



NOVAWINCH™

INSTRUCTIONS AND OPERATOR'S GUIDE

HYDRAULIC WINCH

HEN30000

HEN35000

HEN40000

HEN45000

HEN45000L

PLEASE READ CAREFULLY BEFORE OPERATE THE WINCH



20210908



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	65	Spring washer $\phi 6$	4
Accessories	66	Hardware	1ST
	67	Wire rope tensioner	1
	68	Wire rope (optional)	1
	69	Hook (optional)	1
	70	Hand Saver (optional)	1

Gearbox Assembly	25	V-seal VA-220-N60	1
	26	Nylon washer	1
	32	Drive shaft	1
	34	Hexagon socket cap screws M8×25	8
	35	Spring washer φ8	8
	36	Seals cover plate	1
	37	O-ringφ155×φ2.55	1
	38	Lip seal B71	1
	39	Double row cylindrical roller bearing NN 3019	1
	40	Gearbox support	1
	41	O-ring φ272×φ5.3	2
	42	2nd stage ring gear	1
	43	Cylindrical pin φ12×90	8
	44	2nd planetary gear assembly	1
	45	2nd stage sliding bearing	1
	46	1st gearbox housing	1
	47	Cooper gasket φ16	2
	48	Hexagon headed bolt M16×1.5×20	2
	49	1st Sliding bearing	2
	50	Hexagon socket cap screws M8×100	8
Pneumatic Clutch Assembly	51	Spring washer φ8	8
	52	Flat washer φ8	8
	53	O-ring φ265×φ2.65	1
	54	1st stage ring gear	1
	55	Drive Shaft	1
	56	1st planetary gear assembly	1
	57	1st sun wheel assembly	1
	58	Back cover	1
	59	Hexagon socket cap screw M6×35	8
	60	Spring washer φ6	8
	61	Flat washer φ6	8
	62	O-ring φ30×φ2.65	1
	63	Cylinder φ63×40	1
	64	Hexagon socket cap screw M6×75	4

Safety Warnings and Precautions

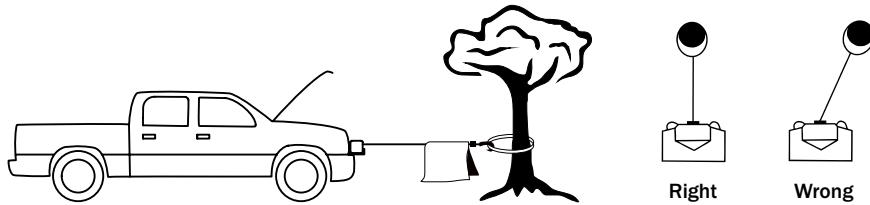
 **WARNING** When using the winch, basic safety precautions should always be followed to reduce the risk of personal injury and damage to the equipment. Read all this instructions before using this winch!

1. Keep children away. Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.
2. Store idle equipment. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
3. Dress properly. Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
4. Use eye and ear protection. Always wear impact safety goggles. Wear a full face shield if you are producing metal filings or wood chips. Wear a dust mask or respirator when working around metal, wood, and chemical dusts and mists.
5. Maintain tools with care. Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
6. Disconnect switch. Unplug switch when not in use.
7. Stay alert. Watch what you are doing, use common sense. Do not operate any tools when you are tired.
8. Check for damaged parts. Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not start the winch if switch does not turn ON or OFF properly.
9. Replacement parts and accessories. When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for this winch.
10. Do not operate winch if under the influence of alcohol or drugs. Read warning labels on prescription to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the winch.

Winch Warnings and Precautions

1. Keeps hands and body away form fairlead (cable intake slot) when operating.
2. Secure vehicle in position before using winch.
3. Be certain winch is properly bolted to a structure (or vehicle) that can hold the winch load.
4. Do not use inappropriate attachments to extent the length of the winch cable.

