Center Pivot

7000, 8000, 8120 Series

Owner's Manual

0994464_M

www.valleyirrigation.com

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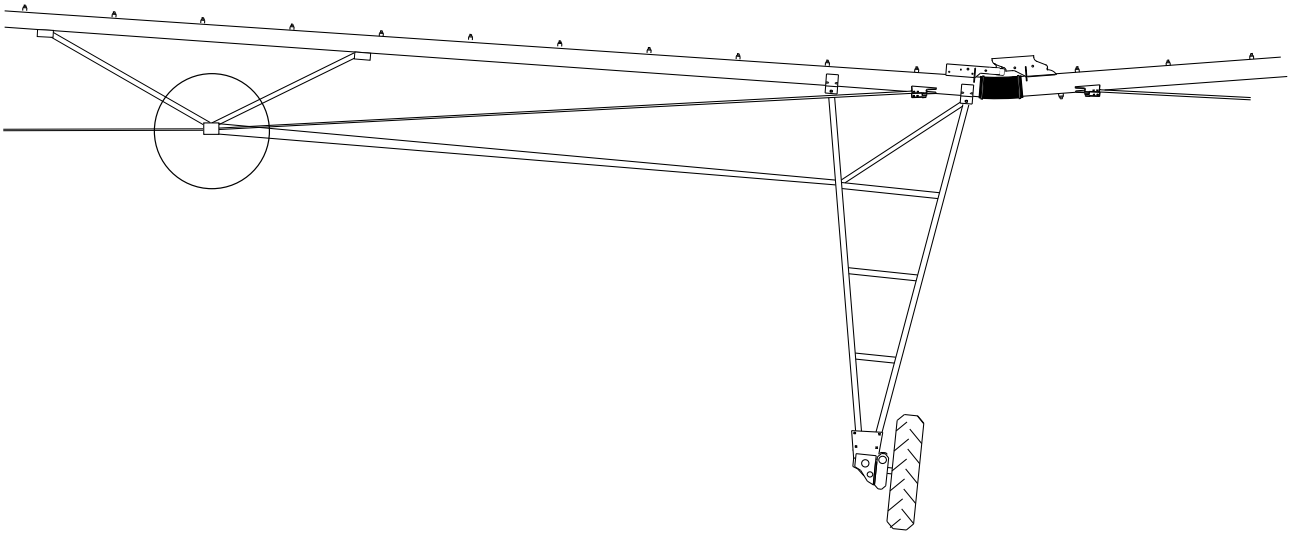
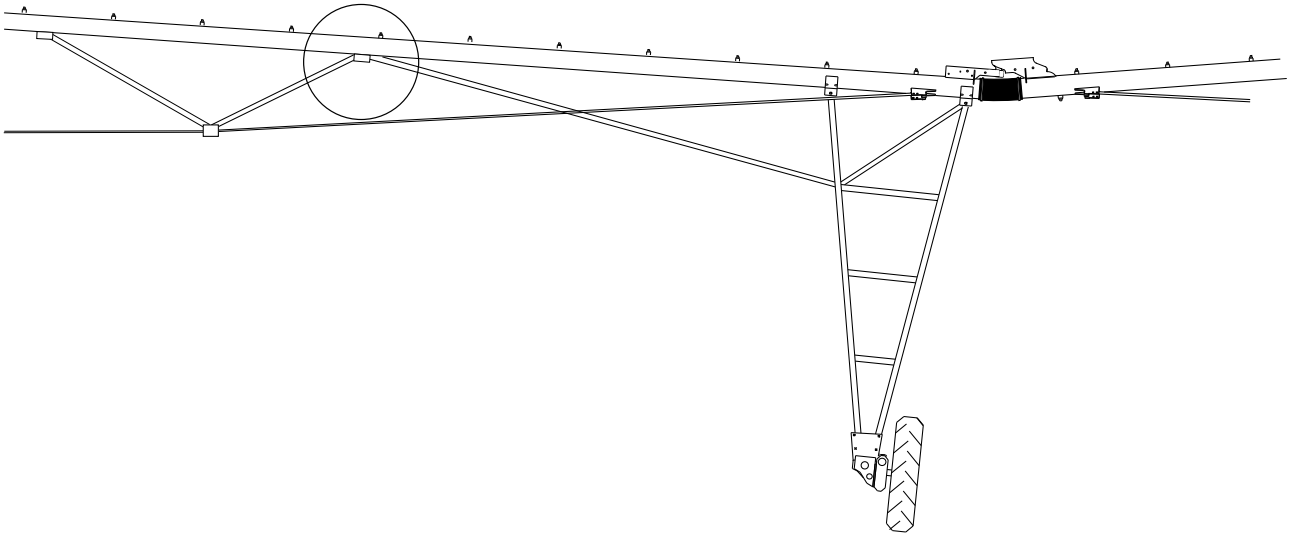
SERIES SPAN IDENTIFICATION

7000

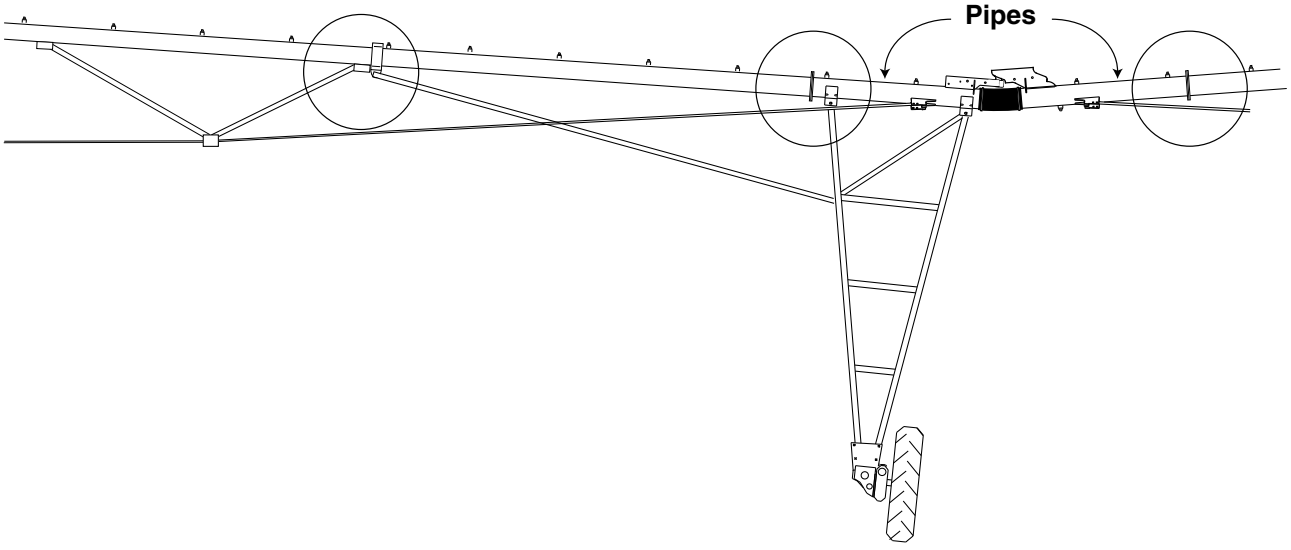


8000



8120 (International Only)

5 ft (1524 mm) Pipes



EC DECLARATION OF CONFORMITY

CE

We: **Valmont Industries, Inc.**
28800 Ida Street
Valley, NE 68064
+1 402.359.6312
+1 402.359.6143 (Facsimile)

Serial Number:

Purchase Order:

declare under our sole responsibility that the product,

Crop Irrigation System

to which this documentation relates, is in conformity with the following documents:

Machinery Directive 2006/42/EC
Low Voltage Directive 2014/35/EU
Electromagnetic Compatibility Directive 2014/30/EU

The above-referenced equipment is in conformity with all safety-related clauses (Not all clauses reflecting commercial preference are met) of the following documents:

EN 60204-1:2006	**Safety of Machinery – Electrical Equipment of Machines**
EN 12100:2010	**Safety of Machinery**
EN 909:1998+A1	**Irrigation Machines**

Statement regarding **Pressure Equipment Directive 97/23/EC:**

The Crop Irrigation System is excluded from the scope of the Pressure Equipment Directive, by the language of Article 1, Sections 3.2, 3.6 & 3.10. This equipment is classified less than Category 1.

Statement regarding **RoHS Directive 2011/65/EC**:

The Crop Irrigation System is excluded from the scope of the RoHS Directive, by the language of Article 2, Section 4(e), being a “Large Scale Fixed Installation.”

Person Authorized to Compile the Technical File in Europe:
Relevant information will be transmitted via email
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ELECTRICAL SAFETY STATEMENT

Installation Of The Valley Electric Irrigation Machine - European Union Only

Valmont Industries Inc. does not install a differential (ground fault) circuit breaker in the control panel of the Valley electric irrigation machine because the standards of protection vary according to country of destination. The distributor must provide and install a differential (ground fault) circuit breaker that meets the standards of the country where the Valley irrigation machine is installed.

In the European Union, differential circuit breaker protection is fixed at a maximum of 24 volts.

Good grounding of the Valley irrigation machine is required.

- If resistance to ground is lower than 80 ohms, a differential (ground fault) circuit breaker of 300 mA will meet requirements.
- If resistance to ground is between 80 and 800 ohms, a differential (ground fault) circuit breaker of 30 mA will meet requirements.

The power supply installation and inspection of equipment protection components or systems are the responsibility of the installer. Valmont Industries, Inc. is not responsible for the failure of equipment protection components or systems not of their manufacture.

Valley pivot irrigation machines receiving power from a generator must have a cable connected from the irrigation machine structure to a ground rod and another cable from the irrigation machine structure to the ground terminal on generator in order for the differential (ground fault) circuit breaker to work.

The linear irrigation machines equipped with a generator are not equipped with a ground rod but must have a cable connected from the linear irrigation machine structure to the ground terminal of the generator in order for the differential (ground fault) circuit breaker to work.

- The resistance between the irrigation machine and the generator must be substantially below 80 ohms.

About This Manual

Information contained in this manual applies to Valley Center Pivot and its use with the 7000, 8000 and 8120 Series of spans.

For proper operation of the Center Pivot machine, the Control Panel Owner's Manual and Center Pivot Owner's Manual must be used together.

The Control Panel Owner's Manual includes safety guidelines and explains the basic operation of the control panel itself, including how to start/stop the machine, change running direction and change water application amounts.

All Owner's, operators and maintenance personnel MUST read and understand the Control Panel Owner's Manual and the Center Pivot Owner's Manual.

All information in this manual is based on information available at the time of printing. Valmont Industries Inc. reserves the right to make changes at any time without notice and without incurring any obligation. Specifications are applicable to equipment sold within the United States and may vary outside of the United States.

Ancillary Equipment Warranty

The owner is responsible for warranty registration of all ancillary equipment such as but not limited to engines, pumps and generators with its respective manufacturer.

SAFETY

Recognize Safety Information

This irrigation equipment may be powered by high voltage which can be extremely dangerous if used improperly. For maximum safety and optimum performance of the machine, all owner's operator's and maintenance personnel must read and understand the owner/operator manual(s), all safety messages in this manual and safety signs/decals on the machine before operating this equipment.

Anyone assembling, operating, servicing or maintaining this machine must read and understand all operation, maintenance, troubleshooting, testing, installation, assembly instructions and all safety messages in this manual before operating the machine or beginning any maintenance, troubleshooting, testing, installation or assembly of components.

These instructions alert you to certain things you should do carefully; if you don't, you could hurt yourself or others, hurt the next person who operates the equipment, or damage the equipment.

Safety Messages

Safety messages in this manual are preceded by the hazard symbol and one of three words, danger, warning or caution. These messages alert you to potential hazards that could hurt you or others and or cause property damage.

This HAZARD SYMBOL is used to alert you to information about unsafe actions or situations, and may be followed by the word danger, warning, or caution.

⚠ DANGER

The HAZARD SYMBOL used with the word DANGER, will describe immediate hazards that may result in severe personal injury or death.

⚠ WARNING

The HAZARD SYMBOL used with the word WARNING, will describe unsafe actions or situations that may cause severe injury, death and/or major equipment or property damage.

⚠ CAUTION

The HAZARD SYMBOL used with the word CAUTION, will describe unsafe actions or situations that may cause injury, and/or minor equipment or property damage.

Information Messages

Important information messages in this manual are preceded by the word NOTE.

NOTE

The word NOTE is used to alert you to information that describes procedures or tips to help you install, operate or maintain your equipment properly.

Use of Personal Protective Equipment

- People working in areas where there are potential electrical hazards must use, personal protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed. Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Safeguards for personnel protection. - 1910.335, or applicable national, state or local regulations, for additional information.
- Personal protective equipment must be maintained in a safe, reliable condition and periodically inspected or tested.
- Protective shields, protective barriers, or insulating materials must be used to protect each person from shock, burns, or other electrically related injuries while that person is working near exposed energized parts which might be accidentally contacted or where dangerous electric heating or arcing might occur. When normally enclosed live parts are exposed for maintenance or repair, they must be guarded to protect unqualified persons from contact with the live parts.
- Safety signs and tags. Safety signs, safety symbols, or accident prevention tags must be used where necessary to warn people about electrical hazards which may endanger them.

Conductive Materials and Equipment

Materials and equipment that may conduct electricity must be handled in a way that will prevent them from contacting energized power lines, exposed conductors or circuit parts.

- When handling long conductive objects (such as but not limited to truss rods, pipes, angles and ladders) in areas with energized power lines, exposed conductors or circuit parts, work practices (such as the use of insulation, guarding, and material handling techniques) must be used to minimize the hazard.
- Portable ladders must have non-conductive side rails.
- Do not wear conductive articles of jewelry and clothing (such as but not limited to watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) that could come in contact with energized power lines, exposed conductors or circuit parts.

Fall Protection

Identify potential fall hazards and determine if fall protection equipment is appropriate for the task, before beginning the work. Pay attention to hazards associated with routine and non-routine tasks. Inspect fall protection equipment (harnesses, lanyards) and devices (guardrails, tie-off points) before each use. Use fall protection equipment if required for the job. Be sure the fall protection equipment is right for the task, fits properly, and is in good condition. Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations Standards - 29 CFR 1926.500, 1926.501 and 1926.502, or applicable national, state or local regulations for more information.

- When using scaffolds, make sure there is proper access, full planking, stable footing, and guard railing.
- When using a boom lift, keep feet firmly on the platform of a boom lift, use fall protection equipment tied-off at all times to the guardrail or tie-off point.
- When using a ladder, make sure the ladder is non-conductive and the correct size for the task. Read the ladder user instructions and be sure the ladder is in good condition. Make sure ladder is set on stable footing and at the correct angle.

Minimum Working Clearance

To reduce the risk of injury, all persons require adequate working clearance around the electrical panel or other electrical equipment. The table below identifies the minimum working clearance needed. Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Safeguards for personnel protection. -1910.303(g)(1)(i), or any other applicable national, state or local regulations, for additional information.

MINIMUM WORKING CLEARANCE 0-600 VOLTS				
WIDTH OF WORKING CLEARANCE AREA	HEIGHT OF WORKING CLEARANCE AREA	★MINIMUM WORKING CLEARANCE IN FRONT OF ELECTRICAL PANEL/EQUIPMENT		
		EXPOSED LIVE PARTS ON ONE SIDE OF WORK SPACE AND NO LIVE GROUNDED PARTS ON THE OTHER SIDE.	EXPOSED LIVE PARTS ON ONE SIDE OF WORK SPACE AND LIVE GROUNDED PARTS ON THE OTHER SIDE.	EXPOSED LIVE PARTS ON ONE SIDE OF WORK SPACE AND EXPOSED LIVE PARTS ON THE OTHER SIDE.
30 in (76.2 cm) MINIMUM OR WIDTH OF ENCLOSURE, WHICH EVER IS GREATER	78 in (198.1 cm) MINIMUM OR HEIGHT OF ENCLOSURE, WHICH EVER IS GREATER	36 in (91.4 cm) MINIMUM	42 in (107 cm) MINIMUM	48 in (122 cm) MINIMUM

★Concrete, brick or tile walls shall be considered as grounded.

Qualified Person

A Qualified person is one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Only qualified persons may work on electric circuit parts or equipment that have not been de-energized.

Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations Standards - 29 CFR 1926.32(m) and 1910.333, or applicable national, state or local regulations for additional information.

Irrigation Equipment near Airports and Crop Dusting Aircraft

- If any part of the irrigation machine comes within 3200 ft (975 m) of an airport runway, especially the approach (ends) of the runway, additional warning markers may be required. In the United States, CFR Title 14, Chapter I, Subchapter E, Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace describes when marking is needed.

  This document is available at: www.ecfr.gov

- Marking requirements vary depending on the location of the irrigation equipment relative to the runway, the type of airport (Civil, Military, or Heliport) and other factors. Contact the local airport authority for guidance and specific recommendations. In the United States, guidelines for marking structures near airports are published by the Federal Aviation Administration in Advisory Circular AC 70/7460-1L – Obstruction Marking and Lighting.

  Available here: www.faa.gov/regulations_policies/advisory_circulars

- For irrigation machines near private or unregulated airfields, including farm-based airstrips, Valley strongly recommends complying with the same standards and requirements as Civil airports as shown in Part 77.

- Regulations vary by country, contact your local aviation authority for guidance.

  Overhang cables, including overhang back cables are a particular danger. In locations where low-flying aircraft are likely, such as within 1,500 ft (457 m) of an end of an airport runway, or where crop dusting aircraft are common, Valley recommends adding obstruction markers to overhang cables to improve their visibility.

  For large overhangs (36 ft / 10.97 m Heavy Duty and longer), five 12 in (300 mm) or 20 in (500 mm), aviation orange marker balls are sufficient. One near the rabbit ears, two in the middle of the back cables and two in the middle of the highest overhang cables. Refer to Section 3.5 in AC70/7460-1 for additional details. Aviation marker balls are available online and from a variety of aviation and airport safety equipment providers.

Overhead Power Lines

Assembling, towing or transporting irrigation machine components such as but not limited to the pivot point, linear cart, span/drive unit assemblies, overhangs and/or corner assemblies underneath or near power lines is extremely dangerous because of the risk of electrocution.

Operating equipment that elevates irrigation machine components, such as but not limited to an aerial lift or crane, near power lines is extremely dangerous because of the risk of electrocution. Only qualified personnel should operate this type of equipment. Before operating the equipment, qualified personnel must read the equipment manufacturers' operating and safety instructions.

Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Cranes and derricks. - 1926.550, or any other applicable national, state or local regulations for additional information.

- Always presume that any overhead power line is an energized line unless and until the person(s) owning the line and/or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Before operating any equipment near any power line make sure the line has been de-energized and visibly grounded at the point of work.
- Electrocution can occur without touching an electrical power line. Electricity, depending on the magnitude, can jump or become induced into equipment or conductive materials that come in close proximity to, but do not touch a power line. High wind, lightening, wet ground and other environmental conditions will increase the possibility of electrocution and require additional consideration.
- Transmitter towers can induce the equipment or materials being handled with an electrical charge. Before working or operating equipment near transmitter towers make sure the transmitter is de-energized.
- Select the location where the span/drive unit will be assembled to ensure that neither the irrigation machine, or the equipment used during the assembly process, will violate the minimum clearance guidelines.
- Never operate equipment or allow the load, ropes or tag lines within 10 ft (3.05 m) of any power line rated 50 kV or lower whether it is energized or not. For lines rated over 50 kV, the minimum clearance shall be 10 ft plus 0.4 in (1.1 cm) for each kV over 50 kVs.
- Never assemble, tow, transport or allow irrigation machine components underneath or within 10 ft (3.05 m) of any power line rated 50 kV or lower whether it is energized or not. For lines rated over 50 kV, the minimum clearance shall be 10 ft plus 0.4 in (1.1 cm) for each kV over 50 kVs. Overhang support angles, cables and spinner drive components regularly extend 10 ft to 12 ft (3.1 m to 3.7 m) above the irrigation pipeline (span).
- Use barricades to identify areas where interference with overhead power lines could occur. Keep the assembly, towing or transporting of irrigation machine components and the operation of equipment including load, ropes or tag lines away from any power line, in the distances described above, whether the line is energized or not.
- Always designate a person to observe clearance between the power line and all equipment being operated or moved in order to give timely warning for all operations to STOP if the minimum clearance is violated.

Minimal Lockout / Tagout Procedure

The following procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It is used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before personnel perform any servicing or maintenance where the unexpectedly energized or start-up of the machine or equipment or release of stored energy could cause injury. All personnel, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance shall not attempt to start, energize, or use that machine or equipment.

When the energy isolating devices are not lockable, tagout should be used and affected personnel must wear full personal protection.

Refer to U.S. Occupational Safety & Health Administration (OSHA) Regulations (Standards - 29 CFR) Typical minimal lockout procedures - 1910.147 App A, or applicable national, state or local regulations, for additional information.

Sequence of Lockout

1. Notify all affected personnel that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
2. The authorized personnel shall identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).
4. De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
5. Lock out the energy isolating device(s) with assigned individual lock(s).
6. Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
7. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

⚠ CAUTION

• RETURN OPERATING CONTROL(S) TO NEUTRAL OR "OFF" POSITION AFTER VERIFYING THE ISOLATION OF THE EQUIPMENT.

8. The machine or equipment is now locked out.

⚠ DANGER

• WHEN PERSONNEL WILL BE EXPOSED TO CIRCUIT ELEMENTS AND ELECTRICAL PARTS, A QUALIFIED PERSON MUST USE TEST EQUIPMENT TO VERIFY THAT THE CIRCUIT ELEMENTS AND EQUIPMENT PARTS OF THE EQUIPMENT ARE DE-ENERGIZED.

Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

1. Check the machine or equipment and the immediate area around the machine to ensure that non-essential items are removed and that the machine or equipment components are operationally intact.
2. Check the work area to ensure that all personnel are safely positioned or removed from the area.
3. Verify that the controls are in neutral.
4. Remove the lockout devices and re-energize the machine or equipment.
5. Notify affected personnel that the servicing or maintenance is completed and the machine or equipment is ready to be used.

Operate Safely

Valley Irrigation machines are designed with safety in mind. However, if this machine is operated incorrectly, it may pose a safety threat to the operator. A good safety program is much like a chain, it is only as strong as its weakest link. The manufacturer, dealer, and operator must maintain and improve all safety programs. Following is a list of safety operating tips which you and all other persons servicing or operating the machine must read and understand.

⚠ CAUTION

- DO NOT operate this machine without first reading the Owner's Manuals for the machine.
- Read all safety messages in this manual and safety signs on the machine.
- DO NOT let anyone operate this machine without proper instructions.
- Unauthorized modifications may impair the function and/or safety of the machine.
- If you do not understand any part of this manual, contact your Valley dealer.

EMPLOYEE INSTRUCTION ON SAFETY

It is very important to instruct your employees on the safe use of this equipment at the time of their initial assignment to operate it. DO NOT let anyone operate this equipment without proper instructions.

Safety training should be presented annually and the service manager should ensure employees fully understand the safety messages and what to do in case of emergencies.

EMERGENCY STOPPING

The machine can be stopped at any time at any tower by turning the disconnect switch, located underneath the tower box, to the OFF position. See Figure 13-1.

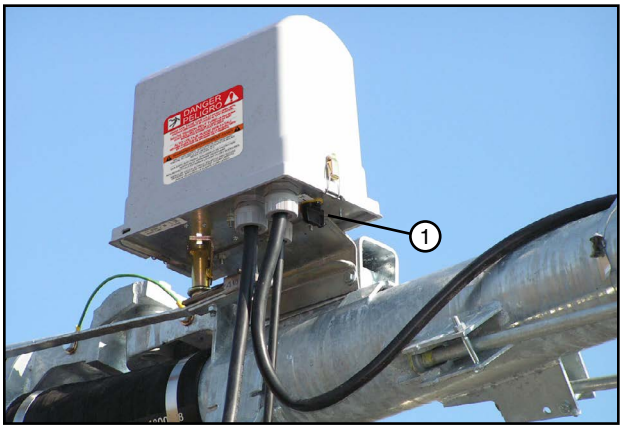


Figure 13-1 1. Disconnect Switch

⚠ WARNING

PROPER GROUNDING

DO NOT attempt to start the machine until the electrical service is properly installed and grounded by a qualified electrician as per the electrical standards.

If the power supplied to the machine is not grounded properly, severe injury or death can result should an electrical malfunction occur.

It is your responsibility to ensure that your power supplier and/or electrical contractor has grounded the irrigation machine as required by the National Electrical Code and by applicable local electrical codes. If a machine is properly grounded and fuse sizing is correct, there is extremely low probability of an individual being injured by electrical shock.

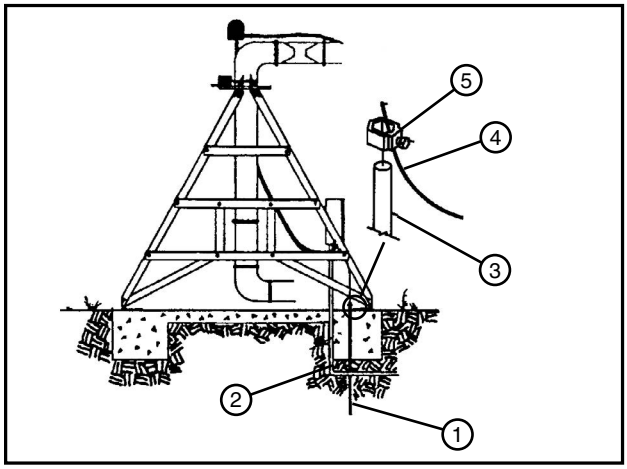


Figure 13-2 1. Ground Rod Installation 2. Service Conductor 3. Copper Ground Rod 4. Copper Ground Wire 5. Clamp

NOTE

- **All 480 VAC, 60 Hz (380 VAC, 50 Hz) power supply services MUST be a 4 conductor service. Three 480 VAC (380 VAC) power lines and one ground conductor which is as large as the power carrying conductors for that service.**

Operate Safely

⚠ DANGER

DISCONNECT POWER WHEN SERVICING
ALWAYS disconnect electrical power before servicing or performing maintenance to the machine.

If you are going to perform maintenance on the machine, YOU MUST shut off and lock the main power disconnect as shown below. See Figure 14-1.

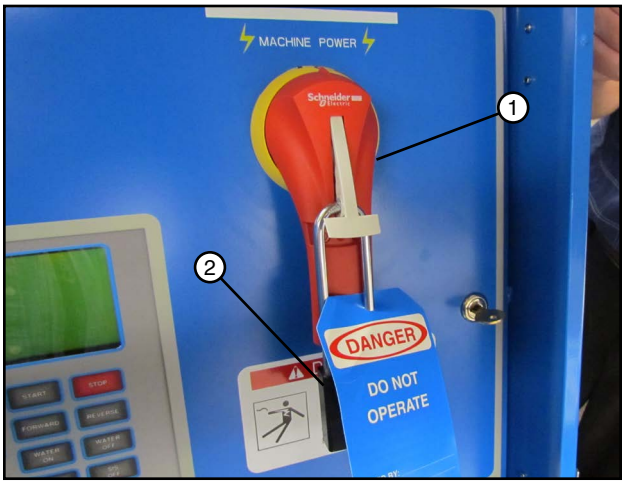


Figure 14-1 1. Main Power Disconnect
2. Lock

The blue (OSHA safety color code) tag shown below should also be filled out and attached to the disconnect after locking. See Figure 14-2.

The tag should reveal the name of a person to contact before restoring power to the machine.

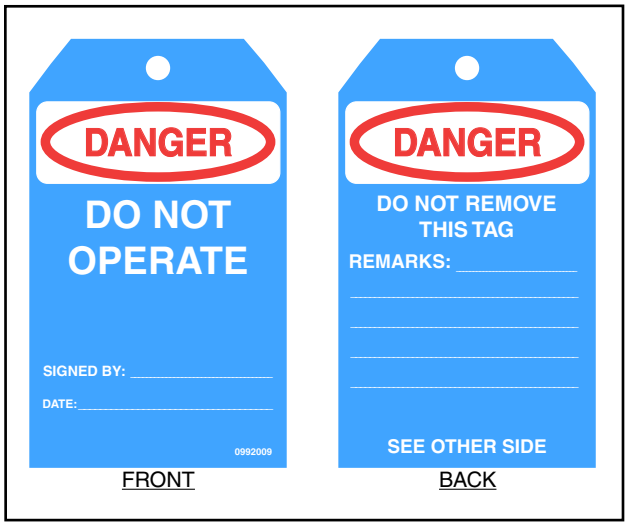


Figure 14-2

⚠ CAUTION

QUALIFIED SERVICE PERSONNEL
If you do not understand electricity or other parts of the machine, have qualified service personnel perform any hazardous repairs or maintenance.

⚠ CAUTION

GUARD ALL POWER TAKE-OFF DRIVES
This includes all belt and power line drives.

Replace any guards and shields removed for maintenance.

⚠ WARNING

MARK AND GUARD ALL POWER LINES
Do NOT deep rip or chisel near the buried power service wires.

Do NOT deep rip in a circle at the drive unit. The deep chisel track will cause severe stresses on the structure.

If you do deep rip your field, run the machine with the percent timer at 100% for the first revolution.

⚠ WARNING

SUSPECTED SHORT CIRCUITS
DO NOT touch the machine if you suspect a short-circuit situation. Call a qualified electrician or an authorized Valley dealer immediately.

Circumstances which may cause you to suspect hazardous voltage situations may include:

- Physical damage to the machine or span cable
- Recent electrical storms (lightning)
- Unusual operating characteristics of the machine

If you suspect a short circuit due to feeling a rippling tingle when touching the machine, DO NOT touch the machine again. Call a qualified electrician or an authorized Valley dealer immediately.

⚠ WARNING

LIGHTNING AND THE MACHINE

Stay away from the machine during an electrical storm. An irrigation machine makes a good path to earth. It is also probably the tallest object in the field, which makes it a good lightning receptor!

Operate Safely

⚠ CAUTION

DO NOT OVERSIZE FUSES
Fuses are sized for the protection of a specific machine.

Be certain you have the proper fuse sizes in place before initial start-up and when replacing fuses.

⚠ CAUTION

PLUG - IN CONNECTORS
Disconnect power before connecting or disconnecting any plug-in connectors.

⚠ CAUTION

DO NOT OPERATE AT FREEZING TEMPERATURES

Spraying water has a cooling effect and water will freeze even though the air temperature is slightly above freezing.

Shut the machine down at 40 degrees Fahrenheit (4.5 degrees Celsius). Do not operate machine when temperature is below 40° F (4.5° C).

- **DAMAGE TO EQUIPMENT RESULTING FROM FREEZE-UP IS NOT COVERED UNDER WARRANTY.**
- **IT IS IMPORTANT TO MAKE SURE ALL PIPE DRAINS FUNCTION PROPERLY TO PREVENT PIPELINE FREEZE-UP DURING COLD WEATHER.**

⚠ CAUTION

AVOID HIGH PRESSURE WATER STREAMS

Avoid body contact with high pressure water streams.

⚠ WARNING

AVOID CHEMICALS

Avoid exposure to sprinkler spray while chemicals are being injected into the water. Read EPA Label Improvement Program (PR Notice 87-1) and all instructions for chemical applications.

If you plan on chemigating, make certain you have complied with state or local regulations in regard to safety equipment, certification, operation and calibration of the injector pump. Make certain you have first aid and fresh water available in case of an accident. You must also be familiar with the correct cleanup procedures in case of a spill.

- **USE OF PROTECTIVE CLOTHING IS RECOMMENDED WHEN HANDLING CHEMICALS. SAFETY GLASSES, GLOVES, AND PROTECTIVE OUTERWEAR SHOULD BE WORN WHEN HANDLING CHEMICALS.**
- **CONTAMINATION OF THE WATER SUPPLY MAY OCCUR IF EFFECTIVE SAFETY DEVICES ARE NOT INSTALLED/USED IN CONNECTION WITH INJECTION EQUIPMENT FOR CHEMIGATION.**

⚠ DANGER

DRIVE SHAFTS START WITHOUT WARNING
An electric motor on each tower of the center pivot powers two or more drive shafts connected to wheel gear drives. These drive shafts start and stop without warning.

- DO NOT touch rotating drive shalt or shield, Clothing or limbs may become entangled, resulting in severe injury.
- DO NOT service the machine until the main disconnect is locked in the OFF position.
- ALWAYS replace drive shaft shields after servicing.
- DRIVE SHAFT SHIELDS MUST ALWAYS BE IN PLACE WHEN OPERATING THE MACHINE.

⚠ CAUTION

CHECK WHEEL TRACKS BEFORE STARTING

Make sure all objects, livestock or persons are clear of the machine before starting. Drive trains are powerful and can climb over vehicles, equipment, etc.

Operate Safely

⚠ CAUTION

KEEP CHILDREN AWAY

Irrigation Machines are NOT playground equipment.

Prevent children from playing or climbing around on the machine. This can be extremely dangerous, especially if the machine is operating.

⚠ CAUTION

CHECK MACHINE DIRECTION

DO NOT operate the machine if it moves in the direction opposite to that which was chosen.

Forward should be clockwise and reverse counterclockwise.

⚠ CAUTION

KEEP WATER OFF ROADWAYS

It is against the law in most states to allow water to spray on state and county roadways. This is a serious hazard to passing motorists.

If end guns are used, make sure you read and understand the correct procedures for setting the on and off positions to avoid watering the roadways.

If an end gun is watering a roadway, immediately discontinue use and adjust the shutoff setting or call your Valley dealer to repair the end gun shut off mechanism.

⚠ CAUTION

AUTO REVERSE OPERATION SAFETY

If the machine reverses direction at a roadway or a physical object such as a building, tree line, power pole, etc., then you MUST provide a backup device to stop the machine if the reversing mechanism were to fail. See Figure 16-1.

Contact your Valley dealer for more information concerning physical barricades for machines under these circumstances.

Figure 16-1 1. Physical Barricade

⚠ CAUTION

PROPER USE OF THE SAFETY OVERRIDE

Caution MUST be taken by the operator when using the safety override function as it will bypass or disable all of the machine's automatic safety shutdown circuits.

NEVER depress and hold the START/STOP SAFETY OVERRIDE switch in the START position for more than 3 to 5 seconds.

If the machine is not in full view by the operator, do not use the Safety Override function.

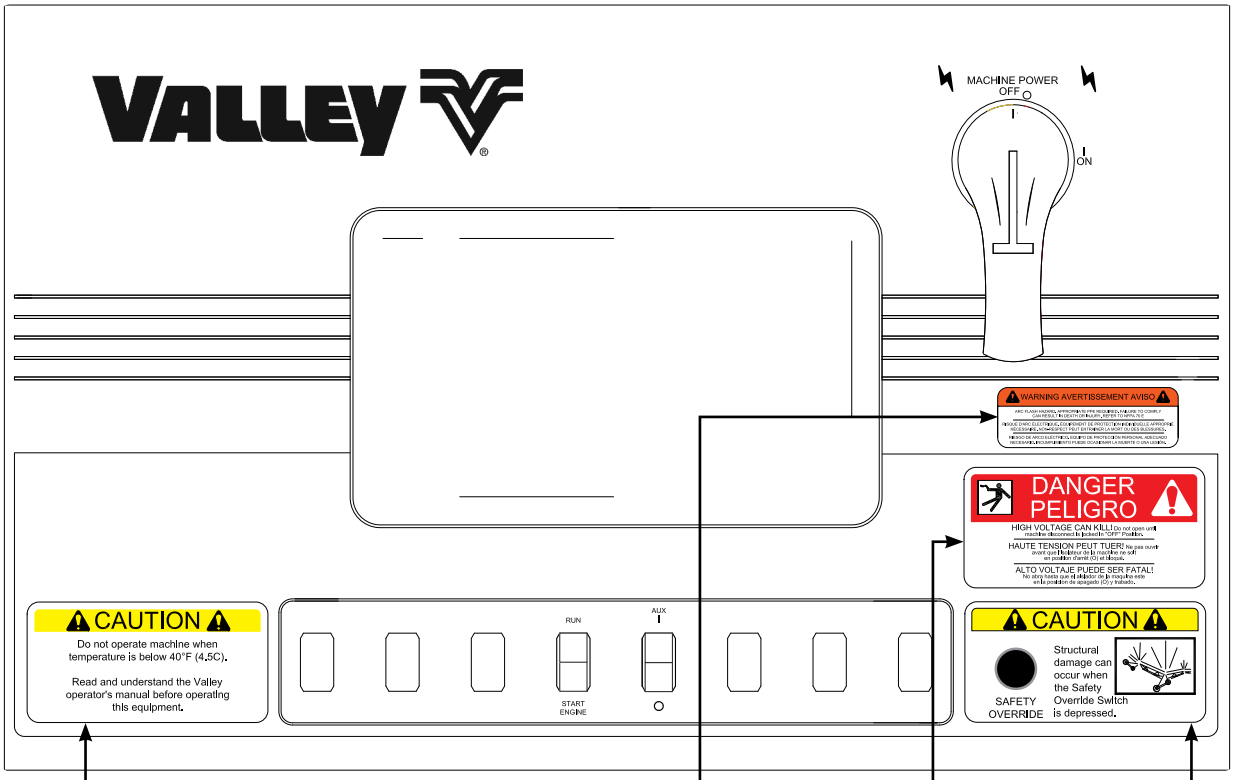
The operator MUST inspect the entire machine between each safety override start attempt.

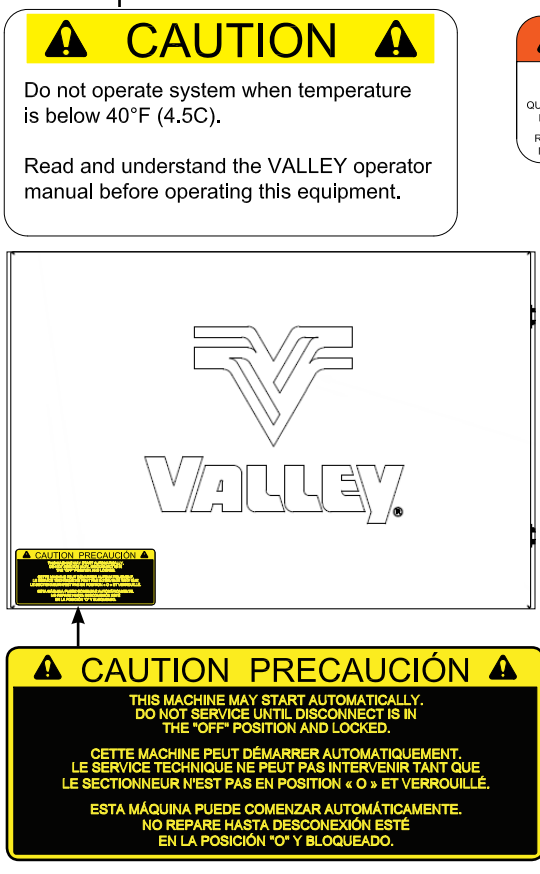
Repeated safety override start attempts can cause severe structural damage.

Call your Valley dealer if the machine fails to start.

Safety Decals

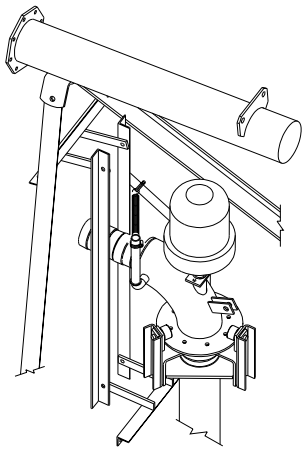
These Danger, Warning, and Caution decals appear in various locations on a Valley irrigation machine. You MUST familiarize yourself and other operators with these safety decals. For replacement of any decal, contact your local Valley dealer.

