



**8" TOP 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 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 11-16
TUBE AND SCREW JOINING.....	PAGE 17
TOP END AND LINE SHAFT DETAILS.....	PAGE 18
GEAR BOX, INTAKE END & MOTOR MOUNT DETAILS.....	PAGE 19
TRUSS ASSEMBLY DETAILS.....	PAGE 20
CHASSIS ASSEMBLY INSTRUCTIONS.....	PAGE 20
CHASSIS PARTS LIST & DIAGRAM.....	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.

Power Source



B. Electric

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.



Lock Out



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.

C. Gasoline Engines

Power Source



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.

Lock Out



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

Power Source



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.

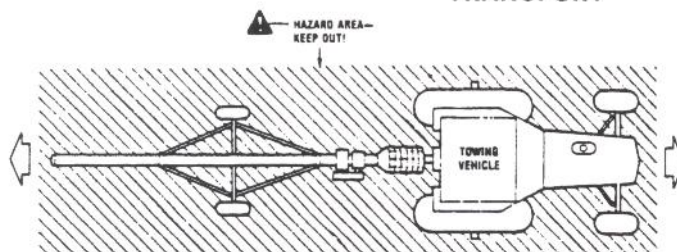


3. It *shall* be the duty of all operators to see that children and/or other persons stay out of the work area: Trespass into the work area by anyone not involved in the actual operation, or trespass into a hazard area by anyone, shall result in an immediate shut down by the operator.

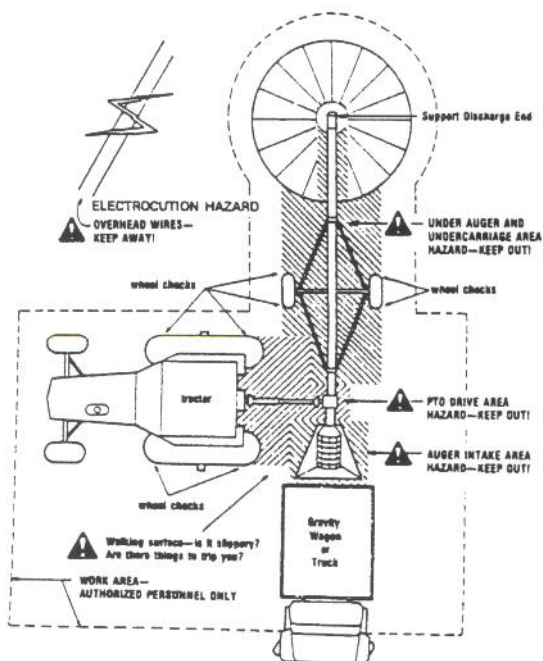


4. Prior to start up and during operation, it shall be the responsibility of all operators to see that the work area has secure footing, is clean and free of all debris and tools which might cause accidental tripping and/or falling.

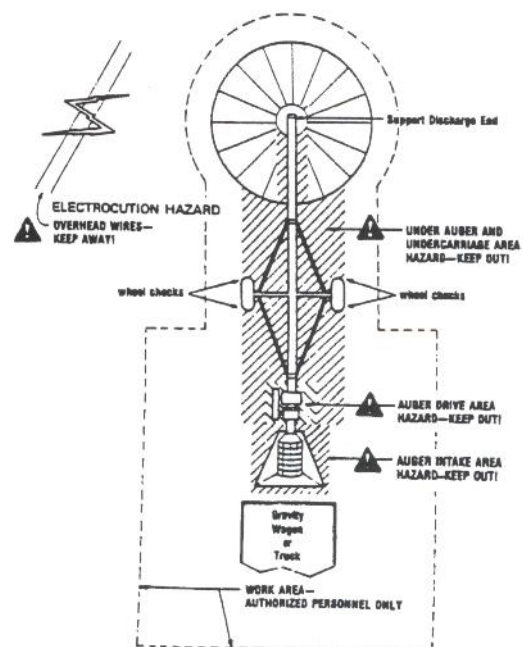
TRANSPORT



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 EP 90 Gear Oil. Check level through plug in the side of gearbox housing. Be sure vent plug is in the top of the gearbox.
PINION SHAFT @ BLACK PLUG IN GUARD-MUST BE GREASED PERIODICALLY TO GET LUBRICATION TO SHAFT BEARINGS!
TOP DRIVE-This unit has a screw type take-up for the roller chain drive. The chain should be lubricated every 40-50 hours of operation with S.A.E. 20 or 30 oil.

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 bearing 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.

32'

A28463 31' Tube

Tube and Screw Diagrams
8" T.D. Auger

A28564 32' Discharge Screw



47'

21909 15' Tube

A28464 31' Tube

A28566 16' Intake Screw

A28565 31' Discharge Screw



52'

21330 20' Tube

A28464 31' Tube

A27380 21' Intake Screw

A28565 31' Discharge Screw



57'

25634 25' Tube

A28464 31' Tube

A28567 26' Intake Screw

A28565 31' Discharge Screw



62'

26438 30' Tube

A28464 31' Tube

A28568 31' Intake Screw

A28565 31' Discharge Screw



72'

