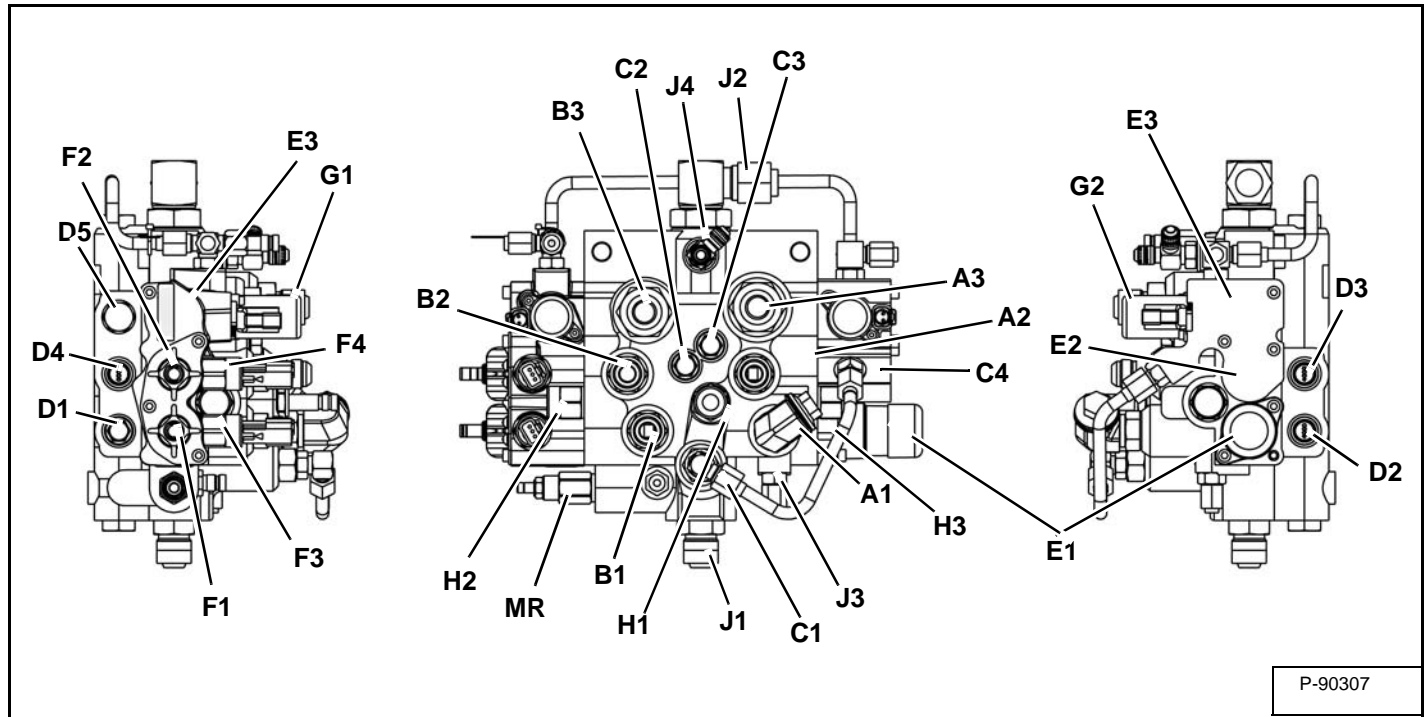


HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

Identification Chart

Figure 20-40-15



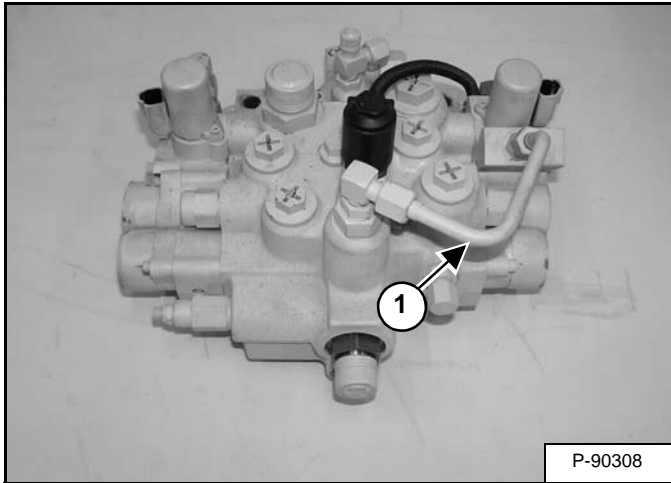
ITEM	T650 LOADER
A1	Lift Cylinder Base End
A2	Tilt Cylinder Base End
A3	Auxiliary Hydraulic Rod End
B1	Lift Cylinder Rod End
B2	Tilt Cylinder Rod End
B3	Auxiliary Hydraulics Base End
C1	Load Check
C2	Load Check Valve Tilt Function
C3	Load Check Valve Auxiliary Function
C4	Check Valve
D1	Anti-Cavitation Valve Lift (Rod End)
D2	Port Relief / Anti-Cavitation Valve – 27,6 MPa (275,8 bar) (4000 psi) Lift (Base End)
D3	Port Relief / Anti-Cavitation Valve – 27,6 MPa (275,8 bar) (4000 psi) Tilt (Base End)
D4	Port Relief / Anti-Cavitation Valve – 27,6 MPa (275,8 bar) (4000 psi) Tilt (Rod End)
D5	Port Relief / Anti-Cavitation Valve (Auxiliary) 27,6 MPa (275,8 bar) (4000 psi) (Optional)

