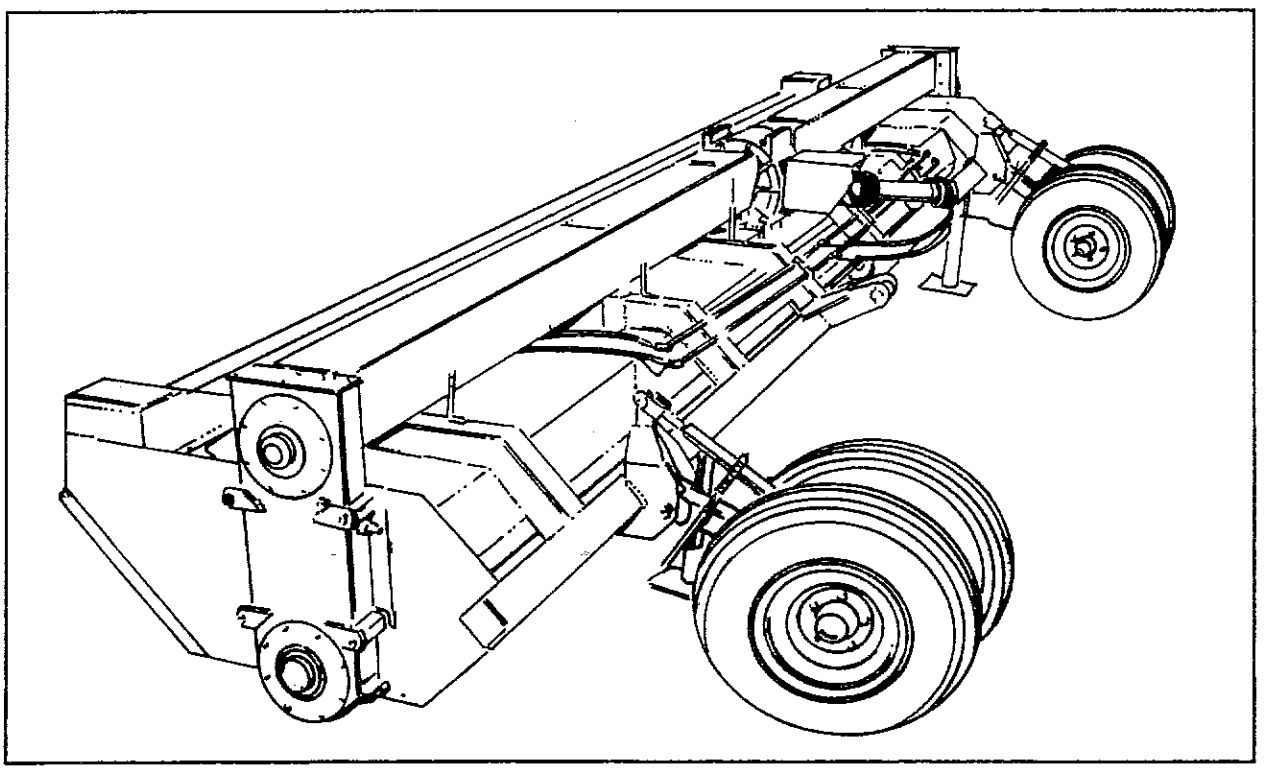
Eversman
by Art's-Way

Models 180, 216, 240, 288
Minimum Tillage System

Operator's Manual



Art's-Way Manufacturing Co., Inc.
Armstrong, Iowa 50514
(712)864-3131

TO THE OWNER

Congratulations on your purchase of the Eversman Minimum Tillage System (M-T-S). You have selected a top quality machine designed and built with pride to give you many years of efficient, reliable service.

Art's-Way developed this Operator's Manual specifically for their Tillage Systems. It will provide you with important information regarding safety, maintenance and machine operation so you can get the best possible performance from your Tiller.

Before operating your Model 180, 216, 240, or 288 Tillage System for the first time, please read this Manual thoroughly to learn how to operate the machine safely and how to adjust it properly to provide maximum field efficiency. By following these operating instructions carefully and establishing a good maintenance program, your Tiller will give you many years of trouble-free service. If you have any questions about information contained in the booklet, please call or write Art's-Way Manufacturing Company, Inc.; PO Box 288, Armstrong, Iowa 50514-9989 (712)864-3131.

PARTS AND SERVICE

Art's-Way Manufacturing Company, Inc. has an excellent dealership network ready to answer any questions you have about your Tillage System. Parts for your machine may be ordered through our dealers. When placing a parts order, please have the model and serial numbers ready to help the dealer fill your order as quickly as possible.

For your convenience, we have provided this space for you to record your model and serial numbers, as well as your dealer name and address and the date you purchased your Tillage System. (For location of the serial number, refer to the diagram on page 5.) Use as a reference when placing parts orders or calling for information on your Tillage System.

MODEL NUMBER: _____

SERIAL NUMBER: _____

DEALER NAME: _____

DEALER ADDRESS: _____

_____

DATE PURCHASED: _____

TABLE OF CONTENTS

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 and can anticipate situations which may produce problems and make necessary corrections before problems develop.

It is important that ALL individuals who will be operating the Minimum Tillage System (M-T-S) read this Manual carefully, paying special attention to safety instructions which are marked by this symbol:

he American Society of Agricultural Engineers has adopted this symbol as a universal SAFETY ALERT SYMBOL to identify areas of potential danger if the equipment is not operated correctly. Please be alert whenever you see this symbol in the Manual or on your machine.

Art's-Way Manufacturing Co., Inc. strives to make our equipment as safe as it can possibly be. The 180, 216, 240, and 288 Tillage System Models conformed to all applicable safety standards, at the time of manufacture. A safety-conscious equipment operator makes an effective accident-prevention program complete.

Safety features and instructions for the Eversman Model 180, 216, 240, or 288 Tillage System are detailed elsewhere in the Operator's Manual. It is the responsibility of the Tiller owner to ensure that ALL operators read and understand the Manual before they are allowed to operate the machine. (Occupational Safety and Health Administration (OSHA) regulation 1928.57)

Watch for these words on machine decals and in this Manual to alert you to important safety messages:

DANGER: Immediate and specific hazard which <u>will</u> 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.

LIMITED WARRANTY

Art's-Way Manufacturing Co., Inc. warrants 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.'s 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.'s** 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.'s 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 expense of delay and the company's liability is limited to repair or replacement of defective parts as set forth herein in the warranty.**

- Any improper use, including operation after discovery of defective or worn parts, operation beyond rated capacity, substitution of parts not approved by **Art's-Way Manufacturing Co., Inc.**, or any alteration or repair by other than an 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 specific legal rights and you may have other rights which vary from state to state.

SAFETY GUIDELINES

OPERATING SAFETY

- Read and understand the Operator's Manual and all safety decals before operating the machine. Review safety instructions with all operators annually.
- Install and secure all guards and shields before starting or operating the machine.
- Clear the area of bystanders before operating the machine.
- Put all tractor and machine controls in "neutral" and disengage PTO before starting.
- Operate machine only while seated on the tractor seat.
- Keep hands, feet, hair and clothing away from moving parts.
- Do not attempt to pull entangled material from components when machine or engine is running.
- Before servicing, adjusting, repairing or unplugging the machine, stop the tractor engine, lower the machine to the ground, place all controls in neutral, set parking brake, remove ignition key, and wait for all moving parts to stop.
- Stay away from overhead power lines. Electrocution can occur even without direct contact.
- Clean reflectors, SMV, and lights before transporting. Be sure lights work and use the tractor road lights when transporting.
- Add extra lights and use a pilot vehicle when transporting machine during times of limited visibility.
- Make sure the unit is adequately blocked before working on it.
- Do not allow anyone to ride on machine while in operation.
- When turning, allow enough room for the rear caster wheels to clear all obstacles.

HYDRAULIC SAFETY

- Make sure all components in the hydraulic system are kept clean and in good condition.
- 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 cements. The hydraulic system operates under extremely high pressure and temporary repairs may fail suddenly and create a hazardous 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 lines, hoses, and couplings are not damaged.

SAFETY GUIDELINES, Cont'd.

MAINTENANCE SAFETY

- Follow all operating, maintenance, and safety instructions found in this Manual.
- Clear area of bystanders, especially small children, when making repairs or adjustments, or performing maintenance on the machine.
- Before servicing, adjusting, repairing, or unplugging the machine, stop tractor engine, lower machine to the ground, put all controls in neutral, set park brake, remove ignition key, and wait for all moving parts to stop.
- Use only 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.
- Follow good shop practices of keeping service area clean and dry and using adequate light for the job at hand.
- Relieve pressure from hydraulic circuit before servicing or disconnecting from tractor.
- Make sure all guards are in place and properly secured when maintenance work is complete.
- After servicing or lubrication, be sure all tools and equipment are removed from the machine.

TRANSPORT 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 anyone to ride on tiller or tractor during transport.
- Do not exceed 10 mph (16km/h) when transporting machine. Reduce speed on rough roads and surfaces.
- Stay away from overhead obstructions and power lines during transport. Electrocution can occur even without direct contact.
- Always use hazard warning flashers on the tractor when transporting, unless prohibited by law in your area.
- Always use turn signals on tractor to indicate your turning intentions to other traffic.
- Do not lift the M-T-S alone with the tractor three-point hitch system. Rear lift-assist wheels must be on the ground at all times.
- The weight of the trailed machine should NEVER exceed the weight of the towing vehicle.

STORAGE SAFETY

- Store the tiller in an area away from human activity.
- Do not permit children to play on or around the stored machine.
- Make sure the tiller is stored in an area with a firm and level base to prevent the machine from tipping or sinking into the ground.

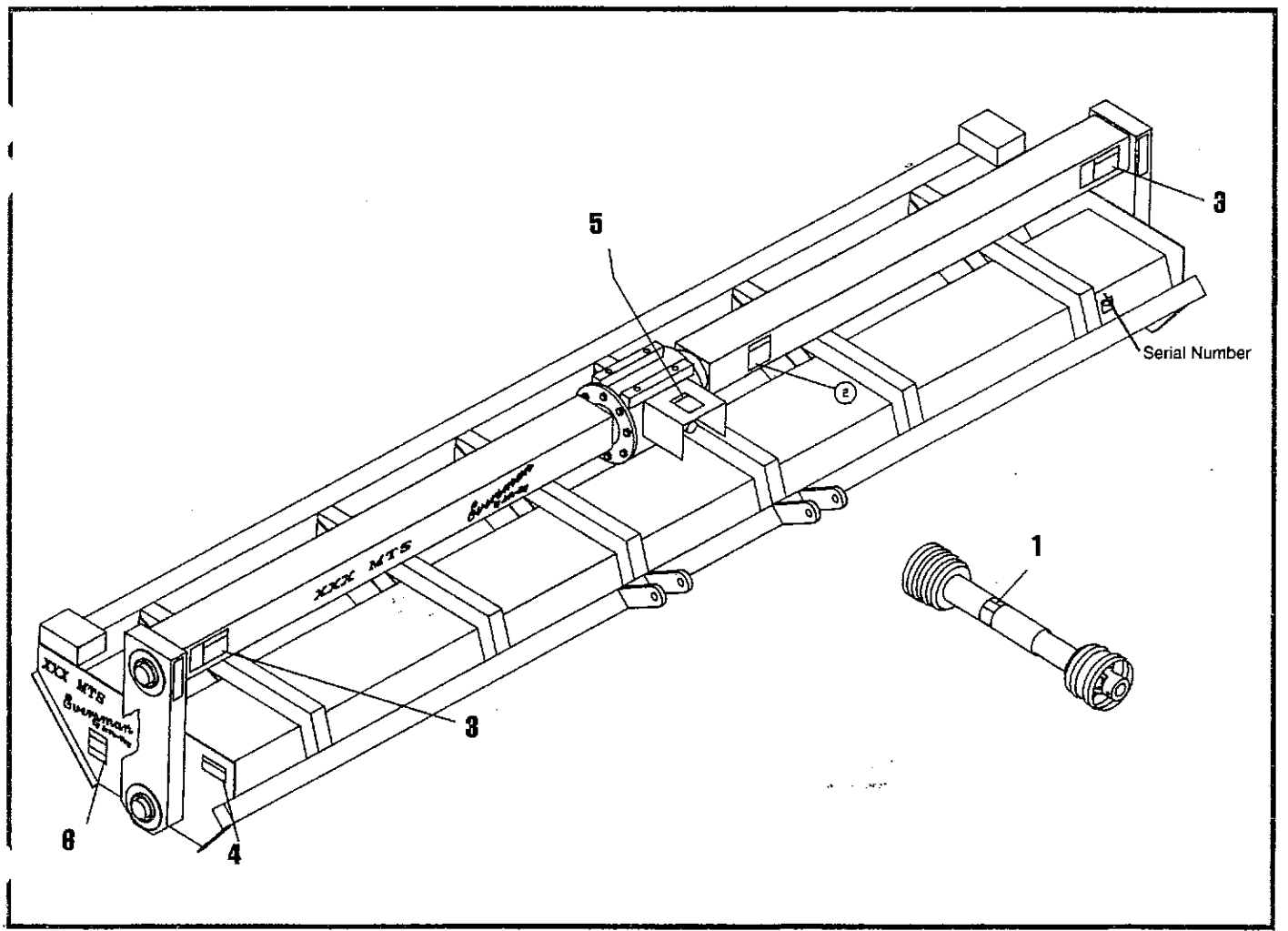
SAFETY GUIDELINES, Cont'd.

ASSEMBLY SAFETY

- Use adequate manpower to perform assembly procedures safely.
- Assemble the tiller in an 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.

TIRE SAFETY

- Have a qualified tire dealer or repair service perform tire repairs.
- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Follow proper procedures when mounting a tire on a 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.

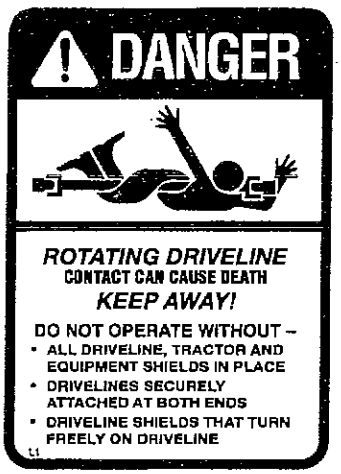


SAFETY DECAL LOCATIONS

SAFETY DECALS

The different types of safety decals for your Minimum Tillage System 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 machine. Refer to the diagram on the previous page for decal locations. The six digit number next to the letter is the part number of that decal.

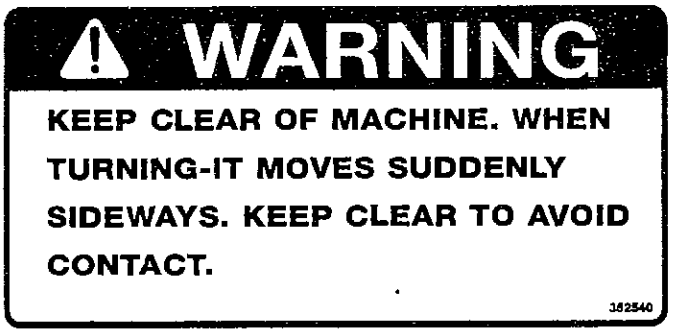
Safety awareness is the responsibility of EACH operator of the Tiller. Keep safety decals and signs clean and legible and be sure that replacement parts display current safety decals and signs too.
REMEMBER: Always replace missing, damaged, or illegible safety decals. New decals and signs are available from your Art's- Way dealer.



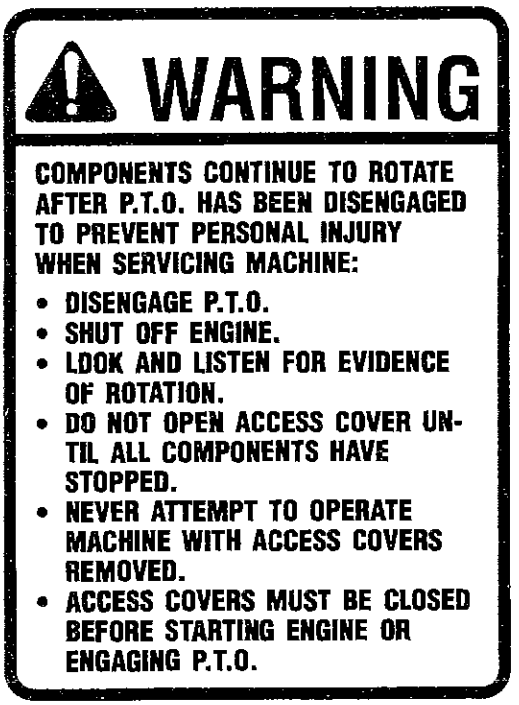
1 - 268860

2 - 234340

3 - 346290



4 - 352540



5 - 146010

6 - 355200

EQUIPMENT SPECIFICATIONS

Model	180	216	240	288
Working Width	15'	18'	20'	24'
Standard No. of Knife Assy's	28	34	38	42
Number of Knifes	112	136	152	168
HP Required - Strip Till	110	120	130	150
HP Required - Solid Till	130	140	150	180
Transportation Width	16'	20'	21'	25'
Weight (lbs.)	5480	6360	6520	7400

1000 RPM PTO Drive, 225 HP gearbox, 9" transport clearance, Cat. 2, 3 or 3N quick hitch and set-up for 4.5 to 5 MPH ground speed with 2.5 to 3 inches working depth.

Optional Equipment:

- Tungsten carbide coated knives
- Rear heavy duty lift-assist wheels
- Front dual-gauge wheels
- Front heavy duty dual-gauge wheels
- Front yoke gauge wheels
- PTO drive line
- Planter mounting bracket kits
- Planter drive coupler kits
- Higher rotor speed kits

ASSEMBLY

TO THE DEALER AND PURCHASER

CAUTION:

A word of caution is in order before you assemble or replace the blades on your M-T-S unit:

Securely block the front-gauge wheels and the lift-assist wheels so the machine will not roll.

Avoid crawling under the blades, or exposing a leg under them, while working under the unit.

The blades can be replaced without putting the M-T-S on blocks or stands. However, should for any reason the machine be raised and set on blocks or stands, extra precaution must be exercised before working under the unit. In addition to blocking the wheels to prevent rolling, be certain the machine cannot slip or slide off the stands.

We request you advise your own service people regarding the above precautions, and also explain to your owners that recommendations should be carefully followed whenever there is occasion to work under this machine.

