CARCO®

# INSTALLATION AND PARTS MANUAL

## MODEL H140A

FOR
CATERPILLAR D8T PS TRACTORS
Equipped w/Ripper Hydraulics

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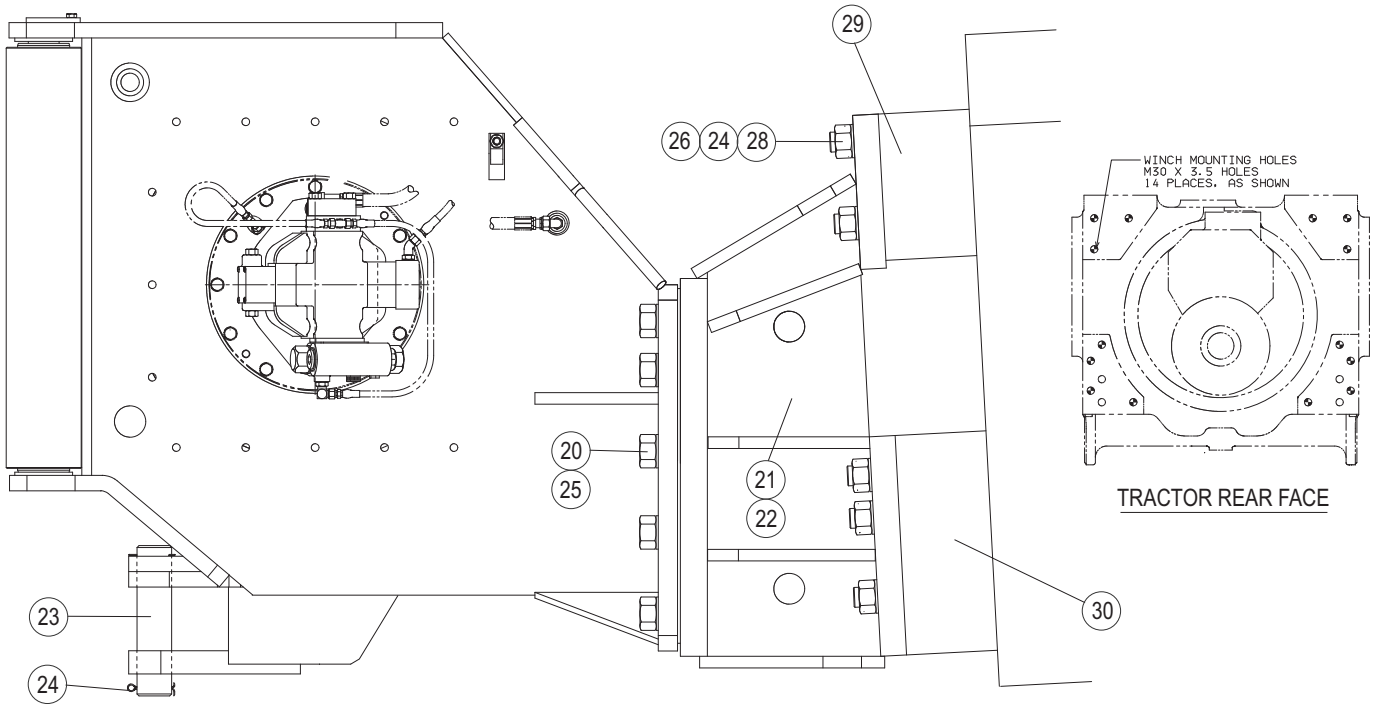
**MODEL H140A**
**MOUNTING GROUP**
**D8T**




| ITEM | PART NO | DESCRIPTION | QTY |
|---|---|---|---|
| 20 | 101872 | CAPSCREW, HEX HD (1 ¼ - 7 X 3 ½, G8, Z) | 10 |
| 21 | 105597 | BRACKET, LH | 1 |
| 22 | 105598 | BRACKET, RH | 1 |
| 23 | 103102 | HITCH PIN | 1 |
| 24 | 70148 | COTTER PIN | 2 |
| 25 | 101206 | WASHER, HARD (1 ¼, Z) | 24 |
| 26 | 107322 | STUD (M30 X 3.5 X 280 mm, G10.9) | 14 |
| 28 | 107321 | NUT, HEX (M30 X 3.5, G10.9, Z) | 14 |
| 29 | 106814 | SPACER | 2 |
| 30 | 106813 | SPACER | 2 |

## INSTALLATION INSRUCTIONS:

**NOTE:** *To reduce installation effort, complete steps 1-15 of the Control Gp installation prior to mounting the winch as per below. Then complete the control installation by completing the remaining steps.*

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. Ensure that the winch mounting instructions below are completed while the threadlocker applied in step 5 (below) is still soft (10 minutes or less).

