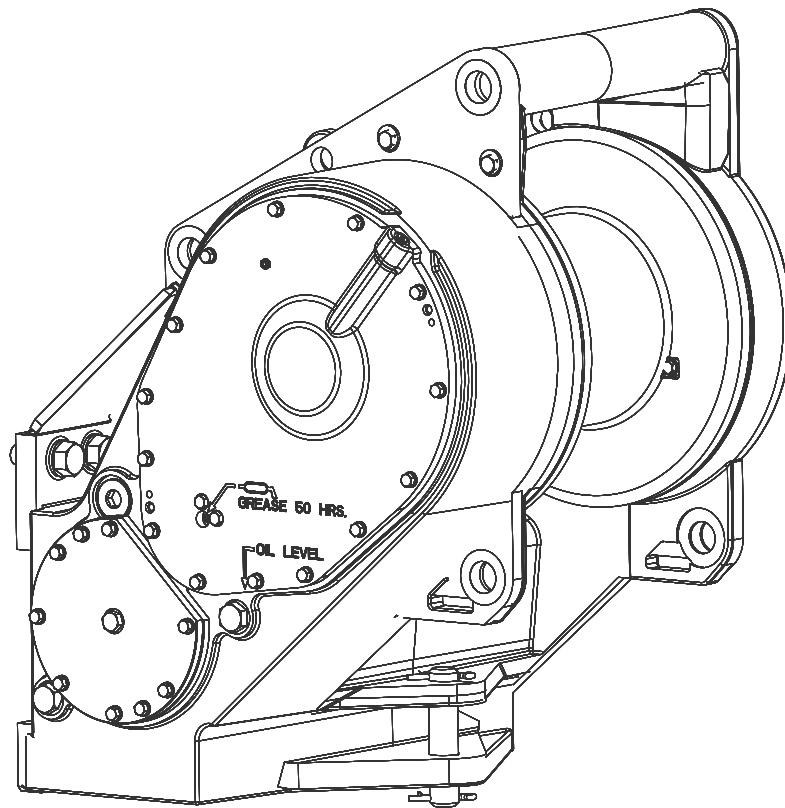


# CARCO®

## INSTALLATION AND PARTS MANUAL

### MODEL H50VS FOR JOHN DEERE 700J TRACTORS



#### **PACCAR WINCH DIVISION**

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WINCH MOUNTING  
LOCATION

RIGHT REAR  
ACCESS PANEL

ACCESS DOOR  
TO JOYSTICKS  
AND HYDRAULIC  
TANKS

WINCH MOUNTING  
LOCATION

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## GENERAL INSTALLATION NOTES

### **CAUTION**

Cleanliness is of utmost importance when working on hydraulic equipment. Contamination may cause damage to close tolerances of the hydraulic components which may result in erratic operation and reduced service life.

- Follow all safety procedures per tractor and winch maintenance and service manuals.

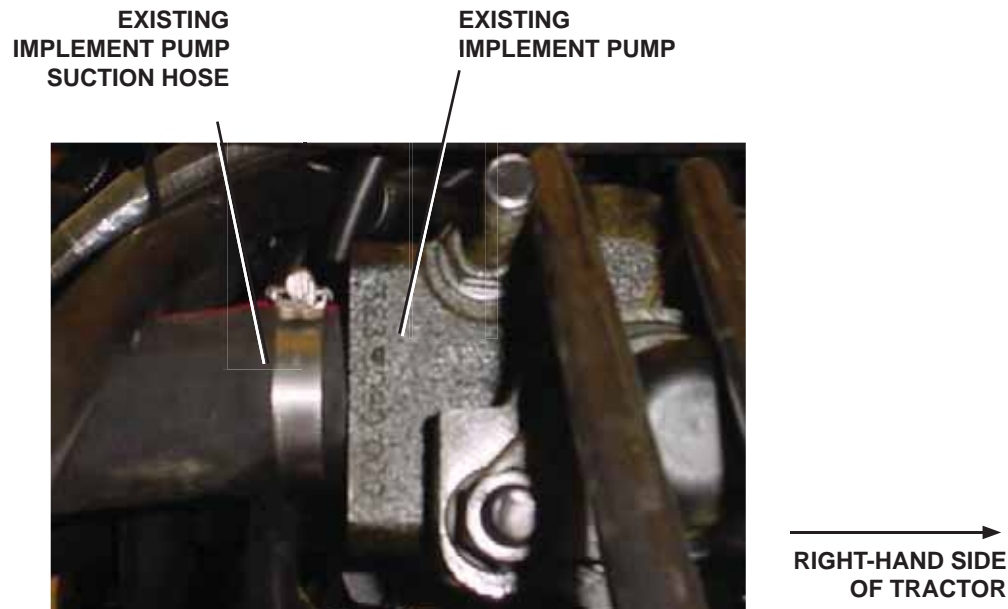
### RECOMMENDED ORDER OF INSTALLATION:

- Lay out joystick cover location on console before removing arm rest and seat. (Page 15).
- Drain transmission and implement hydraulic reservoirs. (Refer to tractor service manual.)
- Drain coolant reservoir and remove heater core (optional). (Refer to tractor service manual.)
- Install winch pump group (page 4).
- Install winch control group (page 15).
- Install winch to tractor per mounting group (page 32).
- Refill transmission and implement hydraulic reservoirs.
- Reinstall heater core (if removed) and refill coolant reservoir. (Refer to tractor service manual.)
- Ensure all fluid levels are correct before starting tractor.
- Start tractor and perform winch function test.

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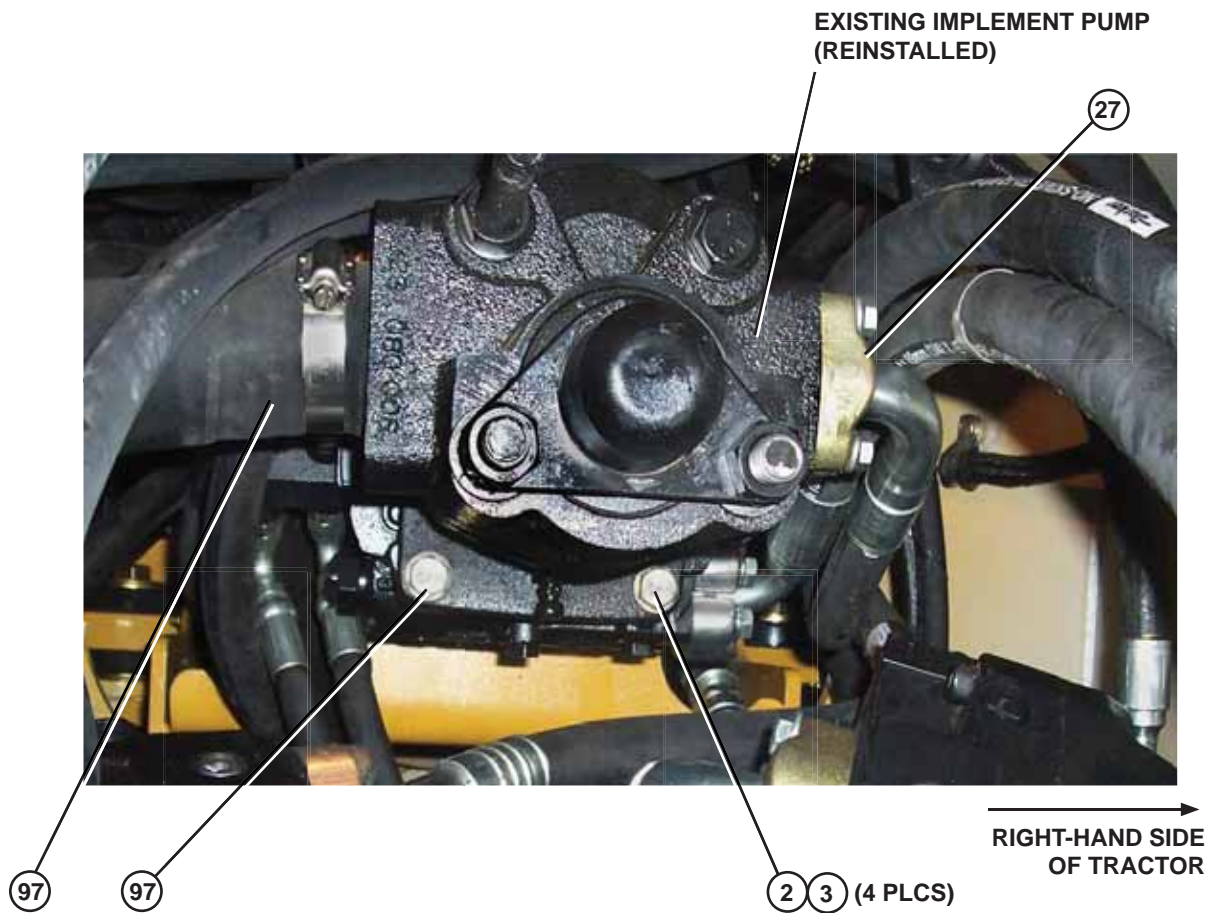
*NOTE: Existing implement pump (John Deere item) is to be removed and replaced with winch pump (Item 1), and reattached after winch pump. See Pump Group Parts List, pg. 14.*

1. Remove the existing suction hose from the existing implement pump and reservoir. Discard suction hose but retain hose clamps for re-use.



2. Disconnect output hose from existing implement pump and reposition for clearance.
3. Remove mounting screws and washers from existing implement pump. Retain these screws and washers to reattach implement pump.
4. Remove implement pump and discard pilot O-ring.
5. Measure the transmission pump adapter flange groove depth;
  - If groove depth measures 1.30 mm (0.05 in.) install O-ring (Item 30) onto the winch pump pilot (Item 1).
  - If groove depth measures 1.96 mm (0.08 in.) install O-ring (Item 4) onto the winch pump pilot (Item 1).
6. Install winch pump through the rear of the tractor or through floor of cab. Insert winch pump input shaft into rear transmission pump.
7. Orient winch pump such that the split flange power ports (Item 27) will be to RH side of tractor. Control ports will be on top. The filter ports will be to LH side of tractor. Secure winch pump using capscrews and washers (Items 2 and 3).
8. Install O-ring (Item 4) onto existing implement pump pilot.
9. Install existing implement pump into back of winch pump.
10. Orient implement pump with inlet port to LH side of tractor. Outlet port will be to RH side of tractor. Secure implement pump with original screws and washers.

11. Attach new suction hose (Item 19) to implement pump and reservoir outlet using original hose clamps.



12. Disconnect cooler-to-reservoir return hose. Set aside for repositioning and reattachment to new fittings (Step 14).



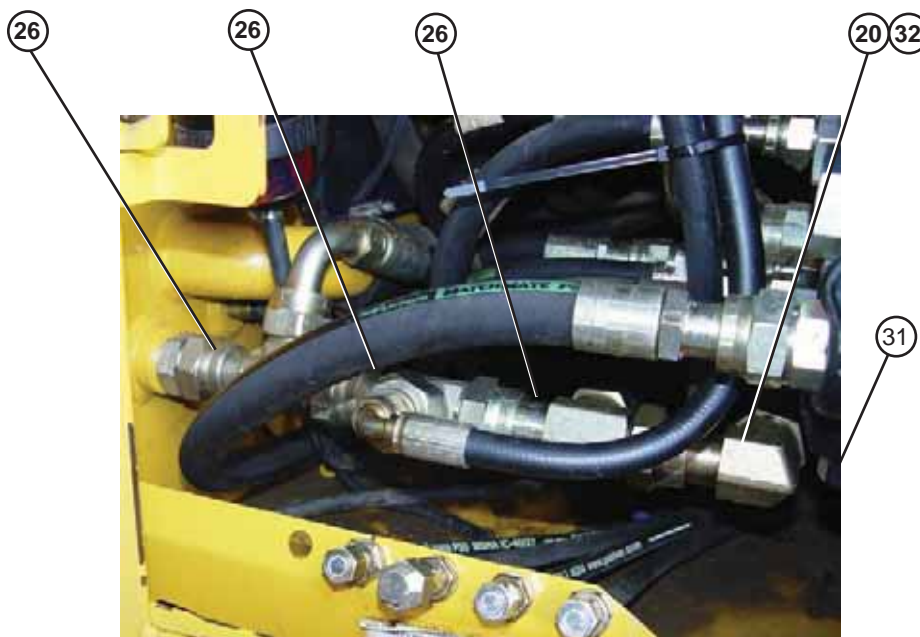


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13. Either a -16-to-16 straight adapter or a -12 to -16 adapter (Item 32) may be required, depending on tractor model. Attach the required adapter to the reservoir inlet.