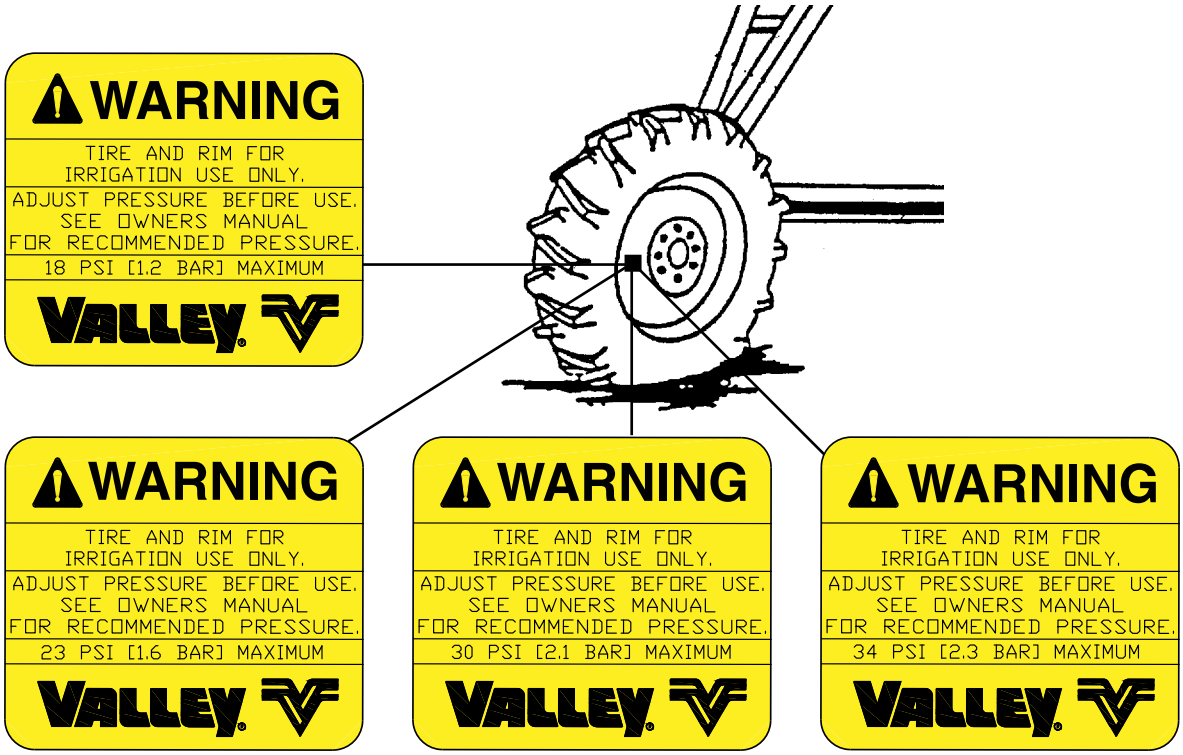




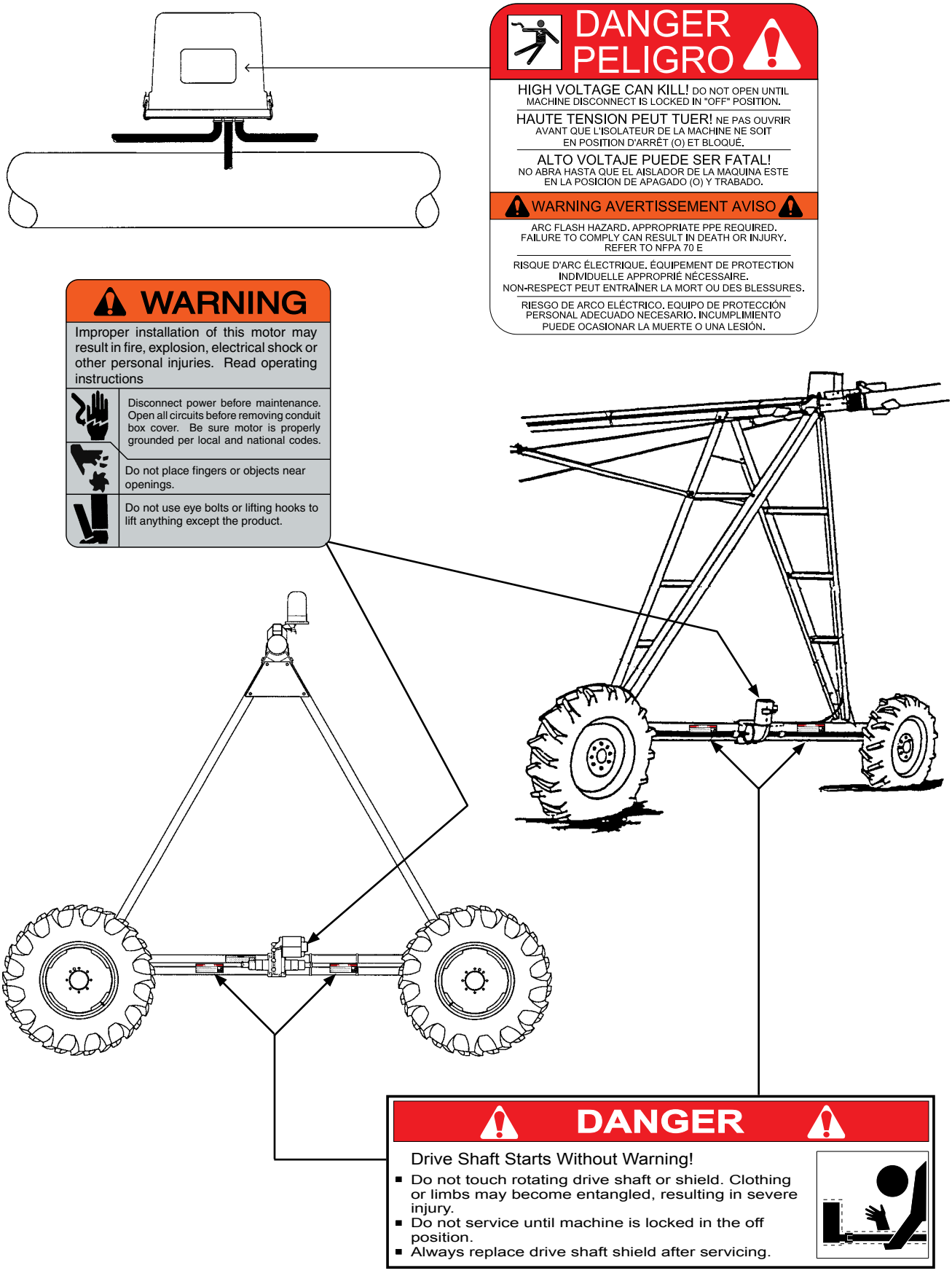
SAFETY

Safety Decals





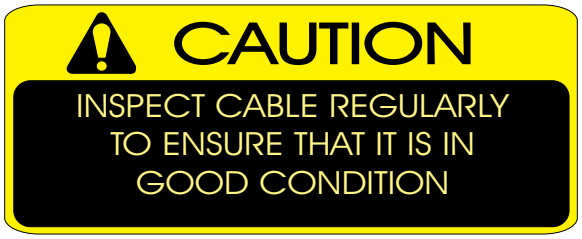
Safety Decals



Safety Decals

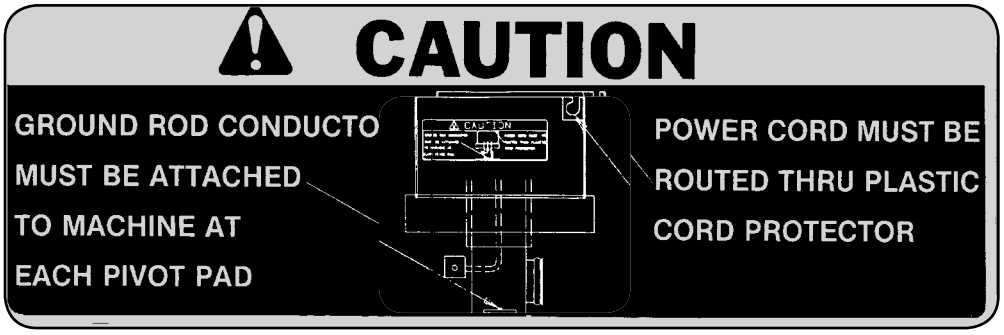
Location: Remote public power installations.

Location: Remote public power package.



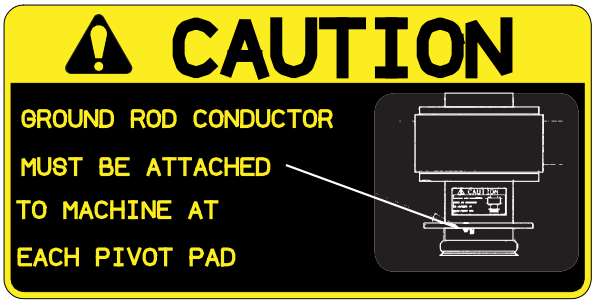
Location: Remote public power installations.

Location: Automatic Restart Option.



Location: Long E-Z Tow remote power package.

Location: Ground Wire Towable Pivots.



Location: E-Z Tow Remote Power Hardware.

Pivot

The center pivot is the structure which the entire machine rotates around. The water entry point for the machine is at the riser pipe. See Figure 21-1.

The legs of a conventional center pivot are bolted to a concrete foundation. Some pivots are towable with a pivot point that is equipped with wheels so it can easily be moved from one field to the other. See Figure 21-1.

Collector Ring and J-Pipe

The collector ring allows the electric cable to rotate with the pivot and is used with all public power options. See Figure 21-1.

The collector ring consists of brass rings in a stack that remain stationary and are separated by insulators.

Contact brushes revolve around the brass rings providing continuous flow of current without twisting the cable as the machine makes revolutions around the field.

One electrical cable from the collector ring goes down through the J-pipe, exiting near the bottom of the riser and then is connected into the public power panel.

The other electrical cable from the collector ring goes out of the conduit and then connects into the control panel.

Pivot Flex

A pivot flex allows for flexibility between the pivot point and the first span. A Pivot Flex is required where the first drive unit is 4% above or below the level of the pivot pad. See Figure 21-1.

Grounding Jumper must be installed from the pivot swivel flange to the span flange.

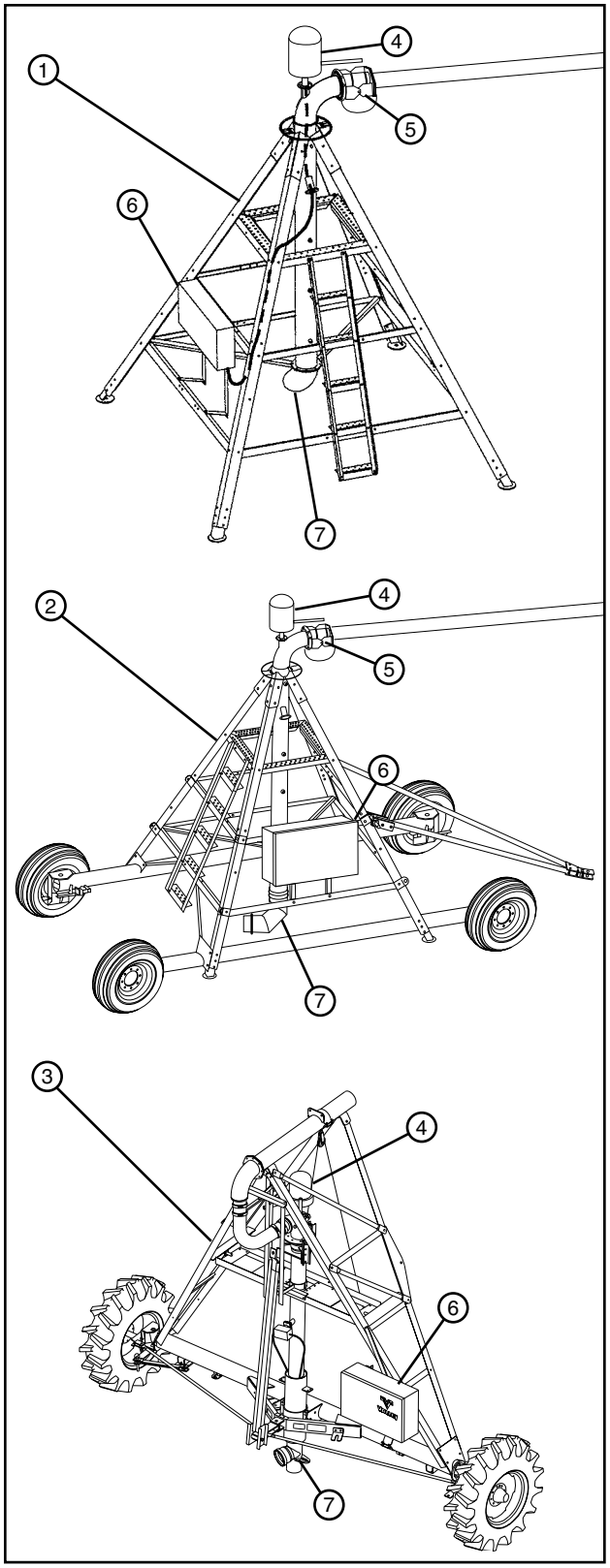


Figure 21-1
1. Conventional Center Pivot
2. 4 Wheel E-Z Tow Pivot
3. 2 Wheel E-Z Tow Pivot
4. Collector Ring
5. Pivot Flex Coupling
6. Control Panel
7. Riser Pipe

OVERVIEW

Spans

Water is transported to the irrigation machine through an underground pipe line. The water is then transported across the field through a pipeline. The pipeline is made up of a series of spans which are connected together. Each span also consists of a drive tower which moves the pipeline across the field. See Figure 22-1.

A span consists of a water pipeline supported with a bowstring under truss design. Truss rods are attached to each truss assembly to support and strengthen the pipeline. See Figure 22-1.

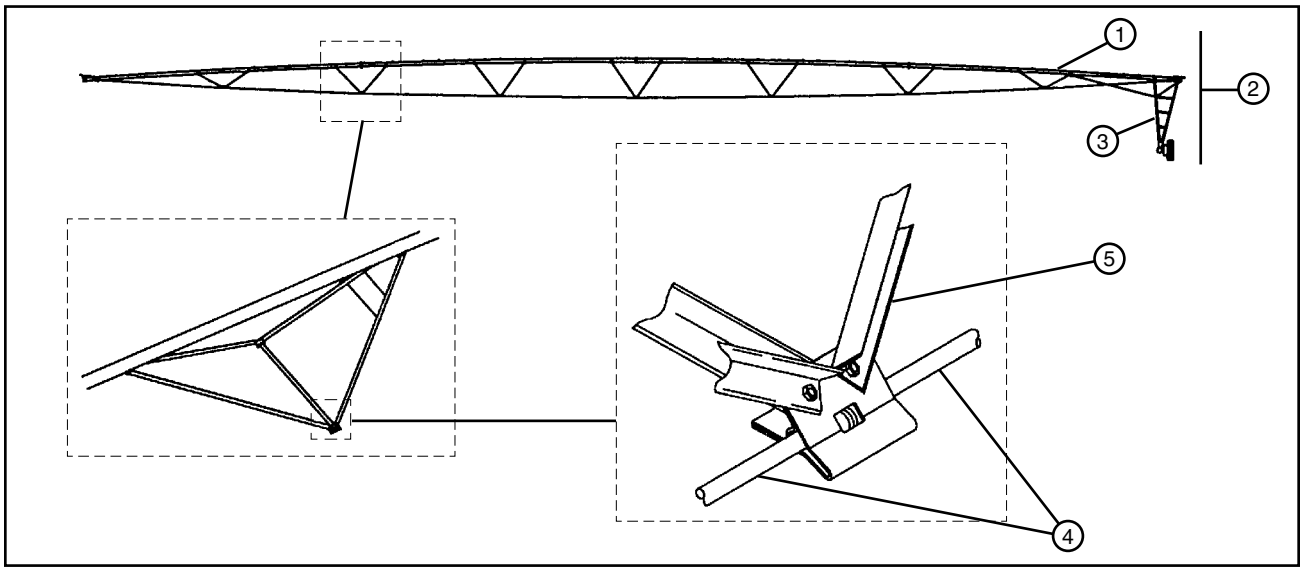


Figure 22-1 1. Pipeline
2. Span
3. Drive Tower
4. Truss Rod
5. Truss Assembly

The spans are attached to each other with a ball hitch and cup assembly which gives lateral, rotational, and vertical flexibility between the spans. See Figure 22-2.

The pipelines in each span are connected together with a flexible hose that is held in place with band clamps. See Figure 22-2.

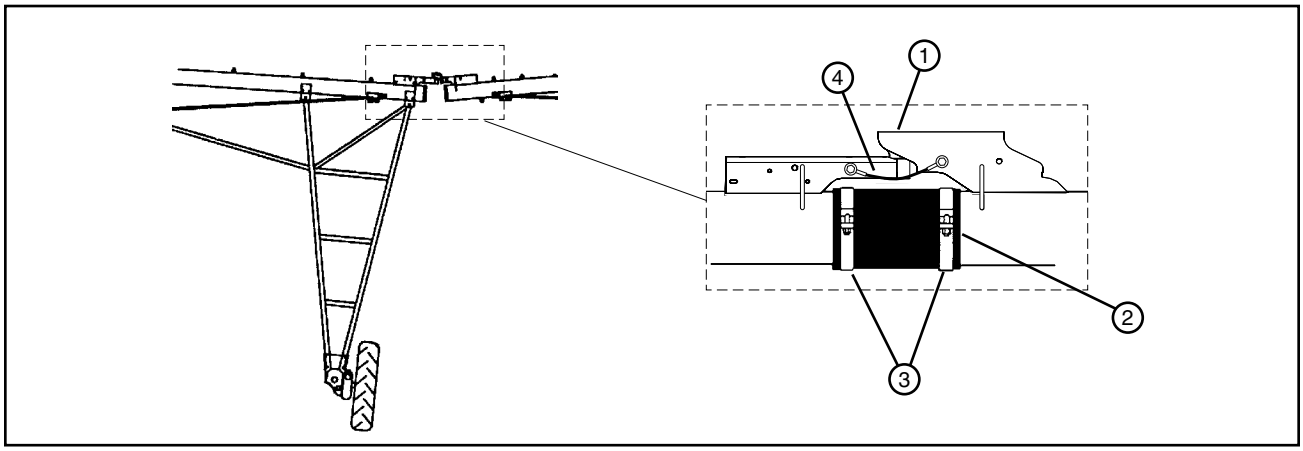


Figure 22-2 1. Hitch Ball and Cup Assembly
2. Flexible Hose
3. Band Clamp
4. Bonding Ground Wire

Overhang (Option)

Typically an overhang is attached to the end of the span pipe and used for irrigation beyond the span/ drive unit. Support ears and cables provide support for the overhang. See Figure 23-1.

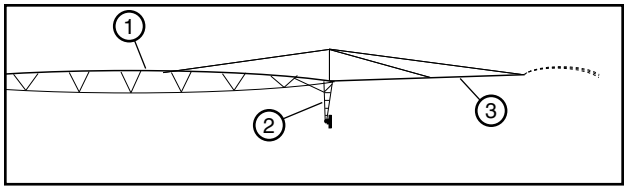


Figure 23-1 1. Span
2. Drive Tower
3. Overhang

End Gun (Option)

Typically an end gun is attached at the end of the overhang and used to increase the area irrigated beyond the end of the machine. See Figure 23-2.

The end gun is set to cover a specified area. This area is determined by the forward and backward angles, which are referred to as the end gun arc settings. See Figure 23-3.

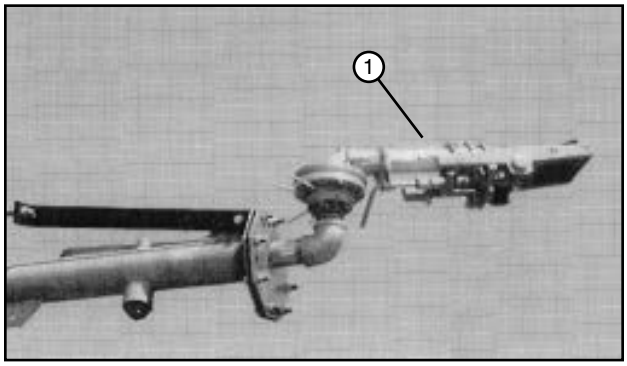


Figure 23-2 1. End Gun

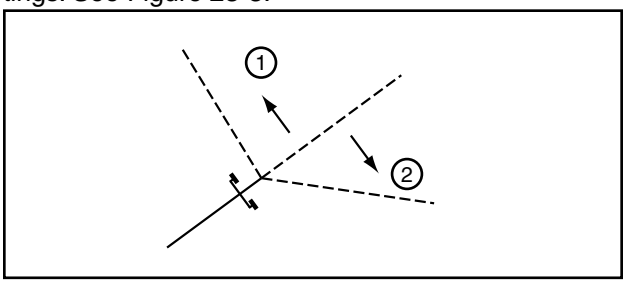


Figure 23-3 1. Backward Angle
2. Forward Angle

Drive Towers

A drive tower is attached to the end of each span. The tower box acts as a junction box for the span cable and supplies power to the electric motor on the center drive gearbox. The center drive gearbox drives the wheel gearboxes. The wheel gearbox drives the tire and wheel. See Figure 23-4.

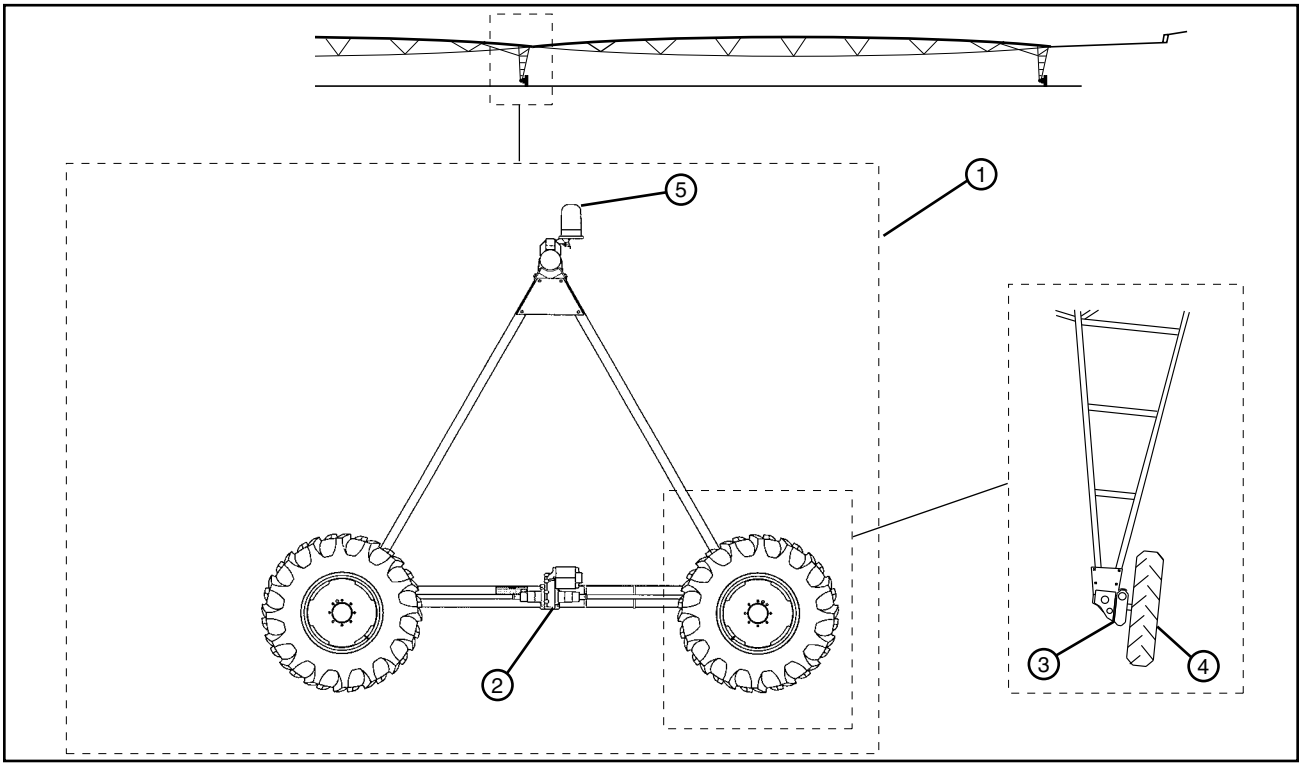


Figure 23-4 1. Drive Tower
2. Center Drive Gearbox
3. Tower Box
4. Wheel Gearbox
5. Tire and Wheel Assembly

OVERVIEW

Water Application

A sprinkler chart provides the operator with information about water application depths and pass times at different percent timer settings.

Water is applied to the field through the sprinklers. Sprinklers can be mounted on top of the pipeline or on drop tubes that hang below the pipeline. See Figure 24-1.

Span Cable

A cable with color coded wires enters and leaves each tower box. The cable runs the entire length of the machine and is referred to as span cable. See Figure 24-2.

The span cable can carry multiple voltages including high voltage depending on control panel and the country of use.

Intermediate Tower Boxes

The intermediate tower control boxes provide power to the center drive gear motors depending on the tower box position in relationship to the next tower in the system. See Figure 24-2.

Last Tower Box

The last tower control box provides power to the center drive gear motor depending on the percent timer setting at the control panel. It also completes the safety circuit. See Figure 24-2.

Safety Circuit

The safety circuit is a 120 volt AC control circuit that starts in the control panel and runs the entire length of the machine. See Figure 24-3.

Each drive tower box contains a safety microswitch. The safety microswitches must be closed to complete the safety circuit.

When the machine is in alignment, the safety microswitches are closed. If the machine ever becomes too far out of alignment, a safety microswitch opens, breaking the safety circuit. This stops the machine to prevent structural damage.

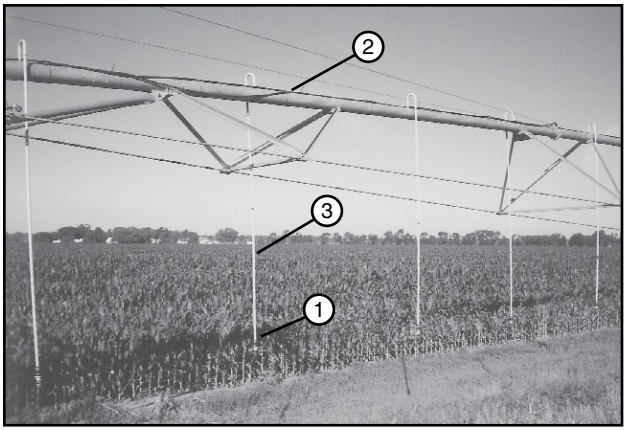


Figure 24-1 1. Sprinkler
2. Pipeline
3. Drop Tube

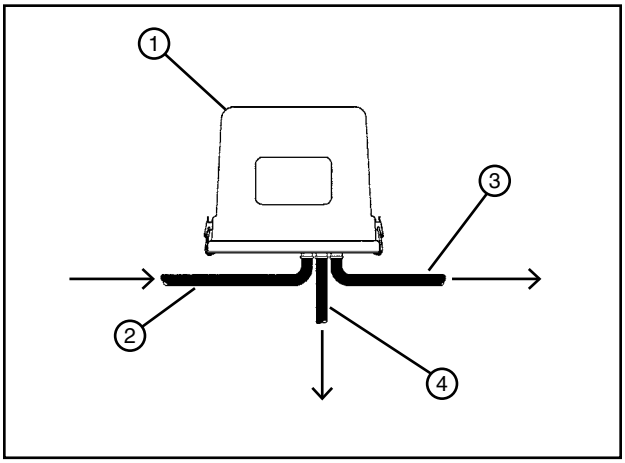


Figure 24-2 1. Tower Box
2. Span Cable Entering Tower Box
3. Span Cable Leaving Tower Box
4. Cable To Drive Motor

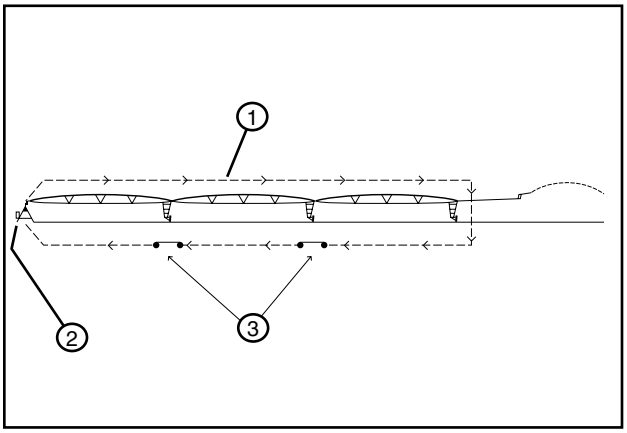


Figure 24-3 1. Safety Circuit
2. Control Panel
3. Safety Microswitch

Alignment

There are 3 types of span alignments available, Standard, Modified and Pivot floating alignment. See Figures 25-1, 25-2 and 25-3.

The type of alignment used varies depending on the length of machine, type of field and other application requirements.

General machine length guidelines are listed below:

- Standard alignment for machines up to 1500 ft (457 m) long.
- Modified Alignment for machines 1500 ft to 2000 ft (457 m to 610 m) long.
- Pivot Floating Alignment for machines 2000 ft to 2800 ft (610 m to 853 m) long.

The last tower is the controlling tower. As the end tower moves, all of the other towers move to maintain straight alignment.

When the last tower moves, it creates an angular deflection with the next intermediate tower, this closes the run microswitches and causes the next intermediate tower to move.

This cycle repeats itself throughout the length of the entire machine.

The result of these cycles is that any tower can be moving at any time, depending on its relationship with the next outer span.

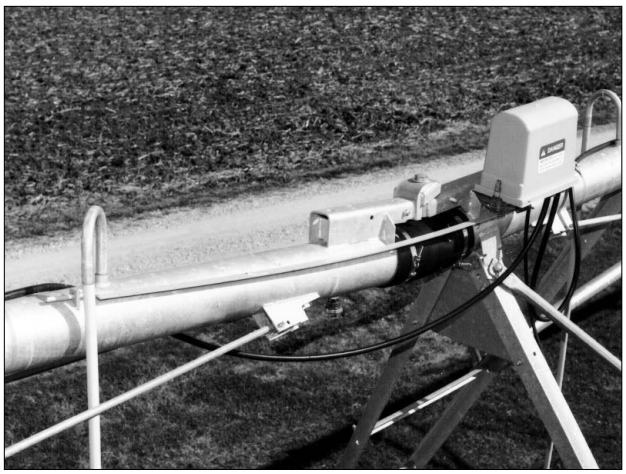


Figure 25-1 Standard Alignment

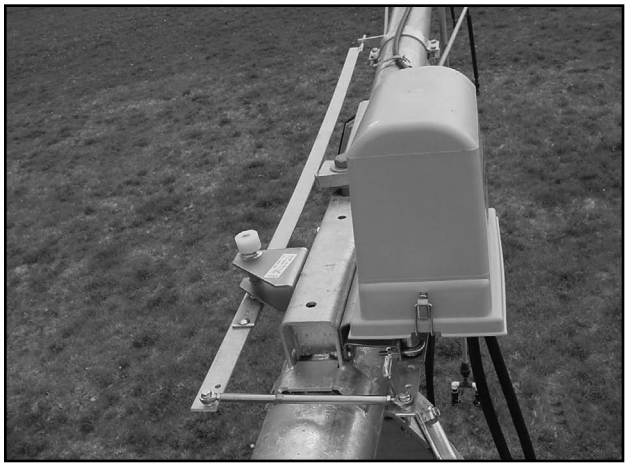


Figure 25-2 Modified Alignment - Adjustable Sensitivity

Figure 25-3 Pivot Floating Alignment - Most Sensitive

OVERVIEW

Over Watering Timer

The over watering timer is located in the time delay watering box. See Figure 26-1.

The time delay watering box is normally located at the next to last tower. It's function is to act as a safety device to shut the entire machine off should the end tower fail to move due to mechanical/electrical failure or wheel slippage. The timer can be set from 0-60 minutes and is factory set at 30 minutes.

At a setting of 30 minutes, the next to last tower must cycle on and off before the 30 minute setting expires. Each time the next to last tower runs, the timer is reset.

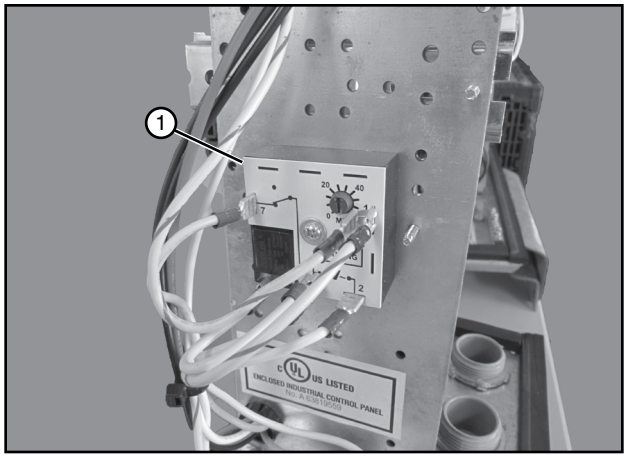


Figure 26-1 1. Over Watering Timer

Stop In Slot Control - Mechanical (Option)

The Stop In Slot option stops the machine at a pre-determined field location. The Valley Classic and ClassicPlus Control Panel utilizes the same control box as used for the end gun shut off. The stop in slot micro switch is located on the outside of the ring. See Figures 26-2 and 26-3.

The machine will be shut down when the stop in slot micro switch contacts the stop in slot ramp.

Figure 26-2 1. Stop In Slot / End Gun Control Box

End Gun Control - Mechanical (Option)

The Valley Classic and ClassicPlus Control Panel can turn the end gun on and off through a control box near the top of the pivot. See Figure 26-3.

The end gun control ramps represent the locations where the end gun will turn on and off.

Whenever the end gun micro switch rolls up on the ramp, power is removed from the solenoid at the end of the machine.

The solenoid controls a valve which shuts the water supply to the end gun off when power is removed from the solenoid. The end gun turns back on as the micro switch rides off the ramp.

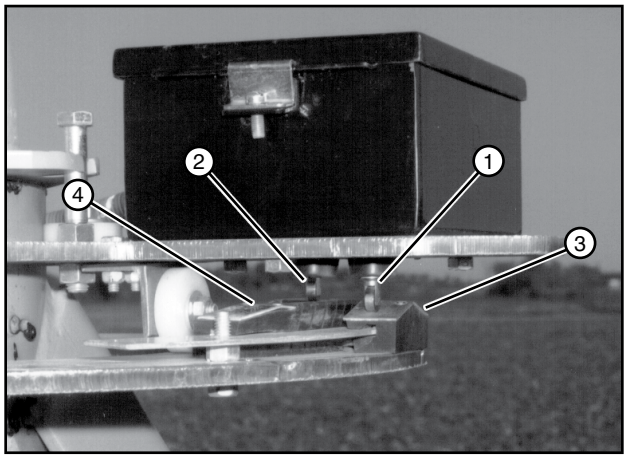


Figure 26-3 1. Stop In Slot Microswitch
2. End Gun Microswitch
3. Stop In Slot Ramp
4. End Gun Ramp

End Gun and Stop In Slot Control - Electronic (Option)

The Valley Control Panels use one of the following options: encoder, a resolver or Valley GPS position to determine the position of the pivot in the field. The field position readings are used to turn the end gun on and off or to stop at the stop in slot position.

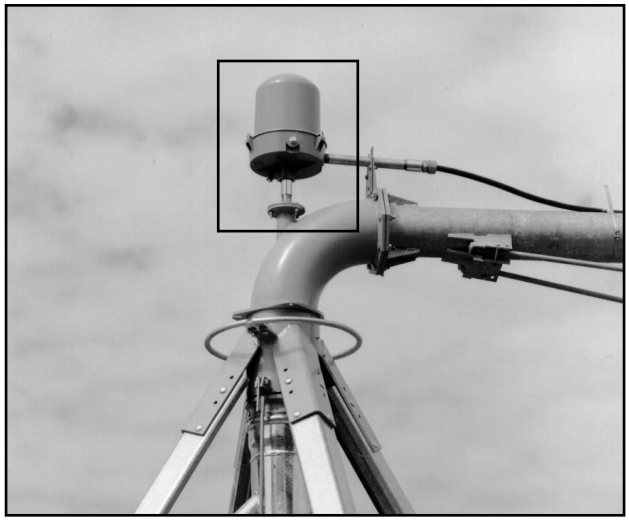


Figure 27-1 Collector Ring

Encoder or Resolver

The encoder and resolver options are installed in the collector ring. See Figure 27-1.

As the pivot rotates, the collector ring turns which also turns the shaft of the encoder or resolver. The encoder or resolver send signals to the control panel.

The Control Panel uses the signal to determine field position in degrees.

Valley GPS Position (Option)

The Valley GPS position option is usually installed at or near the end of machine. See Figure 27-2.

When the machine is on, Valley GPS receives satellite position data and sends raw coordinates to the control panel.

The control panel uses the raw coordinates to determine field position in degrees.

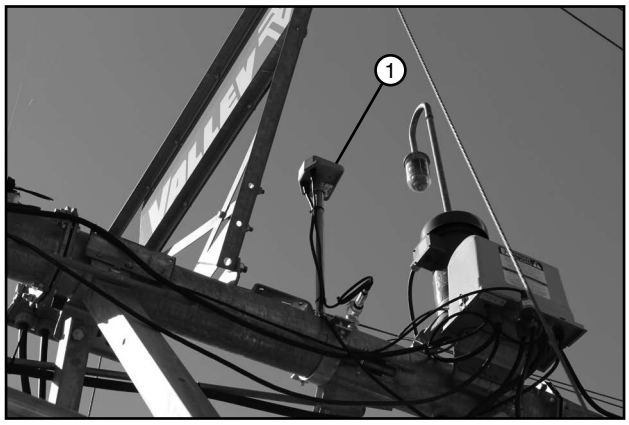


Figure 27-2 1. Valley GPS Position

Public Power Towable (Option)

The public power towable option includes electrical receptacles mounted on each pivot pad and electric cords with plugs wired into an electrical box mounted on the pivot point. See Figure 27-3.

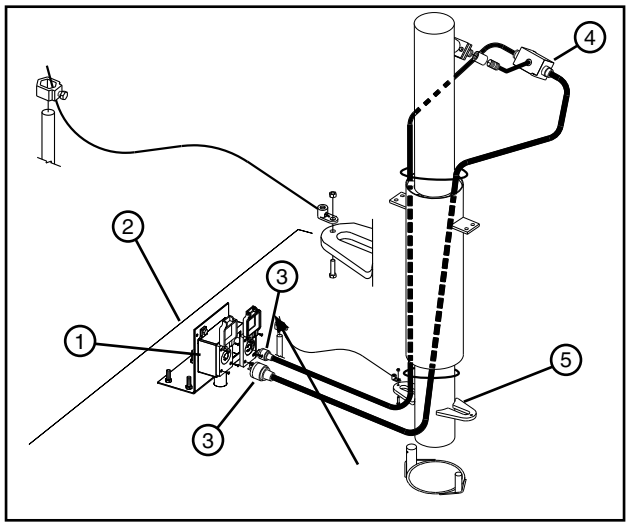


Figure 27-3 1. Electrical Receptacles 4. Electrical Box
2. Pivot Pad 5. 2 Wheel E-Z Tow Pivot
3. Electric Cord and Plug

Drive Unit Mounted End of Field Stop/Auto Reverse (Option)

The drive unit mounted end of field stop is used with both the end of field stop and end of field auto reverse option. See Figure 28-1.