5. Apply Loctite 243 or equivalent to the threads in the indicated holes on the tractor rear face.

6. Install studs (item 26) into the indicated tractor mounting holes. Ensure the studs are installed full depth, or until they bottom out in the holes.

7. Install spacers (items 29 & 30) onto the mounting studs.

   **NOTE:** *At this point, the mounting spacers will be installed loosely. Take precautions to ensure the spacers do not fall off the studs causing damage or possible injury.*

**⚠CAUTION⚠**

The upper mounting brackets weigh approximately 66 lbs each (30 kg). The lower mounting brackets weigh approximately 113 lbs each (51 kg). Use proper lifting equipment and techniques to protect against damage or injury.

8. Install mounting brackets (items 21 & 22) onto the studs over the spacers. Immediately install two (2) washers and hex nuts (items 27 & 28) to the top studs to hold the brackets in place. DO NOT tighten the hex nuts at this time.

**⚠CAUTION⚠**

The mounting brackets weigh approximately 264 lbs each (120 kg). Use proper lifting equipment and techniques to protect against damage or injury.

9. Secure the brackets to the tractor using the remaining washers and hex nuts (items 27 & 28). Leave the hex nuts “finger tight” at this time.

10. Align the mounting holes in the winch case with the threaded holes in the mounting brackets. It may necessary to adjust the mounting brackets slightly to aid in obtaining the proper alignment.

**⚠ WARNING ⚠**

The winch assembly weighs approximately 4,025 lbs (1,825 kg) 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. Secure the winch to the mounting brackets using bolts and washers (items 20 & 25).

12. Tighten 1-1/4-NC mounting bolts to 1,320 ft-lb (1,800 N-m). Tighten M30 hex nuts to 1,180 ft-lb (1,600 N-m).

13. Install the hitch pin (item 23) into the winch case drawbar and secure using cotter pins (item 24).

**MODEL H140A**
**CONTROL GROUP**
**D8T**

| ITEM | PART NO | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 104372 | MANIFOLD VALVE AS | 1 |
| 2 | 21477 | CAPSCREW, HEX HD ($^{3}/_{8}$-16 X 4 in., GD 8, Z) | 2 |
| 3 | 101440 | WASHER, HARD ($^{3}/_{8}$ in., Z) | 4 |
| 4 | PA6V8801 | HEX NUT ($^{3}/_{8}$-16, GD 8, Z) | 2 |
| 5 | 107347 | BRACKET | 1 |
| 6 | 104691 | CAPSCREW, METRIC HEX HD (M12 X 1.75 X 25 mm, GD 10.9, Z) | 2 |
| 7 | 103935 | CAPSCREW, METRIC HEX HD (M12 X 1.75 X 30 mm, GD 10.9, Z) | 2 |
| 8 | 100859 | WASHER, HARD ($^{1}/_{2}$ in., Z) | 2 |
| 9 | 107351 | WIRING HARNESS | 1 |
| 10 | 70117 | PLUG | 1 |
| 11 | 100946 | ADAPTER | 1 |
| 12 | 107558 | HOSE AS, -6 ORFS X 42 in. (1,067 mm) | 1 |
| 13 | 101222 | ADAPTER | 2 |
| 14 | 101438 | ELBOW, 45° | 1 |
| 15 | 101437 | HOSE AS, -8 ORFS X 40 in. (1016 mm) | 1 |
| 16 | 107335 | TEE | 1 |
| 17 | 101433 | ELBOW, 45° | 1 |
| 18 | 101831 | HOSE AS, -4 ORFS X 26 in. (660 mm) | 1 |
| 19 | 32489 | TIE STRAP | 7 |
| 20 | 101286 | ELBOW, 45° | 1 |
| 21 | 100945 | ELBOW, 90° | 1 |
| 22 | 40251 | HOSE AS, -6 ORFS X 21 in. (533 mm) | 1 |
| 23 | 101830 | HOSE AS, -8 ORFS X 29 in. (737 mm) | 1 |
| 24 | 101298 | ELBOW, 90° | 1 |
| 25 | 40115 | ADAPTER | 1 |
| 26 | 107332 | HOSE AS, -16 X 30 in. (762 mm) | 1 |
| 27 | 100623 | SPLIT FLANGE KIT (-16 CODE 62) | 1 |
| 28 | 104319 | CAPSCREW, HEX HD ($^{7}/_{16}$-14 X $2^{3}/_{4}$ in., GD 8, Z) | 4 |
| 29 | 107333 | HOSE AS, -16 X 29.5 in. (749 mm) | 1 |
| 30 | 102199 | O-RING | 2 |
| 31 | 26676 | ADAPTER | 1 |
| 32 | 103998 | PLUG | 2 |
| 33 | 100208 | RECEPTACLE | 2 |
| 34 | 100241 | CONNECTOR PLUG | 8 |
| 35 | 106156 | MOUNTING PLATE | 1 |
| 36 | 106153 | HARNESS ASSY | 1 |
| 37 | 106154 | JOYSTICK | 1 |
| 38 | 106155 | CAPSCREW, METRIC BTN HD (M8 X 1.25 X 20 mm, GD10.9) | 8 |
| 39 | 100858 | WASHER, HARD ($^{5}/_{16}$ in., Z) | 4 |
| 40 | 104993 | HEX NUT, METRIC (M8 X 1.25, GD 10.9, Z) | 4 |
| 41 | 106157 | DECAL, WINCH CONTROL | 1 |
| 42 | 106158 | SWITCH ASSY | 1 |
| 43 | 106159 | SWITCH GUARD | 1 |