5. Never lift people or hoist loads over people.
6. It is important that lay a blanket or jacket over the wire rope near the hook end when puling loads. This will slow the snap-back of a broken wire rope and help to prevent serious injury and damage.
7. Avoid continuous pulls from extreme angles because this will cause the wire rope to pile up on one end of the drum and damage the wire rope.
8. Never come in between the winch and the load when operating.
9. After moving an item with the winch, secure the item. Do not rely on the winch to hold it for an extended period.



10. Examine winch before using. Components may be affected by exposure to chemicals, salts, and rust.
11. Never fully extent cable while under load. Keep 5 complete turns of cable around the winch drum.
12. Never operate winch if cable shows any signs of weakening, knots or kinks.
13. Winch does not have a locking mechanism. Secure load after moving.
14. Do not cross over or under cable under load.
15. Do not move vehicle with cable extended and attached to load to pull it. The cable could snap.
16. Use gloves while handling cable.
17. Apply blocks to vehicle when parking on an incline.
18. Re-spool cable properly.

Unpacking

When unpacking, check to make sure all parts is included. Refer to Winch Assembly Drawing and Parts List (both with respective item numbers) at the end of this manual.

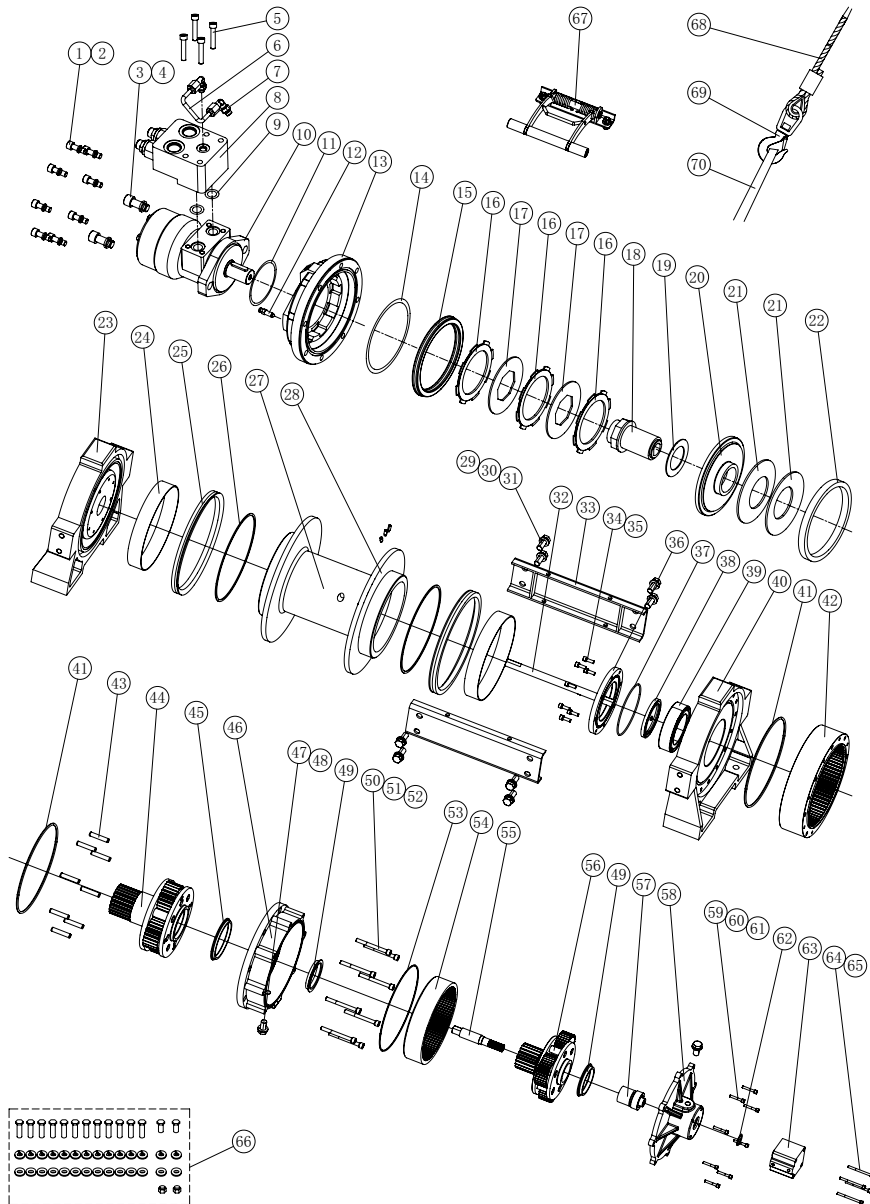
Installation

1. Mount clutch handle to the clutch assembly, screw as tight as possibly by hand.
2. Mount winch to the vehicle by using high strength cap screws. It should be aligned and secured to a solid part of the vehicle (front or rear) where the full rated load will be evenly distributed.
3. Connect the two-color (positive) battery cables from the female connector to screw-down positive (+) terminal of the 12/24V battery.
4. Please refer to installation illustration.

HEN30000-45000L

Assembly	Item	Description	Qty	
Hydraulic Motor & Valve Assembly	3	Hexagon socket screw M12×35	2	
	4	Spring washer φ12	2	
	5	Hexagon socket screw M8×60	4	
	6	U-tube	1	
	7	Adaptor	2	
	8	Block load control	1	
	9	O-ring φ17×φ2.65	2	
	10	Hydraulic motor	1	
	11	O-ring φ82×φ2.65	2	
	12	M7 bleed nipple	1	
	Hydraulic Brake Assembly	1	Hexagon socket screw M8×30	8
