

SINGLE LEVER CONTROL VALVE AND PLUMBING KIT (PARALLEL VALVE) 2405 LOADER KUBOTA TRACTORS

| MODEL | FWA | ROPS | CAB |
|--------|-----|------|-----|
| BX1500 | X | X | |
| BX1800 | X | X | |
| BX1830 | X | X | |
| BX2200 | X | X | |
| BX2230 | X | X | |

VALVE AND PLUMBING GENERAL INFORMATION

Valve and plumbing kit can be installed using tools ordinarily available. Valve control handle has been factory preassembled for ease of installation. Shut off engine and engage brakes during installation.

NOTE: Apply sealant only to all tapered threads unless coupled with swivel adapters. When using teflon tape, wrap tape clockwise (as viewed from end) and wrap tape only twice. Keep sealant away from first two threads of tapered end to prevent contamination of hydraulic fluid. Do not use sealant on o-ring or flare adapter threads.



WARNING: Escaping hydraulic fluid under pressure can penetrate skin causing serious injury.

- **DO NOT** use your hands to check for leaks. Use a piece of cardboard or paper to search for leaks.
- Stop engine and relieve pressure before connecting or disconnecting lines.
- Tighten all connections before starting engine or pressurizing lines.

If any fluid is injected into skin, obtain medical attention immediately or gangrene may result.

CONTROL VALVE ASSEMBLY WITH HANDLE & FITTINGS (FIGURES 1 & 2)

1. Fasten valve linkage bracket (12) to valve (1) using 5/16 x 3/4 flat head socket screw (14) and 5/16 x 3/4 socket head cap screw (13).
2. Fasten ball joint stud (6) to valve linkage bracket (12) using 1/4-28 locknut (8). Slide female ball joint (7) onto stud (6).

3. Fasten male ball joint studs (11) to both spools of valve (1) using 1/4-28 hex nuts (10) and 1/4 lockwashers (9).

NOTE: Rotate tilt spool (spool without float) approximately 45° to ease installation of male ball joint (11), 1/4 lockwasher (9), and 1/4 hex nut (10).

4. Fasten handle (4) to ball joints (7 & 11) using 1/4-28 x 3/4 socket head cap screws (5).
5. Slip boot (3) over handle (4) and attach ball (2).
6. Install straight fittings (15) into pressure and tank ports in valve (1). (See Figure 2, page 4.) Install 90° fitting (20) into power beyond port in valve (1).
7. Install straight female fittings (16) into valve ports located towards the rear of the valve (1). (See Figure 1.) Install straight male fittings (15) into valve ports located towards the front of the valve (1).
8. Fasten 90° fittings (17) to female straight fittings (16). Fasten 45° fittings (18) to 90° fittings (17). Fasten 90° fittings (19) to male straight fittings (15).
9. Install female quick couplers (21) and 3/4" colored spiral bands (22-25) to fittings (18 & 19). Align quick couplers (21) parallel to top of valve (1).
10. Fasten valve assembly to valve stand (26) using 1/4 x 2.00 cap screws (32) and 1/4 locknuts (33).
11. Slip 5/16-18 speed nuts (29) over holes in cover assembly (27). Fasten cover assembly (27) to valve stand (26) using 5/16 x .75 cap screws (30) and 5/16 lockwashers (31).
12. If replacing warning or operational decals (34 or 35), make sure outer surfaces of cover assembly (27) are clean and dry. Remove backing from operational decal (35) and apply to top of cover assembly (27). Remove backing from warning decal (34) and apply to side of cover assembly (27) making sure it is clearly visible to operator.

PARTS LIST — Control Valve Assembly with Handle & Fittings, 51849 (Figure 1)

