COMEUP

INDUSTRIAL WINCH

INSTRUCTION MANUAL

COMEUP

Industrial Winch

Limited One (1) Year Warranty

WARRANTY

Comeup Industries Inc. (COMEUP) warrants to the original purchaser that COMEUP Industrial Winch will be free of defects in material and workmanship for a period of one (1) year from the original date of purchase. All COMEUP mounting kits and other accessories carry a one (1) year limited warranty against defects in material workmanship.

This warranty applies only to the original purchaser of the winch. To obtain any warranty service, the purchaser under this Limited Warranty is requested to advise COMEUP or its authorized distributors on any claim. The purchaser must provide a copy of the purchase receipt bearing the winch serial number, date of purchase, owners name, email or Tel & Fax, address and purchaser vehicle details. Any products that COMEUP determines to be accountable for defective will be repaired or replaced or refund at COMEUP sole discretion without charge to buyer upon buyer's compliance with these procedures. In the event of repair or replace, purchaser must send the defective winch or part, with freight prepaid, to COMEUP or its authorized distributor. And COMEUP will send the serviced product back to purchaser on COMEUP's cost. This warranty does not cover the removal or reinstallation of the winch.

COMEUP takes the responsibility for COMEUP winch parts and components to be free from defects in materials and workmanship, but the following portions are hereby excluded and disclaimed. COMEUP or its authorized distributors may make reasonable charges for parts and labour for repairs or resumption in the following portions not covered by this limited warranty.

(1). All warranties of wire rope assembly after initial use
(2). All warranties of fitness for a particular purpose
(3). All warranties of the product's finish
(4). All warranties of merchantability

The limited warranty does not cover any failure that results from improper installation/operation, third party part substitution, purchaser's alteration or modification on COMEUP winch. This warranty is void when COMEUP serial number plate is removed or defaced.

COMEUP's liability to the purchaser under the winch purchases for any loss or damage howsoever and whatsoever arising shall not exceed the price of the initial winch purchase receipt. COMEUP shall not in any event be liable to the purchaser for any consequential and/or indirect loss or damage whether for loss or for profit or otherwise, costs, expenses or other claims for consequential compensation whatsoever and whether caused by negligence of COMEUP employees, distributors and their employees or otherwise. COMEUP reserves the right to change product design without notice. In situations in which COMEUP has changed a product design, COMEUP shall have no obligation to upgrade or otherwise modify previously manufactured products.

COMEUP

Hydraulic Recovery Winch

Thank you for purchasing a COMEUP Winch. This manual covers operation and maintenance of the winch. All information in this publication is based on the latest production information available at the time of printing. We reserve the right to make changes without notice because of continued product improvement.

It has been designed to give safe and dependable service if operated according to the instructions. Read and understand this manual before installation and operation of winch. Careless winch operation can result in serious injury or property damage.

When requesting information or ordering replacement parts, always give the following information:

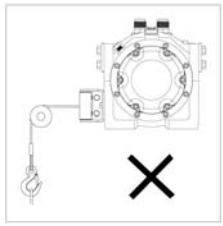
1. Winch model and voltage
2. Serial Number
3. Item. No. and Part Number
4. Part Description

⚠ WARNING

1. The winch is rated at the first layer of wire rope on the drum for intermittent-periodic duty.
2. The winch is not to be used to lift, support or otherwise transport personnel.
3. A minimum of five (5) wraps of rope around the drum is necessary to support the rated load.
4. Keep clear of winch, rope, hook, and fairlead while operating.
5. Winch rope can break without warning. Always keep a safe distance from the winch and rope while under a load.
6. Failure to adequately align, support, or attach winch to a suitable mounting base could result in a loss of efficiency of performance or damage the winch, rope and mounting channel.

I. Safety Requirement

▶ General Rules



⚠ The operator of a winch in some cases is required to have qualifications according to applicable laws and ordinances.

⚠ Check all safety and environmental conditions prior to and during use.

⚠ Don't use unsuitable rope in construction, strength or having any defects.

⚠ Don't use an unsuitable hook and snatch block for rope.