		2	Spring washer φ8	8
13		Motor mounting plate	1	
14		O-ring φ155×φ3.1	1	
15		U-seal	1	
16		Stationary disc	3	
17		Rotating disc	2	
18		Rotor	1	
19		Thrust washer	1	
20		Pressure plate	1	
21		Disc spring	2	
22		Supporting ring	1	
23		Hydraulic motor support	1	
24		Drum Sliding bearing	1	
25	V-seal VA-220-N60	1		
26	Nylon washer	1		
Drum Assembly	27	Drum	1	
	28	Hexagon socket set screw with flat point, M8×20	3	
Tie Assembly	29	Hexagon socket cap screws M12×30	8	
	30	Spring washer φ12	8	
	31	Flat washer φ12	8	
	33	Tie bar	2	
	24	Drum Sliding bearing	1	

HEN30000-45000L Winch Assembly Drawing



MOUNTING

The diagrams show the mounting dimensions for the 30000-45000lbs.

The side and feet mounting hole positions are designed to allow the winch to be interchangeable with the most popular 30000-45000lbs units currently available. The diagram below shows the 30000-45000lbs mounted on a flatbed mounting kit, shown with Roller Fairlead. If a mounting plate is not used, the surface must be flat within 0.5 mm (0.015 inch) and sufficiently stiff to prevent flexing. A minimum of 6.0 mm (0.25 inch) thick steel plate should be used. The thicker the plate, the better the alignment the better the alignment between motor mounting, drum and gearbox housing. It is important that the winch is mounted securely so that the motor mounting, drum and gearbox housing are accurately aligned. Be sure the winch will not move under load, otherwise you may cause misalignment in the winch, causing the drum to bind up.

The tie bars supplied with the winch must remain attached when the winch is foot mounted.

Angle mounting is possible and recommended for maximum flexibility in mounting. These mounts allow the winch to be low-mounted. See the diagram below.

Mounting the directional solenoid valve assembly

The valve should be mounted away from any areas where heat may be considered too extreme. Such as an exhaust manifold or turbo. Be sure all plumbing and wiring reaches from the area selected without being stressed. It may be mounted by using the bracket and Allen screws supplied. Using the bracket as a guide, mark the location of where the mounting holes are going to be drilled, remove the plate and drill four 1/4" holes. Mount valve assembly using nuts, bolts.