This mechanism will stop the machine when the actuator arm contacts the barricade.

If the auto reverse option is installed, the operator can choose to either have the machine stop or automatically reverse its direction of travel and continue to run.

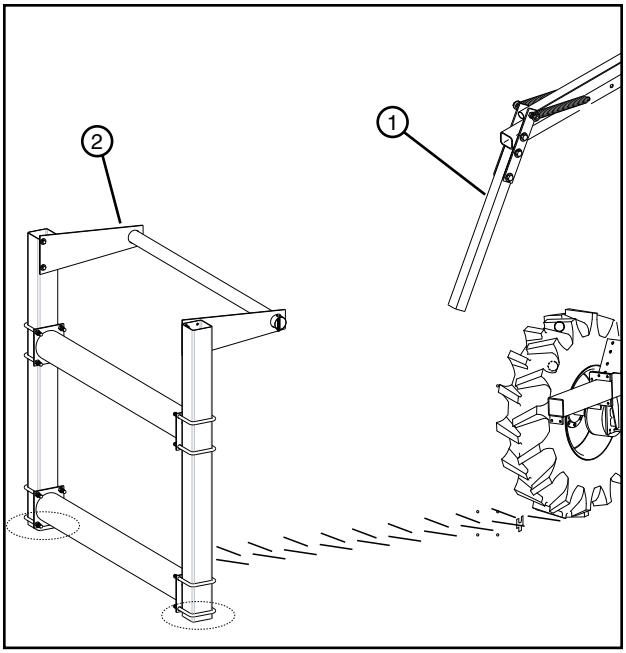


Figure 28-1 1. Actuator Arm
2. Barricade

⚠ CAUTION

- **NEVER USE THE SAFETY OVERRIDE BUTTON TO WALK THE MACHINE OFF OF THE BARRICADE. STRUCTURAL DAMAGE MAY RESULT.**
- **SOIL MAY BUILD UP IN THE WHEEL TRACK RESULTING IN A RAMP EFFECT ALLOWING THE ACTUATOR ARM TO GO OVER THE BARRICADES. REGULARLY MAINTAIN THE WHEEL TRACK TO INSURE THE ACTUATOR ARM ALWAYS CONTACTS THE BARRICADE.**

Auto Reverse/Auto Stop Box (Option)

The Auto Reverse/Auto Stop box provides the machine the ability to Auto Reverse and Auto Stop when the control panel also has the Auto Reverse option.

The Auto Reverse/Auto Stop Box is mounted on the drive unit mounted end of field stop and is only used with the Auto Reverse/Auto Stop option.

Pivot Mounted Auto Reverse (Option)

The pivot mounted auto reverse option is shown for the Standard Center Pivot in Figure 29-1 and the 2 Wheel E-Z Tow Pivot in Figure 29-2.

Two heavy duty limit switches are mounted as shown in the illustrations.

Each switch has a back-up safety contact designed to stop the machine if the reversing contact or associated circuitry fails to achieve the planned direction change.

⚠ CAUTION

- **WHEN THE NEED FOR A PRECISE REVERSING POINT IS CRITICAL, SUCH AS AVOIDING A BUILDING OR TREE LINE, THE DRIVE UNIT MOUNTED AUTO REVERSE OPTION AND THE PHYSICAL BARRICADE MUST BE USED.**
- **PHYSICAL END OF FIELD STOP BARRICADES MUST BE INSTALLED ON ALL PART CIRCLE MACHINES. THE PHYSICAL BARRICADE SERVES AS A BACK UP IN CASE THE CIRCUITRY OF THE PIVOT MOUNTED AUTO REVERSE OPTION SHOULD EVER FAIL. SEE FIGURE 29-3.**

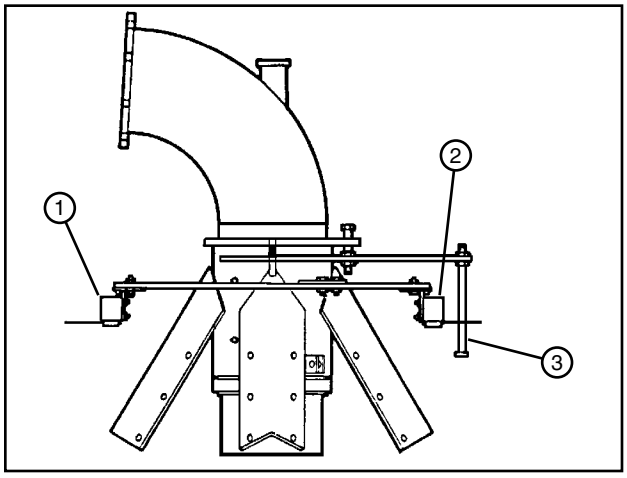


Figure 29-1 Standard Center Pivot Mounted Auto Reverse
1. Reversing Switch
2. Reversing Switch
3. Actuator Bolt

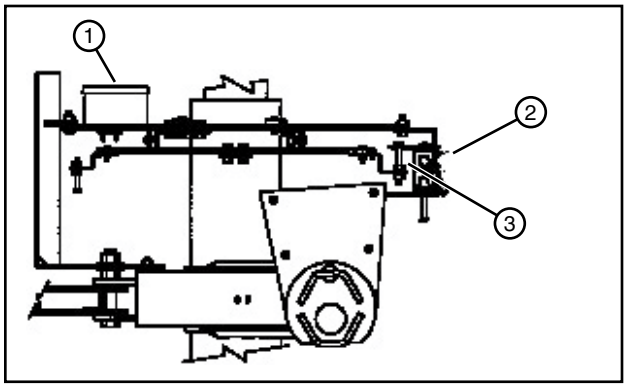


Figure 29-2 2 Wheel E-Z Tow Pivot Mounted Auto Reverse
1. E.G.S.O. and S.I.S. Control Box
2. Reversing Switch
3. Actuator Bolt

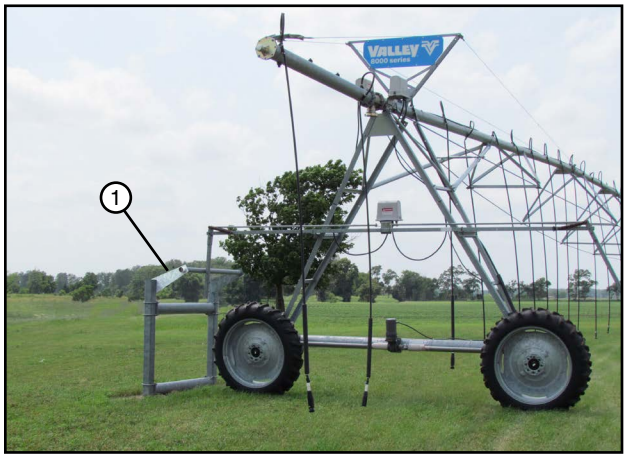


Figure 29-3 1. End of Field Stop Barricade

OVERVIEW

Machine Operation

For proper operation of the Center Pivot machine, the Control Panel Owner's Manual and Center Pivot Owner's Manual must be used together.

The Control Panel Owner's Manual includes safety guidelines and explains the basic operation of the control panel itself, including how to start/stop the machine, change running direction and change water application amounts.

The Center Pivot Owner's Manual includes safety guidelines and explains the operation of the Center Pivot machine including towing.

All Owner's, operators and maintenance personnel MUST read and understand the Control Panel Owner's Manual and the Center Pivot Owner's Manual.

Part Circle Operation

⚠ CAUTION

•PHYSICAL END OF FIELD STOP BARRICADES MUST BE INSTALLED ON ALL PART CIRCLE MACHINES. THE PHYSICAL BARRICADES SERVE AS A BACKUP IN CASE THE CIRCUITRY OR THE TRIP STRUCTURE SHOULD EVER FAIL. DELETION OF THE PHYSICAL BARRICADES CAN BE DONE BY THE CUSTOMER ONLY. SEE FIGURE 31-1.

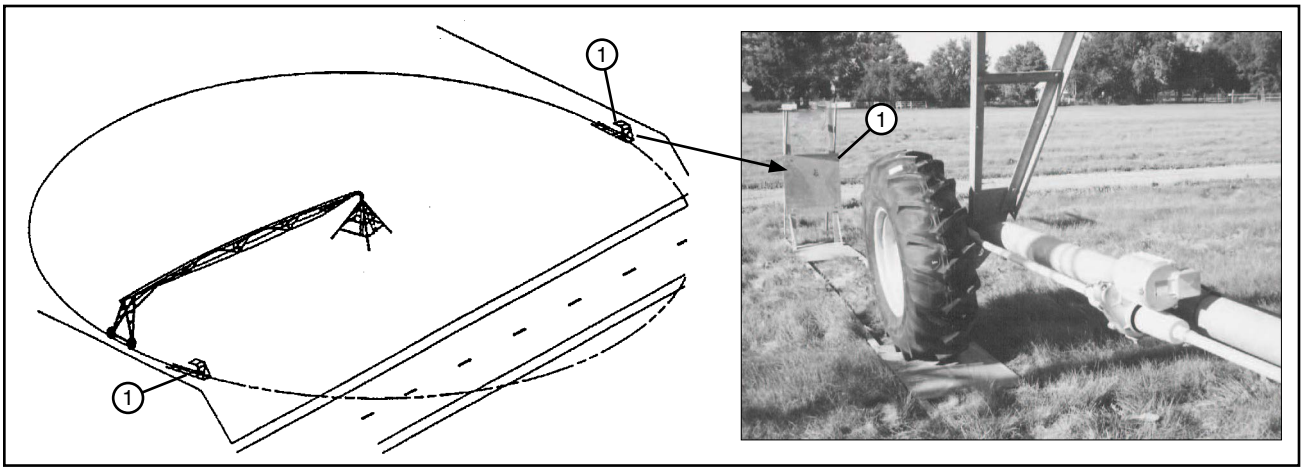


Figure 31-1 1. Physical barricade

NOTE

•Care must be taken when the barricade option in Figure 31-2 is used.

•The operator MUST ensure the actuator arm contacts the tripping structure.

•Under certain conditions, soil may build up in the wheel track resulting in a ramp effect. This may allow the actuator arm to go over the top of the structure which trips the actuator arm. Should this happen, the machine will not stop but continue to move and can result in damage to the machine.

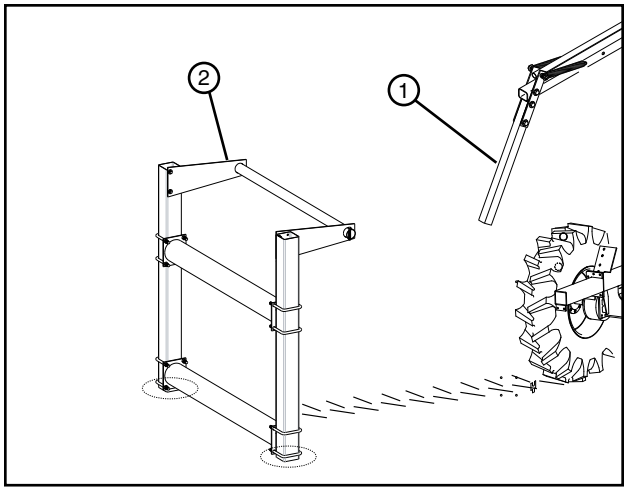


Figure 31-2 1. Actuator Arm
2. Barricade

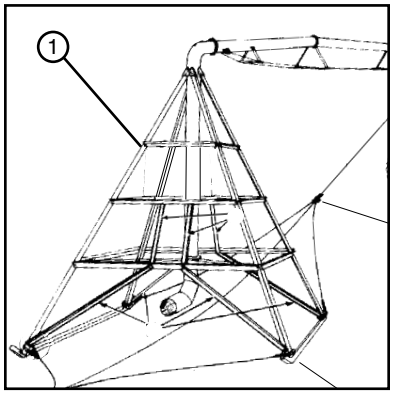
OPERATION

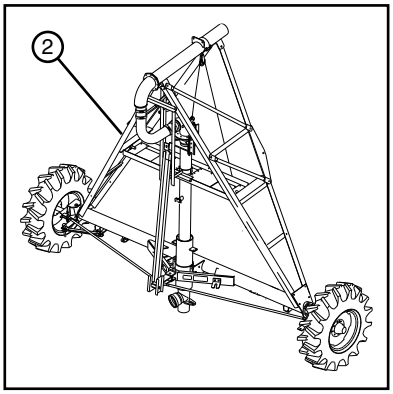
Machine Operation
Towable Pivots

There are four towable pivot options for 8000 and 8120 series spans. The 7000 series spans are not towable. See Figure 32-1.

- Skid Tow Pivot
- 2 Wheel E-Z Tow Pivot
- 4 Wheel E-Z Tow Pivot With Fixed Wheels Option
- 4 Wheel E-Z Tow Pivot With Swivel Wheel Option

See the TOWING section for drive unit preparation, towable pivot preparation, and towing procedures.





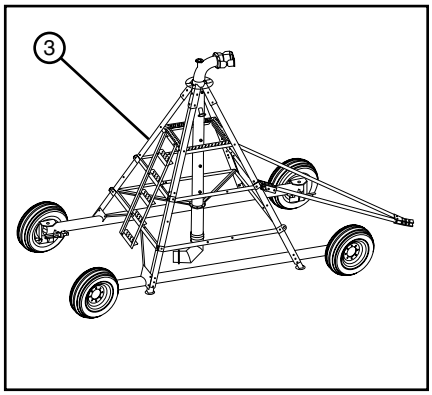


Figure 32-1 1. SKID TOW PIVOT 2. 2 WHEEL E-Z TOW PIVOT 3. 4 WHEEL E-Z TOW PIVOT

Towing Option

Preparing Drive Units for Towing

This topic provides instruction on the preparation of the drive units for towing.

REMEMBER: SAFETY FIRST – Operate according to the following procedures when towing and read all safety precautions in this manual.

1. Position the machine in the tow lane. See Figure 33-1.

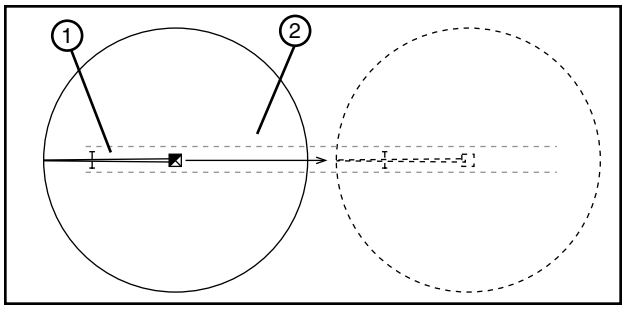


Figure 33-1 1. Machine
2. Tow Lane

NOTE

- **The tow lane should be flat and void of any crop rows.**
- **If towing on a side slope the machine may tend to shift down the hill due to gravitational pull.**
- **DO NOT tow across crop rows, ditches or rough terrain.**

Disconnect Power

When the public power option is used each tow location MUST have a remote power source with a service disconnect.

⚠ DANGER

- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE SERVICING OR PERFORMING MAINTENANCE TO THE MACHINE.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED FOR PERFORMING MAINTENANCE.**

2. Turn OFF and lock the electrical service disconnect at each tow location. See Figure 33-2.

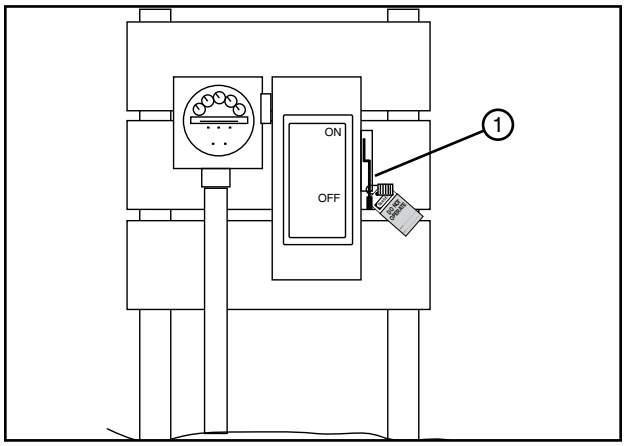


Figure 33-2 1. Public Power Service Disconnect

⚠ WARNING

- **NEVER ATTEMPT TO LIFT THE ENTIRE DRIVE UNIT AT ONE TIME.**
- **IF THE JACK BEGINS TO SLIP OR MOVE OUT OF POSITION, STOP RAISING THE DRIVE UNIT IMMEDIATELY, LOWER THE DRIVE UNIT AND REPOSITION THE JACK.**

NOTE

- **Position the jack so it will not interfere with the rotation of the tire, wheel gear box, gear box mount or gear box mount hardware.**

3. The wheels on each drive unit must be turned into the tow position. Use a jack to lift one side of the drive unit until the tire is off of the ground. See Figure 33-3.

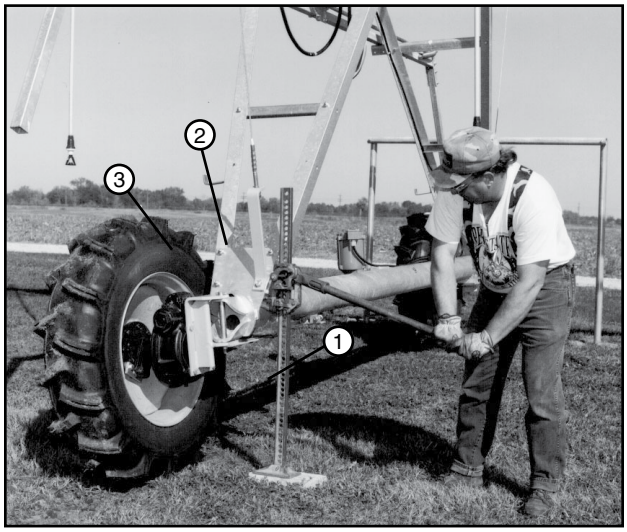


Figure 33-3 1. Jack
2. Drive Unit
3. Tire

Towing Option
Preparing Drive Units for Towing (Continued)

4. Loosen the clamps securing U-joint shields in position. Slide all four U-joint shields away from the gearboxes.
5. Remove lynch pin from retainer clip, then open retainer clip and pull the torque pin from axle torque arm behind gearbox hub and hub torque pin receiver. See Figure 34-1.
6. Using a pry bar, push down on the gearbox mount steering arm to release it from the latch plate while pushing the tire toward the tow position until steering arm is out of latch plate. See Figure 34-2.
7. Push the tire toward the tow position while supporting the drive shaft and using a small pry bar to separate the drive shaft U-joint half from the flex joint and wheel gearbox U-joint half.

   After separating the U-joint, place the loose end of drive shaft in the drive shaft keeper. See Figure 34-3.

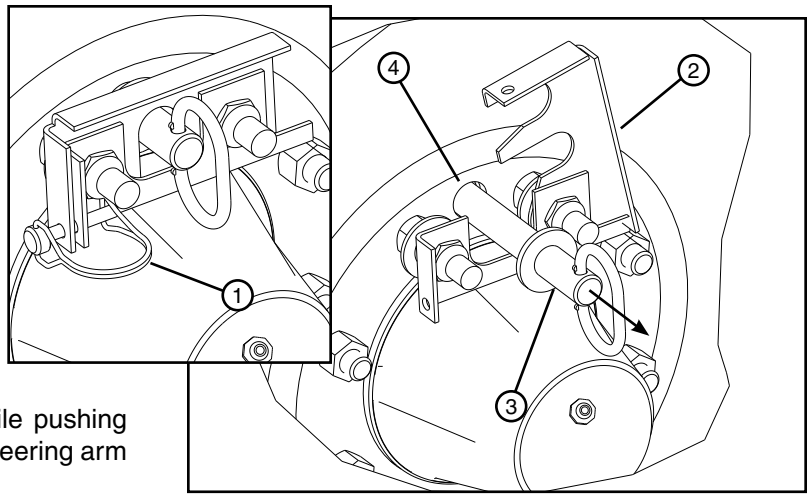


Figure 34-1 1. Lynch Pin 3. Torque Pin
2. Retainer Clip 4. Hub Torque Pin Receiver

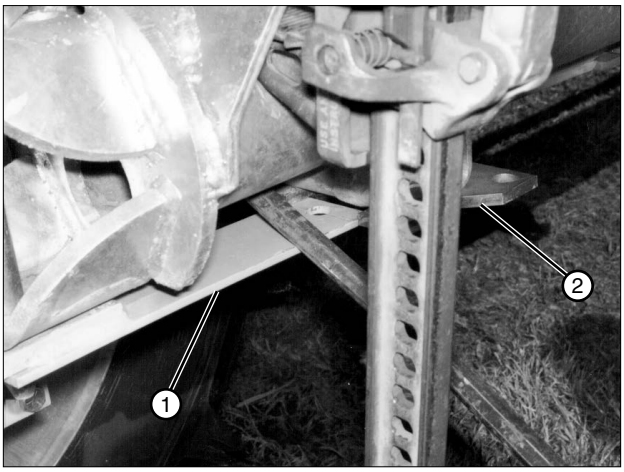


Figure 34-2 1. Steering Arm
2. Latch Plate

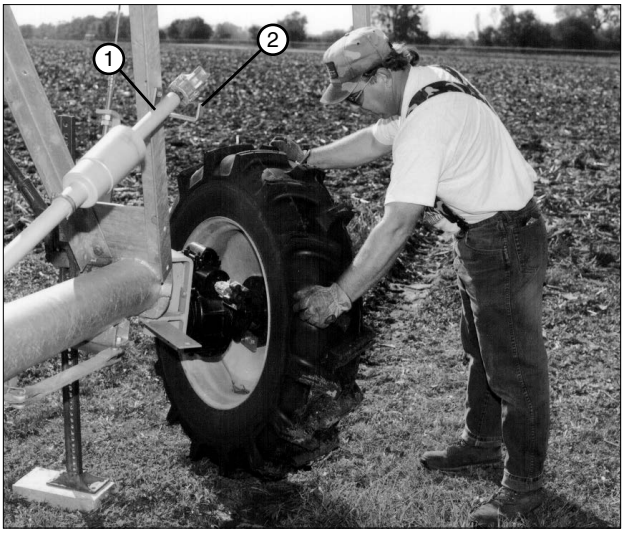


Figure 34-3 1. Drive Shaft
2. Drive Shaft Keeper

Towing Option

Preparing Drive Units for Towing (Continued)

8. Lift the carrier spring and release the tow link bar from the tow link carrier. See Figure 35-1.
9. Position steering arm in tow link bar yoke, align holes, then attach steering arm to tow link bar with torque pin. Secure torque pin with lynch pin. See Figure 35-2.
10. Lower the drive unit and remove the jack. The tire is now in the tow position. See Figure 35-3.
11. Repeat steps 3-10 for all other drive unit tires.

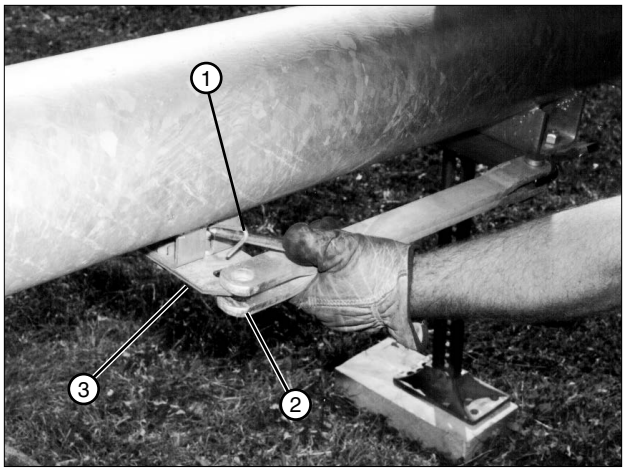


Figure 35-1 1. Carrier Spring 3. Tow Link Carrier
2. Tow Link Bar

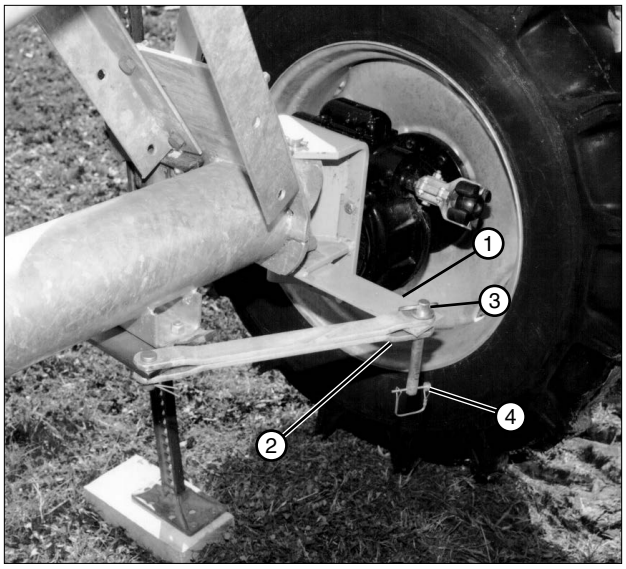


Figure 35-2 1. Steering Arm 3. Torque Pin
2. Tow Link Bar Yoke 4. Lynch Pin

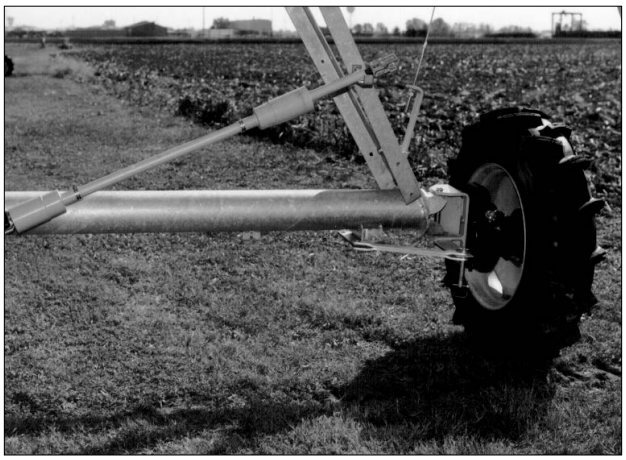


Figure 35-3 TOWING POSITION SHOWN

OPERATION

Towing Option

Towing Option

Preparing Drive Units for Operation

This topic provides instruction on the preparation of the drive units for operation after towing.

REMEMBER: SAFETY FIRST – Operate according to the following procedures when towing and read all safety precautions in this manual.

1. Position the machine in the tow lane. See Figure 37-1.

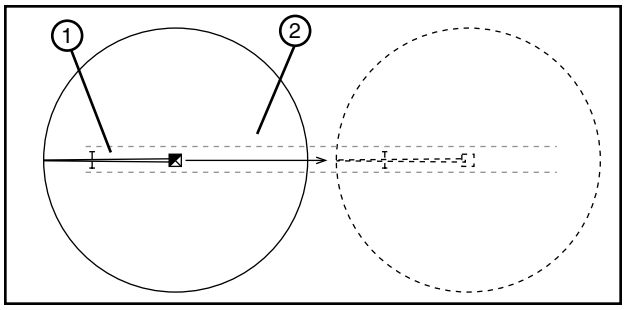


Figure 37-1 1. Machine
2. Tow Lane

NOTE

- **The tow lane should be flat and void of any crop rows.**
- **If towing on a side slope the machine may tend to shift down the hill due to gravitational pull.**
- **DO NOT tow across crop rows, ditches, or rough terrain.**

Disconnect Power

When the public power option is used each tow location MUST have a remote power source with a service disconnect.

⚠ DANGER

- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE SERVICING OR PERFORMING MAINTENANCE TO THE MACHINE.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED FOR PERFORMING MAINTENANCE.**

2. Turn OFF and lock the electrical service disconnect at each tow location. See Figure 37-2.

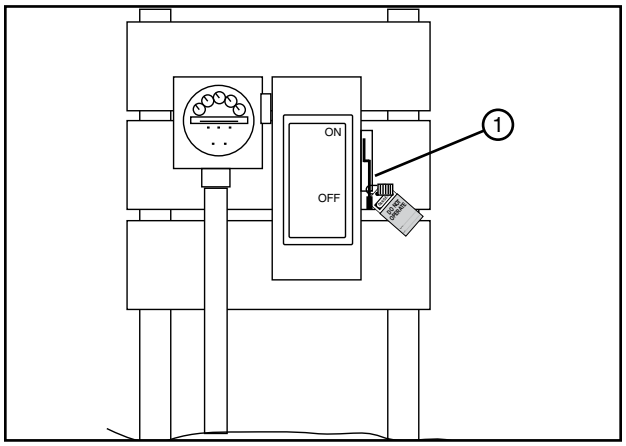


Figure 37-2 1. Public Power Service Disconnect

⚠ WARNING

- **NEVER ATTEMPT TO LIFT THE ENTIRE DRIVE UNIT AT ONE TIME.**
- **IF THE JACK BEGINS TO SLIP OR MOVE OUT OF POSITION, STOP RAISING THE DRIVE UNIT IMMEDIATELY, LOWER THE DRIVE UNIT AND REPOSITION THE JACK.**

3. The wheels on each drive unit must be turned into the operating position. Use a jack to lift one side of the drive unit until the tire is off of the ground. See Figure 37-3.
4. Remove lynch pin from torque pin, then remove torque pin and disconnect tow link bar from steering arm. See Figure 37-3.

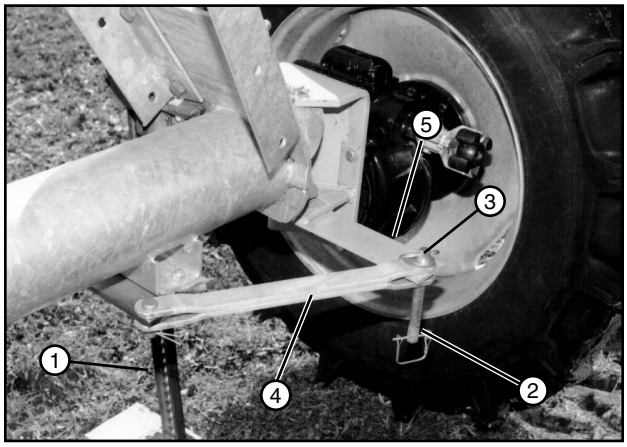


Figure 37-3 1. Jack
2. Lynch Pin
3. Torque Pin
4. Tow Link Bar
5. Steering Arm

NOTE

- **Position the jack so it will not interfere with the rotation of the tire, wheel gear box, gear box mount or gear box mount hardware.**

Towing Option
Preparing Machine for Operation (continued)

5. Rotate tow link bar into the tow link carrier until the carrier spring latches into the hole in tow link bar. See Figure 38-1.
6. Push the tire toward the operating position while aligning the drive shaft U-joint half and flex joint chamfered corners with the wheel gearbox U-joint half. See Figure 38-2.

   Continue pushing the tire toward the operating position with enough force to push the gearbox U-joint half over the flex joint and latch the steering arm in the latch plate. See Figure 38-2.
7. Make sure the steering arm is latched in the latch plate. See Figure 38-3.

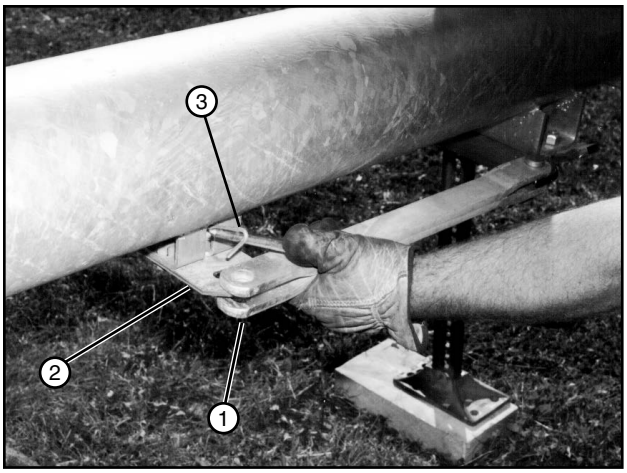


Figure 38-1 1. Tow Link Bar
2. Tow Link Carrier
3. Carrier Spring

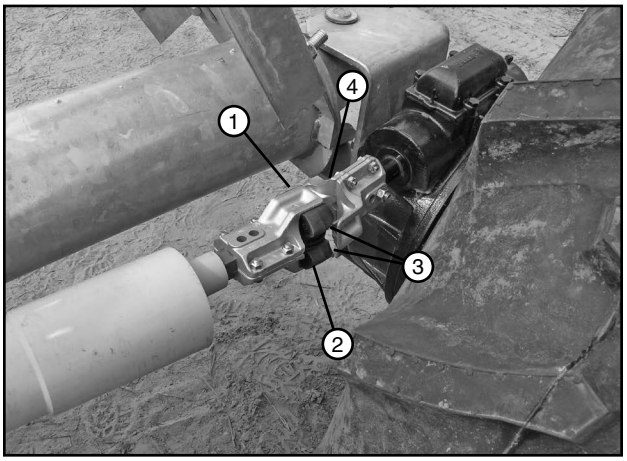


Figure 38-2 1. Drive Shaft U-Joint Half
2. Flex Joint
3. Chamfered Corner
4. Gear Box U-Joint Half

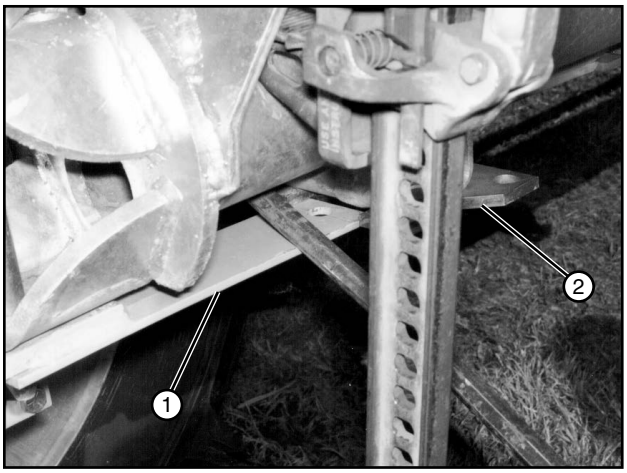


Figure 38-3 1. Steering Arm
2. Latch Plate

Towing Option

Preparing Machine for Operation (continued)

8. Slide the U-joint shield over the U-joint and position approximately 1/4 in (6.3 mm) away from touching the gearbox. Secure the U-joint shield to the drive shaft shield with a clamp. See Figure 39-1.

   Repeat the procedure for all U-joint shields.

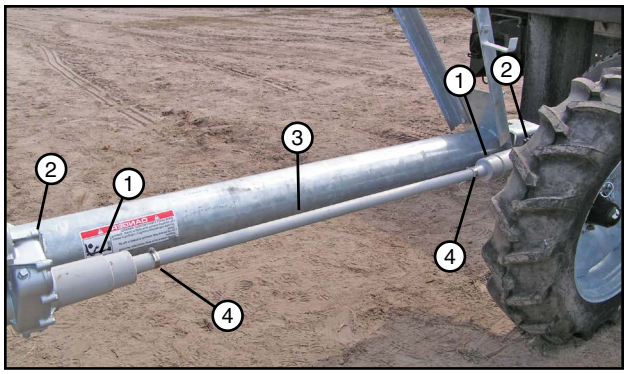


Figure 39-1 Operation Position
1. U-Joint Shield
2. Gearbox
3. Drive Shaft Shield
4. Clamp

> **NOTE**
>
> **•If the drive unit towers are out of line after towing, move the drive unit towers into line with a tractor before installing torque pins in wheel hubs.**

9. Rotate the tire until the hole in the hub torque pin receiver is aligned with the hole in the axle torque arm. Install the torque pin and close the retainer plate. Secure the retainer plate to the retainer clip with the lynch pin. See Figure 39-2.
10. Lower the drive unit and remove the jack. The tire is now in the OPERATING position. See Figure 39-3.
11. Repeat steps 4-10 for all other drive unit tires.

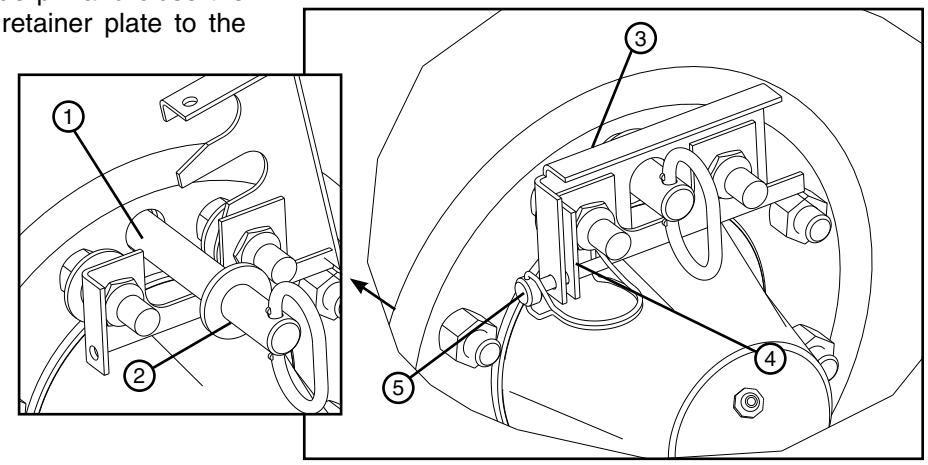


Figure 39-2 1. Hub Torque Pin Receiver 4. Retainer Clip
2. Torque Pin 5. Lynch Pin
3. Retainer Plate

Figure 39-3 1. Tire Shown In Operating Position

OPERATION

Towing Option

Towing Option

Towing the Skid Tow Pivot

This topic provides instruction on the preparation and towing of the skid tow pivot.

REMEMBER: SAFETY FIRST - Operate according to the following procedures when towing and read all safety information in this manual.

1. Position the machine in the tow lane. When positioning the center pivot, always use the “STOP” button on the control panel to stop the center pivot. NEVER stop the center pivot with the control panel or service disconnect switches. See Figure 41-1.

⚠ DANGER

- **THE CONTROL PANEL, COLLECTOR RING AND TOWER BOXES CONTAIN HIGH VOLTAGE! LIVE VOLTAGE CAN KILL.**
- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE TOWING THE MACHINE.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED.**

2. Once the center pivot is positioned in the tow lane, turn off and lock the pivot panel and all service disconnect switches.

   Follow the MINIMAL LOCKOUT/TAGOUT PROCEDURE located in the SAFETY section of this manual and do the following.

3. SHUT OFF and LOCK the public power service disconnect to the irrigation machine. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 41-2.