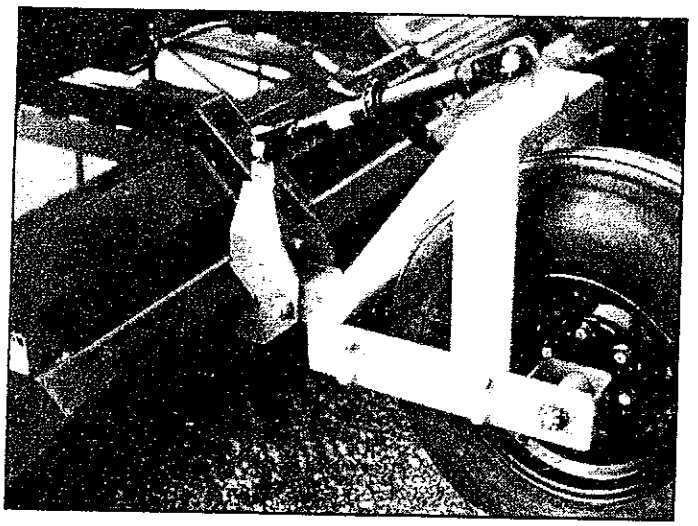
The machine will be largely assembled when delivered to the dealer. His assembly obligations will be:

- Front-gauge wheels
- Rear lift-assist wheel assemblies
- Rotor assemblies (Factory assembly option available)
- Tailgate assembly
- Attachment to tractor

ASSEMBLY, Cont'd.

FRONT GAUGE WHEELS

Warning:
Securely block the tiller frame prior to installing gauge wheel



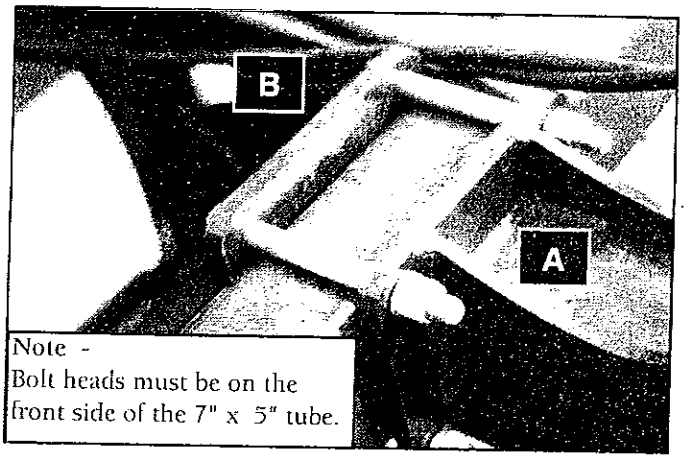
The gauge wheels are attached to the front beam using four (4) U-bolts (V240304). The U-bolts and lock nuts are banded to the frame for shipment.

Install wheels and tires (factory mounted) on hubs. The wheel bolts are shipped in place, and the hubs are factory lubricated. Torque the lug nuts to 90 ft.-lbs.

The centerline of the gauge wheel assembly is located at 90" from the centerline of the M-T-S for 30" rows; 108" for 36" rows. Check row spacings for other locations desired, such as ridge tillage.

LIFT-ASSIST

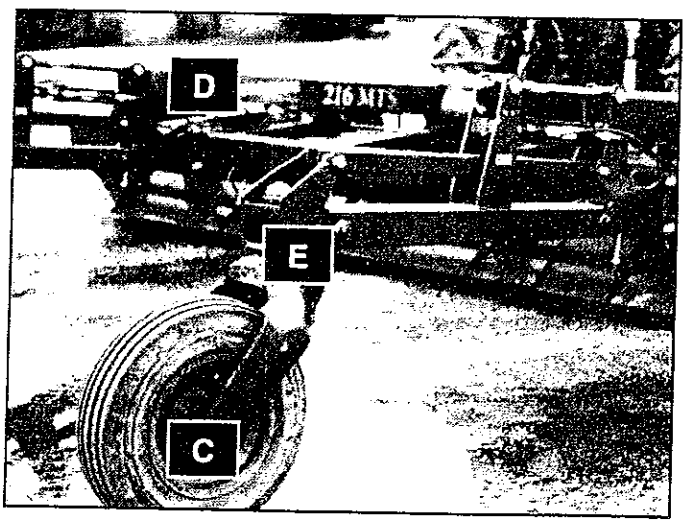
Mount lift-assist assemblies (A) to the 7" x 5" rear beam with 3/4" plates (2) and 5-7/8"x 8-1/2" bolts, nuts and lock washers — 2 at top of beam and 3 at the bottom.



Note -
Bolt heads must be on the front side of the 7" x 5" tube.

Mount wheel and tire to caster wheel hub with 1/2" wheel nuts (shipped in parts box). Then install assembly to the yoke using 1" x 12-1/2" hex bolt, shipped in the yoke (Point C).

Remove 3/4" x 6" bolt (Point D), and pivot caster wheel assembly around lower pin (Point E) until the top bolt can be reinstalled.



Position the centerline of the lift-assists at 60" from the centerline of the center section for 30" rows. Check other row spacings for desired location. When properly spaced, tighten the 7/8" bolts to 120 ft.-lbs. torque.

ROTOR ASSEMBLIES AND DRIVE SHAFTS

DANGER: Before starting assembly of the tillage blades to the rotor shafts be sure to review instructions on safety, page 9, regarding proper support of the machine before any assembly.

IMPORTANT — READ CAREFULLY!

RIGHT AND LEFT LOWER HEX ROTOR SHAFT ALIGNMENT

The hex upper drive shafts are factory assembled to the chain couplers and the main gearbox. Also the lower rotor shafts are properly aligned to maintain a "spiral" cutting pattern for the blades.

Should the need arise to assemble these parts, it is necessary to "time" the upper drive shafts with the lower hex rotor shaft. This is accomplished by turning the upper shaft until the "flat" portion of the upper shaft and the lower shaft are in time. If they are not, continue to turn the upper shaft slowly until a perfect alignment of the position of the hexagon shape of the shaft is obtained. Due to the chain case reduction ratio the lower shaft turns one revolution for each 1-1/3 revolutions of the upper shaft.

ROTOR BLADE HALF ASSEMBLY

Assemble the tillage blades to the blade holder casting exactly as shown in the drawing (see page 12) with 1/2" x 1-1/4" Grade 5 bolts and 1/2" lock nuts. NOTE: The direction of rotation of the blades is as viewed from the left hand side of the machine. It's important that the blades and rotors are assembled as shown. They cannot be reversed and still obtain proper blade cutting angle.

ROTOR BLADE INSTALLATION

After all of the rotor half assemblies are completed, start at the center of the M-T-S and mount them on the lower hex shaft. Again referring to the drawing on page 12, assemble two half casting - "flat" or "point". They are attached to the hex shaft with 1/2" x 1-1/2" Grade 5 bolts and 1/2" lock nuts.

Then alternate "flat" and "point" rotors along the lower hex shaft in accordance with spacing drawings, pages 13-20. A "spiral" pattern for the blades will be the result beginning at the center and continuing in opposite directions to each end. This spiral blade mounting simply means that all blades do not strike the ground at the same time, which requires less power and smooths out the operation by balancing the load.

Leave bolts loose until all rotors are mounted, then set the spacing.

SPACING OF ROTORS

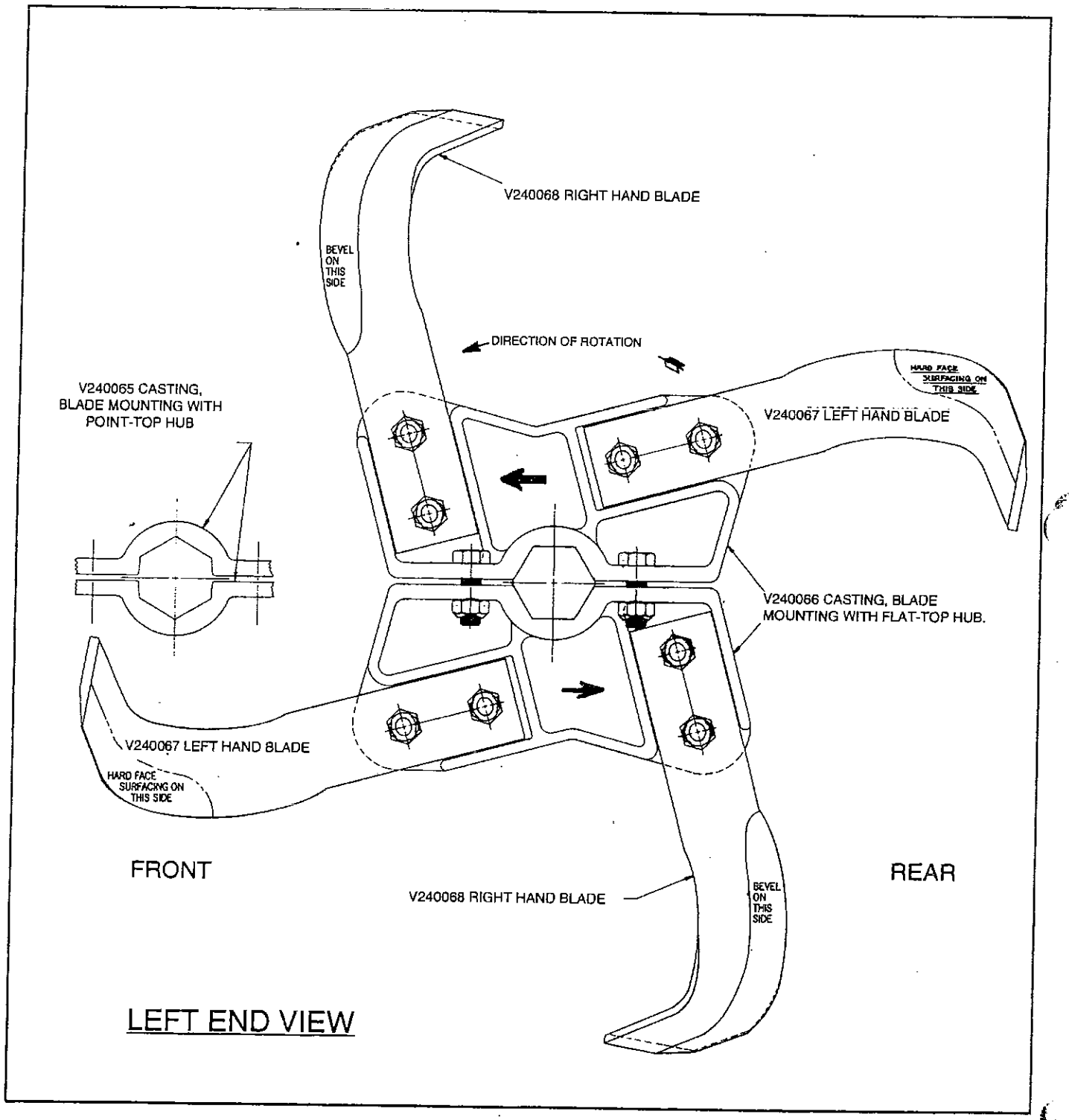
After all rotors are assembled, space them in the pattern you desire to operate, and then thoroughly tighten all bolts to 90 ft.-lbs. torque.

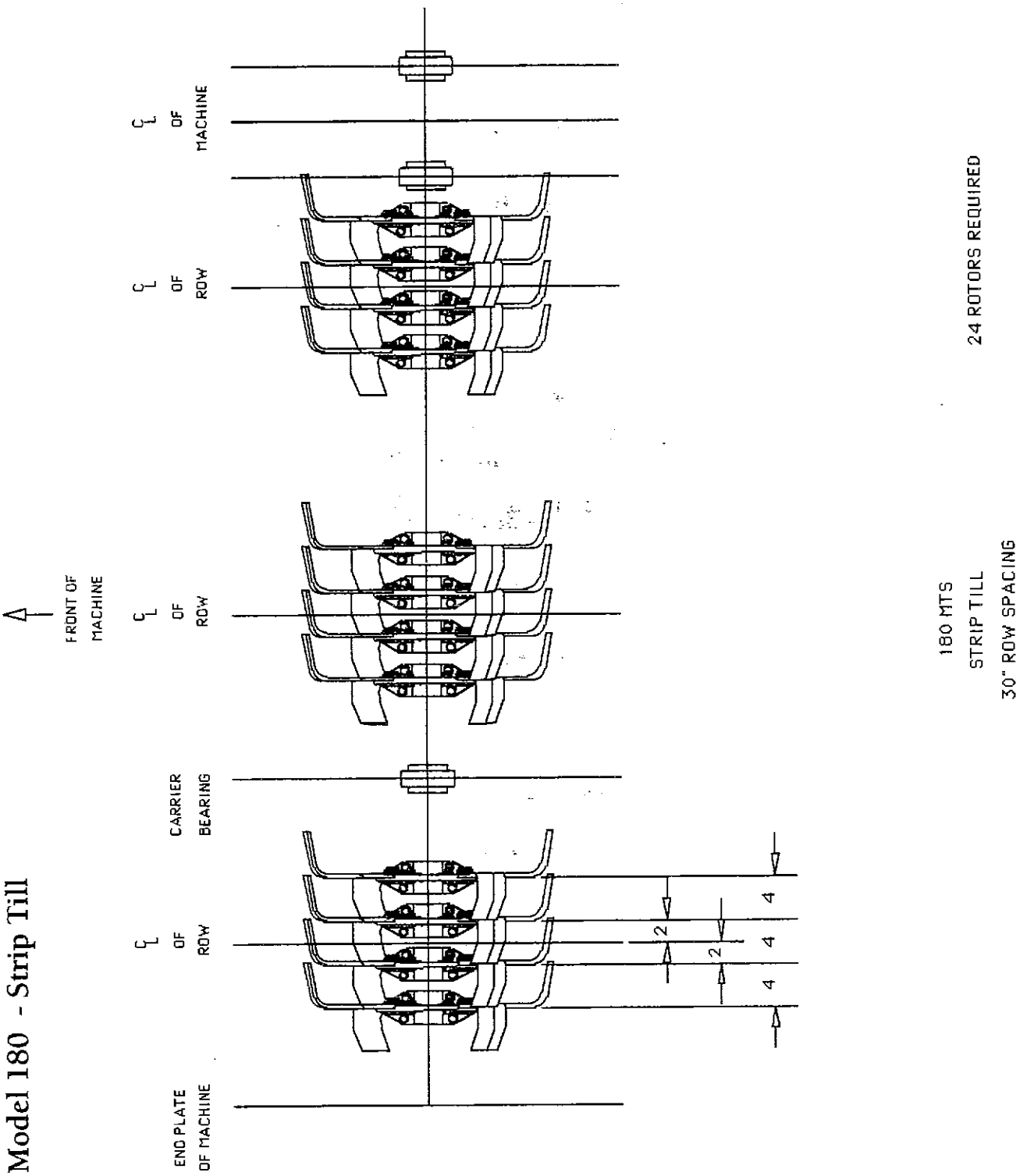
If you plan to operate in a "solid coverage" or "broadcast" pattern, space the rotors evenly along the hex shaft to cover the areas between the end plates, chain cases, and bearing mountings. This spacing permits full coverage except under the bearing mounts. Position carrier bearings as shown on pages 14, 16, 18, and 20.

For strip tillage, refer to drawings on page 13, 15, 17, and 19 for rotor spacing of each model.

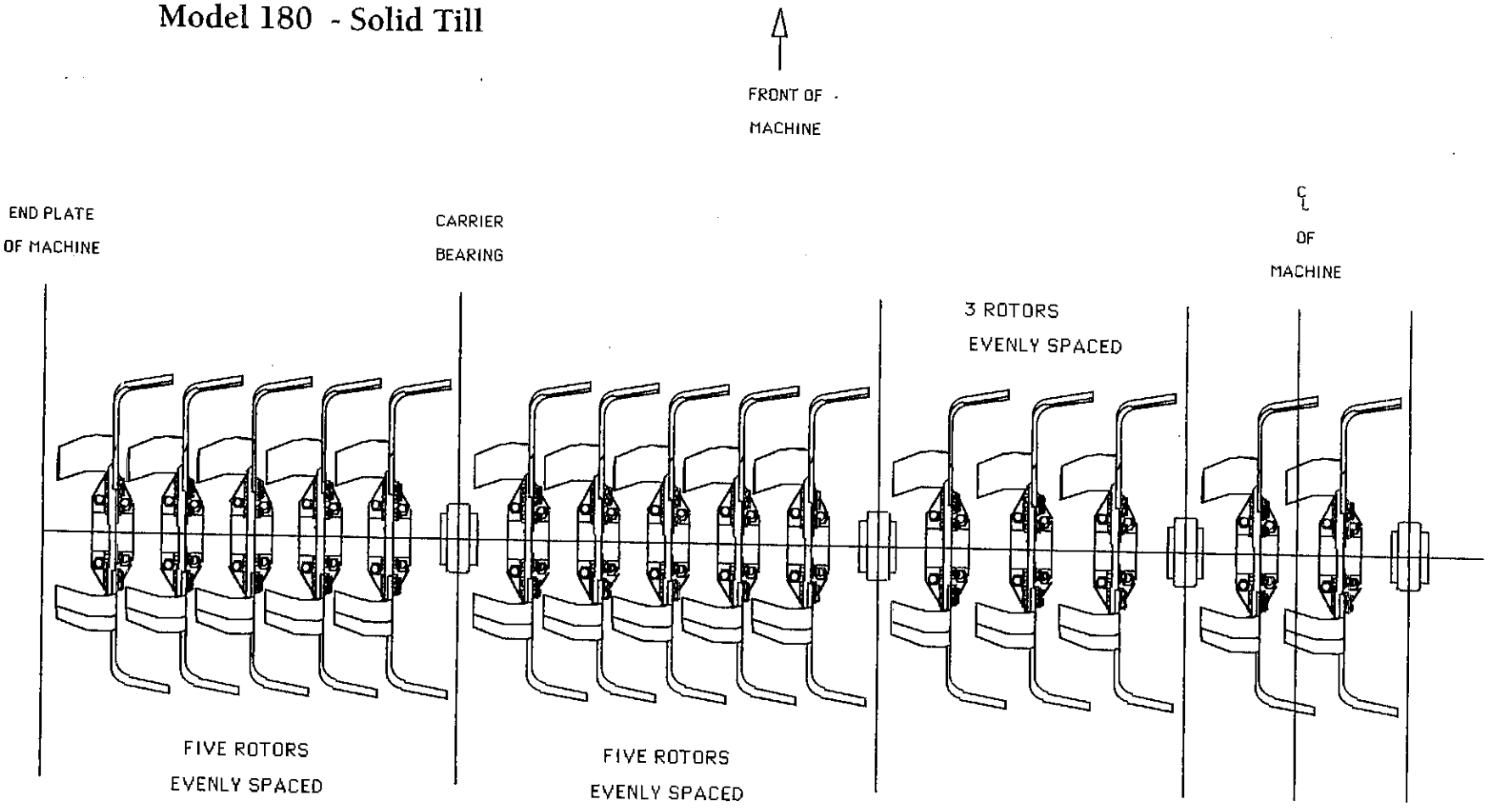
ASSEMBLY, Cont'd.

ROTOR ASSEMBLIES AND DRIVE SHAFTS, Cont'd.