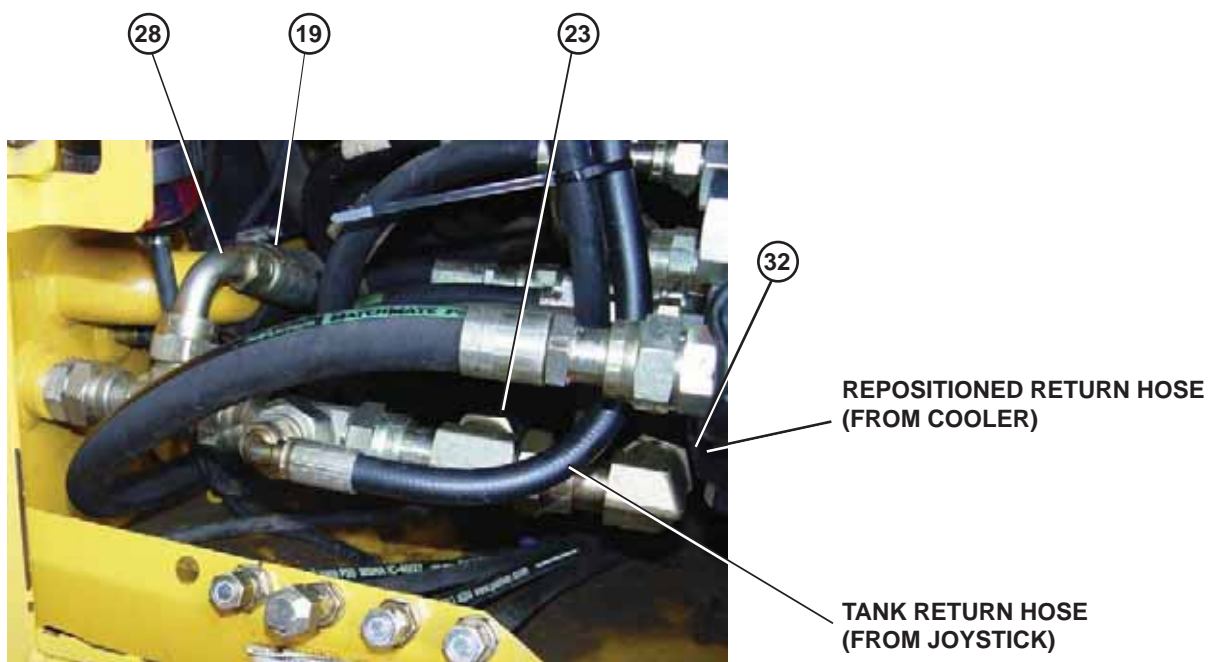
14. Assemble three tees (Item 26), reducer (item 31), and elbow (Item 20) as shown. Assemble loosely until hose clearance is attained, then attach the fitting assembly to the adapter on the reservoir inlet. Tighten all tees and elbow.



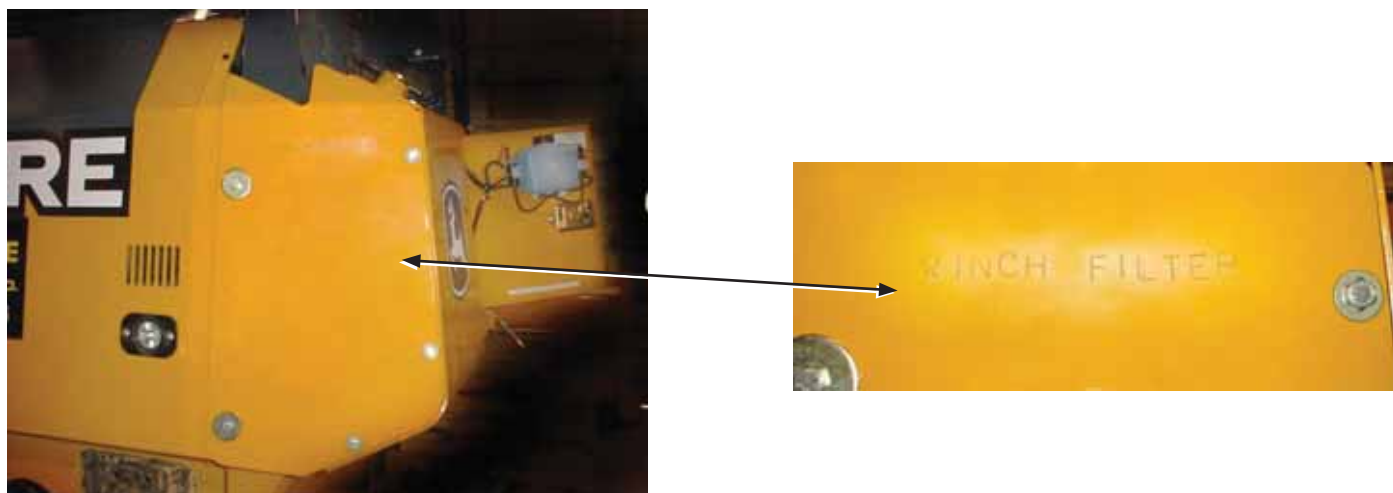
*NOTE: Adapter (Item 32) may be -16/-16 or -16/-12, depending on tractor configuration. Use the appropriate adapter to match existing hose fittings*

15. Attach the ORFS elbow (Item 28) to the tee closest to the reservoir. Attach the 72-inch (1828 mm) hose (Item 19) to the elbow. Attach the 50-inch (1270 mm) hose assembly (Item 23) to the third tee. (The middle tee will be used for the tank return hose from Joystick – see the CONTROL GRP section of this manual). Reattach cooler return hose to elbow.

*NOTE: as in Step 13, a -16/-16 or -12 to -16 adapter (Item 32) may be required, depending on tractor model.*

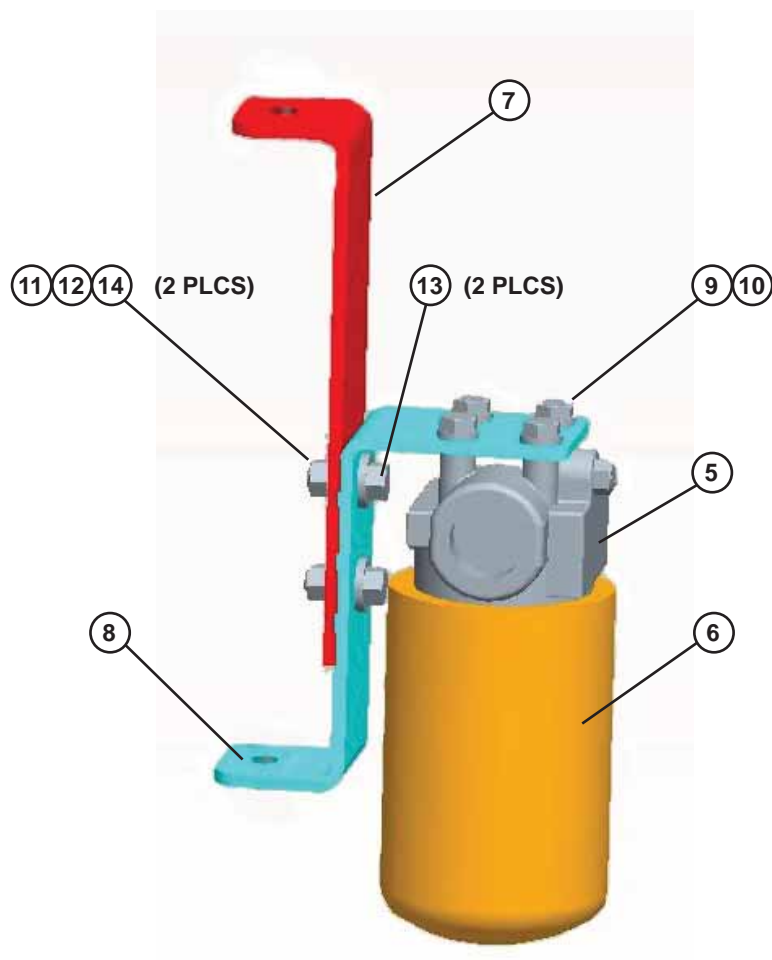


16. Remove the tractor right rear access panel.



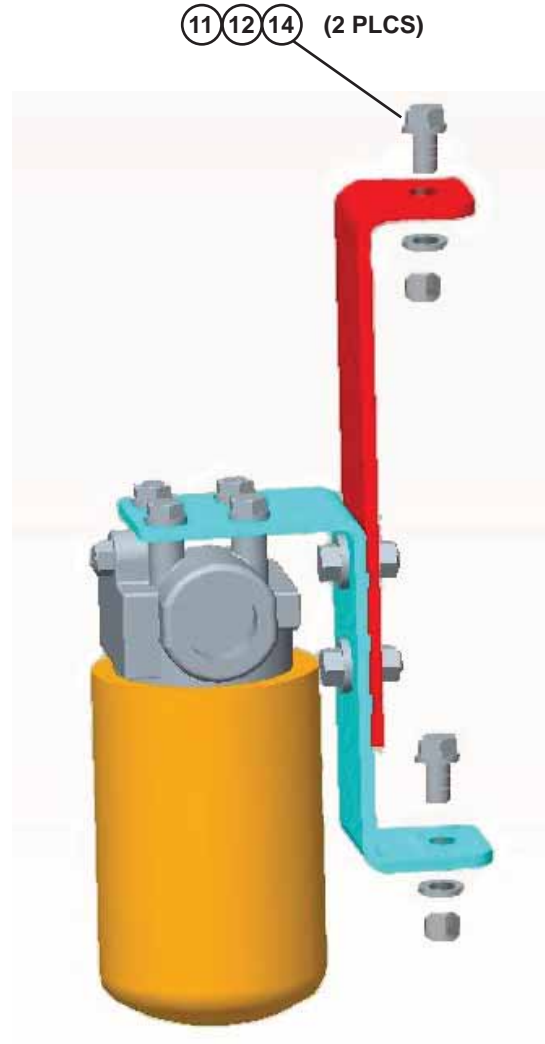
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17. Assemble filter subassembly as shown. Hose loom may be used on hoses as routed to and from winch pump.



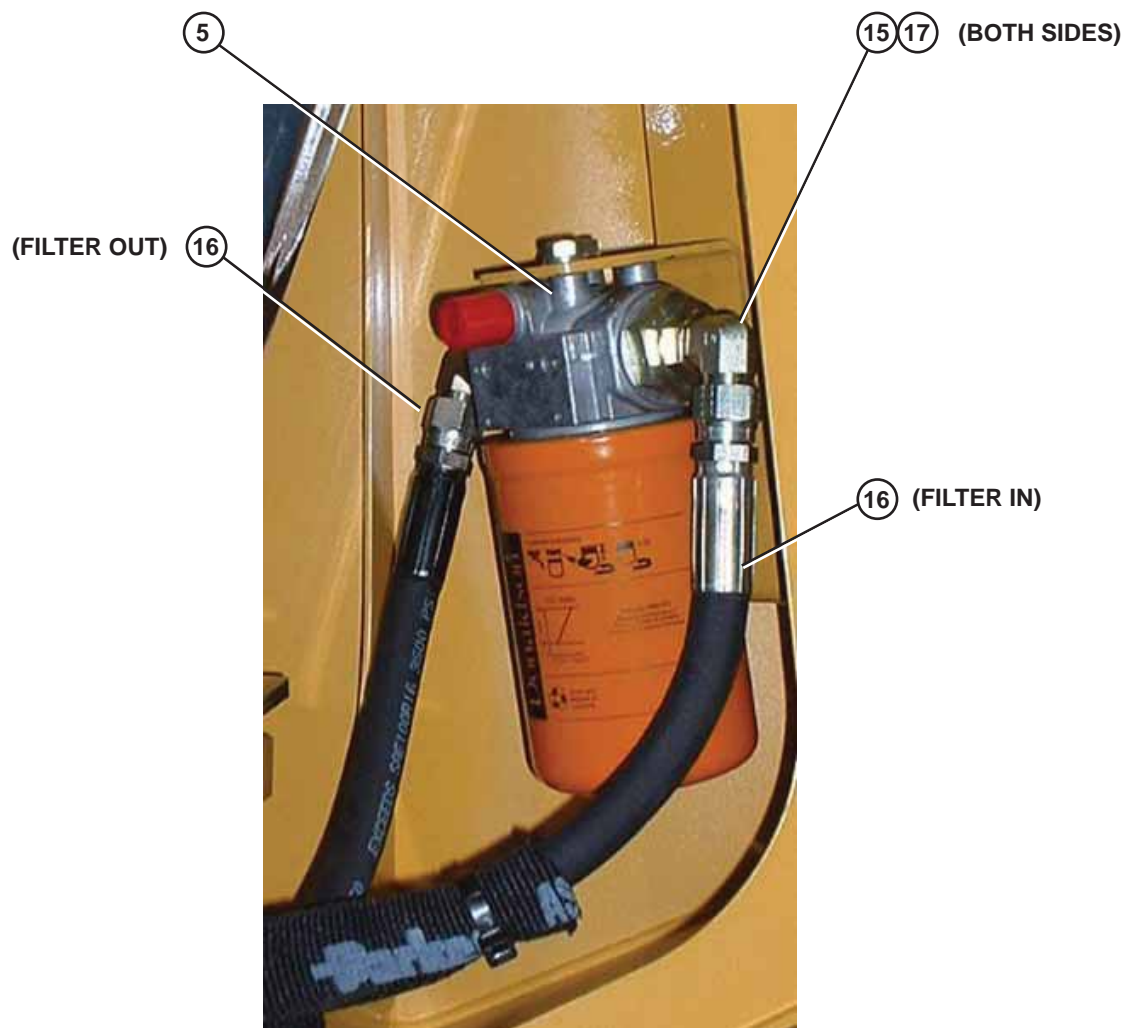


18. Drill one .44 hole in center of each upper and lower gusset. Install filter subassembly between gussets with Items 11, 12, and 14.