## GENERAL NOTES:

1. Tractor must be equipped with CATERPILLAR ripper control system.
2. Follow all safety procedures per the tractor and winch maintenance and service manuals.
3. Refer to page 4 for material list.
4. The winch may be installed to the tractor prior to beginning the installation of the winch control components. To reduce installation effort, it is recommended to complete steps 1-15 of the Control Gp installation instructions prior to mounting the winch to the tractor then finalize the control installation by completing the remaining steps.
5. Secure the hoses and wiring harness with the tie straps (item 19, not shown) as required.

## INSTALLATION INSTRUCTONS:

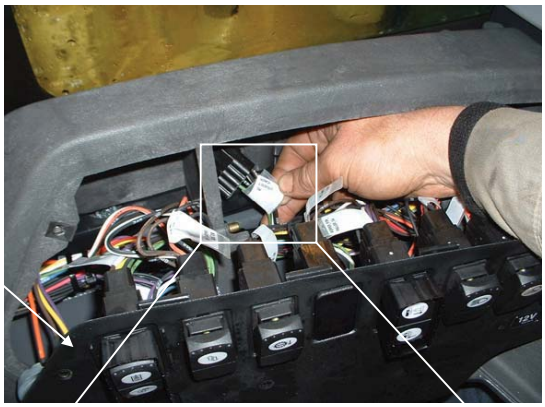
1. Connect the wiring harness (item 36) to the joystick (item 37) as shown.

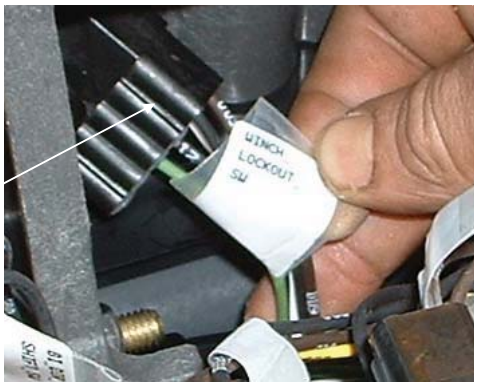
   **NOTE:** *The wiring harness connectors are "gated" to permit assembly only in the correct positions.*


2. Attach the mounting plate (item 35) to the joystick using the capscrews (item 38). Ensure the joystick is oriented properly in the mounting plate, as shown.
3. Affix the winch control decal (item 41) to the mounting plate located and oriented as shown.

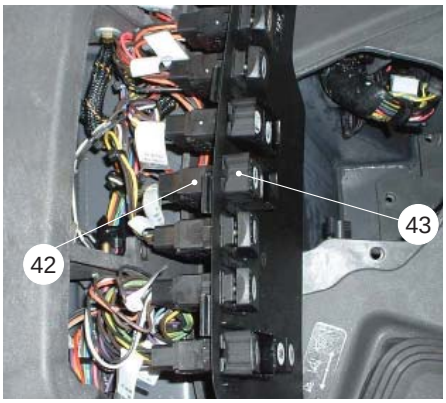

4. Remove the existing ripper control handle assembly, mounting plate and wiring harness from the tractor operator console.

5. Remove the console switch panel mounting screws and pull the switch panel away from the console. Locate the connector labeled "WINCH LOCKOUT SW" on the main control wiring harness.

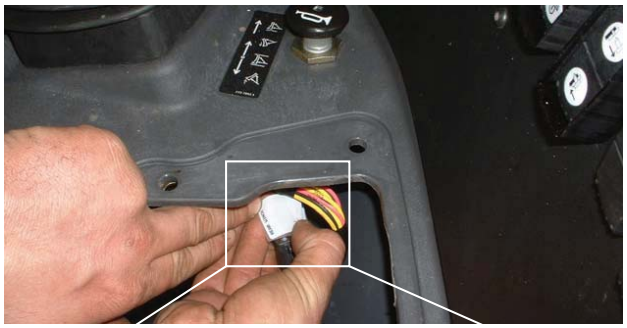




6. Install the winch disable switch (item 42) and the switch guard (item 43) into the switch panel. Connect the “WINCH LOCKOUT SW” connector to the newly installed switch. Re-install the switch panel into the console.




