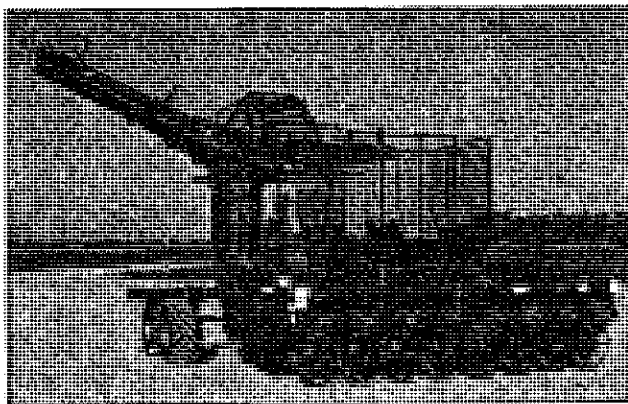




Beet Harvester

Model 692B

2000 with Folding Elevator



Operator's Manual

490470
0800

Art's-Way Manufacturing Co., Inc.

TO THE OWNER

Congratulations on the purchase of your new Art's-Way Sugar Beet Harvester. You have selected a top quality machine that is designed and built with pride to ensure you have many years of efficient, reliable service.

Many people have worked on the design, production, and delivery of this harvester. The information in this Manual is based on the knowledge, study and experience of these people through years of manufacturing specialized farming machinery. This Manual is designed to provide you with important information regarding safety, maintenance and machine operation so you can get the best possible performance from your harvester.

Even if you are an experienced operator of this or similar equipment, we ask you to *read this Manual before running this harvester*. The way you operate, adjust, and maintain this unit will have much to do with its successful performance. Any further questions you may have about this piece of Art's-Way equipment should be directed to your local Art's-Way dealer or to Art's-Way Manufacturing Co., Inc., Armstrong, Iowa, 50514, (712) 864-3131.

Specifications And Design Are Subject To Change Without Notice

Art's-Way Manufacturing Co., Inc. is continually making product improvements. In doing so, we reserve the right to make changes or add improvements to our products without obligation for the equipment previously sold.

Because modifications to this harvester may effect the performance, function and safety of its operation, no modifications are to be made without the written permission of Art's-Way Manufacturing Co., Inc. Any modifications made without the written permission of Art's-Way Manufacturing Co., Inc. shall void the warranty of this product.

In the interest of continued safe operation of this harvester, pay particular attention to the safety alert symbol throughout this Manual.

Art's-Way Manufacturing Co., Inc. Statement Of Product Liability

Art's-Way Manufacturing Co., Inc. recognizes its responsibility to provide its customers with a safe and efficient product. Art's-Way attempts to design and manufacture its products in accordance with all accepted engineering practices in effect at the date of design. This statement should not be interpreted to mean that our products will protect against the user's own carelessness or failure to follow common safety practices, as set forth in this Manual, nor will Art's-Way be liable for any such act. In addition, Art's Way assumes no liability for product altered or modified in any way by users or anyone other than an authorized dealer.

Important Warranty Information

The warranty for this harvester appears on page 1 of this Manual. In order to establish proper warranty registration, the Warranty Registration and Dealer Pre-Delivery Checklist must be completed and returned to the factory. Failure to comply with this requirement may result in reduced warranty allowances.

Limitations of this Manual

This Manual contains operating instructions for your Sugar Beet Harvester only. It does not replace the Manual(s) for any machine that it may be attached to or used with.

PARTS & SERVICE

As the new purchaser of your Beet Harvester, it is very important to consider the following factors:

- A. Original Quality
- B. Availability of Service Parts
- C. Availability of Adequate Service Facilities

Art's-Way Manufacturing Co., Inc. has an excellent dealership network ready to answer any questions you may have about your harvester. Parts for your machine may be ordered through our dealers. When placing a parts order, please have the *model* and *serial number* ready. This will allow the dealer to fill your order as quickly as possible.

For your convenience, we have provided this space for you to record your model number, serial number and the date of purchase, as well as your dealer's name and address.

Owner's Name: _____

Owner's Address: _____

Purchase Date: _____

Dealership Name: _____

Dealership Address: _____

Dealership Phone No.: _____

Building on a
Art's-Way
Tradition of Quality

SERIAL NO.

MODEL NO.

Manufactured By
Art's-Way Manufacturing Co., Inc.
Armstrong, IA

Machine Serial Number Location

(The serial number is located left front corner of the main frame.)

Enter the serial number and model number of your beet harvester in the space provided above.

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NOTES

LIMITED WARRANTY

Art's-Way Manufacturing Co., Inc. warrants the products it sells to be free from defects in material and workmanship for a period of one (1) year after the date of delivery to the first purchaser, subject to the following conditions:

- **Art's-Way Manufacturing Co., Inc.** obligation and liability under this warranty is to repair or replace (at the company's option) any parts which upon manufacture were defective in material or workmanship.
- All parts and repairs under this warranty shall be supplied at an authorized **Art's-Way Manufacturing Co., Inc.** dealer or at the factory, at the option of **Art's-Way Manufacturing Co., Inc.**
- **Art's-Way Manufacturing Co., Inc.** warranty does not extend to parts and elements not manufactured by **Art's-Way Manufacturing Co., Inc.** and which carry the warranty of the other manufacturer.
- Transportation or shipping to an authorized dealer for necessary repairs is at the expense of the purchaser.
- **Art's-Way Manufacturing Co., Inc.** makes no other warranty expressed or implied and makes no warranty of merchantability or fitness for any particular purpose beyond that expressly stated in this warranty. **Art's-Way Manufacturing Co., Inc.** liability is limited to the terms set forth in this warranty and does not include any liability for direct, indirect, incidental or consequential damages or expenses of delay and the Company's liability is limited to repair or replacement of defective parts as set forth herein.
- Any improper use, and maintenance, including operation after discovery of defective or worn parts, operation beyond the rated capacity, substitution of parts not approved by **Art's-Way Manufacturing Co., Inc.** or any alteration or repair by other than authorized **Art's-Way Manufacturing Co., Inc.** dealer which affects the product materially and adversely, shall void this warranty.
- No dealer, employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of **Art's-Way Manufacturing Co., Inc.** at its home office.
- Some states do not allow limitations on how long an implied warranty lasts or exclusions of, or limitations on relief such as incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you the specific legal rights and you may have other rights which vary from state to state.

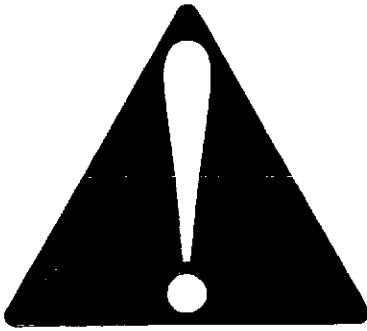
SAFETY FIRST

“A careful operator is the best insurance against an accident.”

(National Safety Council)

Most accidents can be prevented if the operator:

- fully understands how the machine functions
- can anticipate situations which may produce problems
- can make necessary corrections before problems develop.



The Universal Safety Alert Symbol

THIS SYMBOL MEANS ATTENTION!

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

The American Society of Agricultural Engineers has adopted the *Universal Safety Alert Symbol* (shown above) as a way to identify areas of potential danger if the equipment is not operated correctly. *Please be alert whenever you see this symbol in the manuals or on your harvester.*

Art's-Way Manufacturing Co., Inc. strives to make our equipment as safe as it can possibly be. The Art's-Way Sugar Beet Harvester conforms to applicable safety standards at the time of manufacturing. A safety conscious equipment operator makes an effective accident-prevention program complete.

Safety features and instructions for the Sugar Beet Harvester are detailed elsewhere in the Operator's Manual. It is the responsibility of the owner to ensure that *all* operators read and understand the manual before they are allowed to operate the harvester. (*Occupational Safety and Health Administration (OSHA) regulation 1928.57.*)

Notices of Danger, Warning & Caution

Signal Words: Note the use of signal words DANGER, WARNING, and CAUTION on the harvester and in this manual. The appropriate signal word for each has been selected using the following guidelines:



DANGER: Immediate and specific hazard which *will* result in severe personal injury or death if proper precautions are not taken.



WARNING: Specific hazard or unsafe practice *could* result in severe personal injury or death if proper precautions are not taken.



CAUTION: A reminder of good safety practices. Personal injury *could* result if proper procedures are not followed.



SAFETY GUIDELINES



Remember:
"The Best Operator is a Safe Operator"



CAUTION: READ and UNDERSTAND the Operator's Manual and all the safety decals before operating the harvester. Review all safety instructions with all operators annually.

Before Operating

- Do not wear loose fitting clothing as it may catch in moving parts.
- Make sure to install and/or secure all guards and shields, including the tractor power take-off master shield, before starting or operating the harvester.
- Be sure that the correct implement driveline parts are used and that they are properly secured.
- Lower the lifter wheels when the harvester is not in use.
- Install the safety chain when attaching the harvester to the tractor.
- Clear the area of bystanders, especially children, when making repairs, adjustments or performing maintenance on the harvester.
- Do not allow riders.
- Put all tractor and machine controls in "neutral" and disengage the PTO before starting. Follow the starting instructions according to your tractor Manual.
- Operate the harvester only while seated on the tractor seat.
- Make sure the unit is adequately supported with safety blocks or safety stands when changing tires or working on it.



CAUTION: Keep well clear of moving parts. Be sure to shut off the tractor, set the parking brake, put the machine in neutral, and remove the tractor key while making adjustments. Wait for all movement to stop before approaching the machine.

During Operation

- Keep hands, feet, hair and clothing away from moving parts.
- Keep all shields and guards in place and in good repair.
- Keep all children and bystanders away from the harvester while in operation.
- Do not allow riders while the harvester is in operation.
- Do not attempt to unclog, clean or adjust the harvester while it is running.
- Stay away from overhead power lines. Electrocution can occur even without direct contact.
- Keep all hydraulic lines, fittings, and couplers tight and free of leaks. (See the Hydraulic Safety section.)
- Be careful when ascending or descending on the harvester, wet shoes or boots are slippery.

Maintenance Safety

- Follow all operating, maintenance and safety instructions found in this Manual.
- Before servicing, adjusting, repairing or unplugging the machine, always ensure that the tractor engine is stopped, the machine is lowered to the ground, all controls are placed in neutral, the parking brake is set, and all the moving parts have stopped.
- Use only the tools, jacks and hoists that are of sufficient capacity for the job.
- Use support blocks or safety stands when changing tires or working under the machine.

SAFETY GUIDELINES

- Follow the good shop practices of keeping the service area clean and dry and use adequate light for the job at hand.
- Before applying pressure to the hydraulic system, make sure all lines, fittings and couplers are tight and in good condition.
- Make sure all shields/guards are in place and properly secured when maintenance is complete.

Hydraulic Safety

- Make sure components in the hydraulic system are kept clean and in good condition.
- Relieve pressure from the hydraulic circuit before servicing or disconnecting from the tractor.
- Keep all hydraulic lines, fittings, and couplers tight and free of leaks.
- Replace any worn, cut, abraded, flattened or crimped hoses.
- Do not make any temporary repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cement. The hydraulic system operates under extremely high pressure and temporary repairs may fail suddenly and create a bazardous situation.
- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to identify and isolate a leak. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop if hydraulic fluid penetrates the surface of the skin.
- Before applying pressure to the system, make sure all components are tight and that the lines, hoses and couplings are not damaged.

Transportation Safety

- Be sure to comply with all local regulations regarding transporting equipment on public roads and highways.

- Make sure the Slow Moving Vehicle (SMV) emblem and all lights and reflectors required by local highway and transportation authorities are in place, clean and clearly visible to all oncoming or following traffic.
- Do not allow riders while transporting.
- Make sure the harvester is securely attached to the tractor and install a safety chain to the harvester.
- Do not fail to latch the tractor brake pedals together.
- Do not exceed 20 mph (32km/h) when transporting the harvester. Always reduce speed on rough roads and surfaces, or when going down inclines.
- Drive slowly when turning and always use turn signals on the tractor to indicate your turning intentions to the other traffic.
- The weight of the trailed machine should **NEVER** exceed the weight of the towing vehicle.
- Check clearances carefully wherever the machine is towed.
- Lower the elevator into the transport position before transporting the harvester on the highway.
- Stay away from overhead obstructions and power lines during transport. Electrocution can occur even without direct contact.

Storage Safety

- Store the harvester in an area away from human activity.
- Do not permit children to play on or around the stored machine.
- Ensure that the harvester is stored in an area with a firm and level base to prevent the machine from tipping or sinking into the ground.
- Block the wheels to prevent the machine from rolling.

Tire Safety

- Have a qualified tire dealer or repair service perform tire repairs.

SAFETY GUIDELINES

- Do not attempt to install a tire on a wheel or rim unless you have the proper equipment and experience to do the job.
- Follow proper procedures when installing a tire on a wheel or rim to prevent an explosion which could result in serious injury.
- Do not substitute tires of lesser road rating and capacity for the original equipment tires.



CAUTION: Failure to follow proper procedures when installing a tire on a wheel or rim can produce an explosion which may result in serious injury or death. Do not attempt to install a tire unless you have the proper equipment and experience to perform the job. Have it done by your dealer or a qualified tire repair service.

Assembly Safety

- Use adequate manpower to perform assembly procedures safely.
- Assemble the harvester in a area with sufficient space to maneuver the largest components and allow easy access to all sides of the machine.
- Use only forklifts, lift cranes, jacks and tools with sufficient capacity for the loads.
- Do not allow spectators in the working area.

Remember:

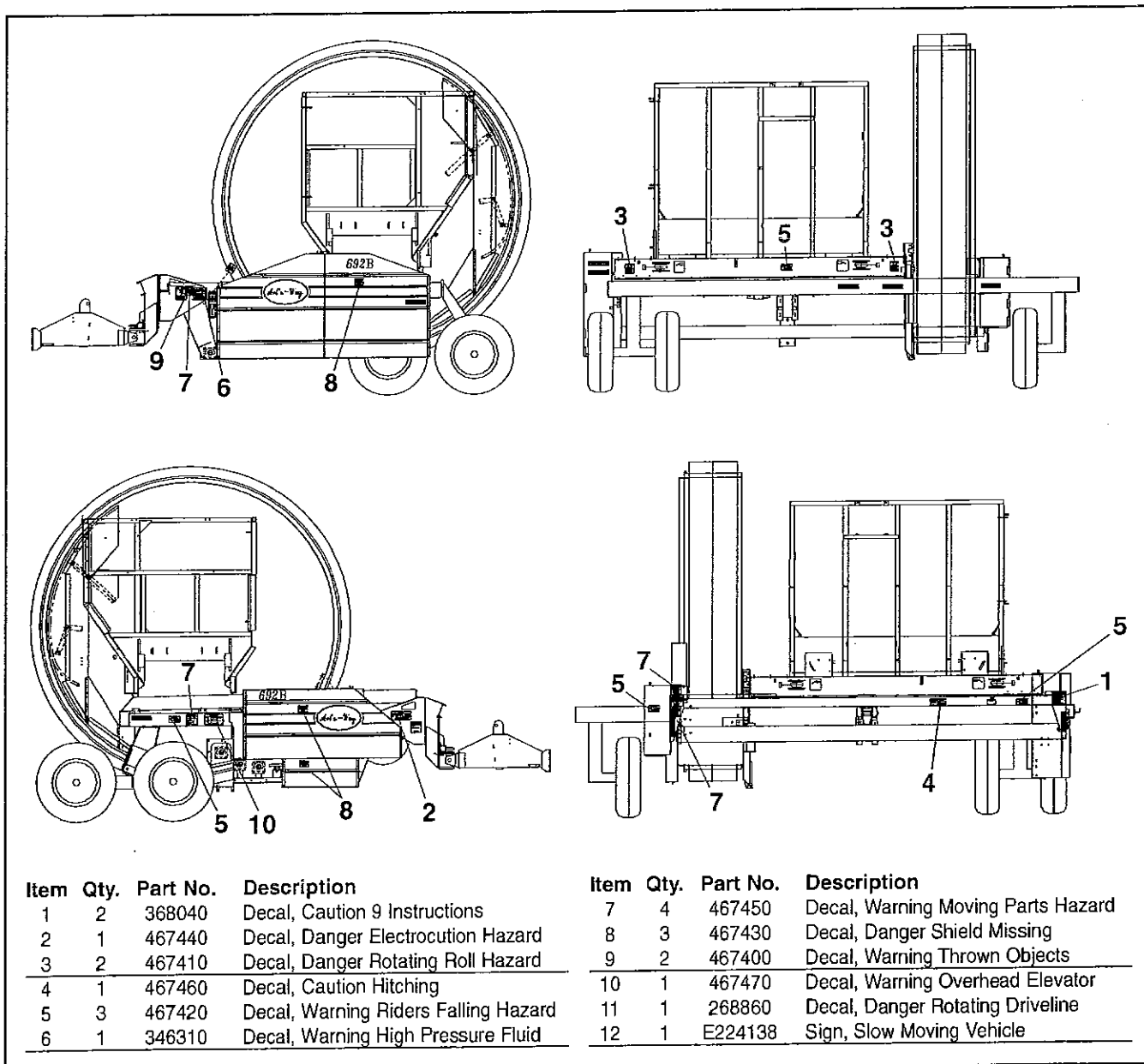
"The Best Operator is a Safe Operator"

SAFETY DECALS

Decal Locations

The different types of safety decals for your Sugar Beet Harvester are illustrated on the following pages. Please familiarize yourself with the appearance of each decal, the warning it describes and the area where it is located on the harvester. Refer diagram below for decal locations. The six digit number following the description on the following pages is the part number of that decal. (This part number also appears on the lower right corner of the decal.)

Safety awareness is the responsibility of *each* operator of the harvester. Keep safety decals and signs clean and legible and be sure replacement parts display the current safety decals and signs as well. **Remember: Always replace missing, damaged or illegible safety decals. New decals and signs are available from your dealer.**

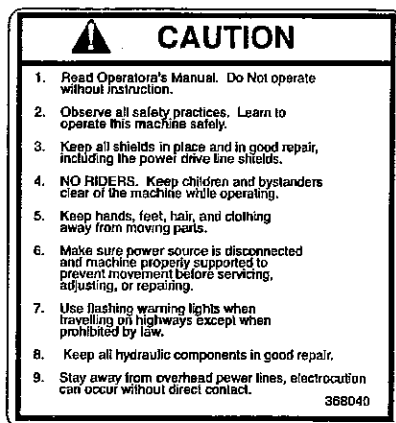


Safety Decal Location Diagram.

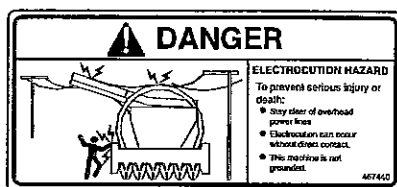
Note: Keep all decals clean and free of dirt for maximum visibility.
 Replace any and all decals that are no longer legible.
 Read and obey all safety decals.

SAFETY DECALS

Decal Identification & Part Numbers



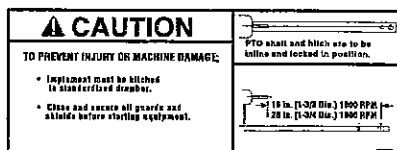
1 - "CAUTION" - Lists Nine Instructions. Part No. 368040



2 - "DANGER" - Electrocutation Hazard - Part No. 467440



3 - "DANGER" - Rotating Roll Hazard. Part No. 467410



4 - "CAUTION" - Hitching. Part No. 467460



5 - "WARNING" - Riders Falling Hazard. Part No. 467420



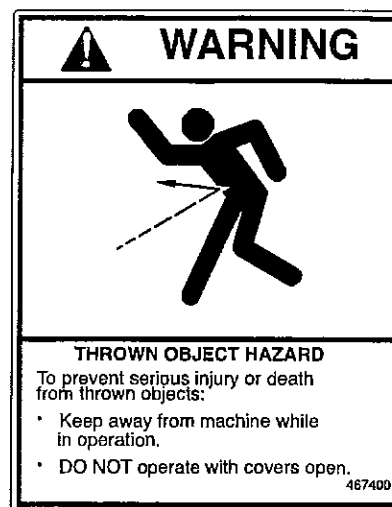
6 - "WARNING" - High Pressure Fluid. Part No. 346310



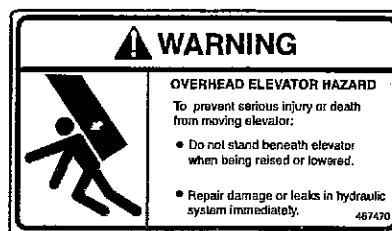
7 - "WARNING" - Moving Parts Hazard. Part No. 467450



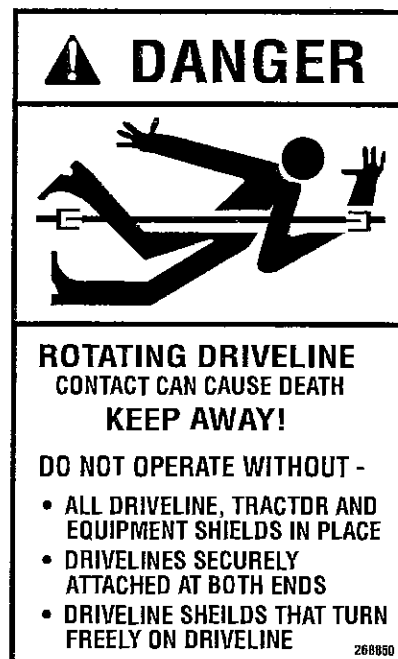
8 - "DANGER" - Shield Missing Hazard. Part No. 467430



9 - "WARNING" - Thrown Objects. Part No. 467400

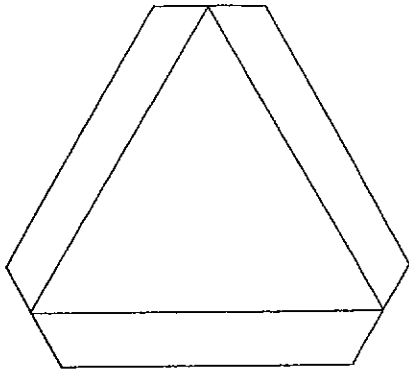


10 - "WARNING" - Overhead Elevator Hazard. Part No. 467470



No. 11 - "DANGER" - Rotating driveline (located on PTO). Part No. 268860.

SAFETY DECALS



12 - Slow Moving Vehicle Sign. Part No.
E224138

Note: Keep all decals clean and free of dirt for maximum visibility. Replace any and all decals that are no longer legible. Read and obey all safety decals.

SECTION 1: INTRODUCTION

This manual has been prepared to acquaint you with the proper assembly, operation, adjustment, service, and lubrication of the 692B Beet Harvester. Take the time to better understand the efficient operation and care of your machine.

Whenever the terms "Left" and "Right" are used, it should be understood to mean standing behind the machine and facing the direction of the forward travel.

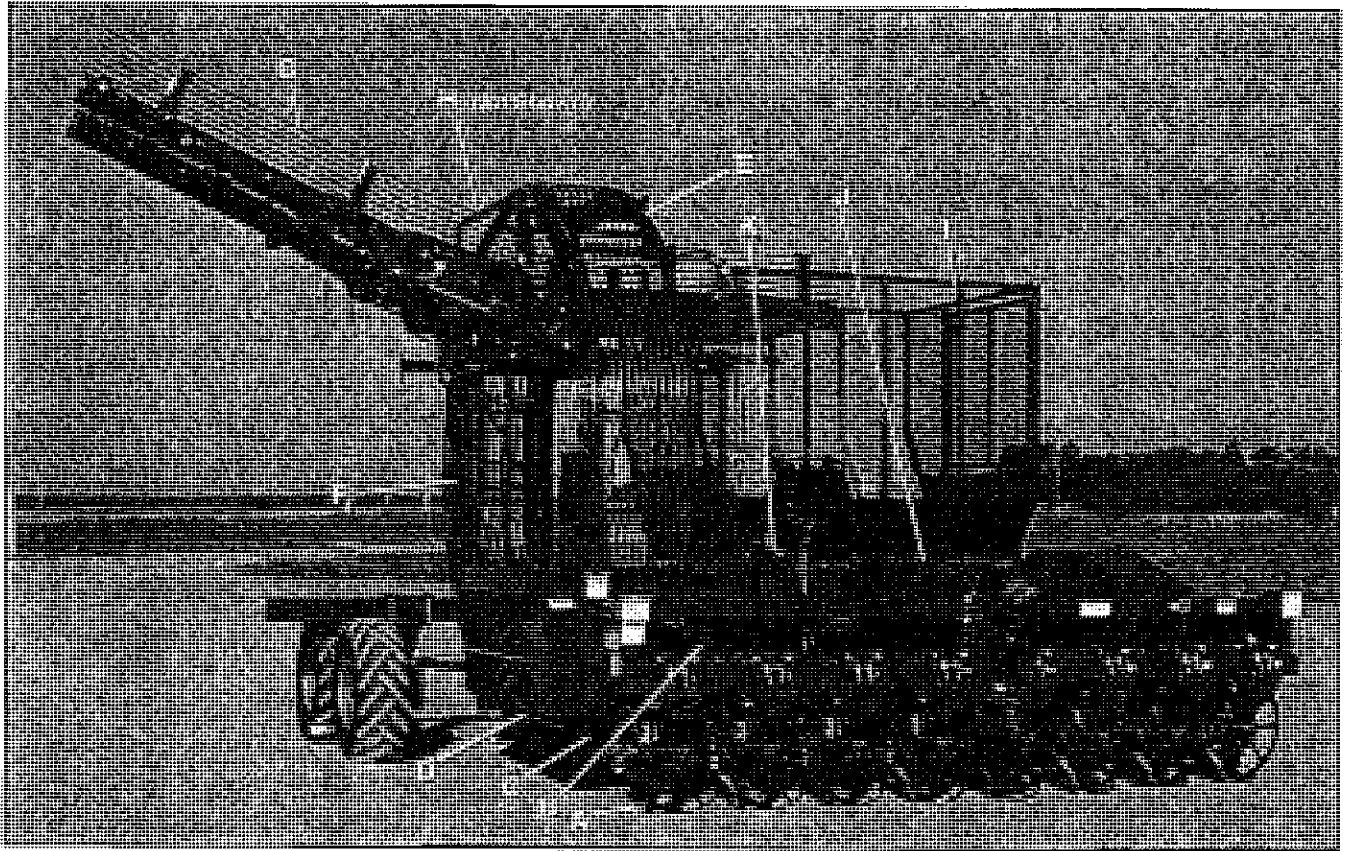


Figure 1.01: Beet Flow.

Beet Flow

The following is a step-by-step description of the beet flow through the beet harvester (Refers to Figure 1.01):

The lifter wheels (A) penetrate the soil and lift the beets out of the ground.

The revolving steel/rubber paddles (B) at the rear upper quarter of the lifter wheels knock off dirt as they move the beets onto the star roll and conveyor roll bed (C).

An inclining bed consisting of one star roll and six conveyor rolls moves the beets to the left side of the machine and back to the grab roll cleaning area (D).

Three spiral grab rolls are paired with three smooth rolls which strip dirt, soil, and trash from the beets as they flow into the wheel elevator (E).

