

the snowplow professionals



**OWNER'S MANUAL
BELT DRIVE
HYDRAULICS**

TABLE OF CONTENTS

OWNER'S MANUAL

Preface	2	Parking with Plow Attached	15
Safety Rules	3	Transporting Plow	15
Before You Begin	3	Plowing Snow	16
Personal Safety	3	General Instructions	16
Ventilation	3	Special Snow Conditions	16
Fire and Explosion	3	Hard-Packed Snow	16
Battery Safety	4	Deep Snow	16
Hydraulic Safety	4	Clearing Driveways	17
Getting to Know Your Snowplow	5	Clearing Parking Lots	17
Snowplow Accessories & Options	6	Plowing Speed Caution	17
Plow Components	7	Removing Snowplow & Storage	18
Common Attachment Kit	8	Release Rod	19
Plow Lights	8	Maintenance	20
Minute Mount Components	9	Pre-Season Check	20
Hydraulic Power	10	Regular Maintenance and Adjustment	20
Single Lever Control	10	Mushroom Shoe Adjustment	20
Angling	11	Cutting Edge	20
Mounting Snowplow to Vehicle	12	Summer Maintenance and Storage	21
Operating Your Snowplow	14	Emergency Parts	21
Controlling the Blade	14		
Light Check	14		

TABLE OF CONTENTS

MECHANICS GUIDE	22
Safety Rules	23
Before You Begin	23
Personal Safety	23
Ventilation	23
Fire and Explosion	23
Battery Safety	24
Hydraulic Safety	24
Vehicle Headlamp Wiring Diagram	25
Troubleshooting Guide	26
General	26
Belt Drive Pump	29
Valves	31
Cables	32
Lights & Wiring Harness	32
Cylinders	33
Plow Headlamps	34
Theory of Operation	34
Plow Lights & Angle Cylinder Components Parts	35
Vehicle Components Parts Diagram	37

PREFACE



This manual has been prepared to acquaint you with the operation and maintenance of your new FISHER® Snowplow and to provide safety information. We urge you to read this manual carefully and to follow its recommendations. This will help ensure profitable and trouble-free operation of your snowplow. Keep this manual accessible as a handy reference in case a minor service problem arises. When service is necessary, your local Fisher dealer or distributor knows your plow best and is interested in your complete satisfaction. Bring your snowplow to your local dealer or distributor for maintenance service or any other assistance you may require.



SAFETY NOTE: Whenever you see this symbol, it notes a SAFETY WARNING. For your own protection and safety, these warnings must be followed. Failure to do so could result in serious bodily injury to yourself or others.

Fisher offers a one year limited warranty for all snowplows, accessories, parts and labor. See separately printed page for this important information. Fisher does not warranty non-Fisher service parts, accessories or the damage caused by the use of these unauthorized items.

SAFETY RULES



WARNING: Read all instructions, including safety information, before performing any service or maintenance on your snowplow.

BEFORE YOU BEGIN

1. Park the vehicle on a level surface, place shift lever in PARK or NEUTRAL, and set parking brake.
2. For most service procedures, leave the plow mounted on the vehicle.



WARNING: Keep well clear of the blade when it is being raised, lowered, or angled. **DO NOT** stand between the vehicle and blade or directly in front of blade. If the blade hits you or drops on you, you could be seriously injured.

PERSONAL SAFETY

1. Wear only snug-fitting clothing while working on your vehicle or snowplow. Do not wear jewelry or necktie. Secure long hair. Be especially careful near moving parts such as fan blades, pulleys and belts.
2. Wear safety goggles to protect your eyes from battery acid, gasoline, dust and dirt from machinery.
3. Avoid touching hot surfaces such as engine, radiator, exhaust pipes and hoses.
4. Always have a fire extinguisher rated for flammable liquids and electrical fires (rated BC) handy.

VENTILATION



DANGER: Vehicle exhaust contains deadly carbon monoxide (CO) gas. Breathing this gas, even in low concentrations, can cause death. Never operate vehicle in an enclosed area without venting exhaust to the outside.

If you work on vehicle or plow in a garage or other enclosed area, be sure to vent exhaust gas directly to the outside through a leakproof exhaust hose.

FIRE AND EXPLOSION



WARNING: Gasoline is highly flammable and gasoline vapor is explosive. Never smoke while working on vehicle. Keep all open flames away from gasoline tank and lines. Wipe up any spilled gasoline immediately.

Be careful when using gasoline. **DO NOT** use gasoline to clean parts. Store only in approved containers away from sources of heat or flame.

SAFETY RULES



BATTERY SAFETY



WARNING: A charging battery gives off gases that may explode if brought into contact with spark or flame. Cover top of battery with electrically nonconductive material to keep sparks from testing operations away from battery gases.

1. Never lay tools or equipment on the battery. You could accidentally ground the POSITIVE (+) battery terminal, resulting in: electrical shock, burns, damage to the vehicle or equipment.
2. Avoid contact with battery acid. It can burn your eyes and skin, and also burn holes in your clothing.

HYDRAULIC SAFETY



WARNING: Hydraulic oil under pressure can cause skin injection injury. If left untreated, these injuries can result in amputation or death. If you are injured by hydraulic oil, get medical treatment immediately.

1. Always inspect hydraulic components and hoses before use. Replace any damaged or worn parts immediately.
2. If you suspect a hose leak, **DO NOT** use your hand to locate it. Use a piece of cardboard or wood.

GETTING TO KNOW YOUR SNOWPLOW

MINUTE MOUNT® SYSTEM

Fisher is proud to introduce its new detachable snow plow system. The Minute Mount System allows quick and easy removal of the plow, A-frame and Headgear assemblies during off-season and between storms. Experience the freedom from the weight and the bulky headgear of the past and still maintain the original "showroom" appearance of your new truck.

BLADE

The Fisher difference, the integral trip-edge design, is available for the "L" Series blades. When an obstacle is encountered only the edge trips, not the entire blade. Because the blade itself remains upright, plowed snow in front of the blade stays put- the load is not dumped-and you keep on plowing with no stops and start.

"L" SERIES

For full size vehicles; Our L-Series blade is available in 7', 7-1/2', 8' and 9' widths. Speedcast moldboard with unique trip Base Angle backed with wear resistant bars.*

Improved location of the moldboard bottom bar makes the L-Series even tougher than the earlier G & H Series.

The 7-1/2', 8' and 9' blades are available with replaceable cutting edges.

* These are two 1/2" x 2-1/2" x 12" special steel wear-bars welded at the corners behind the base angle.

SNOWPLOW ACCESSORIES AND OPTIONS



SNIFOIL®

A rigid extension to your snowplow blade designed to deflect light snow away from the windshield, improving your plow visibility, efficiency and speed. Bolts onto existing blades with ease. Available in 7', 7-1/2', 8' and 9'. Primarily intended for the extra duty use of the commercial snowplower, where time efficiency is a must.

DEFLECTOR

Keeps fluffy snow from flowing over the top of the snowplow blade. Fits "L" Series FISHER® blades. Easy installation and attractively priced.

REPLACEABLE CUTTING EDGE

3/8" or 1/2" cutting edges made of high carbon steel to bolt onto your base angle for maximum blade life. Intended for the commercial snowplower and available in 7-1/2', 8' and 9' sizes.