ITEM	T650 LOADER
E1	Lift Spool Detent
E2	Tilt Spool Centering Spring
E3	Auxiliary Spool / Centering Springs
F1	Lift Spool
F2	Tilt Spool
F3	Lift Spool Lock Solenoid
F4	Tilt Spool Lock Solenoid
G1	Auxiliary Solenoid Stem
G2	Auxiliary Solenoid Stem
H1	BICST™ Solenoid
H2	BICST™ Lock Valve (Tilt)
H3	BICST™ Lock Valve (Lift)
J1	Inlet Fluid Flow (From Pump)
J2	Outlet Fluid Flow (Return to Tank)
J3	Lift Arm Bypass Orifice
J4	Drain (Case)
MR	Main Relief Valve – 24,1 MPa (241,3 bar) (3500 psi)

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

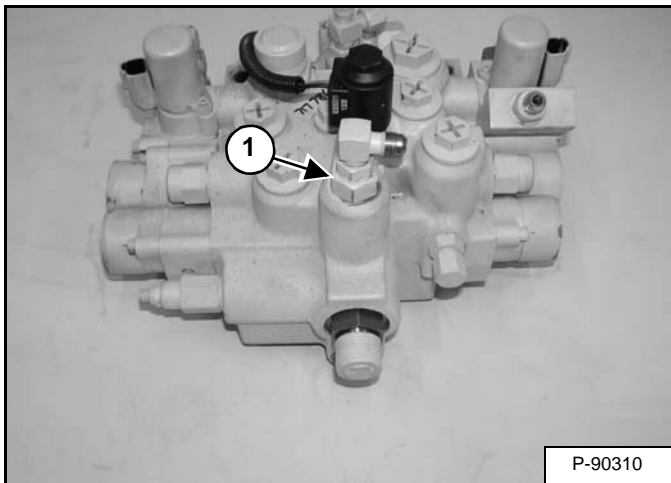
Lift Load Check Valve Removal And Installation

Figure 20-40-16



Remove the charge tubeline (Item 1) [Figure 20-40-16] from the BICS™ valve fitting on the top of the lift load check valve.

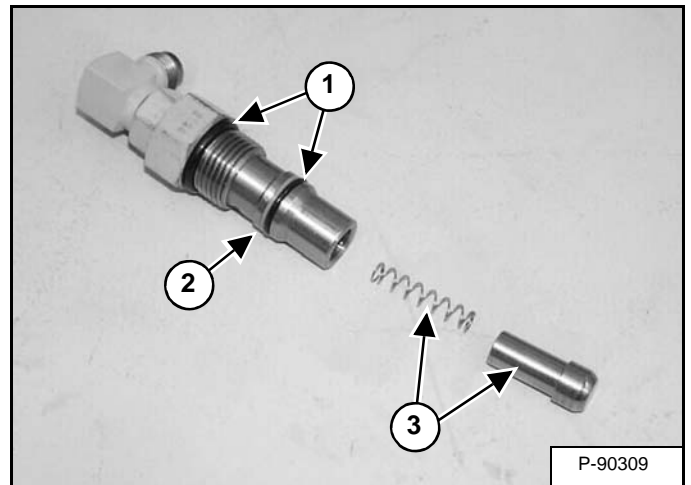
Figure 20-40-17



Remove the lift load check valve (Item 1) [Figure 20-40-17] and fitting from the top of the control valve.

Installation: Lubricate the O-ring and threads and tighten to 75 - 88 N•m (55 - 65 ft-lb) torque.

Figure 20-40-18



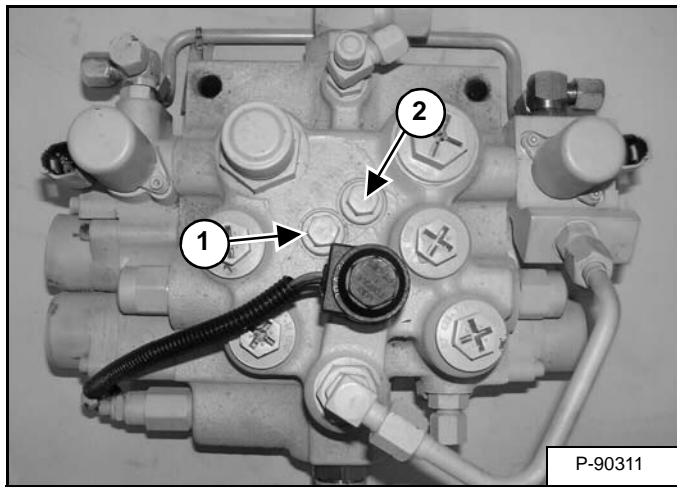
Remove and install new O-rings (Item 1) and back-up ring (Item 2) [Figure 20-40-18].

Check the free movement load check valve and spring (Item 3) [Figure 20-40-18].

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

Load Check Valve Removal And Installation (Tilt And Auxiliary)

Figure 20-40-19

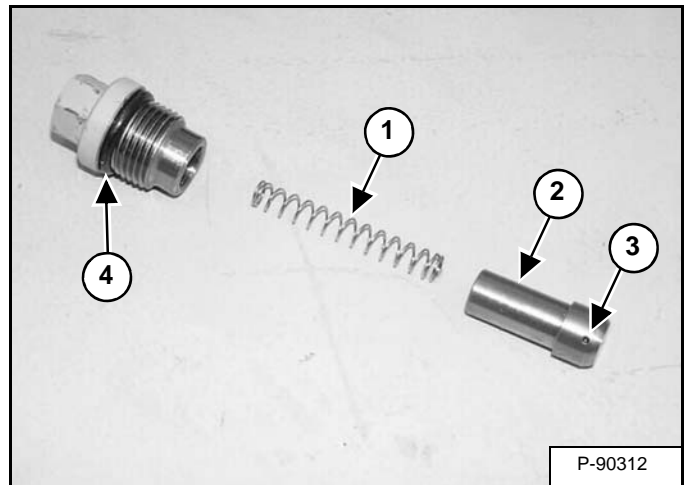


At the front side of the control valve locate the tilt section load check valve (Item 1) [Figure 20-40-19].

At the front side of the control valve locate the auxiliary section load check valve (Item 2) [Figure 20-40-19].

