3/4	2 5/16	2 5/16	5 7/16	
	4	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	7/16	2	2 9/16	2 9/16	5 11/16	
3 1/4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	1/2	1 7/8	2 7/16	2 7/16	6	
	2	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	1/2	2 1/2	3 1/16	3 1/16	6 5/8	
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	1/2	2 1/8	2 11/16	2 11/16	6 1/4	
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	1/2	2 3/8	2 15/16	2 15/16	6 1/2	
4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	5/8	1 7/8	2 7/16	2 7/16	6	
	2	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	5/8	2 3/4	3 5/16	3 5/16	6 7/8	
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	5/8	2 1/8	2 11/16	2 11/16	6 1/4	
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	5/8	2 3/8	2 15/16	2 15/16	6 1/2	
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	5/8	2 1/2	3 1/16	3 1/16	6 5/8	
5	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	3/4	2 1/16	2 7/16	2 7/16	6 5/16	
	2	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 1/8	3 3/8	5/8	1 5/8	3/4	2 15/16	3 5/16	3 5/16	7 3/16	
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	3/4	2 5/16	2 11/16	2 11/16	6 9/16	
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	3/4	2 9/16	2 15/16	2 15/16	6 13/16	
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	3/4	2 11/16	3 1/16	3 1/16	6 15/16	
	6	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	3/4	2 15/16	3 5/16	3 5/16	7 3/16	
	7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 1/8	2 7/8	5/8	1 5/8	3/4	2 15/16	3 5/16	3 5/16	7 3/16	
6	1(Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	7/8	2 5/16	2 13/16	2 13/16	7 1/16	
	2	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/2	3 7/8	1/2	1 1/2	7/8	2 15/16	3 7/16	3 7/16	7 11/16	
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	7/8	2 9/16	3 1/16	3 1/16	7 5/16	
	4	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 1/2	1 15/16	3/8	1 1/4	7/8	2 11/16	3 3/16	3 3/16	7 7/16	
	5	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/2	2 3/8	1/2	1 1/2	7/8	2 15/16	3 7/16	3 7/16	7 11/16	
	6	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5	2 7/8	1/2	1 1/2	7/8	2 15/16	3 7/16	3 7/16	7 11/16	

* Mounting style E not available in 1" bore.

For Cylinder Division Plant Locations – See Page II.

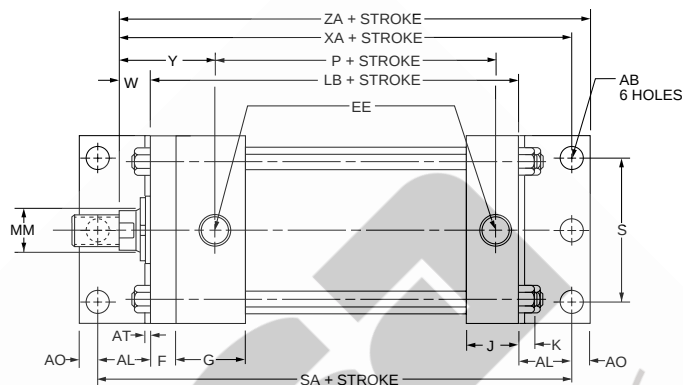
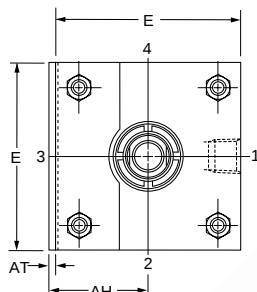
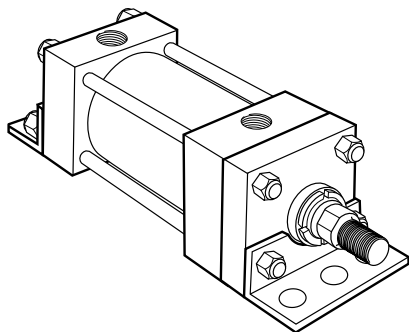
Side End Angles and Side End Lugs Mountings 1" to 6" Bore Sizes

Series 2A Heavy Duty Air Cylinders

Side End Angles

Style CB

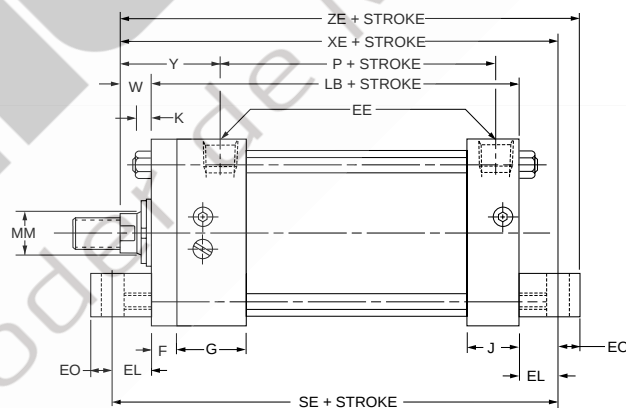
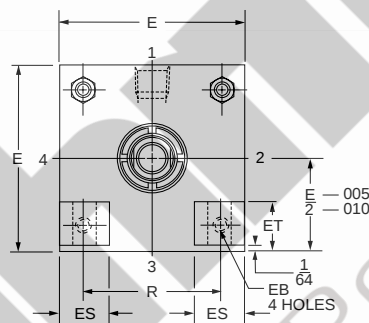
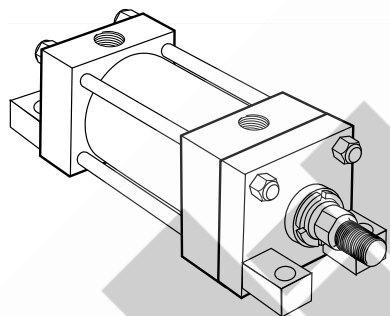
(NFPA Style MS1)



Side End Lugs

Style G

(NFPA Style MS7)

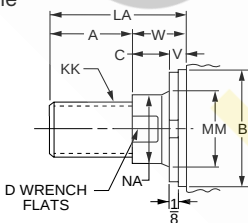


Rod End Dimensions — see table 2

Thread Style 4

(NFPA Style SM)

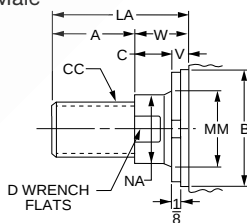
Small Male



Thread Style 8

(NFPA Style IM)

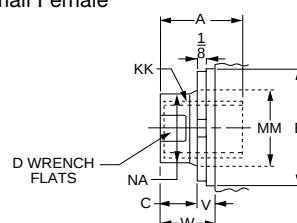
Intermediate Male



Thread Style 9

(NFPA Style SF)

Small Female



A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

For additional information – call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Side End Angles and
Side End Lugs Mountings
1" to 6" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	AB	AH	AL	AO	AT	E	EB	EE NPTF	EL	EO	ES	ET	F	G	J	K	R	S	Add Stroke			
																			LB	P	SA	SE
1*	3/8†	1†	13/16†	5/16†	1/8†	■	•	1/4	•	•	•	•	3/8	11/2	1	3/16	1.08•	15/16†	37/8	2 1/8	5 1/2†	•
1 1/2	7/16	13/16	1	3/8	1/8	2	5/16	3/8**	3/4	1/4	9/16	17/32	3/8	11/2	1	1/4	1.43	1 1/4	4	2 1/4	6	5 1/2
2	7/16	17/16	1	3/8	1/8	2 1/2	3/8	3/8**	15/16	5/16	5/8	5/8	3/8	11/2	1	5/16	1.84	1 3/4	4	2 1/4	6	5 7/8
2 1/2	7/16	15/8	1	3/8	1/8	3	3/8	3/8**	11/16	5/16	13/16	25/32	3/8	11/2	1	5/16	2.19	2 1/4	4 1/8	23/8	6 1/8	6 1/4
3 1/4	9/16	1 15/16	1 1/4	1/2	1/8	3 3/4	7/16	1/2	7/8	3/8	1	15/16	5/8	13/4	1 1/4	3/8	2.76	2 3/4	4 7/8	25/8	7 3/8	6 5/8
4	9/16	2 1/4	1 1/4	1/2	1/8	4 1/2	7/16	1/2	1	3/8	1 1/4	15/32	5/8	13/4	1 1/4	3/8	3.32	3 1/2	4 7/8	25/8	7 3/8	6 7/8
5	1 1/16	2 3/4	1 3/8	5/8	3/16	5 1/2	9/16	1/2	1 1/16	1/2	1 3/8	13/8	5/8	13/4	1 1/4	7/16	4.10	4 1/4	5 1/8	27/8	7 7/8	7 1/4
6	1 3/16	3 1/4	1 3/8	5/8	3/16	6 1/2	9/16	3/4	1	1/2	1 3/4	1 19/32	3/4	2	1 1/2	7/16	4.88	5 1/4	5 3/4	3 1/8	8 1/2	7 3/4

* Cushions not available on 1" bore.

** On 1", 1 1/2", 2" and 2 1/2" bore sizes, the head-end (only) pipe thread is not full depth on cylinders with No. 2 rods. Minimum of three full threads available.

† Mounting style CB available in 1" bore for rod No. 1 only.

‡ Mounting style CB for 1" bore only is furnished with four mounting holes (two each end). Center holes omitted.

■ 1" bore head dimension is 1 3/4" x 1 1/2". See page B20.

• Mounting style G not available in 1" bore.

Table 2—Rod Dimensions

Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions								Y	Add Stroke			
			Style 8 CC	Style 4 & 9 KK	A	+0.000 -0.002 B	C	D	LA	NA	V	W		XA	XE	ZA	ZE
1	1(Std.)	1/2	7/16-20	5/16-24	5/8	.999	3/8	3/8	11/4	7/16	1/4	5/8	1 15/16	5 5/16*	•	5 5/8*	•
	2	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1 15/16	*	•	*	•
1 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1 15/16	5 5/8	5 3/8	6	5 5/8
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	2 5/16	6	5 3/4	6 3/8	6
2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1 15/16	5 5/8	5 9/16	6	5 7/8
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	2 9/16	6 1/4	6 3/16	6 5/8	6 1/2
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	2 5/16	6	5 15/16	6 3/8	6 1/4
2 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	13/8	9/16	1/4	5/8	1 15/16	5 3/4	5 13/16	6 1/8	6 1/8
	2	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/2	1 11/16	3/4	1 1/2	2 13/16	6 5/8	6 11/16	7	7
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	2 5/16	6 1/8	6 3/16	6 1/2	6 1/2
	4	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	2 9/16	6 3/8	6 7/16	6 3/4	6 3/4
3 1/4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	2 7/16	6 7/8	6 1/2	7 3/8	6 7/8
	2	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	3 1/16	7 1/2	7 1/8	8	7 1/2
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	2 11/16	7 1/8	6 3/4	7 5/8	7 1/8
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 15/16	7 3/8	7	7 7/8	7 3/8
4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	2 7/16	6 7/8	6 5/8	7 3/8	7
	2	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	3 5/16	7 3/4	7 1/2	8 1/4	7 7/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	2 11/16	7 1/8	6 7/8	7 5/8	7 1/4
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 15/16	7 3/8	7 1/8	7 7/8	7 1/2
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	3 1/16	7 1/2	7 1/4	8	7 5/8
5	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	2 7/16	7 1/4	6 15/16	7 7/8	7 7/16
	2	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 1/8	3 3/8	5/8	1 5/8	3 5/16	8 1/8	7 13/16	8 3/4	8 5/16
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	2 11/16	7 1/2	7 3/16	8 1/8	7 11/16
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 15/16	7 3/4	7 7/16	8 3/8	7 15/16
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	3 1/16	7 7/8	7 9/16	8 1/2	8 1/16
	6	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	3 5/16	8 1/8	7 13/16	8 3/4	8 5/16
	7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 1/8	2 7/8	5/8	1 5/8	3 5/16	8 1/8	7 13/16	8 3/4	8 5/16
6	1(Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	15/16	1/4	7/8	2 13/16	8	7 5/8	8 5/8	8 1/8
	2	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/2	3 7/8	1/2	1 1/2	3 7/16	8 5/8	8 1/4	9 1/4	8 3/4
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	3 1/16	8 1/4	7 7/8	8 7/8	8 3/8
	4	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 1/2	1 15/16	3/8	1 1/4	3 3/16	8 3/8	8	9	8 1/2
	5	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/2	2 3/8	1/2	1 1/2	3 7/16	8 5/8	8 1/4	9 1/4	8 3/4
	6	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5	2 7/8	1/2	1 1/2	3 7/16	8 5/8	8 1/4	9 1/4	8 3/4
	7	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5	3 3/8	1/2	1 1/2	3 7/16	8 5/8	8 1/4	9 1/4	8 3/4

* Mounting style CB available in 1" bore for rod No. 1 only.

• Mounting style G not available in 1" bore.

Caution: When using mounting styles CB and G, check clearance between mounting members and rod attachment or accessory. If necessary, specify longer rod extension to avoid interference with mounting members.

Table 3 — Envelope and Mounting Dimensions

For Cylinder Division Plant Locations – See Page II.

