



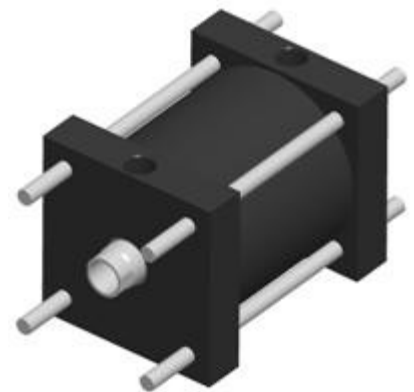
FA Series

Light Duty Pneumatic Cylinders

Knife Gate Pneumatic Service

2-1/2" to 24" Bores

Series Catalog



Document No. CAT2010-FA-A

2010 Edition

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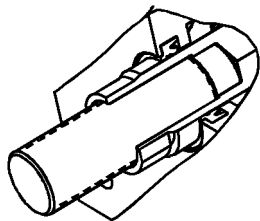
Spring-Loaded Cylinders: Spring-loaded cylinders are offered in spring extend or spring retract orientations. Spring extend cylinders position the spring behind the piston to force the piston and rod out of the cylinder to full extension. In spring retract cylinders the spring is captured between the head end cover and piston to maintain the rod in a fully retracted state. Spring-loaded cylinders are single acting. These cylinders are generally used in fail safe applications or auto return operations. When requesting spring-loaded cylinders it is important to specify the force required to overcome the load in the application.

Spring-loaded cylinders are always under a high load and should be handled with caution. Servicing requires extreme care and knowledge and must be performed only by a qualified service technician.

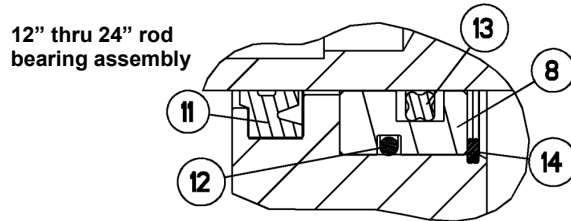
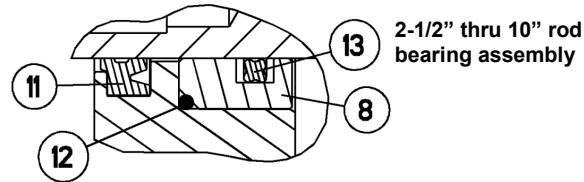
Plated Finishes and Coatings: Quincy Ortmann Cylinders are available in a number of plated finishes, such as NiCoTef[®], Electroless Nickel, Flash Chrome, Cad plating. Additionally we are prepared to handle most primers and epoxy coating requirements. Contact the Quincy Ortmann staff or an authorized distributor near you for details.

Stainless Steel Construction: For cold atmospheres and harsh corrosive environments, the cylinder can be constructed from stainless steel material upon request. The head end cover, cap end cover, piston, tube are of a 316 stainless steel. The piston rod can be requested from a material listing of 17-4ph, 316, 303, or 304 stainless steel. Quincy Ortmann Cylinders has a standard to use stainless steel rod stock that is non-chromed that has been turned, ground, and polished, but if chromed stock is required. The chromed stock can be supply upon request.

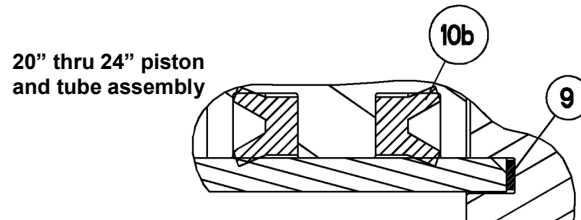
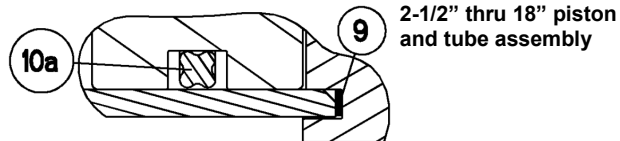
Studded Rod Ends: The studded rod ends offers great benefits for applications that are held in high tension where it may be possible to break or shear standard machined rod ends. For rod size 5/8" to 2" diameters, a rolled thread stud can be threaded into a standard female rod end. Studded rod ends offer higher resistance to thread shear and are more economical to replace in case of fracture.



