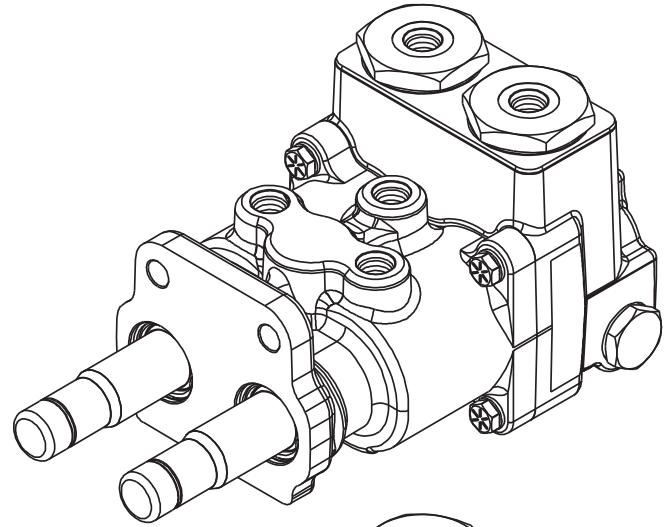


DUAL BRAKE VALVE

Service Instructions

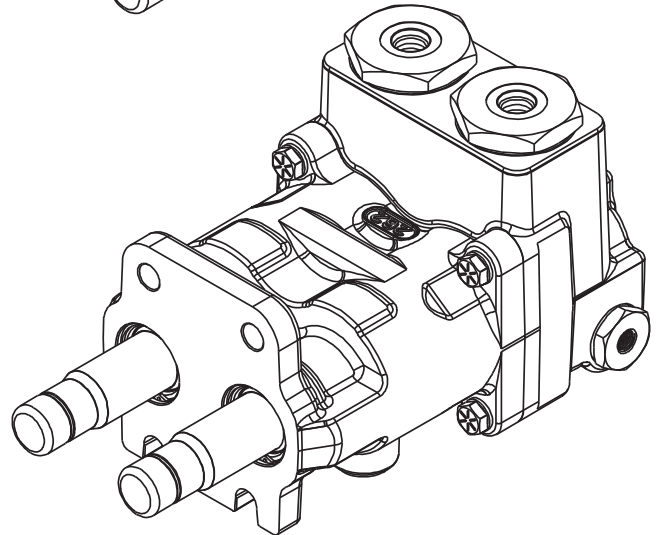
410E Series

(John Deere Number AT183394)



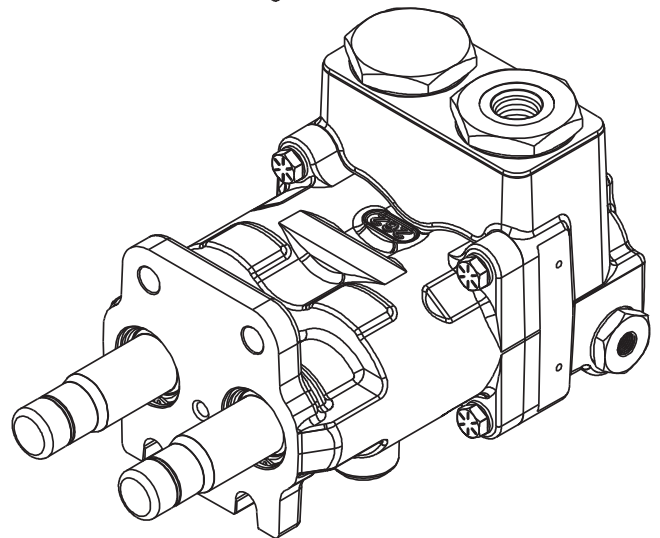
210LE, 310G, 310SG, 315SG, 410G Series

(John Deere Number AT184578)



210LE, 310G, 310SG, 315SG, 410G, 310J, 310SJ, 410J Series

(John Deere Number AT304761, AT384853)



REFER TO VEHICLE MANUFACTURERS PROCEDURES AND RECOMMENDATIONS BEFORE REMOVING VALVE FROM VEHICLE. PREVENT CONTAMINATION TO THE HYDRAULIC SYSTEM AND VALVE BY THOROUGHLY CLEANING THE VALVE AND SURROUNDING AREA OF ALL DIRT, GREASE, OIL, ETC. BEFORE REMOVING VALVE FROM VEHICLE. AFTER REMOVAL, CAP HOSE AND LINE ENDS TO PREVENT ENTRY OF DIRT INTO THE HYDRAULIC SYSTEM.

