

70 SERIES WINCH INSTRUCTIONS

MILE MARKER

Tested to the Extreme

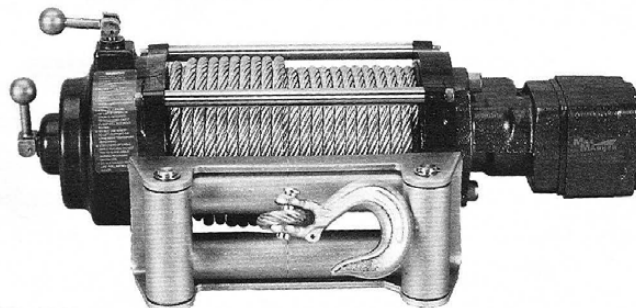
HYDRAULIC WINCH & P.T.O. SYSTEM

Affordable • Lightweight • Dependable

Warning: This winch is never to be used for lifting.

70 SERIES WINCH FEATURES:

Hydraulic
Smooth Power
Reversible Mounting
Planetary Gears
Multiple Safety Features
Completely Sealed
NO BATTERY DRAIN



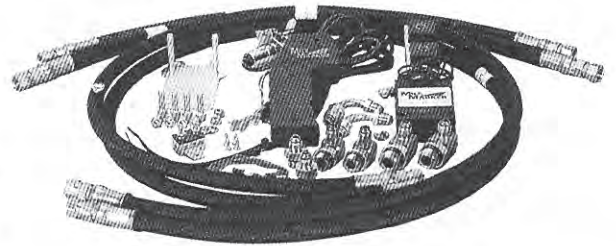
WARNING – 70 SERIES WINCH

1. Make sure clutch is totally engaged before starting any winch operation.
2. Never disengage clutch under load.
3. Stay clear and away from raised loads.
4. Stay clear of cable while pulling! Do not guide cable.
5. Do not exceed maximum line pull ratings.
6. Do not use winch to lift, support, or otherwise transport personnel.
7. A minimum of five wraps of cable around the drum barrel is necessary to hold the load. Cable clamp is not designed to hold load!

NOTE:

Must have a 34 Series Valve Adapter Kit to complete assembly. Kit includes:

12 ft. lead remote control. All hoses and fittings included. Power in and power out. Remote solenoid activated control valve draws only two amps. Uses existing power steering pump as hydraulic power source.



CABLE MUST SPOOL OFF BOTTOM OF DRUM

MOUNTING THE MILE MARKER SOLENOID VALVE ASSEMBLY:

The Mile Marker solenoid 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. The Mile Marker solenoid valve 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 and remove the plate and drill two $\frac{21}{64}$ " holes. Mount valve assembly using nuts, bolts and washers supplied. Your solenoid valve comes with a flow disc. Make sure you install it in the right port. See Figure 2.

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

ELECTRICAL CONNECTIONS:

The Mile Marker valving system is designed to default to the power steering gearbox so power steering is always available even when the winch is in use. The power source to the solenoid is not energized until the four pole Quick Connector Plug is plugged in. Each solenoid has two black 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 black wires plug to the white and black wire in the harness (see illustration). Determine a location on the front grill to mount the female 4-pole plug connector. If desired, the female 4-pole plug connector is connected to the winch with the top motor bolt. If you choose to take the plug out of the box, drill four holes at your desired location and secure with screws. Attach the circuit breaker to the vehicle under the hood. Connect all wiring as shown in illustration. Test hand control unit. Solenoids will make a slight "click" sound if connected properly.

PLUMBING CONNECTIONS:

Please refer to illustration. Keep all hoses away from any areas where heat may be considered too extreme (such as exhaust manifold or turbo). Lines should not be allowed to rub on any abrasive or vibrating surfaces. In some applications, 90° fittings on the solenoid 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 over tighten any fittings.** Install O-ring fittings on winch motor. Torque tight. Connect hose number two to port number two on the valve assembly. Attach the other end of hose number 2 to any port on winch. Connect hose number four to port number four on valve assembly and attach the other end of number four to the other port on winch. Torque both hoses (both sides) ¼ turn past finger tight. See (Fig. 1).

