



**Single Span
Engine Drive Pivot
Owner's Manual**

0997299_D

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EC DECLARATION OF CONFORMITY



We: **Valmont Industries, Inc.**
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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 2006/95/EC
Electromagnetic Compatibility Directive 2004/108/EC

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."

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EC DECLARATION OF CONFORMITY

Recognize Safety Information

This irrigation equipment can be extremely dangerous if operated 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 servicing or maintaining this machine must read and understand all maintenance, troubleshooting, testing installation, assembly instructions and all safety messages in this manual before beginning any maintenance, troubleshooting, testing installation or assembly of components.

Instructions in this manual 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.

SAFETY

Operate Safely

The Valley Pivot is 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.

WARNING

- DO NOT OPERATE PIVOT WITHOUT FIRST READING OWNER'S MANUAL(S) FOR THE PIVOT AND THE ENGINE.
- NEVER START OR OPERATE THE ENGINE WITH THE ENGINE/BELT COVER OPEN.
- MAKE SURE NO EQUIPMENT IS PARKED OVER OR NEAR A WHEEL TRACK.
- MAKE SURE THAT ALL PERSONS ARE CLEAR BEFORE TURNING THE MACHINE ON.
- AVOID EXPOSURE TO SPRAY WHILE CHEMICALS ARE BEING INJECTED INTO THE WATER.
- DO NOT ATTEMPT TO SERVICE ANY PART OF THE MACHINE WHILE THE MACHINE IS OPERATING.
- ALWAYS MAKE SURE ENGINE IS OFF BEFORE SERVICING THE MACHINE.
- ALWAYS HAVE THE MOST QUALIFIED PERSONNEL PERFORM ANY REPAIR OR MAINTENANCE.
- KEEP YOUR MACHINE IN PROPER WORKING CONDITION. UNAUTHORIZED MODIFICATIONS MAY IMPAIR THE FUNCTION AND/ OR SAFETY OF THE MACHINE.
- IF YOU DO NOT UNDERSTAND ANY PART OF THESE SAFETY GUIDELINES OR ANY OTHER PART OF THIS MANUAL AND NEED FURTHER ASSISTANCE, CONTACT YOUR VALLEY DEALER.
- DO NOT CRAWL OUT ON MACHINE TO SERVICE. SERIOUS INJURY COULD RESULT IF YOU FALL.

WARNING

- DRIVE SHAFTS
- A GAS ENGINE ON THE DRIVE UNIT POWERS TWO DRIVE SHAFTS CONNECTED TO WHEEL GEAR DRIVES. THESE DRIVE SHAFTS TURN WHEN THE ENGINE IS RUNNING AND ENGAGED WITH THE BELT.
- DO NOT TOUCH ROTATING DRIVE SHAFT OR SHIELD, CLOTHING OR LIMBS MAY BECOME EN-TANGLED, RESULTING IN SEVERE INJURY.
- DO NOT SERVICE THE MACHINE UNTIL THE ENGINE IS OFF.
- ALWAYS REPLACE DRIVE SHAFT SHIELD AFTER SERVICING,
- DRIVE SHAFT SHIELDS MUST ALWAYS BE IN PLACE WHEN OPERATING THE MACHINE.

DANGER

- 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!

WARNING

- 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 (Continued)

CAUTION

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.

WARNING

KEEP CHILDREN AWAY

Pivots 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

AVOID HIGH PRESSURE WATER STREAMS

Avoid body contact with high pressure water streams.

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 PIPE-LINE FREEZE-UP DURING COLD WEATHER.**

WARNING

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.

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. 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.

SAFETY

Safety Decals


⚠ WARNING

TIRE AND RIM FOR IRRIGATION USE ONLY.
 ADJUST PRESSURE BEFORE USE. SEE OWNERS MANUAL FOR RECOMMENDED PRESSURE.
 18 PSI [1.2 BAR] MAXIMUM

VALLEY 

⚠ WARNING

TIRE AND RIM FOR IRRIGATION USE ONLY.
 ADJUST PRESSURE BEFORE USE. SEE OWNERS MANUAL FOR RECOMMENDED PRESSURE.
 34 PSI [2.3 BAR] MAXIMUM

VALLEY 

⚠ WARNING

TIRE AND RIM FOR IRRIGATION USE ONLY.
 ADJUST PRESSURE BEFORE USE. SEE OWNERS MANUAL FOR RECOMMENDED PRESSURE.
 30 PSI [2.1 BAR] MAXIMUM

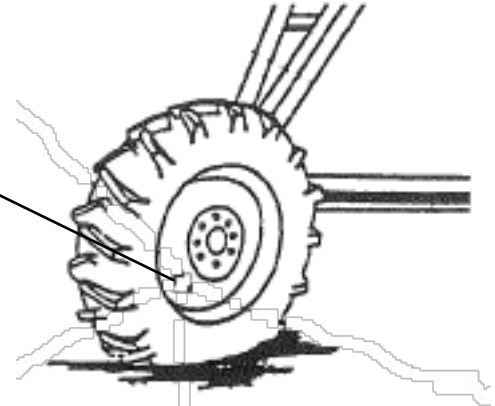
VALLEY 

⚠ WARNING

TIRE AND RIM FOR IRRIGATION USE ONLY.
 ADJUST PRESSURE BEFORE USE. SEE OWNERS MANUAL FOR RECOMMENDED PRESSURE.
 23 PSI [1.6 BAR] MAXIMUM

VALLEY 

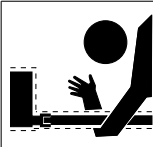
Tire and Wheel



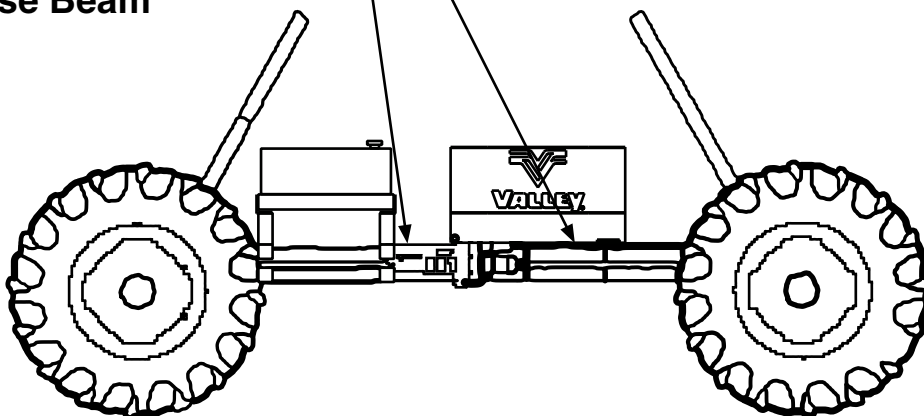
⚠ DANGER ⚠

Drive Shaft Starts Without Warning!

- Do not touch rotating drive shaft or shield. Clothing or limbs may become entangled, resulting in severe injury.
- Do not service until machine is locked in the off position.
- Always replace drive shaft shield after servicing.



Base Beam



OVERVIEW

Center Pivot

The center pivot was named because of its radial rotation around a center point. The center point is called the pivot. See figure 11-1.

Pivot

The pivot is the structure which the entire machine rotates around. The water entry point for the machine is at the bottom of the riser pipe. Water flows through the riser pipe and the swivel elbow. The swivel elbow utilizes a gasket and rotates inside the riser pipe. See figure 11-2.

Most center pivot irrigation machines have pivots that are bolted or chained to a concrete foundation. Some machines have a pivot that is towable. Towable pivots are equipped with skids or wheels so they can easily be moved from one field to the other.

Span and Drive Tower

Water which leaves the swivel elbow is transported across the field through a pipeline called a span. At the end of the span is a drive tower which moves the pipeline around the field. See figure 11-3.

Span

A span consists of a water pipeline with truss rods attached to truss assemblies in a bowstring under truss design, which provides support for the pipeline. The length of the span can be varied by adding or deleting pipes and trusses. See figure 11-3.

Overhang

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 11-3.

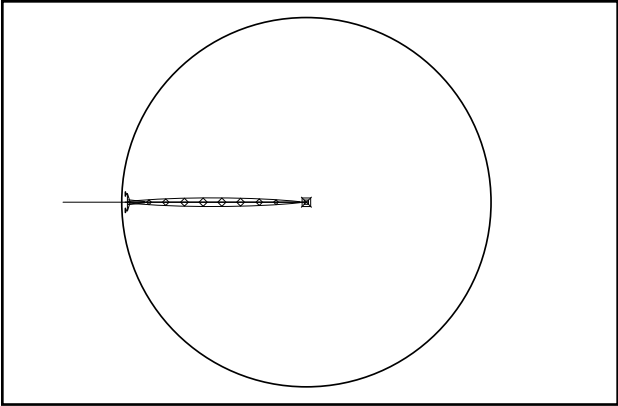


Figure 11-1 1. Center Pivot

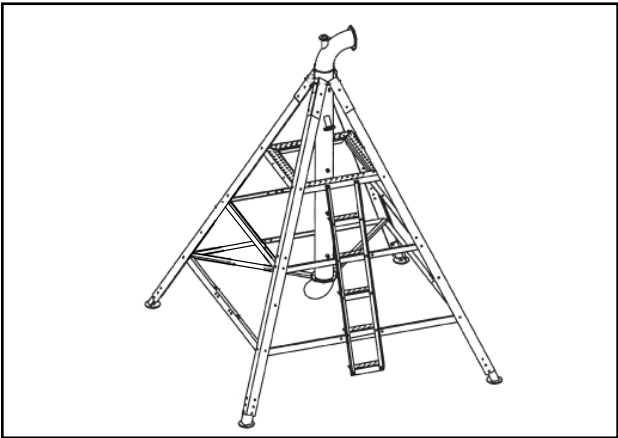


Figure 11-2 1. Pivot

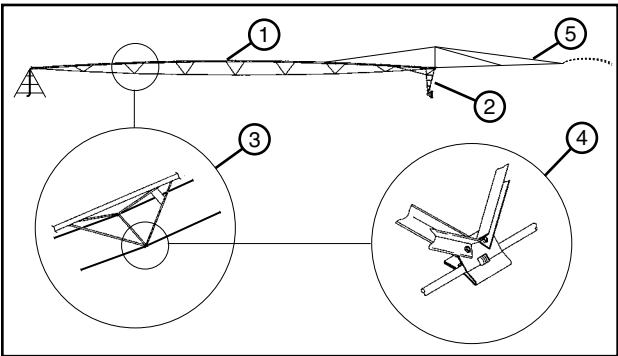


Figure 11-3 1. Span 2. Drive Unit 3. Truss Assembly 4. Truss Rods 5. Overhang

OVERVIEW

End Gun

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 12-1.

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 12-2.

Sprinklers

The sprinklers can be mounted on top of the pipeline but are typically dropped below the pipeline with drop tubes for improved water application efficiency. See figure 12-3.

The nozzle sizes of the sprinklers vary in diameter depending on the distance from the pivot. The sprinklers at the outer end of the machine have larger diameter nozzles since they will cover more area.

By taking into account the distance from the pivot, the total quantity of water to be applied and how much water pressure is available, a sprinkler can be selected for each outlet along the pipeline to provide uniform water application at all points in the field.

Drive Tower

A drive tower is attached to the end of each span. An auxiliary fuel tank and engine drive assembly are mounted on the drive tower. The gas engine drives the center drive gearbox, that drives two wheel gearboxes. See figure 12-4.