| Item | Part No. | Description | Qty. |
|------|----------|---|------|
| 1 | 51908 | VALVE, (1600psi) | 1 |
| 2 | 38902 | BALL | 1 |
| 3 | 43635 | BOOT | 1 |
| 4 | 38902 | HANDLE | 1 |
| 5 | 38910-1 | SCREW, Socket Head, 1/4-28 x 3/4" | 3 |
| 6 | 38904-1 | STUD, Ball Joint | 1 |
| 7 | 38900-5 | BALL JOINT, Female | 1 |
| 8 | 41840-21 | NUT, Lock, 1/4-28 | 1 |
| 9 | 41837-1 | WASHER, Lock, 1/4" | 2 |
| 10 | 41836-11 | NUT, Hex, 1/4-28 | 2 |
| 11 | 26009-3 | BALL JOINT, Male | 2 |
| 12 | 38903 | BRACKET, Valve Linkage | 1 |
| 13 | 38910-2 | SCREW, Socket Head, 5/16-24 x 3/4" | 1 |
| 14 | 38911-1 | SCREW, Flat Head Socket, 5/16-24 x 3/4" | 1 |
| 15 | 32844-1 | FITTING, Straight, 9/16 JIC x 9/16 O-Ring | 4 |
| 16 | 42062-6 | FITTING, Straight, Swivel, 9/16 JIC x 9/16 O-Ring | 2 |
| 17 | 34128-3 | FITTING, Elbow, 90°, 9/16 JIC x 9/16 JIC | 2 |
| 18 | 31213-5 | FITTING, Elbow, 45°, 9/16 JIC x 9/16 O-Ring | 2 |
| 19 | 44277-2 | FITTING, Elbow, 90°, 9/16 JIC x 9/16 O-Ring | 2 |
| 20 | 32845-1 | FITTING, Elbow, 90°, 9/16 JIC x 9/16 O-Ring | 1 |
| 21 | 6147-9 | COUPLER, Female | 4 |
| 22 | 36240-1 | BAND, Spiral, 3/4", Blue | 1 |
| 23 | 36240-2 | BAND, Spiral, 3/4", Red | 1 |
| 24 | 36240-3 | BAND, Spiral, 3/4", Yellow | 1 |
| 25 | 36240-4 | BAND, Spiral, 3/4", Green | 1 |
| 26 | 51850 | VALVE STAND ASSEMBLY | 1 |
| 27 | 51910 | COVER ASSEMBLY, W/Decals | 1 |
| 28 | 44274-1 | PLUG, Square Tube | 1 |
| 29 | 6067-1 | NUT, Speed, 5/16-18 | 2 |
| 30 | 41838-26 | SCREW, Cap, 5/16-18 x 3/4" | 2 |
| 31 | 41837-2 | WASHER, Lock, 5/16 | 2 |
| 32 | 41838-82 | SCREW, Cap, 1/4-20 x 2" | 2 |
| 33 | 41840-11 | NUT, Lock, 1/4-20 | 2 |
| 34 | 25801 | DECAL, Warning | 1 |
| 35 | 38929 | DECAL, Single Handle Control | 1 |