Note: Make sure and re-use any O-rings or seals from OEM tube fittings!

Disconnect original (OEM) high pressure line from the power steering pump to the steering gearbox. If your truck has hydroboost brakes, you will remove the high pressure line from the hydroboost to the steering box. Note: Low pressure line will normally have a hose clamp. See Fig. 3.

Caution: Fluid will be lost from the system.

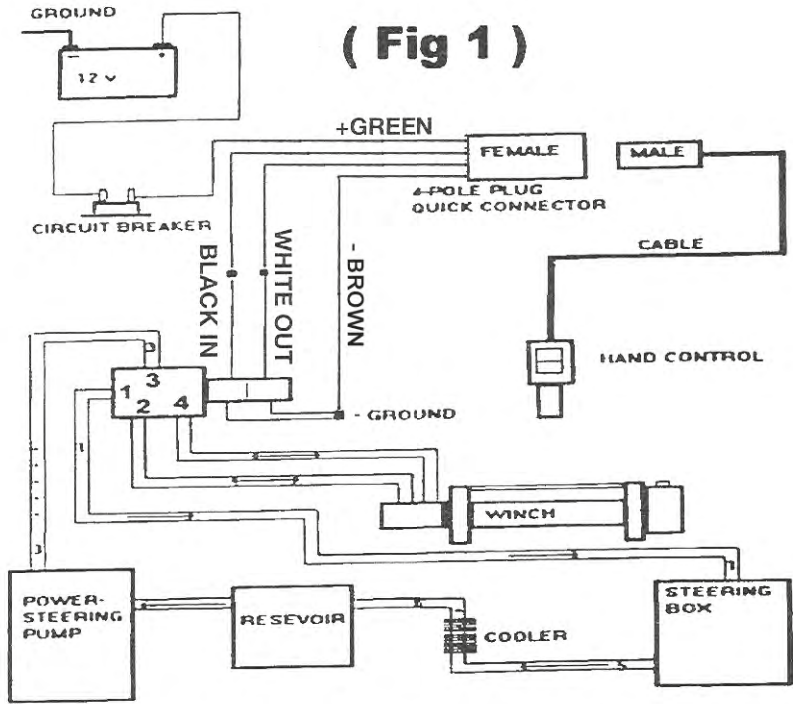
Attach any O-ring or seal from vehicle's original tube fitting to tube fitting #3. Connect tube fitting #3 to power steering pump. Torque to vehicle factory specifications. Connect hose #3 to tube fitting #3. Torque ¼ turn past finger tight. Attach other end of hose #3 to port #3 on solenoid valve. Torque ¼ turn past finger tight. Attach any O-ring or seal from vehicle's original tube fitting to tube fitting #1. Connect tube fitting #1 to steering gearbox. Torque to vehicle factory specification. Attach hose #1 to tube fitting #1. Torque ¼ turn past finger tight. Connect the other end of hose #1 on Solenoid valve. Torque ¼ turn past finger tight. See Fig. 1.

If your application is supplied with an added cooler, remove (OEM) low pressure line from reservoir. Attach hose #5 to existing return line using male to male coupler and hose clamps supplied. Tighten hose clamps. Connect the other side of hose #5 to cooler supplied with hose clamp. Tighten hose clamp. Attach hose #6 to cooler and reservoir with hose clamps. Tighten hose clamps. Check fluid level. Replace lost fluid to system. System will need to be purged. Lift pin on free spool release on winch. Manually pull approximately 10 feet of cable off winch drum. Lock free spool pin back down. Add fluid until full. Start engine. Power winch cable out five feet. Shut off engine. Check fluid level. Add fluid until full if necessary. Start engine. Power winch cable into desired position. Turn the vehicle's front wheels from lock to lock position five times (all the way to the right and then all the way to the left). This will aid in bleeding out any air that may have gotten into the system.