⚠ The operator must remain with the winch when it is being operated.

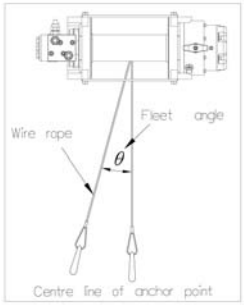
⚠ The winches' duty rating is S3 (intermittent-periodic).

⚠ Do not use the winch as a lifting device or a hoist for vertical lifting and moving people

⚠ Do not exceed maximum line pull ratings shown in tables. Shock load must not exceed these ratings.

⚠ Keep hands clear of rope and fairlead opening.

⚠ Pull from an angle below 3° on horizontal direction to straighten up the vehicle or load.



⚠ Use leather or heavy duty gloves when handling the wire rope.

⚠ When winching a heavy load, lay a heavy blanket or jacket over the wire rope near the hook end.

⚠ A rope should be replaced if it shows signs of excessive wear, broken strands, corrosion or any other defects.

⚠ If the winch fails to pull a load under normal conditions, stop the operation within 30 seconds, or motor damage may occur.

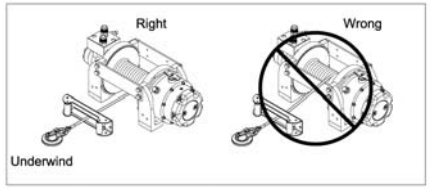
⚠ Check that the clutch T-handle is in the "Engaged" position during and after use.

⚠ Remove the switch from the winch when not in use.

⚠ Do not warp the wire rope around the load and back onto itself. Always use a strap to ensure that the wire rope does not fray or kink.

⚠ Keep hands and clothes away from the winch, rope, and roller fairlead.

⚠ Never unplug the remote control when winching a load.



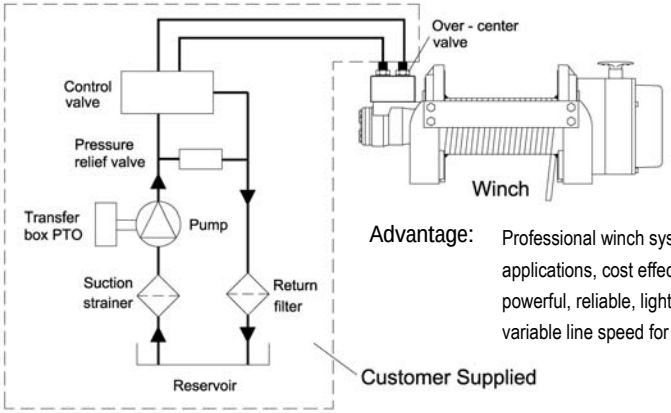
⚠ To avoid insufficient power when winching a load, the vehicle should be running and in neutral.

⚠ If noise or vibration occurs when running, stop the winch immediately and return it for repair.

⚠ The rope shall be wound in according to drum rotation sticker or refer to owners manual.

II. Hydraulic System Installation

(Powered by PTO / power take off unit driven pump)



Advantage: Professional winch system for "Working" applications, cost effective, extremely powerful, reliable, light weight and variable line speed for high work rate.

▶ Hydraulic Fluid

- The hydraulic fluid should be a high grade, petroleum based fluid, with rust, oxidation and wear resistance. Fluid cleanliness and operating viscosity are critical to winch reliability, efficiency and service lift.

▶ Hydraulic Pump

- To maintain the maximum performance, the hydraulic pump must supply the maximum flow of hydraulic fluid at the hydraulic pressure stated in specification.
- With a max. oil supply of 15.9 g/min (60 l/min) at top motor rpm and the pump must be capable of delivering a pressure of 170 bar (2,466 psi).

▶ Hydraulic Control Valve

- The control valve must have a four-way spring return to neutral feature, which provides for open flow from the pressure ports of the winch to the reservoir in neutral position of the control (motor spool).

▶ Hydraulic Pressure Relief

- The hydraulic system requires a pressure relief set at the operating pressured.
- Failure to use the correct pressure and flow may result in damage to the winch, property or personal injury.