NOTE: The tilt and auxiliary load check valves are interchangeable.

Figure 20-40-20



Remove the spring (Item 1) and poppet (Item 2) [Figure 20-40-20].

Check the orifice (Item 3) [Figure 20-40-20] in the poppet to be sure it is not plugged.

Installation: Install a new O-ring (Item 4) [Figure 20-40-20] on the plug and lightly lubricate with oil before installing. Tighten the plug to 52 - 61 N•m (38 - 45 ft-lb) torque.

IMPORTANT

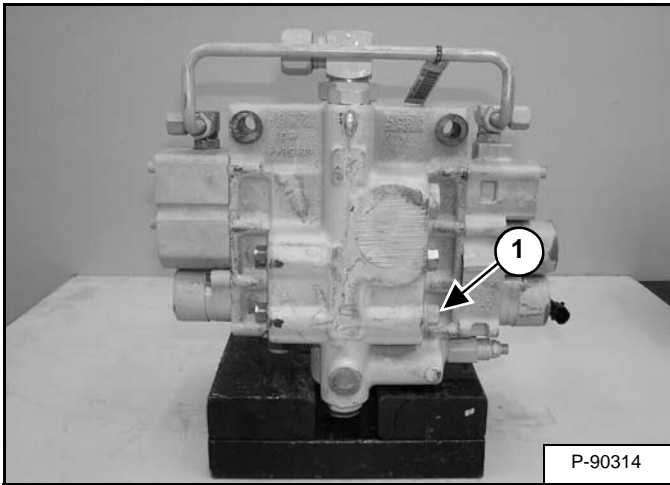
When repairing hydrostatic and hydraulic systems, clean the work area before disassembly and keep all parts clean. Always use caps and plugs on hoses, tubelines and ports to keep dirt out. Dirt can quickly damage the system.

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HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

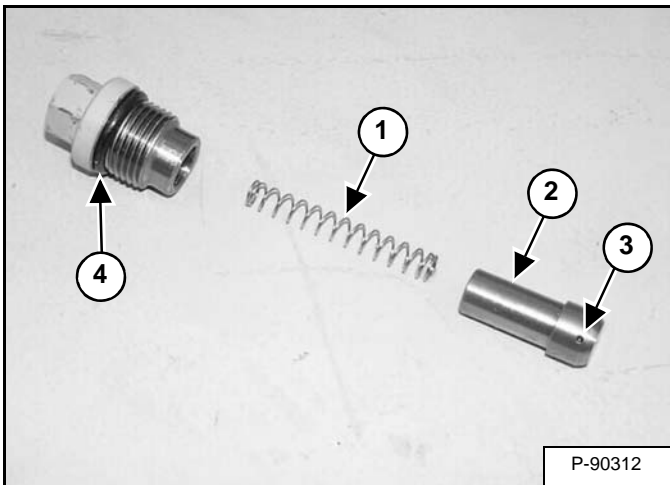
Anti-Cavitation Valve Removal And Installation (Lift, Rod End)

Figure 20-40-21



At the back side of the control valve, remove the lift section anti-cavitation valve (Item 1) [Figure 20-40-21].

Figure 20-40-22



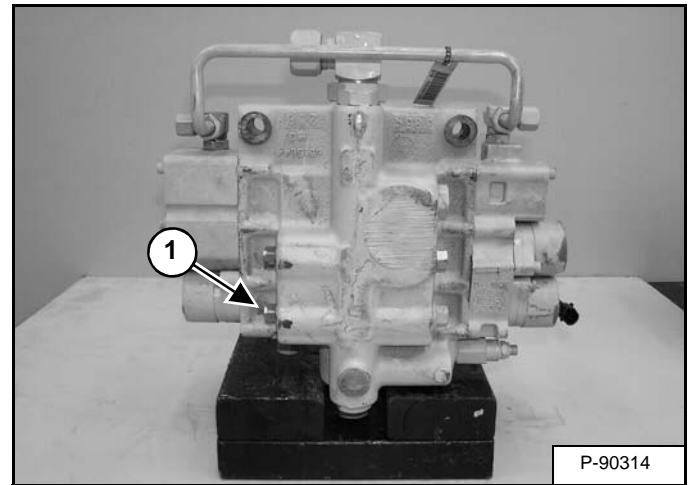
Remove the spring (Item 1) and poppet (Item 2) [Figure 20-40-22].

Check the orifice (Item 3) [Figure 20-40-22] in the poppet to be sure it is not plugged.

Installation: Install a new O-ring (Item 4) [Figure 20-40-22] on the plug and lightly lubricate with oil before installing. Tighten the plug to 52 - 61 N•m (38 - 45 ft-lb) torque.

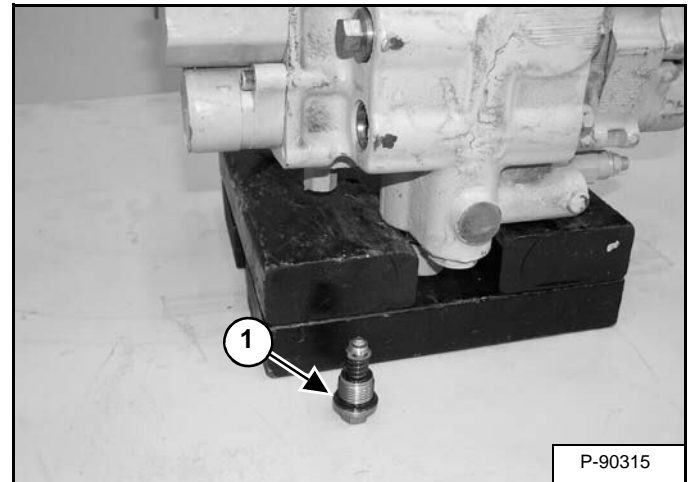
Port Relief / Anti-Cavitation Valve Removal And Installation (Lift, Base End)

Figure 20-40-23



Loosen the lift circuit port relief / anti cavitation valve (Item 1) [Figure 20-40-23].