7. Locate the “REAR WINCH” connector on the tractor control wiring harness below the operator’s console.




8. Attach the loose connector on the winch joystick harness to the “REAR WINCH” connector on the tractor control harness.

9. Install the joystick assembly into the console using the capscrews, washers and nuts (items 38, 39 & 40), as needed.


**NOTE:** *The capscrews and washers shown in this view are NOT the standard production items. Washers and nuts provided in the Control Gp installation kit install* ***below*** *the console top plate, as needed.*

10. Remove the operator seat and floor plates from the tractor cab.


11. Route the hose assembly (item 15) from the hydraulic tank return manifold to the rear of the tractor under the RH side of the fuel tank.

    **NOTE:** *Make sure the plastic plug in the outboard end of the hose remains in place and is inserted tightly. If not tight, oil will leak through the hose until the hose is connected at both ends.*

12. Remove the existing plug from the tank return manifold port. Install the elbow (item 14) and hose assembly (item 15) as shown.

    **NOTE:** *It is highly recommended to draw a vacuum on the tractor hydraulic reservoir* ***BEFORE*** *opening this connection to reduce excessive fluid loss from the reservoir, which will occur even if the reservoir has been drained.*

13. Re-install the floor plates and operator’s seat into the cab.

14. Install the port plug (item 10) into the “T” port of the manifold valve (item 1), as shown below. Install the manifold valve assembly (item 1) to the bracket (item 5) using the capscrews, nuts and washers (items 2, 3 & 4). Tighten fasteners to 35 lb-ft (47 N-m).

**NOTE:** *If tractor is equipped with ripper pin puller option, mount the manifold valve at the end of the bracket as shown in Fig. A. If the tractor is NOT equipped with the pin puller option, then install the manifold valve toward the center of the bracket, as shown in Fig. B.*

**NOTE:** *If necessary, loosen the coil nuts on the solenoids and rotate the solenoids as required to provide adequate clearance for the manifold valve mounting fasteners. Re-tighten the coil nuts to 54 lb-in (6 N-m)* ***maximum****.*

**DO NOT** over-tighten the coil nuts.

> **⚠CAUTION⚠**
> If the coil nuts are over-tightened, damage to the valve cartridge(s) will occur.

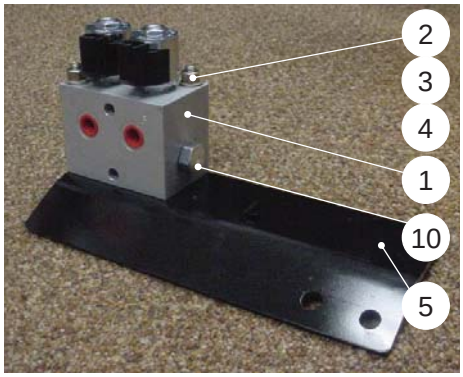



Fig. A


Fig. B

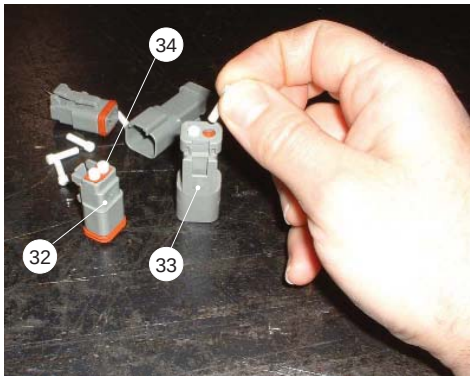
15. Attach the manifold valve / bracket assembly to the mounting pad at the bottom of the tractor fuel tank using the washers (item 8) and the bolts, as noted below.


- For tractors **equipped** with the pin puller option: Remove and discard the existing bolts attaching the pin puller bracket to the mounting pad. Slip the manifold valve / bracket assembly between the pin puller bracket and mounting pad and re-attach both brackets (as shown) using the “long” bolts (item 7).

- For tractors **not equipped** with the pin puller option: Install the manifold valve / bracket assembly directly to the mounting pad using the “short” bolts (item 6).