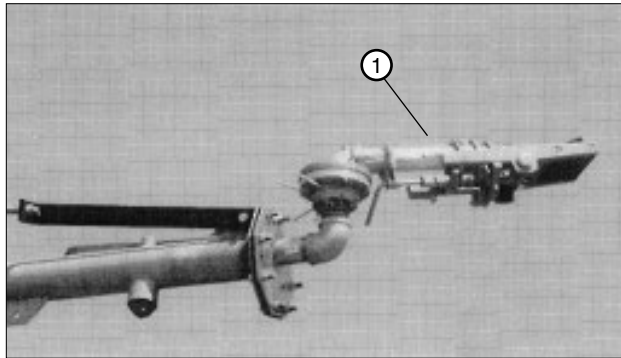


Figure 12-1 1. End Gun

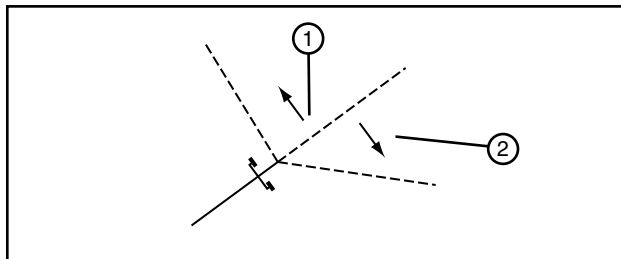


Figure 12-2 1. Backward Angle
2. Forward Angle

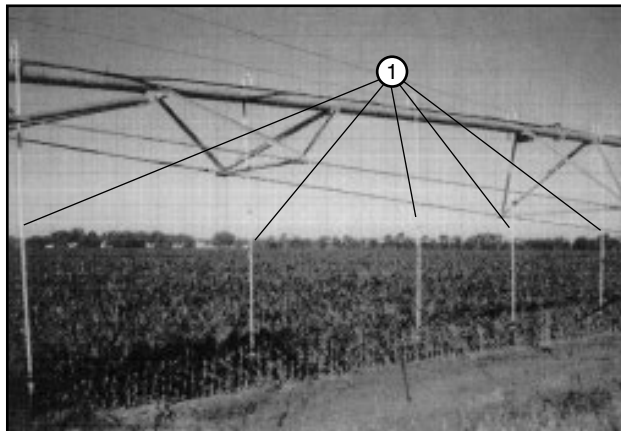


Figure 12-3 1. Sprinkler Drop Tubes

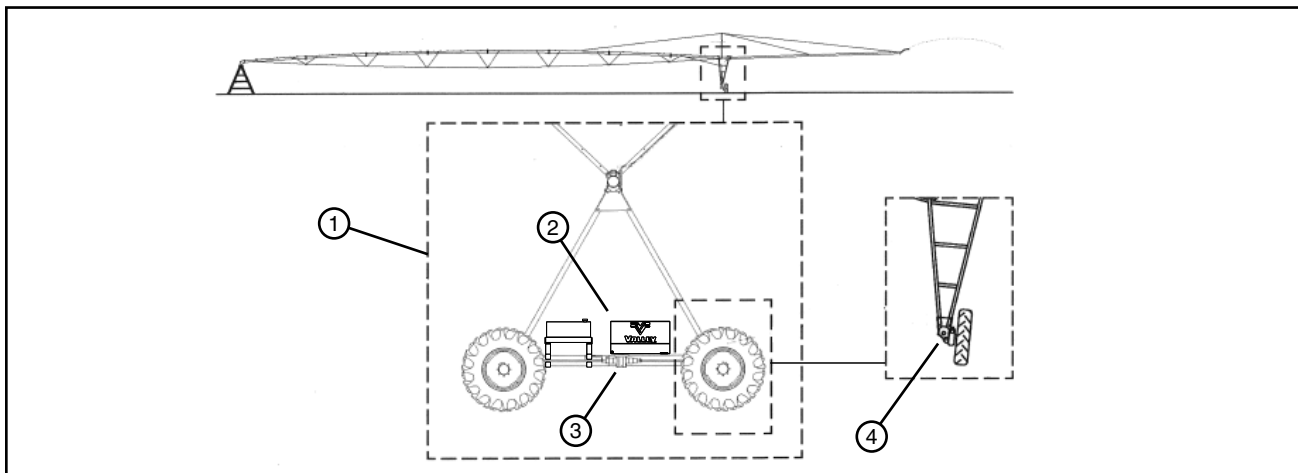


Figure 12-4 1. Drive Tower
2. Gasoline Engine
3. Center Drive Wheel Gearbox
4. Wheel Gearbox

OVERVIEW

Engine Drive Assembly

Auxiliary Fuel Tank

The auxiliary fuel tank has a capacity of 20 gallons and is equipped with a fuel gauge and vented cap. See figure 13-1.

NOTE

•In order for fuel to flow freely from the fuel tank to the engine, the vent in cap must be open. Turn vent counterclockwise to open.

A dome cap is provided to cover the vented cap and reduce the possibility of dirt, debris and moisture contaminating the fuel. See figure 13-1.

Direct Drive Handle

The direct drive handle has two positions.

ENGAGED POSITION

The ENGAGED position, when adjusted correctly, engages the engine and center drive pulleys with the v-belt. See figure 13-2.

DISENGAGED POSITION

The DISENGAGED position, disengages the engine and center drive pulleys from the v-belt. See figure 13-3.

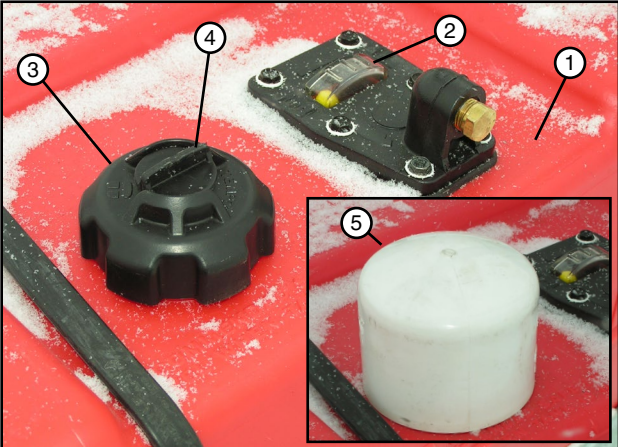


Figure 13-1 1. Auxiliary Fuel Tank 2. Fuel Gauge 3. Vented Cap 4. Vent 5. Dome Cap

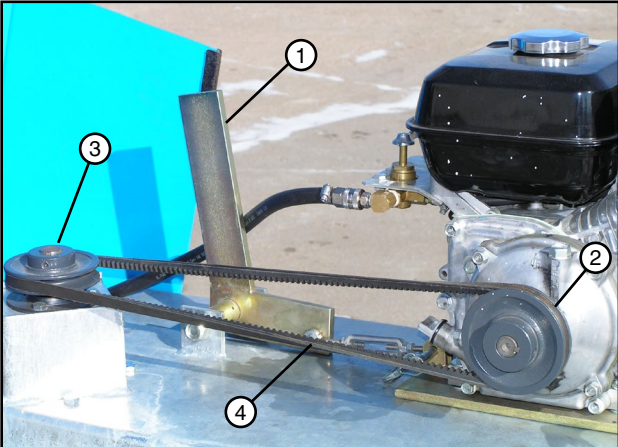


Figure 13-2 1. Direct Drive Handle in Engaged Position 2. Engine Pulley 3. Center Drive Pulley 4. V-Belt

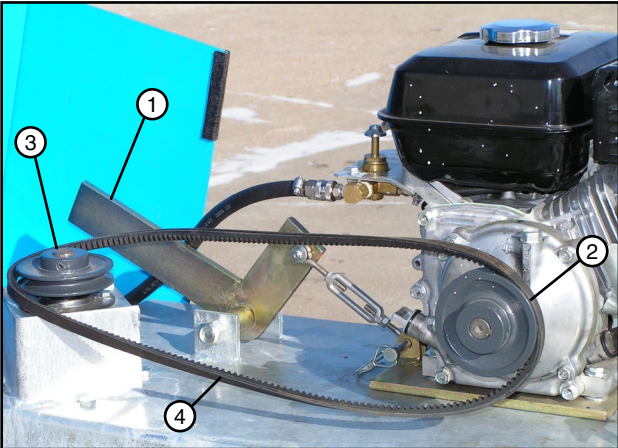


Figure 13-3 1. Direct Drive Handle in Disengaged Position 2. Engine Pulley 3. Center Drive Pulley 4. V-Belt

OVERVIEW

Fuel Valves

There are two fuel valves, the tank selection fuel valve and the engine fuel valve.

The tank selection fuel valve has three positions.

With the tank selection lever pointing to the:

- OFF position, fuel from either fuel tank is prevented from flowing to the engine fuel valve. See figure 14-1.
- MAIN position, fuel from only the main fuel tank is allowed to flow to the engine fuel valve. See figure 14-1.
- AUX position, fuel from only the auxiliary fuel tank is allowed to flow to the engine fuel valve. See figure 14-1.

The engine fuel valve has two positions, OFF or ON.

With the engine fuel valve lever in the:

- OFF position, fuel from the tank selection valve is prevented from flowing to the engine carburetor. See figure 14-2.
- ON position, fuel from the tank selection valve is allowed to flow to the engine carburetor. See figure 14-2.

Tach/Hour Meter (Optional)

The optional tach/hour meter is mounted on the side of the engine air filter cover. See figure 14-3.

- When the engine is running the meter displays engine RPM's and records actual engine run time.
- When the engine is off the meter displays the total accumulated running time.

The meter has a lubrication and oil change reminder feature.

- Every 25 hours LUBE (lubrication) will flash on the display for a total of 2 hours.
- Every 100 hours CHG OIL (change oil) will flash on the display for a total of 4 hours.

Refer to Engine And Reduction Case Maintenance on page 39 for recommended oil change intervals.

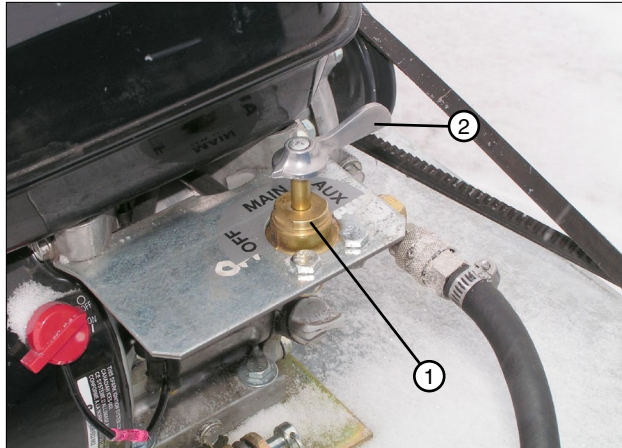


Figure 14-1 1. Tank Selection Fuel Valve
2. Tank Selection Lever

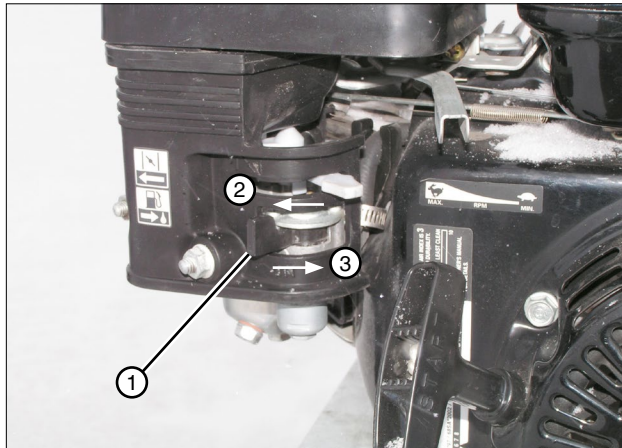


Figure 14-2 1. Engine Fuel Valve Lever
2. OFF Position
3. ON Position

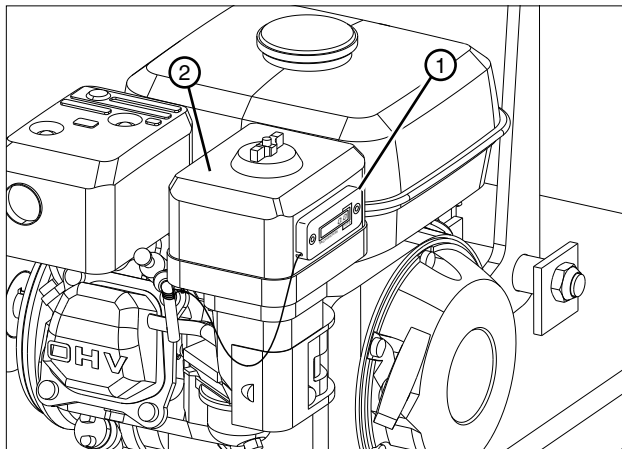


Figure 14-3 1. Tach/Hour Meter (optional)
2. Air Filter Cover

OPERATION

Before Operation Checks

1. Perform the Before Operation Checks described in the engine owner's manual.

WARNING

- GASOLINE IS HIGHLY FLAMMABLE AND EXPLOSIVE, TO REDUCE THE POSSIBILITY OF BEING BURNED OR SERIOUSLY INJURED:
- STOP ENGINE AND KEEP HEAT, SPARKS AND FLAME AWAY, WHEN REFUELING.
- REFUEL ONLY OUTDOORS
- CLEAN UP FUEL SPILLS IMMEDIATELY.

2. Check and fill the auxiliary and/or main fuel tank(s) to the desired level with the correct grade of gasoline as specified in the engine owner's manual. See figure 15-1.
3. Move the tank selection fuel valve lever to the desired fuel tank position, Off, Main or Auxiliary. See figure 15-2.
4. If required, change the v-belt configuration for forward or reverse direction of operation. See figure 15-2.
5. Make sure the direct drive handle is pushed toward engine to engage center drive gearbox and engine pulleys with v-belt. See figure 15-2.
6. Close cover and latch in position BEFORE STARTING THE ENGINE. See figure 15-3.
7. Visually check machine for problems.

