

MODEL: HMMWV FOV with 10,500 Lb Hydraulic Winch

SUBJECT: Disassembly, Cleaning, Inspection, and Assembly Procedures

COMMENTS: Repair of the 10,500 lb hydraulic winch can be accomplished in the field by using these instructions. The following data is provided for interim field use until publications can be updated to cover these procedures.

MATERIALS/PARTS:

NSN	NOMENCLATURE	QTY
8030-00-148-9833	Adhesive	A/R
9150-00-935-1017	Grease, Automotive, Artillery	A/R
9150-01-353-4799	Fluid, Hydraulic	A/R

PROCEDURE:

NOTE

Winch must be removed prior to disassembly.
(Refer to TM 9-2320-280-20 or TM 9-2320-387-24.)

A. Disassembly.

NOTE

Winch cable assembly and drum mounting is identical for all models.

1. Place winch control selector levers in FREESPOOL position as shown in figure 1.
2. Pull out winch cable (2) to end and remove cable clamp bolt (3) and winch cable (2) from drum (1) as shown in figure 1.

NOTE

The basic model winch is applicable to M998, M998A1, and M998A2 model vehicles. Perform steps 3 and 4 for basic winch only.

3. Remove upper banjo tube bolt (12), two washers (10), and inlet port banjo tube (13) from valve body (4) as shown in figure 2. Discard washers (10).
4. Remove lower banjo tube bolt (9), two washers (10), and outlet port banjo tube (11) from valve body (4) as shown in figure 2. Discard washers (10).

NOTE

- Valve/solenoid/coil assembly and hydraulic motors differ between model applications.
- Perform step 5 for M1113 winch only. Perform step 6 for M1114 winch only.

5. Remove two fittings (2) from valve/solenoid/coil assembly (1) as shown in figure 3.
6. Remove two fittings (3) hydraulic motor (4) as shown in figure 3.

NOTE

- Hydraulic motor and valve body orientation differs between models but disassembly is the same.
 - Perform steps 7 through 9 for basic and M1113 winch only.
 - M1114 valve body location is under hood. Disassembly of solenoid valve and solenoid coils are the same.
7. Remove four bolts (5) and valve body (4) from hydraulic motor (1) as shown in figure 2.
 8. Remove two O-rings (3) from ports (2) on hydraulic motor (1) as shown in figure 2. Discard O-rings (3).
 9. Remove restrictor (8), restrictor washer (7), and O-ring (6) from valve body (4) as shown in figure 2. Discard O-ring (6).
 10. Remove jamnut (15) from solenoid valve (14) and two solenoid coils (16) from valve body (4) as shown in figure 2.
 11. Scribe a line (2) on hydraulic motor (6) and motor end support assembly (3) as shown in figure 4.
 12. Remove two bolts (1), hydraulic motor (6), and O-ring (4) from motor end support assembly (3) as shown in figure 4. Discard O-ring (4).
 13. Remove four bolts (1) and two tie bars (2) from motor end support assembly (3) and gearbox housing assembly (4) as shown in figure 5.
 14. Remove motor end support (6), drum bushing (5), and O-ring (4) from drum (7) as shown in figure 6.
 15. Remove gearbox housing (12) and O-ring (8) from drum (7) as shown in figure 6. Discard O-ring (8).
 16. Remove driveshaft (2), driveshaft thrust washer (1), and driveshaft O-ring (3) from drum (7) as shown in figure 6. Discard O-ring (3).
 17. Remove drum drive bushing (9), ring gear (10), and ring gear thrust washer (11) from gearbox housing (12) as shown in figure 6.

CAUTION

When disassembling high and low range levers, apply pressure to compress springs. Failure to do so may cause injury.

18. Depress driveshaft plunger (8) and remove roll pin (3), high range lever (7), lever washer (5), and O-ring (6) from driveshaft plunger (8) as shown in figure 7. Discard O-ring (6).
19. Remove driveshaft plunger (8) and driveshaft plunger spring (9) from gearbox housing (2) as shown in figure 7.
20. Depress low range lever plunger (10) and remove roll pin (3), low range lever (4), lever washer (5), and O-ring (6) from lever plunger (10) as shown in figure 7. Discard O-ring (6).
21. Remove low range lever plunger (10) and low range lever spring (1) from gearbox housing (2) as shown in figure 7.

22. Depress shift plate (7) and remove three snaprings (8), shift plate (7), and three springs (6) from drum (4) as shown in figure 8.
23. Remove three snaprings (1), planetary washers (2), and planetary gears (3) from planetary gearshafts (5) as shown in figure 8.

B. Cleaning.

CAUTION

Do not allow solvents to come in contact with seals, cables, or flexible hoses. These cleaners cause leather, rubber, and synthetic materials to dry out, rot, and lose pliability, making them unserviceable.

1. Nonmetallic parts. Clean nonmetallic parts with soap and water.
2. Bearings. Refer to TM 9-214 for information and care of bearings.

C. Inspection.

Inspect all parts and mating surfaces for damage or wear. Replace if damaged or worn.