16. Remove the cover from the stack valve compartment at the rear of the tractor.

17. Install the pin plugs (item 34) into the supplied electrical connectors (items 32 & 33).

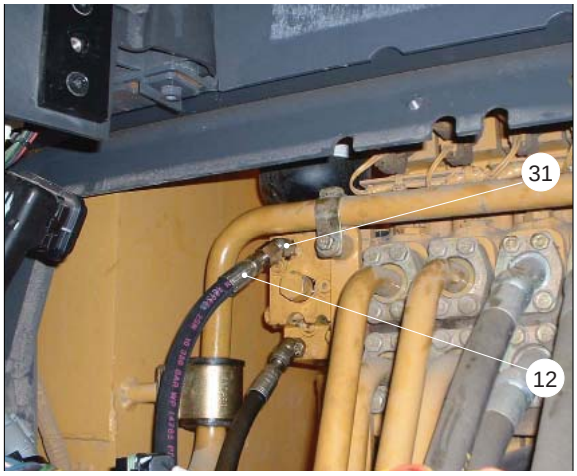



18. Disconnect the existing electrical connection from both the front and rear of the “Ripper Tilt” stack valve section. Install the new “blind plugs”, made in the previous step, to the separated ends of the front and rear connectors, as shown.

19. Discharge the pressure accumulator as defined in the tractor service manual.

20. Remove the port plug from the pilot pressure supply port on the forward side of the stack valve assembly. Install the adapter (item 31) into the port and attach the hose assembly (item 12) to the fitting using the 45° end of the hose. Route the hose downward, under the fuel tank out toward the rear of the machine. Reinstall the valve compartment cover to the tractor.

    **NOTE:** *Make certain the plastic plug in the opposite end of the hose assembly remains tightly installed. If the hose is open or the plug is installed loosely, hydraulic oil will leak through the hose until the hose is connected to the winch.*




**Access shown in this view may be obtained by removing the access panel behind the operator's seat, although this step is not required. Adequate access to the side and rear of the stack valve assembly is available through the rear access cover, as previously defined.**

21. Install the hoses between winch and ripper valve, as shown.


22. Attach hose (item 26) to the Reel-In port on the brake valve using adapter (item 25). Attach the opposite end to the bottom stack valve port, using the existing Cat flange halves and fasteners. Use a new O-ring (item 30) in the hose end.

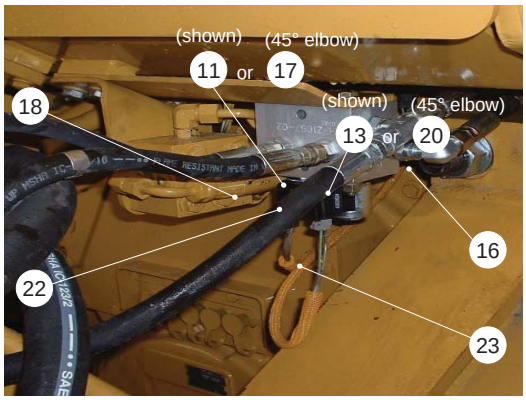
23. Attach hose (item 29) to the Reel-Out port (top of the motor), using split flange kit (item 28). Discard the fasteners supplied in the split flange kit and secure the flange halves to the motor with longer bolts supplied (item 28). Attach the opposite end of the hose to the stack valve port just above the winch Reel-In hose assembly, using the existing Cat flange halves and fasteners. Use a new O-ring (item 30) in the hose end.

24. Install the elbow (item 24) to the tee fitting connected to the motor case drain port. Install the motor case drain hose assembly (item 23) to the elbow.


25. Install the motor Low-Lock hose assembly (item 18) to the elbow in the motor "X" port.

26. Install the drum clutch hose assembly (item 22) to the elbow in the side of the winch case.

27. Install the tee fitting (item 16) into the "T" port of the manifold valve (item 1), as shown below.




28. Install either the reducer fitting (item 11) or elbow (item 17) into the "B" port on the face of the manifold valve, as desired for best hose routing.

29. Install either the adapter (item 13) or the elbow (item 20) into the "A" port of the manifold valve, as desired for best hose routing.

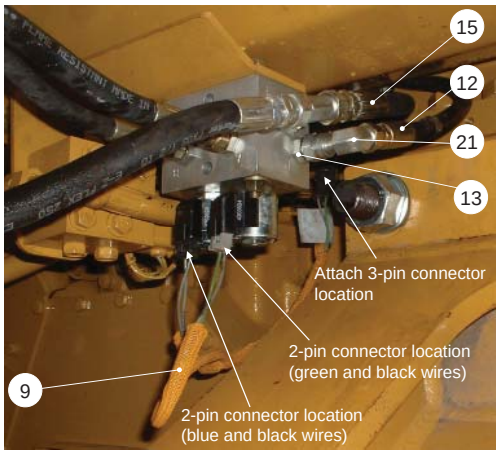
30. Attach the small control hoses from the winch as follows:

    A) Attach the Low Lock shift hose (item 18) to port "B".

    B) Attach the Drum Clutch hose (item 22) to port "A".

    C) Attach the motor case drain hose (item 23) to the tee at port "T".

31. Install the adapter (item 13) into the “P” port of the manifold valve (item 1). Attach the elbow (item 21) to the adapter, as shown.




