

MODEL: HMMWV FOV with 10,500-lb Hydraulic Winch

SUBJECT: Hydraulic Winch Troubleshooting Procedures

DEFICIENCY: Current technical manuals do not identify troubleshooting procedures.

COMMENTS: This digest article identifies procedures to isolate possible problems with winch-related components. These procedures can be used in the field and should be used in the interim until technical publications can be updated accordingly.

PROCEDURE:

A. Vehicle Operator

NOTE

The vehicle power steering pump is used to power the winch. The engine must be running while operating the winch. However, if the engine will not run, the winch cable may be payed out by moving the levers to FREESPOOL wheel position.

1. Perform before-operations checks and services. (Refer to TM 9-2320-280-10 or TM 9-2320-387-10.)
2. Ensure vehicle is at normal operating temperature. Check power steering fluid level. If not within operating range, fill as necessary. (Refer to TM 9-2320-280-10 or TM 9-2320-387-10.)
3. If any fluid leak is found at any hydraulic winch hose connection or line, notify unit maintenance.
4. If air bubbles are in power steering pump or reservoir, notify unit maintenance.
5. Remove winch controller from storage area and attach to controller plug in cab. (Refer to TM 9-2320-280-10 or TM 9-2320-387-10.)
6. Move winch control levers to FREESPOOL position and move winch drum in and out by hand. If winch drum does not turn by hand, notify unit maintenance.
7. If winch drum does turn by hand in FREESPOOL position, move winch control levers to LOCK LOW gear position.
8. Press OUT button on winch controller. If winch does not pay out, check controller plug connection. Ensure controller plug connector is fully seated and locked.
9. Check electrical plugs at winch circuit breaker, located next to windshield washer fluid reservoir. Ensure plugs are fully seated.

10. Check electrical plugs at winch solenoid coils. Ensure plugs are fully seated. (On M998/M998A1/M998A2/M1113 models, solenoid coils are located on winch hydraulic motor. On M1114 models, solenoid coils are located at valve body located under hood.)

WARNING

Wear leather gloves when handling winch cable. Do not handle cable with bare hands. When fully extending winch cable, ensure that four wraps of winch cable remain on drum at all times. Direct all personnel to stand clear of winch cable during winch operation. Failure to do this may cause damage to vehicle and injury or death to personnel.

11. Attempt to pay out winch cable. If there is no movement from winch cable or drum, notify unit maintenance.
- B. Unit Maintenance (Figures 1 through 3 and 5 through 7 depict components and flow of hydraulic fluid in different model vehicle applications.)
1. Check all hydraulic lines from winch and winch control valves. No line should be finger-tight. Tighten any loose hydraulic connections. Fill and bleed power steering system as necessary. (Refer to TM 9-2320-280-20 or TM 9-2320-387-24.)

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2. Ensure winch cable is not binding with tiebars on winch housing. If winch cable is binding, shut down vehicle and carefully remove tiebars from winch housing. Move winch control levers to FREESPOOL and attempt to pay out winch cable by hand. (Refer to TM 9-2320-280-10 or TM 9-2320-387-10.)
3. Check for battery voltage at controller plug in cab, pin B. If battery voltage is present, connect winch controller.
4. Disconnect solenoid coil wires. If battery voltage is present without pressing winch controller IN or OUT buttons, replace winch circuit breaker. (Refer to TM 9-2320-280-20 or TM 9-2320-387-24.) Connect solenoid coil wires and attempt to operate winch.
5. While depressing either the IN or OUT button on controller, check for battery voltage at wires going to solenoid coils. If battery voltage is present, ensure electrical connections are tight and fully seated and attempt winch operations.

