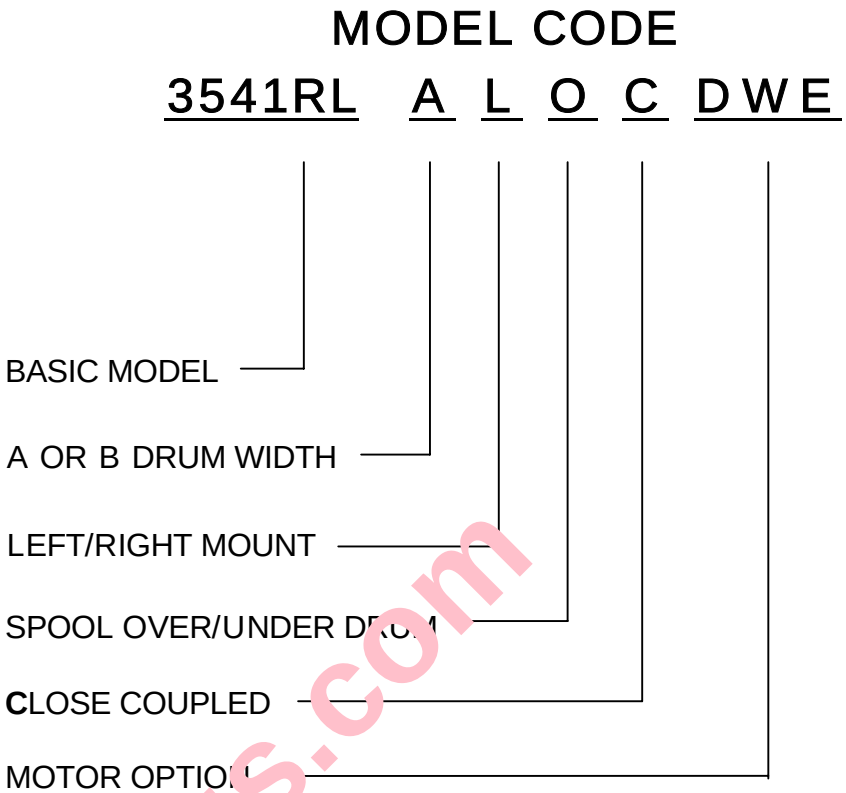
Tulsa Winch

3541RL
SERVICE MANUAL

MODEL CODE



!WARNING!

FAILURE TO HEED THE FOLLOWING WARNINGS MAY RESULT IN SERIOUS INJURY OR DEATH.

1. Tulsa Winches are not to be used to lift, hoist, or move people. If your task involves lifting or moving people, you MUST use the proper equipment, not this winch.
2. Cable anchors on Tulsa Winches are not designed to hold the rated load of the winch. You must keep at least five (5) wraps of cable on the drum to insure that the cable doesn't come loose.
3. Stay clear of the suspended loads and of cable under tension. A broken cable or dropped load can cause serious injury or death.
4. Make sure that all equipment, including the winch and cable, is maintained properly.
5. Avoid shock loads. This type of load imposes a strain on the winch many times the actual weight of the load and can cause failure of the cable or of the winch.
6. Winch operators must be trained in the proper, safe operation of the winch.
7. Do not use EP type gear lubes in the brake section of this winch. EP lubes may prevent the clutch from locking up, causing a load to fall, and resulting in property damage, personal injury, or death.
8. The hydraulic system should use only high quality hydraulic oils from reputable suppliers. These oils should contain additives to prevent foaming and oxidation in the system. All winch hydraulic systems should be equipped with a return line filter capable of filtering 10-micron particles from the system.

INTRODUCTION AND THEORY OF OPERATION

The 3541RL series planetary winch is designed to use a roller-vane gerotor motor, driving through a multiple disc brake, spring assisted air operated clutch and two planet sets to the cable drum.

The multiple disc brake is spring applied and hydraulically released through a port in the brake housing. During inhaul, the brake is not released since the load is driven through the one-way cam clutch, bypassing the brake. When the load comes to a stop, the cam clutch locks up and the load is prevented from moving by the brake.

The brake and brake valve receives its signal any time the winch is in pay out. With the brake fully open at about 340 PSI the brake valve will open and dynamically control the lowering of the load.

MAINTENANCE

Tulsa 3541RL series planetary winches, like any other piece of machinery, need to be periodically serviced and well maintained to insure proper operation.

Good maintenance consists of three steps.

1. A daily inspection to insure that there are no oil leaks present, that all mounting bolts and other fasteners are tight, and that the wire rope is in good condition.
2. Periodic servicing of the winch includes changing the oil in both the gearboxes and the brake section. Severity of use will determine the need for oil changes but it should be checked at a minimum of every 500 hours. Factors such as extremely dirty conditions or widely varying temperature changes may dictate even more frequent servicing.
3. Complete teardowns and component inspections. Again, severity and frequency of use will determine how often this should be done. If the equipment that this winch is mounted on is subject to standards for this type of inspection, then those standards must be followed. If oil changes reveal significant metallic particles then a teardown and inspection must be made to determine the source of wear.

Tulsa 3541RL series of winches are shipped from the factory with SAE 90 EP gear lube in the gearboxes and automatic transmission fluid in the brake section. This oil should be satisfactory for operation in ambient temperatures from -10°F to +110°F. If your work calls for operation in temperatures outside this range, contact Tulsa Winch for recommendations.

Gearbox oil in gear section is drained by removing the fill and drain plugs (items 79) located on the gearbox cover (item 61). Gearbox oil in the drum section is drained by removing the plug (item 45) located on the barrel of the drum (item 1). Examine the used oil for signs of significant metal deposits and then dispose of it in a proper manner. Reinstall the plugs and fill the gearboxes with the proper amount of new SAE 90 EP gear lube through the fill hole. Make sure the breather (item 78) is operational and replace if necessary.

Drain the brake section by removing the drain plug (item 32) and breather (item 31) in the brake cover (item 28). Inspect the oil for signs of metallic particles and/or burning and re-install the drain plug. Fill brake section with automatic transmission fluid, or hydraulic oil.

OIL CAPACITIES

	QTY	TYPE
GEAR LUBE (DRUM SECTION)	3/4 qt.	EP 90
BRAKE OIL	1/2-1 pt.	ATF
GEAR LUBE (GEAR SECTION)	1-1/2 qts.	EP 90

GENERAL DISASSEMBLY

A. MOTOR SECTION DISASSEMBLY

1. Drain the oil from the brake assembly by removing the plug (item 32) from brake cover (item 28).
2. Remove all tubing and hoses attached to motor. *(Note the location of tubing, hoses and fittings for re-assembly).*
3. Remove the capscrews (item 71) holding motor in place.
4. Grasp the motor and remove from winch.
5. Inspect o-ring (item 35), replace if necessary.
6. Motors are not serviceable in the field. Return them to an authorized dealer for service.