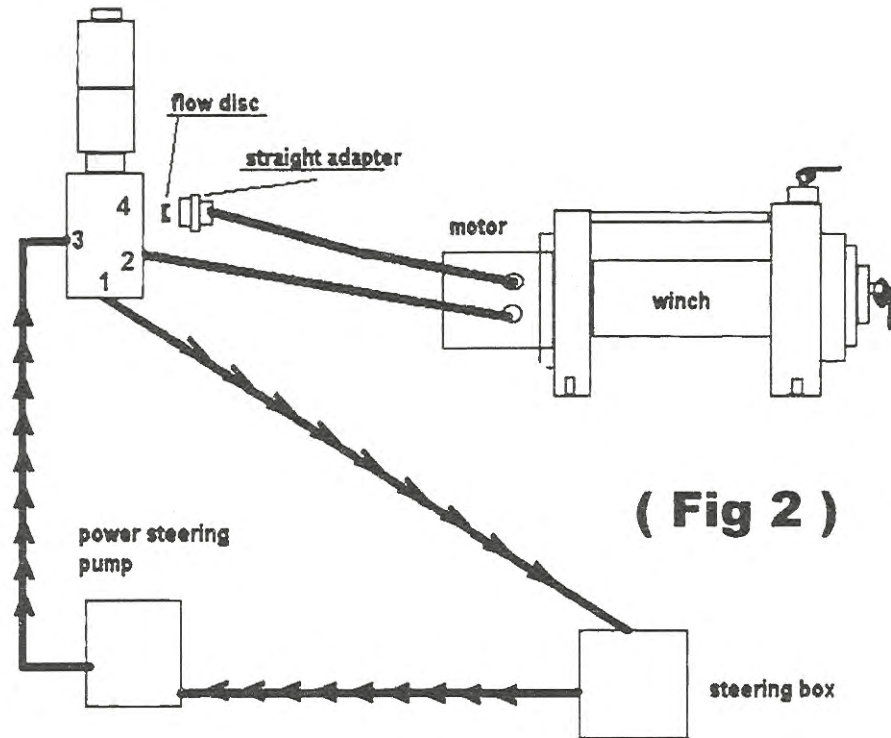
Note: If the hand control unit is working backwards, simply reverse the black and white wire connectors on the valve assembly.

