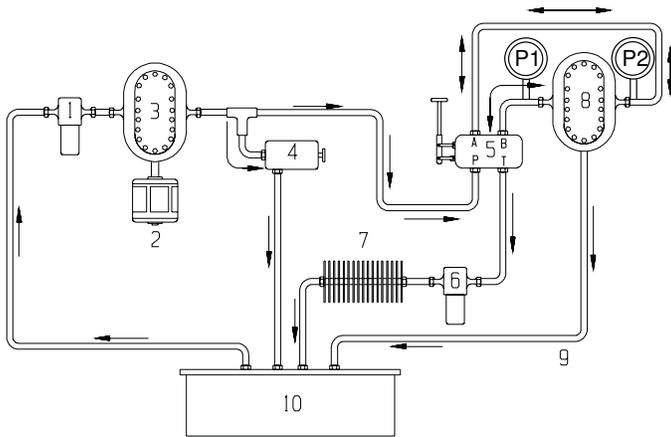


Hydraulic Winch Installation

CAUTION

- Do not exceed the maximum recommended hydraulic pressure or flow of any of the components used.
- The winch control valve must be a tandem center type valve (A & B work ports blocked) to insure proper brake operation. Failure to use proper control valve could cause brake failure resulting in serious injury or property damage.
- The winch works correctly only when hydraulic system components are correct.

NOTE: The pictorial diagram and the following descriptions are intended only as a general guide for reference use. For specific recommendations on component selection, inter-connection, layout, and use, consult a knowledgeable hydraulics representative.



HYDRAULIC FLUID

The hydraulic fluid used with the winch must be an extreme pressure, anti-wear hydraulic oil with oxidation and corrosion inhibitors. It must contain a foam suppressant, and have a viscosity rating of (700-800 cST at 38 DEG. C).

1. **STRAINER:** This removes larger particles from the hydraulic fluid.
2. **MOTOR:** This is the power source for the hydraulic system. It must be adequately rated to supply the required power. It can be a power take-off (PTO), belt drive from a gasoline or diesel engine, a large electric motor, etc.
3. **HYDRAULIC PUMP:** This converts the mechanical power of the motor into hydraulic fluid power. It must be adequately rated to supply the system with enough power for proper performance (see the performance chart for required motor "flow inputs").
4. **PRESSURE RELIEF VALVE:** This is to limit the system pressure to a safe level (one which will not

exceed the maximum pressure rating of any of the components used).

The pressure rating of the winch motor is determined by (a) the maximum allowable pressure at the motor inlet port and (b) the maximum allowable pressure drop across the motor. Pressure drop is defined as the difference between the inlet pressure (P1) and the outlet pressure (P2) at the winch motor (item 8 in the diagram). Exceeding the maximum inlet pressure may damage the motor. Exceeding the maximum pressure drop may cause failure of winch components. Maximum allowable values are shown in the following table.

MOTOR TYPE	MAXIMUM PRESSURE AT THE MOTOR INLET PORT (P1)	MAXIMUM PRESSURE DROP ACROSS THE MOTOR (P1-P2)
3.0 cu.in. 50cc	1900 psi (131 bar)	1900 psi (131 bar)

5. **THREE POSITION VALVE:** This is a three-position tandem valve with a center-off position. In the center-off position, the pressure tank ports (labeled "P" and "T") are inter-connected, and the output ports (labeled "A" and "B") are blocked off. The blocked off ports will immediately stop the hydraulic motor rotation. This valve type is required for proper brake operation. This valve is used to control the three basic winch functions of "Power In", "Stop", and "Power out". It may be actuated either manually or electrically. Ensure that the valve is sufficiently rated for pressure and flow rate.

CAUTION

Do not use a standard motor valve.

6. **FILTER:** This removes the smaller particles and insoluble contaminants from the hydraulic fluid. Ensure that it is rated for an adequate flow rate. The recommended filtration level is 10 microns nominal or finer.



Hydraulic Installation (Cont'd)

7. **HEAT EXCHANGER:** This is a device to remove excess heat from the hydraulic fluid. This is an optional device that will be required only if excess heat buildup is a problem due to a small reservoir size, restricted hydraulic fluid flow, extended operating periods, etc.
8. **HYDRAULIC MOTOR:** This supplies power to the winch. The recommended operating temperature range is 100°F to 150°F (38°C to 66°C). The maximum operating temperature range is -6°F to 180°F (-21°C to 82°C) . DO NOT EXCEED THE FLOW RATING OF THE HYDRAULIC MOTOR. (See Hydraulic Winch Data)
9. **MOTOR CASE DRAIN LINE:** A motor case drain line will be not required in most cases. Warn supplied industrial motors do not require a case drain line unless the motor outlet port (the port connected through the three-position valve back to the reservoir) pressure exceeds 124 bar (1800 psi). This will alternately be either port "A" or "B" at the three-position valve depending on the positioning of the valve at either "power in" or "power out". Check outlet port pressure in both positions.
10. **RESERVOIR:** The reservoir is the container for storing the hydraulic fluid. Its functions include storing all the required fluid, helping to moderate fluid temperature, solid contaminant, possibly heating fluid for viscosity control in cold weather, and reducing sloshing with baffles.

Hydraulic Winch Data

SERIES 6 HYDRAULIC ENGINEERING DATA

Rated Working Load (Maximum Load), first layer _____	6000 lb.	2700 kg
Winch Breaking Strength, first layer _____	12000+ lb.	5400+ kg
Maximum Recommended Wire Rope Diameter _____	5/16 in.	8 mm
Drum Dimensions _____	Barrel Diameter: 2.5 in.	64 mm
	Flange Diameter: 6.0 in.	152 mm
	Distance Between Flanges: 9.0 in.	229 mm
Total Gear Reduction _____	26:1	
Static Input Torque Requirement (To start maximum load) _____	415 lb-in	47 N-m
Dynamic Input Torque Requirement (To operate maximum load) _____	365 lb-in	41 N-m
Maximum Input Flow at Rated Load _____	12 USGPM	45 l/min
Duty Cycle Rating (In accordance with SAE J706) _____	258 ft	79 m
Approximate Shipping Weight _____	40 lb.	18 kg
Sound level at 6 ft. (3000 lb load)	83 dB(A)	
	82 dB(C)	

