



**6" INTAKE DRIVE  
TRANSPORT AUGER**

MODEL & LENGTH: \_\_\_\_\_  
SERIAL NUMBER: \_\_\_\_\_  
DATE PURCHASED: \_\_\_\_\_

**MANUAL**



## Cardinal™ Brand Grain Handling Equipment One Year Limited Warranty

Novae Corp. warrants to the original owner that your Cardinal equipment will be free from defects in material and workmanship for the one (1) year period commencing with the date of purchase, except as herein limited. The obligation of this warranty is limited to repairing or replacing any part or parts which, in the opinion of Novae Corp. is/are defective in material or workmanship under normal use and service.

### 90 Day Limited Warranty

Excluded from this One Year Limited Warranty are driveline components such as gearboxes, PTO drive shafts, chain and belt drives, and universal joints, which are warranted for a 90 day period commencing with the date of purchase.

### Warranty Validation

Your new equipment should be registered with Novae Corp within ten (10) days of the original purchase. Warranty registration forms are available on the web at [www.cardinalgrain.com](http://www.cardinalgrain.com) or by calling customer service at 888-400-3545 to have one mailed to you.

### How to Obtain Service

1. All warranty claims must be presented to Novae Corp. and proper arrangements must be made and approved by Novae Corp. prior to any work being done.
2. All warranty repairs must be performed at Novae Corp. unless prior approval is obtained from Novae Corp. In certain cases, Novae Corp may, at its sole discretion, elect to have warranty work performed by a qualified repair facility.
3. Novae Corp. will not be obligated in any way to pay for: repairs made without specific advance approval, labor charges in excess of those deemed reasonable by Novae Corp., or for any part costs in excess of the cost if Novae Corp. had supplied the parts. The cost of any replacement items will be limited to the amount of the original cost of that item as installed and sold by Novae Corp.
4. Any charges for: overtime labor, service calls, towing charges, expediting, freight or transportation costs are the sole responsibility of the consumer and will not be paid by Novae Corp.

### Items Not Covered In This Warranty

1. Wheels and Tires. Contact the tire manufacturer for warranty information
2. Running Gear including axle and suspension assemblies. Present all claims directly to the axle manufacturer or their authorized dealers.
3. Paint finish and durability are not covered under this warranty.
4. Damage or defects resulting from misuse ( including, but not limited to, improper operation, negligence, alteration, accident or lack of maintenance.)
5. Maintenance items that are worn through normal use.
6. Damage caused by loose nuts, bolts or screws including improperly torqued wheel lug nuts.
7. Damage caused by improper hitching or improper installation of drive motors.
8. Loss of time, inconvenience, loss of equipment use, rental or substitute equipment, loss of revenues, or any other losses.
9. Damage or loss resulting from towing equipment that exceeds the tow vehicle manufacturer's specific towing limitations.
10. Any travel time or expenses, such as food, fuel, lodging, etc., incurred to obtain service.

Any express warranty not provided herein, and any remedy for breach of contract which, but for this provision, might arise by implication or operation of law, is hereby excluded and disclaimed. The implied warranties for merchantability and of fitness for a particular purpose are expressly limited to a term of one (1) year. Under no circumstances will Novae Corp. be liable to purchaser or any other person for any special, incidental, or consequential damages, whether arising out of a breach of warranty, breach of contract or otherwise. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

Novae Corp. neither assumes nor authorizes any other person to give any other warranty on its behalf. This warranty is not transferable from the original owner.

**Cardinal™ Equipment Warranty Registration Form**

Model: \_\_\_\_\_ Date: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Owners Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Street: \_\_\_\_\_

City, State Zip: \_\_\_\_\_

Primary Use: \_\_\_\_\_

Store and Location where purchased: \_\_\_\_\_ Delivery Date: \_\_\_\_\_

Store Representative: \_\_\_\_\_ Owner Signature: \_\_\_\_\_

(Fold to conceal information, tape closed, affix postage and mail)

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State Zip: \_\_\_\_\_

PLACE  
POSTAGE  
HERE

**NOVAE CORP. / CARDINAL GRAIN  
607 S CHAUNCEY ST  
COLUMBIA CITY, IN 46725**



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## TABLE OF CONTENTS

SAFETY GUIDELINES & OPERATIONAL INFORMATION.....	PAGE 4-7
MAINTENANCE & LUBRICATION.....	PAGE 8
SPECIFICATIONS.....	PAGE 9
TUBE , SCREW & COMPONENTS DIAGRAM.....	PAGE 10
EACH INDIVIDUAL AUGER LAYOUT.....	PAGE 11-15
TUBE AND SCREW JOINING.....	PAGE 16
TOP END AND TRUSS DETAILS.....	PAGE 17
CHASSIS ASSEMBLY INSTRUCTION.....	PAGE 18
CHASSIS.PARTS.LIST.&.DIAGRAM.....	PAGE 19
INTAKE ASSEMBLY INSTRUCTIONS.....	PAGE 20
PTO.AND.ELECTRIC.DRIVE..DETAILS.....	PAGE 21
PTO SHAFT AND GEAR BOX PARTS BREAKDOWN.....	PAGE 22







# READ AND UNDERSTAND THIS MANUAL BEFORE OPERATING!



**CAUTION!** This symbol is used to call your attention to specific instructions relating to safety. It is recommended that you review the entire contents of this manual, paying particular attention to items preceded by this symbol.

**FAILURE TO HEED THESE INSTRUCTIONS CAN RESULT IN PERSONAL INJURY!**

## OPERATOR QUALIFICATIONS



Operation of this farmstead equipment shall be limited to competent and experienced persons. In addition, anyone who will operate or work around power equipment must use good common sense. In order to be qualified, he must also know and meet all other requirements, such as:



1. Some regulations specify that no one under the age of 16 may operate power machinery. This includes farmstead equipment. It is your responsibility to know what these regulations are in your own area or situation.



2. Current OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved."\*



3. Unqualified persons are to stay out of the work area. The "Work Area" is defined as any area within 20 feet of storage bins or buildings or the loading or unloading system.



4. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.

\*Federal Occupational Safety & Health Standards for Agriculture Subpart D, Section 1928.57 (a) (6)

## MACHINE INSPECTION

After completion of assembly and before each use, inspection of the equipment is mandatory. This inspection should include but not be limited to:



1. Check to see that all guards listed in the assembly instructions are in place and secured, and functional. PTO shields must rotate easily.



2. Are all fasteners tight?  
3. Are all belts and chains properly adjusted? (See Service Section.)  
4. Check oil levels in drive boxes. (See Service Section.)

## DRIVES AND LOCK OUT

It is essential to inspect your drive before adding power and know how to shut down in an emergency. Whenever you must service or adjust your equipment, make sure you shut down and lock out your power source.

### A. PTO

#### PTO—Shaft



1. Never use a PTO shaft without a rotating shield in good working order. Also see that the power drive system safety shields are in place at the equipment gear box and the power source.



2. Be certain that the PTO shaft is securely attached to the gear box and the power source.
3. Do not exceed maximum recommended operating length or angularity of PTO shaft.
4. Before starting power source, be certain power to PTO is off.
5. Stay out of the hazard area of an operating PTO.



### Lock Out



1. Remove ignition key or coil wire from power source. If this is impossible, remove the PTO shaft from the work area.

### B. Electric

#### Power Source



1. Electric motors and controls shall be installed by a qualified electrician and must meet the standards set by the National Electrical Code and all local and state codes.



2. A magnetic starter should be used to protect your motor.



3. You must have a manual reset button.



4. You must disconnect power before resetting your motor.



5. Reset and motor starting controls must be located so that the operator has a full view of the entire operation.



6. Keep all guards and shields in place.



A main power disconnect switch capable of being locked only in the Off position shall be provided. This shall be locked whenever work is being done on the equipment.



#### Power Source

### C. Gasoline Engines

1. Never attempt to adjust or service engine while it is in operation.
2. Shut down and allow engine to cool before filling with fuel.
3. Keep all guards and shields in place.

1. For engines with rope or crank start, remove spark plug wire or spark plug.
2. For engines with electric start, remove ignition key, spark plug wire or spark plug.

### D. HYDRAULIC POWER



1. Refer to the above rules and regulations applicable to the power source operating your hydraulic drive.

2. Do not disconnect hydraulic lines while system is under pressure. Consult your hydraulic systems operators manual for proper procedures.

3. Keep all hydraulic lines away from moving parts.



### Lock Out



Refer to the above rules and regulations applicable to the lock out of the power source operating your hydraulic drive.



## FULL LOAD OPERATING PROCEDURES

During the regular operation of your farmstead equipment, one person shall be in a position to monitor the operation.

It is also good practice to visually inspect the equipment periodically during the actual operation. You should be alert for unusual vibrations, noises, and the loosening of any fasteners.

### Caution:



1. Observe work area restrictions.
2. Keep all safety shields and devices in place.
3. Make certain everyone is clear before operating or moving farmstead equipment.



4. Keep hands, feet, and clothing away from moving parts.
5. Shut off power to adjust, service, or clean.

## SHUTDOWN

### A. Normal Shutdown

Make certain that the equipment is empty before stopping the unit.

Before the operator leaves the work area, the power source shall be locked out.

### B. Emergency Shutdown

1. Should the equipment be immediately shut down under a load—disconnect and lock out the power source. Clear as much grain from hopper and auger as you can. Never attempt to restart when full.
2. Reconnect power source and clear the equipment gradually.
3. Starting equipment under load may result in damage to equipment. Such damage is considered abuse of the equipment.

## WORK AREA SAFETY AND DIAGRAMS



1. Designated work areas shall be marked off with colored nylon or plastic rope hung as portable barriers to define the designated work areas.



2. Under no circumstances should persons not involved in the operation be allowed to trespass into the work area.

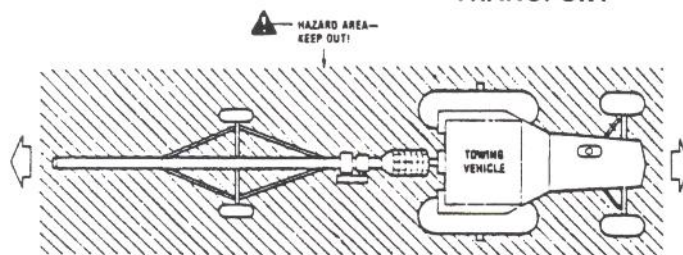


3. It shall be the duty of all operators to see that children and/or other persons stay out of the work area: Trespass into the work area by anyone not involved in the actual operation, or trespass into a hazard area by anyone, shall result in an immediate shut down by the operator.

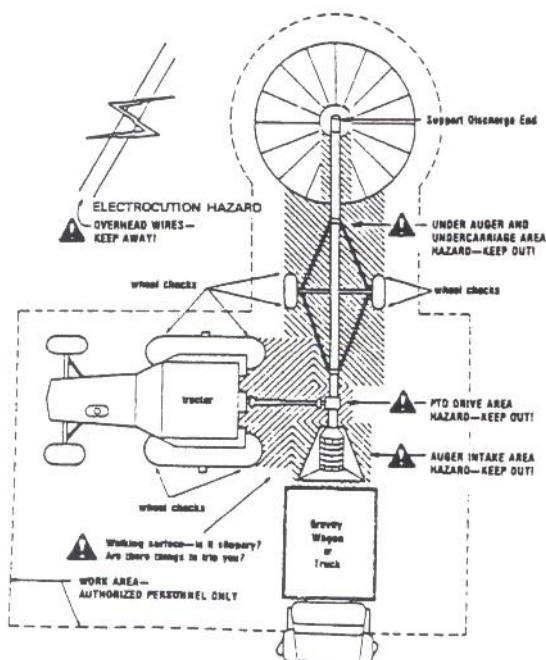


4. Prior to start up and during operation, it shall be the responsibility of all operators to see that the work area has secure footing, is clean and free of all debris and tools which might cause accidental tripping and/or falling.

