



OWNER'S MANUAL

OPTA-FLOW SPREADER

FOR SERIAL NUMBERS AFTER
10S100899

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INTRODUCTION

This manual was written for the assembly, installation and maintenance of your new Sno-Way® OPTA-FLOW SPREADER. Most importantly, this manual provides an operating plan for safe use. Refer to the Table of Contents for an outline of this manual.

Please keep this manual with your machine at all times as reference material and so it can be passed on to the next owner if the machine is sold.

We require that you read and understand the contents of this manual COMPLETELY, especially the chapter on SAFETY, before attempting any procedure contained in this manual.



The Society of Automotive Engineers has adopted this SAFETY ALERT SYMBOL to pinpoint characteristics that, if NOT carefully followed, can create a safety hazard. When you see this symbol in this manual or on the machine itself, BE ALERT!, your personal safety and the safety of others, is involved.

• Defined in the next column, are the SAFETY ALERT messages and how they will appear in this manual.



WARNING

Information, that if not carefully followed, can cause serious personal injury or death!



CAUTION

Information, that if not carefully followed, can cause minor injury or damage to equipment!

NOTE: Additional information concerning the equipment or the procedure that may or may not be contained elsewhere in this manual.

BE AWARE! It is illegal to remove, deface or otherwise alter the safety decals mounted on this equipment.

Record the Spreader Serial Number, Controller Serial Number, Spreader Model Number, in the space provided below as a handy record for quick reference. The Serial Number is located on the left vertical tube of the Hopper Frame. This plate contains information that your Dealer needs, to answer questions, to order replacement parts, or to complete warranty work, if needed, for your unit.

NAME PLATE DATA

SPREADER MODEL NUMBER _____
SPREADER SERIAL NUMBER _____
(Located on Hopper Frame)
CONTROLLER SERIAL NUMBER _____
MOTOR SERIAL NUMBER _____
(FILL IN)

DEALER

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE ()- _____
(FILL IN)

ORIGINAL PURCHASER

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE ()- _____
(FILL IN)

We reserve the right to make changes or improve the design or construction of any part(s) without incurring the obligation to install such parts or make any changes on any unit previously delivered.

Sno-Way® Opta-Flow Spreader Service Parts Manuals are available for purchase from your authorized Sno-Way® dealer. Sno-Way® Opta-Flow Spreader Service Parts Manuals may also be ordered from the address on the back of this manual by requesting part number 97100451.



SAFETY



BEFORE ATTEMPTING ANY PROCEDURE IN THIS BOOK, READ AND UNDERSTAND ALL THE SAFETY INFORMATION CONTAINED IN THIS SECTION. IN ADDITION, ENSURE ALL INDIVIDUALS WORKING WITH YOU ARE ALSO FAMILIAR WITH THESE SAFETY PRECAUTIONS.

For your safety Warning and Information Decals have been placed on this product to remind the operator to take safety precautions. It is important that these decals are in place and are legible before operation begins. New decals can be obtained from Sno-Way or your local dealer.

REMEMBER The careful operator is the best operator. Most accidents are caused by human error. Certain precautions must be observed to prevent the possibility of injury to operator or bystanders and/or damage to equipment.

NEVER operate Spreader when under the influence of alcohol, drugs or other medications that could hamper your judgement and reactions. An accident may result in serious injury or death to other persons or yourself.

ALWAYS operate vehicle in a well-ventilated area. The carbon monoxide in exhaust gas is highly toxic and can cause serious injury or death.

NEVER allow hands, hair or clothing to get near any moving parts such as fan blades, belts and pulleys. Never wear neckties or loose clothing when working on the vehicle or spreader.

NEVER wear wrist watches, rings or other jewelry when working on the vehicle or individual equipment. These things can catch on moving parts or cause an electrical short circuit that could result in serious personal injury.

ALWAYS wear safety goggles when working on the vehicle to protect your eyes from battery acid, gasoline, and dust or dirt from flying off of moving engine parts.

ALWAYS be aware of and avoid contact with hot surfaces such as engine, radiator, and hoses.

ALWAYS wear safety glasses with side shields when striking metal against metal! In addition, it is recommended that a softer (non-chipable) metal material be used to cushion the blow. Failure to heed could result in serious injury to the eye(s) or other parts of the body.

NEVER allow children or unauthorized person to operate this Spreader.

NEVER exceed 45 m.p.h. when loaded Spreader is attached to vehicle. Braking distances may be reduced and handling characteristics may be impaired at speeds above 45 m.p.h.

ALWAYS lock the vehicle when unattended to prevent unauthorized operation.

ALWAYS check the job site for terrain hazards, obstructions and people.

ALWAYS check surrounding area for hazardous obstacles before operating this unit.

ALWAYS inspect the unit periodically for defects. Parts that are broken, missing or plainly worn must be replaced immediately. The unit, or any part of it should not be altered without prior written approval of the manufacturer.

ALWAYS shut off the vehicle engine, place the transmission in Park, turn the ignition switch to the "OFF" position and firmly apply the parking brake of the vehicle before attaching or detaching the Spreader from the vehicle or when making adjustments to the Spreader Gates and/or Deflectors.

ALWAYS make sure personnel are clear of area being spread. Material is discharged from spreader at a high rate of speed and could injure bystanders.

ALWAYS inspect bolts and pins whenever attaching or detaching the Spreader, and before traveling. Worn or damaged components could result in the Spreader dropping to the pavement while driving, causing an accident.

NEVER place fingers in mounting frame or mount lug holes to check alignment when attaching spreader. Sudden motion of the spreader frame could severely injure a finger.

NEVER use material in the spreader containing twigs, brush, plastics, cans or other trash. Foreign materials could plug drive and discharge and damage unit.

NEVER use wet materials in the spreader. This unit is not designed to handle wet materials. Use only dry free flowing materials.

NEVER leave materials in hopper for long periods of time. Remember salt is Hygroscopic and will attract enough atmospheric moisture to cause it to "cake".

NEVER work on the vehicle without having a fully serviced fire extinguisher available. A 5 lb or larger CO² or dry chemical unit specified for gasoline, chemical or electrical fires, is recommended.

NEVER smoke while working on the vehicle. Gasoline and battery acid vapors are extremely flammable and explosive.

REMEMBER it is the owner's responsibility for communicating information on the safe use and proper maintenance of this machine.

THEORY OF OPERATION

Hopper and Mounting System

The hopper is manufactured out of a corrosion resistant, Polyethylene polymer with low temperature and UV stabilizers to provide a long, service free, life.

The hopper is mounted in a tubular steel frame that is powder coated for corrosion resistance. The frame also provides mounting points for attachment to the mounting frame mounted to the vehicle.

The subframe consists of a unique quick attach/detach system that allows the Hopper/Frame to be quickly mounted or removed from the vehicle by simply removing three pins. The subframe, with the empty Hopper attached, can also be pivoted out of the way - giving full access to the bed of the vehicle - without having to remove or disconnect the Hopper/Frame from the vehicle.

An additional benefit of this system is that the vehicle tailgate never has to be removed from the vehicle, and, once the subframe has been removed, is fully operational without removing the mounting brackets.

Power Unit Operation

The drive unit consists of a 12VDC Motor, Motor Sheave, Drive Belt, Adjustable Belt Tensioner, Driven Sheave, Auger Shaft, and Shaft Support Bearings.

Control of the Motor is accomplished by cab mounted variable speed controller.

When the unit is turned on by the operator depressing the start switch the power unit will automatically cycle at full torque and RPM to give an initial BURST of materials and to insure that the spinner reaches optimum speed rapidly. The unit will then operate at the pre-selected speed until the unit is shut off by the operator depressing the off switch.

The belt driven Auger Shaft runs at approximately 1/6 motor RPM. The auger shaft is mounted on two bearings, one located under the top shield and the other located under the spinner assembly. The auger shaft also incorporates a chain "Lump Breaker" to ease material flow in the hopper.

Both pattern and spread are affected by motor speed. The faster the motor turns the more material will be discharged over a wider area.

Gates and Deflector Operation

The Opta-Flow Spreader is equipped with both "Gates" and "Deflectors" to accurately and precisely dispense materials.