4. SHUT OFF and LOCK the control panel main power disconnect. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 41-3.

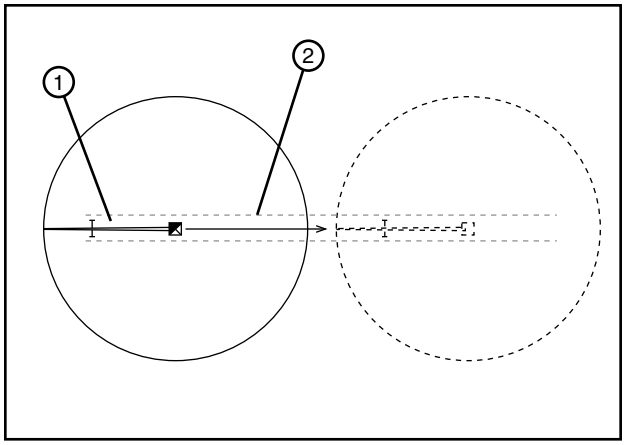


Figure 41-1 1. Machine
2. Tow Lane

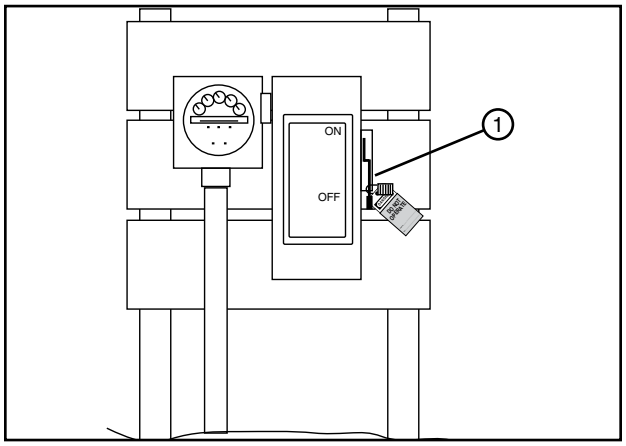


Figure 41-2 1. Public Power Service Disconnect

Figure 41-3 1. Main Power Disconnect
Series 8000 Control Panel Shown

Towing Option
Towing The Skid Tow Pivot

5. With the service disconnect in the OFF position, unplug the power plug from the receptacle. See Figure 42-1.
6. Coil the cord and secure to pivot structure so that it does not drag on the ground while towing the pivot.
7. Prepare the drive unit for towing. See Preparing Drive Unit For Towing in the Towing Option Section.
8. Disconnect the water supply line from lower riser. See Figure 42-2.
9. Remove anchor chains securing skid pivot to pivot pad. See Figure 42-2.

NOTE

•It is recommended that the skid pivot be equipped with a pivot flex to reduce stress between the pivot and the span while towing.

10. Make sure that the skid pivot is equipped with tow braces. See Figure 42-3.

⚠ WARNING

•PIVOT TOW BRACES ARE CRITICAL TO PIVOT TOWING STRENGTH.

•TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE, TOW THE SKID PIVOT ONLY WHEN PIVOT IS EQUIPPED WITH TOW BRACES.

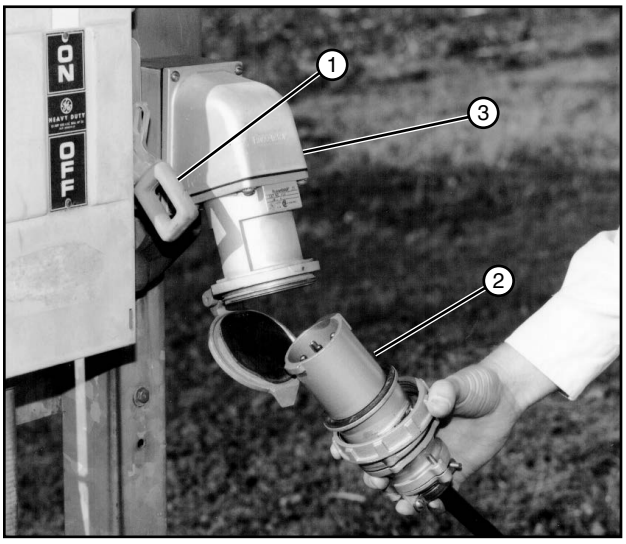


Figure 42-1 1. Service Disconnect - OFF 3. Receptacle 2. Power Plug

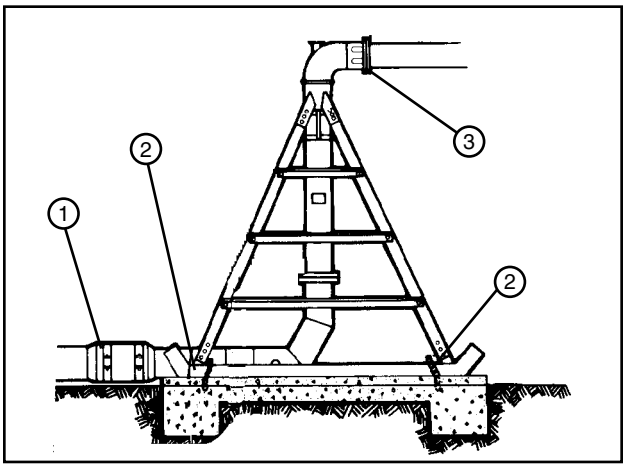


Figure 42-2 1. Water Supply Line 3. Pivot Flex 2. Anchor Chain

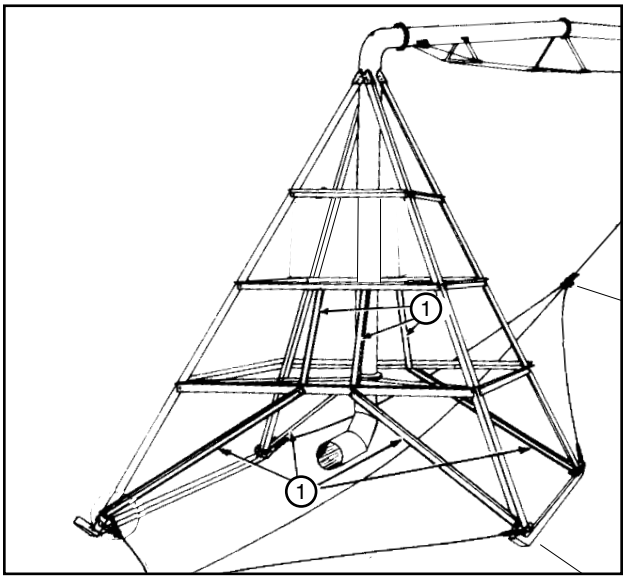


Figure 42-3 1. Tow Brace

Towing Option

Towing The Skid Tow Pivot (Continued)

Attaching Forward Tow Cable

11. Install the tow cable attachment bracket on the span pipe above the drive unit. See Figure 43-1.
12. On one end of 1/2 in (12.7 mm) tow cable, extend 2 ft (610 mm) of cable through one of the eye bolts on turnbuckle, then clamp tow cable together with three 1/2 in (12.7 mm) cable clamps. See Figure 43-1.
13. Bolt the other eye bolt on turnbuckle to the tow cable attachment bracket. See Figure 43-1.
14. On the other end of 1/2 in (12.7 mm) tow cable, extend 2 ft (610 mm) of cable through a clevis and clamp with three 1/2 in (12.7 mm) cable clamps. See Figure 43-1.
15. Wrap chains around the bottom of each pivot leg, then bolt a pivot trail cable to each chain. See Figure 43-1.
16. Attach trail cables to tow cable with 1/2 in (12.7 mm) cable clamps.
    - Adjust the leading trail cables on the tow cable, so that while towing, the leading ends of pivot skids raise approximately 4 in (102 mm) to prevent the skids from digging into the ground. See Figure 43-1.
    - Adjust the trailing trail cables on the tow cable, so that while towing, the trail cables are taught. This will reduce the wallowing action of the skid pivot. See Figure 43-1.

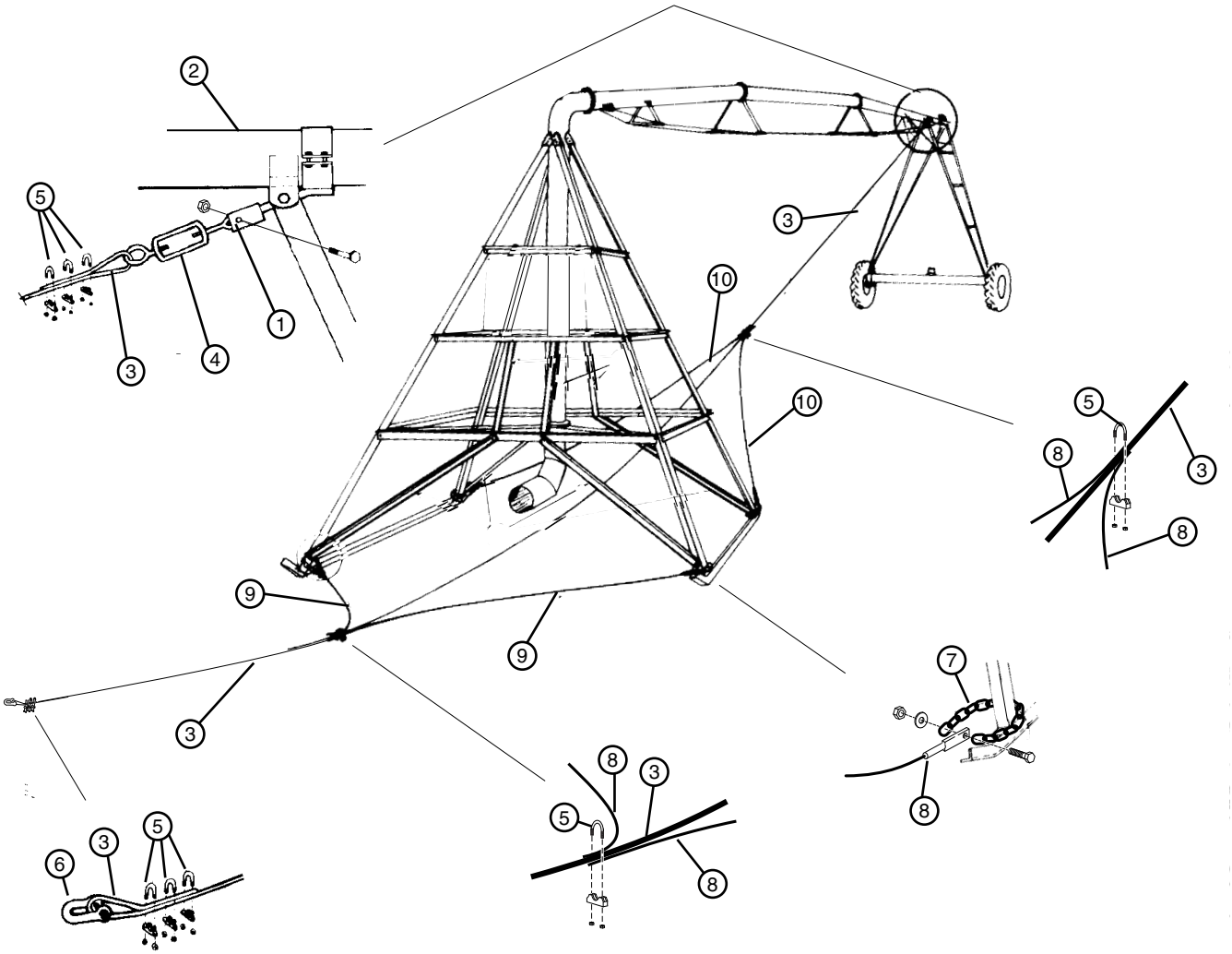


Figure 43-1
1. Tow Cable Attachment Bracket
2. Span Pipe
3. 1/2 in (12.7 mm) Tow Cable
4. Turnbuckle
5. 1/2 in Cable Clamp
6. Clevis
7. Chain
8. Trail Cable
9. Leading Trail Cable
10. Trailing Trail Cable

Towing Option
Towing The Skid Tow Pivot (Continued)

17. After the pivot and drive unit have been prepared for towing, connect the tow cable to the towing unit with the tow cable clevis. See Figure 44-1.

⚠ CAUTION

TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE:

- **IF TOWING ON A SIDE SLOPE THE MACHINE MAY TEND TO SHIFT DOWN THE HILL DUE TO GRAVITATIONAL PULL.**
- **DO NOT TOW ACROSS CROP ROWS, DITCHES OR ROUGH TERRAIN.**
- **DO NOT JERK THE MACHINE AT ANYTIME WHILE TOWING.**
- **DO NOT TOW THE MACHINE MORE THAN 2 MILES PER HOUR MAXIMUM.**
- **ALWAYS TOW THE MACHINE IN A STRAIGHT LINE.**
- **NEVER ATTEMPT TO TURN THE MACHINE WHEN TOWING.**
- **NEVER ATTEMPT REVERSING OR BACKING THE MACHINE INTO POSITION.**

18. Begin towing the machine in a slow, gradual manner.
19. Align the pivot legs with the anchor locations as the pivot approaches the pivot pad.

    NEVER attempt reversing or backing the machine into position.
20. Disconnect the tow cable, trailing cables and chains from the skid pivot and towing unit.
21. Secure skid pivot to pivot pad with anchor chains. See Figure 44-2.
22. Connect the water supply line to the lower riser. See Figure 44-2.
23. Prepare the drive unit for operation. See Preparing Drive Unit For Operating in the Towing Section.

Figure 44-1

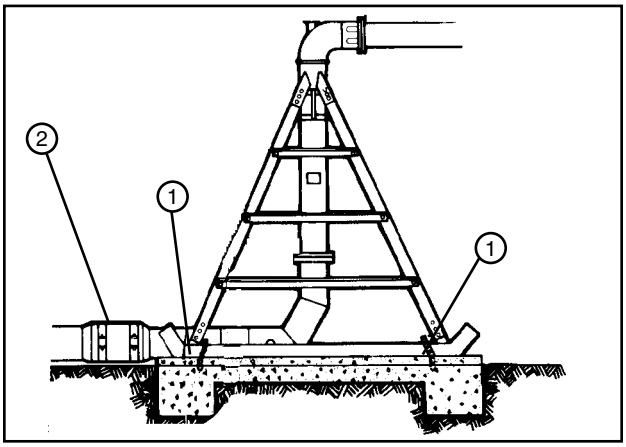


Figure 44-2 1. Anchor Chain
2. Water Supply Line

Towing Option

Towing The Skid Tow Pivot (Continued)

⚠ DANGER

•TO REDUCE THE POSSIBILITY OF SEVERE INJURY OR DEATH BE SURE ALL SERVICE AND CONTROL PANEL DISCONNECTS ARE OFF BEFORE PLUGGING THE POWER PLUG INTO THE RECEPTACLE.

24. With the service disconnect in the OFF position, plug the power plug into the receptacle. See Figure 45-1.

    Be sure the Service and Control Panel Disconnects are OFF before plugging the power plug into the receptacle.

25. If desired turn the power ON.

    - Unlock the Service Disconnect and turn it “ON.”
    - Unlock the Control Panel Disconnect and turn it “ON.”

    If power is available the control panel voltmeter should display the voltage.

    The machine is ready for operation.

⚠ CAUTION

•IF THIS IS THE FIRST ELECTRICAL CONNECTION TO THE PIVOT POINT, BE CERTAIN THE PHASING OR MOTOR ROTATION IS CORRECT. SHOULD ANY OF THE DRIVE UNITS FAIL TO OPERATE OR NOT TRAVEL IN THE DIRECTION SELECTED AT ANY OF THE PIVOT POINTS, IMMEDIATELY PRESS THE “STOP” BUTTON AND TURN THE CONTROL PANEL DISCONNECT “OFF.” CALL YOUR VALLEY DEALER.

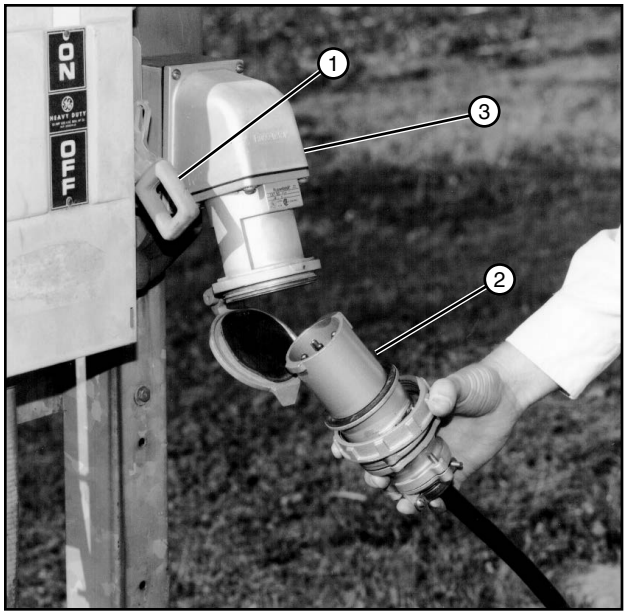


Figure 45-1 1. Service Disconnect - OFF
2. Power Plug
3. Receptacle

Towing Option

Towing Option

Towing the 2 Wheel E-Z Tow Pivot

This topic provides instruction on the preparation and towing of the 2 wheel E-Z Tow pivot.

REMEMBER: SAFETY FIRST - Operate according to the following procedures when towing and read all safety information in this manual.

1. Position the machine in the tow lane. When positioning the center pivot, always use the “STOP” button on the control panel to stop the center pivot. NEVER stop the center pivot with the control panel or service disconnect switches. See Figure 47-1.

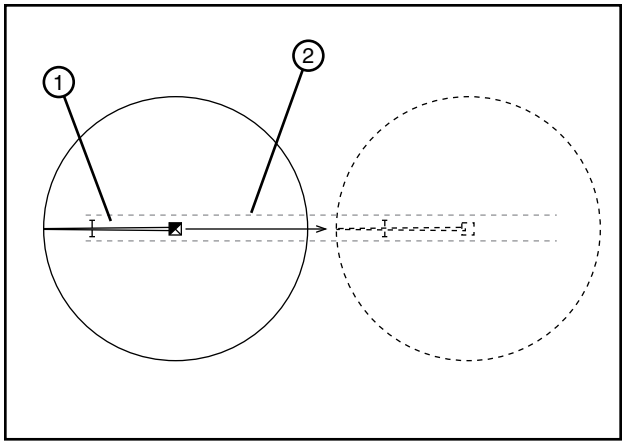


Figure 47-1 1. Machine
2. Tow Lane

⚠ DANGER

- **THE CONTROL PANEL, COLLECTOR RING AND TOWER BOXES CONTAIN HIGH VOLTAGE! LIVE VOLTAGE CAN KILL.**
- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE TOWING THE MACHINE.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED.**

2. Once the center pivot is positioned in the tow lane, turn off and lock the pivot panel and service disconnect switches.

   Follow the MINIMAL LOCKOUT/TAGOUT PROCEDURE located in the SAFETY section of this manual and do the following.

3. SHUT OFF and LOCK the public power service disconnect to the irrigation machine. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 47-2.

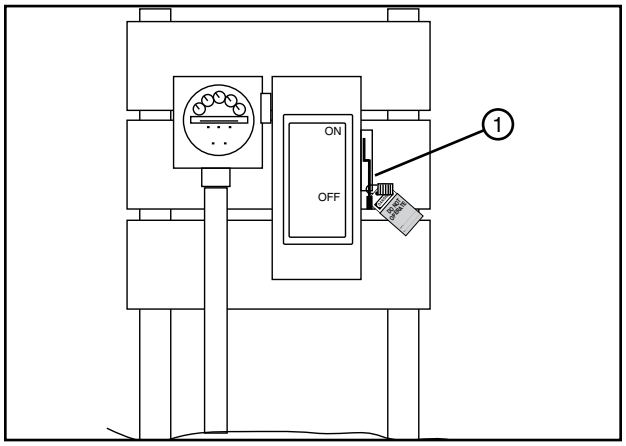


Figure 47-2 1. Public Power Service Disconnect

4. SHUT OFF and LOCK the control panel main power disconnect. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 47-3.

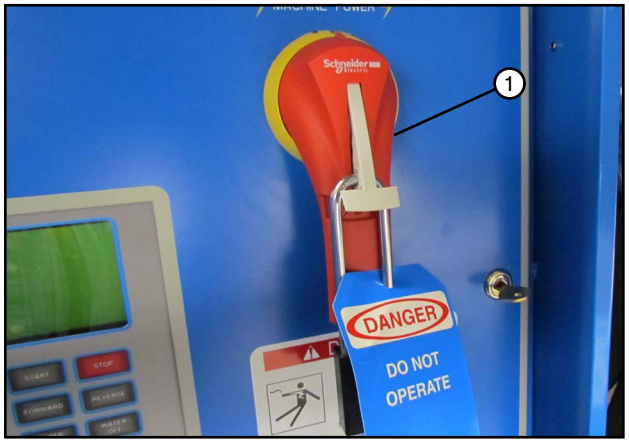


Figure 47-3 1. Main Power Disconnect
Series 8000 Control Panel Shown

Towing Option
Towing the 2 Wheel E-Z Tow Pivot (Continued)

5. With the disconnect in the OFF position, unplug the power plug and then unplug the pump control plug from the receptacle. See Figure 48-1.
6. Wrap the cords around the tongue mounting channels and place the ends of the cords into the receptacle holder bracket. See Figure 48-2.

NOTE

•E-Z TOW pivots with onboard engine/generator sets may only have pump control wires coming into one of the pivot pad receptacles.

7. Disconnect the ground wire from the ground lug on the lower riser ear. After removing ground wire, retighten the grounding lug screw so it is not lost while towing. See Figure 48-3.

⚠ WARNING

•EACH TIME A TOWABLE PIVOT IS MOVED, THE GROUND WIRE MUST BE REATTACHED TO THE GROUND LUG ON THE RISER AND CHECKED FOR ELECTRICAL INTEGRITY BEFORE STARTING THE MACHINE.

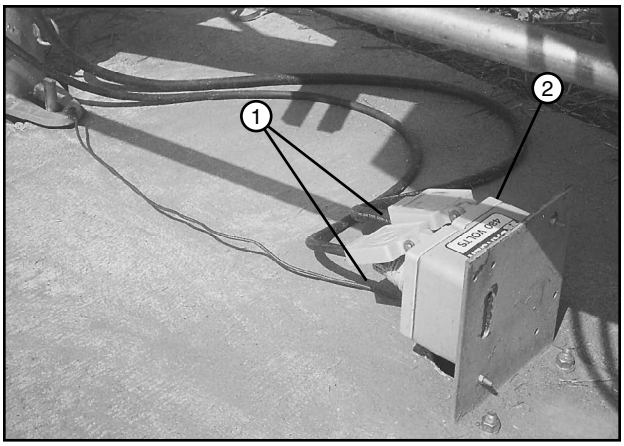


Figure 48-1 1. Power and Pump Control Plugs
2. Receptacles

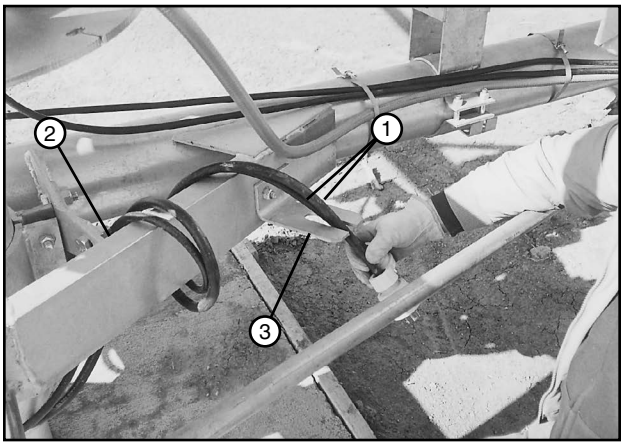


Figure 48-2 1. Cord
2. Tongue Mounting Channel
3. Receptacle Holder

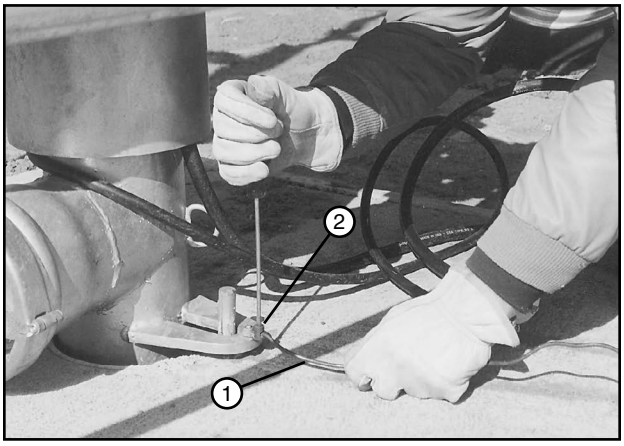


Figure 48-3 1. Ground Wire
2. Ground Lug

Towing Option

Towing the 2 Wheel E-Z Tow Pivot (Continued)

8. Disconnect the water supply line from riser pipe. See Figure 49-1.
9. Release and lower the tongue.
10. Remove lynch pin from each torque pin, then remove each torque pin and disconnect the tow link bars from the gearbox mount steering arms. Install each torque pin back in the steering arm hole and secure with lynch pin. See Figure 49-2.
11. Rotate each tow link bar into the tow link carrier until the carrier spring latches into the hole in tow link bar. See Figure 49-3.

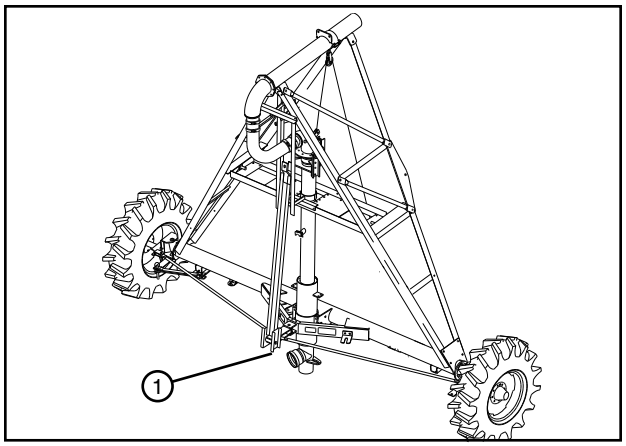


Figure 49-1 1. Riser Pipe

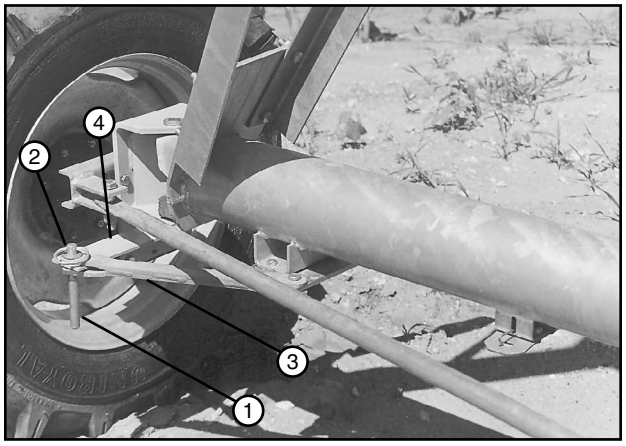


Figure 49-2 1. Lynch Pin
2. Torque Pin
3. Tow Link Bar
4. Steering Arm

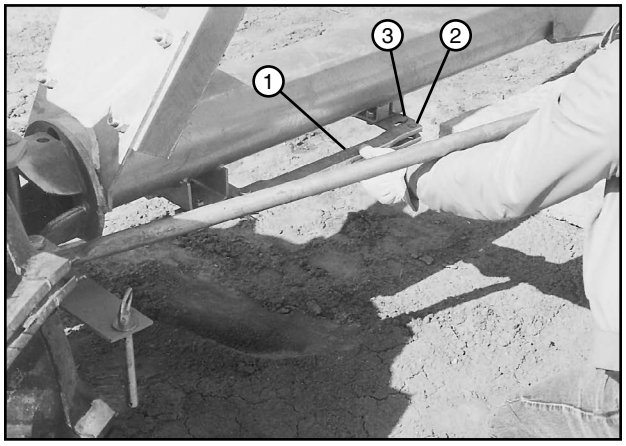


Figure 49-3 1. Tow Link Bar
2. Tow Link Carrier
3. Carrier Spring

Towing Option
Towing the 2 Wheel E-Z Tow Pivot (Continued)

12. Attach the tongue to the towing unit. See Figure 50-1.
13. Use the winch to raise the riser pipe out of the anchor pipe. I may be necessary to pry the riser from the anchor pipe. See Figure 50-2.

    When the riser clears the anchor pipe, raise the riser pipe to the tow position.
14. Prepare the drive units for towing. See Preparing Drive Unit For Towing in the Towing Section.
15. After the pivot and drive units have been prepared for towing, begin towing the machine in a slow, gradual manner.

    DO NOT jerk the center pivot at any point during towing.

⚠ CAUTION

•THE WHEEL TRACKS OF THE TOW PATH MUST NOT EXCEED 6 IN DEPTH.

⚠ CAUTION

TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE:

•IF TOWING ON A SIDE SLOPE THE MACHINE MAY TEND TO SHIFT DOWN THE HILL DUE TO GRAVITATIONAL PULL.

•DO NOT TOW ACROSS CROP ROWS, DITCHES OR ROUGH TERRAIN.

•DO NOT JERK THE MACHINE AT ANYTIME WHILE TOWING.

•DO NOT TOW THE MACHINE MORE THAN 2 MILES PER HOUR MAXIMUM.

•ALWAYS TOW THE MACHINE IN A STRAIGHT LINE.

•NEVER ATTEMPT TO TURN THE MACHINE WHEN TOWING.

•NEVER ATTEMPT REVERSING OR BACKING THE MACHINE INTO POSITION.

16. Carefully align the riser pipe with the anchor pipe as the pivot approaches the pivot pad. Remember, you cannot back the center pivot up. See Figure 50-3.

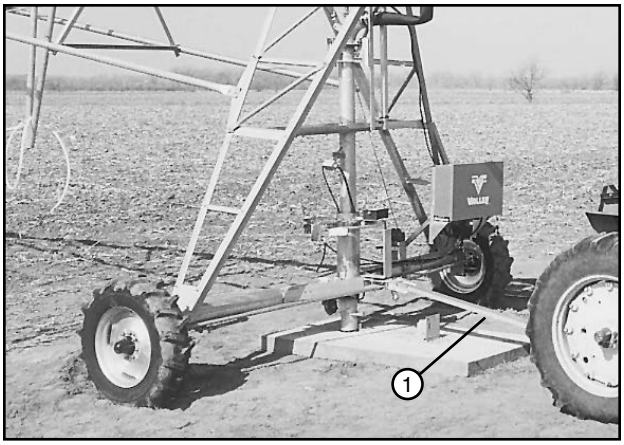


Figure 50-1 1. Tongue

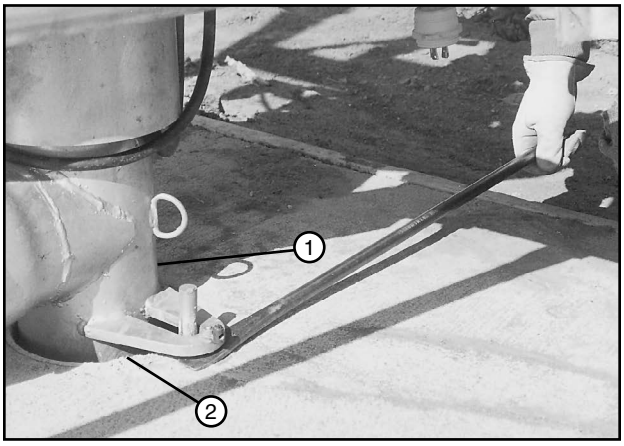


Figure 50-2 1. Riser Pipe
2. Anchor Pipe

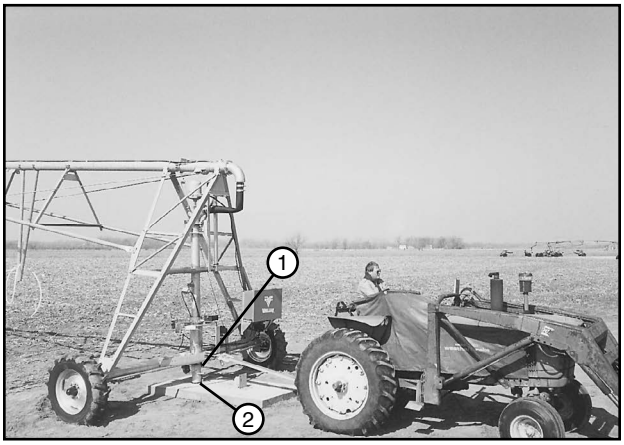


Figure 50-3 1. Riser Pipe
2. Anchor Pipe

Towing Option

Towing the 2 Wheel E-Z Tow Pivot (Continued)

17. Align and lower the riser pipe into the anchor pipe. Be sure the slotted ears on the riser pipe align with the studs in the pivot pad. In addition, the slotted ear on the Stop-In-Slot and End Gun Shutoff bracket must be positioned on the “T” bracket. See Figure 51-1.
18. Disconnect the tongue from the towing unit.
19. Lift each carrier spring and release the tow link bar from the tow link carrier. Remove torque pin from each gearbox steering arm. See Figure 51-2.
20. Position each steering arm in tow link bar yoke, align holes, then attach each steering arm to tow link bar with torque pin and secure with lynch pin. It may be necessary to move the tongue for proper alignment of the holes. See Figure 51-3.
21. Secure tongue in the raised position.

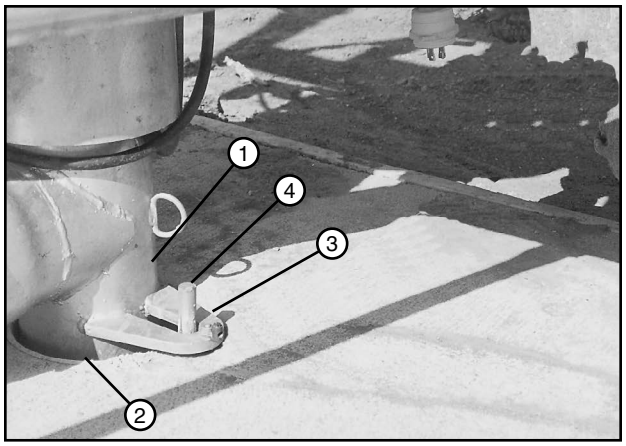


Figure 51-1 1. Riser Pipe 3. Slotted Ear
2. Anchor Pipe 4. Stud

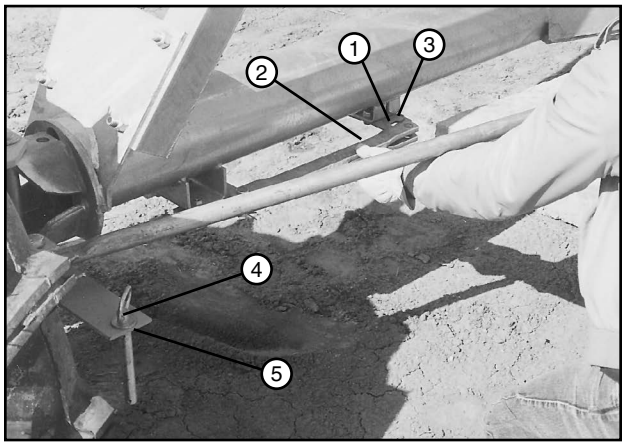


Figure 51-2 1. Carrier Spring 4. Torque Pin
2. Tow Link 5. Steering Arm
3. Tow Link Carrier

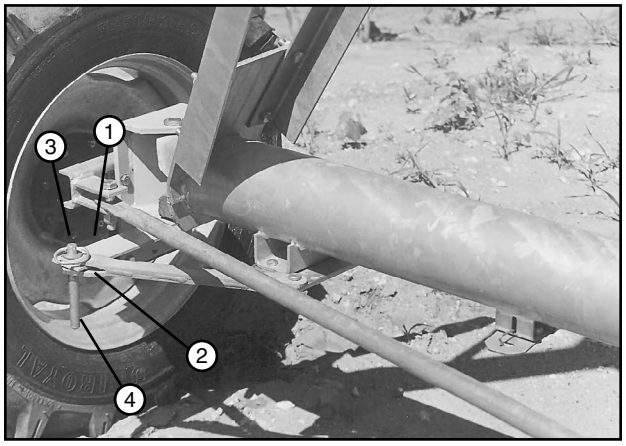


Figure 51-3 1. Steering Arm 3. Torque Pin
2. Tow Link Bar Yoke 4. Lynch Pin

Towing Option
Towing the 2 Wheel E-Z Tow Pivot (Continued)

22. Connect the water supply line to the lower riser. See Figure 52-1.
23. Prepare the drive units for operation. See Preparing Drive Unit For Operation in the front of Towing Option section.
24. Attach the ground wire to the ground lug on the riser. See Figure 52-2.
25. With the disconnect in the OFF position, plug the power and pump control plugs into the receptacles. See Figure 52-3.

⚠ DANGER

•TO REDUCE THE POSSIBILITY OF SEVERE INJURY OR DEATH BE SURE ALL SERVICE AND CONTROL PANEL DISCONNECTS ARE OFF BEFORE PLUGGING THE POWER PLUG INTO THE RECEPTACLE.

26. If desired turn the power ON.
    - Unlock the Service Disconnect and turn it "ON."
    - Unlock the Control Panel Disconnect and turn it "ON."

    If power is available the control panel voltmeter should display the voltage.

The machine is ready for operation.

⚠ CAUTION

•IF THIS IS THE FIRST ELECTRICAL CONNECTION TO THE PIVOT POINT, BE CERTAIN THE PHASING OR MOTOR ROTATION IS CORRECT. SHOULD ANY OF THE DRIVE UNITS FAIL TO OPERATE OR NOT TRAVEL IN THE DIRECTION SELECTED AT ANY OF THE PIVOT POINTS, IMMEDIATELY PRESS THE "STOP" BUTTON AND TURN THE CONTROL PANEL DISCONNECT "OFF." CALL YOUR VALLEY DEALER.

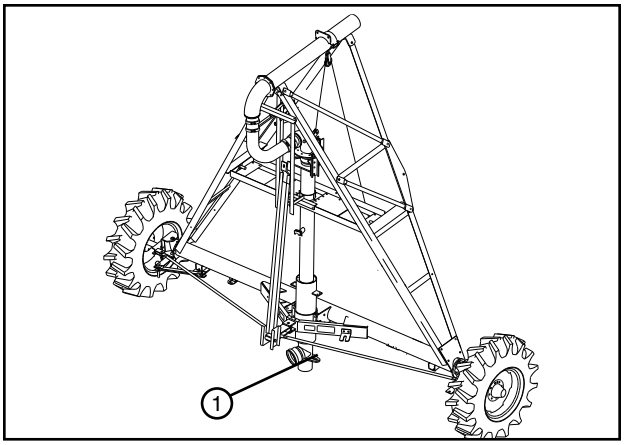


Figure 52-1 1. Riser Pipe

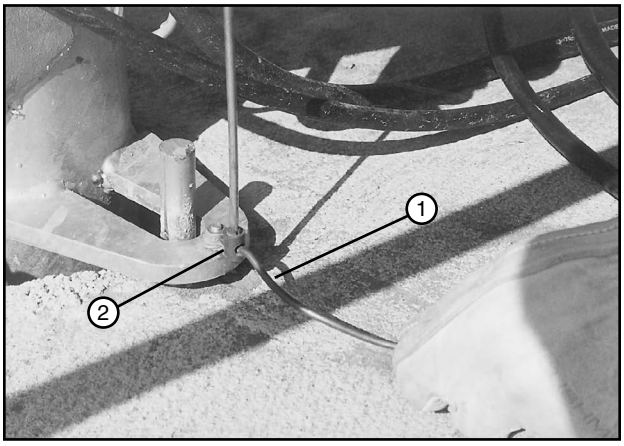


Figure 52-2 1. Ground Wire
2. Ground Lug

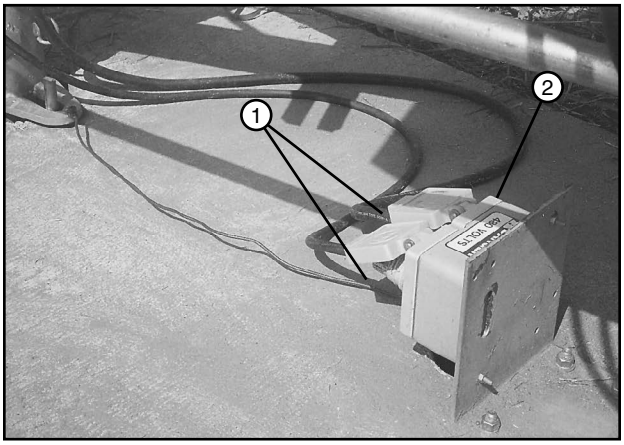


Figure 52-3 1. Power and Pump Control Plugs
2. Receptacles

Towing Option

Towing the 4 Wheel E-Z Tow Pivot - Fixed Tire

This topic provides instruction on the preparation and towing of the 4 wheel E-Z Tow pivot with the standard fixed wheel option.