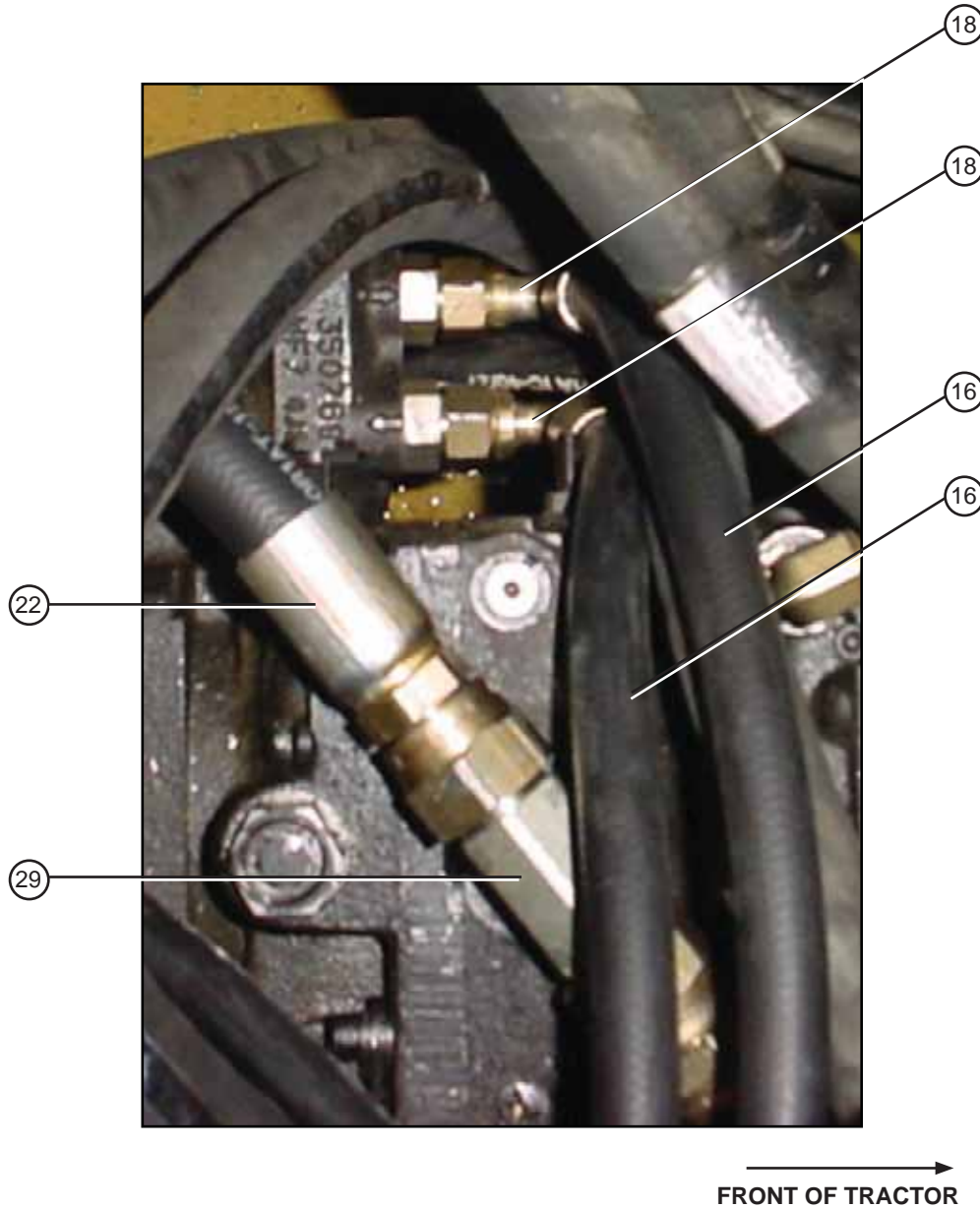
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19. Install hydraulic hose adapters (Items 15 and 17) and hose assemblies (Item 16) as shown.



*NOTE: A 1-5/8-inch service wrench may be required to loosen and adjust the pilot pressure/filtration manifold for fitting clearance.*

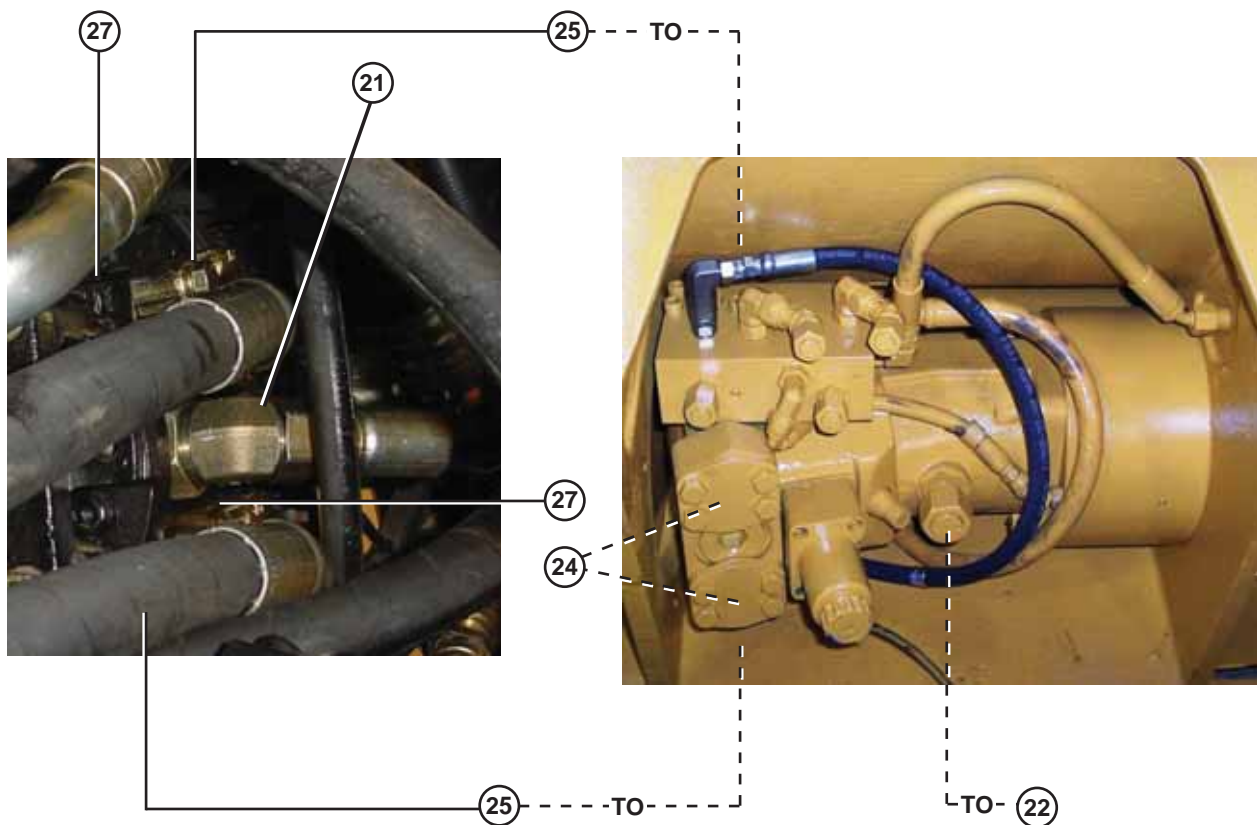
20. Install the adapter fittings (Item 18) as shown. Attach the winch power hoses (Item 16) to the adapter fittings. Attach the 45-inch case drain hose (Item 22) to the branch tee (Item 29).



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21.

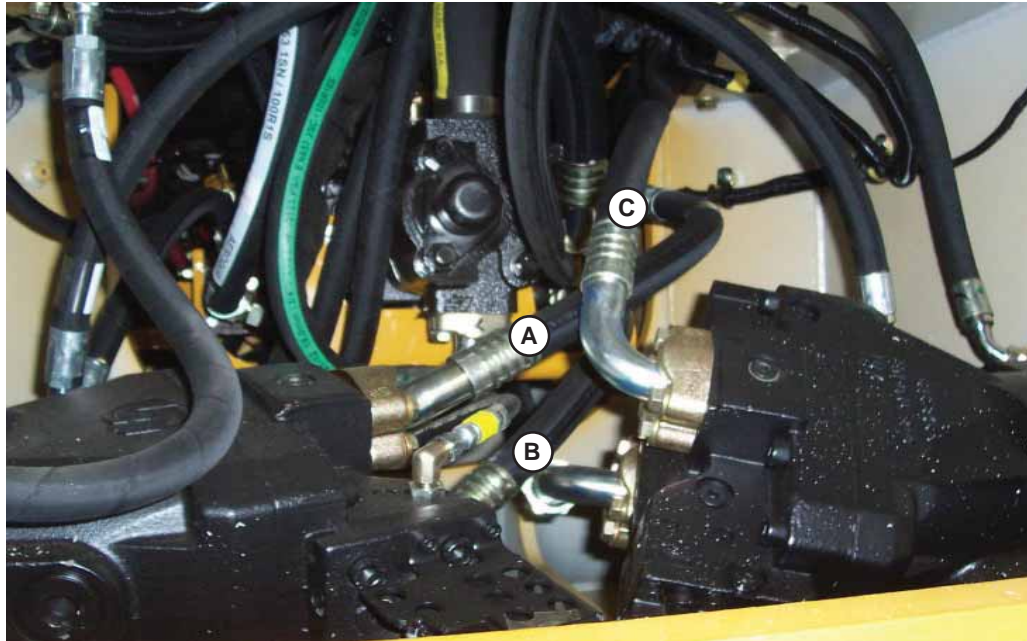
- Attach the split flange kit (Item 27) to the winch pump.
- Attach the split flange kit (Item 24) to the winch.
- Attach the -16 -12 45° elbow (Item 21) to the winch pump.
- Attach the 35-inch (889 mm) hose (Item 25) to the upper side of the winch pump, and then to the upper split flange (REEL OUT) on the winch.
- Attach the other 35-inch hose (Item 25) to the lower side of the winch pump, and then to the lower split flange (REEL IN) on the winch.
- Attach the 45-inch (1143 mm) hose assembly (Item 22) to the winch motor case drain port as shown.