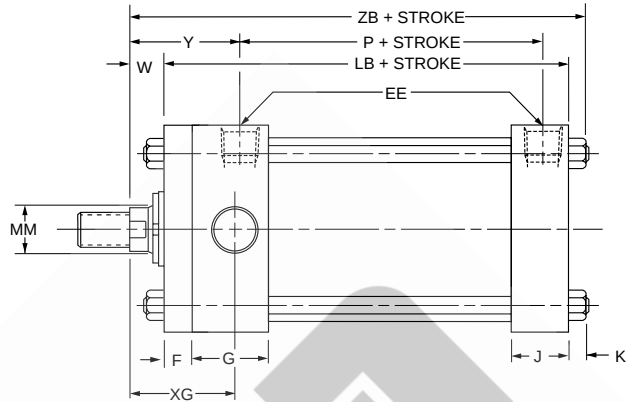
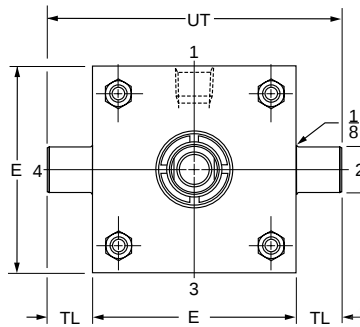
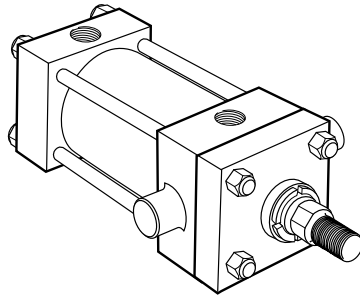


A

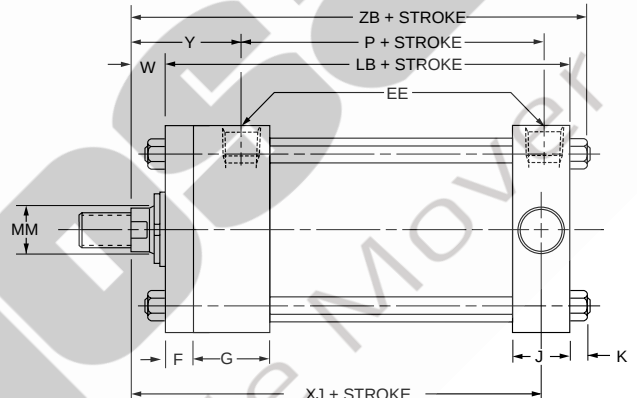
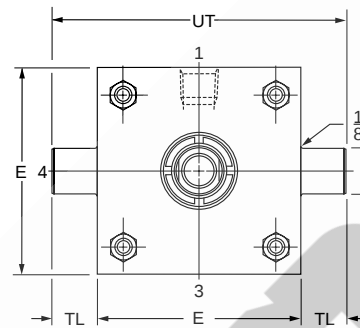
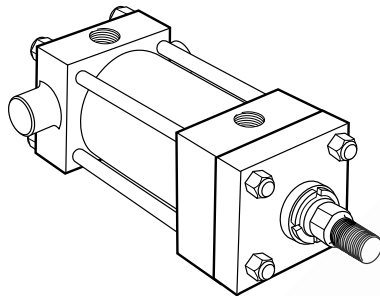
Trunnion Mountings 1" to 6" Bore Sizes

Series 2A Heavy Duty Air Cylinders

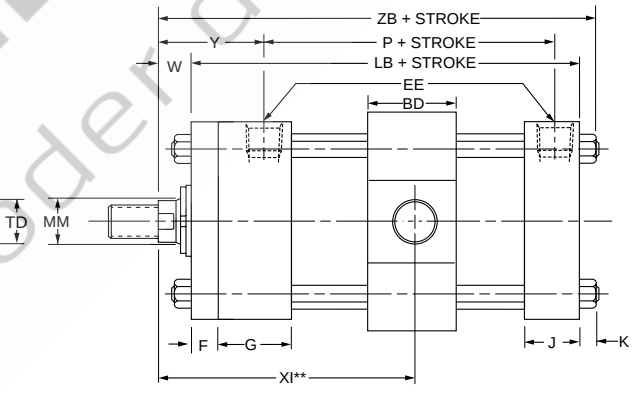
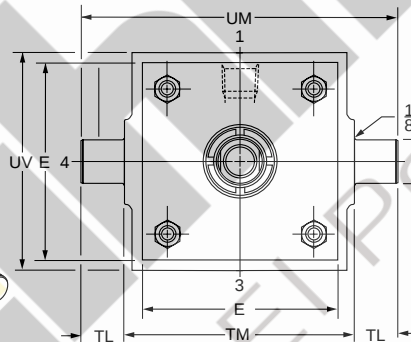
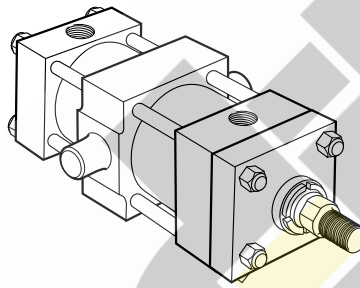
Head Trunnion Style D (NFPA Style MT1)



Cap Trunnion Style DB (NFPA Style MT2)

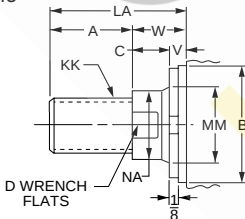


Intermediate Fixed Trunnion Style DD (NFPA Style MT4)

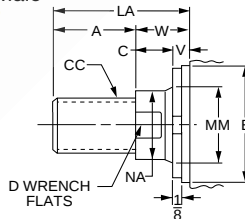


Rod End Dimensions — see table 2

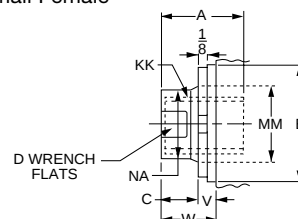
Thread Style 4 (NFPA Style SM) Small Male



Thread Style 8 (NFPA Style IM) Intermediate Male



Thread Style 9 (NFPA Style SF) Small Female



"Special" Thread Style 3

Special thread, rod eye, blank, etc., are also available. To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

For additional information — call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Trunnion Mountings
1" to 6" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	BD	E	EE NPTF	F	G	J	K	+0.000 TD -.001	TL	TM	UM	UT	UV	Add Stroke		Style DD Min. Stroke
														LB	P	
1*	•	■	1/4	3/8	1 1/2	1	3/16	.750	3/4	•	•	3	•	37/8	2 1/8	•
1 1/2	1 1/4	2	3/8**	3/8	1 1/2	1	1/4	1.000	1	2 1/2	4 1/2	4	2 1/2	4	2 1/4	1 1/2
2	1 1/2	2 1/2	3/8**	3/8	1 1/2	1	5/16	1.000	1	3	5	4 1/2	3	4	2 1/4	1 1/2
2 1/2	1 1/2	3	3/8**	3/8	1 1/2	1	5/16	1.000	1	3 1/2	5 1/2	5	3 1/2	4 1/8	2 3/8	3/8
3 1/4	2	3 3/4	1/2	5/8	1 3/4	1 1/4	3/8	1.000	1	4 1/2	6 1/2	5 3/4	4 1/4	4 7/8	2 5/8	7/8
4	2	4 1/2	1/2	5/8	1 3/4	1 1/4	3/8	1.000	1	5 1/4	7 1/4	6 1/2	5	4 7/8	2 5/8	7/8
5	2	5 1/2	1/2	5/8	1 3/4	1 1/4	7/16	1.000	1	6 1/4	8 1/4	7 1/2	6	5 1/8	2 7/8	5/8
6	2 1/2	6 1/2	3/4	3/4	2	1 1/2	7/16	1.375	1 3/8	7 5/8	10 3/8	9 1/4	7	5 3/4	3 1/8	1 1/8

* Cushions not available on 1" bore.

** On 1", 1 1/2", 2" and 2 1/2" bore sizes, the head-end (only) pipe thread is not full depth on cylinders with No. 2 rods. Minimum of three full threads available.

• Mounting style not available in 1" bore.

■ 1" bore head dimension is 1 3/4" x 1 1/2". See page B20.

Table 3 — Envelope and Mounting Dimensions

Table 2—Rod Dimensions

Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions								XG	Min.** XI	Y	Add Stroke	
			Style 8 CC	Style 4 & 9 KK	A	+0.000 -.002 B	C	D	LA	NA	V	W				XJ	ZB
1	1(Std.)	1/2	7/16-20	5/16-24	5/8	.999	3/8	3/8	1 1/4	7/16	1/4	5/8	1 3/4	*	1 15/16	4	4 11/16
	2	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 3/4	*	1 15/16	4	4 11/16
1 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 3/4	3 3/16	1 15/16	4 1/8	4 7/8
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	2 1/8	3 9/16	2 5/16	4 1/2	5 1/4
2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 3/4	3 5/16	1 15/16	4 1/8	4 5/16
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	1 5/16	5/8	1 1/4	2 3/8	3 15/16	2 9/16	4 3/4	5 9/16
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	2 1/8	3 11/16	2 5/16	4 1/2	5 5/16
2 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 3/4	3 5/16	1 15/16	4 1/4	5 1/16
	2	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/2	1 11/16	3/4	1 1/2	2 5/8	4 3/16	2 13/16	5 1/8	5 5/16
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	1 5/16	1/2	1	2 1/8	3 11/16	2 5/16	4 5/8	5 7/16
3 1/4	4	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	1 5/16	5/8	1 1/4	2 3/8	3 15/16	2 9/16	4 7/8	5 11/16
	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	2 1/4	4 3/16	2 7/16	5	6
	2	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2 7/8	4 13/16	3 1/16	5 5/8	6 5/8
4	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	2 1/2	4 7/16	2 11/16	5 1/4	6 1/4
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 3/4	4 11/16	2 15/16	5 1/2	6 1/2
	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	1 5/16	1/4	3/4	2 1/4	4 3/16	2 7/16	5	6
5	2	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	3 1/8	5 1/16	3 5/16	5 7/8	6 7/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	1 5/16	3/8	1	2 1/2	4 7/16	2 11/16	5 1/4	6 1/4
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 3/4	4 11/16	2 15/16	5 3/4	6 13/16
6	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	2 7/8	4 13/16	3 1/16	5 7/8	6 15/16
	6	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	3 1/8	5 1/16	3 5/16	6 1/8	7 3/16
	7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 1/8	2 7/8	5/8	1 5/8	3 1/8	5 1/16	3 5/16	6 1/8	7 3/16
6	1(Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	2 5/8	4 15/16	2 13/16	5 7/8	7 1/16
	2	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/2	3 7/8	1/2	1 1/2	3 1/4	5 9/16	3 7/16	6 1/2	7 11/16
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	2 7/8	5 3/16	3 1/16	6 1/8	7 5/16
	4	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 1/2	1 15/16	3/8	1 1/4	3	5 5/16	3 3/16	6 1/4	7 7/16
	5	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/2	2 3/8	1/2	1 1/2	3 1/4	5 9/16	3 7/16	6 1/2	7 11/16

* Mounting style DD not available in 1" bore.

**Dimension XI to be specified by customer.

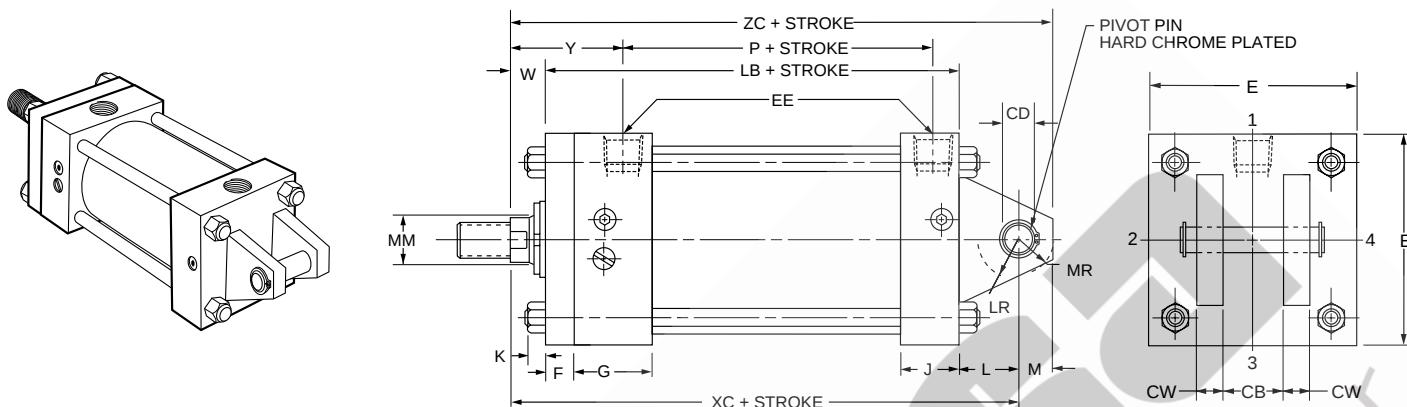
For Cylinder Division Plant Locations – See Page II.



Clevis Mountings 1" to 6" Bore Sizes

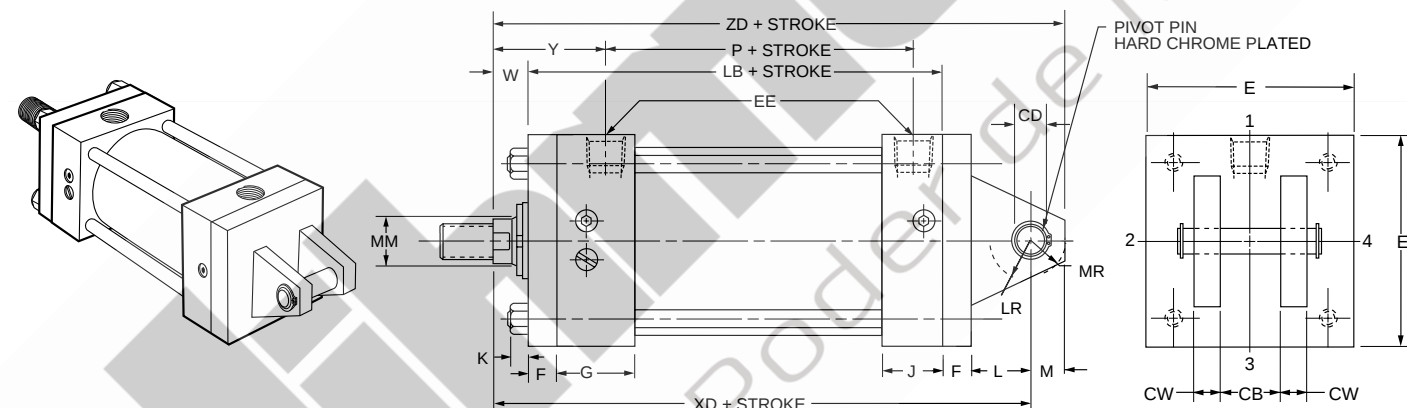
Series 2A Heavy Duty Air Cylinders

Cap Fixed Clevis Style BB (NFA Style MP1)



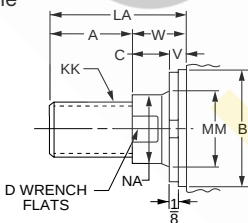
The 1", 4", 5" and 6" bore sizes have tie rod nuts at both ends as shown. Tie rods thread into cap on all other bore sizes.

