

OPERATIONAL SPECIFICATIONS
SPRING APPLY - HYDRAULIC RELEASE SECTION

Model Number	Effective Area	Maximum Stroke	Maximum Displacement	Maximum Pressure	Release Pressure
12-460-020	4.66 sq. in.	0.5 in.	2.33 cu. in.	2000 psi	300 psi
12-460-022	4.66 sq. in.	0.5 in.	2.33 cu. in.	2000 psi	300 psi
12-460-052	4.66 sq. in.	0.5 in.	2.33 cu. in.	2000 psi	300 psi
12-460-056	4.66 sq. in.	0.5 in.	2.33 cu. in.	2000 psi	300 psi
12-460-058	4.66 sq. in.	0.5 in.	2.33 cu. in.	2000 psi	175 psi

HYDRAULIC APPLY SECTION

Model Number	Effective Area	Maximum Stroke	Maximum Displacement	Maximum Pressure
12-460-020	0.439 sq. in.	0.5 in.	0.220 cu. in.	2000 psi
12-460-022	0.439 sq. in.	0.5 in.	0.220 cu. in.	2000 psi
12-460-052	0.920 sq. in.	0.5 in.	0.460 cu. in.	2000 psi
12-460-056	0.920 sq. in.	0.5 in.	0.460 cu. in.	2000 psi
12-460-058	0.439 sq. in.	0.5 in.	0.220 cu. in.	2000 psi

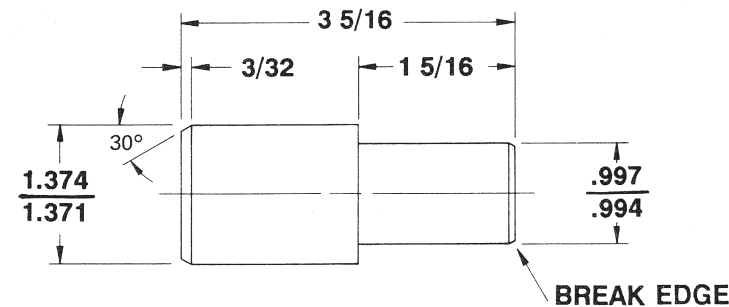
ASSEMBLY TOOL

P/N 12-720-002

Model Nos.

12-460-020

12-460-022



ACTUATOR INTERFACE

ACTUATOR P/N	PULL ROD THREAD SIZE	AXLE P/N (NEW)	AXLE P/N (OLD)	BRAKE TORQUE
12-460-020	1/2 - 20	D - 60	D9NN - 3000 AD,BD	86.9 in. lb./lb.
12-460-020	1/2 - 20	D - 62	D9NN - 4000 AD	86.9 in. lb./lb.
12-460-022	7/16 - 20	D - 45	D1NN - 4000 AC	73 in. lb./lb.
12-460-052	1/2 - 20	D - 60	D9NN - 3000AD, BD	86.9 in. lb./lb.
12-460-052	1/2 - 20	D - 62	D9NN - 4000 AD	86.9 in. lb./lb.
12-460-056	7/16 - 20	D - 45	D1NN - 4000 AC	83 in. lb./lb.
12-460-058	1/2 - 20	D - 60		86.9 in. lb./lb.
12-460-058	1/2 - 20	D - 62		86.9 in. lb./lb.

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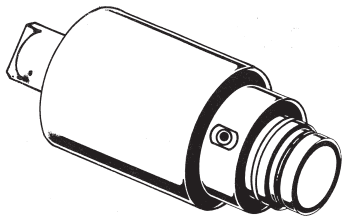
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Spring/Hydraulic
Actuator



Service Instructions

Provides both service
brake and parking brake
functions for Ford OEM Axle
Equipped Vehicles: D1NN 4000
AC, D9NN 3000 AD, BD, D9NN
4000 AD. Designed to install with
no modifications to original axle.



Model Nos.
12-460-020 12-460-022
12-460-052 12-460-056
12-460-058

REMOVAL

Remove retainer. Disconnect necessary fluid lines and remove dust cap (19, Fig. 3 or 39, Fig. 4). Make sure internal sleeve assembly is removed before continuing (See Figures 3 & 4). Disconnect push rod by removing cap screw (18, Fig. 3 or 38, Fig. 4) and adjust nut (17, Fig. 3 or 37, Fig. 4).