▶ Hydraulic Reservoir

- The hydraulic reservoir has sufficient capacity to provide good heat dissipation in order to prevent over-heating of the hydraulic fluid.
- Must be fitted with an oil filler device comprising strainer and filter and a dip stick. The capacity of the tank should be at least 60 liters.

▶ Over-Center Valve

- Give smoothly controlled winch out when under load and to provide full dynamic braking. It must be installed to hold full load.
- The Port A of over-center valve means the inlet port of oil from reservoir and the Port B meaning the return port of oil to reservoir.

▶ Hydraulic Hoses

- The following hydraulic hoses are recommended for maximum efficiency of the hydraulic winch. The bigger nominal bore hose, the better winch performance.
- All hose lengths are kept to a minimum because pressure and flow loss is increased as hose length increases.
- Pressure and return lines in excess of 3.5 meter (11.5") should be compensated with an increase in nominal bore size.

Inlet line …….. 1 1/4" – 1 1/2" nominal bore (N.B.) from reservoir to pump

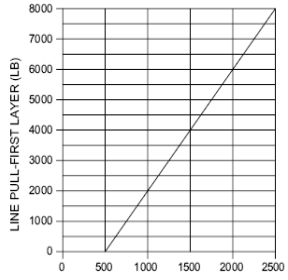
Return line …… 1" (N.B.) from control to reservoir

Pressure hoses …..... 1/2" (N.B.) from control valve to over-center valve

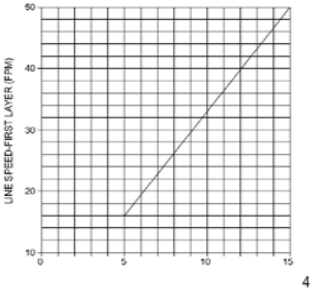
Motor drain line pipe… 1/4" BSP N.B.

IV. Winching Principles

▶ Line Pull (lb) V.S. Pressure (psi)



▶ Line Speed (fpm) V.S. Flow (g/min)



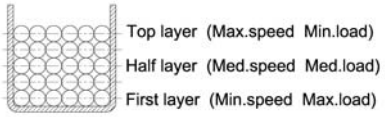
▶ Calculating Fleet Angle

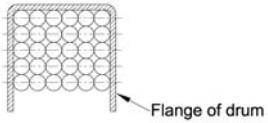
To obtain the best wire rope service, the direction of pull will be on a horizontal within ±3 degrees and perpendicular to be centerline of the winch drum within ±3 degrees. If the fleet angle is bigger than the recommended angles, a good spooling cannot be obtained as the rope will spoon on to one side of the rope drum.

▶ Load Rating

Load and speed varies according to how much wire rope is on the drum. The first layer of rope on the drum delivers the slowest speed and the maximum load. The top layer delivers the maximum speed and the minimum load.

For this reason, all industrial winches are rated at their first layer capacities.





According to EN 14492-1 Section 5.7.2, the flanged drum end plates shall protrude beyond the rope wound on the drum at the top layer by at least 1.5 x the nominal rope diameter.

▶ Duty Cycle Ratings

Duty cycle ratings usually specify continuous, intermittent, or special duty (typically expressed in minutes).

- S1 - Continuous duty.
  The motor works at a constant load for enough time to reach temperature equilibrium.
- S2 - Short-time duty.
  The motor works at a constant load, but not long enough to reach temperature equilibrium, and the rest periods are long enough for the motor to reach ambient temperature.
- S3 - Intermittent periodic duty.
  Sequential, identical run and rest cycles with constant load. Temperature equilibrium is never reached. Starting current has little effect on temperature rise.

For this reason, all industrial winches are rated at S3 intermittent periodic duty.

▶ Securing Anchor Point

Select a safe and firm anchor point. The usual point is a tree, stump or rocks, but if using a winch to help a stuck vehicle overcome the obstacles, then the rescue vehicle can be treated as an anchor point.

The selection of an anchor point shall be strong enough to hold the gross weight of the vehicle and the fleet angle between center of anchor point and wire rope shall maintained less than 3°.