ROD BEARINGS



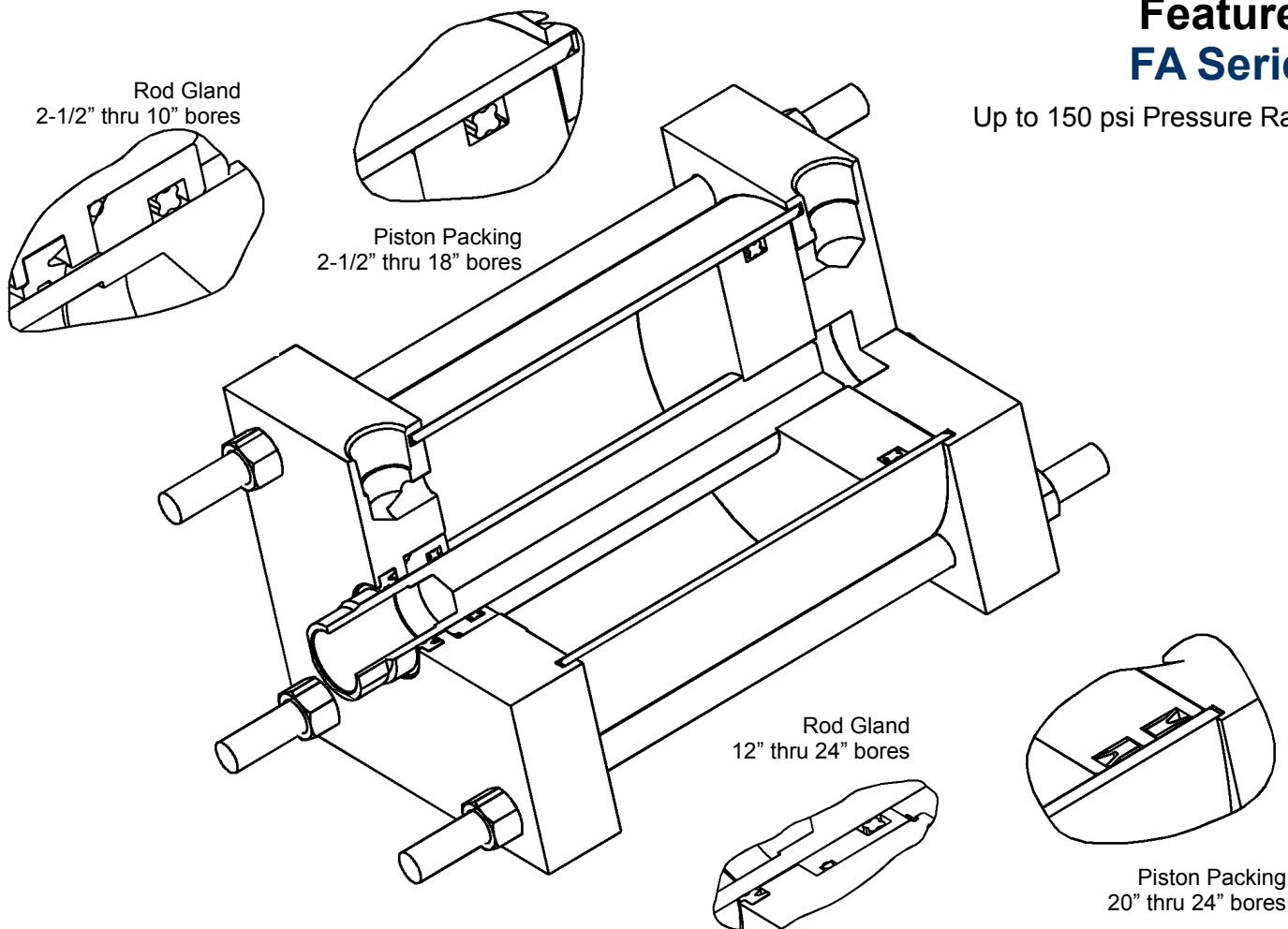
PISTONS



ITEM	PART DESCRIPTION (Bore Size)	SRE	DRE	SPEX	SPRE	ADJC
8	Rod Bearing	1	2	1	1	1
9	End Cover Gasket	2	2	2	2	2
10a	Piston Packing (2-1/2 to 18)	1	1	1	1	1
10b	Piston Packing (20 to 24)	2	2	2	2	2
11	Rod Wiper	1	2	1	1	1
12	Rod Bearing O-ring	1	2	1	1	1
13	Rod Packing	1	2	1	1	1
14	Retaining Ring (12 to 24)	1	2	1	1	1

Features FA Series

Up to 150 psi Pressure Rating



Piston Rod: Medium carbon steel with 100,000 psi minimum yield with a chrome plate and highly polished to resist nicks and wear. The piston rod can be requested from a material listing of 17-4ph, 316, 303, or 304 stainless steel. Quincy Ortman Cylinders has a standard to use stainless steel rod stock that is non-chromed that has been turned, ground, and polished, but if chromed stock is required. The chromed stock can be supplied upon request. The double ended construction cylinder design the piston rods are pilot fitted to assure perfect alignment and are locked together with Loctite.®

Head/Cap End Cover: Steel flat bar material to supply a low cost and yet durability. The head and cap end covers are machined to assure perfect alignment of the rod bearing, piston rod, piston, and tube.

Seals: The rod packing, wiper, and piston seals are made of a buna compound for leak-proof performance and offers a low breakaway pressure. The buna packing can be used with many different type of gases. Other seal material, as of viton and ethylene-propylene compound, can be requested. Some of the requested packing material can increase the lead time of delivery. The 2-1/2" thru 18" bores the piston packing uses a quad ring design. The upper bores uses the standard u-cup packing design. These piston packing arrangements allows for a low cost cylinder, but yet, great cylinder performance. The tube seal is manufactured from a Garlock® material that allows great sealing performance. Individual seal kits and complete repair kits are available.

Rod Bearing: Ductile iron material that insures low friction, high load capabilities, and long life of service. The 2-1/2" thru 10" bore rod bearings are pressed in the head end cover. The 12" thru 24" bore rod bearings are internally removable.

Piston: The 2-1/2" thru 14" bore pistons are of a ductile iron material that insures low friction, high load capabilities, and long life of service. The 16" thru 24" bore piston are of a aluminum material to reduce the overall cylinder weight, but yet, offers a long life of service. The pistons are one piece design that is pilot fitted to assure perfect alignment. All pistons are locked with Loctite® and are staked to assure the piston from backing off. The larger bore cylinders are not staked, but are pinned with the a locking set screw.