Model 180 - Strip Till
FRONT OF MACHINE
℄ OF MACHINE
℄ OF ROW
℄ OF ROW
℄ OF ROW
CARRIER BEARING
END PLATE OF MACHINE
2
2
4
4
4
180 MTS
STRIP TILL
30" ROW SPACING
24 ROTORS REQUIRED

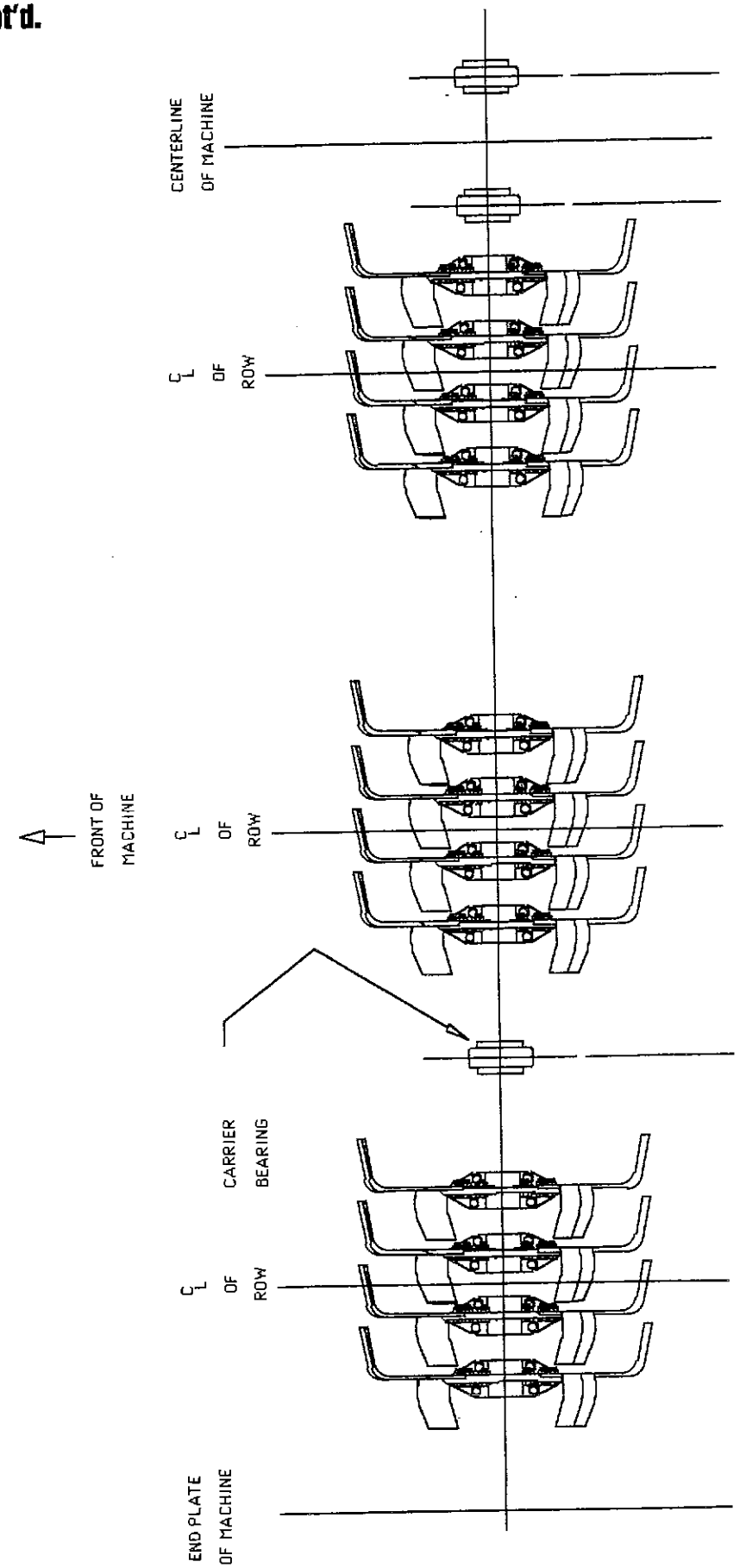
Model 180 - Solid Till



180 MTS
30" ROW SPACING
SOLID TILL

28 ROTORS REQUIRED

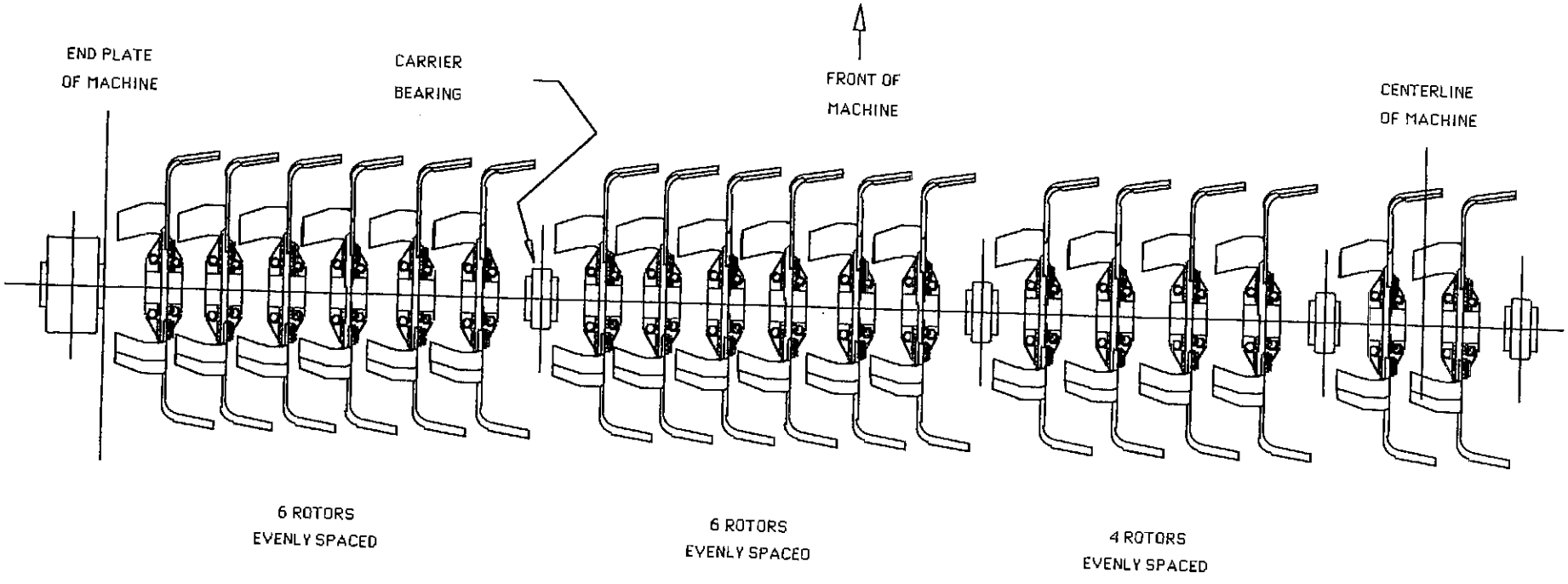
Model 216 - Strip Till



216 M.T.S.
STRIP TILL
36" ROW SPACING

24 ROTORS REQUIRED

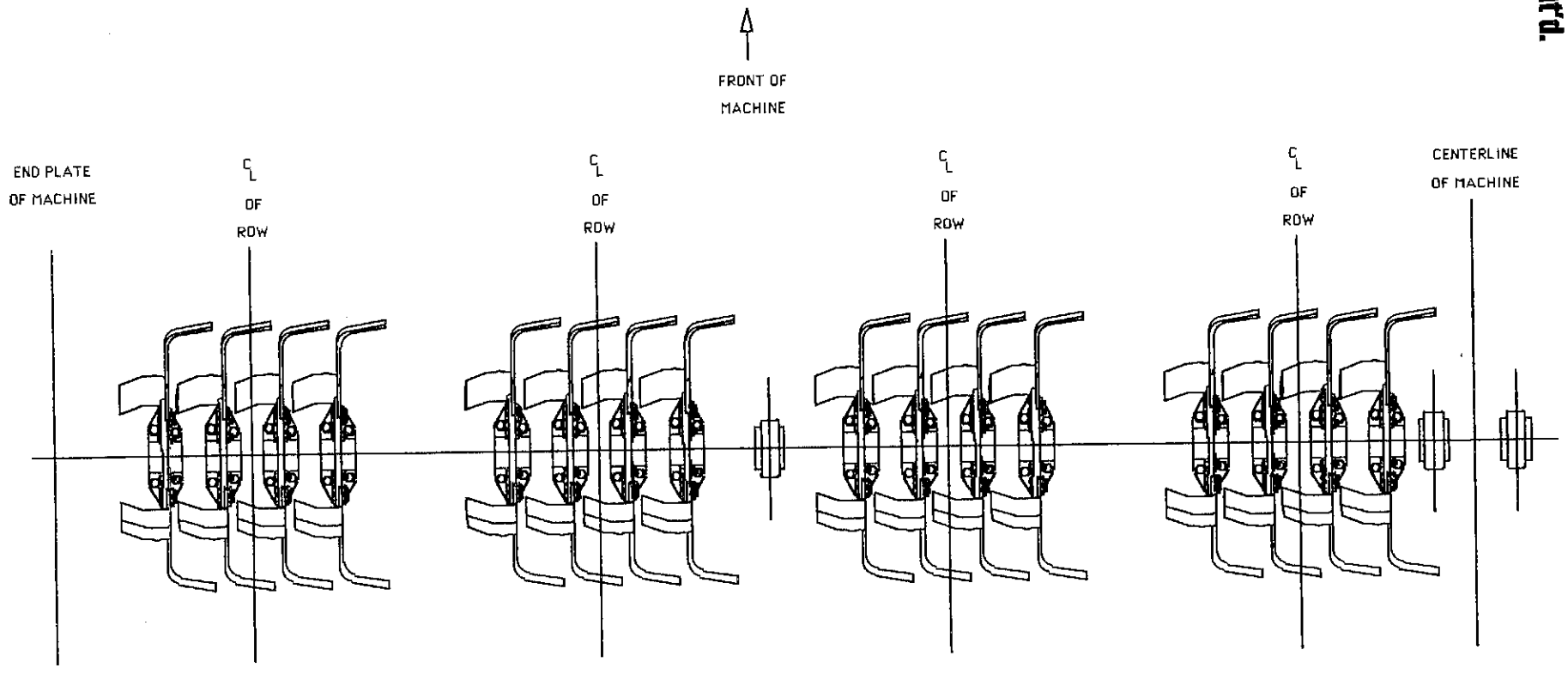
Model 216 - Solid Till



216 M.T.S.
36" ROW SPACING
SOLID TILL

34 ROTORS REQUIRED

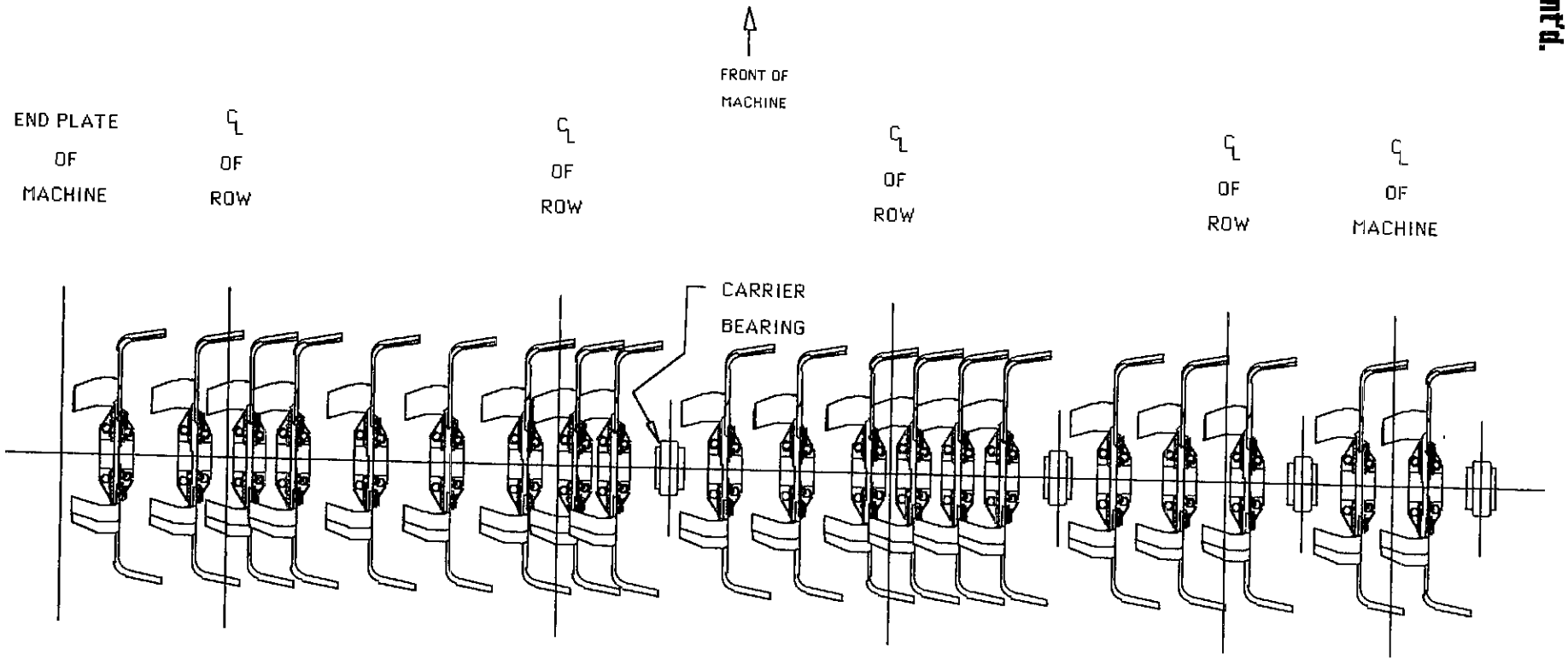
Model 240 - Strip Till



240 M.T.S.
STRIP TILL
30" ROW SPACING

32 ROTORS REQUIRED

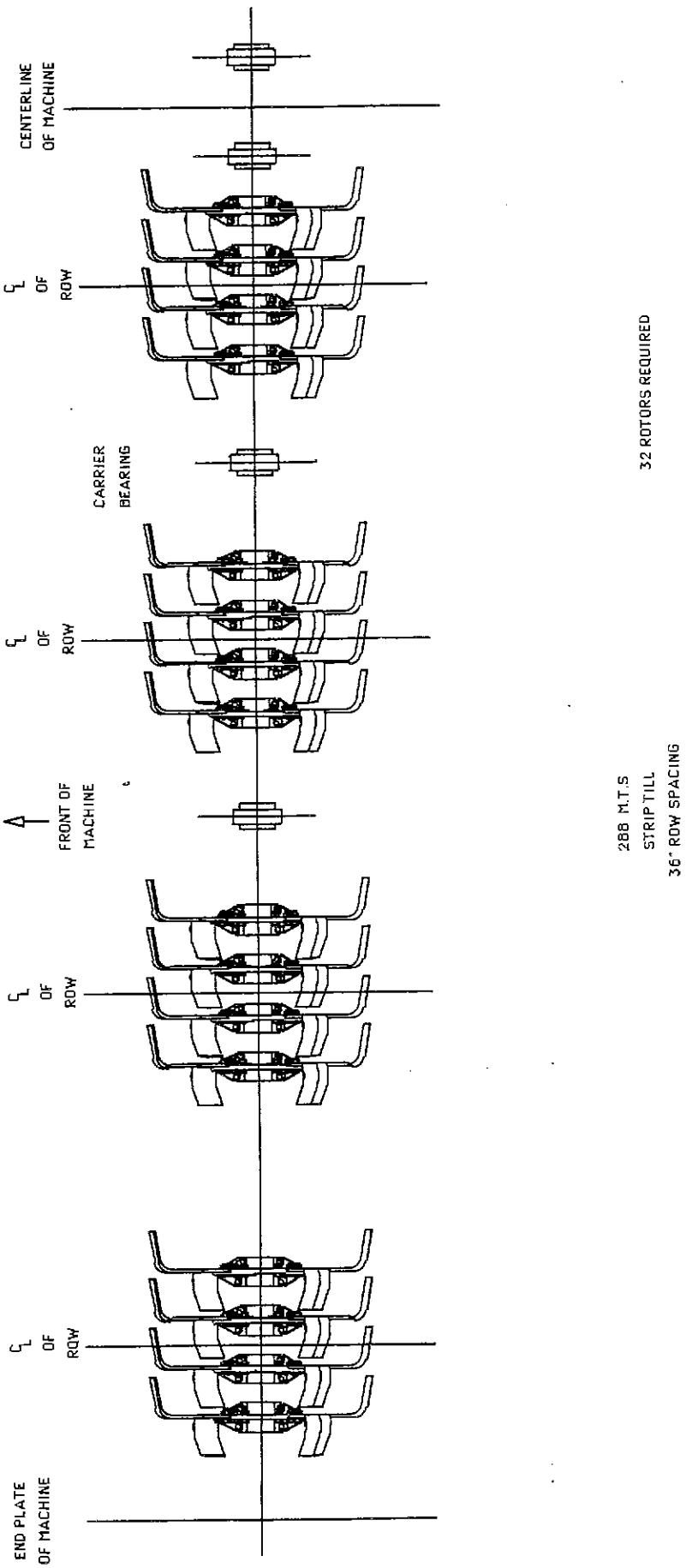
Model 240 - Solid Till



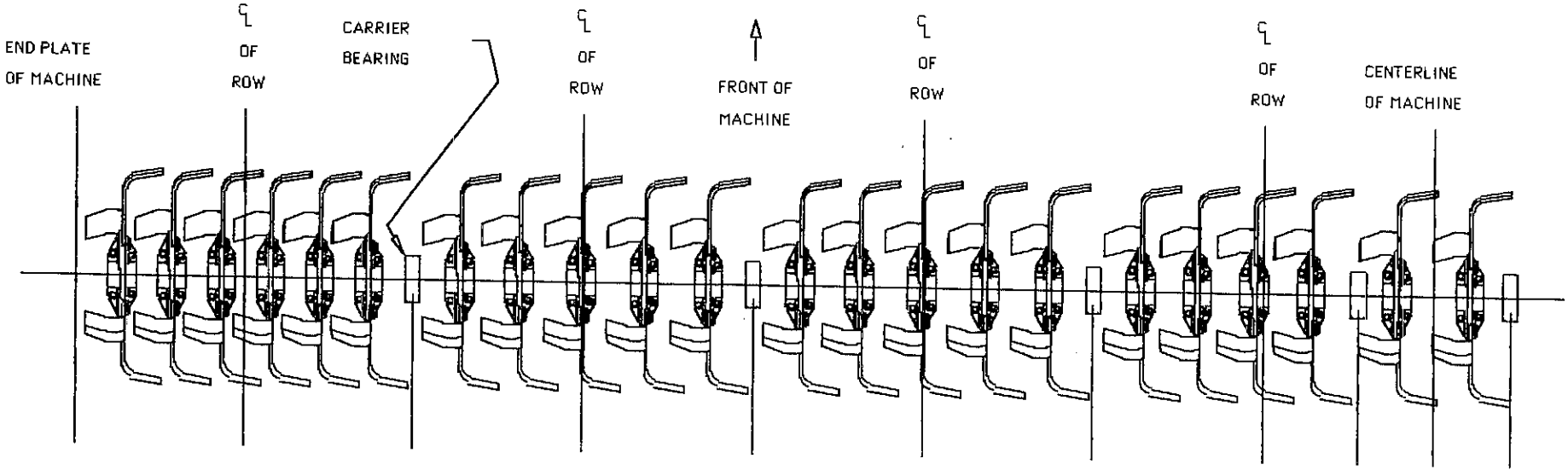
240 M.T.S.
30" ROW SPACING
SOLID TILLAGE