Figure 1
Control Valve Assembly
with Handle & Fittings

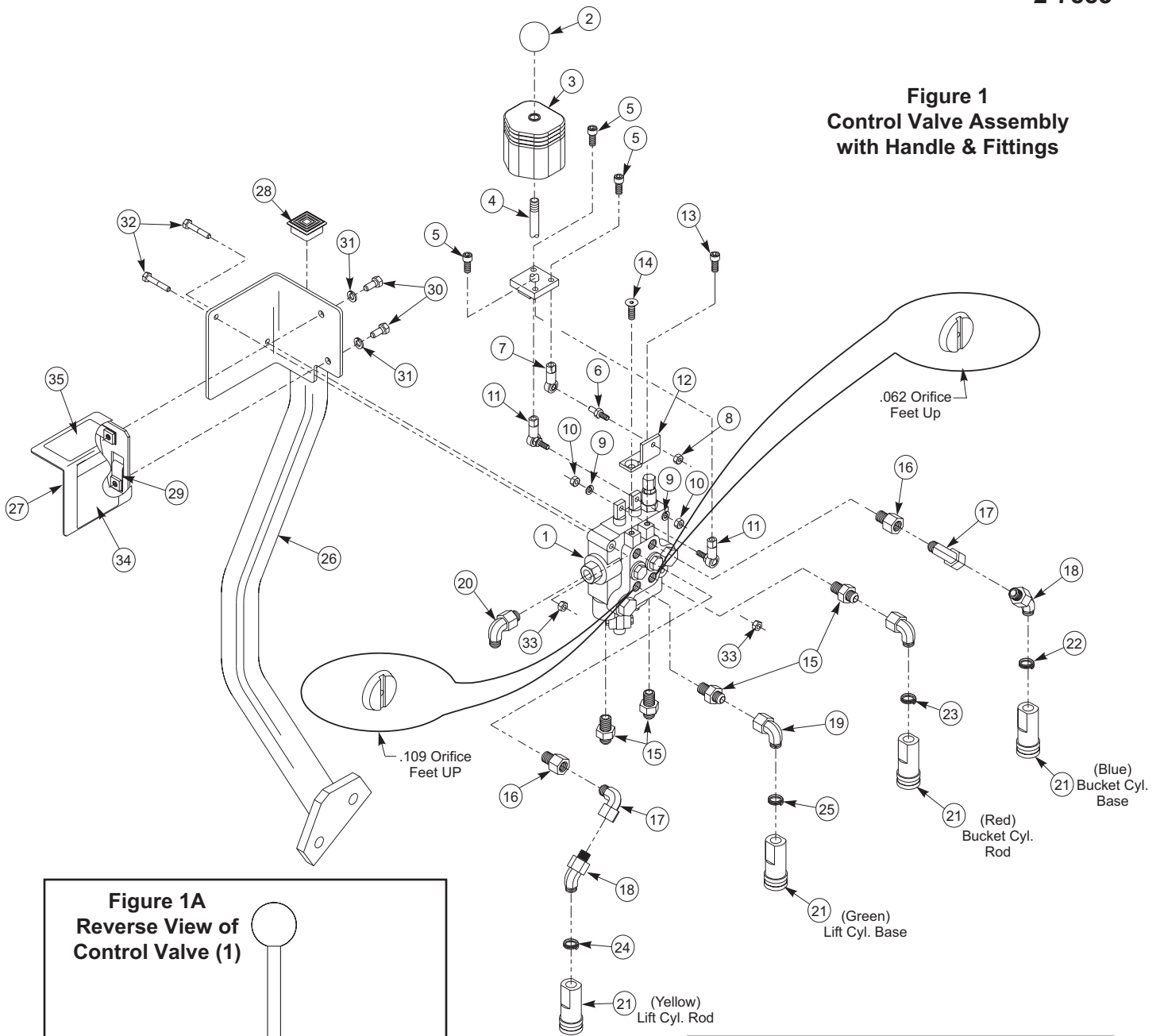


Figure 1A
Reverse View of
Control Valve (1)

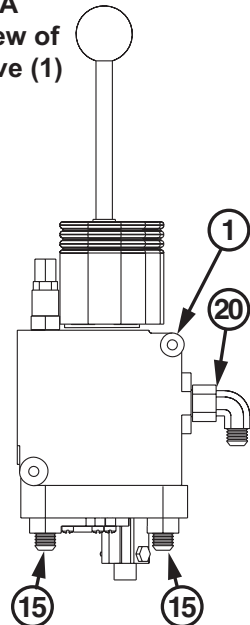
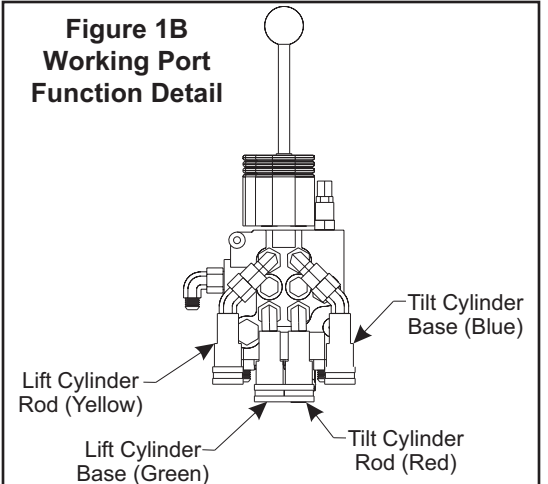