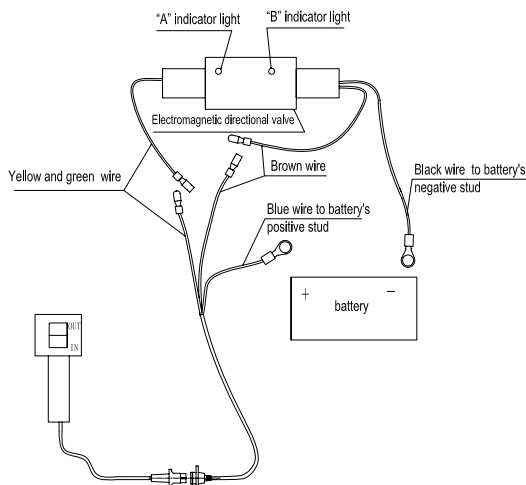
Note: On some vehicles grill may have to be removed to install plumbing and wiring for the winch.

Mounting the balance valve

The balance valve you obtained (it's optional) is simply connected to motor. If your winch system installs a balance valve as complete working mode, be sure the balance valve's installing direction meets hydraulic principle chart. Otherwise, the winch will not reach the rated line pull, and it is also dangerous for winch to power off the cable with heavy load. If this symptom happens, simply disconnect the balance valve, exchange the oil hole between hydraulic motor and balance valve, and reconnect it. If you ordered, then the balance valve should be supplied. It will have been connected with the motor at the factory.

Electrical connections

If winch's power supply is from the vehicle's exiting power steering pump, the solenoid valve system is designed to default to the power steering box so power steering is always available even when the winch is in use. The power source to the solenoid is not energized until the three-pole quick connector plug is plugged in. Each solenoid has two wires—either of which can be used as a ground or for electric power. The grounds are connected to each other at the factory. The other will connect to the blue and yellow wire in the harness (see illustration). Determine a location on the front grill to mount the female 3 pole plug connector. Drill a hole and mount the female 3 pole plug connector using nuts, bolts and washers supplied. Connect all wiring as shown in illustration. Test hand control unit, solenoids will make a slight "click" sound if connected properly.



40000lb Winch Line Pull And Pressure Difference						
Single line pull	lbs	0	16000	24000	32000	40000
	kg	0	7257	10886	14515	18144
Pressure difference between Motor entry and exit	MPa	8	9.5	10.5	12	14

45000lb Winch Line Pull And Pressure Difference							
Single line pull	lbs	0	16000	24000	32000	40000	45000
	kg	0	7257	10886	14515	18144	20412
Pressure difference between Motor entry and exit	MPa	8	9.5	10.5	11	12.5	14

45000lb(L) Winch Performance Specifications	
	HEN45000L
Rated line pull	45000lbs(20412kg)
Gear ratio	30.4:1
Max flow	85L/min
Max pressure	17MPa
Motor displacement	500mL/r
Wire rope	7/8"×190.3'(φ22×58m)
Drum size	8.7"×15"(φ220×381mm)
Overall dimensions	45.24"×19.16"×16.1"(1149×486.6×408mm)
	43.86"×19.16"×16.1"(1114×486.6×408mm)
Bolt pattern	18.9"×11.5"(479.9×292.1mm) 23.4"×11.5"(594.3×292.1mm)
Net weight	650. 5lbs(295kg)

45000lb(L) Winch Line Pull And Cable Capacity					
Layer of cable		1	2	3	4
Rated line pull per layer	lbs	45000	38571	33750	30000
	kg	20412	17496	15309	13608
Line speed	Ft/min	12.5	14.8	17.1	19.4
	m/min	3.8	4.5	5.2	5.9
Cable capacity per layer	Ft.	37.0	82.0	134.0	190.3
	m	11.3	25.0	41.0	58.0

45000lb(L) Winch Line Pull And Pressure Difference							
Single line pull	lbs	0	16000	24000	32000	40000	45000
	kg	0	7257	10886	14515	18144	20412
Pressure difference between Motor entry and exit	MPa	8	9.5	10.5	11	12.5	14

35000lb Winch Line Pull And Pressure Difference							
Single line pull	lbs	0	8000	16000	24000	30000	35000
	kg	0	3632	7257	10886	13608	15876
Pressure difference between Motor entry and exit	MPa	8	9.5	11	12.5	14.5	17