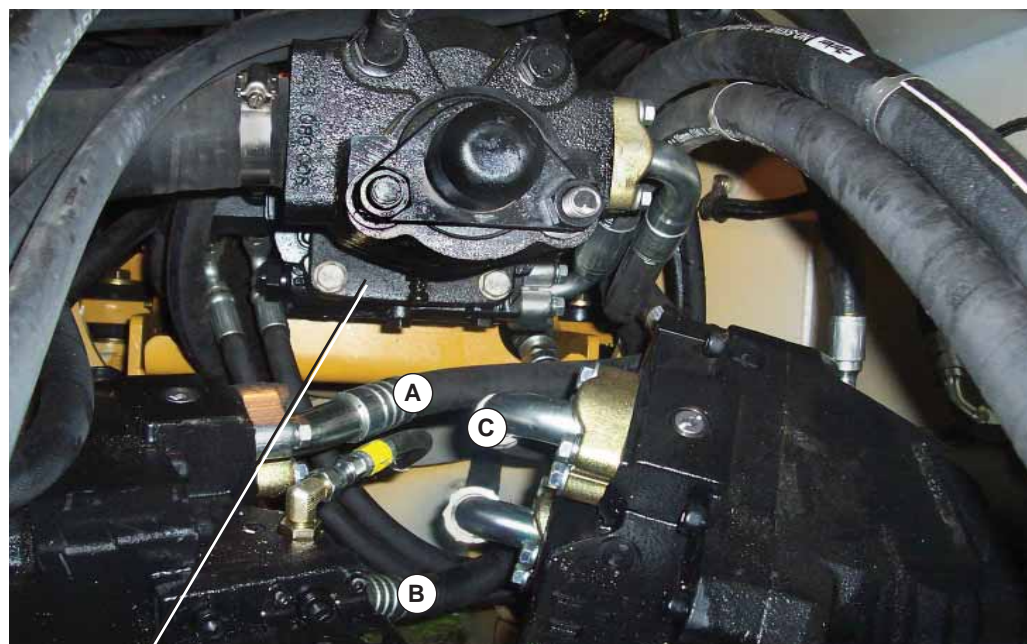


22. The orientation of transmission hoses before and after pump installation is shown here.

**BEFORE WINCH PUMP**



**AFTER WINCH PUMP**



①



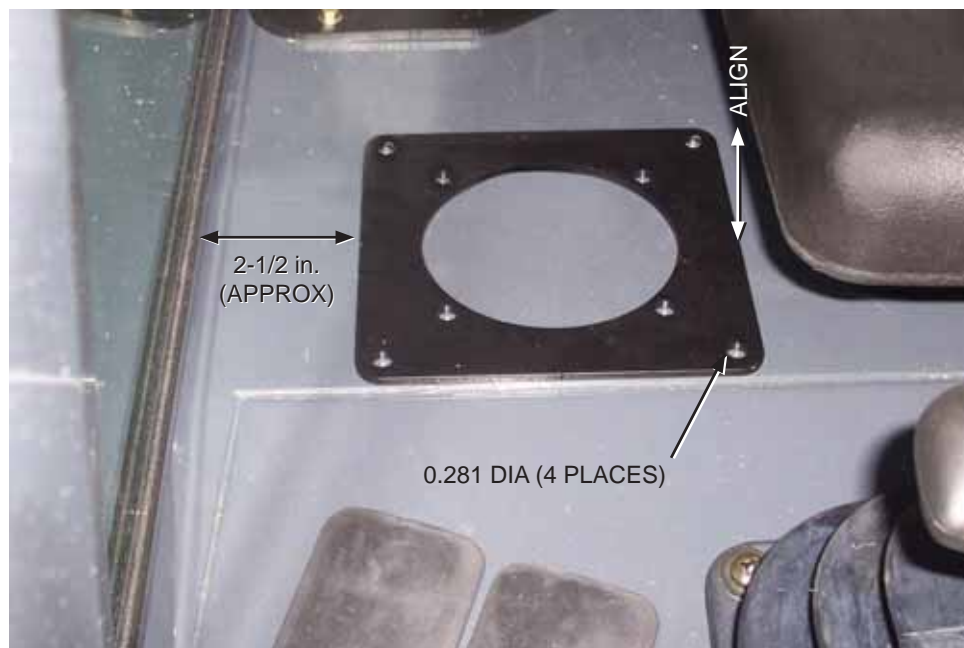
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**PUMP GROUP**  
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ITEM	DESCRIPTION	PART NUMBER	QTY
1	PUMP, HYDRAULIC, AXIAL PISTON	105951	1
2	CAPSCREW 1/2-13 X 1-1/2 NC GD8 Z HX HD	104322	4
3	WASHER, PLAIN (1/2 Z)	100859	4
4	O-RING	73537	2
5	FILTER HEAD	27390	1
6	FILTER ELEMENT	108747	1
7	FILTER BRACKET TOP	106238	1
8	FILTER BRACKET BOTTOM	106239	1
9	CAPSCREW 3/8-16 X 3/4 NC GD8 Z HX HD	104135	4
10	LOCKWASHER (3/8 Z)	27152	4
11	CAPSCREW 3/8-16 X 1 NC GD8 Z HX HD	104309	4
12	WASHER, HARD (3/8 Z)	101440	6
13	WASHER, HARD (3/8 Z)	101718	2
14	NUT	PA6V8801	4
15	REDUCER, -16/-8, ORB	102195	2
16	HOSE ASSY -6 ORFS SW 90/-8 ORFS SW X 96	105950	2
17	ELBOW 90	101282	2
18	ADAPTER, ORB/ORFS	104881	2
19	CY FLEX WINCH 150 PSI 2-IN. (50 MM) X 72-IN. (1828 MM)	106241	1
20	ELBOW, -16 ORFS SWIVEL	106308	1
21	ELBOW 45 -16ORB / -12 ORFS	106371	1
22	HOSE ASSY - 12 ORFS STR / -12 X 45 IN. (1143 MM) / -16 ORFS	106242	1
23	HOSE ASSY - 12 ORFS STR / -12 X 50 IN. (1270 MM) / -16 ORFS	106243	1
24	SPLIT FLANGE KIT *	107773	2
25	HOSE ASSY -16 CODE 62 SF 90 1 - 12 X 35 IN. (889 MM)	106244	2
26	TEE -16 ORFS	106223	3
27	SPLIT FLANGE KIT, -16 CODE 6	100623	2
28	HOSE ASSY -12 ORFS STR / -12 X 45 IN. (1143 MM) / -16 ORFS 90	106374	1
29	TEE	106224	1
30	O-RING	107093	1
31	REDUCER	109156	1
32	ADAPTER	40115	1

INSTALLATION INSTRUCTIONS (JOYSTICK): *See Control Group Parts List, pg. 31.*

1. Locate the joystick cover (item 11) as shown such that the edge of the cover aligns with the edge of the arm rest. The other edge of the cover will then be about 2.5 in. (63.5 mm) from the window edge.

Locate the forward edge of the cover adjacent to the weld seam at the forward edge of the RH console top plate (see below). Use the cover as a template to locate and drill the four .281-in. (7 mm) diameter holes.

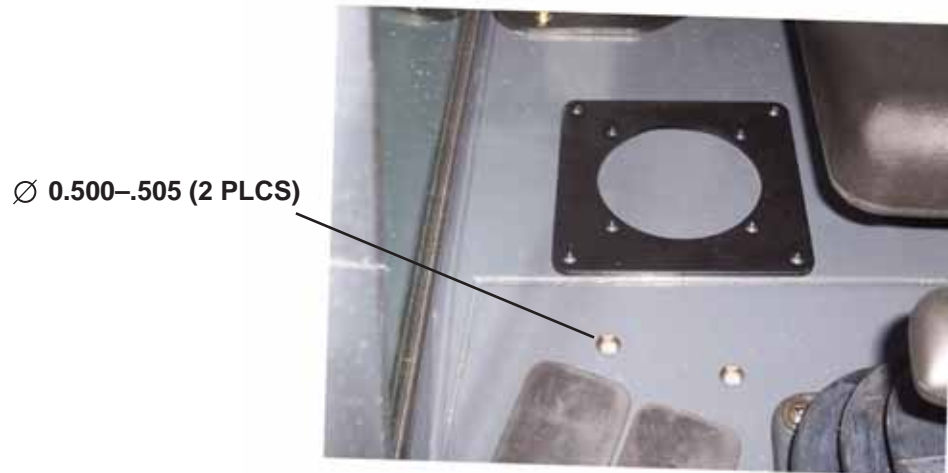


2. Center and remove a 4 in. x 4 in. (102 x 102 mm) square opening to clear the joystick (Item 1). Center the opening within the cover mounting pattern.

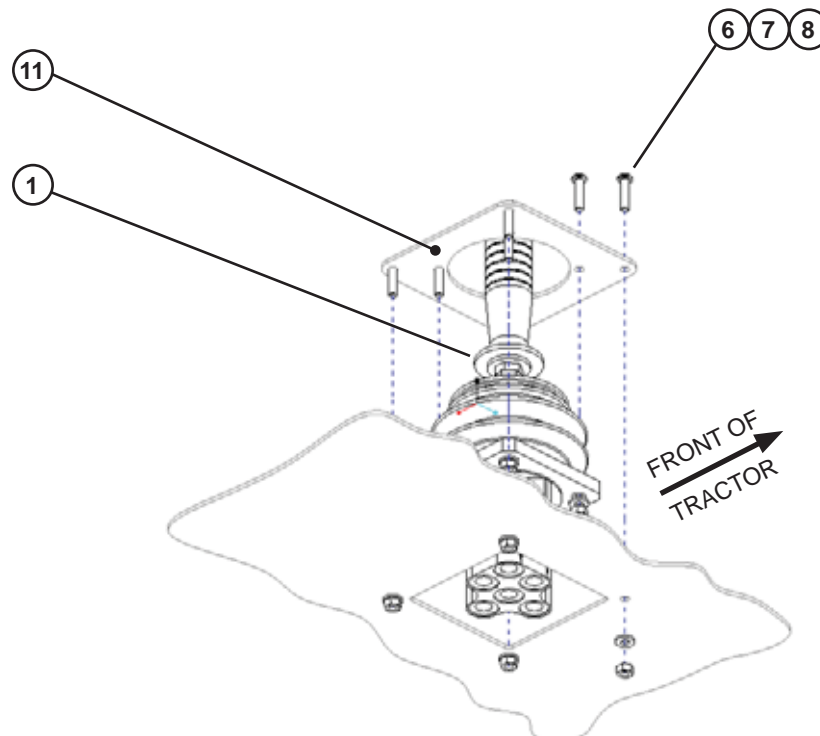


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3. Drill .500/.505 holes for indicator lights approximately at location shown. These will be for the low lock and filter service indicators.

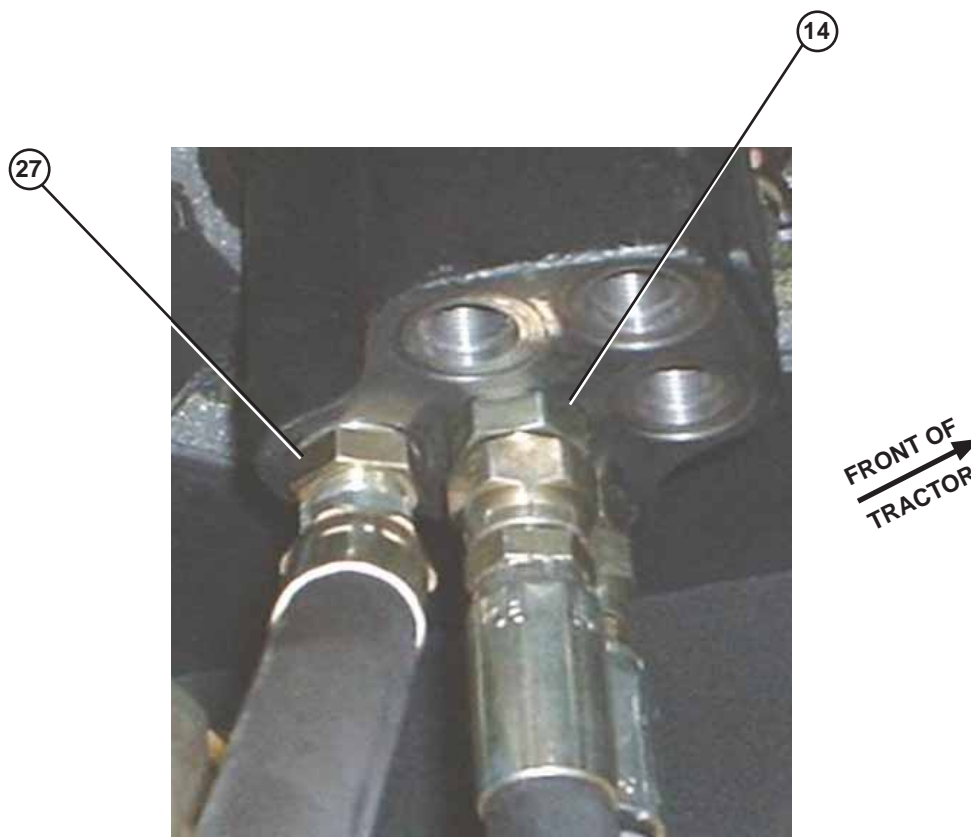


4. Install joystick (Item 1), joystick cover (Item 11), and joystick cover mounting hardware (Items 6, 7, and 8) as shown.

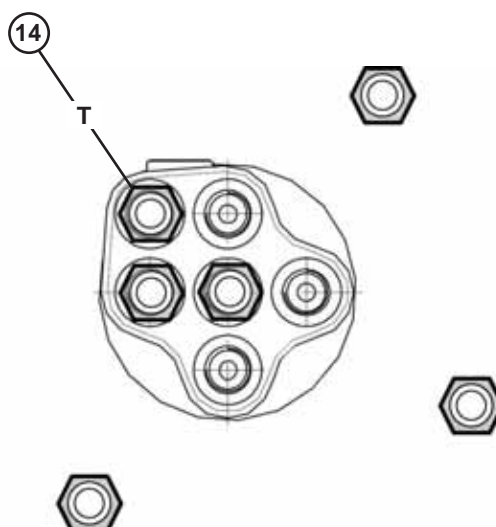


Joystick clearance hole (as seen from cab and from inside access door)

5. Install the -6 45° elbow fitting (Item 27) to joystick port 4. Ensure that the elbow is oriented correctly (pointed out and away from the other ports). Then install the straight adapter (Item 14) to the joystick center port (P).