The standard fixed tire option allows the pivot to be towed in only two directions by moving the tongue 180 degrees from one side of the pivot to the other.

REMEMBER: SAFETY FIRST - Operate according to the following procedures when towing and read all safety information in this manual.

1. Position the machine in the tow lane. When positioning the center pivot, always use the “STOP” button on the control panel to stop the center pivot. NEVER stop the center pivot with the control panel or service disconnect switches. See Figure 53-1.

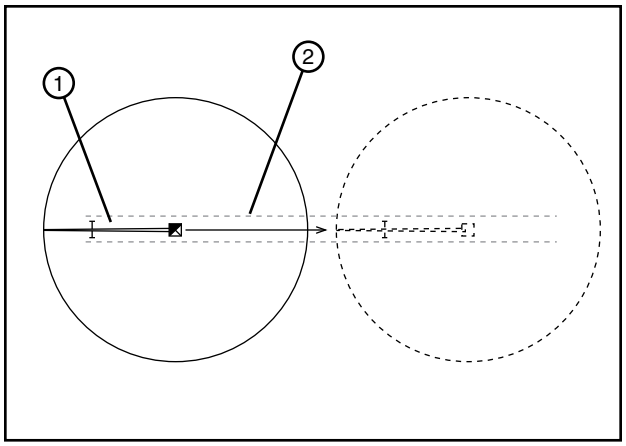


Figure 53-1 1. Machine
2. Tow Lane

⚠ DANGER

- **THE CONTROL PANEL, COLLECTOR RING AND TOWER BOXES CONTAIN HIGH VOLTAGE! LIVE VOLTAGE CAN KILL.**
- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE TOWING THE MACHINE.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED.**

2. Once the center pivot is positioned in the tow lane, turn off and lock the pivot panel and service disconnect switches.

   Follow the MINIMAL LOCKOUT/TAGOUT PROCEDURE located in the SAFETY section of this manual and do the following.

3. SHUT OFF and LOCK the public power service disconnect to the irrigation machine. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 53-2.

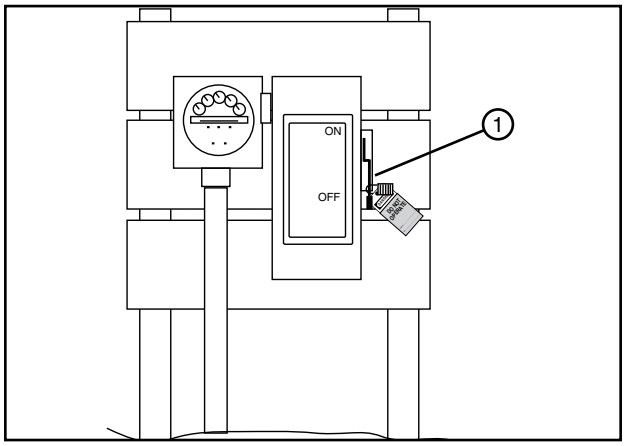


Figure 53-2 1. Public Power Service Disconnect

4. SHUT OFF and LOCK the control panel main power disconnect. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 53-3.

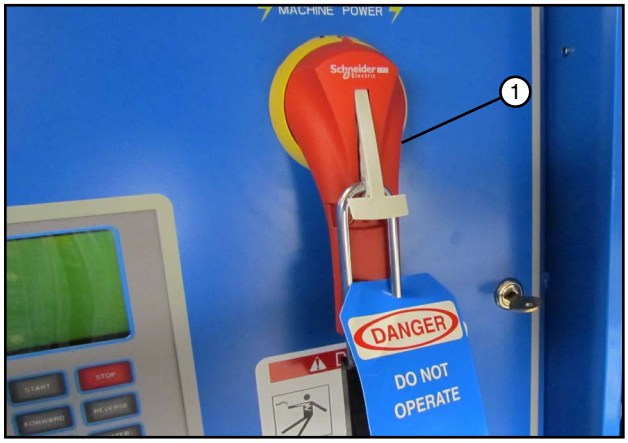


Figure 53-3 1. Main Power Disconnect
Series 8000 Control Panel Shown

Towing Option
Towing the 4 Wheel E-Z Tow Pivot - Fixed Tire (Continued)

5. With the service disconnect in the OFF position, unplug the power plug from the receptacle. See Figure 54-1.
6. Coil the cord and secure to pivot structure so that it does not drag on the ground while towing the pivot.
7. Disconnect the water supply line from lower riser.
8. Prepare the drive units for towing. See Preparing Drive Unit For Towing in the front of Towing Option section.
9. Remove the load binders at each corner of the pivot. See Figure 54-2.
10. If necessary, move the tongue to the side of pivot that faces the towing direction. See Figure 54-3.

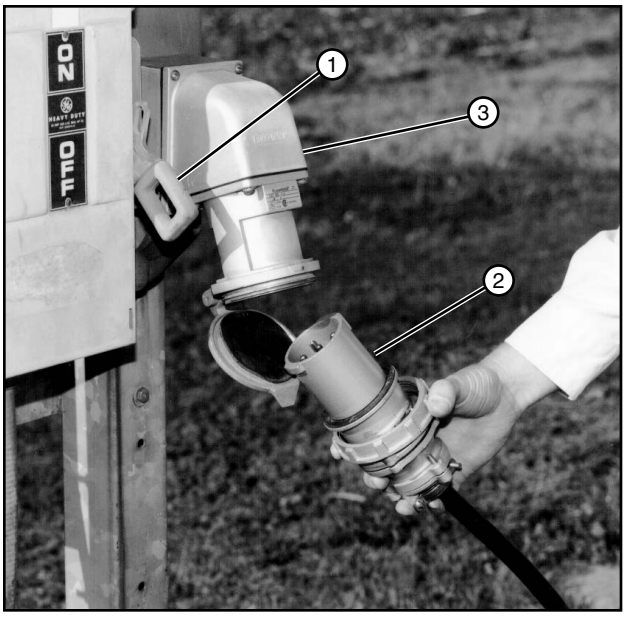


Figure 54-1 1. Service Disconnect - OFF
2. Power Plug
3. Receptacle

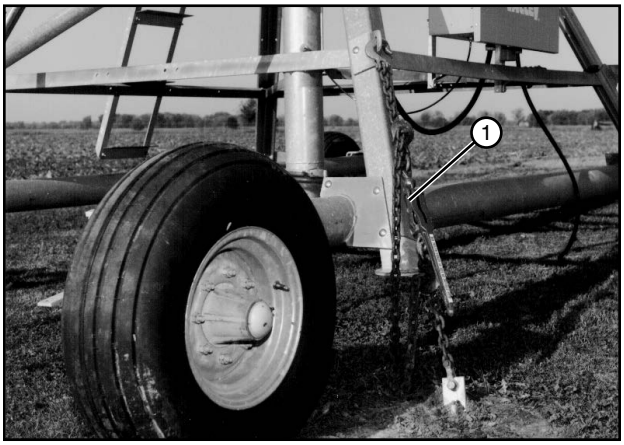


Figure 54-2 1. Load Binder

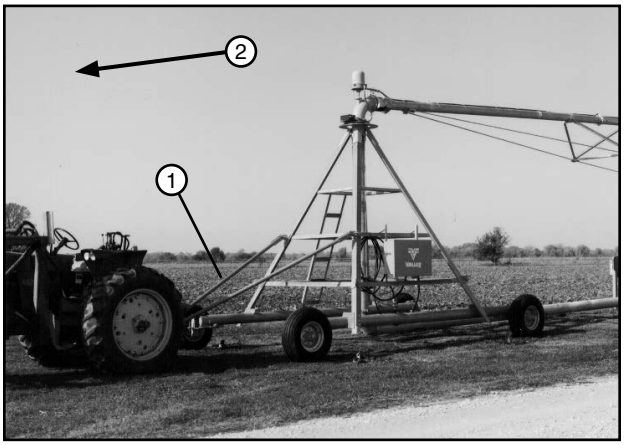


Figure 54-3 1. Tongue
2. Towing Direction

Towing Option

Towing the 4 Wheel E-Z Tow Pivot - Fixed Tire (Continued)

11. Hook tongue to the towing unit. See Figure 55-1.
12. After the pivot and drive units have been prepared for towing, begin towing the machine in a slow, gradual manner.

    DO NOT jerk the center pivot at any point during towing.

⚠ CAUTION

•THE WHEEL TRACKS OF THE TOW PATH MUST NOT EXCEED 6 IN DEPTH.

⚠ CAUTION

TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE:

•IF TOWING ON A SIDE SLOPE THE MACHINE MAY TEND TO SHIFT DOWN THE HILL DUE TO GRAVITATIONAL PULL.

•DO NOT TOW ACROSS CROP ROWS, DITCHES OR ROUGH TERRAIN.

•DO NOT JERK THE MACHINE AT ANYTIME WHILE TOWING.

•DO NOT TOW THE MACHINE MORE THAN 2 MILES PER HOUR MAXIMUM.

•ALWAYS TOW THE MACHINE IN A STRAIGHT LINE.

•NEVER ATTEMPT TO TURN THE MACHINE WHEN TOWING.

•NEVER ATTEMPT REVERSING OR BACKING THE MACHINE INTO POSITION.

13. Align the pivot tires with the tire ruts and center point location as the pivot approaches the pivot pad.
14. Attach and tighten the load binders at each corner of the pivot. See Figure 55-2.
15. Disconnect the tongue from towing unit.
16. Connect the water supply line to the lower riser.
17. Prepare the drive units for operation. See Preparing Drive Unit For Operation in the front of Towing Option section.

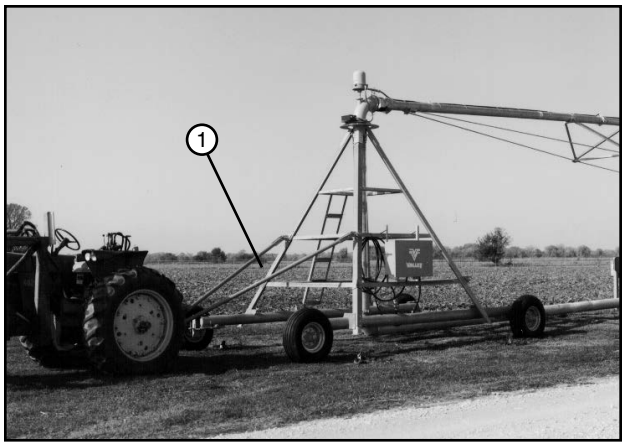


Figure 55-1 1. Tongue

NOTE

•The center point of the 4 wheel E-Z Tow pivot must be anchored in exactly the same position each time it is towed.

•To help position the pivot in exactly the same position each time it is towed, a small rut should be made for each of the tires to fall into. Installing cement ruts for the tires to fall into is recommended.

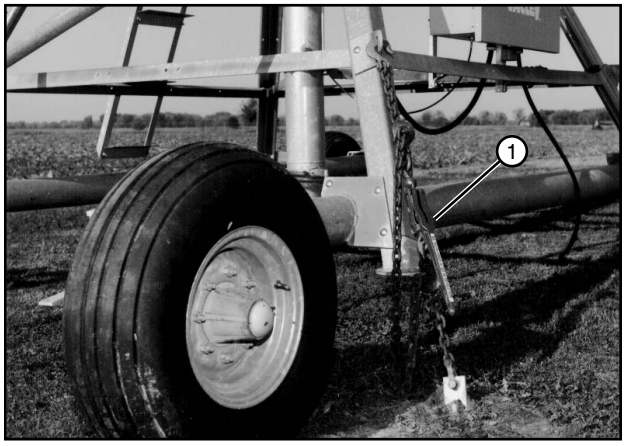


Figure 55-2 1. Load Binder

Towing Option
Towing the 4 Wheel E-Z Tow Pivot - Fixed Tire (Continued)

⚠ DANGER

•TO REDUCE THE POSSIBILITY OF SEVERE INJURY OR DEATH BE SURE ALL SERVICE AND CONTROL PANEL DISCONNECTS ARE OFF BEFORE PLUGGING THE POWER PLUG INTO THE RECEPTACLE.

18. With the service disconnect in the OFF position, plug the power plug into the receptacle. See Figure 56-1.

    Be sure the Service and Control Panel Disconnects are OFF before plugging the power plug into the receptacle.

19. If desired turn the power ON.

    » Unlock the Service Disconnect and turn it "ON."

    » Unlock the Control Panel Disconnect and turn it "ON."

    If power is available the control panel voltmeter should display the voltage.

The machine is ready for operation.

⚠ CAUTION

•IF THIS IS THE FIRST ELECTRICAL CONNECTION TO THE PIVOT POINT, BE CERTAIN THE PHASING OR MOTOR ROTATION IS CORRECT. SHOULD ANY OF THE DRIVE UNITS FAIL TO OPERATE OR NOT TRAVEL IN THE DIRECTION SELECTED AT ANY OF THE PIVOT POINTS, IMMEDIATELY PRESS THE "STOP" BUTTON AND TURN THE CONTROL PANEL DISCONNECT "OFF." CALL YOUR VALLEY DEALER.

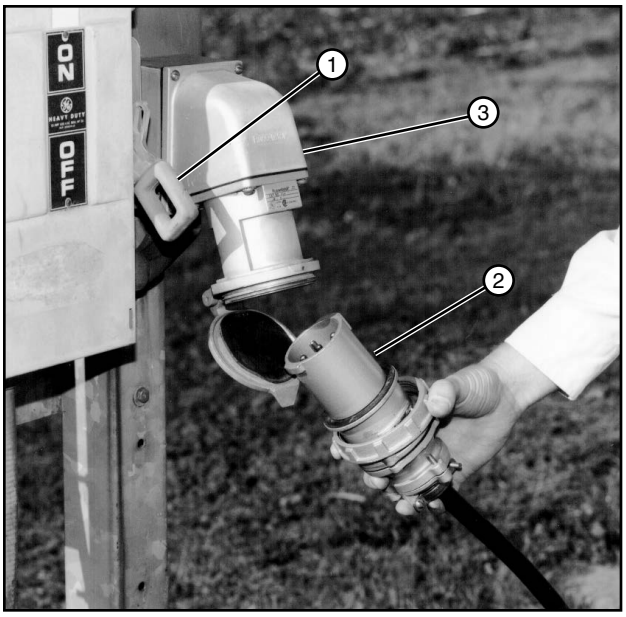


Figure 56-1 1. Service Disconnect - OFF
2. Power Plug
3. Receptacle

Towing Option

Towing the 4 Wheel E-Z Tow Pivot - Swivel Tire

This topic provides instruction on the preparation and towing of the 4 wheel E-Z Tow pivot with the swivel wheel option.

The swivel tire option allows the tires to be turned so the pivot can be rotated to any towing direction that is in line with the span.

REMEMBER: SAFETY FIRST - Operate according to the following procedures when towing and read all safety information in this manual.

1. Position the machine in the tow lane. When positioning the center pivot, always use the “STOP” button on the control panel to stop the center pivot. NEVER stop the center pivot with the control panel or service disconnect switches. See Figure 57-1.

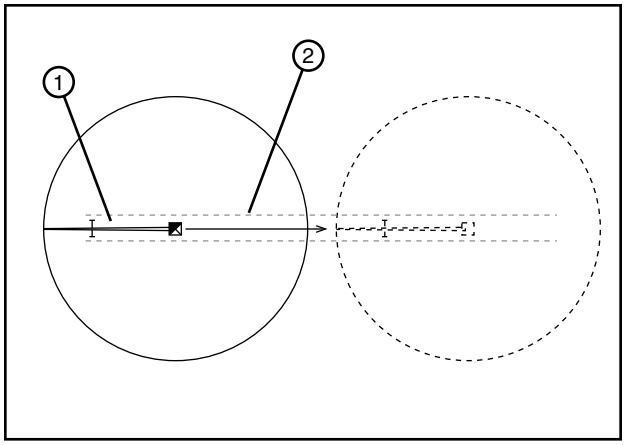


Figure 57-1 1. Machine
2. Tow Lane

⚠ DANGER

- **THE CONTROL PANEL, COLLECTOR RING AND TOWER BOXES CONTAIN HIGH VOLTAGE! 480 VOLTS CAN KILL.**
- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE TOWING THE MACHINE.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED.**

2. Once the center pivot is positioned in the tow lane, turn off and lock the pivot panel and service disconnect switches.

   Follow the MINIMAL LOCKOUT/TAGOUT PROCEDURE located in the SAFETY section of this manual and do the following.

3. SHUT OFF and LOCK the public power service disconnect to the irrigation machine. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 57-2.

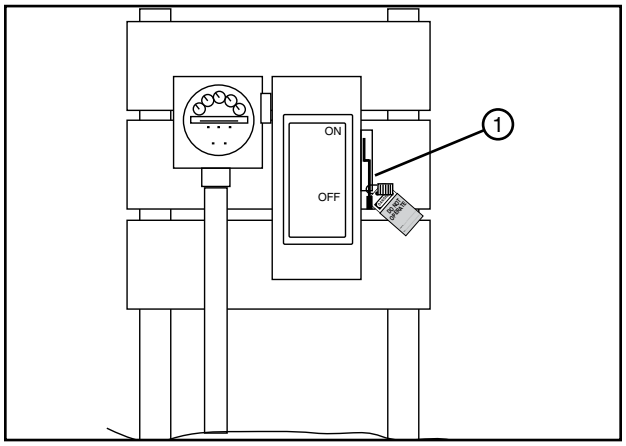


Figure 57-2 1. Public Power Service Disconnect

4. SHUT OFF and LOCK the control panel main power disconnect. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 57-3.

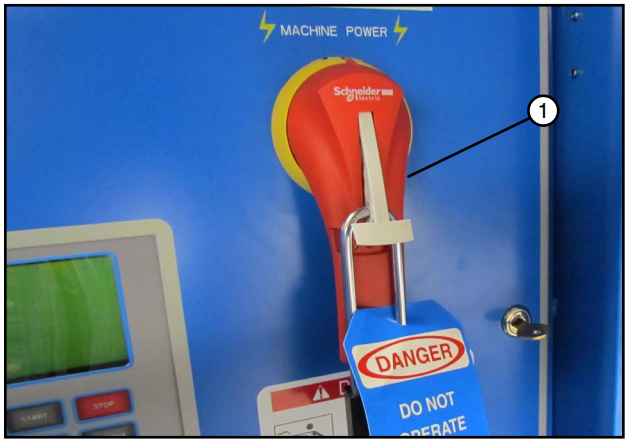


Figure 57-3 1. Main Power Disconnect

Towing Option
Towing the 4 Wheel E-Z Tow Pivot - Swivel Tire (Continued)

5. With the service disconnect in the OFF position, unplug the power plug from the receptacle. See Figure 58-1.
6. Coil the cord and secure to pivot structure so that it does not drag on the ground while towing the pivot.
7. Disconnect the water supply line from lower riser.
8. Prepare the drive units for towing. See Preparing Drive Unit For Towing in the front of Towing Option section.
9. Remove the load binders at each corner of the pivot. See Figure 58-2.
10. If the pivot wheels are in line with the span, move the tongue to the side of pivot that faces the towing direction. See Figure 58-3. Then proceed to step 18 of these instructions.

    If the pivot wheels are not in line with the span continue with step 11 of these instructions.

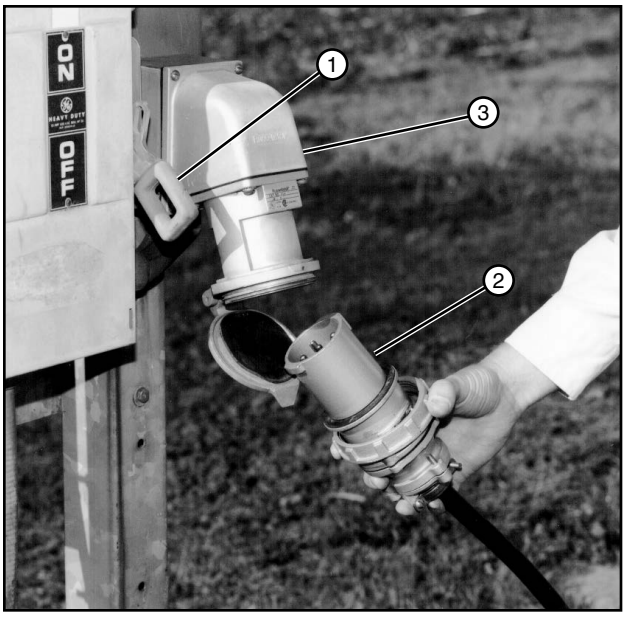


Figure 58-1 1. Service Disconnect - OFF
2. Power Plug
3. Receptacle

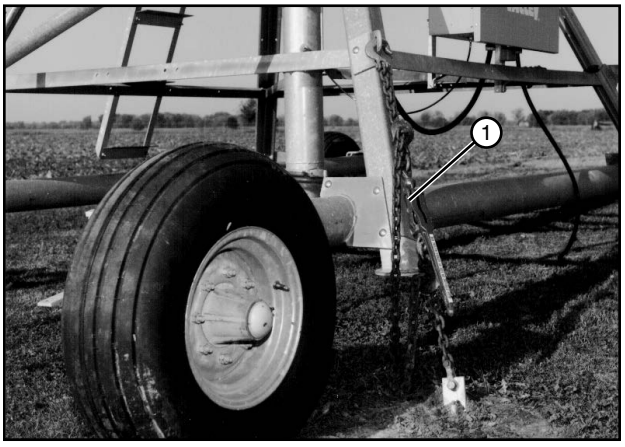


Figure 58-2 1. Load Binder

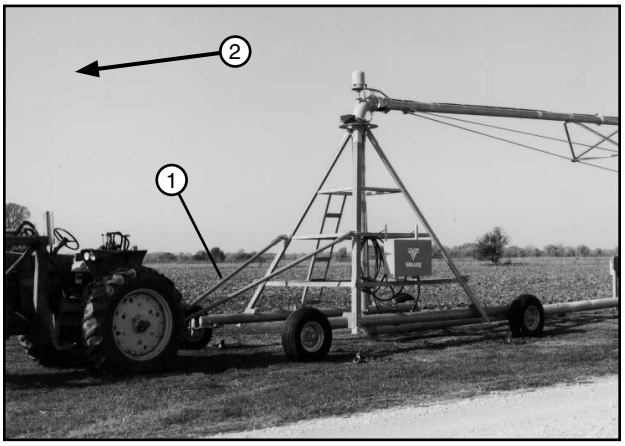


Figure 58-3 1. Tongue
2. Towing Direction

Towing Option

Towing the 4 Wheel E-Z Tow Pivot - Swivel Tire (Continued)

11. Remove hardware securing wheel in the tow position. See Figure 59-1.
12. Insert a bar in the swivel tube and turn the wheel to the pivot swivel position. See Figure 59-1.
13. Secure wheel in the swivel position with original hardware. See Figure 59-2.
14. Repeat steps 11-13 to set all other pivot wheels in the swivel position.
15. Connect tongue to towing unit with a chain. See Figure 59-3.
16. Slowly turn the pivot point to the desired tow location.
17. Reverse steps 11-13 to return the pivot wheels to the tow position.

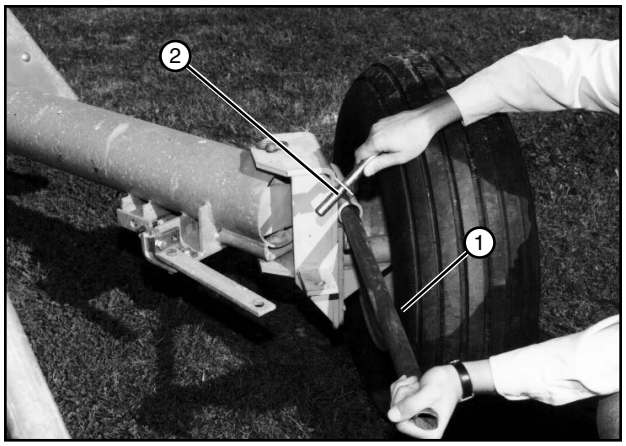


Figure 59-1 1. Bar
2. Swivel Tube

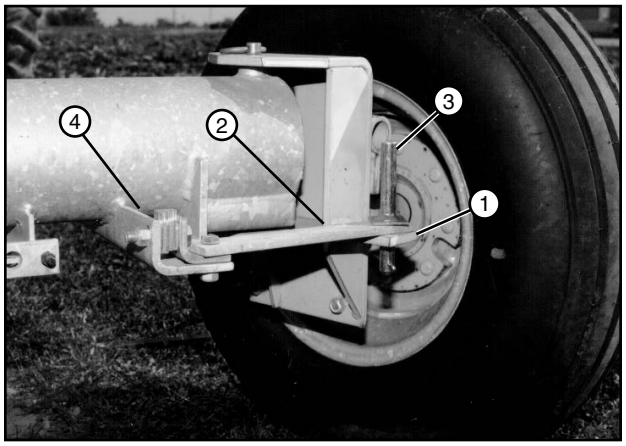


Figure 59-2 1. Steering Arm
2. Swivel Link
3. Pin
4. Swivel Link Spacers

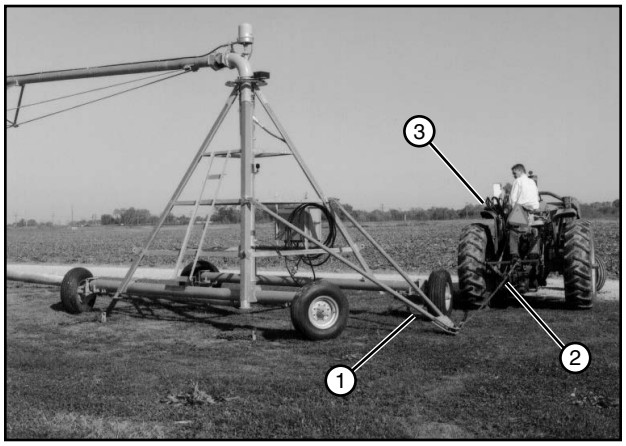


Figure 59-3 1. Tongue
2. Chain
3. Towing Unit

Towing Option
Towing the 4 Wheel E-Z Tow Pivot - Swivel Tire (Continued)

18. After the pivot and drive units have been prepared for towing, hook tongue to the towing unit. See Figure 60-1.
19. Begin towing the machine in a slow, gradual manner.

    DO NOT jerk the center pivot at any point during towing.

⚠ CAUTION

•THE WHEEL TRACKS OF THE TOW PATH MUST NOT EXCEED 6 IN DEPTH.

⚠ CAUTION

TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE:

•IF TOWING ON A SIDE SLOPE THE MACHINE MAY TEND TO SHIFT DOWN THE HILL DUE TO GRAVITATIONAL PULL.

•DO NOT TOW ACROSS CROP ROWS, DITCHES OR ROUGH TERRAIN.

•DO NOT JERK THE MACHINE AT ANYTIME WHILE TOWING.

•DO NOT TOW THE MACHINE MORE THAN 2 MILES PER HOUR MAXIMUM.

•ALWAYS TOW THE MACHINE IN A STRAIGHT LINE.

•NEVER ATTEMPT TO TURN THE MACHINE WHEN TOWING.

•NEVER ATTEMPT REVERSING OR BACKING THE MACHINE INTO POSITION.

20. Align the pivot tires with the tire ruts and center point location as the pivot approaches the pivot pad.
21. Attach and tighten the load binders at each corner of the pivot. See Figure 60-2.
22. Disconnect the tongue from towing unit.
23. Connect the water supply line to the lower riser.
24. Prepare the drive units for operation. See Preparing Drive Unit For Operation in the front of Towing Option section.

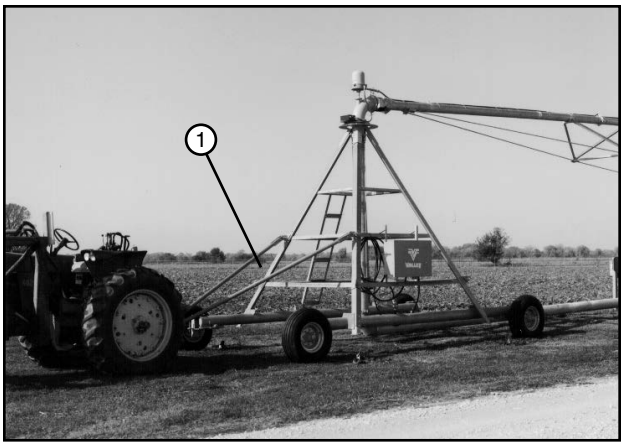


Figure 60-1 1. Tongue

NOTE

•The center point of the 4 wheel E-Z Tow pivot must be anchored in exactly the same position each time it is towed.

•To help position the pivot in exactly the same position each time it is towed, a small rut should be made for each of the tires to fall into. Installing cement ruts for the tires to fall into is recommended.

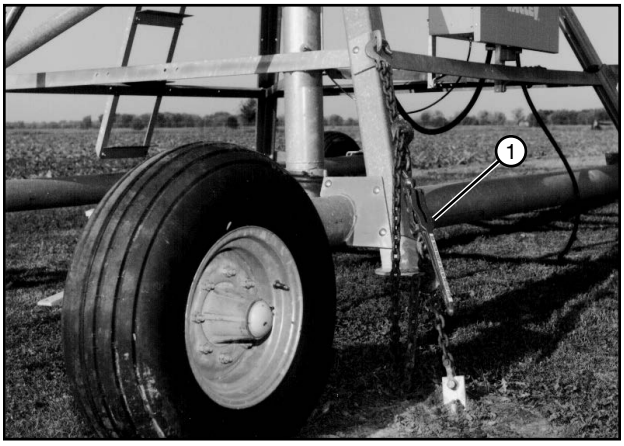


Figure 60-2 1. Load Binder

Towing Option

Towing the 4 Wheel E-Z Tow Pivot - Swivel Tire (Continued)

⚠ DANGER

•TO REDUCE THE POSSIBILITY OF SEVERE INJURY OR DEATH BE SURE ALL SERVICE AND CONTROL PANEL DISCONNECTS ARE OFF BEFORE PLUGGING THE POWER PLUG INTO THE RECEPTACLE.

25. With the service disconnect in the OFF position, plug the power plug into the receptacle. See Figure 61-1.

    Be sure the Service and Control Panel Disconnects are OFF before plugging the power plug into the receptacle.

26. If desired turn the power ON.

    » Unlock the Service Disconnect and turn it "ON."

    » Unlock the Control Panel Disconnect and turn it "ON."

    If power is available the control panel voltmeter should display the voltage.

The machine is ready for operation.

⚠ CAUTION

•IF THIS IS THE FIRST ELECTRICAL CONNECTION TO THE PIVOT POINT, BE CERTAIN THE PHASING OR MOTOR ROTATION IS CORRECT. SHOULD ANY OF THE DRIVE UNITS FAIL TO OPERATE OR NOT TRAVEL IN THE DIRECTION SELECTED AT ANY OF THE PIVOT POINTS, IMMEDIATELY PRESS THE "STOP" BUTTON AND TURN THE CONTROL PANEL DISCONNECT "OFF." CALL YOUR VALLEY DEALER.

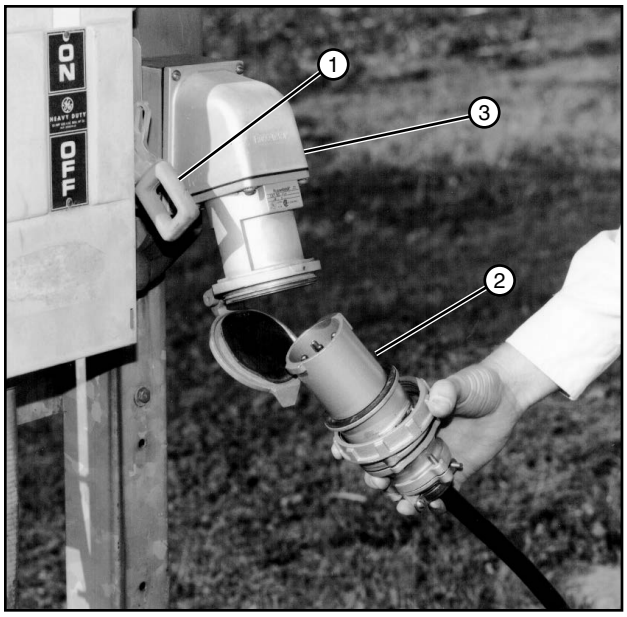


Figure 61-1 1. Service Disconnect - OFF
2. Power Plug
3. Receptacle

OPERATION

Towing Option

Safety

⚠ DANGER

- **THE CONTROL PANEL CONTAINS HIGH VOLTAGE! LIVE VOLTAGE CAN KILL.**
- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE SERVICING OR PERFORMING MAINTENANCE TO THE MACHINE.**
- **TESTING AND TROUBLESHOOTING SHOULD BE PERFORMED ONLY BY AN AUTHORIZED VALLEY DEALER.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED FOR PERFORMING MAINTENANCE.**

Disconnect All Power

Before performing service or maintenance on any part of the machine, follow the MINIMAL LOCKOUT/TAGOUT PROCEDURE located in the SAFETY section of this manual and do the following:

1. SHUT OFF and LOCK the public power service disconnect to the irrigation machine. See Figure 63-1.

   FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 63-1.

2. SHUT OFF and lock the control panel main power disconnect. See Figure 63-2.

   FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 63-2.

⚠ DANGER

- **BE AWARE OF HIGH WATER PRESSURE. TURN OFF THE PUMP AND ALLOW THE MACHINE TO DRAIN COMPLETELY BEFORE REPAIRING OR PERFORMING MAINTENANCE TO THE MACHINE.**

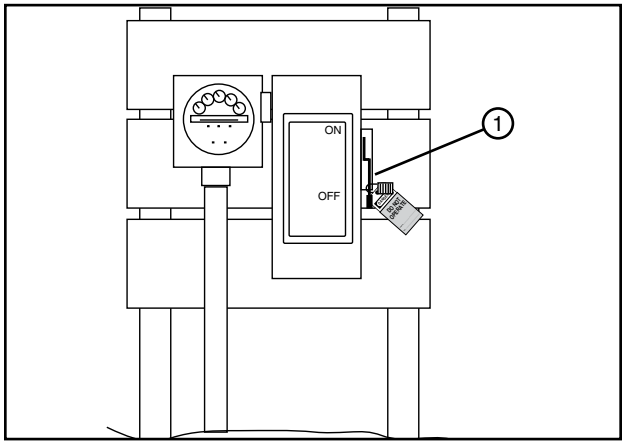


Figure 63-1 1. Public Power Service Disconnect

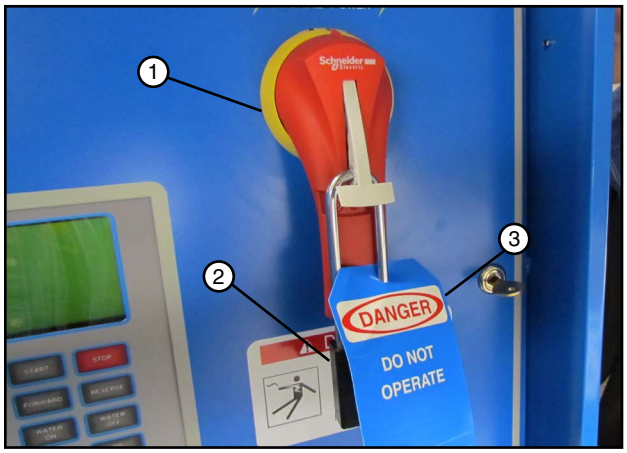


Figure 63-2 1. Main Disconnect
2. Lock
3. Blue Tag

Wheel Gearbox 7000 Series

NOTE

- **After the first operating season, change the oil in all of the wheel gearboxes.**
- **After the first oil change, change the wheel gearbox oil every third year or 3000 operating hours, whichever occurs first.**
- **At the end of each operating season, drain the wheel gearboxes of any condensation or contaminated oil that may have accumulated in the gearbox and refill to its normal level.**

1. Remove the drain plug from the bottom of the wheel gearbox and drain the oil into a container. See Figure 64-1.
2. Install the drain plug after draining oil.
3. Clean all of the dirt away from the fill plug. See Figure 64-2.

NOTE

- **Use only Valley Gear Lube. Other brands of lubricants may contain corrosive extreme pressure additives, which may damage bronze worm gears.**
- **The oil in worm gear cases may reach temperatures up to 200˚ F (94˚ C) without alarm.**

4. Fill the wheel gearbox with Valley Gear Lube. The capacity is approximately 3.9 quarts (3.7 liters).
   - Fill gearbox to the top of worm gear shaft or to the bottom of the fill plug hole.
5. Install the fill plug.

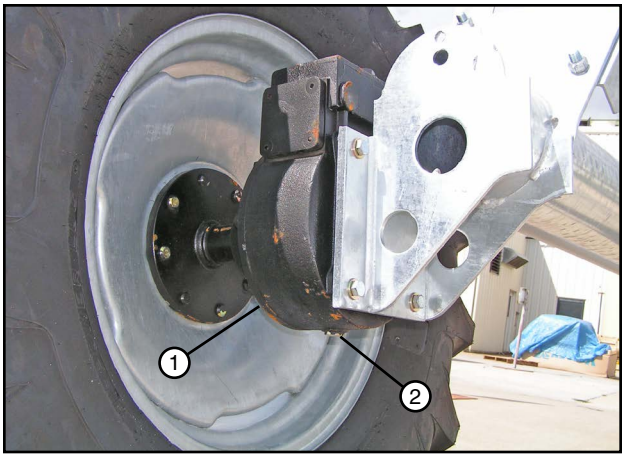


Figure 64-1 1. Wheel Gearbox
2. Drain Plug

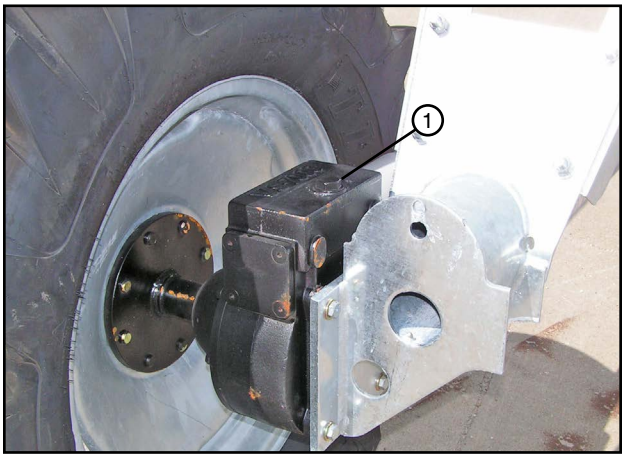


Figure 64-2 1. Fill Plug

Center Drive Gearmotor 7000 Series

After EACH season of operation, change the oil in all of the helical gearmotor gearboxes.