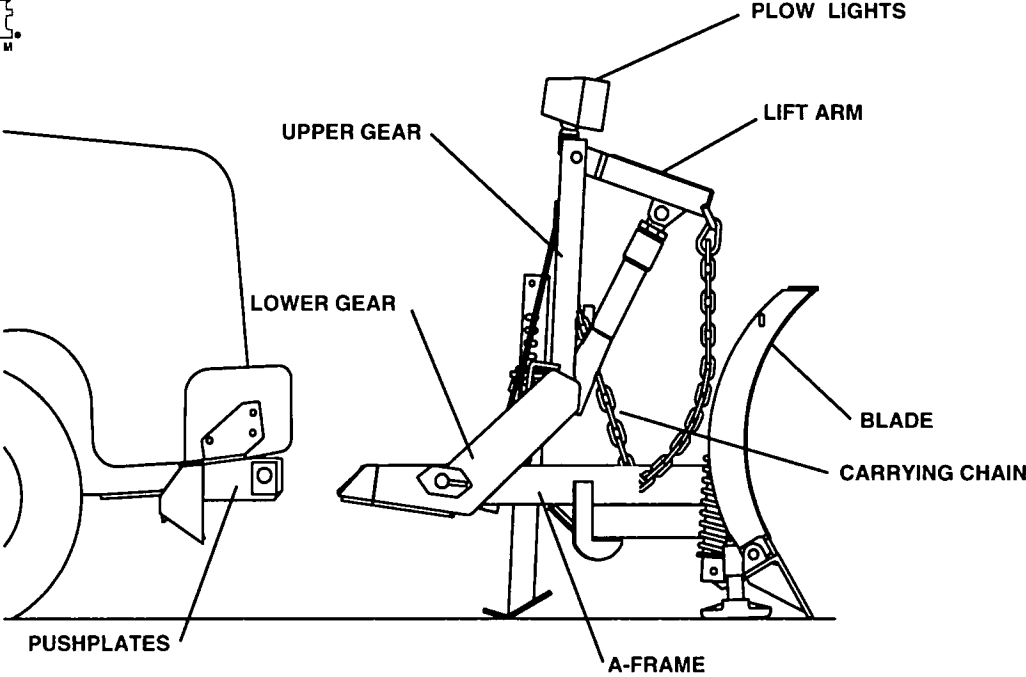
ANTI-WEAR SHOES

These shoes are offered for maximum protection against blade wear. The more the blade is used, the more important the shoes become.

TOUCH-UP PAINT

Fisher touch-up paint, part #20292, is available to keep your snowplow protected from rust - a must for the long duration of summer.

PLOW COMPONENTS



COMMON ATTACHMENT KIT

The Common Attachment Kit is composed of the A-Frame, Upper and Lower gear, Jack and Lift arm.

A-FRAME

The A-Frame is attached to the Blade Assembly with a centered pivot pin. The pivot pin allows the Blade Assembly to angle left or right at 28 degrees providing excellent snow displacement. The heavy 1" pivot pin is shear-proof under normal operation, assuring a solid connection.

UPPER GEAR AND LIFT ARM

The Upper gear, Lower gear and Lift Arm are the primary link between the snowplow and the vehicle. The Upper and Lower gear are connected to the pushplates which are mounted directly to the vehicle frame. The Upper gear provides the mounting framework for the Lift Arm and lift cylinder. The Lift Arm raises and lowers the blade via the lift cylinder.

PLOW LIGHTS



WARNING: Before traveling, position blade so it does not block headlamp beam. **DO NOT** change blade position while traveling.

The Plow Lights include a set of rectangular dual-beam halogen headlamps, plus combination park and turn signals.

A pre-wired harness with plug-in module requires no headlamp wire splicing. Lights conform to federal safety standards.

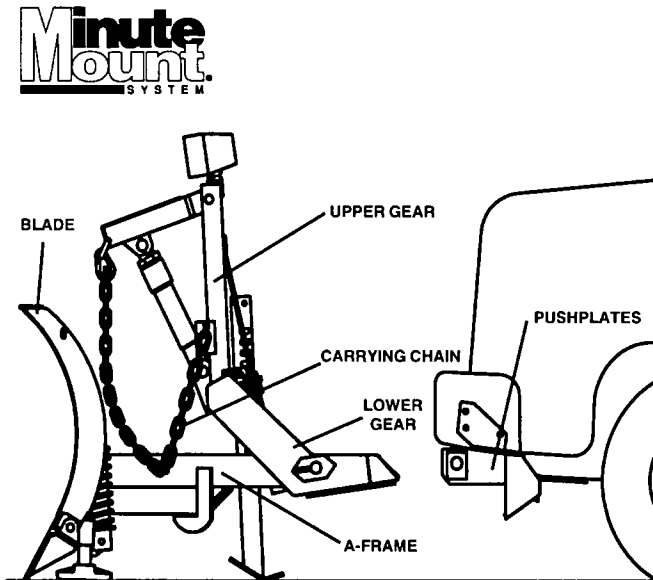
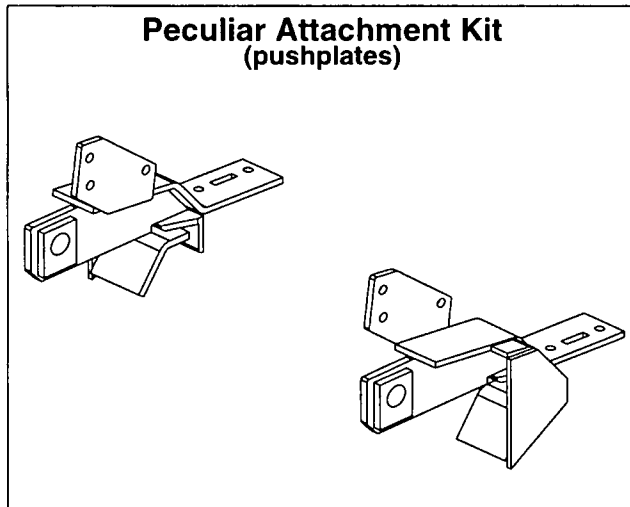
When the plow plugs are **connected** during plow mounting, the headlamps will automatically switch to the plow lights when they are turned on. With Daytime Running Lamps, the vehicle headlamps switch to the plow lights when the ignition is turned "on."

When the plow plugs are **disconnected** during plow removal, the headlamps will automatically switch back to the vehicle headlamps.

MINUTE MOUNT® COMPONENTS

Fisher has designed a custom Peculiar Attachment Kit for most vehicles. Due to the differences between vehicle models, the kits are generally not interchangeable.

The Peculiar Attachment Kit is fastened to the underside of the vehicle frame and is engineered to provide the primary connecting point between the snowplow and the vehicle. The weight of the Minute Mount System is distributed to your vehicle's sturdy frame.



HYDRAULIC POWER

The heart of any snowplow is its hydraulic system; the components that raises, lowers and angles the plow blade. No one gives you more hydraulic options than Fisher! Under the hood hydraulics as well as our front-mounted Solenoid Electric Hydraulic Pak are available to power your FISHER® Snowplow.

UNDER THE HOOD HYDRAULICS

With this system, the major hydraulic components are mounted under the vehicle hood; protected from snow, ice and possible theft. Engine heat helps keep the hydraulic oil at its optimum operating temperature, ensuring consistent hydraulic performance.

The FISHER® Belt Drive is the most dependable hydraulic system available to power a snowplow. With the FISHER Belt Drive, the hydraulic pump is powered by a drive pulley usually connected to the engine crank shaft. The pump then delivers oil to the control valve where it is directed to the lift or angle cylinders. Using belt drive you avoid potential electrical system overload; especially important during nighttime plowing when electrical demands on your battery are already high.

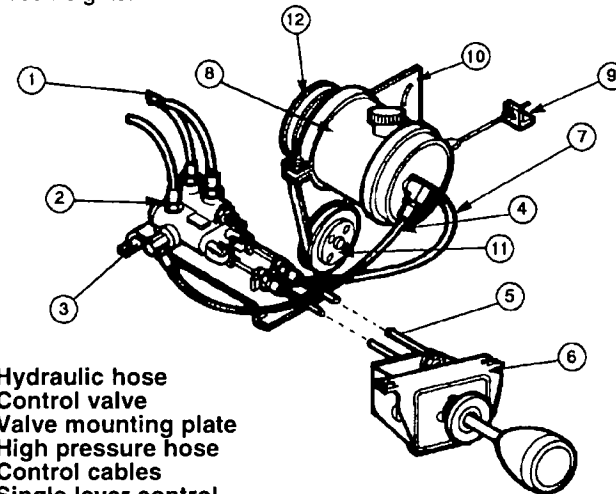


WARNING: Keep well clear of the blade when it is being raised, lowered or angled. **DO NOT** stand between the vehicle and blade or directly in front of blade. If the blade hits you or drops on you, you could be seriously injured.

SINGLE LEVER CONTROL



The Single Lever Control moves the valve spool in and out for Raise/Drop and Angle Left/Right. The pivot hub in the control attaches to cables which move the spools 5/16" in each direction from center. There is a detent spring in Drop/Float to hold the control down to allow for differences in plowed surfaces heights.