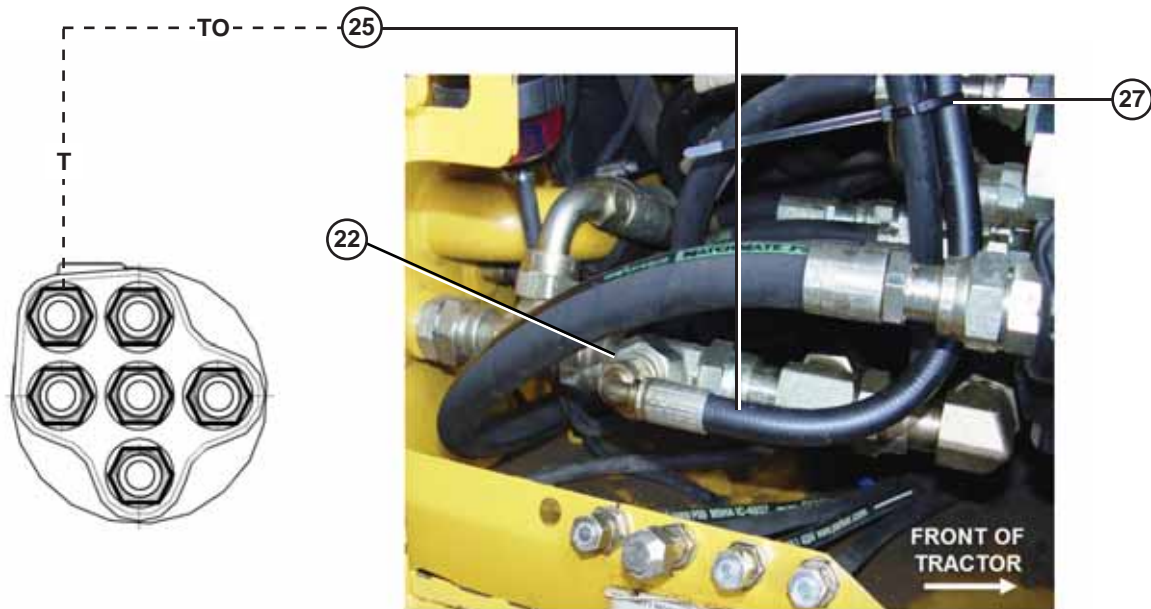


6. Install remaining adapters (Item 14) to remaining joystick ports (T, 1, 2, and 3).

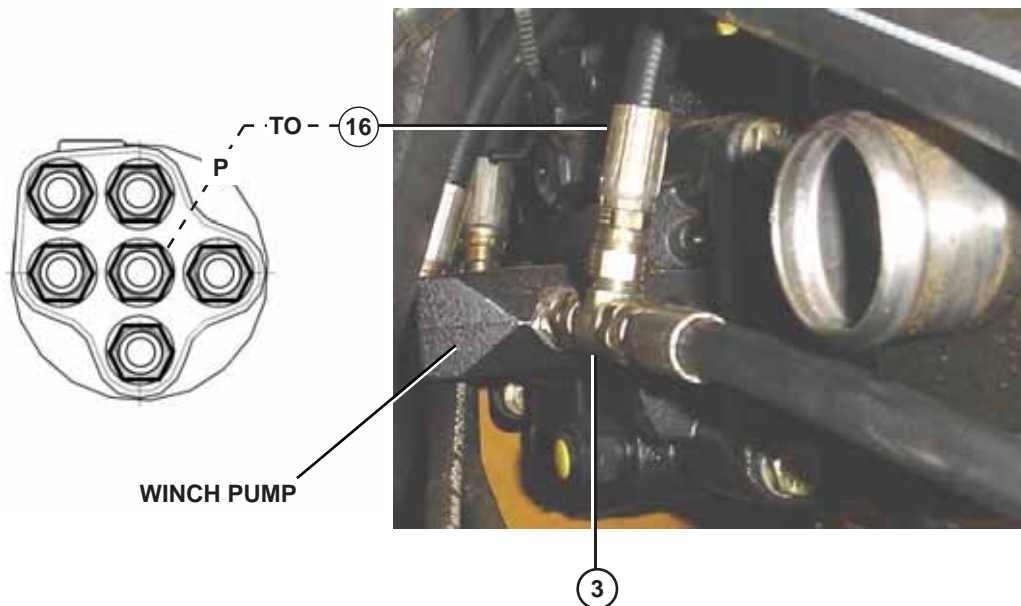


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7. Install the reducer fitting (Item 20) to the open branch tee port in the tank return fitting stack (see PUMP Group section, page 6). Connect the 24-in. (610 mm) hose assembly (Item 25) between joystick port T and the reducer (Item 20). Zip-tie hoses as needed (Item 34).

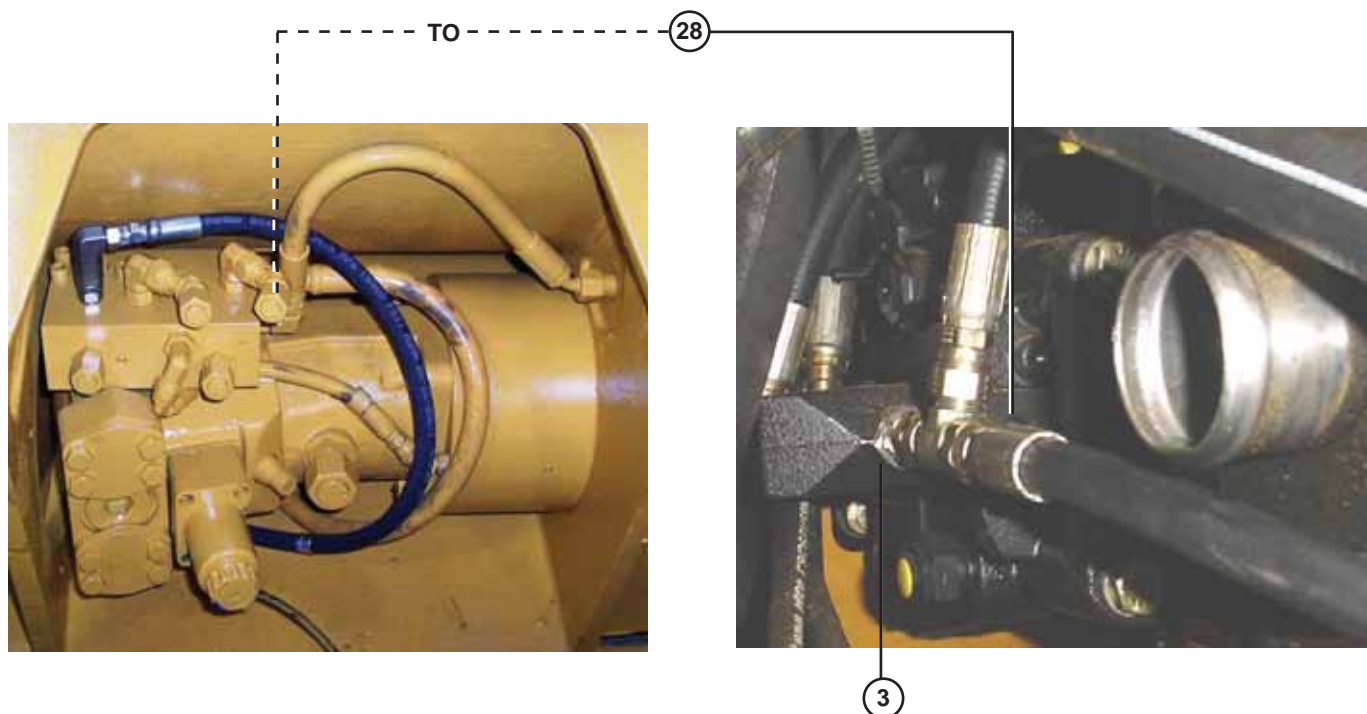


8. Connect the tee (Item 3) to port M3 of the winch pump. Connect the 60-in. (1524 mm) hose assembly (Item 16) between the tee and joystick port P as shown.

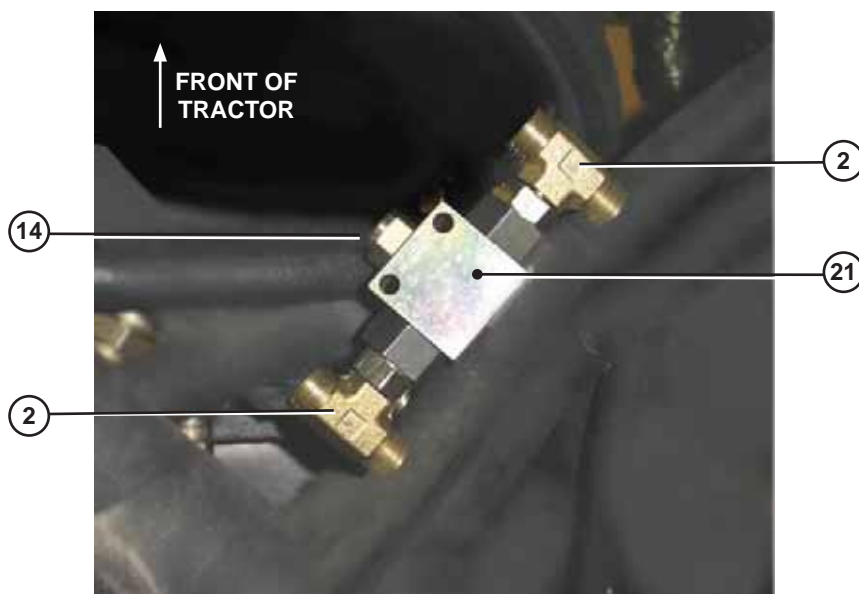




9. Connect the 40-in. (1016 mm) hose assembly to the run tee (Item 3). Run the other end of the hose to the rear of the tractor. Leave that end plugged and unconnected at this time. (It will later be connected to winch manifold P port.)



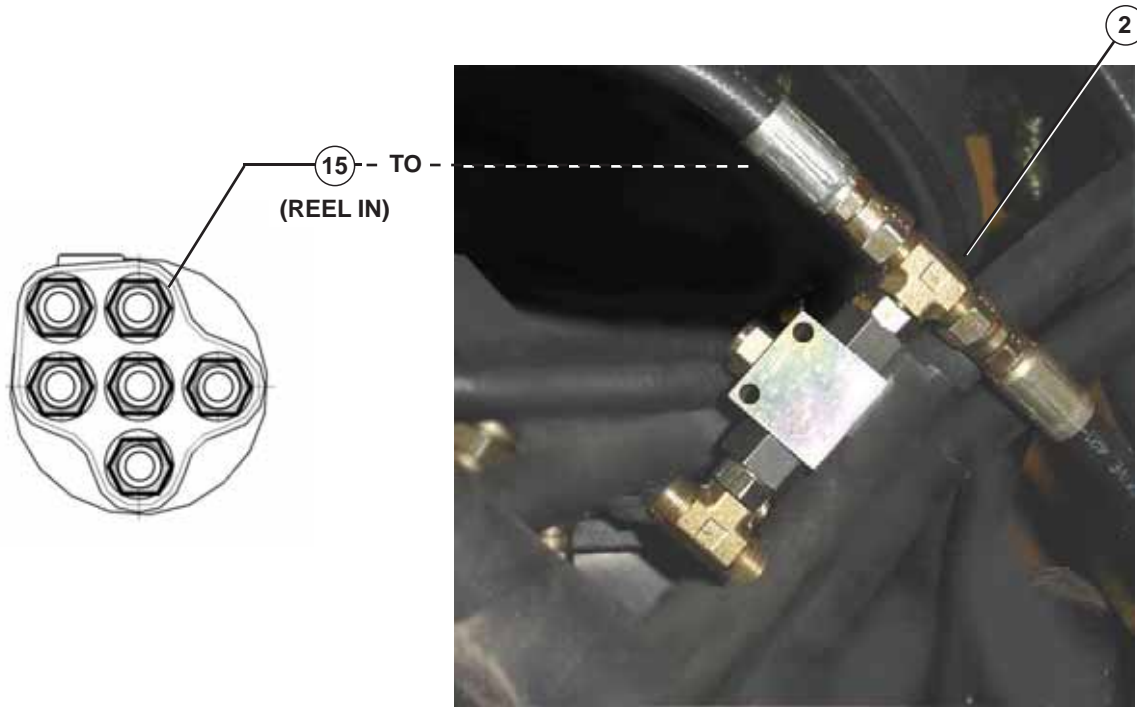
10. Install tee fittings (Item 2) to opposing ports of the shuttle valve (Item 21) as shown. Attach the adapter (Item 14) to the shuttle valve.