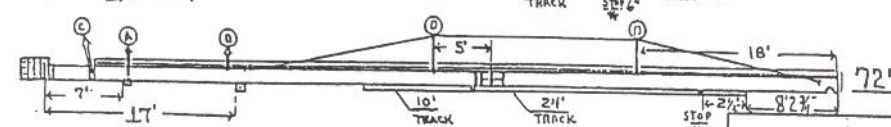
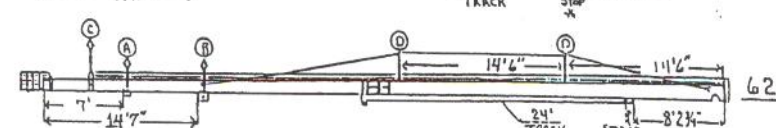
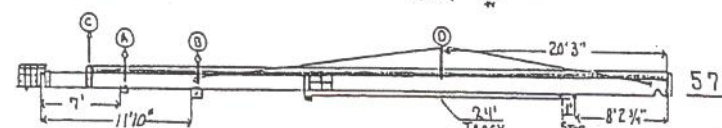
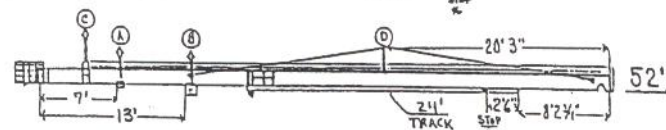
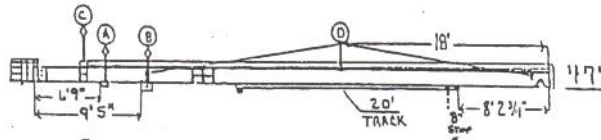
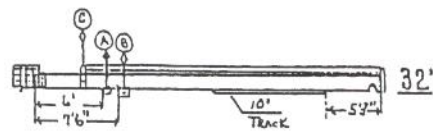