The Gates control the volume of material being dispensed and to a lesser extent the discharge pattern of the material. If the Left Gate is fully closed and the Right Gate is opened more material will be discharge to the **left** side of the pattern. Conversely If the Right Gate is fully closed and the Left Gate is opened more material will be discharge to the **right** side of the pattern

The Deflectors control the pattern of the material being dispensed. The wider the deflectors are set the wider the pattern will be. If the Right Deflector is set parallel with the vehicle and the Left Deflector is set wide open all the material being discharged will go to the **left** of center. Conversely if the Left Deflector is set parallel with the vehicle and the Right Deflector is set wide open all the material being discharged will go to the **right** of center.

Both pattern and spread are affected by motor speed. The faster the motor turns the more material will be discharged over a wider area.

Burst Operation

Depressing the Start Switch engages the BURST feature of the Opta-Flow spreader. As long as the Start Switch is depressed the spreader will operate at maximum speed regardless of the setting on the speed controller. This gives the operator the option of applying extra material on particularly slippery locations without having to adjust the flow controls.

When the operator releases the Start switch the BURST feature will stop and normal spreader operation will continue.

Adjustable Speed Operation

Speed of the spinner is controlled by the operator, from the cab, by turning the knob on the control unit clockwise, increased flow, or counterclockwise, decreased flow.

SPREADING OPERATION

Operating Capacities



WARNING

DO NOT OVERLOAD VEHICLE. Overloading could result in an accident and/or damage/injury to the vehicle and occupants.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

Hopper capacity is 10.25 cu. Ft. Use the following table as a guide to calculate the weight of material placed in the spreader.

IMPORTANT: Material weights given are average weights for DRY materials. Depending on moisture content of material weights will vary. NEVER load the vehicle this spreader is installed on beyond the vehicle manufacturer's maximum Gross Vehicle Weight Rating.

Material	Weight (lbs. Per Cu. Ft.)
Rock Salt Coarse	35
Rock Salt Fine	45
Coarse Sand	95

Example: Fine Rock Salt@45 lbs/ft³x10ft³ = 450lbs

REMEMBER Calcium and Sodium Chloride (Salt) materials are hygroscopic, attract moisture, and will form a solid block when exposed to atmospheric moisture. It is easier to unload unused material and clean out the hopper in a timely manner than chip out a 800 lb hardened salt block later.



WARNING

DO NOT load hopper when in the "swing open" position.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

Before The Season Begins

1. Inspect vehicle safety equipment for proper operation; brakes, headlights, windshield wipers, flashers, etc.

2. Inspect the spreader, spreader frame and all attaching hardware for wear and corrosion. Replace worn or damaged parts and clean and repaint exposed metal parts with a high quality, corrosion resistant enamel.

3. Inspect all fasteners to insure that they are properly tightened. If any fasteners are loose, re-tighten to the proper torque (refer to the Torque Specification Chart in this manual) and carefully inspect the adjacent area for damage or wear as well as carefully inspecting all adjacent fasteners for proper torque.

4. Apply a small amount of light oil to the Hitch Pins

5. Install auxiliary and flashing lights as required by local ordinances.

6. Remove the drive cover and inspect all drive components. Engage the spinner drive to insure proper operation of the spinner drive.



CAUTION

Keep hands and clothing away from the drive belt and pulleys whenever the drive operation is being inspected and the drive cover is not installed.

Transporting Vehicle With Spreader Attached



WARNING

- **DO NOT** operate vehicle with loaded spreader above 45 m.p.h.
- Braking distance is increased and handling is impaired dramatically at speeds above 45 m.p.h
- Operation at faster speeds could result in an accident and/or damage to the vehicle and occupants.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

1. DO Not exceed 45 m.p.h. when driving with the Spreader attached. Braking distance is increased and handling is impaired dramatically at speeds above 45 m.p.h. Reduce speed when crossing railroad tracks or when road conditions deteriorate.

2. Inspect spreader attaching hardware for wear or damage before transporting and beginning spreading operations.

Spreading Like A Pro



WARNING

- **Never exceed 10 mph when Spreading!**
- **Never Spread with your head protruding from the vehicle side window. Serious eye injuries can result from material being discharged from spreader.**
- **Wear your seat belt! Contact with a hidden obstruction can cause serious personal injury from bodily contact within the vehicle cab or whiplash from sudden stops.**
- **Never operate spreader in the vicinity of pedestrians. Material discharged from spreader can travel a long distance and can injure bystanders.**

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

1. Become familiar with the area to be treated and mark potential hazards before the snow falls. Many immovable objects cannot be seen when covered with snow. Developing a plan early can save valuable time and equipment damage.

2. Spread with the storm. The “Pros” are out early. Allowing Ice to accumulate to unmanageable levels can cause difficult removal problems and can be costly in terms of “wear and tear” on equipment.

3. Research municipal ordinances for restrictions on the allowable materials used for ice control and removal. Many municipalities limit amounts of salt that can be used.

Mounting Spreader To Vehicle



WARNING

Ensure Engine is OFF and set parking brake before mounting Spreader to vehicle. Vehicle movement, equipment failure or inadvertent operation of the control switches during installation could result in serious injury.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.



CAUTION

Spreader Hopper and Frame weigh 168 lbs. **EMPTY.** Get help and use proper lifting procedures when installing or removing Spreader.

1. Position vehicle as close as possible to spreader. Set parking brake and turn ignition switch off. Remove key from ignition.

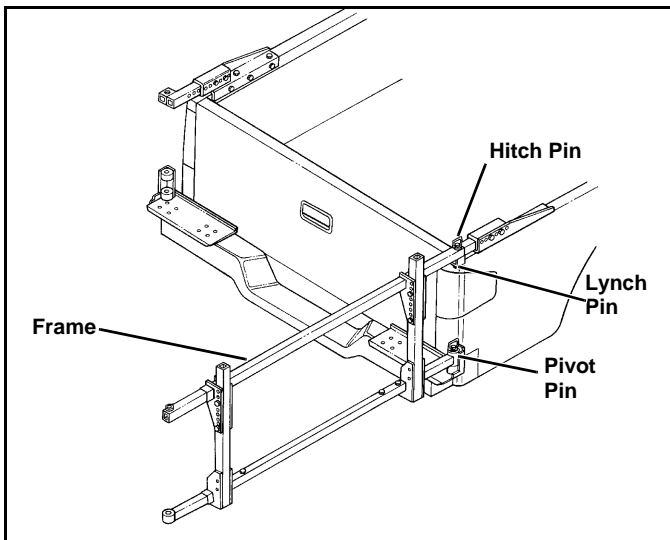


Figure 1-1

2. With the Spreader Frame swung out to the rear, place the Pivot Pin of the Lower Right Attaching Tube into the hole in the collar of the Pivot Bracket on the right side of the vehicle bumper. (See Figure 1-1)



CAUTION

NEVER place fingers in frame or mount lug holes to check alignment. Sudden motion of the frame could severely injure a finger.

3. Align the hole in the Right Side Upper Arm of the Frame with the hole in the right side Mounting Bracket on the side rail of the vehicle box. Install Hitch Pins through Mounting Brackets and Hopper Frame. Install Lynch Pin into Hitch Pin to secure it in place. (See Figure 1-1)

4. Swing the Hopper Frame forward until the hole in the Lower Left Arm of the Frame is aligned with the hole in the Latch Bracket on the left side of the vehicle bumper. Insert the Latch Pin through the hole in the Latch Bracket and lower mounting arm and retain the Latch Pin with the Retaining Pin through the Latch bracket and Latch Pin. (See Figure 1-1)

5. Align the hole in the Left Side Upper Arm of the Frame with the hole in the Left Side Mounting Bracket on the side rail of the vehicle box. Secure with Hitch pin and install Lynch Pin into Hitch Pin.