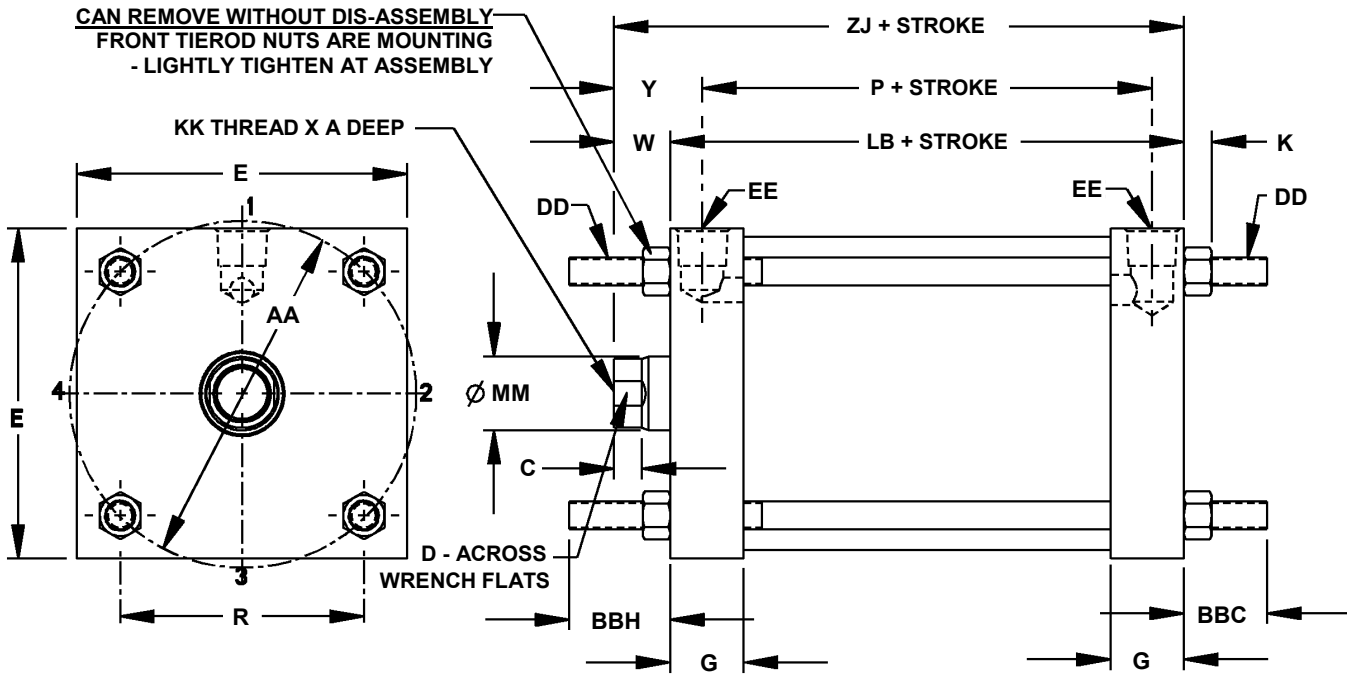
Tube: Composite (Fiberglass) material is used on all bore sizes to assure a smooth operation with minimum friction. This material choice has allowed the overall cylinder weight be reduced. The steel, chrome plated bore, material can be requested. The steel material selection can increase outer dent resistance and faster delivery times.

Tie rod: Medium carbon steel with 100,000 psi minimum yield material. At assembly, the each tie rod is pre-stressed with a high strength alloy nut to minimize the possibility of tie rod elongation.

Porting: Unrestricted ports to permit maximum flow with minimum pressure drops. The standard porting is NPTF porting, but SAE porting is available.

Springs: Springs are power-coated yellow to reduce rust and improve wear performance. The spring ends are flatten and ground to increase the parallelism with the bore and rod.

Quincy Ortmann Cylinders enforces a \$25.00 net minimum order charge.

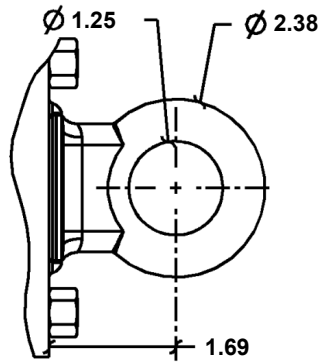


Bore	Basic Dimensions															Plus stroke			
	MM	A	C	D	KK	BBH	DD	E	EE	G	AA	R	W	K	Y	BBC	LB	P	ZJ
2-1/2	0.62	0.75	0.25	0.50	0.44"-20	1.12	0.31"-24	3.00	0.25"-18	0.88	3.10	2.19	0.62	0.31	0.38	0.88	2.50	1.75	3.12
3-1/4	1.00	1.12	0.38	0.88	0.75"-16	1.38	0.38"-24	4.00	0.25"-18	0.88	3.90	2.76	0.75	0.38	0.38	1.12	2.50	1.75	3.25
4	1.00	1.12	0.38	0.88	0.75"-16	1.38	0.38"-24	4.50	0.38"-18	1.00	4.70	3.32	0.75	0.38	0.44	1.12	3.00	2.12	3.75
5	1.00	1.12	0.38	0.88	0.75"-16	1.81	0.50"-20	5.50	0.38"-18	1.00	5.80	4.10	0.75	0.44	0.44	1.19	3.00	2.12	3.75
6	1.00	1.12	0.38	0.88	0.75"-16	1.81	0.50"-20	6.50	0.38"-18	1.00	6.90	4.88	0.88	0.44	0.44	1.19	3.25	2.38	4.12
7	1.00	1.12	0.38	0.88	0.75"-16	2.00	0.62"-18	8.00	0.38"-18	1.00	8.10	5.73	0.88	0.56	0.44	1.31	3.50	2.62	4.38
8	1.00	1.12	0.38	0.88	0.75"-16	2.00	0.62"-18	9.00	0.38"-18	1.00	9.11	6.44	0.88	0.56	0.44	1.31	3.50	2.62	4.38
10	1.00	1.12	0.38	0.88	0.75"-16	2.25	0.75"-16	11.00	0.50"-14	1.25	11.20	7.92	1.00	0.69	0.56	1.69	4.12	3.00	5.12
12	1.38	1.62	0.50	1.12	1.00"-14	2.25	0.75"-16	12.75	0.50"-14	1.25	13.29	9.40	1.00	0.69	0.56	1.69	4.12	3.00	5.12
14	1.38	1.62	0.50	1.12	1.00"-14	2.50	0.88"-14	14.75	0.75"-14	1.50	15.41	10.90	1.00	0.81	0.69	1.93	4.75	3.38	5.75
16	1.75	1.62	0.62	1.50	1.00"-14	2.75	1.00"-14	17.00	0.75"-14	1.50	17.81	12.59	1.25	0.88	0.69	2.00	5.00	3.62	6.25
18	2.00	2.25	0.75	1.69	1.50"-12	3.25	1.12"-12	19.00	0.75"-14	1.75	20.00	14.14	1.50	1.00	0.94	2.25	5.75	3.88	7.25
20	2.00	2.25	0.75	1.69	1.50"-12	3.25	1.25"-12	21.00	0.75"-14	2.00	22.30	15.77	1.50	1.12	1.19	2.38	6.50	4.12	8.00
22	3.00	3.50	0.75	2.62	2.25"-12	3.50	1.25"-12	23.00	0.75"-14	2.00	24.25	17.15	2.25	1.12	1.19	2.38	7.50	5.12	9.75
24	3.50	3.50	0.75	3.00	2.50"-12	3.50	1.25"-12	25.25	0.75"-14	2.50	26.50	18.74	2.25	1.12	1.50	2.38	8.50	5.50	10.75