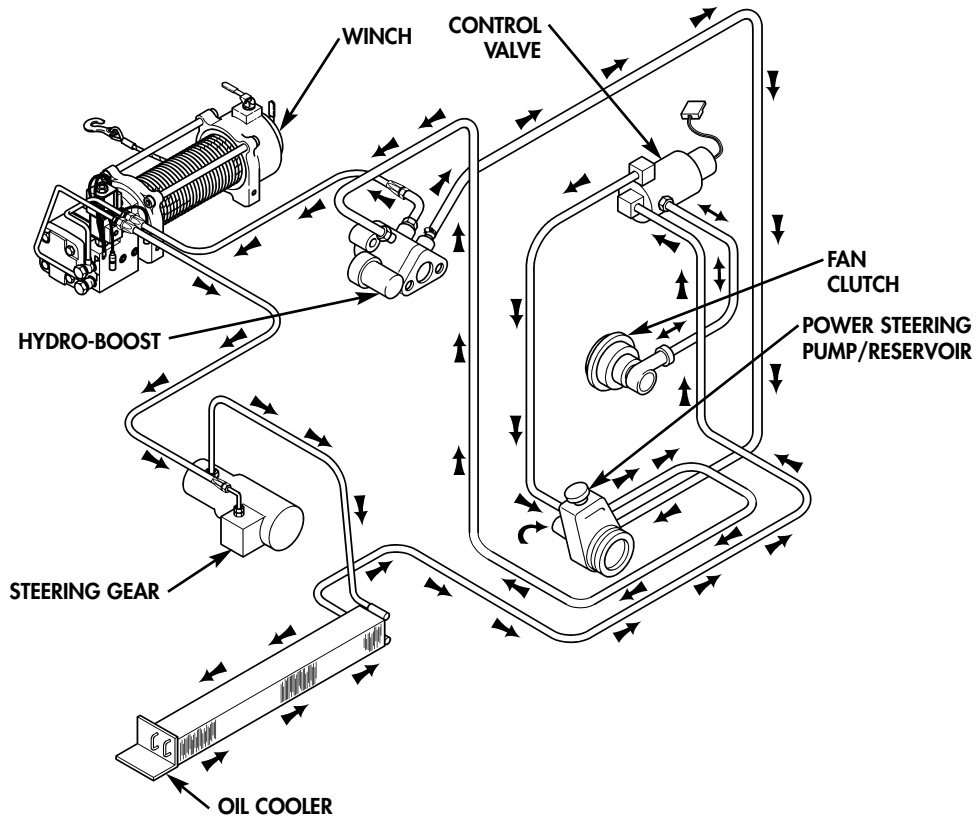
6. If winch still does not operate, replace winch controller. (Refer to TM 9-2320-280-20 or TM 9-2320-387-24.)
7. If winch still does not operate, replace solenoid coils. (Refer to TM 9-2320-280-20 or TM 9-2320-387-24.)
8. If winch drum moves opposite of button pressed, switch electrical leads to solenoid coils.
9. If winch drum moves out slowly or does not hold a load, check position of restrictor valve (2) in valve body (1) as shown in figure 4. If restrictor valve is not positioned correctly, winch power drops by 50%. If restrictor is not installed, winch drum will not hold a load. (Refer to TM 9-2320-280-20 or TM 9-2320-387-24.)
10. If winch operation is still sluggish, check hydraulic fluid pressure going into winch. The line connected to port P on the valve body is high pressure. Minimum fluid pressure is 1255 psi. If this pressure is not present, troubleshoot power steering system to isolate cause of low pressure. (Refer to TM 9-2320-280-20 or TM 9-2320-387-24.)
11. If winch drum does not move by hand while in FREESPOOL position, notify DS maintenance.

C. Direct Support Maintenance

1. If winch control levers do not move or winch drum does not move in FREESPOOL position, remove gearbox housing and check for broken items. Replace as needed. (Refer to TM 9-2320-280-34 or TM 9-2320-387-24.)
2. If gearbox is in working order, remove hydraulic motor from winch assembly. If winch drum rotates freely, replace hydraulic motor. (Refer to TM 9-2320-280-34 or TM 9-2320-387-24.)
3. If winch drum still does not turn freely, replace drum assembly. (Refer to TM 9-2320-280-34 or TM 9-2320-387-24.)