Figure 20-40-24



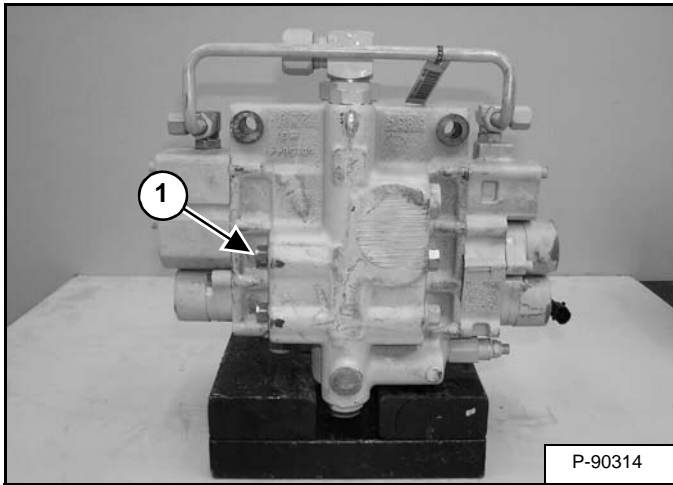
Replace the O-ring (Item 1) [Figure 20-40-24] before installation.

Installation: Tighten to 52 - 61 N•m (38 - 45 ft-lb) torque.

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

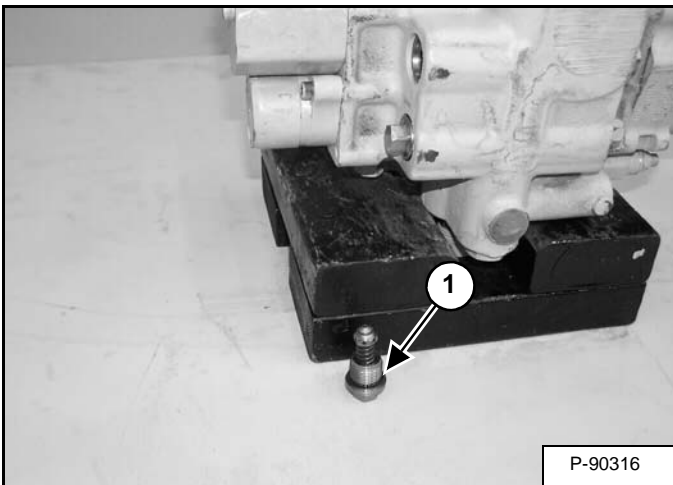
Port Relief / Anti-Cavitation Valve Removal And Installation (Tilt, Base End)

Figure 20-40-25



Remove the tilt port relief / anti cavitation valve (Item 1) [Figure 20-40-25] from the base end of the tilt section.

Figure 20-40-26

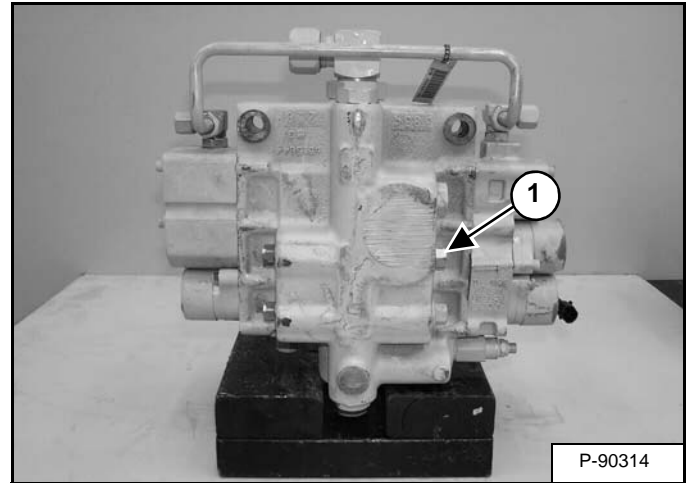


Replace the O-ring (Item 1) [Figure 20-40-26] before installation.

Installation: Tighten to 52 - 61 N•m (38 - 45 ft-lb) torque.

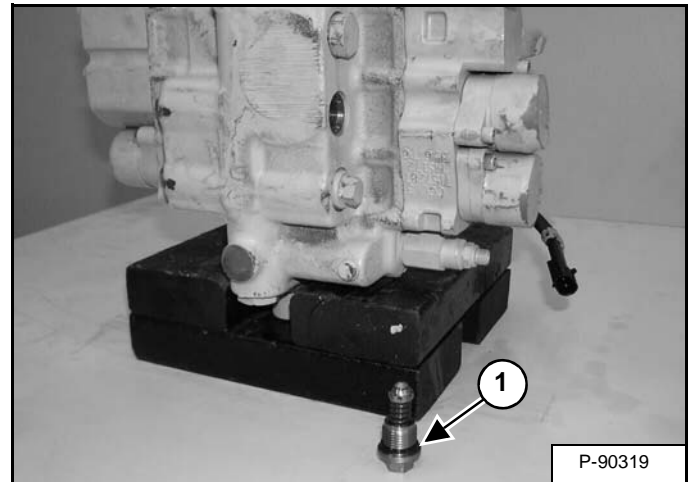
Port Relief / Anti-Cavitation Valve Removal And Installation (Tilt, Rod End)

Figure 20-40-27



Remove the tilt port relief / anti cavitation valve (Item 1) [Figure 20-40-27] from the rod end of the tilt section.