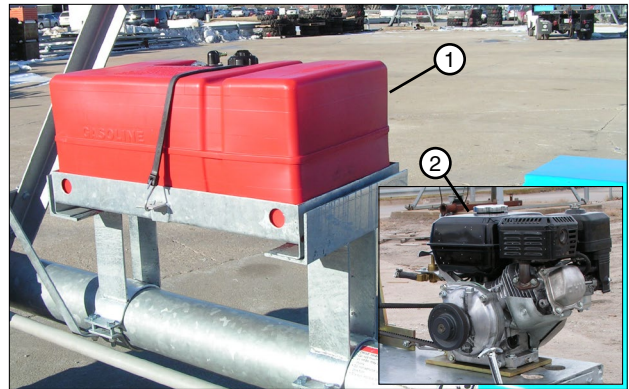


Figure 15-1 1. Auxiliary Fuel Tank
2. Main Fuel Tank

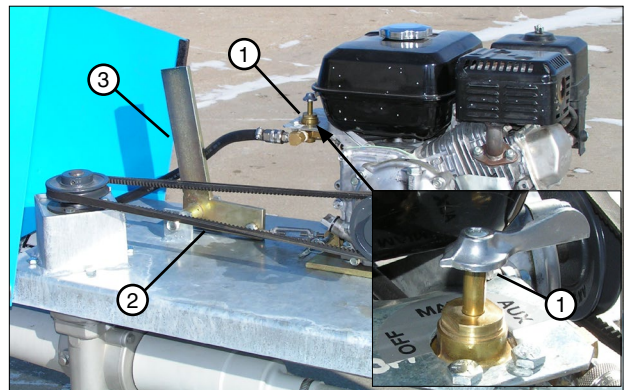


Figure 15-2 1. Fuel Valve
2. V-belt
3. Direct Drive Handle

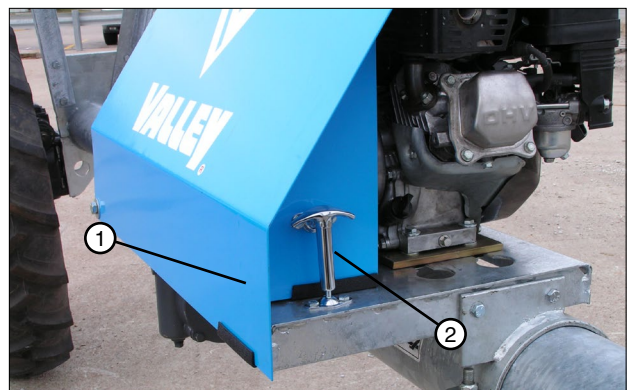


Figure 15-3 1. Cover
2. Latch

OPERATION

Starting The Machine

WARNING

- TO REDUCE THE POSSIBILITY OF SEVERE INJURY OR DEATH USE CAUTION WHEN STARTING THE MACHINE.
- MAKE SURE COVER IS CLOSED AND LATCHED BEFORE STARTING ENGINE.
- DO NOT LEAN OVER BASE BEAM TO START OR STOP ENGINE.
- STAY AWAY FROM ROTATING DRIVE SHAFTS, TIRES AND WHEELS.
- WHEN THE ENGINE IS STARTED AND RUNNING THE DRIVE SHAFTS, TIRES AND WHEELS WILL BE TURNING AND THE DRIVE UNIT WILL BEGIN MOVING IMMEDIATELY.

Starting Procedure

1. Follow the Starting The Engine procedure in the engine owner's manual.
2. Move the throttle lever and adjust engine speed to achieve the desired machine speed/water application depth. See figure 16-1.

NOTE

- For the best performance, never operate the machine at an engine speed that is lower than 2000 rpm minimum or higher than 3500 rpm maximum.

CAUTION

- OPERATING THE ENGINE BELOW 2000 RPM OR ABOVE 3500 RPM CAN DAMAGE ENGINE.

3. Start the irrigation pump.

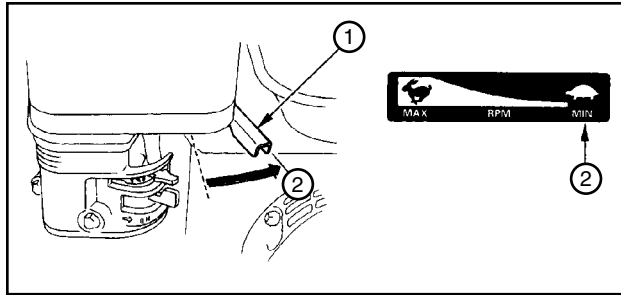


Figure 16-1 1. Throttle Lever
2. Minimum

Stopping The Machine

WARNING

- TO REDUCE THE POSSIBILITY OF SEVERE INJURY OR DEATH USE CAUTION WHEN APPROACHING THE MACHINE / DRIVE UNIT WHILE IT IS MOVING.
- DO NOT OPEN THE COVER WHILE ENGINE IS RUNNING.
- DO NOT LEAN OVER BASE BEAM TO START OR STOP ENGINE.
- STAY AWAY FROM ROTATING DRIVE SHAFTS, TIRES AND WHEELS.

Emergency Stopping

- To stop the engine / machine in an emergency situation, carefully approach the drive unit and turn the engine switch to the OFF position. See figure 17-2.

Stopping Under Normal Conditions

1. Stop the irrigation pump.
2. Carefully approach the drive unit and follow the Stopping The Engine procedure in the engine owner's manual. When the engine stops the machine should also stop.

NOTE

- Because the Single Span Engine Drive DOES NOT have an automatic stopping device, it is necessary to be in the field to stop the machine when it reaches the tow lane or any other stopping point.

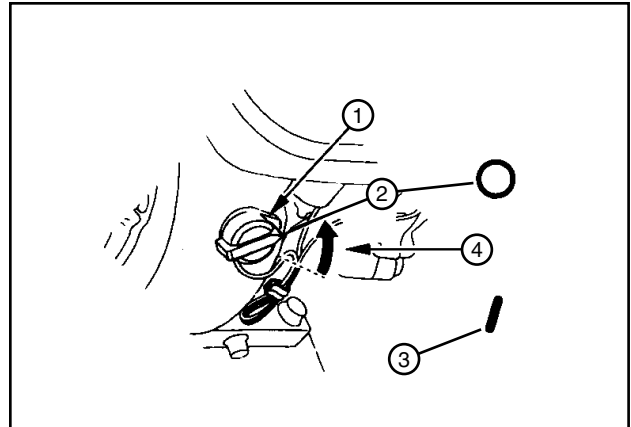


Figure 17-1 1. Engine Switch
2. OFF
3. ON
4. Direction of OFF Position

OPERATION

Water Application

Several factors including sprinkler nozzle size, engine rpm, tire size and pulley ratio affect water application depth.

The sprinkler nozzle sizes (sprinkler package) are selected to apply the desired minimum amount of water per revolution based on the initial design of the machine including pump gallons per minute, length of machine and maximum speed.

The engine rpm regulates the machine speed which controls the amount of water being applied per revolution of the machine.

- When the engine is running at maximum speed of 3500 rpm, the machine is running at 100% of speed and is applying the minimum amount of water.
- When the engine is running at the minimum recommended speed of 2000 rpm, the machine is running at approximately 56% of speed and applying the maximum amount of water.

The tire size and pulley ratio affects machine speed throughout the engine rpm range.

Changing tires without changing the sprinkler package:

- Installing larger tires in place of smaller tires, increases machine speed throughout the engine rpm range, which would reduce the amount of water that could be applied.
- Installing smaller tires in place of a larger tires, decreases machine speed throughout the engine rpm range, which would increase the amount of water that could be applied.

Changing pulley ratio without changing the sprinkler package:

- Installing the high speed pulleys in place of the standard speed pulleys, increases the machine speed throughout the engine rpm range, which would reduce the amount of water that could be applied.
- Installing the standard speed pulleys in place of the high speed pulleys, decreases the machine speed throughout the engine rpm range, which would increase the amount of water that could be applied.

The theoretical single span engine drive machine speeds based on engine rpm, tire size and pulley ratios are shown in figure 18-1.

THEORETICAL SINGLE SPAN ENGINE DRIVE, MACHINE SPEED IN FEET PER MINUTE								
TIRE SIZE	ENGINE RPM							
	2000		2500		3000		3500	
	STANDARD SPEED PULLEYS	HIGH SPEED PULLEYS	STANDARD SPEED PULLEYS	HIGH SPEED PULLEYS	STANDARD SPEED PULLEYS	HIGH SPEED PULLEYS	STANDARD SPEED PULLEYS	HIGH SPEED PULLEYS
11.2 X 24	2.31 ft/min	4.77 ft/min	2.89 ft/min	5.96 ft/min	3.47 ft/min	7.15 ft/min	4.05 ft/min	8.34 ft/min
14.9 X 24	2.67 ft/min	5.50 ft/min	3.34 ft/min	6.88 ft/min	4.01 ft/min	8.25 ft/min	4.67 ft/min	9.63 ft/min
16.9 X 24	2.80 ft/min	5.76 ft/min	3.49 ft/min	7.20 ft/min	4.19 ft/min	8.64 ft/min	4.89 ft/min	10.08 ft/min
11.2 X 38	3.13 ft/min	6.46 ft/min	3.92 ft/min	8.07 ft/min	4.70 ft/min	9.68 ft/min	5.48 ft/min	11.30 ft/min

Figure 18-1

OPERATION

Water Application Depth Calculation

1. Measure and record the span length in feet or use the Last Regular Drive Unit Distance (LRDU Dist) shown on the VChart timer report.

Span length in feet _____

NOTE

•Shown in steps 2 and 3 are the recommended and alternate methods for measurement and calculation of drive unit speed. For maximum accuracy use the recommended methods.

2. **Recommended Method:** Measure and record the rotation time of the drive unit in minutes by running the machine at the maximum engine speed (3500 rpm) for one complete revolution.

Rotation time in minutes _____

3. **Recommended Method:** Calculate the actual drive unit speed in feet per minute (DUS ft/min) using the following formula:

$$\frac{(6.28) \times (\text{Span Length in ft})}{(\text{Rotation Time in min})} = \text{Drive Unit Speed in ft/min}$$

$$\frac{(6.28) \times (\text{_____})}{(\text{_____})} = \text{_____ DUS ft/min}$$

Alternate method: Measure and record the distance in feet that the drive unit travels at the maximum engine speed (3500 rpm) for one minute.

Distance in feet _____

Alternate method: Calculate the actual drive unit speed in feet per minute (DUS ft/min) using the following formula:

$$\frac{(\text{Distance in feet})}{(1 \text{ min})} = \text{Drive Unit Speed in ft/min}$$

$$\frac{(\text{_____})}{(1 \text{ min})} = \text{_____ DUS ft/min}$$

OPERATION

Water Application Depth Calculation (Continued)

- Compare the calculated drive unit speed in feet per minute with the drive unit speed ft/min shown in the LRDU Drive Train box on the VChart timer report. See figure 20-1.

NOTE

•If there is more than a 5% difference between the calculated Drive Unit Speed ft/min and the Drive Unit Speed ft/min from the VChart timer report, call your Valley dealer to get new VChart timer report at correct DUS.

Dealer Valmont/Miscellaneous Customer Valmont/Miscellaneous Single Span Engine Drive					
Valley Standard Pivot 8000 Percent Timer Data					
Based on Inches			Based on % Timer		
Inches Per 360 Degrees, In	Pivot % Timer	Hours Per 360 Degrees	Pivot % Timer	Inches Per 360 Degrees, In	Hours Per 360 Degrees
0.397	100.0	4.1	100.0	0.397	4.1
0.40	99.1	4.1	90.0	0.44	4.6
0.50	79.3	5.2	80.0	0.50	5.1
0.60	66.1	6.2	70.0	0.57	5.9
0.70	56.7	7.2	60.0	0.66	6.8
0.80	49.6	8.3	50.0	0.79	8.2
0.90	44.1	9.3	45.0	0.88	9.1
1.00	39.7	10.3	40.0	0.99	10.3
1.25	31.7	12.9	35.0	1.13	11.7
1.50	26.4	15.5	30.0	1.32	13.7
1.75	22.7	18.1	25.0	1.59	16.4
2.00	19.8	20.7	20.0	1.98	20.5
2.50	15.9	25.8	17.5	2.27	23.4
3.00	13.2	31.1	15.0	2.64	27.3
3.50	11.3	36.3	12.5	3.17	32.8
4.00	9.9	41.4	10.0	3.97	41.0
5.00	7.9	51.9	7.5	5.29	54.7
6.00	6.6	62.1	5.0	7.93	82.0

Field Area	Flow	Pressure	LRDU Drive Train
3.4 Acres Total 3.4 Acres : Pivot 360° Acres : EG On 100% 218.0 ft Machine Length ft End Gun Radius	150 Gallons Per Minute 43.77 GPM/Acre 2.32 In/Day App Rate 0.397 in App Depth @ 100% 0.0 GPM End Gun	35 PSI Pivot Pressure Inlet Pressure 0.0 ft Highest Elevation 0.0 ft Lowest Elevation	RPM Center @ Hz frequency Tire Wheel GB Ration LRDU Dist 135.7 ft 4.1 Hrs/360 @ 100% (3.50) ft/min

Figure 20-1 1. Span Length
2. Drive Unit Speed

Water Application Depth Calculation (Continued)

5. For desired water application depth (WAD) look up the corresponding Pivot % Timer setting from VChart Timer Report. This is the Water Application Depth Percentage (WAD%). See figure 21-1.