Securing the tree, never hook the wire rope back onto itself. You could damage the wire rope and tree, Use a tree trunk protector and recovery strap to protect.

▶ Required Pulling Force

You need a winch powerful enough to overcome the weight of your vehicle with the added resistance caused by the obstacle, moving water, mud, snow, sand or on a steep hill.

As a general guide, you need a winch with a maximum line pull of at least 1.5 times greater than the gross vehicle weight.

There are three factors listed that influence the line pull effect required to recover the vehicle. The values and calculations in this section are approximate and are for reference only.

a). Gross vehicle weight

b). Type of the surface to be traversed

c). Gradient to overcome

In recovery and loading the winch is used to pull something, the required pulling force (RPF) can be calculated according to the formula:

RPF = (Wt X S) + (Wt X G)

Where: Wt = The gross vehicle weight
S = The type of the surface to be traversed
G = The gradient to overcome

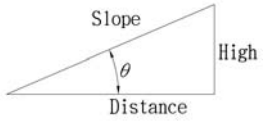
Surface Type	Surface Drag (S)
Metal	0.15
Sand	0.18
Gravel	0.20
Soft Sand	0.22
Mud	0.32
Marsh	0.52
Clay	0.52

Gradient	Angle (θ)	Gradient (G)
5%	3°	0.06
10%	6°	0.11
20%	11°	0.2
30%	17°	0.3
50%	26°	0.44
70%	35°	0.58
100%	45°	0.71

For example, if a vehicle weighing 3,000 kg is winched up an incline by 100% on the marsh road, the above formula would be used as follows:

Where Wt: 3,000 kg, S: 0.52 G: 0.71

RPF = (Wt X S) + (Wt X G)
= (3,000 kg X 0.52) + (3,000 kg X 0.71)
= 1,560 kg + 2,130 kg
= 3,690 kg of effect required to recover the vehicle



A gradient of 10% is a rise of one meter in ten meters (High / Distance)

▶ Winching V.S. Hoisting. A pulling winch should not be used for lifting.
Please refer to our website to view our full range of lifting winches

V. Standards Compliance

▶ Comeup Industrial Winches comply with the following regulations

1. European Standards of EN 14492-1 for Power Driven Winches came to effect from 29th. December 2009
2. The latest Machinery Safety regulations of 2006/42/EC for machinery Directive.
3. SAE International Surface Vehicle Standard J706

▶ Extracts from the Directive & Comeup compliance:

1. EN 14492-1 Section 5.15.6 Wire Rope
   Wire rope minimum break to be twice winch rating
2. EN 14492-1 Section 5.7.2 Rope Drum
   Rope drum mean diameter to be 10 times the diameter of the wire rope
3. EN 14492-1 Section 5.7.6 Rope Fastening onto the rope drum
   Rope attachment to withstand 2.5 times the winch rating
   Rope must have at least two wraps winding before fixing point
4. EN 14492-1 Section 5.15.5 Brake
   Winch to hold full rated load
5. EN 14492-1 Section 5.15.2 Rated Capacity limiters
   The pressure relief valve limit the hydraulic pressure to prevent overloading of the winch

To comply with EN 14492-1, the following optional accessories must be fitted to all winches

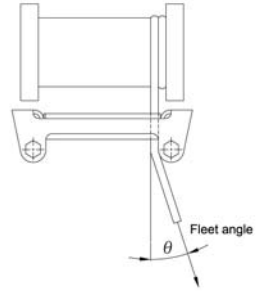
- Wire rope with 1,960 N/mm^2 grade
- Rope drum cover
- Emergency stop valve
- Flow limiting valve

When using and installing a winch, the owner or end user shall ensure that all legal requirements are completely complied with.

VI. Accessories

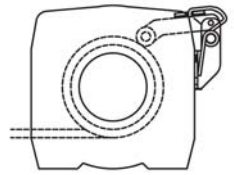
▶ Roller Fairlead

The use of 4 ways roller fairlead can eliminate the contacting friction because the fairlead rollers contact with the wire rope. But the fairlead does not insure the wire rope will wind onto the drum in an orderly manner. The proper fleet angle within 3° must be maintained for the wire rope to wind onto the drum in an orderly manner. If the proper fleet angle is not maintained, it can result in damage to the winch and wire rope.