26880 40' Tube

A28464 31' Tube

A28568 31' Intake Screw

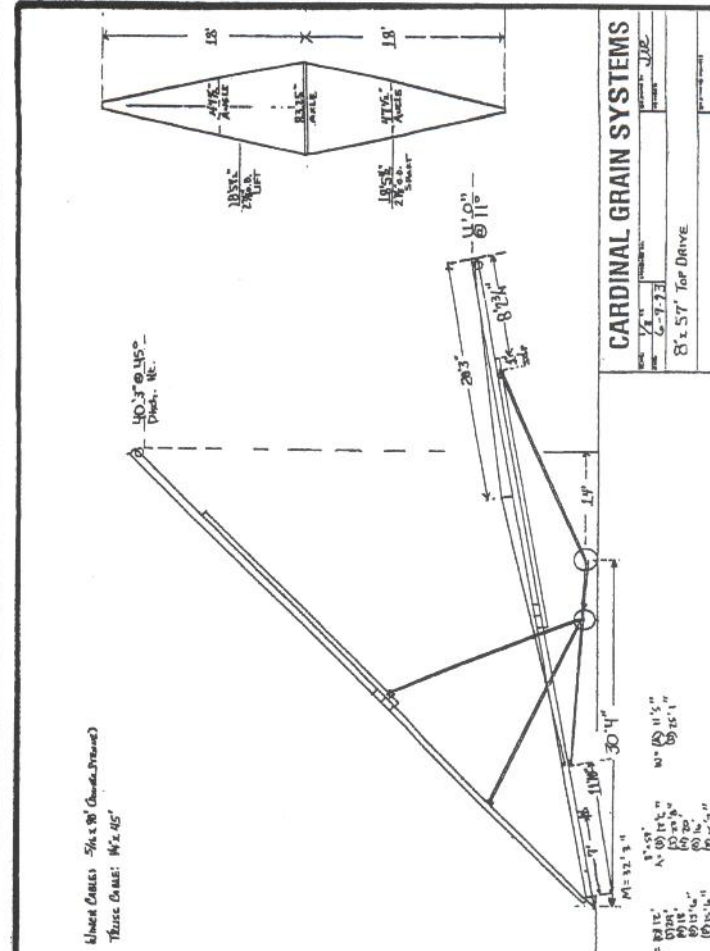
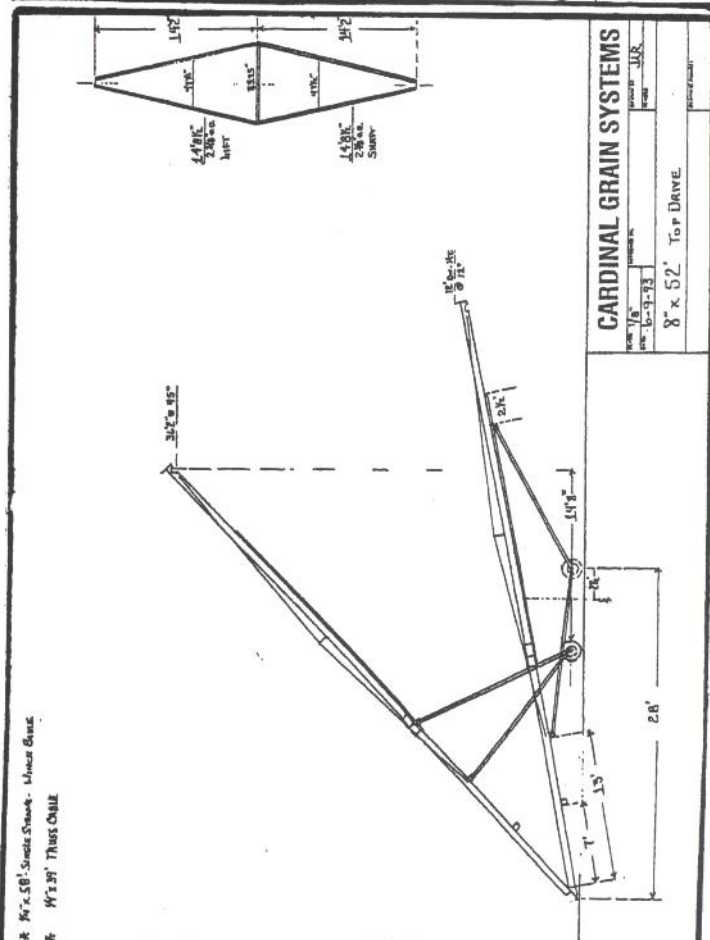
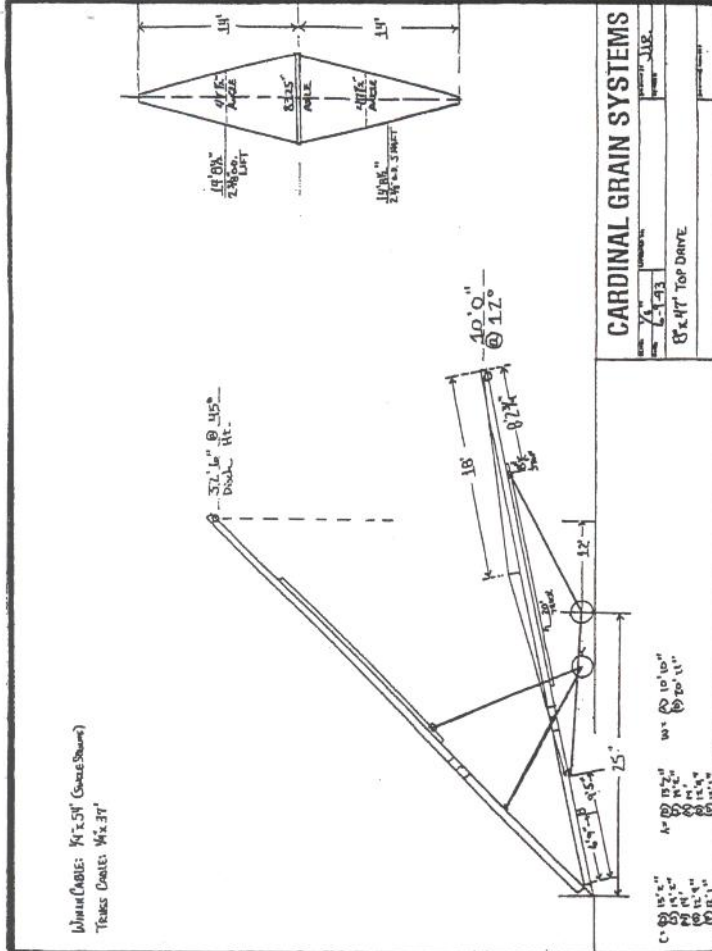
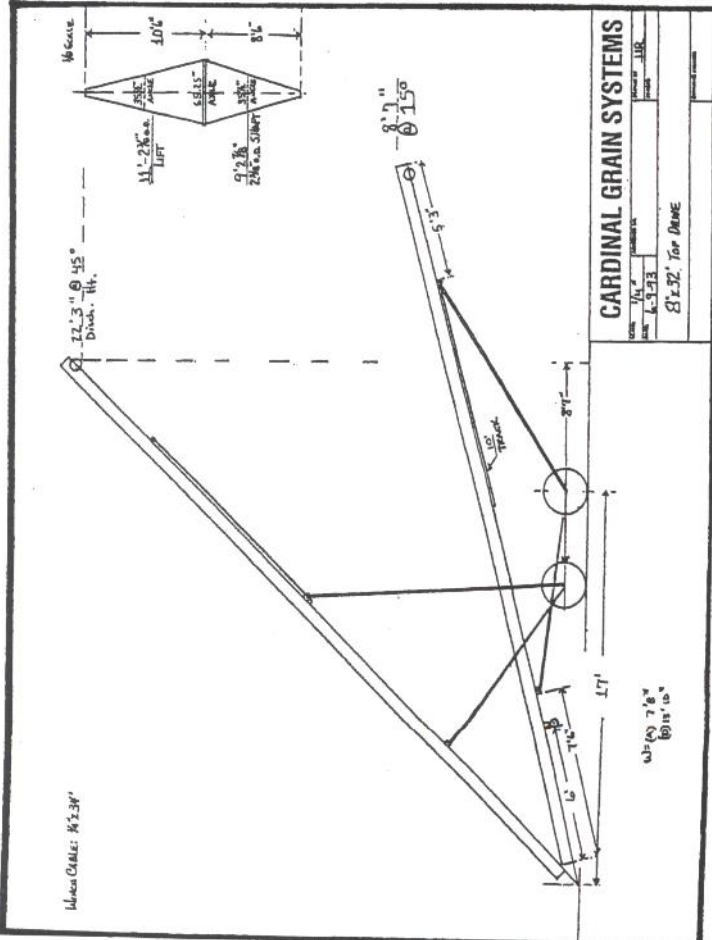
A20616 10' Extension Screw