The wheel elevator revolves at approximately 11 rpm, (at 1000 PTO rpm) carrying the beets up to the truck elevator. A retainer (F) holds the beets in the wheel until they reach the top and fall into the truck elevator (G). A stripper (H - not shown) clears the wheel of any rocks or beets that wedge between the rods,

The truck elevator delivers the beets to a truck or the holding tank (I).

The tank bottom unloading conveyor (J) is actuated by a hydraulic motor (K) - moving the beets onto the grab rolls, into the wheel elevator and onto the truck elevator.

SECTION 1: INTRODUCTION

Inspect the Beet Harvester

Generally inspect the machine for:

- Any loose bolts or set screws.
- Proper tensioning of all roller chains, drive belts and draper chains.
- Proper PTO installation and lubrication.
- Proper installation of hydraulic cylinders and hoses.
- Electric wires and hydraulic lines are adequately secured to prevent damage.
- Oil level in gearboxes up to fill plug.
- All shields and guards are in place.
- Proper installation of any options.
- Tires (13.50 x 16.1 6 ply traction) inflated to 25 psi (30 psi maximum).

Tractor

Art's-Way Sugar Beet Harvesters are designed to be used on large agricultural tractors. To ensure good performance, the following requirements must be met:

Horsepower - In consideration of the size and weight of the harvester, we recommend that the harvester be operated by a tractor with 175 PTO horsepower or larger. 175 PTO HP is the minimum requirement. This recommendation will provide the stability and control necessary for safe operation and highway transport.

Drawbar - Set the tractor drawbar at 16 inches from the end of the PTO to the center of the drawbar attaching hole for 1-3/8" PTO's, and at 20 inches for 1-3/4" PTO's. When connected to the tractor, the driveline should measure between 58 and 68 inches between centers of the universal crosses. Refer to Figures 1.02 and 1.04.

NOTE: Use of an additional support for the tractor drawbar is recommended. An optional drawbar support kit is available from your Art's Way dealer.

Drawbar and PTO Dimensions

| Dimension | Tractor PTO | Dimension |
|-----------|--------------------|------------|
| A | 1-3/8" - 21 spline | 16" |
| | 1-3/4" - 20 spline | 20" |
| B | All | 58" to 68" |

Figure 1.02: Drawbar and PTO Dimensions.

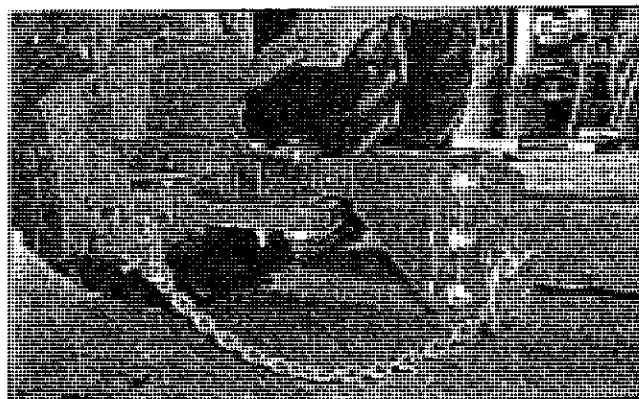


Figure 1.03: Safety Chain Installed.

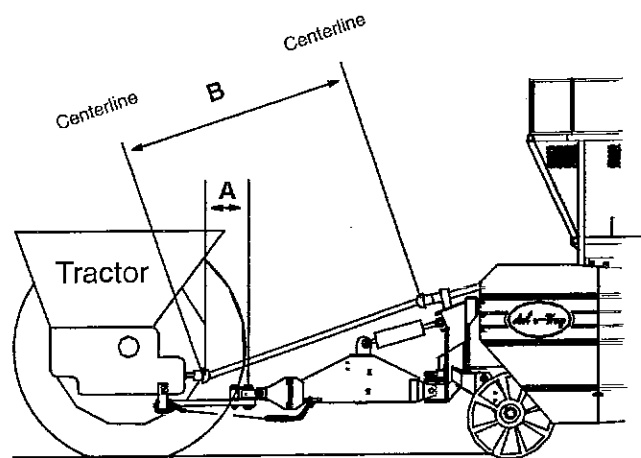


Figure 1.04: Drawbar Specifications.

Power Take Off (PTO) - Two PTO shafts are available; a 1000 RPM PTO shaft with a 1-3/8" diameter - 21 spline yoke, or a 1000 RPM PTO shaft with a 1-3/4" diameter - 20 spline yoke.

Tractor Wheel Spacing - Adjust the front and rear wheels of the tractor to fit the desired row spacing

Tractor Hydraulics - Install hydraulic hose ends to match the tractor.

Attaching To The Tractor

When hooking the harvester to the tractor, refer to Figure 1.05 and the procedures below.

1. Clear the area of bystanders, especially small children.
2. Block the harvester wheels to prevent rolling.
3. Position the tractor near the harvester hitch.

SECTION 1: INTRODUCTION

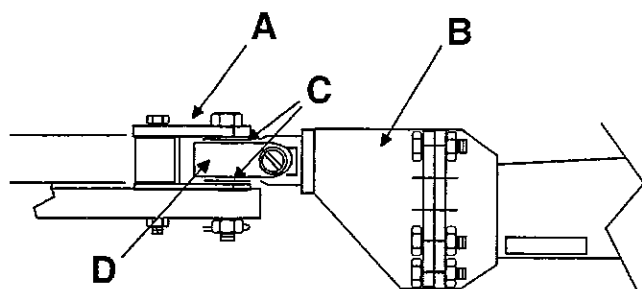


Figure 1.05: Drawbar Installation

4. Attach lift cylinder hoses to tractor outlets.
5. Activate the lift cylinder and lift the harvester hitch above the tractor hitch
6. Place all tractor controls in neutral, set the park brake and stop the engine. Remove the ignition key before dismounting.
7. Adjust the tractor drawbar. Refer to Figures 1.02 and 1.04.
8. Attach the harvester to the tractor with yoke weldment (Figure 1.05-A) and bolts provided. Be sure to install the hardened washers (C) between the yoke (A) and the hitch clevis (D). The existing tractor clevis may be used if a 3" spacing can be maintained. Install hardened washers (C) to shim the hitch clevis (D) so that it is snug. If the tractor drawbar mounting hole is smaller than 1-3/8", an 1-1/4" pin is available from your Art's-Way Dealer (AW Part Number 456220). If the tractor drawbar mounting hole is larger than 1-7/16", a bushing should be installed.

NOTE: Additional support for the tractor drawbar is recommended.

9. Cycle the lift cylinder and observe the lift height. Position the front bolt-on hitch (Figure 1.05-B) to obtain the desired lift height, while still allowing adequate penetration into the ground.

NOTE: The hitch must have at least three (3) bolts installed on each side (total of six (6) bolts).

10. Attach the safety chain to the harvester hitch by inserting the large chain eyelet through the chain bracket on the tongue (from the back side). Route all chain links through the large chain link and pull tight. Route chain through the intermediate chain support and secure the chain to the tractor drawbar carrier. Be certain to allow enough slack in the chain for full articulation of tractor and harvester without binding, (see Figure 1.03).

11. Clean the splines inside the yoke and on the tractor shaft. Be sure the driveline and safety guard telescope easily and that the guard rotates freely.
12. Retract the slide collar on PTO yoke and slide the yoke over the shaft. Stop when the slide collar clicks into place. Pull on the yoke to make sure it is securely locked in place.
13. Be sure there is sufficient clearance between the drawbar, three-point hitch links and driveline to allow maneuvering in the field. Be sure to check the distance between the universal joint centers (see Figures 1.02 and 1.04).
14. Lower the tractor PTO shield over the universal joint and secure.
15. The Art's-Way Beet Harvester requires three (3) or four (4) tractor hydraulic circuits to operate. Connect the tractor hydraulics according to the appropriate list that follows, starting with the tractor's priority valves first.

NOTE: It is very important to have the lift and main valve on the number one and number two priority valves. Adjust the flow at the tractor to the minimum required to operate all functions.

16. Connect tractor hydraulics to the harvester as follows:

With Fixed Carrier Wheels

Circuit Function

1. Lift cylinder - front of machine.
2. Main Valve and Rowfinder with flow divider.
 - Truck boom - raise and lower.
 - Truck elevator
 - Tank conveyor
 - Rowfinder
3. Override side shift.

With Steerable Carrier Wheels

Circuit Function

1. Lift cylinder - front of machine.
2. Main Valve and Rowfinder with flow divider.
 - Truck boom - raise and lower.
 - Truck elevator
 - Tank conveyor

SECTION 1: INTRODUCTION

- Rowfinder
- 3. Override side shift.
- 4. Steering

NOTE: The lift function needs to be connected to the priority outlet of the tractor.

17. With the hitch pointed straight forward, adjust the side shift cylinder attaching bracket so that the cylinder is in the center of its stroke. This is 24-1/4" centerline to centerline of pins.
18. Lift the harvester and then cycle the rowfinder cylinder by moving the rowfinder arms from side to side. The harvester should move in the same direction as the rowfinder arms.



CAUTION: Keep clear of the machine as it shifts sideways.

Electrical Controls:

1. Install the control box in the tractor cab and connect the power cord to a suitable 12 volt power supply as shown in Figure 1.06. (White to Positive, Black to Negative).

IMPORTANT: The controls are rated for use with a 12 Volt DC System only. A battery charger should not be used for testing.

2. Route the main wiring harness through the cab and connect the wires to the control box according to the color of the wires and the color code on the box. See Figure 1.07.
3. Connect the running lights to the appropriate circuit of the 7 connector plug provided with the hazard lights. See Figure 3.26, "Section 3: Assembly of Beet Harvester".

4. Connect the control box wiring harness and the valve wiring harness with the 10 connector plug. Make sure all the wires have been properly routed and connected according to color codes and the function on the box.

12-VOLT SYSTEM

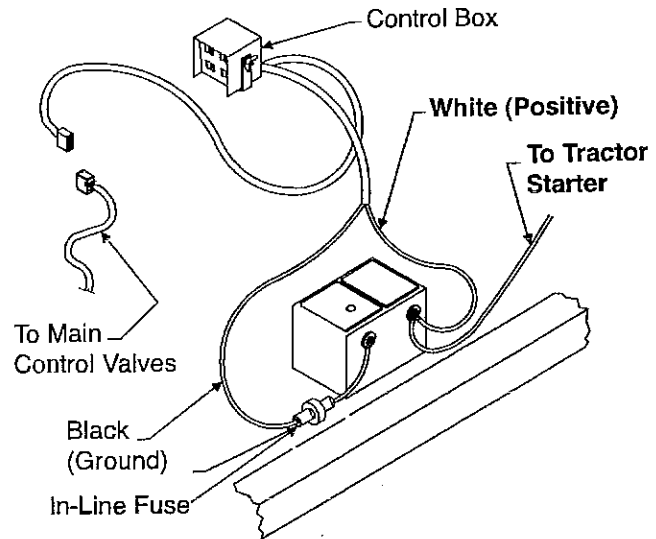


Figure 1.06: Control Box Power Connection.

For the procedures below, refer to Figure 1.08. For a more detailed illustration of the system, refer to Figure 3.20 thru 3.24 in "Section 3: Assembly of Beet Harvester"

1. The solenoid valve on the bottom of the main valve is installed as standard equipment on the 692B. This valve provides OPEN center operation of the system. This is for tractors that have the load sense system. A special plug can be installed to switch this to closed center. Refer to Figure 3.23 in "Section 3: Assembly of Beet Harvester"

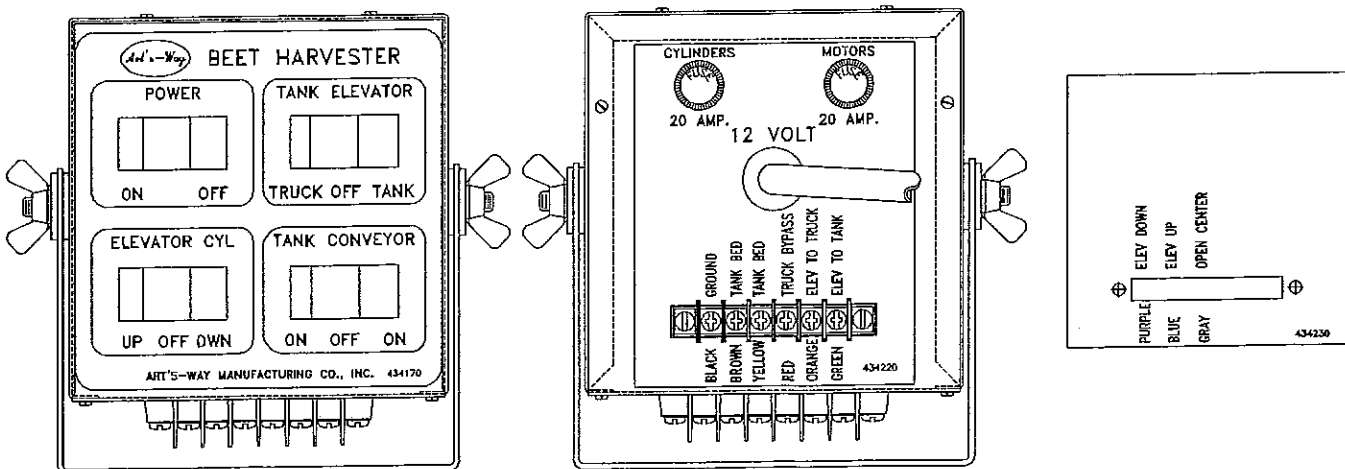


Figure 1.07: Main Control Box.

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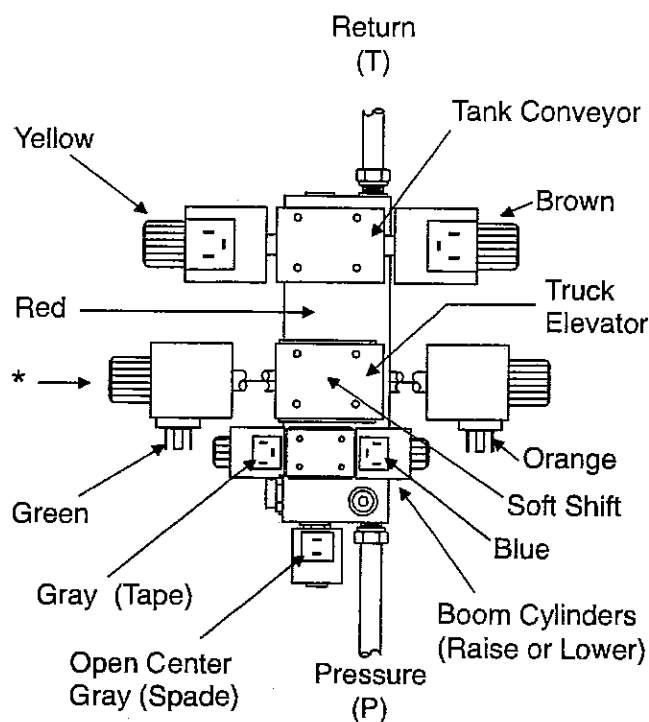


Figure 1.08: Wiring and Hydraulics.

NOTE: For all older tractors with a true closed center system, the closed center plug must be installed.

2. The pressure side of the valve is identified in Figure 1.08 as (P). The tractor valve must be set to provide pressure to this port in the valve.
3. The upper solenoid valve that controls the truck elevator is equipped with a soft shift screw. If action of reversing is too slow or too severe loosen lock nut, screw adjusting screw in all the way in. Then back out 3-1/2 turns. If this does not give proper action turn 1/8 turn in to slow action or out 1/8 turn to speed action.
4. Solenoid valves may be manually overridden by inserting a small drift pin and pushing in. See the location marked by * in Figure 1.08.

Adjust Row & Carrier Wheel Spacing

Use Figure 3.03 in "Section 3: Assembly of Beet Harvester" to determine settings for lifter wheels. Make all measurements for setting lifter wheels from the centerline of the front of the machine to the pinch point on the lifter wheels. Set all lifter wheels at exact row widths on either side of centerline.

After adjusting the lifter wheels, set the rear carrier wheels (see Figure 3.03 in "Section 3: Assembly of Beet Harvester").

It is recommended that the left carrier wheel be set to run in the far left dug row. The right wheels may be set to run in the dug rows (except for opening new lands or irrigated field) or between the rows. The diagram shows the right wheels between the rows. If the wheel setting desired is different than the diagram, subtract or add the appropriate half row space from the dimension given. Position the left carrier wheels first.

For harvesters equipped with a third carrier strut, it is recommended to raise the spindle support bracket one hole on the center strut. This is needed to prevent the harvester from pivoting on the center strut and affecting the lifter wheel depth.

Steerable Carrier Wheels

It is important that the harvester frame, in the digging position, run as level as possible, front to back and side to side. To adjust carrier wheels and steering mechanism (see Figure 1.09):

1. Lift rear of harvester with a safe lifting device.
2. Remove steering tie rod (A) and steering cylinder (B) at one end.
3. Loosen the four (4) 1" x 8" bolts on each carrier strut (C), slide carrier struts to proper position and height for row spacing desired. Retighten bolts.
NOTE: When two carrier struts are used, the left carrier strut should be positioned over the second dug row or running in the second and third dug rows. The steering cylinder bracket is positioned on left strut.
4. Set both carrier struts in straight ahead position (square to machine and parallel to each other).
5. Locate the steering cylinder bracket (D) in proper position on the center strut (on the left side of the machine when two struts are used).

Be sure left carrier wheels are in straight ahead position (square to the machine). For a left turn, locate cylinder bracket (D) so that cylinder is fully retracted and pinned in hole 1. For a right turn, locate cylinder bracket (D) so that cylinder is fully extended and pinned in hole 2.

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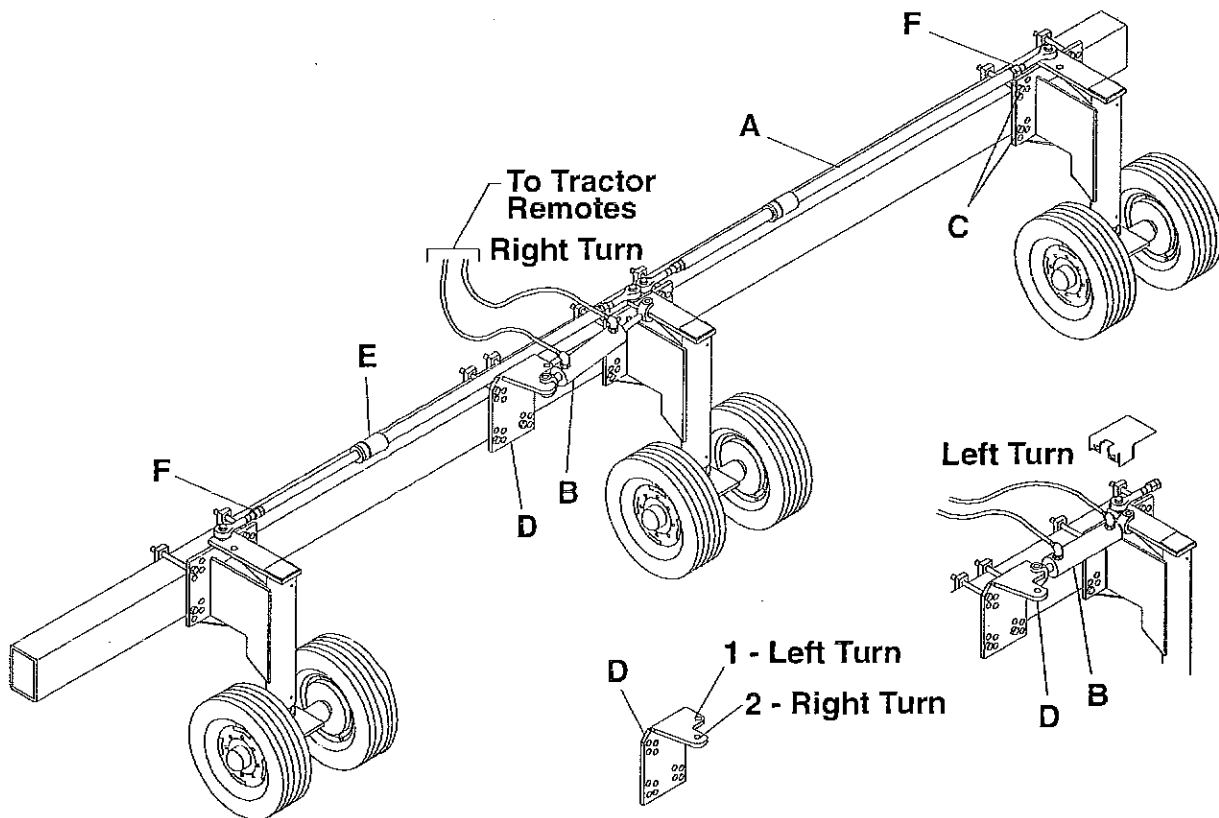


Figure 1.09: Steerable Carrier Wheels.

6. Install steering tie rod (A), adjust to proper length. To adjust length, remove screws from taper lock bushing (E) and loosen bushing. Slide tie rod to proper length. Replace screws in original position and tighten taper lock bushing (E). Install tie rod to steering arms.
7. To adjust right carrier wheels to run parallel to left wheels, loosen jam nuts (F) on both ends. Rotate center of tie rod until wheels are aligned. Tighten jam nuts.
8. For harvesters equipped with a third carrier strut, it is recommended to raise the center strut one mounting hole. This is needed to prevent the harvester from pivoting on the center strut and affecting the lifter wheel depth.

Test Run The Harvester



CAUTION: Before running the harvester, keep all children and bystanders away from the machine.

1. With the tractor running at low RPM, engage the PTO and check operation of the machine. Slowly increase the RPM to the proper operating speed of 1000 PTO RPM.

2. Check the operation, alignment and clearances of all moving parts. Make any necessary adjustments.



CAUTION: Keep well clear of moving parts. Be sure to shut off the tractor, set the parking brake, put the machine in neutral, and remove the tractor key while making adjustments. Wait for all movement to stop before approaching the machine.

3. The first operation of the hydraulic control valve circuit must be to raise the truck elevator to the operating position (the elevators must be off). Raise and lower the elevator boom several times with the tractor at idle. The other hydraulic functions of the control box are the truck elevator, and tank conveyor. The tank elevator runs both directions. Finally activate the tank conveyor. The tank conveyor will only function if the truck elevator is running or if the tank conveyor switch is on and the truck boom is being raised or lowered.
4. Check the oil level in your tractor after filling the hydraulic lines for the first time.

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5. The flow of oil to the control valve circuit is regulated to 14 GPM. It is recommended this flow be reduced to the range of 10 to 12 GPM with the flow control on the tractor. Set the flow control on the flow divider so 3-5 gpm goes to the rowfinder. Reduce the flow on the tractor until the motors just start to slow down, then reduce the flow a bit more. The flow rate can then be adjusted (slightly) under operating conditions to a speed to suit the operator.
6. Run the machine for 10 to 15 minutes. Then, check the machine for any loose hardware and check drive belt tension.

Constant Velocity (CV) PTO Lubrication

Prior to use of the Constant Velocity PTO make absolutely sure the Constant Velocity housing is full of grease. See Figure 2.33, CV Center Housing Zerk in "Section 2: Field Operations and Adjustments, Lubrication and Storage". With the CV straight ahead add grease until it is evident around the center disk, this may take 30 to 50 pumps. Follow lubrication guidelines for CV PTO closely while the machine is in use (see "Section 2: Field Operations and Adjustments, Lubrication and Storage").

Transporting



CAUTION: It is the responsibility of the operator to know the lighting and marking requirements of local highway authorities. Road hazard lights provided with this harvester conform to current ASAE Standard 279.10 Lighting and Marking of Agricultural Equipment on Highways. Be sure to use and maintain the proper warning lights and markings at all times on public roads.

1. The tractor hitch must be securely installed.
2. Attach a safety chain to the tractor and to the tongue of the harvester as shown in Figure 1.03.



CAUTION: A safety chain will help control drawn equipment should it accidentally separate from the drawbar while transporting. Using the appropriate adapter parts, attach the chain to the tractor drawbar or other specified anchor location. Provide only enough slack in the chain to permit turning.

3. Know the transport height and width of your harvester. With the truck boom folded, the transport height is 14' and the width is 21'-4" (See the "Specifications").
4. Lower the truck elevator before transporting.
5. The harvester weighs approximately 11 tons empty and up to 16.5 tons when loaded. Transport when empty, if possible.
6. Raise the lifter wheels.
7. Never tow the harvester faster than 20 mph (32 km/h).
8. The harvester is equipped with road hazard lights, a SMV emblem, two (2) red reflectors and two (2) red-orange reflectors mounted on the rear, and four (4) amber reflectors mounted on the front and sides. Keep the reflectors clean and visible at all times. Turn road hazard lights on when on public roads. Refer to the Caution at the beginning of this section.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS



CAUTION: Keep well clear of moving parts. Be sure to shut off tractor and place key in pocket while making adjustments. Wait for all movement to stop before approaching machine.

The Beet Harvester is designed for simplicity and trouble free operation. Art's-Way Manufacturing Co., Inc. has provided a wide range of adjustments on this machine to allow the best operation in various operating conditions. It is essential that all adjustments be set for your operating conditions. Continual review during harvest must be done for optimum performance. When field or crop conditions change, re-check your harvesting operation and adjustments. The following explains the operation and adjustment of the machine. See your dealer if questions arise.

Basic Controls

Beets are diverted to the tank or truck by a hydraulic motor (A) (see Figure 2.01). The tank is unloaded by use of hydraulic motor (B) on the tank unloading chain.

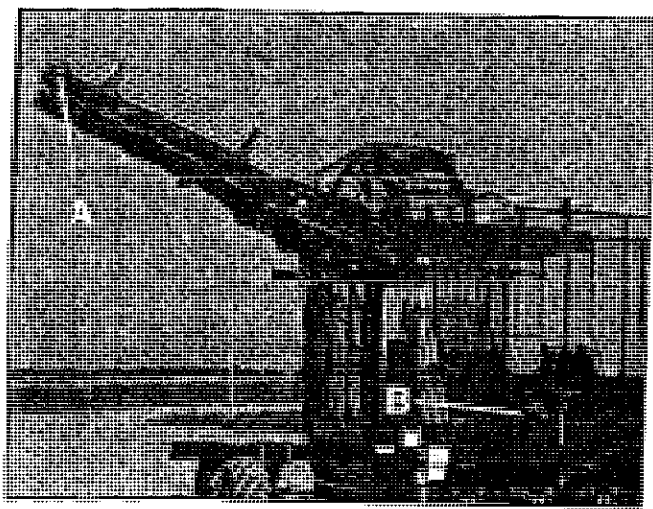


Figure 2.01: Basic Controls. (A) - Truck/Tank Motor; (B) - Tank Motor.

To *load directly into the truck*, activate the switch labeled elevator to the truck position, which will start the hydraulic motor (A) at the end of the truck elevator.

To *fill the holding tank*, activate the switch labeled elevator to the tank position, which will reverse the hydraulic motor (A) at the end of the truck elevator.