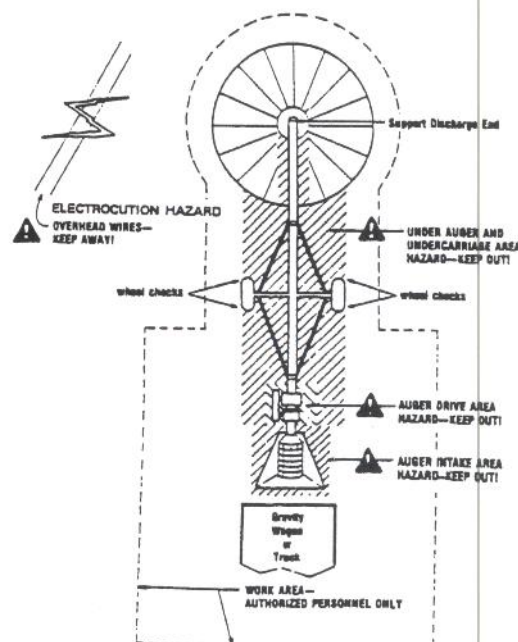
## TRANSPORT



## PTO DRIVE



## GAS, ELECTRIC AND HYDRAULIC





## MANUAL WINCH OPERATION



**READ BEFORE EACH USE!  
SEE WINCH**

1. This winch is equipped with a brake that is actuated by turning the handle. Turn the handle clockwise to raise the auger, and counterclockwise to lower the auger. The brake is designed to hold the auger in position.
2. **CAUTION:** The brake is not fully locked until the handle is turned clockwise far enough to hear two clicks.
3. **CAUTION:** The brake disc will get HOT when lowering auger. If brake is smoking, or squeals, stop lowering and let the brake cool for 15 minutes. **DO NOT TOUCH BRAKE!**
4. **NEVER CONTINUE TURNING THE HANDLE COUNTERCLOCKWISE IF THE AUGER DOES NOT LOWER; THIS WILL DISENGAGE THE BRAKE MECHANISM.**
5. Brake disc inspection (items 9). To physically check the wear on these parts, they must be removed from the winch. Measure the discs for wear and if they are worn to 1:16 of an inch, replace both discs.



**READ MANUAL SHIPPED IN WINCH CARTON.**

## TRANSPORTING AND POSITIONING



Your auger is designed for maximum balance when empty and in down position. Auger must be empty and in lowest position before moving. Partially filled augers can be dangerous and difficult to handle. Before transporting on county or state highways, contact your local sheriff's department or State Highway Patrol office for laws governing the transportation of the equipment in question. Care should be exercised when traveling on rough and uneven terrain and in turning and cornering to avoid upsetting. Auger is designed for transport at tractor speeds. Be alert to overhead obstructions and electrical wires and devices.



**ELECTROCUTION HAZARD  
OVERHEAD WIRES  
KEEP AWAY**



**ELECTROCUTION HAZARD!  
THIS MACHINE IS NOT INSULATED. KEEP AWAY FROM OVERHEAD WIRES AND DEVICES. ELECTROCUTION CAN OCCUR WITHOUT DIRECT CONTACT. FAILURE TO KEEP AWAY WILL RESULT IN SERIOUS INJURY OR DEATH!**

Leave auger in the full down position while moving. Raise auger to necessary height and back into position at bin or building making sure all persons are clear of the hazard area. Auger must be hooked up to the tractor for transport, raising and placement. **DO NOT push or pull in any other manner.** Operation site should be firm and level. When in place, unhook from tractor, lower to final position, remove hitch and install the proper hopper. Install the necessary wheel chocks, supports and anchors needed to secure auger. When operation is complete, move auger slowly out of the working position with towing vehicle--not by hand. If not in transport position, lower auger to the full down position immediately upon clearance of any obstruction. Transport to the new work area or storage area. We recommend that the auger be stored in the full down position with the intake end anchored.

## BEFORE OPERATING AUGER



Make certain everyone is clear of the auger before starting or moving it.



Electric drives should have manual resets on auger. Wiring must be done by a qualified electrician making certain it meets all safety laws and ordinances.



Make certain all guards and shields are in place before starting.

**CAUTION:** Auger should be securely fastened to bin or building during operation or when raised and unattended.

## BREAK-IN INSTRUCTIONS

Augers should be broken in properly and never run empty. Do not try out new auger prior to season by running it empty. This will result in serious damage to your auger.

Idle engine and be sure a supply of grain is available. Slowly engage clutch lever and increase R.P.M. to handle grain supply. New augers should always be run at reduced capacity until tube and screw become polished, therefore auger should be broken in at reduced RPM's. This would also be true of an auger which has not been used for some time.

## ANGLE OF OPERATION

Your auger is designed to operate between 15° and 45°. Capacity decreases and power requirements increase as the angle of operation increases, therefore the lower the angle of operation the greater the efficiency of the auger.

## RAISING AND LOWERING



**FAILURE TO HEED THESE INSTRUCTIONS CAN RESULT IN PERSONAL INJURY.**

1. Never fully extend the cable. Always keep three (3) complete turns of the cable around the drum.
2. Always inspect the cable for damage prior to each use. Replace frayed or kinked cable.
3. The operator must keep all persons clear of the auger when it is being raised or lowered.
4. Never operate winch with wet or oily hands and always use a firm grip on the handle.
5. Auger should be in the down position or secured to bin or building when unattended.
6. Always keep the winch lubricated per lubrication instructions. Remember that worn parts cause unsafe conditions.
7. Whenever raising auger with a manual winch, listen for a "clicking sound" of the ratchet. If the clicking sound stops, keep a firm grip on the handle and return the auger to the full down position by turning the handle counterclockwise. Repair the ratchet. There will not be a clicking sound when the auger is being lowered.
8. The winch is designed for raising the auger weight only! **DO NOT LIFT OTHER ITEMS WITH THE AUGER!**



## -MAINTENANCE AND LUBRICATION-

### -Periodic Inspection-

The auger is subject to some vibration. Even though all the nuts are locking types, the auger should be checked at least once a week during operation for loose bolts and nuts. Especially check in critical areas; such as the tube joiners, chassis hook-up, drive shafts, PTO shafts, trailer hitches, ect. This is especially true with a new auger. One mistightened bolt could cause a lot of down time. Check your new auger closely.

### -Lubrication-

Lubrication and care of this auger will determine its useful life. The more care, the greater its life.

PTO SHAFTS-Grease the fittings on each yoke each eight hours of operation and right before storage. Pull the sliding members apart and grease the surface of the solid square shaft at least twice a year.

GEARBOX-Fill with EP80 or EP90 Gear Oil. Check level through plug in the side of gearbox housing. Be sure vent plug is in the top of the gearbox.

INTAKE DRIVE HOUSING-This unit has a fixed center distance (no adjustment) roller chain drive. Fill this housing with approximately one (1) pint of SAE # 10 or #20 motor oil. There is a level check plug on the lower part of the housing. Be sure the vent plug is in the top of the housing.

WHEELS-Repack each wheel hub at least once a year and check before transporting long distance. Lubricate each wheel right before storage. Periodically check the wheel bearings for excessive wear.

WINCH-All gears should have a film of grease on them at all times. The bushings should be wet with oil. Do not lubricate any part of the friction brake. (See instructions included in the winch carton.)



Shut off power to adjust, service or clean.

**-SPECIFICATIONS-**

WHEEL TREAD WIDTH -----66" ON 32' MODEL  
 75" ON 47'-52' MODELS  
 93" ON 57'-62' MODELS

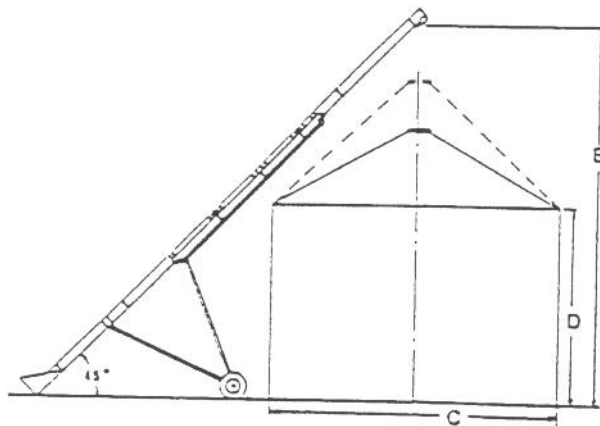
WHEEL BEARINGS ----- TAPERED ROLLER BEARING

AUGER RPM ----- 600

CAPACITY (BASED ON DRY  
 CORN @ 20 DEGREE  
 ELEVATION) ----- 1270 BU/HR

Recommended Electric Horsepower

32'		47'		52'		57'		62'	
Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
3	5	7.5	10	7.5	10	10	15	10	15