D. Assembly.

1. Apply GAA grease to drum and planetary gear components (1) as shown in figure 9.
2. Install three planetary gears (2), washers (8), and snaprings (7) on planetary gearshafts (3) as shown in figure 9.
3. Install three planetary gear springs (4) with smaller diameter of spring towards planetary gears (2) on planetary gearshafts (3) as shown in figure 9.
4. Install shift plate (5) on planetary gearshafts (3) and apply pressure to shift plate (5) and install three snaprings (6) as shown in figure 9.
5. Apply hydraulic fluid to two new O-rings (6) and install in gearbox housing (2) as shown in figure 10.
6. Apply GAA grease to shaft (9) and needle bearings (11) of driveshaft plunger (10) and shaft (13) of low range lever plunger (12) as shown in figure 10.
7. Install driveshaft plunger spring (8), driveshaft plunger (10), and lever washer (5) in position. Depress driveshaft plunger (10) and install high range lever (7) with roll pin (3) as shown in figure 10.
8. Install low range lever spring (1), low range lever plunger (12), and lever washer (5) in position. Depress low range lever plunger (12) and install low range lever (4) with roll pin (3) as shown in figure 10.
9. Place high selector lever and low selector lever in freespool position as shown in figure 1.
10. Apply GAA grease to components (2) as shown in figure 11.
11. Install ring gear thrust washer (6), ring gear (5) (with wider machined edge of ring gear towards drum), and drum drive bushing (4) in gearbox housing (1) as shown in figure 11.

12. Apply hydraulic fluid to new O-ring (3) and install in gearbox housing (1) as shown in figure 11.
13. Apply hydraulic fluid to new O-ring (2) and install in motor end support (3) as shown in figure 12.

NOTE

Placement of hydraulic motor and gearbox housing on drum assembly differs between basic and M1113/M1114.

14. Stand drum (1) on end with planetary gear end (7) down. Apply GAA grease to drum bushing (4). Align tab (8) on drum (1) with slot on bushing (4) and slowly lower motor end support (3) onto drum (1), taking care not to damage O-ring (2), as shown in figure 12.
15. Stand drum (1) on end with motor end support (6) down. Slowly lower gearbox assembly (5) onto end of drum (1), taking care not to damage O-ring, as shown in figure 12.
16. Apply adhesive to threads of four bolts (1). Install two tie bars (2) on motor end support (3) and gearbox housing (4) with four bolts (1) as shown in figure 5. Tighten bolts (1) to 18 lb-ft.
17. Apply GAA grease to driveshaft and components at locations marked (1) as shown in figure 13.
18. Apply hydraulic fluid to new O-ring (6) and install into end of driveshaft (2) as shown in figure 13.
19. Install driveshaft thrust washer (5) onto driveshaft (2) and slide driveshaft (2) into drum (3) until splines (4) engage planetary gears as shown in figure 13.

NOTE

Hydraulic motor orientation differs between models but mounting to motor end support assembly is the same.

20. Apply hydraulic fluid to new O-ring (4) and GAA grease to splines (5) of hydraulic motor (6). Install O-ring (4) and motor (6) onto motor end support (3), aligning scribe marks (2) as shown in figure 4.
21. Apply adhesive to threads of two bolts (1) and install on motor (6) and end support (3) as shown in figure 4. Tighten bolts (1) to 45 lb-ft.

NOTE

Perform step 22 for M1114 winch only.

22. Install two fittings (3) on hydraulic motor (4) as shown in figure 3.

NOTE

Perform steps 23 and 24 for basic and M1113 winches only.

23. Apply hydraulic fluid to two new O-rings (3) and install in inlet and outlet ports (2) of motor (1) as shown in figure 2.

NOTE

- Do not allow restrictor valve assembly to separate from valve and solenoid assembly during installation. Damage to equipment may result.
 - Valve body size is different for M1113 but assembly is same as M998, M998A1, and M998A2 models. M1114 valve body location is under hood but assembly is the same.
24. Install restrictor (5), new O-ring (4), and restrictor washer (3) in port (6) of valve body (1). Use a rubber band (2) to temporarily secure restrictor (5) in position until installed as shown in figure 14.
 25. Apply adhesive to four screws (5) and secure valve body (4) loosely to hydraulic motor (1) with screws (5). Remove rubber band being careful not to allow restrictor to fall out of position in valve body as shown in figure 2. Tighten screws (5) to 18 lb-ft.
 26. Install solenoid coils (16) on solenoid valve (14) and secure with jamnut (15) as shown in figure 2. Tighten jamnut (15) to 36 lb-in.

NOTE

Perform step 27 for M1113 winch only.