1. Remove the drain plug and the fill plug. Drain the oil and install the drain plug. See Figure 65-1.

NOTE

- **Use only Valley Gear Lube. Other brands of lubricants may contain corrosive extreme pressure additives, which may damage bronze worm gears.**
- **The oil in worm gear cases may reach temperatures up to 200˚ F (94˚ C) without alarm.**

2. Fill the gearbox 1-7/8 in (48 mm) from the bottom of fill plug hole with Valley Gear Lube. The capacity of the gearbox is approximately 44 oz (1.3 liter). See Figure 65-1.

NOTE

- **OIL LEVEL SHOULD BE 1-7/8 IN (48 MM) BELOW FILL PLUG WHEN FULL.**

Special Dipstick for Checking Oil Level:

- **The dipstick is not part of the gearmotor plug.**
- **Remove gearmotor plug and insert dipswitch to check oil level.**
  - »**Low oil condition would be no oil on stick.**
  - »**High oil condition would be oil above the indicator hole.**
- **Dipstick part number is 0998886.**

⚠ WARNING

- **INPUT SEAL FAILURE CAN OCCUR IF OIL CAPACITY IS EXCEEDED.**

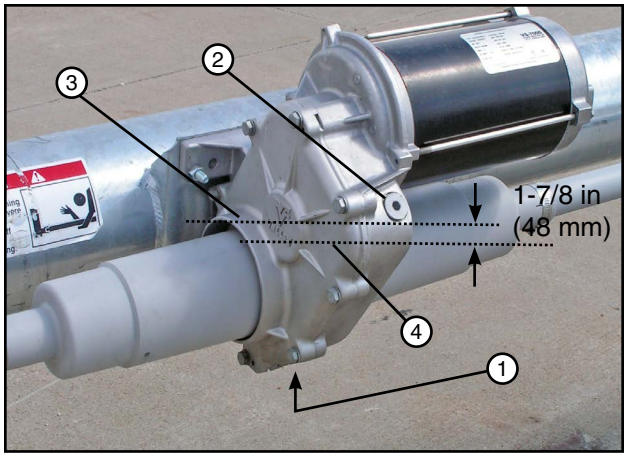


Figure 65-1 1. Drain Plug 3. Oil Level
2. Fill Plug 4. Bottom of Fill Plug Hole

Wheel Gearbox 8000/8120 Series

NOTE

- **After the first operating season, change the oil in all of the wheel gearboxes.**
- **After the first oil change, change the wheel gearbox oil every third year or 3000 operating hours, whichever occurs first.**
- **At the end of each operating season, drain the wheel gearboxes of any condensation or contaminated oil that may have accumulated in the gearbox and refill to its normal level.**

1. Remove the drain plug from the bottom of the wheel gearbox and drain the oil into a container. See Figure 66-1.
2. Install the drain plug after draining oil.
3. Clean all of the dirt away from the expansion chamber cap and remove the expansion chamber cap. Do not allow dirt to fall into the gearbox when removing the cap. See Figure 66-2.
   - Make sure the vent holes on each side of the expansion chamber cap are open and unobstructed.

NOTE

- **Use only Valley Gear Lube. Other brands of lubricants may contain corrosive extreme pressure additives, which may damage bronze worm gears.**
- **The oil in worm gear cases may reach temperatures up to 200˚ F (94˚ C) without alarm.**

4. Fill the wheel gearbox with Valley Gear Lube. The capacity is approximately 3.9 quarts (3.7 liters).
   - Fill gearbox to the top of worm gear shaft or remove the check plug and fill until the oil begins to flow out of the check plug hole. See Figure 66-3.
5. Install the expansion chamber cap after refilling the gearbox. Secure with original hardware and torque to 8 lb-ft (10.8 N·m).

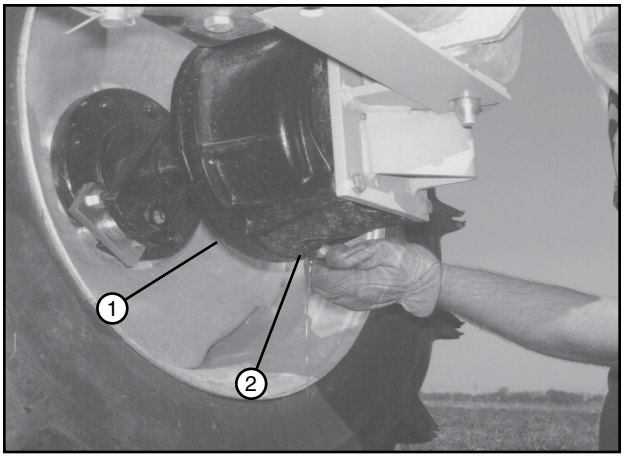


Figure 66-1 1. Wheel Gearbox
2. Drain Plug

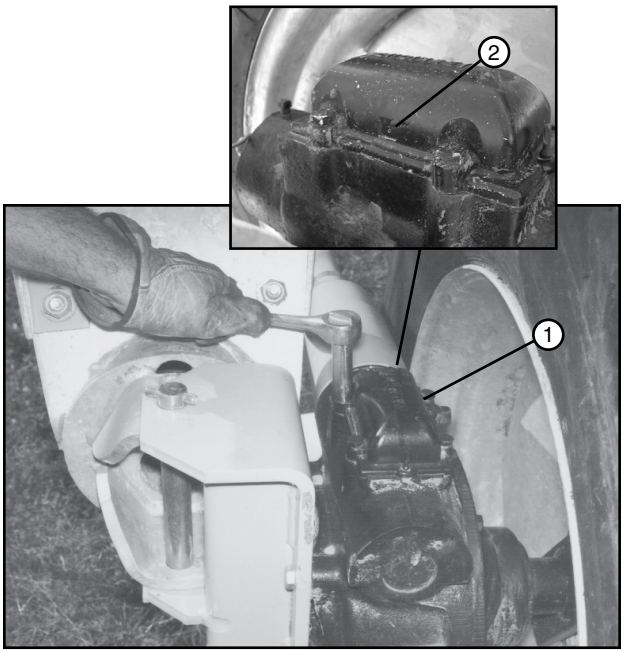


Figure 66-2 1. Expansion Chamber Cap
2. Vent Hole

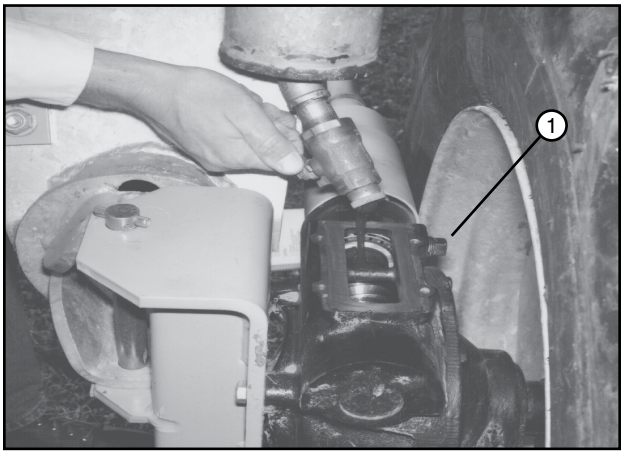


Figure 66-3 1. Check Plug

Center Drive Gearmotors 8000/8120 Series

Helical Gearmotor

After EACH season of operation, change the oil in all of the helical gearmotor gearboxes.

1. Remove the drain plug and the fill plug. Drain the oil and install the drain plug. See Figure 67-1.

NOTE

- **Use only Valley Gear Lube. Other brands of lubricants may contain corrosive extreme pressure additives, which may damage bronze worm gears.**

2. Fill the gearbox 1-7/8 in (48 mm) from the bottom of fill plug hole with Valley Gear Lube. The capacity of the gearbox is approximately 44 oz (1.3 liter). See Figure 67-1.

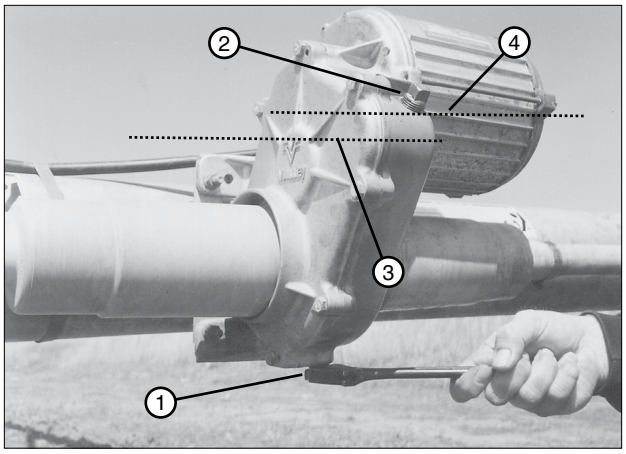


Figure 67-1 1. Drain Plug 2. Fill Plug 3. Oil Level 4. Bottom of Fill Plug Hole

NOTE

- **OIL LEVEL SHOULD BE 1-7/8 IN (48 MM) BELOW FILL PLUG WHEN FULL.**

Special Dipstick for Checking Oil Level:

- **The dipstick is not part of the gearmotor plug.**
- **Remove gearmotor plug and insert dipswitch to check oil level.**
  - »**Low oil condition would be no oil on stick.**
  - »**High oil condition would be oil above the indicator hole.**
- **Dipstick part number is 0998886.**

⚠ WARNING

- **INPUT SEAL FAILURE CAN OCCUR IF OIL CAPACITY IS EXCEEDED.**

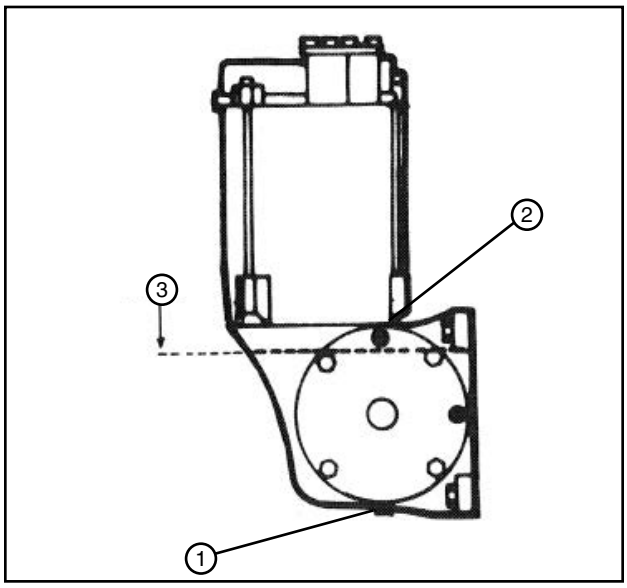


Figure 67-2 1. Drain Plug 2. Fill Plug 3. Oil Level

Worm Gearmotor

After EACH season of operation, change the oil in all of the worm gearmotor gearboxes.

1. Remove the drain plug and the fill plug. Drain the oil and install the drain plug. See Figure 67-2.

NOTE

- **Use only Valley Gear Lube. Other brands of lubricants may contain corrosive extreme pressure additives, which may damage bronze worm gears.**

2. Fill the gearbox to within 1/2 in (12.7 mm) of the bottom of the fill plug hole with Valley Gear Lube. The capacity of the gearbox is approximately 1 quart (0.9 liter). See Figure 67-2.

MAINTENANCE

Tire and Wheel

Towable Hub Lubrication

The towable hubs should be greased at least once a year with water resistant lithium based grease.

This must be done whether the pivot has been towed or not during the season.

The grease fitting is located on the end of the hub. Refill the bearing cavity using a grease gun. See Figure 68-1.

When the cavity is full, grease will cream around the seal area. Greasing the hub will also help push out any water which may have accumulated in the hub.

Wheel Lug Nut Torque

Wheel lug nuts should be torqued to 125 lb-ft (169.47 N·m). See Figure 68-1.

Check the wheel lug nut torque annually, preseason; at spring start-up.

Tire Pressures

Proper tire pressure is important! Operating with low tire pressure will damage the tires and the drive train.

Check tire pressure several times a year:

- Pre-season: At spring start-up.
- During-season: Check tire pressure monthly.
- Post-season: When performing fall winterization.

For the correct tire pressure refer to the decal on the rim or the tire pressure chart. See Figure 68-2.

⚠ WARNING

•TIRES ARE SHIPPED AT A PRESSURE OF 30 TO 35 PSI (206 TO 241 KPA).

•BE SURE THE TIRES HAVE BEEN DEFLATED TO THE CORRECT PRESSURE (SHOWN ON DECAL) BEFORE THE TIRE IS USED.

NOTE

•When replacing tires be sure the ply rating of the new tire is equal to or greater than the ply rating of the old tire.

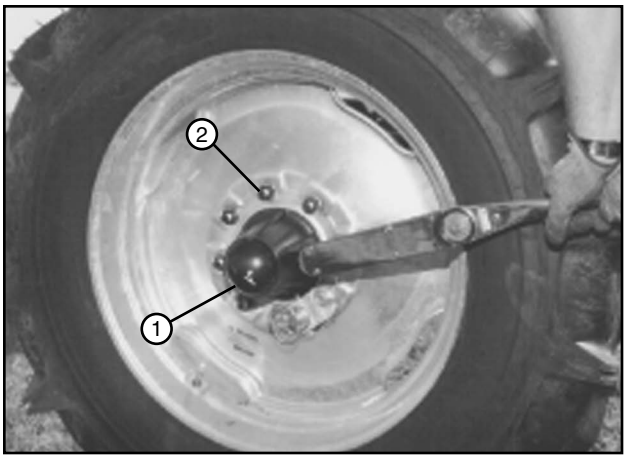


Figure 68-1 1. Grease Fitting
2. Wheel Lug Nut

TIRE PRESSURE TABLE

Span Drive Units			
Tire Size	Pounds per Square Inch	Kilo pascal	Bar
(Inches)	(PSI)	(kPa)	(bar)
11 X 22.5 Tire	34	234	2.3
11.2 X 24 Tire	34	234	2.3
14.9 X 24 Float Tire	18	124	1.2
14.9 X 24 Turf Tire	18	124	1.2
16.9 X 24 Turf Tire	18*	124	1.2
18.4 X 26 Tire	16	110	1.1
11.2 X 38 Tire	23	158	1.5
11L X 15 Implement Tire (4 Wheel E-Z Tow Only)	28	206	2.1

Figure 68-2 *Tire pressure may be reduced to 16 PSI (110 kPa) for increased flotation.

Barricade

Maintain the barricade structure and area.

Inspect the barricade structure for failure and tighten any loose hardware completely.

Ensure that the actuator arm contacts the tripping structure. Under certain conditions, soil may build up in the wheel track resulting in a ramp effect. This may allow the actuator arm to go over the top of the structure which trips the actuator arm. See Figure 69-1.

Should this happen, the machine will not stop but continue to move and can result in damage to the machine. Remove any build up of soil in the barricade area.

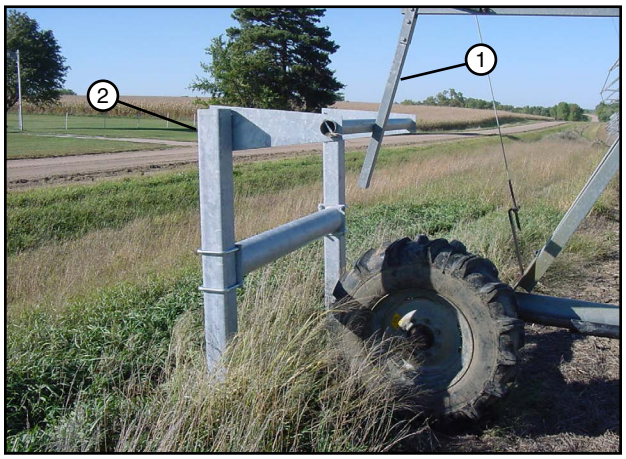


Figure 69-1 1. Actuator Arm
2. Barricade

Wheel Tracks

It is important to maintain wheel tracks. See Figure 69-2.

- Ensure correct tire pressure to help reduce the possibility of deep wheel tracks.
- Wheel track depth:
  - » Regular drive units must not exceed 4 in (101 mm).
- Wheel track depth can be controlled by various methods, which include larger tires, dry wheel track sprinkler packages, boombacks, wide-flat berms, drag socks, etc.

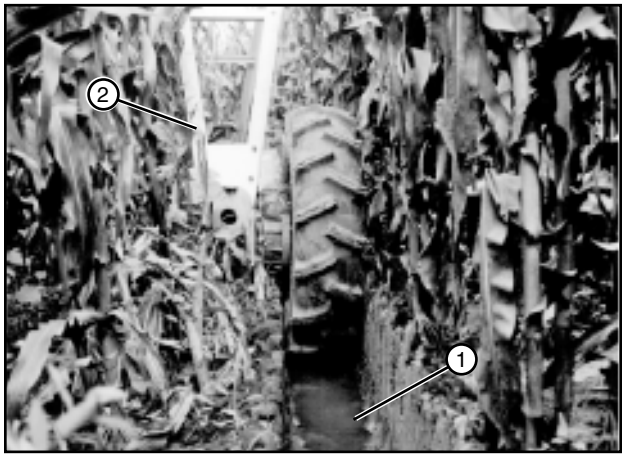


Figure 69-2 1. Wheel Track
2. Drive Unit

Engine/Generator

Refer to the Owner's Manual supplied with engine/generator for specific details on maintenance, operation, and winterizing of the engine/generator.

⚠ CAUTION

• A PARTIALLY FILLED FUEL TANK WILL PERMIT CONDENSATION WHICH WILL CONTAMINATE THE FUEL AND ACT TO DAMAGE THE INJECTION PUMP AND INJECTORS.

Miscellaneous

Flex Hose Replacement

If a flex hose must be replaced, loosen the two clamps to remove the old flex hose and insert the new one. No extra support is needed while making the changes. See Figure 70-1.

When installing or tightening the hose clamps always place the bolts and fasteners on the opposite side of the control rod. Under certain terrain conditions the bolts could interfere with the machine's alignment if positioned on the same side as the control rod. See Figure 70-1.

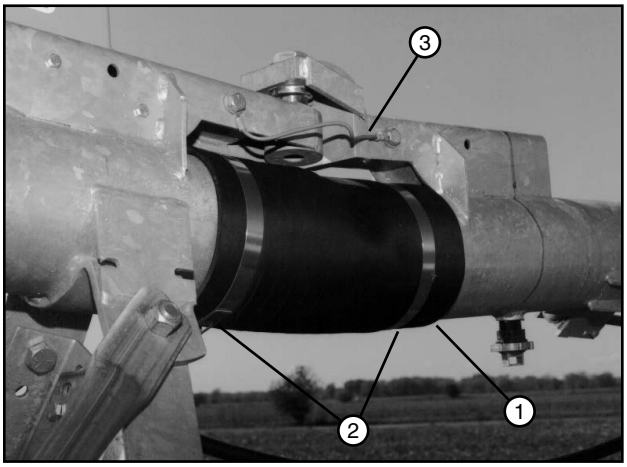


Figure 70-1 1. Flex Hose
2. Hose Clamp
3. Bonding Ground Wire

Bonding Ground Wire

Bonding ground wire **MUST** be installed for proper ground between individual spans and the pivot. See Figure 70-1.

Electrical and Grounding Conductors

Check the condition of all electrical and grounding conductors regularly. See Figure 70-2.

Have your local Valley dealer repair or replace broken conduit and electrical wire that has worn or cracked insulation.

Always be sure the ground wire is securely attached to both the ground rod and the ground lug on the pivot.

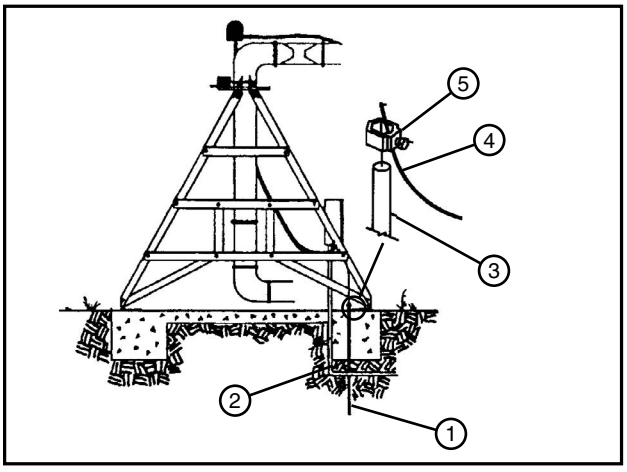


Figure 70-2 1. Ground Rod Installation
2. Service Conductor
3. Copper Ground Rod
4. Copper Ground Wire
5. Clamp

Pivot Swivel Lubrication

The pivot swivel should be greased every 5 to 7 revolutions with water resistant lithium based grease. See Figure 70-3.

Greasing the pivot swivel regularly reduces the possibility of binding that can cause the pivot to move erratically. When a resolver is used for position sensing the erratic movement can cause incorrect position readings.

The grease fittings are located on the side of pivot near the pivot swivel. See Figure 70-3.

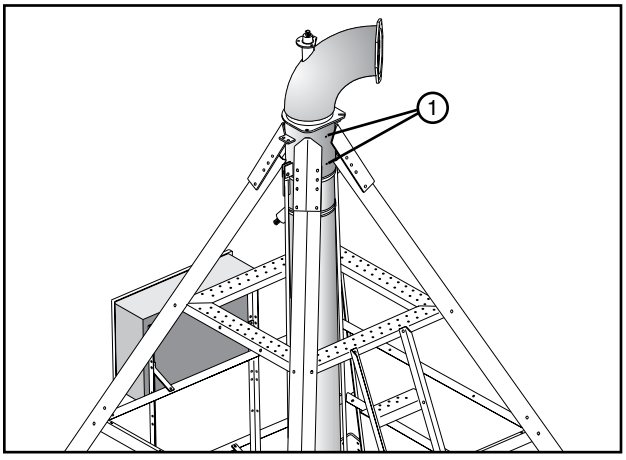


Figure 70-3 1. Grease Fitting

Miscellaneous

2 Wheel E-Z Tow Pivot Swivel Bearing Lubrication

Lubricate the 2 wheel E-Z Tow pivot swivel bearings and rollers with Water Resistant Lithium based grease every 5 to 7 revolutions.

1. Lubricate three (3) upper swivel rollers. See Figure 71-1.
2. Lubricate two (2) grease fittings on the upper bearing. See Figure 71-2.
3. Lubricate two (2) grease fittings on the lower bearing. See Figure 71-3.

Figure 71-1 1. Upper Swivel Roller

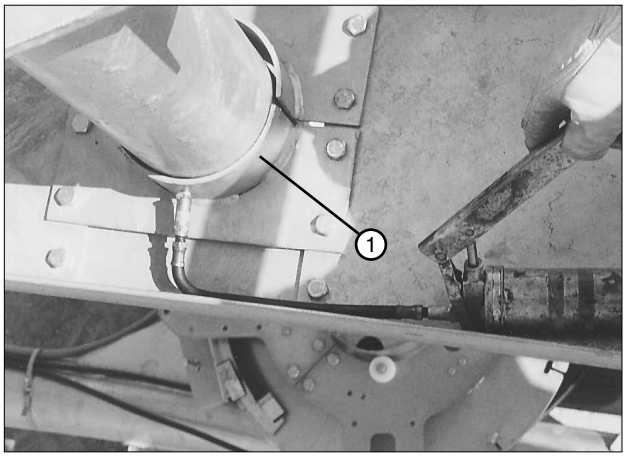


Figure 71-2 1. Upper Bearing

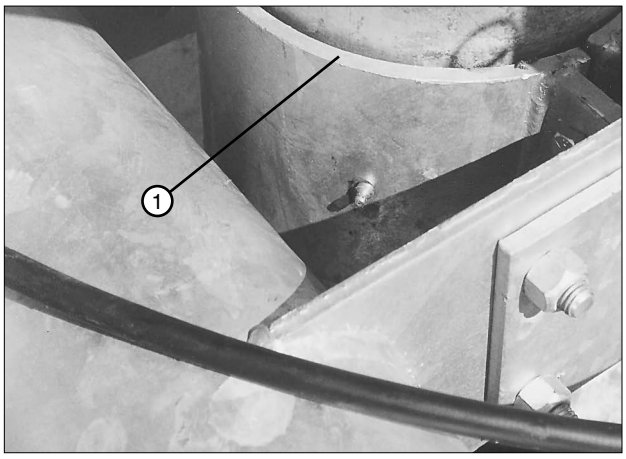


Figure 71-3 1. Lower Bearing

Miscellaneous
Standard and 4 Wheel E-Z Tow Pivot
Pivot Mounted Auto Reverse Adjustment

The end gun shut off locations are adjusted by cutting and splicing the rubber ramps as illustrated in Figure 72-1.

The ramps are then placed on the inside of the ring as illustrated in Figure 72-2.

The ramps represent the locations where the end gun will turn off.

NOTE

- **Make sure of proper contact between ramps and switch rollers.**

Notice that the control box is located 180 degrees from the direction the pivot extends from the elbow. See Figure 72-2.

Therefore, the ramps must be placed 180 degrees opposite the action point. Figure 72-3 illustrates the ramp placement to shut the end gun off at the highway location.

NOTE

- **Very small changes in the location of the end gun shut off ramp can result in MUCH greater distance changes at the outer end of the machine.**

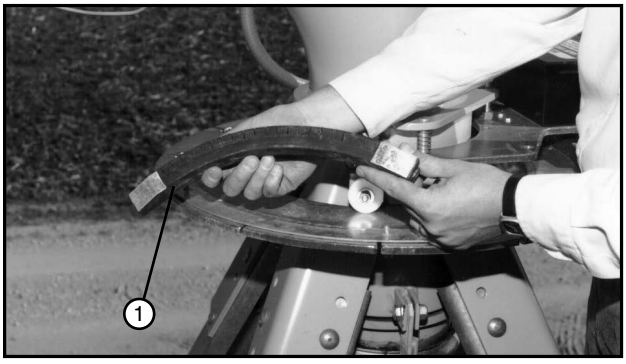


Figure 72-1 1. Rubber Ramp
Cut and splice rubber ramps as required.

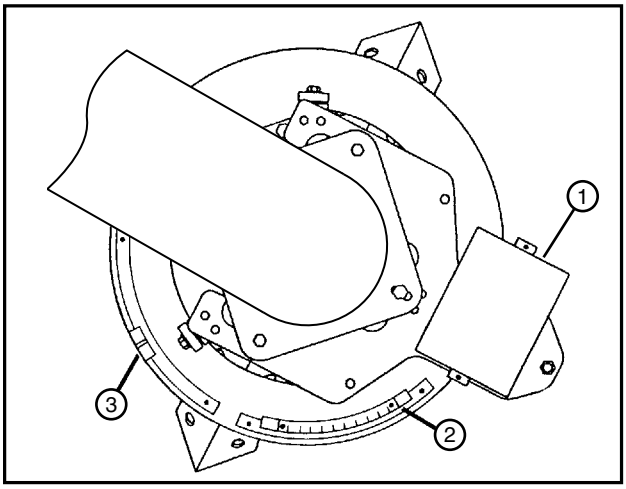


Figure 72-2 1. End Gun and Stop In Slot Control Box
2. End Gun Shut Off Ramp (on inside of ring)
3. Stop In Slot Ramp (on outside of ring)

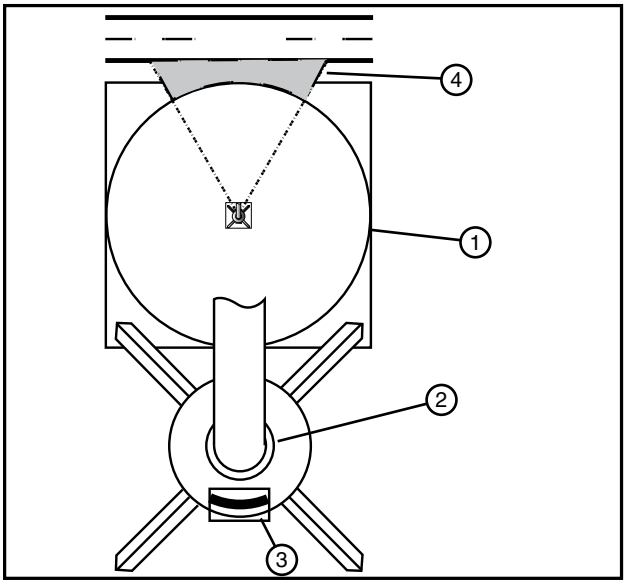


Figure 72-3 1. Field 3. Ramp Location
2. Pivot 4. End Gun Shut Off Area

Miscellaneous

Standard and 4 Wheel E-Z Tow Pivot Mechanical Stop In Slot Adjustment

The stop in slot shut off location is set by adjusting the ramp as illustrated in Figure 73-1.

The ramp is placed on the outside of the ring as illustrated in Figure 73-1.

The ramp represents the location where the pivot will Stop.

The machine will be shut down when the stop in slot micro switch contacts the stop in slot ramp. The micro switch should click when the switch rollers are halfway up or down the respective sloped portion of the ramp.

NOTE

- **Make sure of proper contact between ramps and switch rollers.**

Notice that the control box is located 180 degrees from the direction the pivot extends from the elbow. See Figure 73-1.

Therefore, the ramp must be placed 180 degrees opposite the action point. Figure 73-2 illustrates the ramp placement to shut the machine down at the pivot road.

NOTE

- **Very small changes in the location of the stop in slot shut off ramp can result in MUCH greater distance changes at the outer end of the machine.**

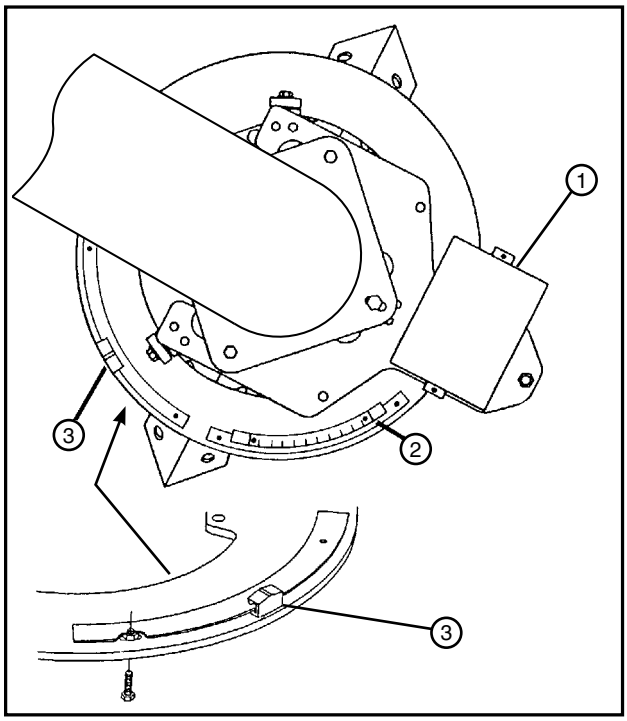


Figure 73-1 1. End Gun and Stop In Slot Control Box
2. End Gun Shut Off Ramp (on inside of ring)
3. Stop In Slot Ramp (on outside of ring)

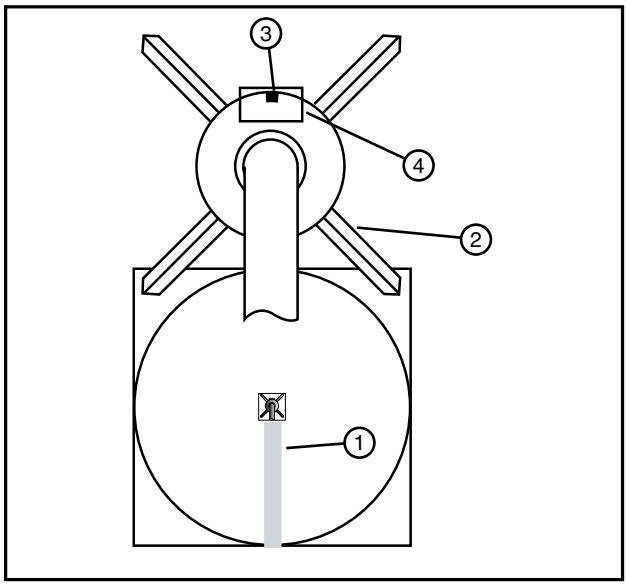


Figure 73-2 1. Pivot Road
2. Pivot
3. Stop In Slot Ramp Location
4. End Gun and Stop In Slot Control Box

Miscellaneous

Standard and 4 Wheel E-Z Tow Pivot

Pivot Mounted Auto Reverse Adjustment

Two heavy duty limit switches are mounted by a bracket attached to the split ring. The switches remain stationary with the riser pipe. See Figure 74-1.

The actuator bolt is mounted to roller plate. See Figure 74-1.

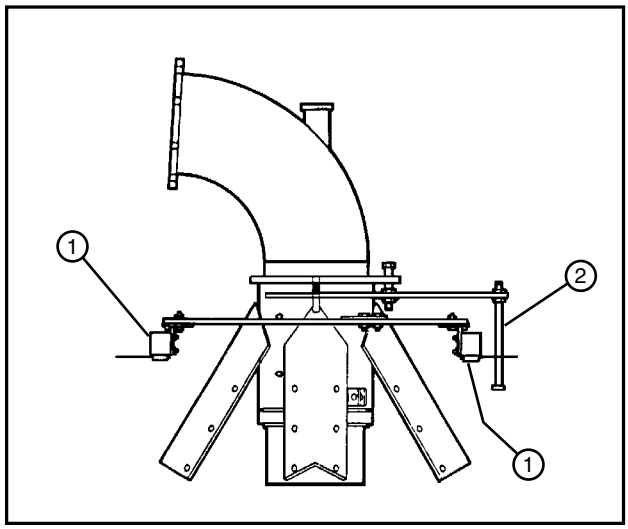


Figure 74-1 Center Pivot Mounted Auto Reverse
1. Reversing Switch
2. Actuator Bolt

Switch Adjustment

Position each of the switch brackets in the appropriate position on the split ring. Adjust the switches in the slots of the actuator brackets corresponding to the position where the center pivot is to change directions.

NOTE

- **A very small change in the location of either switch can result in MUCH greater change at the outer end of the machine. For example, 1/16 of an inch at the pivot equates to approximately 7 feet at the outer end of a typical quarter section center pivot.**

After the auto reverse switches have been installed and initially adjusted, observe the pivot as it reverses direction to insure it does not travel beyond the desired reversing point(s). If necessary, readjust the switch(s) until the center pivot reverses at the desired point(s).

Miscellaneous

2 Wheel E-Z Tow Pivot

Mechanical End Gun Ramp Adjustment

The end gun shut off locations are adjusted by cutting and splicing the rubber ramps as illustrated in Figure 75-1.

The ramps are then placed on the inside of the ring as illustrated in Figure 75-1.

The ramps represent the locations where the end gun will turn off.

NOTE

- **Make sure of proper contact between ramps and switch rollers.**

Notice that the control box is located 180 degrees from the direction the pivot extends from the elbow. See Figure 75-1.

Therefore, the ramps must be placed 180 degrees opposite the action point. Figure 75-2 illustrates the ramp placement to shut the end gun off at the highway location.

NOTE

- **Very small changes in the location of the end gun shut off ramp can result in MUCH greater distance changes at the outer end of the machine.**

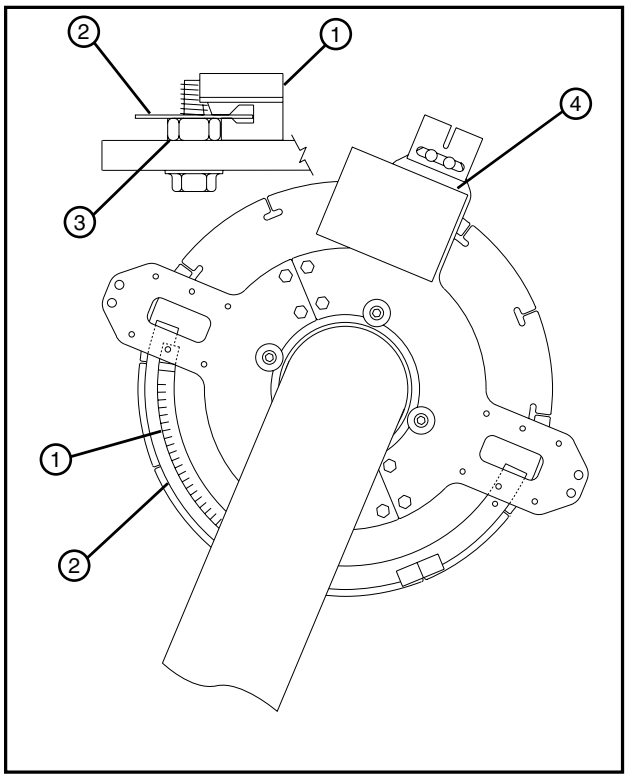


Figure 75-1
1. End Gun Ramp (placed on inside of ring)
2. Mounting Ring
3. 3/8 in Hex Nut (for spacer)
4. End Gun and Stop In Slot Control Box

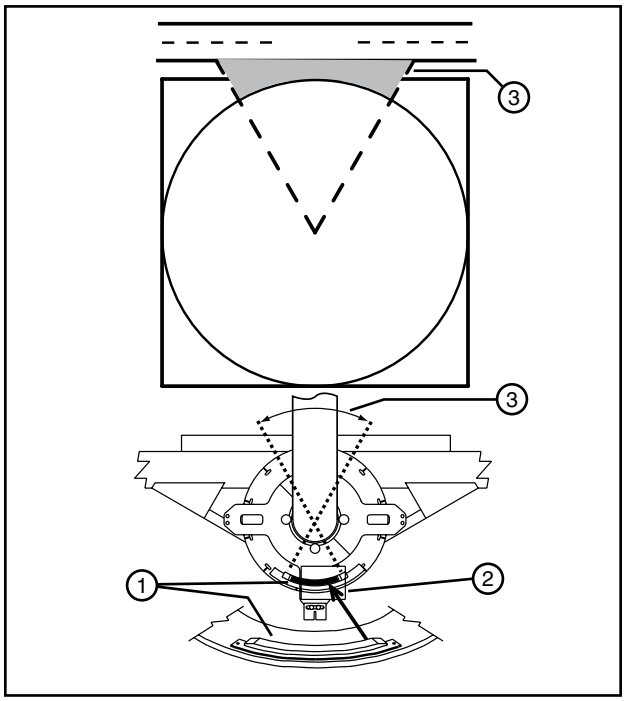


Figure 75-2
1. End Gun Ramp
2. End Gun and Stop In Slot Control Box
3. End Gun Shutoff Area

Miscellaneous
2 Wheel E-Z Tow Pivot
Mechanical Stop In Slot Adjustment

The stop in slot shut off location is set by adjusting the ramp as illustrated in Figure 76-1.

The ramp is placed on the outside of the ring as illustrated in Figure 76-1.

The ramp represents the location where the pivot will Stop.