38 ROTORS REQUIRED

Model 288 - Strip Till



Model 288 - Solid Till



288 M.T.S.
36" ROW SPACING
SOLID TILL

42 ROTORS REQUIRED

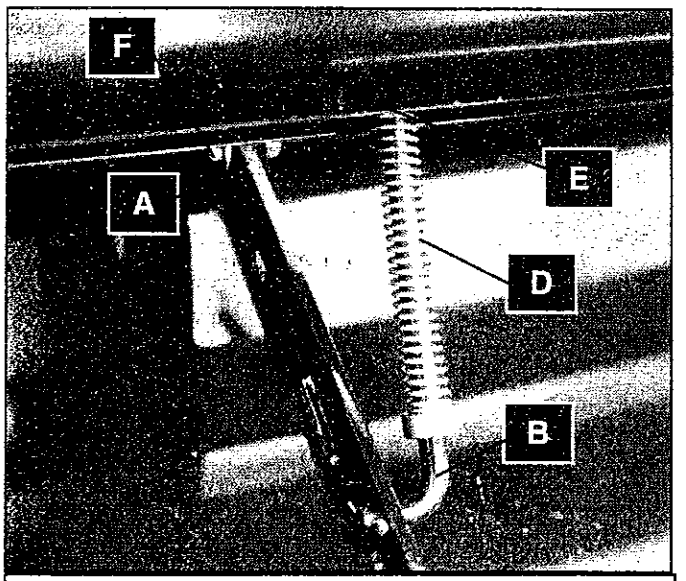
TAILGATE ASSEMBLY

IMPORTANT - Be sure that tailgate mounting bars are installed on the OUTSIDE of the mounting lugs on the main frame, both sides.

Assemble the tailgates using 7/8" x 7/16" bushings (A), a 1/2" flat washer, 1/2" x 1-1/2" Grade 5 bolts, and 1/2" lock nuts.

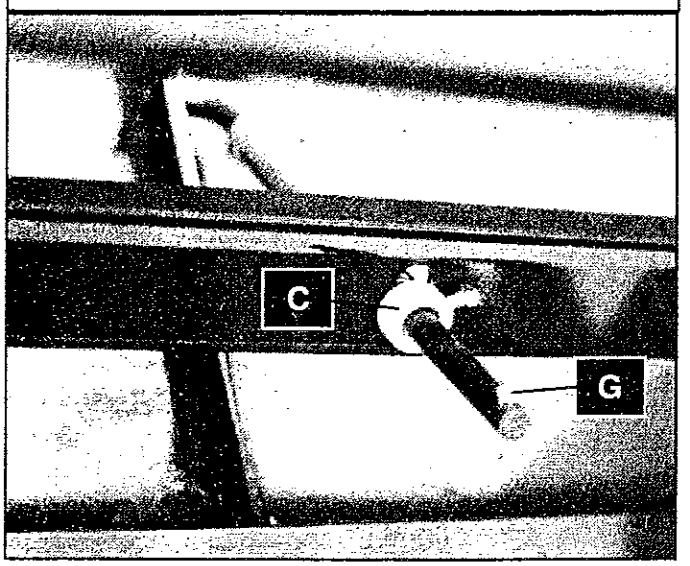
The rod (B) is secured to the tailgate with a 3/16" x 1-1/4" cotter pin.

Slide a set collar (C), along with a spring (D), on the rod.



A) Bushing (V240056)
B) Tailgate Rod (V240081)
C) Set Collar (V240083)
D) Spring (V240082)
E) 1/2" Flat Washer
F) 1/2" x 1-1/2" Grade 5 bolt
G) 3/16" x 1-1/4" Cotter Pin (V064333)

Insert the rod through the support-channel hole in the frame and lock with a set collar (C), and a 3/16" x 1-1/4" cotter pin (G).



ASSEMBLY, Cont'd.

ATTACHMENT TO TRACTOR

CAUTION:
Shut off tractor before working with driveline or hitch fittings.

QUICK HITCH

All models must be installed with a Category 2, 3, or 3-N quick hitch. The top hitch point of the quick hitch is not used.

A quick hitch must be used due to the PTO shaft angle.

The hitch pin is secured with two linch pins (V240437).

PTO

All four M-T-S models require the use of tractors equipped with a 1000 RPM PTO.

Two Wheel and Four Wheel Drive Tractors:
The PTO selection is dependent on the tractor used with your M-T-S system. With only a few exceptions, your particular tractor will require either a 1-3/8", 21- spline PTO drive line (V240805) or a 1-3/4", 20- spline PTO drive line (V240807).

Four Wheel Drive Tractors:
On four-wheel drive tractors, other than John Deere and International "2+2", the standard PTO shaft may be too short. A longer drive shaft, (V240806) 1-3/4", or (V240808) 1-3/8", should be ordered for those tractors.

Do not use these drive lines on 2-wheel drive tractors.

IMPORTANT:

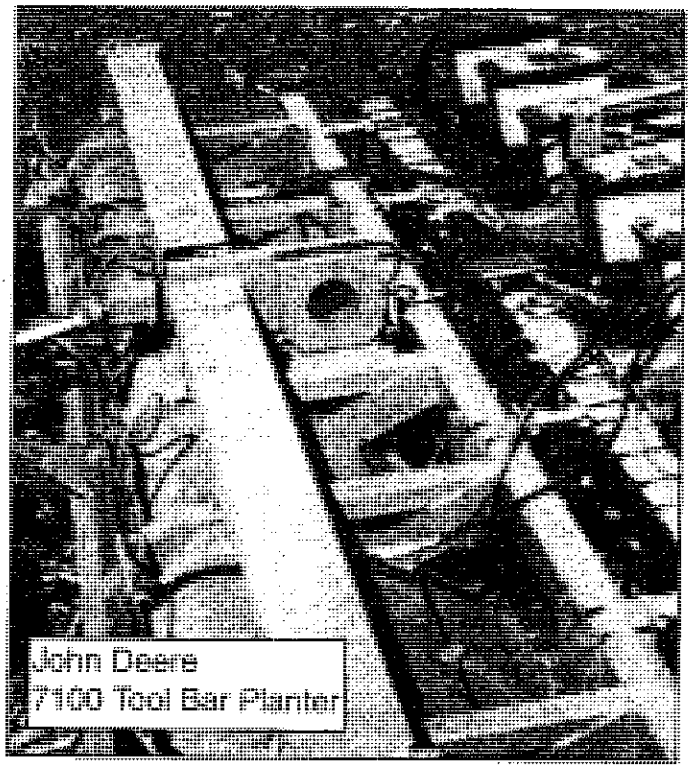
If in doubt, check the measurement from the end of the PTO shaft to the centerline of the hitch pins. If it measures 29-1/2" or less, the long drive shaft cannot be used. A long shaft will work on measurements of 30" to 38" only.

If in doubt regarding the correct drive line for your tractor, contact your Eversman Dealer for more information.

PLANTER INSTALLATION

Any tool bar planter can be mounted on the M-T-S, 7" x 5" rear beam with the proper brackets. Most planter mounting bracket kits are available through an authorized Eversman Dealer.

Individual planter row units can also be mounted on the rear beam with 7" x 5" U-bolts. The planter drive and rear gauge wheels are not furnished by Art's-Way.



Warning:
Securely block the tiller and planter frame prior to assembling units.

Mounting a John Deere 7100 or 7300 Tool Bar Planter

Park the planter on a level surface.

Support both ends of the planter using adequate blocking stands.

Remove the two (2) support stands from the planter's 7" x 7" tool bar and store for future use.

Relieve pressure from hydraulic circuit before disconnecting hoses!

Disconnect the lift-assist hydraulic line and remove the rear lift-assist assemblies from the M-T-S and position them behind the planter.

MODEL 180 (6 Row - 30 inch)

The Model 180 requires kit V240798 which contains:

- 2 - Lift-Assist Brackets (V240982)
- 2 - Lift-Assist Plates (V240983)
- 10 - 7/8" x 10-1/2" Grade 8 bolts, lock washer, & nuts (V061720)
- 10 - 7/8" x 8-1/2" Grade 8 bolts, lock washer, & nuts (V061716)

Position the one lift-assist assembly between the second and third row unit, and the other between the fourth and fifth row unit (Row unit placement is determined by counting from left to right, looking from the rear of the planter).

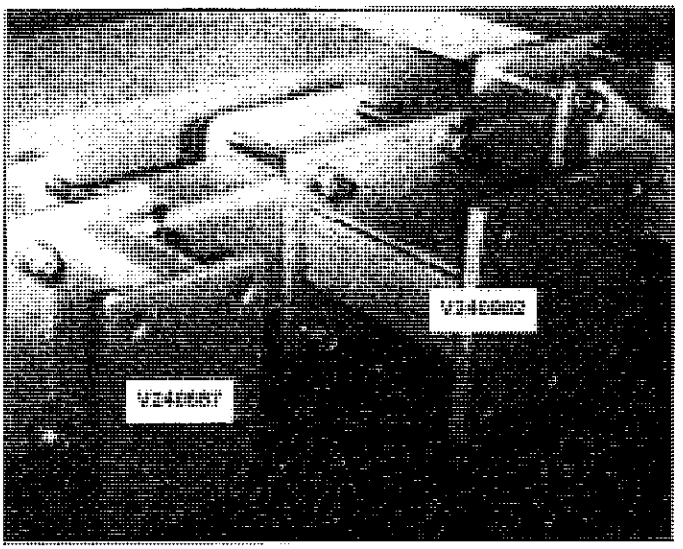
Using five (5) 7/8" x 10-1/2" Grade 8 bolts (V061720), connect the rear lift-assist assembly and lift-assist bracket (V240982) to the planter tool bar, placing the lift-assist to the rear of the tool bar and the lift-assist bracket to the front of the tool bar. Repeat this procedure for the second lift-assist, and place it between the fourth and fifth row unit.

Back the M-T-S to the planter, keeping the two units centered and parallel to each other. An overhead crane or forklift may be required to properly line up the machines .

The M-T-S (7" x 5") tool bar should line up between the top and bottom holes of lift-assist bracket (V240982). Couple the lift-assist bracket (V240982) and lift-assist plate (V240983) using five (5) 7/8" x 8-1/2" Grade 8 bolts (V061716), supplied with the kit.

Tighten all bolts to 240 ft.-lbs.

Connect the necessary hydraulic hoses and remove blocking stands.



MODEL 216 (6 row - 36" spacing):

The Model 216 requires kit V240894 which contains:

- 2 - Lift-Assist Brackets (V240982)
- 2 - Lift-Assist Plates (V240983)
- 2 - Planter Support Brackets (V240687)
- 8 - Angle iron brackets (V240674)
- 18 - 7/8" x 10-1/2" Grade 8 bolts & lock nuts (V061720)
- 18 - 7/8" x 8-1/2" Grade 8 bolts & lock nuts (V061716)

Position one lift-assist assembly between the second and third row unit, and the other between the fourth and fifth row unit (Row unit placement is determined by counting left to right, looking from the rear of the planter.) Using five (5) 7/8" x 10-1/2" Grade 8 bolts (V061720), connect the rear lift-assist assembly and lift-assist bracket (V240982) to the planter tool bar, placing the lift-assist to the rear of the tool bar and the bracket to the front of the tool bar.

LEAVE ALL BOLTS LOOSE AT THIS TIME

Repeat this procedure for the second lift-assist, and place it between the fourth and fifth row unit.

Install one planter support bracket (V240687) to the front of the planter tool bar directly in front of row unit No. 1. Install the second in front of row unit No. 6. Use two angle iron plates (V240674) per bracket and four (4) Grade 8, 7/8" x 10-1/2" bolts (V061720). The two angle iron plates should fit in-between the two angle iron supports, which attach the row unit to the tool bar. If this is not possible, move it toward the planter center line, but keep it as close to the end of the tool bar as possible.

Back the M-T-S to the planter, keeping the two units centered and parallel to each other. An overhead crane or forklift may be required to properly line up the machines.

The M-T-S (7" x 5") tool bar should line up between the top and bottom holes of brackets V240982 & V240687. Couple the lift-assist bracket (V240982) and lift-assist plate (V240983) using five (5) 7/8" x 8-1/2" Grade 8 bolts. Then couple planter support bracket (V240687) to two angle iron brackets (V240674), using four (4) 7/8" x 8 1/2" Grade 8 bolts.

Tighten all bolts to 240 ft.-lbs.

Connect the necessary hydraulic hoses and remove blocking stands.

MODELS 240 & 288:
(240 - 8 row 30" spacing)
(288 - 8 row 36" spacing)

The Model 240 & 288 requires kit V240894 which contains:

2 - Lift-Assist Brackets (V240982)
2 - Lift-Assist Plates (V240983)
2 - Planter Support Brackets (V240687)
8 - Angle Iron Brackets (V240674)
18 - 7/8" x 10-1/2" Grade 8 bolts & lock nuts (V061720)
18 - 7/8" x 8-1/2" Grade 8 bolts & lock nuts (V061716)

Position one lift-assist assembly between the second and third row unit, and the other between the sixth & seventh row unit (Row unit placement is determined by counting left to right, looking from the rear of the planter.) Using five (5) 7/8" x 10-1/2" Grade 8 bolts (V061720), connect the rear lift-assist assembly and lift-assist bracket (V240982) to the planter tool bar, placing the lift-assist to the rear of the tool bar and the bracket to the front of the tool bar.

LEAVE ALL BOLTS LOOSE AT THIS TIME

Repeat this procedure for the second lift-assist, and place it between the sixth & seventh row unit.

Install one planter-support bracket (V240687) to the front of the planter tool bar directly in front of row unit No. 1. Install the second in front of row unit No. 8. Use two angle iron plates (V240674) per bracket and four (4) Grade 8, 7/8" x 10-1/2" bolts. The two angle iron plates should fit between the two angle iron supports that attach the row unit to the 7" x 7" tool bar. If not, move it toward the planter center line, but keep it as close to the end of the tool bar as possible.

Back the M-T-S to the planter, keeping the two units centered and parallel to each other. An overhead crane or forklift may be required to properly line up the machines.

The M-T-S (7" x 5") tool bar should line up between the top and bottom holes of brackets V240982 & V240687.

Couple the lift-assist bracket (V240982) and lift-assist plate (V240983) using five (5) 7/8" x 8-1/2" Grade 8 bolts. Then couple planter support bracket (V240687) to two angle iron brackets (V057560), using four (4) 7/8" x 8-1/2" Grade 8 bolts.

Tighten all bolts to 240 ft.-lbs.

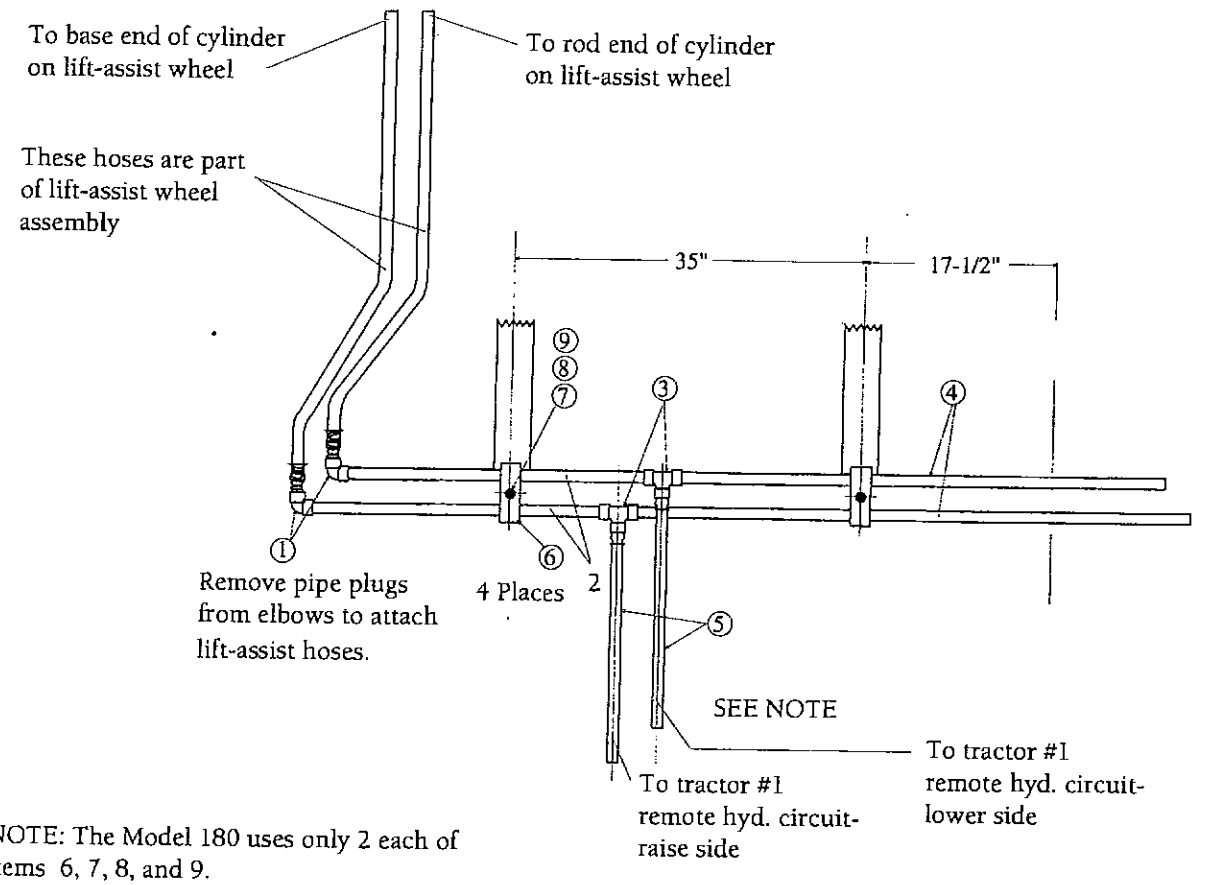
Connect the necessary hydraulic hoses and remove blocking stands.