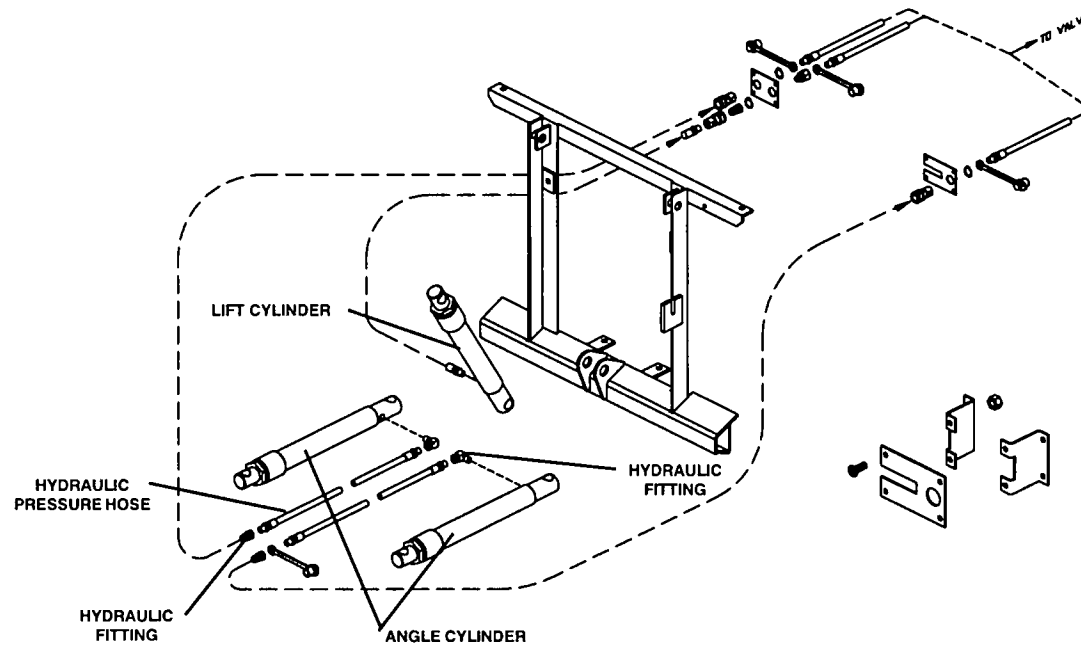
1. Hydraulic hose
2. Control valve
3. Valve mounting plate
4. High pressure hose
5. Control cables
6. Single lever control
7. Low pressure return hose
8. Belt drive pump
9. Brace rod and tab
10. Saddle bracket
11. Drive sheave
12. Pump sheave

* This illustration is for instruction purposes only and may not depict your actual installation.

ANGLING

The Belt Drive Hydraulics power angling gives you full control of the plow from within the cab of the vehicle. Two single acting hydraulic rams hold the blade at the desired angle. The rams are operated by the Single Lever Control.

The Belt Drive Hydraulics cross over relief is built in to prevent damage to the blade or vehicle if obstacles are hit. When force against the blade causes pressure in an extended ram to exceed set limits the relief opens allowing oil to escape and the ram plunger to retract.



MOUNTING SNOWPLOW TO VEHICLE

*For Removal instructions, see pg. 18-19.

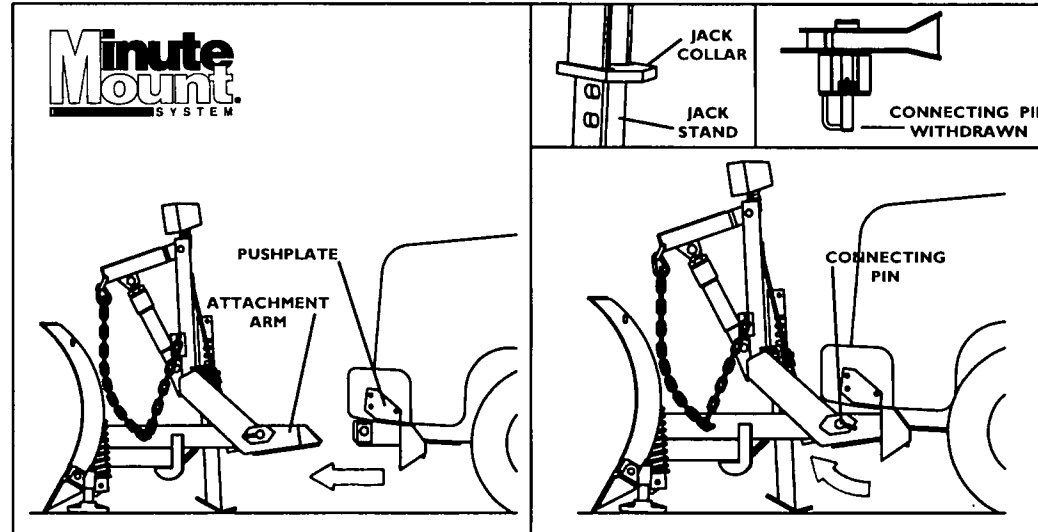
Minute
Mount
SYSTEM



WARNING: Inspect plow components and bolts for wear or damage whenever mounting or removing the plow. Worn or damaged components could permit plow to drop unexpectedly.



WARNING: Never put a finger in A-frame ear or coupling lug holes to check alignment. If the plow moves, your finger could be crushed.



* This illustration is for instruction purposes only and may not depict your actual plow installation.

STEP A.

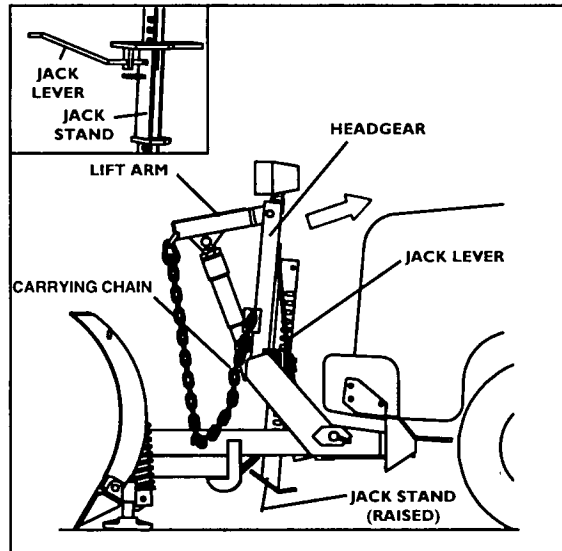
1. Drive vehicle forward fully engaging pushplates into attachment arms.

STEP B.

1. Twist connecting pin to release tension.
2. Remove electrical and hydraulic covers on vehicle.
3. Attach electrical connector to corresponding connector on vehicle.
4. Repeat steps B 1-3 on passenger side of vehicle.
5. Connect hydraulic hoses to quick disconnects

NOTE: Adequate chain slack is necessary for connecting pin hole alignment.

MOUNTING SNOWPLOW TO VEHICLE



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WARNING: Keep well clear of the blade when it is being raised, lowered, or angled. **DO NOT** stand between the vehicle and blade or directly in front of blade. If the blade hits you or drops on you, you could be seriously injured.

STEP C.

1. Release carrying chain and reattach it leaving plenty of slack.
2. Push headgear upward toward vehicle until connecting pins snap in place.
3. Pull jack lever outward and raise the jackstand.

OPERATING YOUR SNOWPLOW



CONTROLLING THE BLADE

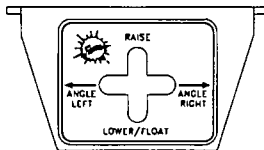


WARNING: To prevent accidental movement of the blade, always return lever to neutral and use spool lock whenever

CAUTION: DO NOT hold control lever in RAISE, ANGLE LEFT or ANGLE RIGHT position after blade has reached desired position. To do so could result in the hydraulic fluid overheating.

RAISE: Move control lever UP (forward) to raise blade until blade has reached desired height.

**LOWER/
FLOAT:** Move the lever DOWN (back) to lower blade and engage blade float. (This allows the blade to move up and down to follow the contour of the surface being plowed.)