NOTE

Be aware that the seal kit contains two different size sets of items 15 and 16, see TABLE 2. For reassembly purposes, arrange the parts in the order in which they are removed while disassembling this valve.

DISASSEMBLY

(Refer to Figures 1, 2 and 3)

1. Remove valve assembly from vehicle by disconnecting necessary fluid lines. Remove mounting bolts and drain fluid from assembly.
2. Remove reservoir plugs (27) from housing (20). Remove o-rings (28) from reservoir plugs (27).
3. Remove tip valve assemblies (29) from housing (20). Tip valve assemblies (29) are not field serviceable. Service by replacement only.
4. Housings (7 & 20) are under spring tension. To separate housing halves, position mounting flange on housing (7) face down and clamp in a vise. Apply downward pressure on housing (20) while evenly loosening four cap screws (5). It may be necessary to twist on housing (20) to break the two sections apart. Remove four cap screws (5) and four washers (6) while carefully separating housing halves.
5. Remove springs (9), piston (14) assemblies, springs (17), o-rings (18) and retainers (19).
6. Remove retaining ring (11), washer (12) and ball (13) from pistons (14).
7. Remove piston ring (10), seal (16) and o-ring (15) from pistons (14).
8. Remove push rods (8) from housing (7). Do not remove retaining rings from push rods (8).
9. Retainer (3) need not be removed to service seals (2 & 4). Carefully remove wiper seal (2) by inserting a small screw driver along the outer perimeter of wiper seal (2) and prying out. Remove seal (4) using a dull pointed pick tool. See Figure 2. **NOTE: Be careful not to scratch or mar insert (2) or housing bore.** If retainers (3) require replacement, remove retaining rings (1) and seals (2 & 4) as indicated. With housing (7) flange face down in a vise, use a plastic or wooden dowel through housing (7) bore to evenly tap on retainers (3) to remove. An inside bearing puller can also be used to remove retainers (3).
10. Remove plugs (21), springs (23) and washers (24) from housing (20). Remove o-rings (22) from plugs (21).
11. Use a plastic or wooden dowel to carefully remove spool (26) from housing (20). Remove o-ring (25) from spool (26). **NOTE: Be careful not to scratch or mar spool (26) or housing bore.**

ASSEMBLY

(Refer to Figures 1, 2 and 3)

THE SEAL KIT DOES NOT INCLUDE ALL O-RINGS TO SERVICE THIS VALVE. O-RINGS 22 AND 28 ARE AVAILABLE FROM THE DEALER AND ARE NOT INCLUDED IN THE SEAL KIT. SERVICEABLE ITEMS AVAILABLE FROM THE DEALER ARE LISTED IN TABLE 1.

LUBRICATE ALL RUBBER COMPONENTS WITH CLEAN TYPE FLUID USED IN THE SYSTEM.

