HYDRAULIC WINCH

INSTRUCTIONS

Safety Warnings and Precautions

WARNING : When using the tool , 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 tool!

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 use the tool if any switch does not turn "On" and "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 use this tool.

10. **Do not operate tool 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 tool.

Winch Warnings and Precautions

1. Keeps hands and body away from 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 extend the length of the winch cable.
5. Never lift people or hoist loads over people.
6. Never come in between the winch and the load when operating.
7. Do not apply load to winch when cable is fully extended. Keep at least 5 full turns of cable on the reel.
8. After moving an item with the winch, secure the item. Do not rely on the winch to hold it for an extended period.
9. Examine winch before using. Components may be affected by exposure to chemicals, salts, and rust.
10. Never fully extend cable while under load. Keep 5 complete turns of cable around the winch drum.
11. Never operate winch if cable shows any signs of weakening, knotted or kinked.
12. Winch does not have a locking mechanism. Secure load after moving.
13. Do not cross over or under cable under load.
14. Do not move vehicle with cable extended and attached to load to pull it. The cable could snap.
15. Use gloves while handling cable.
16. Apply blocks to vehicle when parking on an incline.
17. 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 like item numbers) at the end of this manual.

Installation

1. Mount Clutch handle (28) to the Clutch assembly (3), screw tightest as possibly by hand.

2. Mount Winch to the vehicle using high strength cap screw (32). 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 (40) to screw-down positive (+) terminal to the 12/24 volt battery.

4. Please refer to installation illustration.

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 is selected without being stressed. It may be mounted by using the bracket and allen screws suppied. 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 supplied 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 your ordered that 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 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

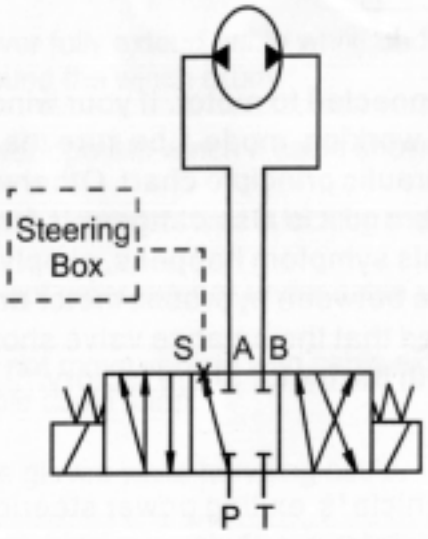
Plug is plugged in. Each solenoid has two wires-either of which can be used as a ground or for electric power. The grounds are connected to each other at the factory. The other will connect to the blue and yellow wire in the harness (see illustration).Determine a location on the front grill to mount the Female 3 Pole Plug Connector. Drill a hole and mount 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.

Plumbing Connections

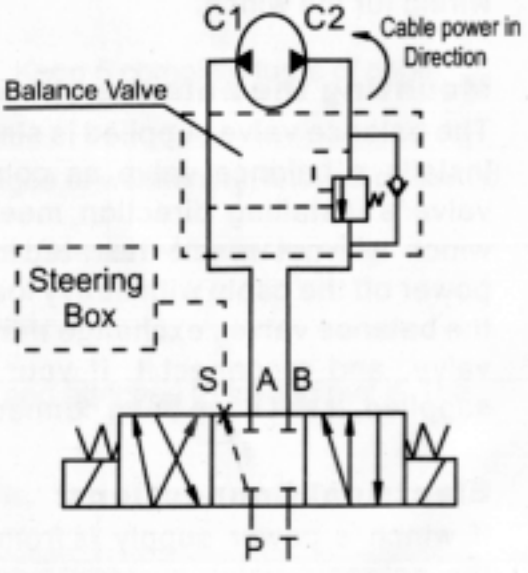
Keep all hoses away from any areas where heat may be considered too extreme such as an exhaust manifold or turbo. Lines should not be allowed to rub on any abrasive or vibrating surfaces. In some applications, 90° fittings on the directional valve and motor or balance valve are necessary to make hose mounting more flexible. After plumbing has been laid out on vehicle, install o-ring fittings supplied to valve. Torque tight. DO NOT OVERTIGHTEN ANY FITTINGS. Install o-ring fittings on Winch Motor. Torque tight. Connect any hose port A on motor or port V1on balance valve to port A on directional valve, port B on motor or port V2 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, if necessary Connect any hose port S on valve to steering box. Attach any o-ring or seal from vehicles original tube fitting to tube fitting.