WARNING

NEVER mount Hopper on vehicle frame until **ALL** Hitch Pins and Latch Pin are in place and secured by the Lynch Pins and Retaining Pin.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

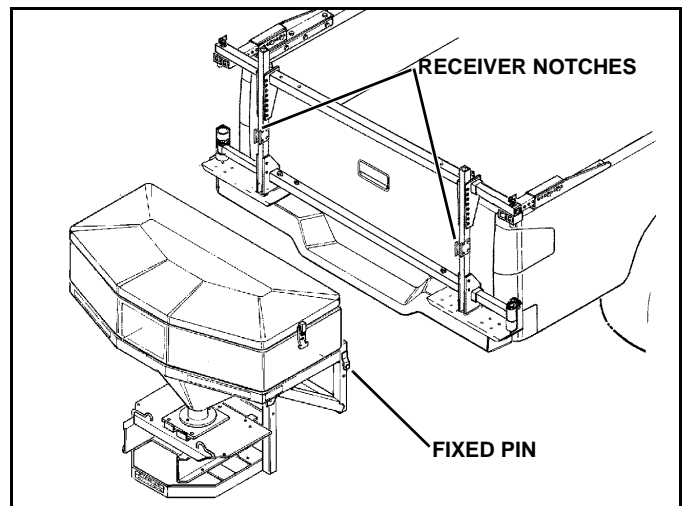


Figure 1-2

6. Lift Spreader Hopper Assembly, position Hopper Frame against Mounting Frame, and lower Hopper Frame Fixed Mounting Pins into Receiver Notches in Mounting Brackets on each side of Mounting Frame. (See Figure 1-2)

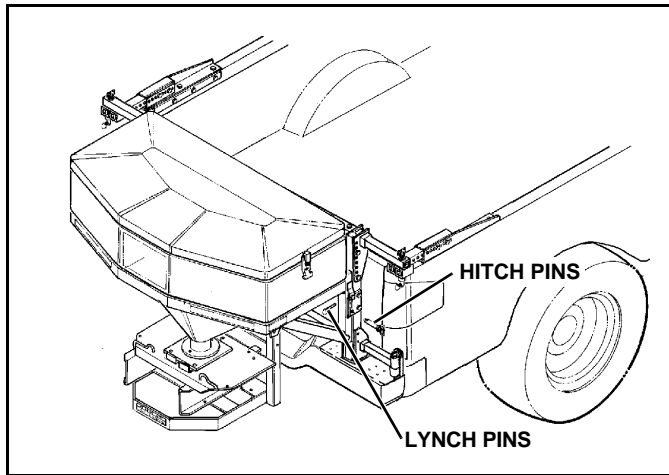


Figure 1-3

7. Install Hitch Pins through Mounting Brackets and Hopper Frame. Install Lynch Pins into Hitch Pins to secure them in place. (See Figure 1-3).

8. Remove the protective cover from the vehicle end of the wiring and store it in vehicle.

CAUTION

Never use pliers or any other tool to force the connector halves together.

9. Align the two harness connector halves, push the spreader connector into the vehicle connector.

Swinging Hopper



WARNING

Park vehicle on flat level surface, turn off engine, remove key from the ignition, and set parking brake before working on spreader.

Uneven terrain, vehicle movement, equipment failure or inadvertent operation of the control switches could result in serious injury.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.



WARNING

DO NOT swing Hopper when loaded.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

1. Park vehicle on a flat level surface.
2. Unload material from Hopper.
3. Pull Lynch Pin and Hitch Pin from Attachment Bar on Latch (Left) side of frame.
4. Pull Retaining Pin and Latch Pin from Latch Assembly mounted on left side of vehicle bumper.
5. Swing Hopper and Frame to right until Frame clears vehicle tailgate.

NOTE: To close, reverse above procedure. Make sure to re-install Hitch Pin and Latch Pin and secure with Lynch Pin and Retaining Pin.

Checking Spinner Rotation



WARNING

Never check spinner rotation by looking at spinner. Material residue on spinner will cause severe injury to eyes of bystanders upon discharge.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

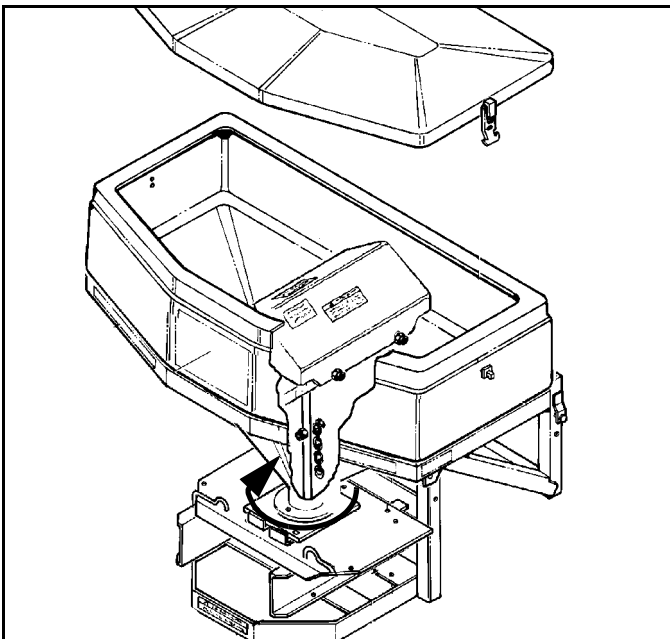


Figure 1-4

Remove cover. Turn ignition to ACC position and engage Start Switch on Spreader control Panel. Check auger for proper rotation. Shaft should rotate clockwise when viewed from top. (See Figure 1-4) If shaft rotates counterclockwise:

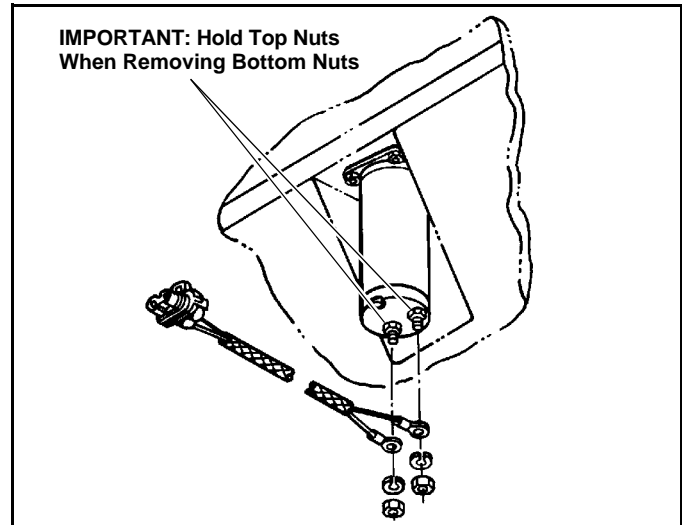


Figure 1-5

1. Disconnect wire harness at vehicle connector.

IMPORTANT: When removing or installing wire terminals on the terminal posts of the motor hold the upper nut on the terminal post with a wrench to prevent the possibility of twisting the terminal post and damaging the post or internal motor wiring.

2. Remove the two electrical wires from the terminal posts on the motor and reverse them. (Remove both wires from terminals. Place wire from right terminal on left terminal, and connect wire from left terminal to right terminal.) (See Figure 1-5)

3. Reconnect wire harness at vehicle connector.
4. Re-check rotation of shaft.

Before You Use Spreader



CAUTION

Disconnect wire harness motor connector before lubricating drive components or checking belt tension or spinner freedom of rotation.

IMPORTANT: Lubricate Spindle Shaft Bearings before each use of the Spreader. Failure to grease these bearings will result in corrosion of the bearings and will cause the Spreader to work inadequately.

1. Grease bearings on spinner shaft. See "Lubrication Requirements" on page 15.

IMPORTANT: Check belt tension before each use of the Spreader. Operating unit with incorrect belt tension will cause the spreader to work inadequately.

2. Check Belt tension. See "Drive Belt Adjustment" on page 16.

3. Check for free turning of spinner shaft by grasping spinner and turning it by hand.

4. Load Material in Hopper. See "Operating Capacities" on page 5.

Removing Spreader From Vehicle

1. Drive vehicle to the desired storage area. It is recommended that the Spreader be stored in a dry, protected area.



- Ensure engine is OFF and parking brake is set before removing spreader from vehicle. Vehicle movement, equipment failure or inadvertent operation of the control switches during removal could result in serious injury.
- Ensure all personnel are clear of the area surrounding the hopper storage location before removing hopper to prevent serious injury in case unit is dropped.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

2. Turn vehicle ignition switch to OFF. Remove key. Set Park Brake.

IMPORTANT: Spreader should be thoroughly cleaned of all materials, especially salt, before it is put into storage.

REMEMBER Calcium and Sodium Chloride materials are hygroscopic, attract moisture, and will form a solid block when exposed to atmospheric moisture. It is easier to unload unused material and clean out the hopper in a timely manner than chip out a 800 lb hardened salt block later!

3. Remove all material from Hopper.



Never use pliers or any other tool to separate the wiring harness connector halves.