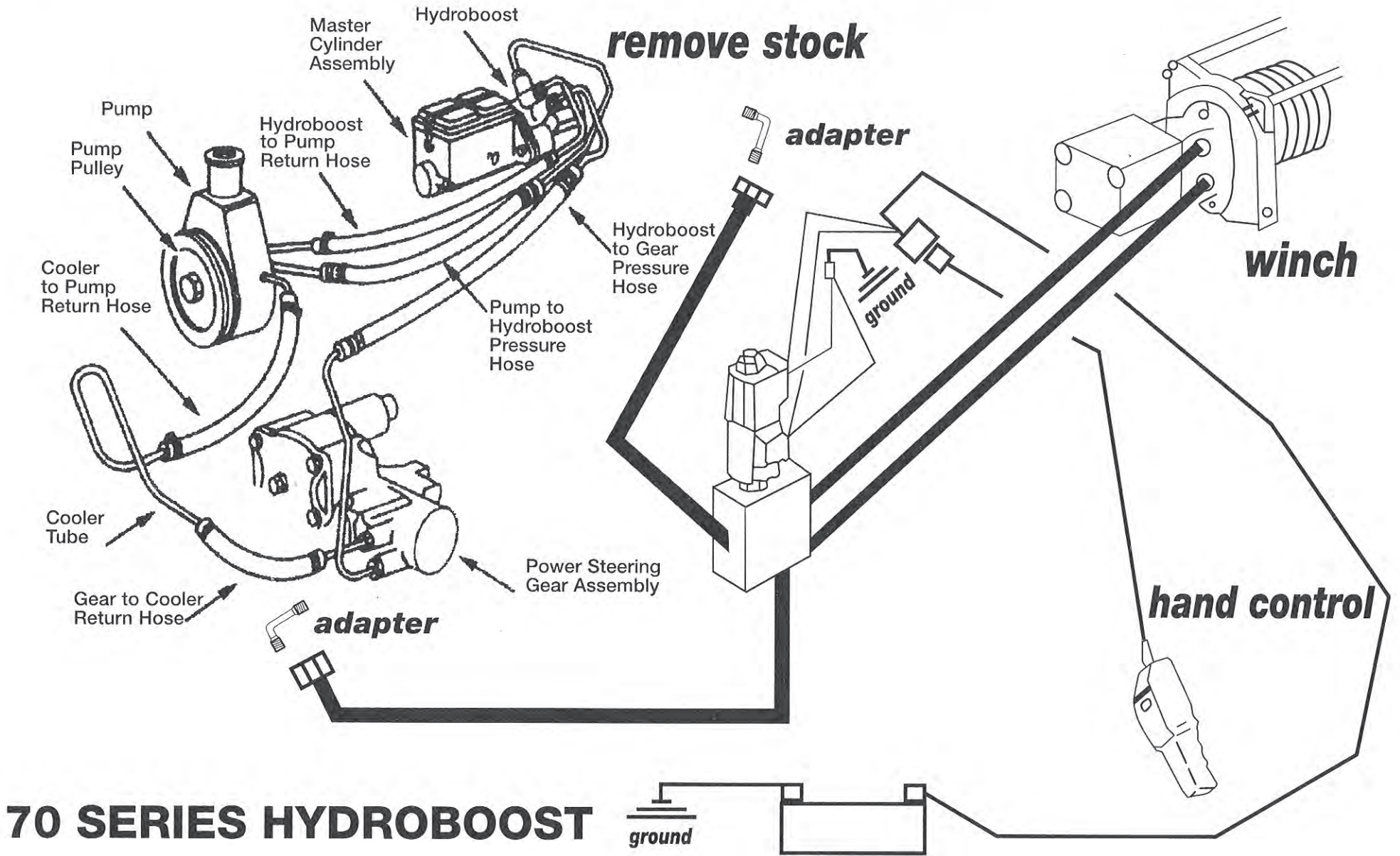
EXTREME BULLETIN

Please attach hand control box to the top motor bolt on the winch assembly.



Disc must be installed in the port that goes to the top port on motor
Disc must be installed with cut side to motor





MILEMARKER 2-SPEED WINCH OPERATION

A. General

The vehicle's steering pump is used to power the winch. The engine must be running while operating the winch, as the engine turns the power steering pump which pumps fluid to rotate the winch. The winch will have full pulling capabilities at an engine idle. The winch is operated by an electric activated switching valve. When engaging or disengaging the clutch and/or shift lever, it may be necessary to rotate the drum by hand to align gears.

B. Preparation for Use

1. For use in pulling objects other than self recovery, park vehicle directly facing object to be winched. Apply parking brake.
2. Place transmission shift lever in "N" (neutral).
3. Start engine.
4. Chock wheels.

C. Unwinding Winch Cable

To unwind cable by hand, turn top lever to "FREE" (free spool). Turn side lever to "FREE" (free spool). Both levers should be in "FREE" positions to unwind cable.

WARNING

- Wear leather gloves when handling winch cable. Do not handle cable with bare hands. Broken wires cause injuries.
- When fully extending winch cable, make sure that five wraps of winch cable remain on drum at all times. Failure to do this may cause serious injury.
- Pull off cable by hand to desired length. Connect to load leaving one foot of slack in cable.

D. Pulling load

1. Turn top lever to "LOW" (lock low gear). Leave the side lever at "FREE" (free spool). This will engage the winch into low gear.

WARNING

- Direct all personnel to stand clear of winch cable during winch operation. A snapped winch cable will cause serious injury or death.
- Do not activate winch electric connector when engine is OFF with a LOAD on cable. This can put the winch into a retarded free spool mode.