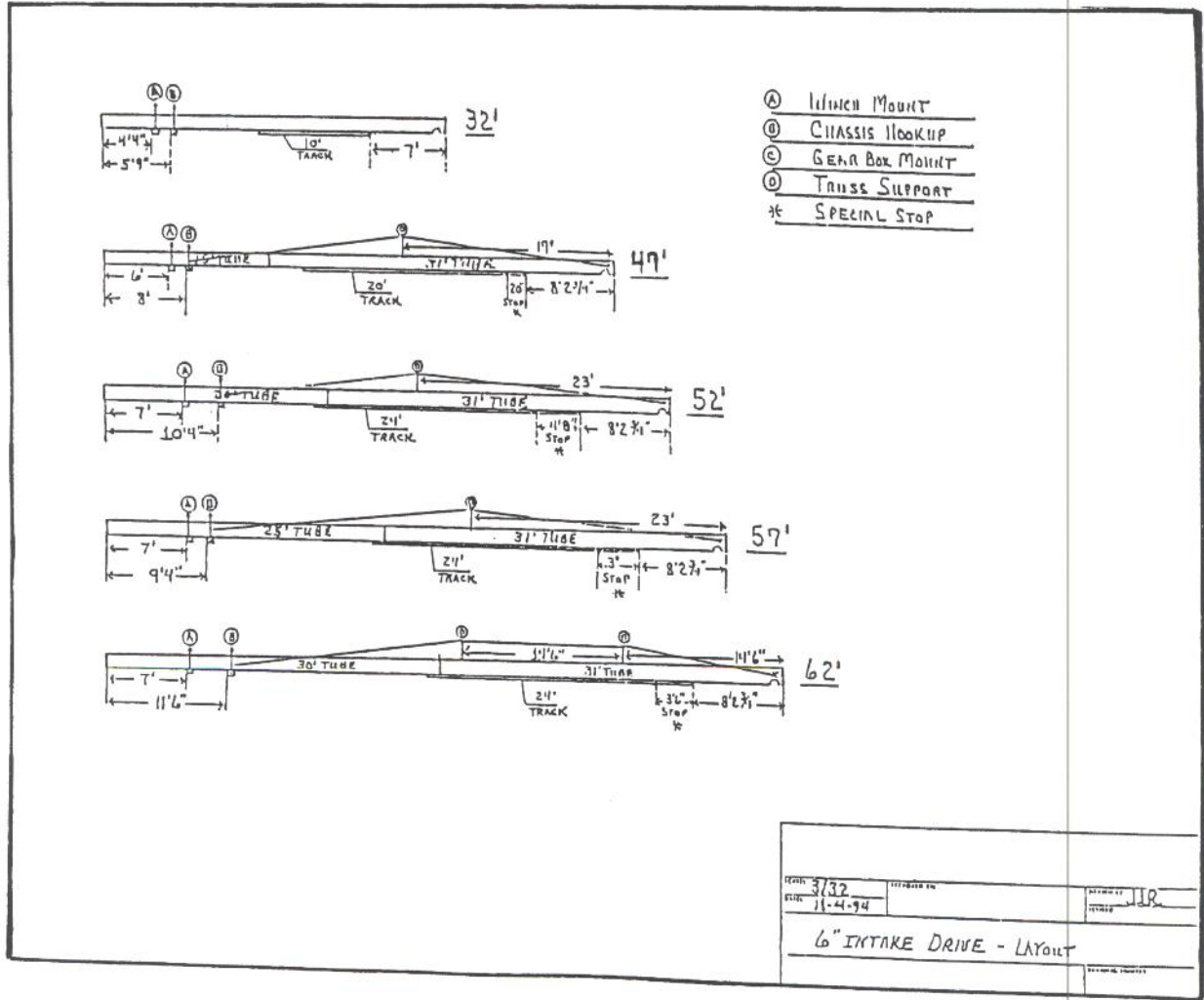
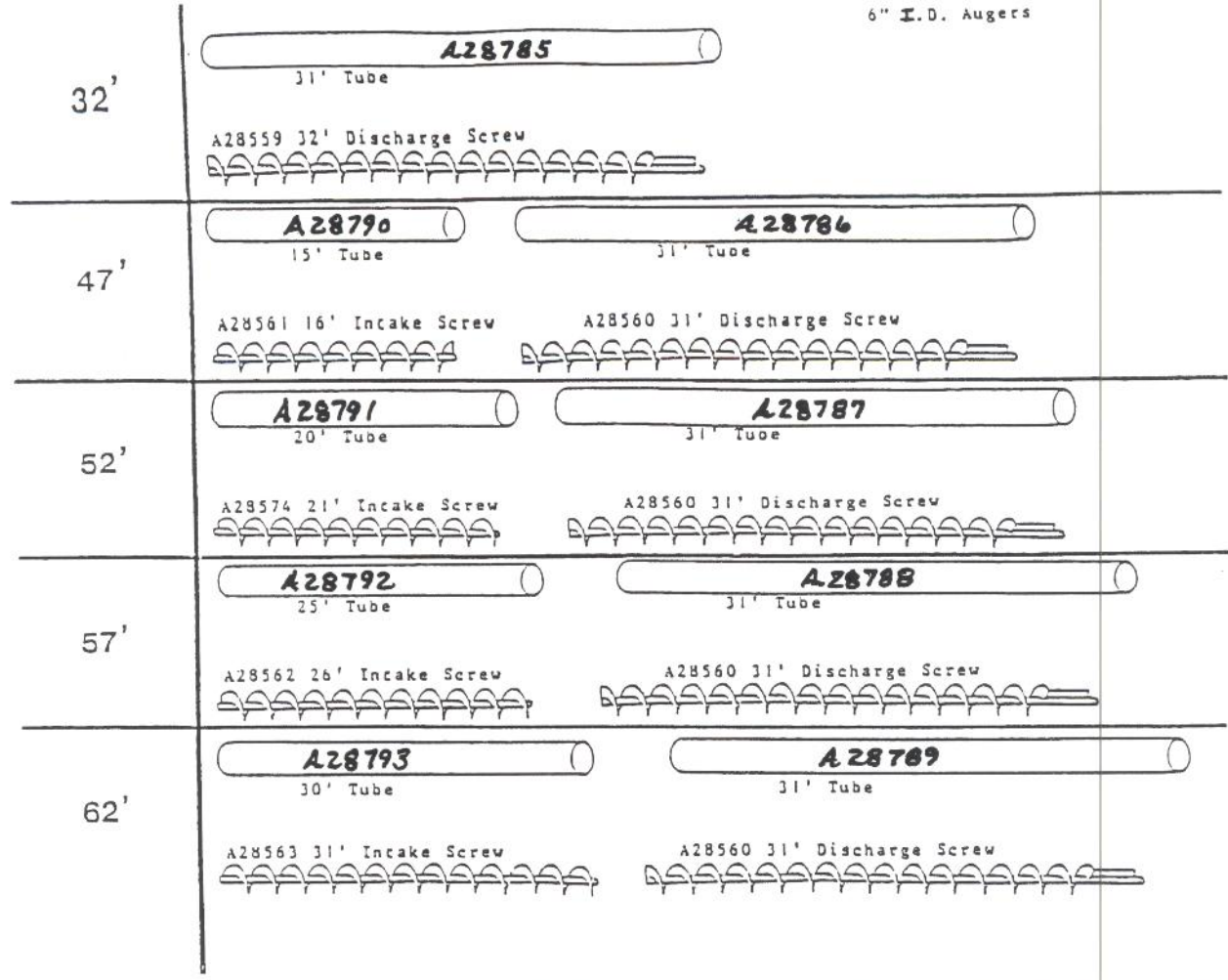
**APPLICATION CHART**

LENGTHS	32'	47'	52'	57'	62'
BIN DIA.	19'	24'	31'	32'	36'
EAVE (MAX)	13.5'	21'	21.5'	25'	27'
DISCHARGE HGT. (MAX)	22'	32'	36.5'	39.25'	44'

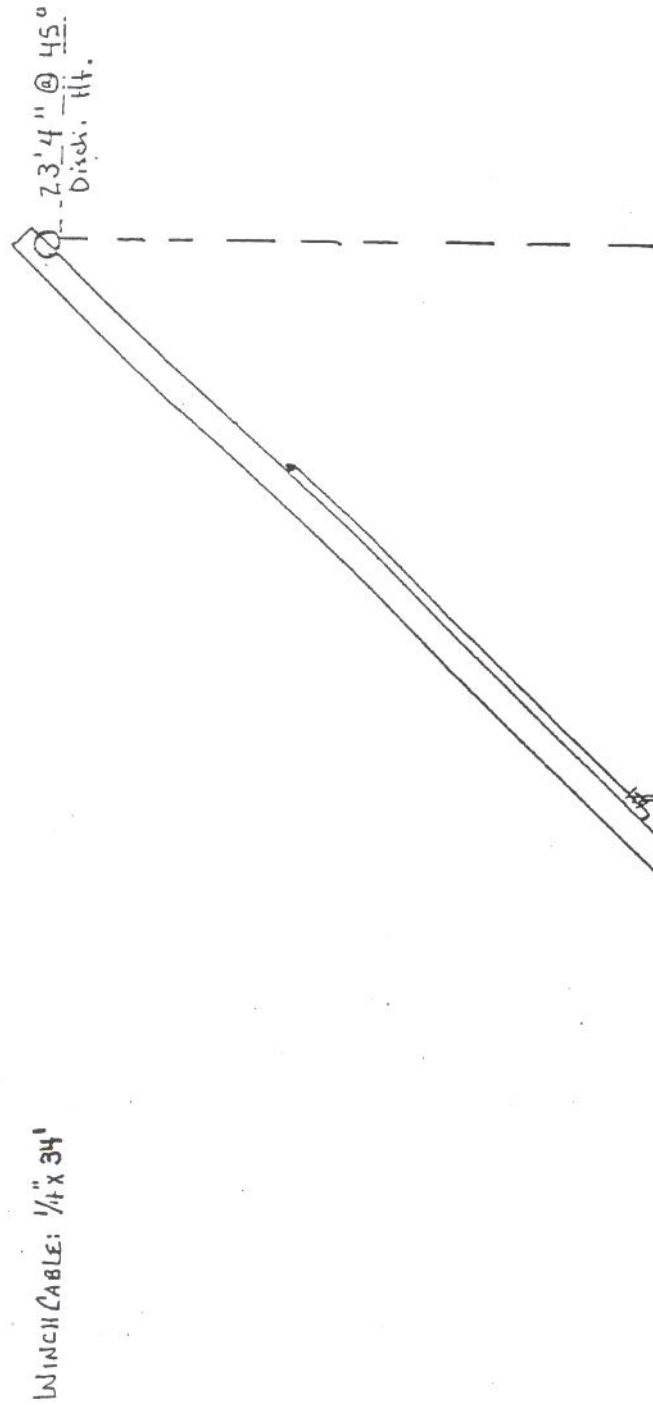
**TRANSPORT HEIGHTS**

LENGTH	32'	47'	52'	57'	62'
6"	9'0"	10'5"	10'0"	12'5"	13'7"





1/8" SCALE



WINCH CABLE: 1/4" x 3/4"

23.4" @ 45°  
Disk. Ht.

11' - 2 1/8" o.d.  
LIFT

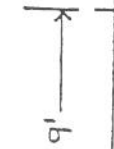
9' 2 1/8"  
2 3/8" o.d. SHAFT

6.575"  
AXLE

10' 6"

8' 6"

8' 7"  
@ 15°



15'

5' 4"  
4 1/4"

# CARDINAL GRAIN SYSTEMS

Scale: 1/4" = 1' AFFIXED SH  
 Date: 11-11-94

Drawn by: LUR  
 Title: 11-11-94

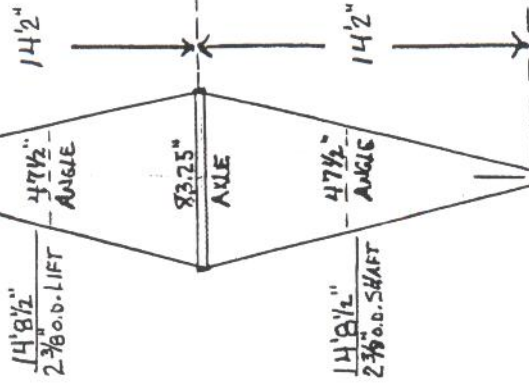
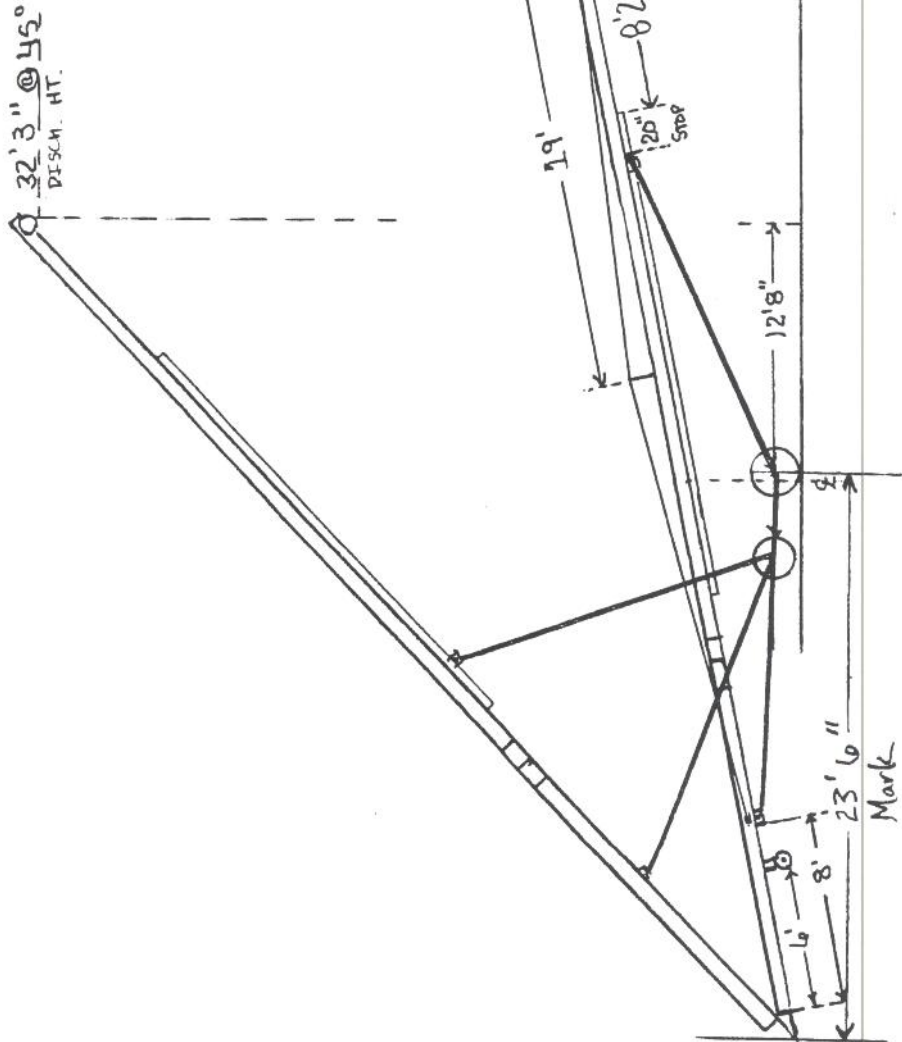
6" x 32" INTAKE DRIVE

DESIGNED IN U.S.A.