4. Disconnect electrical connections. Cap vehicle end of connector.

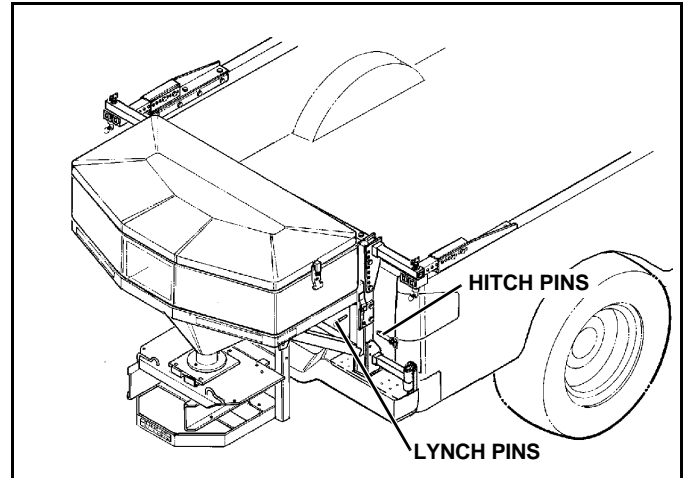


Figure 1-6

5. Remove Lynch Pin and Hitch Pin from Upper Left Arm of the Frame. Remove Tab Lock Pin and Latch Pin from Lower Left Arm of Frame

6. Pivot Hopper and Frame Rearward.

7. Remove Lynch Pin and Hitch Pin from Upper Right Arm of Frame.



Spreader Hopper and Frame weigh 168 lbs. EMPTY. Get help and use proper lifting procedures when installing or removing Spreader.

8. Lift Hopper with Hopper Frame from vehicle frame and carefully place on floor.



Use care when placing Hopper/Frame assembly on floor. If unit is dropped the frame can be bent which will cause spinner to jam and/or malfunction.

Operating The Spreader



WARNING

Never operate spreader in the vicinity of pedestrians. Material discharged from spreader can travel a long distance and can injure bystanders.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

To Start The Motor

1. Turn ignition key to ACC position or start the engine. This routes power to the controller
2. Depress and release switch Start position. The indicator lamp will come on indicating that there is power going to the spinner motor. Depressing the switch automatically engages the Burst operation for a short time and then returns the motor to a steady speed operation controlled by the speed controller.
3. Adjust the speed by turning the variable speed control knob in a clockwise direction to increase speed, or in a counterclockwise direction to decrease speed.

NOTE: The Variable speed control may be adjusted at any time. The unit does not have to be in the start mode. The variable speed controller only controls the steady state running speed of the motor and does not affect the BURST mode of operation.

To Stop The Motor

1. Depress and release the switch Stop position. The indicator lamp will go off. The motor will stop rotating.

IMPORTANT: If ignition switch is turned off at any time during operation the spinner motor will stop and the controller will automatically reset to the off position. Spinner will not automatically be restarted if ignition is turned back on.

Gate And Deflector Adjustment

The amount of material dispensed is dependent on four factors:

- Spinner Speed
- Gate Position
- Deflector Position
- Vehicle Speed

Any variation in one or more of the above will result in

varied pattern spread, pattern width and the amount of material discharged from the spreader..

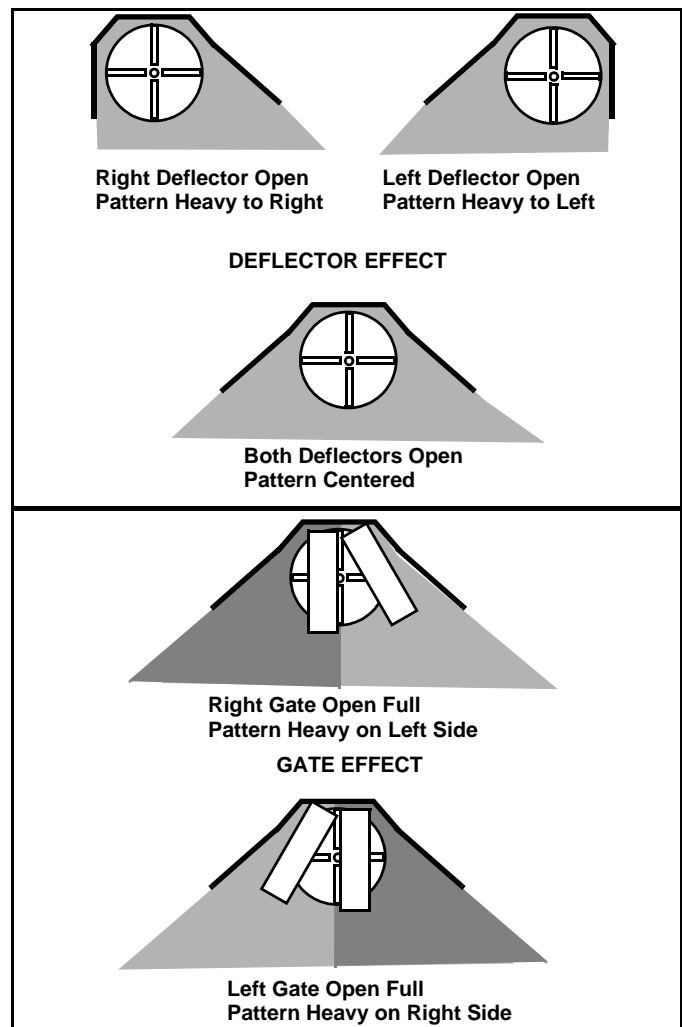


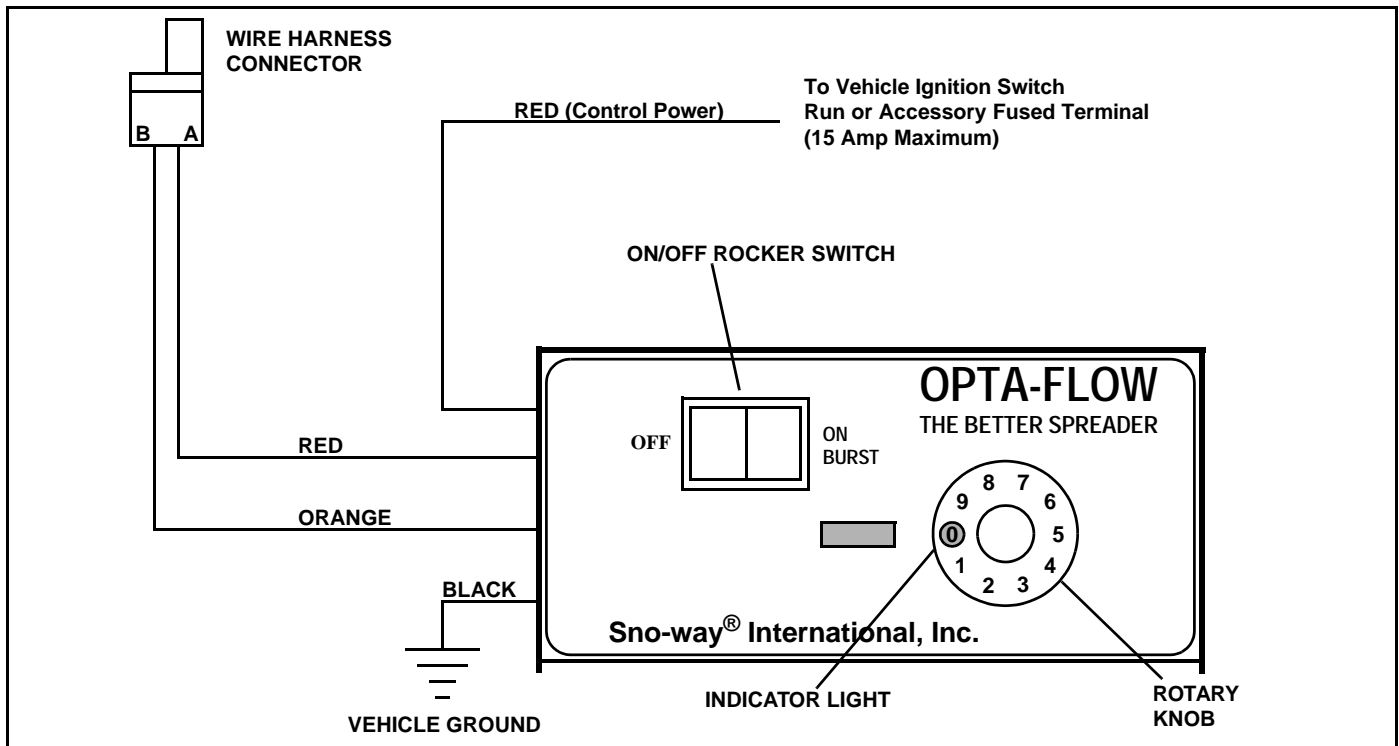
WARNING

Ensure engine is OFF, ignition key removed and parking brake is set BEFORE making any adjustments to the deflectors or gates. Vehicle movement, equipment failure or inadvertent operation of the control switches during adjustments could result in serious injury.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

The following charts will serve as a general guide and starting point but experience is the best guide for determining the best combinations of settings for your application





Motor Controller Operation



CAUTION

The controller input voltage must be a minimum of 11 volts DC for proper operation. Low voltage may result in an occasional failure to properly sense an over-current condition. Be sure the vehicle battery and alternator are in good operating condition and adequate to provide 11 volts DC to the salt spreader controller.