Cap Detachable Clevis Style BC (NFA Style MP2)



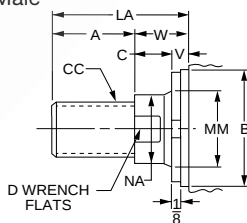
Rod End Dimensions — see table 2

Thread Style 4 (NFA Style SM) Small Male



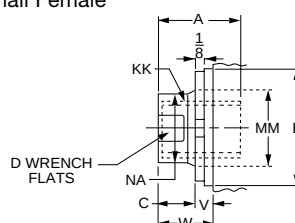
A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8 (NFA Style IM) Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9 (NFA Style SF) Small Female



"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available. To order, specify "Style 3" and give desired dimensions for CC or KK , A and LA . If otherwise special, furnish dimensioned sketch.

For additional information – call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Clevis Mountings
1" to 6" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	CB	+.000 CD -.002	CW	E	EE NPTF	F	G	J	K	L	LR	M	MR	Add Stroke	
														LB	P
1*	†	.441†	†	■	1/4	3/8	1 1/2	1	3/16	1 1/2†	1 1/2†	7/16†	1/2†	37/8	2 1/8
1 1/2	3/4	.501	1/2	2	3/8**	3/8	1 1/2	1	1/4	3/4	3/4	1/2	5/8	4	2 1/4
2	3/4	.501	1/2	2 1/2	3/8**	3/8	1 1/2	1	5/16	3/4	3/4	1/2	5/8	4	2 1/4
2 1/2	3/4	.501	1/2	3	3/8**	3/8	1 1/2	1	5/16	3/4	3/4	1/2	5/8	4 1/8	2 3/8
3 1/4	1 1/4	.751	5/8	3 3/4	1/2	5/8	1 3/4	1 1/4	3/8	1 1/4	1	3/4	15/16	4 7/8	2 5/8
4	1 1/4	.751	5/8	4 1/2	1/2	5/8	1 3/4	1 1/4	3/8	1 1/4	1	3/4	15/16	4 7/8	2 5/8
5	1 1/4	.751	5/8	5 1/2	1/2	5/8	1 3/4	1 1/4	7/16	1 1/4	1	3/4	15/16	5 1/8	2 7/8
6	1 1/2	1.001	3/4	6 1/2	3/4	3/4	2	1 1/2	7/16	1 1/2	1 1/4	1	13/16	5 3/4	3 1/8

* Cushions not available on 1" bore.

** On 1", 1 1/2", 2" and 2 1/2" bore sizes, the head-end (only) pipe thread is not full depth on cylinders with No. 2 rods. Minimum of three full threads available.

† In 1" bore size model only, a single eye mounting, 7/16" thick, is used. Dimension CD (.441") is hole diameter – pin not supplied.

• Dimension CD is pin diameter except in 1" bore. ■ 1" bore head dimension is 1 3/4" x 1 1/2". See page B20.

Table 3 — Envelope and Mounting Dimensions

Table 2—Rod Dimensions

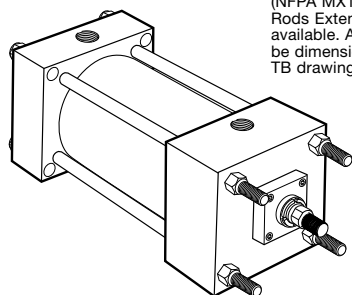
Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions								Add Stroke				
			Style 8 CC	Style 4 & 9 KK	A	+.000 -.002 B	C	D	LA	NA	V	W	Y	XC	XD	ZC	ZD
1	1(Std.)	1/2	7/16-20	5/16-24	5/8	.999	3/8	3/8	1 1/4	7/16	1/4	5/8	1 15/16	5	5 3/8	5 7/16	5 13/16
	2	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 15/16	5	5 3/8	5 7/16	5 13/16
1 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 15/16	5 3/8	5 3/4	5 7/8	6 1/4
	2	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	2 5/16	5 3/4	6 1/8	6 1/4	6 5/8
2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 15/16	5 3/8	5 3/4	5 7/8	6 1/4
	2	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	2 9/16	6	6 3/8	6 1/2	6 7/8
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	2 5/16	5 3/4	6 1/8	6 1/4	6 5/8
2 1/2	1(Std.)	5/8	1/2-20	7/16-20	3/4	1.124	3/8	1/2	1 3/8	9/16	1/4	5/8	1 15/16	5 1/2	5 7/8	6	6 3/8
	2	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/2	1 11/16	3/4	1 1/2	2 13/16	6 3/8	6 3/4	6 7/8	7 1/4
	3	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	2 1/8	15/16	1/2	1	2 5/16	5 7/8	6 1/4	6 3/8	6 3/4
	4	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 7/8	15/16	5/8	1 1/4	2 9/16	6 1/8	6 1/2	6 5/8	7
3 1/4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	2 7/16	6 7/8	7 1/2	7 5/8	8 1/4
	2	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	3 1/16	7 1/2	8 1/8	8 1/4	8 7/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	2 11/16	7 1/8	7 3/4	7 7/8	8 1/2
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 15/16	7 3/8	8	8 1/8	8 3/4
4	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	2 7/16	6 7/8	7 1/2	7 5/8	8 1/4
	2	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	3 5/16	7 3/4	8 3/8	8 1/2	9 1/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	2 11/16	7 1/8	7 3/4	7 7/8	8 1/2
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 15/16	7 3/8	8	8 1/8	8 3/4
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	3 1/16	7 1/2	8 1/8	8 1/4	8 7/8
5	1(Std.)	1	7/8-14	3/4-16	1 1/8	1.499	1/2	7/8	1 7/8	15/16	1/4	3/4	2 7/16	7 1/8	7 3/4	7 7/8	8 1/2
	2	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 1/8	3 3/8	5/8	1 5/8	3 5/16	8	8 5/8	8 3/4	9 3/8
	3	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 5/8	15/16	3/8	1	2 11/16	7 3/8	8	8 1/8	8 3/4
	4	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/4	1 11/16	1/2	1 1/4	2 15/16	7 5/8	8 1/4	8 3/8	9
	5	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 5/8	1 15/16	1/2	1 3/8	3 1/16	7 3/4	8 3/8	8 1/2	9 1/8
	6	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 5/8	2 3/8	5/8	1 5/8	3 5/16	8	8 5/8	8 3/4	9 3/8
	7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 1/8	2 7/8	5/8	1 5/8	3 5/16	8	8 5/8	8 3/4	9 3/8
6	1(Std.)	1 3/8	1 1/4-12	1-14	1 5/8	1.999	5/8	1 1/8	2 1/2	1 5/16	1/4	7/8	2 13/16	8 1/8	8 7/8	9 1/8	9 7/8
	2	4	3 3/4-12	3-12	4	4.749	1	3 3/8	5 1/2	3 7/8	1/2	1 1/2	3 7/16	8 3/4	9 1/2	9 3/4	10 1/2
	3	1 3/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	3 1/16	8 3/8	9 1/8	9 3/8	10 1/8
	4	2	1 3/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 1/2	1 15/16	3/8	1 1/4	3 3/16	8 1/2	9 1/4	9 1/2	10 1/4
	5	2 1/2	2 1/4-12	1 7/8-12	3	3.124	1	2 1/16	4 1/2	2 3/8	1/2	1 1/2	3 7/16	8 3/4	9 1/2	9 3/4	10 1/2
	6	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5	2 7/8	1/2	1 1/2	3 7/16	8 3/4	9 1/2	9 3/4	10 1/2
	7	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5	3 3/8	1/2	1 1/2	3 7/16	8 3/4	9 1/2	9 3/4	10 1/2

For Cylinder Division Plant Locations – See Page II.

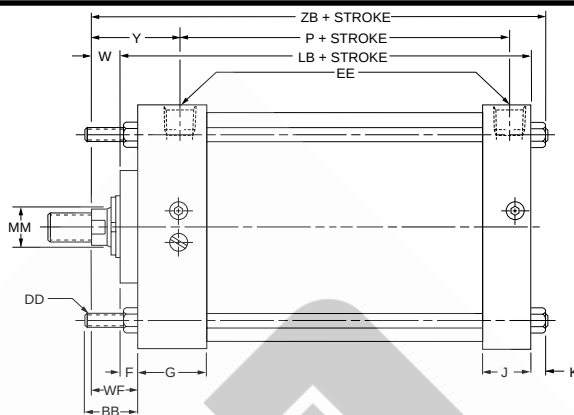
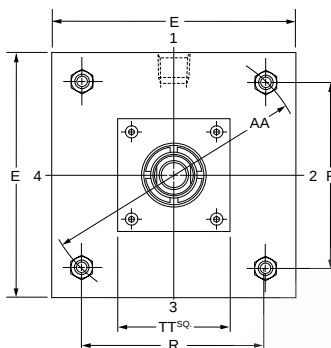
Tie Rod, Head Square and Cap Square Mountings 7" Bore Size

Series 2A Heavy Duty Air Cylinders

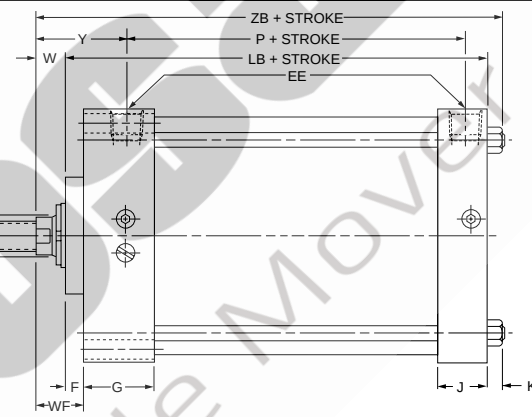
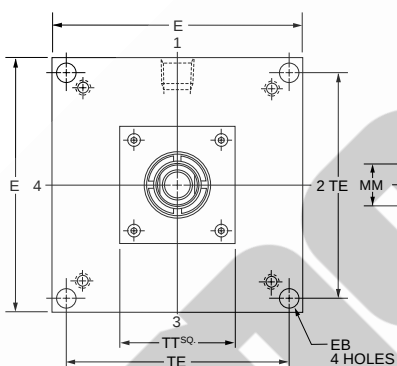
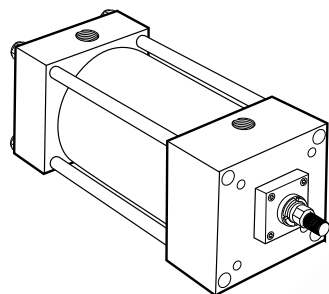
Tie Rods Extended Style TB (NFPA Style MX3)



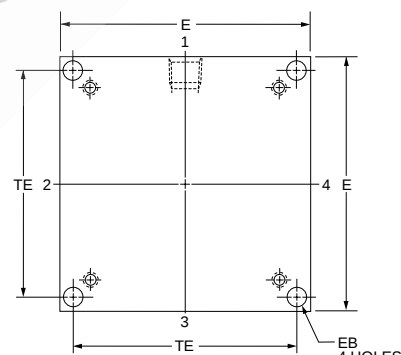
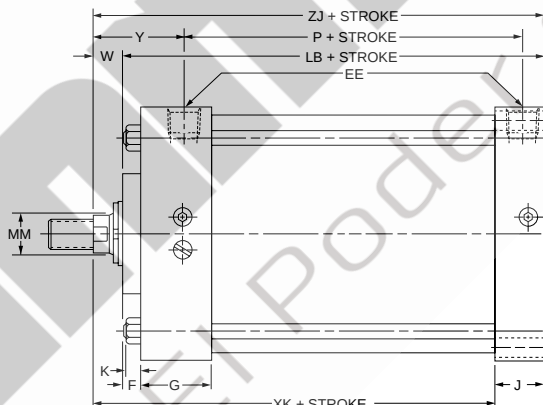
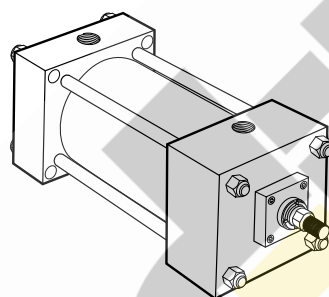
Style TB (NFPA MX3) Head Tie Rods Extended, illustrated: Style TC (NFPA MX2), Cap Tie Rods Extended; and Style TD (NFPA MX1), Both Ends Tie Rods Extended are also available. All "T" styles can be dimensioned from Style TB drawing at right.



Head Square Flange Style JB (NFPA Style ME3)

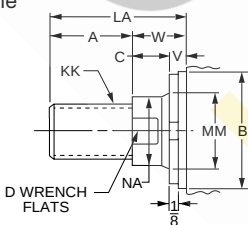


Cap Square Flange Style HB (NFPA Style ME4)



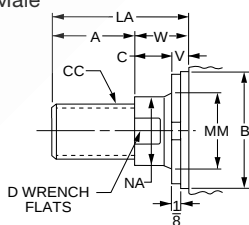
Rod End Dimensions — see table 2

Thread Style 4 (NFPA Style SM) Small Male



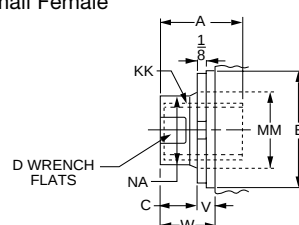
A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8 (NFPA Style IM) Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9 (NFPA Style SF) Small Female



"Special" Thread Style 3

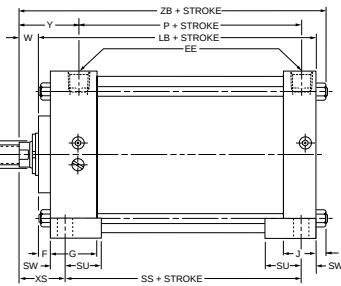
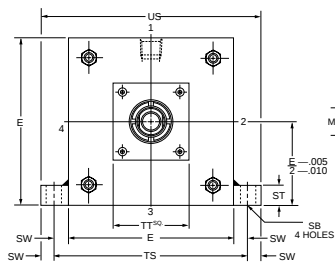
Special thread, rod eye, blank, etc., are also available. To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensional sketch.