Figure 1B
Working Port
Function Detail

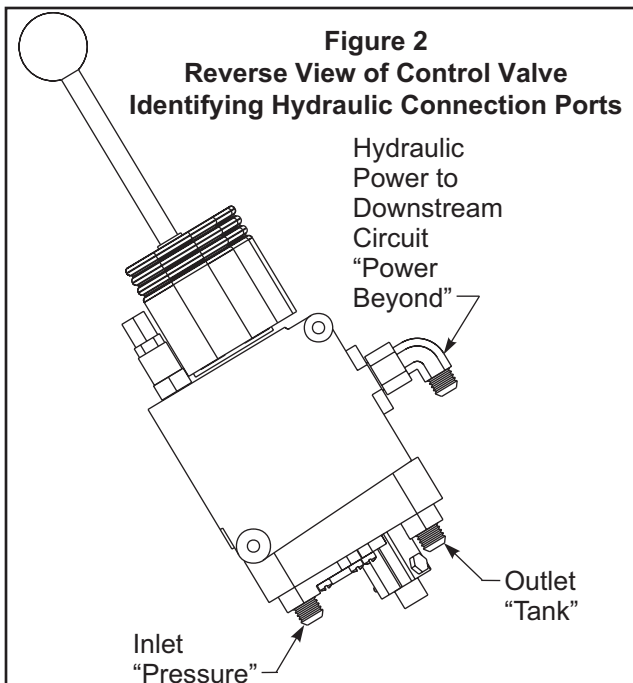


ATTACHING VALVE ASSEMBLY TO TRACTOR (FIGURE 5)

1. If tractor is equipped with loader mounting brackets, remove upper, forward two 9/16 bolts and lockwashers on right side. Fasten valve stand (2) to loader mount on right side of tractor frame using 9/16 x 2.25 bolts (14) and 9/16 lockwashers (15).
2. Fasten valve assembly (1) to valve stand (2) using 1/4 x 2.00" bolts (10) and 1/4 locknuts (12).
3. Slip 5/16 speed nuts (9) over holes in cover assembly (3). Fasten cover assembly (3) to valve stand using 5/16 x 1.00 bolts (7) and 5/16 lockwashers (8).
4. If replacing warning or operational decals (20 & 21) make sure outer surfaces of cover assembly (3) are clean and dry, remove backing from operational decal (21) and apply to top of cover assembly (3). Remove backing of warning decal (20) and apply to side of cover assembly (3), making sure it is clearly visible to operator.

PLUMBING CONTROL VALVE TO TRACTOR HYDRAULICS (FIGURES 2, 3 & 5)

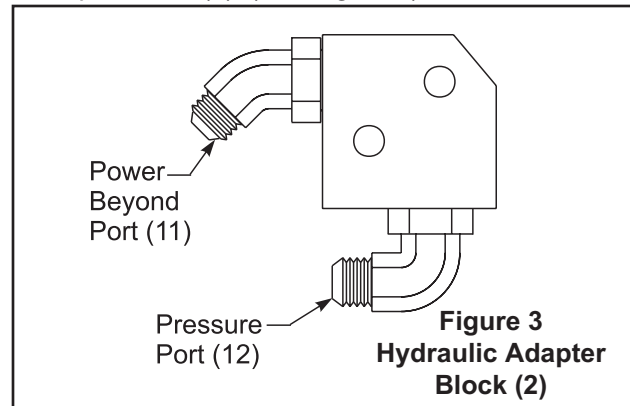
1. Install 3/8 x 90 hoses (20) to pressure and tank fittings on valve (1). Install 3/8 x 94 hose (21) to power beyond fitting on valve (1). Mark opposite end of each hose to identify pressure, tank, and power beyond hose.



2. Slip 90" sleeves (22) over 90" hoses (20) and slip 94" sleeve (23) over 94" hose (21).
3. Route all three hoses along valve stand and slip them between tractor frame and engine just forward of rear engine mount. Route hoses under cavity of oil

pan staying forward of rear engine mount. Finish the loop by slipping hoses between engine and left frame. Hoses should emerge directly opposite of where they entered on the right side. Make sure hoses are away from drive shaft and other moving parts. Pull on hose sleeves to remove slack.