Working hydraulic principle chart:

Simple working mode

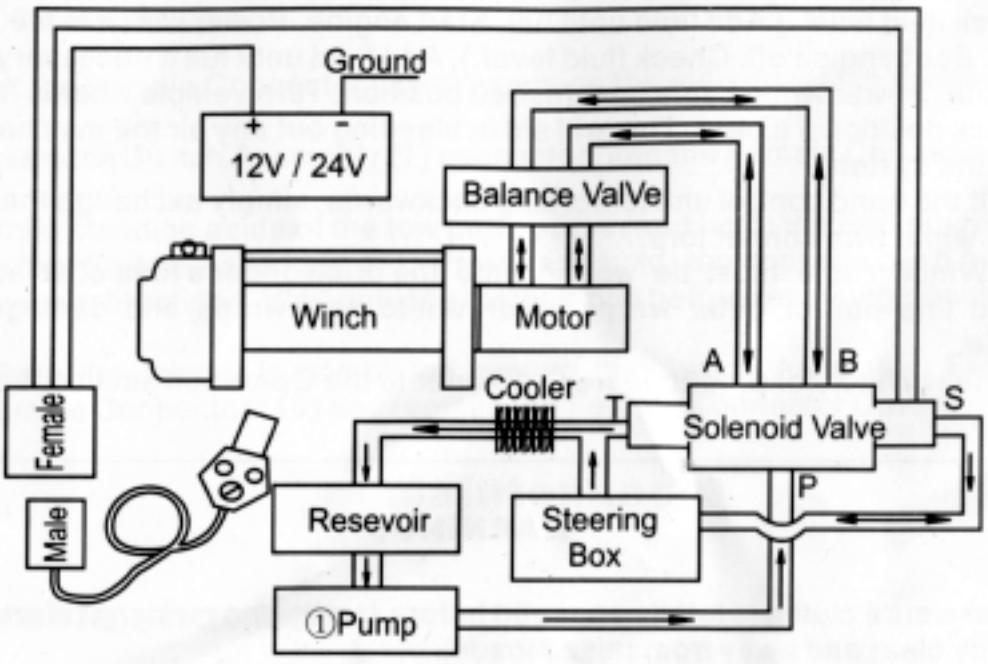


Complete working mode

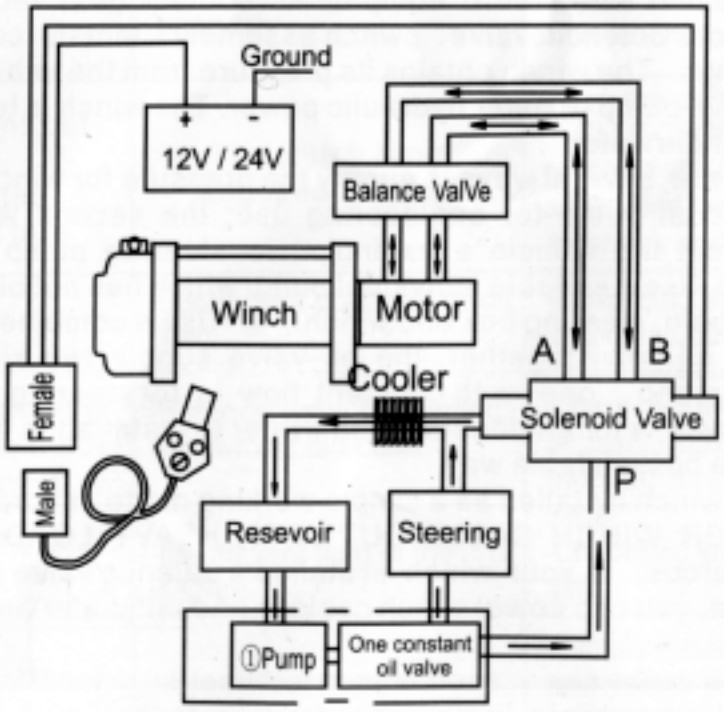


Installation illustration (Complete working mode):

1. Hydraulic power from a suitable individual pump



2. Hydraulic power from a combined pump



Caution:

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 wring cable into desired position. Turn vehicle wheels from lock to lock position 5 timers. This will aid in bleeding out any air the 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 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 barrel.

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 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 not oil valve; it supply pressure for both steering box and winch. ② Use a combined pump which integrate an oil valve together, the oil valve supply two kinds of flow for difference demand , one with constant flow is for steering use, the other with higher power is for engineering use. Refer to installation illustration. You can choice the best suitable way.

If your winch installed as a simple working mode (standard supplied), NEVER POWER WINCH CABLE OUT WITH HEAVY LOAD; that will be serious dangerous. If your winch in stalled 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 (3) to the "out" position.