32. Attach the tank return hose (item 15 – previously installed to the tank return manifold) to the forward end of the tee in the “T” port.

33. Attach the pilot hose (item 12 – previously installed to the pilot port of the stack valve) to the elbow in the “P” port.

34. Ensure hoses are routed to reduce hose scuffing and connections are tight.

35. Attach the wiring harness (item 9) to the tractor as defined below:

    A) Attach the 3-pin connector to the tractor harness connection labeled “WINCH” (located forward of the manifold valve below the fuel tank).

    B) Attach the 2-pin connector with green and black wires to the Drum Clutch solenoid connector at port “A”.

    C) Attach the 2-pin connector with blue and black wires to the Low Lock shift solenoid connector at port “B”.

36. Verify all hose connections are tight **BEFORE** starting the tractor engine. Repair any leaks or damaged components or fittings immediately.

37. Ensure all tractor covers or previously removed parts are properly reinstalled.

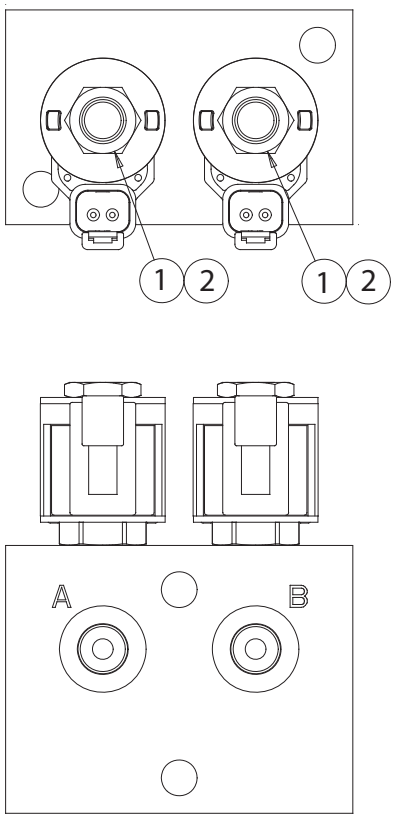
38. Check the tractor hydraulic tank to ensure proper oil level. Refill as required.

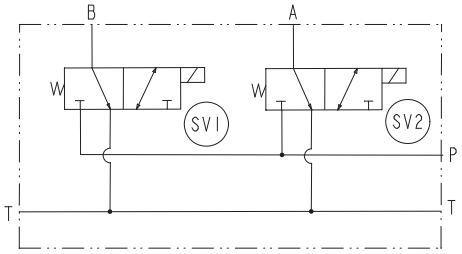
39. Check the winch gear oil level **BEFORE** operating the winch. Fill as required with the proper gear oil.

**⚠ CAUTION ⚠**

Fill the winch to the proper level with the recommended oil **BEFORE** operating. Component damage may occur if the winch is operated without oil.

**MODEL H140A**
**DUAL SOLENOID MANIFOLD VALVE**
**D8T**




| ITEM | PART NO | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 106518 | 3-WAY DIRECTIONAL VALVE | 2 |
| | 29821 | SEAL KIT (FOR ITEM 1) | 1 |
| 2 | 106378 | SOLENOID COIL - 24VDC | 2 |