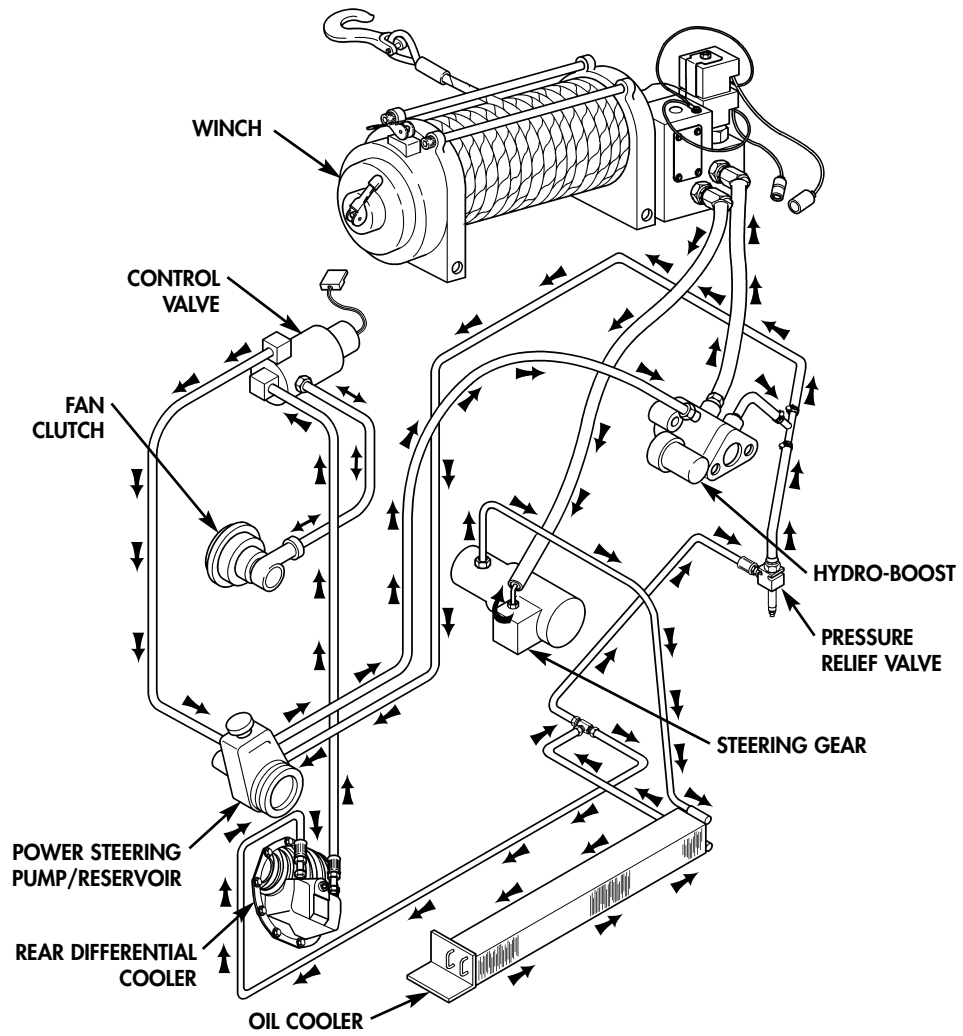
PUBLICATIONS AFFECTED: TM 9-2320-280-20
TM 9-2320-280-34
TM 9-2320-387-24

