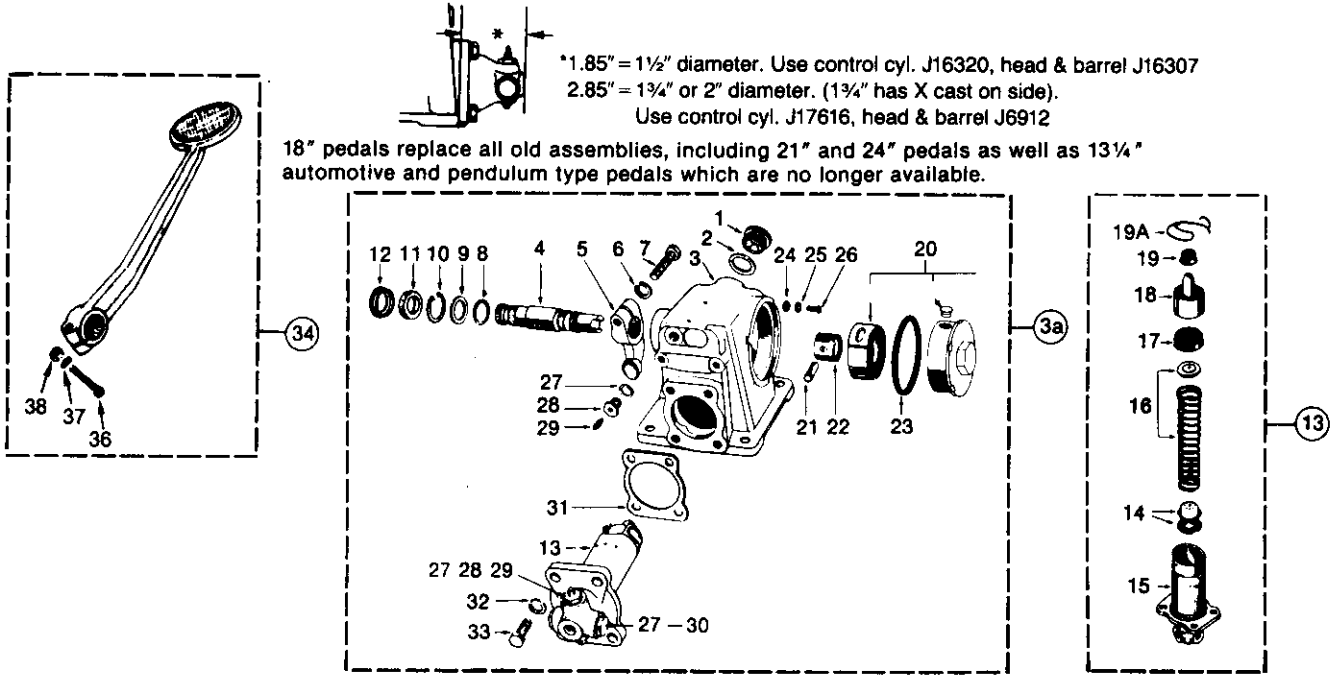


INDUSTRIAL BRAKE SYSTEMS REPLACEMENT PARTS CONTROL CYLINDERS (J16320 - J17616 - J19907) AND PEDAL (J8219)

The control cylinders below replace equivalent assemblies, which are identified by the nameplate on the top of the supply tank. Similar J17617, 2" diameter control cylinders as well as 2" diameter head & barrels and repair kits are no longer manufactured and must be replaced by 1 3/4" diameter J17616 control cylinders. J17616 control cylinders must also replace ob-

solete 1 3/4" J8142 and J9337 control cylinders. However, new 1/2" mounting holes must be drilled to match the smaller assembly. Casting numbers are included in the part name tabulation to assist in identification. The head & barrel diameter can be determined without removal from control cylinder by measuring extension of "nose."*