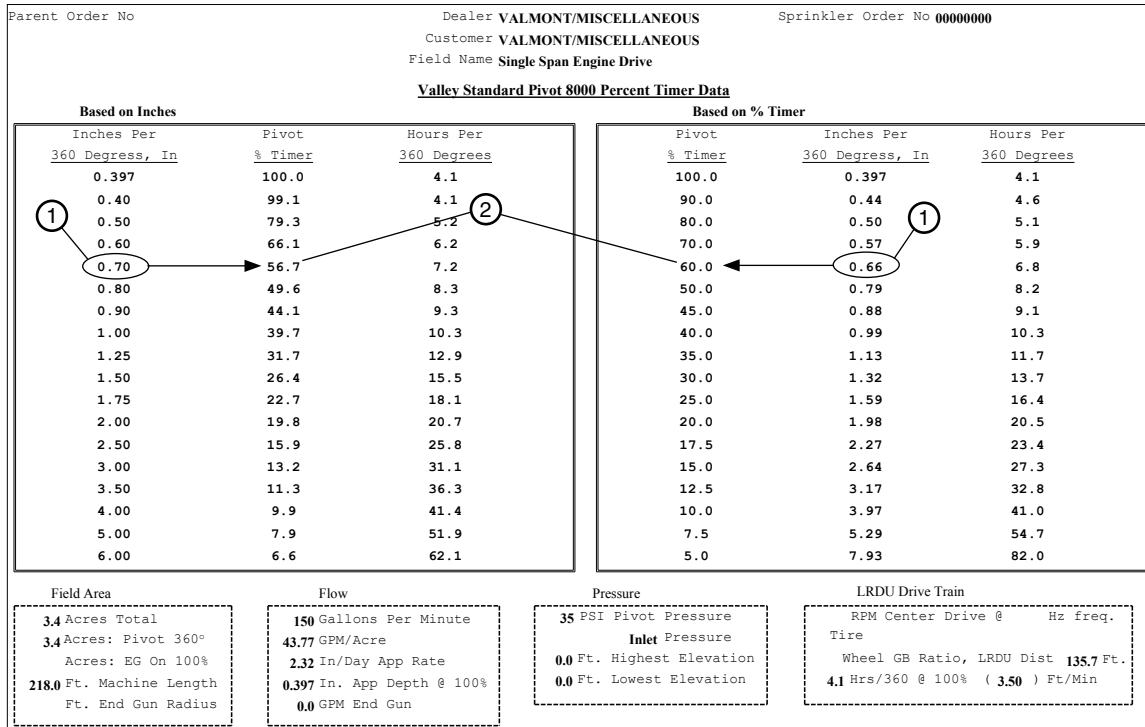


Figure 21-1 1. Desired Water Application Depth
 2. Water Application Depth Percentage (WAD%)

6. To calculate the drive unit speed in ft/min. for the desired water application depth, use this formula:

$$(\text{Max. Drive Unit Speed ft/min}) \times (\text{WAD}\% \div 100) = \text{Drive Unit Speed in ft/min.}$$

$$(\text{_____}) \times (\text{_____} \div 100) = \text{DUS ft/min.}$$

7. If the optional tach/hour meter is NOT being used, adjust engine speed to a lower rpm and repeat steps 2 and 3 until the drive unit speed for the desired water application depth is obtained.

OR

If the optional tach/hour meter is being used, adjust the engine speed to the rpm/percent associated with the desired water application depth shown in the VChart Timer Report. See figure 21-2.

ENGINE RPM	PERCENT
3500	100
3325	95
3150	90
2975	85
2800	80
2625	75
2450	70
2275	65
2100	60

Figure 21-2

OPERATION

Creating A Water Application Depth Table

If the VChart timer report is not available, use the equations below to calculate the Inches Per Revolution, Hours Per Revolution and Drive Unit Speed, then record the results in the water application depth table. See figure 22-1.

1. Calculate the inches per revolution maximum (In/Rev Max) using the equation shown below. Use the In/Rev Max to calculate the inches per revolution percent (In/Rev %). Record the In/Rev % results in the water application depth table under the In/Rev heading. See figure 22-1.

$$\frac{(\text{Rotation Time in Hours}^*) \times (\text{Gallons Per Minute}) \times (30.64)}{(\text{Span Length}^{**} + \text{Overhang Length}^{**} + \text{Endgun Radius}^{**})^2} = \frac{\text{In/Rev}}{\text{Max}}$$

$$\frac{(\quad) \times (\quad) \times (30.64)}{(\quad + \quad + \quad)^2} = \quad \div 1.0 = \quad 100\%$$

$$\div 0.9 = \quad 90\%$$

$$\div 0.8 = \quad 80\%$$

$$\div 0.7 = \quad 70\%$$

$$\div 0.6 = \quad 60\%$$

2. Calculate the hours per revolution maximum (Hrs/Rev Max) using the equation shown below. Use the Hrs/Rev Max to calculate the hours per revolution percent (Hrs/Rev %). Record the Hrs/Rev % results in the water application depth table under the Hrs/Rev heading. See figure 22-1.

$$\frac{(\text{Rotation Time in Minutes}^\dagger)}{(60)} = \frac{\text{Hrs/Rev}}{\text{Max}}$$

$$\frac{(\quad)}{(60)} = \quad \div 1.0 = \quad 100\%$$

$$\div 0.9 = \quad 90\%$$

$$\div 0.8 = \quad 80\%$$

$$\div 0.7 = \quad 70\%$$

$$\div 0.6 = \quad 60\%$$

3. Calculate the drive unit speed ft/min maximum (DUS ft/min Max) using the equation shown below. Use the DUS ft/min Max to calculate the drive unit speed ft/min percent (DUS ft/min %). Record the DUS ft/min % results in the water application depth table under the DUS ft/min heading. See figure 22-1.

$$\frac{(6.28) \times (\text{Span Length in ft}^\ddagger)}{(\text{Rotation Time in Minutes}^\dagger)} = \frac{\text{DUS ft/min}}{\text{Max}}$$

$$\frac{(6.28) \times (\quad)}{(\quad)} = \quad \times 1.0 = \quad 100\%$$

$$\times 0.9 = \quad 90\%$$

$$\times 0.8 = \quad 80\%$$

$$\times 0.7 = \quad 70\%$$

$$\times 0.6 = \quad 60\%$$

WATER APPLICATION DEPTH TABLE

ENGINE RPM	PERCENT	IN/REV	HRS/REV	DUS ft/min
3500	100%			
3150	90%			
2800	80%			
2450	70%			
2100	60%			

Figure 22-1 * The rotation time of the drive unit in hours while running at the maximum engine speed (3500 rpm) for one complete revolution.
 ** All lengths and radius are expressed in feet.
 † The rotation time of the drive unit in minutes while running at the maximum engine speed (3500 rpm) for one complete revolution.
 ‡ The length of span only, does not include overhang.

OPERATION

Engine Installation

WARNING

- GASOLINE IS HIGHLY FLAMMABLE AND EXPLOSIVE, TO REDUCE THE POSSIBILITY OF BEING BURNED OR SERIOUSLY INJURED:
- STOP ENGINE AND KEEP HEAT, SPARKS AND FLAME AWAY, WHEN WORKING AROUND FUEL TANKS OR FUEL LINES.
- CLEAN UP FUEL SPILLS IMMEDIATELY.

Open the cover, then:

1. Lift engine onto direct drive base mount, align retaining washers on direct drive engine mount with holes in engine mounting slot. See figure 23-1.
2. Slide engine toward direct drive handle and secure direct drive engine mount to turnbuckle with lynch pin. See figure 23-2.
3. Install v-belt over center drive gearbox and engine pulleys in the configuration for desired direction of operation, either forward or reverse. See figure 23-2.

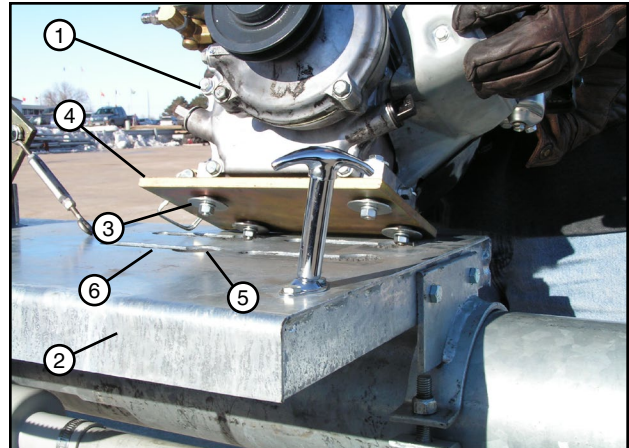


Figure 23-1 1. Engine 4. Engine Mount
2. Base Mount 5. Hole
3. Retaining Washer 6. Engine Mounting Slot

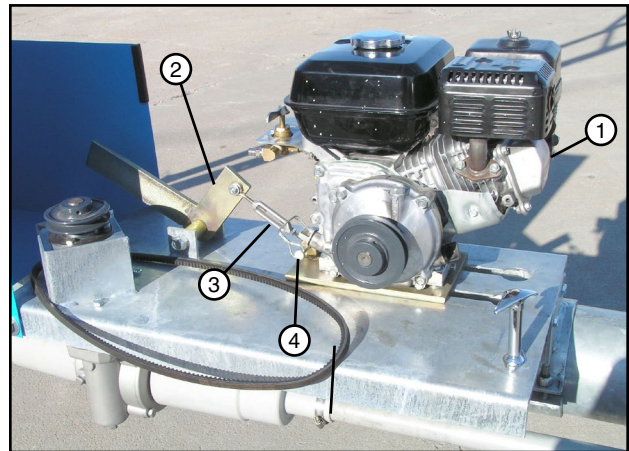


Figure 23-2 1. Engine 3. Turnbuckle
2. Direct Drive Handle 4. Lynch Pin

OPERATION

Engine Installation (continued)

4. Push direct drive handle toward engine to engage center drive and engine pulleys with v-belt. See figure 24-1.
5. Connect the auxiliary fuel tank hose to the engine at the quick disconnect fitting. See figure 24-1.
6. Move the three way fuel valve lever to the desired fuel tank position. See figure 24-1.
7. Installation of the engine is complete, close and latch the cover BEFORE STARTING THE ENGINE.

Towable Pivots

There are four towable pivot options. See figures below.

- Skid Tow Pivot. See figure 24-2.
- 2 Wheel EZ-Tow Pivot. See figure 24-3.
- 4 Wheel EZ-Tow Pivot With Fixed Wheels Option. See figure 24-4.
- 4 Wheel EZ-Tow Pivot With Swivel Wheel Option. See figure 24-4.

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

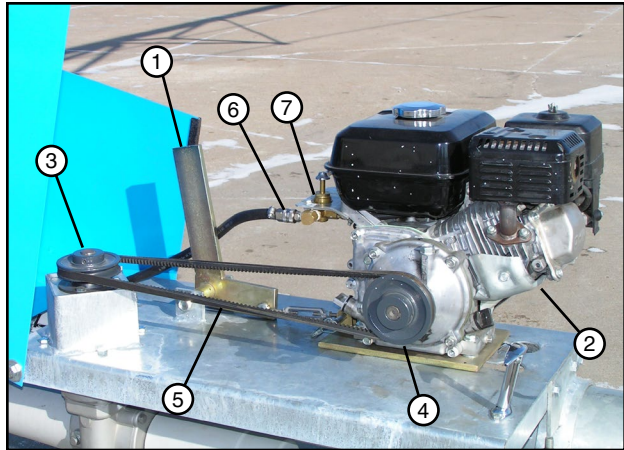


Figure 24-1 1. Direct Drive Handle 2. Engine 3. Center Drive Pulley 4. Engine Pulley 5. V-belt 6. Auxillary Fuel Hose Quick Disconnect 7. Fuel Valve

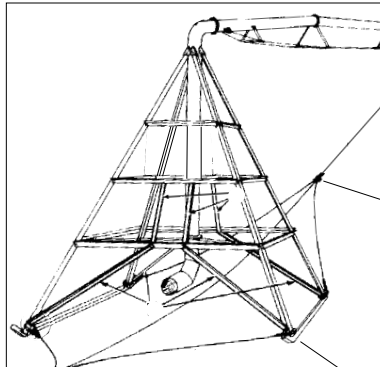


Figure 24-2 Skid Tow Pivot

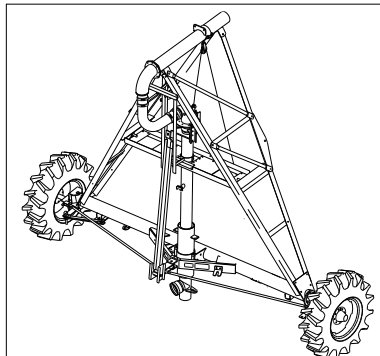


Figure 24-3 2 Wheel EZ- Tow Pivot

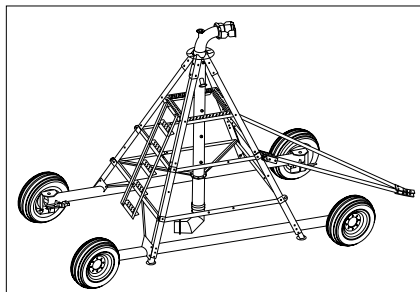


Figure 24-4 4 Wheel EZ- Tow Pivot

This topic provides instruction on the preparation of the drive unit 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 25-1.

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.

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 gearbox, swivel mount or swivel mount hardware.

2. Use a jack to lift one side of the drive unit until the tire is off of the ground. See figure 25-2.
3. Loosen the clamps securing u-joint shields in position. Slide all four u-joint shields away from the gearboxes.
4. 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 25-3.