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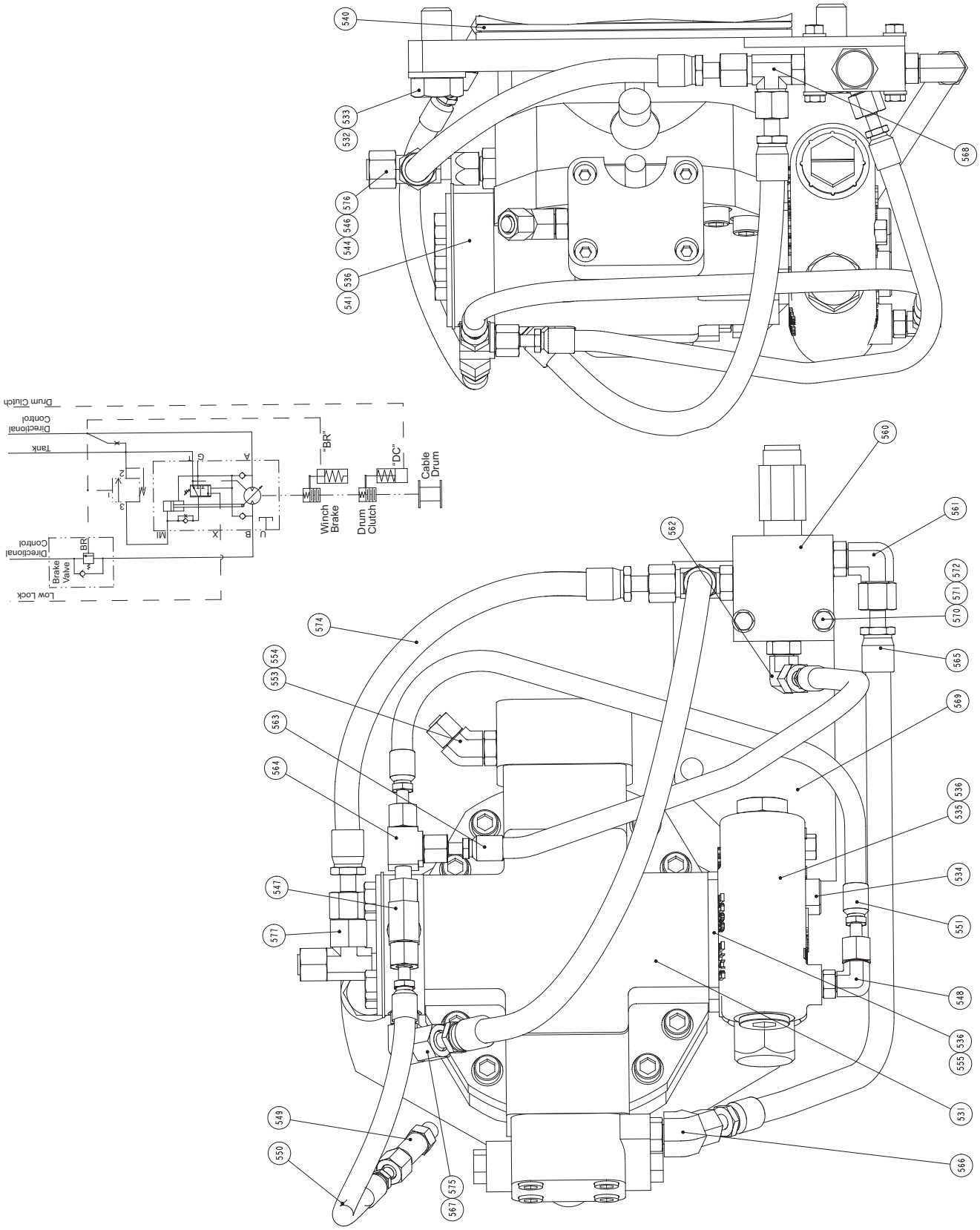
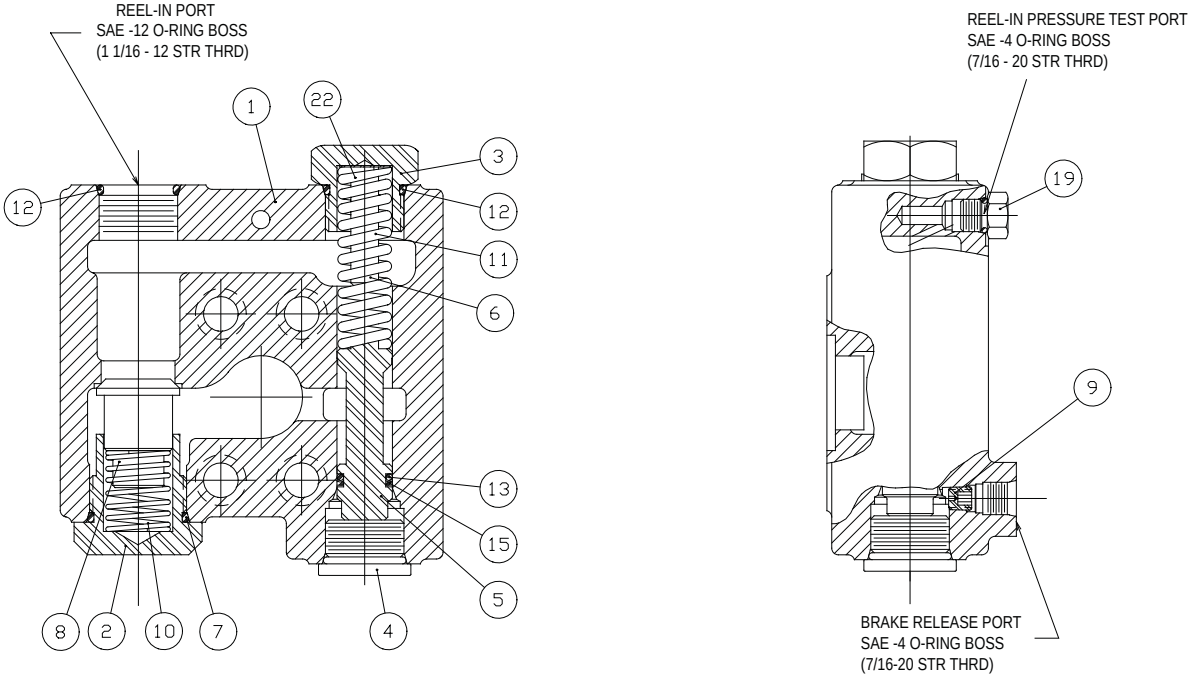
**MODEL H140A**
**MOTOR GROUP**
**D8T**