WINCH CABLE: 1/4" x 52' (SINGLE STRUNG)

TRUSS CABLE: 1/4" x 39'



# CARDINAL GRAIN SYSTEMS

SCALE: 1/8" = 1'

APPROVED BY: *JOB*

DATE: 7-27-93

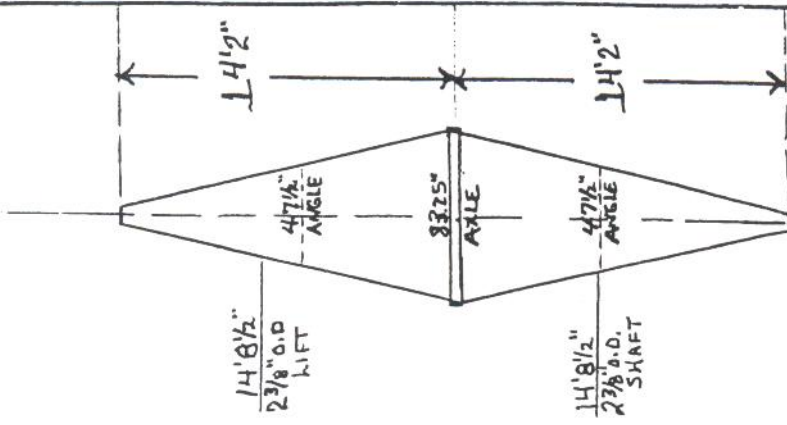
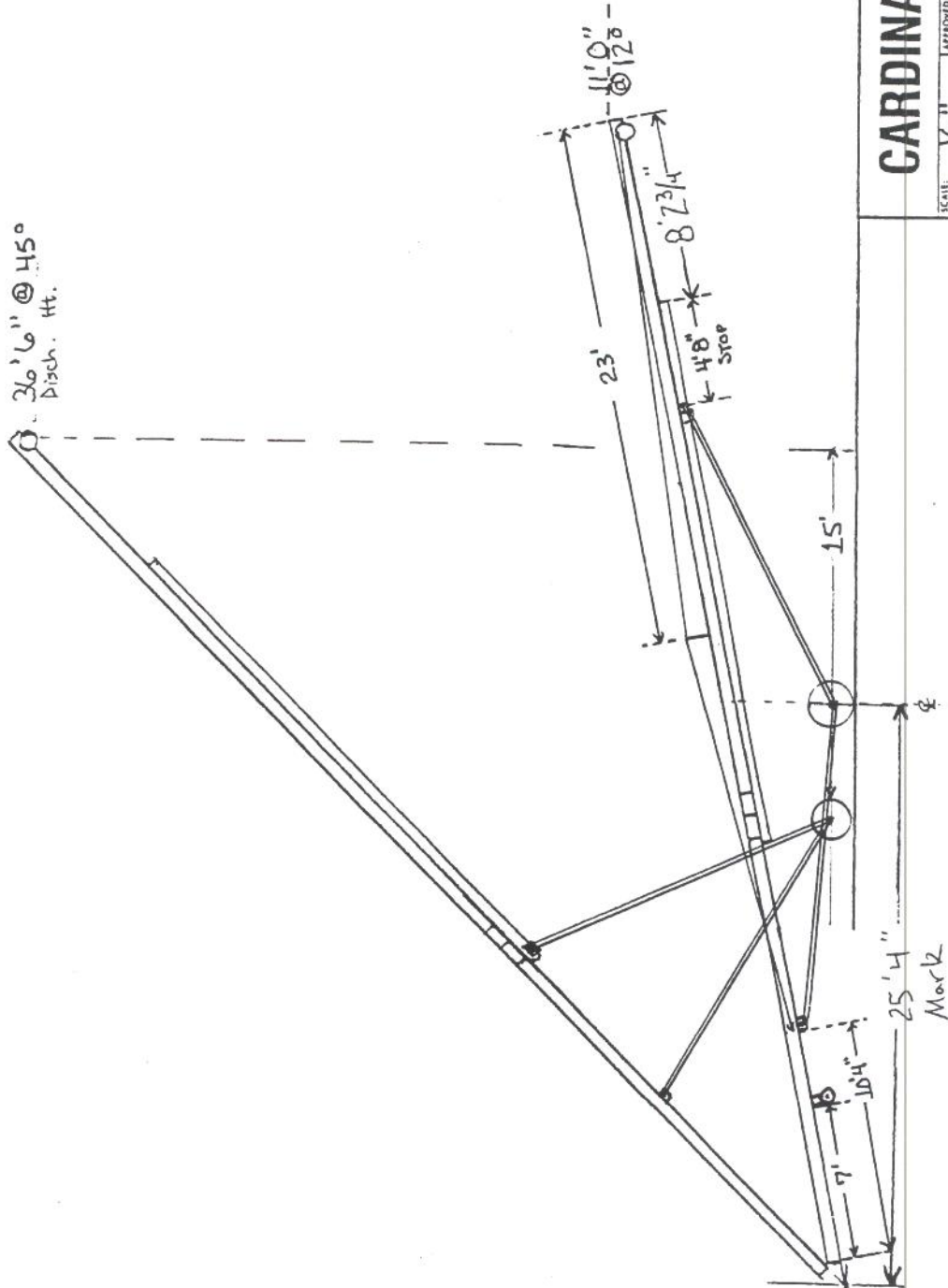
REVISED

6" x 47' INTAKE DRIVE

DRAWING NUMBER

WINCH CABLE: 1/4" x 5/16" (SINGLE STRIPE)

TRUSS CABLE: 1/4" x 41"



# CARDINAL GRAIN SYSTEMS

SCALE: 1/8" = 1'

APPROVED BY: JAR

DATE: 7-27-93

REVISION

6' x 52' INTAKE DRIVE

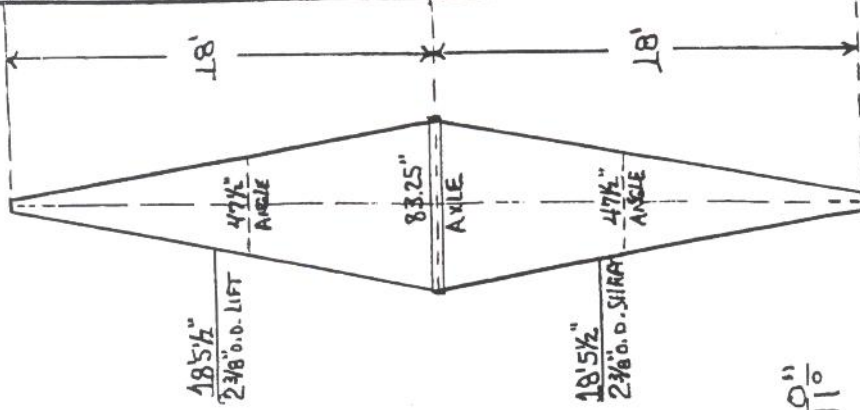
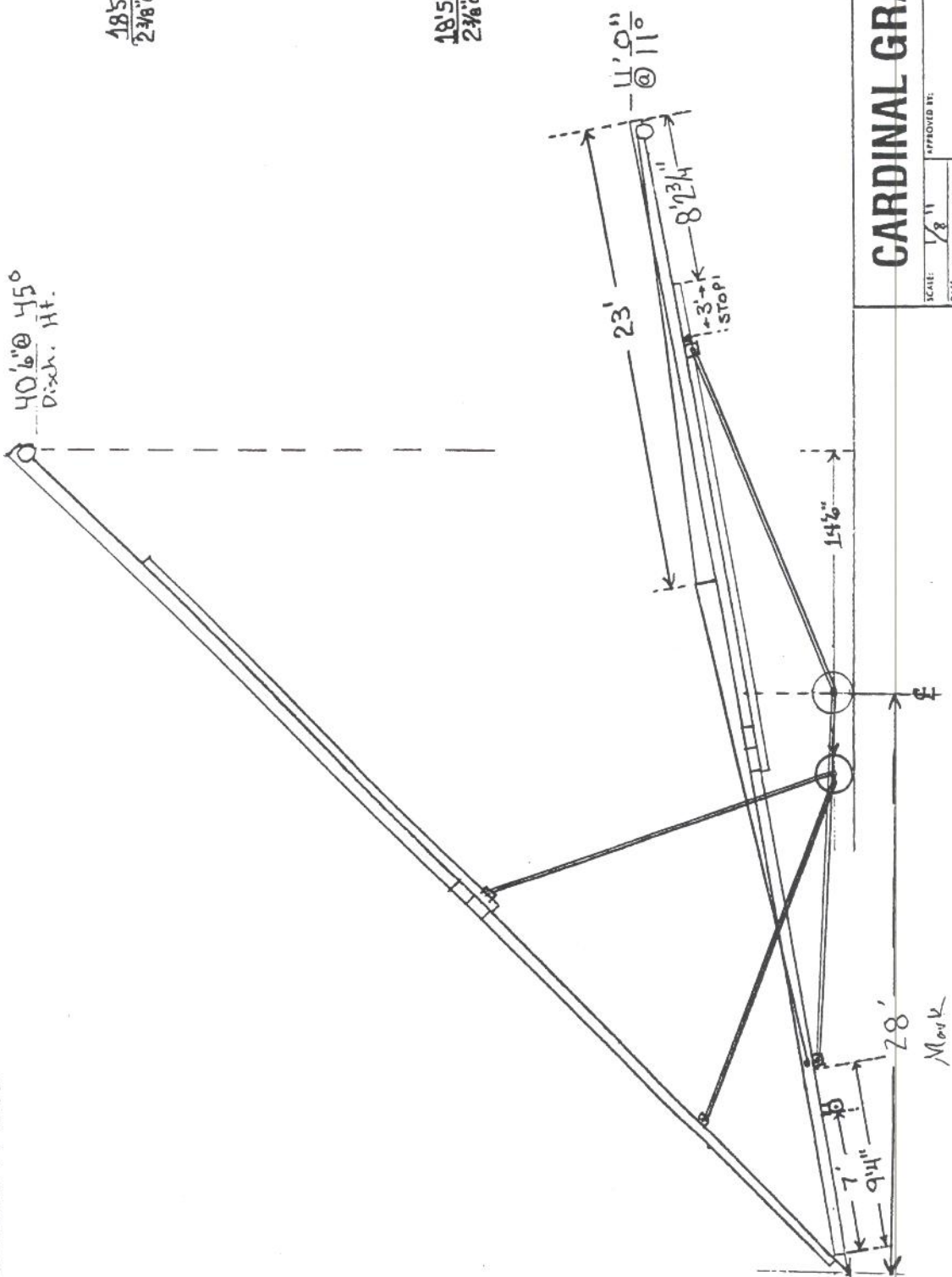
DRAWING NUMBER



WINCH CABLE: 5/16" X 24' (DOUBLE STRUNG)

TRUSS CABLE: 1/4" X 48'

40' 6" @ 45°  
Disch. Ht.