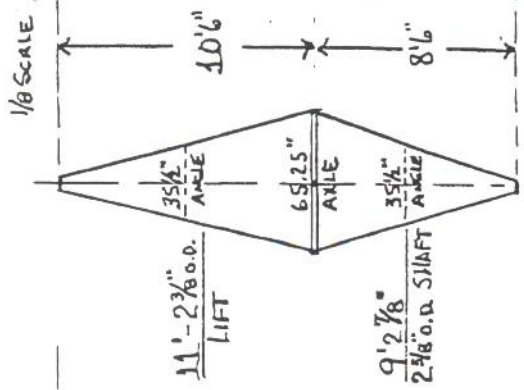
A28565 31' Discharge Screw



- A WHEEL MOUNT
- B CHASSIS HOOKUP
- C GEAR BOX MOUNT
- D TRUSS SUPPORT
- * SPECIAL STOP

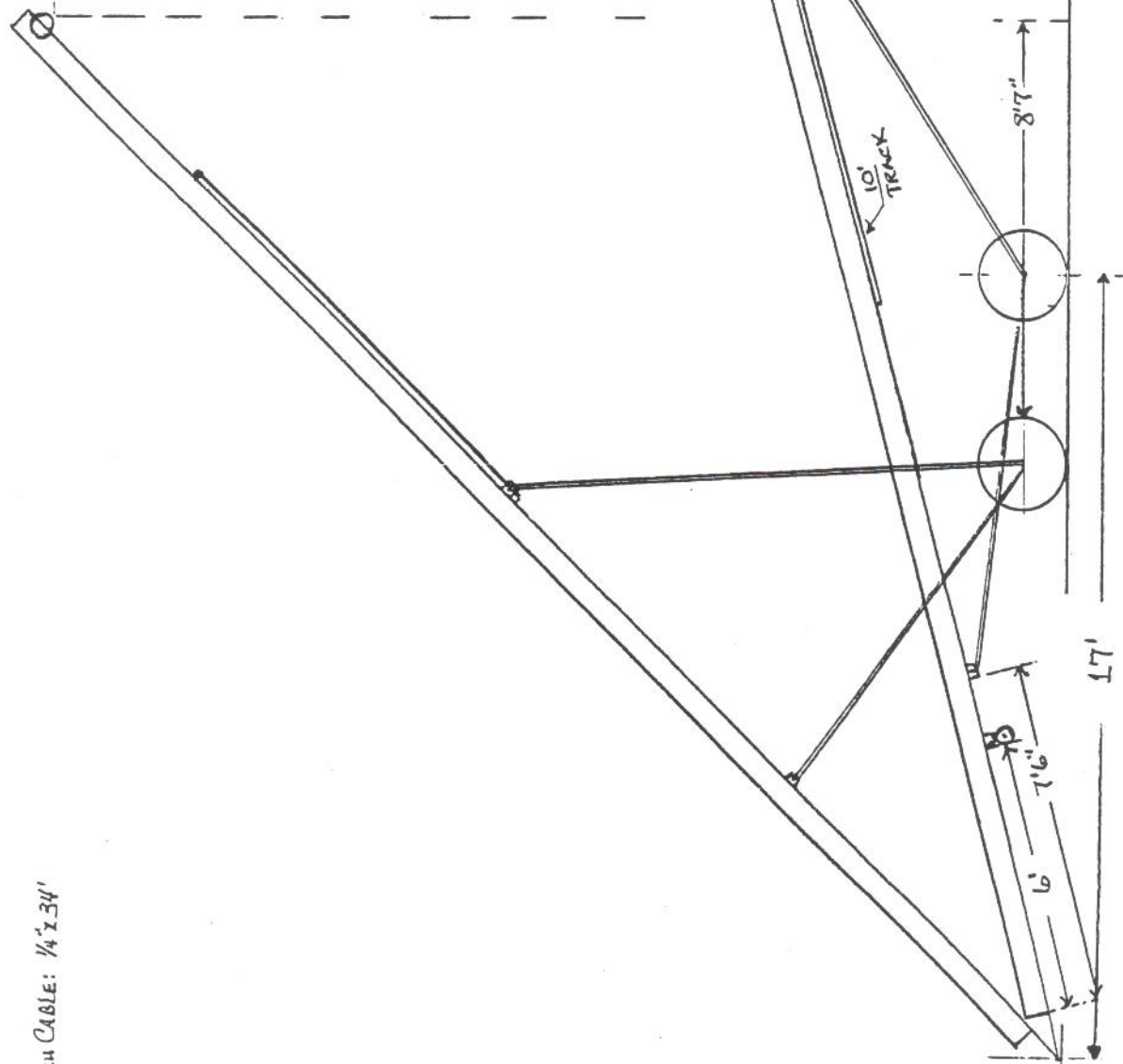
DATE: 3/32	DESIGNED BY:	DRAWN BY: JLR
DATE: 6-9-93	CHECKED BY:	DATE:
8" TOP DRIVE - PTO-LAYOUT		





22' 3" @ 45°
Disch. Ht.