NOTE: A built-in delay has been incorporated to soft-shift the elevator chain.

To empty the holding tank, the motor at the end of the truck elevator (A) must be activated first to convey

beets into the truck then activate the motor on tank conveyor (B). Beets are conveyed from the tank onto grab rolls, where they go up the wheel elevator and into the truck. When tank is empty, turn off the tank conveyor switch.

The tank drive is capable of unloading to the left side of the tank for extra cleaning in muddy conditions.

Constant Velocity (CV) PTO

General recommended operating procedures for CV PTO's.

1. Normal operation with wide end rows: Slow tractor so PTO is at a maximum of 600 RPM prior to raising the machine. Continue at this rpm until turning is completed and machine is lowered back into the ground.
2. If making very sharp turns in irrigated areas or in rough terrain it is recommended to shut PTO off prior to raising the machine out of the ground.
3. It is not necessary to operate CV PTO while turning.
4. It is **EXTREMELY** important to follow the lubrication guideline. See Figure 2.33, if telescoping members become hard to slide between seasons it is recommended to take apart, clean with solvent, and re-coat with grease before re-assembling.

Machine Leveling

It is important that the harvester frame, in the digging position, runs as level as possible, front to back and side to side (see Figure 2.02).

For harvesters equipped with a third strut, it is recommended to raise the spindle support bracket one hole on the center strut. This is needed to prevent the harvester from pivoting on the center strut and affecting the lifter wheel depth.

To level machine on left side, move spindle support bracket (A) (see Figure 2.03) up or down on oscillating struts. To level machine on right side, move spindle support (B) (see Figure 2.04) up or down to raise or lower machine as required.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

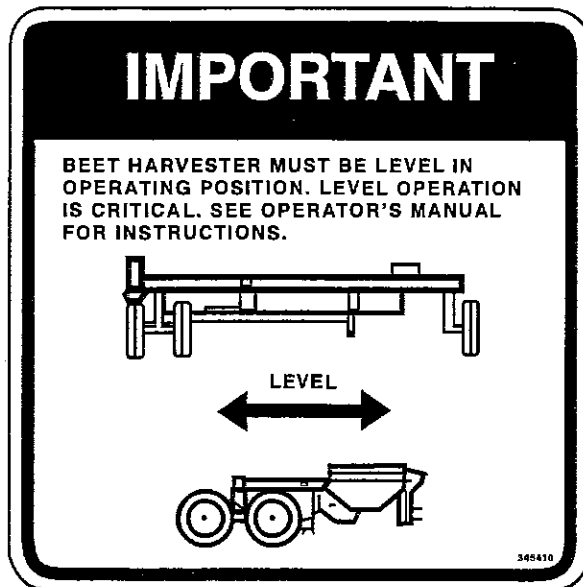


Figure 2.02: Machine Leveling.

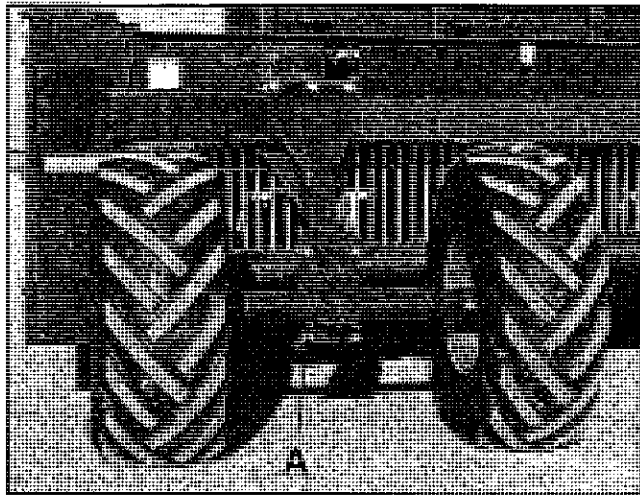


Figure 2.03: Oscillation Carrier Wheels. (A) - Support Bracket.

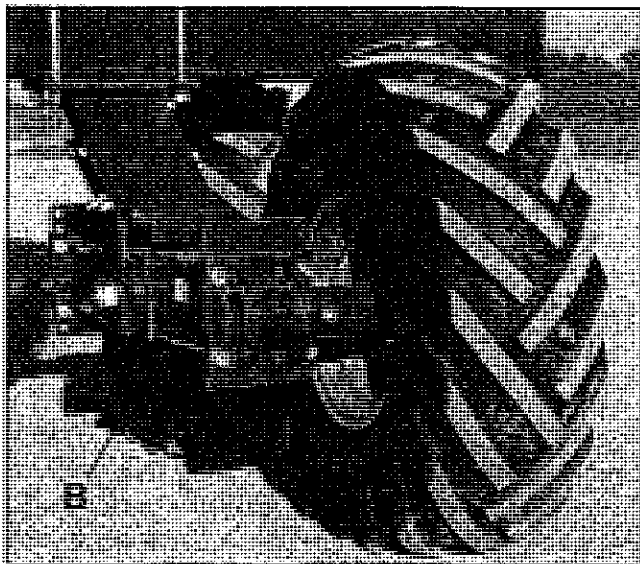


Figure 2.04: Walking Beam Carrier Wheels. (A) - Support Bracket.

Set the front hitch of harvester (see Figure 2.05) so maximum lift for transport is maintained and still allows lowering into ground as far as necessary. Move the bolt-on hitch (B) to best position, this may require turning (B) over.

For steerable wheel adjustment, move entire strut up or down on both sides (see Figure 1.09 for instructions).

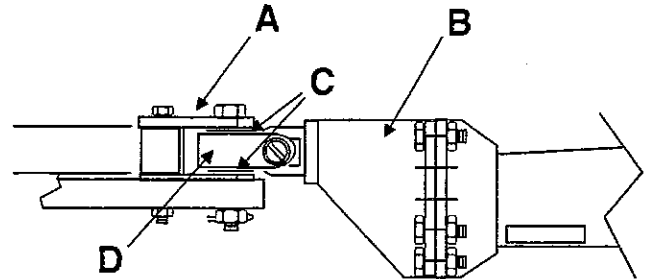


Figure 2.05: Front Hitch Adjustment.

Operating Speeds

The recommended ground speed is 3.5 - 4 mph. Adjust the speed to your conditions.

Maintain 950 RPM minimum output at the PTO shaft.

***Note:** The beet harvester is equipped with a constant velocity PTO. For "normal" turns, slow the PTO to approximately 600 RPM or less. When making sharp turns, it is recommended that the harvester be shut off.*

Always engage the PTO with tractor at low RPM and "run-up" to full RPM gradually.

Be sure the tractor drawbar is set as specified in Figures 1.02 and 1.04 in "Section 1: Introduction"

Lifter Wheel Spacing

Make sure the lifter wheels are located at the proper row widths, measurement to be taken **at the pinch point**, to prevent slicing and breaking the tails off beets.

Spacing Adjustments - Refer to Figure 2.06. Loosen strut mounting L-bolts (A); paddle bolts (B); and the bolts holding the barriers (C). Adjust the rubber covers (D) so they are centered over the row and routed over the round tube. Slide all to the proper row spacing. Tighten the bolts.

Pinch Point - The distance between each pair of lifter wheels can be increased to accommodate larger beets, or decreased for smaller beets. Lifter wheel spacing is

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

adjusted by inserting or removing spacers between the lifter wheel and the hub. See the Figure 2.07 and also Figure 2.13. Be sure to set the spacing at the widest position possible to prevent beet damage. Whenever the lifter wheel pinch point is adjusted, also, adjust the scrapers (see Figure 2.11-A).



Figure 2.06: Row Spacing Adjustments. (A) - L-Bolts; (B) - Paddles; (C) - Barriers; (D) - Rubber Covers (behind tube above paddles and barriers).

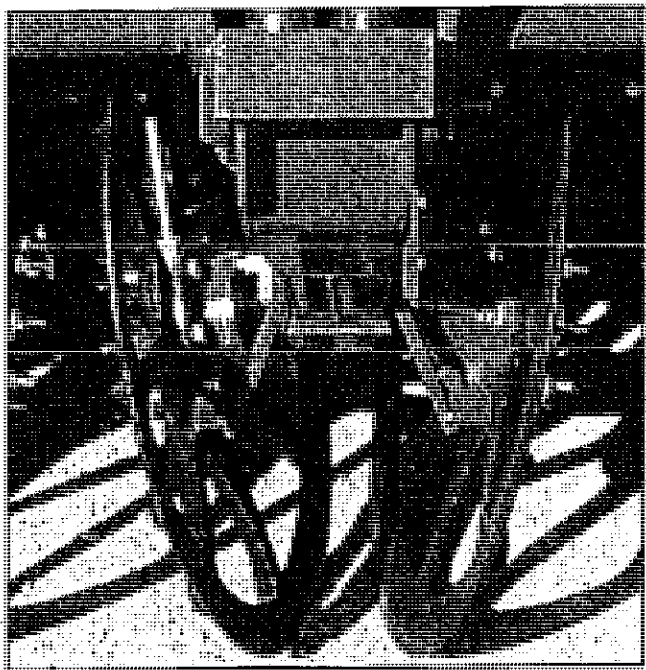


Figure 2.07: Lifter Wheel Adjusting Shims.

Operating Depth

As a starting point, the lifter wheels should be set to dig approximately 2" to 3-1/2" deep. This setting will change with soil conditions. Set the lifter wheels to run as shallow as possible to prevent lifting excessive amounts of dirt and to reduce power requirements. To prevent breaking the tails of the beets in extremely hard ground, first add shims to widen the lifter wheels

before you try deeper settings. Set the stop on the lift cylinder to help maintain the proper digging depth.

Procedure for finding the correct depth.

1. Be sure the harvester is not digging across guess rows between rounds.
2. Begin digging as deep as necessary to keep from breaking beet tails.
3. Raise lifter wheels gradually until some beet tail breakage occurs.
4. Lower lifter wheels about 1/4".
5. Set lift cylinder stop to maintain this depth.

Cylinder floatation in rocky conditions.

In rocky conditions, it is strongly recommended that the lift cylinder be allowed to float in the running position. To do this, the cylinder depth must be set with stops. If your tractor has a valve with a float position, connect the lift cylinder to this circuit and make sure the control lever is in the float position when the harvester is in the ground. If your tractor does not have a float valve, a single hose must be plumbed to the lift side of the lift cylinder and the other side of the cylinder must be equipped with a breather (allowing air to enter and escape). Consult your Art's-Way dealer for the best method to accomplish this.

Rowfinder Operation

The optional rowfinder helps keep your harvester on the rows. The feeler arms (A) (Figure 2.08) rest astride the row (B) and follow the line of beets - sensing any changes in the direction of the row or the position of the harvester. Sideward movement of the feeler arms actuates the hydraulic valve (C), which controls oil flow to the rowfinder steering cylinder.

The rowfinder steering cylinder extends or retracts according to the action of the feeler arms, steering the harvester back onto the row. A manually controlled hydraulic override function allows the operator to steer the harvester - which is particularly helpful when entering rows.

Be sure the rowfinder hoses are connected properly. The harvester should move in the same direction as the tips of the arms. If the machine moves in the opposite direction as the tips of the arms, switch the pressure and return lines to the rowfinder.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS



CAUTION: Keep clear of the machine as it shifts sideways.

Adjustments

The rowfinder is adjustable to beet size, beet height, operating depth and soil conditions. Correct adjustment of the rowfinder and a good understanding of the importance of each adjustment will provide maximum satisfaction during field operation.

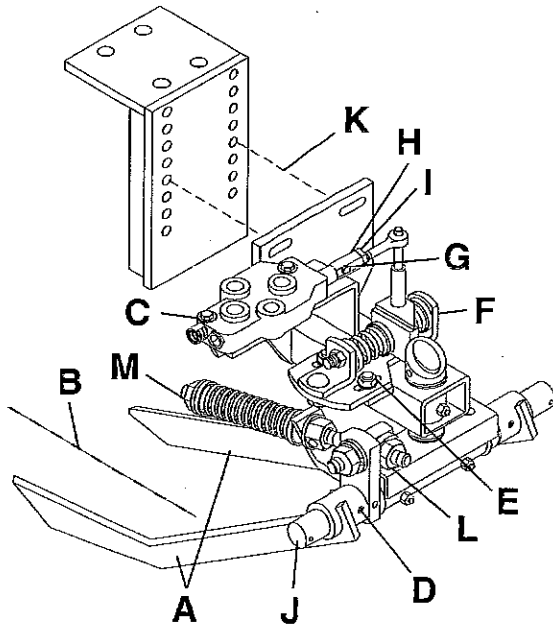


Figure 2.08: Rowfinder.

Beets must be harvested in the same multiple as they are planted.

Make the following adjustments as necessary to meet crop and field conditions before taking the machine to the field.

Note: Be sure to raise the harvester when backing up so the rowfinder is not damaged.

1. Feeler Arm Spacing

For this adjustment, refer to Figure 2.08. The feeler arms (A) should be set so the largest beets will just pass through the opening, between the tips, while just touching each arm. To adjust the arms, remove the spring pins (D), set the arms to the appropriate width, then install the spring pins.

2. Feeler Arm Centering

Refer to Figure 2.08: The horizontal shaft (J) in the rowfinder must be parallel with the front of the har-

vester frame to function accurately. Remove pin (G) and loosen the nuts (E), then slide the plate (F) until the shaft is parallel with the frame. Tighten the nuts.

The hydraulic control valve must be centered each time the shaft (J) is adjusted. Loosen lock nut (I), adjust nut (H) until pin (G) can be inserted freely through nut (H) and valve spool. Tighten the lock nut (I) and check to be sure the pin is still free.

The feeler arms must be centered with the gap between the lifter wheels to function accurately. To adjust, loosen bolts (K) and slide the entire assembly in the mounting slots until they are centered. Tighten the bolts.

3. Rowfinder Height

Set the rowfinder height in correct relationship to the lifter wheel working depth to assure proper function. Example: If the lifter wheels will work at a depth of 3", the bottom edges of the feeler arms should be about 3" above the rims of the lifter wheels when operating in the rows. See the Figure 2.09.

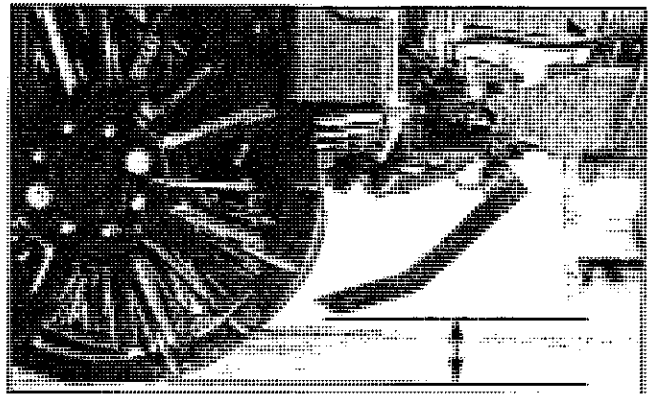


Figure 2.09: Rowfinder Feeler Arm Height Adjustment.

The feeler arms should ride along the surface of the ground or just slightly penetrating the surface.

To change the rowfinder height by more than 1", remove the four (4) bolts (Figure 2.08-K) attaching the rowfinder frame to the support plate. Bolt the rowfinder to the holes that provide the desired operating height. Tighten the bolts.

NOTE: For less than 1" height adjustments, raise or lower the feeler arms by adjusting nuts (Figure 2.08-L).

4. Feeler Arm Down Pressure

The down pressure of the rowfinder is factory set at a spring length of 4-1/4". If the beet crowns are below the ground surface, adjust down pressure so the

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

rowfinder arms penetrate the soil. To increase the down pressure, turn lock nut (see Figure 2.09-M) to compress the spring.

5. Rowfinder Steering Cylinder

The rowfinder steering cylinder (Figure 2.10-A), is activated by the rowfinder or by the operator with the tractor control valve.

If the tractor must be set to straddle three rows, the tongue must be offset 11" for 22" rows or 12" for 24" rows.

To adjust the bracket position, refer to Figure 2.10 and perform the following:

1. Set the cylinder (A) in the center of its stroke.
2. Loosen the four (4) u-bolts (B) that secure the 3" x 3" tube to the hitch.
3. Loosen the two (2) u-bolts (C) that secure the rowfinder.
4. Loosen the two (2) u-bolts (D) that attach the outer tube brace to the frame.
5. Move the tongue to the desired offset and tighten the U-bolts.

For offsetting one half row on 24" rows (tractor straddling three rows), move the tractor to the right.

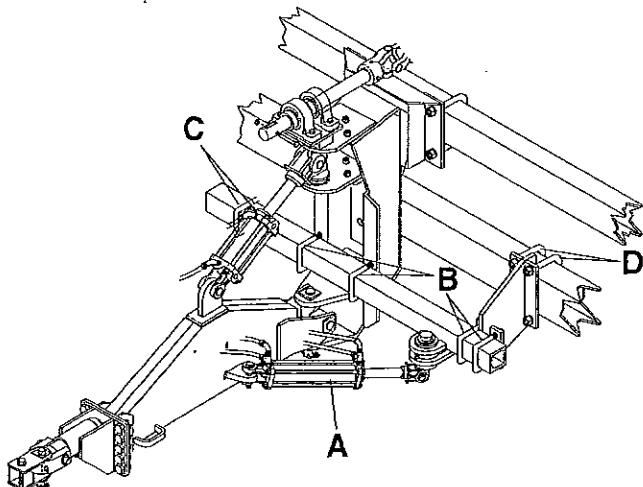


Figure 2.10: Rowfinder Details. (A) - Cylinder; (B) - U-Bolts, Tube to Hitch; (C) - U-Bolts, Rowfinder; (D) - U-Bolts, Brace to Frame.

Scrapers

Wheel scrapers (see Figure 2.11) keep dirt and trash from building up on the lifter wheel hubs. Shim the scrapers so they just clear the hub and lifter wheel.

Check the scrapers frequently and clean off any accumulated mud and trash.

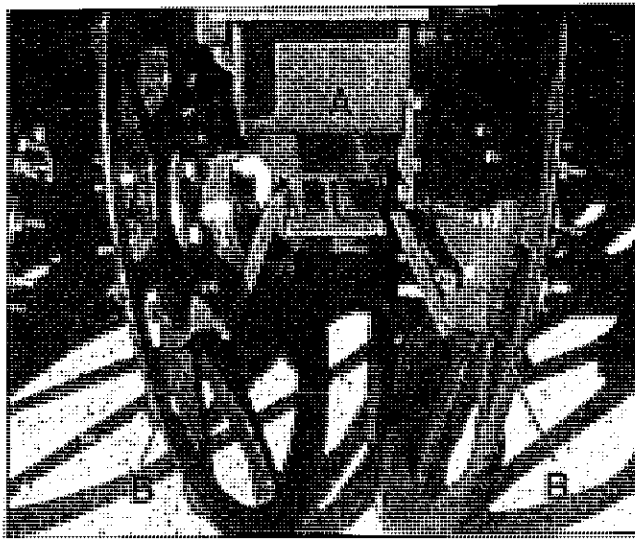


Figure 2.11: Wheel Scrapers. (A) - Shims; (B) - Required Clearance.

Flex Struts

In rocky conditions, flex lifter wheel struts are recommended. These struts are mounted with flex cushions that help absorb shock loads as large rocks are encountered. They flex to allow the strut to roll up over the rock. The lifter wheels are also protected by cushions that allow the wheels to open up when a rock is wedged into the pinch point. (See Figure 2.17-B for information on the rock cushions.)

As a starting position, set the flex strut cushions at 2-7/8" (actual cushion length). Adjust to match conditions as necessary. Flex strut cushions may need to be adjusted to 2-3/4" to reduce the amount of flexing on hard ground.

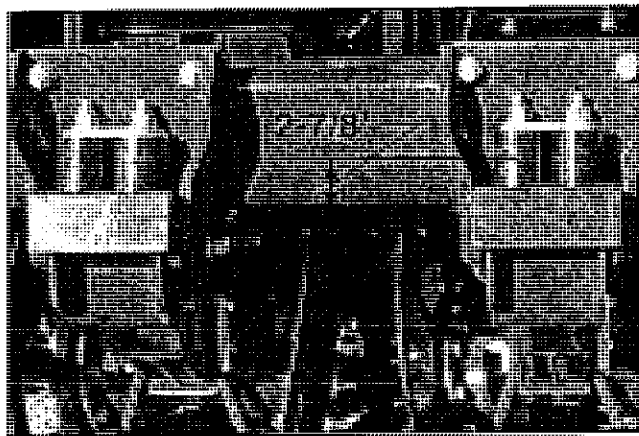


Figure 2.12: Flex Lifter Wheel Struts.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

Pinch Point Adjustment

The lifter wheels are adjustable for both pinch point width and height.

Pinch Point Width - To adjust the pinch point width, insert or remove spacer between the lifter wheel and hub (see Figure 2.13). It is very important to set this as wide as possible and still lift all the beets.

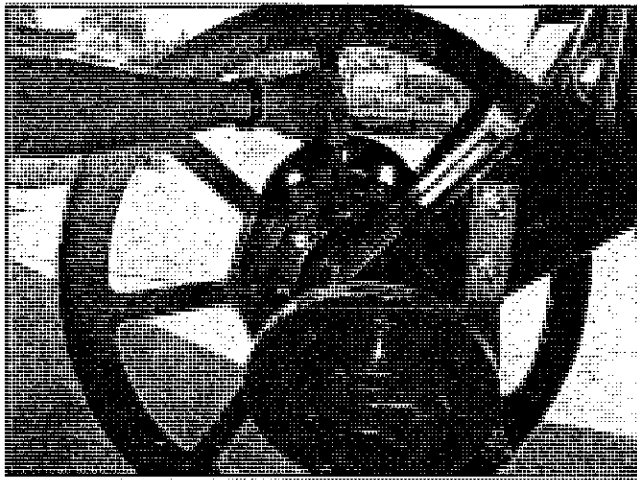


Figure 2.13: Shims to Adjust Pinch Point Width.

Pinch Point Height - To adjust the pinch point height, insert or remove spacers between the upper portion of the strut and the mounting pad (see Figure 2.14). The pinch point height is factory preset to function well in most conditions.

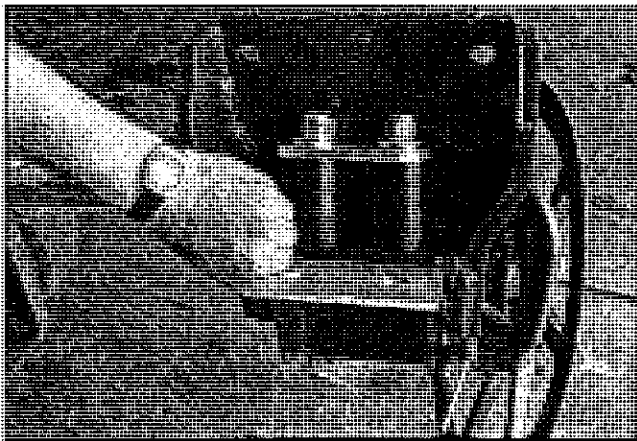


Figure 2.14: Shims to Adjust Pinch Point Height.

Paddle Shaft Slip Clutch

Prior to each seasons use, it is recommended to loosen the slip clutches - allow them to slip - then tension springs to proper setting.

The paddle shaft is protected by a slip clutch (A) (see Figure 2.15). The six (6) springs (B) set the tension of this clutch. The setting recommended is 2-3/8" actual length of springs. Be sure all springs are the same length. Keep jaws free of grease.

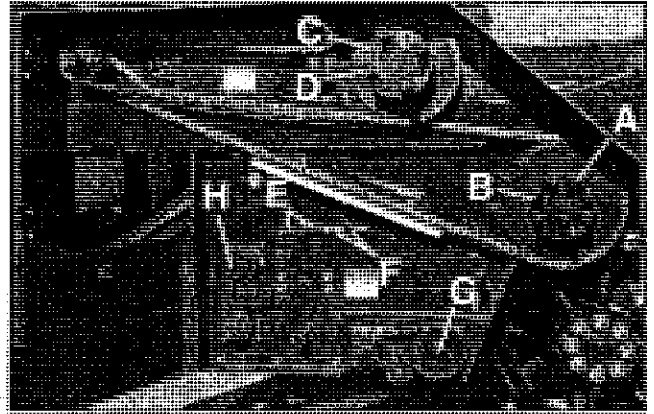


Figure 2.15: Right Hand Drives (Shields Removed for Clarity). (A) - Paddle Shaft Slip Clutch; (B) - Springs; (C) - Wheel Elevator Slip Clutch; (D) - Springs; (E) Conveyor Springs; (F) - Conveyor Nuts; (G) - Star Roll; (H) - Diverter Roll.

Paddle Shaft Paddles & Barriers

The rubber paddles may be removed if desired (except when flex struts are used). If removed, reposition the paddle shaft by lowering it to the bottom set of bearing holes. This will keep the paddle tips in their correct relationship.

Be sure the paddles are positioned sequentially around the paddle shaft so adjacent paddles contact beets at 30 degree intervals. This avoids excessive shock loads to the paddle shaft and drives.

When flex lifter wheel struts are used, the paddle shaft bearings must stay mounted in the top holes. The rubber paddles must be attached to the steel paddles. With the paddle shaft in the top holes, the lifter wheel struts can flex without hitting the paddle shaft. The rubber paddles are added to bring the active tips of the paddles to the desired positions.

To adjust the barriers, loosen the u-bolts (Figure 2.16-B); center the barriers between the lifter wheels; then tighten the u-bolts.

The rubber flaps (Figure 2.16-C) located above the paddles, are only effective when they are centered over the paddle clusters and routed over the round tube.

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Figure 2.16: Barrier Adjustment. (A) - Paddles; (B) - Barriers; (C) - Rubber Flaps (located behind frame tube).

Close-Up Attachments

Optional wheel close-ups (Figure 2.17-A) are available to prevent small beets from falling out between the lifter wheel spokes. Slot adjustments are provided on the close-ups so they may be rotated out of the way as conditions warrant.

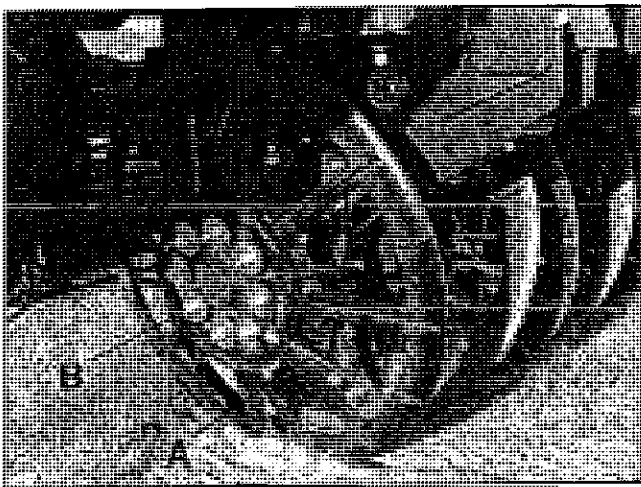


Figure 2.17: Lifter Wheel Options. (A) - Close-Ups, (B) - Rock Cushions.