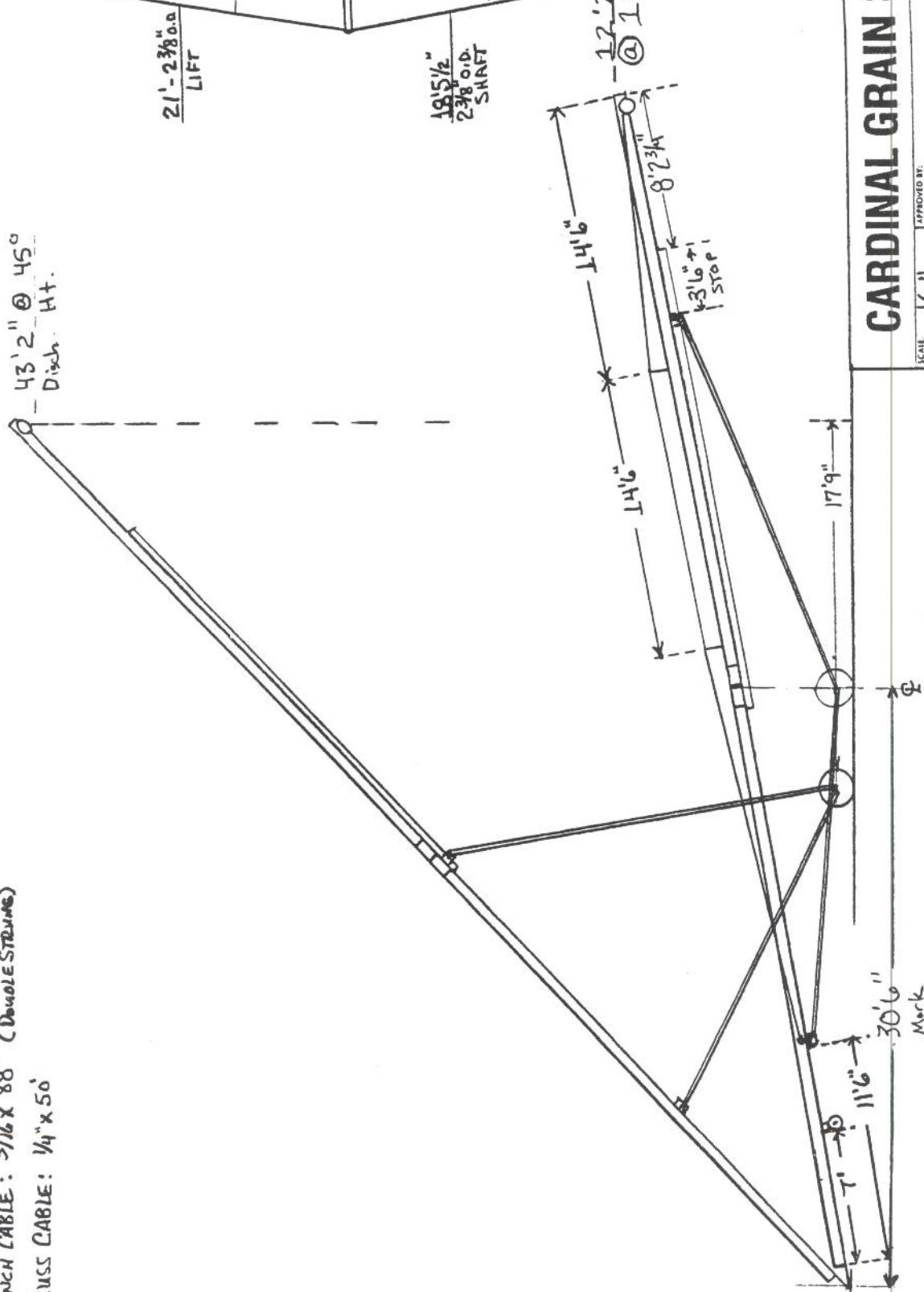
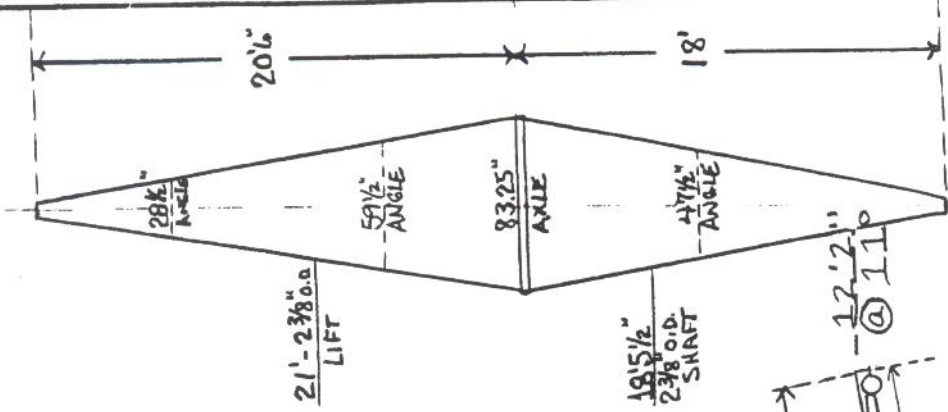


# CARDINAL GRAIN SYSTEMS

SCALE: 1/8"	APPROVED BY: JAR
DATE: 7-27-93	DRAWN BY: JAR
6" X 57' INTAKE DRIVE	
DRAWING NUMBER	

WINCH CABLE: 5/16 x 88' (DOUBLE STRUNG)  
 TRUSS CABLE: 1/4" x 50'

43' 2" @ 45°  
 Dish. Ht.



## CARDINAL GRAIN SYSTEMS

SCALE: 1/8" = 1'	APPROVED BY:	DRAWN BY: <b>JJR</b>	
DATE: 7-27-93		REVISED:	
6" x 62" INTAKE DRIVE		DRAWING NUMBER	



**-ASSEMBLY INSTRUCTIONS-**

The auger should be assembled in an area that is level. A mechanical lifting device, of at least a 2-ton capacity, should be available to lift the partially assembled auger during the assembly procedure.

This auger is shipped broken down. The tubes and screws are shipped according to the length of auger ordered. Each auger length has one 31 foot long discharge tube with the proper screw inside.

With the tubes and screw arranged in the proper order, place a joiner band (see Figure 1) over one tube at joint of two tubes. No tube joiners are required at either end of the auger. Now, with the joiner on one tube, couple the two screws together with the coupler shaft and attached coupler bolts (see Figure 1). Go to the next joint and repeat the process until all screws are coupled. Butt the tubes together and center the joiner over the joint. Use 3/8-16NC x 1½ bolts starting at the center bolt hole in the joiner flange and work your way to each end of the joiner (see Figure 2). Watch the overall alignment of the auger as the tubes are joined to be sure of maintaining a straight auger. Note: Tighten the bolts (Key No. 2 in Figure 2) in the joiner band to a reading of 35-40 foot-pounds to obtain good clamping pressure.

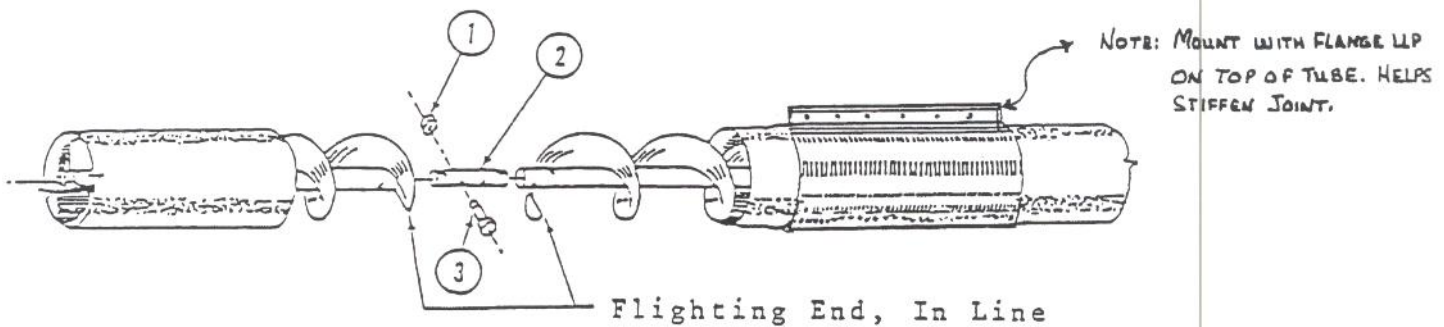


Figure #1

<u>Figure #1 Key Nos.</u>	<u>Part No.</u>	<u>Description</u>
1.	1271	1/4-20 LOCKNUT
2.	15613	Coupler Shaft
3.	23069	1/4-20 COUPLER BOLT

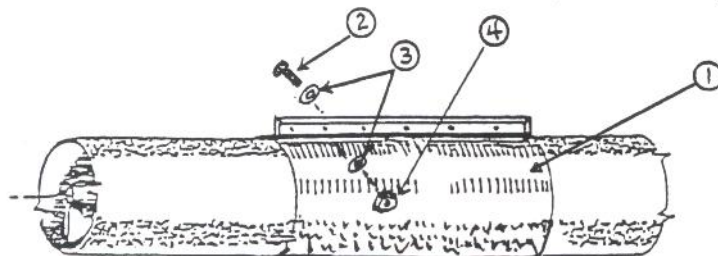


Figure #2

<u>Figure #2 Key Nos.</u>	<u>Part No.</u>	<u>Description</u>
1.	A28445	Tube Joiner W/Hdw
2.	1404	HHCS 3/8-16 x 1½ GRD5
3.	28453	Clamp Washer 7/16 I.D.
4.	1274	3/8-16NC LOCKNUT

Assemble the discharge shaft, Key No. 10 (Figure No. 3) to the discharge screw with 1/16 bolts. Slide the discharge shaft through the bearing collar. Pin the thrust collar (Key No. 5) to the discharge shaft making sure it is up against the bearing collar. Tighten the eccentric locking bearing collar by turning it in the same direction (clockwise looking at the end of the shaft) as the shaft will be rotating in operation.

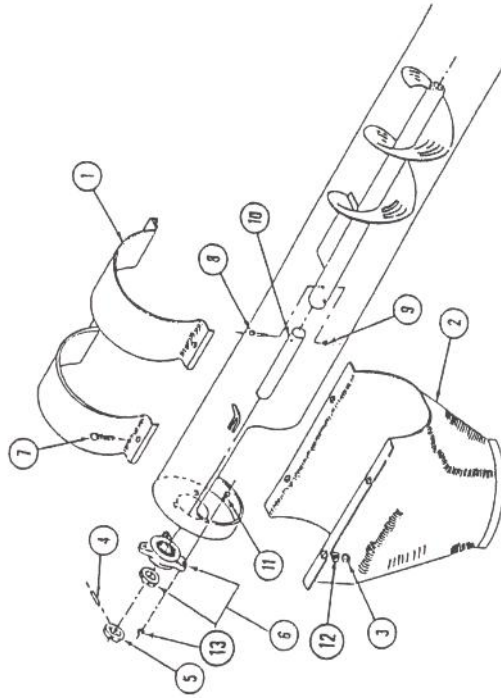


Figure #3  
Discharge Details

Figure #3 Key Nos.	Part No.	Description
1.	28362	Clamp Band 6"
2.	A2652	Discharge Spout 6"
3.	1274	Hex Locknut 3/8-16
4.	15389	Spring Pin
5.	15502	Thrust Collar
6.	A16878	Flange Bearing
7.	1177	HCS 3/8-16x1 1/2
8.	23069	Coupler Bolt 1/2-20
9.	1271	Hex Locknut 1/2-20
10.	28320	Discharge Shaft
11.	1215	Carriage Bolt 5/16-18x1
12.	1294	Flatwasher 3/8
13.	1274	Hex Locknut 5/16-18

Assemble the truss supports (trussed models only), Key No. 18 (Figure No. 4), to the tube placing it as shown on the component placement diagram.