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

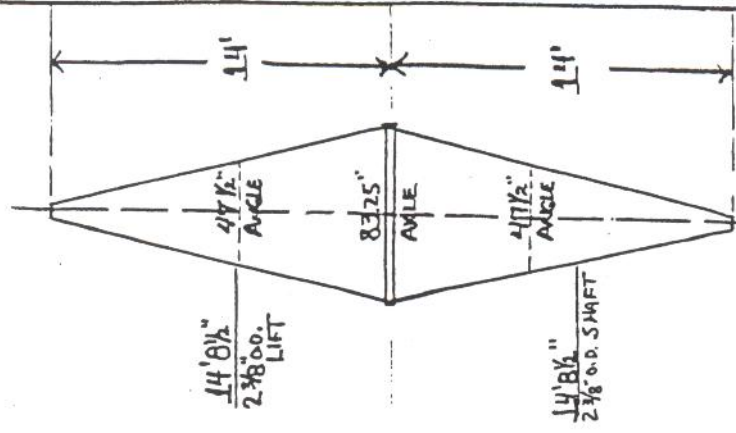
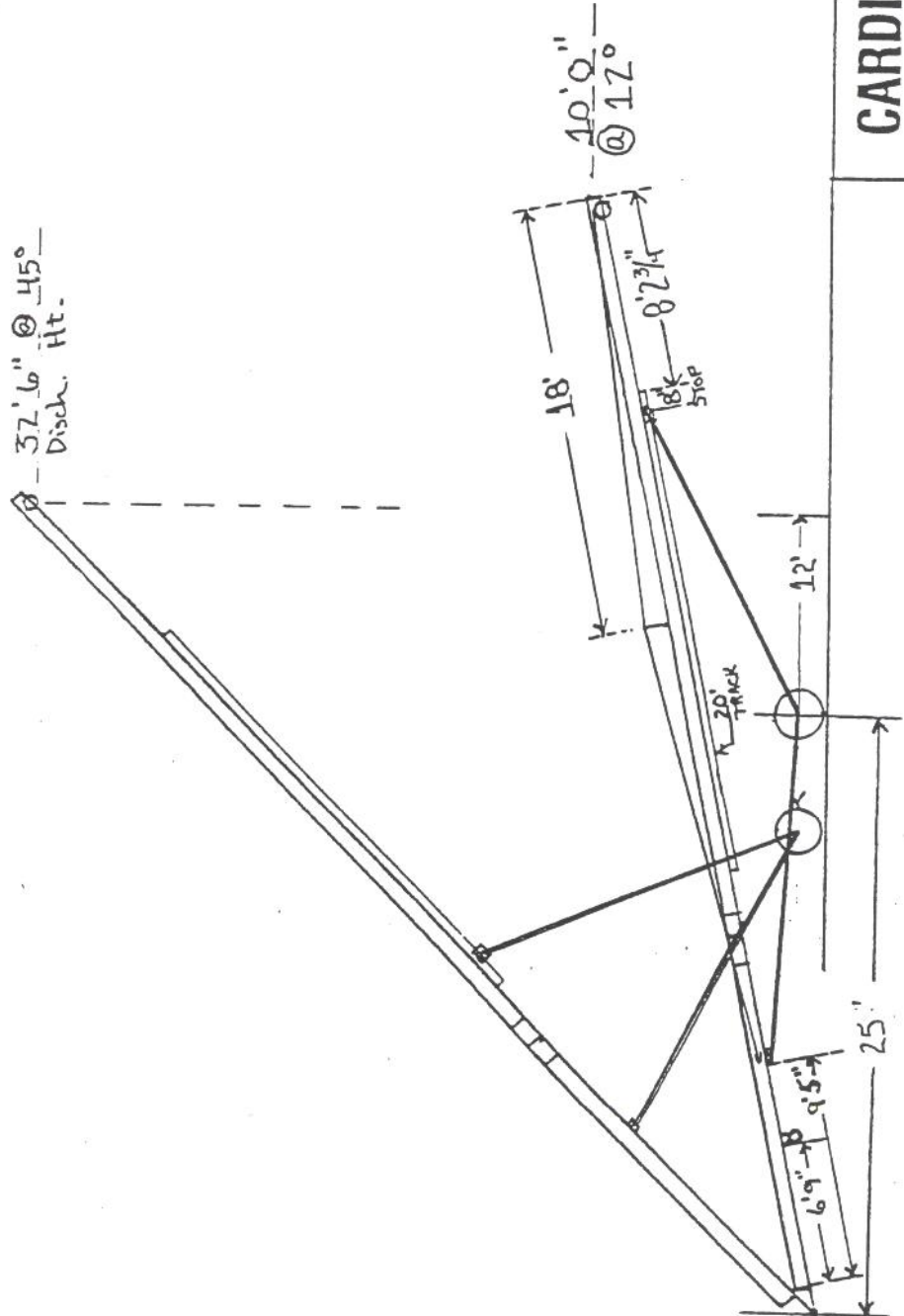


W = (A) 7' 8"
(B) 13' 10"

CARDINAL GRAIN SYSTEMS

SCALE: 1/4" = 1'	APPROVED BY: JLR
DATE: 6-9-93	DRAWING NUMBER:
8' x 32' TOP DRIVE	

WINCH CABLE: 1/4" x 54' (SINGLE STRANDING)
 TRUSS CABLE: 1/4" x 37'



CARDINAL GRAIN SYSTEMS

SCALE: 1/8" = 1'-0"

DATE: 6-9-93

APPROVED BY: [Signature]

DESIGNED BY: JLR

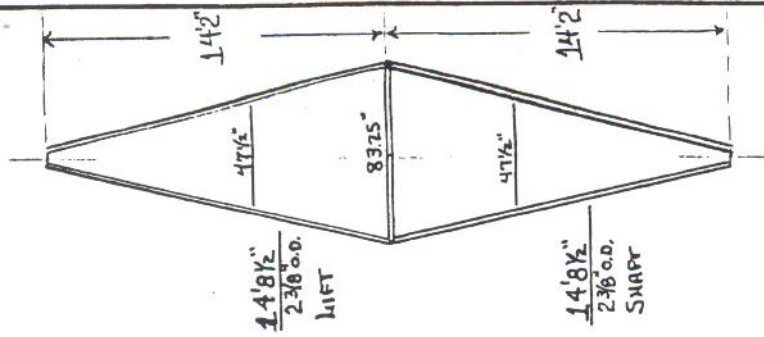
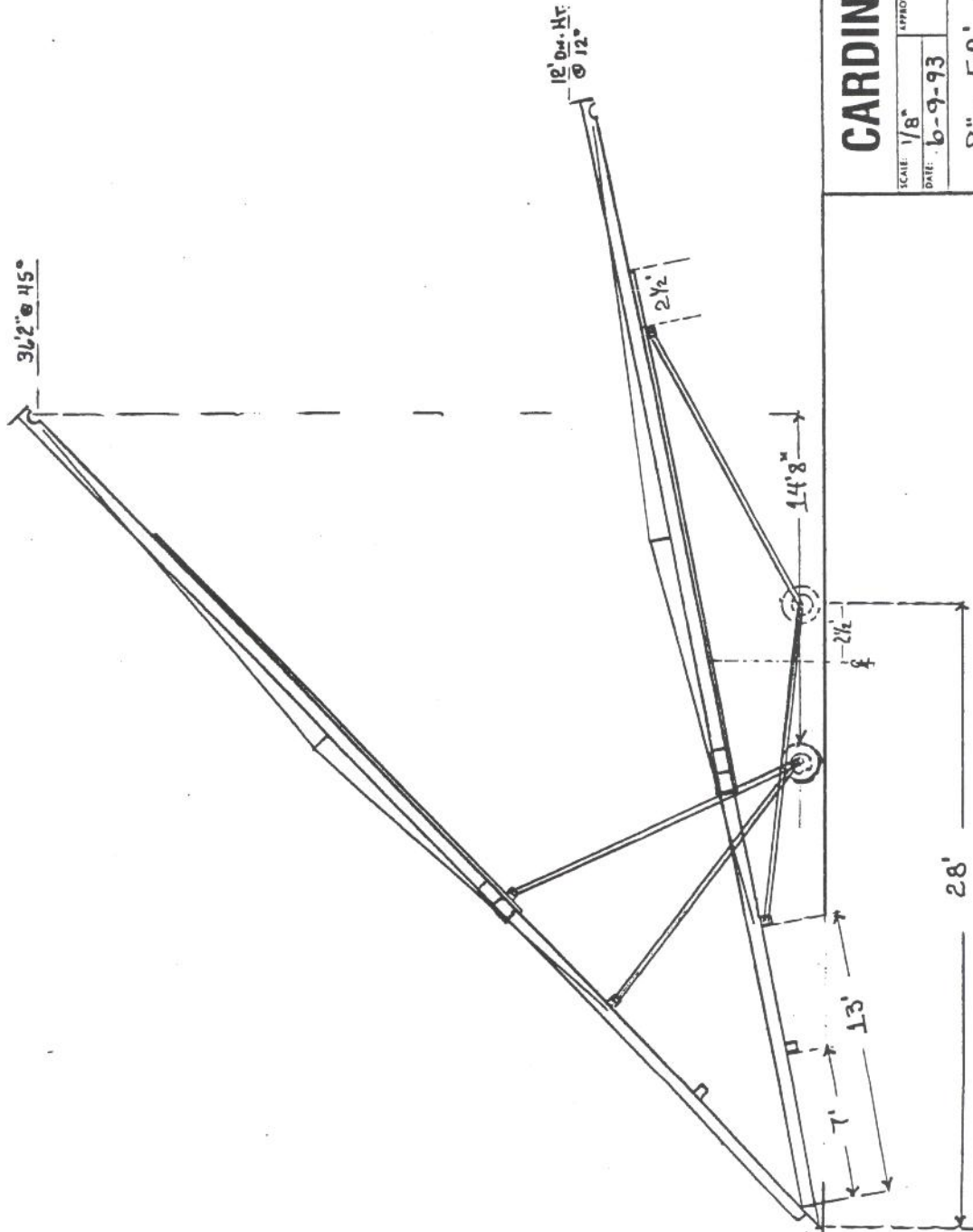
REVISED