Rock Cushions

Optional rock cushions (Figure 2.16-B) are available (standard on machines with flex struts) that allow the lifter wheels to spread apart when rocks are pinched between the wheels. The cushions are recommended where many small (baseball size) rocks are in the field. If large rocks are also present, the addition of flex struts is recommended. The lifter wheel cushions should be compressed to a height of 1-inch, including the washer.

Conveyor & Grab Roll Drive Belts

The conveyor rolls and grab roll drive belts are tensioned by spring loaded idlers (see Figure 2.18). These should be tightened so the springs (A) are compressed to 4-1/2" for all three (3) drives. Recheck tension frequently and retension promptly if slippage occurs.

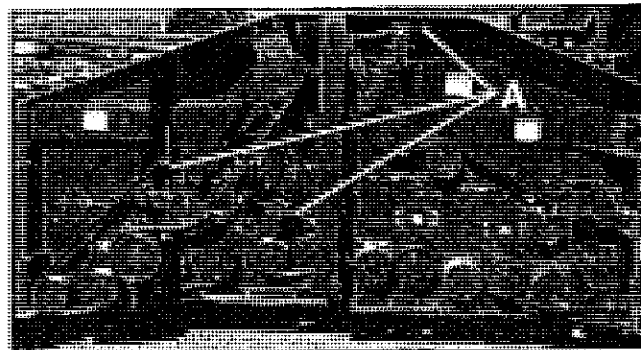


Figure 2.18: Left Hand Drives (Shields Removed for Clarity). (A) - Springs.

Ferris Wheel & Paddle Shaft Roller Chains

Tension roller chains by moving idler sprocket in slots (see Figure 2.15). Check tension frequently. Tension so approximately 20 lbs. force deflects chain 1/2" to 1". (See also Figure 2.18.)

Grab Roll Spacing

The grab roll bed is designed to separate and remove clods, soil and trash from beets on their way to the elevator.

The grab rolls at the drive end can be set in two positions.

1. #4 (smooth) grab roll in a **raised** position, which results in a more aggressive cleaning action. (Depending on soil type).
2. #4 (smooth) grab roll in a **lowered** position, which results in a less aggressive cleaning action. (Depending on soil type).

The factory set up is in the lower position. Route the drive belt under the idler sheave when #4 (smooth) grab roll is raised.

Protection against rock damage to the grab rolls is provided by flex cushioned arms (see Figures 2.19 and 2.20) on the drive and discharge ends, allowing the grab rolls to move when rocks enter the grab roll bed. Set flex cushion at 2-3/4" including washer on drive end.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

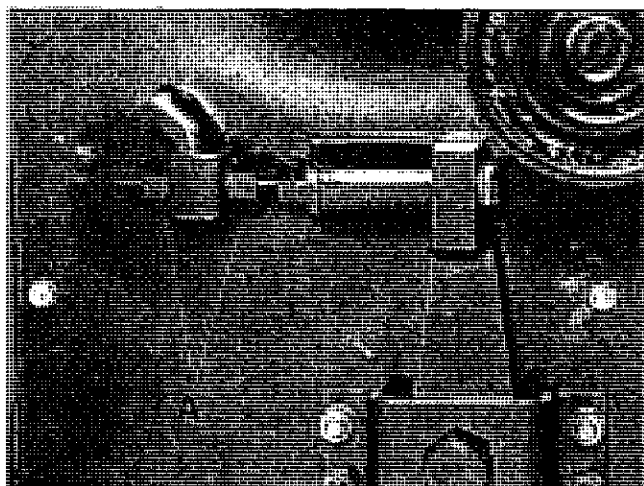


Figure 2.19: Drive End Adjustment (Shields Removed for Clarity).

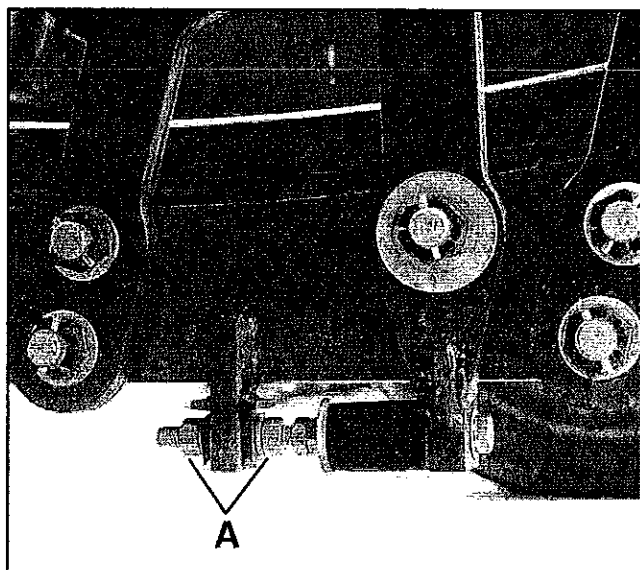


Figure 2.20: Discharge End Adjustment.

Set flex cushion at 2-13/16" including washer on discharge end.

1" arm pivot bolts should be checked occasionally for tightness, torque to 760 ft-lbs.

Grab roll pairs should normally be spaced so that they nearly touch on drive end and are 1/4" wider, up to maximum distance (for large beets) apart on the discharge end.

IMPORTANT: *Never set rolls narrower at discharge end than at drive end; excessive power will be required. Beet damage will occur.*

When additional cleaning action is required in heavy and/or muddy soil conditions or in extremely heavy trash, increase space between grab rolls at the drive and discharge end.

NOTE: *Always maintain at least 1/4" more gap at the discharge end.*

To maximize cleaning and reduce loss, increase spacing for larger beets and reduce spacing for small beets. To adjust, loosen nuts (A) (see Figures 2.19 and 2.20) on adjusting bolt and adjust grab roll to desired spacing. Retighten nuts.

Conveyor Roll Spacing

Conveyor rolls are factory preset to function well in most conditions. If adjustments are made, make sure they stay parallel to each other.

The conveyor roll bed is designed to move the beet flow to the left side of the harvester and then to the rear to the grab roll bed. The conveyor rolls also help remove soil and trash for extra cleaning before the grab roll bed.

Protection against rock damage to the conveyor rolls is provided by spring loaded arms (E) (see Figure 2.15) on both ends, allowing the conveyor rolls to move when rocks enter the conveyor roll bed. Set springs (E) at 2" on each end of conveyor rolls.

The conveyor rolls should run parallel to each other. To adjust, loosen nuts (F) (see Figure 2.15) on adjusting bolt and adjust conveyor roll to desired spacing. Retighten nuts.

NOTE: *If cleaning of conveyor rolls or star rolls is needed, grate rods are hinged for access only. When opening grate rods, first raise the center gear box shield - then open the grate rods - lower the center gear box shield to secure grate rods since the grate rods are not self-locking.*



CAUTION: Failure to follow the above procedure may result in injury.

Star Roll & Drive

The star roll is driven by a roller chain (G) (see Figure 2.15). The stars help to move the beets away from the lifter wheels onto the conveyor roll bed.

Diverter Roll & Drive

The diverter roll is driven by a roller chain (H) (see Figure 2.15). It is designed to keep the area in front of the wheel elevator clear of build-up and enhance the beet flow to the left side of the harvester.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

Holding Tank Conveyor Draper Chain

To adjust draper chain in tank conveyor (see Figure 2.21), loosen bracket bolts (A). Using take-up bolts (B), tension both sides equally so draper chain just clears guides under tank, this is very tight. Retighten bolts. Check tension frequently.

NOTE: It is especially important to keep tight if unloading to the left side.

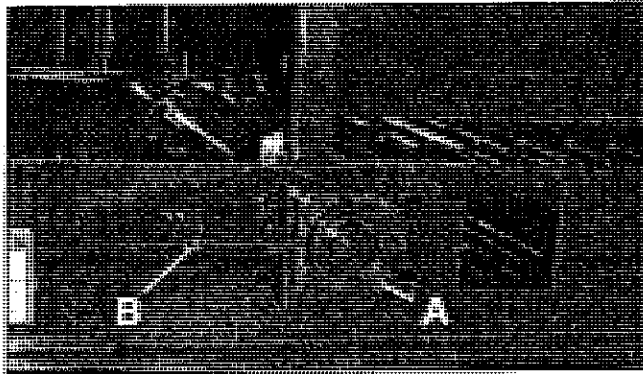


Figure 2.21: Tank Chain Tensioning. (A) - Bracket Bolts; (B) - Take-Up Bolts.

Tank Conveyor Drive

Adjust chain tension with idler sprocket (A) (see Figure 2.22). This chain must be kept especially tight if unloading to the left side.

In muddy conditions, the tank drive is capable of unloading to the left side of the harvester. Be sure the draper chain is tensioned correctly to prevent sagging when the tank is loaded.

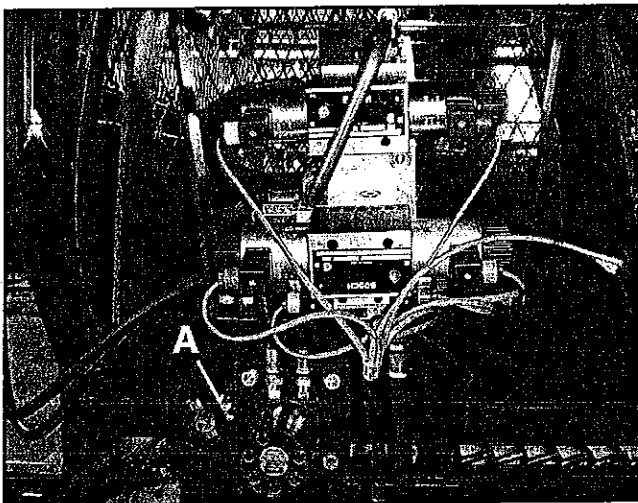


Figure 2.22: Tank Conveyor Drive (Shields Removed for Clarity). (A) - Idler Sprocket.

Holding Tank Gate

A sliding gate (A) (see Figure 2.23) is provided in the tank discharge opening. This can be raised or lowered to vary the beet discharge rate from the tank for various beet sizes, unloading speeds and operating conditions.

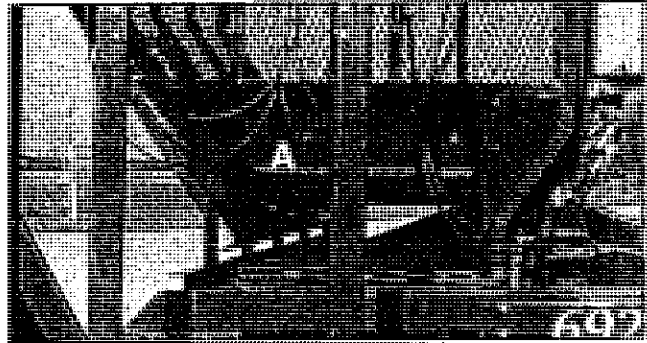


Figure 2.23: Tank Discharge Gate. (A) - Discharge Gate.

Holding Tank Door

An access door (A) (see Figure 2.24) is provided in the holding tank. This door is opened by loosening latches (B) and moving them outward to release door.



WARNING: Keep clear of door when latches are moved. Beets inside loaded tank could cause door to open forcefully when latches are removed.

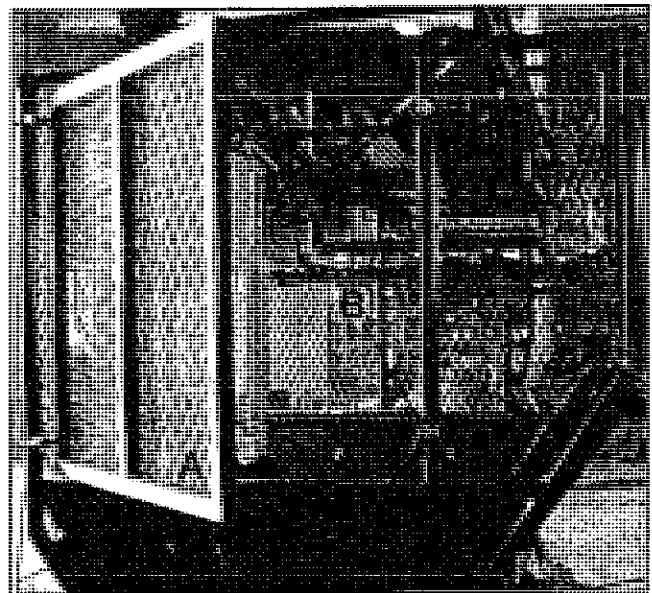


Figure 2.24: Access Door in Holding Tank. (A) - Access Door; (B) - Latches.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

Wheel Elevator Drive Slip Clutch

Prior to each seasons use, it is recommended to loosen the slip clutches - allow them to slip - then tension springs to proper setting.

The wheel elevator is protected by a slip clutch (C) (see Figure 2.15). The four (4) springs (D) set the tension of this clutch. The setting recommended is 2-3/8" actual length of springs. Be sure all four (4) springs are the same length. *Keep jaws free of grease.*

Wheel Elevator

The wheel elevator (A) (see Figure 2.25) revolves at approximately 11 rpm at 1000 PTO rpm. The beets are carried up to the truck elevator as the wheel revolves in the direction of travel. The retainer (B) holds the beets in the wheel until they get to the top and fall into the truck elevator. The stripper (see Figure 2.27) clears the wheel of any rocks or beets that get wedged between the rods, and helps clear mud. The stripper must be centered to clear the wheel.

NOTE: A knife cleaner kit is also available to clear mud from edges of the wheel.

The wheel elevator must turn easily and the chain tension must be adjusted properly. The retainer must be adjusted properly for minimum beet loss and maximum capacity. For muddy conditions, it is important to tighten the springs (F) on the retainer.

Wheel Elevator - Tightening Chain

Loosen jam nut (A) (see Figure 2.26) and turn adjusting nut (B). Check this adjustment by pulling the chain away from the rear of the wheel elevator. A distance between 1/2" and 1-1/2" (see arrows (C), Figure 2.25) indicates proper chain tension).

IMPORTANT: Do not tighten the chain too tight or friction will drive the elevator and the chain will not feed into the slot properly. Do not remove links to tighten. Replace chain if tightener sprocket cannot sufficiently tighten chain.

Set dampener spring length to 6-3/4" (see arrows, Figure 2.26 by loosening jam nut (D) and turning adjustment nut (C). This should be preset from the factory.

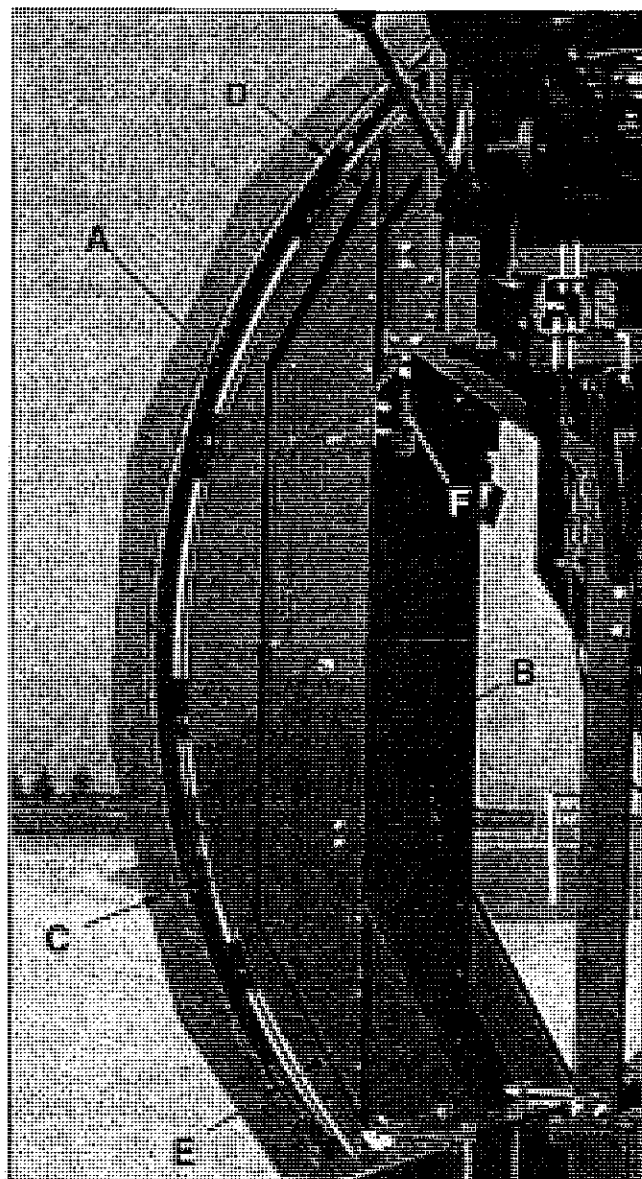


Figure 2.25: Wheel Elevator. (A) - Wheel Elevator; (B) Retainer; (C) - Chain Tension; (D) Top Retainer Clearance; (E) - Bottom Retainer Clearance; (F) Retainer Tightener Springs.

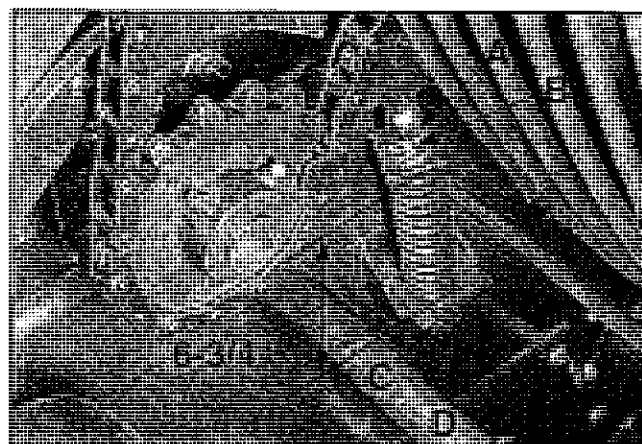


Figure 2.26: Wheel Elevator Drive (Shields Removed for Clarity). (A) - Top Jam Nut; (B) - Top Adjustment Nut; (C) - Bottom Jam Nut; (D) - Bottom Adjustment nut.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

Adjusting Wheel Elevator - Alignment

Operate the elevator until the chain connector link is positioned near the drive shaft for easy removal. Loosen jam nut (A) (see Figure 2.26) and turn adjusting nut (B) until maximum chain slack is obtained, then disconnect chain.

Lay one end of the chain over the other and wire them together so the wheel can be manually turned.

Turn the wheel and check the idlers for rotation. If they do not turn or are not aligned with the wheel, replace them or use washers to align them. Also check the chain tightener sprocket for alignment with the chain. Use washers if necessary at the forward end of the tightener sprocket pivot arm (where the grease fitting is located).

The wheel is guided by two (2) rollers to the left at the top of its travel and one roller mounted on the frame. Adjust so rollers contact wheel as close as possible, set upper rear roller first. Two (2) right-hand guide tubes are adjustable and also must be free to revolve. Replace them or free them so they revolve. Position the right-hand tubes so they clear the drive band of the wheel by 1/8" - 1/4" at its closest point.

Stripper

The stripper is an adjustable device fitted with several disks which help to keep the elevator clear of rocks, trash and soil build-up. The stripper disks (A) (see Figure 2.27) must be centered between the wheel elevator rods so they do not make contact. Adjust position so disks do not hit the cross tube weldments of the wheel. Position approximately 10 inches from the back of 2 x 2 square tubes.

Alignment

Straighten elevator rods if bent during shipping. Turn the wheel elevator through one or two complete revolutions and slide stripper supports (B) (see Figure 2.27) right or left to eliminate interference.

Bend the wheel elevator rods, if necessary, only after adjusting stripper support. Pay particular attention to the wheel elevator joints.

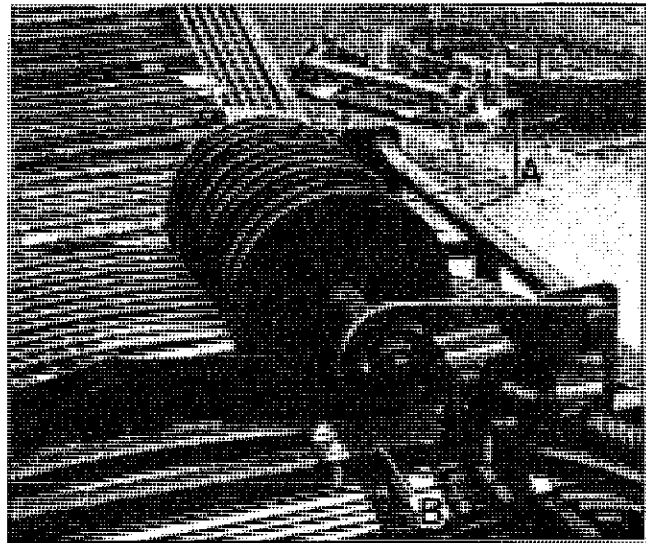


Figure 2.27: Stripper Adjustment. (A) - Stripper Disks; (B) - Stripper Supports.

Retainer

The retainer and rods keep the beets from falling out of the wheel elevator pockets on the way up. The retainer frame must be centered right-and-left and front to back with the wheel elevator. The distance between the retainer and the wheel elevator must be the same at the top (D) (see Figure 2.25) as it is at the bottom (E). Make this adjustment at the top attaching point. Make sure the retainer does not make contact with the truck elevator.

The retainer rod assembly is able to move away from the wheel as more beets are conveyed. Field adjustment is dependent on beet size and tonnage. The spring adjusting nuts (A or B) (see Figure 2.28) are used to adjust the spring tension. Loosening the stop nuts will decrease the tension. It is normally necessary to tighten in muddy conditions to help clear mud build-up. An additional set of holes are provided for the spring bracket (C), if required for large beets.

Truck Elevator

The truck elevator moves beets to the truck or tank by using an electro-hydraulic valve and hydraulic motor. The direction is changed by operating the electric switch on the control box in the tractor.

NOTE: A soft shift has been incorporated to smooth reversal of the elevator chain (see Figure 1.08).

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

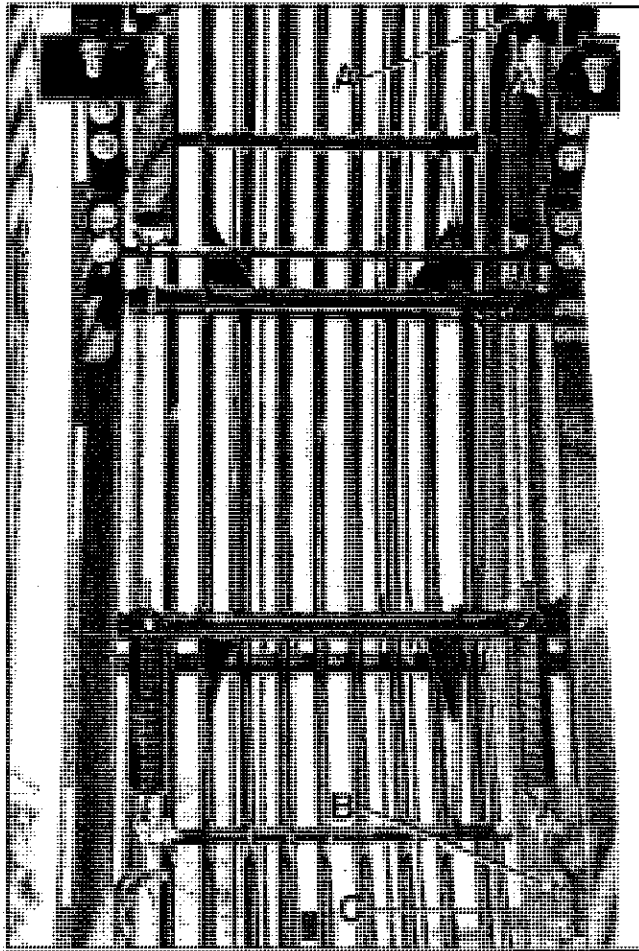


Figure 2.28: Retainer. (A and B) Adjusting Nuts; (C) Spring Bracket.

The elevator has two locations to adjust the height for various truck side heights. The elevator also has two positions for row spacing and truck location.

The belted chain tension is adjusted by loosening nuts (A) (see Figure 2.29) then loosening nuts (B). Turn outer nut (B) counterclockwise to increase tension, or clockwise to decrease tension. Tighten nuts. The belt should be 1" to 2" above 5" roller at joint of elevator.

IMPORTANT: Keep chain tension equal on both sides of conveyor so chain will run straight and wear uniform.

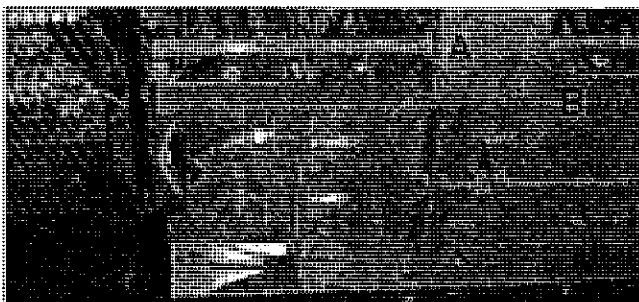


Figure 2.29: Belted Chain Tensioning. (A) - Bracket Nuts; (B) - Take-Up Nuts.

Truck Elevator Adjustments

High and Low Position

Normally high or low position of the elevator is assembled from the factory. See Figure 2.30. If it must be changed move the truck boom to the appropriate new position and move upper draper chain roller so chain is in a smooth line. See next section for readjusting stop when boom is folded down.

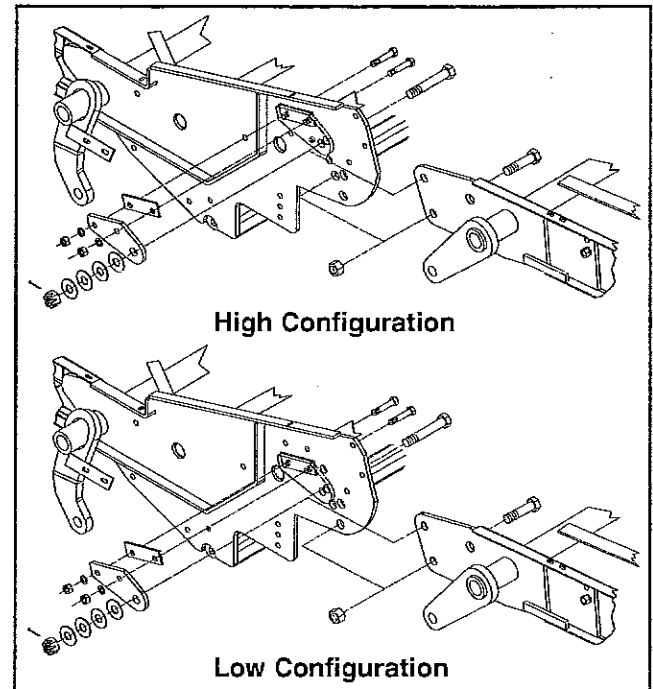


Figure 2.30: High and Low Position.

Adjustment In and Out, and Tilting

Two positions are provided 11" apart for the position of the elevator in or out to more accurately match the tracking of the truck on the rows (see Figure 2.31). Disconnect the support angles (A). Move the 2-1/2" square tube (B) to the appropriate new position. Loosen the inner tie straps (C). **Do NOT** remove bolts or elevator will tip. Move the elevator in or out, tighten straps and reattach angles. Note; 11" grate (D) must be repositioned. Note that the inner tie straps (C) can be used to tilt the elevator higher or lower. **To reposition - elevator MUST BE supported.** After these adjustments the fold down stop must be readjusted.