27. Install two fittings (2) on valve body (1) as shown in figure 3.

NOTE

- Perform steps 28 and 29 form M998/A1/A2 winches only.
 - Banjo bolts will be tightened to 33-40 lb-ft when reinstalled on vehicle.
28. Secure banjo tube (13) to port P on valve body (4) with two new washers (10) and banjo tube bolt (12) as shown in figure 2. Do not tighten.
 29. Secure banjo tube (11) to port T on valve body (4) with two new washers (10) and banjo tube bolt (9) as shown in figure 2. Do not tighten.
 30. Install winch cable and clamp (2) onto winch drum (1) and with cable clamp bolt (3) as shown in figure 1.
 31. Wrap winch cable onto drum. (Refer to TM 9-2320-280-10 or TM 9-2320-387-10.)

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

LEVEL OF MAINTENANCE: Direct Support

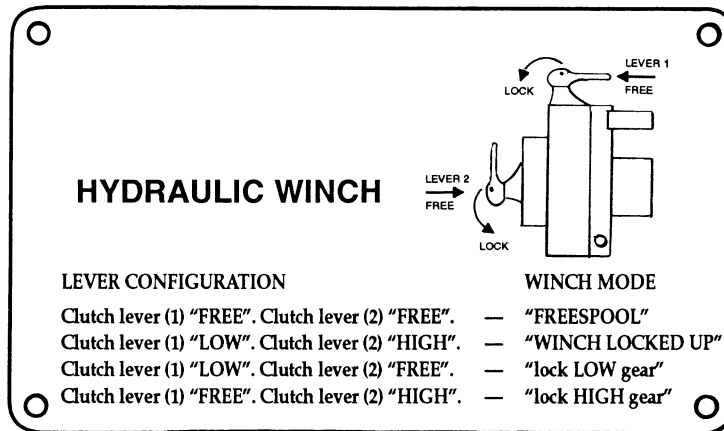
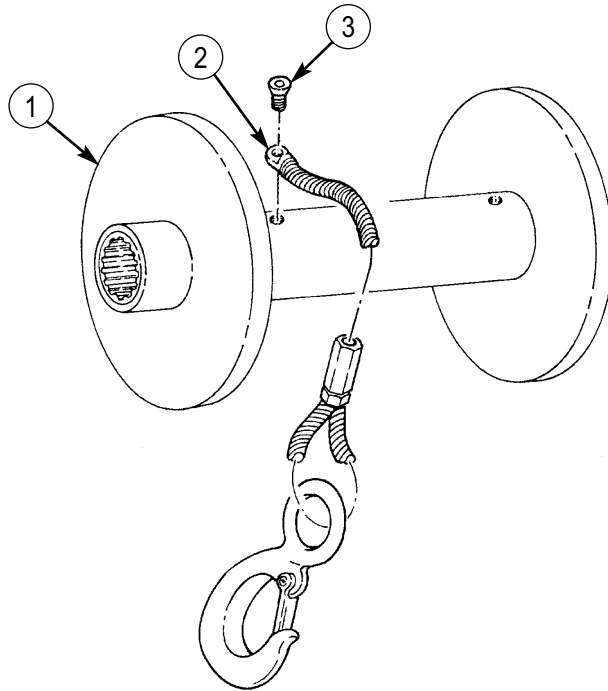