Preparing The Drive Unit For Towing

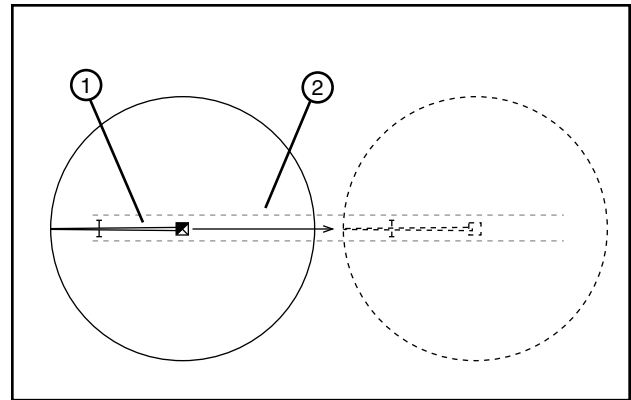


Figure 25-1 1. Machine
2. Tow Lane

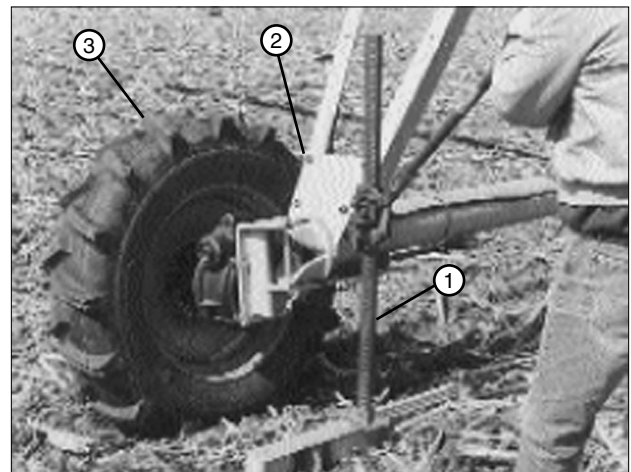


Figure 25-2 1. Jack
2. Drive Unit
3. Tire

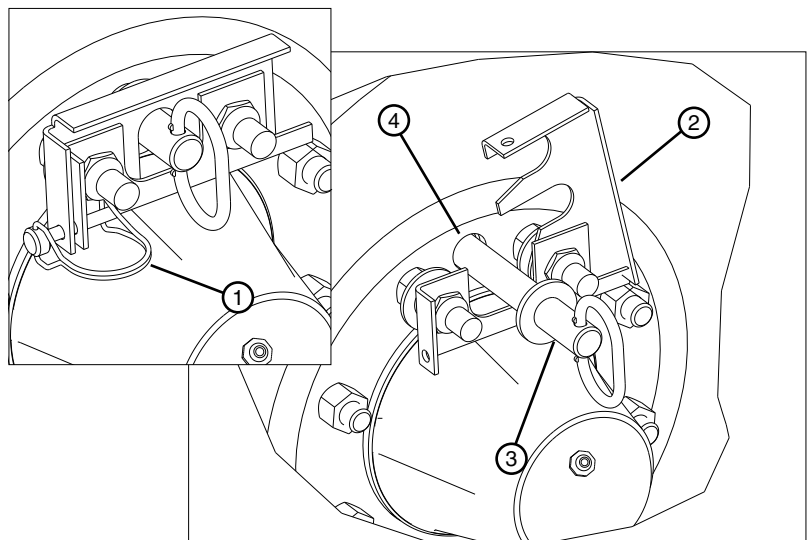


Figure 25-3 1. Lynch Pin
2. Retainer Clip
3. Torque Pin
4. Hub Torque Pin Receiver

OPERATION

Preparing The Drive Unit For Towing (Continued)

- 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 26-1.
- As tire is turned into the tow position support the drive shaft and use a small pry bar to separate the drive shaft u-joint half from the puck 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 26-2.

- Lift the carrier spring and release the tow link bar from the tow link carrier. See figure 26-3.

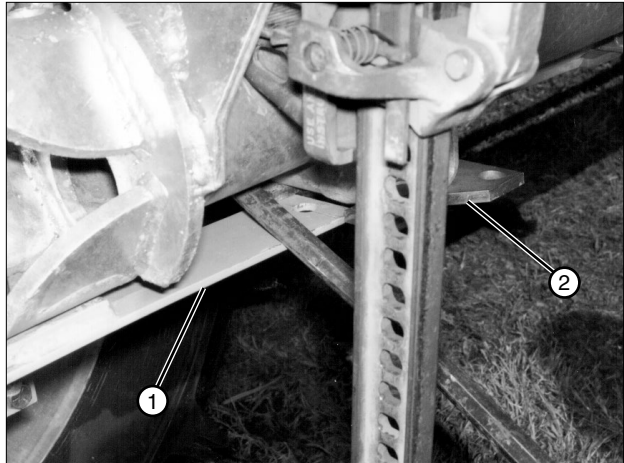


Figure 26-1 1. Steering Arm
2. Latch Plate

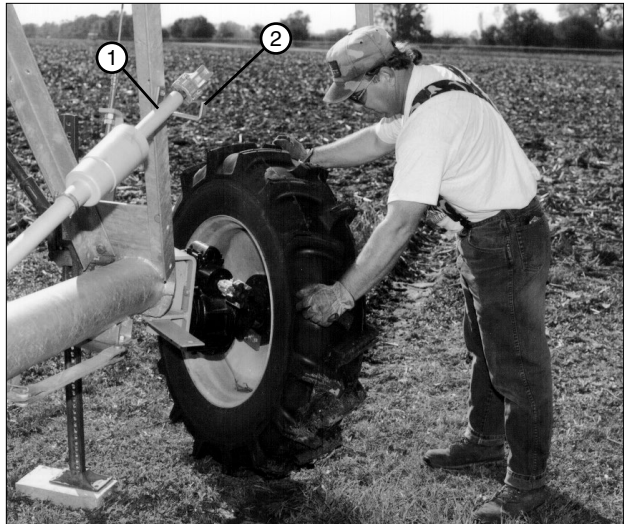


Figure 26-2 1. Drive Shaft
2. Drive Shaft Keeper

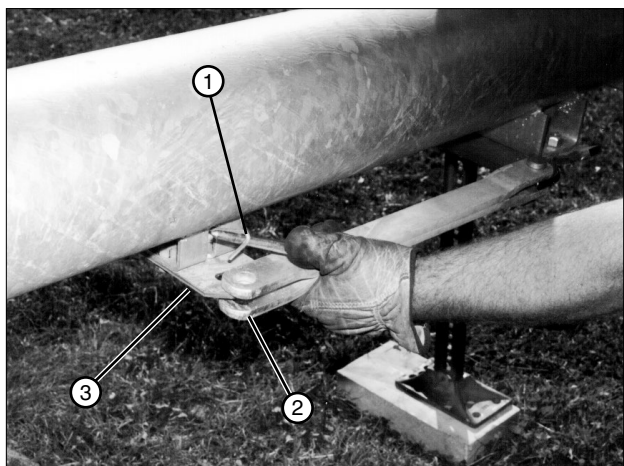


Figure 26-3 1. Carrier Spring
2. Tow Link Bar
3. Tow Link Carrier

Preparing The Drive Unit For Towing (Continued)

8. 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 27-1.
9. Lower the drive unit and remove the jack. The tire is now in the tow position. See figure 27-2.
Repeat steps 3-8 for the other drive unit tire.

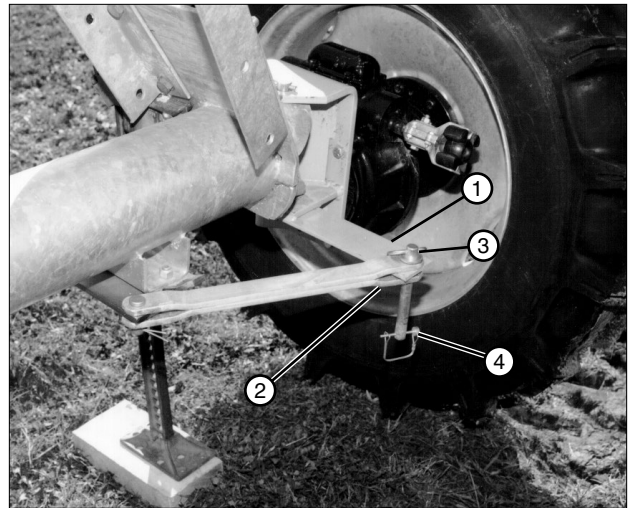


Figure 27-1 1. Steering Arm
2. Tow Link Bar Yoke
3. Torque Pin
4. Lynch Pin

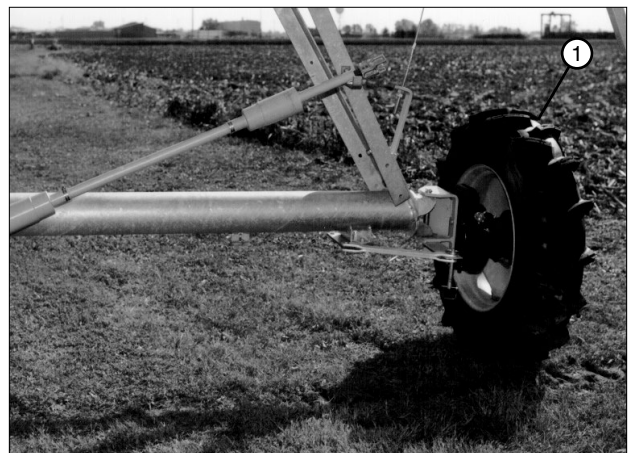


Figure 27-2 1. Tire Shown In Tow Position

OPERATION

Preparing The Drive Unit For Operation

This topic provides instruction on the preparation of the drive unit for operation.

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



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 gearbox, swivel mount or swivel mount hardware.

1. Use a jack to lift one side of the drive unit until the tire is off of the ground. See figure 28-1
2. Remove lynch pin from torque pin, then remove torque pin and disconnect tow link bar from steering arm. See figure 28-2
3. Rotate tow link bar into the tow link carrier until the carrier spring latches into the hole in tow link bar. See figure 28-2.
4. As tire is turned to the operating position, align the drive shaft u-joint half with puck and wheel gearbox u-joint half.

Continue pushing tire toward the operating position with enough force to push the gearbox u-joint half over the puck and latch the steering arm in the latch plate.

5. Make sure the steering arm is latched in the latch plate. See figure 28-3.

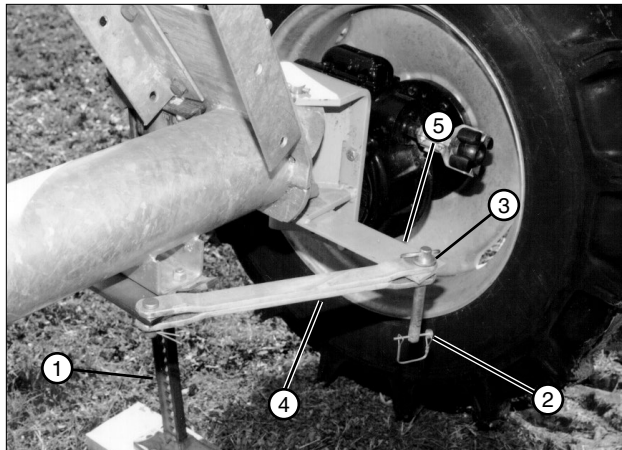


Figure 28-1 1. Jack
2. Lynch Pin
3. Torque Pin
4. Tow Link Bar
5. Steering Arm

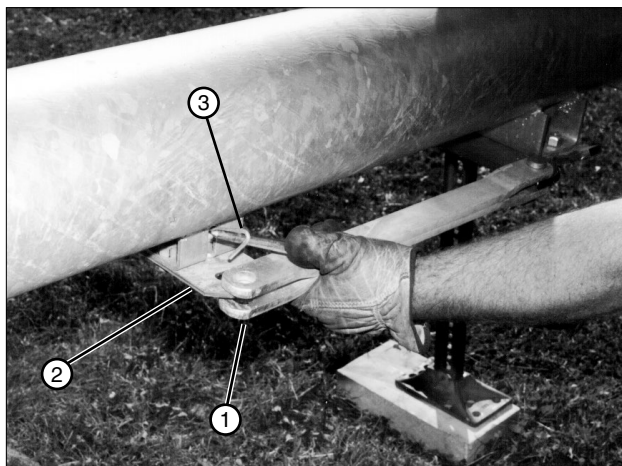


Figure 28-2 1. Tow Link Bar
2. Tow Link Carrier
3. Carrier Spring

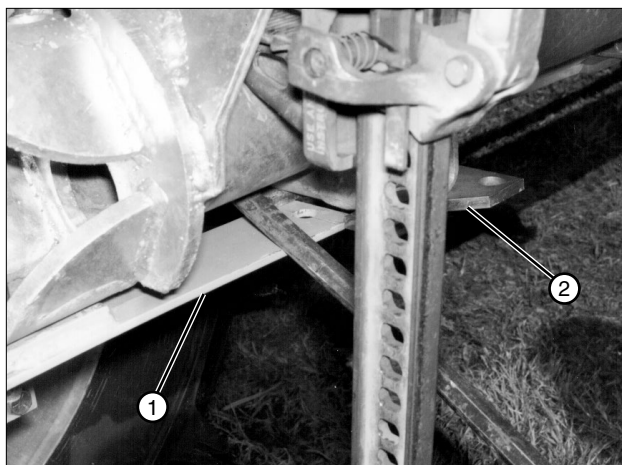


Figure 28-3 1. Steering Arm
2. Latch Plate

Preparing The Drive Unit For Operation (Continued)

- Slide u-joint shield over the u-joint and position approximately 1/4 in away from touching the gearbox. Secure u-joint shield to drive shaft shield with clamp. See figure 29-1.