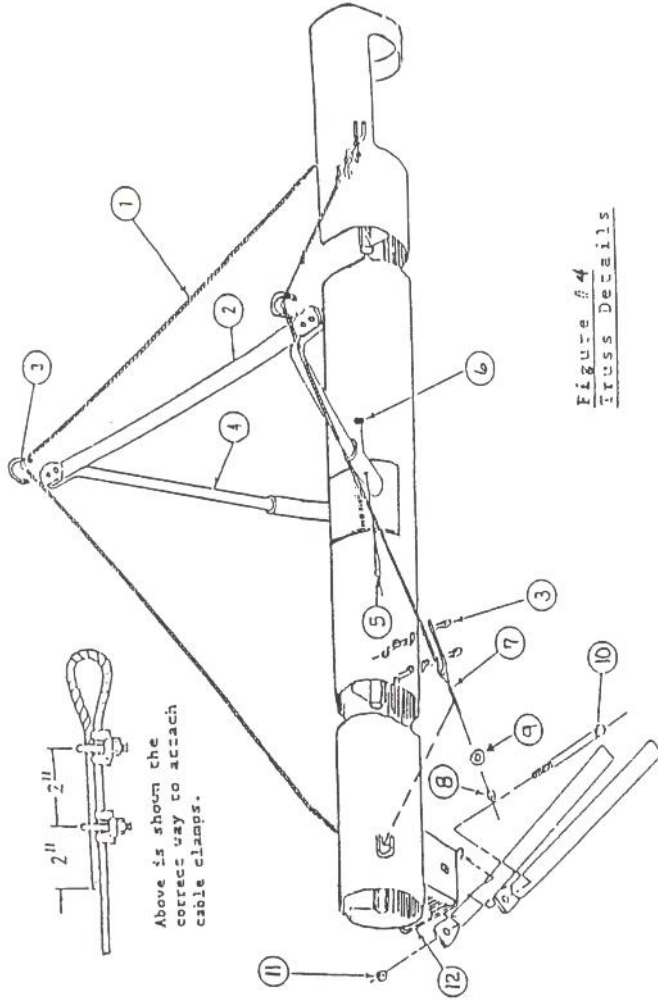


Figure #4  
Truss Details

Figure #4 Key Nos.	Part No.	Description
1. A.		1/2 DIA. x 'CABLE (47')
B.		1/2 DIA. x 'CABLE (52')
C.		1/2 DIA. x 'CABLE (57')
D.		1/2 DIA. x 'CABLE (62')
2.	28111	TRUSS-CROSS-PIPE
3.	15188	1/2" CABLE CLAMP
4.	28100	TRUSS SUPPORT PIPE
5.	11778	HCS 3/8-16ncx1 3/4"
6.	1274	HEX LOCKNUT 3/8-16
7.	A28415	EYE BOLT 1/2-13x8"
8.	1269	1/2-13 REG. NUT
9.	1295	FLAT WASHER 1/2" (2 EA. GAST)
10.	1508	HCS 3/4-10x7"
11.	1278	3/4-10 LOCKNUT
12.		CHASSIS HOOKUP



## CHASSIS ASSEMBLY

Assemble the chassis pipes and axle together as shown in Figure 6 on the auger tube just ahead of the chassis track, lift the discharge end of the assembled auger three or four feet off the ground. Roll the assembled chassis underneath the auger. Attach the chassis hook-up band Key No. 6 and 9, in Figure No. 4 to the auger tube in the correct position as shown on the component placement diagrams. Attach the anchor bracket, Key No. 12 in Figure No. 4 to the chassis hook-up band as shown.

Bolt the winch mount to the auger tube in position as shown on the component placement diagrams. Attach the winch mount as shown.

String the winch cable as shown by starting at the end opposite the winch. Attach the cable to the winch drum as noted on the winch instruction sheet.

The cable winch is equipped with a brake which is activated by turning the handle. Turn the handle clockwise to raise the auger and counterclockwise to lower the auger. A clicking sound will be heard when raising the auger. When lowering the unit, no clicking will be heard. When the auger is lowered to the desired height, turn the handle clockwise until two clicks are heard to lock the winch. There is no pawl or clutch to release to lower the auger.

Always be sure there are at least three wraps of cable on the winch drum.

Read winch operating instructions included in the winch carton.

Carefully lift the auger with the cable or chain sling, and at the same time manually raise the chassis lift until the roller frame Key No. 12 (Figure No. 6) engages the end of the chassis track. With the roller frame in position on the chassis track, continue to raise the auger until the lift roller frame passes the four sets of holes in the track. Refer to the component placement diagrams and find where to place the chassis stop, Key No. 2 (Figure No. 5). Attach the chassis stop with four 3-13NCx1 bolts and nuts. Let the auger down until the lift roller frame rests against the stop.

Do not remove the lifting sling at this time as the auger may be cop end heavy and tip.

String the truss cables as shown in Figure No. 4. Note: Only one truss support is shown for simplicity. Tighten cables only enough to maintain a straight auger.

Assemble the rear stop, Key No. 2, in Figure No. 5 onto the chassis track as shown on the component placement diagrams.

**CAUTION:** Check the assembled auger balance. If it is heavy on the discharge end, then add weight to the intake or hitch end in the form of an optional gravity hopper, electric motor, or if necessary, tie down the intake end to prevent a "tip-over" condition. Never lift the intake end any higher than necessary to attach the hitch to the towing vehicle as a weight shift toward the top of the discharge end will take place rapidly.

Assemble the chassis track to the auger tube at 90 degrees to the track bands as shown in Figure No. 5. The chassis tracks come in 4', 8', 14', & 20' lengths. Check the component placement diagrams for the correct placement on your auger. The basic 20 foot chassis track has four sets of holes in one end. This end of the track should be placed toward the discharge end of the auger. Be sure the track is directly on the bottom of the tube opposite the truss supports and at 90 degrees to the tube joiner flanges.

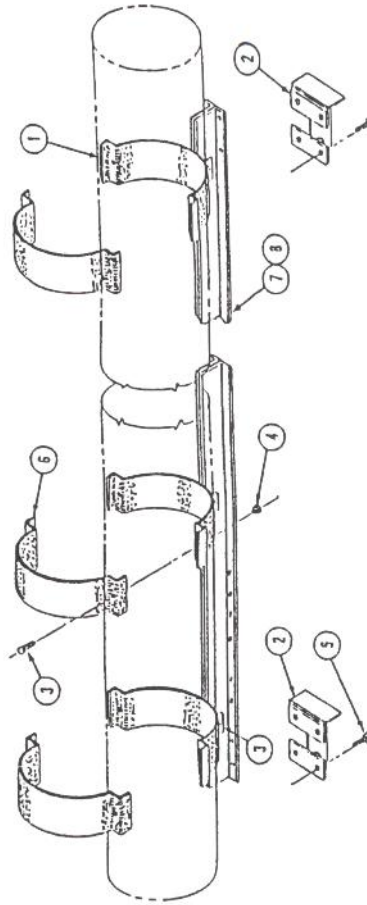
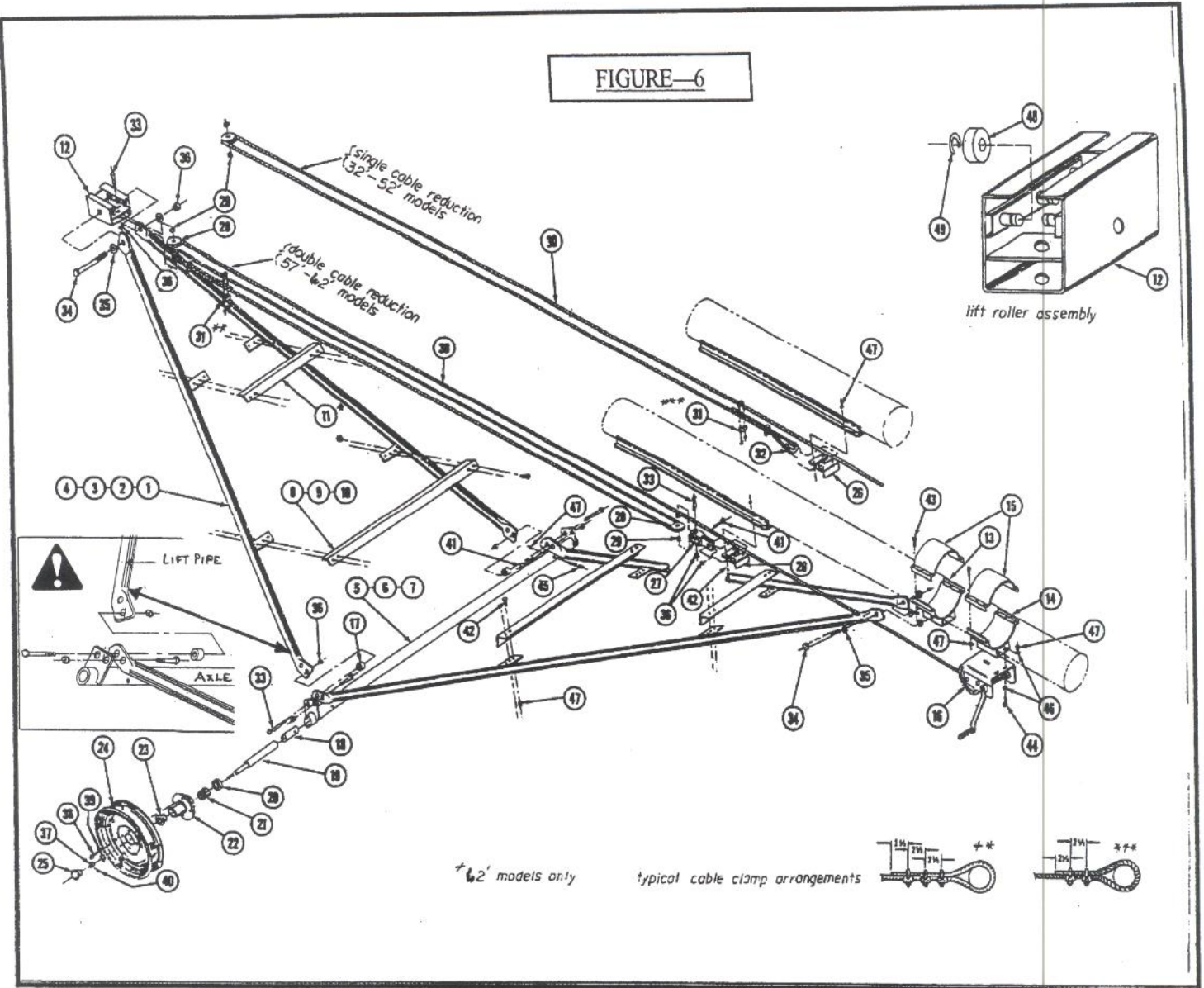


Figure #5  
Chassis Track Details

Figure #5 Key Nos.	Part No.	Description
1.	A28392	Track Band
2.	A28395	Stop
3.	1404	HCS 3/8-16x1 1/2 GR5
4.	1274	Hex Locknut 3/8-16
5.	1187	HCS 1/2-13x1
6.	28362	Track Clamp Band Half
7.	28375	4' Chassis Track Angle
8.	28374	8' Chassis Track Angle