INSTALLATION

Install brake actuator on vehicle by connecting push rod and fluid lines. Attach retainer. Adjust nut (17, Fig. 3 or 37, Fig. 4) in accordance to Ford Brake adjustment specifications.

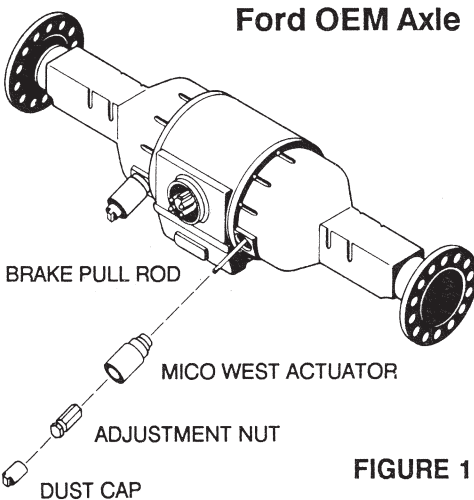


FIGURE 1

SYSTEM SCHEMATIC (TYPICAL)

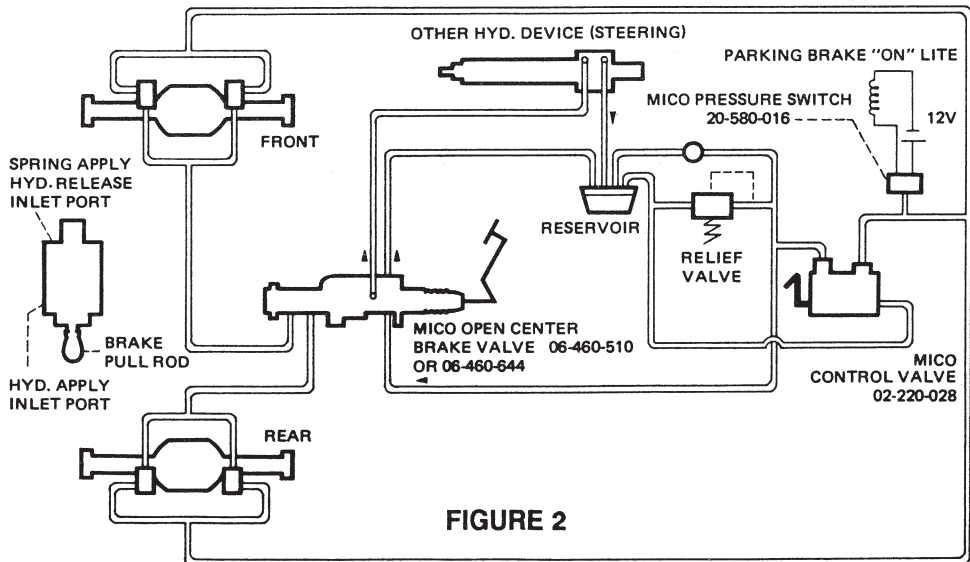
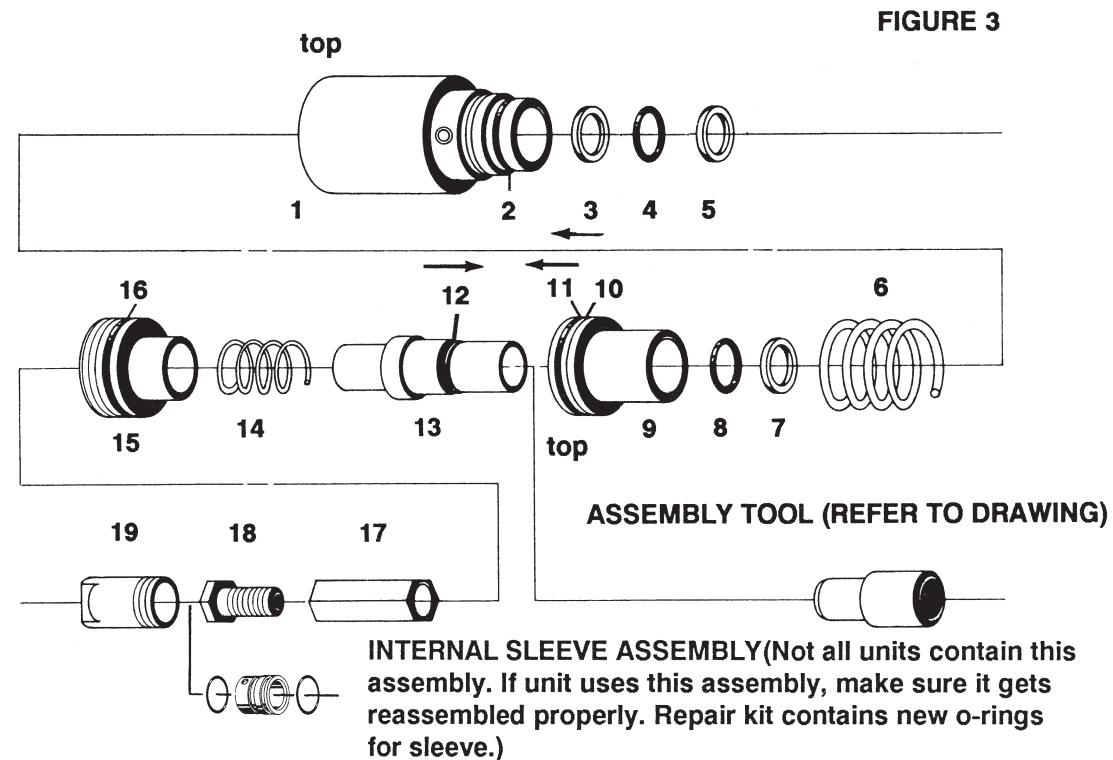