40000-45000lb Winch Performance Specifications		
	HEN40000	HEN45000
Rated line pull	40000lbs(18144kg)	45000lbs(20412kg)
Gear ratio	30.4:1	30.4:1
Max flow	85L/min	85L/min
Max pressure	15MPa	17MPa
Motor displacement	315mL/r	400mL/r
Wire rope	4/5"×147.6'(φ20×45m)	7/8"×111.5'(φ22×34m)
Drum size	7.48"×10"(φ190×254mm)	7.48"×10"(φ190×254mm)
Overall dimensions	40.04"×19.16"×16.1" (1017×486.6×408mm)	42.4"×19.16"×16.1" (1077.2×486.6×408mm)
	38.86"×19.16"×16.1" (987×486.6×408mm)	41.02"×19.16"×16.1" (1042.2×486.6×408mm)
Bolt pattern	13.5"×11.5"(342.9×292.1mm) 18"×11.5"(457.3×292.1mm)	13.5"×11.5"(342.9×292.1mm) 18"×11.5"(457.3×292.1mm)
Net weight	584lbs(265kg)	595lbs(270kg)

40000lb Winch Line Pull And Cable Capacity						
Layer of cable		1	2	3	4	5
Rated line pull per layer	lbs	40000	33600	28966	25455	22703
	kg	18144	15241	13139	11546	10298
Line speed	Ft/min	13.8	16.1	18.4	20.7	23.3
	m/min	4.2	4.9	5.6	6.3	7.1
Cable capacity per layer	Ft.	25.9	56.7	92.5	133.2	147.6
	m	7.9	17.3	28.2	40.6	45.0

45000lb Winch Line Pull And Cable Capacity					
Layer of cable		1	2	3	4
Rated line pull per layer	lbs	45000	37266	31800	27733
	kg	20412	16903	14424	12579
Line speed	Ft/min	12.5	14.8	17.1	19.4
	m/min	3.8	4.5	5.2	5.9
Cable capacity per layer	Ft.	25.23	53.05	82.57	111.5
	m	7.6	16.2	25.2	34.0

Plumbing connections

Keep all hoses away from any areas where heat may be considered too extreme such as an exhaust manifold or turbo. Lines should not be allowed to rub on any abrasive or vibrating surfaces. In some applications, right angle fittings on the directional valve and motor or balance valve are necessary to make hose mounting more flexible. After plumping has been laid out on vehicle, install o-ring fitting supplied to valve. Torque tight. DO NOT OVERTIGHTEN ANY FITTINGS. Install o-ring fitting on winch motor. Torque tight. Connect any hose to port A on motor or port C1 on balance valve to port A on directional valve, port B on motor or port C2 on balance valve to port B on directional valve, port P on directional valve to pump's high pressure port, port T on valve to reservoir. Attach any o-ring or seal from vehicles original tube fitting to tube fitting.

Hydraulic system requirements

Refer to the performance charts below to properly match your hydraulic system to the winch performance.

A motor spool directional control valve is recommended.

HEN30000/35000:

SYSTEM REQUIREMENTS:
2000 PSI RELIEF VALVE SETTING
15 G.P.M. FLOW RATE *
10 MICRON NORMAL FILTRATION

*Caution: Do not exceed 15 G.P.M. If exceeded, motor and winch may be damaged.

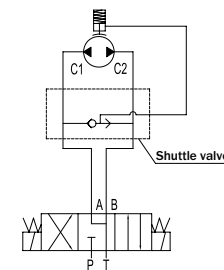
HEN40000/45000/45000L:

SYSTEM REQUIREMENTS:
2000 PSI RELIEF VALVE SETTING
16 G.P.M. FLOW RATE *
10 MICRON NORMAL FILTRATION

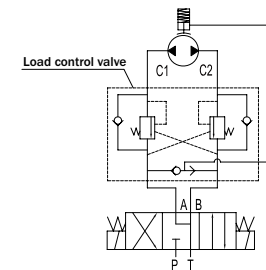
*Caution: Do not exceed 16 G.P.M. If exceeded, motor and winch may be damaged.