Figure 1

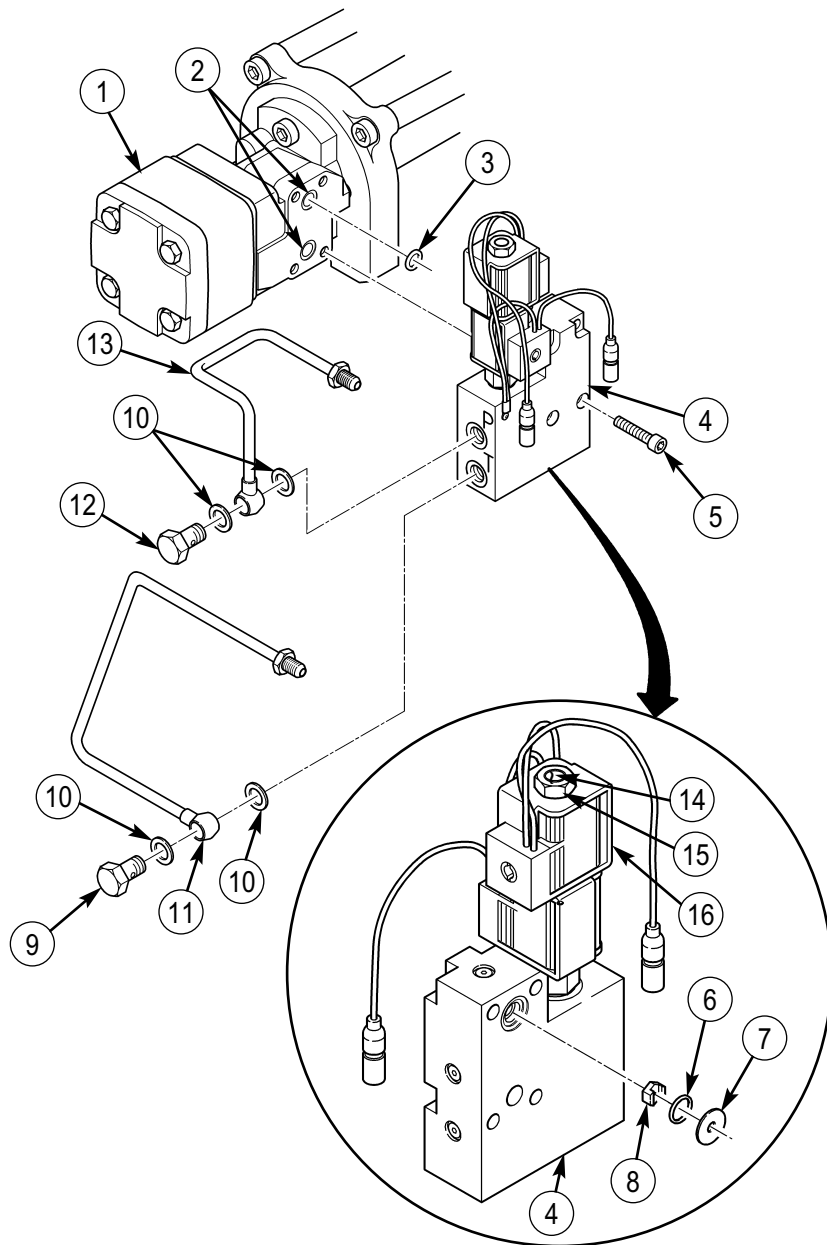


Figure 2

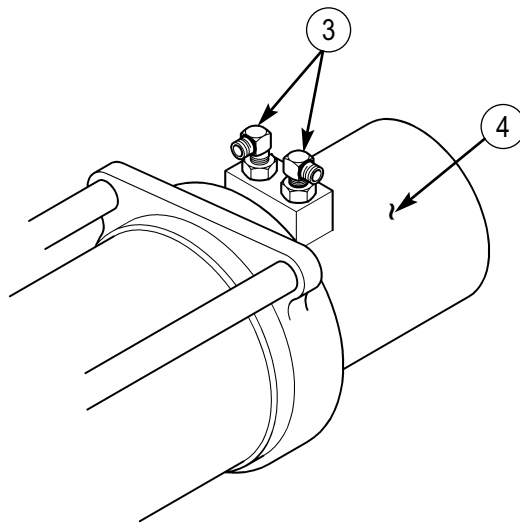
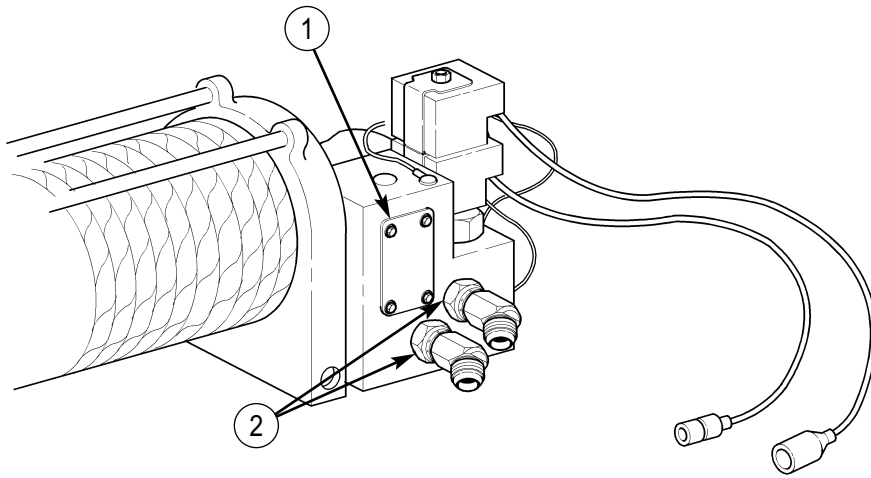