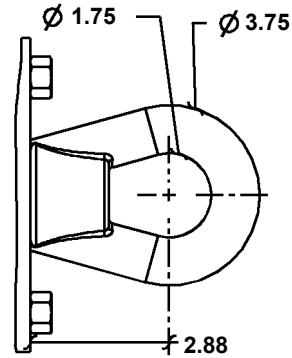
- Double ended construction (DRE) - BBC is equal to BBH in the DTR lifting option.
- Shown above is the Single ended construction (SRE) with a Extended Tie Rod (TR) lifting option.
- Lift Options (LE) and (HLE) does not included the Extended Tie rod on the cap end (BBC).

Cylinder Dimensions FA Series

Lifting Eyes Dimensions



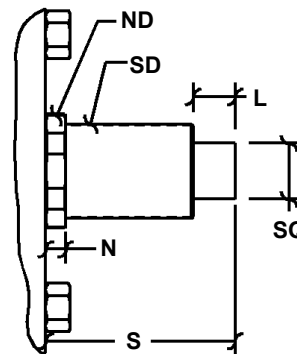
LE Lifting Option
2-1/2" thru 12" bore



HLE Lifting Option
5" thru 24" bore

Stroke Adjustment Dimensions

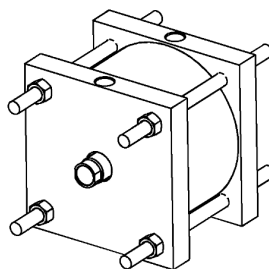
Cap Stroke Adjust Dimensions						
Bore	N	ND (Flats)	S	SD (Thread)	SQ	L
2-1/2	.94	.266	1.88	0.75"-16	.44	.50
3-1/4	1.31	.312	1.88	1.06"-12	.62	.62
4	1.31	.312	1.88	1.06"-12	.62	.62
5	1.31	.312	1.88	1.06"-12	.62	.62
6	1.94	.391	2.38	1.62"-12	1.00	.75
7	1.94	.391	2.38	1.62"-12	1.00	.75
8	1.94	.391	2.38	1.62"-12	1.00	.75
10	1.94	.391	2.38	1.62"-12	1.00	.75



Total Length = "S" + Stroke Adjustment Length

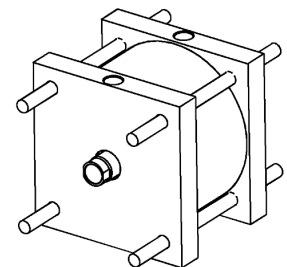
MOUNTING (SRE)

The head end cover (rod end cover) is threaded so the rod end tie rod hex nuts can be used for mounting. The hex nuts are hand tighten for shipping reasons. This practice will be performed before each shipment of the following constructions: Single Rod End Cylinder (SRE), Spring Extend Cylinder (SPEX), Spring Retract Cylinder (SPRE), and Cap End Stroke Adjustment Cylinder (ADJC). The head end cover (rod end cover) hex nuts "only" can be used for mounting. The cap end cover will disassemble the cylinder and will void any remaining warranty.

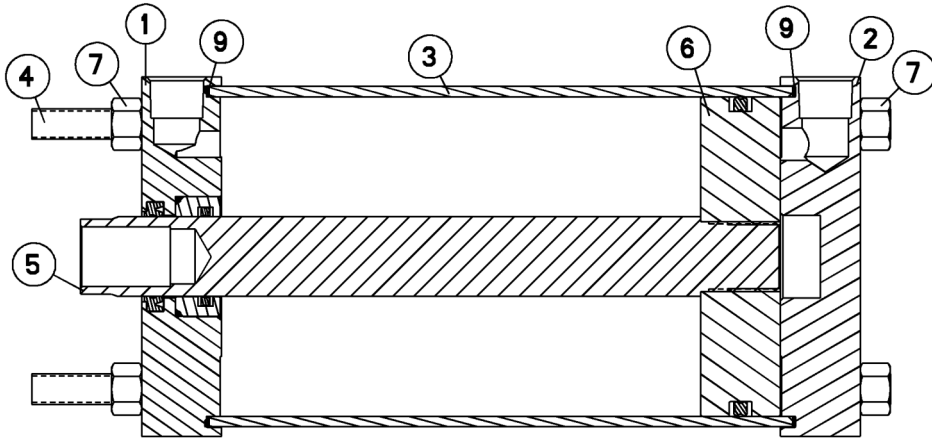


MOUNTING (DRE)

The one end cover is threaded so the rod end tie rod hex nuts can be used for mounting. The hex nuts are shipped loose with the cylinder. This practice will be performed before each shipment of the following construction: Double Rod Ended Cylinder (DRE). The threaded end cover is shipped without the hex nuts and should use the hex nuts that were shipped loose for mounting. The opposite cover will disassemble the cylinder and will void any remaining warranty. The threaded end (mounting) cover will be the end of double ended cylinder that does not have the tie rod hex nuts mounting to the cylinder's tie rods.



Quincy Ortmann Cylinders enforces a \$25.00 net minimum order charge.



SRE

Single Rod End Cylinder
 The single rod end construction can be used in a single acting or a double acting operation. The available lifting options can be a cap end cover lifting eye (LE or HLE), extended cap tie rods (TR), and a basic no lifting option (O).