LEVEL OF MAINTENANCE: Unit
Direct Support



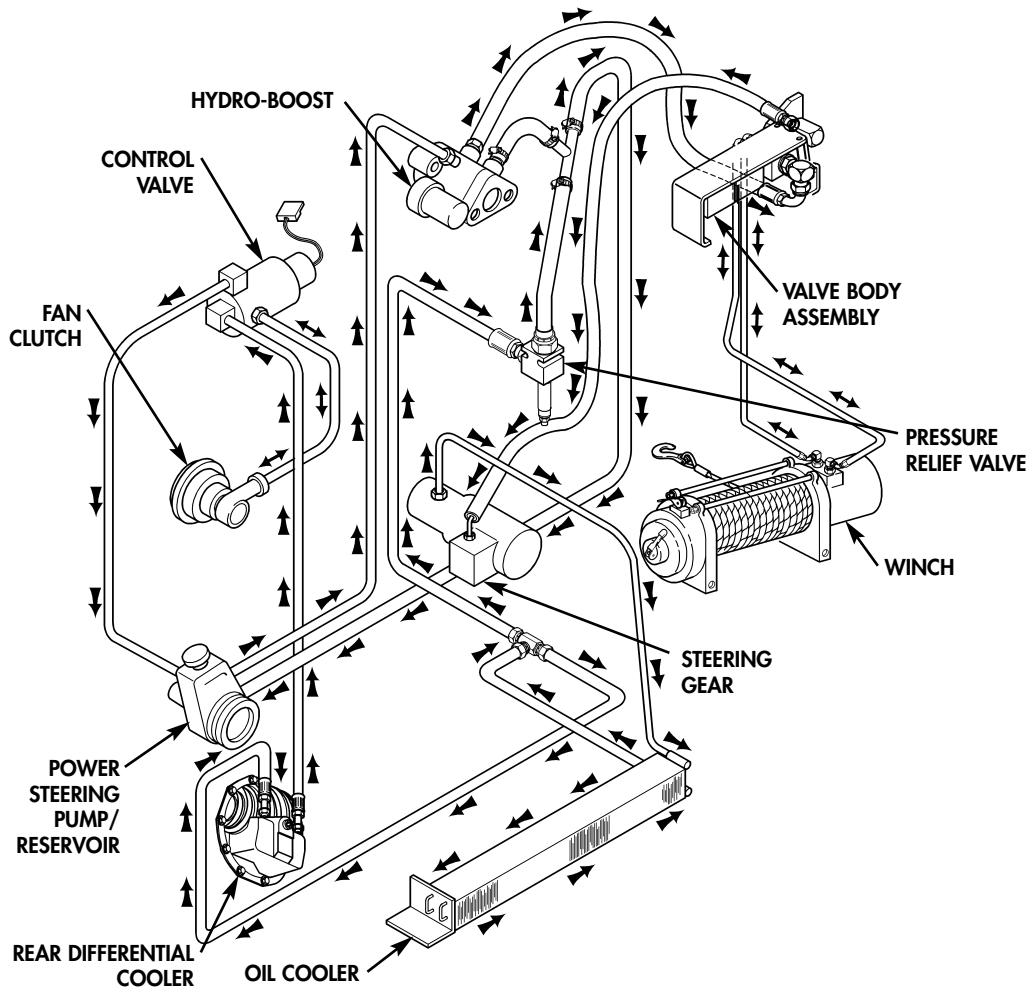
BASIC/A1/A2 FLUID FLOW

Figure 1



M1113 FLUID FLOW

Figure 2