FIGURE-6



- |            |   |            |   |
|------------|---|------------|---|
| 1. A28542  | 2 3/8" O.D. x 9'2 7/8" CHASSIS PIPE         | 26. A28395 | STOP W/A                                  |
| 2. A28543  | 2 3/8" O.D. x 14'8 1/2" CHASSIS PIPE        | 27. A26033 | PULLEY BRACKET                            |
| 3. A28558  | 2 3/8" O.D. x 18'5 1/2" CHASSIS PIPE        | 28. 15144  | CABLE SHEAVE                              |
| 4. A28770  | 2 3/8" O.D. x 21' CHASSIS PIPE              | 29. 20660  | SPACER                                    |
| 5. A28476  | 65.25" AXLE PIPE (32' AUGER)                | 30. A28627 | 1/4" x 36' WINCH CABLE (32' AUGER)        |
| 6. A28477  | 83.25" AXLE PIPE (47' thru 62' AUGERS)      | A28594     | 1/4" x 52' WINCH CABLE (47' AUGER)        |
|            |   | A28581     | 1/4" x 54' WINCH CABLE (52' AUGER)        |
|            |   | A28628     | 5/16" x 87' WINCH CABLE (57' & 62' AUGER) |
| 8. 28540   | 35 1/2" CHASSIS ANGLE (32' AUGER)           | 31. 15188  | 1/4" CABLE CLAMP                          |
| 9. 28541   | 47 1/2" CHASSIS ANGLE (47' thru 62' AUGERS) | 15266      | 5/16" CABLE CLAMP                         |
| 10. 28539  | 59 1/2" CHASSIS ANGLE (62' AUGER)           | 32. 19480  | 5/16" CABLE THIMBLE                       |
| 11. 28538  | 28 1/8" CHASSIS ANGLE (62' AUGER)           | 33. 1192   | HHCS 3/4"-10x3"                           |
| 12. A28588 | LIFT ROLLER FRAME -W/A                      | 34. 1508   | HHCS 3/4"-10x7"                           |
| 13. A28367 | CHASSIS HOOKUP-W/A                          | 35. 1297   | 3/4" FLATWASHER                           |
| 14. A28579 | WINCH MOUNT-W/A                             | 36. 1278   | 3/4" LOCKNUT                              |
| 15. 28184  | 3 BOLT- HALF BAND                           | 37. 28507  | SPINDLE NUT                               |
| 16. A20532 | 1000 # WINCH- (32' AUGER)                   | 38. 28510  | WHEEL BOLT                                |
| A20385     | 1500 # WINCH- (47' & 52' AUGERS)            | 39. 28506  | SPINDLE WASHER                            |
| A28057     | 2500 # WINCH- (57' thru 62' AUGERS)         | 40. 28508  | SPINDLE COTTER PIN                        |
| 17. 28484  | FRAME SPACER                                | 41. 1191   | HHCS 3/4"-10x2"                           |
| 18. 28483  | AXLE TUBE SLEEVE                            | 42. 1187   | HHCS 1/2"-13x1"                           |
| 19. 28513  | AXLE SPINDLE                                | 43. 1404   | HHCS 3/8"-16x1 1/2" GR.5                  |
| 20. 28511  | SEAL  | 44. 1175   | HHCS 3/8"-16x1"                           |
| 21. 15128  | WHEEL BEARING-INNER CONE                    | 45. 1514   | HHCS 3/8"-16x2 3/4" GR.5                  |
| 22. 15184  | WHEEL HUB                                   | 46. 1294   | 3/8" FLATWASHER                           |
| 23. 15127  | WHEEL BEARING-OUTER CONE                    | 47. 1274   | 3/8"-16 LOCKNUT                           |
| 24. 15124  | 15" 4 BOLT RIM                              | 48. 27689  | PLASTIC ROLLER                            |
| 25. 28509  | CAP   | 49. 27690  | RETAINING RING                            |

-Intake Section-

(Refer to Figure No. 7

Assemble the intake shaft, Key No. 18, to the auger screw with two 1/2-20x1 1/16 bolts, Key No. 23.

Assemble the intake housing, Key No. 12, to the auger tube leaving 12" of exposed flighting. Attach the 22 tooth sprocket, Key No. 7, to the intake shaft leaving 11/16" between the plate and the sprocket, as shown on diagram. Use a woodruff key, Key No. 22. Place the drive shaft, Key No. 13, through the top bearing. Attach the 16 tooth sprocket, Key No. 8, to the drive shaft using a woodruff key, Key No. 24. Be sure to align the two sprockets. Assemble the guard mounting angles, Key No. 16, to the intake housing.

Before assembling any more of the intake section, next assemble the gearbox and couple it to the drive shaft as shown for PTO drive or for electric motor drive as shown on page

Assemble the gearbox, Key No. 11 (Figure No. 8) or Key No. 28 (Figure No. 9) to the mount. Attach the coupler, Key No. 8 (Figure No. 8) or Key No. 14 (Figure No. 9) to the gearbox using a 5/16-18 x2 1/2 Hex Head Cap Screw and a 5/16-18 Hex Locknut. Assemble the drive shaft Key No. 7 (Figure No. 8) on to the opposite end of the coupler using a woodruff key. Adjust the gearbox clamp band up or down the tube to maintain alignment of the upper sprocket with the lower sprocket. Attach the chain, Key No. 6 (Figure No. 7).

For electric drive, assemble the motor mount details as per Figure No. 9. Be sure to maintain the 13" dimension between the gearbox and the motor mount as shown.

Assemble the drive shaft shield, Key No. 5 (Figure No. 8) or Key No. 12 (Figure No. 9) to the shield mounting bracket, Key No. 13 (Figure No. 8) or Key No. 19 (Figure No. 9) on the gearbox. Attach the other end of the drive shaft cover to the guard mounting angles, Key No. 16. (Figure No. 7) on the intake housing.

Attach the mounting angles and bracket to the drive shaft shield, Key No. 15 (Figure No. 7) using 1/2x1/2 self tapping screws, Key No. 26.

Attach the drive shaft guard, Key No. 14 (Figure No. 7) to the drive shaft shield, Key No. 15 using 1/2x1/2 self tapping screws, Key No. 26.

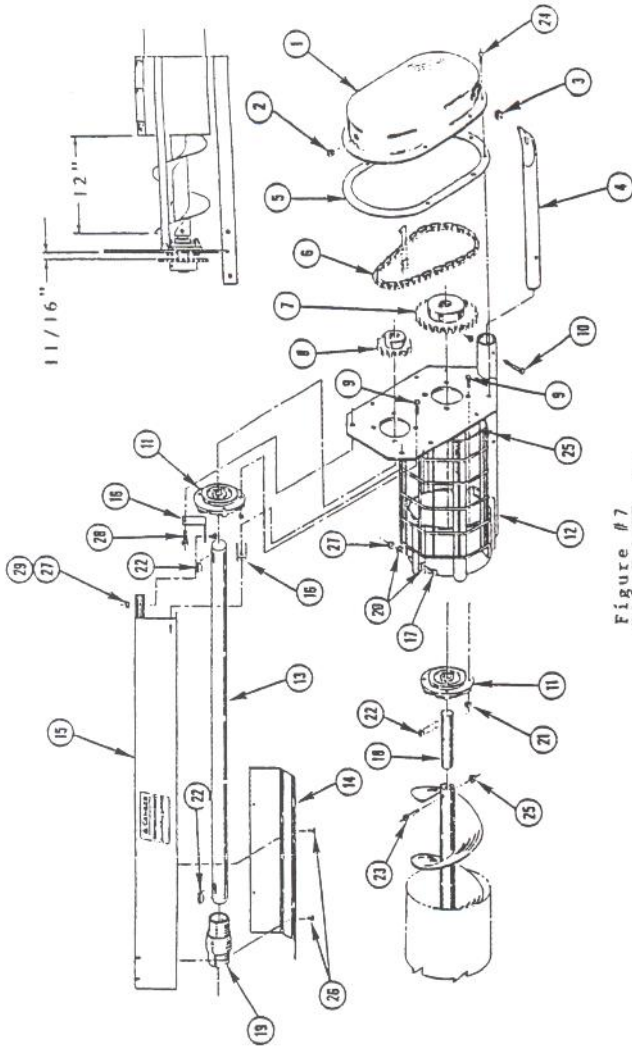


Figure #7  
Intake Details

Figure #7 Key Nos.	Part No.	Description
1.	25090	Drive Housing
2.	25145	1/2" Vented Pipe Plug
3.	25144	1/2" Pipe Plug
4.	26403	Hitch
5.	25091	Gasket
6.	A25228	Roller Chain
7.	A17403	Sprocket 22T
8.	A25227	Sprocket 16T
9.	1161	HHCS 5/16-18x1 1/2
10.	1427	HHCS 1/2-13x3 GR5
11.	A25226	Flange Bearing 7/8
12.	A28071	Intake Housing W/A
13.	25190	Drive Shaft
14.	25794	Drive Shaft Guard
15.	A25858	Drive Shaft Shield W/Decals
16.	25792	Guard Mtg. Angle
17.	1404	HHCS 3/8-16x1 1/2 GR5
18.	25197	Intake Shaft
19.	A25186	Coupling W/A
20.	1294	Flatwasher 3/8
21.	1273	Hex Locknut 5/16-18
22.	15304	Woodruff Key
23.	23069	Coupler Bolt 1/2-20
24.	1154	HHCS 1/2-20x1
25.	1271	Hex Locknut 1/2-20
26.	1319	Self Tap Screw 1/2x1/2
27.	1274	Hex Locknut 3/8-16
28.	1177	HHCS 3/8-16x1 1/2
29.	1217	Carriage Bolt 3/8-16x1



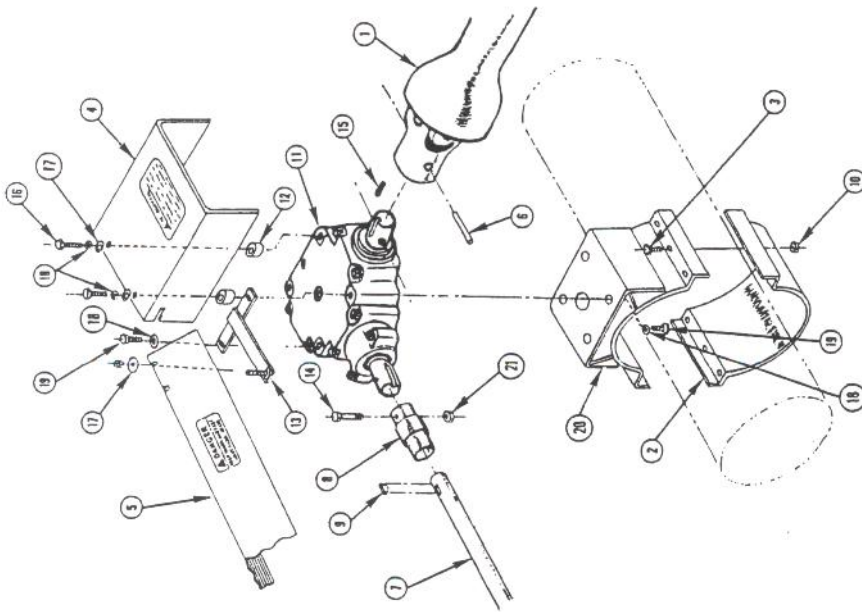


Figure #8  
PTO Drive Details

Figure #8 Key Nos.	Part No.	Description
1.	A27849	PTO Shaft
2.	28184	Clamp Band Half
3.	1177	HHCS 3/8-16x1 1/2
4.	A27935	PTO Shield W/Decal
5.	A25858	Shield W/Decal
6.	26649	Spring Pin 5/16x2
7.	25190	Drive Shaft
8.	A25186	Coupler W/A
9.	15304	Woodruff Key
10.	1274	Hex Locknut 3/8-16
11.	A25189	Gearbox
12.	24728	Spacer
13.	A25790	Bracket
14.	1509	HHCS 5/16-18x2 1/4 GR5
15.	19179	Square Key 3/4x1 1/2
16.	1180	HHCS 3/8-16x2 1/4
17.	1294	Flatwasher 3/8
18.	1302	Lockwasher 3/8
19.	1175	HHCS 3/8-16x1
20.	A28289	Gear Box Mount W/A
21.	1273	Hex Locknut 5/16-18