| ITEM | PART NO | DESCRIPTION | QTY |
|---|---|---|---|
| 531 | 101323 | HYD MOTOR (3.34 CU IN, 3100 PSI) | 1 |
| 532 | 104328 | CAPSCREW, HEX HD ($^{3}/_{4}$ - 10 X 1-$^{3}/_{4}$, G8, Z) | 2 |
| 533 | 100856 | WASHER, HARD ($^{3}/_{4}$, Z) | 2 |
| 534 | 21134 | CAPSCREW, HEX SKT HD ($^{7}/_{16}$ - 14 X 3 in., G8 Z) | 4 |
| 535 | 83206 | BRAKE VALVE ASSY (REFER TO PAGE 14) | 1 |
| 536 | 25366 | O-RING | 3 |
| 540 | 22358 | O-RING | 1 |
| 541 | 100820 | ADAPTER BLOCK | 1 |
| 544 | 101267 | ADAPTER, METRIC | 1 |
| 546 | 101274 | CAP | 1 |
| 547 | 101268 | TEE | 1 |
| 548 | 27430 | ELBOW, 90° | 1 |
| 549 | 101275 | ADAPTER | 1 |
| 550 | 101919 | HOSE ASSY, -4 ORFS X 14 in. (356 mm) | 1 |
| 551 | 101271 | HOSE ASSY, -4 ORFS X 20 in. (508 mm) | 1 |
| 553 | 101433 | ELBOW, 45° | 1 |
| 554 | 101273 | CAP | 1 |
| 555 | 40064 | SPACER | 1 |
| 560 | 105330 | VALVE | 1 |
| | 105413 | CARTRIDGE SEAL KIT (FOR ITEM 105330) | 1 |
| 561 | 40107 | ELBOW, 90° | 1 |
| 562 | 26680 | ELBOW, 90° | 1 |
| 563 | 101270 | HOSE ASSY, -4 ORFS X 17 in. (432 mm) | 1 |
| 564 | 104204 | TEE | 1 |
| 565 | 104203 | HOSE ASSY, -6 ORFS X 18.5 in. (470 mm) | 1 |
| 566 | 101286 | ELBOW, 45° | 1 |
| 567 | 40251 | HOSE ASSY, -6 ORFS X 21 in. (533 mm) | 1 |
| 568 | 102949 | TEE | 1 |
| 569 | 104207 | BRACKET | 1 |
| 570 | 21461 | CAPSCREW, HEX HD ($^{1}/_{4}$ - 20 X 1-$^{3}/_{4}$, G8, Z) | 2 |
| 571 | 69645 | NUT, HEX ($^{1}/_{4}$ - 20, Z) | 2 |
| 572 | 100857 | WASHER, HARD ($^{1}/_{4\ in.}$) | 4 |
| 574 | 101435 | HOSE ASSY, -6 ORFS X 16 in. (406 mm) | 1 |
| 575 | 100947 | ELBOW, 90° | 1 |
| 576 | 105293 | TEE | 1 |
| 577 | 107345 | REDUCER | 1 |

**MODEL H140A**
**BRAKE VALVE ASSEMBLY**
**D8T**




| ITEM | PART NO | DESCRIPTION | QTY |
|---|---|---|---|
| - | 83206 | BRAKE VALVE AS. | 1 |
| 1 | NSS | BRAKE VALVE HOUSING | 1 |
| 2 | 24424 | VALVE SPRING RETAINER | 1 |
| 3 | 104734 | SPRING RETAINER | 1 |
| 4 | 22450 | PLUG | 1 |
| 5 | NSS | SPOOL | 1 |
| 6 | NSS | SPOOL STOP | 1 |
| 7 | 24186 | O-RING | 1 |
| 8 | NSS | CHECK VALVE POPPET | 1 |
| 9 | 24200 | PILOT ORIFICE | 1 |
| 10 | 24190 | CHECK VALVE SPRING | 1 |
| 11 | 104732 | SPRING, MAIN SPOOL | 1 |
| 12 | 23601 | O-RING | 2 |
| 13 | 24193 | O-RING | 1 |
| 15 | 24195 | BACK-UP RING | 1 |
| 19 | 25663 | PLUG | 1 |
| 22 | NSS | SHIM, SPOOL SPRING | AR |

NSS - NOT SERVICED SEPARATELY
AR - AS REQUIRED UP TO 3