Available with the 2-1/2" thru 24" bores

The cylinder shown to the left is of a single rod end construction with a basic no lifting option. The bore could be of a 2-1/2" to 10" bore due to the pressed in rod bearing.

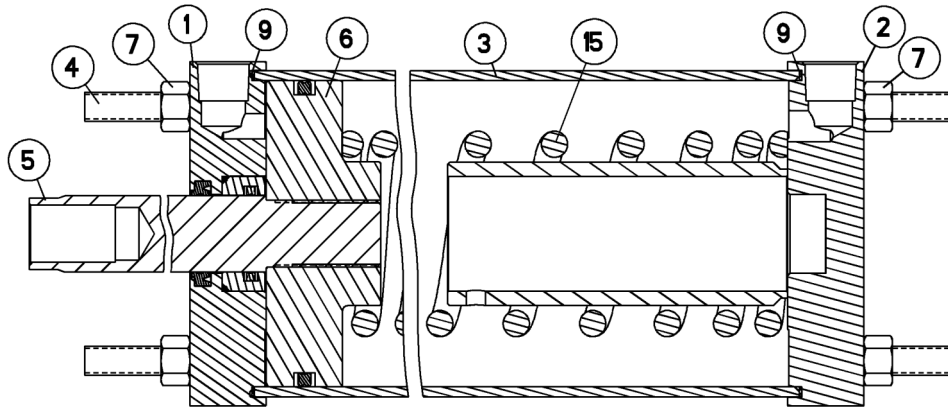
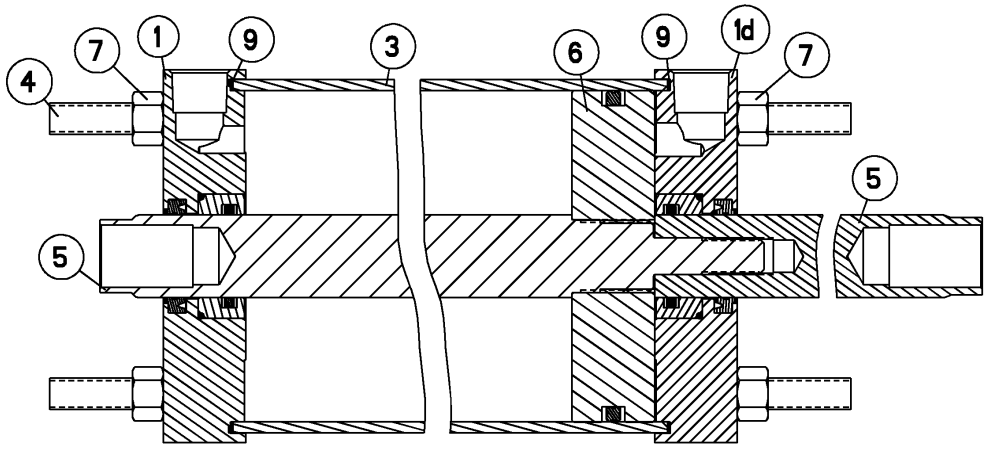
DRE

Double Rod Ended Cylinder
 The double rod ended construction can be used in a single acting or a double acting operation. The available lifting options can be an extended cap tie rods (TR) and a basic no lifting option (O).

Available with the 2-1/2" thru 24" bores

There are restrictions on minimum strokes.

The cylinder shown to the right is of a double rod ended construction with an extended cap tie rod lifting option. The bore could be of a 2-1/2" to 10" bore due to the pressed in rod bearings.



SPEX

Spring Extend Cylinder
 The spring extend construction can be used in a single acting or a double acting operation. The available lifting options can be a cap end cover lifting eye (LE or HLE), extended cap tie rods (TR), and a basic no lifting option (O).

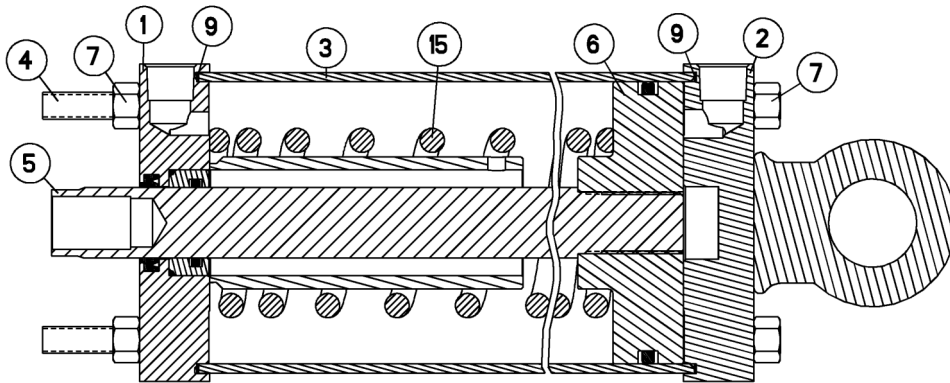
Available with the 3-1/4" thru 16" bores

The cylinder shown to the left is of a single rod end construction with an extended cap tie rod lifting option. The bore could be of a 2-1/2" to 10" bore due to the pressed in rod bearing.

Special assembly items are shipped loose with each spring cylinder. These items should be place in a safe and clean environment. The items should include tie rods(2), flat washers(4), hex nuts(4), and cotter pins(2).

Cylinder Constructions

FA Series



SPRE

Spring Retract Cylinder

The spring retract construction can be used in a single acting or a double acting operation. The available lifting options can be a cap end cover lifting eye (LE or HLE), extended cap tie rods (TR), and a basic no lifting option (O).

Available with the 2-1/2" thru 16" bores

The cylinder shown to the left is of a single rod end construction with a lifting eye lifting option. The bore could be of a 2-1/2" to 10" bore due to the pressed in rod bearing.

Special assembly items are shipped loose with each spring cylinder. These items should be place in a safe and clean environment. The items should include tie rods(2), flat washers(4), hex nuts(4), cotter pins(2) and assembly piston rod(1).

