

"D" SERIES CYLINDER COMPONENTS

ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
1	Front Head	+19	Retaining Ring
+2	Bushing	20	Tie Rod Nuts (4)
+3	Wiper	21	Lock Washers (4)
+4	Bushing O-Ring	22	Tie Rods (4)
+5	Bearing Strip	23	Cushion Adj. Screw Nut
+6	Rod U-Cup	24	Cushion Adj. Screw
7	Cylinder Tube	25	O-Ring
● 8	Piston Retainer	26	Cylinder Insert
● 9	Piston	+ 27	Cushion Poppet
+10	Piston U-Cup	+ 28	Front Cushion Spring
+11	Rear Cushion Spring	● 29	O-Ring
12	Cylinder Insert	+ 30	Piston Bearing
+13	Cushion Poppet	● 31	Piston Lock Nut
+14	Cylinder Tube Seal	● 32	Threaded Washer
15	Rear Head	33	Cushion Adj. Screw Nut
+16	Retaining Ring	34	Cushion Adj. Screw
● 17	Piston Rod	35	O-Ring
18	Jam Nut		



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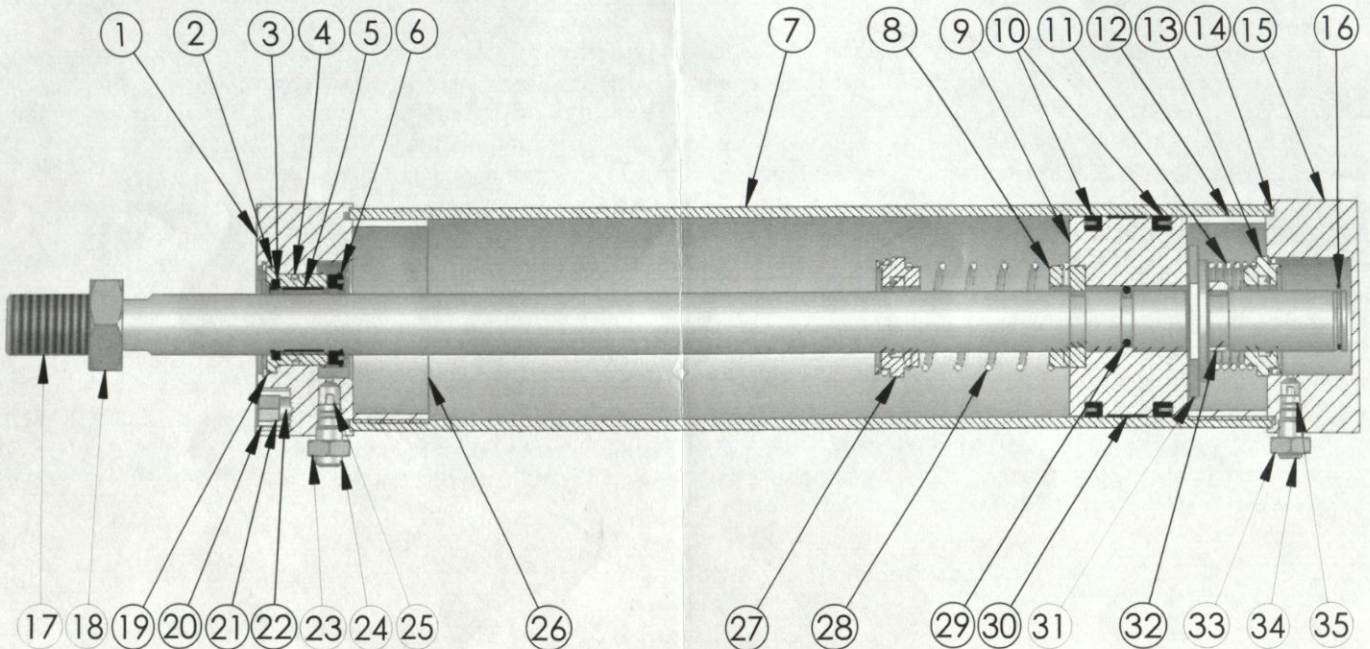
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D30NC KIT

MOTION CONTROLS, LLC
HARTFORD, WI 262-673-9255

"D" SERIES SEAL KIT



DOUBLE CUSHION CYLINDER SHOWN

(●) AVAILABLE AS FACTORY ASSEMBLED ONLY.

(+) AVAILABLE AS KITS ONLY.
ORDER APPROPRIATE KIT FOR NON-CUSHION OR CUSHION APPLICATION.