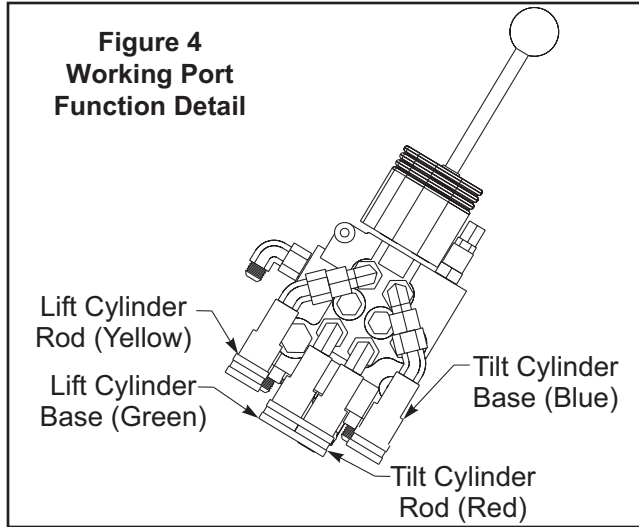
4. Route hoses over left loader mount and under left side of operators platform near outside edge. Gently lift left side of platform's rubber mat to expose 1/4 holes. Insert 1/4 x 1-1/4" cap screws (11) and 1/4 flatwashers (13) into forward and rear holes.
5. Secure hoses to underside of platform using hose clamp plates (3), previously installed 1/4 x 1-1/4" bolts (5), and 1/4 locknuts (6). Power beyond hose (21) should be placed to outside, pressure hose (20) should be placed in middle, and tank hose (20) should be placed to inside.
6. Temporarily remove left rear tire from tractor.
7. Remove hydraulic cover plate located above and forward of rear axle.
8. Attach 90° fitting (12) to pressure port (bottom) of adapter block (2). Attach 45° fitting (11) to side of adapter block (2). (See Figure 3).



- Fasten adapter block (2),
9. with o-rings (13), to tractor port using 8mm x 40mm bolts (10) and 5/16 lockwashers (4).
10. Remove tank plug located forward and below adapter block (2). Replace with 90° fitting (12).
11. Fasten 90" tank hose (20) to 90° tank fitting (12). Fasten 94" power beyond hose (21) to 45° fitting (11). Fasten 90" pressure hose (20) to 90° pressure fitting (12).
12. Using plastic tie straps (25), bundle hoses and secure to tractor frame, valve stand (26 Figure 1), and fender hose loop (located on inner left fender). Make sure there is adequate clearance for tires and all other moving parts.
13. Tighten all hydraulic connections.
14. Reinstall left rear tire.

PLUMBING CONTROL VALVE TO LOADER (FIGURES 4 & 5)

1. Install 3/8 x 38 hoses (19) to loader steel oil lines. Slip 38" sleeves (24) over each hose (19) and secure each end using tie straps (25).



- Install colored 3/4" spiral bands (15-18) onto free end of hoses (19) to match bands on female quick couplers. Install male quick couplers (14) onto free end of hoses (19). Connect corresponding quick couplers from loader to valve.
3. After all plumbing has been completed, slowly cycle lift and bucket cylinders several times to purge air from hydraulic system. Retract cylinders and shut off tractor engine. Replenish tractor hydraulic system.

NOTE: When cycling loader, operate loader according to operation decal (35 Figure 1) on valve box. If direction of control lever is wrong, or loader will not lower, recheck connections shown.