Item No.	Part Description	No. Used	Part No.	Item No.	Part Description	No. Used	Part No.
1	Filler Plug	1	⑩				
2	Filler Plug Gasket	1	⑩				
3	17615 Supply Tank	1					
3a	Control Cylinder Assy., less pedal	1		19a	Piston Stopwire	1	
	1 1/2" Diameter		J16320	20	Spring & Case Assy.	1	J17828
	1 3/4" Diameter		J17616	21	Shaft Pin	1	
	1 3/4" Diameter (Screened Breather replaces Items 28 & 29)		J19907	22	Sleeve Arbor	1	
4	Shaft	1	J17611	23	Spring Case Gasket	1	⑧
5	Lever	1	J7158	24	Case Washer	3	⑧
6	1/2" Lockwasher	1	②	25	#10 Lockwasher	3	⑧
7	1/2"-20 x 2" Cap Screw	1	②	26	Stainless Allen Screw	3	⑧
8	O Ring	1		27	F17 Copper Gasket	5	J105376
9	Retainer Plate	1		28	Bleeder Screw Adaptor	1	J7348
10	Snap Ring	1		29	Bleeder Screw	1	F6446
11	Felt Seal	1					
12	Felt Retainer	1		31	1396 Head Gasket	1	⑨
13	Head & Barrel Assy. (Items 14-19a, 16308 1 1/2" Diameter 27-30) 6911 1 3/4" Diameter	1	J16307 J6912	32	7/16" Lockwasher	4	②
14	Valve & Seat	1	④	33	7/16"-14 x 1 1/4" Cap Screw	4	②
15	Head & Barrel	1		34	Pedal Assy	1	J8219
16	Retainer Spring	1	J19039 KIT				
17	Piston Cup	1	④	36	1/2"-20 x 2 1/4" Bolt	1	②
18	Piston	1	④	37	1/2" Lockwasher	1	②
19	Support Ring	1	④	38	1/2"-20 Nut	1	②

② Standard hardware items. Obtain locally.

④ Use Either Kit J19039 for 1 1/2" Head and Barrel or Kit J19040 for 1 3/4" Head and Barrel (Items 14, 16-19)

⑧ Order Gasket Kit J73923

⑨ Included in Item 13, Head & Barrel Assy., or ④ or ⑤ Head & Barrel Repair Kits

⑩ Order J105377 Filler Plug/Gasket Kit

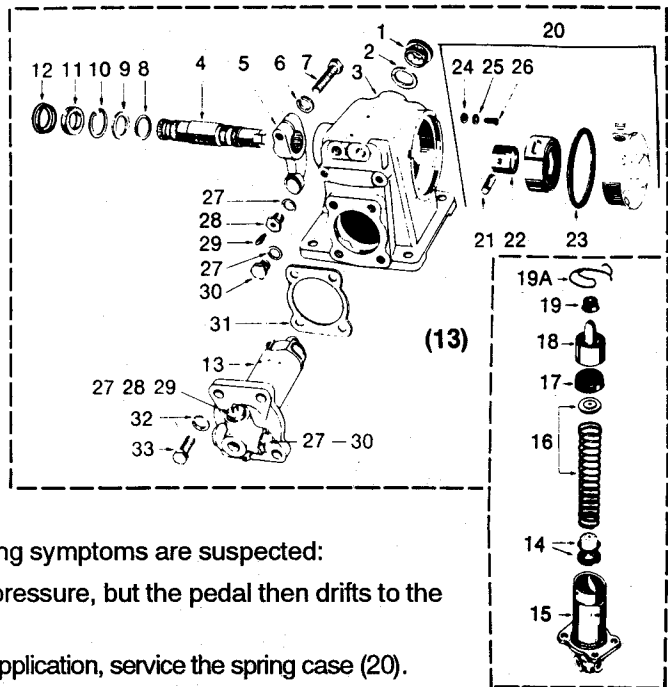
J19907 has a vented cap / filler plug, item 1, for brake systems that do not have a fluid reservoir bleeder

SERVICING INSTRUCTIONS

Type H Control Cylinders



CONTROL CYLINDER
(WITH PEDAL ASSEMBLY)



Service the control cylinder if one or more of the following symptoms are suspected:

1. If normal pedal force and stroke develops braking pressure, but the pedal then drifts to the floor, service the head and barrel (13).
2. If the pedal will not return to normal height after brake application, service the spring case (20).
3. If brake fluid leaks past the shaft or the spring case, replace seals (8-12) and (23).
4. If the supply tank (3) appears defective, discard and replace complete assembly.

When servicing the assembly, always refer to the nameplate assembly number on top of the supply tank.

Note that only 1-1/2" and 1-3/4" diameter assemblies are now available. Two-inch diameter assemblies are no longer manufactured.

SERVICING THE HEAD AND BARREL ASSEMBLY (13)

Temporarily block fluid supply from Fluid Reservoir/Bleeder and drain fluid from the supply tank (3). Remove four stud bolts and head and barrel assembly (13). Clamp barrel lightly in vise in vertical position with piston end up. Remove stop wire (19A), support ring (19), piston (18), cup retainer (17), return spring (16), and valve and valve seat (14). Clean cylinder using only brake fluid or isopropyl alcohol. **Do not** use gasoline, cleaning solvent or mineral oil. Bypass port holes must not be clogged. If cylinder bore is scratched or pitted, discard and replace head and barrel assembly.

Reassemble head and barrel in reverse order using all new parts (14, 16-19A) from Head and Barrel repair kit. Lubricate parts with 21B Brake Fluid. Clean residual fluid from supply tank reservoir and reinstall head and barrel using new head gasket (31). Make sure that piston push rod aligns with socket on lever (5).