ADJC

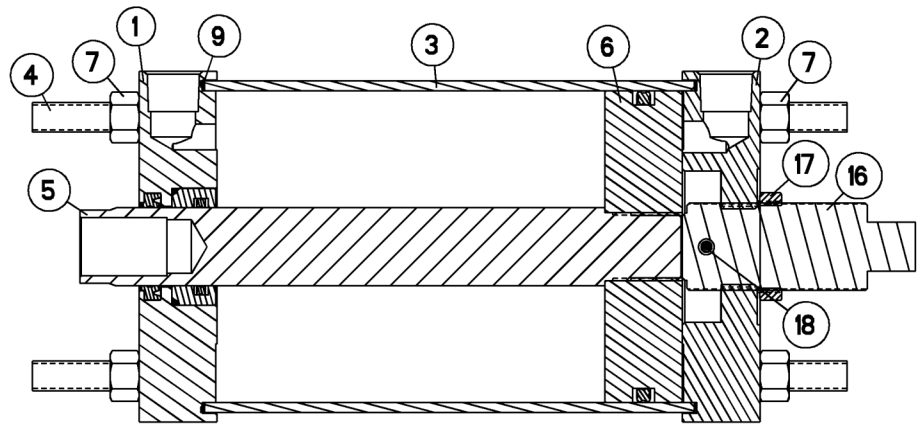
Cap End Stroke Adjustment Cylinder

The cap end stroke adjustment construction can be used in a single acting or a double acting operation. The available lifting options can be an extended cap tie rods (TR) and a basic no lifting option (O).

Available with the 2-1/2" thru 10" bores

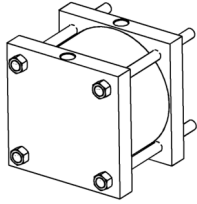
There are restrictions on maximum stroke adjustments.

The cylinder shown to the right is of a double rod ended construction with an extended cap tie rod lifting option. The bore could be of a 2-1/2" to 10" bore due to the pressed in rod bearings.



ITEM	PART DESCRIPTION (Bore Size)	SRE	DRE	SPEX	SPRE	ADJC
1	Head End Cover	1	1	1	1	1
1d	Head End Cover		1			
2	Cap End Cover	1		1	1	1
3	Tube	1	1	1	1	1
4	Tie Rod	4	4	4	4	4
5	Piston Rod	1	1	1	1	1
6	Piston	1	1	1	1	1
7	Tie Rod Hex Nut	8	12	8	8	8

ITEM	PART DESCRIPTION (Bore Size)	SRE	DRE	SPEX	SPRE	ADJC
9	End Cover Gasket	2	2	2	2	2
10a	Piston Packing (2-1/2 to 18)	1	1	1	1	1
10b	Piston Packing (20 to 24)	2	2	2	2	2
15	Spring	1		1	1	
16	Adjustment rod	1				1
17	Seal Nut	1				1
18	Cotter Pin	1				1

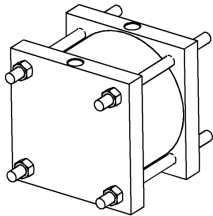


Basic No Option

Lifting Code: O

Available with the 2-1/2" thru 24" bores

The FA cylinder has a head end cover tie rod extension¹ and no lifting option on the cap end cover. The tie rod are flush with a hex nuts.

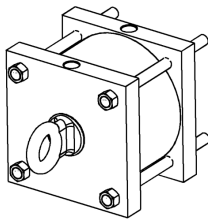


Extended Tie Rod Option

Lifting Code: TR

Available with the 2-1/2" thru 24" bores

The FA cylinder has a head end cover tie rod extension¹ and a tie rod extension¹ lifting option on the cap end cover. The tie rod are extend past the hex nuts. The removal of the cap end cover hex nuts will disassemble the cylinder and will void any remaining warranty.

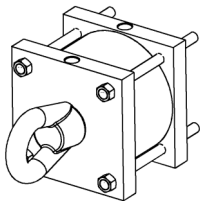


Welded Cap End Lifting Eye Option

Lifting Code: LE

Available with the 2-1/2" thru 12" bores

The FA cylinder has a head end cover tie rod extension¹ and a welded cap end lifting option on the cap end cover. The tie rod are flush with a hex nuts. The lifting eye dimensions are available on page 10.

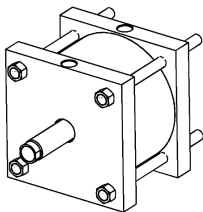


Heavy Duty Welded Cap End Lifting Eye Option

Lifting Code: HLE

Available with the 5" thru 24" bores

The FA cylinder has a head end cover tie rod extension¹ and a welded cap end lifting option on the cap end cover. The tie rod are flush with a hex nuts. The lifting eye dimensions are available on page 8-4.

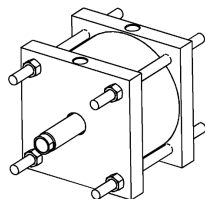


Basic No Option (DRE)

Lifting Code: DO

Available with the 2-1/2" thru 24" bores

The FA cylinder has a head end cover tie rod extension¹ and no lifting option on the cap end cover. The tie rod are flush with a hex nuts.



Extended Tie Rod Option (DRE)

Lifting Code: DTR

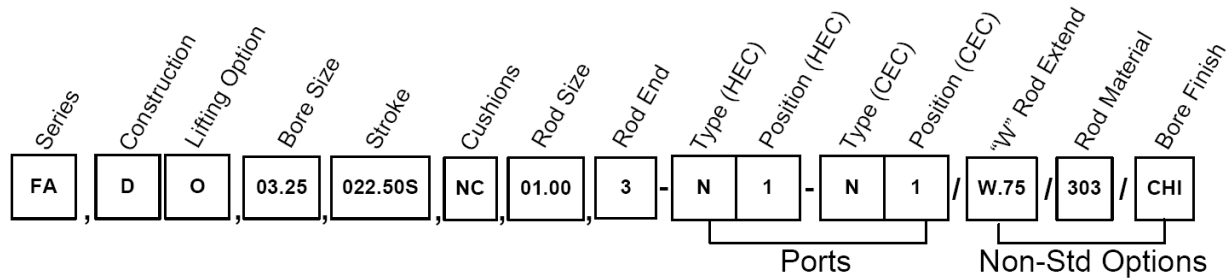
Available with the 2-1/2" thru 24" bores

The FA cylinder has a head end cover tie rod extension¹ extension¹ and a tie rod extension¹ lifting option on the opposite cover. The tie rod are extend past the hex nuts. The removal of the hex nuts will disassemble the cylinder and will void any remaining warranty.