8" x 47" TOP DRIVE

DRAWING NUMBER

- C = (A) 13' 2"
- (B) 19' 2"
- (C) 14'
- (D) 12' 9"
- (E) 13' 1"
- W = (A) 10' 10"
- (B) 20' 11"

- * 1/4" x 58' SINGLE STRUNG - WINCH CABLE
- * 1/4" x 39' TRUSS CABLE



CARDINAL GRAIN SYSTEMS

SCALE: 1/8" APPROVED BY:

DRAWN BY: **JUR**

DATE: **6-9-93**

REVISED

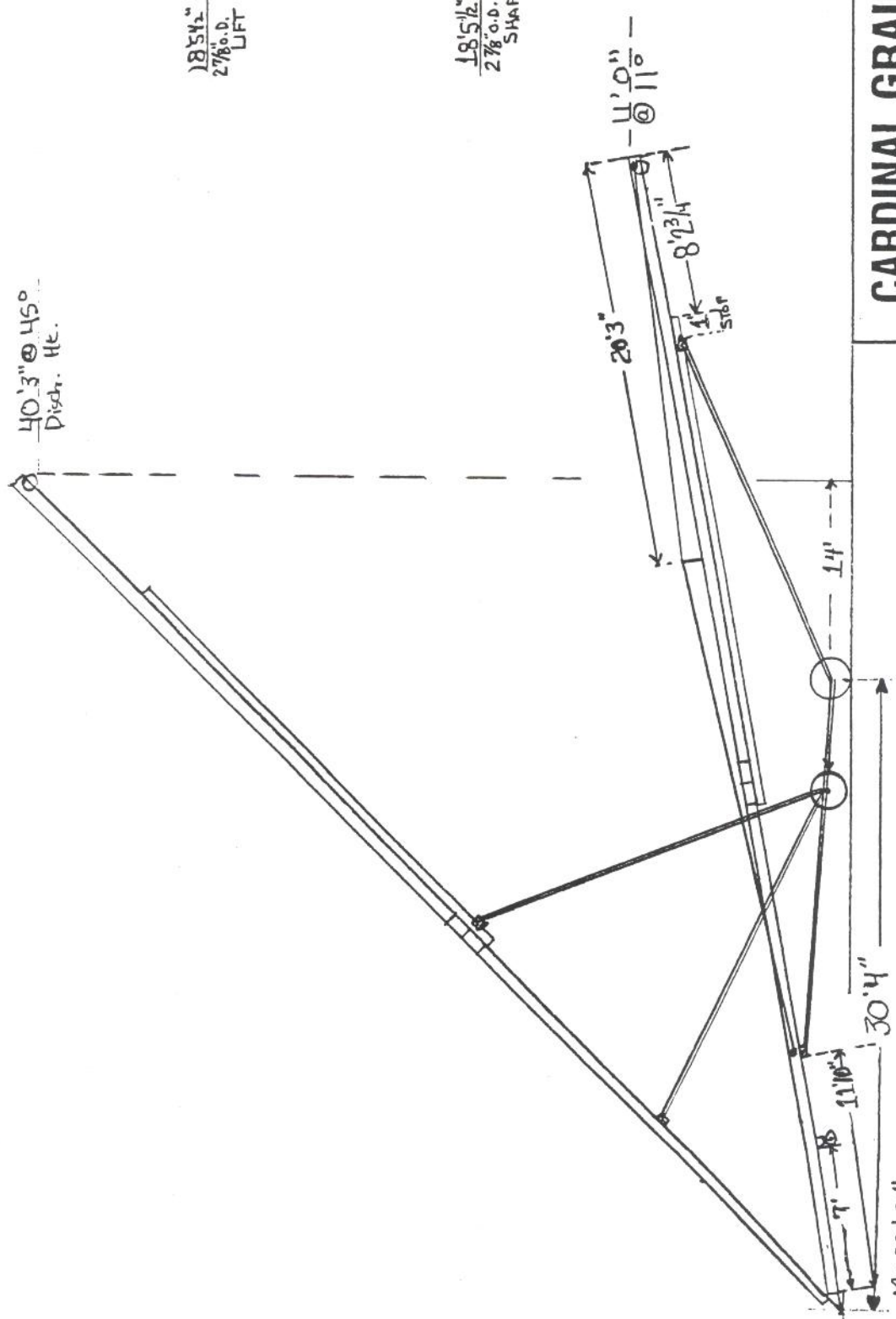
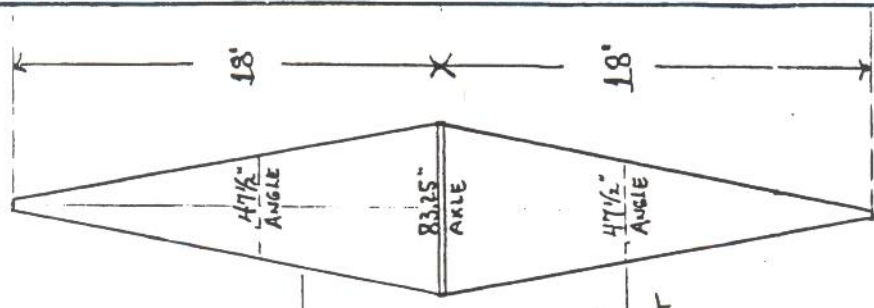
8" x 52' TOP DRIVE