Figure 3

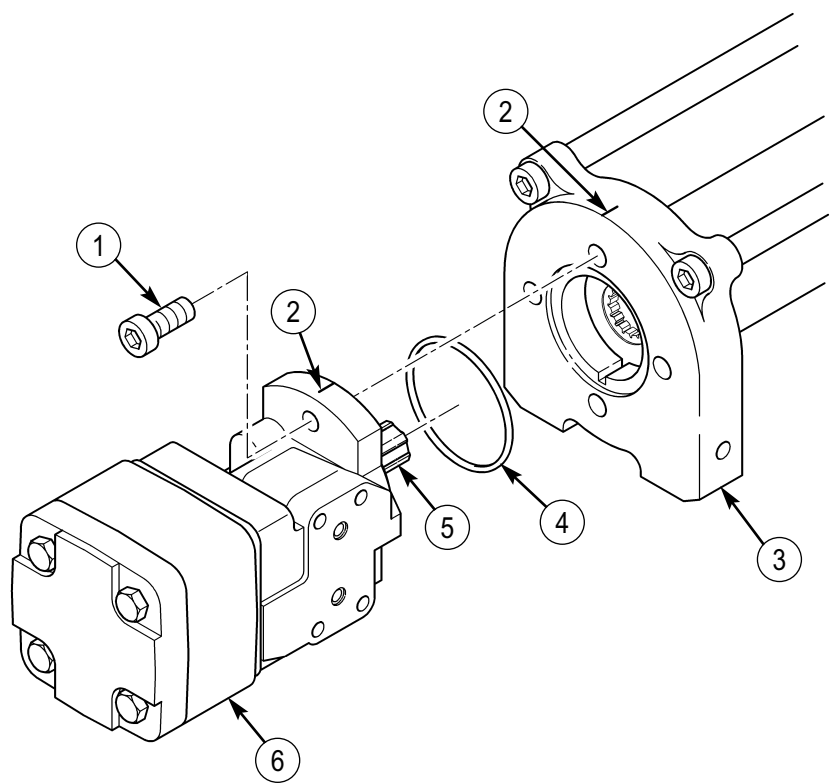


Figure 4

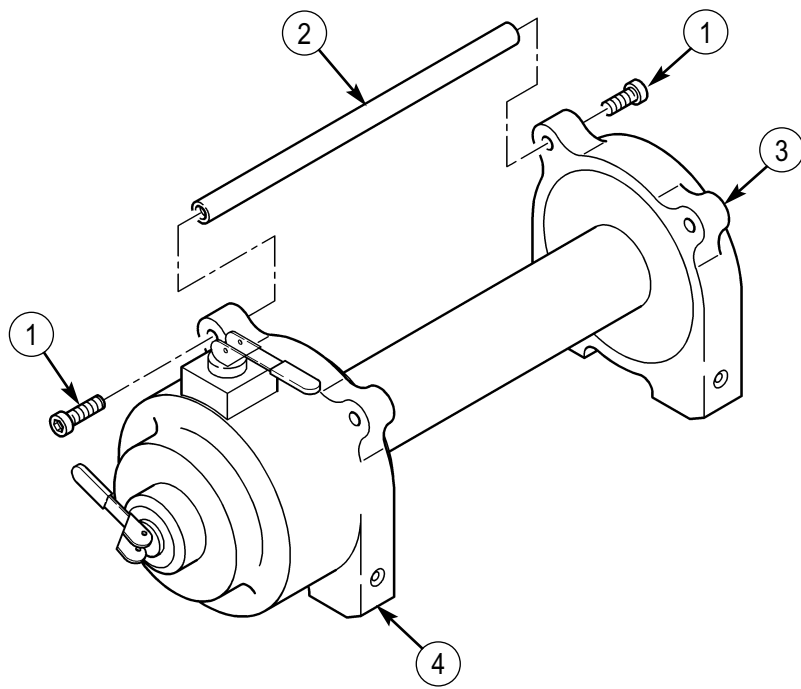


Figure 5