ANGLE LEFT: Move lever to the LEFT to angle blade to the left until blade has reached desired angle.

ANGLE RIGHT: Move lever to the RIGHT to angle blade to the right until blade has reached desired angle.

LOCK BLADE

IN POSITION: Move control lever to neutral and slide locking spool down control lever until locking spool engages control housing. Blade is now locked and cannot be accidentally moved.

LIGHT CHECK:

With both plow plugs connected, check the operation of all vehicle and plow lights as follows:

Parking Lamps - Both vehicle and plow lamps should be on.

Right Turn Signal - Both vehicle and plow lamps should be on.

Left Turn Signal - Both vehicle and plow lamps should be on.

Headlamps - with vehicle headlamp switch in the "on" position, connecting and disconnecting the plug should switch between the vehicle and plow headlamps as follow:

- Plow plugs DISCONNECTED
-Vehicle headlamps should light.
- Plow plugs CONNECTED
-Plow headlamps should light.

Aim plow headlamps with plow mounted and raised to travel position. Aim vehicle headlamps with plow removed from vehicle.

OPERATING YOUR SNOWPLOW

PARKING WITH PLOW ATTACHED



WARNING: Always lower blade fully when vehicle is parked. Temperature changes could change hydraulic pressure, causing the blade to drop unexpectedly or damaging hydraulic components. Failure to do this can result in serious injury.

Whenever you park your vehicle, lower blade to the ground.

TRANSPORTING PLOW

NOTE: These instructions are for driving short distances to and from plowing jobs. For long trips, remove plow from front of vehicle.

1. Raise blade.
2. Adjust blade and carrying chain for maximum plow light illumination.



WARNING: Your vehicle must be equipped with plow headlights and directional lights. Be sure the plow lights are operating properly before traveling.

3. Adjust blade to straight position.



WARNING: Make sure blade does not block headlight beams.

4. Slide Single Lever Control lock spool into "Lock" position to prevent plow from being lowered accidentally.



WARNING: Never exceed posted road speeds. Under bad weather conditions or when driving on uneven surfaces such as railroad tracks or bumpy roads reduce speed.

5. Monitor vehicle operating temperature. Overheating is unlikely under normal driving conditions, but occasionally the plow may be positioned where it deflects air away from the radiator. If this occurs, stop the vehicle and raise, angle or lower the plow slightly to correct overheating.

NOTE: Only the driver should be in the vehicle when the plow is attached during transport of vehicles with less than 3/4 ton rating.

PLOWING SNOW



GENERAL INSTRUCTIONS

1. Before plowing, make sure you know of any obstructions hidden beneath the snow, such as bumper stops in parking lots, curbs, sidewalk edges, shrubs, fences or pipes sticking up from the ground.

CAUTION: To prevent damage to plow or vehicle, flag any obstructions that are hard to locate.

2. Only the driver should be in the vehicle when plow is attached for plowing.



WARNING: Always wear seat belt when plowing snow. A hidden obstruction could cause the vehicle to stop suddenly, throwing you forward and injuring you.

3. Plow during the storm rather than letting snow accumulate.



WARNING: Never plow with head out of the vehicle window. Sudden stops or protruding objects could cause severe neck or head injuries.

4. When you are stacking snow, begin raising the blade as you come close to the stack. This will let the blade with its load ride up onto the stack.

SPECIAL SNOW CONDITIONS

— Hard-packed Snow

1. On all L-Series Blades, raise the disc shoes so that the cutting edge comes into direct contact with the pavement. (See "Regular Maintenance and Adjustments", page 20.)
2. Use lowest gear to place maximum power behind cutting edge.
3. An angled blade is more effective to remove hard-packed snow.

— Deep Snow

1. Shear off top layers by plowing with the blade raised 3 to 4 inches for the initial pass.
2. Bite into the edges using only partial blade width until job is cut down to size for full blade plowing. Rule of thumb: 6" snow may be plowed with entire blade width; 9" with 3/4 blade; 12" with 1/2 blade. Experience and "feel" are the best guides.
3. When plowing deep snow, be sure to keep vehicle moving.
4. Ballast is suggested for maximum traction. (See step 8 of "Preseason Check", page 20.)
5. For increased traction use tire chains.

PLOWING SNOW

CLEARING DRIVEWAYS

1. Head into drive with angled blade and plow snow away from buildings. Widen drive by rolling snow away from building.
2. If building is at end of driveway, plow up to within a vehicle length of building. Then push as much snow as possible off driveway.
3. With raised straight blade, drive through remaining snow to building. Drop blade and "back-drag" snow away from building door at least one vehicle length. Repeat if necessary.
4. Back vehicle to building door and plow forward, away from the building, removing remaining snow from driveway. Check municipal ordinances for disposal of snow.

CLEARING PARKING LOTS

1. Clear areas in front of buildings first. With raised blade, drive up to building. Drop blade and "Back-drag" snow away from building. When snow is clear of buildings, turn vehicle around and push snow away from buildings towards outer edges of lot.
2. Plow a single path down center in long direction.
3. Angle plow toward the long sides, and plow successive strips lengthwise until area is cleared and snow is "stacked" around outer edges.
4. If snow is too deep to clear in above manner, clear main traffic lanes as much as possible.

PLOWING SPEED CAUTION

<p style="text-align: center;">CAUTION</p> <ol style="list-style-type: none">1. Drive slowly while blade is attached.2. Attach carrying chain for "Over the road travel"3. Lower blade whenever vehicle is unattended.4. Use warning flasher when blade is attached.
SNOWPLOWING IS CONSIDERED HAZARDOUS
Vehicle speed should not exceed 5 MPH while plowing.

REMOVING SNOWPLOW & STORAGE

Minute
Mount
SYSTEM

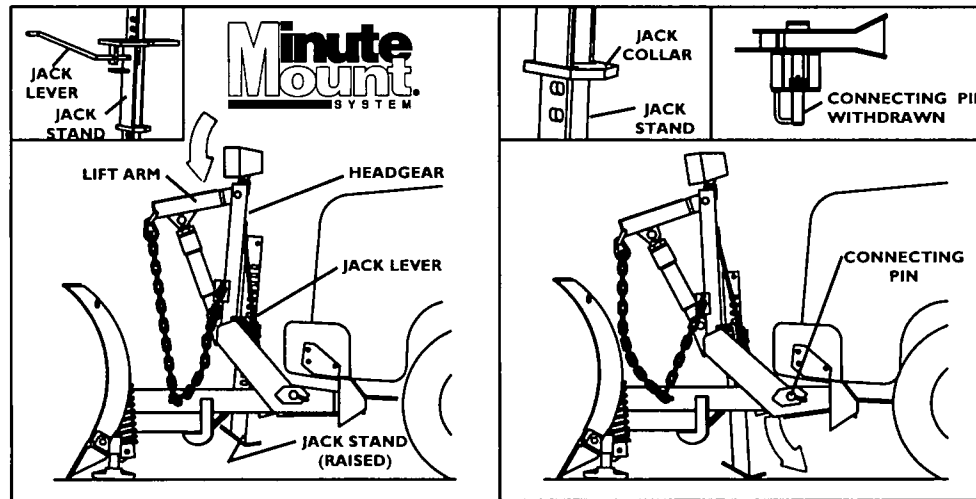


WARNING: Inspect plow components and bolts for wear or damage whenever mounting or removing the plow. Worn or damaged components could permit plow to drop unexpectedly.



WARNING: Keep hands and feet clear of blade and A-frame when removing or mounting plow. Moving or falling assemblies can pinch or crush.

NOTE: For long-term storage, grease exposed chrome surfaces of the angle cylinder rams to prevent rust.



STEP A.

1. Place cab control in "Lower/Float."
2. Push lift arm down.
3. Pull jack lever outward. Jack stand will adjust to proper height.