DRAWING NUMBER

WINCH CABLE: 5/16 x 90' (DOUBLE STRUNG)

TRUSS CABLE: 1/4" x 45'

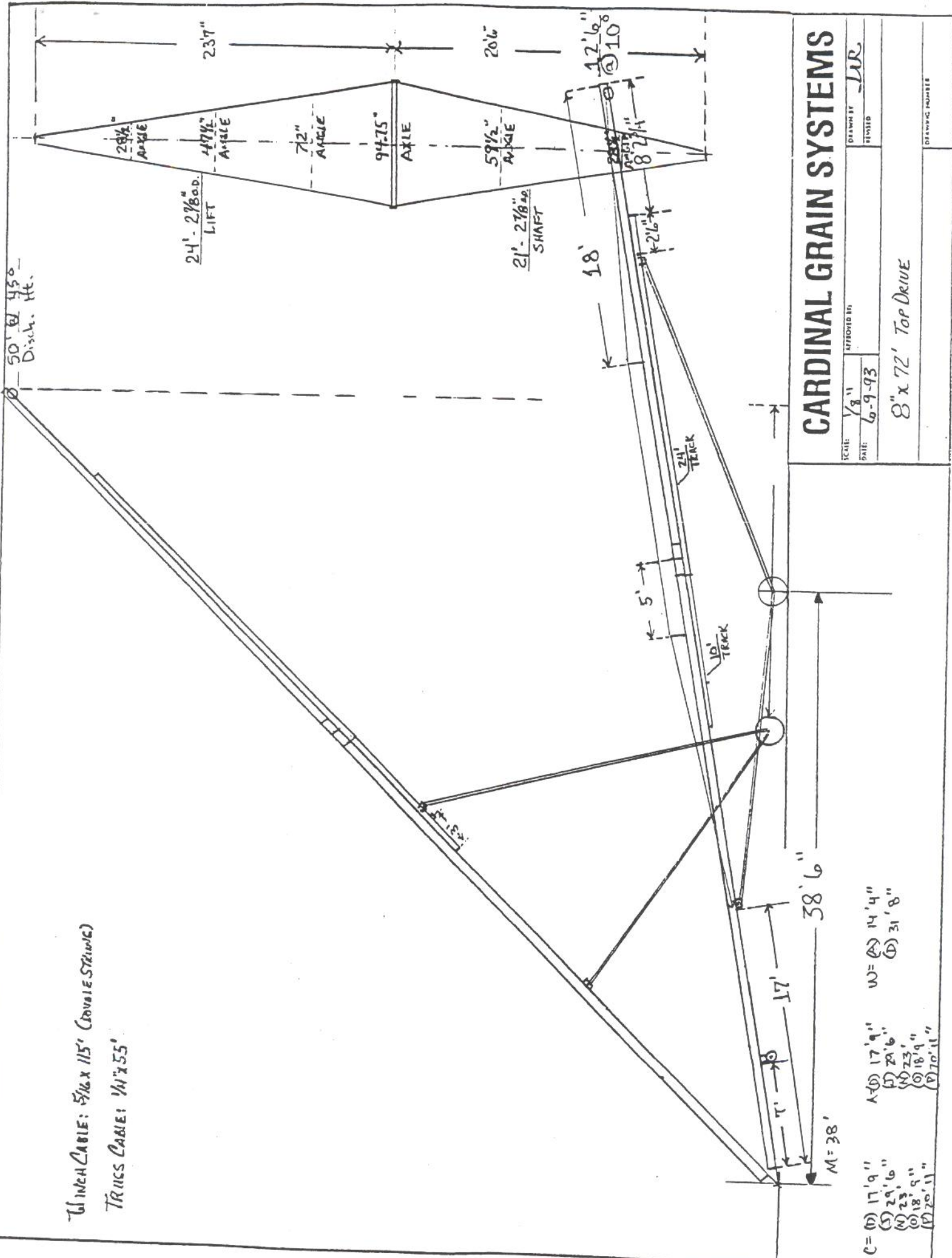
40' 3" @ 45°
Disch. Ht.