Figure 20-40-28



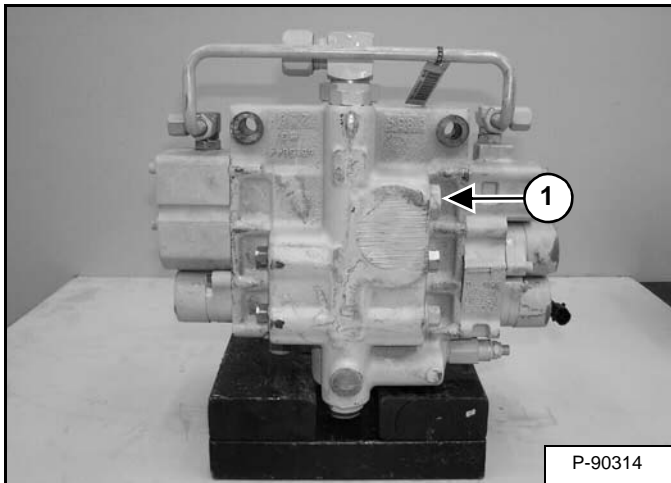
Replace the O-ring (Item 1) [Figure 20-40-28] before installation.

Installation: Tighten to 52 - 61 N•m (38 - 45 ft-lb) torque.

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

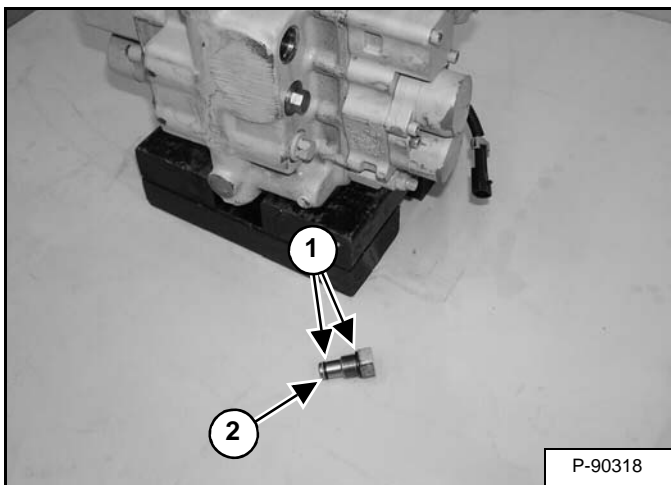
Port Relief Valve Removal And Installation

Figure 20-40-29



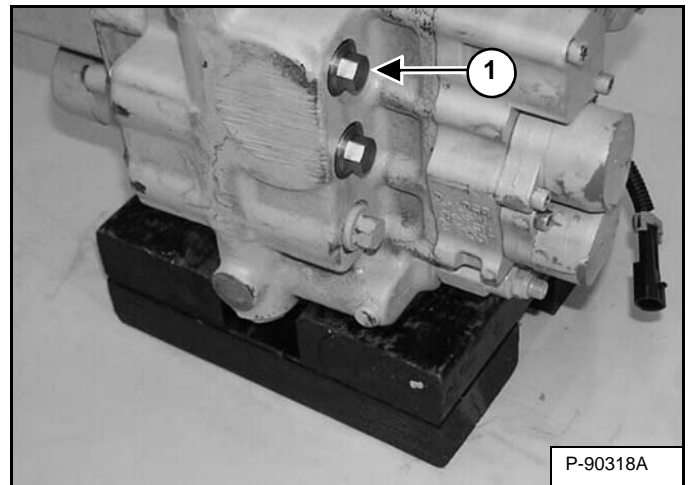
Remove the port relief plug (Item 1) [Figure 20-40-29] from the auxiliary circuit of the control valve.

Figure 20-40-30



Installation: Always use new O-rings (Item 1) [Figure 20-40-30]. Tighten to 52 - 61 N•m (38 - 45 ft-lb) torque.

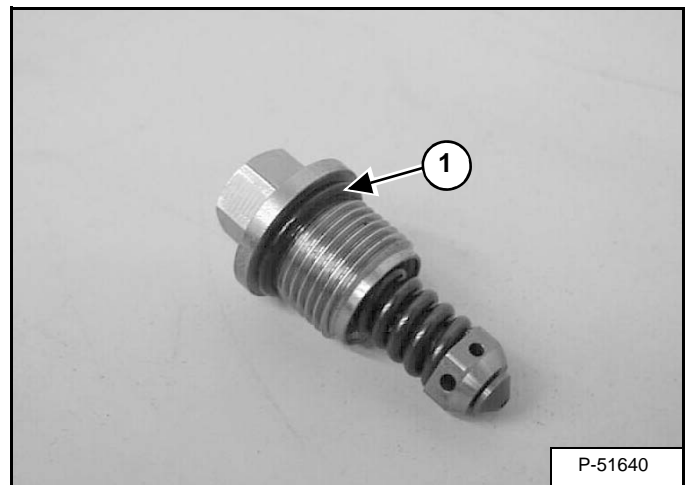
Figure 20-40-31



The control valve may be equipped with an optional auxiliary port relief valve (Item 1) [Figure 20-40-31].

Remove the auxiliary port relief valve.

Figure 20-40-32

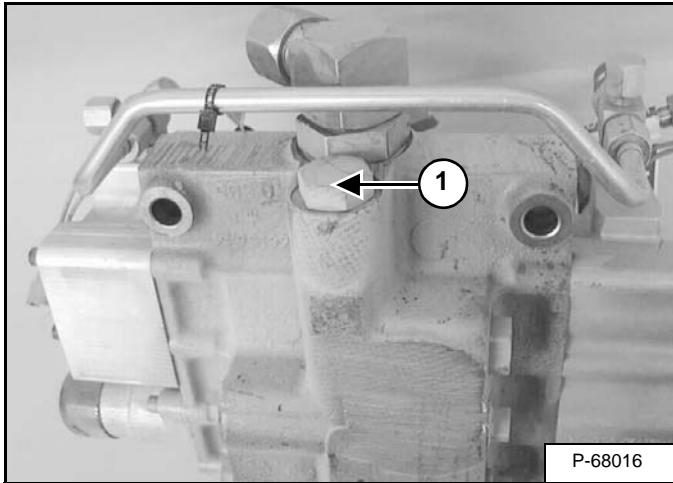


Installation: Always use new O-rings (Item 1) [Figure 20-40-32]. Tighten to 52 - 61 N•m (38 - 45 ft-lb) torque.