▶ Cable Tensioner

The purpose of cable tensioner device is to keep the wire rope tight on the drum while the winch is in free spool mode or while there is no load on the wire rope. The cable tensioner shall be treated as optional to winches.



▶ Snatch Block

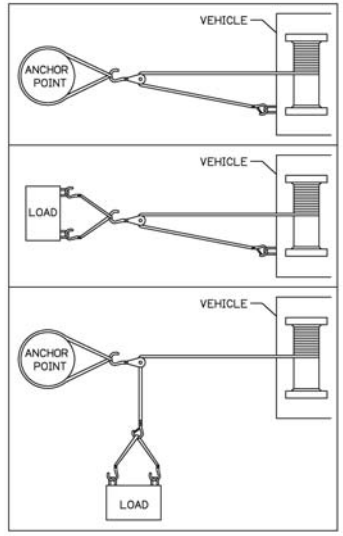
An important aid to successful winching is the use of snatch block, which can be used to increase the pulling power of a winch or change the direction of a pull.

A winch double lined with a snatch block creates a mechanical leverage cutting the effort required by nearly half.

The double line pull shows self recovery using a snatch block attached to an anchor point; the pull applied to the vehicle is almost twice as much as the line pull of the winch.

The use of one snatch block shows an indirect pull where the vehicle is limited due to unsuitable ground or obstruction. The pull on the load is the actual line pull of the winch.

If more than one snatch block is used, they must be located at least 100 cm (40") apart.



VII. Hydraulic Operation

▶ Manual Clutch Function

The clutch allows rapid pay-out of the wire rope for hooking onto a load or anchor points and is operated by a clutch T-handle.

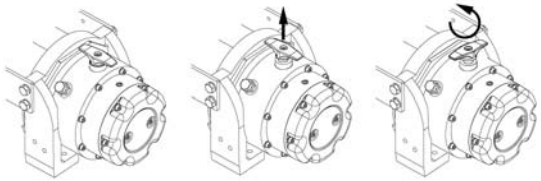
The clutch T-handle must be in the “Engaged” position before winching.

1).To disengage, lift the clutch T-handle up and turn it at 90° counter-clockwise rotation to the “Disengaged” position, wire rope can now clutch off the drum.

2).To engage, lifts the clutch T-handle up and turn it at 90° clockwise rotation to the “Engaged” position.

3).If a clutch T-handle can’t be properly locked in the “Engaged” position, rotate the drum to make the clutch device engage to the gear train.

4).Wear leather gloves and use a strap when guiding the wire rope on and off the drum.



(Engaged) (Disengaged)

▶ Air Clutch Function

The air clutch must be in the “Engaged” position before winching.

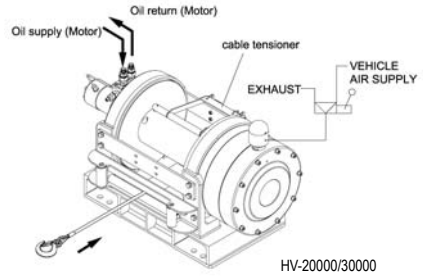
1). Apply air pressure to the 125-27 NPT port with 80 psi at minimum to 150 psi at maximum.

2).To disengage the drum by operating the air control valve to pull out the wire rope by hand. Pull out the wire rope but leave at least 5 wraps on the drum.

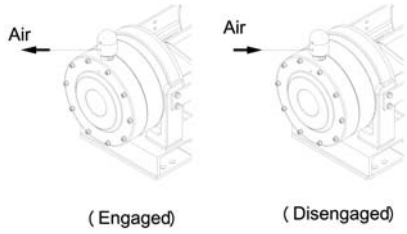
3).To engage the drum by moving the control valve lever to the appropriate position. Do not attempt to pull a load until the air clutch in the “Engaged” position.

4).Wear leather gloves and use a strap when guiding the wire rope on and off the drum.