The machine will be shut down when the stop in slot micro switch contacts the stop in slot ramp. The micro switch should click when the switch rollers are halfway up or down the respective sloped portion of the ramp.

NOTE

•Make sure of proper contact between ramps and switch rollers.

Notice that the control box is located 180 degrees from the direction the pivot extends from the elbow. See Figure 76-1.

Therefore, the ramp must be placed 180 degrees opposite the action point. Figure 76-2 illustrates the ramp placement to shut the machine down at the pivot road.

NOTE

•Very small changes in the location of the stop in slot shut off ramp can result in MUCH greater distance changes at the outer end of the machine.

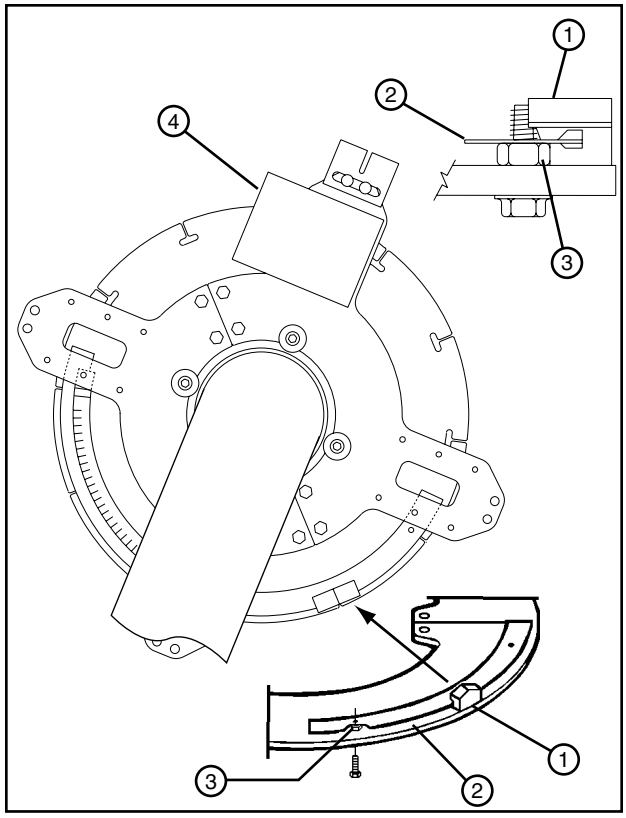


Figure 76-1 1. Stop In Slot Ramp (placed on outside of ring)
2. Mounting Ring
3. 3/8 in Hex Nut (for spacer)
4. End Gun and Stop In Slot Control Box

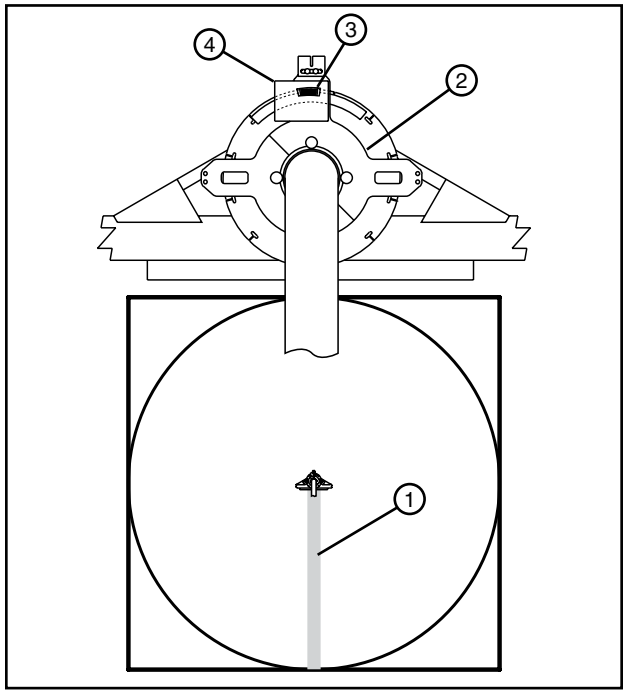


Figure 76-2 1. Pivot Road
2. Pivot
3. Stop In Slot Ramp Location
4. End Gun and Stop In Slot Control Box

Miscellaneous

2 Wheel E-Z Tow Pivot

Pivot Mounted Auto Reverse Adjustment

Two heavy duty limit switches are mounted by a bracket attached to the roller plate.

The upper or top switch (auto reverse) changes the direction of the center pivot from forward to reverse operation. See Figure 77-1.

The lower or bottom switch (auto forward) changes the direction of the center pivot from reverse to forward operation. See Figure 77-1.

Actuator bolts are mounted to actuator brackets that are bolted on the split ring. The actuator bolts remain stationary with the riser pipe.

The actuator bolt that points upward, changes the direction of operation of the center pivot from reverse operation to forward operation. See Figure 77-1.

The actuator bolt that points downward, changes the center pivot direction from forward operation to reverse operation. See Figure 77-1.

Actuator Bolt Adjustment

Position each of the actuator brackets in the appropriate position on the split ring. Adjust the actuator bolts in the slots of the actuator brackets corresponding to the position where the center pivot is to change directions.

NOTE

- **A very small change in the location of either actuator bolt causes a MUCH larger change at the outer end of the machine. For example, 1/16 of an inch at the pivot equates to approximately 7 feet at the outer end of a typical quarter section center pivot.**

After the auto reverse actuator bolts have been installed and initially adjusted, observe the pivot as it reverses direction to insure it does not travel beyond the desired reversing point(s). If necessary, readjust the actuator bolt(s) until the center pivot reverses at the desired point(s).

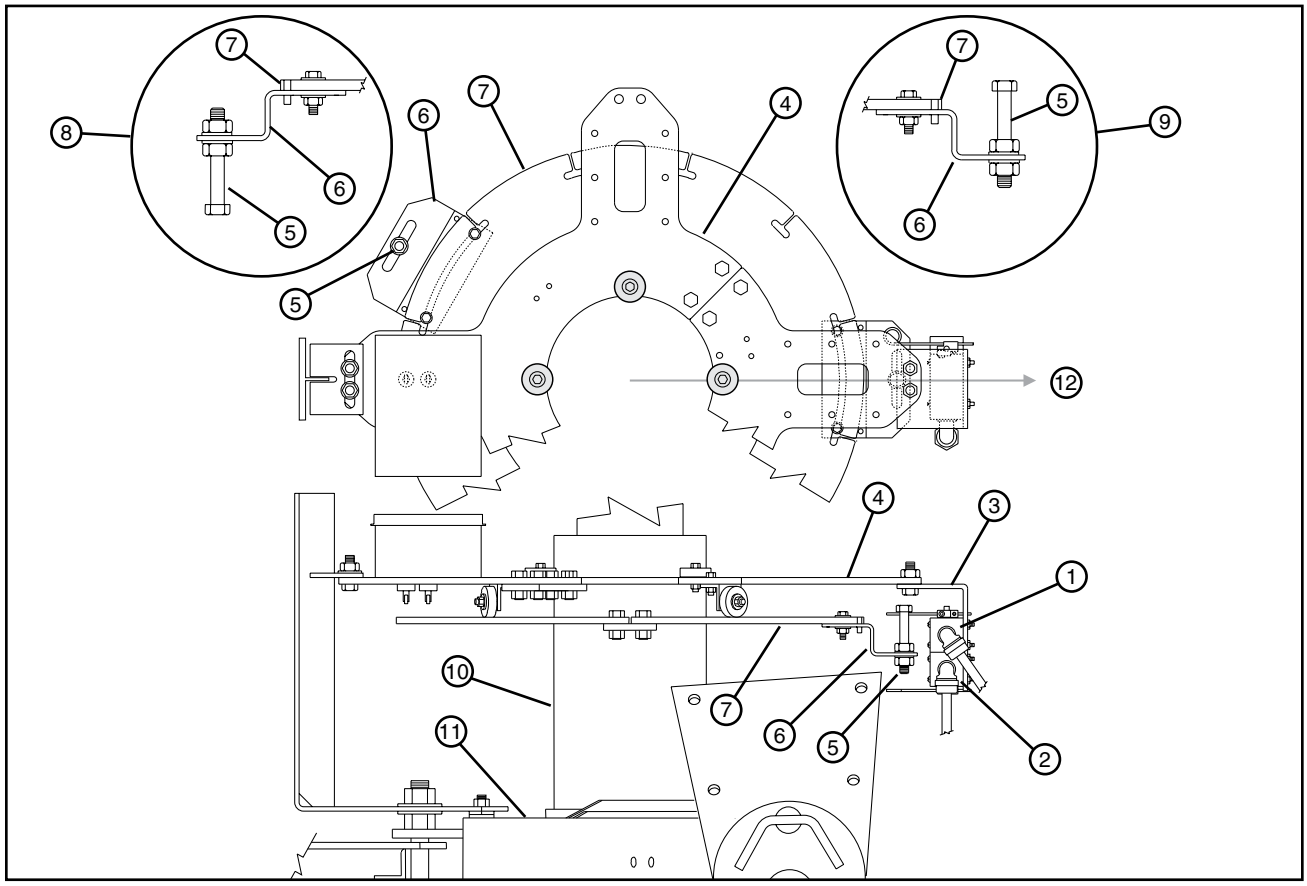


Figure 77-1
1. Auto Reverse Switch (Top)
2. Auto Froward Switch (Bottom)
3. Bracket
4. Roller Plate
5. Actuator Bolt
6. Actuator Bracket
7. Split Ring
8. Auto Forward Actuator Bolt/Bracket
9. Auto Reverse Actuator Bolt/Bracket
10. Riser
11. Basebeam
12. Pivot Position

MAINTENANCE

Miscellaneous
2 Wheel E-Z Tow Pivot
Pivot Mounted Auto Reverse Example Settings

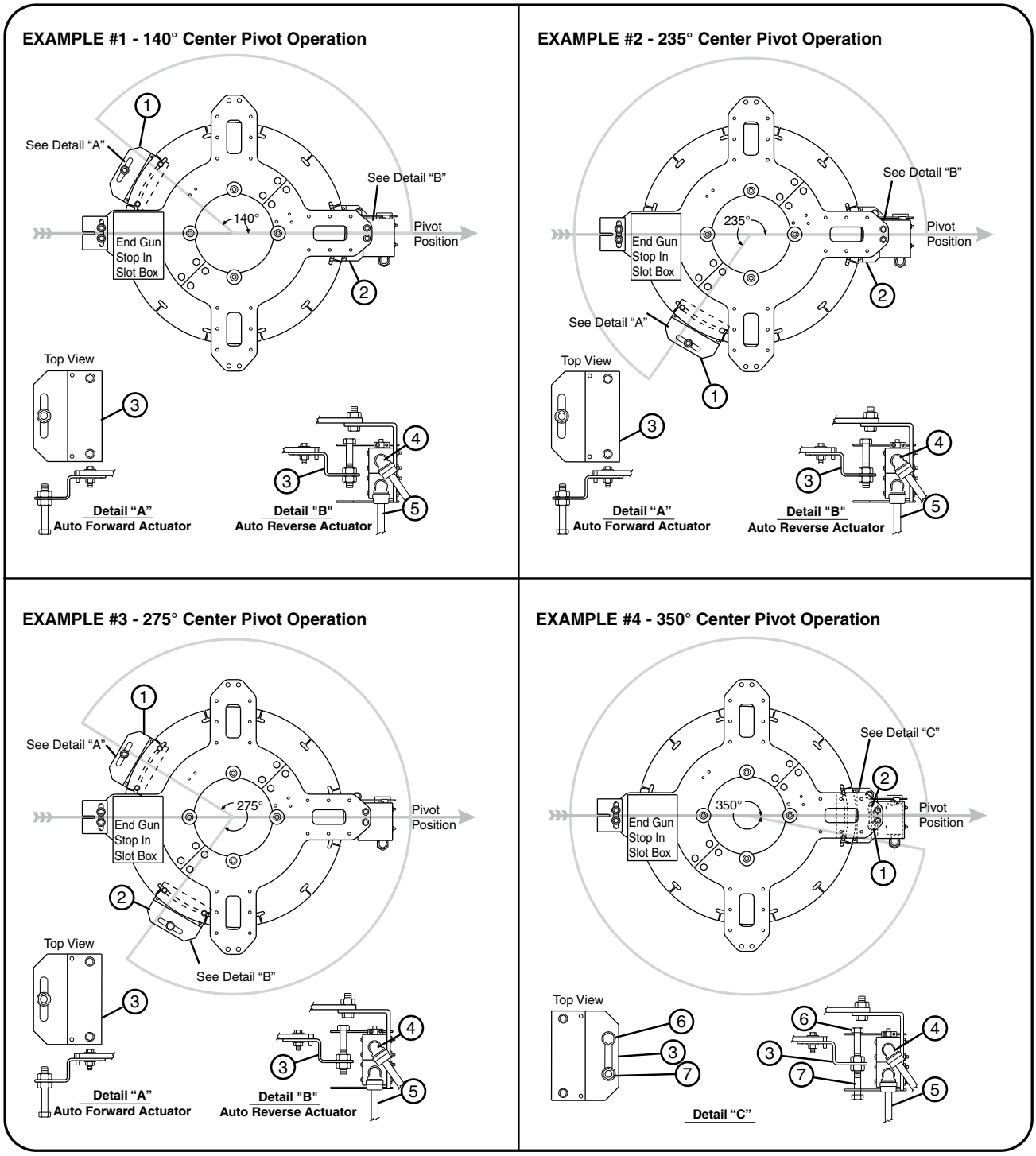


Figure 78-1
1. Auto Forward (Reverse to Forward Actuator- Bolt Down)
2. Auto Reverse (Forward to Reverse Actuator- Bolt Up)
3. Actuator Plate
4. Auto Reverse Switch (Forward to Reverse)
5. Auto Forward Switch (Reverse to Forward)
6. Auto Reverse Actuator Bolt (Up)
7. Auto Forward Actuator Bolt (Down)

Detail "A" - Auto Forward (Reverse to Forward Operation - Actuator Bolt Positioned Down).
Detail "B" - Auto Reverse (Forward to Reverse Operation - Actuator Bolt Positioned Up).
Detail "C" - Auto Forward (Reverse to Forward Operation) and Auto Reverse (Forward to Reverse Operation) both actuator bolts mounted on one plate. Second plate not used.

Miscellaneous

End Gun Arc Setting Example

An end gun is installed at the end of the machine and is used to increase the area irrigated beyond the end of the machine. See Figure 79-1.

The end gun must be set to cover a specified area to ensure the best uniformity. This area is determined by two angles – the Forward and Backward end gun angles which are sometimes referred to as the end gun arc settings.

A line on the sprinkler chart specifies the correct end gun arc settings for the machine: See Figure 79-2.

END GUN ARC SETTING EXAMPLE:

FORWARD ANGLE = 45

BACKWARD ANGLE = 85

IMPORTANT: This is an example only. Refer to the sprinkler chart for each pivot to determine the correct end gun arc settings. These settings should initially be set by your Valley Dealer at time of installation and start up.

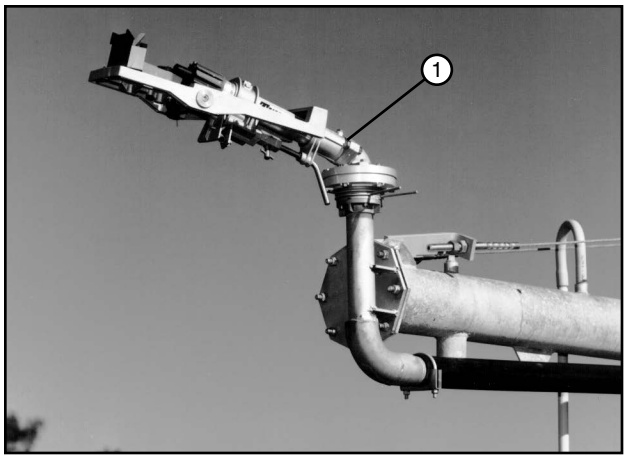


Figure 79-1 1. End Gun

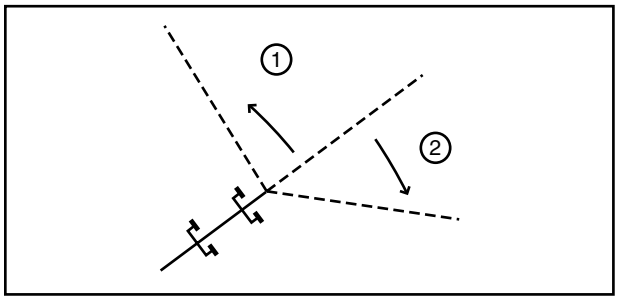


Figure 79-2 1. Backward Angle = 85°
2. Forward Angle = 45°

MAINTENANCE

Machine Alignment

The machine is initially aligned when it is installed. However, for various reasons it may become necessary to adjust the alignment.

⚠ WARNING

•DO NOT ALIGN THE MACHINE WHEN THERE ARE ESTABLISHED WHEEL TRACKS. WHEEL TRACKS MUST BE REMOVED BEFORE ALIGNING THE MACHINE TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE.

Alignment should be checked annually and adjusted before there are wheel tracks.

Alignment is an important factor in the operation of the machine. A misaligned machine develops very high stresses which could cause structural damage and reduce expected motor and gearbox life.

A leading bow creates extreme tension or linear pulling force over the entire machine. See Figure 80-1.

A trailing bow creates extreme compressing or linear pushing force on the entire machine. When the spans are compressed, they lose their inherent strength. See Figure 80-1.

⚠ WARNING

•A TRAILING BOW IN EITHER DIRECTION IS NEVER ACCEPTABLE AND MAY RESULT IN SEVERE STRUCTURAL DAMAGE.

NOTE

•If the irrigation machine is operated in forward and reverse, a leading bow in one direction becomes a trailing bow in the other direction. Therefore, such a machine should be aligned to operate in as straight a line as possible.

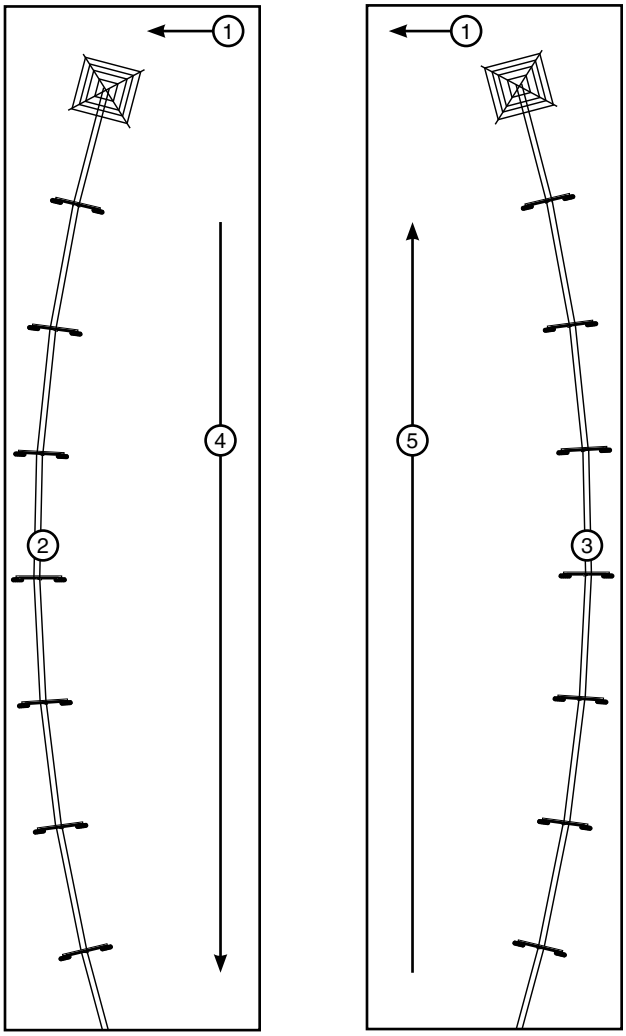


Figure 80-1
1. Direction of Travel
2. Leading Bow
3. Trailing Bow
4. Direction of Pulling
5. Direction of Pushing

Machine Alignment

Tower Alignment - Three Tower Method

The three tower alignment method is used to identify towers that start or stop in a position that is either leading or trailing in relationship to the other two towers.

This procedure works best with two people:

- One person at tower 1 sighting the tower alignment.
- One person at tower 2 adjusting the alignment.

1. At the control panel, set the percent timer at 50% and start the machine in either the forward or the reverse direction.
2. Begin the alignment procedure from the end tower. Identify the first three towers as 1, 2, and 3. Use towers 1 and 3 to align tower 2. See Figure 81-1.
3. Sight an imaginary center line between the center of the tower drive motor 1 to the center of the tower drive motor 3. See Figure 81-1.
4. Observe the movement of the tower drive motor 2. It should start and stop equal distances from the imaginary center line. See Figure 81-1.

   If it does not, the alignment linkage at tower box 2 needs to be adjusted.
5. If adjustments are necessary, stop the machine and make adjustments Adjustment procedures, located in the Alignment Section of this manual.
6. After tower 2 is aligned, move in to the next tower and repeat steps 3, 4, and 5 of this procedure.

   Continue this process to the pivot end of the machine.

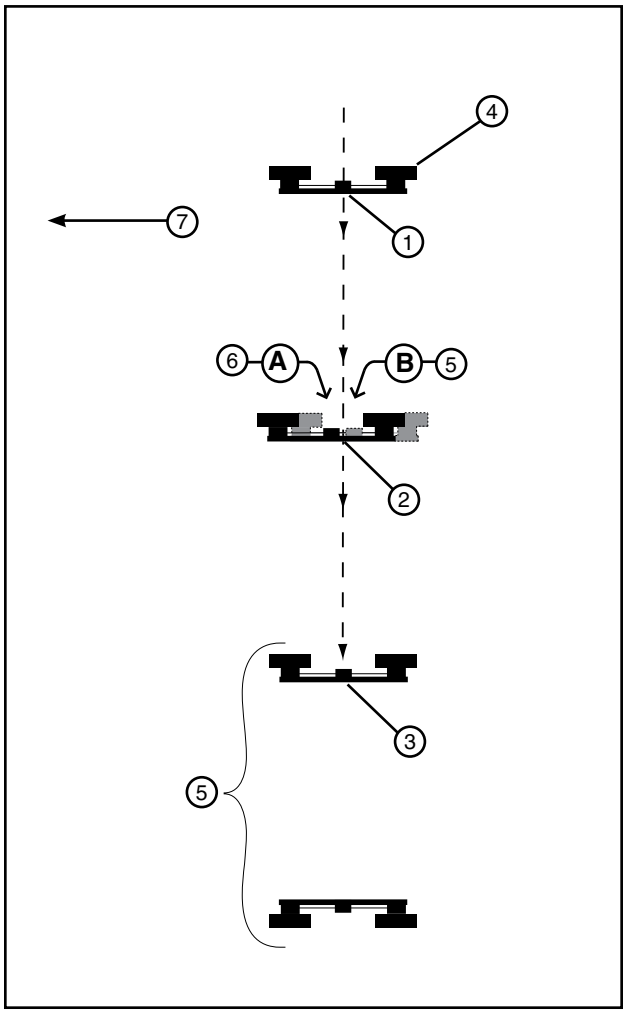


Figure 81-1
1. Tower 1
2. Tower 2
3. Tower 3
4. End Tower
5. Start
6. Stop
7. Direction of Travel

Machine Alignment
Standard Alignment Adjustment

1. Loosen the hardware securing control bar to the switch pivot arm. See Figures 82-1 and 82-2.
2. Adjust the jam nuts clockwise or counter-clockwise no more than 1/4 of a turn at one time. See Figures 82-1 and 82-2, and the adjustment chart below.

ADJUSTMENT CHART

Direction of travel	Condition	Adjust Nuts
Forward	Leading Bow	*Clockwise
	Trailing Bow	**Counter-clockwise
Reverse	Leading Bow	**Counter-clockwise
	Trailing Bow	*Clockwise

*Clockwise - Adjust the nut further onto the threaded stud as if tightening it.

**Counter-clockwise - Back the nut off of the threaded stud as if loosening it.

⚠ CAUTION

- **NEVER ADJUST THE JAM NUTS MORE THAN 1/4 OF A TURN AT ONE TIME.**
- **ALWAYS RE-TIGHTEN THE JAM NUTS AND ALLOW THE TOWER TO CYCLE TWICE (START AND STOP) TO DETERMINE IF THE TOWER IS STILL LEADING OR TRAILING.**

3. Tighten jam nuts.
4. Tighten hardware to secure control bar to switch pivot arm.

   Allow tower to cycle (start and stop) twice to determine if the tower is still running ahead or behind. Adjust the jam nuts as needed until the tower is in alignment.
5. Continue the Three Tower Method of alignment down the entire length of the machine, make adjustments as necessary to individual towers.

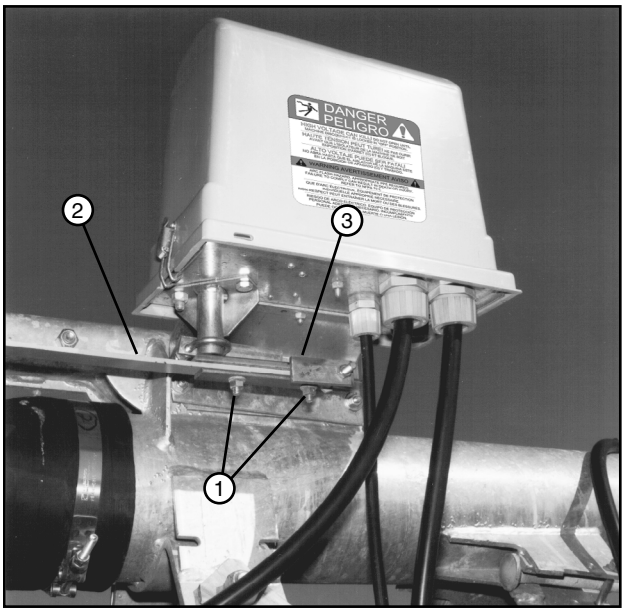


Figure 82-1 1. Hardware
2. Control Bar
3. Switch Pivot Arm

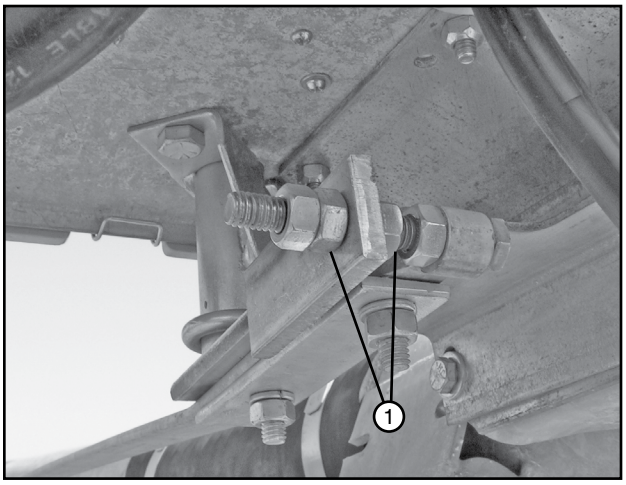


Figure 82-2 1. Jam Nut

Machine Alignment

Modified Alignment Adjustment

When a machine is equipped with modified alignment the tower box is located on the side of the tower with a mechanical linkage between the tower box and the control bar.

NOTE

•All adjustments shown are made from the tower box side of drive unit.

1. From the tower box side of drive unit, loosen the jam nut at each end of the connection rod. See Figures 83-1 and 83-2.
2. To adjust the distance between the control bar and the switch pivot arm, rotate the connection rod clockwise or counter-clockwise no more than 1/8 of a turn at one time. See Figures 83-1 and 83-2, and the adjustment chart below.

ADJUSTMENT CHART

Direction of travel	Condition	Adjust Nuts
Forward	Leading Bow	**Counter-clockwise
	Trailing Bow	*Clockwise
Reverse	Leading Bow	*Clockwise
	Trailing Bow	**Counter-clockwise

* Clockwise - From the tower box side of the drive tower, rotate the connection rod clockwise to increase the distance between the control bar and the switch pivot arm.

**Counter-clockwise - From the tower box side of the drive tower, rotate the connection rod counter-clockwise to decrease the distance between the control bar and the switch pivot arm.

⚠ CAUTION

•NEVER ADJUST THE CONNECTION ROD MORE THAN 1/8 OF A TURN AT ONE TIME.

•ALWAYS RE-TIGHTEN THE JAM NUTS AND ALLOW THE TOWER TO CYCLE TWICE (START AND STOP) TO DETERMINE IF THE TOWER IS STILL LEADING OR TRAILING.

3. Adjust the connection rod until the tower is in alignment.
   - Sensitivity can be adjusted by repositioning the connection rod. See Figure 83-3.
4. Continue the Three Tower Method of alignment down the entire length of the machine, make adjustments as necessary to individual towers.

Figure 83-1 1. Tower box side of drive unit

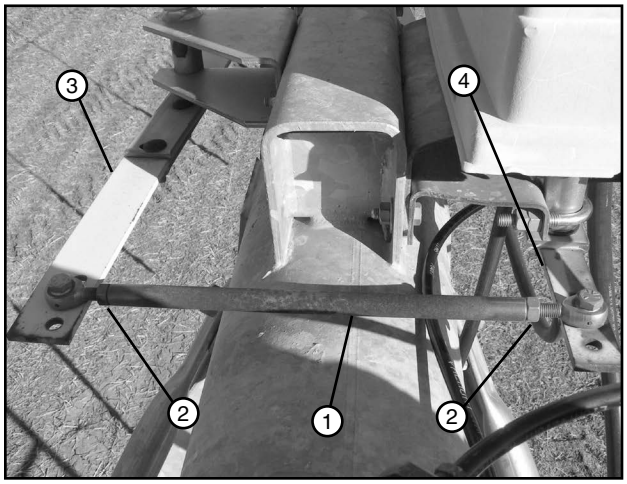


Figure 83-2 1. Connection Rod 3. Control Bar
2. Jam Nut 4. Switch Pivot Arm

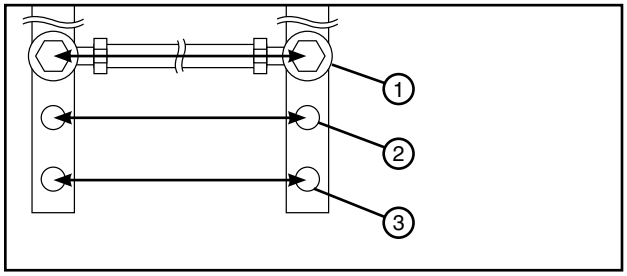


Figure 83-3 Connection Rod Sensitivity
Position 1 = Most Sensitive
Position 2 = Less Sensitive
Position 3 = Least Sensitive

Machine Alignment
Pivot Floating Alignment Adjustment

When a machine is equipped with pivot floating alignment the tower box is located on the yoke and tower box support with a mechanical linkage between the tower box switch pivot arm and the yoke control rod. See Figures 84-1 and 84-2.

NOTE

- **All adjustments shown are made from the tower box side of drive unit.**

1. Adjust nuts #1 and #2 as needed. Refer to the Adjustment Chart below and Figure 84-2.

ADJUSTMENT CHART

Direction of travel	Condition	Adjust Nuts
Forward	Leading Bow	**Counter-clockwise
	Trailing Bow	*Clockwise
Reverse	Leading Bow	*Clockwise
	Trailing Bow	**Counter-clockwise

*Clockwise - Adjust the nut further onto the threaded stud as if tightening it.

**Counter-clockwise - Back the nut off of the threaded stud as if loosening it.

⚠ CAUTION

- **NEVER ADJUST NUTS #1 AND #2 MORE THAN 1/4 TURN AT ONE TIME.**
- **ALWAYS RE-TIGHTEN THE JAM NUTS AND ALLOW THE TOWER TO CYCLE TWICE (START AND STOP) TO DETERMINE IF THE TOWER IS STILL LEADING OR TRAILING.**

2. Adjust nuts #1 and #2 until the tower is in alignment.
3. Continue the Three Tower Method of alignment down the entire length of the machine making adjustments as necessary to individual towers.

Figure 84-1

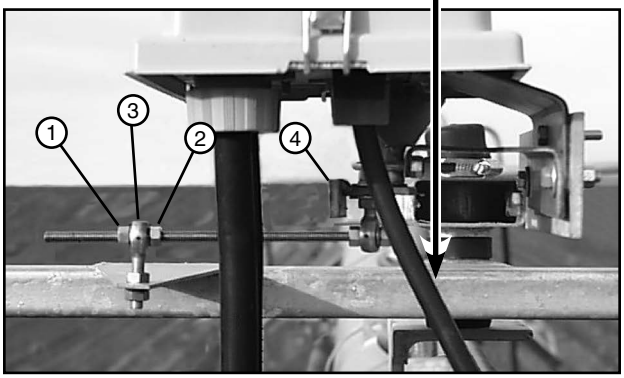


Figure 84-2 1. Nut #1 3. Yoke Control Rod
2. Nut #2 4. Switch Pivot Arm

Machine Alignment

Setting Alignment Cable Tension

4. Set alignment cable tension. Use a truss spreader part number 9360055 to check the alignment cable tension. The truss spreader is 115 in (292 cm) long and weighs 23.4 lb (10.6 kg). See Figure 85-1.
5. Position the truss spreader across the alignment cables at approximately 58 in (147 cm) from the drive unit ball and socket joint. See Figure 85-1.
6. Hold and support the truss spreader across the safety cables and measure and record the distance from the truss spreader to the span pipe without the full weight of the truss spreader. This is the ORIGINAL measurement. See Figure 85-1.

Alternate Method:

6. With a piece of string and a 3/4 in nut tied to each end, you can lay it over the cables and one man can measure the ORIGINAL measurement.
7. Lower the truss spreader onto the alignment cables and allow the alignment cables to support the full weight of truss spreader. See Figure 85-1.

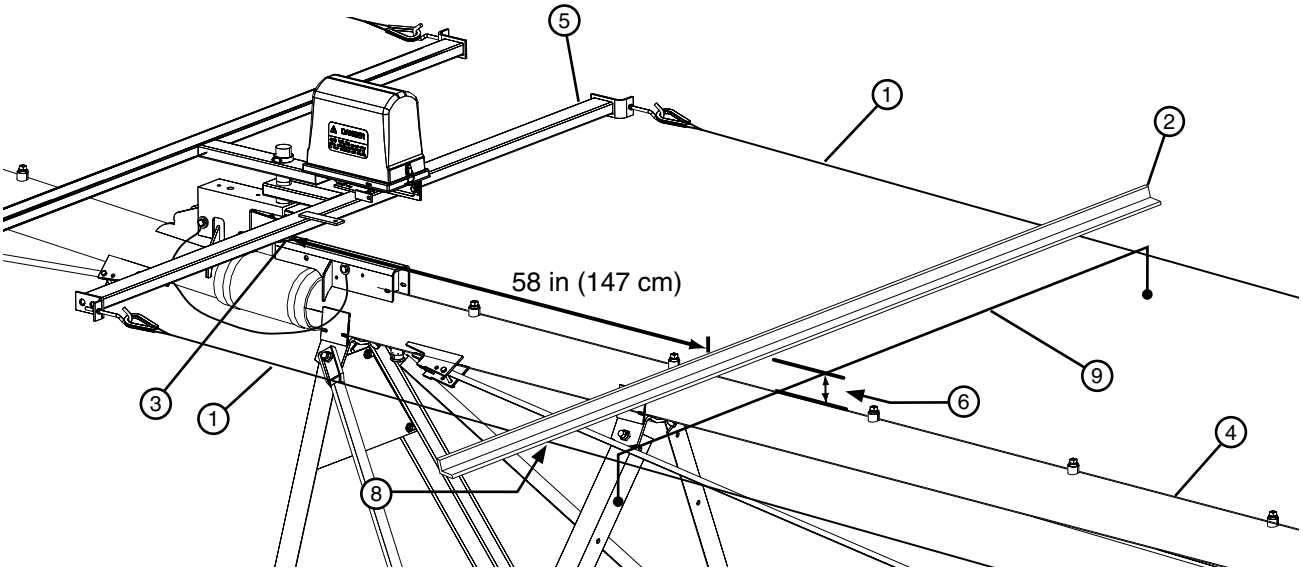


Figure 85-1
1. Alignment Cable
2. Truss Spreader
3. Ball and Socket Joint
4. Span Pipe
5. T-Bar
6. Original Measurement
7. Pivot
8. Do Not Deflect
9. Alternate Method

Machine Alignment
Setting Alignment Cable Tension (continued)

8. Measure and record the distance from the truss spreader to the span pipe. This is the DEFLECTED measurement. See Figure 86-1.
9. Subtract the DEFLECTED measurement from the ORIGINAL measurement. The difference should be approximately 1-3/4 in to 2 in (41 mm to 51 mm), if it's not, the hook bolts should be adjusted. See Figure 86-1.

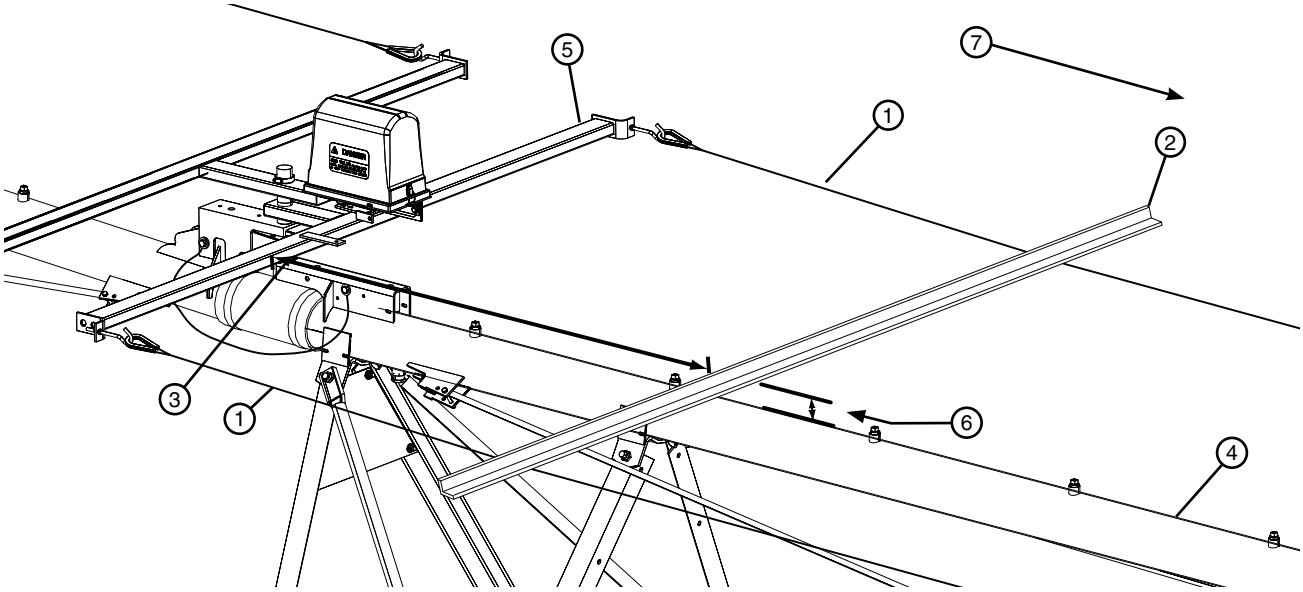


Figure 86-1
1. Alignment Cable
2. Truss Spreader
3. Ball and Socket Joint
4. Span Pipe
5. T-Bar
6. Deflected Measurement
7. Pivot

10. Adjust the hook bolts until the proper deflection of alignment cables is achieved and both the T-Bars are perpendicular (90 degrees) to the span pipe. See Figure 86-2.
11. After adjustment, tighten all hook bolt hardware completely.
12. Repeat steps 1 through 8 for each set of alignment cables.