M1114 FLUID FLOW

Figure 3

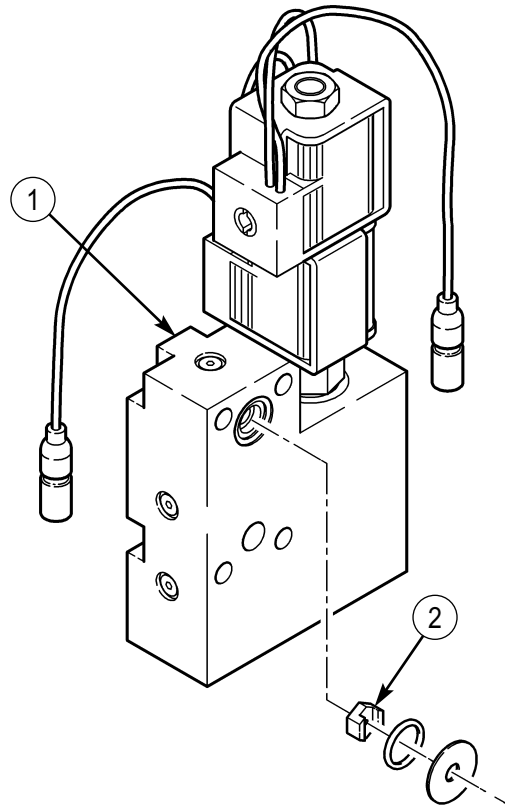
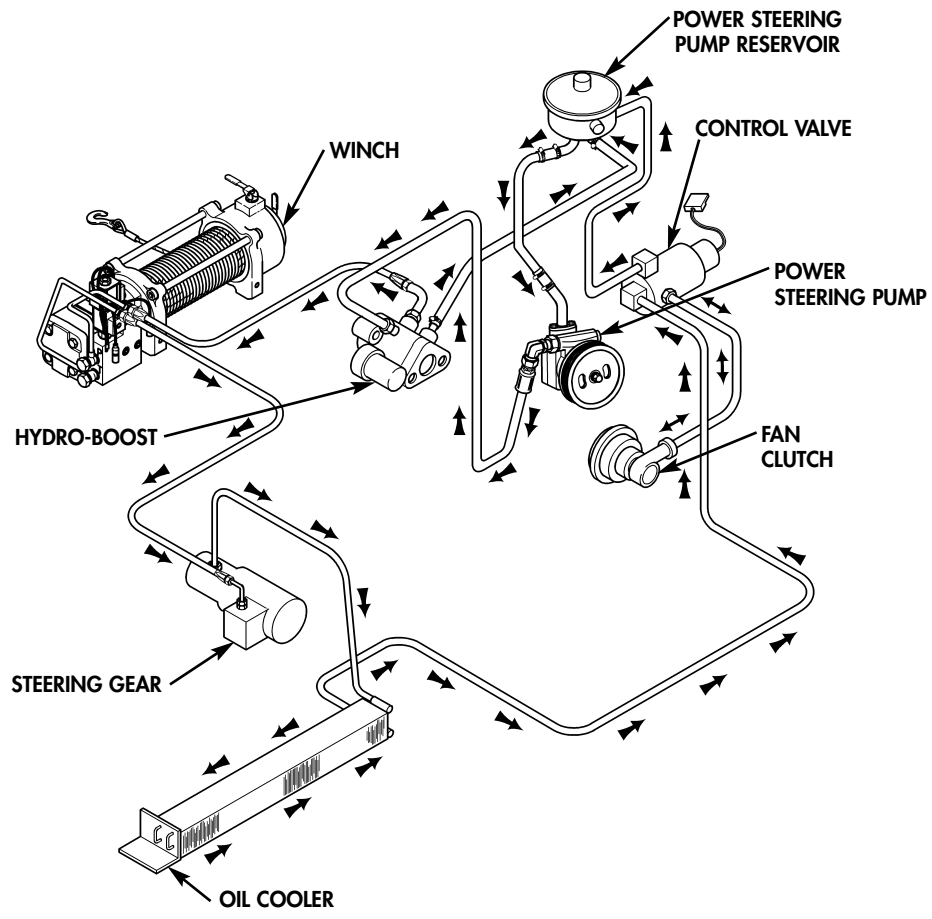
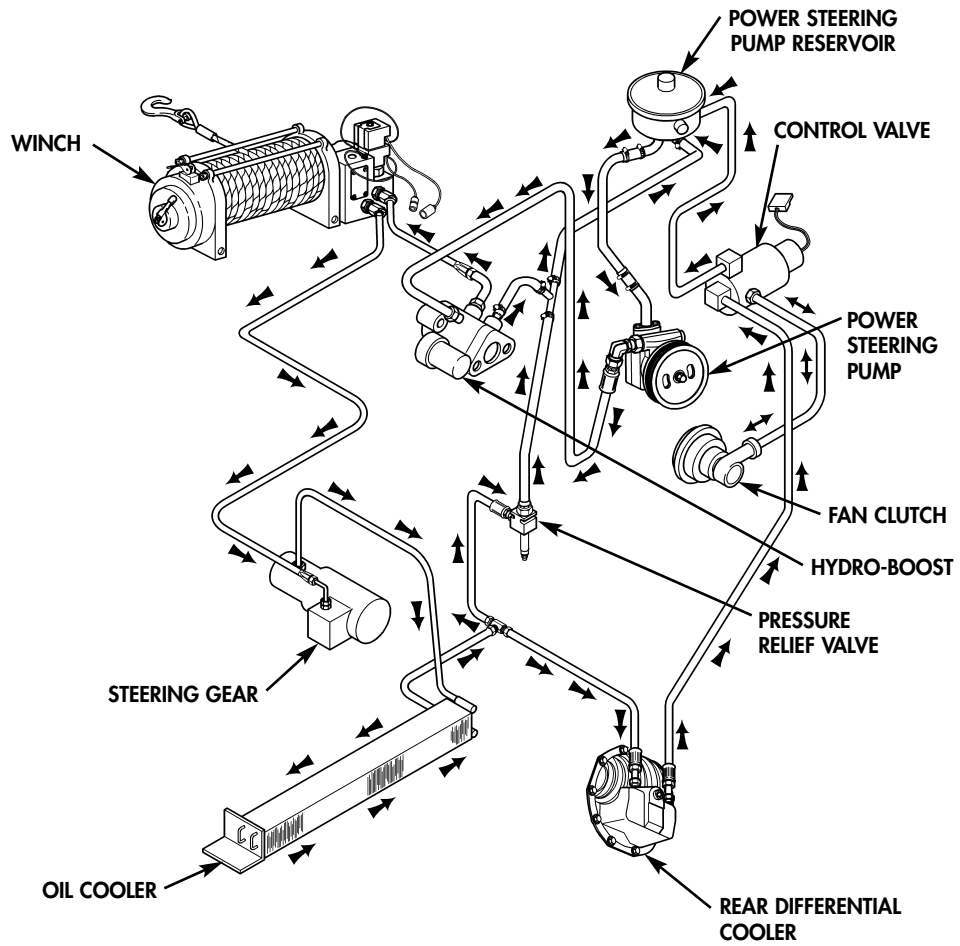