5).It cannot be clutched when the load is under load.



HV-20000/30000



▶ Lubrication

- For Gear Box

  All moving parts in the winch are permanently lubricated at the time of assembly. Under normal conditions factory lubrication will suffice. The lubricant for gear box was recommended by Castrol Alpha Spheerol L-EP 2 grease recommended, 150 Viscosity (cSt) at 40°C or similar quality after repair or disassembly.

- For Brake Assembly

  The lubrication is an important component in insuring the long life of your winch and the type of lubricant will have a great influence. The oil of brake assembly for your winch was shipped with Castrol Alpha Series, SP-460, a viscosity (cSt) is 457.81/29.83 at 40°C / 100°C. Consult your local lubricant distributor on the selection that best fits your climate and application.

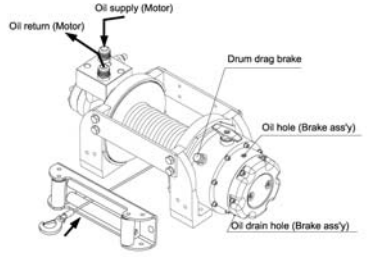
  The initial lubricant should be changed after the first 10 hours of operation. Subsequent changes should be scheduled annually.

- For T-handle, Roller Fairlead and Wire Rope

  The lubrication for clutch, roller fairlead and wire rope can use light oil in the temperature of -10°C to 50°C.

▶ Lubricant Quantity

Winch Components		Gear Box	Brake Assembly	T-handle, Roller Fairlead, Wire Rope
Lubrication Type		Grease	Oil	Light Oil
Quantity	HV-8	0.3 litre	0.12 litre	little
	HV-10	0.3 litre	0.12 litre	little
	HV-12	0.6 litre	0.3 litre	little
	HV-15	0.6 litre	0.3 litre	little
	HV-20000	0.75 litre	Nil	little
	HV-30000	1 litre	Nil	little
	Yak 5	0.6 litre	Nil	little
	Yak 7	0.6 litre	Nil	little



HV-8/10/12/15

Remark: 1. The purpose of drum drag brake is to prevent the drum from overrunning the wire rope when “free-spooling” and it will not be replied on to control or hold a load

2. The drum drag brake is only available for HV-8/10.

▶ Wire Rope Replacement

Never use a wire rope of a different size or material. The wire rope end shall be inserted through a hole in the drum and a screw is used to clamp the wire rope in place. This rope attachment is simple and ingenious.

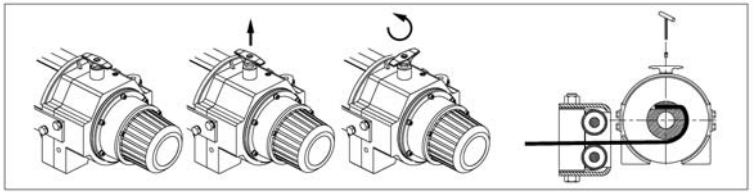
1). Disengage the clutch T-handle.

2). Spool the entire wire rope, and then remove it from the drum.

3). Place the replacement wire rope through the roller fairlead opening, pass below the drum, and insert it into the hole on the drum core.

4). Tighten the screw downwards to secure the wire rope.

5). The red paint markings on the wire rope means 3 metres remains on the drum.



(Engaged) (Disengaged)

▶ Wire Rope Recommendation

Model		HV-8	HV-10	HV-12	HV-15	HV-20000	HV-30000	Yak 5	Yak 7
Grade		1,960 N/mm^2				1,770 N/mm^2		1,960 N/mm^2	
Dia.	mm	10	11	12	14	14	16	8	10
	inch	3/8	7/16	1/2	9/16	9/16	5/8	5/16	3/8
Cap. m/feet	Std Drum	30 / 98	27 / 89	39 / 128	27 / 128	80 / 265	91 / 300	40 / 131	24 / 79
	Long Drum	40 / 131						60 / 197	35 / 115
Breaking Strength KN		69.8	84.4	100.5	137	129	169	44.7	69.8

IX. Maintenance Schedule

- Ensure that a responsible person carries out all inspections as per schedule.
- Inspections are dived into Daily, Monthly and Quarterly.