For additional information – call your local Parker Cylinder Distributor.

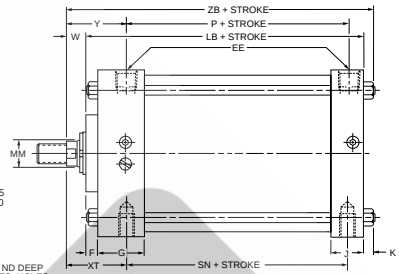
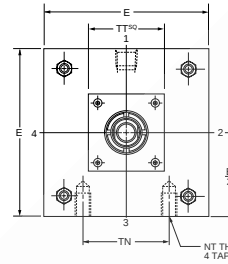
Series 2A Heavy Duty Air Cylinders

Side Lug, Side Tapped,
Cap Trunnion, Head Trunnion,
Cap Fixed Clevis Mountings
7" Bore Size

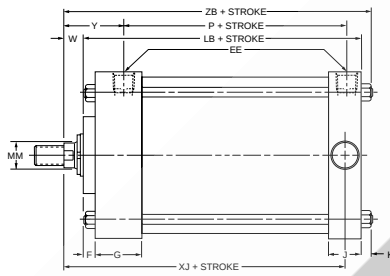
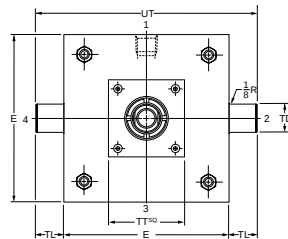
Side Lug Style C (NFA Style MS2)



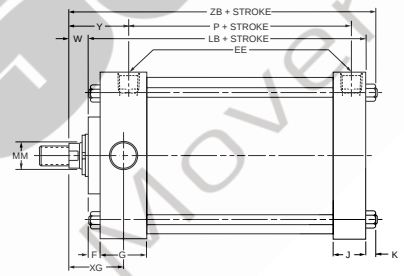
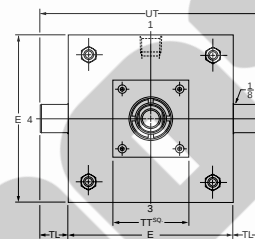
Side Tapped Style F (NFA Style MS4)



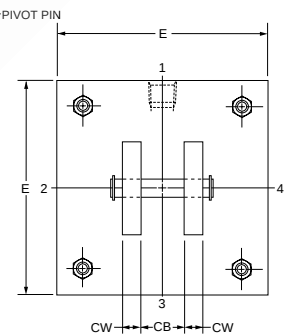
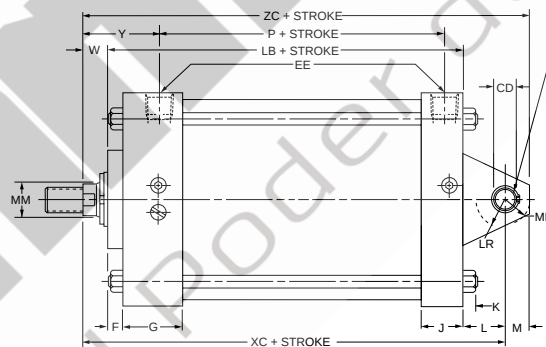
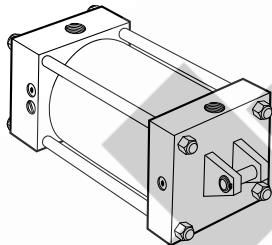
Cap Trunnion Style DB (NFA Style MT2)



Head Trunnion Style D (NFA Style MT1)



Cap Fixed Clevis Style BB (NFA Style MP1)



Note: Other mounting styles and double rod end cylinders are available on request. Consult factory for details.

Table 1—Envelope and Mounting Dimensions

Bore	AA	BB	CB	+0.000 CD -0.002	CW	DD	E	EB	EE	F	G	J	K	L	LR	M	MR	ND	NT	R	SB	ST	SU	SW	+0.000 TD -0.001	TE	TL	TN	TS	US	UT	AddStroke			
																																LB	P	SN	SS
7	8.1	2 5/16	1 1/2	1.001	3/4	5/8-18	7 1/2	9/16	3/4	3/4	2	1 1/2	9/16	1 1/2	1 1/4	1	1 1/16	1 1/8	3/4-10	5.73	13/16	1	1 9/16	1 1/16	1.375	6 3/4	1 3/8	3 1/2	8 7/8	10 1/4	10 1/4	5 7/8	3 1/4	3 1/4	3 3/4

Table 2—Rod Dimensions

Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions														Add Stroke									
			Style 8 CC	Style 4 & 9 KK	A	+0.000 -0.002 B	C	D	LA	NA	V	W	WF	Y	TT	XG	XS	XT	XC	XJ	XK	ZB	ZC	ZJ				
7	1	13/8	11/4-12	1-14	15/8	1.999	5/8	1 1/8	2 1/2	15/16	1/4	7/8	15/8	2 13/16	4	25/8	25/16	2 13/16	8 1/4	6	5 1/4	75/16	9 1/4	6 3/4				
	3	13/4	1 1/2-12	1 1/4-12	2	2.374	3/4	1 1/2	3 1/8	1 11/16	3/8	1 1/8	17/8	3 1/16	4	2 7/8	29/16	3 1/16	8 1/2	6 1/4	5 1/2	79/16	9 1/2	7				
	4	2	13/4-12	1 1/2-12	2 1/4	2.624	7/8	1 11/16	3 1/2	1 15/16	3/8	1 1/4	2	3 3/16	4	3	2 11/16	3 3/16	85/8	63/8	55/8	7 11/16	95/8	7 1/8				

Table 3 — Envelope and Mounting Dimensions

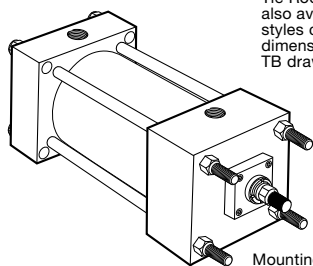
Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions														Add Stroke							
			Style 8 CC	Style 4 & 9 KK	A	+0.000 -.002 B	C	D	LA	NA	V	W	WF	Y	TT	XG	XS	XT	XC	XJ	XK	ZB	ZC	ZJ		
7	1	13/8	11/4-12	11-14	15/8	1.999	5/8	11/8	21/2	15/16	1/4	7/8	15/8	213/16	4	25/8	25/16	213/16	81/4	6	51/4	75/16	91/4	63/4		
	3	13/4	11/2-12	11/4-12	2	2.374	3/4	11/2	31/8	111/16	3/8	11/8	17/8	31/16	4	27/8	29/16	31/16	81/2	61/4	51/2	79/16	91/2	7		
	4	2	13/4-12	11/2-12	21/4	2.624	7/8	111/16	31/2	115/16	3/8	11/4	2	33/16	4	3	211/16	33/16	85/8	63/8	55/8	711/16	95/8	71/8		

For Cylinder Division Plant Locations – See Page II.

Tie Rod, Head Square and Cap Square Mountings 8" to 14" Bore Size

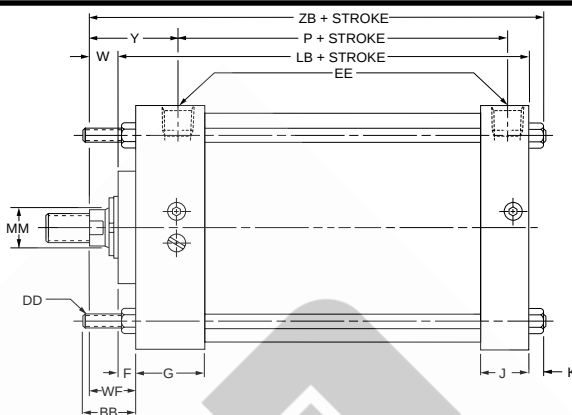
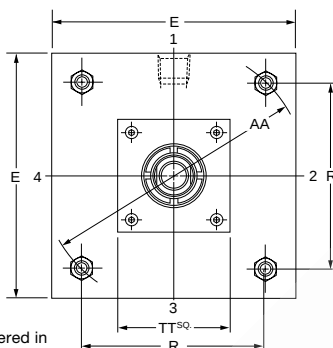
Series 2A Heavy Duty Air Cylinders

Tie Rods Extended Style TB (NFA Style MX3)

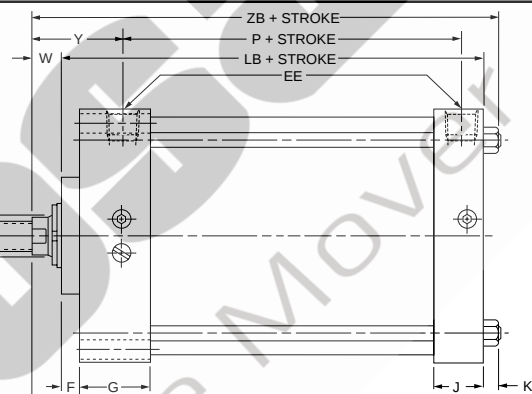
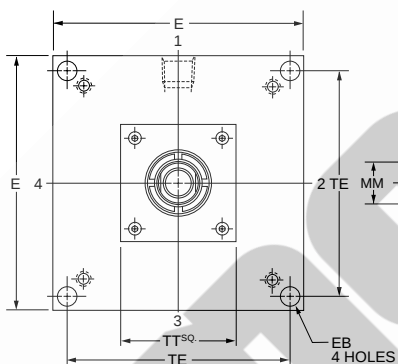
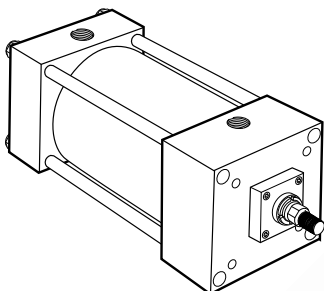


Style TB (NFA MX3) Head Tie Rods Extended, illustrated: Style TC (NFA MX2), Cap Tie Rods Extended; and Style TD (NFA MX1), Both Ends Tie Rods Extended are also available. All "T" styles can be dimensioned from Style TB drawing at right.

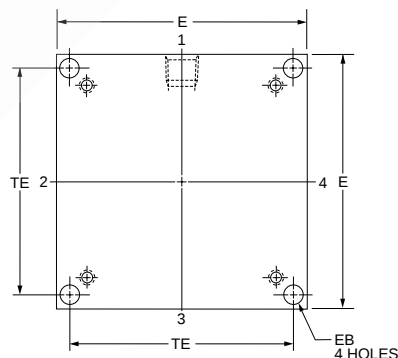
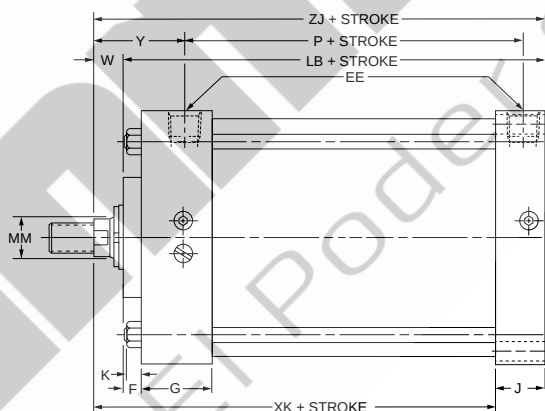
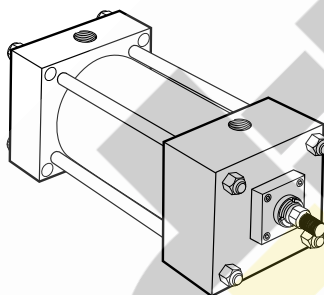
Mounting styles TB & TD not offered in 8" bore, rod codes #2, 9 and 0.



Head Square Flange Style JB (NFA Style ME3)

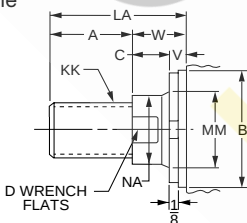


Cap Square Flange Style HB (NFA Style ME4)



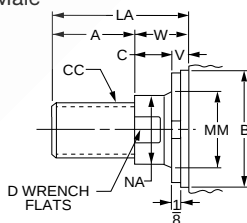
Rod End Dimensions — see table 2

Thread Style 4 (NFA Style SM) Small Male



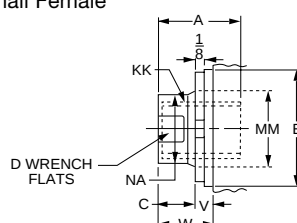
A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8 (NFA Style IM) Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9 (NFA Style SF) Small Female



"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensional sketch.

For additional information – call your local Parker Cylinder Distributor.