2. Grab the Cable Assembly (4) hook 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 Precautions on page 2、3 before continuing.

3. Reengage the clutch by turn the clutch (3) to the "In" position. If necessary to turn the drum make a slight "click" sound while engaged properly, then finger the clutch tight.

4. Lift the Female Connector Cover exposing the electric switch connector .

5. Insert the Switch Assembly (7) connector onto the Female Connector (40).

6. While standing aside of the tow path, press (and hold) the Red push button on the Switch Assembly (7). 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 (40) and replace the Female Connector Cover.

Maintenance

Trouble shooting

SYMPTOM	POSSIBLE CAUSE	SUGGESTED ACTION
Which does not turn	-Electrical connections have not connected properly	-Insert Switch Assembly all the way into connector. -Tighter nuts on all cable connections.
Motor runs but Cable drum does not turn	-The clutch is not engaged	-Turn the clutch to the "CLUTCH IN" 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 -Balance valve connected with wrong direction. -Insufficient fluid in the system.	-Bump is not suitable or defective.Change a new one or a suitable one. -Disconnect the balance valve; exchange the oil hole between hydraulic motor and balance valve. -Check fluid level. And fluid until full.
The switch Ass'y working in backwards	-Electrical connections are in wrong direction.	-Simply exchange the blue and yellow wire connectors at the solenoid of directional valve.

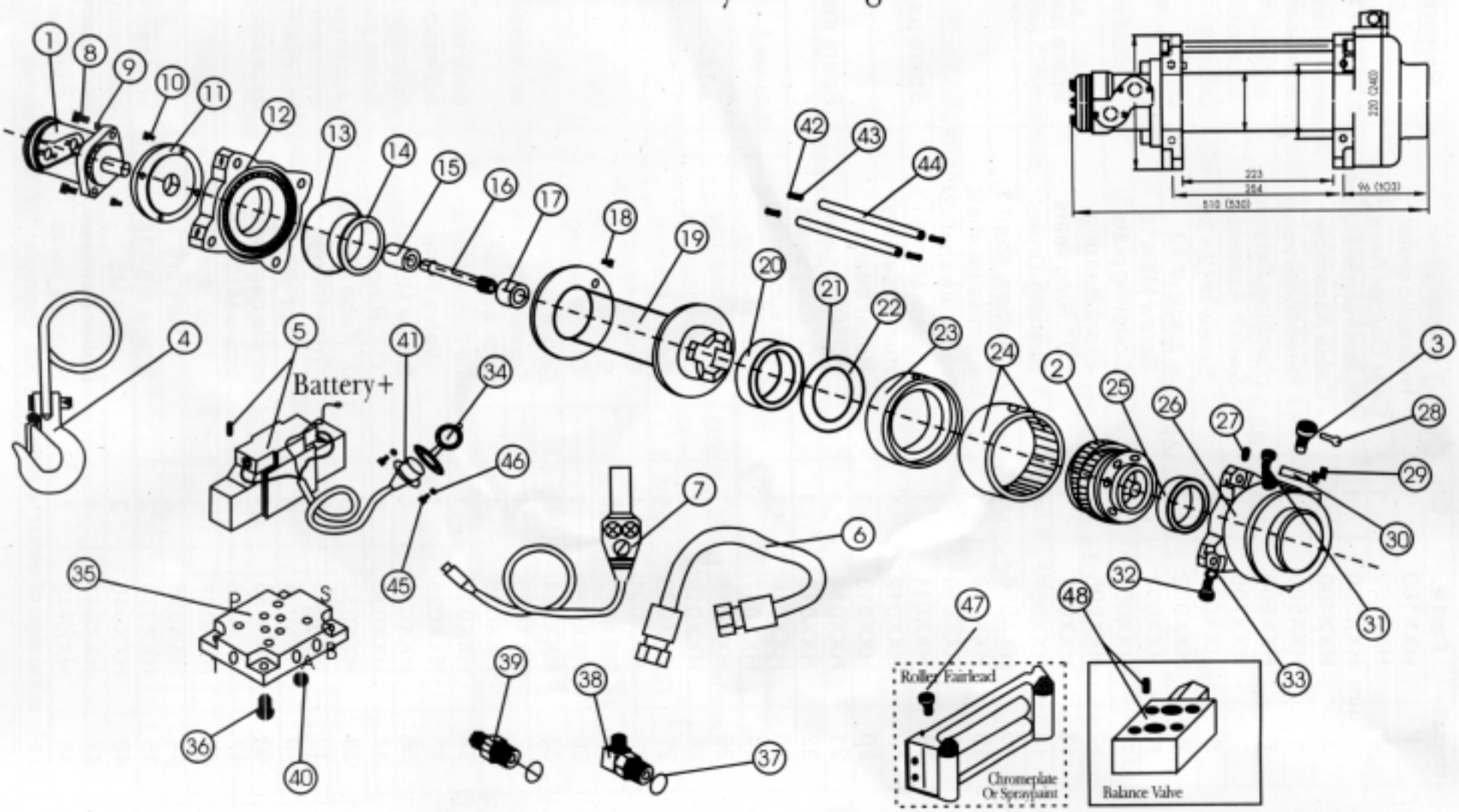
Lubrication

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 a light penetrating oil.