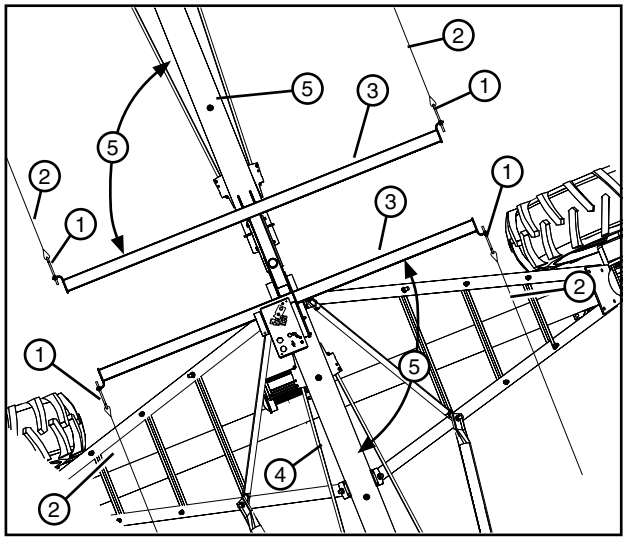
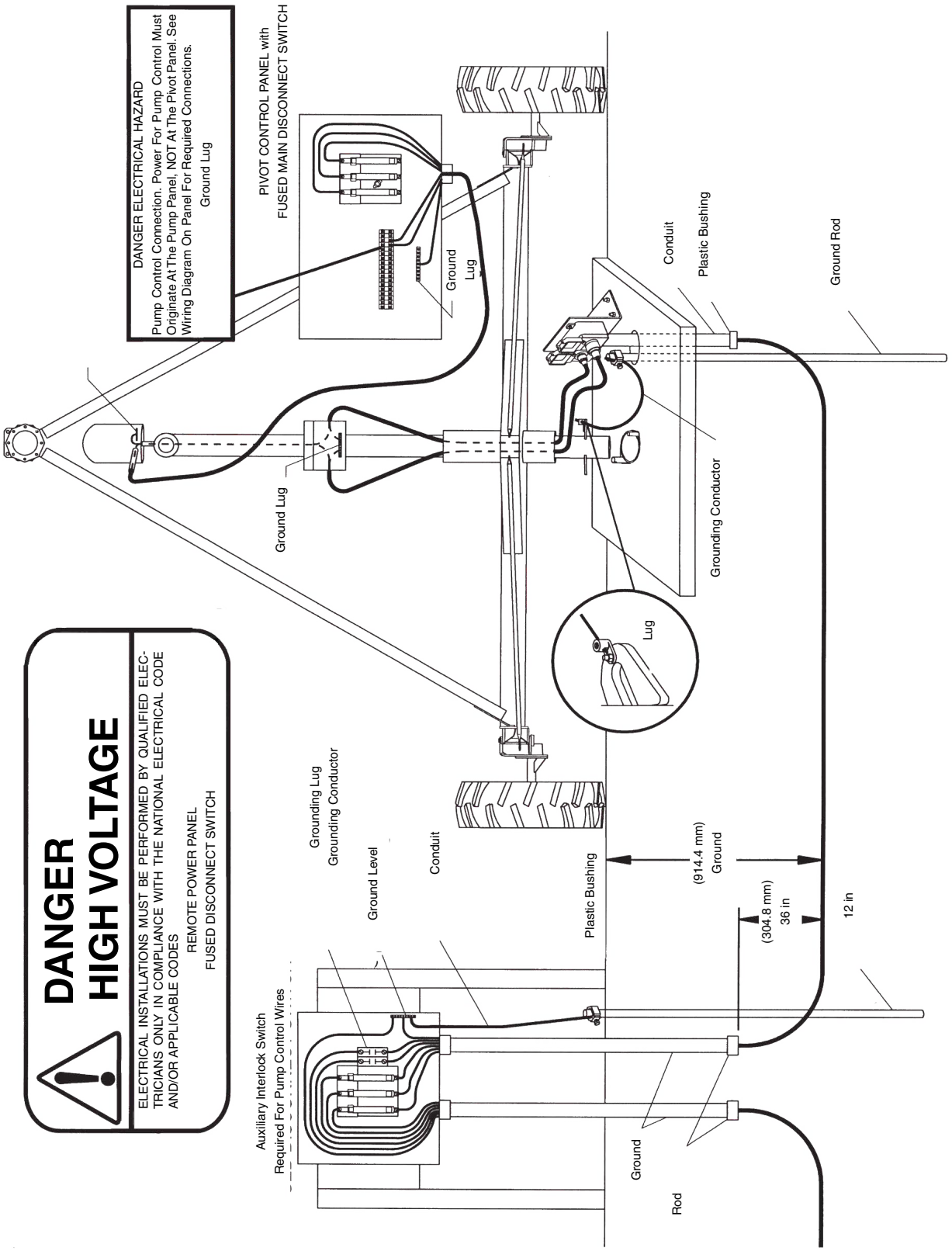


Figure 86-2
1. Hook Bolt
2. Alignment Cable
3. T-Bar
4. Span Pipe
5. 90 Degrees

2 Wheel E-Z Tow Power Supply Installation Example



Example of Recommended 2 Wheel E-Z Tow Power Supply Installation

Span Flushing Procedure

The purpose of flushing the machine is to remove sand and debris from the pipeline. Excessive accumulation of sand in the machine also adds weight and can cause structural damage to the machine.

The Flushing Process Should Be Performed:

- After system installation.
- After pump repair.
- After structural repair.
- Seasonally - prior to operating the system and after the operating season is over.
- As often as necessary according to debris or sand content in the water. Excessive sprinkler problems (clogging) could be an indication of high debris or sand content.

NOTE

•Excessive sprinkler problems (clogging) could be an indication of high debris or sand content.

⚠ DANGER

•DO NOT START THE FLUSHING PROCEDURE WHILE THE SYSTEM IS UNDER WATER PRESSURE. REMOVING SAND TRAP PLUGS WHILE THE SYSTEM IS UNDER PRESSURE MAY CAUSE PERSONAL INJURY OR DEATH.

1. Turn the pump off and make sure machine is completely drained.

⚠ DANGER

•BE AWARE OF HIGH WATER PRESSURE. TURN OFF THE PUMP AND ALLOW THE MACHINE TO DRAIN COMPLETELY BEFORE REPAIRING OR PERFORMING MAINTENANCE TO THE MACHINE.

2. Turn the control panel main disconnect switch off. Only water is required for this procedure - the machine does not need to run.

   Follow the MINIMAL LOCKOUT/TAGOUT PROCEDURE located in the SAFETY section of this manual and do the following:

   (a) SHUT OFF and LOCK the public power service disconnect to the irrigation machine. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 88-1.

   (b) SHUT OFF and LOCK the control panel main power disconnect. FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 88-2.

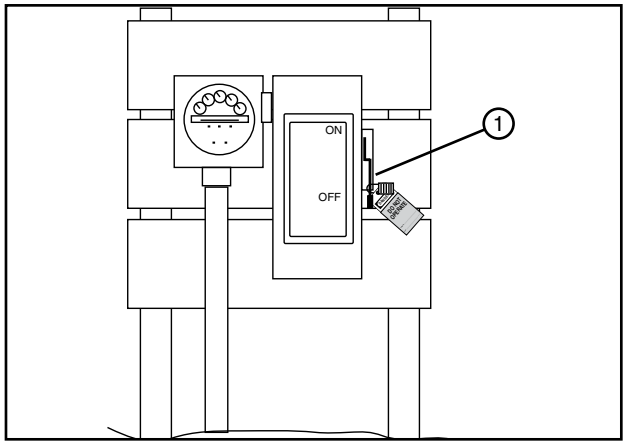


Figure 88-1 1. Public Power Service Disconnect

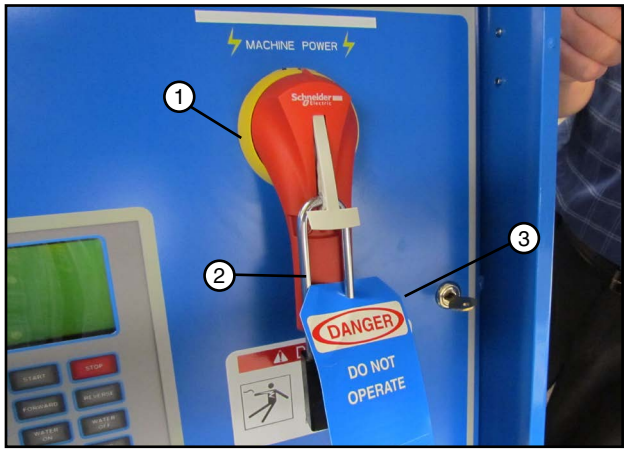


Figure 88-2 1. Main Disconnect
2. Lock
3. Blue OSHA Tag

Span Flushing Procedure

3. Remove the pipe drains at each drive unit tower. Clean sand and foreign particles from these drains. Turn the rubber drain seal over when reinstalling. See Figure 89-1.

NOTE

- **The rubber drain seals should be turned over when being reinstalled. This practice helps to increase the seal life.**

4. Remove and clean the sand trap at the last regular drive unit. See Figure 89-2.
5. Remove plugs from the overhang drains. Clean sand and foreign particles from these drains. Turn the rubber drain seal over when reinstalling. See Figure 89-3.
6. Start the pump and allow the machine to flush thoroughly.

NOTE

- **After flushing for winterization, ensure the water has been allowed to drain completely before replacing the pipe drains and plugs to prevent freezing and splitting of the pipeline.**

7. Turn off the water supply and re-install the pipe drains, sand trap and overhang plugs.

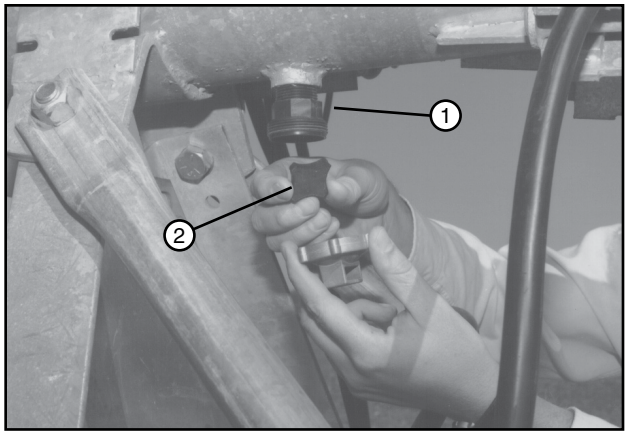


Figure 89-1 1. Pipe Drain
2. Rubber Seal

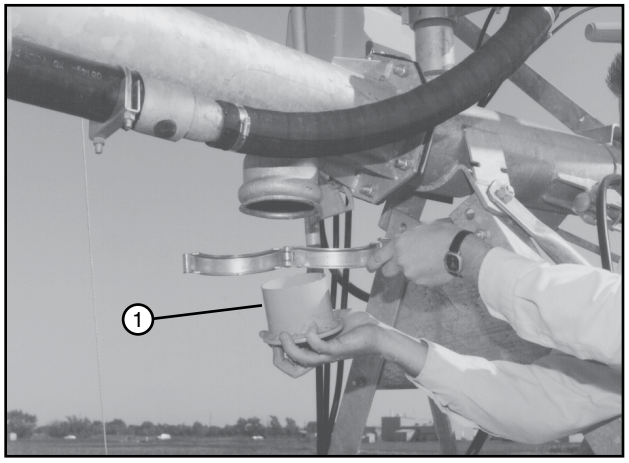


Figure 89-2 1. Sand Trap

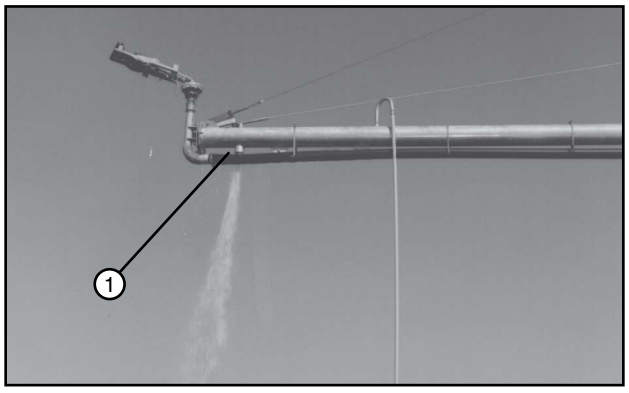


Figure 89-3 1. Sand Trap

Span Flushing Procedure

8. If the machine is equipped with an end gun:
   - Make sure the booster pump hose drain is not plugged with sand or debris and the hose is completely drained. See Figure 90-1.
   - Clean the end gun shut off solenoid valve cross filter or optional dirty water filter. See Figures 90-2 and 90-3.
   - Clean the water shut off valve external filter. See Figure 90-4.

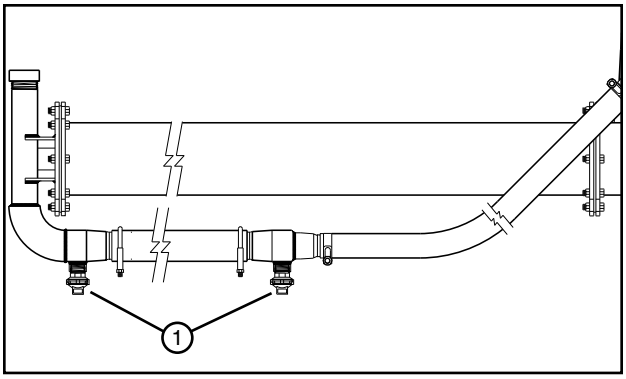


Figure 90-1 1. Booster Pump Hose Drain

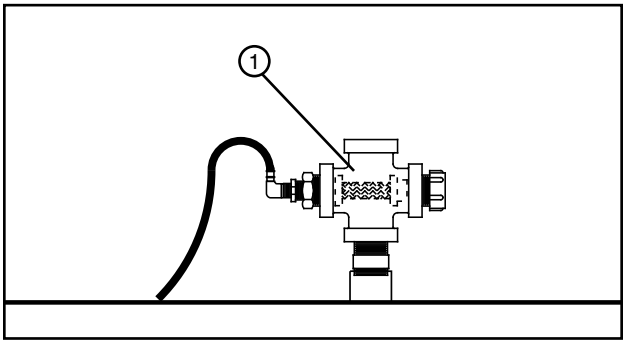


Figure 90-2 1. Cross Filter

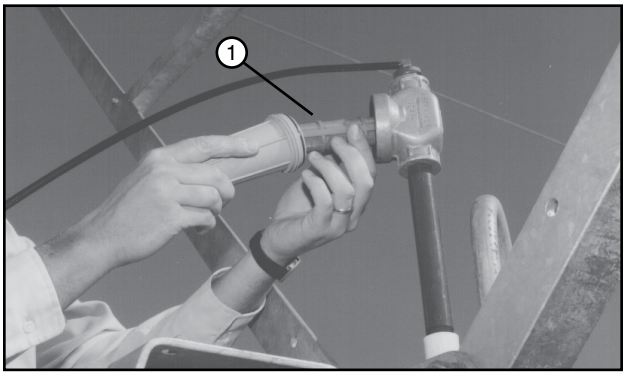


Figure 90-3 1. Optional Dirty Water Filter

Winterization

In regions where the temperature during the winter months will drop below 40°F (4°C) and/or the growing season is 6 months or less, the irrigation machine must be winterized.

- Flush and drain the irrigation machine and all plumbing components as specified in the flushing procedure section. After flushing for winterization, ensure the water has been allowed to drain completely from all drains and plumbing components before replacing drains and plugs to prevent freezing and splitting of the pipeline.
- All underground pipe MUST be drained below the frost line. When drainage is complete, re-install all plugs to prevent rodent infestation.
- Perform all post-season maintenance as specified in the recommended maintenance section.
- Winterize auxiliary equipment such as pumps, power units, mainline pipes and hoses according to the auxiliary equipment manufacturers recommendations.

Parking the Machine

The metal in the irrigation machine will expand and contract with variances in temperature. When the machine is being operated, this poses no threat. However, if the machine is parked in the wheel tracks which were created during the year, shrinking due to the contraction of the metal could cause structural damage.

The possibility of structural damage due to metal contraction increases as the machine length increases. Machines which are 1500 ft (457 m) or longer are susceptible to these stresses, especially where extreme temperature variances occur (90°F (32°C) down to -0°F (-17°C)) and when wheel tracks are present.

To reduce the possibility of structural damage due to expansion and contraction of the metal, the operator should consider one of the following methods when parking the machine in the off season:

1. Park the machine in an area where the wheel tracks have been eliminated.
2. Place wooden 2 in x 12 in planks over the wheel tracks. Park the machine with the tires on the center of the planks.
3. Towable Drive Units – Place every third drive unit's wheels in the tow position.
4. Remove all wheel tracks and run the machine dry (without water) for approximately 100 yards (92 m) to 200 yards (183 m) monthly. Only run the pivot if the temperature is above 40°F (4°C).
5. If an irrigation machine has more than 8 spans of 10 in (254 mm) pipe, the spans must be disconnected. Each span should be supported off the end of the previous span with chains to allow for contraction during cold weather.

Contact your Valley dealer for other winter storage/parking information and tips.

Off Season Storage of Hose

Never leave the hose laying in the field during the winter. The hose can be easily covered by snow, mud, or dust and can quickly become damaged by farm equipment. Driving over the top of the hose can cause damage. Since some hoses contain PVC or rubber, extended exposure to sunlight can lead to cracking or checking problems.

After the final irrigation pass of the season, purge the hose of any remaining water.

Store the hose in a protected area where it will be sheltered from the weather and safe from livestock and rodents. Store the hose away from gas or diesel fuels, contaminates, transformers, and welding areas that can produce ozone.

Off Season Storage of Electric Cord

Never leave the electric cord laying in the field during the winter. The electric cord can be easily covered by snow, mud, or dust and can quickly become damaged by farm equipment. Driving over the electric cord can cause damage.

After the final irrigation pass of the season, shut off power and disconnect electric cord plug from power receptacle. Install cap on plug and carefully coil and hang electric cord on machine.

MAINTENANCE

Regular Maintenance

Time, humidity, vibration, temperature, sand, and machine operation all contribute to wear on your Valley irrigation machine. To keep the machine operating properly with a minimum amount of down time, establish a regular preventative maintenance program using the recommended maintenance charts in this section. If replacement parts are needed, use only genuine Valley Real Parts.

Pivot

	Pre season	1st Pass	4th Pass	Mid season	Post season	Remarks
Check all nuts and bolts. Tighten as required.	X			X		
Check anchor bolts or chains.	X			X		If your pivot is towable, check the grounding conductor hook-ups prior to start up each time the pivot is towed.
Check equipment grounding conductors. Tighten or clean as required.	X			X		
Grease pivot swivel.	X		X	X		
Check condition of power and pump shutdown wires.	X			X		For your safety, call your local Valley dealer. For immediate replacement or repair of any broken conduit or wire with cracked insulation.
Check collector ring base drain for proper drainage.	X			X	X	
Visually check pivot contactors for arcing. Ensure disconnect is in the OFF position.	X			X		Burned or pitted contact points indicate low voltage. Check generator belts for proper tension.
Drain riser assembly.	X				X	
Check placement of screens on the generator, pump panel, and electric motors (used to prevent rodent damage).	X			X	X	
Check tire pressure.	X			X	X	Check at least one time during the operating season.
Check condition of electrical conductor.	X			X	X	Replace if frayed, worn, or weather checked.

Span

	Pre season	1st Pass	4th Pass	Mid season	Post season	Remarks
Check all nuts and bolts. Tighten as required.	X			X		
Check flanges for leaks and tighten as required.	X			X		
Check pipe drains for proper drainage and invert the seal when applicable. Clean as required. See Winterization procedure.	X			X	X	
Check structural components for tightness.	X			X		
Check span cable for damage.	X			X		Replace or repair cable if chaffed or weather checked.
Check span cable for proper banding.	X			X		Replace bands and adjust span cable as required.

Regular Maintenance

Sprinkler

	Pre season	1st Pass	4th Pass	Mid season	Post season	Remarks
Check the water pressure to make sure it matches the sprinkler package pressure.	X		X	X		Notify your local Valley dealer of any changes.
Check sprinklers and nozzles for tightness.	X			X		
Check sprinkler for free movement.	X			X		
Check sprinkler nozzles for wear.	X		X	X		
Check pressure gauge or pressure transducer for proper operation.	X			X		
Check for plugged or partially plugged nozzles.	X	X	X	X		Clean as required.
Flush entire machine.	X				X	See the Span Flushing Procedure and Winterization in the Maintenance section.
Check end gun bearing and brake setting.	X				X	
Ensure the booster pump hose is drained.					X	

Alignment

	Pre season	1st Pass	4th Pass	Mid season	Post season	Remarks
Check all nuts and bolts. Tighten as required.	X			X		
Check connection of grounding bond jumpers.	X			X		
Visually check for contactor wear and/or pitting. Make sure the power is OFF.	X					Pitted or burned contact points indicate low voltage.
Visually check the surge suppressor connection.	X					
Align the pivot and check all safety switches.						As needed. Call your local Valley dealer.
Check for proper safety microswitch position.						As needed. Call your local Valley dealer.

MAINTENANCE

Regular Maintenance

Overhang/End Gun/Booster Pump

	Pre season	1st Pass	4th Pass	Mid season	Post season	Remarks
Check overhang cables for broken cable strands.	X			X		Replace if cables are damaged.
Clean and ensure operation of the end gun drain.	X			X	X	Clean as required.
Check and clean the sand trap.				X	X	As needed. See Winterization in the Maintenance section.
Check the end gun arc settings.	X			X		Refer to the sprinkler chart.
Check the end gun bearing and brake.	X			X		
Check the end gun nozzle for wear.	X					
Drain the booster pump and ensure that the booster pump is drained completely.					X	See Winterization in the Maintenance section.

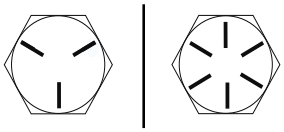
Drive Unit

	Pre season	1st Pass	4th Pass	Mid season	Post season	Remarks
Check the flex joint hose for leaks.	X			X		Tighten clamps or replace as required.
Check the motor lead cable for damage.	X			X		Contact your local Valley dealer if the outer insulating sheath is cracked.
Check for proper ground connection on motor and motor lead.	X			X		
Check the motor drain hole for proper drainage.	X			X		
Check and change the center drive gearbox lubricant. Drain moisture.	X				X	See the Center Drive Gearbox in the Maintenance section.
Check the center drive gearbox seals and gaskets.	X					
Check the wheel gearbox lubricant level and drain moisture.	X				X	See the Wheel Gearboxes in the Maintenance section.
Change the wheel gearbox lubricant.	X					Change after the first season and then change every third season thereafter.
Check the wheel gearbox seals and gaskets.	X					
Check the drive shaft U-joints. Check the U-joint and drive shaft covers for damage.	X					Replace covers as required.
Check the wheel lug nut torque. Tighten to 125 ft lb (169 N·m) torque.	X				X	
Check the tire pressure.	X			X	X	See the Tire Pressure Chart in the Maintenance section.
Check the ARAS/EOFS arms for proper operation.	X			X		
Grease the towable hubs.	X			X	X	See Towable Hub Lubrication in the Maintenance section.

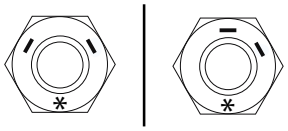
Regular Maintenance

Hardware Identification - SAE Grade - Inch Size

CAP SCREW
GRADE 5 GRADE 8

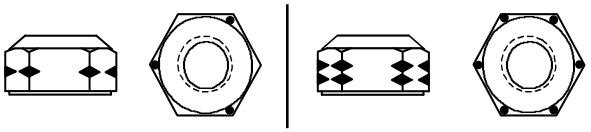


NUT
GRADE 5 GRADE 8



* Vendor's Mark

LOCKNUT
GRADE B GRADE C



Use With Grade 5 Screw

Use With Grade 8 Screw

Torque Chart - Hex Head Cap Screws

SIZE INCH	GRADE 5				GRADE 8			
		ACCEPTABLE RANGE		ACCEPTABLE RANGE		ACCEPTABLE RANGE		ACCEPTABLE RANGE
	lb-ft	lb-ft	N·m	N·m	lb-ft	lb-ft	N·m	N·m
1/4	9	8-9	12	11-12	12	11-13	16	15-17
5/16	18	16-19	24	22-25	25	22-27	34	30-36
3/8	31	28-33	42	38-44	43	39-47	58	53-64
7/16	49	44-53	66	60-71	69	63-75	94	85-101
1/2	75	68-81	102	92-109	106	96-115	144	130-156
9/16	108	98-117	146	133-158	152	139-166	206	188-225
5/8	149	135-162	202	183-219	210	191-229	285	259-310
3/4	264	240-297	358	325-402	372	338-406	504	458-550
7/8	426	387-464	577	525-629	601	546-655	815	740-888
1	637	579-695	863	785-942	900	818-982	1220	1109-1331

Critical Torque Applications

	GRADE 5		GRADE 8	
SPANS AND DRIVE UNITS	lb-ft	N·m	lb-ft	N·m
Wheel lug nuts	125	169.4	N/A	N/A

MAINTENANCE

Regular Maintenance

Pivot Annual Maintenance Log

	YEAR	Date(s) Performed/Comments
Check all nuts and bolts. Tighten as required.		
Check anchor bolts or chains.		
Check equipment grounding. Tighten or clean as required.		
Grease pivot swivel.		
Check condition of power and pump shutdown wires.		
Check collector ring base drain for proper drainage.		
Visually check pivot contactors for arcing.		
Drain riser assembly.		
Check placement of screens on generator, pump panel, and electric motors (used to prevent rodent damage).		
Check the air pressure in the tires.		

Regular Maintenance

Span Annual Maintenance Log

	YEAR	Date(s) Performed/Comments
Check flanges for leaks and tighten as necessary.		
Check pipe drains for proper drainage and invert the seal when applicable (see Winterization).		
Check structural components for tightness.		
Check power cable for damage and proper banding to ensure proper attachment.		

MAINTENANCE

Regular Maintenance

Sprinkler Annual Maintenance Log

	YEAR	Date(s) Performed/Comments
Check the pivot pressure to make sure it matches the sprinkler package pressure.		
Check sprinklers and nozzles for tightness.		
Check sprinkler for free movement.		
Check sprinkler nozzles for wear.		
Check pressure gauge or pressure transducer for proper operation.		
Check for plugged or partially plugged nozzles.		
Flush the entire machine.		
Check end gun bearing and brake setting.		
Ensure the booster pump hose is drained.		

Regular Maintenance

Alignment Annual Maintenance Log

	YEAR	Date(s) Performed/Comments
Check all nuts and bolts. Tighten as required.		
Check connection of grounding.		
Visually check for contactor wear and/or pitting. Make sure the power is OFF.		
Visually check suppressor connection.		
Align machine and check all safety switches.		
Check for proper safety microswitch position.		

MAINTENANCE

Regular Maintenance

Overhang/End Gun/Booster Pump Annual Maintenance Log

	YEAR	Date(s) Performed/Comments
Check overhang cables for broken cable strands.		
Check and ensure operation of the end gun drain.		
Check and clean the sand trap.		
Check end gun arc settings.		
Check end gun bearing and brake.		
Check end gun nozzle for wear.		
Drain booster pump and ensure booster pump is completely drained.		

Regular Maintenance

Drive Unit Annual Maintenance Log

	YEAR	Date(s) Performed/Comments
Check flex joint boot for leaks and tighten bands as required.		
Check motor lead cable for damage.		
Check for proper ground connection on motor and motor lead.		
Check motor drain hole for proper drainage.		
Drain and replace gear motor lubricant.		
Check/change gearbox lubricant.		
Check gear motor seals and gaskets.		
Check drive shaft U-joints and U-joint covers.		
Check gearbox seals and gaskets.		
Check and tighten wheel lug bolts (125 lb-ft torque).		
Check tire pressure.		
Clean gearbox ventilation hole expansion chamber (3 times/year).		
Grease towable hubs.		

MAINTENANCE

Safety

⚠ DANGER

- **THE CONTROL PANEL CONTAINS HIGH VOLTAGE! LIVE VOLTAGE CAN KILL.**
- **ALWAYS DISCONNECT ELECTRICAL POWER BEFORE SERVICING OR PERFORMING MAINTENANCE TO THE MACHINE.**
- **TESTING AND TROUBLESHOOTING SHOULD BE PERFORMED ONLY BY AN AUTHORIZED VALLEY DEALER.**
- **ALWAYS REPLACE ANY GUARDS OR SHIELDS THAT ARE REMOVED FOR PERFORMING MAINTENANCE.**

Disconnect All Power

Before performing service or maintenance on any part of the machine, follow the MINIMAL LOCKOUT/TAGOUT PROCEDURE located in the SAFETY section of this manual and do the following:

1. SHUT OFF and LOCK the public power service disconnect to the irrigation machine. See Figure 103-1.

   FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 103-1.

2. SHUT OFF and lock the control panel main power disconnect. See Figure 103-2.

   FILL OUT the blue (OSHA safety color code) tag and attach to the disconnect after locking. See Figure 103-2.

⚠ DANGER

- **BE AWARE OF HIGH WATER PRESSURE. TURN OFF THE PUMP AND ALLOW THE MACHINE TO DRAIN COMPLETELY BEFORE REPAIRING OR PERFORMING MAINTENANCE TO THE MACHINE.**

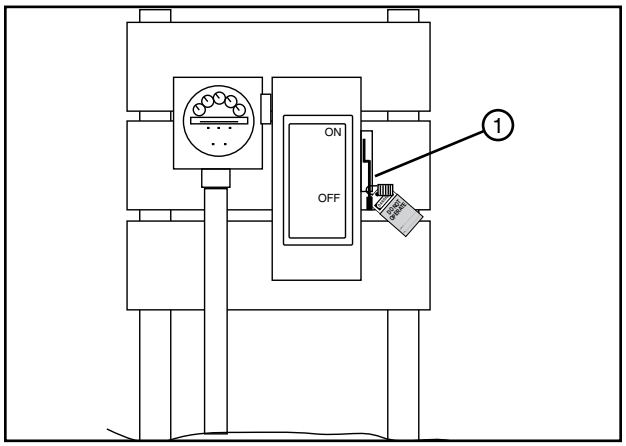


Figure 103-1 1. Public Power Service Disconnect

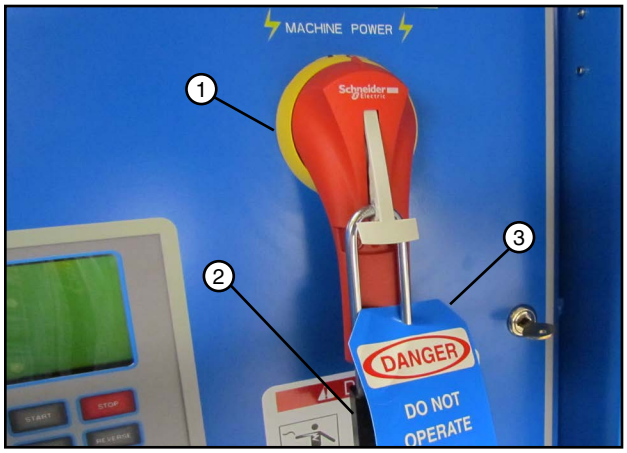
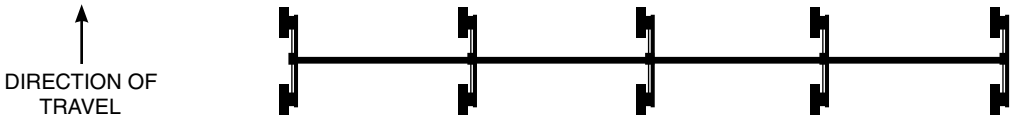


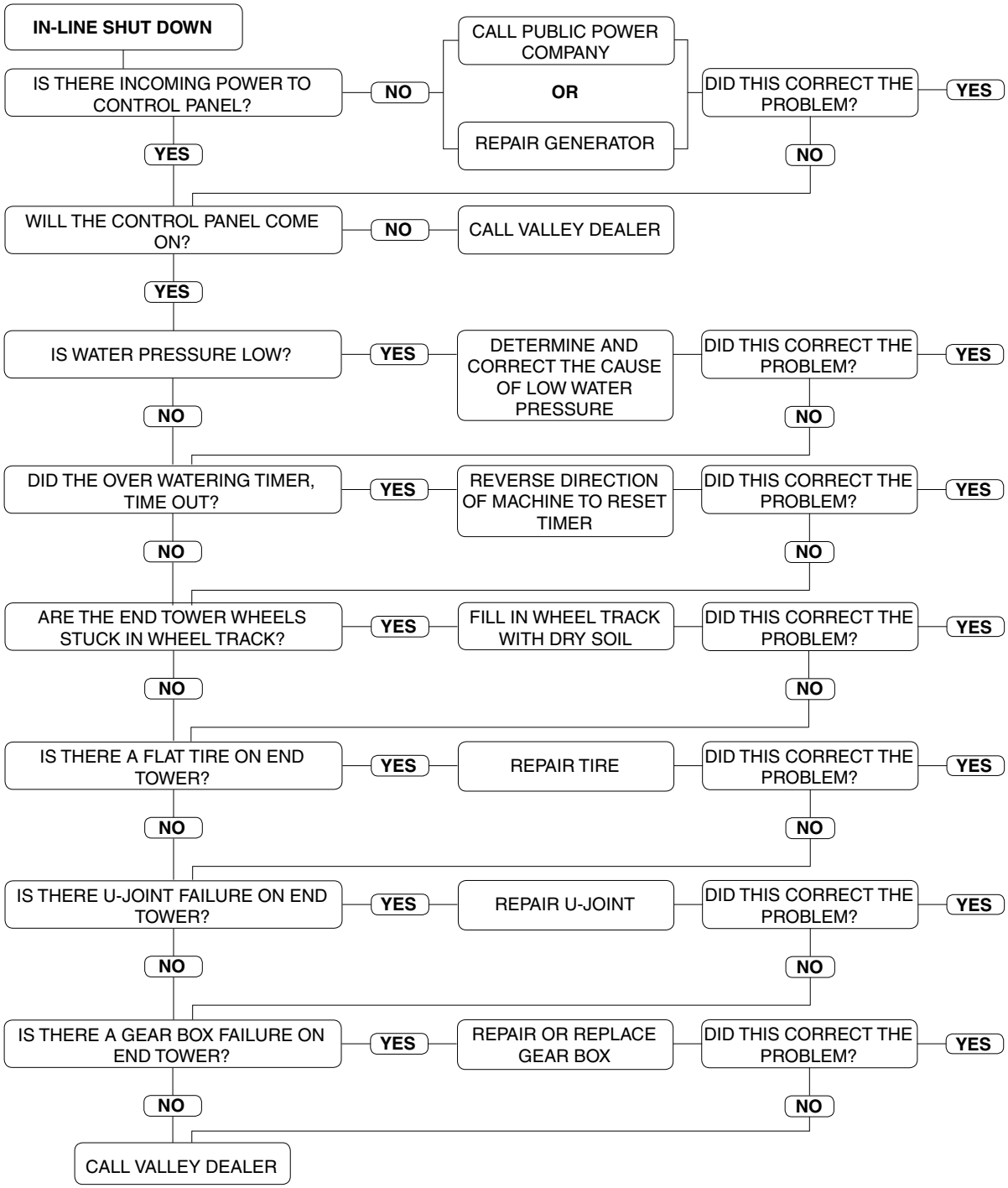
Figure 103-2 1. Main Disconnect
2. Lock
3. Blue Tag

TROUBLESHOOTING

In-Line Shut Down

In-line shut downs typically occur because of a failure in one or more of the following areas: power source, machine controls, or end tower. Use the flow chart below to determine if the in-line shut down was due to a mechanical failure. Refer to the control panel Owners Manual for other TROUBLESHOOTING information.





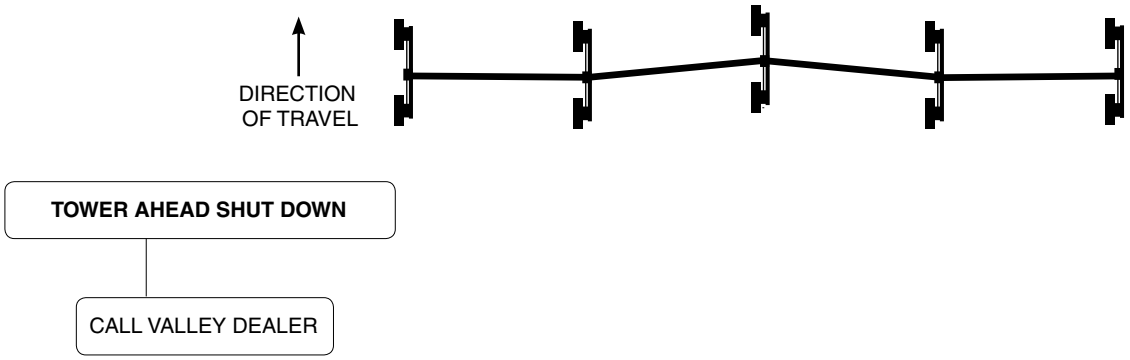
Tower Ahead Shut Down

In a tower ahead shut down, the tower which is out of line and the farthest ahead fails to shut off and breaks the safety circuit.

⚠ WARNING

- **TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE, NEVER REVERSE THE DIRECTION OF TRAVEL AFTER A TOWER AHEAD SHUT DOWN. AFTER MACHINE IS REPAIRED, ALWAYS OPERATE IN THE SAME DIRECTION OF TRAVEL AS BEFORE THE SHUT DOWN. WHEN THE MACHINE COMES BACK INTO ALIGNMENT THE DIRECTION CAN BE CHANGED.**

Tower ahead shut downs typically occur because of a component failure in the tower box. Some causes of tower ahead shut downs are; contactor failure, suppressor failure, run microswitch failure and binding of the switch pivot arm. Call your Valley Dealer to diagnose and repair a tower ahead shut down. Refer to the control panel Owners Manual for other TROUBLESHOOTING information.



TROUBLESHOOTING

Tower Behind Shut Down

In a tower behind shut down, the tower which is out of line and the farthest behind, fails to run and breaks the safety circuit.

> **⚠ WARNING**
>
> **•TO REDUCE THE POSSIBILITY OF STRUCTURAL DAMAGE, NEVER REVERSE THE DIRECTION OF TRAVEL AFTER A TOWER AHEAD SHUT DOWN. AFTER MACHINE IS REPAIRED, ALWAYS OPERATE IN THE SAME DIRECTION OF TRAVEL AS BEFORE THE SHUT DOWN. WHEN THE MACHINE COMES BACK INTO ALIGNMENT THE DIRECTION CAN BE CHANGED.**

Tower behind shut downs typically occur because of a failure in one or more of the following areas; tower box, drive train or machine alignment. Use the flow chart below to determine if the cause of shut down is mechanical. Refer to the control panel Owners Manual for other TROUBLESHOOTING information.