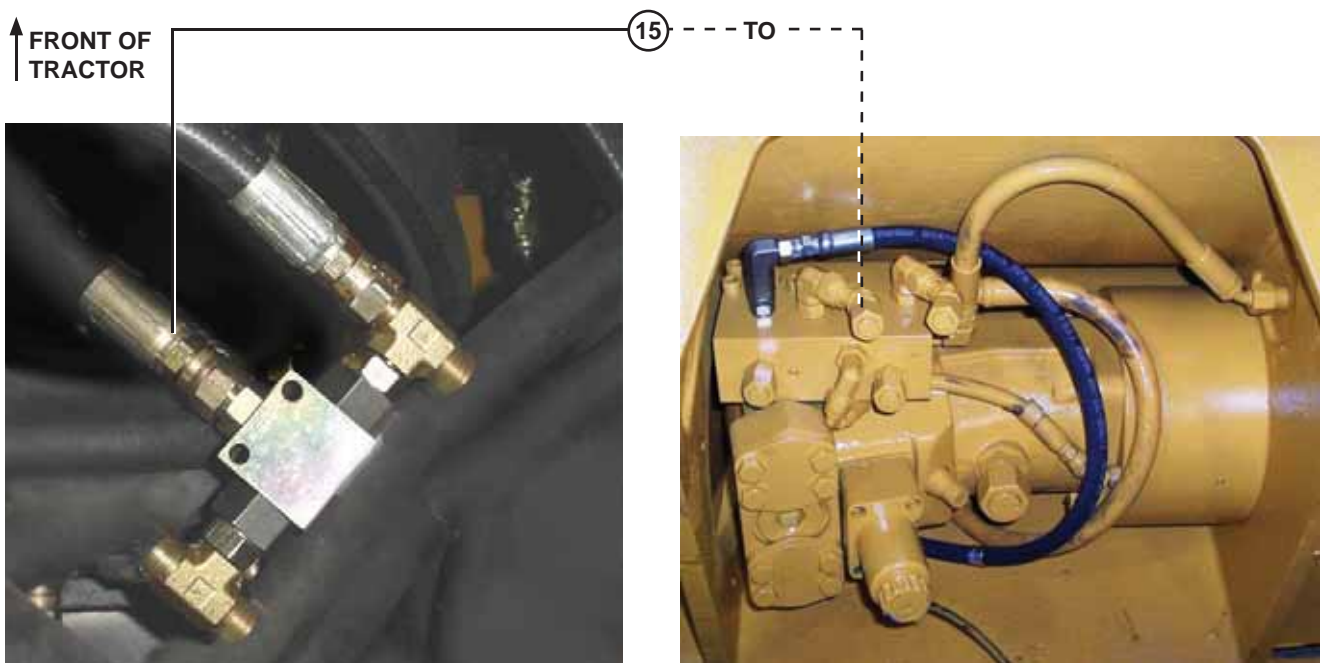
(View looking down through floorplate)

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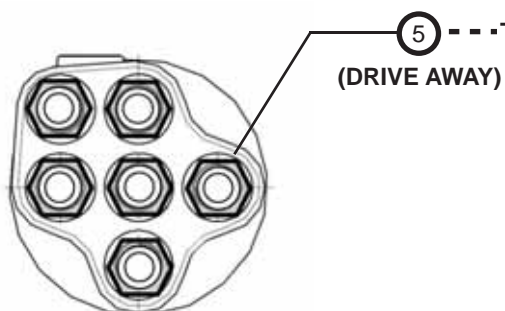
11. Connect a 50-in. (1270 mm) hose assembly (Item 15) between joystick port 1 and the tee (Item 2) as shown.



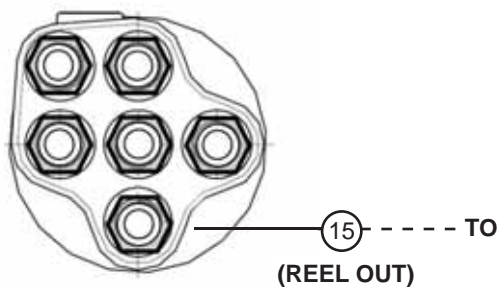
12. Connect another 50-in. (1270 mm) hose assembly (Item 15) to the shuttle valve outlet. Run the other end of the hose to the rear of the tractor. Leave that end plugged and unconnected at this time. (It will later be connected to winch manifold Y port.)



13. Connect the 76-in. (1930 mm) hose assembly (Item 5) between the adapter fitting on joystick port 2 and the winch manifold port 2. Leave the hose unplugged and unconnected at this time.



14. Connect a 50-in. (1270 mm) hose assembly (Item 15) between joystick port 3 and the tee (Item 2) on the shuttle valve.



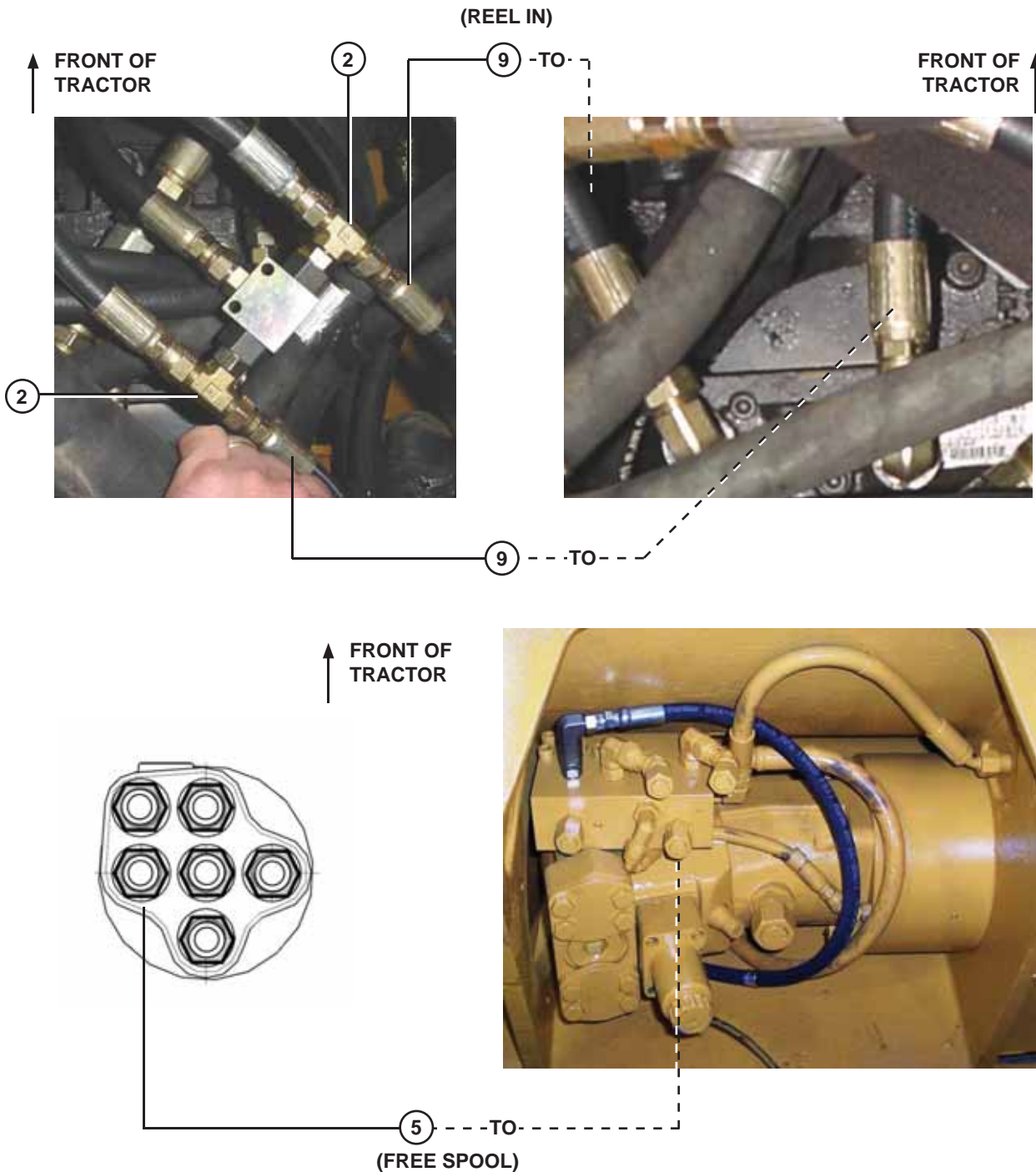
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15. Connect a 21-in. (533 mm) hose assembly (Item 9) from to the shuttle valve tee (Item 2) and then to the pump port "X1" (REEL IN).

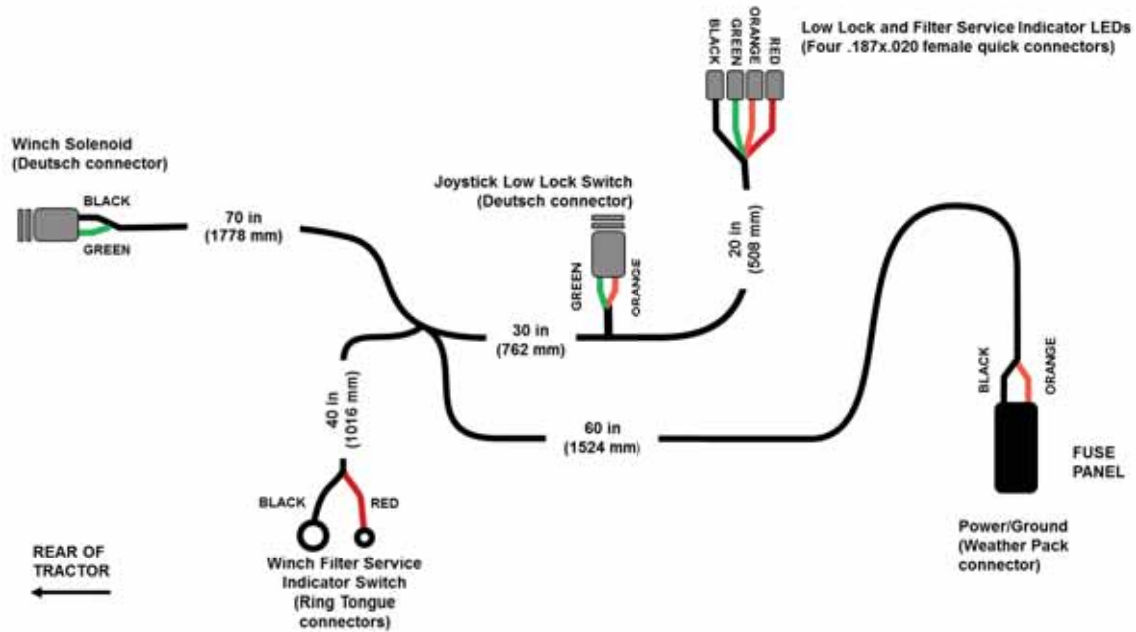
Connect the other 21-in. (533 mm) hose assembly (Item 9) from the other shuttle valve tee (Item 2) and then to the top right pump port "X2" (REEL OUT).

16. Connect a 76-in. (1930 mm) hose assembly (Item 5) to joystick port 4. Run the other end of the hose to the rear of the tractor. Leave that end plugged and unconnected at this time. (It will later be connected to winch manifold FREE SPOOL port.)

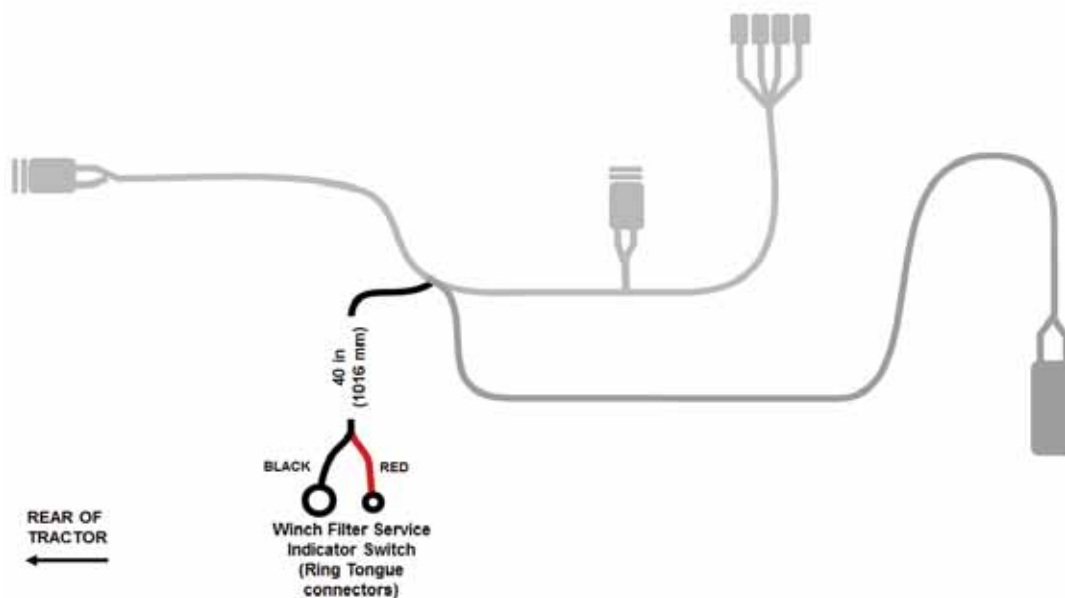




17. Place the four-way juncture of wiring harness (Item 30) at forward and lower inner edge of reservoir.



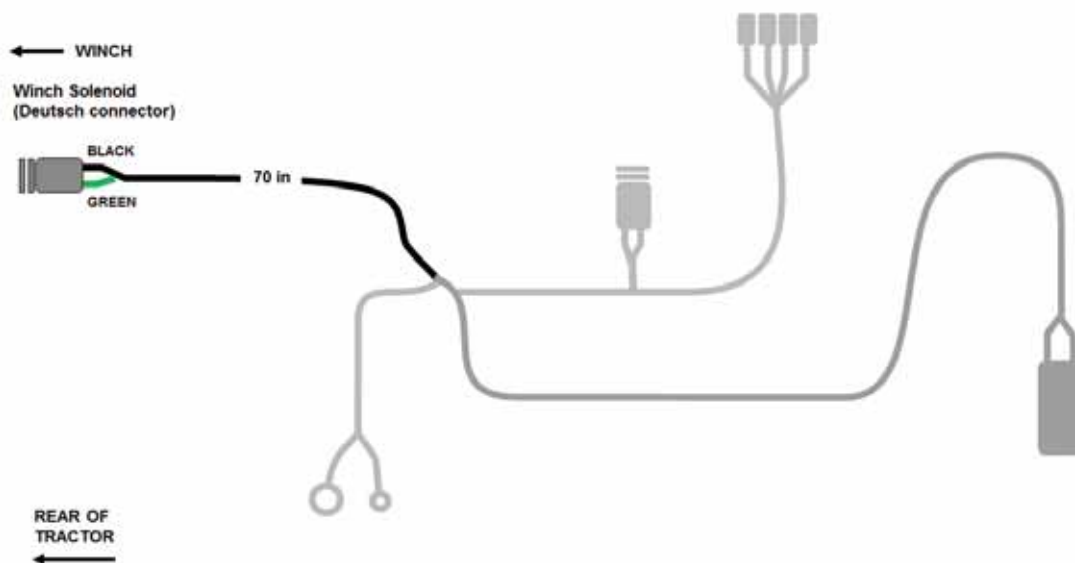
18. Route shortest leg of the wiring harness to winch filter. Connect the red tongue to the filter sensor and the black tongue to the mounting ground.