The Motor Controller controls the speed of the Spinner Drive Motor by varying the voltage and current to the Spinner Drive Motor.

Control current is supplied by a control power lead (RED Wire) from the vehicle fuse block and must be protected by a fuse no greater than 15 Amps. This control power lead must also be connected to the fuse block so that the controller receives current **ONLY** when the vehicle ignition is in the ACC position or RUN position.

The Spinner Drive Motor is protected by a 40 Amp Circuit Breaker installed in the wiring system near the vehicle battery.

The Spinner Drive Motor speed is adjusted by a Rotary Knob on the front of the Control Box.

The following controls and indicators are located on the face of the Control Box:

- Green Indicator Light— Indicates whether spinner motor is on.
- On/Off Rocker Switch—Used to start or stop Spinner Motor. Also used to activate BURST sequence. Switch is a momentary contact, self centering, rocker type switch.
- Rotary Knob—Used to adjust the rotational speed of the Spinner Motor. Clockwise rotation of the dial will produce a higher rate of speed.
- Red Indicator Light— Indicates an over-current or over-temperature condition.

Start:

The ON/OFF Switch on the front of the Control Box is a momentary push Rocker Switch. When the ON side of the Switch is depressed, current will be directed to the Spinner Drive Motor and the Green Indicator Light behind the clear dial of the rotary knob will illuminate to indicate that power is ON to the Spinner Drive Motor. Also, when the ON Switch is depressed, the Motor Control will go to FULL output momentarily to provide maximum Motor output and speed for initial start-up of the Spinner Drive Motor. After the initial BURST the Spinner Drive Motor speed will go to the speed setting on the Rotary Knob of the controller.

Power Bursts:

Pressing the ON/OFF Switch ON side at any time will activate the POWER BURST (maximum Motor speed). As long as the ON side of the Switch is depressed the Spinner Drive Motor will continue to run at maximum.

Stall Warnings:

If the Spinner Drive Motor stalls, an over current sensing circuit will cause a warning buzzer to sound for 5 seconds and also cause the Red Indicator Light on the face of the Controller to illuminate. The Red Indicator Light will continue to stay lit until the controller is shut off, the cause of the stall is corrected and the controller is re-started.

NOTE: If the Spinner Drive Motor is locked up for more than 5 seconds, the Controller will shut down and the Red Indicator Light will continue to stay lit.



Make sure that the vehicle ignition switch is in the OFF position and key removed from the switch before inspecting the Spreader for cause of obstruction.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

If the Spinner Drive Motor stalls, press the OFF side of the ON/OFF Switch to shut off the power to the Spinner Drive Motor. Turn off the vehicle ignition and remove the key from the ignition switch. Inspect the Hopper and the Spinner Drive to determine the cause of the obstruction. Correct the problem and test to make sure everything is clear by grasping the Spinner and rotating it by hand to insure the obstruction has been removed. Then restart the Spinner Drive Motor.

Over Temperature Protection:

A Temperature Sensor in the Controller Box monitors the temperature of internal components of the Controller Box. In case of overheating, the sensor will shut down the Controller to protect the internal components from heat damage, and the Red Indicator Light will illuminate and the Warning Buzzer will sound for 5 seconds.

In order to reset the Temperature Sensor, and the Controller, the Control Box must be allowed to cool down and the ON/OFF Switch turned OFF, then ON again.

IMPORTANT: The Control Box MUST BE mounted in the vehicle so that there will be adequate air circulation around the Control Box to avoid overheating.

Be careful NOT to cover the Control Box with gloves, jackets, etc. during operation.

DO NOT mount the Control Box directly to the floor or console of the vehicle.

Disconnect Protection:

The Ground Wire to the Controller must be connected to a good ground on the vehicle to insure proper Controller function. In case the control ground is lost, by a disconnected ground wire or poor/improper ground, the Controller will automatically shut down and the Indicator Light will go out. If the ON/OFF Switch is depressed (ON) and the Indicator Light **DOES NOT** light, it will indicate an improper ground to the Controller.

TROUBLE SHOOTING GUIDE

Introduction

Whenever service is necessary, your local dealer knows your Opta-Flow Spreader best and is interested in your complete satisfaction. Return your Opta-Flow Spreader to your local dealer for maintenance service or any other assistance you may require. If you are unable to do so, this trouble Shooting Guide should help you determine the problem. However, before attempting the servicing of your Opta-Flow Spreader, you should possess good mechanical abilities and a total understanding of the mechanism.



CAUTION

First read all warning instruction, the safety messages, and directions before attempting any adjustments or repairs to your unit!

PLEASE: Before calling parts and service personnel be certain that:

1. You have read this guide carefully and are certain that all of the suggestions pertaining to your problem have been attempted.

2. You should have the following information available.

- A. Date Opta-Flow Spreader was originally installed.
- B. Spreader Model Number.
- C. Spreader Serial Number.
- D. Controller Serial Number.

This information should be recorded on page 2 of this Owners Manual.

Trouble Shooting-Quick Reference General

1. Check to see that vehicle ignition switch is "ON" or in "Accessory" position.

2. Check, and replace if necessary, accessory fuse in vehicle fuse panel.

3. Check all wiring to be sure that battery terminals are clean and connections to battery, circuit breaker, switches and all connections on spreader harness and motor are clean and tight.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Motor does not run	Plugged drive unit.	Unplug.
	Blown Fuse	Replace Fuse
	Loose electrical connections	Check all connections
	Motor seized	Replace Motor
Motor runs backwards	Electrical connections incorrect	Verify correct installation. See "Checking Spinner Rotation" on page 9
Material will not feed	No material in Hopper	Fill Hopper
	Material in Hopper too wet	Replace with dry material
	Material in Hopper too coarse	Replace material
	Spinner not turning	Check drive unit. Adjust belt tension. See "Drive Belt Adjustment" on page 16 Check for foreign objects in discharge chute.
Spinner does not turn but motor does turn	Loose belt	Adjust belt tension. See "Drive Belt Adjustment" on page 16
	Hopper plugged stopping Spinner	Replace material
	Material in Hopper too coarse stopping spinner	Replace material

MAINTENANCE

Polyethylene Hopper Care

- **NEVER** beat on sides of Polyethylene hopper to remove materials, especially at subzero temperatures.
- **DO NOT** use abrasive or highly alkaline cleaners on Polyethylene hopper.
- **NEVER** scrape Polyethylene hopper with squeegees, razor blades or other sharp instruments.
- **Never** use Benzene, Gasoline, Acetone or Carbon Tetrachloride on Polyethylene hopper.
- **DO NOT** clean Polyethylene hopper in hot sun or at elevated temperatures.

Polyethylene Hopper Cleaning Instructions

Wash with a mild soap or detergent and lukewarm water using a clean cloth or soft sponge. Dry outside thoroughly with a chamois or moist cellulose sponge to prevent water spots.

Stainless Steel Cleaning Instructions

Wash with soap or detergent and lukewarm water.

To scrub off any surface rust, use a nylon or brass bristle brush. **Do not** use steel wool; Steel wool will leave a steel residue which will result in surface rust.

Lubrication Requirements

It is recommended that the two bearings supporting the auger shaft be lubricated with a Lithium Base EP Marine Grade grease at the beginning of **every** operating period.



CAUTION

- **Using the proper grease at frequent intervals greatly increases the life expectancy of the bearings.**
- **Failure to use the proper grease at recommended intervals can cause extensive damage to the bearings and consequently to the power unit, Auger and Spinner.**

NOTE: The motor is factory lubricated and sealed and does not require any lubrication.