Adjusting Fold Down Stop

After positioning elevator, the folding stop must be adjusted. See Figure 2.31. Note that the elevator aligns with the rear frame tube. It may be desirable for certain spacings to cut rear frame tube off to allow minimum

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

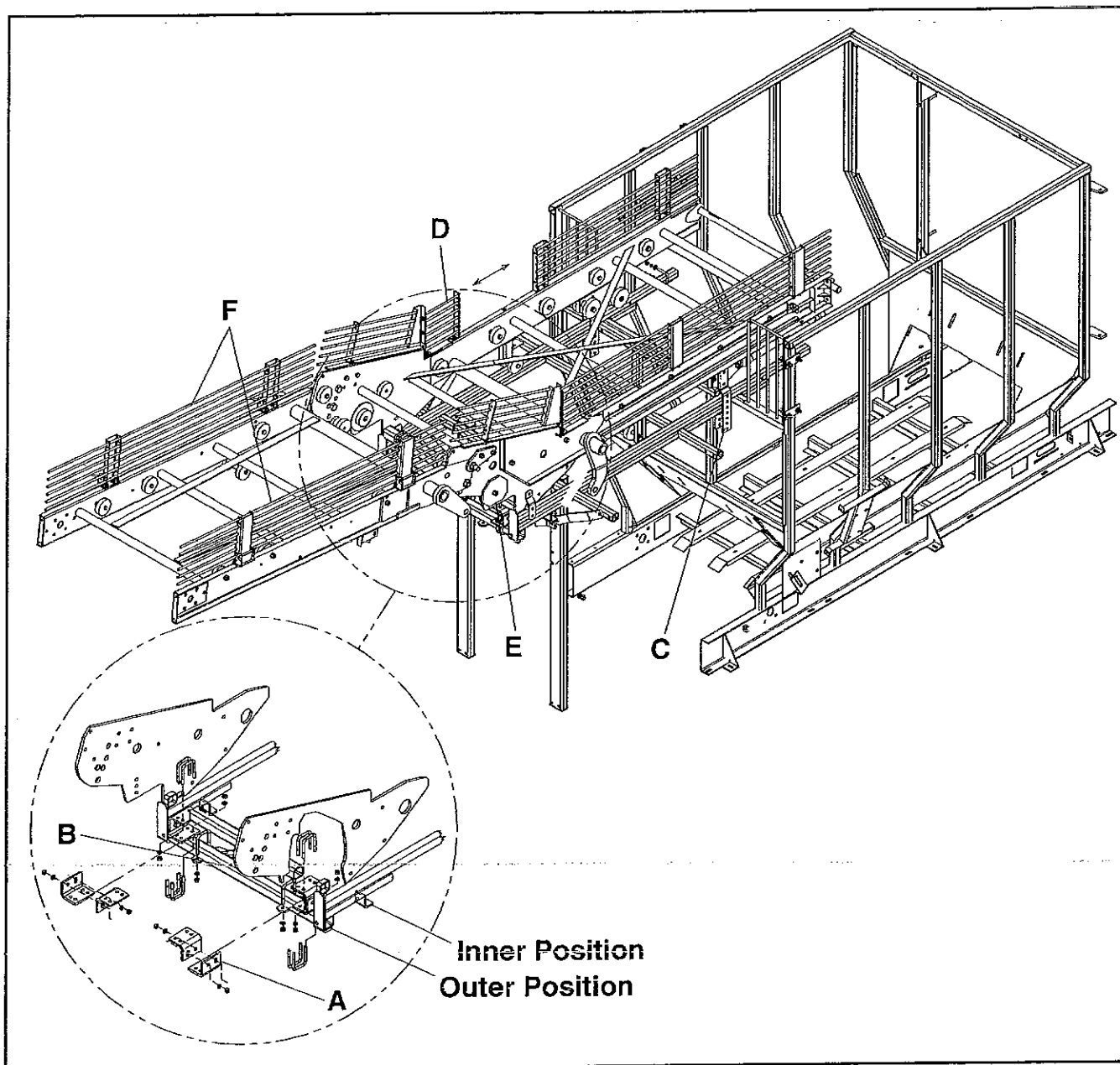


Figure 2.31: Elevator Positioning.

width of the machine. Remove octagon stop (E). Fold elevator down to the lowest position, install octagon stop to hold in this position. If the rear frame tube is not cut off for the inner position, it may be necessary to drill a new hole in the stop to hold elevator out far enough.

Folding Truck Boom Grates

To narrow the machine the side grates (F) on the truck boom can be folded down (see Figure 2.31). They are held in the up or down position by a $\frac{3}{8}$ " diameter pin. Do not run the elevator with the grates down.

Roller Chain Drives

Roller chain drives are tensioned by moving idler sprockets in slots. Check roller chains frequently and tension so approximately 20 lbs. force deflects chain $\frac{1}{2}$ " to 1".

Also, frequently check sprocket alignment. If more wear appears on one side of a sprocket realign sprockets.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

Tire Pressure

Frequently check tire pressures. Equal pressure should be maintained in all tires. Figure 2.32 lists recommended pressure for tires used on 692B Beet Harvester.

| | |
|--------------------|----------------------|
| 11.00-16 - 12 PLY | - 45 PSI RECOMMENDED |
| | - 50 PSI MAXIMUM |
| 13.50-16.1 - 6 PLY | - 25 PSI RECOMMENDED |
| | - 30 PSI MAXIMUM |

Figure 2.32: Tire Pressure.

Installing Tires



CAUTION: Failure to follow proper procedures when installing a tire on a wheel or rim can produce an explosion which may result in serious injury or death. Do not attempt to install a tire unless you have the proper equipment and experience to perform the job. Have it done by your dealer or a qualified tire repair service.

When seating tire beads on rims, never exceed 36 psi or maximum inflation pressures specified by tire manufacturers for installing tires. Inflation beyond this maximum pressure may break the bead, or even the rim, with dangerous explosive force. If both beads are not seated when the maximum recommended pressure is reached, deflate, reposition tire, relubricate bead, and reinflate.

Detailed agricultural tire installing instructions, including necessary safety precautions, is also available from the Rubber Manufacturers Association and from tire manufacturers.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

LUBRICATION & STORAGE

General

Economical and efficient operation of any machine depends upon regular and proper lubrication of all moving parts with a quality lubricant. Failure to lubricate results in reduced efficiency, premature wear, breakdown and needless and costly replacement of parts.



CAUTION: Keep well clear of moving parts. Be sure to shut off the tractor, set the parking brake, put the machine in neutral, and remove the tractor key while making adjustments. Wait for all movement to stop before approaching the machine.

All unmarked locations 1, 2 or 3 pumps every 10 hours.

Every 20-30 hours on items marked with Δ.

For items marked with * see special instructions.

*** A. CV PTO - (See Figure 2.33)** A high quality general-purpose grease may be used; however, a lithium based grease is recommended. *Lubricate every 8 hours of operation.*

1. Cross and Bearings (3), until grease is purged around the seal (2-4 pumps).
2. CV Center Housing (1), until grease is evident around the center section disk (6-12 pumps).
3. Telescoping Members (1) until grease fills the telescoping area. Disassemble occasionally to ensure components are adequately greased (4-8 pumps).
4. Shield Bearings (3 plastic zerks) (2 pumps).

IMPORTANT: When turning frequently or making many sharp turns, grease the CV center housing at 4-hour intervals.

IMPORTANT: Failure to frequently grease the CV center housing and telescoping members will reduce the life of the CV.



CAUTION: When rotating the drive-line to gain access to the lubrication zerks, be sure to shut off the tractor, and wait for all movement to stop. Remove the key before lubricating.

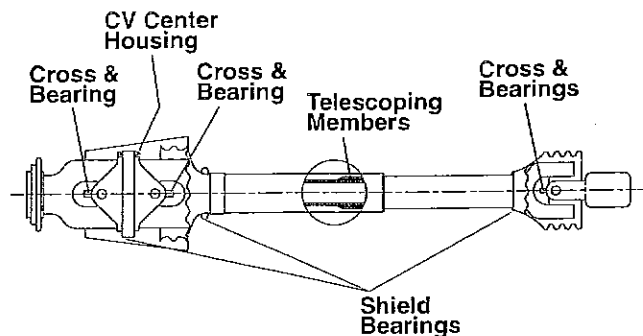


Figure 2.33: Constant Velocity PTO.

B. Hitch, input drive and rowfinder - See Figure 2.34.

1. Hitch pin and swivel at tractor connection pivot.
2. Pivot at rear of tongue.
3. Rowfinder swivel.
4. Upper lift cylinder swivel (2 zerks).
- Δ 5. Pillow block bearings on short jackshaft and on other side of double u-joint and center of long jackshaft (4 zerks).
6. Double u-joints.
7. Rowfinder (not shown).

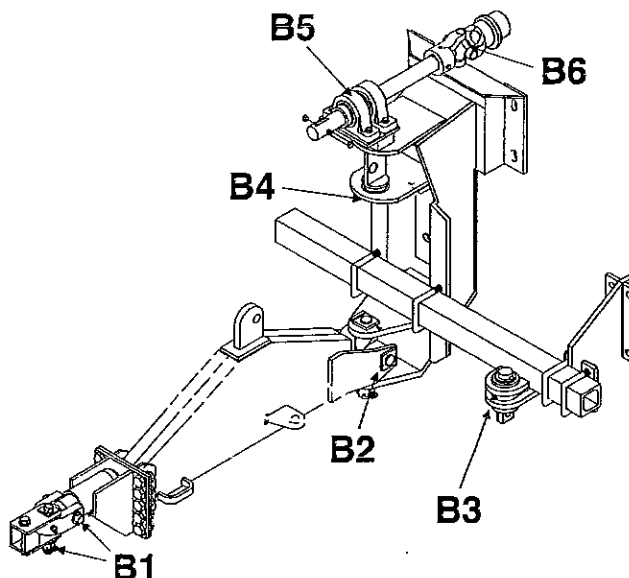


Figure 2.34: Hitch Area.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

LUBRICATION & STORAGE

C. Frame and drives in front of tank (See Figure 2.35).

1. U-joints, 3 shafts of gearbox.
- * 2. Lifter wheel hubs every 20 - 50 hours depending on conditions.

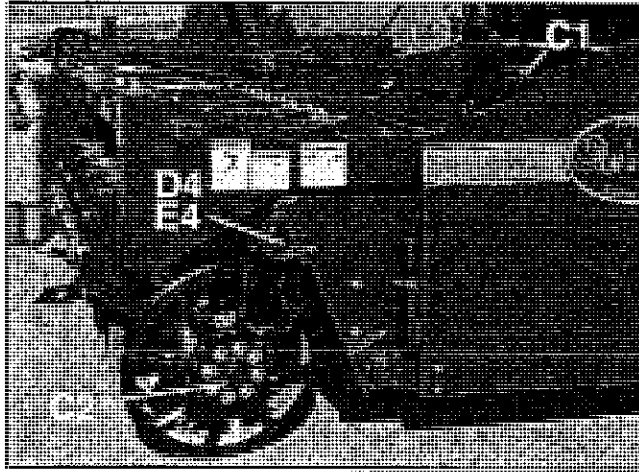


Figure 2.35: Frame and Drives on Front of Tank.

D. Right hand drives. (See Figures 2.35 and 2.36)

- Δ 1. Flange block bearings on conveyor rolls (4 zerks) Center bearing of star rolls (2 zerks).
- * 2. Ferris wheel idler pivot every 20 to 40 hours (see Figure 2.26).
- Δ 3. Ferris wheel drive flange block bearings (see Figure 2.26).
- Δ 4. Paddle shaft pillow block bearing (2 zerks).
- * 5. Slip clutch hub on ferris wheel and paddle shaft. Grease occasionally very sparingly. Depending on slippage every 50 to 100 hours.
- Δ 6. Flange block bearings on discharge ends of grab rolls (not shown).

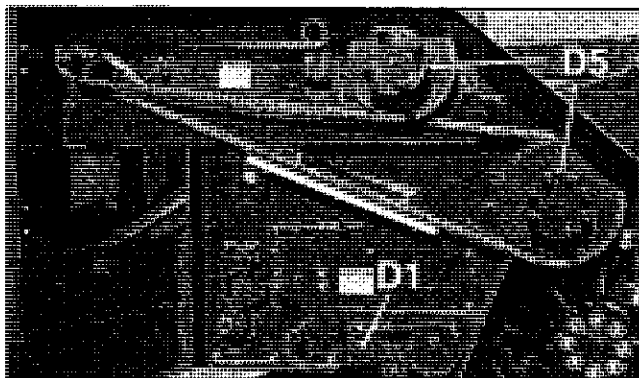


Figure 2.36: Right Hand Drive.

E. Left hand drives. (See Figure 2.37)

- Δ 1. Flange block bearings on ends of conveyor rolls and grab rolls (7 zerks).
2. Pivot points of belt tightener arms (3 zerks).
3. Take-up rod slide area for belt tighteners (4 zerks).
- Δ 4. Paddle shaft pillow block bearing (see Figure 2.35).

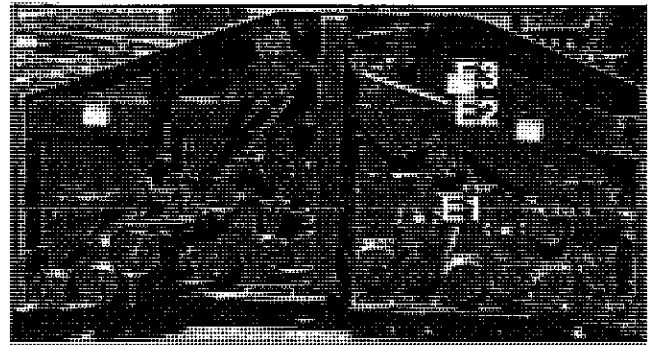


Figure 2.37: Left Hand Drive.

F. Elevator and tank area (see Figure 2.38).

- Δ 1. Flange block bearings drive and idler end of elevator.
- Δ 2. Flange block bearings drive and idler end of tank unloading drive.
- Δ 3. Pivot slide of stripper adjusting rod (see Figure 2.27).



Figure 2.38: Elevator and Tank Area.

G. Carrier Wheels (see Figure 2.39 and 2.40).

- * 1. Oscillating and walking beam pivot area. Every 20 to 50 hours depending on conditions.

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

LUBRICATION & STORAGE

2. Pivot of steerable wheels if so equipped (not shown).
- * 3. Carrier wheel bearings, clean and pack with wheel bearing grease every 200 hours or each season.

* H. Check oil level in gearbox every 50 hours.

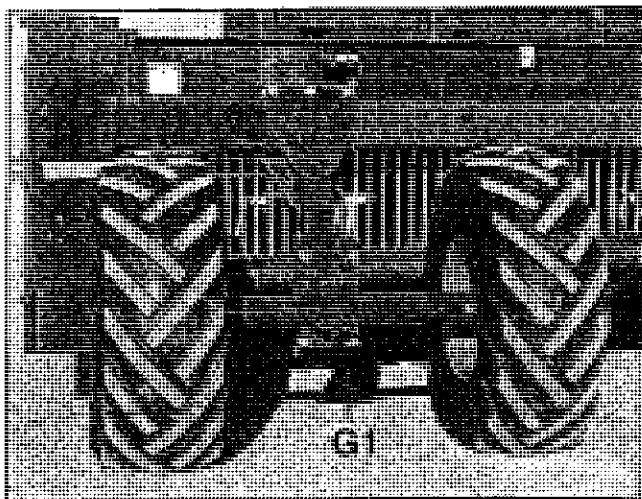


Figure 2.39: Oscillation Carrier Wheels.

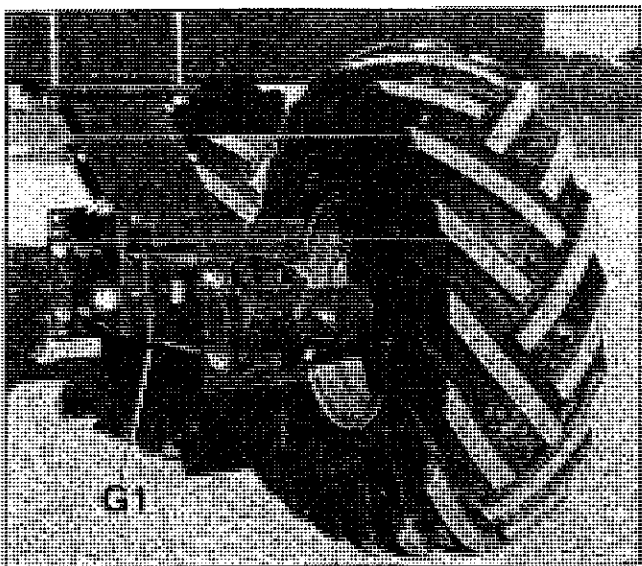


Figure 2.40: Walking Beam Carrier Wheels.

Storage

Proper storage of your harvester will greatly lengthen the service life and make it easier to place it back into service at the beginning of the next season.

Preparing Harvester For Storage

1. Store harvester in a dry place.

2. Squirt diesel fuel on seals of bearings prior to washing with power washer.
3. Clean harvester thoroughly.
4. Clean drive chains and brush with heavy oil to prevent rust.
5. Lubricate harvester. Grease threads of adjusting bolts. Run harvester briefly to distribute grease.
6. Remove belt tension.
7. Scrape and repaint all worn parts or coat with light oil to prevent rust.
8. Block up harvester to remove load from tires, do not deflate tires. If stored outside, remove wheels and tires and store in a cool, dark dry place.
9. Place a plank under lifter wheels so they do not sink into ground, if harvester is not stored on a hard surface.
10. List the replacement parts needed before next season and order early. Your dealer can give better service in the off season. Replacement parts can be installed in your spare time - no delay at time of need.
11. If hydraulic cylinders remain on the harvester and cylinder rods are extended, apply grease to exposed rod end.
12. If harvester is not sheltered, the belted elevator chain should be protected from direct sunlight.

Preparing Harvester From Storage

1. Replace wheels if they were removed and remove blocking.
2. Inflate (traction tires to 25psi, 30 psi maximum).
3. Clean harvester thoroughly.
4. Check drive and conveyor chains making certain they have proper tension.
5. Clean slip clutches. Check and adjust spring lengths as necessary.
6. Retention belt drives.
7. Lubricate harvester; then run at half speed for 10-15 minutes listening for any unusual noises. Stop

SECTION 2: FIELD OPERATIONS & ADJUSTMENTS

LUBRICATION & STORAGE

- harvester and check bearings for over heating or excessive looseness. Recheck chain tension.
8. Review safety and operating instructions in this manual.
 9. Inspect all connections and make certain that hardware is tight and cotter pins are in place.
 10. If cylinders were stored on machine and cylinder rods were extended and coated with grease, clean grease from exposed rods.
 11. Make sure all shields are in place and properly fastened.

SECTION 3: ASSEMBLY OF BEET HARVESTER



CAUTION: The 692B Beet Harvester weighs approximately 22,000 lbs. While working on the machine be sure to work safely. Be sure to use adequate blocking. Use adequately rated lifting devices. Make sure parts are secured before working under or near them.

NOTE: A hoist or lift truck is necessary to assemble the beet harvester.

Set the frame on a level area to assemble. Set the lifter wheels on a board so they do not penetrate into soft ground.

Setting Carrier Wheel Spacings

Raise the rear frame bar with a jack or hoist. Use Figure 3.03 to determine settings for carrier wheels. It is recommended that the left oscillating carrier wheel be set to run in the far left dug row. The left wheels may also be set to run straddling the dug rows, depending on field conditions. If the wheel setting desired is different than shown add or subtract the appropriate half row spacing from the dimensions given.

For traction tires, a 3" wheel strut extension is added (bolted to A, see Figure 3.01) to give more clearance from tires to the frame on the left side of the harvester.

Position the left carrier wheels first. (See Figure 3.01) so machine runs parallel to ground at digging depth (2" to 3-1/2").

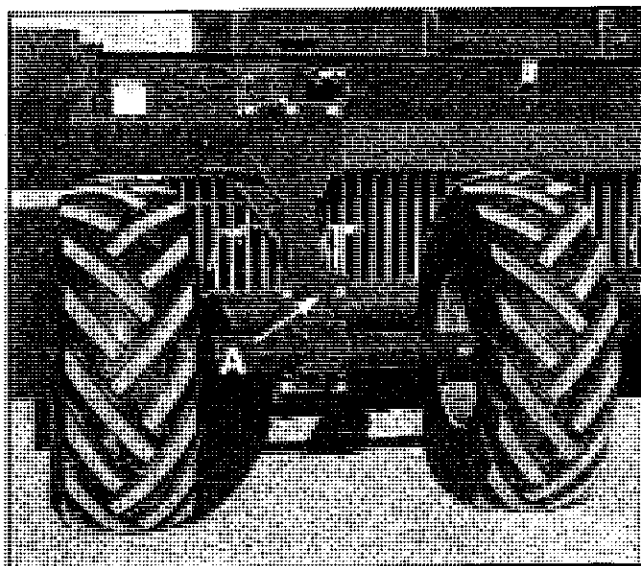


Figure 3.01: Oscillating Carrier Wheel, (A) - Strut Mounting Plate.

NOTES: For harvesters equipped with a third carrier strut, it is recommended to raise the spindle support on the center strut one hole on the center strut. This is to prevent the harvester from pivoting on the center strut and affecting the lifter wheel depth.

Now position the right walking beam carrier wheels according to Figure 3.03. Adjust height of carrier wheels by moving spindle support bracket (A) (see Figure 3.02) to adjust height of walking beam so machine runs parallel to ground at digging depth.

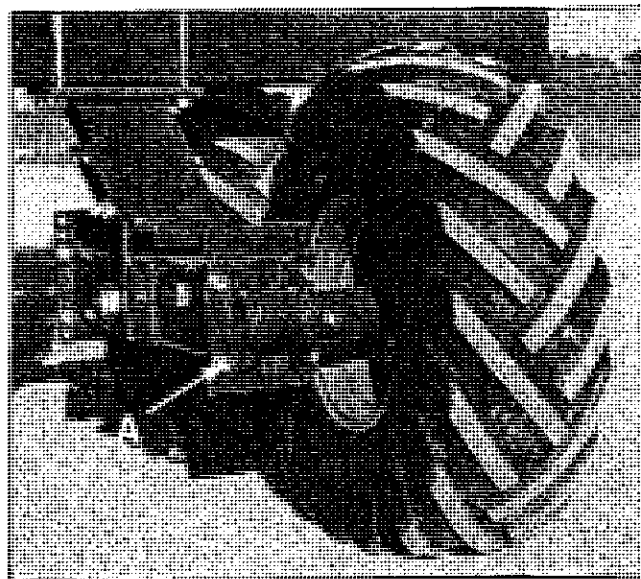


Figure 3.02: Walking Beam Carrier Wheel, (A) - Spindle Support Bracket.

NOTE: Machine should be parallel to the ground, front to back and side to side when operating in the field, adjust carrier wheels accordingly.

NOTE: Torque specifications for wheel mounts is 130 ft-lbs. Recheck after initial use.



CAUTION: The walking beam carrier wheels and support weigh approximately 500 pounds. Use proper equipment and be careful when handling.

IMPORTANT: If the bearing seals are damaged, make sure to replace them.

SECTION 3: ASSEMBLY OF BEET HARVESTER

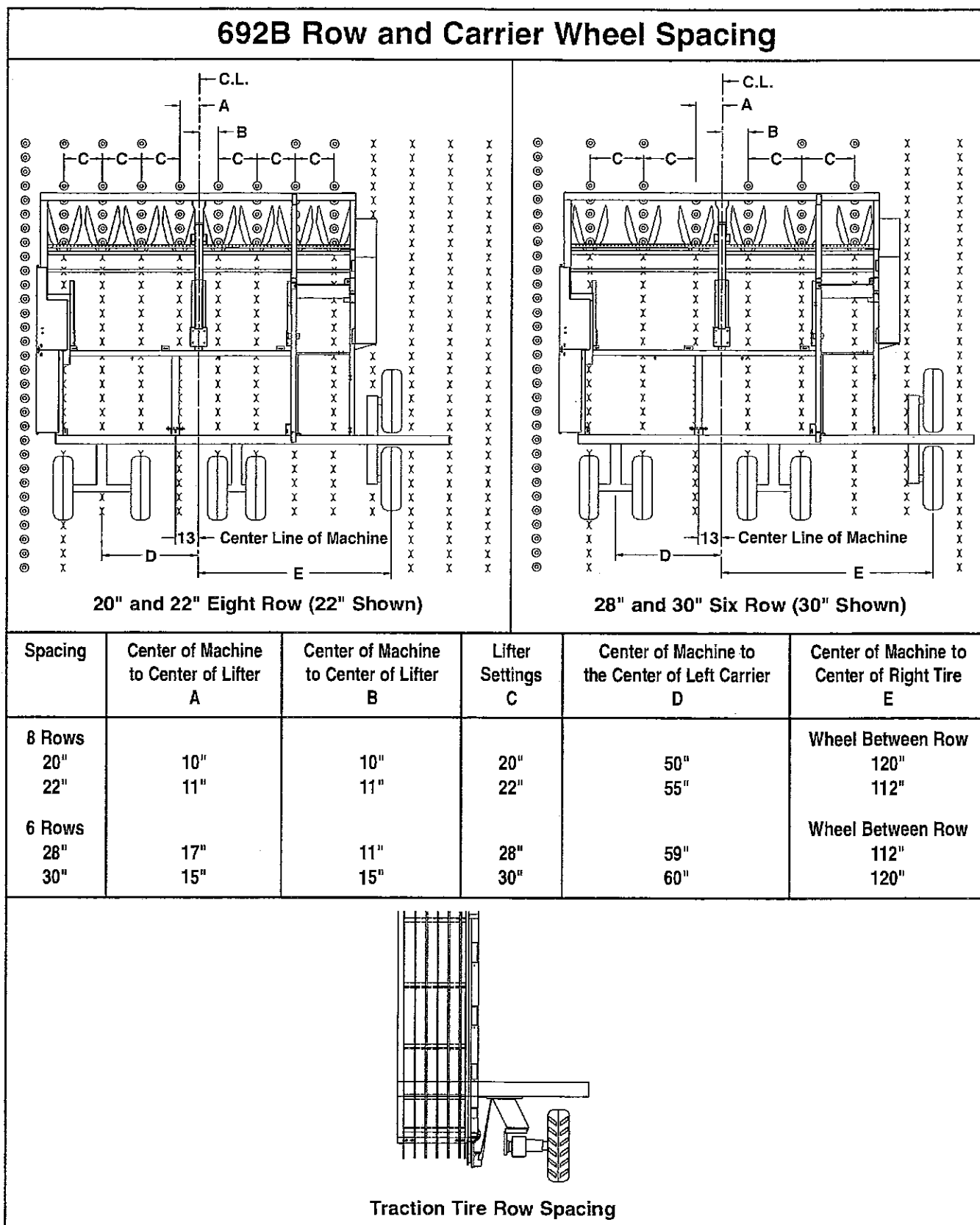


Figure 3.03: Carrier Wheel Spacing.