1. Thoroughly clean housings and all parts with clean solvent and allow to dry before proceeding. Lubricate all parts and housing bores with clean type fluid used in the system.
2. Install new o-ring (25) on spool (26). Carefully install spool (26) in housing (20). **NOTE: Be careful not to scratch or mar spool (26) or housing bore.**
3. Install new o-rings (22) on plugs (21). Install washers (24), springs (23) and plugs (21) in housing (20). Be sure washers (24) are properly positioned over spool (26). Torque plugs (21) 54.2-61.0 N·m (40-45 lb·ft).
4. Install new seals (4), new wiper seals (2) and retaining rings (1) in housing (7). Note direction of cups (4) and wiper seals (2). See Figure 2. If retainers (3) require replacement, install new seals (4) in new retainers (3) as shown. Place a thin coat of bearing grease on outside diameter of new retainers (3) and carefully tap into place. Install new wiper seals (2) and retaining rings (1). See Figure 2.
5. Install ball (13), washer (12) and retainer (11) into pistons (14). Be sure retainers (11) are properly seated in groove. See Figure 1.
6. Install new piston ring (10) and new o-ring (15) on pistons (14). Be sure the cut on piston rings (10) match the position as indicated in Figure 3 when installed into housing (7) bores.
7. **Seal kit contains two different size sets of o-rings (15) and seals (16). Locate the John Deere number on the valve and see TABLE 2 for proper size of replacement o-rings (15) and seals (16).** Install seal (16) in pistons (14) groove over top o-rings (15). Seals (16) will stretch and become oversized when being installed. These seals must be resized before final assembly. To resize seals (16), lubricate seals (16), pistons (14) and housing (20) bores with clean type fluid used in the system. Carefully insert each piston (14) assembly in the proper housing (20) bore being careful not to extrude seal (16). Allow each piston (14) assembly to remain in the housing bores for at least 10 minutes. Proceed to next step while waiting.
8. Rub clean type fluid used in the system on the outer diameter of push rods (8) and housing (7) bores. Fully insert push rods (8) into housing (7) bores.
9. Place springs (9) into push rods (8).
10. Install retainers (19) in housing (20). Install new o-rings (18) over retainers (19).
11. Steps 11 & 12 must be done quickly so seals (16) remain the proper size and form. Remove piston (14) assemblies from housing (20) bores and install in housing (7) bores. Be sure the cut on piston rings (10) match the position as indicated in Figure 3 when installed into housing (7) bores.

...continued on page 4

12. Install springs (17). Place housing (20) over springs (17) and align housing (20) bores with pistons (14). Be careful not to damage seals (16). While applying downward pressure on housing (20), install two cap screws (5) and washers (6) diagonal from each other and finger tighten to hold the assembly together.
13. Install the remaining two cap screws (5) and washers (6). Evenly torque the four cap screws (5) 29.8-38.0 N·m (22-25 lb·ft).
14. While installing tip valve assemblies (29) in housing (20), push rods (8) inward approximately 1/2 inch. Torque tip valve assemblies (29) 40.7-47.5 N·m (30-35 lb·ft).
15. Install new o-rings (28) on reservoir plugs (27). Install reservoir plugs (27) in housing (20) and torque 61.0-81.4 N·m (45-60 lb·ft).
16. Properly reinstall valve on vehicle. Be sure all lines are properly connected and do not leak.

MANUAL BLEEDING

NOTE

Both Option A and Option B are acceptable for most tractors where applicable, but Option B is recommended for the 210LE.

Option A

- a. Before bleeding, engage park brake. Be sure it holds vehicle from moving.
- b. With engine at fast idle, dump and curl backhoe bucket 5 times.
- c. With engine at low idle, pump LH brake pedal 5 times, allowing 2 seconds between each pump for air to escape.
- d. Repeat steps "a" and "b" until the LH pedal is solid.
- e. Pump RH brake pedal until it is solid, then both pedals together until solid.
- f. Recheck brake pedal feel. Dual pedal travel should not exceed 3.75 inches and single pedal travel should not exceed 4.5 inches. **NOTE: All fittings must be inspected for leaks and tightened if leaks occur.**
- g. Repeat process if necessary.

Option B

- a. Before bleeding, engage park brake. Be sure it holds vehicle from moving.
- b. Remove cap from tractor hydraulic reservoir and loosen bleed screws on rear axle.
- c. Attach clear 1/4 inch tube from bleed screws on the axle and run them inside the fill neck on the hydraulic reservoir.
- d. Start engine and turn the steering wheel slowly to left and right to ensure brake master cylinder is full.
- e. Pump the brake pedals independently while continuing to slowly move the steering wheel back and forth until a consistent stream of fluid is seen through the clear lines, with no air bubbles.
- f. Tighten the bleeder screws, drain the oil in the clear lines into the reservoir, and lock the cap on the tractor hydraulic reservoir.
- g. Recheck brake pedal feel. Dual pedal travel should not exceed 3.75 inches and single pedal travel should not exceed 4.5 inches. **NOTE: All fittings must be inspected for leaks and tightened if leaks occur.**
- h. Repeat process if necessary.