At the end of the season, remove the belt drive idler pulley, clean it thoroughly to remove any dirt and salt, and coat all of the exposed surfaces of the bearing and inner bearing sleeve with a good quality grease to protect the bearing and sleeve from corrosion.

Controller Service

The Controller is a solid state electronic unit and is not serviceable. If the unit does not work after performing tests in the Diagnostics Section, replace the Controller.



CAUTION

DO NOT attempt to perform any service on the Controller. Any attempt to service the controller will void the factory warranty.

Motor Service

There are no owner serviceable parts in the motor. Motor is sealed and should not be disassembled for any reason. If motor does not work after performing tests in the Diagnostics section, replace motor.



CAUTION

DO NOT attempt to disassemble the motor. This is a sealed unit and there are no owner serviceable parts in the motor. Disassembly of motor will break seals and cause motor to fail prematurely.

Electrical System Corrosion Prevention

The terminals on the motor and terminals of the motor wiring harness should be kept clean and free of corrosion. Before the start of each season, remove the wiring harness from the motor terminals, clean the motor terminals and the terminals on the wiring harness, re-attach and coat the terminals with a battery terminal protective spray. Also, disconnect the connectors between the main wire harness and the motor harness and coat the terminals and connectors with dielectric grease.

IMPORTANT: When removing or installing the motor harness wire terminals on the terminal posts of the motor, hold the upper nut on the terminal post with a wrench to prevent the possibility of twisting the terminal post and damaging the post or the internal motor wiring.

Drive Belt Adjustment

NOTE: Drive belt may be adjusted with the hopper either on or off of the vehicle.

1. Drive vehicle to the desired maintenance area. Set park brake. Turn off engine. Remove key.



WARNING

Ensure engine is OFF and parking brake is set before working on the spreader. Vehicle movement, equipment failure or inadvertent operation of the control switches during service could result in serious injury.

FAILURE TO HEED CAN RESULT IN SERIOUS INJURY OR DEATH.

2. Remove cover from hopper by undoing the two rubber hold-downs.

3. Remove enough material from the hopper to expose the Belt Cover bolts.

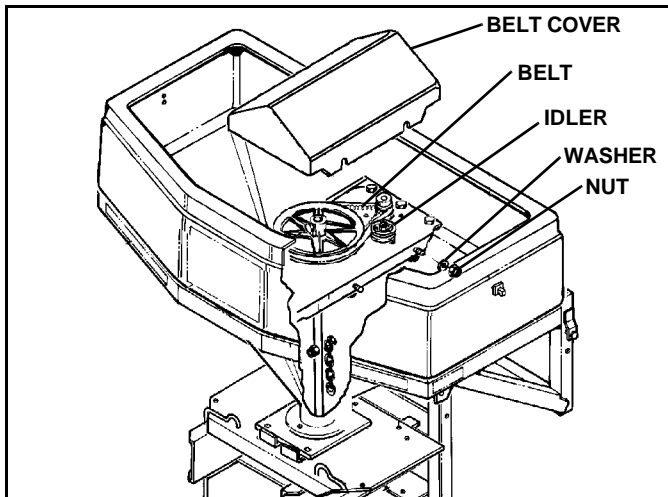


Figure 2-1

4. Loosen four (4) Nylock Nuts and four (4) plain washers securing Belt Cover to crossbrace. (See Figure 2-1)

5. Remove Belt Cover.

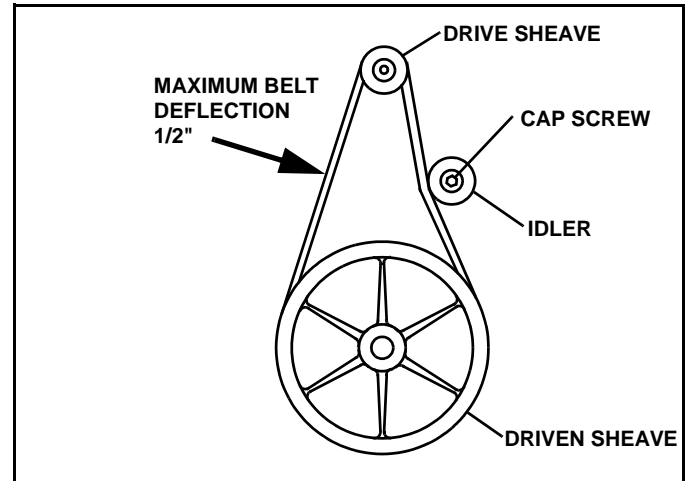


Figure 2-2

6. Loosen cap screw/nut retaining belt tensioner to crossbrace. (See Figure 2-2)

7. Adjust Idler until belt opposite idler has 1/2 inch deflection. (See Figure 2-2)

8. Tighten cap screw/nut retaining belt tensioner to crossbrace to 23 lbs-ft.

9. Replace Belt Cover and secure with four (4) Nylock nuts and plain washers. Tighten to 10 lbs-ft.

10. Replace Hopper Cover.

Metri-Pack™ Connector Removal

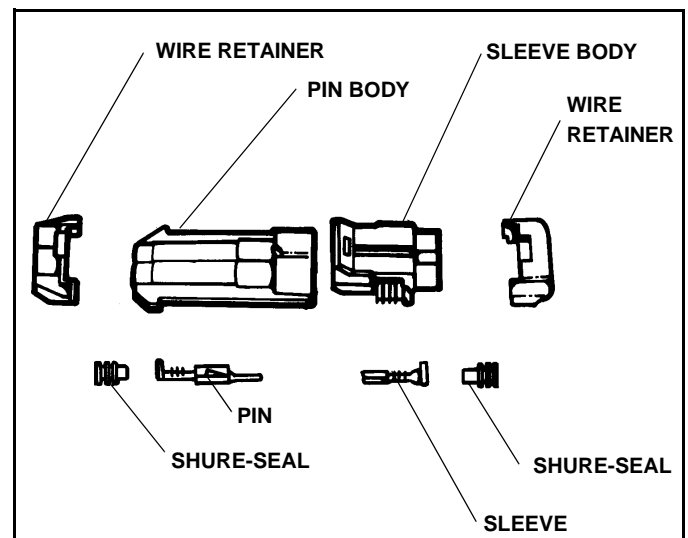


Figure 2-3

IMPORTANT: Identify wire number/color locations with connector terminal letters.