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Wheel Elevator Assembly

Install the square wear plates on the wheel with the 5/16" x 7/8" carriage bolts and 5/16" flange nuts provided. The plate is on the inside of the wheel and the carriage bolt head is to the outside of the wheel. Install on side of slot away from bucket direction so lugs of drive chain contact when turning the wheel. Assemble the first half of the wheel using a hoist or lift truck on the third crossbar. Lift wheel half into position from the rear of machine. Start feeding wheel half onto rear rollers making sure 7/8" square rail is riding on rollers (see Figures 3.04 and 3.05). Continue feeding wheel half on rollers toward front of machine making sure rail is aligned with front roller and rotate wheel half as far as possible to allow the tank and retainer to be mounted. Secure the wheel half in place.

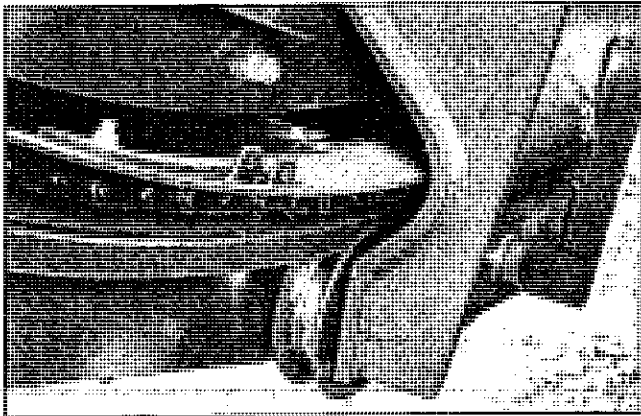


Figure 3.04: Rear Elevator Wheel Rollers.

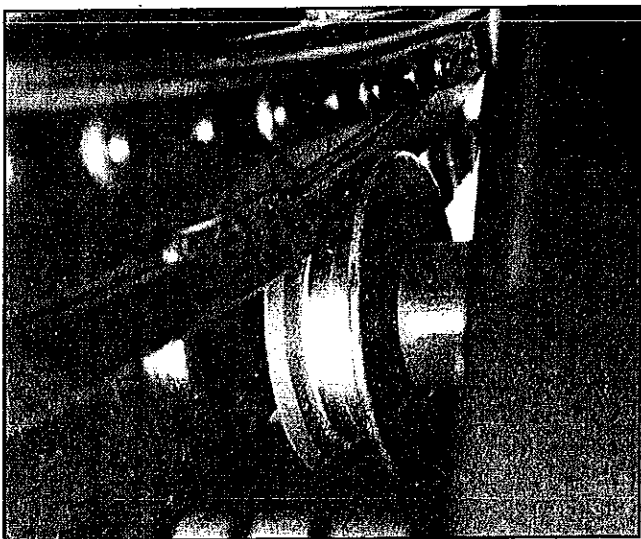


Figure 3.05: Front Elevator Wheel Roller (Shields Removed for Clarity).

Elevator & Tank Assembly

Open tank door and remove parts from tank.

Attach elevator hood using six (6) 3/8" x 1-1/2" carriage bolts, six (6) 3/8" lock washers and six (6) 3/8" nuts.

Determine if the elevator will be positioned in the extreme outer position as assembled or the 11" in position (see Figure 3.08). If 11" in position is desired move 2-1/2" square tube (item 20) to inner position and move the 11" filler grate to the inner position so the ferris wheel opening is in the proper position.

Install 5 grates on the tank elevator front and rear when convenient.



CAUTION: Support the elevator so it will not tip when repositioning elevator.

Tank Assembly

Pick up tank assembly and set in place on frame (see Figure 3.06). For lifting, placing chain hooks in top tank tube ends works well. Use the six (6) 1/2" x 1-3/4" carriage bolts, six (6) 1/2" flat washers, six (6) 1/2" lock washers and six (6) 1/2" nuts provided to secure tank in place. *Slide tank as far rearward as possible and square up to frame.* Tighten hardware.

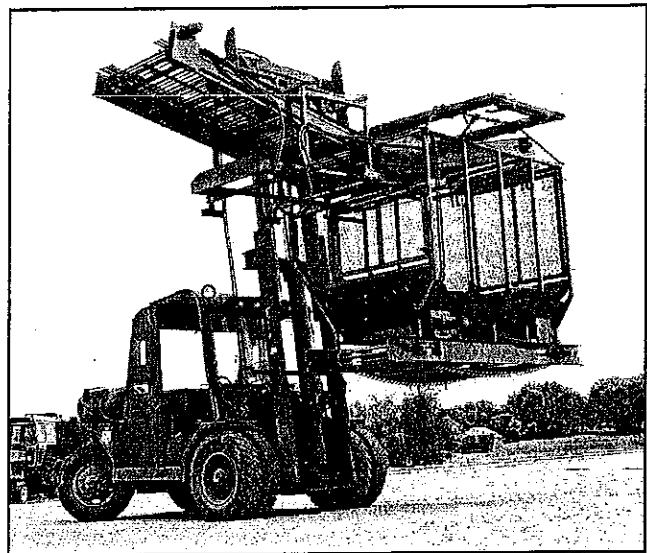


Figure 3.06: Lifting Tank Assembly.

Use the 3/8" hardware from the tank mounting hardware bag to attach the two beet deflector plates at tank discharge. Also install the beet deflector plate to front of tank channel.

SECTION 3: ASSEMBLY OF BEET HARVESTER

Attach two (2) 2" x 4" track support tubes (A) with the capped end up to elevator track and so the holes are oriented as shown. See Figure 3.07, make sure to place the upper and lower end to the tank side of the 2" x 2" tube and lower brackets respectively. Use the four (4) 1/2" x 4-3/4" hex bolts on top, four (4) 1/2" x 3-1/2" hex bolts on bottom, eight (8) 1/2" lock washers and eight (8) 1/2" nuts provided to secure tubes in place.

NOTE: The track may have to be raised to insert hardware into mounting holes.

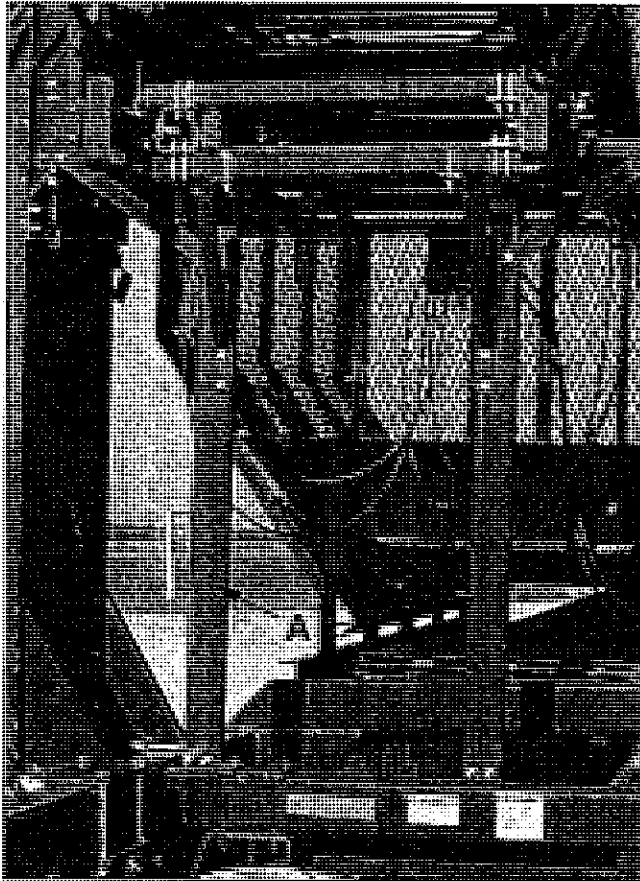


Figure 3.07: Track Support Tubes. (A) - Support Tubes.

Folding Elevator Assembly



CAUTION: Tank and elevator unit is top heavy. Use care when handling.

Once the tank and elevator are in place on the frame, proceed as follows, (see Figure 3.08).

1. Install Braces, front and rear (items 5 and 6) as shown from 2" x 4" tube out to 2-1/2" square tube on track. Install the bar braces (item 3) as shown forward and rearward to track, replace existing bolt with 1/2" x 4".

2. Move elevator from shipping position to outer permanent position.

- A. Check to make sure the Temporary Support (item 22) is in place from the track to the channel in the main elevator.
- B. Remove the bolts holding the elevator to the track at the support roller.
- C. Before removing the tie strap (items 18 and 19) and shipping angle (item 23) that hold truck elevator to track and tank elevator to high side of tank; make absolutely sure the elevator cannot tip, support explained in A is to hold from tipping.
- D. After removing the tie strap (items 18 & 19) and shipping angle (item 23), move elevator assembly out into the position selected with the 2-1/2" square tubes (item 20) directly over each other. As you are moving the elevator out and have it securely supported; remove the temporary support (item 22) from the track to the channel in the main elevator.
- E. Install two inner elevator tie bars (item 4) on each side securing the tank elevator to the track inside the tank, leave bolts loose. Supporting the end of the truck elevator remove bolts on inner elevator tie bars (item 4), tilt elevator to the desired position for truck height then attach and tighten elevator tie bars.
- F. Install the four (4) outer support angles (item 2) as shown using the u-bolts and bolts and position as shown to secure 2-1/2" square tubes on track and tank elevator together.

3. Install hydraulics to operate folding boom, see Figure 3.09:

- A. Hydraulic cylinders (item 13) must have end-caps rotated so ports are as shown. Note that these are right hand and left hand assemblies. Remove rods rotate solid clevis and torque rods to 76 ft-lbs.
- B. Install check valve (item 3), fittings (items 2, 4, and 5) and hoses (item 14) to hydraulic cylinders (item 13) for boom fold as shown.

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- C. Remove shield at rear cylinder location. Install hydraulic cylinders (item 13) into position on the elevator assembly as shown.
- D. Install flow divider restrictor valve (item 12) to bracket on tank as shown.
- E. Install hoses (items 9 and 10) from hydraulic cylinders to flow divider restrictor valve

(item 12) and then hoses (item 11) to main valve (item 15).

- F. When hydraulic cylinders for boom are activated extend cylinders so they just support the truck boom then remove 1" bolts (item 16) so truck boom can pivot. Lower elevator to lowest position so it just clears frame.

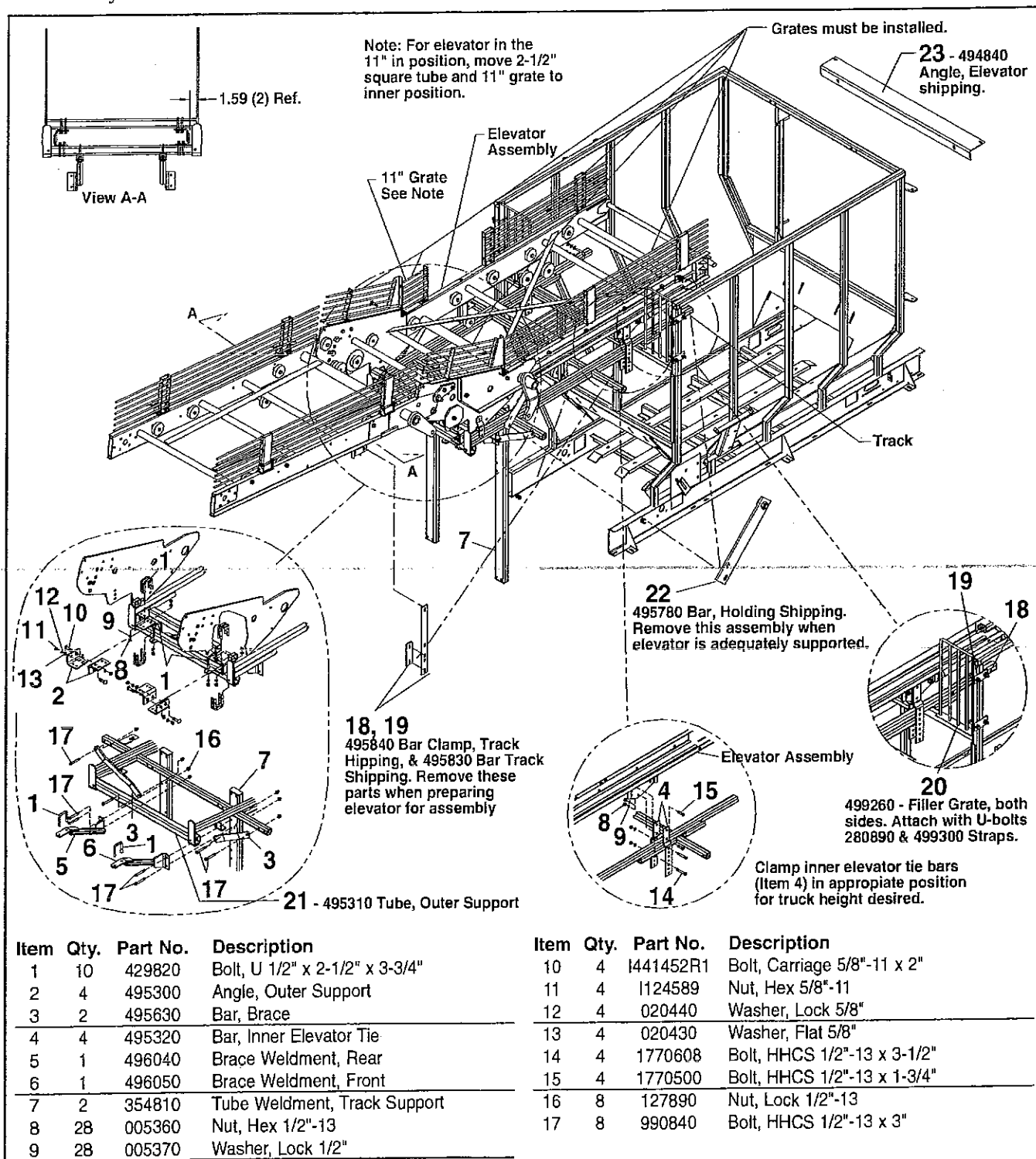


Figure 3.08: Elevator Assembly.

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Note: It may be desirable to cut rear frame tube off for some row spacings.

- G. Loosen bolts holding octagon elevator stop plate (item 17) turn it to stop the elevator as

desired making sure it is on the same edge on both sides. If elevator is in inner position a new hole maybe needed in the hexagon stop.

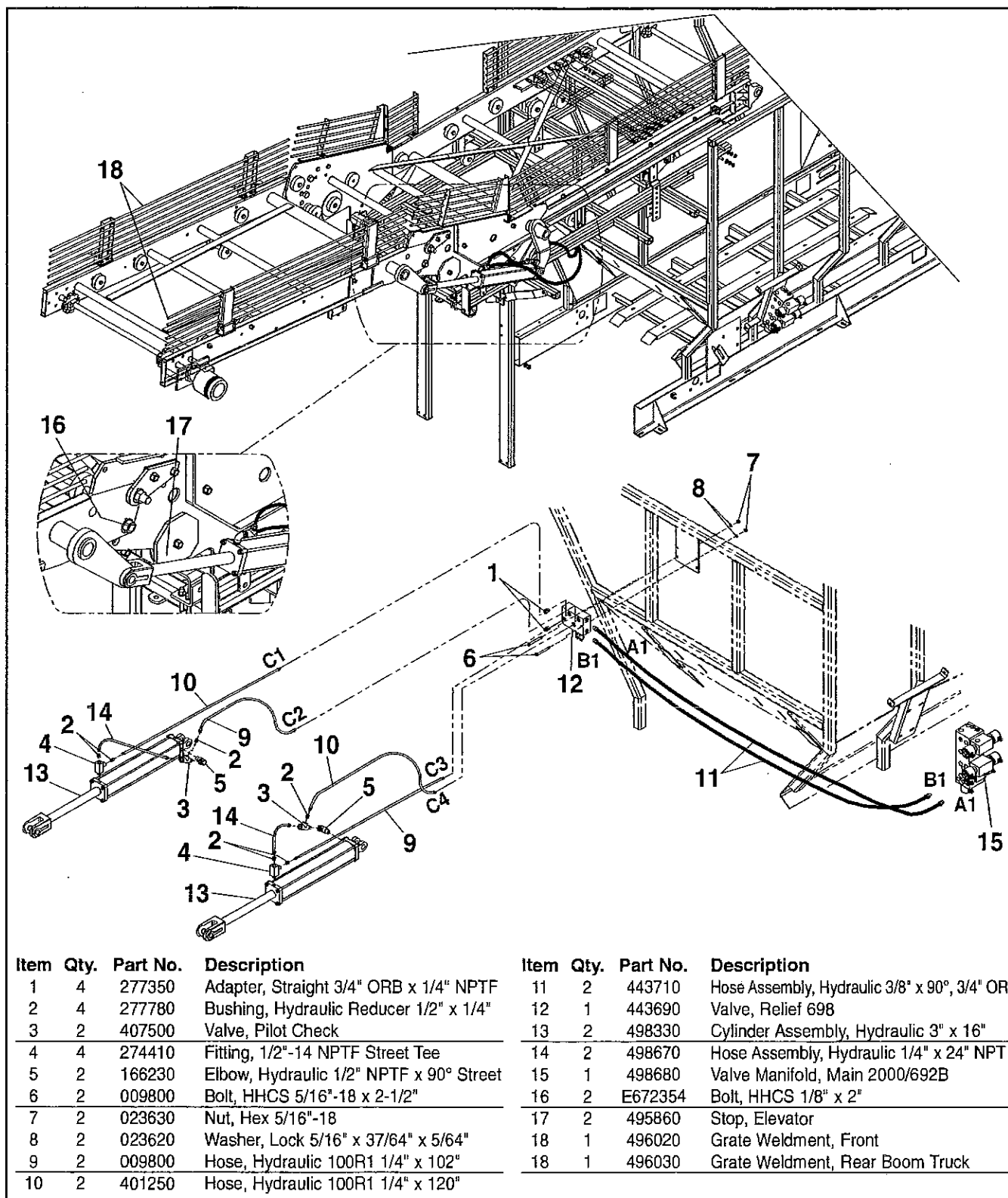


Figure 3.09: Elevator Hydraulics.

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- H. Be sure to fold the truck boom grates (item 18) up before running the elevator.
- I. Tie hoses in place with ties provided.
- J. Install shield over cylinder, it may be necessary to space out.
- K. Install Filler Grates (20) with u-bolts, (see Figure 3.08).

Attach ladder and ladder extension to tank (see Figure 3.10). Use two (2) 3/8" x 2" carriage bolts and two (2) 3/8" flange lock nuts to loosely join ladder and ladder extension together. Put two (2) 3/8" x 1" carriage bolts and two (2) 3/8" flange lock nuts into ladder extension. Slide assembly onto ladder mounts and secure to ladder brackets using two (2) 3/8" x 1" carriage bolts and two (2) 3/8" flange lock nuts.

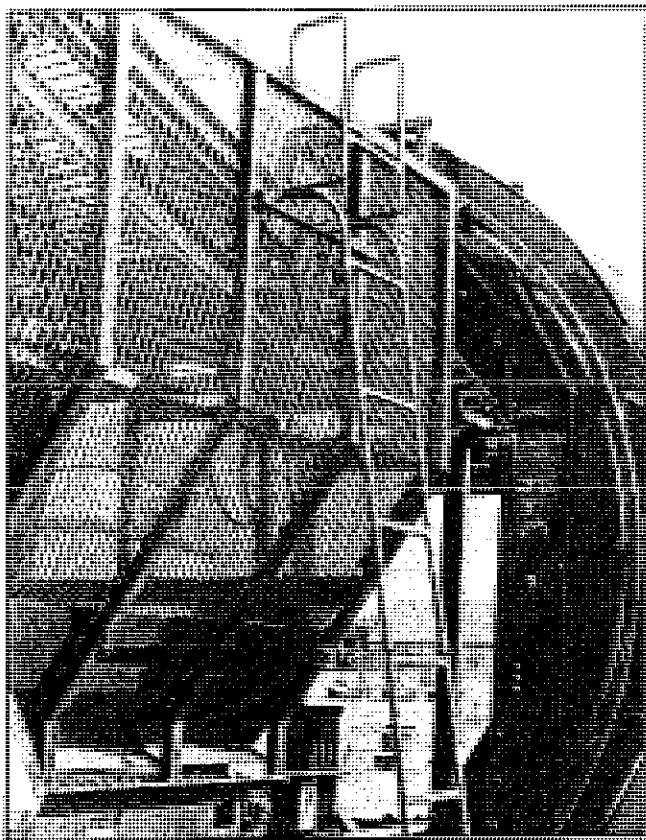


Figure 3.10: Ladder Assembly.

Retainer Assembly

Install the bottom of the retainer first with four (4) 1/2" x 1-1/4" hex bolts, four (4) 1/2" lock washers, two (2) 1/2" flat washers and four (4) 1/2" nuts provided. Make sure the sides of the retainer are outside the attaching panels as shown (see Figure 3.11).

(Refers to Figure 3.12) - Insert two (2) 5/8" x 2-1/2" hex bolts and two (2) 5/8" flat washers through angle on track and the retainer attaching brackets. Push retainer as close to the unloading elevator as possible and secure with two (2) 5/8" nuts, two (2) 5/8" lock washers and two (2) 5/8" flat washers. The retainer will be adjusted later.

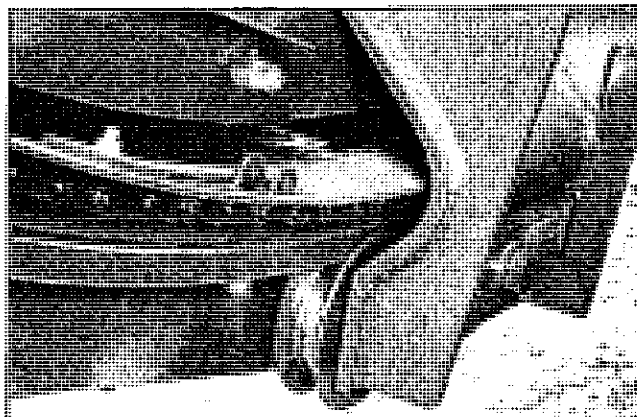


Figure 3.11: Lower Retainer Installation

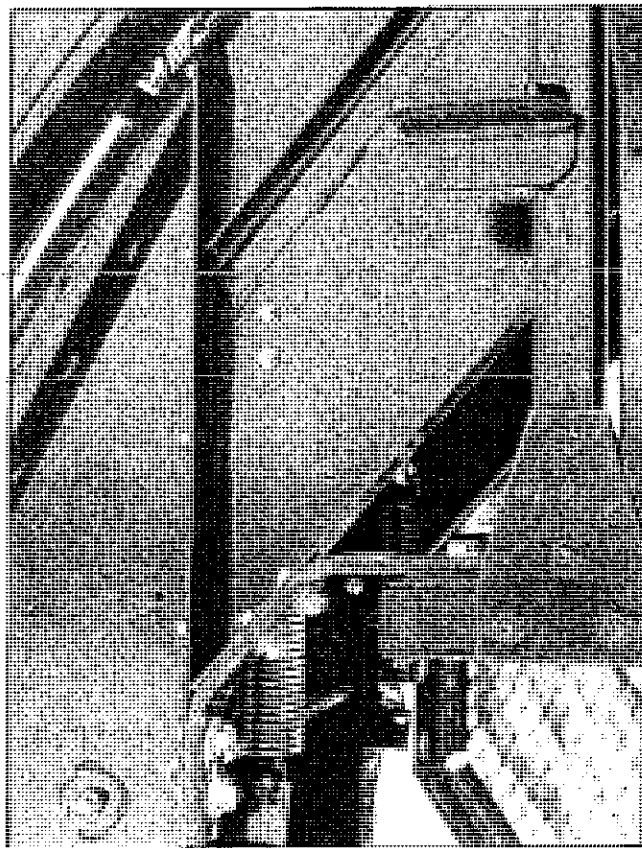


Figure 3.12: Upper Retainer Installation

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Wheel Elevator Assembly

Lift the second wheel half in preparation for installation. Position the chains around fourth crossbar for proper balance.

Loosen the right-hand rollers at the top of the machine, if necessary, so the wheel half slides between them and both left-hand rollers.

Attach the two (2) wheel halves together with twelve (12) 5/8" x 3-1/2" bolts and twelve (12) rocker straps, flat side towards nuts and bolt heads. Make sure the side tabs interlock properly (four places) where the halves join (see Figure 3.13).

IMPORTANT: Make sure the rail that rides on the rollers is aligned end to end when bolting the halves together. Use C-clamps or similar device to align the rails (see Figure 3.13). It may be necessary to grind rail ends in insure alignment of halves.

NOTE: Use a punch to align the holes at one joint first, then loosely insert two (2) bolts, straps and jam nuts. Then use a punch to align the other joint holes and insert hardware.

Tighten the first jam nut to 120 ft-lbs., then securely lock the second jam nut against the first one.

IMPORTANT: Do not over tighten the first jam nut.

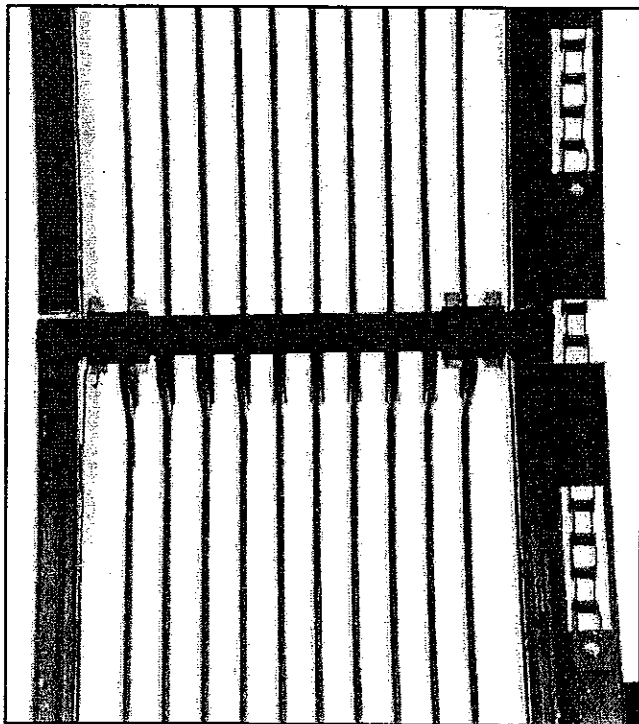


Figure 3.13: Wheel Elevator Joint.

Install the rod connectors between the two (2) wheel halves as shown (see Figure 3.14). Adjust the three (3) left hand rollers so they just touch the 2 x 2 tube of the wheel elevator. Free the wheel and turn it manually through several revolutions to make sure nothing is interfering with it. Adjust left hand rollers so they all contact the wheel. Adjust the right-hand rollers so they are about 1/8"-1/4" away from the drive band of the wheel elevator at its closest point. Make sure tabs in chain slots (see Figure 3.13) are properly installed.