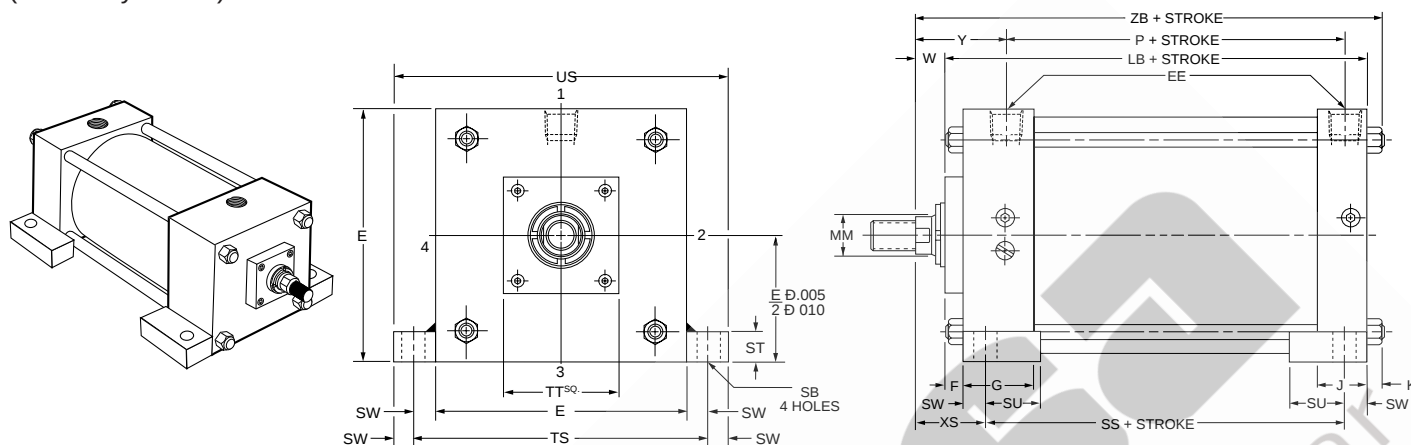
Side Lugs and Centerline Lugs Mountings 8" to 14" Bore Size

Series 2A Heavy Duty Air Cylinders

Side Lug

Style C

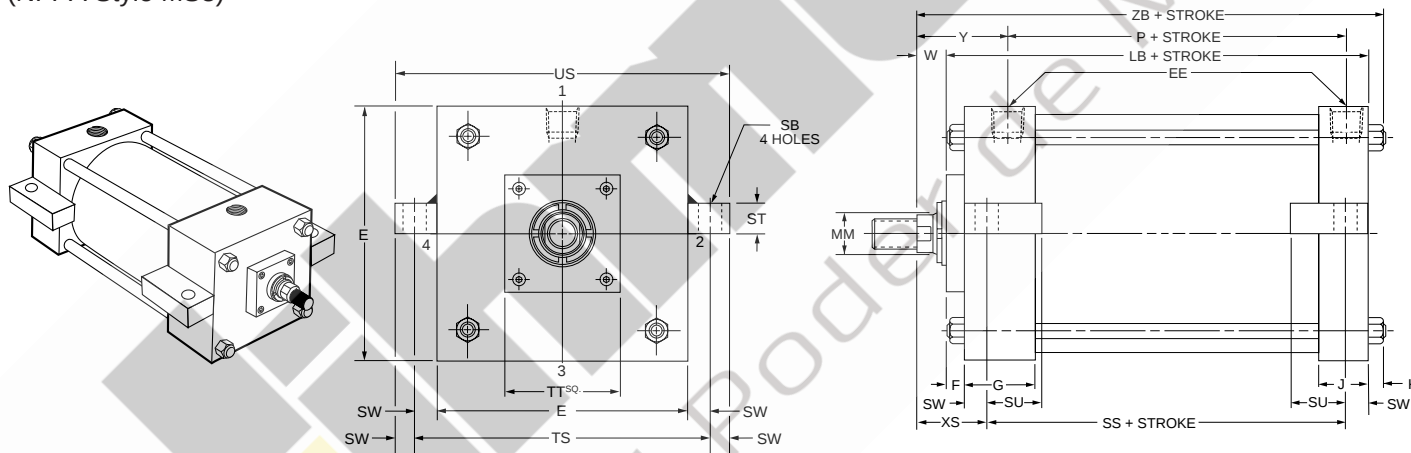
(NFPA Style MS2)



Centerline Lugs

Style E

(NFPA Style MS3)

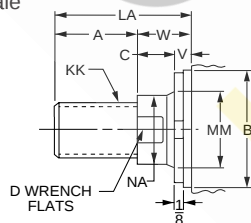


Rod End Dimensions — see table 2

Thread Style 4

(NFPA Style SM)

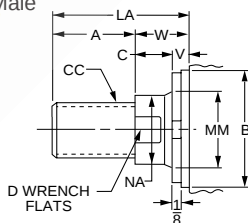
Small Male



Thread Style 8

(NFPA Style IM)

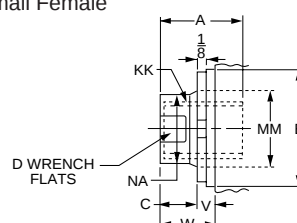
Intermediate Male



Thread Style 9

(NFPA Style SF)

Small Female



A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensional sketch.

For additional information – call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Side Lugs and
Centerline Lugs Mountings
8" to 14" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	E	EE NPTF	F	G	J	K	SB*	ST	SU	SW	TS	US	Add Stroke		
													LB	P	SS
8	8 ¹ / ₂	³ / ₄	³ / ₄	2	1 ¹ / ₂	⁹ / ₁₆	¹³ / ₁₆	1	1 ⁹ / ₁₆	¹¹ / ₁₆	9 ⁷ / ₈	11 ¹ / ₄	5 ⁷ / ₈	3 ¹ / ₄	3 ³ / ₄
10	10 ⁵ / ₈	1	³ / ₄	2 ¹ / ₄	2	¹¹ / ₁₆	¹¹ / ₁₆	1 ¹ / ₄	2	⁷ / ₈	12 ³ / ₈	14 ¹ / ₈	7 ¹ / ₈	4 ¹ / ₈	4 ⁵ / ₈
12	12 ³ / ₄	1	³ / ₄	2 ¹ / ₄	2	¹¹ / ₁₆	¹¹ / ₁₆	1 ¹ / ₄	2	⁷ / ₈	14 ¹ / ₂	16 ¹ / ₄	7 ⁵ / ₈	4 ⁵ / ₈	5 ¹ / ₈
14	14 ³ / ₄	1 ¹ / ₄	³ / ₄	2 ³ / ₄	2 ¹ / ₄	³ / ₄	1 ⁵ / ₁₆	1 ¹ / ₂	2 ¹ / ₂	1 ¹ / ₈	17	19 ¹ / ₄	8 ⁷ / ₈	5 ¹ / ₂	5 ⁷ / ₈

* Upper surface spotfaced for socket head screws.

Table 2—Rod Dimensions

Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions								TT	XS	Y	Add Stroke ZB
			Style 8 CC	Style 4 & 9 KK	A	+ .000 - .002 B	C	D	LA	NA	V	W				
8	1(Std.)	1 ³ / ₈	1 ¹ / ₄ -12	1-14	1 ⁵ / ₈	1.999	⁵ / ₈	1 ¹ / ₈	2 ¹ / ₂	1 ⁵ / ₁₆	¹ / ₄	⁷ / ₈	4	2 ⁵ / ₁₆	2 ¹³ / ₁₆	7 ⁵ / ₁₆
	2	5 ¹ / ₂	5 ¹ / ₄ -12	4-12	5 ¹ / ₂	6.249	1	4 ⁵ / ₈	7	5 ³ / ₈	¹ / ₂	1 ¹ / ₂	7	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	7 ¹⁵ / ₁₆
	3	1 ³ / ₄	1 ¹ / ₂ -12	1 ¹ / ₄ -12	2	2.374	³ / ₄	1 ¹ / ₂	3 ¹ / ₈	1 ¹¹ / ₁₆	³ / ₈	1 ¹ / ₈	4	2 ⁹ / ₁₆	3 ¹ / ₁₆	7 ⁹ / ₁₆
	4	2	1 ³ / ₄ -12	1 ¹ / ₂ -12	2 ¹ / ₄	2.624	⁷ / ₈	1 ¹¹ / ₁₆	3 ¹ / ₂	1 ¹⁵ / ₁₆	³ / ₈	1 ¹ / ₄	4	2 ¹¹ / ₁₆	3 ³ / ₁₆	7 ¹¹ / ₁₆
	5	2 ¹ / ₂	2 ¹ / ₄ -12	1 ⁷ / ₈ -12	3	3.124	1	2 ¹ / ₁₆	4 ¹ / ₂	2 ³ / ₈	¹ / ₂	1 ¹ / ₂	4	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	7 ¹⁵ / ₁₆
	6	3	2 ³ / ₄ -12	2 ¹ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	5	2 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	7 ¹⁵ / ₁₆
	7	3 ¹ / ₂	3 ¹ / ₄ -12	2 ¹ / ₂ -12	3 ¹ / ₂	4.249	1	3	5	3 ³ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	7 ¹⁵ / ₁₆
	8	4	3 ³ / ₄ -12	3-12	4	4.749	1	3 ³ / ₈	5 ¹ / ₂	3 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	7 ¹⁵ / ₁₆
	9	4 ¹ / ₂	4 ¹ / ₄ -12	3 ³ / ₄ -12	4 ¹ / ₂	5.249	1	3 ⁷ / ₈	6	4 ³ / ₈	¹ / ₂	1 ¹ / ₂	7	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	7 ¹⁵ / ₁₆
10	1(Std.)	1 ³ / ₄	1 ¹ / ₂ -12	1 ¹ / ₄ -12	2	2.374	³ / ₄	1 ¹ / ₂	3 ¹ / ₈	1 ¹¹ / ₁₆	³ / ₈	1 ¹ / ₈	4	2 ⁹ / ₁₆	3 ¹ / ₈	8 ¹⁵ / ₁₆
	3	2	1 ³ / ₄ -12	1 ¹ / ₂ -12	2 ¹ / ₄	2.624	⁷ / ₈	1 ¹¹ / ₁₆	3 ¹ / ₂	1 ¹⁵ / ₁₆	³ / ₈	1 ¹ / ₄	4	2 ⁷ / ₈	3 ¹ / ₄	9 ¹ / ₁₆
	4	2 ¹ / ₂	2 ¹ / ₄ -12	1 ⁷ / ₈ -12	3	3.124	1	2 ¹ / ₁₆	4 ¹ / ₂	2 ³ / ₈	¹ / ₂	1 ¹ / ₂	4	3 ¹ / ₈	3 ¹ / ₂	9 ⁵ / ₁₆
	5	3	2 ³ / ₄ -12	2 ¹ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	5	2 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹ / ₂	9 ⁵ / ₁₆
	6	3 ¹ / ₂	3 ¹ / ₄ -12	2 ¹ / ₂ -12	3 ¹ / ₂	4.249	1	3	5	3 ³ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹ / ₂	9 ⁵ / ₁₆
	7	4	3 ³ / ₄ -12	3-12	4	4.749	1	3 ³ / ₈	5 ¹ / ₂	3 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹ / ₂	9 ⁵ / ₁₆
	8	4 ¹ / ₂	4 ¹ / ₄ -12	3 ³ / ₄ -12	4 ¹ / ₂	5.249	1	3 ⁷ / ₈	6	4 ³ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹ / ₂	9 ⁵ / ₁₆
	9	5	4 ³ / ₄ -12	3 ¹ / ₂ -12	5	5.749	1	4 ¹ / ₄	6 ¹ / ₂	4 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹ / ₂	9 ⁵ / ₁₆
	0	5 ¹ / ₂	5 ¹ / ₄ -12	4-12	5 ¹ / ₂	6.249	1	4 ⁵ / ₈	7	5 ³ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹ / ₂	9 ⁵ / ₁₆
12	1(Std.)	2	1 ³ / ₄ -12	1 ¹ / ₂ -12	2 ¹ / ₄	2.624	⁷ / ₈	1 ¹¹ / ₁₆	3 ¹ / ₂	1 ¹⁵ / ₁₆	³ / ₈	1 ¹ / ₄	4	2 ⁷ / ₈	3 ¹ / ₄	9 ⁹ / ₁₆
	3	2 ¹ / ₂	2 ¹ / ₄ -12	1 ⁷ / ₈ -12	3	3.124	1	2 ¹ / ₁₆	4 ¹ / ₂	2 ³ / ₈	¹ / ₂	1 ¹ / ₂	4	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
	4	3	2 ³ / ₄ -12	2 ¹ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	5	2 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
	5	3 ¹ / ₂	3 ¹ / ₄ -12	2 ¹ / ₂ -12	3 ¹ / ₂	4.249	1	3	5	3 ³ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
	6	4	3 ³ / ₄ -12	3-12	4	4.749	1	3 ³ / ₈	5 ¹ / ₂	3 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
	7	4 ¹ / ₂	4 ¹ / ₄ -12	3 ¹ / ₄ -12	4 ¹ / ₂	5.249	1	3 ⁷ / ₈	6	4 ³ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
	8	5	4 ³ / ₄ -12	3 ¹ / ₂ -12	5	5.749	1	4 ¹ / ₄	6 ¹ / ₂	4 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
	9	5 ¹ / ₂	5 ¹ / ₄ -12	4-12	5 ¹ / ₂	6.249	1	4 ⁵ / ₈	7	5 ³ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
	0	6	5 ³ / ₄ -12	4 ¹ / ₂ -12	6	6.749	1	4 ⁹ / ₈	8	5 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	8	3 ¹ / ₈	3 ¹ / ₂	9 ¹³ / ₁₆
14	1(Std.)	2 ¹ / ₂	2 ¹ / ₄ -12	1 ⁷ / ₈ -12	3	3.124	1	2 ¹ / ₁₆	4 ¹ / ₂	2 ³ / ₈	¹ / ₂	1 ¹ / ₂	4	3 ¹ / ₈	3 ¹³ / ₁₆	11 ¹ / ₈
	3	3	2 ³ / ₄ -12	2 ¹ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	5	2 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹³ / ₁₆	11 ¹ / ₈
	4	3 ¹ / ₂	3 ¹ / ₄ -12	2 ¹ / ₂ -12	3 ¹ / ₂	4.249	1	3	5	3 ³ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹³ / ₁₆	11 ¹ / ₈
	5	4	3 ³ / ₄ -12	3-12	4	4.749	1	3 ³ / ₈	5 ¹ / ₂	3 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	5 ¹ / ₂	3 ¹ / ₈	3 ¹³ / ₁₆	11 ¹ / ₈
	6	4 ¹ / ₂	4 ¹ / ₄ -12	3 ¹ / ₄ -12	4 ¹ / ₂	5.249	1	3 ⁷ / ₈	6	4 ³ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹³ / ₁₆	11 ¹ / ₈
	7	5	4 ³ / ₄ -12	3 ¹ / ₂ -12	5	5.749	1	4 ¹ / ₄	6 ¹ / ₂	4 ⁷ / ₈	¹ / ₂	1 ¹ / ₂	7	3 ¹ / ₈	3 ¹³ / ₁₆	11 ¹ / ₈