Case IH Tool Bar Planters

The Case IH and previous IHC planters are installed identically to the John Deere instructions, with the exceptions that the lift-assist brackets and the planter-support brackets are slightly longer in length than the John Deere components.

ASSEMBLY, Cont'd.

HYDRAULIC SYSTEM



NOTE: The Model 180 uses only 2 each of items 6, 7, 8, and 9.
*Item 2, 359900, & Item 4, 359910, on Model 180 only.

FRONT OF MACHINE

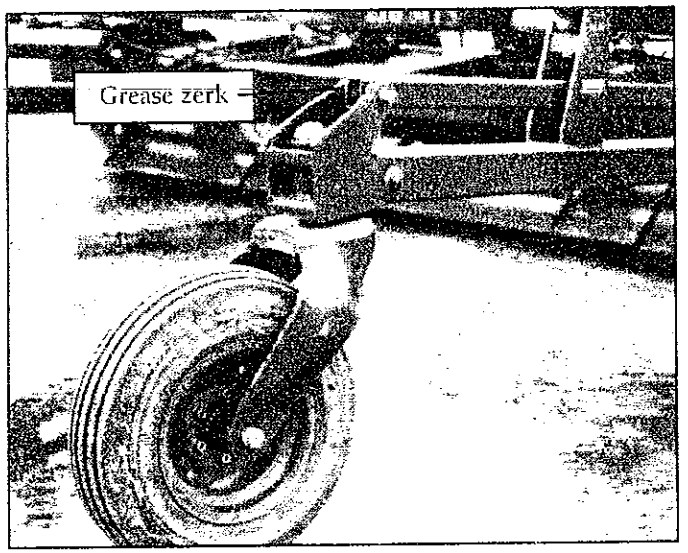
NOTE: QUICK COUPLERS ARE NOT PROVIDED.

Part	Part No.	Qty.
1) Fitting, Steel 1/2 Npt.	353320	4
2) Tube, Hyd. 5/8" x 60"	353330	2
Tube, Hyd. 5/8" x 18" for Model 180	359900*	2
3) Tee, Steel 1/2 Npt.	353470	2
4) Tube, Hyd. 5/8" x 72"	353340	2
Tube, Hyd. 5/8" x x37" for Model 180	359910*	2
5) Hose, Hyd. 1/2" x 57"	V041016	2
6) Clip, Pipe	V413100	4
7) Bolt, 1/2" NC x 1-1/4" Hhm.	010730	4
8) Washer, 1/2" Std. Flat Pl.	005200	4
9) Washer, 1/2" Std. Lock Pl.	005370	4

LUBRICATION

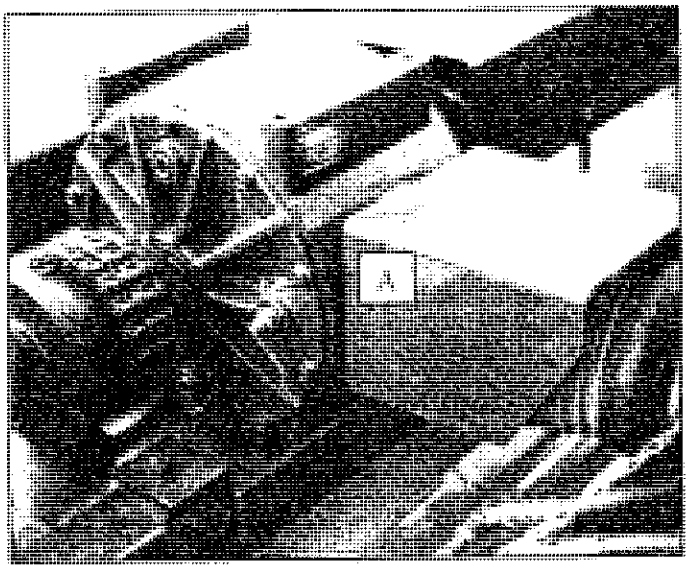
LIFT-ASSIST

Lubricate the rear lift-assist pivot bushings twice daily.



GEAR BOX

Check oil level in gear box once a year. It should not be filled above the level of the hex shaft. Use gear box oil SAE-90, extreme pressure. Any good differential type oil is satisfactory.



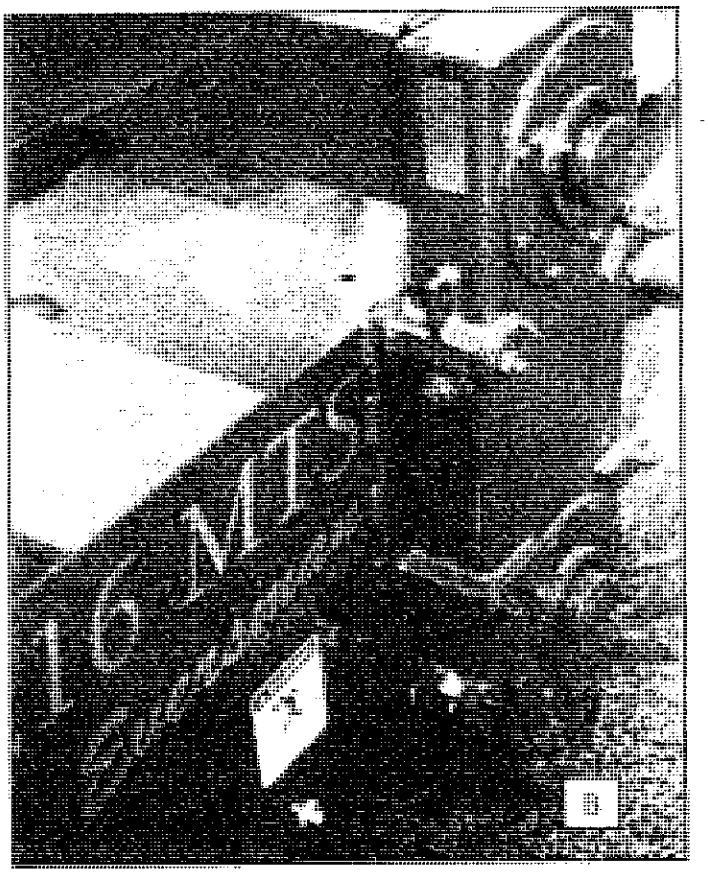
IMPORTANT - Before operation, install vent plug (V240762) at point A on right hand side of gear box. Check chain case lubricant every 10 hours. Fill to level of pipe plug at point A. Use SAE-90W gear oil.

PTO

Grease zerks on PTO drive shaft every 4 hours. Be sure drive shaft telescopes freely. Grease should be expelled from all 4 ends of crosses. Keep pumping grease in zerks until grease appears outside of all 4 bearings. Lubricate zerks in all ratchet jacks before start of season.

CHAIN CASE

Check chain case lubricant every 10 hours. Fill to level of pipe plug at point B. Use SAE-90W gear oil.



FIELD OPERATION AND ADJUSTMENT

BEFORE YOU GO TO THE FIELD

The M-T-S hitch fittings are designed for Category 2, 3 or 3-N tractors. All models must be attached using a quick hitch due to the PTO shaft angle. Check PTO drive shaft for proper size and length. Serious damage can result if improper length is used. See PTO Section page 22. The top hitch point is not utilized. All models require a 1000 PTO RPM tractor.

Two heavy-duty rear lift-assist assemblies allow the machine to be raised easily with planters installed on the rear 7" x 5" frame. Only one hydraulic control valve is required on the tractor. Refer to the hydraulic circuit drawing, page 26, to be certain all hoses and fittings are properly assembled before attaching the front hoses to the tractor fittings.

Take the time to check all bolts and set screws to be certain they are thoroughly tight. Be sure the cotter pins are spread so they will not work loose.

Refer to the rotor blade setting instructions on pages 11 through 12 and carefully check to be sure the bolts are all tight and the blades are properly spaced for row width and type of tillage you desire.

All wire, twine, sticks, etc., should be removed around the rotors, and clean caked mud from bearing supports and end plates. Caked mud will wear blades, cause rusting, and require more horsepower.

Check all tires for proper inflation (25 PSI) gauge wheels and (50 PSI) lift-assist wheels. Be certain they are spaced correctly.

Refer to page 27 for lubrication details and be sure all zerks have been properly greased.

Refer to your planter manual for information on proper operation and carefully check the spacings on the planters as well as the recommended height of tool bar.

Check gearbox and chain cases for proper oil levels - refer to page 27 and inspect tightness of chain case chains. There should be 1/2" to 3/4" slack. See page 27. Install vent plugs, (V240761), in top of chain cases.

PREPARING AND ADJUSTING THE TRACTOR

The horsepower requirements are as follows:

- 180: 110 HP strip till, 130 HP solid till, 225 max.
- 216: 120 HP strip till, 140 HP solid till, 225 max.
- 240: 130 HP strip till, 150 HP solid till, 225 max.
- 288: 150 HP strip till, 180 HP solid till, 225 max.

The M-T-S is Not recommended for use in rocky soils.

For 30" row spacing plantings, set front and rear tractor wheels exactly on 60" spacing. For 36" row spacing, set tractor wheels on 72" spacing and for 38" row spacing, 76".

Refer to your tractor manual for complete instructions and add front-end weight for stability and steering control when operating the M-T-S. In general, you will have to add front-end ballast so that approximately 1/3 the tractor weight, with M-T-S attached, is on the front wheels.

ATTACHING TO THE TRACTOR

With the M-T-S setting on firm, level ground, attach the lower hooks of the quick hitch to the hitch pins on the front frame. The inside of the lugs of the fitting are set for Cat. 2 or Cat. 3-N quick hitches, while the outside of the lugs will fit a Cat. 3 quick hitch. Secure the hitch pins with 7/16" linch pins.

Caution:

To prevent possible injury from high pressure hydraulic fluid, shut off tractor and move both control levers in both directions to relieve pressure before either connecting or detaching the hose couplers. Connect hoses for the lift-assist cylinders.

Operate the control valve to be certain the hydraulic circuit is functioning correctly and that there are no obstructions while lifting and lowering M-T-S with the lift-assist assembly. The lift-assist cylinders extend to raise the machine.

TRANSPORTING

Caution:

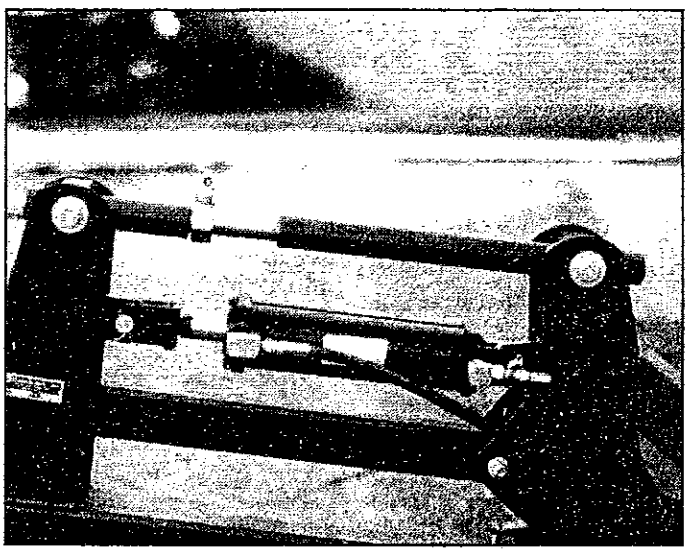
Exercise extreme care when transporting on a gravel road, or on a road with soft shoulders. The M-T-S is heavier than most rear-mount equipment, and slower speeds are advised to properly handle the tractor. Use a "Slow Moving Vehicle" sign at all times.

To lower machine, retract lift-assist cylinders, and lower 3-point hitch arms, until the machine is resting on the ground. Do not allow the 3-point hitch arms to drop too fast; you may need to refer to the tractor manual if an adjustment is required.

ADJUSTMENTS AND OPERATION

Setting Operating Depth

Move the M-T-S to a firm, level surface and raise the machine with the lift-assists. Determine the depth you want to incorporate and plant, which will be approximately 3". Then place 2" x 4" and 1" x 4" boards under each front gauge wheel. Raise the gauge wheels with the ratchet jacks provided so you can then lower the M-T-S to the ground, resting on the blades. Then lower the gauge wheels with the ratchet jacks to rest on the



boards. If planters are installed on the rear tool bar, the depth of the planter gauge wheels is set in the same way. Leaving the machine resting on the blades, set a level on one of the M-T-S main frame cross tubes to be certain the machine is completely level. Then set the lift-assist wheels by adjusting the lock nuts on the depth adjustment screws, being certain the frame is kept level. Check planter manual for proper settings of planting depth.

Checking Depth

Pull into the field, stop the tractor, lower the M-T-S, and turn on the PTO. Then turn off the PTO, raise the machine, and check the depth where the blades have worked. Also be certain that the stubble is being cut and moved away from the path of the planters. If depth is not what you desire, adjust up or down by moving all ratchet jacks and adjustment screws the same amount. Continue checking until desired depth has been established. The recommended depth is the depth you are planting, 2 to 3". Do not try to plow with this machine— running too deep produces excessive blade wear and waste of fuel.

IMPORTANT - When planters are installed, all the weight of the M-T-S will be on the front-gauge wheels and the planter-gauge wheels. No weight is carried on the tractor hitch. Only when planters are installed, set the tractor control lever in the "float" position for the lift-assist wheel hydraulic circuit. When planters are not installed, the weight is carried on the front-gauge wheels and the lift-assist wheels, and the tractor control lever is set in the neutral position.

Ground Speed

When engaging PTO clutch to start operation of the M-T-S, be sure tractor engine is at low RPM and the rotor blades are above the ground. Damage may result if PTO angle is too sharp or if blades are in the ground when PTO is engaged. Lower the machine slowly to the ground and gradually increase PTO RPM to 1000 as the tractor is moved forward. If the machine is suddenly dropped, serious damage may result.

The ratio of rotor speed to ground speed is critical for smooth operation, and for efficient herbicide incorporation. At 1000 RPM on the tractor PTO, the rotor turns at 270 RPM. The recommended ground speed corresponding to that is 4-1/2 to 5 MPH. Operating at any other speed will result in "rippling", uneven depth, or inconsistent herbicide incorporation. Refer to tractor operator's manuals for proper gear to run in to achieve the 4-1/2 to 5 MPH speed at 1000 PTO RPM only on the tachometer. If in doubt, check PTO speed with a separate instrument. Heavy residue or soil conditions may require a slightly slower ground speed.

Tailgate Adjustment

There is sufficient adjustment of the tailgates to obtain the desired amount of smoothing of the seedbed ahead of the planters. The tailgate spring pressure is increased by moving the lower set collar on the spring rod higher on the rod. (See page 21, Item C). Be sure rods are straight and tailgate panels are not bent. Replace worn plates if necessary.

Chain Type Shear Pin Coupling

If a shear bolt breaks, stop the tractor immediately and turn off the PTO. Raise the machine out of the ground, lift hinged shields at sheared coupler and remove pieces of the broken bolt. Turn the upper shaft until the holes on the coupler matching flanges line up. Install two 3/8" x 2" Grade 5 bolts and replace safety shields. Check chains for loose or worn pins and replace if necessary. The machine is then ready for operation.

Rotor Blades & Holders

Check tightness of rotor bolts and blade bolts twice daily the first two days of operation. If necessary tighten to 90 ft.- lbs.

MAINTENANCE AND STORAGE

End of Season

Clean all dirt, trash and crop residue from machine and repaint all spots which might show rust. Check oil in chain cases and gearbox, and change if contaminated. Grease PTO drive shafts and chains in shear pin coupling, and be certain they all move freely. Inspect carefully for missing or broken parts and order immediately. Be sure to give dealer the serial number of your M-T-S so you can be assured of receiving correct parts.

Storage

If possible, move M-T-S under cover to prevent excessive corrosion and weathering. Block up frame, front and rear, to remove weight from tires.

Beginning of Season

Check and tighten all bolts, set screws, cotter keys, etc. Be sure all points are lubricated properly. Refer to page 27 . Check lug bolts in gauge wheels and grease zerks in ratchet jacks. Before going to the field, run machine a few minutes to be certain there are no loose parts, or misalignments, which would produce unusual noises. It's easy to forget from year to year —so review this M-T-S manual in careful detail to obtain the best possible operation from your machine.

TROUBLE SHOOTING

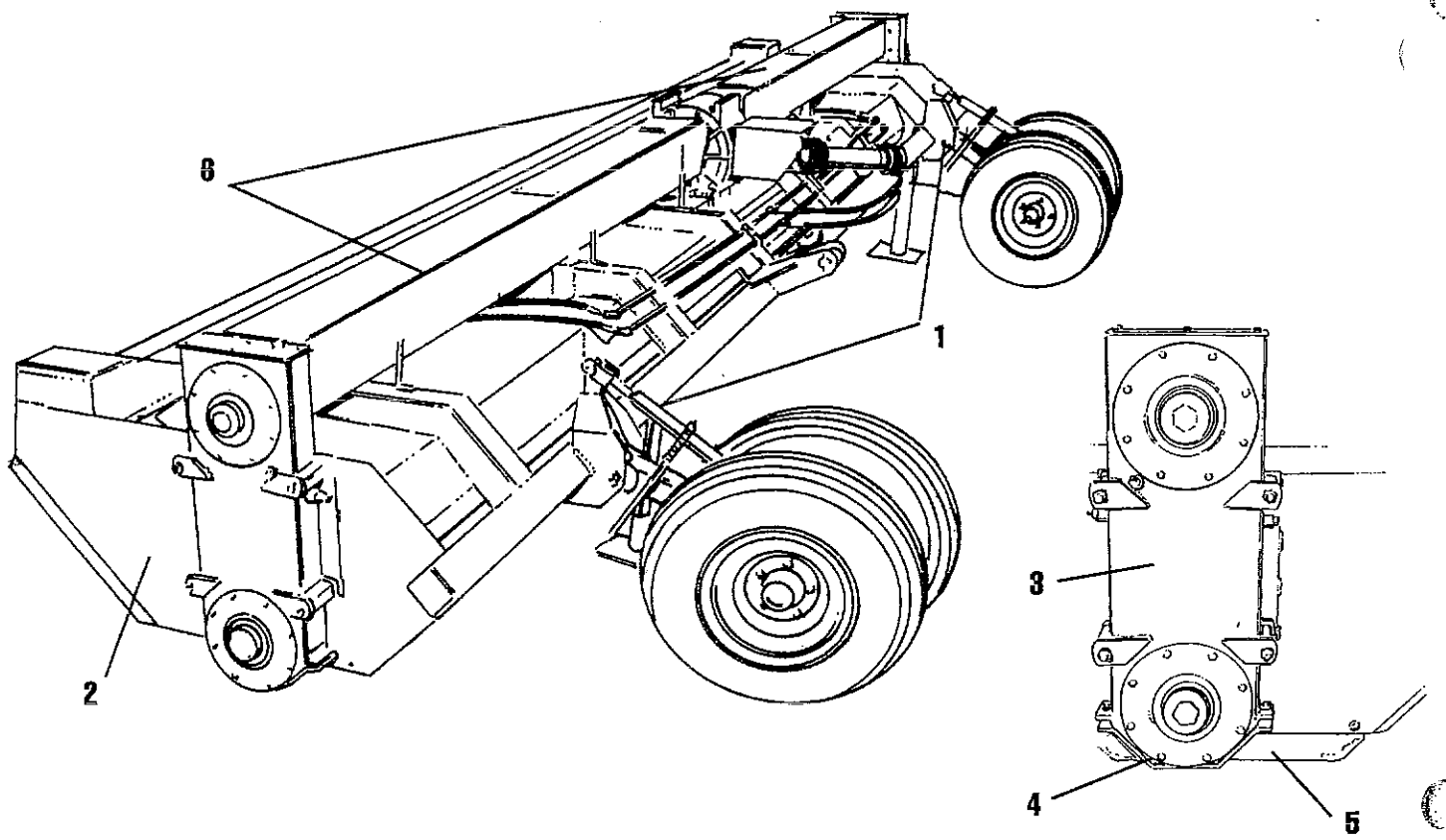
If shear bolts break too frequently, hex shaft may be out of alignment. To correct, loosen pillow blocks by chain coupler - run slowly to align, then retighten pillow block bolts.