Repeat the procedure on each of the four u-joint shields.

- Rotate tire until hole in the hub torque pin receiver is aligned with hole in the axle torque arm. Install torque pin and close retainer plate. Secure retainer plate to retainer clip with lynch pin. See figure 29-2.

- Lower the drive unit and remove the jack. The tire is now in the OPERATING position. See figure 29-3.

Repeat steps 1-7 for the other drive unit tire.

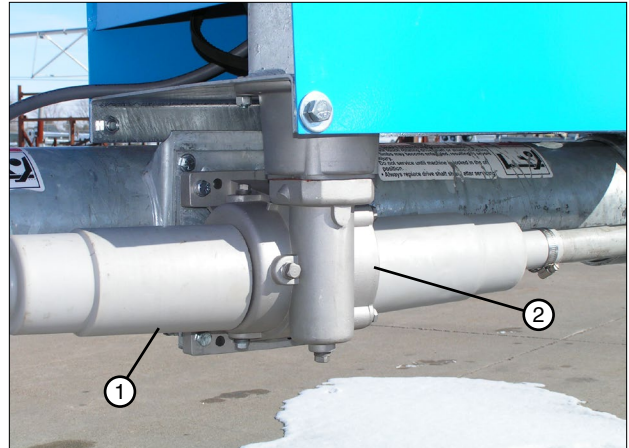


Figure 29-1 1. U-joint Shield
2. Gearbox

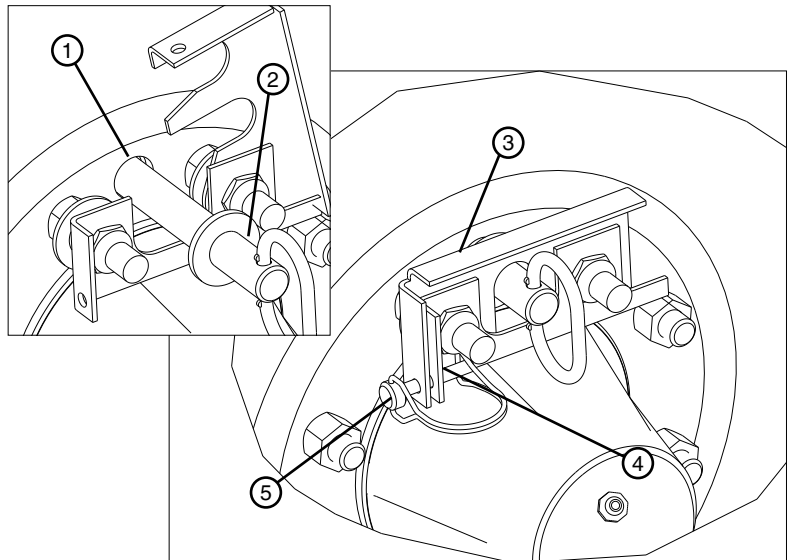


Figure 29-2 1. Hub Torque Pin Receiver 4. Retainer Clip
2. Torque Pin 5. Lynch Pin
3. Retainer Plate



Figure 29-3 1. Tire Shown In Operating Position

OPERATION

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. See figure 30-1.
2. Prepare the drive unit for towing. See Preparing Drive Unit For Towing in the Towing Section.
3. Disconnect the water supply line from lower riser. See figure 30-2.
4. Remove anchor chains securing skid pivot to pivot pad. See figure 30-2.

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.

5. Make sure that the skid pivot is equipped with tow braces. See figure 30-3.

⚠ 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.

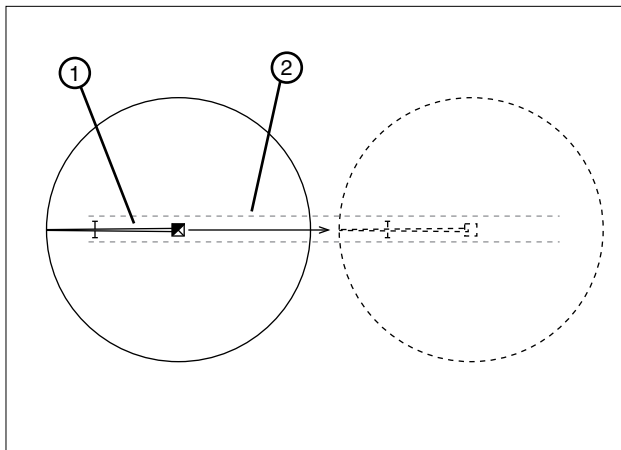


Figure 30-1 1. Machine
2. Tow Lane

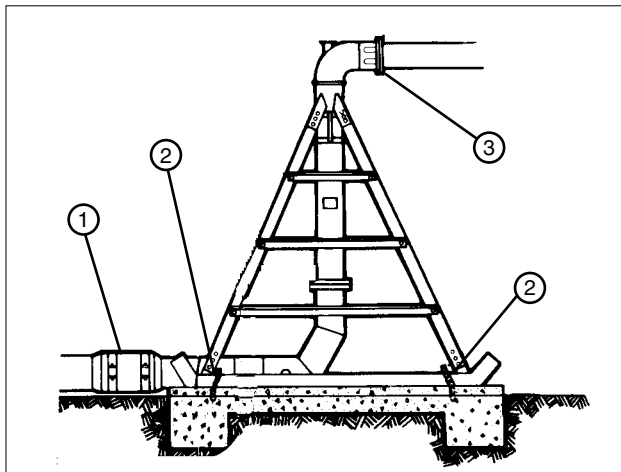


Figure 30-2 1. Water Supply Line
2. Anchor Chain
3. Pivot Flex

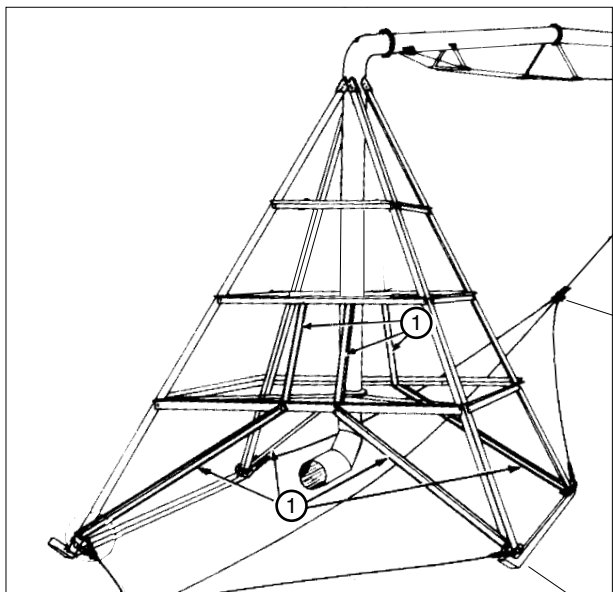


Figure 30-3 1. Tow Brace

Towing The Skid Tow Pivot (Continued)

Attaching Forward Tow Cable

6. Install the tow cable attachment bracket on the span pipe above the drive unit. See figure 31-1.
7. On one end of 1/2 in tow cable, extend 2 feet of cable through one of the eye bolts on turnbuckle, then clamp tow cable together with three 1/2 in cable clamps. See figure 31-1.
8. Bolt the other eye bolt on turnbuckle to the tow cable attachment bracket. See figure 31-1.
9. On the other end of 1/2 in tow cable, extend 2 feet of cable through a clevis and clamp with three 1/2 in cable clamps. See figure 31-1.
10. Wrap chains around the bottom of each pivot leg, then bolt a pivot trail cable to each chain. See figure 31-1.
11. Attach trail cables to tow cable with 1/2 in 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 to prevent the skids from digging into the ground. See figure 31-1.
 - 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 31-1.

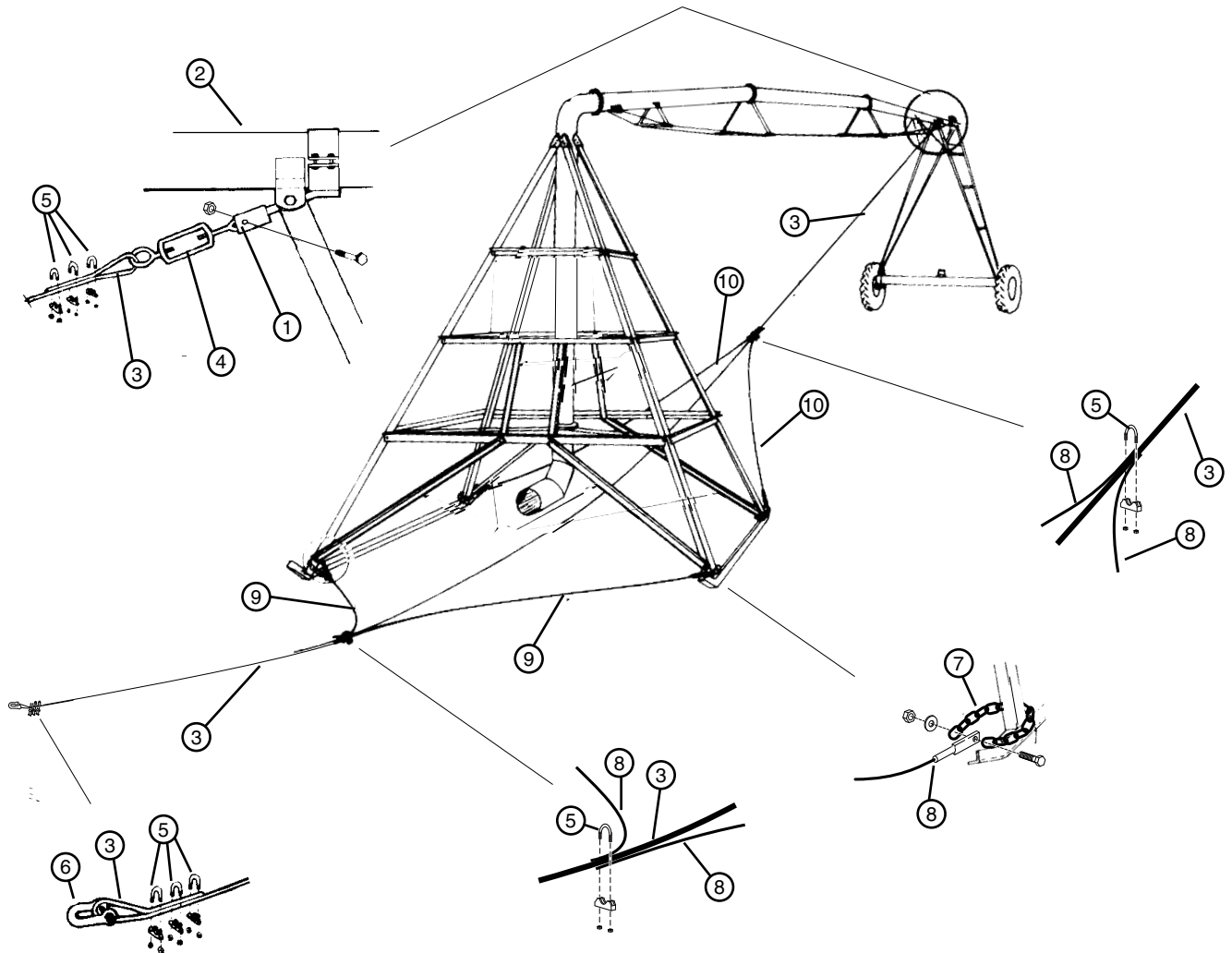


Figure 31-1 1. Tow Cable Attachment Bracket 5. 1/2 in Cable Clamp 9. Leading Trail Cable
2. Span Pipe 6. Clevis 10. Trailing Trail Cable
3. 1/2 in (12.7 mm) Tow Cable 7. Chain
4. Turnbuckle 8. Trail Cable

OPERATION

Wheel Gearboxes

Change the wheel gearbox oil after 1000 hours or after the first season of operation which ever comes first. After that, change the wheel gearbox oil every 3000 hours or 3 seasons of operation which ever comes first. However, at the end of each operating season drain any condensation or contaminated oil, then fill each gearbox to the correct level with new Valley gear oil.

Wheel gearbox capacity is approximately 5 quarts (4.73 liter). Use only Valley Gear Oil.

Valley Gear oil (MIL-L-2105c 85-140 GL5) is a compounded gear lubricant containing non-corrosive extreme pressure additives. Other gear oils may contain sulfur, chlorine and extreme pressure additives which are corrosive to bronze worm gears.

The oil in wheel gearboxes may reach temperatures up to 200° F (94° C) without concern.

Changing Wheel Gearbox Oil

1. Clean all dirt away from the expansion chamber cap, then remove and retain both the hardware securing the expansion chamber cap and the expansion chamber cap. See figure 76.

DO NOT allow dirt to fall into gearbox when removing the expansion chamber cap.