2. Operate remote control switch to "IN" or "OUT" until load has been retrieved. Secure winch after operation.

CAUTION

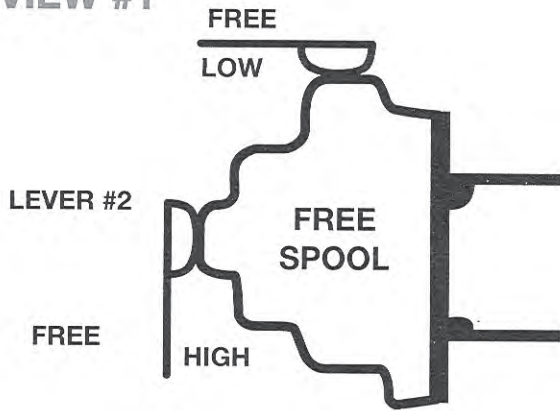
- Winch cable must be wound onto the drum under a load of at least 500 lbs. or outer wraps will draw into the inner wraps and damage the winch cable.

OPERATION OF HIGH GEAR

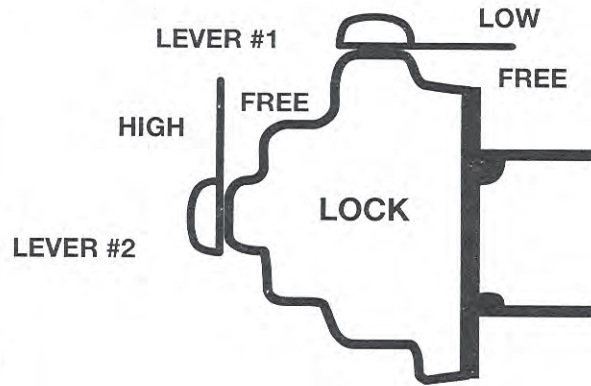
Turn top lever to "FREE." Turn side lever to "HIGH" (lock high gear).

MILE MARKER HYDRAULIC 2-SPEED WINCH LEVER POSITIONS

VIEW #1



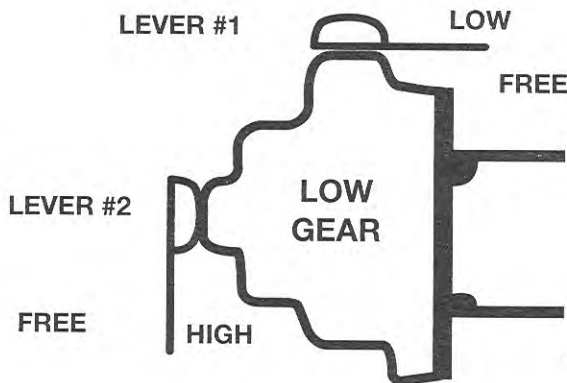
VIEW #2



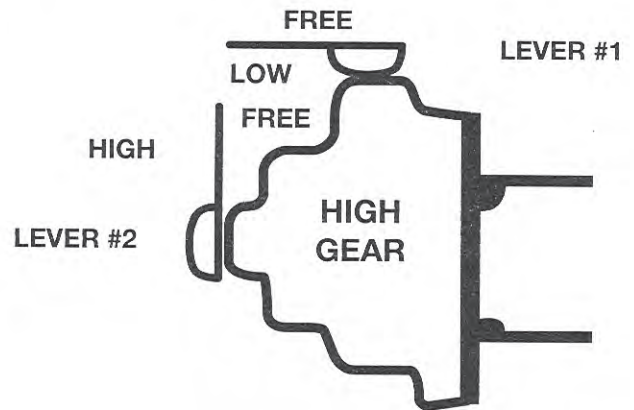
WARNING

DO NOT MOVE SHIFT LEVERS WITH LOAD ON WINCH CABLE!!

VIEW #3



VIEW #4



WARNING

DO NOT MOVE SHIFT LEVERS WHEN POWERING WINCH IN OR OUT!

LEVER POSITIONS AND WINCH MODES:

<u>LEVER #1</u>	<u>LEVER #2</u>	<u>MODE</u>	<u>VIEW #</u>
FREE	FREE	FREE SPOOL	.1
LOW	HIGH	LOCK	.2
LOW	FREE	LOW GEAR	.3
FREE	HIGH	HIGH GEAR	.4

GENERAL OPERATION

The vehicle's hydraulic pump is used to power the winch. The engine must be running for winch operation. The winch has maximum pulling capabilities at engine idle.