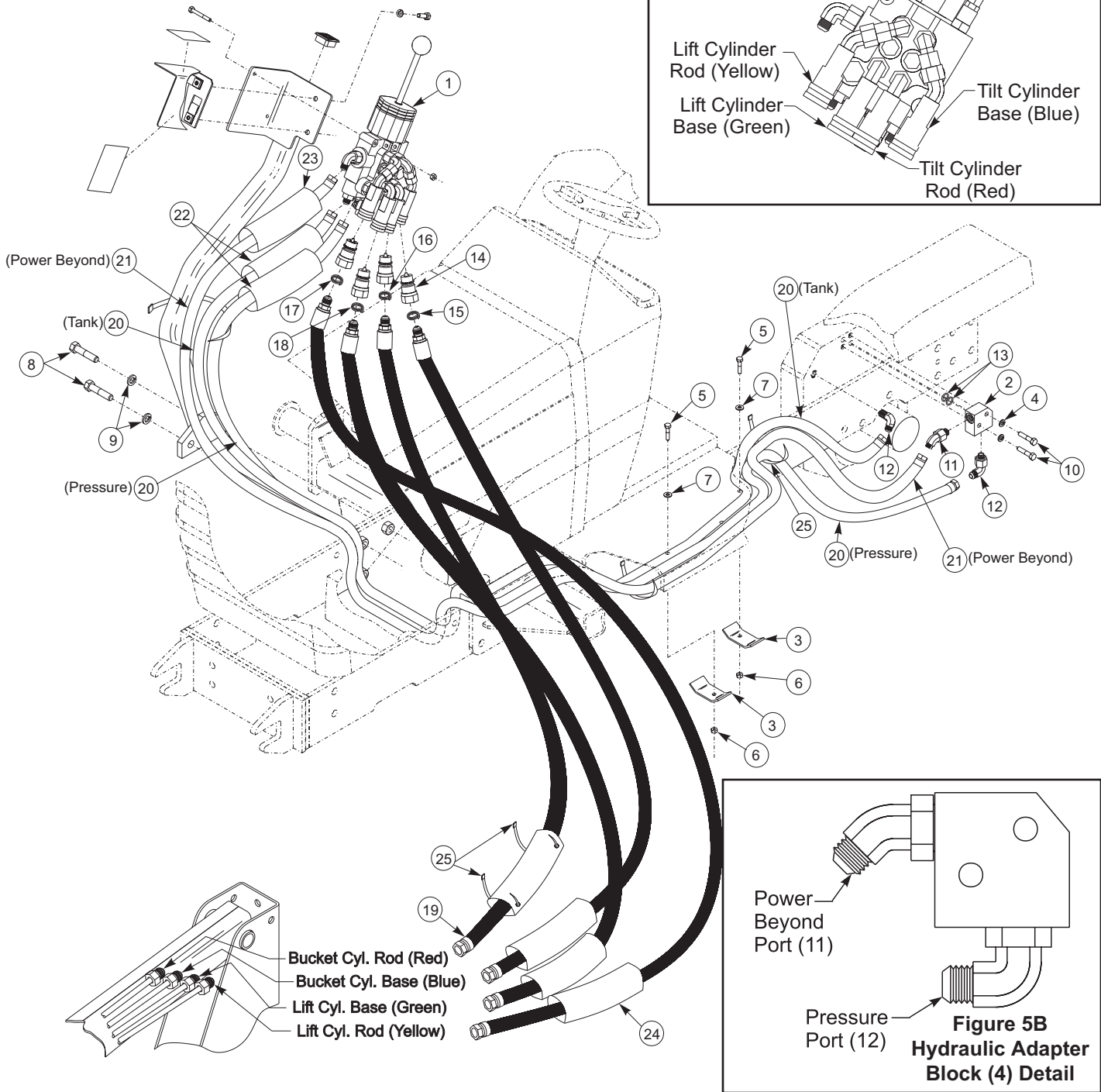


WARNING: Escaping hydraulic fluid under pressure can have sufficient force to penetrate skin causing serious personal injury. If injured by escaping hydraulic fluid, obtain medical treatment immediately.

PARTS LIST — Plumbing Loader & Valve to Tractor Hydraulics (Figure 5)

| Item | Part No. | Description | Qty. |
|------|----------|---|------|
| 1 | 51849 | VALVE, Assembly | 1 |
| 2 | 51858 | BLOCK, Adapter, BX1500, BX1800, BX2200 | 1 |
| | 53346 | BLOCK, Adapter, BX1830, BX2230 | 1 |
| 3 | 51857 | CLAMP, Hose | 2 |
| 4 | 41837-2 | WASHER, Lock, 5/16" | 2 |
| 5 | 41838-83 | SCREW, Cap, 1/4-20 x 1-1/4" | 2 |
| 6 | 41840-11 | NUT, Lock, 1/4-20 | 2 |
| 7 | 42502-6 | WASHER, Flat, 1/4" | 2 |
| 8 | 41838-84 | SCREW, Cap, 9/16-18 x 2-1/4" | 2 |
| 9 | 41837-6 | WASHER, Lock, 9/16" | 2 |
| 10 | 42672-64 | SCREW, Cap, 8mm-1.25 x 40mm | 2 |
| 11 | 31213-5 | FITTING, Elbow, 45°, 9/16 JIC x 9/16 O-Ring | 1 |
| 12 | 32845-1 | FITTING, Elbow, 90°, 9/16 JIC x 9/16 O-Ring | 2 |
| 13 | 6000-20 | O-RING, 5/8" | 2 |
| 14 | 6137-9 | COUPLER, Male Adapter | 4 |
| 15 | 36240-1 | BAND, Spiral, 3/4", Blue | 1 |
| 16 | 36240-2 | BAND, Spiral, 3/4", Red | 1 |
| 17 | 36240-3 | BAND, Spiral, 3/4", Yellow | 1 |
| 18 | 36240-4 | BAND, Spiral, 3/4", Green | 1 |
| 19 | 36388-8 | HOSE, 3/8 x 38" | 4 |
| 20 | 36386-10 | HOSE, 3/8 x 90" (Pressure & Tank) | 2 |
| 21 | 36386-3 | HOSE, 3/8 x 94" (Power Beyond) | 1 |
| 22 | 34853-71 | SLEEVE, 1.66 x 90" | 2 |
| 23 | 34853-72 | SLEEVE, 1.66 x 94" | 1 |
| 24 | 34853-33 | SLEEVE, 1.66 x 38" | 4 |