¹At the time of order placement, the tie rod extension can be specified to a different length than standard to meet the application needs.

Ordering Information

FA Series



Series:

FA - Knife Gate Pneumatic Cylinder

Construction:

D - Double Rod End

Lifting Option:

O - Basic - No Option

TR - Extend Tie Rod

LE - Welded Cap End Lifting Eye Option

HLE - Heavy Duty Welded Cap End Lifting Eye Option

Bore:

02.50 - 2.50" dia.	12.00 - 12.00" dia.
03.25 - 3.25" dia.	14.00 - 14.00" dia.
04.00 - 4.00" dia.	16.00 - 16.00" dia.
05.00 - 5.00" dia.	18.00 - 18.00" dia.
06.00 - 6.00" dia.	20.00 - 20.00" dia.
07.00 - 7.00" dia.	22.00 - 22.00" dia.
08.00 - 8.00" dia.	24.00 - 24.00" dia.
10.00 - 10.00" dia.	

Stroke:

xxx.xxS - Stroke format (ex. 001.50S)

The stroke is always followed by the letter "S". The stroke length should equal the actual stroke length unless the cylinder contains a internal stop. At that time, the stroke should equal the nominal stroke length.

Cushions:

NC - Non-Cushioned

Bore:

00.62 - 0.62" dia.	02.00 - 2.00" dia.
01.00 - 1.00" dia.	03.00 - 3.00" dia.
01.38 - 1.38" dia.	03.50 - 3.50" dia.

Rod Ends:

3 - SF-Standard Female

4 - OF-Special Female

8 - Studded Male Rod End

Port-Type (HEC):

N - NPTF Port

S - SAE Port

Port-Position (HEC):

1 - Pos #1 - 12 o'clock

2 - Pos #2 - 3 o'clock

3 - Pos #3 - 6 o'clock

4 - Pos #4 - 9 o'clock

Port-Type (CEC):

N - NPTF Port

S - SAE Port

Port-Position (CEC):

1 - Pos #1 - 12 o'clock

2 - Pos #2 - 3 o'clock

3 - Pos #3 - 6 o'clock

4 - Pos #4 - 9 o'clock

5 - Pos #5 - Axial Center

Non-Std Options:

Rod End Options

Wx.xx - Actual "W" dimension (ex. W1.62)

Ax.xx - Actual "A" dimension (ex. A3.00)

FLx - Wrench Flats (ex. FL2, FL4, or FL6)

Rod Packing Options

RSV - Viton®

RSE - Ethylene Propylene (EPR)

Piston Packing Options

PSV - Viton®

PSE - Ethylene Propylene (EPR)

Piston Rod Material Options

174 - 17-4 Stainless Steel

303 - 303 Stainless Steel

304 - 304 Stainless Steel

Tubing Bore Material Options

CHI - Steel-Chromed-Type I

Jack Screw Options

JSH - Black Oxide Hex Bolt

JSL - Stainless Steel Stud

Construction Options

Xx.xx - Stroke Adjustment Length (ex. X3.00)

Rxxx.xx - Spring Rate (ex. R123.00)

Painting Options

NON - Non-Coated

- Each non-standard option is separated with a "/".
- Spring Rate is for spring return and spring extend construction, consult factory for rate value.
- (HEC) = Rod End, Head End Cover (CEC) = Blind End, Cap End Cover

Standard Terms and Conditions

LEGAL EFFECT: Except as expressly otherwise agreed to in writing by an authorized representative of Seller, the following terms and conditions shall apply to and form a part of this order and any additional and/or different terms of Buyer's purchase order or other form of acceptance are rejected in advance and shall not become a part of this order.

The rights of Buyer hereunder shall be neither assignable nor transferable except with the written consent of Seller.

This order may not be canceled or altered except with the written consent of Seller and upon terms which will indemnify Seller against all loss occasioned thereby. All additional costs incurred by Seller due to changes in design or specifications, modification of this order or revision of product must be paid for by Buyer.

In addition to the rights and remedies conferred upon Seller by this order, Seller shall have all rights and remedies conferred at law and in equity and shall not be required to proceed with the performance of this order if Buyer is in default in the performance of such order or of any other contract or order with seller.

TERMS OF PAYMENT: Unless otherwise specified in this order, the terms of payment shall be net cast within thirty (30) days after shipment. These terms shall apply to partial as well as complete shipments. If any proceeding be initiated by or against Buyer under any bankruptcy or insolvency law, or in the judgment of Seller the financial condition of Buyer, at the time the equipment is ready for shipment, does not justify the terms of payment specified, Seller reserves the right to require full payment in cast prior to making shipment. If such payment is not received within fifteen (15) days after notification of readiness for shipment, Seller may cancel the order as to any unshipped item and require payment of its reasonable cancellation charges.

If Buyer delays shipment, payments based on date of shipment shall become due as of the date when ready for shipment. If Buyer delays completion of manufacture, Seller may elect to require payment according to percentage of completion. Equipment held for Buyer shall be at Buyer's risk and storage charges may be applied at the discretion of Seller.

Accounts past due shall bear interest at the highest rate lawful to contract for but if there is no limit set by law, such interest shall be eighteen percent (18%). Buyer shall pay all cost and expenses, including reasonable attorney's fees, incurred in collecting the same, and no claim, except claims within Seller's warranty of material or workmanship, as stated below, will be recognized unless delivered in writing to Seller within thirty (30) days after date of shipment.