Retainer Adjustment

Center the retainer both right-and-left and front-to-back with the wheel. The distance between the outside edge of the retainer and the inside edge of the wheel must be the same at the top as it is at the bottom (B) (see Figure 3.17).

First loosen the two attaching bolts at the top. Move the retainer with a chain and a bar to position it correctly, then tighten the two (2) bolts. Make sure the retainer does not make contact with the truck elevator.

NOTE: It may be necessary to reposition the tank assembly so the elevator clears the retainer and maintains an equal gap with the wheel.

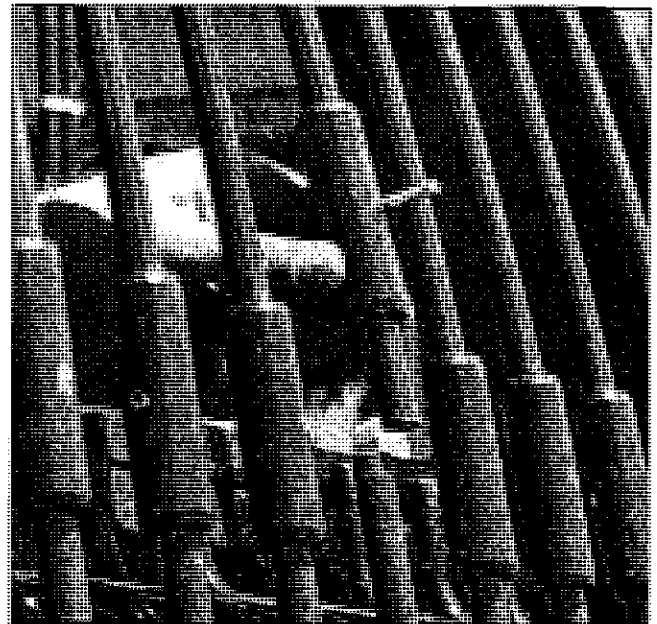


Figure 3.14: Rod Connector Installation.

Stripper Assembly

Install stripper 10" from rear edge of support frame. Lift stripper assembly into position and attach with four (4) 1/2" u-bolts (A) (see Figure 3.15), eight (8)

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1/2" flat washers, eight (8) 1/2" lock washers, and eight (8) 1/2" hex nuts as shown. Center the round disks between the rods of the wheel elevator.

Make sure disks do not strike against square cross tubes, joint cross bars or tear the optional rubber flaps.

Turn the wheel elevator one or two complete revolutions and slide stripper supports (B) right or left to eliminate interference (see Figure 3.15).

Bend the wheel elevator rods, if necessary, only after adjusting stripper support. Pay particular attention to the wheel elevator joint cross bars.

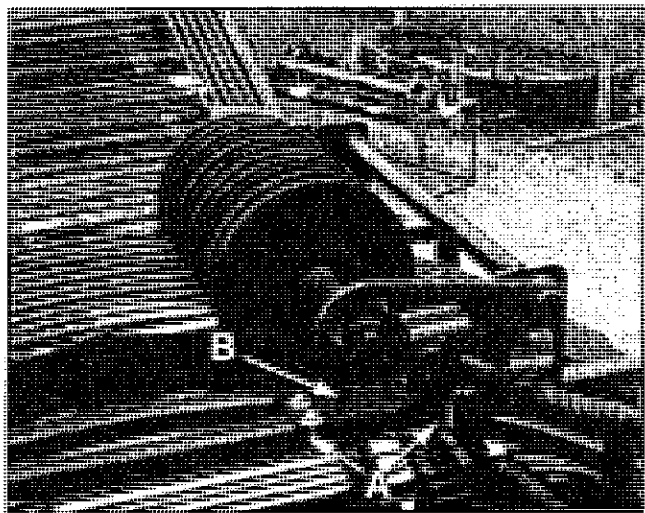


Figure 3.15: Stripper Installation.

Wheel Elevator Chain Assembly

Remove one of the square wear plates on the wheel. Use that hole to wire the wheel elevator chain to the wheel. Make sure to reinstall the wear plate after the chain is installed. Turn the wheel manually to install the chain. Wrap around the drive and tightener sprockets as shown and install the connector link (see Figure 3.16). Tighten the chain by loosening jam nut (A) and turning adjusting nut (B). Check this adjustment by pulling the chain away from the rear of the wheel elevator. In Figure 3.17 the distance of (A) indicates proper tension, this distance should be 1/2" to 1-1/2".

The tightener sprocket must be aligned with the chain. Use washers if necessary at the forward end of the tightener sprocket pivot arm (where the grease fitting is located). Set dampener spring length to 6-3/4" (see Figure 3.16). Adjust if necessary by loosening jam nut (D) and turning adjustment nut (C).

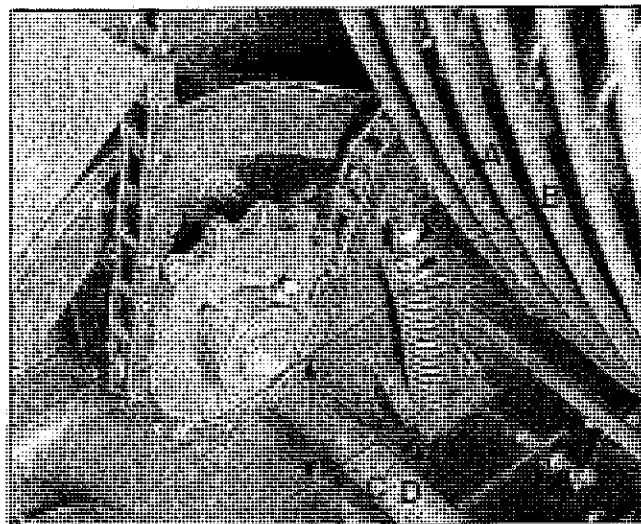


Figure 3.16: Wheel Elevator Drive (Shields Removed for Clarity).

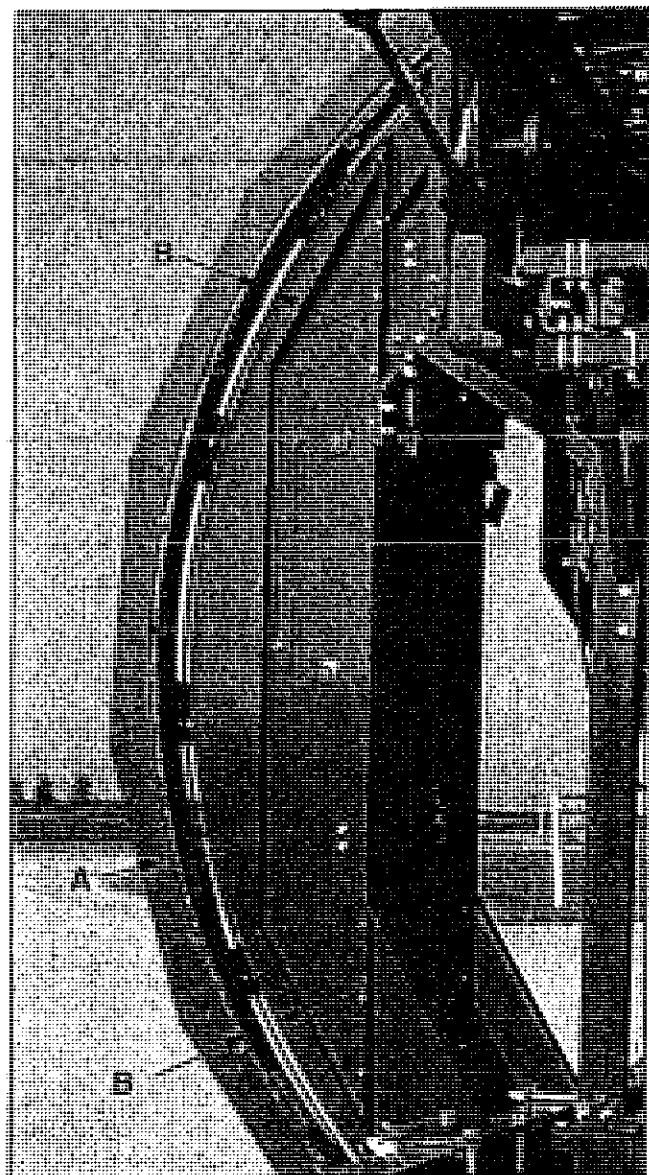


Figure 3.17: Wheel Chain Tensioning.

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Hitch Support, Tongue & Driveline Assembly

See Figure 3.18, lift hitch support assembly (20) into position and prepare to install exactly on center of the center frame. The rowfinder tube should be in the left

position with keystone straddling support; brace weldment must be positioned to clear lifter strut.

Attach the hitch assembly to the bottom front tube of the main frame using two 1" x 7" wide u-bolts (item 17), hex lock nuts, lock washers, and flat washers. Do not tighten at this time. Install hitch to the upper frame tube

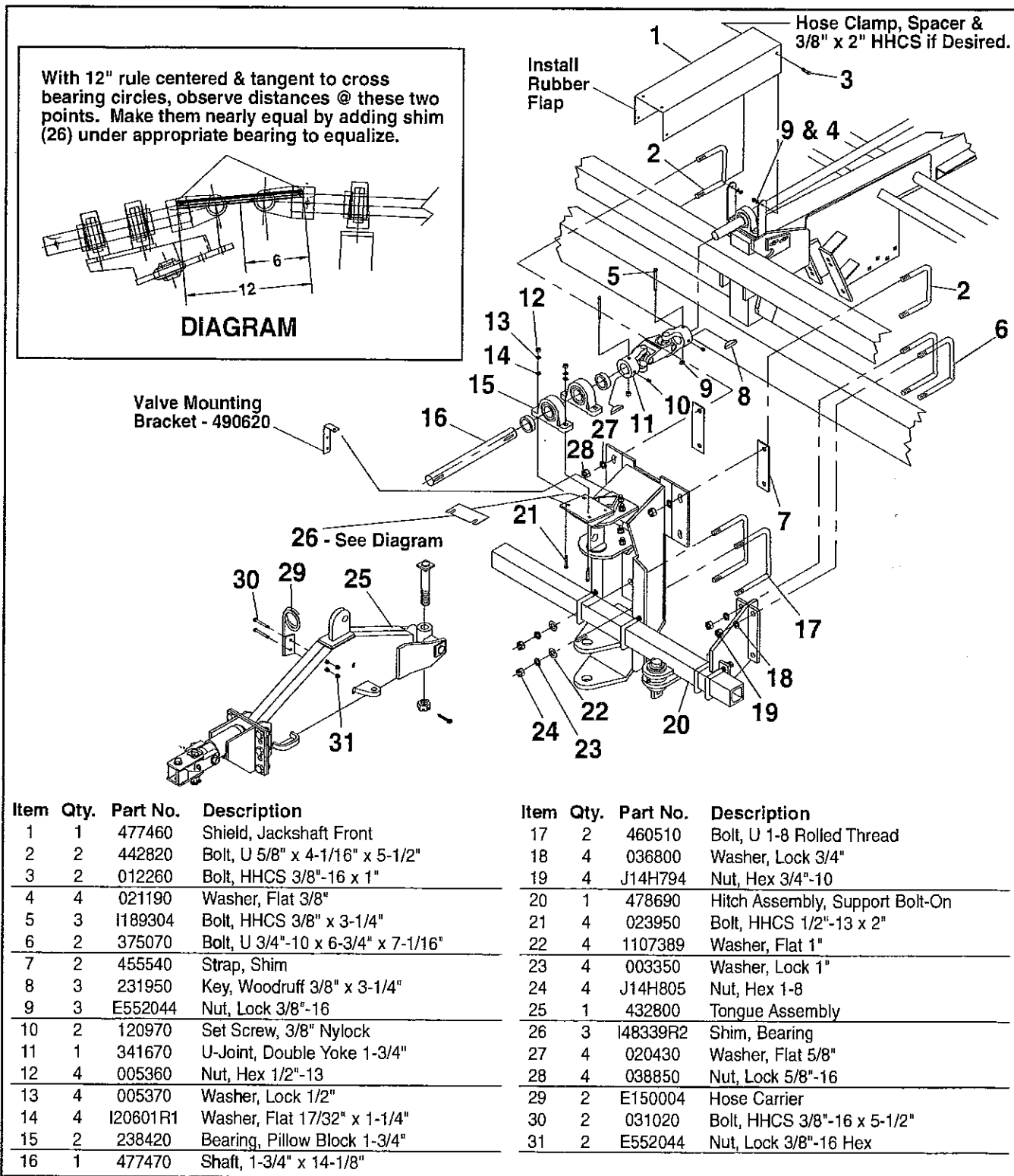


Figure 3.18: Hitch Assembly

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with two (2) straps if required (item 7), two (2) 5/8" x 4" wide u-bolts (item 2), hex nuts, and flat washers. Attach the left steering cylinder support to the lower frame tube with two (2) 3/4" x 7" wide u-bolts (item 6), lock washers and hex nuts. Tighten all hardware.

Install jackshaft extension, (see Figure 3.18). Install double u-joint (item 11) onto jackshaft using key, set screw, bolt and nut shown. Install two (2) bearings (item 15) and short jackshaft (item 16), into other end of double u-joint using hardware shown.

Snug hardware to check equal angle on double u-joint. See diagram. Install shims (item 26) so angle is equal within dimensions shown. Tighten all hardware.

Attach the tongue assembly (item 25) to the hitch support using the pivot pin, slotted nut and cotter pin that are in tongue assembly.

Install the two (2) hose carriers (item 29) with their loops toward the hitch centerline using two hex bolts and nuts.

Install shield (item 1) as shown. Bolt rubber extension to shield.

Rowfinder Installation

1. Install the mounting bracket using the 3/4" U-bolts that are provided (see Figure 3.19).
2. Use four 1/2" x 1-3/4" hex bolts and related hardware to install the rowfinder assembly to the mounting bracket.
3. Install the feeler arms to the desired width with roll pins.

See instructions to adjust rowfinder.

Hydraulic System Assembly & Information

Most tractor hydraulic systems are PFC type systems and can be plumbed as shown in Figure 3.20. If tractor is a true closed system plumbing must be modified to operate on this system.

Hose Installation

Install elbows to flow control valve (item 16) and attach to support bracket (refer to item 490620 Figure 3.18). Install 36" hydraulic hose (item 18) from flow control valve CF port to "IN" port on rowfinder valve. (See Figure 3.20).

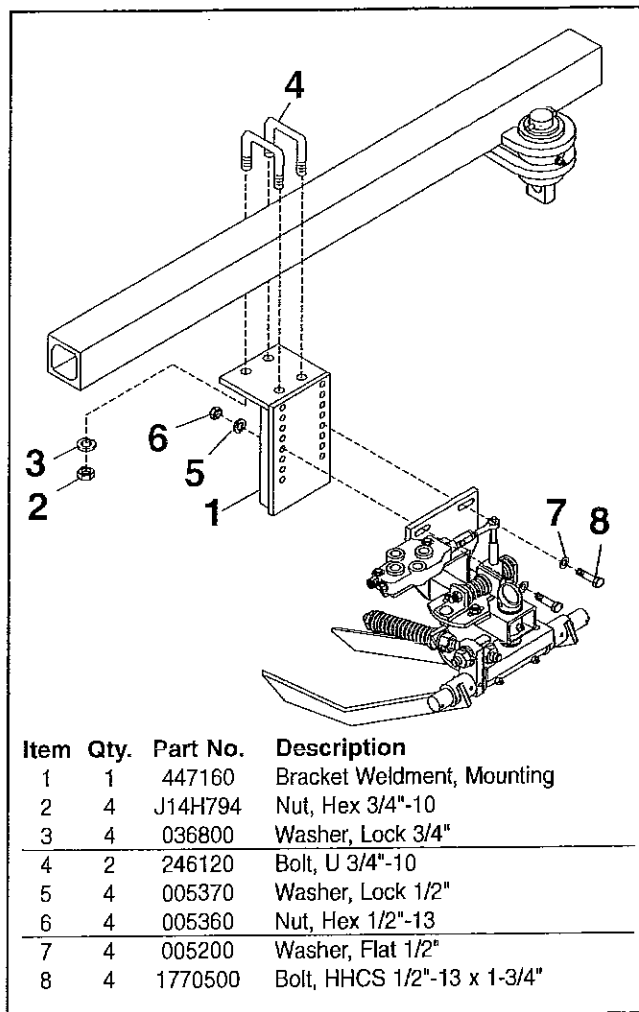


Figure 3.19: Hydraulic Rowfinder

Install two (2) hose assemblies (132" and 156", items 7 and 8) from the valve assembly on the tank to the out ports on rowfinder and flow control valve as shown (see Figure 3.20). Install hydraulic hoses (120" and 146", items 13 and 14) in rowfinder valve and flow control valve as shown and route through hose carrier on hitch to tractor.

Install hydraulic hose ends to match the tractor. Install hydraulic hoses (79", item 9) in rowfinder valve to steering cylinder as shown.

Flow Control

The valve assembly for the 692B model beet harvester features a flow control for the elevator drive motor. The flow is factory pre-set and should **NOT** be changed unless special circumstances make it necessary. This setting allows the elevator belt to run at approximately 120 rpm which is sufficient to deal with normal beet flow and tank unloading flow. The flow range can be set from a low of 10 gpm to a high of 16 gpm.

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To set full flow of the elevator drive system, use your tractor valve outlet flow control, and check elevator speed with an rpm meter. The elevator belt runs at approximately 120 rpm when the motor is using 14 gpm.

IMPORTANT: If the tractor control is set for higher than required flow, it will shift to high pressure on PFC hydraulic systems.

Pressure Relief Valve

To reduce the chance of damage to the elevator belt chain, a pressure relief valve is also built in and factory pre-set for 1500 psi. Under normal conditions this setting should not be changed.

Tank Bottom Chain

The valve which provides flow to the tank bottom chain is of an open center design and can only be activated while the elevator chain is also running. The

elevator belt chain drive can be switched to load into the truck or into the harvester tank. When switching from truck loading to tank loading or vice versa, a soft shift screw action is built in to the valve to cushion the reversal (see note Figure 3.20).

Rowfinder

The flow divider valve (item 16) should be set to allow 3-5 gpm flow to the rowfinder if the tractor is running and the remote is engaged. If a closed plug was installed in the rowfinder, the tractor pressure system would kick into high and no flow would be available to the elevator and tank chain valve.

Reverse Flow Divider

If for any reason the auxiliary flow divider gets plumbed backwards (ie. control flow [CF] to the elevator and tank chain valve block and exhaust [EX] to the rowfinder, the rowfinder function will be interrupted while the time delay switch is being activated.

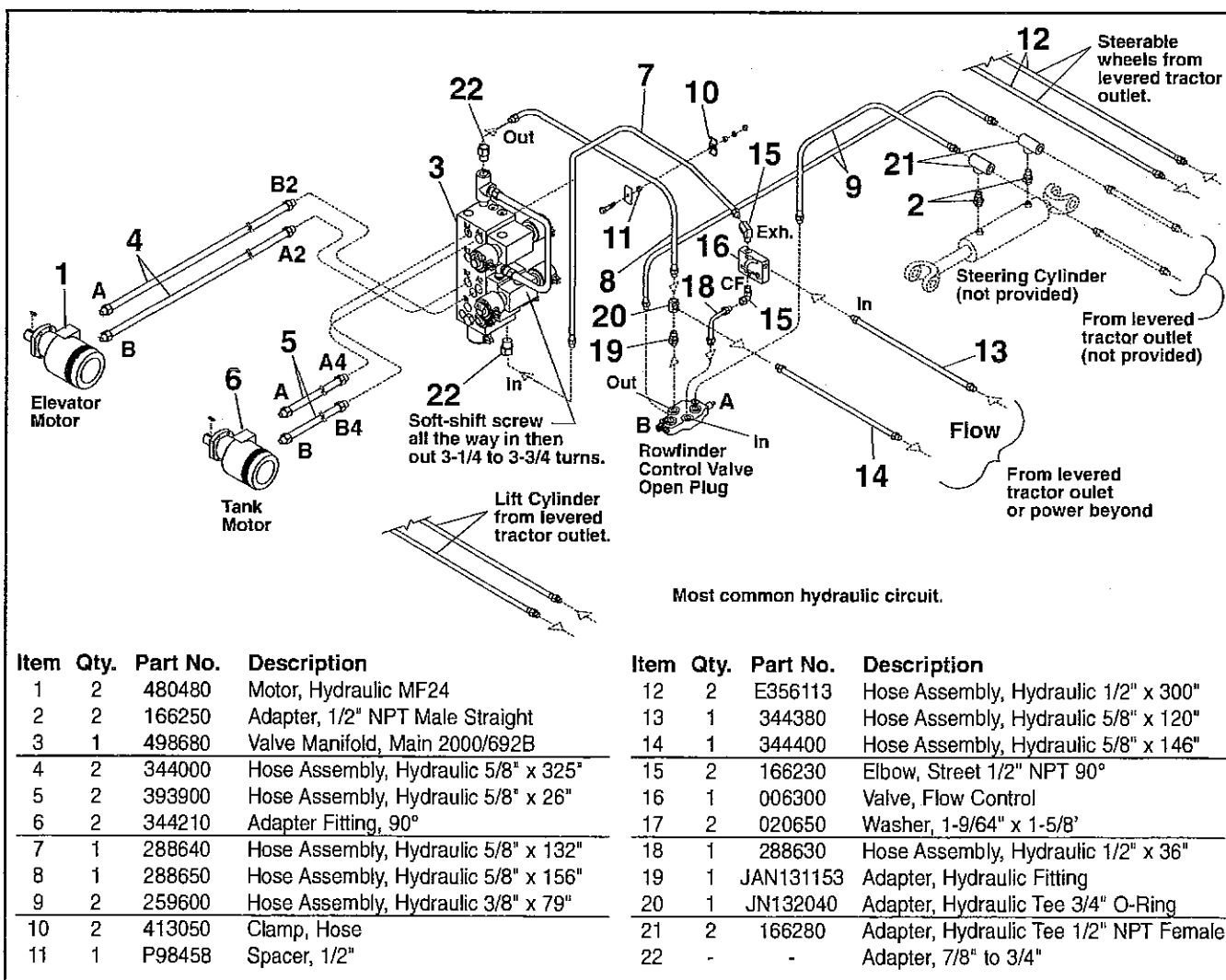


Figure 3.20: Hydraulic Circuit.

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No Rowfinder

If no rowfinder is used, plumb the elevator and chain valve block directly into the tractor remote. No flow divider is required.

NOTE: Use 5/8" hydraulic lines on "elevator and tank circuit" to reduce friction heat buildup.

1. Connect the wiring harness to the control box by matching the color of the wires to the colors called for on the control box decal. See Figure 3.21 and 3.22, connect the other end of the harness to the appropriate solenoid valves on the valve assembly.

NOTE: The DIN Connector to the purple wire is identified by gray tape on the DIN connector. Route and secure the wiring.

2. The solenoid valve on the bottom of the main valve is installed as standard equipment. This valve provides **OPEN** center operation of the system. This is OK for the newer tractors that have the load sense system. A special plug can be installed to switch this to closed center (refer to Figure 3.23).

NOTE: For all older tractors with a true closed center system, the closed center plug must be installed.

3. See Figure 3.24 for schematic diagram of main valve, ensure the hoses from the boom elevator to the main valve are connected as shown in Figure 3.20. Note that the A and B ports of the valve are to be connected to the A and B ports of the hydraulic motors. See note.

Note: Model 692B uses a reversed inlet hydraulic motor on the truck elevator. Therefore, you must connect B-2 to the A port of the motor and A-2 to the B port of the motor.

4. For proper operation, the boom cylinders must be operated separately, with all other functions off. The tank elevator must be running before the tank conveyor will operate.

Note: Be sure that all other main valve functions are off while the truck boom is being raised or lowered.

Open/Closed Center (Refer to Figure 3.23)

Main Valve - To change the main valve from open to closed center, remove the open center solenoid (item 1) from the valve body and replace it with the closed center plug (item 2). The open center solenoid is identified by the letters **SV10-21** on the hexagonal section of the stem (area A). The closed center plug is identified by the letters **CP10-20** on the head of the plug (area B).

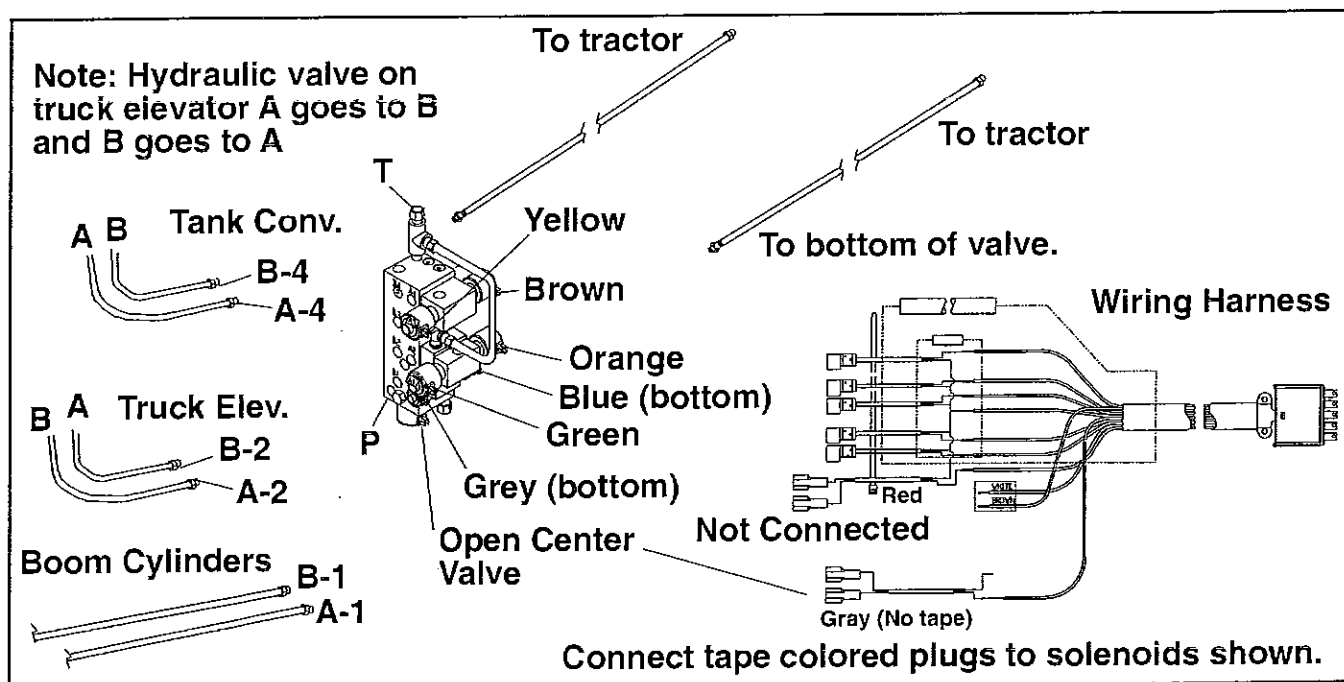


Figure 3.21: Hydraulic Valve and Wiring.