The winch is operated by an electrically activated hydraulic switching valve.

- Wear leather gloves when handling winch cable. **DO NOT** handle cable with bare hands as broken wires can cause injuries.
- When extending winch cable, ensure that at least five wraps of cable remain on drum under load. Serious personal injury or property damage may result.
- Ensure that all persons stand well clear of winch cable and load during winch operation, 1.5 times the cable length is recommended. If a cable pulls loose or breaks under load it can lash back and cause serious personal injury or death.
- Draping a heavy blanket or similar object over the extended winch cable is recommended as it will dampen any lash back should a failure occur.
- Ensure rated "D" or bow shackles are used in conjunction with an approved tree trunk protector to provide a safe anchor point.
- **DO NOT** operate the winch control when the engine is **OFF** and a load remains on the cable. This may put the winch into freespool mode when not required, therefore not holding the load.
- Ensure the winch clutch is totally engaged before starting any winch operation. When engaging or disengaging the clutch it may be necessary to rotate the drum by hand to align the clutch pin.
- **NEVER** disengage the winch clutch under load.
- Store the winch with clutch lever function in the **HIGH GEAR** position.
- The maximum winch capacity is available on the first layer of rope on the bare winch drum. During all winching operations it is recommended to unspool the rope back to the first layer so as to provide maximum capacity and avoid rope damage. Ensure that at least five wraps of cable remain on the drum at all times.
- The use of a snatch block will aid recovery operations by providing: A doubling of the winch capacity and a halving of the winching speed; and the means to maintain a direct line pull to the center of the rollers.
- The MileMarker winch is a 2-speed unit, low speed for vehicle recovery winching and high speed for line retrieval.
- **DO NOT** use the winch to lift, support or otherwise transport personnel.
- **DO NOT** drive your vehicle to assist the winch in any way. Vehicle movement in combination with winch operation may overload the cable, the winch itself, or cause damaging shock loads.
- Shock loads when winching are dangerous! A shock load occurs when an increased force is suddenly applied to the cable. A vehicle rolling back on a slack cable may induce a damaging shock load.

WINCHING TIPS AND USE OF A SNATCH BLOCK

1. Use OEM tow hooks, recovery eyes or a clevis mount for attachment of a tow strap or winch cable. Warning: Never use a ball and/or ball mount as an anchor point for tow strap or winch cable. Severe personal injury or death could occur.
2. Always heed all winch manufacturer's recommendations, cautions and warnings.
3. Attach return cable to tow hook or recovery eye when using a snatch block. Always use a clevis to secure snatch block to strap, or severe damage could occur to persons and vehicle. (See Figure 4). Caution: Do not attach return cable to winch mount. This may overload winch mount and/or front receiver.

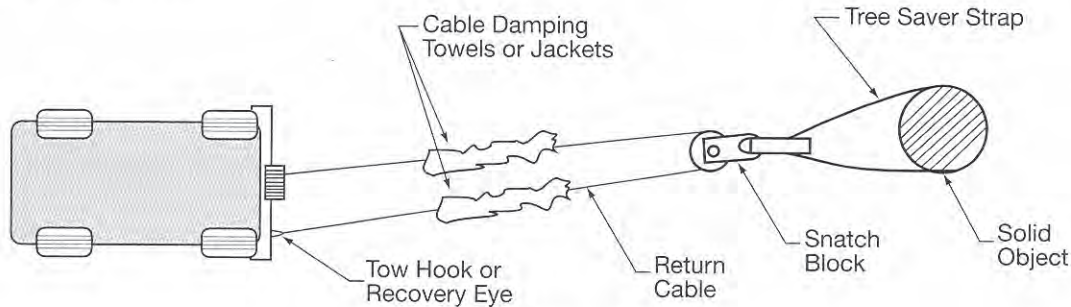


Figure 4

Rating:

For maximum line pull rating, winch cable direction must not exceed:

1. 15° angle up or down from horizontal. (See Figure 5).
2. 45° angle left or right from straight ahead (See Figure 6). Caution: Exceeding the maximum line pull rating may overload winch, winch mount, and/or front mounted receiver.