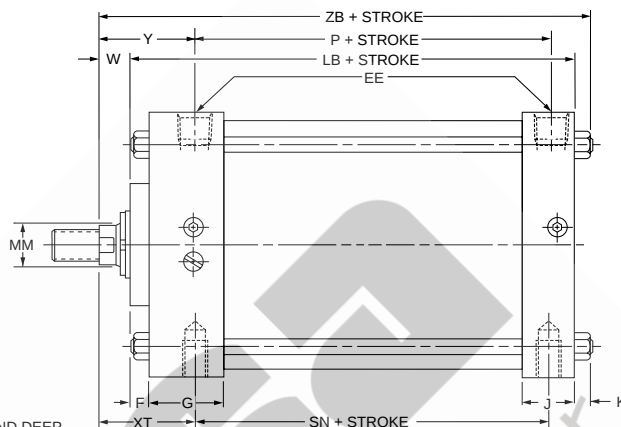
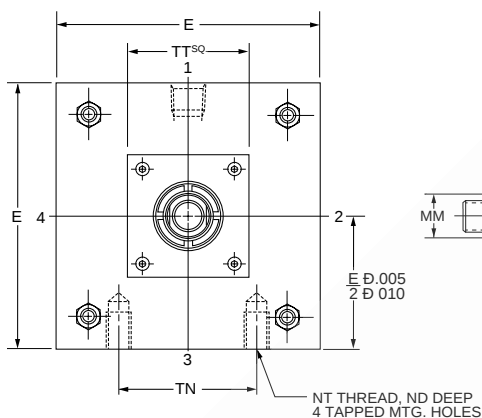
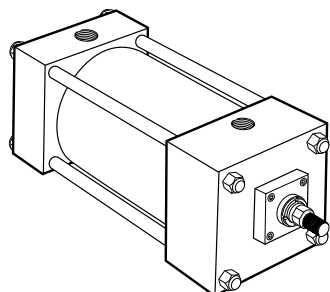
Table 3 — Envelope and Mounting Dimensions

For Cylinder Division Plant Locations – See Page II.

Side Tapped and Side End Lugs Mountings 8" to 14" Bore Size

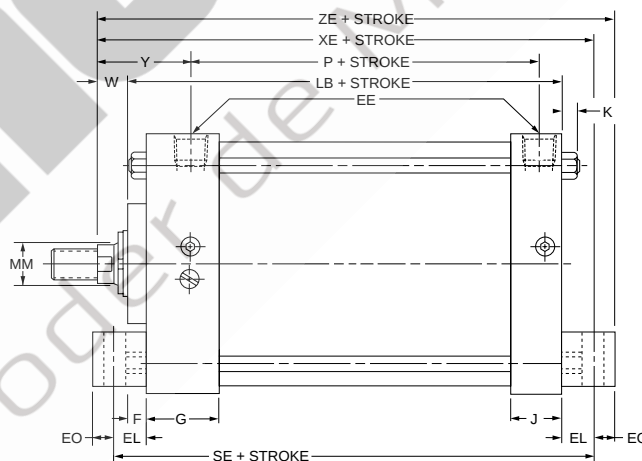
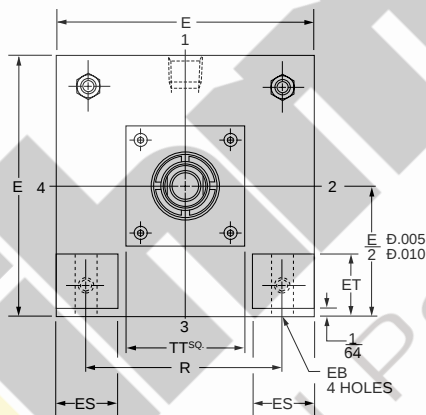
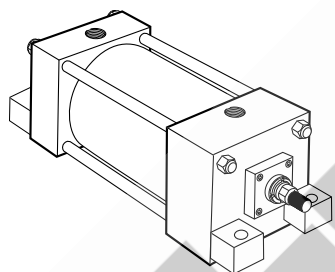
Series 2A Heavy Duty Air Cylinders

Side Tapped Style F (NFPA Style MS4)



Side End Lugs Style G (NFPA Style MS7)

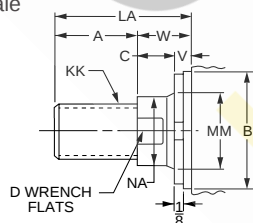
Cylinders with this mounting style are mounted on the precision ground surfaces of the head and cap. There must be a minimum gap of at least $\frac{1}{16}$ of an inch between the bottom of the lug and the mounting surface before the mounting bolts are tightened.



Not offered in the following sizes: 8" bore, rod codes #2, 6, 7, 8, 9 and 0; 10" bore, rod codes #8, 9 and 0; and 12" bore, rod codes #7, 8 and 9.

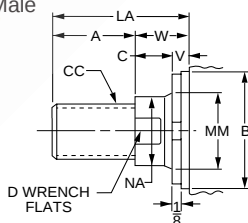
Rod End Dimensions — see table 2

Thread Style 4 (NFPA Style SM) Small Male



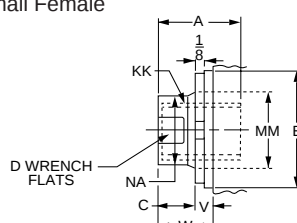
A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8 (NFPA Style IM) Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9 (NFPA Style SF) Small Female



Special Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available.

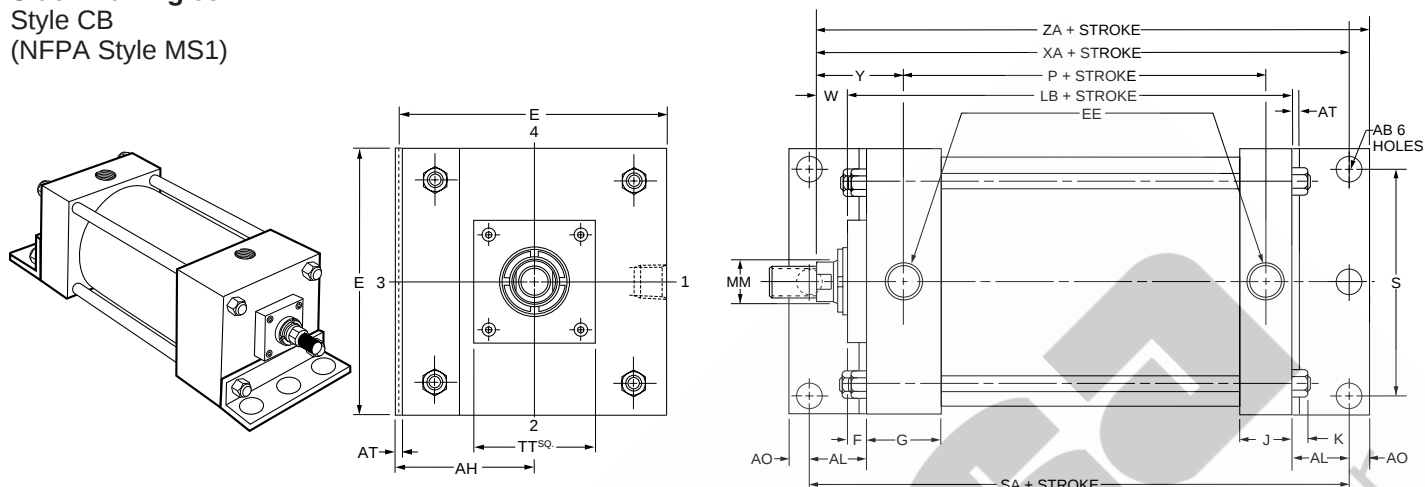
To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensional sketch.

For additional information – call your local Parker Cylinder Distributor.

Side End Angle and Clevis Mountings 8" to 14" Bore Sizes

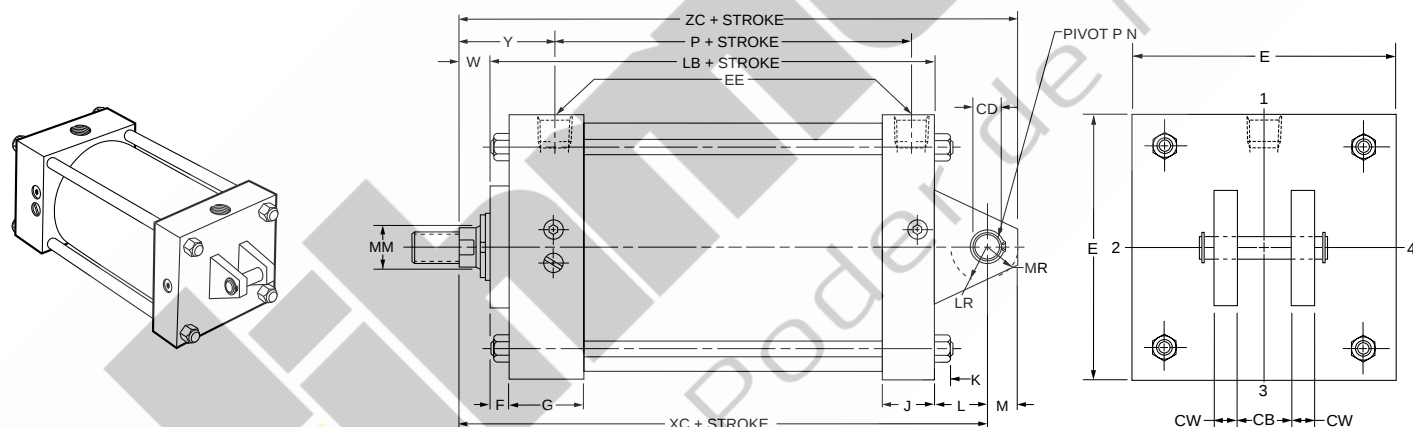
Series 2A Heavy Duty Air Cylinders

Side End Angles Style CB (NFPA Style MS1)



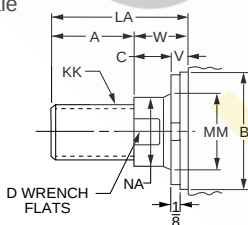
Not offered in the following sizes: 8" bore, rod codes #2, 6, 7, 8, 9 and 0; 10" bore, rod codes #8, 9 and 0.

Cap Fixed Clevis Style BB (NFPA Style MP1)



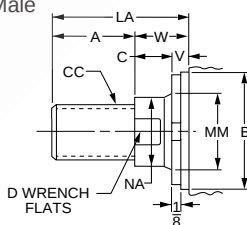
Rod End Dimensions — see table 2

Thread Style 4 (NFPA Style SM) Small Male



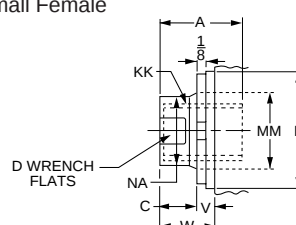
A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8 (NFPA Style IM) Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9 (NFPA Style SF) Small Female



"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensional sketch.

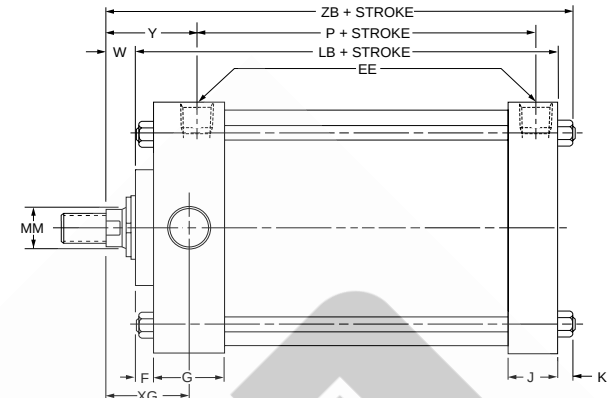
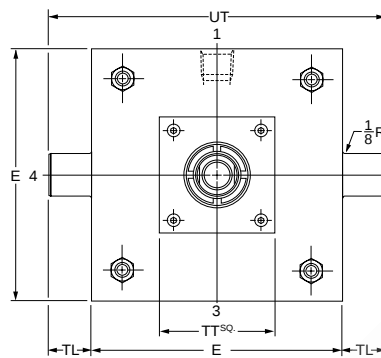
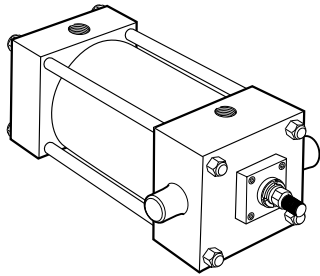
For additional information – call your local Parker Cylinder Distributor.