SERVICING THE SPRING CASE ASSEMBLY (20)

If the pedal will not return to normal height, loosen the three screws (26) and apply 125-175 in-lb counterclockwise torque to the spring case (20). Tighten screws. If this does not help, the clock spring may be defective. Loosen screws and unwind the spring case clockwise, remove the screws and spring case. The spring case is serviced as a J17626 kit including items 20-26. Note that a new spring case includes a 1-1/4" hex for tightening with standard wrench. A J73923 gasket kit is also available including only items 23-26.

To reassemble, lubricate gasket (23) with brake fluid and slide over spring case (20). Insert assembly into supply tank (3) while rotating to engage pin (21) to slot in shaft (4). Attach three lock washers, case washers and screws loosely. Use wrench to wind spring counterclockwise to 125-175 in-lb torque. Tighten the screws and check torque by installing pedal with pad 14-15" above floor. With head and barrel (13) in place, depressed pedal must return to original height.

SERVICING THE SHAFT SEAL (8-12)

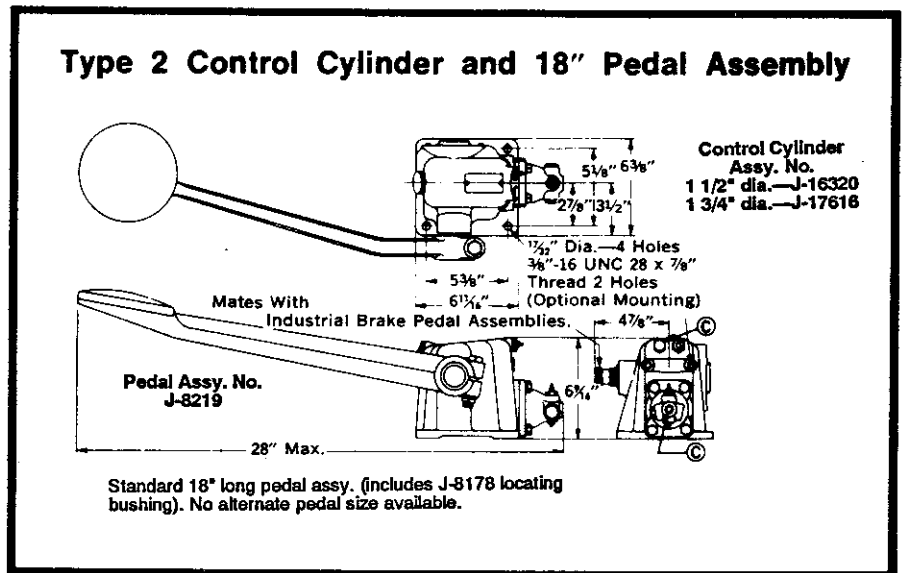
Remove retainer, felt seal, snap ring, retainer plate and "O" ring. Use new parts (8-12) from J10799 shaft kit. Dip "O" ring and felt seal in brake fluid and reinstall in reverse order.

INSTALLATION INSTRUCTIONS

Type H Control Cylinder and 18" Pedal Assembly

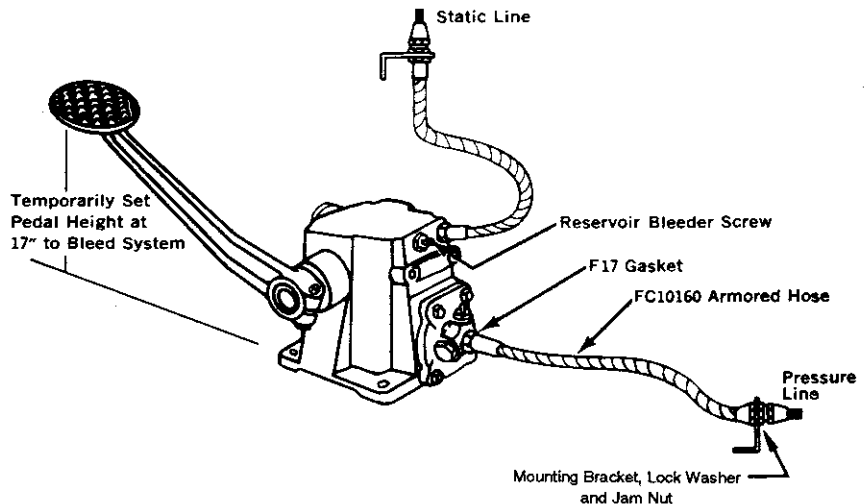
The control cylinder may be located in front, to either side, or to the rear of the standing or seated operator. However, it is essential that the foot *pad* be in a position for the operator to control full pedal force through up to 8" pedal pad travel. (Actual pedal travel depends on the specific system used.) We suggest that the pedal be slipped on the shaft and the control cylinder position be rechecked before the final location is selected.