Condition: "Rippling" - "machine hopping"
Cause: Rotor speed too fast for ground speed.
Cure: Check PTO RPM - 1000 only. Increase ground speed by going to a higher gear. If sufficient power is not available, reduce tractor RPM slightly.
Cause: Ridges crosswise to direction of travel.
Cure: Order optional walking beam gauge wheels and lower tire pressures.

Condition: Excessive vibration or noise from under machine.
Cause: Lower rotor hex shaft may have gotten knocked out of alignment. Loosen carrier bearing bolts and realign.
Cause: Rotors or blades loose. Retighten to 90 ft.-lbs. torque. If they have moved along shaft, they may be hitting on the frame or supports. Move to correct position and retighten.

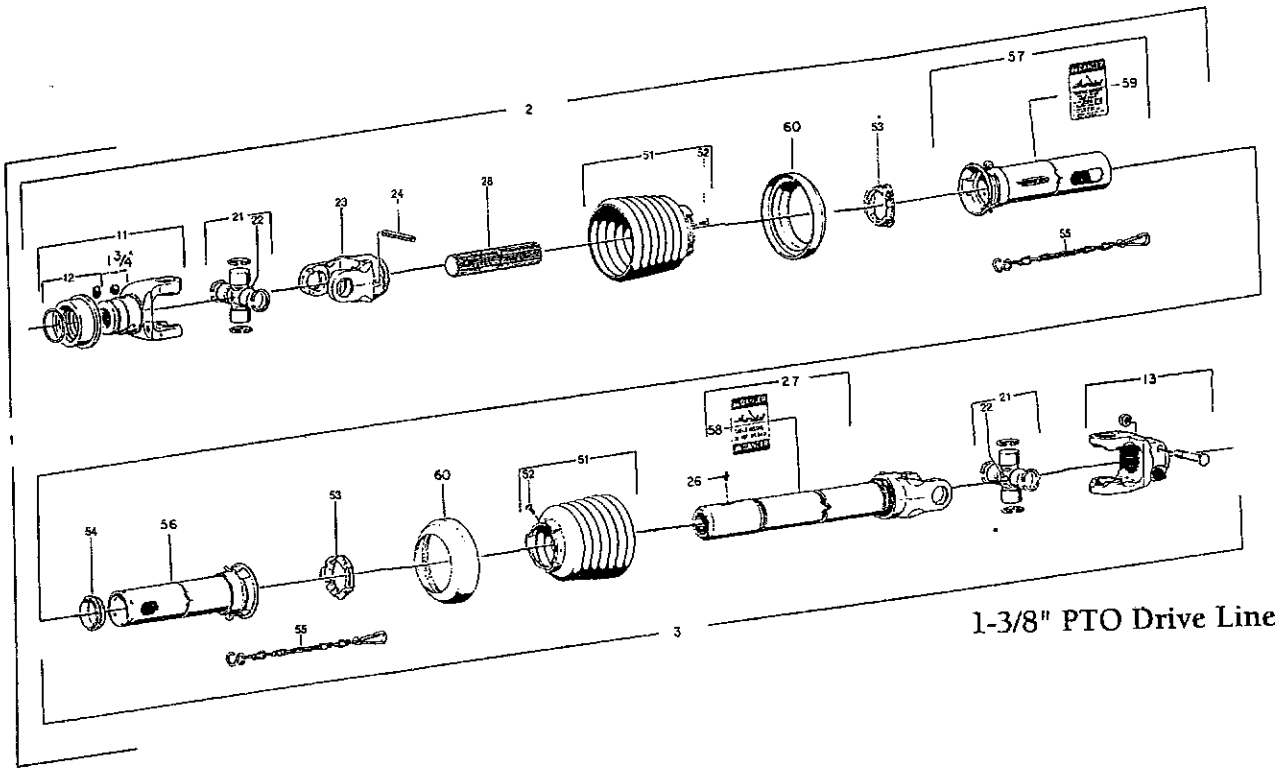
Condition: Chain case excessively noisy.
Cause: Chain overtight. Proper tension is 1/2" to 3/4" slack when checked through pipe plug in the side of case. If overtight, the chain can break or wear quickly.
Cure: Loosen chain tightener bolt.

MAIN FRAME ASSEMBLY



Ref. No.	Description	Part No.	No. Reg.	Will Fit
1	Dual Gauge Wheel Package (2 assemblies)	V240802	1	All
	7.60 X 15 Tire and Wheel Assembly - 8 Ply	V240413	1 or 2	All
1A	Heavy Duty Gauge Wheel Package (2 assemblies)	V241260	1	All
	9.5L X 15 Tire and Wheel Assembly	V630037	1	All
-	Walking Beam Gauge Wheel Package (2 assy)	V240893	1	All
2	Main Frame Assembly	V242748	1	180
	Main Frame Assembly	V242535	1	216
	Main Frame Assembly	V242675	1	240
	Main Frame Assembly	V242764	1	288
3	Chain Case Assembly - Standard Speed	V240210	2	All
4	Chain Case Wear Plate	V240507	2	All
5	Wear Plate	V240328	2	All
6	Drive Line Shields			
	Model 288	V241725	2	288
	Model 240	V241865	2	240
	Model 216	V241938	2	216
	Model 188	V241946	2	188

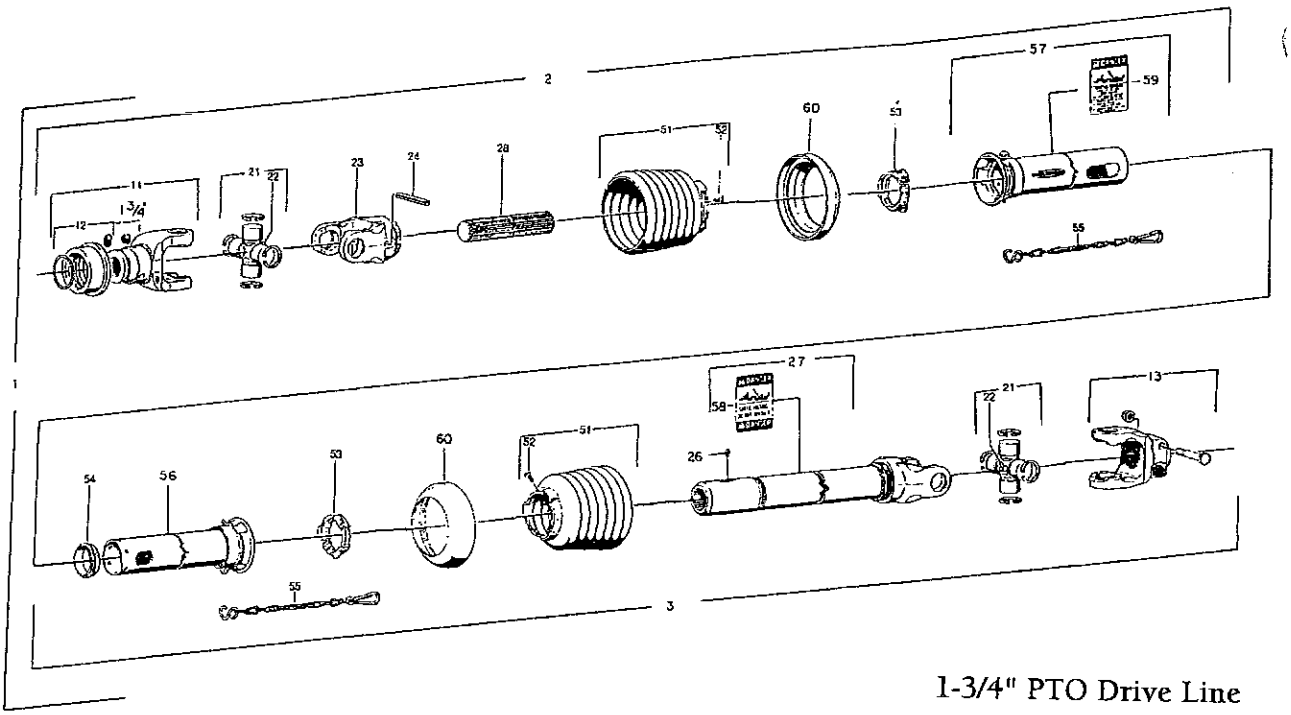
PTO ASSEMBLY - 1 3/8"



1-3/8" PTO Drive Line

Ref. No.	Description	Part No.	No. Req.	Will Fit
1	PTO Drive Shaft with Shielding (1-3/8")	352270	1	All
2	PTO Half Shaft with Shielding	352660	1	All
3	PTO Half Shaft with Shielding	352640	1	All
11	End Yoke	352670	1	All
12	Quick Disconnect Kit - In Item 11	340210	1	All
13	End Yoke	352700	1	All
21	Cross & Bearing Kit	352680	1	All
22	Grease Zerk - In Item 21		1	All
23	Inboard Yoke		1	All
24	Spring Pin		1	All
26	Grease Zerk	1102467H	1	All
27	Inboard Yoke, Tube & Sleeve W.A.		1	All
28	Splined Profile		1	All
51	Shield Cone 7 Rib		1	All
52	Screw - In Item 51		1	All
53	Bearing Ring		1	All
54	Shield Support		1	All
55	Safety Chain	182890	1	All
56	Inner Shield Tube W/Cap		1	All
57	Outer Shield Tube W/Cap		1	All
58	Danger Decal, Inner - In Item 27	340180	1	All
59	Danger Decal, Outer - In Item 57	268860	1	All
60	Reinforced Collar		1	All

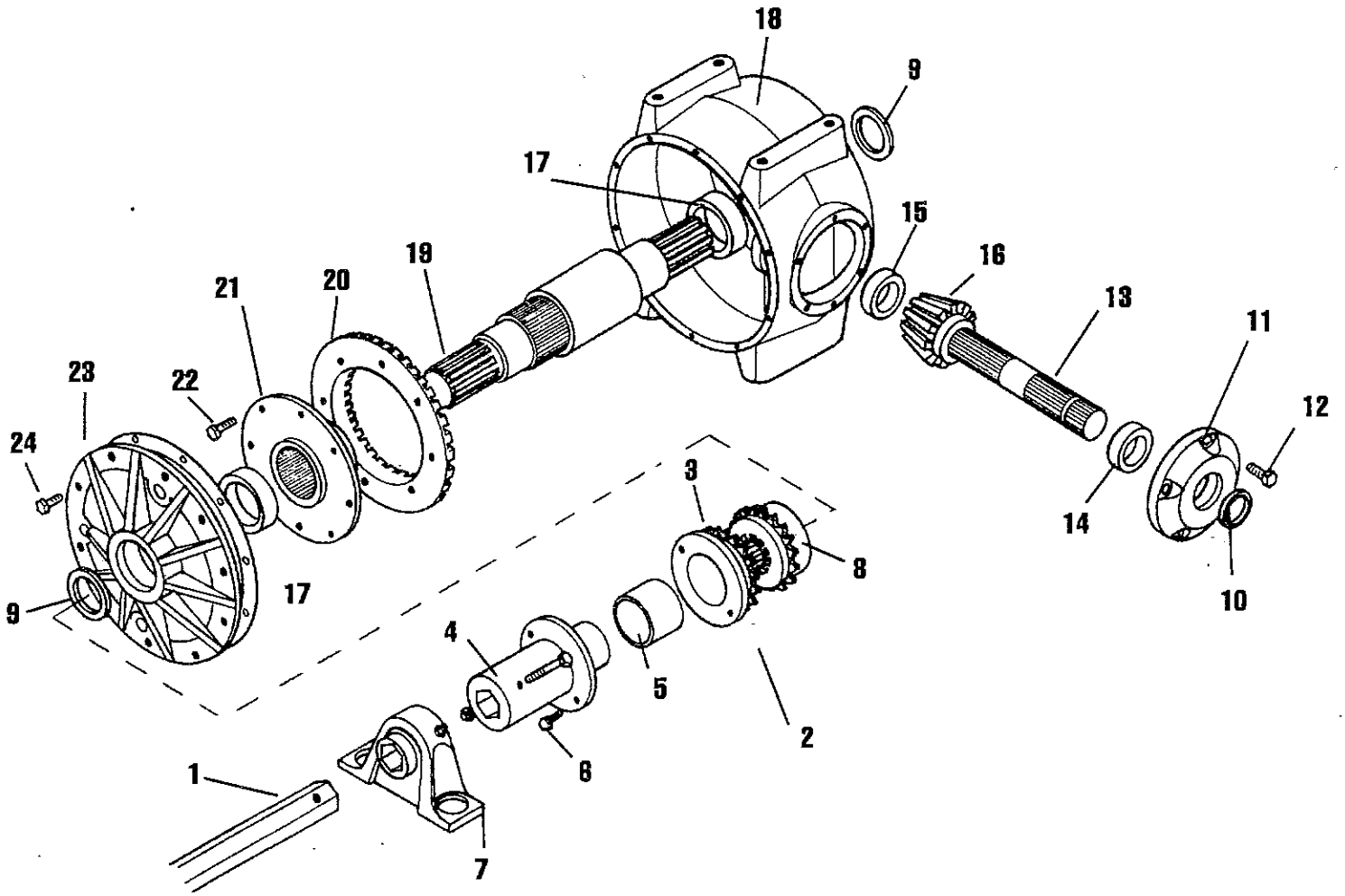
PTO ASSEMBLY - 1 3/4"



1-3/4" PTO Drive Line

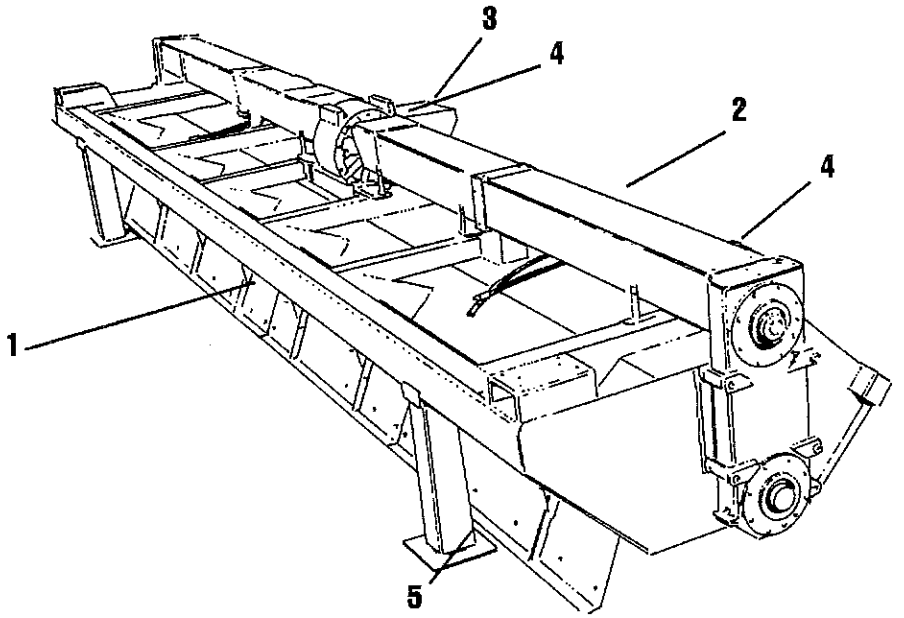
Ref. No.	Description	Part No.	No. Req.	Will Fit
1	PTO Drive Shaft with Shielding	352280	1	All
2	PTO Half Shaft with Shielding	352650	1	All
3	PTO Half Shaft with Shielding	352640	1	All
11	End Yoke	352690	1	All
12	Quick Disconnect Kit - In Item 11	340200	1	All
13	End Yoke	352700	1	All
21	Cross & Bearing Kit	352680	1	All
22	Grease Zerk - In Item 21		1	All
23	Inboard Yoke		1	All
24	Spring Pin		1	All
26	Grease Zerk		1	All
27	Inboard Yoke, Tube & Sleeve W.A.	I102467H	1	All
28	Splined Profile		1	All
51	Shield Cone 7 Rib		1	All
52	Screw - In Item 51		1	All
53	Bearing Ring	345980	1	All
54	Shield Support		1	All
55	Safety Chain		1	All
56	Inner Shield Tube W/Cap	182890	1	All
57	Outer Shield Tube W/Cap		1	All
58	Danger Decal, Inner - In Item 27		1	All
59	Danger Decal, Outer - In Item 57	340180	1	All
60	Reinforced Collar	268860	1	All