Classification of check			Item		Checking method	Checking reference
Daily	Periodical					
	Monthly	Quarterly				
○			Installation	Loosening and center run-out of foundation	Checking of installing bolts	Existence of abnormalities
○			Remote control	Working	Manual	Reasonable actuation
		○		Wearing in contact points	Visual	Free of wear or damage
○			Wire rope	Breaking of base wire	Visual	Less than 10%
○	○			Decreasing of diameter	Visual, measuring (one month)	7% of nominal diameter max
○				Deforming or corrosion	Visual	To be not remarkable
○				Fastening condition of end	Visual	To be sufficient for hanging up of load
		○	Clutch	Wearing of handle	Operating	To be free from remarkable wearing and damage
		○	Motor	Staining, damage	Decomposition checking	Existence of abnormalities
		○	Brake	Wearing of brake disc	Decomposition checking	To be free from remarkable wearing and damage
○				Performance	Visual	Reasonable actuation
		○	Gear	Damage, wearing	Decomposition checking	To be free from remarkable wearing and damage
○	○			Low oil level	Visual	Replenish oil

X. Trouble Shooting

▶ For Hydraulic Winch

In most cases, the cause of malfunction is found in the hydraulic system. Before the winch is removed from its mounting and disassembled, all of hydraulic system components should be check for proper function. When checking oil pressure and volume in the hydraulic system, make certain that the hydraulic reservoir is filled to the top level.

1. Hydraulic Oil Volume

The hydraulic oil volume relates to the line speed or rpm of the winch. Therefore if the winch does not produce the specified maximum line speed or drum rpm, a loss of hydraulic flow in the hydraulic system can be analysed. In this condition exists, install a flow meter into the hydraulic system to check the volume supplied to the pressure port of the hydraulic winch motor when the winch control is completely opened.

2. Hydraulic Pressure

The hydraulic pressure relates to the line pull of the winch. Therefore if the winch does not produce the specified maximum line pull, a loss of hydraulic pressure in the hydraulic system can be analysed. In the condition exists, install a pressure gauge into the pressure line leading to the pulling port on the hydraulic winch motor.

3. Troubleshooting chart

Only if the hydraulic system has been checked and found to be in order, use the following indications for possible causes of failure in the winch.

Symptom	Possible Causes	Remedy
Winch will not pull load	Motor may be damaged	Remove and disassembly motor and examine all parts and replace any that are worn or damaged
	No oil supply to winch	Check oil supply line connections and hoses
	System not delivering full pressure to winch	Confirm pump is running to a higher setting
	Winch is Overload	Reduce load to within rated capacity
	The pressure is not adequate to power the load, or the back pressure is too high	Check the pressure on each side of the hydraulic motor
	Winch is mechanically binding up	Loosen, but not remove, the bolts that are attaching the tie bar and support racks. Rotate the drum, making sure that it turns freely without sticking. Tighten the bolts.
	The brake is not releasing	This requires disassembly of the brake assembly. Remove and replace of the brake assembly.
Winch will not pay out	Poor locking of 2nd stage ring gear	Clean any burs left on the ring gear
	The gear train is mechanically bundling up	This requires disassembly of the brake assembly. Remove and replace of the brake assembly.
	Winch is mechanically binding up	Same as above
	Damaged clutch T-handle linkage	Replace or remove the clutch assembly
Oil leakage	Damaged drum seals	Replace drum seal
	Damaged drum flanges	Replace drum
	Front seal in the hydraulic motor shaft has failed	Replace or repair the motor
Excessive noise	Low oil level	Refill oil
	Oil flow too high	Check oil flow rate
Fail in immediate stop after power off	Fail in installing or damaged over-center valve	Check over-center valve
	Wrong oil flow direction of port A & B on the over-center valve	Check over-center valve
	Damaged brake assembly	Replace or repair brake assembly
Drum noise	Insecure mounting	Check mounting
	Low oil flow	Check flow rate
	Low relief	Check relief valve setting

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