Figure 5

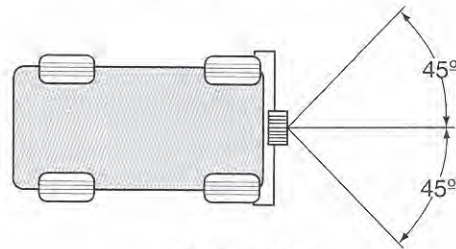


Figure 6

SAFETY TIPS

1. **Never disengage Low Gear clutch lever when there is a load on the winch.** To manually lock the winch to hold a load, engage **BOTH HIGH and LOW GEARS**. First, engage low gear. After low gear is engaged, engage high gear. Power the winch **IN** momentarily. You will hear the high gear engage and the winch will “lock up.” In this position, it is mechanically locked up and will not freespool, power **IN** or **OUT**. To disengage locked position, disengage high gear lever to “**FREE**.” Power the load **OUT** momentarily and the spring loaded high gear will disengage, leaving the winch in low gear.
2. Store the remote control cord in a safe place when not in use to prevent use by children or other unauthorized persons who could injure themselves or others or damage the controls.
3. Do not operate winch under the influence of drugs, alcohol or medications.
4. Isolate winch before putting your hands in or around the fairlead or wire rope drum (The Danger Zone).

5. **Do not overload your winch.** Do not maintain power to the winch if the drum stops. Overloads can damage the vehicle, winch or winch rope and create unstable operating conditions.
6. It is recommended to lay a heavy blanket or jacket over the rope about half way along to the hook attachment. If a rope failure should occur, the weight of the cloth will act as a damper and help prevent the broken rope from whipping. (See Figure 7). Remember to move the blanket or coat as winching proceeds, but halt winching when doing so. Partially raising the hood of the vehicle will also give a measure of protection to its occupants from broken rope, consistent with sufficient forward visibility for the operator.

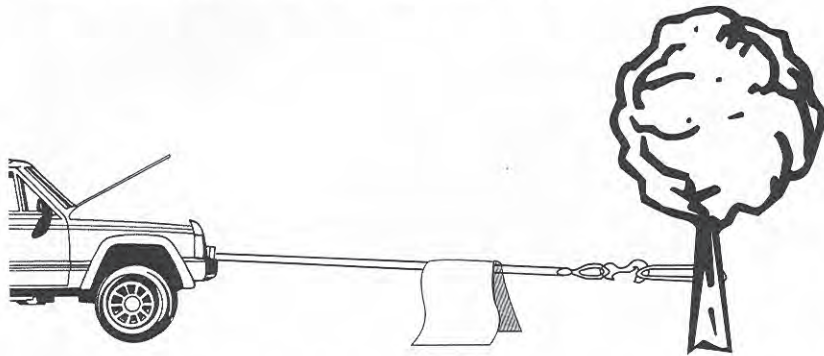


Figure 7

SELF RECOVERY

1. Always aim to get the cable as straight as possible to the direction of the vehicle. It is acceptable to start a pull at an angle if it is obvious that the vehicle will turn towards the hook anchoring point. Turning the steering wheel will assist the process. It is recommended that the driver is in the vehicle.

2. Make sure hand brake and foot brake are free and that the transmission is in neutral.
3. When the driver's attempt to regain vehicle traction is successful, he or she should be careful not to overrun the cable and risk the possibility of it being trapped under the vehicle.
4. **DO NOT** move your vehicle in reverse to assist the winch. The combination of the winch and vehicle pulling together could overload the cable and winch itself.

USE OF A PULLEY BLOCK OR SNATCH BLOCK

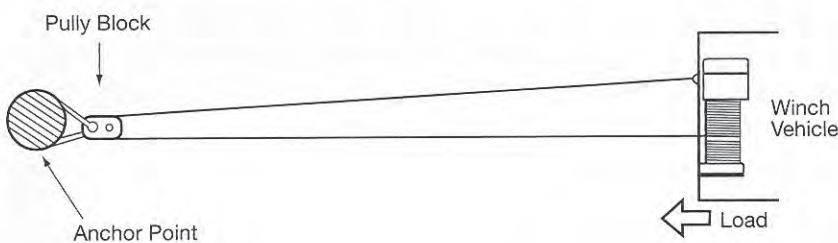


Figure 8: Vehicle self-recovery using the pulley block attached to the anchor point for direct pull. In this instance the vehicle becomes the "load" and the actual pulling power on the vehicle will be double at half winch rope speed.