GEARBOX, DRIVE V240600



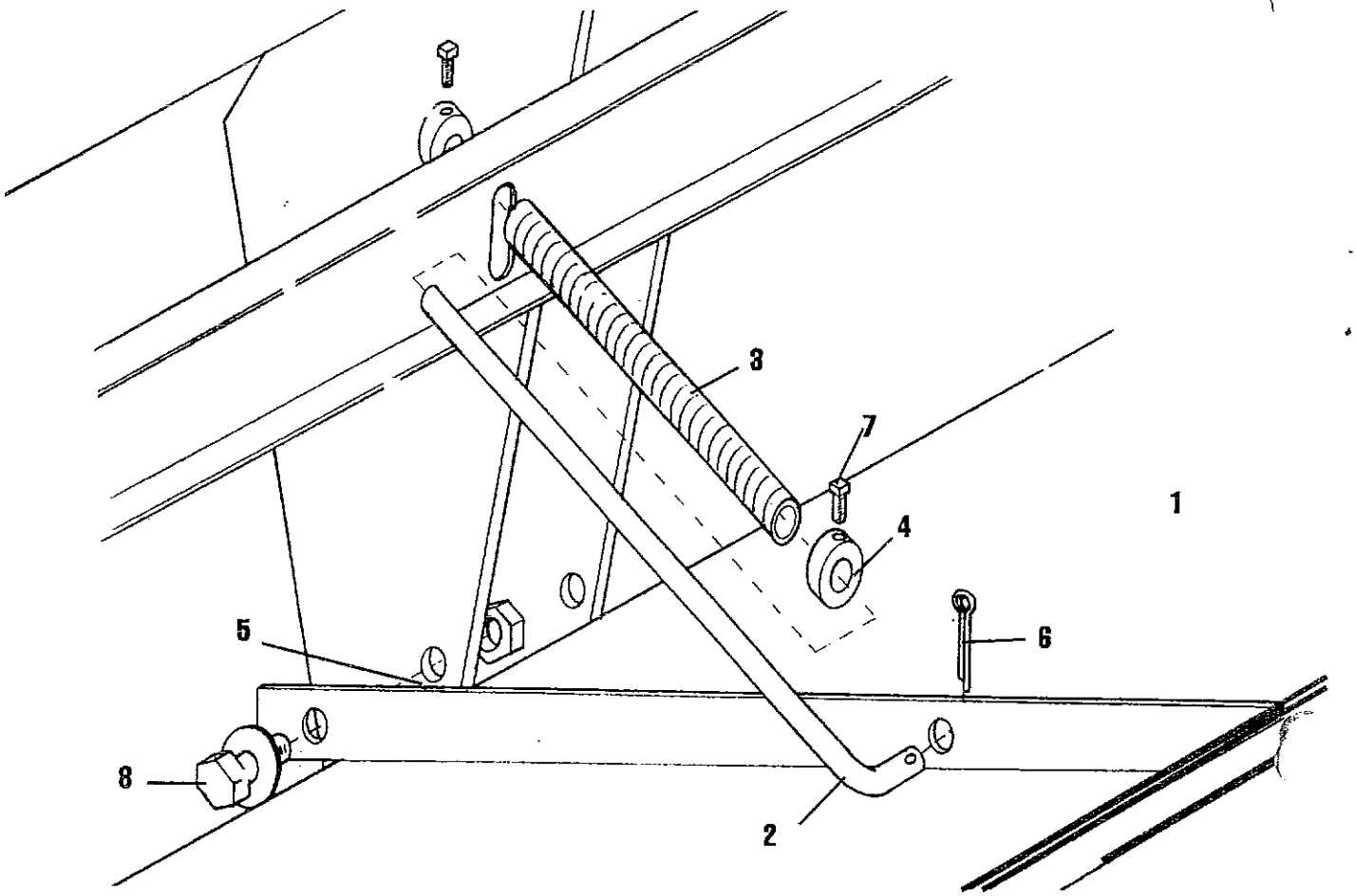
GEARBOX, DRIVE V240600

	Gear Box	V240600	1	All
1	Upper 1-3/4" Drive Shaft - 136"	V240927	2	288
-	Upper 1-3/4" Drive Shaft - 112"	V240619	2	240
-	Upper 1-3/4" Drive Shaft - 105 3/4"	V241628	2	216
-	Upper 1-3/4" Drive Shaft - 82 7/8"	V240825	2	180-C
2	Coupling Roller Chain #80-2	V240651	2	All
-	Connecting Pin	V240656	2	All
-	Coupling Assy., Shear Pin Half	V240640	2	All
3	Sprocket Coupling Half	V240695	2	All
4	Hex Sleeve Coupling Half	V240690	2	All
5	Bushing, Sintered Bronze (not Shown, Inside)	V240636	2	All
6	3/8" x 2" GR.5 Shear Bolt	V055918	2	All
7	Pillow Block Bearing Assembly	V240047	2	All
-	Bearing	V240061	2	All
-	Housing	V240063	2	All
8	Splined Sprocket	V240648	2	All
9	Output Seal 2-5/8" Output Shaft	V240887	2	All
10	Input Seal	V240886	1	All
-	Gearbox Bearing & Seal Kit 2-1/2" Output Shafts	V241179	1	All
11	Output Cap	V241273	1	All
12	Sems Cap Screw	184750	8	All
13	Integral Gear Shaft	V241272	1	All
14	Bearing Cone	V241091	1	All
	Bearing Cup	V241092	1	All
15	Bearing Cone	V241099	1	All
	Bearing Cup	V241098	1	All
	Shim .010	V241291	Var	All
16	(One piece with Item 13)			
17	Bear cone	V241096	2	All
	Bearing Cup	V241097	2	All
	Sim .010	V241285	Var	All
18	Housing	V241271	1	All
19	Shaft Assembly	V241084	1	All
20	Ring Gear	V241286	1	All
21	Ring Gear Plate		1	All
22	Bolt	V241294	8	All
	Lock Waher	V063136	8	All
23	Cap	V241093	1	All
	Gasket (.015)	V241085	Var	All
	Gasket (.005)	V241086	Var	All
	Gasket (.003)	V241087	Var	All
	Pipe Plug	V241292	3	All
24	Sems Cap Screw	236550	10	All



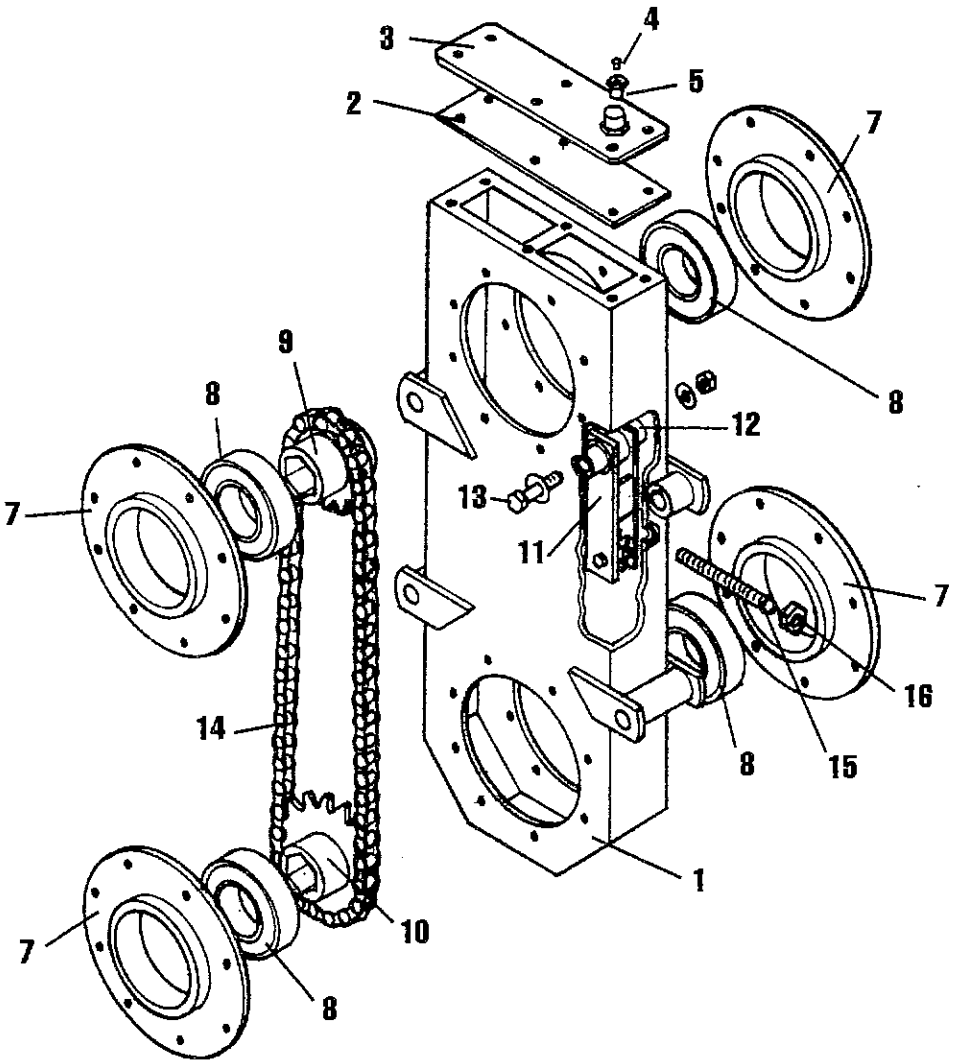
Ref. No.	Description	Part No.	No. Req.	Will Fit
1	Tailgate Weldment	V241248	3, 4	216, 288
-	Tailgate Weldment	V241167	4	240
-	Tailgate Weldment	V241192	2	180
2	Shield	V241725	2	288
-	Shield	V241865	2	240
-	Shield	V241938	2	216
2	Shield	V241946	2	180
3	U-Joint Shield	V240709	1	All
4	Shield Mounting Strip	V240398	2	All
5	Shipping Stands			

TAILGATE WELDMENT



Ref. No.	Description	Part No.	No. Req.	Will Fit
1	Tailgate Weldment	V241248	4	288
-	Tailgate Weldment	V241167	4	240
	Tailgate Weldment	V241248	3	216
-	Tailgate Weldment	V241192	2	180
2	Spring Rod	V240081	8	All
3	Spring	V240082	8	All
4	Spring Rod Collar	V240083	16	All
5	Bushing	V240056	8	All
6	3/16" x 1-1/2" Cotter Pin	V063747	16	All
7	5/16" Set Screw	V060219	16	All
8	1/2" x 1-1/2" Grade 5 Bolt	V057114	8	All
-	1/2" Flat Washer	V063538	8	All
-	1/2" Lock Nut	V066518	8	All

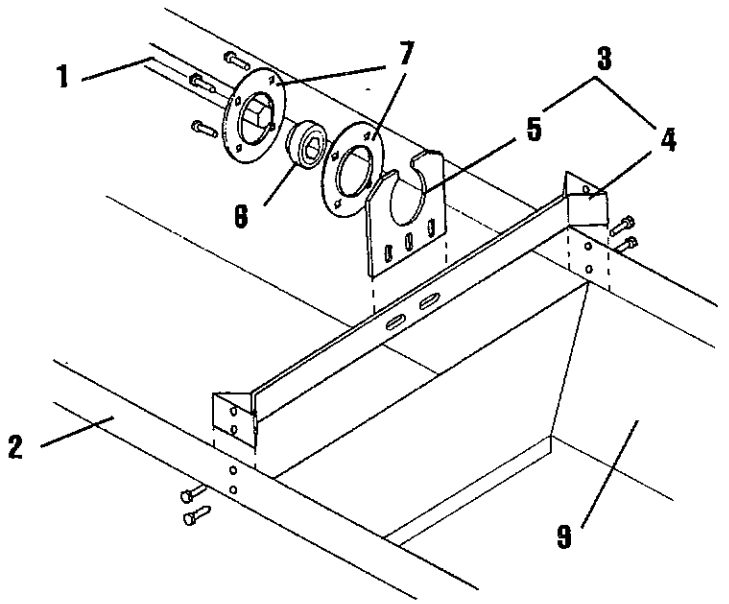
CHAIN CASE ASSEMBLY



CHAIN CASE ASSEMBLY

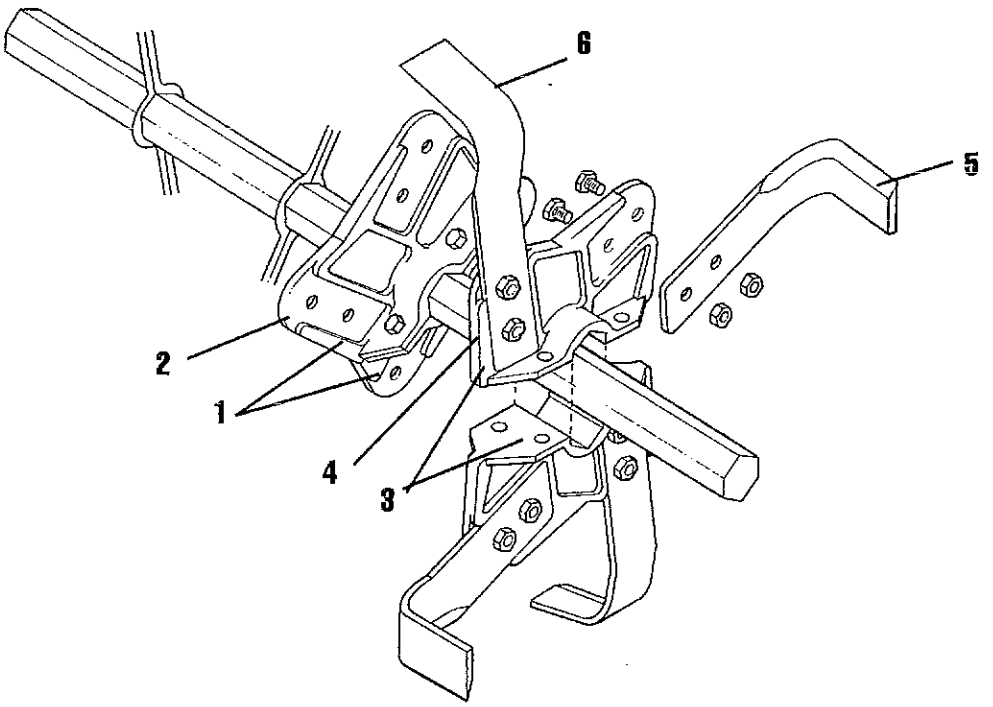
Ref. No.	Description	Part No.	No. Req.	Will Fit
	Chain Case Assembly	V240210	2	All
	Slow Down Chain Case Assembly 240 RPM	V240342	2	All
	Speed Up Chain Case 304 RPM	V240860	2	All
1	Weldment, Chain Case	V240226	1	All
2	Gasket, Chain Case Top	V240239	1	All
3	Weldment, Inspection Plate	V240235	1	All
4	Bushing, Reducing, 1/2" x 1/8" Blk.	V620030	1	All
5	Zero-Pressure Vent	V240761	1	All
7	Cover Plate, Chain Case Bearing	V240221	4	All
8	Bearing, Chain Case	V240214	4	All
9	Sprocket, 15 Tooth	V240215	1	All
	Sprocket, 14 Tooth	V240914	1	All
10	Sprocket, 19 Tooth	V240219	1	All
	Sprocket, 20 Tooth (Optional)	V240820	1	All
11	Idler Assy.	V240250	1	All
	Sprocket, Idler	V240260	1	All
	Bearing, Idler	V240262	2	All
	Ret. Ring	V240263	1	All
12	Bushing, Idler Pivot	V240257	1	All
13	Bolt, Idler, 5/8" x 4-5/8"	V057339	1	All
	Washer, Seal 5/8"	V240268	1	All
	Washer, Threadseal 5/8"	V240267	1	All
14	Chain, Roller	V240673	1	All
	Connector Link	V240763	1	All
	Offset Half Link - 2 Pitch	V240742	1	All
15	Set Screw, Idler Adj. 5/8" x 5"	V067709	1	All
16	Nutsert, Replaceable	V066553	32	All
-	3/8" x 1" Bolt (Not Shown)	V056910	32	All
-	Check Level Plug (Not Shown)	V628510	1	All
-	Drain Plug (Not Shown)	V628520	1	All

LOWER DRIVE SHAFT ASSEMBLY



Ref. No.	Description		Part No.	No. Reg.	Will Fit
	Lower 1-3/4" Hex Axle	(151")	V240928	2	288
	Lower 1-3/4" Hex Axle	(127")	V240620	2	240
-	Lower 1-3/4" Hex Axle	(115")	V241636	2	216
-	Lower 1-3/4" Hex Axle	(97-1/8")	V240750	2	180
2	Tailgate Weldment		V241248	4	288
-	Tailgate Weldment		V241167	4	240
-	Tailgate Weldment		V241192	2	180
-	Tailgate Weldment		V241248	3	216
3	Carrier Bearing Sub-Assembly (includes)		V240044	4	All
4	Carrier Bar Weldment		V240915	1	All
	(7/16" x 1" Hex bolt)		V057010	24	All
5	Mounting Plate		V240919	1	All
6	Bearing		V240061	1	All
7	Flangette		V240062	2	All
8	Anti-Wrap Shield (Not Shown)		V240682	2	All
9	Liner Assembly		V242411	3	288
-	Liner		V242365	3	288
-	Liner Strap		V242349	15	288
-	Liner Assembly		V242470	2	240
-	Liner		V242373	2	240
-	Liner Strap		V242349	14	240
-	Liner Assembly		V242497	2	216
-	Liner		V242420	2	216
-	Liner Strap		V242349	10/14	216
-	Liner Assembly		V242446	2	180
	Liner		V242390	2	180
-	Liner Strap		V242349	10/14	180
	(Fender Washer)		V067506	VAR	All
	(Carriage Bolts)		V050808	VAR	All

ROTOR ASSEMBLY



Ref. No.	Description	Part No.	No. Req.	Will Fit
1	Flat Rotor Blade Assembly	V240076	2/Row	All
2	Flat-Blade Holder Casting	V240066	2	All
3	Point Rotor Blade Assembly	V240075	2/Row	All
4	Point-Blade Holder Casting	V240065	2	
-	1/2" x 1-1/2", Grade 5 Bolt (Rotor Castings to Shaft)	V057114	4	
-	1/2" Locknut	V066518	2	
5	L.H. Hard-Surfaced Blade	V240067	2	
6	R.H. Hard-Surfaced Blade	V240068	2	
-	1/2" x 1-1/4" Bolt (Blade to Casting)	V057112	8	
-	1/2" Locknut	V066518	8	