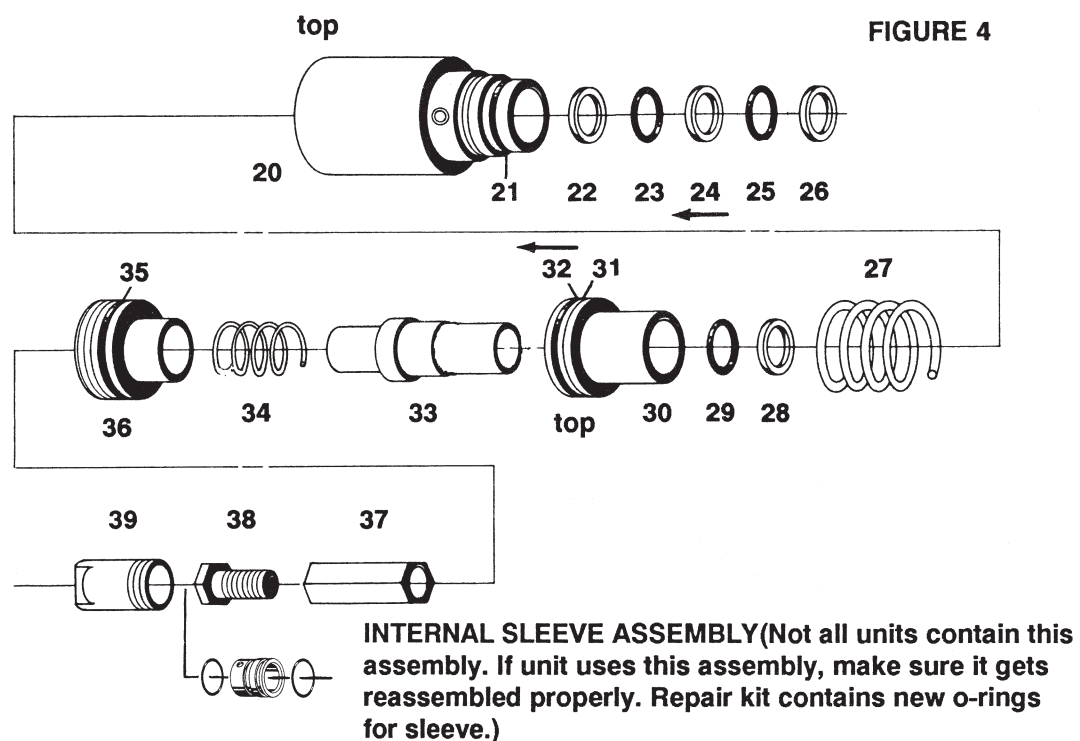
FIGURE 2

NOTE:
THIS SPRING BRAKE
CONTROL VALVE CIR-
CUIT CAN ONLY BE
USED IF OPEN CENTER
HYDRAULIC SYS-
TEM DEVELOPS A
BACK PRESSURE OF
300 PSI AT ENGINE
IDLE RPM. OPTIONAL
SOLENOID 12V D.C.
CONTROL VALVE
(02-220-050).