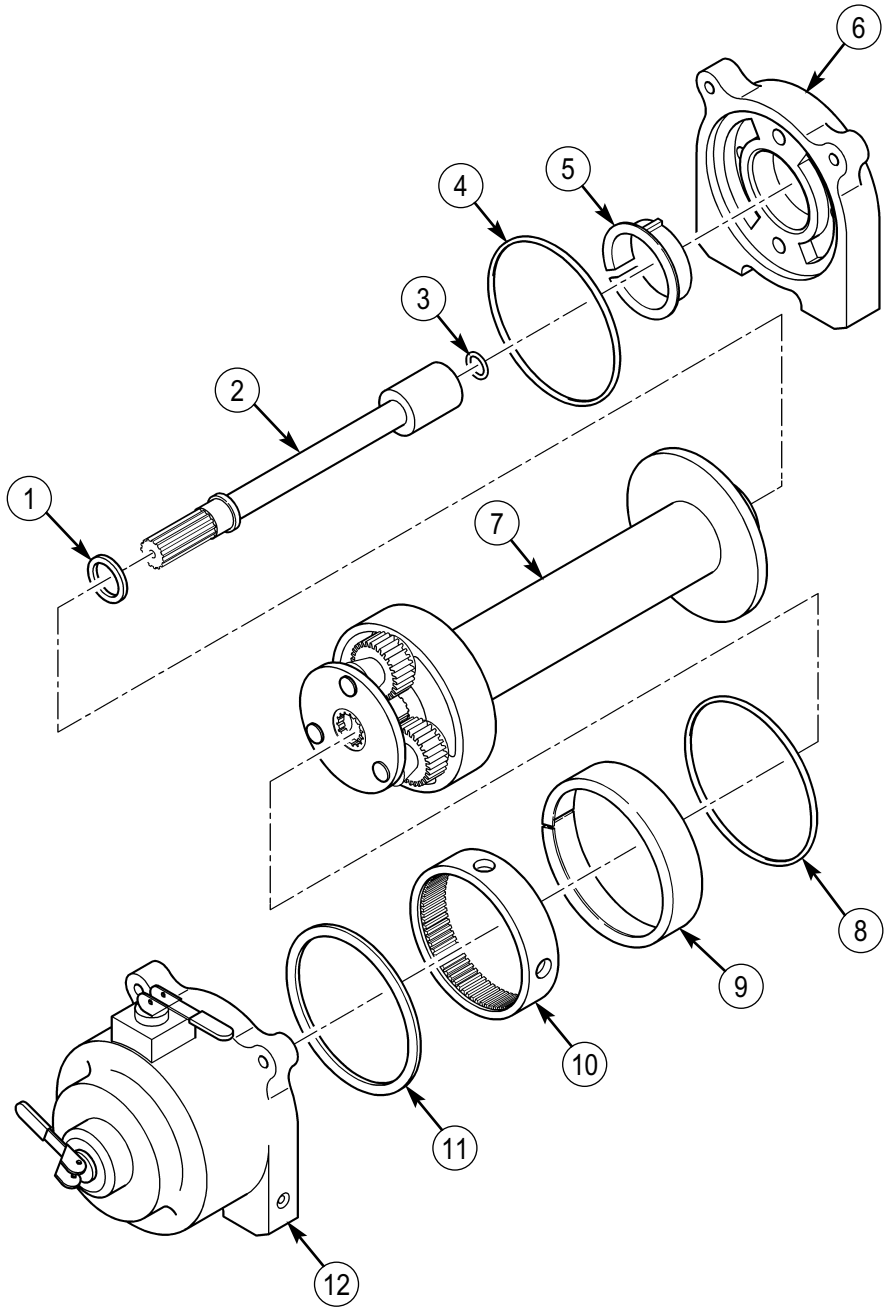


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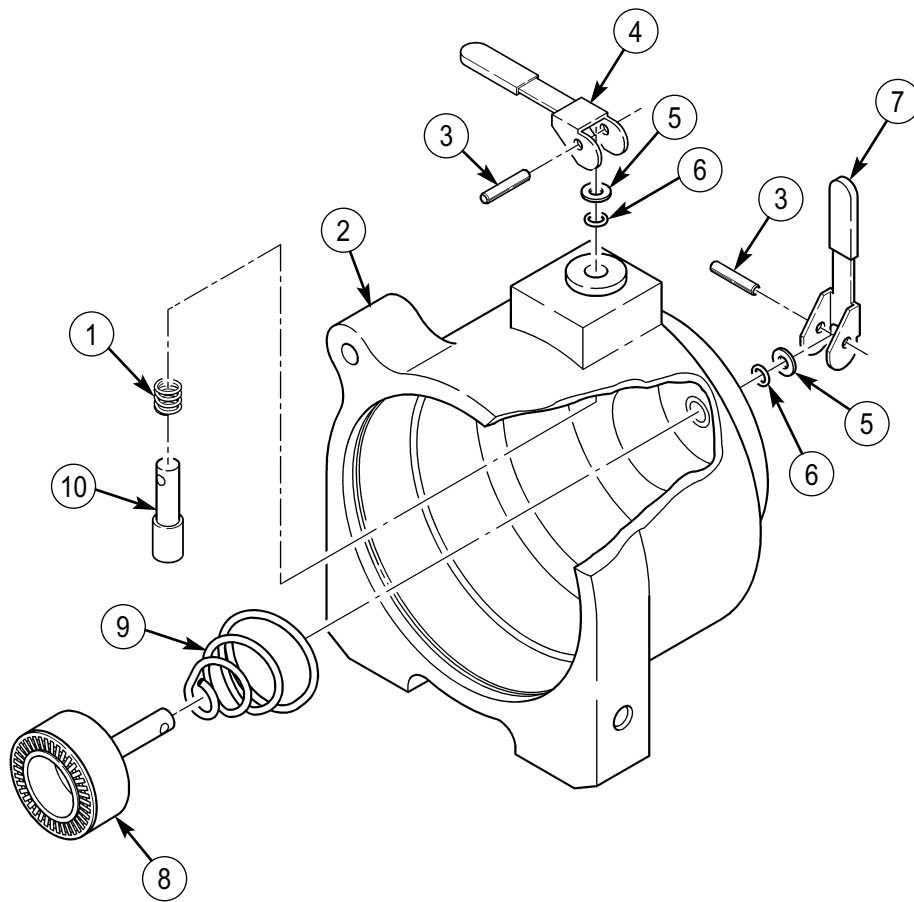