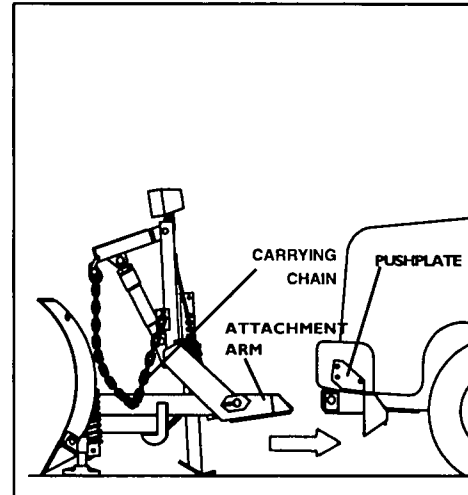
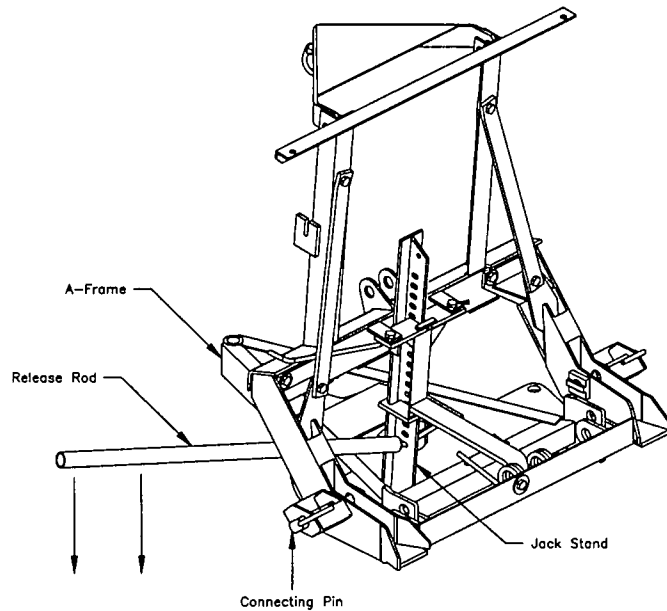
STEP B.

1. Disconnect electrical connector and reinsert in protective cover.
2. Insert tip of release rod in lowest hole on jack stand above A-Frame. (See illustration next page)
3. Push down on release rod as you pull and twist connecting pin.
4. Repeat steps B 1-3 on passenger side.
5. Disconnect hydraulic hose couplings and cover with dust plugs.

REMOVING SNOWPLOW & STORAGE

RELEASE ROD

Note: **DO NOT** push release rod all the way down. This will create pressure on the connecting pins



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STEP C.

1. Remove slack from carrying chain and reattach.
2. Back vehicle away from plow.



WARNING: Keep well clear of the blade when it is being raised, lowered, or angled. **DO NOT** stand between the vehicle and blade or directly in front of blade. If the blade hits you or drops on you, could be seriously injured.

MAINTENANCE



PRESEASON CHECK

Before the snow flies, check your equipment and make sure it's ready for action. Here's an Eight Step Countdown for getting your equipment set for the snowplowing season:

1. Check hydraulic system for leaks and cracked or damaged hoses. Change oil (push lift arm all the way down). Replace worn or defective parts.
2. Check all mountings of snowplow to vehicle; tighten fasteners.
3. Repaint Blade Assembly and attachments as necessary to protect the metal from rusting when exposed to adverse conditions (sand, salt, etc.).
4. Check windshield wipers, heaters, headlights and auxiliary lights.
5. Install auxiliary and flashing lights in accordance with regulations. Vehicle headlamps should be aimed without plow attached to the vehicle. Plow headlamps should be aimed with plow attached and in raised position.
6. Use chains on tires if additional traction is needed.
7. To permit snowplow to rise and fall (float) with contour of ground, leave some slack in the lift and carrying chain.
8. Counterbalancing (sand, blocks, etc.) may be necessary or beneficial on some vehicles to provide maximum traction. Any counterbalancing material used must be solidly secured to the vehicle to prevent it from moving under harsh snowplowing conditions that will be encountered. **DO NOT** exceed the Gross Vehicle Weight (GVW) or the Gross Axle Weight Ratings (GAWR) of your vehicle.

REGULAR MAINTENANCE AND ADJUSTMENTS



WARNING: To prevent injuries, always lower snowplow to the ground when parked. Always remove snowplow before servicing vehicle when automotive lifts or hoists are used. Failure to do this can result in serious injury.

Your FISHER® Snowplow is designed for rugged, dependable service. But like the vehicle on which it is mounted, it needs a certain amount of regular care and maintenance. Check the following before and frequently during the plowing season:

- Make sure all fasteners, mounting bolts, hydraulic and electrical connections are tight.
- Check all plugs and seals for oil leaks. Repair as necessary.

Mushroom Shoe Adjustment

- The disc shoes should be adjusted to provide 1/4" to 1/2" clearance between cutting edge and surface. Place the supplied spacer rings between the shoe and the blade shoe bracket to obtain this clearance. **DO NOT** store unused spacers on top of shoe bracket.

Cutting Edge

- Replace cutting edge when worn within 1" of the carriage bolts on the "L" Series blade.
- Lubricate all pivot points (e.g., connecting pin assembly, lower spring anchor, etc.).

SUMMER MAINTENANCE AND STORAGE

NOTE: Repaint Blade Assembly and Minute Mount® System components as necessary to protect the metal from rusting when exposed to adverse conditions (sand, salt, etc.).

- Clean and paint blade assembly as needed.
- Connect angle hose male and female disconnects together and apply a light grease to exposed cylinder rods.
- If blade is to be left in one location for an extended period of time, place blocks under the cutting edge and shoes to eliminate ground contact. This will reduce the chances of rust on the lower part of the plow.
- Collapse lift cylinder so that cylinder rod is not exposed.
- Remove pump belt
- Lubricate valve spools with a light grease.
- Drain and flush hydraulic system and refill with FISHER® Hydraulic Fluid or type "A" automatic transmission fluid.

EMERGENCY PARTS

It is suggested that the following items be kept in the vehicle for emergency use:

- 1 - 6817 Pivot Pin 1" x 6"
- 1 - 90013 Cotter Pin 1/4" x 2"
- 1 - 10" Adjustable Wrench
- 1 - Medium Screw Driver
- 1 - Pair of Pliers
- 1 - Quart FISHER® Hydraulic Fluid or type "A" Automatic Transmission Fluid (ATF)

Always use FISHER® designed and tested replacement parts.

**Minute
Mount.**
SYSTEM
MECHANICS GUIDE

SAFETY RULES



WARNING: Read all instructions, including safety information, before performing any service or maintenance on your snowplow.

BEFORE YOU BEGIN

1. Park the vehicle on a level surface, place shift lever in PARK or NEUTRAL, and set parking brake.
2. For most service procedures, leave the plow mounted on the vehicle.



WARNING: Keep well clear of the blade when it is being raised, lowered, or angled. **DO NOT** stand between the vehicle and blade or directly in front of blade. If the blade hits you or drops on you, you could be seriously injured.

PERSONAL SAFETY

1. Wear only snug-fitting clothing while working on your vehicle or snowplow. Do not wear jewelry or necktie. Secure long hair. Be especially careful near moving parts such as fan blades, pulleys and belts.
2. Wear safety goggles to protect your eyes from battery acid, gasoline and dust and dirt from machinery,
3. Avoid touching hot surfaces such as engine, radiator, exhaust pipes and hoses.
4. Always have a fire extinguisher rated for flammable liquids and electrical fires (rated BC) handy.

VENTILATION



DANGER: Vehicle exhaust contains deadly carbon monoxide (CO) gas. Breathing this gas, even in low concentrations, can cause death. Never operate vehicle in an enclosed area without venting exhaust to the outside.

If you work on vehicle or plow in a garage or other enclosed area, be sure to vent exhaust gas directly to the outside through a leakproof exhaust hose.

FIRE AND EXPLOSION



WARNING: Gasoline is highly flammable and gasoline vapor is explosive. Never smoke while working on vehicle. Keep all open flames away from gasoline tank and lines. Wipe up any spilled gasoline immediately.

Be careful when using gasoline. **DO NOT** use gasoline to clean parts. Store only in approved containers away from sources of heat or flame.

SAFETY RULES



BATTERY SAFETY



WARNING: A charging battery gives off gases that may explode if brought into contact with spark or flame. Cover top of battery with electrically nonconductive material to keep sparks from testing operations away from battery gases.