"D" SERIES CYLINDER MAINTENANCE INSTRUCTIONS

NOTE: Cylinder life is directly dependent on proper installation and air preparation.

Cylinders are not structural units and they are designed only to push and pull. The piston rod must be properly aligned with the mating part in both the extended and retracted position. Any misalignment will cause interference and shorten the cylinder life. Air lines must be free of all contamination. An air line filter should be used. The air supply must be clean and free of moisture. Proper lubrication is also recommended. When rebuilding cylinders, make sure all parts are clean before reassembly and avoid introducing any dirt or chips into the cylinder. Check the piston rod (17) and the cylinder tube (7) for damage and replace either if necessary before proceeding. Pre-lubrication of all seals prior to re-assembly is recommended for ease of installation.

To Replace the Rod Seals

Remove any rod clevis or jam nut from the piston rod end (17). Remove the retaining ring (19), rod bushing assembly (2,3,4,5) and rod U-cup (6). Install a new U-cup (6) over the rod, taking care in passing it over the threaded part of the piston rod. Seat the seal into the bottom of the front head using a blunt instrument. If not already assembled, install a new wiper (3) and a bearing strip (5) into the new bushing (2). Install O-ring (4) on to the bushing as well. Slide the bushing assembly over the piston rod, again taking care in passing it over the rod threads. Seat the bushing assembly into the front head (1), and re-install the retaining ring (19).

To Replace the Piston Seals

Remove the front head (1) by unscrewing four tie rod nuts (20), removing the lock washers (21) and lifting the front head off the cylinder tube (7). Remove the piston rod/cylinder tube assembly from the rear head (15) and pull the piston rod assembly from the tube (7). Remove the piston U-cups (10), and the piston bearing (30). **IMPORTANT:** Install new U-cups, making sure that the lips of the seals face away from each other. Use grease to hold the new bearing (30) in place, and insert the piston rod assembly back into the cylinder tube. **NOTE:** It may be necessary to temporarily compress the first piston U-cup to allow it to enter the tube. Make sure the bearing strip is not pinched between the tube and piston. Install new cylinder tube seals (14) (either gaskets or O-rings) into the heads, and reinstall the cylinder tube. This is best done in the vertical position, with the blind end cover down. Make sure the tie rod nuts (20) and lock washers (21) are installed on the short threaded end of the tie rods. Retighten the tie rods using equal torque on each rod per the chart below.

Model	D12	D24, 49, 70	D96, 160
Torque	8-10 ft.lb	15-19 ft.lb.	22-25 ft.lb.

Cushion Cylinders

Front cushion

Disassemble the cylinder per previous instructions. Prior to removal of the piston rod assembly, take out the cylinder insert (26). Remove the old spring (28) and cushion poppet (27) from piston rod assembly. Attach a new spring onto new poppet making sure tang on spring is firmly seated into the mating hole on the poppet. Slide the poppet/spring assembly over the piston rod, taking care in passing the poppet over the rod threads. Insert the tang in other end of the spring into the mating hole of the piston retainer (8) and stake in place. Reassemble the cylinder per previous instructions. Make sure the cylinder insert (26) is in place prior to final assembly. **NOTE:** D96 and D160 cylinders use a different spring mounting method, very similar to a coarse thread. Thread the spring onto the retainer and turn until the spring tang aligns with the mating hole. Stake in place.

Rear cushion

Disassemble the cylinder per previous instructions. Prior to removal of the piston rod assembly, take out the cylinder insert (12). Remove the retaining ring (16) from the rear of the piston rod. Remove the cushion poppet (13) and spring (11). Install a new spring onto the rod assembly. Carefully slide a new cushion poppet over the rear of the piston rod, taking care in passing the poppet over the retainer ring groove. Install retainer ring (16). Reassemble the cylinder per previous instructions. Make sure the cylinder insert (12) is in place inside the cylinder tube. **NOTE:** Front and rear springs are not interchangeable. Front cushion springs have tangs on either end, while the rear cushion springs do not. This applies to all "D" series Cylinders.

Double Cushion

Follow instructions for front and rear cushion cylinders.

***** IMPORTANT *****

All "D" Series Cylinders utilize a poppet style cushion. There are two different styles for the D12 through D70 cylinders. The original design poppet had non-replaceable bonded sealing surfaces. The new design is similar to the D96 and the 160 poppets in that they use standard O-rings placed into grooves on the poppet. The O-rings must be assembled on the outside groove surface of the poppet, and on the inside groove using the appropriate size O-rings. Older D96 and 160 poppets used a U-cup on the inner diameter and are not interchangeable with the newer design.