Figure 7

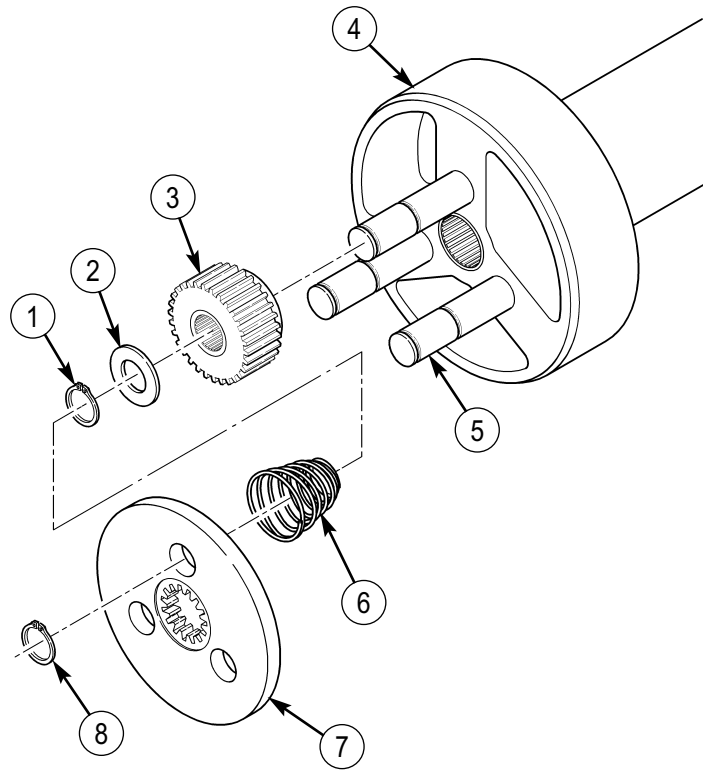


Figure 8



Figure 10

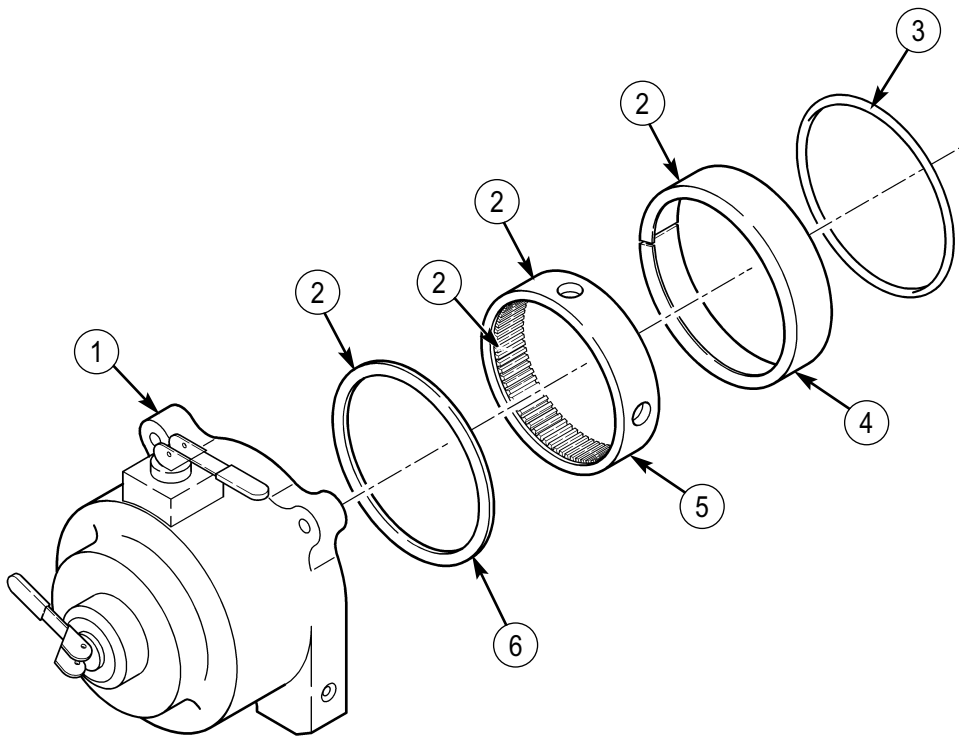


Figure 11