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

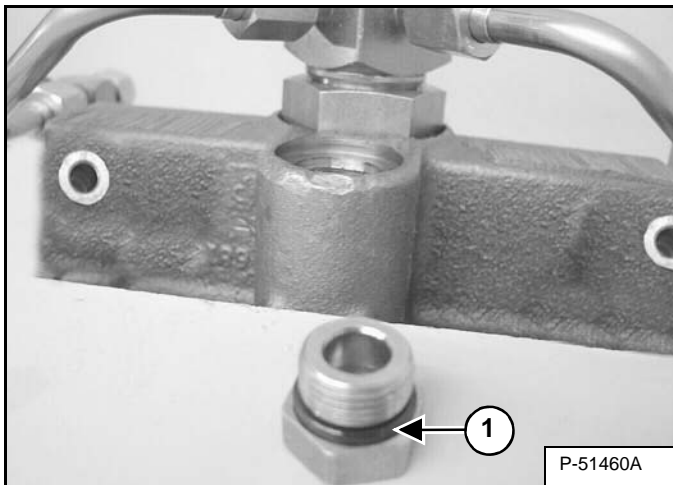
Plug Removal And Installation

Figure 20-40-33



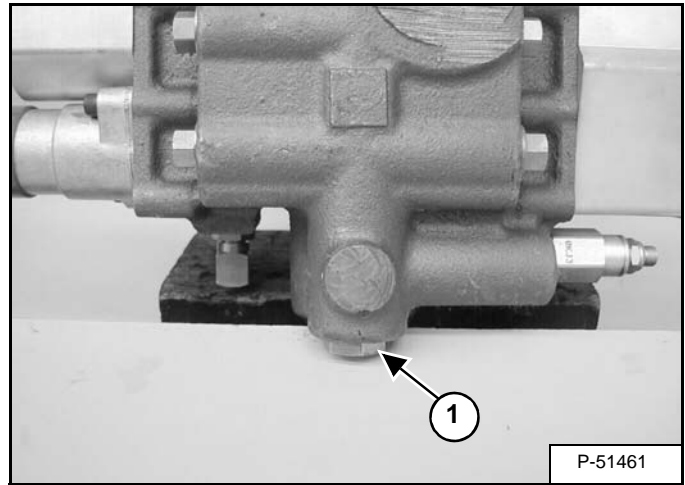
At the top side of the control valve, remove the plug (Item 1) [Figure 20-40-33].

Figure 20-40-34



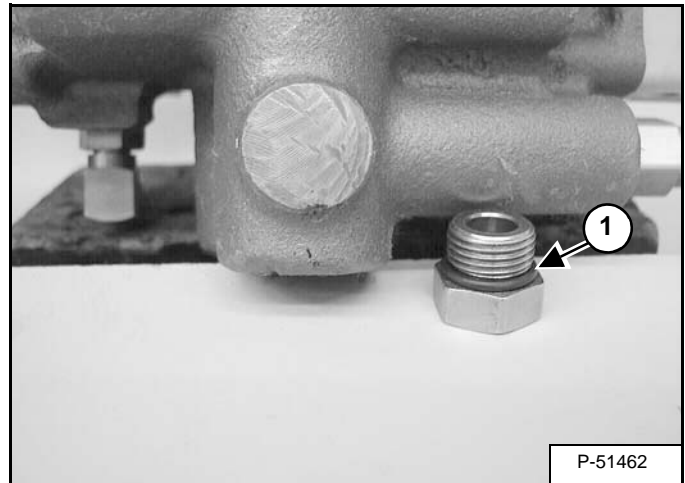
Installation: Always use new O-rings (Item 1) [Figure 20-40-34]. Tighten to 54 N•m (40 ft-lb) torque.

Figure 20-40-35



At the bottom side of the control valve remove the plug (Item 1) [Figure 20-40-35].

Figure 20-40-36

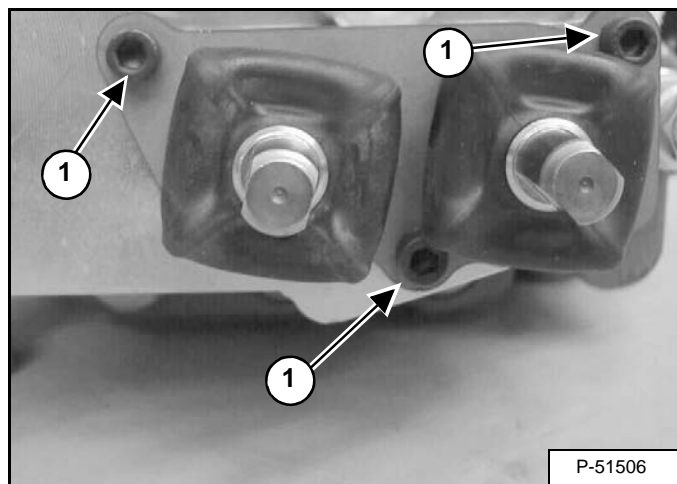


Installation: Always use new O-rings (Item 1) [Figure 20-40-36]. Tighten to 54 N•m (40 ft-lb) torque.