NOTE: Relocating pedal assembly on shaft changes pad height in increments of 2.4 inches.



INSTALLATION

1. Bolt control cylinder to floor with 1/2" bolts.
2. Using F-17 copper gasket seal, screw short threaded end of two armored hoses into port C. Wrench tighten to provide leak-proof hydraulic seals.
3. Use mounting brackets, lock washers and jam nuts provided to attach free ends of hoses to rigid support.
4. Temporarily install foot pedal with pad 17" above floor level. This permits maximum control cylinder stroke when bleeding system. (Pedal height should be lowered to desired height after the hydraulic system is thoroughly bled.)
5. Control cylinder is now ready to be piped into the hydraulic system.



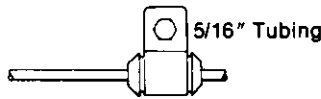
REPLACEMENT PARTS

5/16" Tubing, 1/2"-20 SAE Fittings and Miscellaneous Accessories

A55980 TUBING 5/16" OD x 100' Copper

J5138 CLAMP

J5137 TUBE BUSHING
Support tubing every 3 ft. with J5138 and J5137



J86 TUBE NUT mates 1/2-20 thd. with 45° chamfer and flared tubing



J9945 TUBE TEE (1/2-20 thd.*)



F996 OUTLET PLUG (1/2-20 thd.**)



J7346 ADAPTOR PLUG 1/2-20 thd.** with 1/4-28 thd. for F6446 Bleeder Screw

UNION AND ADAPTOR FITTINGS

	A	B
J49087 UNION (Replaces FC4080)	1/2-20*	1/2-20*
J269 ADAPTOR	1/2-20*	1/2-20**
F11955 ADAPTOR	1/2-20*	1/4-18 NPT.
J71052 ADAPTOR	1/2-20*	7/16-24

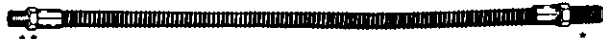
J49087 UNION (Replaces FC4080)

J269 ADAPTOR

F11955 ADAPTOR

J71052 ADAPTOR

30 INCH ARMORED HOSE



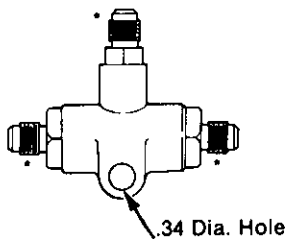
J10160 HOSE ASSEMBLY--only

F5780 HOSE BRACKET--anchors hose at * long thread

J10797 HOSE KIT--includes hose, F17 gasket for seal at ** short thread, F5780 hose bracket, 1/2-20 jam nut and lockwasher

J18377 TWO WAY HYDRAULIC CHECK VALVE

This assembly is required for operation of brake system from more than one control station.

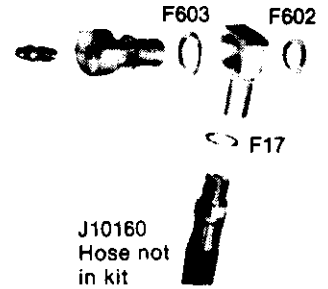


* 45° Chamfer, mates flared tubing and J86 tube nut

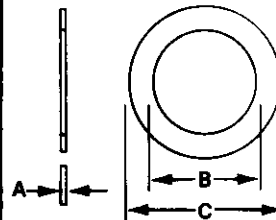
**Requires F17 Gasket Seal at cylinder port

J15555 RIGHT ANGLE KIT

Provides right angle swivel connection and bleeder screw port for any 1/2"-20 cylinder port. This assembly is furnished as standard on 6" and 8" type HM brake parking cylinder. Must be ordered separately if required for any other port.



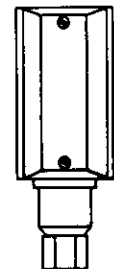
COPPER GASKETS



Part No.	A	B	C
F17	1/32"	33/64"	45/64"
F602	1/32"	1/2"	13/16"
F603	1/32"	19/32"	13/16"

J24684 HYDRAULIC PRESSURE SWITCH

1 pole--2 position electric contact. Easily read dials allow field adjustment of 50-500 psi pressure range and 10-80 psi pressure differential. This replacement part for JF70930 HM control unit may also be line mounted in parking cylinder hydraulic line to replace function of obsolete JD14853 mechanical limit switch in old HM-2 system or JC9738 pressure switch in old HM system.



1/4"-18 NPT.



F9314 21B SUPER HEAVY DUTY BRAKE FLUID (6-1 gal. CASE)

Industrial Brake Systems must be filled only with 21B Super Heavy Duty Brake Fluid meeting SAE J1703 specs. Do not use mineral oil or any other substitute. Avoid contamination. Purchase brake fluid in 1 gal. cans which can be easily carried to job site and discarded when empty.