Figure 4



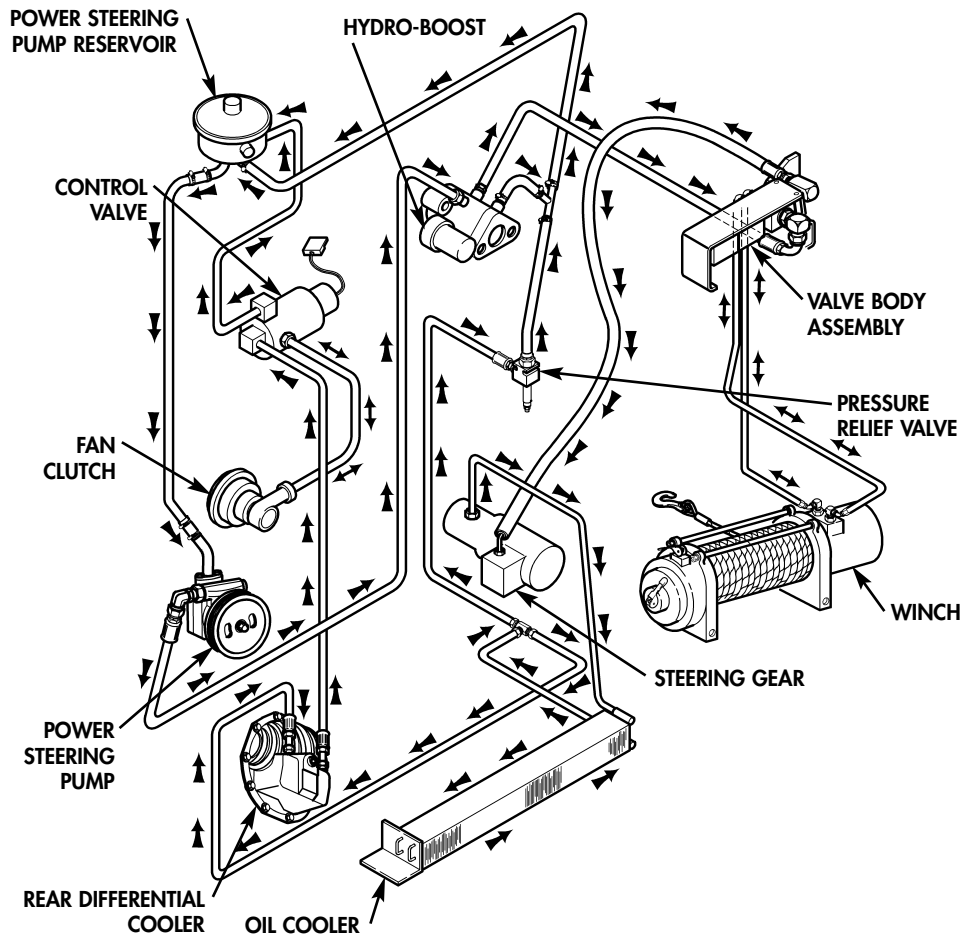
M998A2 SERIES FLUID FLOW WITH ENHANCED ENGINE (LITENS)

Figure 5



M1113 FLUID FLOW WITH ENHANCED ENGINE (LITENS)

Figure 6



M1114 FLUID FLOW WITH ENHANCED ENGINE (LITENS)

Figure 7