Working hydraulic principle chart:

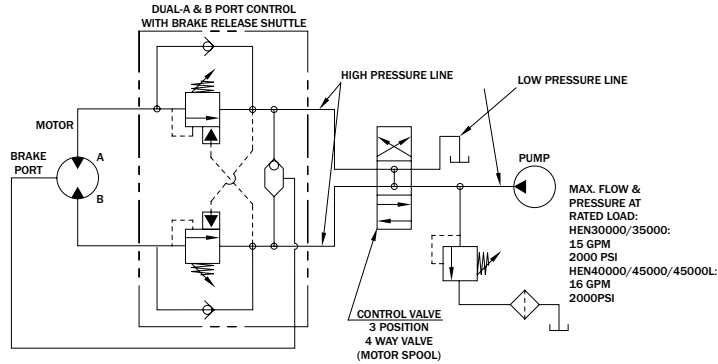
Without load control



With load control



Typical layout



Battery cables should not be drawn taut, leave slack for some cable movement.

If your application is supplied with an added cooler, please refer to illustration. Check fluid level. Replace lost fluid to system. System will need to be purged. Start engine. Power winch cable in 5 feet. Shut engine off. Check fluid level. (Add fluid until full. start engine. power winch cable. Out 5 feet. Shut engine off. Check fluid level.) Add fluid until full if necessary. Start engine. Power winch cable into desired position. Turn vehicle wheels from lock to lock position 5 times. This will aid in bleeding out any air that may have got into the system.

If the hand control unit is working backwards, simply exchange the brown and white wire connectors.

Winch cable must be wound onto the drum under a load of at least 10% rated line pull or outer wraps will draw into inner wraps and damage winch cable.

Test winch for proper operation. Refer to the operation section below.

WARNINGS!

1. Make sure the clutch is totally engaged before starting any winch operation;
2. Stay clear and away from raised loads;
3. Stay clear of cable while pulling do not try to guide cable;
4. A min. of 5 wraps of cable around the drum.

General information

The winch's standard equipments contain gear reducer, drum, hydraulic motor, solenoid valve, switch assembly, female connector and plumbing fittings. The winch obtains its pressure from the vehicle's existing power steering pump or other hydraulic power. The winch is totally sealed, can be used underwater.

There are several ways to supply the pressure for winch. The first way: use an individual

30000-35000lb Winch Performance Specifications

	HEN30000	HEN35000
Rated line pull	30000lbs(13608kg)	35000lbs(15876kg)
Gear ratio	30.39:1	30.39:1
Max flow	70L/min	70L/min
Max pressure	17MPa	17MPa
Motor displacement	315mL/r	400mL/r
Wire rope	3/4"×170.6'(φ18×52m)	3/4"×170.6'(φ18×52m)
Drum size	7.48"×10"(φ190×254mm)	7.48"×10"(φ190×254mm)
Overall dimensions	38.84"×19.16"×16.1" (1012×486.6×408mm)	38.84"×19.16"×16.1" (1012×486.6×408mm)
	38.46"×19.16"×16.1" (977×486.6×408mm)	38.46"×19.16"×16.1" (977×486.6×408mm)
Bolt pattern	13.5"×11.5"(342.9×292.1mm) 18"×11.5"(457.3×292.1mm)	13.5"×11.5"(342.9×292.1mm) 18"×11.5"(457.3×292.1mm)
Net weight	573lbs(260kg)	573lbs(260kg)

30000lb Winch Line Pull And Cable Capacity

Layer of cable		1	2	3	4	5
Rated line pull per layer	lbs	30000	25578	22288	19750	17728
	kg	13608	11600	10108	8957	8040
Line speed	Ft/min	15.1	17.4	19.7	22.0	24.3
	m/min	4.6	5.3	6.0	6.7	7.4
Cable capacity per layer	Ft.	22.9	52.5	91.8	134.5	170.6
	m	7.0	16.0	28.0	41.0	52.0