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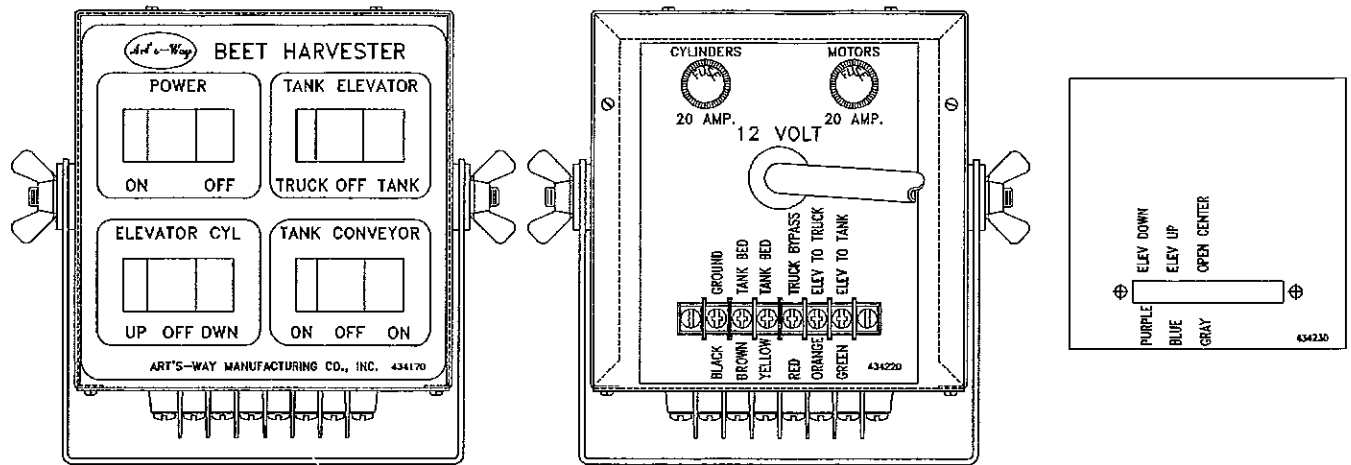


Figure 3.22: Control Box

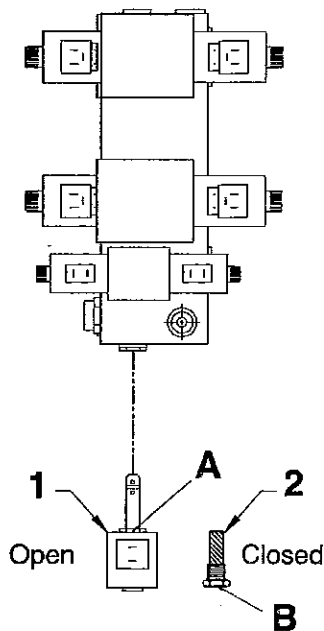


Figure 3.23: Main Valve, Open and Closed Center.

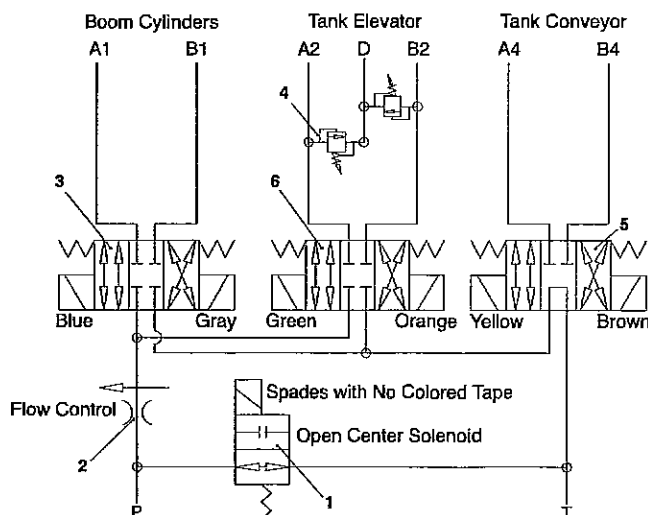


Figure 3.24: Main Valve, Schematic Diagram.

Work Light Installation

1. (Refer to Figure 3.25.) Choose locations where the three lights are desired during operation after dark. Position brackets to mount the lights in chosen locations.
2. Route the wire for the power to the 7-connector plug used for safety lights or directly to the tractor console.

NOTE: The bar (item 5, part # 236260) is provided for support when mounting the light to the mesh on the tank.

NOTE: Four lights maximum - 200 watts maximum. Secure all loose sections of wire.

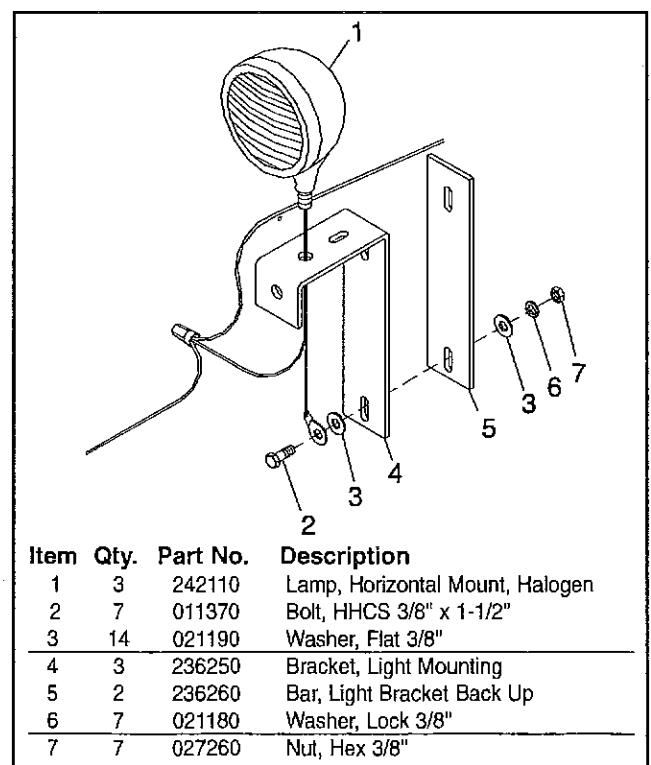


Figure 3.25: Work Light Components.

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Road Hazard Light Package Installation

(Refers to Figure 3.26.) The road hazard light package includes two amber warning lamps, two red tail lamps, a 7-pin connector, and four brackets with mounting hardware.

IMPORTANT: The harvester road hazard lights are used to satisfy width lighting requirements. The amber lamps must be located within 16" of the lateral extremities of the harvester. Road hazard lamps must be equal distances from the implement centerline; as far to the

rear as possible; visible from the front and the rear; and at least 42" from the center of the lamp to ground.

1. Install the angle brackets (items 13 and 17) to the rear of the harvester frame using the large 3/8" u-bolts that are provided in the kit. Route the wiring harness as shown and secure all loose wires to the harvester frame. Mount the converter module with the #10 screws or with the provided wire ties.
2. Connect the lights directly to the tractor with the 7-pin connector as provided by the tractor manufacturer.

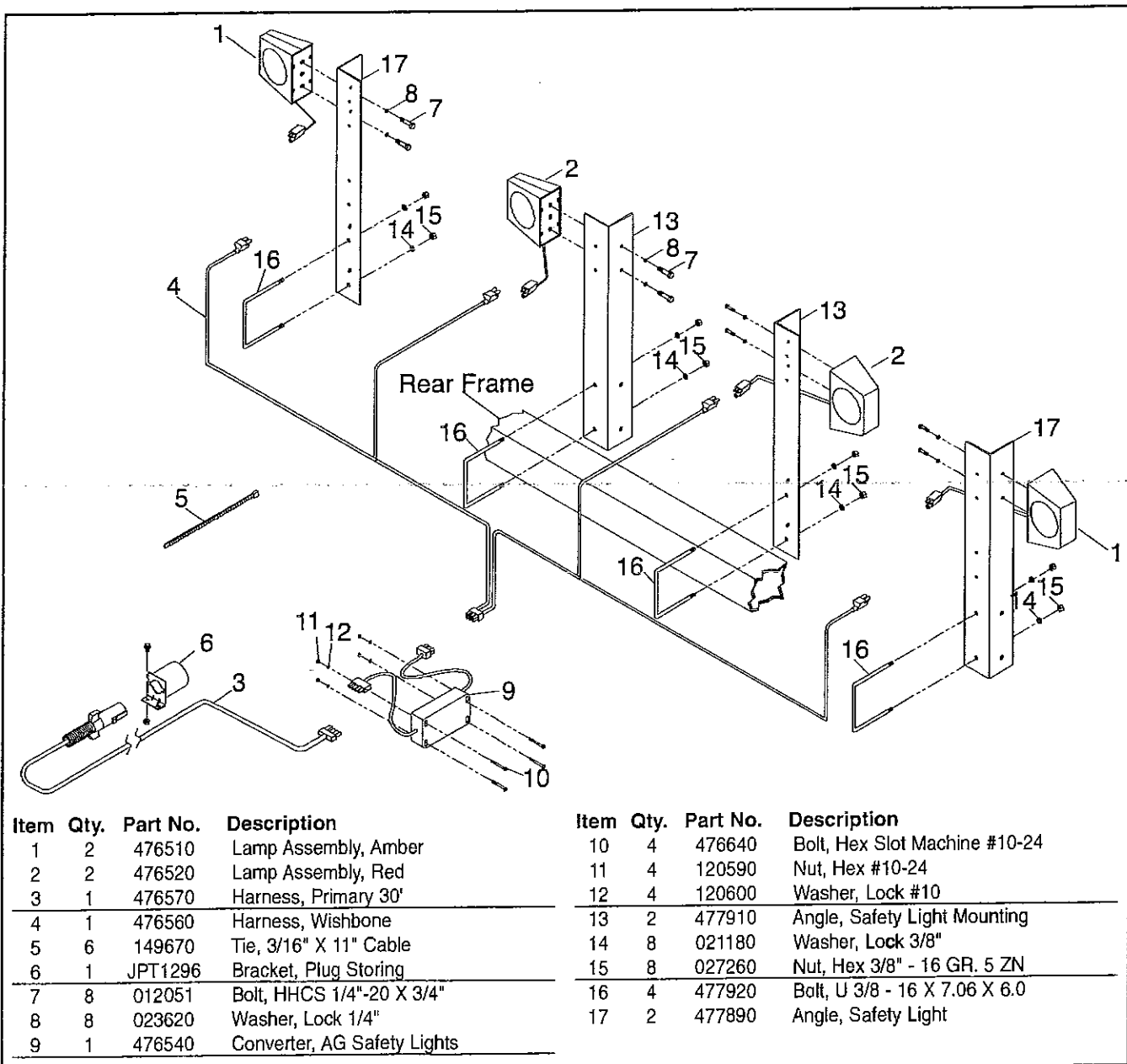


Figure 3.26: Road Hazard Light Package.

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Review The Machine

Generally review the harvester for the following items:

- Any loose bolts or set screws.
- Proper tensioning of all roller chains, drive belts and draper chains.
- Proper PTO installation and lubrication.
- Hydraulic cylinders and hoses for proper routing, installation and securing.
- Electric wires for adequate securing to prevent damage.
- Oil level in (2) gear boxes filled to the proper levels.
- All shields and guards for proper installation.
- Proper installation of any options.
- Correct tire pressure (see Figure 2.32).

Attaching to the Tractor



CAUTION: When ever possible during hookup procedure, place all tractor controls in neutral, set the park brake and stop the engine. When dismounting, be sure to remove the key from the ignition.

When hooking the harvester up to the tractor, follow this procedure:

1. Clear the area of bystanders.
2. Always follow good shop practices.
3. Block harvester wheels to prevent rolling.
4. Slowly back the tractor up to the harvester, position the hitch so it is above the drawbar and align hitch pin hole.
5. With the carrier wheels and cylinders attached, lift the machine to align the drawbar.
6. Install the hitch pin supplied with the harvester.
7. Attach the safety chain to the harvester hitch by inserting the large chain eyelet through the chain bracket on the tongue (from the back side). Route all chain links through the large chain link and pull tight. Route chain through the intermediate chain support and secure the chain to the tractor drawbar carrier. Be certain to allow enough slack

in the chain for full articulation of tractor and harvester without binding. See Preparing for Field Operation section.

PTO Hookup

Constant Velocity (CV) PTO Lubrication

Prior to use of the Constant Velocity PTO make absolute sure the Constant Velocity housing is full of grease. See Figure 2.33, CV Center Housing Zerk in "Section 2: Field Operations and Adjustments, Lubrication and Storage". With the CV straight add grease until it is evident around the center disk, this may take 30 to 50 pumps. Follow lubrication guidelines for CV PTO closely while the machine is in use (see "Section 2: Field Operations and Adjustments, Lubrication and Storage").

When hooking the harvester up to the tractor's power take off, you must follow this procedure:

1. Clean the splines inside the yoke and on the tractor shaft. Be sure the driveline and safety guard telescope easily and that the guard rotates freely.
2. Retract the slide collar on PTO yoke and slide the yoke over the shaft. Stop when the slide collar clicks into place. Pull on the yoke to make sure it is securely locked in place.
3. Be sure there is sufficient clearance between the drawbar, three-point hitch links and the driveline to allow maneuvering in the field. Be sure to check the distance between the universal joint centers (refer to Figure 1.02 and 1.04).
4. Lower the tractor PTO shield over the universal joint and secure.

Hydraulic Hoses

The harvester is **NOT** furnished with the hydraulic couplers to the tractor. Install couplers on the hoses. Use a quality pipe thread compound or Teflon tape to ensure a leak free connection.

Hydraulic Hookup

1. Use a clean cloth or paper towel to clean dirt and build-up from around the remote receptacle and the male tips.

SECTION 3: ASSEMBLY OF BEET HARVESTER

2. Insert the male tips into the receptacle and make sure that they are securely fastened.
3. Make sure the hydraulic hoses are properly routed along the hitch to provide adequate clearance.
4. Run the hydraulic functions of the harvester to purge the hydraulic system of the machine. Check the hydraulic oil level of the tractor after purging to ensure it maintains the proper level of hydraulic oil.
3. Engage the PTO with the tractor at low RPM. Observe operation at low speed and listen for any unusual noises. Gradually speed up PTO to a speed of 1000 RPM.
4. Check operation, alignment and clearances of all moving parts. Make any necessary adjustments.

Pre-Delivery Test Run



CAUTION: Before test running the harvester, keep all children and bystanders away from the machine.

With the tractor connected after assembly is completed, operate the harvester to ensure it functions properly. Be certain to check and complete the following items during the final run-in process.

1. Clear the area of bystanders.
2. Check that the harvester is clear of foreign objects (nuts, bolts, stones, wood blocks, etc.) and that the elevator chains and belts are free to operate.
5. Cycle the tank and elevator drives and continue to run the machine for 10 to 15 minutes. After running is complete and movement has stopped, check machine for any loose hardware and check drives.
6. Check all hydraulic connections for leaks and tighten if necessary, follow hydraulic safety instructions.
7. Complete the Dealer Pre-Delivery Checklist included with the Operator's Manual.



CAUTION: Keep well clear of moving parts. Be sure to shut off the tractor, set the parking brake, put the machine in neutral, and remove the tractor key while making adjustments. Wait for all movement to stop before approaching the machine.

SECTION 4: TROUBLESHOOTING

The Art's-Way 692B Sugar Beet Harvester is designed to provide simple and reliable operation throughout beet harvest. Its full range of adjustments ensure efficiency in varying operating conditions.

If you encounter a problem with the Harvester, check this Troubleshooting section for a possible cause and solution. If you have a problem that is not covered in this section, please call your local Art's-Way dealer for assistance. Be sure to give the dealer your model and serial numbers when you call.

Basic Machine

| Problem | Possible Cause | Possible Remedy |
|---------------------------------|--|--|
| Pulls too hard | Lifter wheels running too deep | Do not run the lifter wheels deeper than necessary |
| | Tractor too small | Use a larger tractor |
| | Grab rolls building up with mud | Wait for dry conditions |
| | Grab roll spacing wrong between pairs or conveyor roll spacing - must be parallel | Adjust grab rolls - further apart at discharge end |
| Gear case runs hot, leaks oil | Dirt buildup around main gearbox | Clean and lubricate the machine to avoid overload |
| | Lubrication viscosity too light for climate | If weather is hot and problems persist, change to No. 140 gear lube |
| Hard to keep on rows | Lifter wheel strut assemblies not set properly with rows points of the lifter wheels | Make sure the lifter wheel strut assemblies match the rows at the pinch |
| | Machine straddling the guess row | Make sure you are not straddling the guess row |
| | Rowfinder not adjust correctly | Adjust rowfinder |
| | Conditions suitable for utilization of rowfinder | Install a rowfinder for automatic tongue steering |
| Can't dig deep | Tractor drawbar not set properly | Set tractor drawbar properly |
| | Front hitch in wrong hole setting | Adjust front hitch to the proper holes |
| | Improper cylinder being used | Use correct depth control cylinder |
| | Machine running uneven | Level machine by adjusting the carrier wheels |
| Premature wear of roller chains | Improper lubricant or infrequent intervals | Lubricate chains with proper oil and more frequently |
| Looses small beets | Conditions suitable for utilization of close-ups | Install close-ups |
| | Grab roll spacing too wide | Reduce gap of grab roll pairs |
| | Ground speed too slow | Increase ground speed - this may help get the beets to the paddles and onto the cleaning bed |
| | Lifter wheels too far apart | Space the wheels closer together |

(continued...)

SECTION 4: TROUBLESHOOTING

(...continued from previous page)

| | | |
|--------------------------------------|---|---|
| | Pinch point too high or too low | Lower or raise pinch point |
| Breaks the tails off | Lifter wheels not running deep enough | Run lifter wheels deeper |
| | Lifter wheel strut assemblies not properly spaced | Make sure lifter wheel strut assemblies are spaced to fit rows |
| | Not steering properly (if so equipped) | Adjust steering toe in and/or tracking |
| | Lifter wheels too narrow, pinch point is too tight | Space wheels further apart |
| | Rowfinder not adjusted properly | Adjust rowfinder arms Adjust down pressure |
| | Pinch point too high or too low | Lower or raise pinch point |
| | Front smooth roll too high or too low | Lower or raise front roll |
| Beet slicing | rowfinder not adjusted properly | Adjust rowfinder arms Adjust down pressure |
| | Harvester positioned over guess rows | Dig on planted row only |
| | Lifter wheels too narrow, pinch point is too tight | Space wheels further apart |
| | Replanted beets | |
| | Tractor moving beets | Check tire size and spacing |
| Loads too many clods | Lifter wheels set too deep | Run lifter wheels shallower, if possible without breaking tails |
| | Grab rolls not set wide enough | Set grab rolls for wider gap |
| | Very dry soil conditions | Irrigate field or wait for rain |
| Beet plugging cleaning bed | PTO speed too slow | Increase PTO speed to a minimum of 950 RPM |
| | Grab roll spacing wrong between pairs or conveyor roll spacing - must be parallel | Adjust grab rolls - further apart at discharge end |
| | Loading too much dirt | Raise digging depth of machine |
| | Flighting and transfer areas of spiral worn | Respiral rolls or replace |
| | Ground speed too fast | Decrease ground speed |
| | Small beets | Space the grab rolls closer together |
| Excessive trash or dirt in the truck | Cleaning areas built up with mud or trash | Remove mud or trash |
| | Cloddy, stony field conditions | Space grab rolls further apart |
| | Improper operation or adjustment | Correct the operating procedures or adjustments |

(continued...)

SECTION 4: TROUBLESHOOTING

(...continued from previous page)

rowfinder

| | | |
|---------------------------------------|---|--|
| Lifter wheels moving away from beets | Hydraulic hoses incorrectly connected | Check the valve connections at the tractor outlets |
| Lifter wheels not tracking properly | Feeler arms not centered | Center feeler arms |
| Lifter wheels jump off rows too early | Not enough down-pressure | Increase down-pressure or lower rowfinder |
| | rowfinder arms too high | Lower arms |
| | Drawbar mounting hole greater than 1-1/4" | Insert bushing |

SPECIFICATIONS

General Description

Model

6 or 8 Row Tank Type Harvester

Overall Dimensions

Transport 14' H x 21'-4"W x 20'-6" L
Operating 15'-3"H x 27"W x 20'-6"L
Machine Weight 22,000 lbs.
Tread Width Adjustable to row spacing

Tires

Implement 11.00-16 12 Ply
Traction 13.50 x 16.1 6 Ply
Operating Pressure 45 psi (Implement)
25 psi (Traction)

Row Spacing

6 Rows 28" to 30"
8 Rows 20" to 22"
Operating Speed 4.5 mph
Lift and depth control* Hydraulic
Steering hitch control** Hydraulic

*Requires 5" x 8" remote cylinder (not furnished)

**Requires 4" x 8" remote hydraulic cylinder (not furnished)

Lifter Wheels

(2 per row) 28" solid rim heavy duty cast steel

Lifter Struts

Heavy duty tapered bearings

Lifter Wheel Scrapers

To prevent mud buildup on lifter wheels

Paddle Shaft And Drive

Type Three steel per row
Drive Heavy #80H roller chain with heavy duty slip clutch

Center Gearbox

Heavy, 1-3/4" Diameter Shafts
Capacity - 5 Qts. 90W Gear Oil

Conveyor Roll Bed And Drive

Size 48 sq. ft.
Type Six spiral conveyor rolls
Drive Belt drive with spring loaded idlers

Grab Rolls And Drive

Size 35 sq. ft.
Type Three grab rolls with 3/4" spiral rods and three smooth grab rolls adjustable spring loading and spacing
Drive Belt drive with spring loaded idlers

Truck To Tank Loading Elevator

Size Width, 40" 56mm pitch belted chain
Type Electro-hydraulic valve and hydraulic motor driven belted chain, reversible for tank or truck loading fold down for transport




Tank

Construction Welded Steel
Capacity 9,000 lbs
Unloading Chain type conveyor, actuated by electro-hydraulic valve and hydraulic motor

Torque Specification Guide. (SAE Grade 5 Coarse Thread)

| SIZE | CLAMP LOAD | PLAIN | PLATED |
|------------------|------------|--------------|--------------|
| 1/4 - 20(.250) | 2,025 | 8 ft. lbs. | 76 in. lbs. |
| 5/16 - 18(.3125) | 3,338 | 17 ft. lbs. | 13 ft. lbs. |
| 3/8 - 16(.375) | 4,950 | 31 ft. lbs. | 23 ft. lbs. |
| 7/16 - 14(.4375) | 6,788 | 50 ft. lbs. | 37 ft. lbs. |
| 1/2 - 13(.500) | 9,075 | 76 ft. lbs. | 57 ft. lbs. |
| 9/16 - 12(.5625) | 11,625 | 109 ft. lbs. | 82 ft. lbs. |
| 5/8 - 11(.625) | 14,400 | 150 ft. lbs. | 112 ft. lbs. |
| 3/4 - 10(.750) | 21,300 | 266 ft. lbs. | 200 ft. lbs. |
| 7/8 - 9(.875) | 29,475 | 430 ft. lbs. | 322 ft. lbs. |
| 1 - 8(1.00) | 38,625 | 644 ft. lbs. | 483 ft. lbs. |
| 1-1/8 - 7(1.125) | 42,375 | 794 ft. lbs. | 596 ft. lbs. |

SAE Bolt Identification.

| IDENTIFICATION OF SAE BOLT GRADES; HEAD MAKINGS | |
|---|---|
| Grades 0, 1, and 2 no markings |  |
| Grades 5: 3 radial dashes 120° apart |  |
| Grades 8: 6 radial dashes 60° apart |  |

SPECIFICATIONS

Tractor Requirements

Recommended Horsepower Rating

6, 8 Row 175 PTO HP (minimum)

Remote Cylinders: (Not Furnished)

(1) 4" x 8" and (1) 5" x 8"

Hydraulics Requirements

Tractor must be equipped with three remote hydraulic outlets, four remotes if equipped with steerable wheels. The tractor must be capable of supplying 22 gpm flow. If using the "Power Beyond", connect to the rowfinder, tank and elevator drives

PTO Shaft

Tractors must have 1-3/8" or 1-3/4" diameter 1000 rpm PTO shaft (Do not use an adapter shaft)

Front Ballast

Maximum tractor front ballast is required

Drawbar Support (Recommended)

Electrical System

12-Volt

Attachments

rowfinder

To keep the harvester on the row

Lifter Wheel Close-Ups

To prevent loss of small beets through lifter wheels

Lifter Wheel Spacers

To increase lifter wheel opening by 1/4" increments

Lifter Wheel Cushions

To protect lifter wheels in rocky soil conditions (standard on flex struts)

Constant Velocity PTO

Standard - Allows turning without disengaging PTO

Flashing Warning Light Kit

Standard

Light Package

To light machine for night use (3 sealed beam halogen lights)

Fixed Or Steerable Wheels

Extra Fixed Or Steerable Carrier Strut Helps flotation in very wet conditions

Ferris Wheel Knife Cleaner

Polyethylene Covered Grab Rolls

NOTES



Quality Manufacturers of:

- **SupRaMix®** - forage vertical tub mixer
425, 500 or 710 cu. ft. capacity
- **Portable Mixer-Processor**
105 bushel with 20" hammer Mill or 150 bushel with 26" Hammer Mill.
- **GRIXXER - Mixer Processor**
Economical portable 105 bushel Grinder Mixer with a 20" Hammer Mill — other options available.
- **CATTLEMAXX - Cattle Processing**
105 bushel or 150 bushel with 20" Roller Mill for cattle applications.
- **Hammer Mills**
26" electrically or PTO driven mills.
- **Roller Mills**
10", 20", 30" or 36" PTO or electrically driven mills.
- **SCALE SYSTEMS**
Electronic weighing equipment — from basic weighing to a computerized system.
Platform Scales
Universal Scales
Small Animal Scales
Mounting Scales
Scale Accessories
Indicators, single ingredient & Batching
- **UFT Grain Drills**
10', 12', 15' or 30' seeding width.
- **UFT High Dump Wagons**
- **Speedy Edible Bean Equipment**
- **Finishing Mowers**
60" or 72" Mid-Mount Mount
72" Rear Mount Mowers.
- **Eversman PreSeeder**
15' to 30' tillage tool that prepares the ideal seed bed, incorporates chemicals and plants in one pass.
- **Eversman Ditchers**
43" to 84" ditch width.
20" to 33" ditch depth.
- **Eversman Land Planes**
16', 20' or 24' blade widths.
- **Sugar Beet Defoliators**
4 to 12 row defoliators with different row spacings. Optional hydraulic or mechanical scalpings.
- **Sugar Beet Harvesters**
4 to 8 row harvesters with different row spacings.
- **MEGA tater**
4-row potato harvester.
- **LOGAN - Potato Equipment**
Potato Harvesters, Potato Planters, Windrowers and Bulk Boxes.
- **Art's-Way/UFT Flail Shredders**
Various cutting widths.
- **Grain Wagons**
350 bushel or 475 bushel center dump.
280 bushel, 320 bushel, 390 bushel or 470 bushel side dump.

Art's-Way Manufacturing Co., Inc.

P.O. Box 288, Highway 9 West • Armstrong, Iowa 50514-0288
Phone: (712) 864-3131 • Fax: (712) 864-3154