The most important aid to successful winching (after the winch) is the pulley block, which can be used to increase the pulling power of the winch or for indirect pulls. Pulley blocks can be used in two modes. First mode is attached to the load and second is secured to an anchor point.

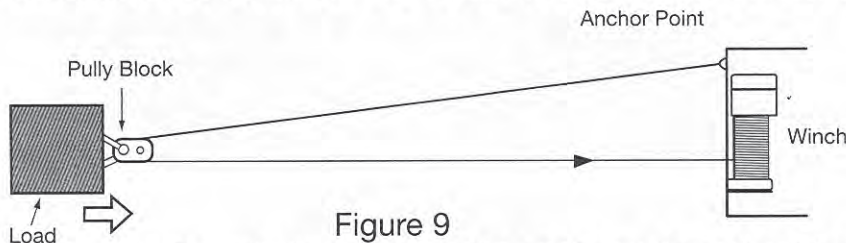


Figure 9

Figure 9: Direct pull on load using the winch vehicle as the anchor with pulley block attached to the load. Actual pulling power on load will be double at half winch rope speed.

The anchor point, when used must be secure, using a tree, another vehicle or any firm structure to which a pulley block can be attached with a chain or stout rope or tree saver. Figs. 8-10 show typical examples where a pulley block can be used to your advantage.

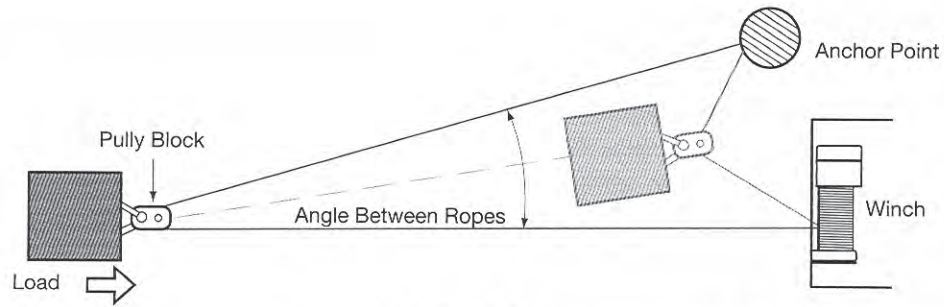


Figure 10

Figure 10: Indirect pull necessitated by obstructions or soft ground. Pulley block attached to load using a suitable anchor point. Note the angled direction taken by the load and subsequent angle of rope feed-back on the winch drum (extreme example shown). There may be unavoidable circumstances requiring this mode, though in general it is not recommended unless applied in stages by moving the anchor point or vehicle to avoid the sharp angled rewind on the winch drum. The actual load pulling power and rope speed will depreciate with any increased angle between the ropes.

USE OF A NYLON SLING & SHACKLE

A shackle should always be used when attaching winch hooks to nylon slings. NOTE: The shackle must pass through both eyes of the sling. The safe working load of the nylon sling is based on the use of both eye ends.

USE OF GLOVES

When handling or rewinding the cable always use gloves to eliminate the possibility of cuts caused by burrs and broken strands. Inspect cable and equipment frequently. The cable should be inspected for damage that could reduce its breaking strength. A frayed cable with broken strands should be replaced immediately. Always replace the cable with a MileMarker recommended replacement part. Any substitution must be IDENTICAL in strength, quality, lay and stranding. Never hook the cable back onto itself. Hooking the cable back onto itself creates an unacceptable strain, breaking individual strands which in turn weakens the entire cable. Use a sling. Avoid continuous pulls from extreme angles as this causes cable to pile up at one end of the drum.