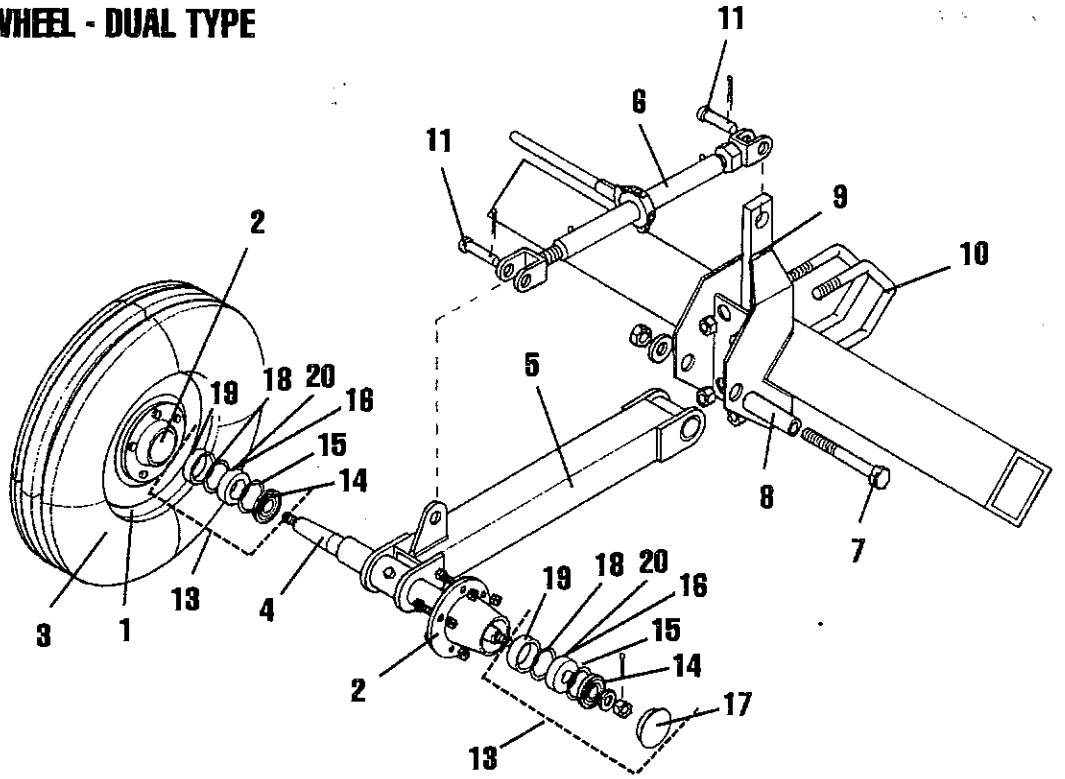
Optional Premium Blades:

L.H. Tungsten Carbide Hard Surfaced Blade	V241147
R.H. Tungsten Carbide Hard Surfaced Blade	V241148
Rotor Half Assembly - Point	V241269
Rotor Half Assembly - Flat	V241270
Complete Rotor Assembly - Point	V241275
Complete Rotor Assembly - Flat	V241276

Rotor and Blade Requirements:

Model 180 -	14 flat rotors;	14 point rotors;	56 LH blades;	56 RH blades
Model 216 -	17 flat rotors;	17 point rotors;	68 LH blades;	68 RH blades
Model 240 -	19 flat rotors;	19 point rotors;	76 LH blades;	76 RH blades
Model 288 -	21 flat rotors;	21 point rotors;	82 LH blades;	82 RH blades

FRONT GAUGE WHEEL - DUAL TYPE

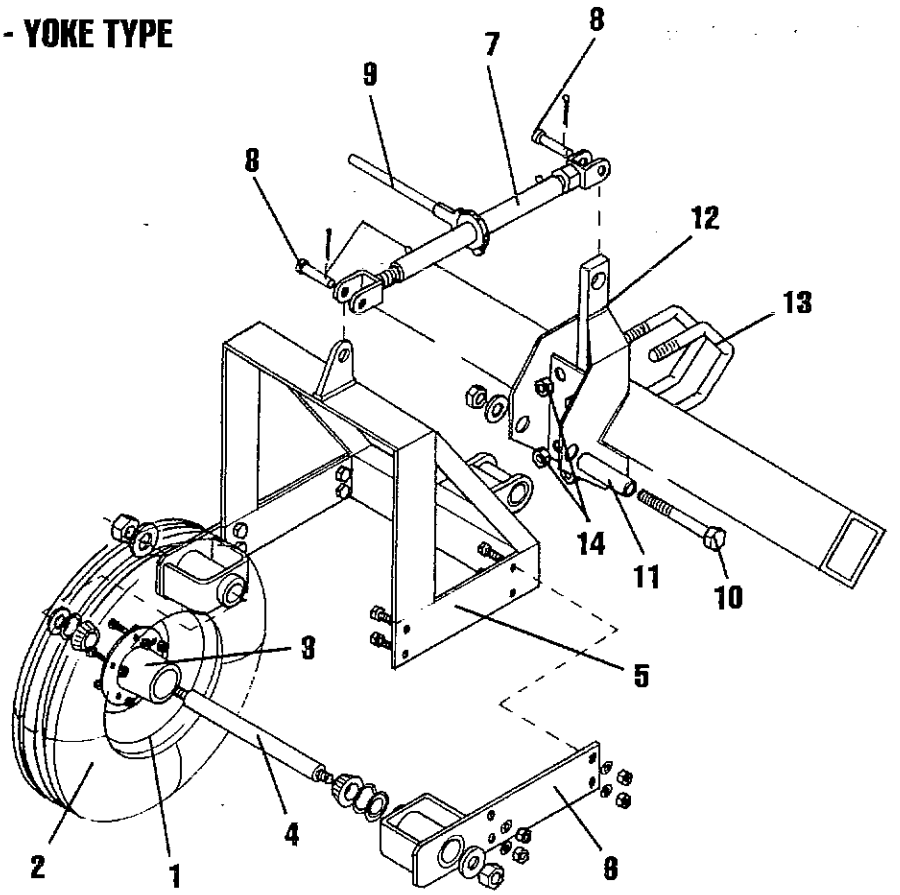


Ref. No.	Description	Part No.	No. Req.	Will Fit
-	Dual Gauge Wheel Assembly (Less Tires)	V240095	2	All
1	15 x 5" Wheel, 5-Bolt	V590400	2	
2	5-Bolt Hub Assembly	V023470	2	
3	7.60 x 15 Tire - 8 Ply Tubeless	V590673	2	
4	Dual Wheel Spindle	V240276	1	
5	Gauge Wheel Arm Weldment	V240271	1	
-	3/8" x 2-1/2" Bolt, Grade 5	V037630	1	
6	Ratchet Jack	V240476	1	
-	Handle	V172630	1	
7	1" x 6-1/2" Bolt (Arm to Mtg. Bracket)	V057652	1	
8	Pivot Bushing	V240312	1	
9	Mtg. Bracket Weldment	V240305	1	
10	V-Bolt, 3/4"	V240304	2	
11	3/4" Locknuts	V064541	4	
12	Pin	V240477	4	
13	Hub Repair Kit (includes parts 14-20)	V023520	1	
14	Triple Lip Seal	V023490	4	
15	Wear Sleeve	V023510	4	
16	Outer Bearing	V012630	4	
17	Hub Cap	V035420	2	
18	Inner Bearing	V044370	4	
19	InnerCup	V018850	4	
20	Outer Cup	V018860	4	

V241265 Heavy Duty Dual Gauge Wheel Assembly (Not Shown)

Spindle	V040846	1	All
6-Bolt Hub Assembly	V044115	2	All
Hub Repair Kit	V044116	1	All
Arm Weldment	V241264	1	All
15" Wheel	V590410	2	All
9.5L x 15, 8-Ply Tire	V590780	2	All
Complete Wheel & Tire Ass'y - 9.5L x 15, 8 Ply	V630037	2	All

FRONT GAUGE WHEEL - YOKE TYPE

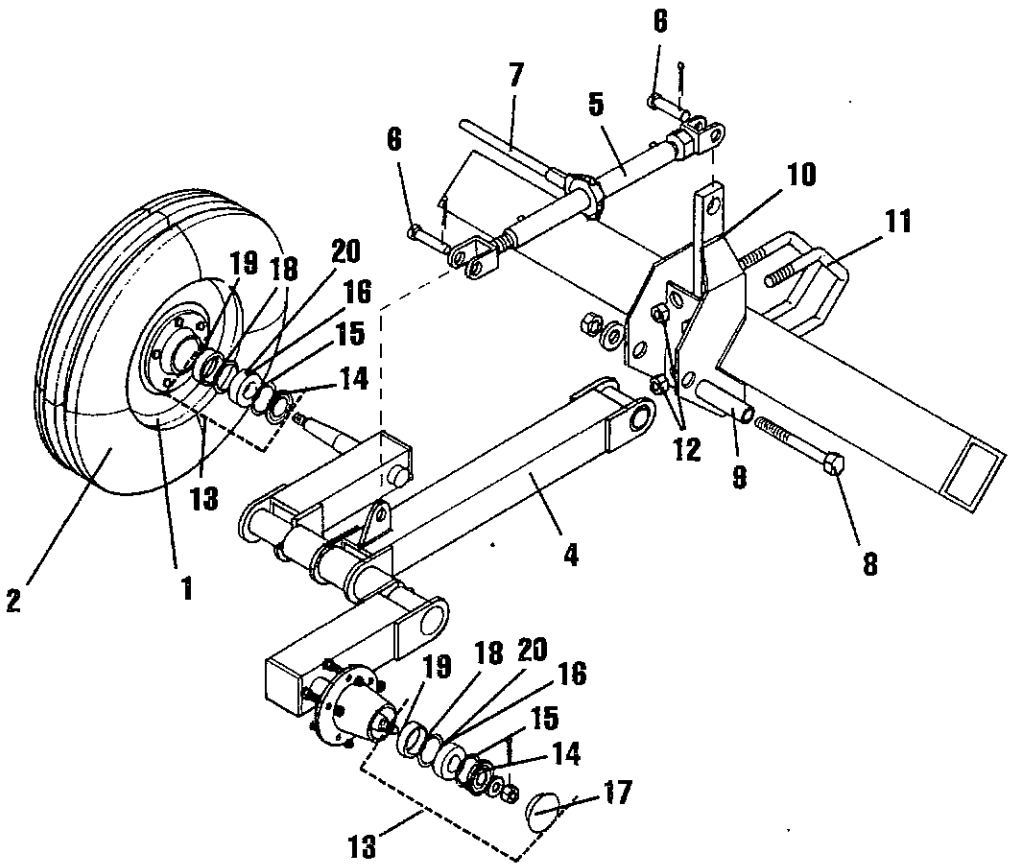


Ref. No.	Description	Part No.	No. Req.	Will Fit
	Yoke Gauge Wheel Kit (2 Assemblies)	V242217	1	All
1	15 x 8 Wheel, 6-Bolt	V590410	2	
2	9.5L x 15 Tire, 8-Ply	V590780	2	
3	Hub Assembly, 6-Bolt	V450804	2	
-	Hub Repair Kit	V450803	2	
-	Seal	V450843	2	
-	Cup	V450841	2	
-	Cone	V450842	2	
-	7/8" Slotted Hex Nut	129830	4	
4	Spindle	V450806	2	
5	Yoke Weldment	V241997	2	
6	Spindle Support Weldment	V240905	2	
7	Ratchet Jack	V240476	2	
8	Pin	V240477	4	
9	Handle	V172630	2	
10	1" x 6-1/2" Pivot Bolt GR.5	V057652	2	
11	Pivot Bushing	V240312	2	
12	Mounting Bracket	V240305	2	
13	3/4" V-Bolt	V240304	4	
14	3/4" Locknut	V064541	4	

For 1990 and Later Productions:

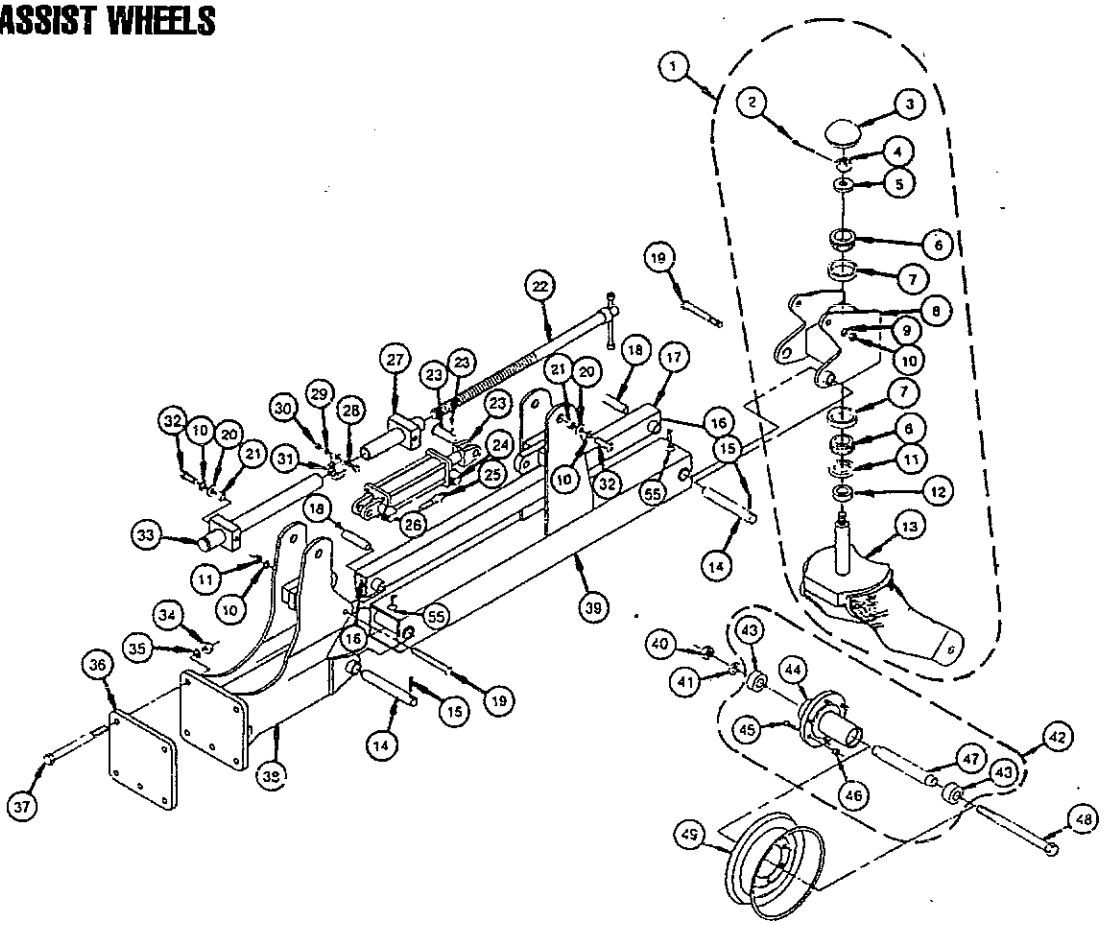
Yoke Gauge Wheel Kit (2 assemblies) - V242217, the only difference is the Yoke weldment. The new yoke is - V241997.

FRONT GUAGE WHEEL - WALKING BEAM



Ref. No.	Description	Part No.	No. Req.	Will Fit
	Walking Beam Gauge Wheel Kit (2 Assemblies)	V240893	1	All
1	15 x 5 Wheel, 5-Bolt	V590400	2	
2	7.60 x15 Tire, 8-Ply	V590673	2	
3	Hub Assembly, 5-Bolt	V023470	2	
4	Gauge Wheel Weldment, LH	V240973	2	
4	Gauge Wheel Weldment, RH	V240974	2	
5	Ratchet Jack	V240476	2	
6	Pin	V240477	4	
7	Handle	V172630	2	
8	1" x 6-1/2" Pivot Bolt GR. 5	V057652	2	
9	Pivot Bushing	V240312	2	
10	Mounting Bracket	V240305	2	
11	3/4" V-Bolt	V240304	4	
12	3/4" Lock Nut	V064541	4	
13	Hub Repair Kit (includes parts 14-20)	V023520	2	
14	Triple Lip Seal	V023490	4	
15	Wear Sleeve	V023510	4	
16	Outer Bearing	V012630	4	
17	Hub Cap	V035420	2	
18	Inner Bearing	V044370	4	
19	Inner Cup	V018850	4	
20	Outer Cup	V018860	4	

REAR LIFT-ASSIST WHEELS



Note: (1) Grease zerk at 16, several times daily during operation.
(2) Lubricate pin, 14, frequently and check to see that the roll pin, 15, has not fallen out.

ITEM	PART#	DESCRIPTION	QTY
1	358740	Tail Section and Yoke Assembly (Less Items 9 and 10)	1
2	124340	1/4" x 2-1/2" Cotter Pin	1
3	358750	Dust Cap	1
4	E552084	1-1/2" Slotted Jam Nut	1
5	358760	11/16" O.D. x 1-1/2" I.D. x 3/4" Washers	1
6	358770	Bearing	2
7	358780	Cup	2
8	358790	Tail Section (Includes Cups Item 7)	1
9	036800	3/4" Lock Washer	6
10	036750	3/4" Hex Nut	1
11	358800	Seal	1
12	358810	2-1/2" O.D. x 2" I.D. x 3/4" Bearing Spacer	1
13	358820	Yoke (Includes Items 4 &12)	1
14	358830	1-1/4" x 8-3/4" Pin	2
15	047250	3/8" x 2" Groove Pin	2
16	049180	1/4" - 28 UNF Grease Fitting, Straight	2
17	358840	Connecting Tube x 63"	1
18	358850	1" O.D. x 3/4" I.D. x 3-15/16" Long, Bushing	2
19	E672088	3/4" x 6" Hex Bolt	2
20	034800	3/4" Flat Washer	4
21	358990	1-1/4" O.D. x 3/4" I.D. x 5/8" Long, Bushing	4
22	358860	Adjusting Screw	1
23	358870	3" x 10" Hydr. Cylinder w/ Fittings &Pins	1
24	166230	1/2" NPT 90° Elbow (Male to Female)	1
25	351910	3/8" Hydr. Hose w/ 1/2" NPT Fittings x 132"	1

ITEM	PART#	DESCRIPTION	QTY
26	166230	1/2" NPT 90° Elbow (Male to Female)	1
27	358880	Adjusting Screw Slide	1
28	011370	3/8" x 1-1/2" Hex Bolt	1
29	021180	3/8" Lock Washer	1
30	027260	3/8" Hex Nut	1
31	358980	1-3/8" Lock Nut w/ Lock Tabs	1
32	990540	3/4" x 2" Hex Bolt	4
33	358890	Adjusting Screw Housing	1
34	E552017	7/8" Hex Nut	5
35	003460	7/8" Lock Washer	5
36	V240983	Mounting Plate	1
37	V061720	7/8" x 10-1/2" Hex Bolt Grade 8	5
38	358900	Narrow Mounting Bracket	1
39	358910	Main Frame x 63"	1
40	J14H805	1" Hex Nut	1
41	003350	Lock Washer	1
42	358920	6-Bolt Hub Assembly	1
43	358930	2.440" O.D. x 1.245" I.D. Sealed Bearing	2
44	358940	6-Bolt Hub	1
45	V031020	1/2"-20 UNF x 1-5/8" Knurled Wheel Bolt	6
46	020730	1/2"-20 UNF Wheel Nut	6
47	358950	1-1/2" O.D. x 1" I.D. x 10.120" Long, Bearing Spacer	1
48	358960	1" x 12-1/2" Hex Bolt	1
49	V590410	Wheel, 15" x 8", 6-Bolt	1
	V240079	Complete Purchased w/ Components	