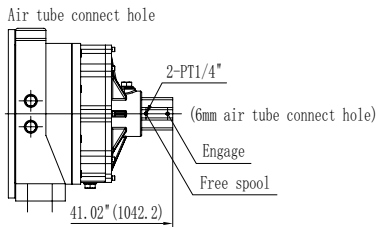
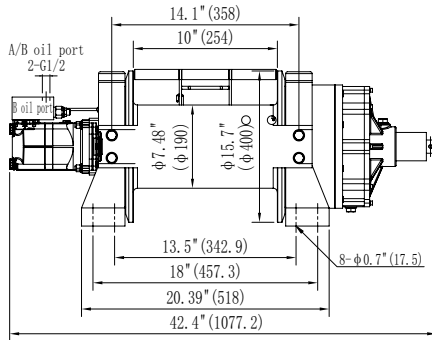
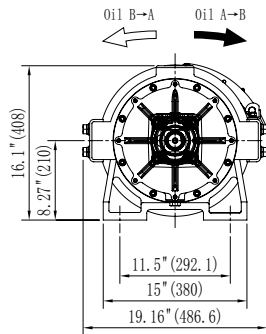
35000lb Winch Line Pull And Cable Capacity

Layer of cable		1	2	3	4	5
Rated line pull per layer	lbs	35000	29836	26000	23038	20682
	kg	15876	13533	11793	10450	9381
Line speed	Ft/min	15.1	17.4	20.0	22.6	25.3
	m/min	4.6	5.3	6.1	6.9	7.7
Cable capacity per layer	Ft.	22.9	52.5	91.8	134.5	170.6
	m	7.0	16.0	28.0	41.0	52.0

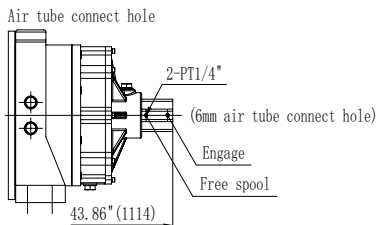
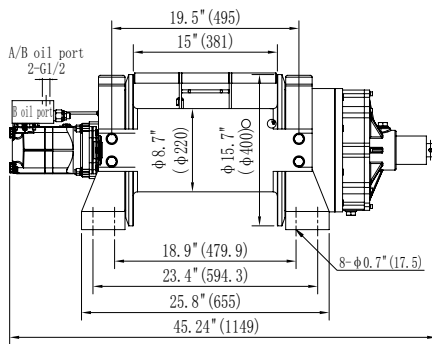
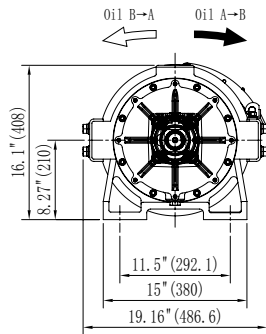
30000lb Winch Line Pull And Pressure Difference

		lbs	0	8000	16000	24000	30000
Single line pull	kg	0	3632	7257	10886	13608	
	MPa	8	9.5	11	12.5	15	
Pressure difference between Motor entry and exit							

HEN45000



HEN45000L



pump for engineering use; the second way: the winch's pressure is from the vehicle's exiting power steering pump as installation illustration:

- (1) Use a suitable individual pump which has no oil valve. It supplies pressure for both steering box and winch.
- (2) Use a combined pump which integrates an oil valve. The oil valve supplies two kinds of flow for different demand, one with constant flow is for steering use, the other with higher power is for engineering use. Refer to installation. You can choice the best suitable way.

If your winch is installed as a simple working mode (standard supplied), NEVER POWER WINCH CABLE OUT WITH HEAVY LOAD, that will be very dangerous. If your winch is installed with a balance valve as a complete working mode, you can power winch cable in and out under heavy load even lifting.

1. Disengage the clutch by turning the clutch to the "out" position.
2. Grab the Cable and hook assembly and pull the cable to the desired length, then attach to item being pulled.

CAUTION always leave at least five turns of cable on the drum. Review winch Safety Warnings and Precaution before continuing.