Figure 5
Plumbing
g Loader & Valve
to



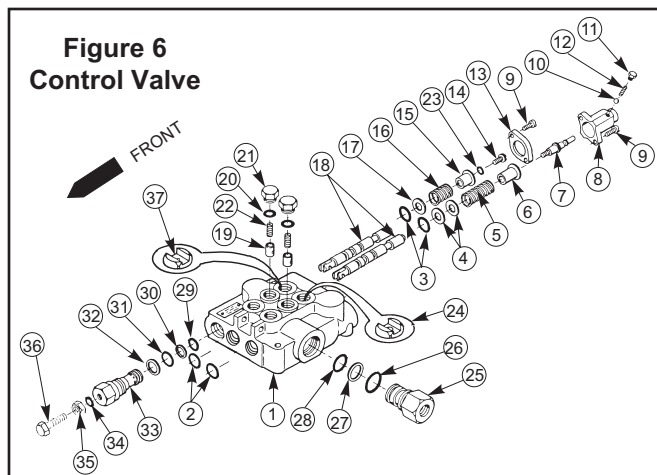
DUKES DV-27 VALVE SERVICE (FIGURE 6)

The control valve is designed to be reliable and easy to service. The valve body and spools are not sold as separate repair items, because the body is factory honed to fit the spools. If the valve should malfunction during warranty period, return the complete valve assembly, without disassembling, to your authorized service department or contact your authorized service department for instructions. Unauthorized disassembly of the valve in the warranty period will VOID WARRANTY.



WARNING: This valve has a valve relief setting preset at the factory. Tampering with this setting can cause **SERIOUS INJURY** to the operator and **DAMAGE** to the tractor or loader. Unauthorized adjustments or service to the valve relief will VOID WARRANTY of both loader and tractor. If adjustments or service to the valve relief are required during the warranty period, an authorized service department must be consulted for authorization.

Follow the following procedure to disassemble and reassemble the valve.



VALVE DISASSEMBLY

NOTE: It is advisable to mark or tag all parts so they will be reinstalled in their proper position.

1. Remove 1-way restrictor plates with .109 hole (24) and .062 hole (37) from working ports "B" and "D" of valve body by holding the valve body upside down and lightly tapping on the bottom of valve.

2. Remove detent screws (11), detent springs (12) and steel balls (10) from both sides of detent end cap (8). Remove detent end cap (8) and end cap (13) from rear of valve body (1) by removing two screws (9) from each end cap.

3. Remove detent stud (7), spring spacer (6), detent centering spring (5) and flat washers (4) from detent spool. Remove screw (14), O-ring (23), spring spacer (15), centering spring (16) and flat washer (17) from the other spool.

NOTE: If spring centering parts are not damaged, it is advisable not to remove the parts from the spools, because detent stud (7) and screw (14) are installed with Loctite® and torqued to 3 ft. Lbs.

4. Push spools (18) into valve body (1) from the rear until rear spool O-rings (3) are exposed, then remove O-rings by using a wire hook and a screwdriver. Push spools back into valve body from the front and pull spools out of valve body from the rear. Remove front spool O-rings (2) with wire hook and screwdriver.
5. Remove load check plugs (21), load check springs (22) and load check poppets (19) from the top of the valve body. Remove load check plug O-rings (20) from plugs only if O-rings are to be replaced.
6. For valves with pilot-operated relief cartridge (33), remove pilot-operated relief cartridge (33) from front of valve body. Remove O-rings (29 & 31) and back-up washers (30 & 32) only if they are to be replaced.