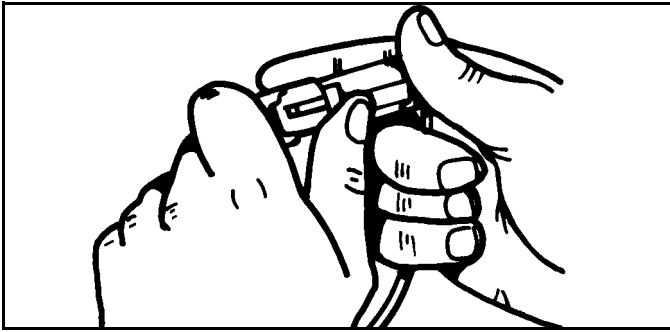


Figure 2-4

1. Open connector body. (See Figure 2-4)

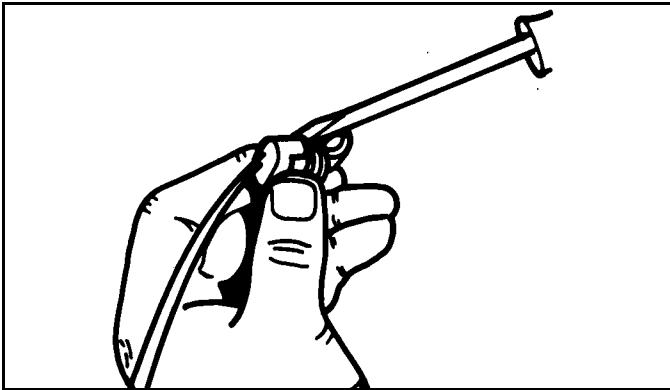


Figure 2-5

2. Remove retainer on wire end of connector with a screwdriver. (See Figure 2-5)

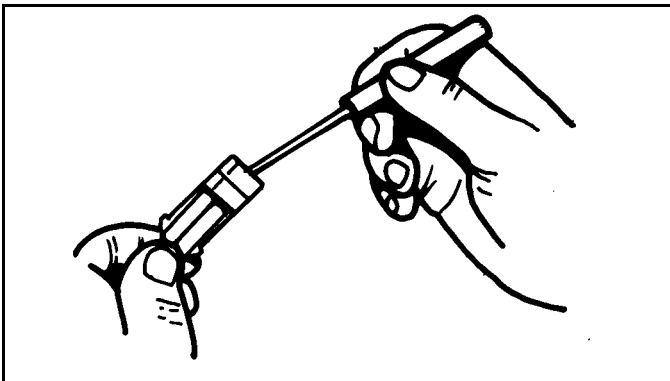


Figure 2-6

3. Use Terminal Removal Tool (#96102499) to remove contact from connector body. (See Figure 2-6)

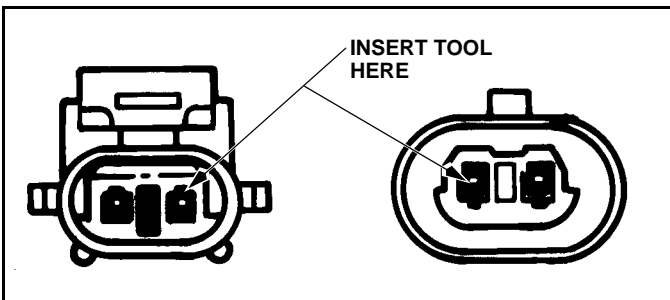


Figure 2-7

NOTE: To remove sleeve connector from sleeve body (short connector half) insert tool in slot between terminal contact and connector body. To remove pin connector from pin body (long connector half) insert tool in center of contact.

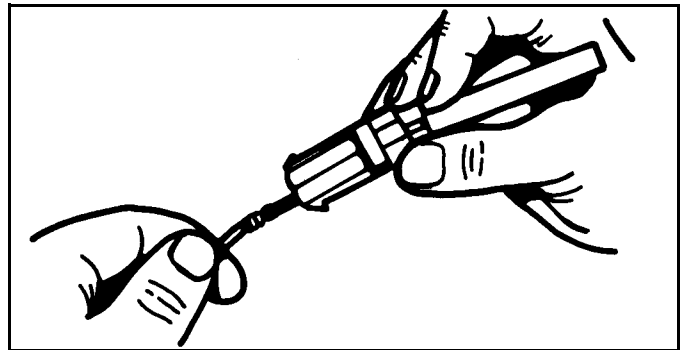


Figure 2-8

4. Hold the removal tool fully seated and pull wire from connector body

Metri Pack™ Connector Replacement

1. Remove wire from connector body as described above.

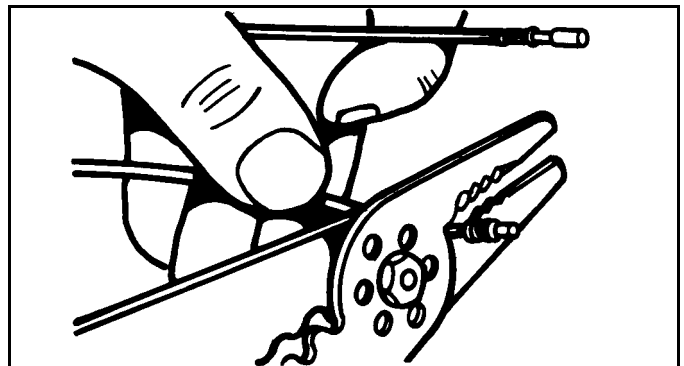


Figure 2-9

2. Use Universal Electrical Pliers to remove wire as close as possible to old contact. (See Figure 2-9)

IMPORTANT: METRI PACK™ connectors are keyed A, B, C, etc. for proper contact mating. Be sure contacts and wire colors/numbers match and are in proper alignment.

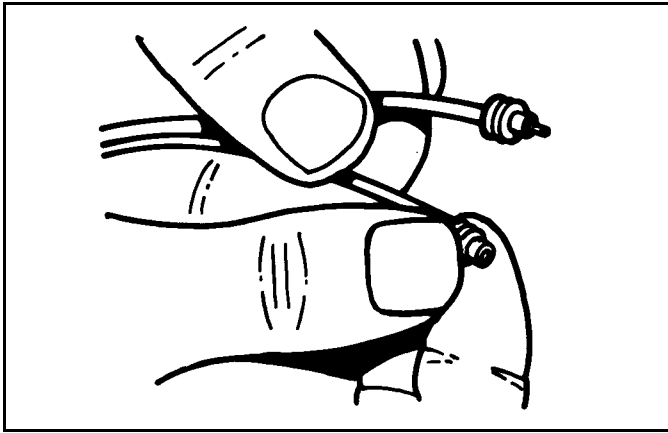


Figure 2-10

3. Install correct size cable seal on wire.

Cable seals are available for three sizes of wire:

- Large - 1.0 mm (16 gauge) wire
- Medium - 0.8 mm (18 gauge) wire
- Small - 0.5 mm (20 gauge) wire

4. Strip insulation from wire to expose 6mm (1/4 in) and align cable seal with edge of insulation

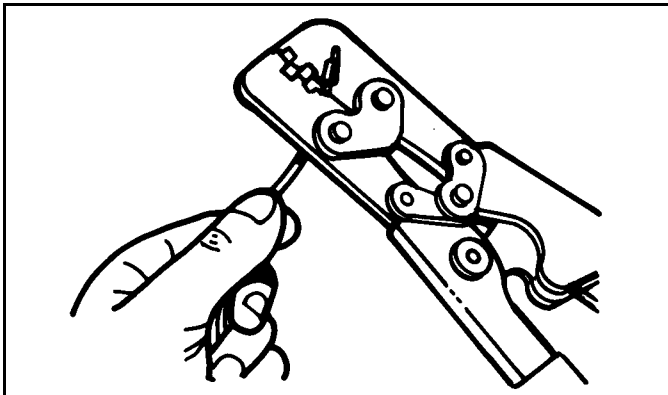


Figure 2-11

5. Place proper size contact on wire and use Crimper (#96102500) to crimp contact in place with a "W" type crimp.

6. Use CRIMPER to secure cable seal to contact.

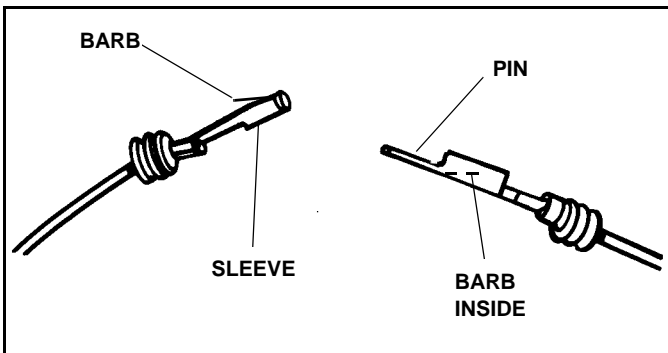


Figure 2-12

IMPORTANT: Proper barb location and orientation for installation of sleeve and pin is shown.

NOTE: Connector bodies are keyed for proper contact mating. be sure contacts are in proper alignment.

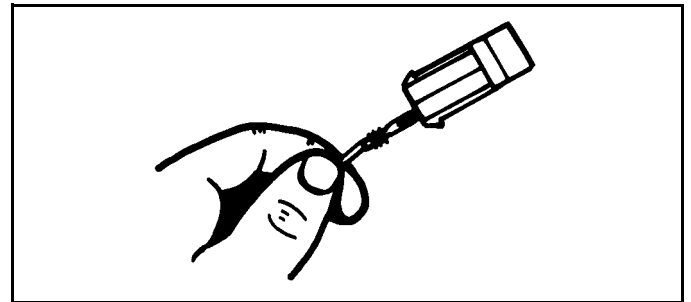


Figure 2-13

7. Push contact into new connector body until fully seated.

8. Pull on wire slightly to be certain terminal is locked in place.

9. Install wire retainer.

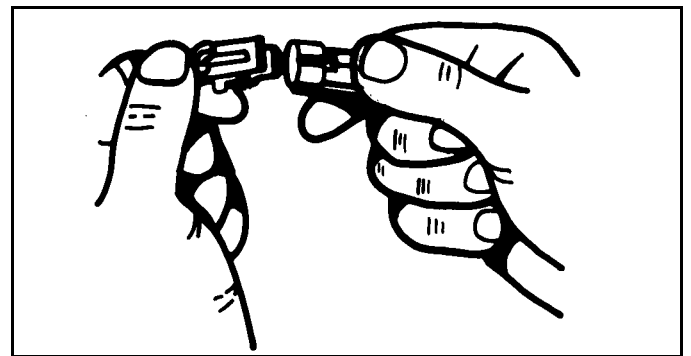



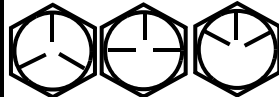
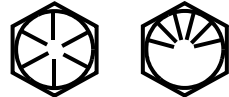