1. Never lay tools or equipment on the battery. You could accidentally ground the POSITIVE (+) battery terminal, resulting in; electrical shock, burns, damage to the vehicle or equipment.
2. Avoid contact with battery acid. It can burn your eyes or skin, and burn holes in clothing.

HYDRAULIC SAFETY



WARNING: Hydraulic oil under pressure can cause skin injection injury. If left untreated, these injuries can result in amputation or death. If you are injured by hydraulic oil, get medical treatment immediately.

1. Always inspect hydraulic components and hoses before use. Replace any damaged or worn parts immediately.
2. If you suspect a hose leak, **DO NOT** use your hand to locate it. Use a piece of cardboard or wood.

TROUBLESHOOTING GUIDE - General

Condition	Possible Cause	Correction
Blade angles in opposite direction and will not raise	1. Supply hose (high pressure) from pump is installed in wrong port valve.	Check that high pressure hose is installed in the "in" port of valve.
Blade angles one way, but not the other	1. Low on fluid 2. Disconnect not completely connected 3. Blocked disconnect 4. Cables incorrectly adjusted so valve spool is not throwing full stroke.	Refill with FISHER® Hydraulic Fluid or type "A" automatic transmission fluid Connect disconnect. Replace disconnect halves Adjust cables. (Refer to Cable Section)
Blade will not drop	1. Cables incorrectly adjusted so valve spool is not throwing full stroke 2. Cylinder seized 3. Carrying chain attached at headgear 4. Tight cylinder packing nut	Adjust cables. (Refer to Cable Section) Place lever in "LOWER" position and manually exert leverage on lift arm to collapse cylinder. Remove and repair or replace cylinder. If manual leverage will not collapse cylinder, disconnect blade, remove and replace extended cylinder. New cylinder can be manually extended using a bench vise at the base and a bar through the hole in the ram. Unhook carrying chain at headgear. Loosen packing nut
Blade will not raise	1. Low fluid level 2. Low pump pressure 3. Control handle not actuating valve spool fully	Refer to "Pump Section." Refer to "Pump Section." Refer to "Cable Section."

TROUBLESHOOTING GUIDE - General

Condition	Possible Cause	Correction
Control lever sticks on "Raise" or "Angle" positions	1. Exposed spools on control valve where control cables attach are frozen from moisture or dirt.	Apply lubricating grease. Valve spools must move freely, in valve body. A stuck spool may cause the pump to go on relief, resulting in premature failure.
Blade will not hold an angle	1. Control cables out of adjustment. 2. Control lever/valve not centering properly. 3. "O" rings damaged on crossover cartridge.	Refer to "Cable Section." Control handle will be in centered position when both valve spools are in neutral when adjusted properly.
Blade raises slow but angles OK.	1. Low pump pressure. 2. Raise cable incorrectly adjusted so valve spool is not throwing full stroke. 3. Restriction in lift cylinder hose or fittings.	Refer to appropriate "Pump Section." Refer to "Cable Section." Check hoses and fittings.
Base angle/cutting edge wearing excessively	1. Mushroom shoes not adjusted properly.	Mushroom shoes should be adjusted to provide 1/4" to 1/2" clearance between cutting edge and surface. Place the supplied spacer rings between the shoe bracket to obtain this clearance. DO NOT store unused spacers on top of shoe bracket.
Pump shaft seal leaks (Belt drive)	1. Reservoir overfilled. 2. Shaft seal worn or defective.	Refer to "Pump Section." Install new shaft seal.
Pump overheats, fluid boils	1. Low on fluid. 2. Pump on relief for extended periods.	Fill to "Full" mark. DO NOT OVERFILL Make sure valve centers properly. (Refer to "Valve Section")

TROUBLESHOOTING GUIDE - General



Condition	Possible Cause	Correction
Pump overheats, fluid boils	3. Valve not centering properly	Adjust cable so valve spools throw full stroke (1/4"). Refer to "Cable Section." DO NOT hold control handle in "Raise" position after plow has completed lifting or angling.
Noisy Belt (Belt drive)	<ol style="list-style-type: none"> 1. Loose belt 2. Worn or cracked belt 3. Worn or rusted pulleys 4. Misalignment of pump and drive pulleys. 5. Oily belt 	Tighten to proper tension. Replace Belt. Replace pulleys. Realign pulleys. Repair hydraulic leaks to prevent premature belt failure or slippage. DO NOT apply belt dressing.
Hose Leaks	<ol style="list-style-type: none"> 1. Loose fittings 2. Worn hose or fittings 	Seal and tighten fittings Replace hose. DO NOT attempt to repair.
<p align="center">Contact your nearest authorized Fisher outlet for assistance if any conditions are encountered which are not covered in this Guide.</p>		

TROUBLESHOOTING GUIDE - Belt Drive Pump

Condition	Possible Cause	Correction
Pump leaks	<ol style="list-style-type: none"> 1. Leaking at front washer/gasket 2. Leaky shaft seal 3. Leaks at brazing of front or rear reservoir cover 4. Leaks at fittings or ports 	<p>Tighten the (4) cap screws in the front face washer (behind pulley) using a 9/16" open end wrench which must be thin enough to get between pulley and pump.</p> <p>Reservoir probably overfilled. Install new shaft seal and fill to full mark on dipstick. (Be sure lift cylinder is fully collapsed before filling.)</p> <p>Return to authorized Fisher outlet for repair or replacement. Tighten fittings using pipe thread sealant.</p>
Noisy pump	<ol style="list-style-type: none"> 1. Low on fluid 2. Loose bolts 3. Loose belt 4. Worn or cracked belt 5. Worn or rusted pulleys 6. Misaligned pulleys 7. Oily belt 8. Contaminated fluid filter inside pump 9. Pressure hose in contact with vehicle sheet metal 	<p>Fill to full mark with lift cylinder fully collapsed. DO NOT OVERFILL.</p> <p>Tighten all bolts. Tighten belt. Replace belt. Replace Pulleys. Realign pulleys. Repair hydraulic leaks. Never use belt dressing. Drain fluid and flush system. Refill system with FISHER® Hydraulic Fluid or type "A" automatic transmission fluid. Isolate hose from sheet metal. Foam type air conditioning tubing insulation may be helpful.</p>
Low pump pressure	<ol style="list-style-type: none"> 1. Low on fluid 2. Restricted hoses, fittings or disconnect. 3. Loose belt 	<p>Fill to full mark with lift cylinder fully collapsed. DO NOT OVERFILL.</p> <p>Check and replace as required. Tighten or replace belt.</p>

TROUBLESHOOTING GUIDE - Belt Drive Pump



Condition	Possible Cause	Correction
Low pump pressure	4. Check pressure	Normal pressure 1400-1700 psi. Lower pressure may be acceptable for smaller blades without affecting performance.
Pump shaft will not turn	<ol style="list-style-type: none"> 1. Contamination jamming gears. 2. Bearings seized. 	Replace pump. Replace pump.
Pump overheats, fluid boils	<ol style="list-style-type: none"> 1. Low on fluid 2. Pump on relief for extended periods 3. Valve not centering properly 	Fill to "Full" mark with lift cylinder fully collapsed. DO NOT OVERFILL. Check control head lever to assure that it is in "Neutral" position. Adjustments may be made as per "Cable Section."

TROUBLESHOOTING GUIDE - Valves

Condition	Possible Cause	Correction
Control lever angles blade, but blade will not hold position	<ol style="list-style-type: none"> 1. Control lever not returning to center position 2. Blown crossover relief in control valve 	<p>Check control cables for binding by disconnecting at control valve. Control valve spools must be in "Neutral" when control handle is centered. Return valve to authorized Fisher outlet for service.</p>
Control valve leaks at spools or end caps	<ol style="list-style-type: none"> 1. Worn/damaged O-rings or spools seals. 2. Dirt or contaminants in spool seal seats. 	<p>Return to authorized Fisher outlet. Return to authorized Fisher outlet.</p>
Hydraulic leaks at fittings	<ol style="list-style-type: none"> 1. Fittings are loose 2. Fittings too tight 3. Broken fittings 	<p>Fittings on control valve are O-ring sealed and must not be overtightened (Torque to 24-26 ft. lbs.) Fittings on control valve are O-ring sealed. If O-rings are damaged, replace (torque fittings to 24-26 ft. lbs.) Replace fittings as necessary.</p>
Valve leak in casting	<ol style="list-style-type: none"> 1. Pinholes, cracked or broken casting 	<p>Return to authorized Fisher outlet.</p>

TROUBLESHOOTING GUIDE - Cables



Condition	Possible Cause	Correction
Cables bind	<ol style="list-style-type: none"> 1. Cable routing 2. Cable bent in the control head 	Check cable routing for excessive bends or obstruction at exposed travel portion of cable. Replace cable.
Control lever will not return to center position or works one way only	<ol style="list-style-type: none"> 1. Control lever is in "Down" position 2. Out of adjustment 3. Cable routing 	Normal operation. Position as to allow blade to follow contour of ground. Adjust cable at valve bulkhead. Control handle will be in centered position when both valve spools are centered. There will be approximately 1/4" of spool travel each way. Check control cables at pivot connection in control head to be sure cables have not unhooked from pivot ball or become bent. Grease pivot balls regularly.