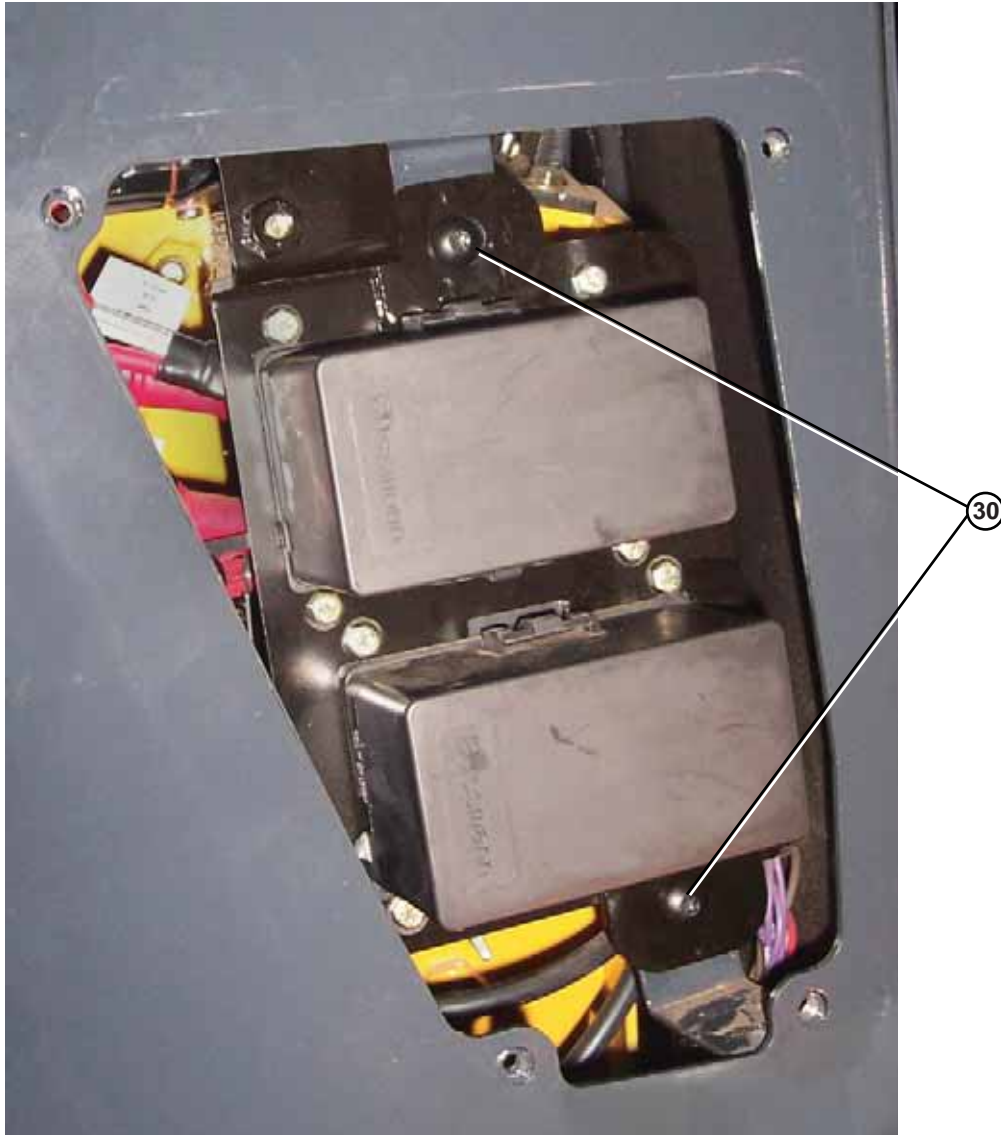
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19. Route the longest leg of the wiring harness to the rear of the tractor. This end will be connected to the winch motor solenoid (Item 30).



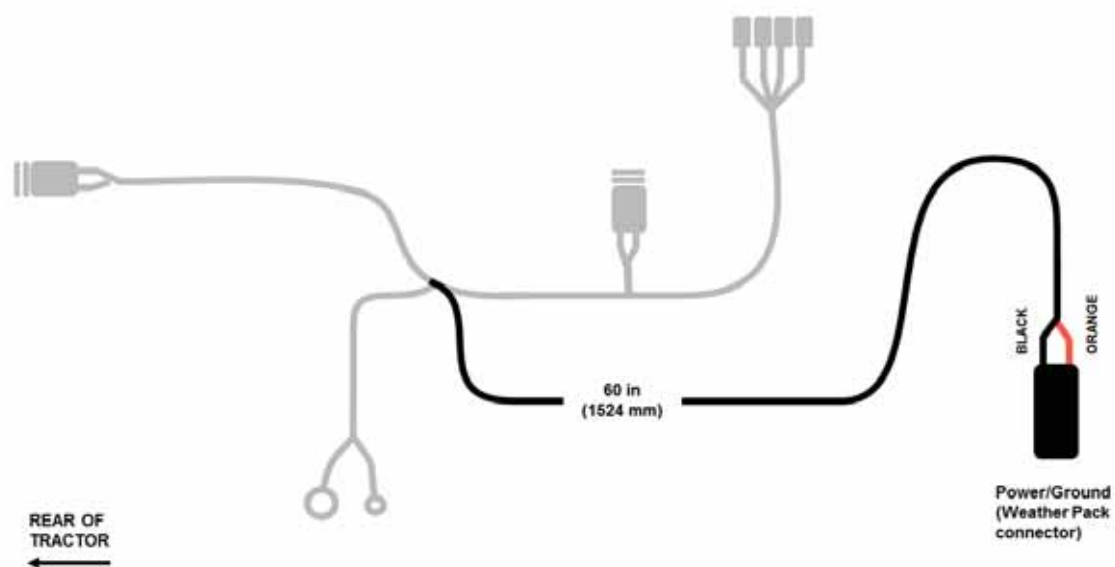
(5) ---TO---

20. Remove two screws to access rear of fuse panel area and carefully pull the fuse panel assembly through the opening to expose the connections behind the panel.



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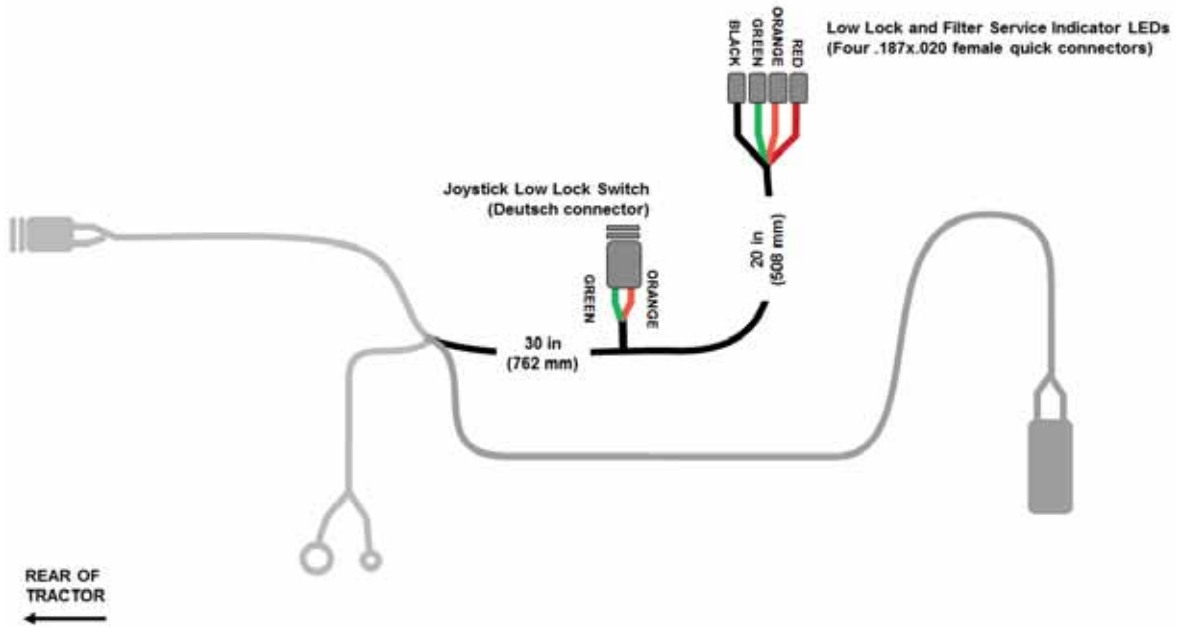
21. Route the power/ground leg along an existing wire harness towards front of tractor and to fuse panel.



22. Remove blank plug from "X29" connector and attach power/ground connector from wiring harness (Item 30)

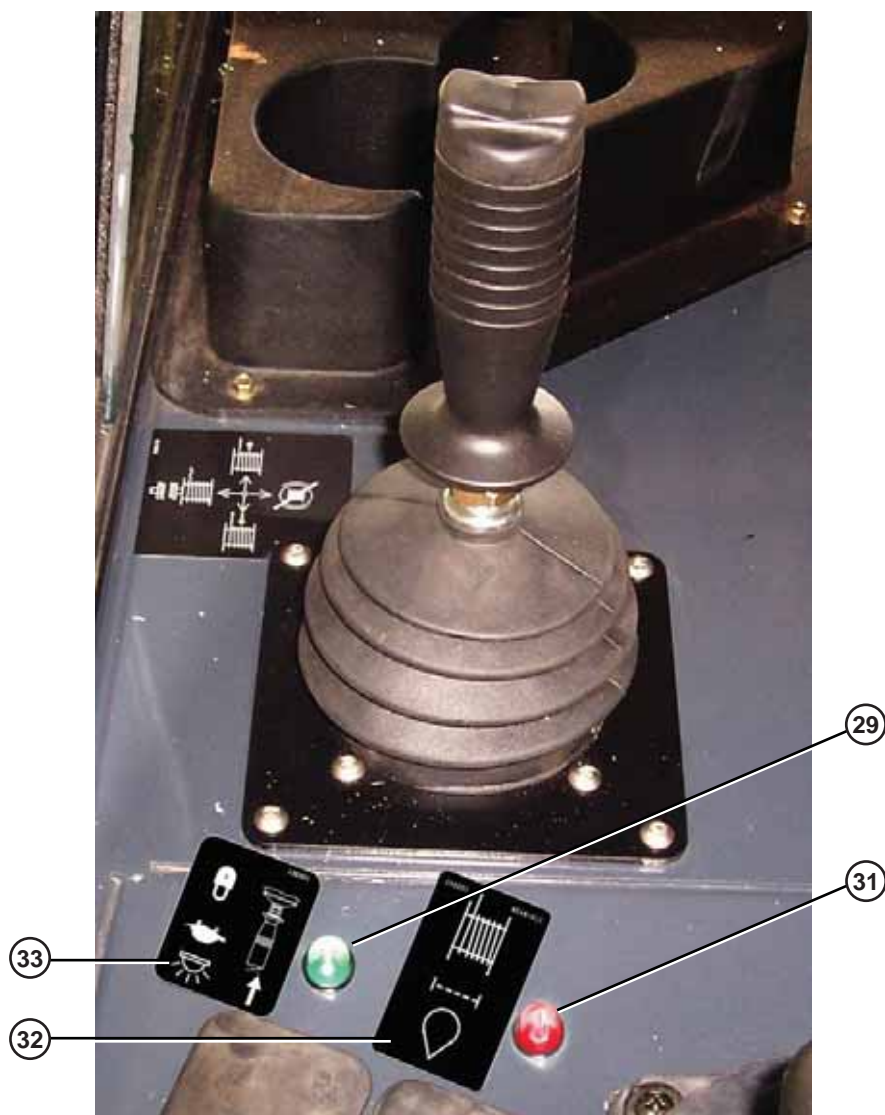


23. Fig U. Route remaining leg behind the tractor filters to winch joystick and indicator bulbs. Use zip ties (Item 34) to secure harness as needed.