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

Rubber Boot Removal And Installation

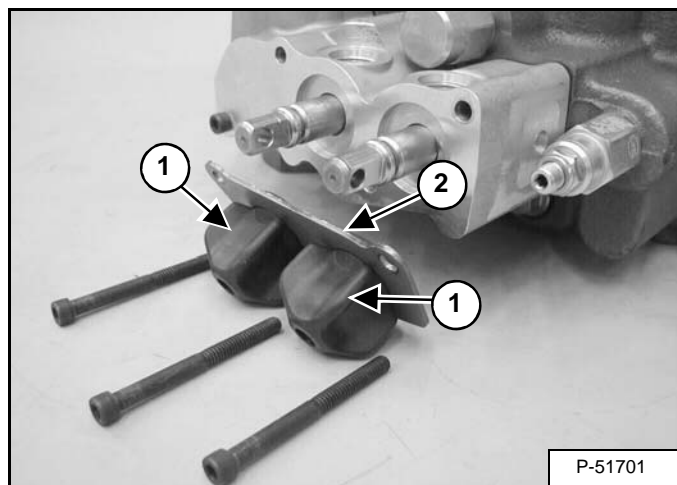
Figure 20-40-37



Remove the three screws (Item 1) [Figure 20-40-37] on the rubber boot retainer plate.

Installation: Tighten the screws to 10,2 - 11,3 N•m (90 - 100 in-lb) torque.

Figure 20-40-38

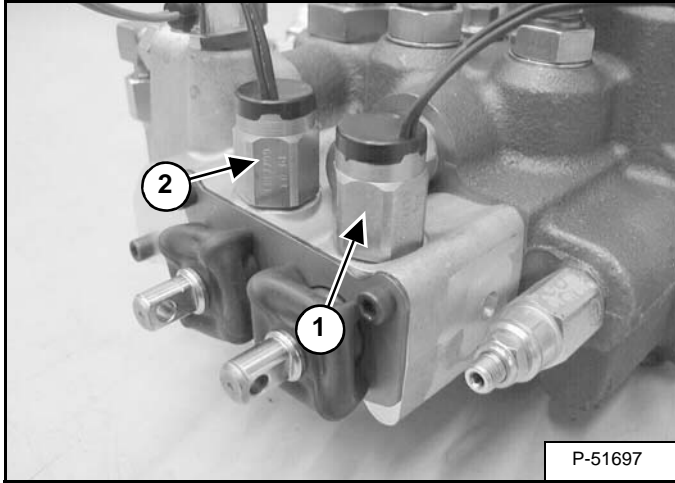


Remove the rubber boots (Item 1) from the retainer plate (Item 2) [Figure 20-40-38].

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

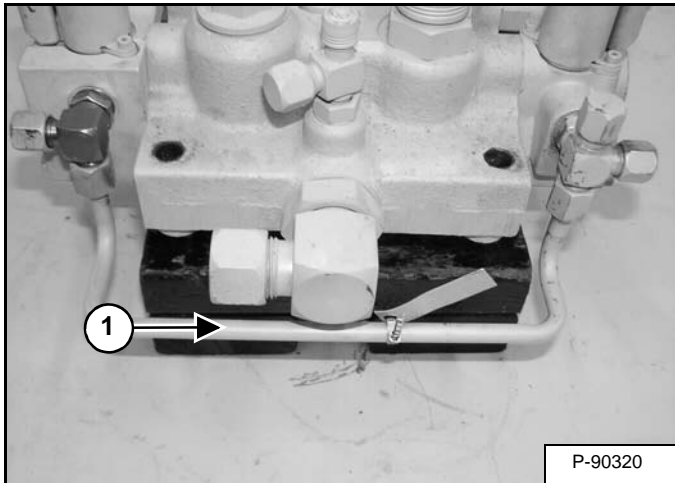
End Cap Block Removal And Installation

Figure 20-40-39



Remove the lift spool lock solenoid (Item 1) and the tilt spool lock solenoid (Item 2) [Figure 20-40-39] from the end cap / spool lock block.

Figure 20-40-40



Disconnect the tube line (Item 1) [Figure 20-40-40] from the end cap / spool lock block.

Figure 20-40-41

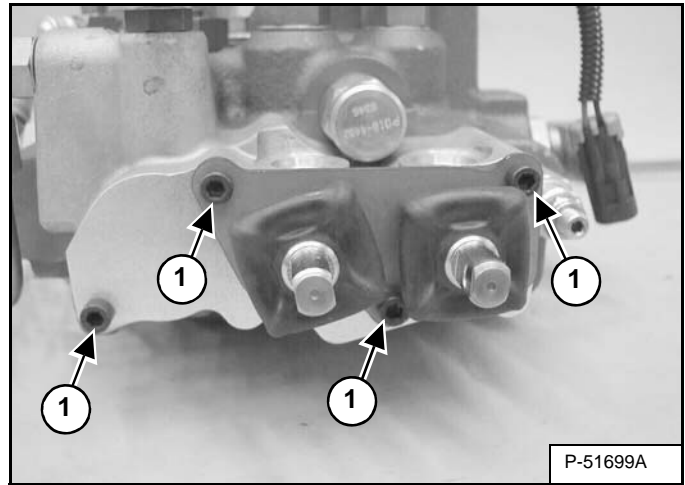
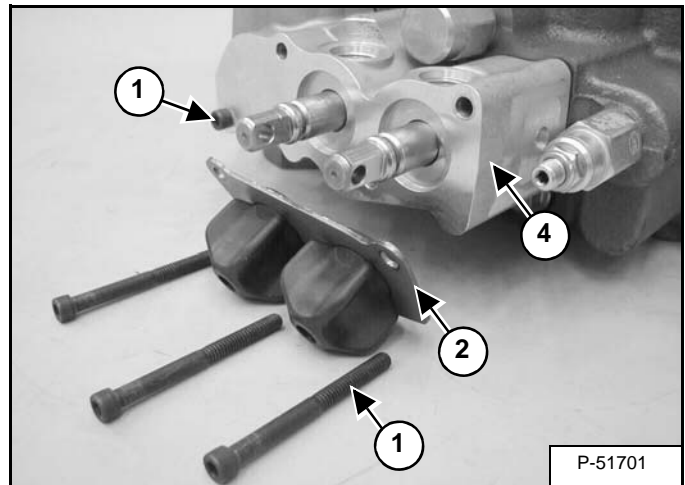


Figure 20-40-42



Remove the four end cap / spool lock block mount screws (Item 1) [Figure 20-40-41] and [Figure 20-40-42].