Trunnion Mountings 8" to 14" Bore Sizes

Series 2A Heavy Duty Air Cylinders

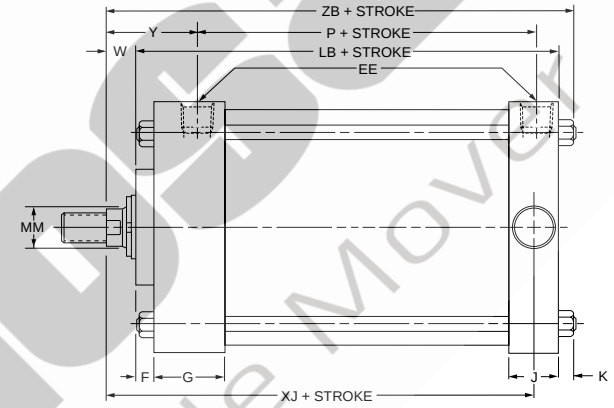
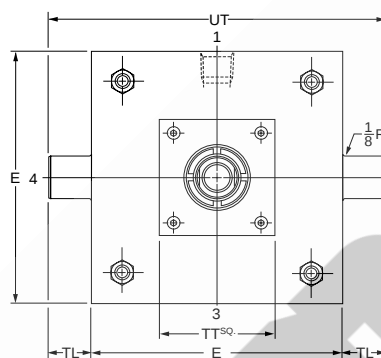
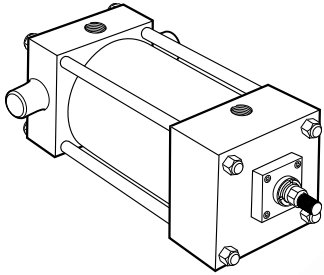
Head Trunnion

Style D
(NFPA Style MT1)



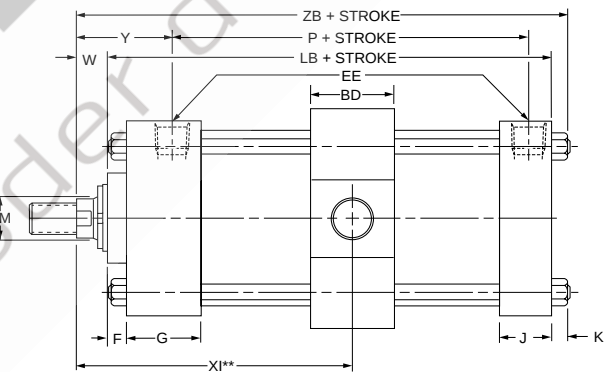
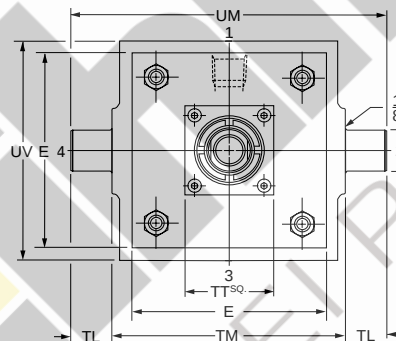
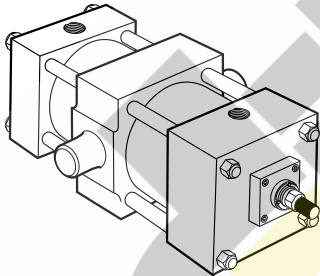
Cap Trunnion

Style DB
(NFPA Style MT2)



Intermediate Fixed Trunnion

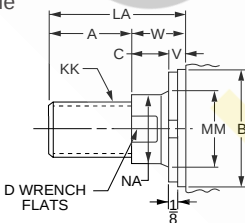
Style DD
(NFPA Style MT4)



Rod End Dimensions — see table 2

Thread Style 4

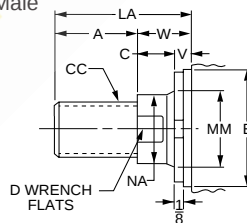
(NFPA Style SM)
Small Male



A high strength rod end stud is supplied on thread style 4 through 2" diameter rods and on thread style 8 through 1 3/8" diameter rods. Larger sizes or special rod ends are cut threads. Style 4 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are

Thread Style 8

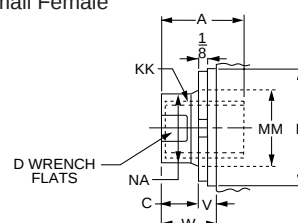
(NFPA Style IM)
Intermediate Male



recommended through 2" piston rod diameters and style 8 rod ends are recommended on larger diameters. Use style 9 for applications where female rod end threads are required. If rod end is not specified, style 4 will be supplied.

Thread Style 9

(NFPA Style SF)
Small Female



"Special" Thread Style 3

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify "Style 3" and give desired dimensions for CC or KK, A and LA. If otherwise special, furnish dimensional sketch.

For additional information – call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Trunnion Mountings
8" to 14" Bore Sizes

Table 1—Envelope and Mounting Dimensions

Bore	BD	E	EE NPTF	F	G	J	K	+.000 TD -.001 B	TL	TM	UM	UT	UV	Add Stroke		Style DD Min. Stroke
														LB	P	
8	2½	8½	¾	¾	2	1½	9/16	1.375	1¾	9¾	12½	11¼	9½	5⅞	3¼	7/8
10	3	10⅝	1	¾	2¼	2	11/16	1.750	1¾	12	15½	14⅞	11¾	7⅞	4⅞	7/8
12	3	12¾	1	¾	2¼	2	11/16	1.750	1¾	14	17½	16¼	13¾	7⅞	4⅞	3/8
14	3½	14¾	1¼	¾	2¾	2¼	¾	2.000	2	16¼	20¼	18¾	16	8⅞	5½	3/8

Table 2—Rod Dimensions

Bore	Rod No.	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions								Add Stroke					
			Style 8 CC	Style 4 & 9 KK	A	+.000 -.002 B	C	D	LA	NA	V	W	TT	XG	Min.** XI	Y	XJ	ZB
8	1(Std.)	1⅜	1¼-12	1-14	1⅝	1.999	5/8	1⅞	2½	1⅝	1¼	7/8	4	2⅝	4⅝	2⅜	6	7⅝
	2	5½	5¼-12	4-12	5½	6.249	1	4⅝	7	5⅜	1½	1½	7	3¼	5⅞	3⅞	6⅝	7⅝
	3	1¾	1½-12	1¼-12	2	2.374	3/8	1½	3⅞	1⅝	3/8	1⅞	4	2⅞	5⅞	3⅞	6¼	7⅞
	4	2	1¾-12	1½-12	2¼	2.624	7/8	1⅝	3½	1⅝	3/8	1¼	4	3	5⅞	3⅞	6⅞	7⅝
	5	2½	2¼-12	1⅞-12	3	3.124	1	2⅞	4½	2⅞	1½	1½	4	3¼	5⅞	3⅞	6⅞	7⅝
	6	3	2¾-12	2¼-12	3½	3.749	1	2⅝	5	2⅞	1½	1½	5½	3¼	5⅞	3⅞	6⅞	7⅝
	7	3½	3¼-12	2½-12	3½	4.249	1	3	5	3⅞	1½	1½	5½	3¼	5⅞	3⅞	6⅞	7⅝
	8	4	3¼-12	3-12	4	4.749	1	3⅞	5½	3⅞	1½	1½	5½	3¼	5⅞	3⅞	6⅞	7⅝
	9	4½	4¼-12	3¼-12	4½	5.249	1	3⅞	6	4⅞	1½	1½	7	3¼	5⅞	3⅞	6⅞	7⅝
10	1(Std.)	1¾	1½-12	1¼-12	2	2.374	¾	1½	3⅞	1⅝	3/8	1⅞	4	3	5⅞	3⅞	7¼	8⅝
	3	2	1¾-12	1½-12	2¼	2.624	7/8	1⅝	3½	1⅝	3/8	1¼	4	3⅞	5⅞	3⅞	7⅞	9⅝
	4	2½	2¼-12	1⅞-12	3	3.124	1	2⅞	4½	2⅞	1½	1½	4	3⅞	6⅞	3½	7⅞	9⅝
	5	3	2¾-12	2¼-12	3½	3.749	1	2⅝	5	2⅞	1½	1½	5½	3⅞	6⅞	3½	7⅞	9⅝
	6	3½	3¼-12	2½-12	3½	4.249	1	3	5	3⅞	1½	1½	5½	3⅞	6⅞	3½	7⅞	9⅝
	7	4	3¼-12	3-12	4	4.749	1	3⅞	5½	3⅞	1½	1½	5½	3⅞	6⅞	3½	7⅞	9⅝
	8	4½	4¼-12	3¼-12	4½	5.249	1	3⅞	6	4⅞	1½	1½	7	3⅞	6⅞	3½	7⅞	9⅝
	9	5	4¾-12	3½-12	5	5.749	1	4¼	6½	4⅞	1½	1½	7	3⅞	6⅞	3½	7⅞	9⅝
	0	5½	5¼-12	4-12	5½	6.249	1	4⅝	7	5⅜	1½	1½	7	3⅞	6⅞	3½	7⅞	9⅝
12	1(Std.)	2	1¾-12	1½-12	2¼	2.624	7/8	1⅝	3½	1⅝	3/8	1¼	4	3⅞	5⅞	3¼	7⅞	9⅝
	3	2½	2¼-12	1⅞-12	3	3.124	1	2⅞	4½	2⅞	1½	1½	4	3⅞	6⅞	3½	8⅞	9⅝
	4	3	2¾-12	2¼-12	3½	3.749	1	2⅝	5	2⅞	1½	1½	5½	3⅞	6⅞	3½	8⅞	9⅝
	5	3½	3¼-12	2½-12	3½	4.249	1	3	5	3⅞	1½	1½	5½	3⅞	6⅞	3½	8⅞	9⅝
	6	4	3¾-12	3-12	4	4.749	1	3⅞	5½	3⅞	1½	1½	5½	3⅞	6⅞	3½	8⅞	9⅝
	7	4½	4¼-12	3¼-12	4½	5.249	1	3⅞	6	4⅞	1½	1½	7	3⅞	6⅞	3½	8⅞	9⅝
	8	5	4¾-12	3½-12	5	5.749	1	4¼	6½	4⅞	1½	1½	7	3⅞	6⅞	3½	8⅞	9⅝
	9	5½	5¼-12	4-12	5½	6.249	1	4⅝	7	5⅜	1½	1½	7	3⅞	6⅞	3½	8⅞	9⅝
	0	6	5½-12	4½-12	6	6.749	1	5	8	6⅜	1½	1½	8	4⅞	7⅞	4	9⅝	10⅝
14	1(Std.)	2½	2¼-12	1⅞-12	3	3.124	1	2⅞	4½	2⅞	1½	1½	4	3⅞	6⅞	3½	9¼	11⅞
	3	3	2¾-12	2¼-12	3½	3.749	1	2⅝	5	2⅞	1½	1½	5½	3⅞	6⅞	3½	9¼	11⅞
	4	3½	3¼-12	2½-12	3½	4.249	1	3	5	3⅞	1½	1½	5½	3⅞	6⅞	3½	9¼	11⅞
	5	4	3¾-12	3-12	4	4.749	1	3⅞	5½	3⅞	1½	1½	5½	3⅞	6⅞	3½	9¼	11⅞
	6	4½	4¼-12	3¼-12	4½	5.249	1	3⅞	6	4⅞	1½	1½	7	3⅞	6⅞	3½	9¼	11⅞
	7	5	4¾-12	3½-12	5	5.749	1	4¼	6½	4⅞	1½	1½	7	3⅞	6⅞	3½	9¼	11⅞

**Dimension XI to be specified by customer.

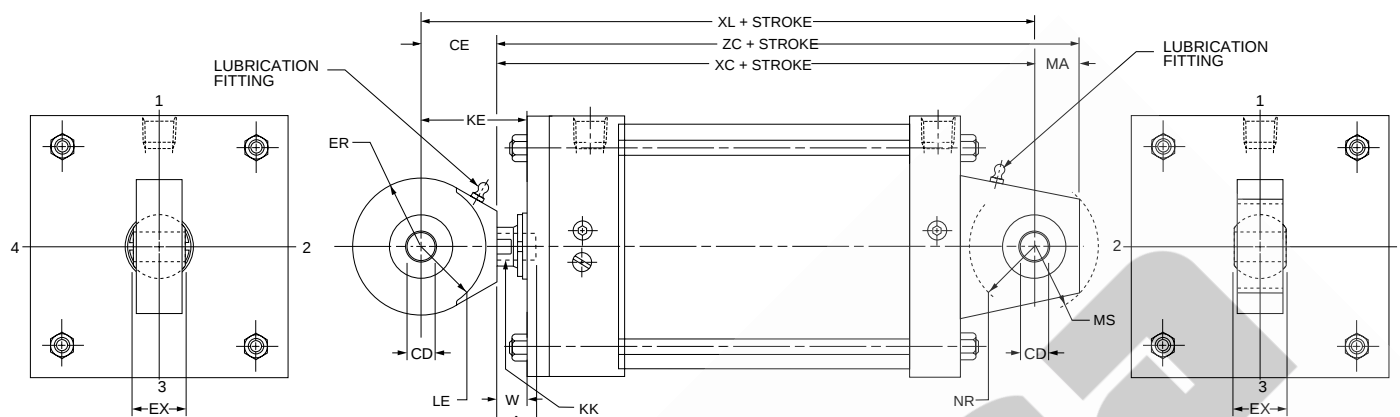
For Cylinder Division Plant Locations – See Page II.