Make sure vent holes on each side of expansion chamber cap are open and unobstructed. See figure 33-1.
2. Remove and retain drain plug from bottom of gearbox and drain oil into a container. See figure 33-1.
3. After oil has completely drained out of gearbox, install drain plug in bottom of gearbox and tighten completely.
4. If desired, remove and retain check plug from oil level hole in the side of gearbox. See figure 78.
5. Fill gearbox with Valley Gear Oil until oil begins to flow out of oil level hole or until oil covers the worm gear. Install check plug in oil level hole, in the side of gearbox and tighten completely. See figure 33-1.
6. Install expansion chamber cap on top of gearbox and secure with original hardware.

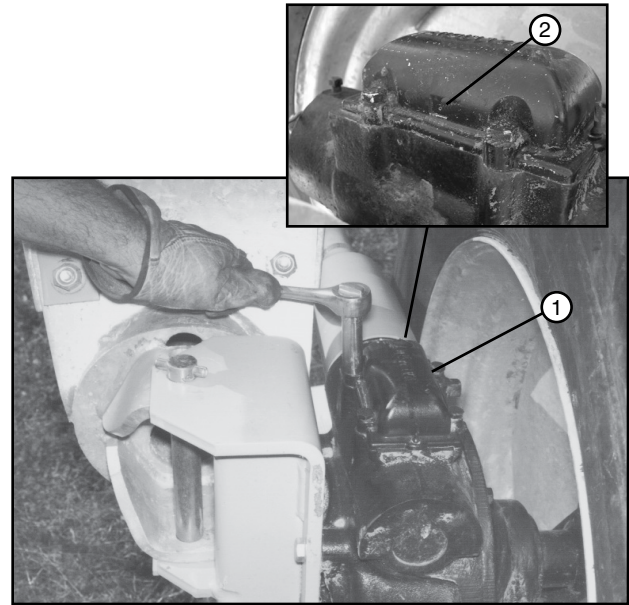


Figure 33-1 1. Expansion chamber cap
2. Vent Hole

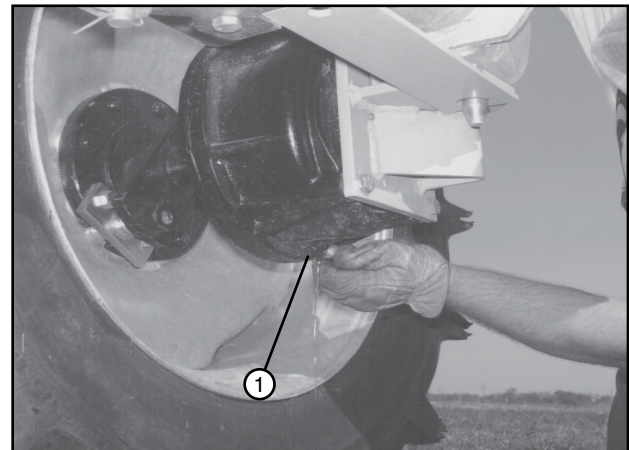


Figure 33-2 1. Drain plug

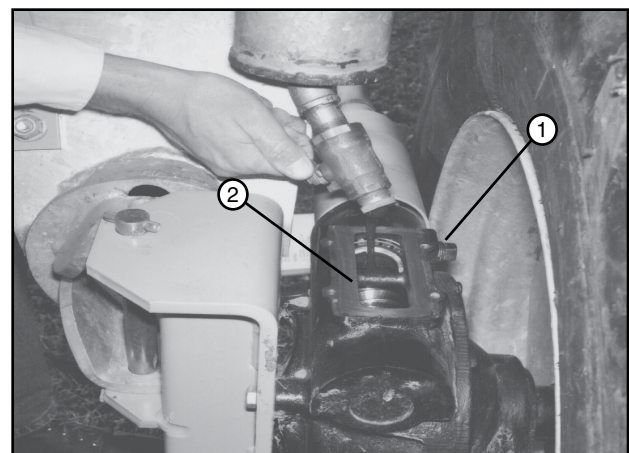


Figure 33-3 1. Check Plug
2. Worm Gear

MAINTENANCE

Center Drive Gearbox

Change the center drive gearbox oil every 1000 hours or after each season of operation, whichever ever comes first. Center drive gearbox capacity is approximately 11 oz (0.32 liter).

Valley Gear oil (MIL-L-2105c 85-140 GL5) is a compounded gear lubricant containing non-corrosive extreme pressure additives. Other gear oils may contain sulfur, chlorine and extreme pressure additives which are corrosive to bronze worm gears.

Changing Center Drive Gearbox Oil

1. Remove and retain fill plug from top of gearbox, oil level plug from side of gearbox and drain plug from bottom of gearbox and drain oil into a container. See figure 34-1.
2. After oil has completely drained out of gearbox, install drain plug in bottom of gearbox and tighten completely. See figure 34-1.
3. Fill gearbox with Valley Gear Oil until oil begins to flow out of oil level hole. Install fill plug in top of gearbox, oil level plug inside of gearbox, then tighten both completely. See figure 34-1.

Tire Pressure

Proper tire pressure is important! Operating with low tire pressure will damage the tires and drive train. Check tire pressure at least three times a year; at spring start-up, during the irrigation season, and when performing fall winterization. Valmont recommends you check tire pressures monthly during the irrigation season. Refer to the decal on the rim for the proper tire pressure. See figure 34-2 for recommended tire pressures.

WARNING

- TIRES ARE SHIPPED AT A PRESSURE OF 30-35 PSI. BE SURE THE TIRES HAVE BEEN DEFLATED TO THE CORRECT PRESSURE (SHOWN ON THE DECAL) BEFORE THE TIRE IS USED.

Replacing Tires

When replacing tires on your system, be sure the ply rating of the new tire is equal to or higher than the ply rating of the old tire. The 11.2-24 four ply Titan tires are specially constructed with a 6-ply bead, and must be replaced with the same Valmont part number (0991257) or with a 6-ply tire.

Wheel Lug Nut Torque

Check wheel lug nut torque before first use at the beginning of each season and then again after season.

Wheel lug nuts should be torqued to 125 lb-ft (169.4 N·m). See figure 34-3.

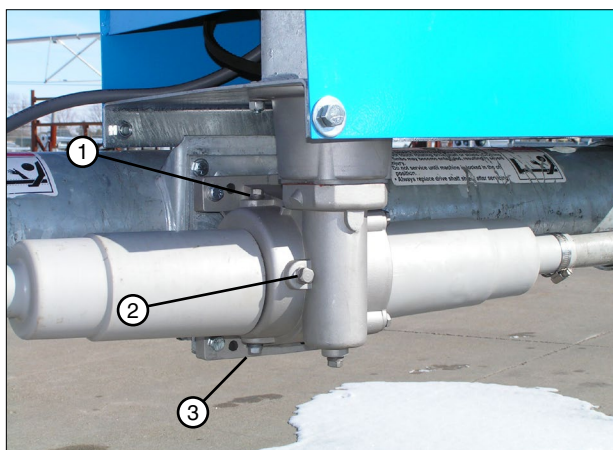


Figure 34-1 1. Fill Plug
2. Oil Level Plug
3. Drain Plug

Recommended Tire Pressures

Tire Size(Inches)	Pounds Per Square Inch(PSI)	Kilopascals(kPa)
11.2-24 New	34	234
11.2-38 New	22	152
14.9-24 New	18	124
14.9-24 New (Turf)	18*	124
16.9-24 New	18*	124
16.9-24 New (Turf)	18*	124
11R24.5 Retread	30	207
9-20 Retread	30	207
12.5-22.5 Retread	30	207
11R22.5 Retread	30	207
10R22.5 Retread	30	207

Figure 34-2 *Tire pressure may be reduced to 16 psi (110 kPa) for increased flotation.

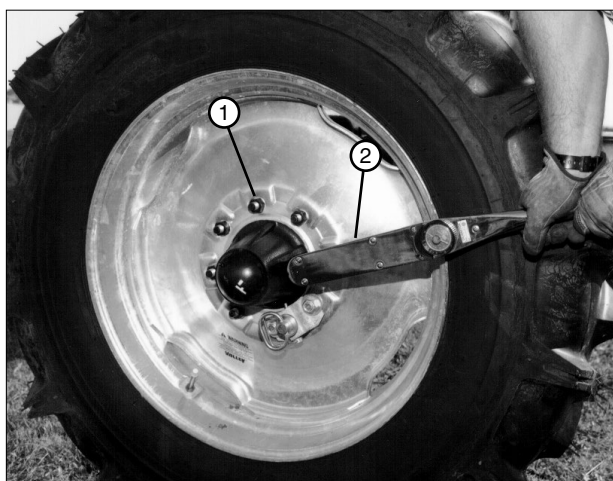


Figure 34-3 1. Lug Nut
2. Torque Wrench

Lubricate two (2) pivot swivel grease fittings every 5-7 revolutions with water resistant lithium based grease to reduce the possibility of the pivot swivel binding. See figure 35-1.

Towable Hub Lubrication

The towable hubs should be greased at least once a year with water resistant lithium based grease, preferably in the fall.

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

Refill the bearing cavity using a grease gun. See figure 35-2.

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.

Pivot Swivel Lubrication

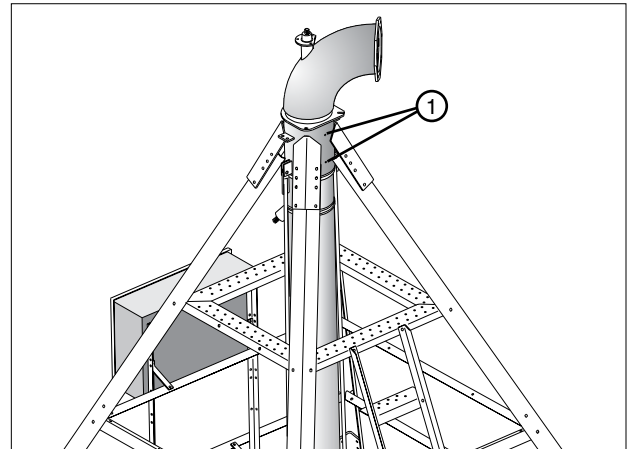


Figure 35-1 1. Grease Fitting

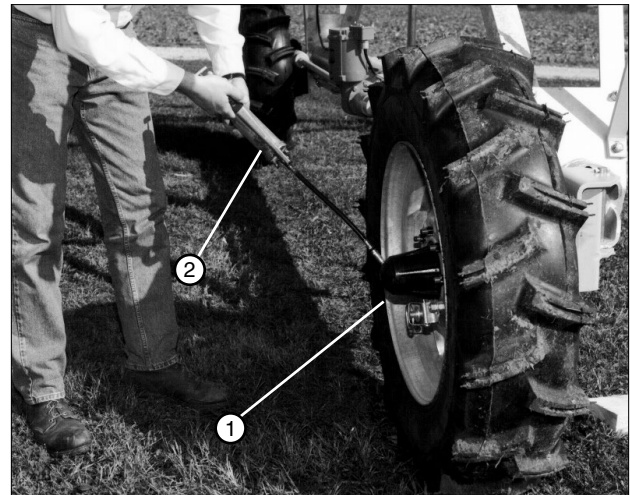


Figure 35-2 1. Towable Hub
2. Grease Gun

MAINTENANCE

2 Wheel Ez-Tow Pivot Swivel Bearing Lubrication

Lubricate the 2 wheel EZ-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 36-1.
2. Lubricate two (2) grease fittings on the upper bearing. See figure 36-2.
3. Lubricate two (2) grease fittings on the lower bearing. See figure 36-3.

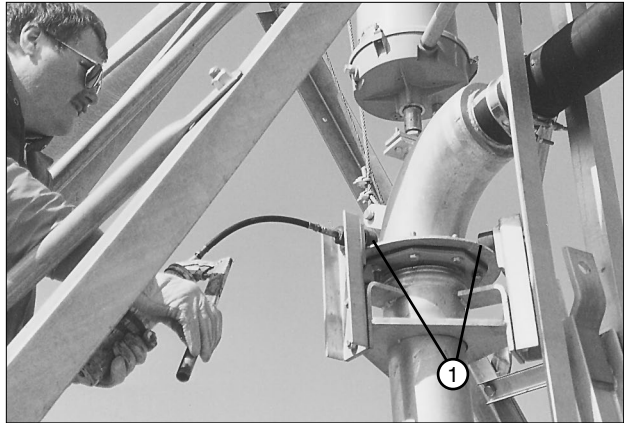


Figure 36-1 1. Upper Swivel Roller

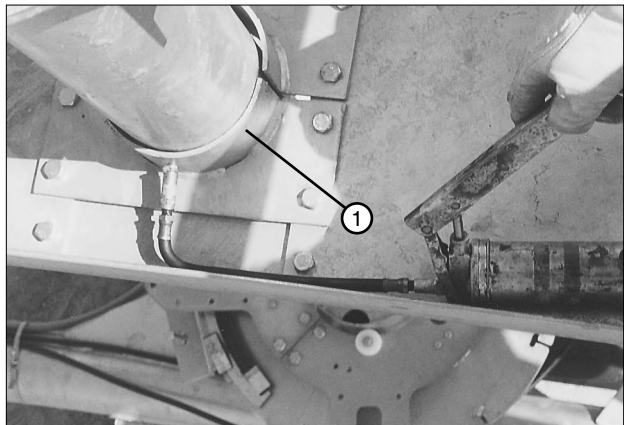


Figure 36-2 1. Upper Bearing

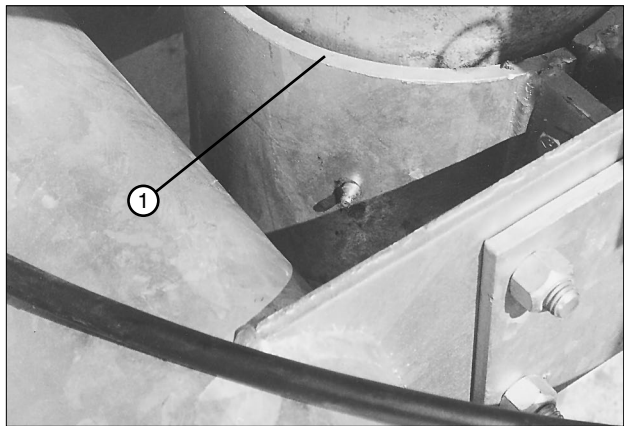


Figure 36-3 1. Lower Bearing

V-Belt Tension

The v-belt tension should be checked after the first 20 hours and then every 100 hours after that.