3. Re-engage the clutch by turn the clutch to the "in" position. If necessary to turn the drum make a slight "click" sound while engaged properly, then turn the clutch tight.
4. Lift the female connector cover exposing the electric switch connector.
5. Insert the switch assembly connector on to the female connector.
6. While standing aside of the towing path, press (and hold) the push button on the switch assembly. Press (and hold) the opposite push button to reverse directions. Wait until the motor stops before reversing directions.
7. When the towing is complete remove the switch assembly. From the female connector and replace the female connector's cover.

Maintenance

It is highly recommended and that the winch be used regularly (once a month). Simply power the cable out 15m, free spool 5m and then power back in. This will keep all components in good working condition so that the winch can be relied on when needed. Contact your authorized outlet for technical assistance and repairs.

Trouble shooting

SYMPTOM	POSSIBLE CAUSE	SUGGESTED ACTION
Winch does not turn	-Insufficiently hydraulic system pressure. -Improper connections of hydraulic system, no oil into motor.	-Check relief valve regulate pressure. -Check all the plumbing fixtures according to the working principle chart. -Defective directional control valve.

Motor runs but Cable drum does not turn	-The clutch is Not engaged.	-Turn the clutch to the high or lows peed position. If problem still persists, a qualified technician needed to check and repair.
Winch drum runs slowly or without normal power	-Insufficient pressure or oil flow. -Insufficient fluid in the system. -Wrong winch working direction.	-Bump is not suitable or defective. Change a new one or a suitable one -Check fluid level. Add fluid until full. -Change the connection of balance valve and motor.
Winch cannot spool off wire rope with load smoothly	-Wrong winch working direction.	-Change the connection of balance valve and motor.

Lubrication

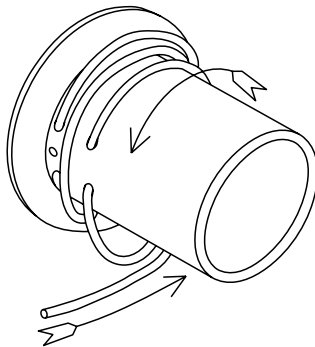
1. All moving parts within the winch having been lubricated using high temperature lithium grease at the factory. No internal lubrication is required.
2. Lubricate cable assembly periodically using light penetrating oil.

Cable Assembly Replacement

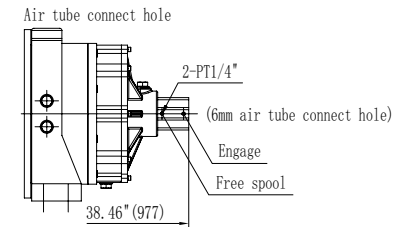
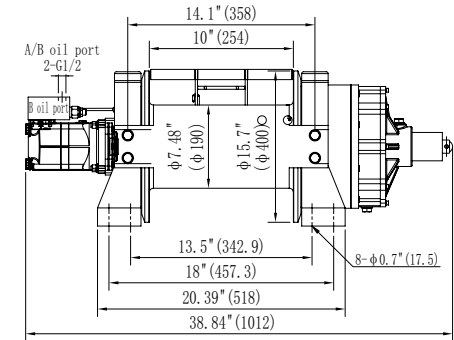
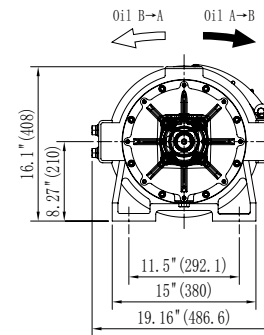
1. Turning clutch to the "Clutch Out" position.
2. Extend cable assembly to its full length. Pay attention to how the existing cable is connected to the drum.
3. Remove old cable assembly and attach new one.
4. Retract cable assembly onto drum, first five wraps being careful not to allow kinking of the winch cable must be wound onto the drum under a load of at least 10% rated line pull.
5. The roller fairlead is to be mounted so as to guide the rope onto the drum evenly.

Pulling out the rope

Dis-engage the freespool. With a pair of gloves on, pull out the rope and secure to anchor or load. Re-engage the freespool.



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