TAXES: All prices exclude present and future sales, use, occupation, license, excise, and other taxes in respect of manufacture, sales or delivery, all of which shall be paid by Buyer unless include in the purchase price at the proper rate or a proper exemption certificate is furnished.

ACCEPTANCE: All offers to purchase, quotations and contracts of sales are subject to final acceptance by an authorized representative at Seller's plant.

DELIVERY: Except as otherwise specified in this quotation, delivery will be F. O. B. cars point of shipment. In the absence of exact shipping instruction, Seller will use its discretion regarding best means of insured shipment. No liability will be accepted by Seller for so doing. All transportation charges are at Buyer's expense. Time of delivery is an estimate only and is based upon the receipt of all information and necessary approvals. The shipping schedule shall not be construed to limit seller in making commitments for materials or in fabricating articles under this order in accordance with Seller's normal and reasonable production schedules.

Seller shall in no event be liable for delays caused by fires, acts of God, strikes, labor difficulties, acts of governmental or military authorities, delays in transportation or procuring materials, or causes of any kind beyond Seller's control. No provision for liquidated damages for any cause shall apply under this order. Buyer shall accept delivery within thirty (30) days after receipt of notification of readiness for shipment. Claims for shortages will be deemed to have been waived if not made in writing with ten (10) days after the receipt of the material in respect of which any such shortage is claimed. Seller is not responsible for loss or damage in transit after having received "In Good Order" receipt from the carrier. All claims for loss or damage in transit should be made to the carrier.

TITLE & LIEN RIGHTS: The equipment shall remain personal property, regardless of how affixed to any realty or structure. Until the price (including any notes given therefore) of the equipment has been fully paid in cash, Seller shall, in the event of Buyer's default, have the right to repossess such equipment.

PATENT INFRINGEMENT: If properly notified and given an opportunity to do so with friendly assistance, Seller will defend Buyer and the ultimate user of the equipment from any actual or alleged infringement of any published United States patent by the equipment or any part thereof furnished pursuant hereto (other than parts of special design, construction, or manufacture specified by and originating with Buyer), and will pay all damages and costs awarded by competent court in any suit thus defended or of which it may have had notice and opportunity to defend as aforesaid.

STANDARD WARRANTY: Seller warrants that products of its own manufacture will be free from defects in workmanship and materials under normal use and service for the period specified in the product instruction manual. Warranty for service parts will be Ninety (90) days from date of factory shipment. Electric Motors, gasoline and diesel engines, electrical apparatus and all other accessories, components and parts not manufactured by Seller are warranted only to the extent of the original Notice of the alleged defect must be given to the Seller, in writing with all identifying details including serial number, type of equipment and date of purchase within thirty (30) days of the discovery of the same during the warranty period.

Seller's sole obligation on this warranty shall be, at its option, to repair or replace or refund the purchase price of any product or part thereof which proves to be defective. If requested by Seller, such product or part thereof must be promptly returned to seller, freight prepaid, for inspection.

Seller warrants repaired or replaced parts of its own manufacture against defects in materials and workmanship under normal use and service for ninety (90) days or for the remainder of the warranty on the product being repaired.

This warranty shall not apply and Seller shall not be responsible or liable for:

- (a) Consequential, collateral or special losses or damages;
- (b) Equipment conditions caused by fair wear and tear, abnormal conditions of use, accident, neglect or misuse of equipment, improper storage or damage resulting during shipping;
- (c) Deviation from operating instructions, specifications or other special terms of sale;
- (d) Labor charges, loss or damage resulting from improper operation, maintenance or repairs made by person(s) other than Seller or Seller's authorized service station.

In no event shall Seller be liable for any claims whether arising from breach of contract or warranty or claims of negligence or negligent manufacture in excess of the purchase price.

THIS WARRANTY IS THE SOLE WARRANTY OF SELLERS AND ANY OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED IN LAW OR IMPLIED IN FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR USE ARE HEREBY SPECIFICALLY EXCLUDED.

LIABILITY LIMITATIONS: Under no circumstances shall the Seller have any liability for liquidated damages or for collateral, consequential or special damages or for loss of profits, or for actual losses or for loss of production or progress of construction, whether resulting from delays in delivery or performance, breach of warranty, negligent manufacture or otherwise.

ENVIRONMENTAL AND OSHA REQUIREMENTS: At the time of shipment of the equipment from the factory, Quincy Compressor / Quincy Ortman Cylinders will comply with the various Federal, State and local laws and regulations concerning occupational health and safety and pollution. However, in the installation and operation of the equipment and other matters over which the seller has no control, the Seller assumes no responsibility for compliance with those laws and regulations, whether by the way of indemnity, warranty or otherwise.

FA SERIES WARRANTY

Seller warrants that any product of its manufacture, which upon examination is found by a Seller's representative to be defective in either workmanship or material under normal use and service, will, at Seller's option, be repaired or replaced free of charge including lowest transportation charges but not cost of installation or removal or have the purchase price refunded, provided that the SELLER receives written claim specifying the defect within one (1) year or 4,000 hours of use in normal service applications, whichever arrives first after Seller ships the product. Modified or special products shall be subject to special written warranty depending on application of products. In no event shall Seller be liable for any claims, whether arising from breach of contract or warranty or claims of negligence or negligent manufacture, in excess of the purchase price. **ALL OTHER WARRANTIES EXPRESSED AND IMPLIED INCLUDING ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR USE ARE HEREBY DISCLAIMED.** The foregoing expresses all of Seller's obligations and liabilities with respect to the quality of items furnished by it and it shall under no circumstances be liable for consequential, collateral or special losses or damages.

"This information should be used as a guide for your consideration, investigation, and verification. This information does not constitute a warranty or representation and we assume no legal responsibility or obligation with respect thereto, and the use to which such information may be put."