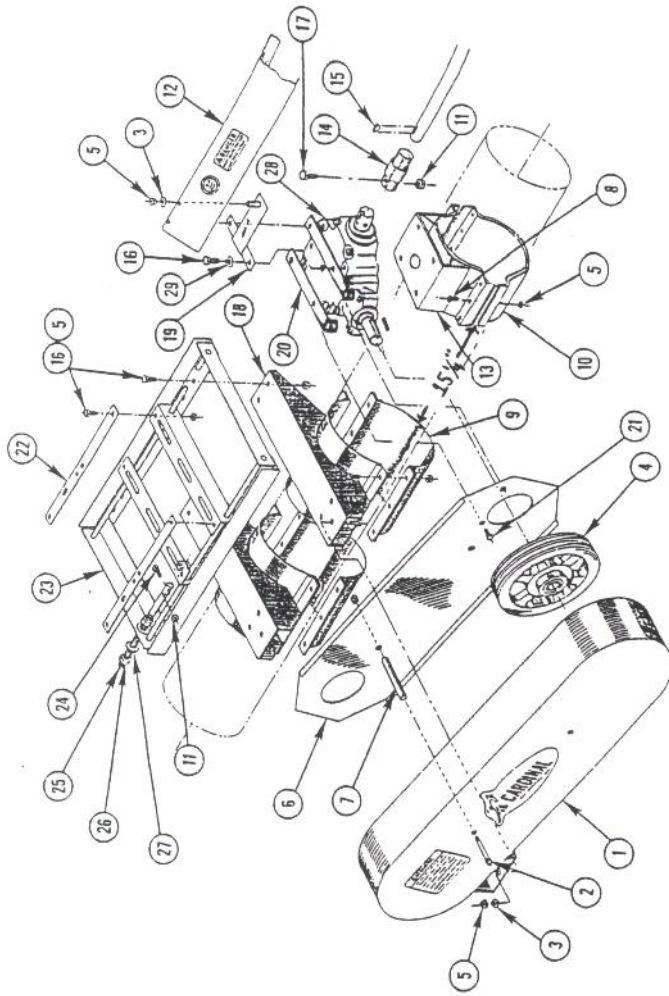
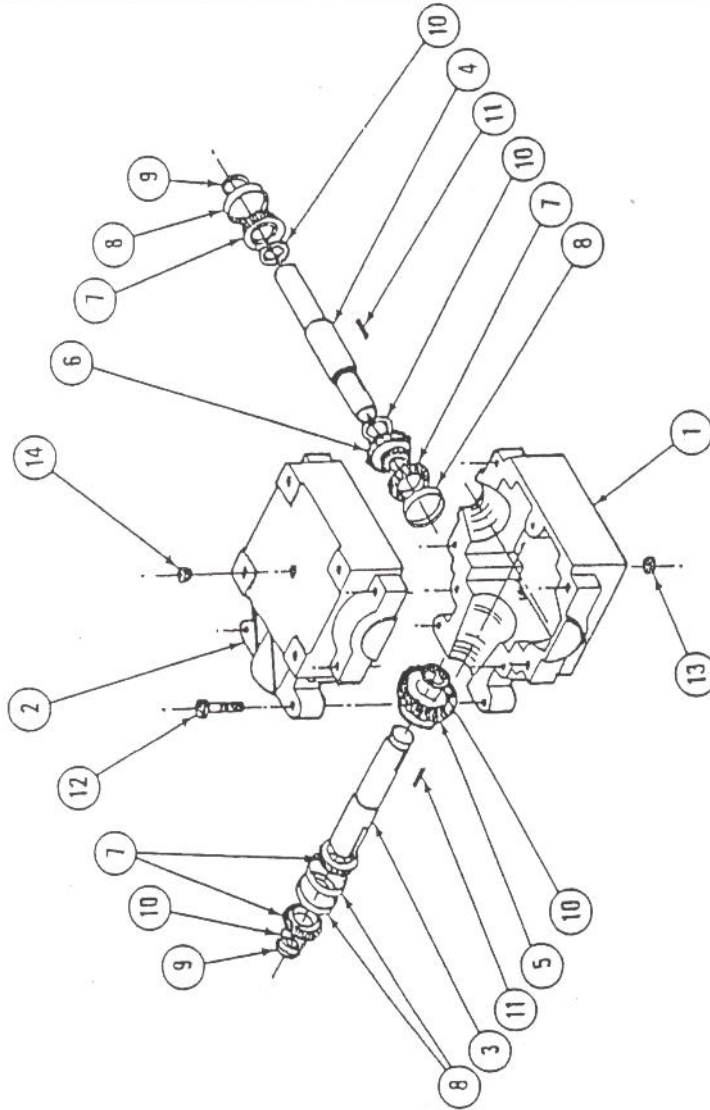


Figure #9  
Motor Mount Details

Figure #9 Key Nos.	Part No.	Description
1.	A25133	Guard Cover W/Decals
2.	1369	HHCS 5/16-18x5
3.	1294	Flatwasher 3/8"
4.	A25219	V-Belt Pulley
5.	1274	Hex Locknut 3/8-16
6.	25125	Guard Backplate
7.	25128	Cover Stand-Off
8.	1177	HHCS 3/8-16x1 1/2
9.	A19326	Clamp Band
10.	28184	Clamp Band
11.	1273	Hex Locknut 5/16-18
12.	A28558	Drive Shaft Shield W/Decals
13.	A28289	Gear Box Mount
14.	A25186	Coupler W/A
15.	15304	Woodruff Key
16.	1175	HHCS 3/8-16x1
17.	1509	HHCS 5/16-18x2 1/4 GR5
18.	A25178	Support
19.	A25790	Bracket
20.	25237	Guard Support
21.	1159	HHCS 5/16-18x1
22.	20766	Spacer Strap
23.	A20758	Motor Base W/A
24.	1202	HHCS 5/16-18x1 3/4 GR8
25.	20771	Adjusting Rod
26.	1278	Hex Locknut 3/4-10
27.	1297	Flatwasher 3/4"
28.	A25189	Gearbox
29.	A251302	Lockwasher 3/8"



PARTS LIST FOR SERIES 251 GEAR BOX  
( P/N A25189, Superior P/N 251AEF-066 )

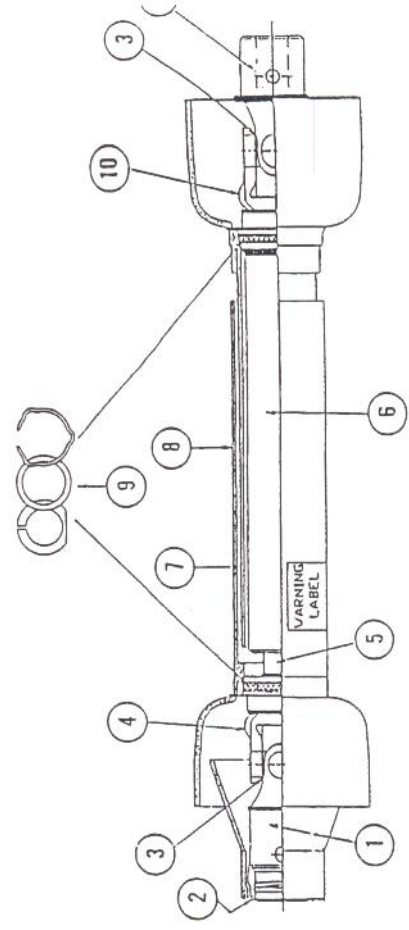


KEY NO.	PART NO.	SUPERIOR PART NO.	DESCRIPTION
1	27707	210001	GEARCASE (THREADED HOLES)
2	27708	210002	GEARCASE (THROUGH HOLES)
3	26223	200100-24	PINION SHAFT
4	26224	200110-113	CROSS SHAFT
5	26227	251016	PINION GEAR
6	26226	251024	CROSS SHAFT GEAR
7	23198	244643	BEARING CONE
8	23197	244610	BEARING CUP
9	26225	209843	SEAL
10	27030	203293	RETAINING RING
11	27029	200200	KEY
12	27709	203825	2 1/2 LG. BOLT
13	27711	200300	PIPE PLUG
14	27712	20030V	VENTED PLUG

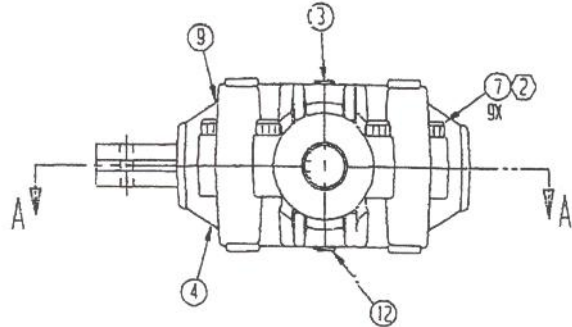
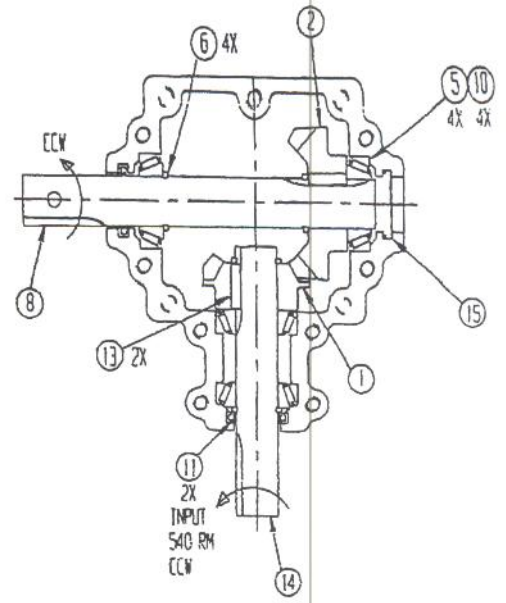
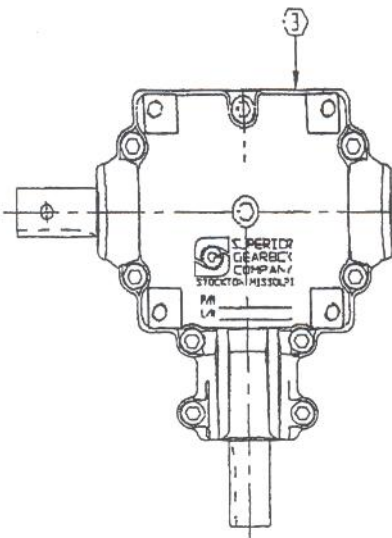
USE EP90 GEAR OIL

NGING LUBRICANT --- After  
at 100 hours of operation, drain out  
oil, preferably while warm. Flush out  
gear case with an approved flushing oil and  
dry. Thereafter oil should be changed  
every 2500 operating hours or every 6  
months --- whichever occurs first. If unit is  
operating in extremely dirty or high or low  
temperature environments, change oil  
often.

REPAIR PARTS LIST  
CARDINAL PART NO. A27849 (183-63) (G&G)



KEY NO.	PART NO.	DESCRIPTION
1	27852	Snap Hitch Yoke
2	27853	Uni-Shield Repair Kit
3	A25292	Repair Kit Complete
4	25293	Yoke 1x1-1/8 Rect
5	25294	1x1-1/8 Rect. Shafting x 5'
6	25295	1x1-1/8 Rect. Tubing x 5'
7	27854	Inner Plastic Shield
8	27855	Outer Plastic Shield
9	A25298	Nylon Bearing, Thrust Washer & Snap Ring
10	25299	Yoke 1-9/32 x 1-13/32 Rect.
11	25301	Implement Yoke 1" Bore
	A27850	Tractor Half Assembly
	A27851	Implement Half Assembly



SECTION A - A



**SUPERIOR GEARBOX COMPANY BILL of MATERIAL**

Run-Date: Fri 01/10/2003

Customer-Name: **CARDINAL GRAIN**

Superior Gearbox P/N: **R200-9DXA-B0490**

Customer P/N: **A25189 (ID 618")**

Seq	Component-Item	Description	Qty-Per	PART #
1	251016	GEAR, R200 1.50 16T KW Ø1.0005	1	26227
2	251024	GEAR, R200 1.50 24T KW Ø1.0005	1	26226
3	20030V	PLUG, VENT 1/4 NPT SCHD PLN	1	27712
4	210003-0	HSG, R200 MACH TAP STD	1	30427
5	244610	BEARING, CUP 1.9800 VN-L44610	4	23197
6	203293	RETAINING RING, EXT 1.000 SHFT	4	27030
7	203815	BOLT, 3/8-16 X 1.50 SHCS	9	27710
8	200110-113	SHAFT, R200 CROSS-O KW .25KW	1	26224
9	210004-0	HSG, R200 MACH THRU STD	1	30429
10	244643	BEARING, CONE 1.000 VN-L44643	4	23198
11	209843	SEAL, 1.000-1.499-.250 (R) TC	2	26225
12	200300	PLUG, 1/4-18 NPT SCHD W/3M	2	27711
13	200200	KEY, 1/4 X 1/4, .930	2	27029
14	200100-01	SHAFT, R200 STUB KW .25KW (PINION)	1	27027
15	400301	END CAP, CP-2.000-.312 D.#0689	1	30428
16	X000-48A0-A0165	LUBE/EP 80W90	14	