Cable Assembly Replacement

1. Turning clutch to the "Clutch Out" position.
2. Extend Cable Assembly to its full length. Note 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 then winch cable must be wound onto the drum under a load of at least 10% rated line pull.

Winch Assembly Drawing



Winch Parts List

Item #	Part #	Qty	Description	Remark
1	HXX100	1	Hydraulic motor	
2	HXX200	1	Gear Carrier Assembly	
3	HXX300	1	Clutch Assembly (free spooling)	
4	HXX400	1	Cable Assembly	Accessory (Hook)
5	HXX500	1	Directional valve	accessory
6	HXX600	4	plumbing fixtures	accessory
7	HXX700	1	Switch Assembly	accessory
8	HXX001	2	Screw M12×35	
9	HXX002	2	Lock ¢12	
10	HXX003	4	Screw M8×16	
11	HXX004	1	Coupling plate	
12	HXX005	1	Front Bearing	
13	HXX006	1	"O" Ring seals	Spare part
14	HXX007	1	Bushing-Drum	
15	HXX008	1	Transition shaft 1	
16	HXX009	1	transmission shaft	
17	HXX010	1	Transition shaft 2	
18	HXX011	1	Screw M6×8	Spare part
19	HXX012	1	Drum Assembly	
20	HXX013	1	Roller bearing	
21	HXX014	1	"O"Ring seals	Spare part
22	HXX015	1	"O"Ring seals	
23	HXX016	1	Inner supporting	
24	HXX017	1	Gear-Ring	
25	HXX018	1	Roller bearing	
26	HXX019	1	Gear-Housing	
27	HXX020	1	Screw M8×10	
28	HXX021	1	Clutch handle	
29	HXX022	4	Screw M6×20	
30	HXX023	1	Clutch setting	
31	HXX024	12	Screw M12×15	
32	HXX025	4	Screw M12×35	accessory
33	HXX026	4	Lock washer ¢12	
34	HXX027	1	Female connector cover	accessory
35	HXX028	1	Valve Plate	accessory
36	HXX029	4	Screw M6×45	accessory
37	HXX030	6	"O" Ring seals	Spare part
38	HXX032	3	90° Tube fittings	accessory
39	HXX033	3	Tube fittings	accessory
40	HXX034	4	Nut M6	accessory
41	HXX035	1	Female connector	accessory
42	HXX036	4	Screw M10×35	
43	HXX037	4	Lock ¢10	
44	HXX038	2	Tie bar	
45	HXX039	2	Screw M5×16	accessory
46	HXX040	2	Nut M5	accessory
47	HXX041	1	Roller Fairlead	accessory
48	HXX042	1	Balance Valve	Optional

"xx" is the sign of winch's rated line pull. Example: 10000 lbs shows "10".

NHW10000

Performance Specifications

Single line rated pull	10000 lbs (45 kN)
MAX.line pull	12500 lbs (56.7 kN)
Gear reduction ratio	67:1
Motor	Hydraulic motor Dls.50
Drum size	ø 2.8″ (D)×8.8″ (L);ø72mm(D)×222mm(L)
Cable	ø13/32″ (D)×87′ (L);ø10.3mm(D)×26.5m(L)
Overall dimensions	20″ (L)×7.3″ (W)×8.8″ (H) 510mm(L)×186mm(W)×224mm(H)
Mounting bolt pattern	10″ ×4.5″ (254mm×114.3mm)
Weight	102lbs (46 kgs)

Pull、Speed、pressure、Flow (First layer)

Line pull	pressure		Flow	Line speed
Lbs	Mpa		G/min(L/min)	Ft/min(m/min)
0	1.0		5.3(20)	5(1.5)
6000	6.5		7.9(30)	7.5(2.3)
10000	9.5		13.2(50)	13(3.8)

Line pull and cable capacity

Layer of cable		1	2	3	4
Rated line pull per layer	lbs	10000	8020	6700	5800
	kN	45	36	30	26
Total Rope on drum	ft.	18	41	66	87
	m	5.6	12.6	20.0	26.5