TROUBLESHOOTING GUIDE - Lights & Wiring Harness

Turn signals flash weakly	<ol style="list-style-type: none"> 1. Flasher 2. Flasher connection 3. Bulb 	Replace flasher with H.D. Flasher. Check flasher connection to insure good clean connection. Check bulb to insure correct bulb is used (G.E.#1157 bulb)
Turn signals flash rapidly	<ol style="list-style-type: none"> 1. Flasher 	Needs H.D. Flasher.
Inability to switch from truck lights to plow lights	<ol style="list-style-type: none"> 1. Auxiliary light switch shorted internally 	Replace switch.

TROUBLESHOOTING GUIDE - Cylinders

Condition	Possible Cause	Correction
Leaking cylinder at cylinder nut	<ol style="list-style-type: none"> 1. Loose cylinder nut 2. Worn packing 3. Cracked cylinder nut 	Tighten cylinder nut. Replace packing. Replace cylinder nut.
Leaking cylinder at weld	<ol style="list-style-type: none"> 1. Pinhole in weld 	Replace as necessary.
Leaking cylinder at pressure port fitting	<ol style="list-style-type: none"> 1. Fitting not tightened 2. Pipe thread sealant not used on threads of fitting 	Tighten fitting. Remove fitting from cylinder and liberally apply pipe sealant on threads of fitting. Reinstall fitting in pressure port of cylinder. We do not recommend the use of Teflon tape.
Rusted/pitted rod	<ol style="list-style-type: none"> 1. Cylinder has not been used for a long period of time 	Using emery/crocus cloth, clean rod. Lightly oil or grease rod. If cleaning does not remove rust and pits, replace cylinder rod.
Fitting broken in pressure port	<ol style="list-style-type: none"> 1. Hose and fitting not installed between cylinder and A-frame as specified. 	Remove broken fitting from pressure port. Install new fitting in pressure port. Reinstall cylinder with hose and fitting between cylinder and A-frame assembly.
Rod seized in cylinder assembly	<ol style="list-style-type: none"> 1. Wiper ring wedged between nut and rod 2. Guide segments wedged in barrel 	Remove nut and replace wiper. Remove rod if possible. Replace worn parts. Replace cylinder if necessary.

PLOW HEADLAMPS



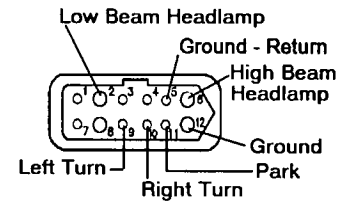
THEORY OF OPERATION

The headlamp switching circuit uses two single pole double throw (SPDT) relays. When combined with a Minute Mount® plug-in headlamp harness and the vehicle harness (also for hydraulic unit operation), the relays will automatically switch between vehicle and plow headlamps as the plow plugs are connected and disconnected.

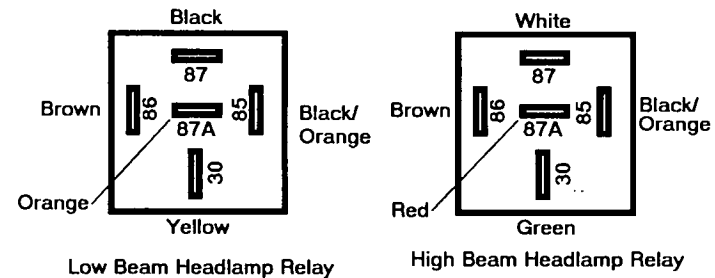
The vehicle harness has a brown wire that is spliced into the vehicle park lamp circuit. This wire feeds the plow park lamps through the grill connector. Within the harness is a splice that also powers the coil of both relays. The other terminal of the relay coil is connected to the black/orange wires which goes to the grill connector. Whenever the plow plug is connected to the grill connector, a ground is completed for the relay coil. Whenever the vehicle park lamps are turned on and the plugs are connected, the relay coils will be activated. This causes the relay contacts to switch from the normally closed contacts to open contacts to power the vehicle headlamps.

It should be noted that:

- ◆ The relay with the yellow, orange and black wires operates the low beam headlamps.
- ◆ The relay with the green, red and white wires operates the high beam headlamps.
- ◆ Both relays are activated at the same time.

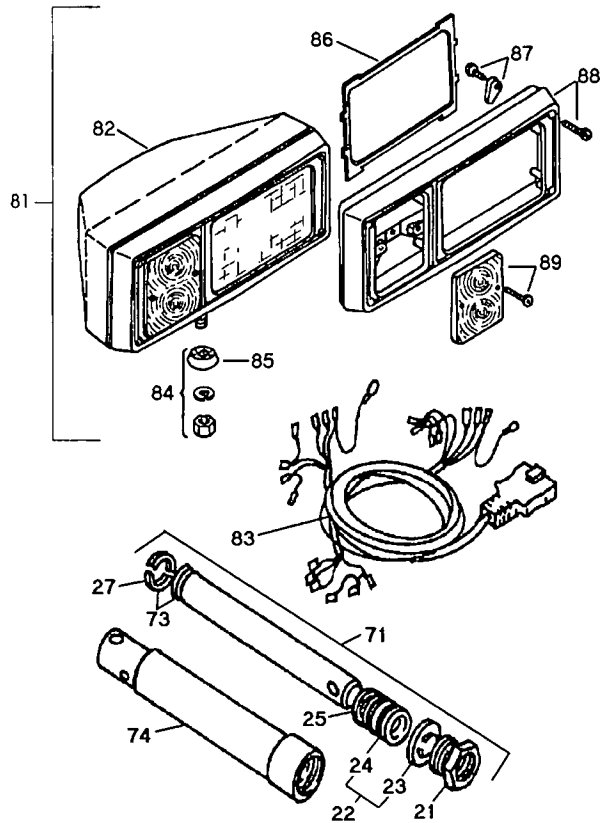


TYPICAL HEADLAMP RELAY WIRING DIAGRAM*

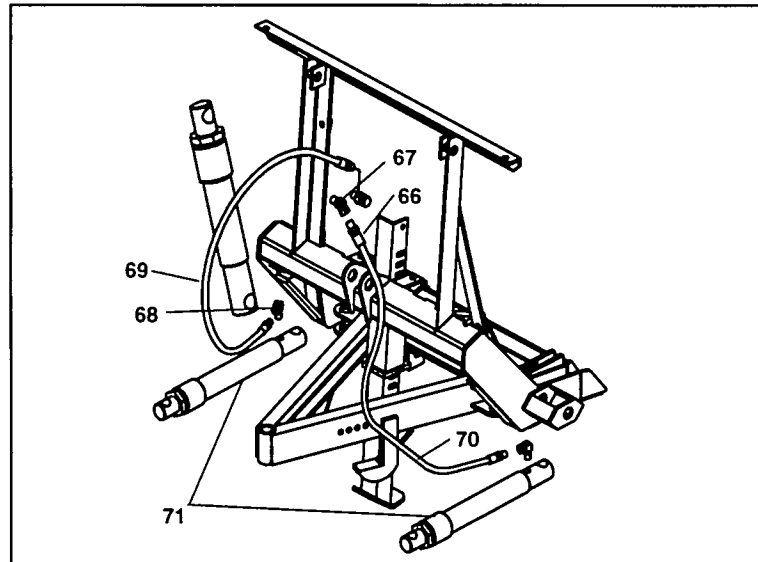


*Some vehicles require different relay connections.