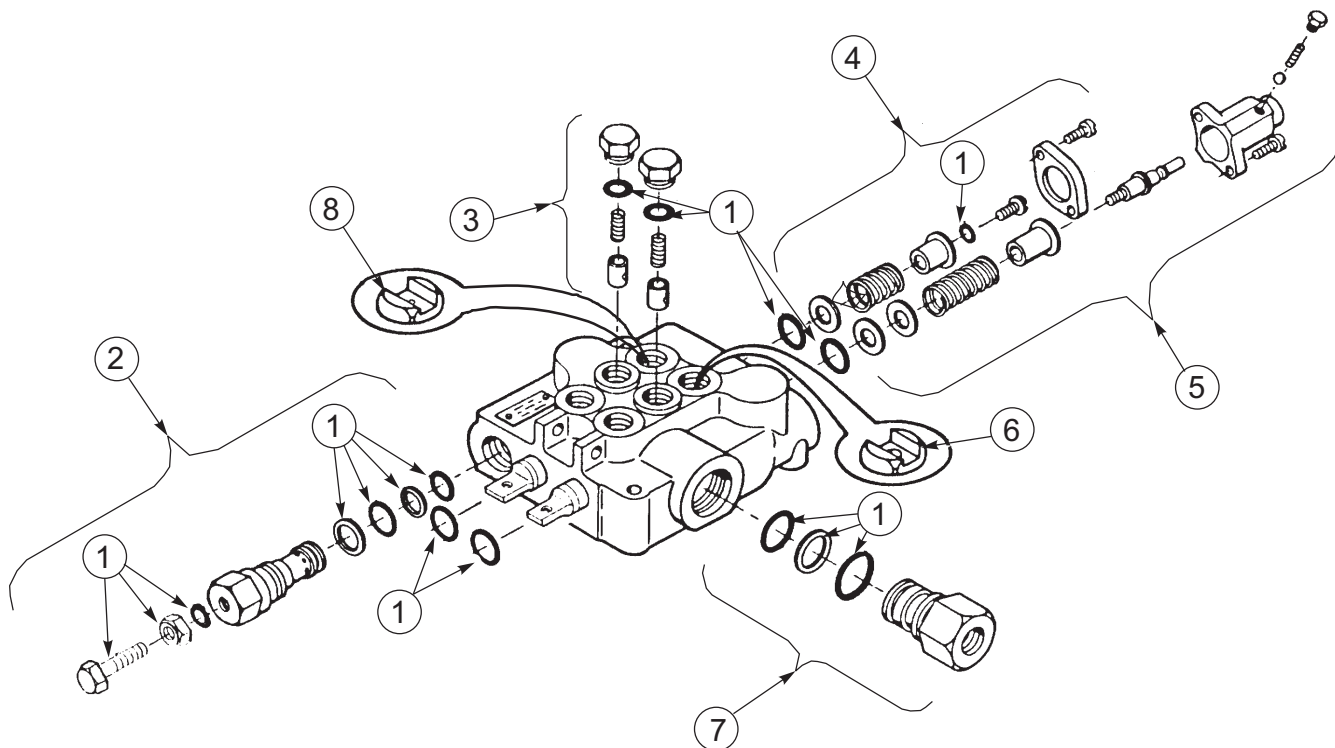


CAUTION: Do not remove or adjust smaller nuts of relief cartridge (29).

7. Clean all parts, including valve body, in a suitable cleaning solvent. After cleaning parts with solvent, use air pressure to blow any dirt or excess solvent from all parts, including inside of valve body.

VALVE REASSEMBLY

1. Examine all parts for wear and damage and replace if necessary.
2. Lubricate all o-rings and spools with oil to prevent damage when assembling.
3. Lubricate all detent and spring centering parts with a light coat of grease before assembling.



PARTS LIST - DUKES DV-27 VALVE, 51908

| ITEM | PART NO. | DESCRIPTION | QTY. |
|------|----------|---|------|
| 1 | 41270 | REPAIR KIT, Seal - Pilot operated relief | 1 |
| 2 | 36583 | REPAIR KIT, Pilot operated relief, 1600 PSI | 1 |
| 3 | 33101 | REPAIR KIT, Load Check | 2 |
| 4 | 41269 | REPAIR KIT, Spring Centering | 1 |
| 5 | 33103 | REPAIR KIT, Detent Spring Centering | 1 |
| 6 | 25944 | PLATE, 1-Way Restrictor w/.109 Hole | 1 |
| 7 | 36584 | POWER BEYOND KIT | 1 |
| 8 | 33740 | PLATE, 1-Way Restrictor w/.062 Hole | 1 |

* **NOTE:** Individual items not listed in parts list are not available separately.

INSTALLATION INSTRUCTIONS