Model Nos. 12-460-020 and 12-460-022 Repair Kit No. 12-400-018



Model Nos. 12-460-052 and 12-460-056 Repair Kit No. 12-400-022



SPRING/HYDRAULIC ACTUATOR

DISASSEMBLY - Models 12-460-020, 12-460-022 and 12-460-058

1. Drain fluid from unit before disassembling.
2. Remove the end cap (15) by compressing the piston (13) with a hydraulic press or other suitable compression device. This will relieve the spring pressure (6) on the end cap (15). Use a spanner wrench to remove end cap. The spanner wrench holes are 1/4" diameter on 2 1/4" centers.
3. Remove the spring (14).
4. Remove the two attached pistons (13) and (9) from the housing.
5. Remove the spring (6).

ASSEMBLY - Models 12-460-020, 12-460-022 and 12-460-058 use Repair Kit 12-400-018 (Refer to Figure 3)

1. Clean all parts in solvent before assembly. Thoroughly coat all cups and o-rings with silicon lubricating grease before assembling.
2. Install cup (3) in the top groove of the small bore of housing (1) with the lip of cup in the direction of arrow. Install the back-up ring (5) and o-ring (4) in bottom groove of housing (1), with o-ring at top of groove.
3. Install the cup (11) and back-up ring (10) on the large groove on piston (9). Cup is at the top of piston groove with the lip in the direction of arrow.
4. Install the o-ring (8) and back-up ring (7) in inner groove of piston (9), with the o-ring at top of piston.
5. Insert piston (13) into piston (9) and then install cup (12) in groove of piston (13) with lip in direction of arrow.
6. Place the spring (6) in housing bore (1).
7. Insert assembly tool in piston (13).
8. Install two piston assembly over spring (6) in cylinder bore. Press down firmly until end of assembly tool protrudes about 5/16" through bottom of housing small bore.
9. Place spring (14) inside housing on piston (13).
10. Install o-ring (16) in groove of end cap (15).
11. Screw end cap (15) into housing (1) using spanner wrench. Compression of piston (13) may be required as in note 2 of disassembly procedure.
12. Install o-ring (2) on bottom groove of housing.
13. Install unit on axle housing and adjust nut (17) to Ford specifications.
14. Install cap screw (18) and dust cap (19). Be sure to apply gasket sealer before installing.

DISASSEMBLY - Models 12-460-052 and 12-460-056

1. Drain Fluid from unit before disassembling.
2. Remove the end cap (36) by compressing the piston (33) with a hydraulic press or other suitable compression device. This will relieve the spring pressure (27) on the end cap (36). Use a spanner wrench to remove end cap. The spanner wrench holes are 1/4" diameter on 2 1/4" centers.
3. Remove the spring (34).
4. Remove the two attached pistons (33) and (30) from the housing.
5. Remove the spring (27).

ASSEMBLY - Models 12-460-052 and 12-460-056 use Repair Kit 12-400-022 (Refer to Figure 4)

1. Clean all parts in solvent before assembling. Thoroughly coat all cups and o-rings with silicon lubricating grease before assembling.
2. Install the back-up ring (22) and o-ring (23) in the groove of middle bore of housing (20) with the back-up ring on top.
3. Install the cup (24) in the top groove of the small bore of housing (20) with the lip of the cup in the direction of arrow.
4. Install the back-up ring (26) and o-ring (25) in groove of the small bore of housing (20) with the o-ring (25) on top.
5. Install the cup (32) and back-up ring (31) on the large groove of piston (30). Cup is at top of piston groove with the lip in the direction of arrow.
6. Install o-ring (29) and back-up ring (28) in inner groove of piston with the o-ring at top of piston.
7. Insert piston (33) into piston (30).
8. Place the spring (27) in housing bore (20).
9. Install two piston assembly over spring (27) in cylinder bore.
10. Place spring (34) inside the housing on the piston (33).
11. Install the o-ring (35) in groove of end cap (36). Screw end cap into housing using spanner wrench. Compression of piston (33) may be required as in note 2 of disassembly procedure.
12. Install o-ring (21) on bottom groove of housing.
13. Install unit on axle housing and adjust nut (37) to Ford specifications.
14. Install cap screw (38) and dust cap (39). Be sure to apply gasket sealant before installing.