Checking Tension

Make sure engine is off before checking v-belt tension.

With the center drive gearbox and engine pulleys engaged with v-belt, depress v-belt with 4 to 6 lb of force midway between the center drive gearbox and engine pulleys, the deflection of v-belt should be approximately 5/16 in (0.79 cm). Adjust v-belt tension as needed. See figure 37-1.

Adjusting Tension

WARNING

•TO REDUCE THE POSSIBILITY OF SERIOUS INJURY MAKE SURE ENGINE IS OFF BEFORE ADJUSTING V-BELT TENSION.

With the center drive gearbox and engine pulleys engaged with v-belt:

1. Loosen 1/4 in hex nut securing eye bolt to turnbuckle. See figure 37-1.
2. Turn the turnbuckle counter clockwise to increase v-belt tension or turn the turnbuckle clockwise to reduce v-belt tension. See figure 37-2.
3. Check v-belt tension.
4. Repeat steps 1 thru 3 until correct v-belt tension is achieved, then tighten 1/4 in hex nut against turnbuckle to prevent movement.

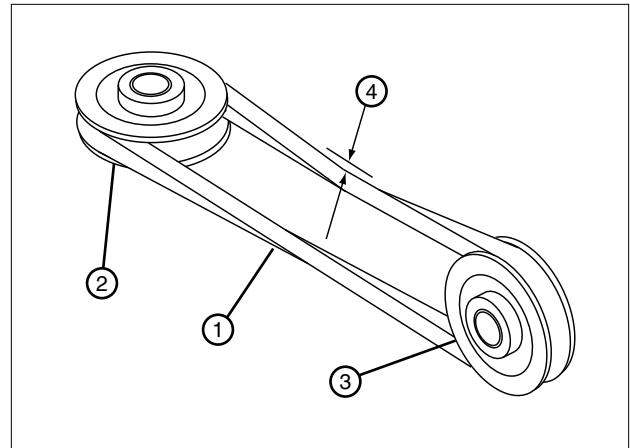


Figure 37-1 1. V-belt
2. Center Drive Pulley
3. Engine Pulley
4. 5/16 in (0.79 cm) DEFLECTION

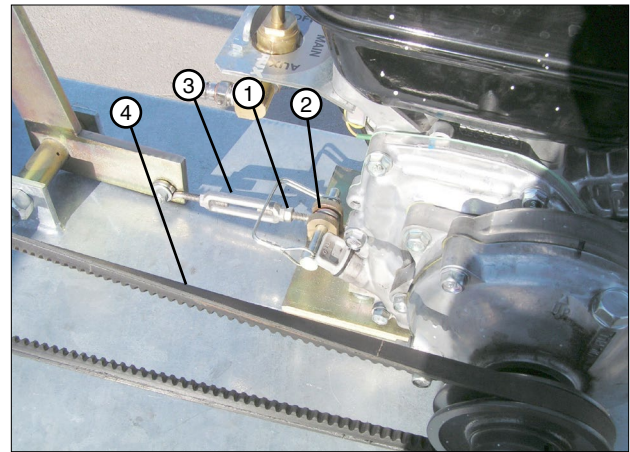


Figure 37-2 1. 1/4 in Hex Nut
2. Eye Bolt
3. Turnbuckle
4. V-belt

MAINTENANCE

Engine And Reduction Case Maintenance

Change engine oil every 50 hours. Maintain all other engine and reduction case components as specified in the engine owner's manual.

Flushing The Machine

Flushing the machine removes sand and debris from the pipeline. Excessive accumulation of sand in the machine, adds weight to the machine which can cause structural damage.

The flushing process should be performed:

- After machine installation
- After pump repair
- After structural repair
- Before and after each season
- As required according to the debris and sand content of the water.

WARNING

- DO NOT START THE FLUSHING PROCEDURE WHILE THE MACHINE IS UNDER PRESSURE. REMOVING SAND TRAP, PLUGS OR DRAINS WHILE THE PIVOT IS UNDER PRESSURE MAY CAUSE SERIOUS PERSONAL INJURY OR DEATH.

Flushing Procedure

1. Remove span pipe drain and seal. Mark the drain side of seal for reference later. Clean sand and debris from the drain. See figure 38-1.
2. Remove sand trap at the drive unit. Clean sand and debris from the trap. See figure 38-2.
3. Remove plugs from the overhang. See figure 38-3.
4. Start the irrigation pump and flush the machine thoroughly.
5. Stop the irrigation pump.

After flushing for winterization, make sure water has completely drained from pipes before installing drains and plugs To reduce the possibility of damage to the pipeline due to freezing water.

6. Install drain and seal. Notice the drain side of seal is marked. Turn seal over when installing to increase seal life.
7. Install sand trap.
8. Install plugs and tighten completely.

Flushing procedure is complete.

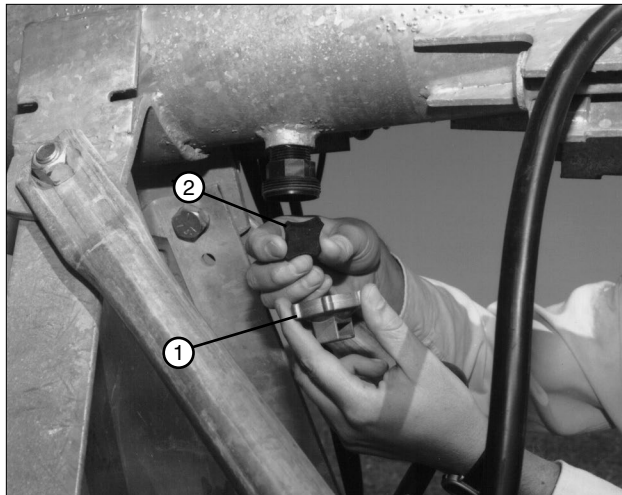


Figure 38-1 1. Drain
2. Seal



Figure 38-2 1. Sand Trap

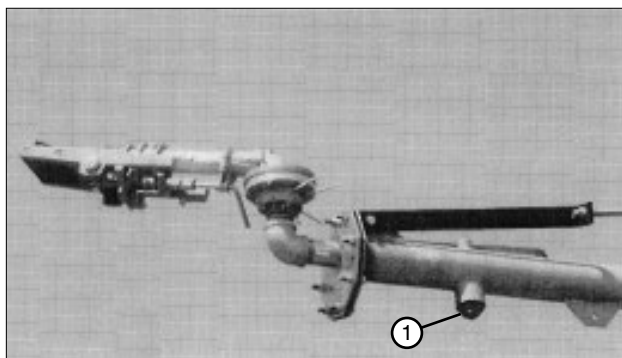


Figure 38-3 1. Overhang Plug

MAINTENANCE

Maintenance Schedule

MAINTENANCE DESCRIPTION						REMARKS
	PRE-SEASON	BEFORE EVERY USE	AFTER FIRST PASS	DURING THE SEASON	POST-SEASON	
PERFORM THE BEFORE OPERATION CHECKS ON ENGINE		✓				SEE ENGINE OWNER'S MANUAL
CLEAN AUXILIARY FUEL TANK AND REPLACE FUEL FILTER	✓			✓		AS REQUIRED EVERY 6 MONTHS OR 500 HOURS
PERFORM ENGINE MAINTENANCE	✓			✓		SEE ENGINE AND REDUCTION CASE MAINTENANCE ON PAGE 48
CHECK DRIVE V-BELT FOR CRACKING AND WEAR	✓					REPLACE AS NEEDED
CHECK MACHINE FOR LOOSE HARDWARE	✓	✓	✓	✓		TIGHTEN AS REQUIRED
CHECK STRUCTURAL COMPONENTS FOR DAMAGE	✓			✓		REPAIR AS REQUIRED
CHECK ANCHOR BOLTS, CHAINS AND LOAD BINDERS		✓	✓			TIGHTEN OR REPLACE AS NEEDED
LUBRICATE PIVOT SWIVEL				✓	✓	SEE PIVOT SWIVEL LUBRICATION
LUBRICATE PIVOT SWIVEL BEARINGS				✓	✓	SEE 2 WHEEL EZ-TOW PIVOT SWIVEL BEARING LUBRICATION
FLUSH MACHINE	✓				✓	AS REQUIRED, SEE FLUSHING PROCEDURE
CHECK FLANGES FOR LEAKS	✓	✓	✓			REPAIR AS REQUIRED
CHECK PIPE DRAINS FOR PROPER OPERATION	✓		✓			CLEAN DRAINS AN REPLACE SEALS AS REQUIRED
CHECK FOR CORRECT WATER PRESSURE	✓			✓		PRESSURE MUST MATCH SPRINKLER PACKAGE
CHECK SPRINKLERS AND NOZZLES FOR TIGHTNESS, FREE MOVEMENT AND WEAR	✓					REPLACE AS NEEDED
CHECK FOR PLUGGED NOZZLES	✓			✓		CLEAN AS REQUIRED
CHECK PRESSURE GAUGE FOR PROPER OPERATION	✓			✓		REPLACE AS NEEDED
FLUSH MACHINE	✓				✓	SEE FLUSHING THE MACHINE
CHECK OR CHANGE WHEEL GEARBOX OIL	✓				✓	SEE WHEEL GEARBOX
CHECK OR CHANGE CENTER DRIVE GEARBOX OIL	✓				✓	SEE CENTER DRIVE GEARBOX
CHECK GEARBOX SEALS AND GASKETS FOR LEAKS				✓	✓	REPLACE AS NEEDED
CHECK DRIVE SHAFT U-JOINTS.				✓	✓	REPAIR AS NEEDED
CHECK DRIVE SHAFT AND U-JOINT SHIELDS		✓			✓	ADJUST/REPLACE AS NEEDED
CHECK WHEEL LUG BOLTS FOR PROPER TORQUE	✓				✓	TIGHTEN AS REQUIRED TO 125 lb-ft OF TORQUE
CHECK TIRE PRESSURE	✓			✓	✓	SEE TIRE PRESSURE
CLEAN WHEEL GEARBOX EXPANSION CHAMBER VENT				✓	✓	AS NEEDED DURING THE SEASON
LUBRICATE TOWABLE HUBS					✓	SEE TOWABLE HUB LUBRICATION
CHECK OVERHANG CABLES FOR BROKEN CABLE STRANDS	✓	✓			✓	REPLACE AS REQUIRED
CLEAN END GUN DRAIN					✓	SEE FLUSHING PROCEDURE
CLEAN SAND TRAP					✓	SEE FLUSHING PROCEDURE
CHECK END GUN ARC SETTINGS	✓					ADJUST AS REQUIRED
CHECK END GUN NOZZLE FOR WEAR	✓					REPLACE AS NEEDED
CHECK END GUN BEARING AND BRAKE	✓					REPAIR AS NEEDED
WINTERIZE MACHINE					✓	SEE WINTERIZATION CHECK LIST

MAINTENANCE

Winterization Checklist

- Eliminate all wheel tracks in the field.
- Park the machine in an area where wheel tracks have been eliminated.
- Flush and drain the machine. See Flushing Procedure.
- Make sure all underground pipe leading to the pivot is drained to below the frost line to prevent damage from freezing.
- Cap or plug open pipes to prevent trash or small animal entry.
- Check and inflate tires to proper pressure. See Tire Pressure section.
- Tighten wheel lug nuts to 125 lb-ft (169.4 N·m) of torque.
- If applicable, lubricate the pivot swivel. See Pivot Swivel Lubrication.
- If applicable, lubricate the 2 Wheel EZ-Tow Pivot Swivel Bearings. See 2 Wheel EZ-Tow Pivot Swivel Bearing Lubrication.
- If applicable, lubricate the towable wheel hubs. See Towable Hub Lubrication.
- Perform maintenance on wheel gearboxes. See Wheel Gearbox section.
- Perform maintenance on center drive gearbox. See Center Drive Gearbox section.
- Perform end of season maintenance on the drive engine. Refer to the Storing Your Engine section in the engine Owner's Manual.
- Drain all fuel from the auxiliary fuel tank to avoid fuel deterioration problems next season such as fuel system damage or poor engine performance.

Contact your local Valley Dealer for additional winterizing procedures which are common for your area.