Installation: Tighten the screws to 10,2 - 11,3 N•m (90 - 100 in-lb) torque.

Remove the rubber boots and retainer plate (Item 2) [Figure 20-40-42] from the lift and tilt spools.

Remove the end cap / spool lock block (Item 4) [Figure 20-40-42] from the control valve.

HYDRAULIC CONTROL VALVE (STANDARD) (CONT'D)

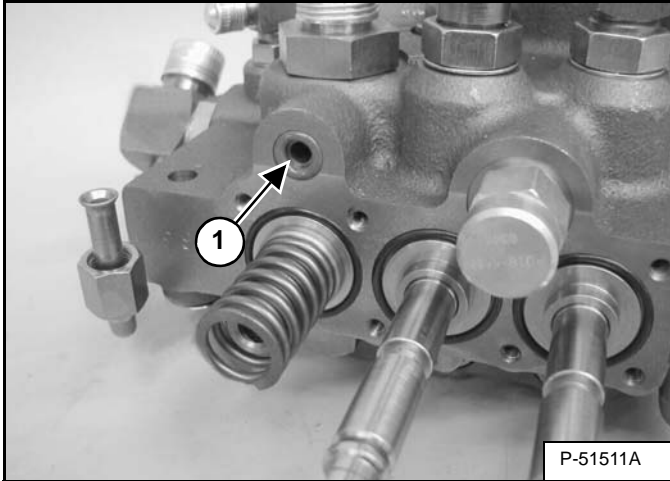
Lift Spool And Detent Removal And Installation

The tool listed will be needed to do the following procedure:

MEL1278 - Detent Tool
MEL1285 - Detent Spring Tool

Remove the end cap / spool lock block from the control valve.

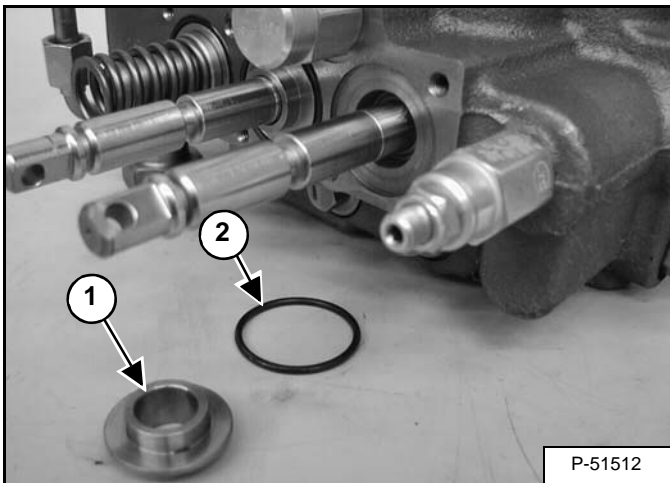
Figure 20-40-43



Remove the O-ring (Item 1) [Figure 20-40-43].

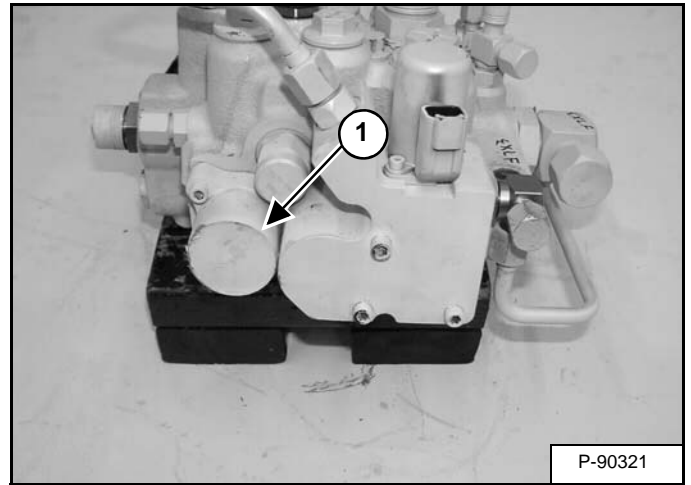
Installation: Replace the O-ring, and lubricate the O-ring lightly with grease or oil before installation of the end cap / spool lock block.

Figure 20-40-44



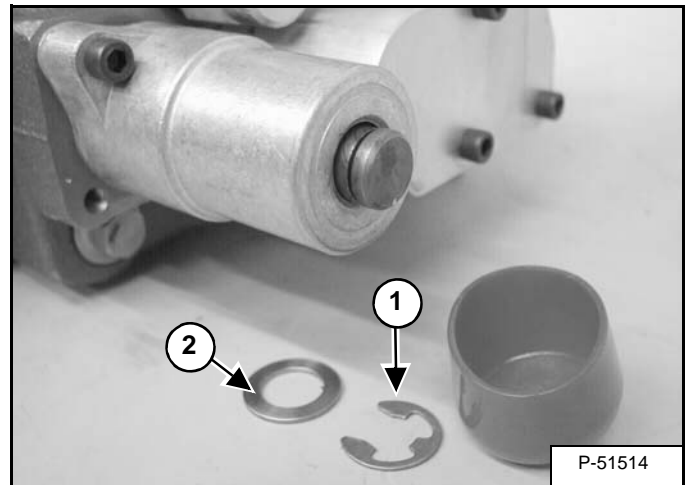
Remove the spacer (Item 1) and O-ring (Item 2) [Figure 20-40-44] from the lift spool.

Figure 20-40-45



Remove the end cap (Item 1) [Figure 20-40-45].

Figure 20-40-46



Use a screwdriver to remove the snap ring (Item 1) [Figure 20-40-46].

Remove the washer (Item 2) [Figure 20-40-46].