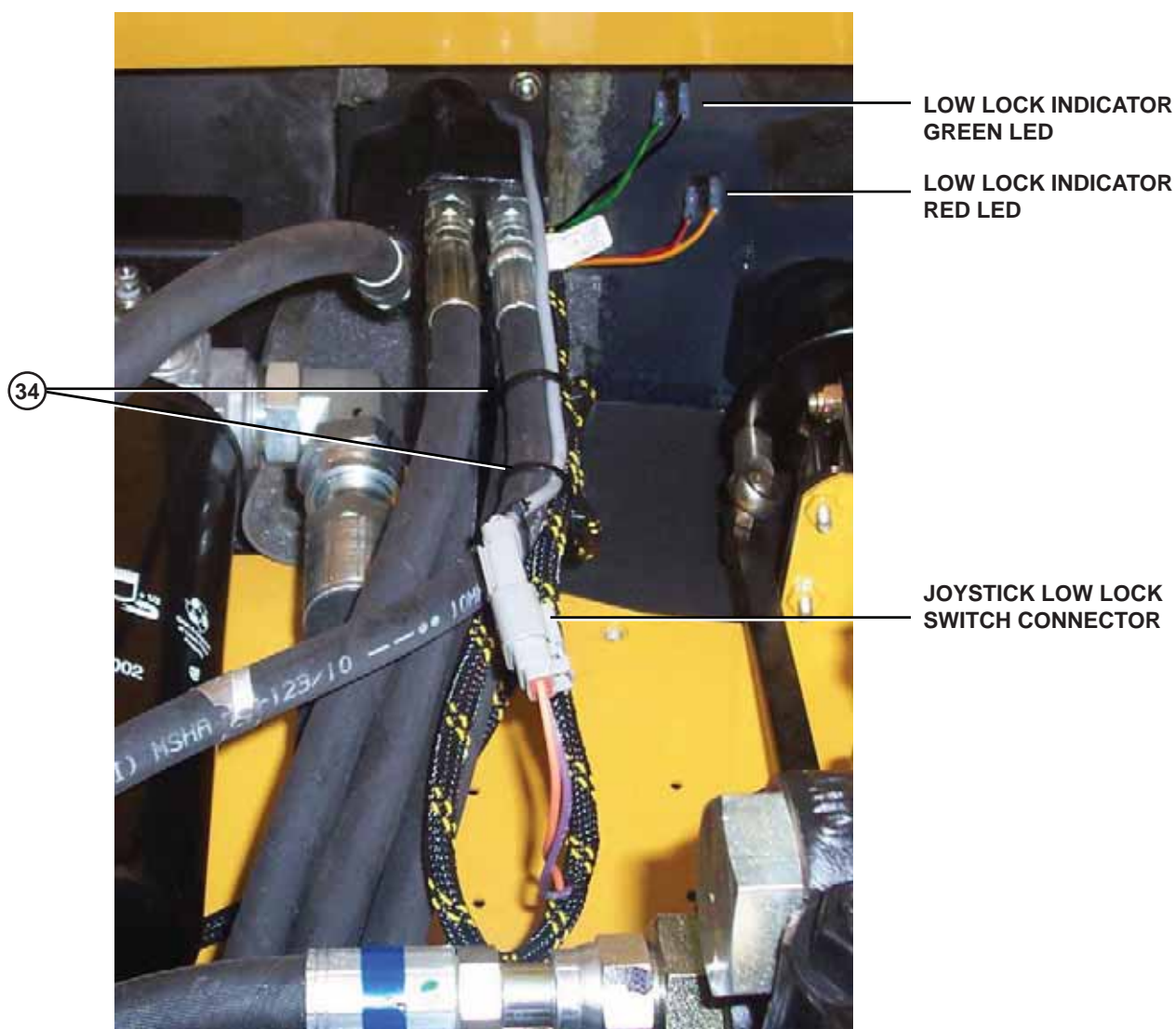
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24. Install low lock (green, Item 29) and filter service (red, Item 31) indicator lights as shown. Apply the low lock decal (item 33) and filter service indicator decal (item 32) where they can be seen by the operator.





25. Connect Black and Green wires to “Green” Low Lock Indicator LED.
26. Connect Red and Orange wires to “Red” Filter Service Indicator LED.
27. Connect the Joystick Low Lock Switch.
28. Zip-tie (Item 34) wire harness as desired.



29. Hydraulic hose routing is shown below.



- TO PUMP BOTTOM PORT (REEL-IN)
- TO PUMP TOP PORT (REEL-OUT)
- TO JOYSTICK PORT 4 (FREE SPOOL)
- TO JOYSTICK PORT 2 (DRIVE AWAY)
- TO SHUTTLE VALVE
- TO PILOT PRESSURE TEE
- TO TOP MOTOR CASE DRAIN PORT

ITEM	DESCRIPTION	PART NUMBER	QTY
1	JOYSTICK SUB-ASSEMBLY	83625	1
000	HANDLE ASSY	100989	1
1A	BOOT, HANDLE	100990	1
1B	LINKAGE KIT	108777	1
2	TEE ORS/ORB BRANCH	101283	2
3	TEE, RUN ORFS SWIVEL NUT	102273	1
4	DECAL, CONTROL	106576	1
5	HOSE ASSY ORFS -6 X 76-IN. (1930 MM)	104507	2
6	CAPSCREW 1/4-20 X 1 NC GD SS BUTTON HEAD	40240	8
7	NUT 1/4-20 UNC GD8 Z HX HD	105012	8
8	WASHER, HARD (1/4 Z)	100857	8
9	HOSE ASSY 21-IN.	40251	2
11	COVER	106245	1
12	ELBOW	40107	2
14	ADAPTER, ORFS/ORB	101222	7
15	HOSE ASSY, -6 ORFS X 50.00	106796	3
16	HOSE ASSY -6 ORFS X 60.00	106440	1
20	REDUCER 16 ORFS / 8 ORFS	106240	1
21	VALVE, SHUTTLE	104867	1
25	HOSE ASSY -6 ORFS STR/-6 X 24-IN. (609 MM) / -8 ORFS 90	106250	1
27	ELBOW 45 DEG	101286	1
28	HOSE ASSY	40104	1
29	LIGHT - LED 24V GREEN BIPOLA	29846	1
30	WIRING HARNESS	108134	1
31	LIGHT - LED 24V RED BIPOLAR	100792	1
32	DECAL, FILTER	102247	1
33	DECAL, LOW SPEED	105327	1
34	16571-0002 STRAP, BLACK	32489	20

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MOUNTING GROUP  
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- 1) Follow general installation and operation instructions and all safety precautions as defined in the tractor and winch service and operator manuals.
- 2) Ensure that all mating surfaces on the winch, winch mounting brackets, winch mounting spacers, rear face of tractor are free of paint or rust, smooth and clean before beginning winch installation.
- 3) Ensure that all threaded holes in the winch mounting brackets and tractor rear face are clean. If necessary, clear the holes out using a properly sized tap.
- 4) Apply Loctite 243 or equivalent to threads of all fasteners during installation.
- 5) Bolt LH and RH adapter plates (items 1 and 2) to rear of tractor using capscrews and washers (items 3 and 4). Torque to 700 lb-ft (950 N-m).

**CAUTION**

The adapter brackets weigh approximately 89 lbs each (40 kg). Use proper lifting equipment and techniques to protect against damage or injury.



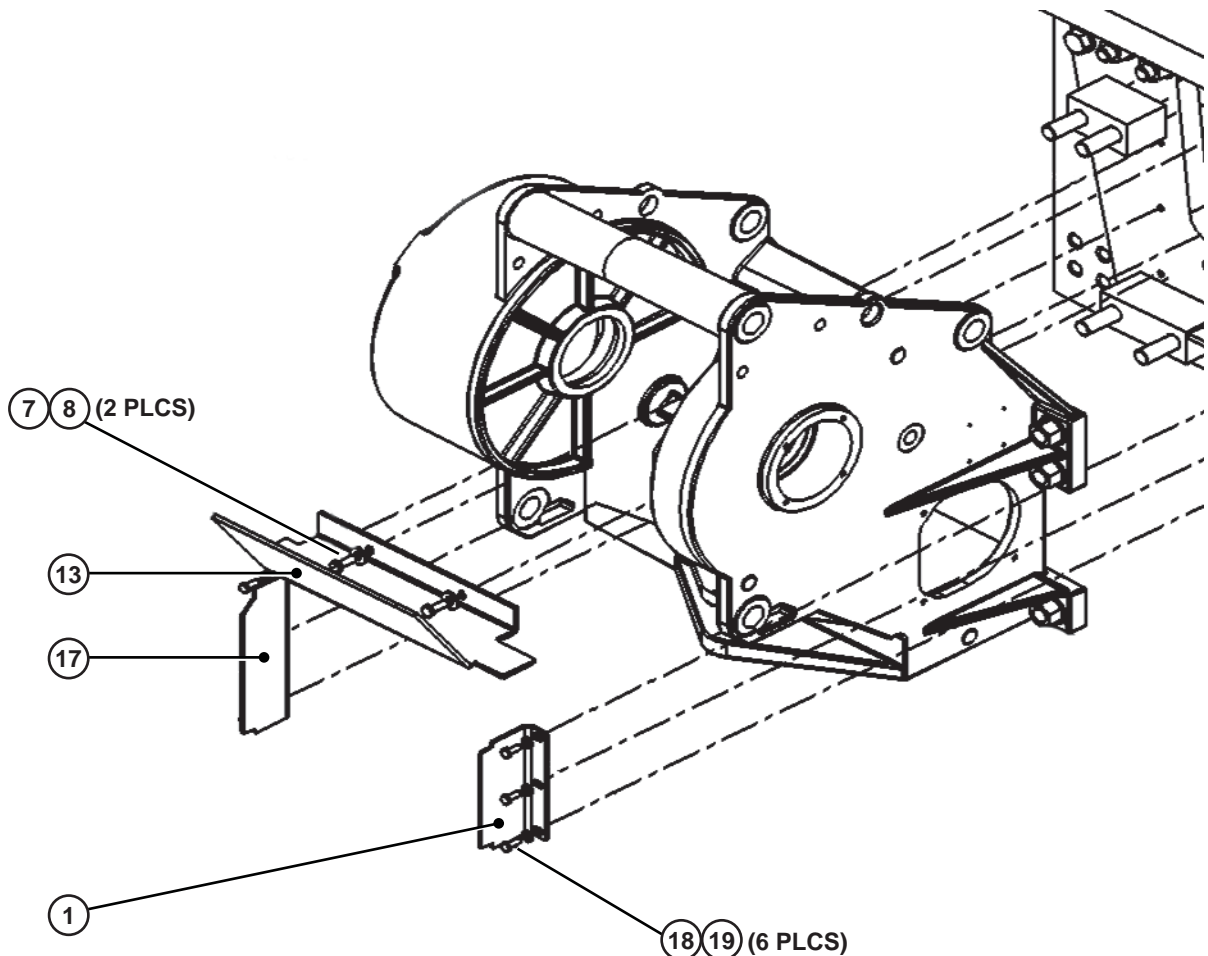
- 6) Before installing Items 5, 6, and 7, it will be necessary to match-drill four (4) 1.06 in. (26.9 mm) DIA mounting holes into the tractor rear mounting plate. (Use the installed adapter plates – Items 1 and 2 – as a template.) Install capscrews, nuts, and washers (items 5, 6, and 7) as shown. Torque to 700 lb-ft (950 N-m).

- 7) Install studs (items 8) into LH and RH adapter plates (items 1 and 2).
- 8) Slide spacers (items 9, 10, 11, and 12) onto the mounting studs.
- 9) Install plate (item 20) between the LH and RH adapters.
- 10) Install winch using hex nuts and washers (items 6 and 7). Secure the winch assembly to the tractor by first installing washers/hex nuts to the top studs to hold in place (do not tighten). Then install remaining washers/hex nuts to lower studs. When winch assembly is properly aligned, tighten all hex nuts to 700 lb-ft (950 N-m).

**⚠ WARNING ⚠**

The winch assembly weighs approximately 1,325 lbs (601kg) without oil, cable, and tractor adapters. Make certain the lifting equipment has adequate capacity. Attempting to lift the winch with inadequate equipment may result in personal injury or damage to the winch or property.

- 11) After hoses have been connected and winch tested for proper function, install guards (Items 13, 16, and 17) using fasteners (Items 14, 15, 18, and 19) as shown.





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**MOUNTING GROUP**  
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ITEM	DESCRIPTION	PART NUMBER	QTY
1	PLATE	105933	1
2	PLATE, ADAPTER, RH	105934	1
3	CAPSCREW HM24-300-70 GD10.9	103684	10
4	WASHER CM24 HARD Z	103685	10
5	CAPSCREW 1-8 X 4-1/2 NC GD8 Z HX HD	69664	4
6	NUT 1-8 NC GD8 Z	104731	12
7	WASHER, HARD (1 Z)	101205	16
8	STUD 100-700 NC GD8 ALL-THD	105939	8
9	SPACER	105935	1
10	SPACER	105936	1
11	SPACER	105937	1
12	SPACER	105938	1
13	GUARD	105940	1
14	CAPSCREW HM12 X 30MM GD10.9 Z	103935	2
15	WASHER, HARD (1/2 Z)	102987	2
16	GUARD	105942	1
17	GUARD	105941	1
18	WASHER, HARD (3/8 Z)	101440	6
19	CAPSCREW 3/8-16 X 7/8 NC GD8 Z HX HD	103749	6
20	PLATE	105943	1