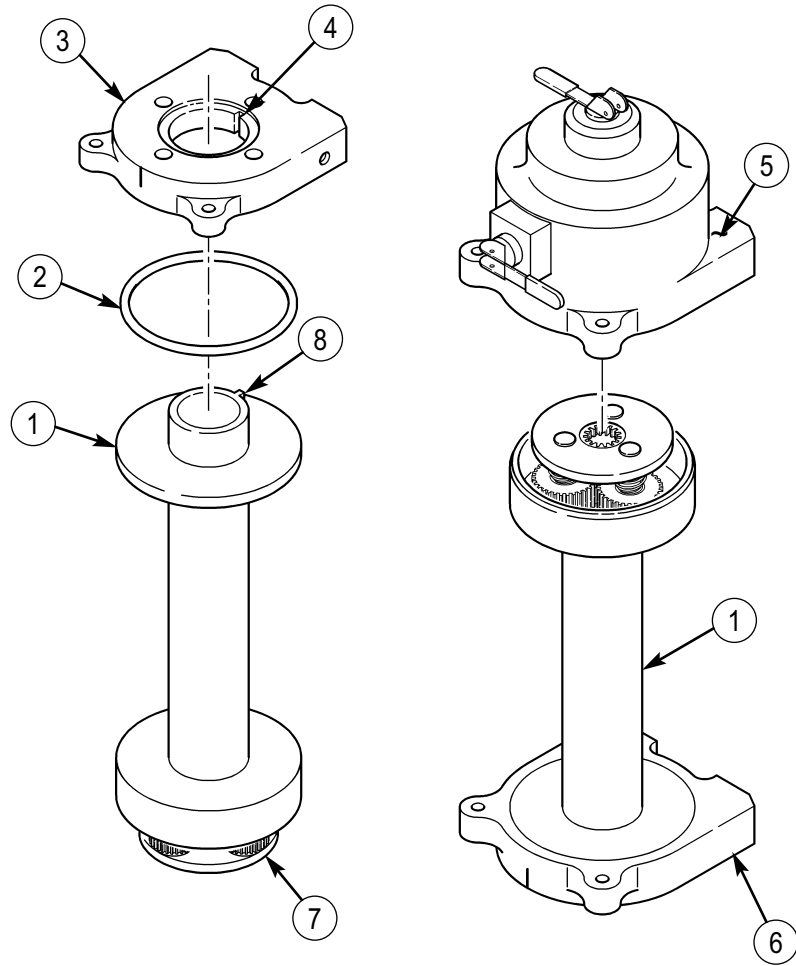


Figure 12

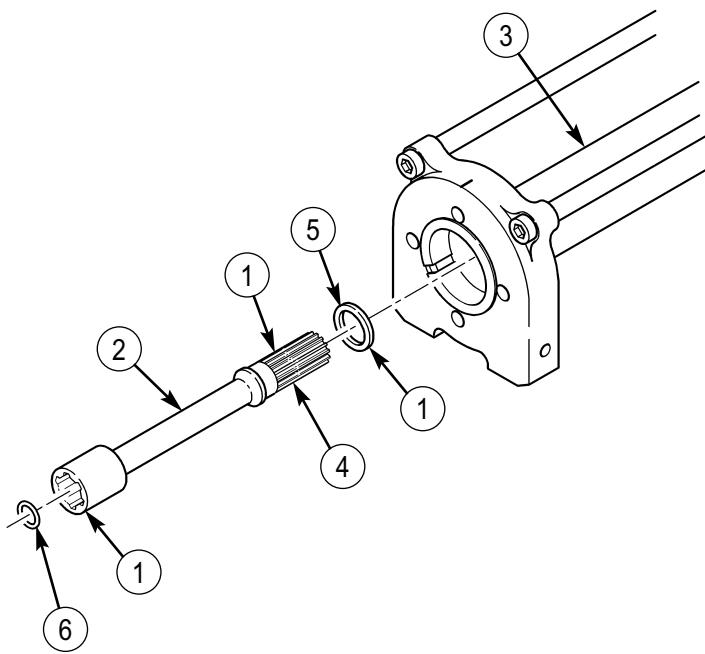


Figure 13

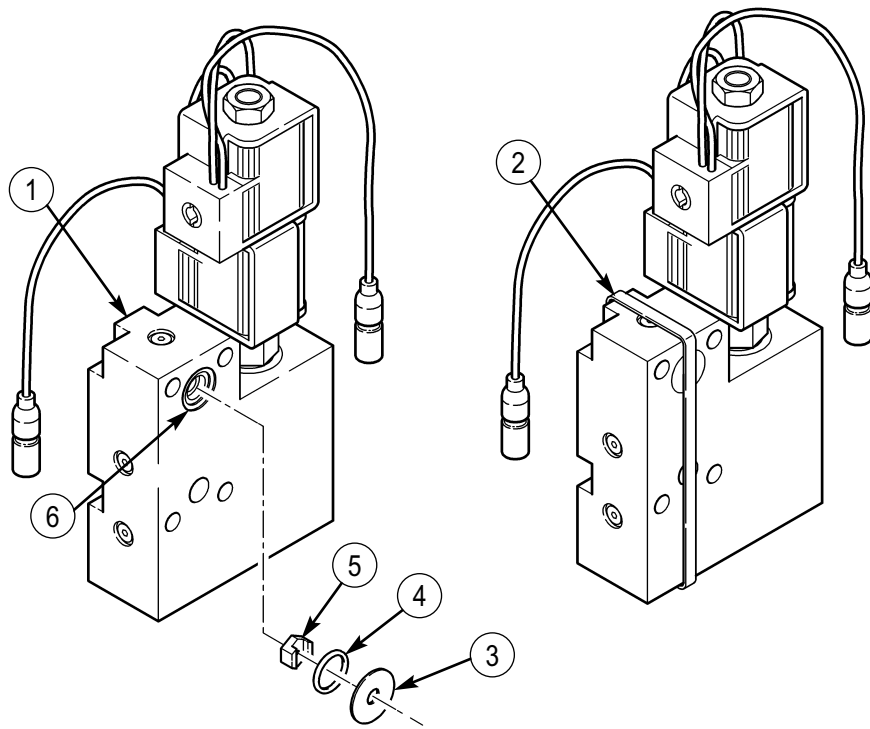


Figure 14