Figure 2-14

10. Transfer remaining wires to correct terminal in new connector.

11. Place retainer on wire end of connector and snap in place.

12. Close connector body.

TORQUE SPECIFICATIONS

SAE Grade and Head Markings	1 or 2 No Marks 	5 5.1 5.2 	8 8.2 
SAE Grade and Nut Markings	2 No Marks 	5 	8 

	Grade 1		Grade 2		Grade 5, 5.1 or 5.2		Grade 8 or 8.2	
	Lubricated ^a	Dry ^b	Lubricated ^a	Dry ^b	Lubricated ^a	Dry ^b	Lubricated ^a	Dry ^b
SIZE	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft	lb-ft
8-32			14*	19*	22*	30*	31*	42*
10-24			21*	27*	32*	43*	45*	60*
1/4	2.8	3.5	4.5	5.5	7	9	10	12.5
5/16	5.5	7	9	11	15	18	21	26
3/8	10	13	16	20	26	33	36	46
7/16	16	20	26	32	41	52	58	75
1/2	25	31	39	50	63	80	90	115
9/16	36	45	56	70	90	115	130	160
5/8	50	62	78	100	125	160	160	225
3/4	87	110	140	175	225	280	310	400
7/8	140	175	140	175	360	450	500	650
1	210	270	210	270	540	675	750	975

DO NOT use these values if a different torque value or tightening procedure is given for a specific application.

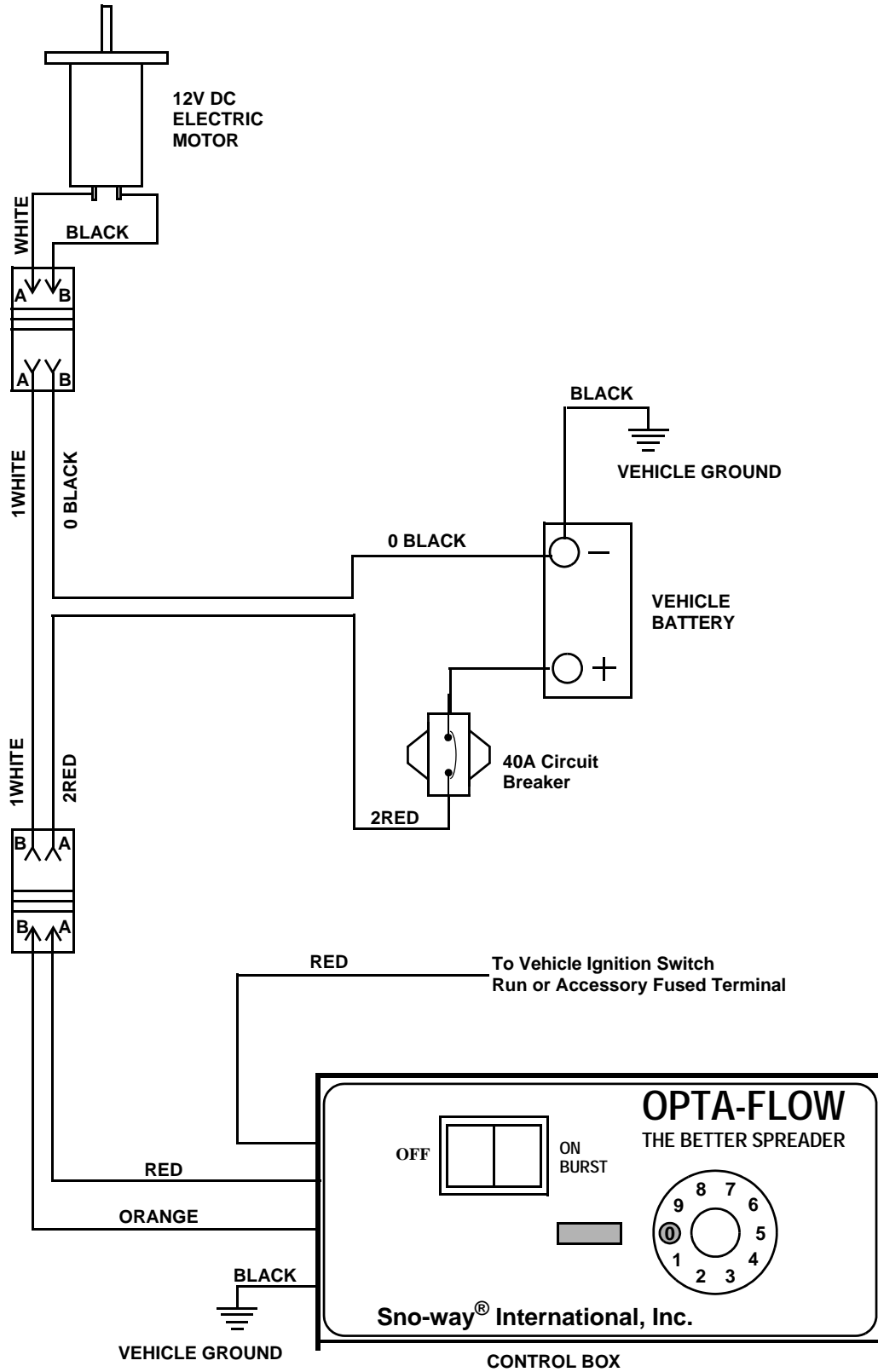
Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

^a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.

^b "Dry" means plain or zinc plated without any lubrication

* Values with asterisk are in lb-in.

WIRING SCHEMATIC



NOTES

SNO-WAY® OPTA-FLOW SPREADER

LIMITED ONE-YEAR WARRANTY

SNO-WAY® Warrants to the original retail purchaser for a period of one (1) year from the date of delivery from an authorized SNO-WAY® Dealer that your new SNO-WAY® Opta-Flow Spreader is free from defects in materials and workmanship if properly set up and operated in accordance with the recommendations set forth in SNO-WAY'S® Set-up and Operator's Manuals. This warranty does not cover paint or normal wear items such as Bearings and Belts.

SNO-WAY® Opta-Flow Spreader used by a dealer as a demonstrator shall be warranted only for the period of one (1) year from the date of delivery to said dealer and the first subsequent purchaser shall be entitled to the remaining warranty protection.

This warranty shall not apply to any item of equipment which has been repaired or altered outside the SNO-WAY® factory or authorized SNO-WAY® dealership or which has been subject to misuse, negligence or accident: nor shall it apply to equipment which has not been operated in accordance with SNO-WAY® printed instructions or has been operated beyond SNO-WAY'S® recommended Opta-Flow Spreader operating parameters.

To validate this warranty, your dealer and you must complete the enclosed Warranty Registration Card at time of purchase of the Opta-Flow Spreader and return the Factory copy to SNO-WAY® International, Inc. within ten (10) days following delivery of your new Opta-Flow Spreader.

To obtain warranty service, promptly return your Opta-Flow Spreader or any defective part at your expense to any authorized SNO-WAY® dealer during the warranty period. Replacement or repair of defective or inadequate parts shall be performed without charge for labor or materials by such dealer at his regular place of business during regular business hours after inspection and determination that the warranty applies.

EXCLUSIONS OF WARRANTY

Except as otherwise expressly stated herein, SNO-WAY® makes no representation of warranty of any kind expressed or implied, including merchantability or fitness for particular purpose in respect to the equipment.

SNO-WAY® shall not be liable for incidental or consequential damages for any breach of warranty, including but not limited to loss of use, inconvenience, rental or replacement equipment, loss of profits or other commercial loss.

No agent, employee or representative of SNO-WAY® has any authority to bind SNO-WAY® to any affirmation, representation or warranty concerning its equipment except as specificity set forth herein.

Certain limitations expressed herein are excludable in accordance with provisions of local law. Such limitations shall be deemed struck if such local law is applicable. All other limitations and provisions shall continue to apply.

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