PLOW LIGHTS & ANGLE CYLINDER COMPONENTS PARTS LIST



**USE ONLY GENUINE
FISHER® REPLACEMENT
PARTS**



PLOW LIGHTS & ANGLE CYLINDER COMPONENTS PART LIST

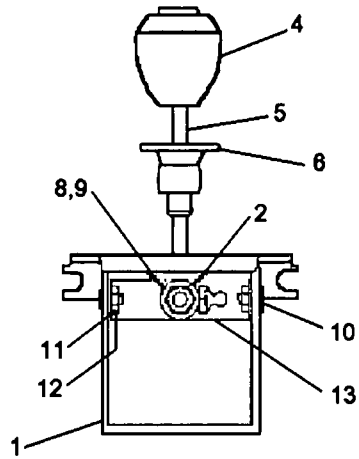


ITEM	PART #	QTY	DESCRIPTION
68	2780	2	1/4 NPT X 90 DEG STREET ELBOW
69	4424	1	HOSE - 36" HP 1/4P-1/4P
70	3074	1	HOSE - 22" HP 1/4P-1/4P
71	20117	2	1-1/2" X 12" CYL ASSY - XL
21	5763	1	PACKING NUT
23	341	1	WIPER - 1-1/2"
24	339	1	PACKING SET - 1-1/2"
25	338	1	WASHER
73	20601	1	ROD ASSY 1-1/2" X 12" - XL
27	20118	1	SPLIT BEARING - 1-1/2"
74	5759	1	BARREL - 1-1/2" X 12"
81	8328	1	HEADLAMP - REPLACEMENT M (DR or PASS)
83	8612	1	PLOW HARNESS - 7 PIN M
	8246	1	PLOW HARNESS - 9 PIN M
84	6128	1	HEADLAMP SWIVEL & FASTENERS
86	6664	1	GASKET SET - SEALED BEAM
87	A6153	2	2E1 RET FINGERS W/SCREWS (4EA)
88	6122	2	BEZEL W/FASTENERS (DR or PASS)
89	6123	2	LENS W/ FASTENERS (DR or PASS)

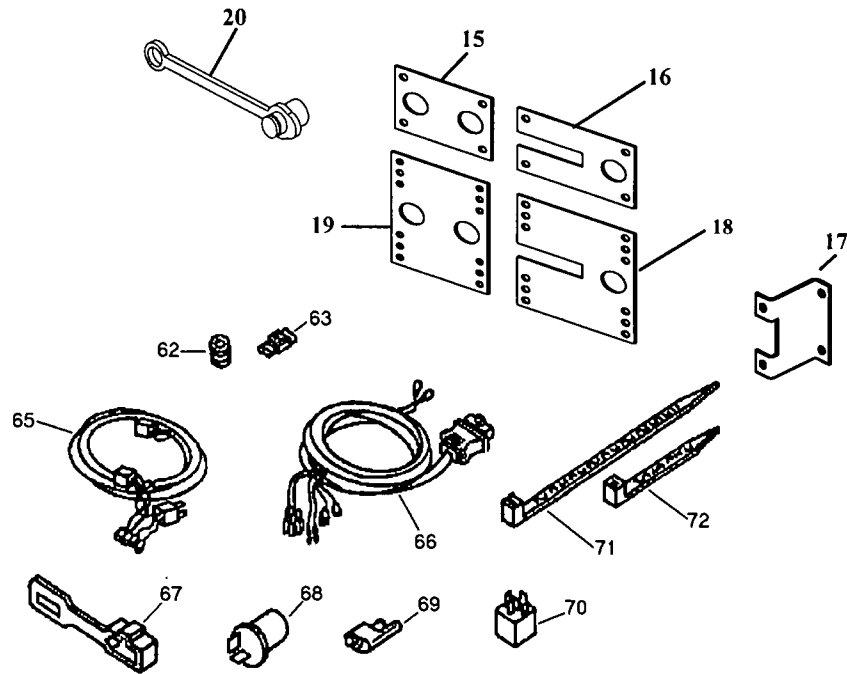
Abbreviations

ADT	Adapter
ASSY	Assembly
CS	Cap screw
CYL	Cylinder
DEG	Degree
DR	Driver Side
EA	Each
HX	Hex
HXW	Hex Washer
LK	Lock
M	Minute Mount® System
NPSM	American Standard Straight Pipe Threads for Mechanical Joints
NPT	National Pipe Thread (Fluid)
PASS	Passenger Side
RET	Retaining
SL	Slotted
SOL	Solenoid
\STD	Standard
\STR	Straight
SWV	Swivel
TFTS	Thread Forming Tapping Screw
TRTS	Thread Rolling Tapping Screw
TY	Type
W/	With
ZP	Zinc Plate

VEHICLE COMPONENTS PARTS DIAGRAM



**USE ONLY GENUINE
FISHER® REPLACEMENT
PARTS**



VEHICLE COMPONENTS PARTS LIST



ITEM	PART #	QTY	DESCRIPTION
1	4419	1	SLC HEAD - BELT DRIVE
2	5858	1	HUB W/ STUD
3	7737	1	LABEL - SLC BELT DRIVE (not shown)
4	6528	1	LENS LABEL - IIIA CONTROL
5	A5842	1	KNOB & LEVER ASSEMBLY
6	5857	1	LOCKSPool, SLC W/ LABEL
7	N/A	1	1/4 X 3/8 (NF) CAP SCREW
8	90311	1	1/4 FLAT WASHER
9	90359	1	1/4 LOCK WASHER
10	9957	2	YOKE SCREW
11	4958	2	NYLON WASHER - 3/8"
12	4956	2	NUT
13	5009	1	YOKE
14	5861	1	S SPRING (not shown)
15	8686	1	2 QD (SHORT)
16	8688	1	QD/ELECTRIC (SHORT)
17	8687	2	STANDOFF LEG
18	8599	1	QD/ELECTRIC (LONG)
19	8600	1	2 QD (LONG)
20	1588	3	DUST PLUG
50	8274	1	CABLE ASSEMBLY - VEHICLE
90672	2	5/16-24 HX JAM NUT ZP	51
90360	2	5/16 SP LOCK WASHER ZP	52
5759	1	BARREL - 1-1/2" X 12"	53
90673	2	#10-32 HX NUT ZP	54
5794	1	SOLENOID	55
90461	2	1/4-20 X 3/4 HS CS G5 ZP	56
90311	2	1/4-PLAIN WASHER ZP	57
90350	2	1/4-20 PT HX LK NUT TI ZP	58
8325	1	PANEL MOUNT PLATE SET- SHORT	60
8290	1	PANEL MOUNT PLATE SET- LONG	61

ITEM	PART #	QTY	DESCRIPTION
3042	2		GROMMET - RUBBER, SPLIT
63	4302	1	IN-LINE CONNECTOR - INSULATED
65		1	PLUG-IN HARNESS (VARIES w/VEHICLE)
66	8611	1	VEHICLE HARNESS - 7 PIN
	8275	1	VEHICLE HARNESS - 9 PIN
67	8291	2	PLUG COVER
68	5972	1	FLASHER - HEAVY-DUTY
69	5776	3	BULLET RECEPTACLE CONNECTOR
70	8293	2	HEADLAMP RELAY SPDT
71	8324	8	CABLE TIE - LONG
72	3666	8	HOSE TIE, NYLON - 3/16 X 8

Abbreviations

ASSY	Assembly	SL	Slotted
BP	Black Phosphate	SP	Spring
BPO	Black Phosphate & Oil	SPDT	Single Pole Double
BZP	Black Zinc Plate		Throw
CS	Cap Screw	STD	Standard
G	Grade	SYS	System
HD	Heavy Duty	TY	Type
HX	Hex	TCTS	Thread Cutting Tapping
HXW	Washer		Screw
LK	Lock Washer	TFT	Thread Forming Tapping
NYIS	Nylon Insert		Screw
PC	Printed Circuit	W/	With
PN	Pan	ZP	Zinc Plate
PT	Prevailing Torque		



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