A

Series 2A

Heavy Duty Air Cylinders

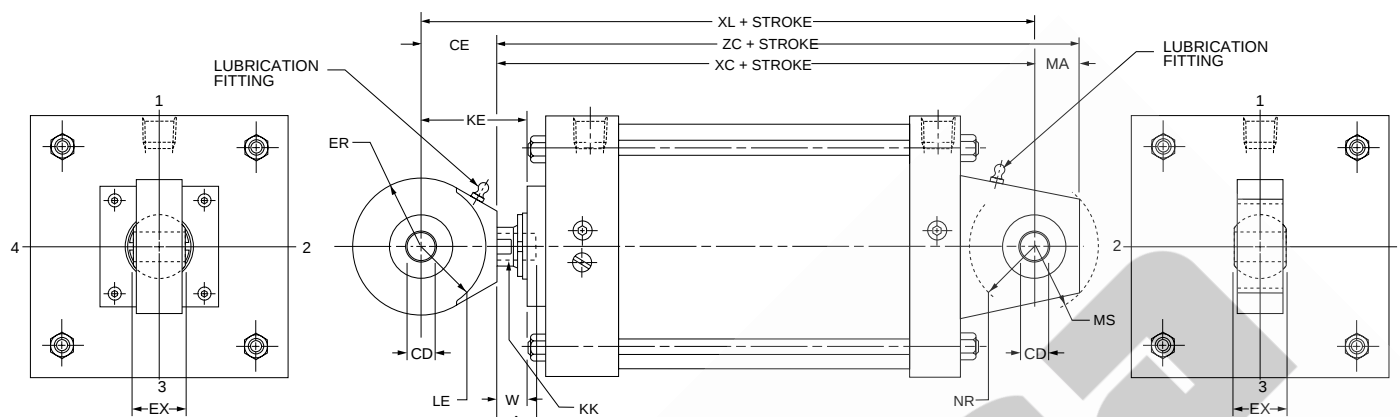


Maximum operating pressure at 4:1 design factor is based on tensile strength of material. Pressure ratings are based on standard commercial bearing ratings.
 Note: For additional dimensions see Series 2A, page 30.
 * Dimension CD is hole diameter.
 ** Corresponding rod eye pin diameter may not match pin diameter of cap.
 Rod No. 1 is standard.

For additional information – call your local Parker Cylinder Distributor.

Series 2A Heavy Duty Air Cylinders

Spherical Bearing Mounting
Style SB
8" to 14" Bore Sizes



Bore	Rod No.	Rod Dia. MM	Thread		A	W	Add Stroke				CD*	CE	ER	EX	LE	MA	MS	NR	Max. Oper. PSI 2A
			Style 9 KK	Style 7 KK			XC	XL	ZC	KE									
8	1(Std.)	1 3/8	1-14	—	1 5/8	7/8	8 1/4	10 1/8	9 1/2	2 3/4	-.0005 1.0000	1 7/8	1 1/4	7/8	1 7/16	1 1/4	1 11/16	1 1/4	250
	2	5 1/2	**	1-14	1 5/8	1 1/2	8 7/8	10 3/4	10 1/8	3 3/8									
	3	1 3/4	**	1-14	1 5/8	1 1/8	8 1/2	10 3/8	9 3/4	3									
	4	2	**	1-14	1 5/8	1 1/4	8 5/8	10 1/2	9 7/8	3 1/8									
	5	2 1/2	**	1-14	1 5/8	1 1/2	8 7/8	10 3/4	10 1/8	3 3/8									
	6	3	**	1-14	1 5/8	1 1/2	8 7/8	10 3/4	10 1/8	3 3/8									
	7	3 1/2	**	1-14	1 5/8	1 1/2	8 7/8	10 3/4	10 1/8	3 3/8									
	8	4	**	1-14	1 5/8	1 1/2	8 7/8	10 3/4	10 1/8	3 3/8									
	9	4 1/2	**	1-14	1 5/8	1 1/2	8 7/8	10 3/4	10 1/8	3 3/8									
	0	5	**	1-14	1 5/8	1 1/2	8 7/8	10 3/4	10 1/8	3 3/8									
10	1(Std.)	1 3/4	1 1/4-12	—	2	1 1/8	10 3/8	12 1/2	12 1/4	3 1/4	-.0005 1.3750	2 1/8	1 11/16	1 3/16	1 7/8	1 7/8	2 7/16	1 5/8	250
	3	2	**	1 1/4-12	2	1 1/4	10 1/2	12 5/8	12 3/8	3 3/8									
	4	2 1/2	**	1 1/4-12	2	1 1/2	10 3/4	12 7/8	12 5/8	3 5/8									
	5	3	**	1 1/4-12	2	1 1/2	10 3/4	12 7/8	12 5/8	3 5/8									
	6	3 1/2	**	1 1/4-12	2	1 1/2	10 3/4	12 7/8	12 5/8	3 5/8									
	7	4	**	1 1/4-12	2	1 1/2	10 3/4	12 7/8	12 5/8	3 5/8									
	8	4 1/2	**	1 1/4-12	2	1 1/2	10 3/4	12 7/8	12 5/8	3 5/8									
	9	5	**	1 1/4-12	2	1 1/2	10 3/4	12 7/8	12 5/8	3 5/8									
	0	5 1/2	**	1 1/4-12	2	1 1/2	10 3/4	12 7/8	12 5/8	3 5/8									
12	1(Std.)	2	1 1/2-12	—	2 1/4	1 1/4	11 1/8	13 5/8	13 5/8	4 1/4	-.0005 1.7500	2 1/2	2 1/16	1 17/32	2 1/8	2 1/2	2 7/8	2 1/16	250
	3	2 1/2	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
	4	3	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
	5	3 1/2	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
	6	4	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
	7	4 1/2	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
	8	5	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
	9	5 1/2	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
	0	6	**	1 1/2-12	2 1/4	1 1/2	11 3/8	13 7/8	13 7/8	4									
14	1(Std.)	2 1/2	1 7/8-12	—	3	1 1/2	12 7/8	15 5/8	15 3/8	4 1/4	-.0005 2.0000	2 3/4	2 1/2	1 3/4	2 1/2	2 1/2	3 5/16	2 3/8	250
	3	3	**	1 7/8-12	3	1 1/2	12 7/8	15 5/8	15 3/8	4 1/4									
	4	3 1/2	**	1 7/8-12	3	1 1/2	12 7/8	15 5/8	15 3/8	4 1/4									
	5	4	**	1 7/8-12	3	1 1/2	12 7/8	15 5/8	15 3/8	4 1/4									
	6	4 1/2	**	1 7/8-12	3	1 1/2	12 7/8	15 5/8	15 3/8	4 1/4									
	7	5	**	1 7/8-12	3	1 1/2	12 7/8	15 5/8	15 3/8	4 1/4									
	8	5 1/2	**	1 7/8-12	3	1 1/2	12 7/8	15 5/8	15 3/8	4 1/4									

Maximum operating pressure at 4:1 design factor is based on tensile strength of material. Pressure ratings are based on standard commercial bearing ratings.

Note: For additional dimensions see Series 2A, page 40.

* Dimension CD is hole diameter.

** Corresponding rod eye pin diameter may not match pin diameter of cap.

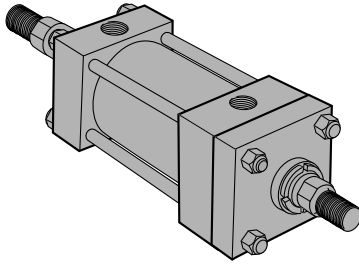
Rod No. 1 is standard.

For Cylinder Division Plant Locations – See Page II.



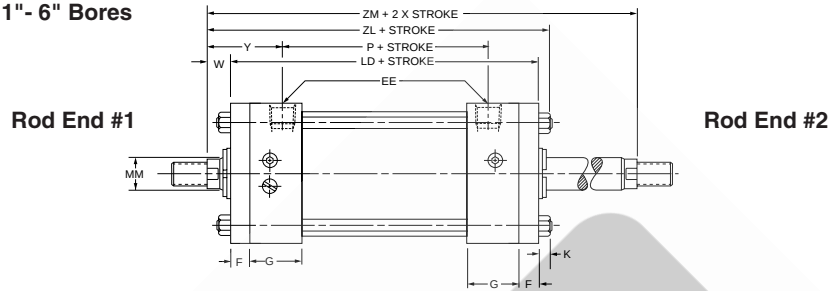
Double Rod Models 1" to 14" Bore Sizes

Series 2A Heavy Duty Air Cylinders

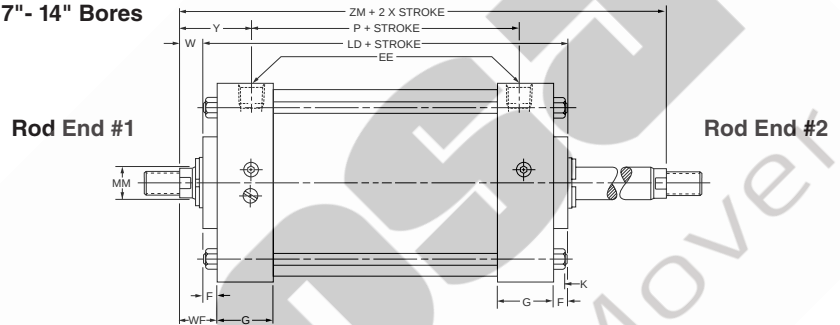


How to Use Double Rod Cylinder Dimensioned Drawings

1" - 6" Bores



7" - 14" Bores



Mounting Styles for Single Rod Models	Mounting Styles for Corresponding Double Rod Models*	Dimensions Shown on This Page Supplement Dimensions on Pages Listed Below	
		1"-6" Bores Page No.	8"-14" Bores Page No.
T	KT	20	34
TB**	KTB	20	34
TD	KTD	20	34
J	KJ	20	—
JB**	KJB	22	34
C**	KC	24	36
E	KE	24	36
F	KF	24	38
CB	KCB	26	40
G	KC	26	38
D	KD	28	42
DD	KDD†	28	42

*If only one end of these Double Rod Cylinders is to be cushioned, be sure to specify clearly which end this will be.

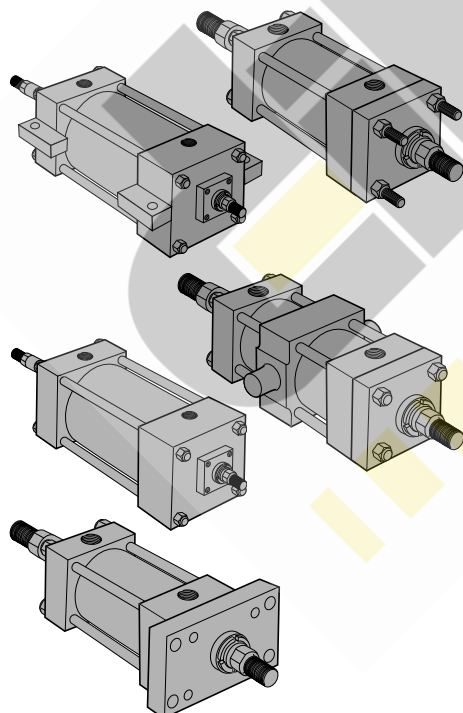
**Available in 7" bore, page 32.

†Specify XI dimension from rod end #1.

To determine dimensions for a double rod cylinder, first refer to the desired single rod mounting style cylinder shown on preceding pages of this catalog. (See table at left.) After selecting necessary dimensions from that drawing, return to this page supplement the single rod dimensions with those shown on drawings at right and dimension table below. Note that double rod cylinders have a head (Dim. G) at both ends and that dimension LD replace LB and ZL replaces ZB, etc. The double rod dimensions differ from, or are in

addition to those for single rod cylinders shown on preceding pages and provide the information needed to completely dimension a double rod cylinder.

On a double rod cylinder where the two rod ends are different, be sure to clearly state which rod end is to be assembled at which end. Port position 1 is standard. If other than standard, specify pos. 2, 3 or 4 when viewed from rod end #1 only. See port position information in Section C.



All dimensions are in inches and apply to Code 1 rod sizes only. For alternate rod sizes, determine all envelope dimensions (within LD dim.) as described above and then use appropriate rod end dimensions for proper rod size from single rod cylinder.

Bore	Rod No.	Rod Dia. MM	Add Stroke										Add 2X Stroke
			LD	ZL	SA _K	XA _K	ZA _K	SS _K	SN _K	SE _K	XE _K	ZE _K	
1	1	1 1/2	4 3/4	5 1/2	6 3/8	6 3/16	6 1/2	3 3/8*	2 1/8	*	*	*	6
1 1/2	1	5/8	4 7/8	5 3/4	6 7/8	6 1/2	6 7/8	3 3/8	2 1/4	6 3/8	6 1/4	6 1/2	6 1/8
2	1	5/8	4 7/8	5 13/16	6 7/8	6 1/2	6 7/8	3 3/8	2 1/4	6 3/4	6 7/16	6 3/4	6 1/8
2 1/2	1	5/8	5	5 15/16	7	6 5/8	7	3 1/2	2 3/8	7 1/8	6 11/16	7	6 1/4
3 1/4	1	1	6	7 1/8	8 1/2	8	8 1/2	3 3/4	2 5/8	7 3/4	7 5/8	8	7 1/2
4	1	1	6	7 1/8	8 1/2	8	8 1/2	3 3/4	2 5/8	8	7 3/4	8 1/8	7 1/2
5	1	1	6 1/4	7 7/16	9	8 3/8	9	3 5/8	2 7/8	8 3/8	8 1/16	8 9/16	7 3/4
6	1	1 3/8	7	8 5/16	9 3/4	9 1/4	9 7/8	4 1/8	3 3/8	9	8 7/8	9 3/8	8 3/4
7	1	1 3/8	7 1/8	—	—	—	—	4 1/4	3 3/4	—	—	—	8 7/8
8	1	1 3/8	7 1/8	—	9 1/4	9 1/16	9 3/4	4 1/4	3 3/4	7 7/8	8 3/8	9	8 7/8
10	1	1 3/4	8 1/8	—	10 7/8	10 5/8	11 1/2	4 7/8	4 1/8	9 1/4	9 13/16	10 7/16	10 3/8
12	1	2	8 5/8	—	11 3/8	11 1/4	12 1/8	5 3/8	4 5/8	9 3/4	10 7/16	11 1/16	11 1/8
14	1	2 1/2	10 1/8	—	13 1/2	13 5/16	14 3/8	6 3/8	5 1/2	11 5/8	12 3/8	13 3/8	13 1/8
Replaces: On single rod mounting styles:			LB	ZB	SA	XA	ZA	SS	SN	SE	XE	ZE	—
			All Mtg. Styles					CB	C,E	F	G		All Mtgs.

* Mounting styles KE, KG and KDD not available in 1" and 7" bore sizes.

For additional information – call your local Parker Cylinder Distributor.