CARDINAL GRAIN SYSTEMS

SCALE: 1/8" = 1'	APPROVED BY: <i>JUR</i>
DATE: 6-9-93	REVISED:
8" x 57' TOP DRIVE	
DRAWING NUMBER:	

- C = (D) 12'
 (E) 24'
 (M) 18'
 (N) 15' 6"
 (P) 15' 6"
 8" x 59'
 A = (D) 12' 6"
 (S) 23' 8"
 (M) 20'
 (N) 16'
 (P) 15' 2"
 W = (A) 11' 5"
 (D) 25' 1"



TRUSS CABLE: 5/16" x 115' (DOUBLE STRUNG)
 TRUSS CABLE: 1/2" x 55'

CARDINAL GRAIN SYSTEMS

SCALE: 1/8" = 1'	APPROVED BY:	DRAWN BY: LUR
DATE: 6-9-93	REVISED:	
8" x 72' Top 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 1 1/2 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.

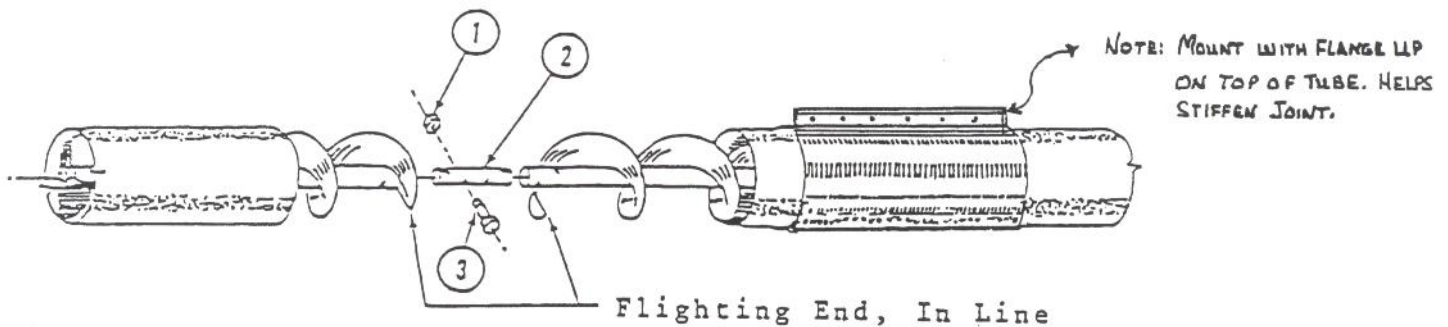


Figure #1

Figure #1 Key Nos.	Part No.	Description
1.	1280	3/8-24 LOCKNUT
2.	20627	Coupler Shaft
3.	1201	3/8-24x2" GAS HHCS

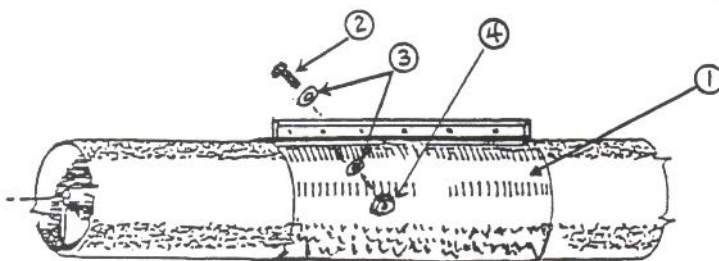


Figure #2

Figure #2 Key Nos.	Part No.	Description
1.	A28446	Tube Joiner W/Hdw
2.	1404	HHCS 3/8-16 x 1 1/2 GRD5
3.	28453	Clamp Washer 7/16 I.D.
4.	1274	3/8-16NC LOCKNUT

*Note: This dimension should be maintained between all Line Shaft Bearings.

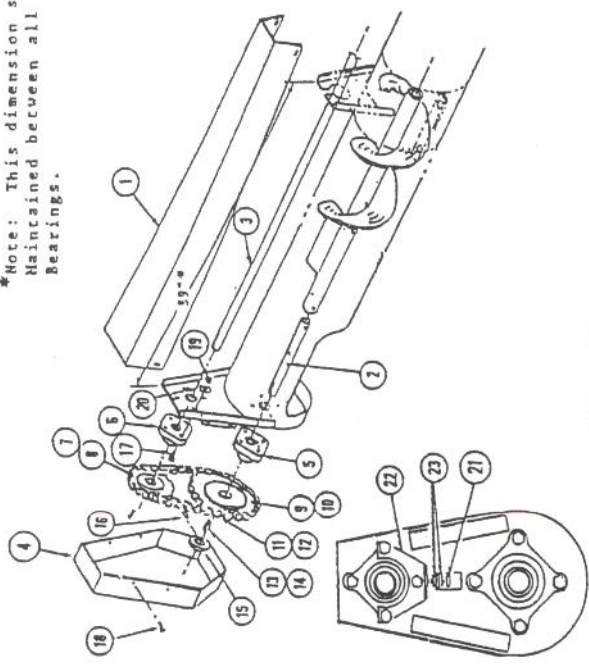


Figure #3
Top Drive Details

Figure #3 Key Nos.	Part No.	Description
1.	26498	Discharge Cover
2.	26506	Coupler Shaft
3.	27201	Line Shaft (Discharge)
4.	A27152	CHAIN COVER
5.	A21343	Bearing
6.	A26518	Sprocket 13I(upper)
7.	A26462	Sprocket 13I(upper)(double) 72'
8.	A26461	Sprocket 25I(lower)
9.	A20654	Sprocket 25I(lower)(double) 72'
10.	A26463	Roller Chain
11.	A25118	Sq. Key 1/2 x 1 1/2 72'
12.	A26692	Collar
13.	25139	Spring pin (collar to shaft)
14.	19179	Self tap screw 3/8 x 1 1/2 hex hd (pltd)
15.	20652	Locknut 7/16-14NC
16.	10023	Flatwasher 7/16
17.	1428	HRCS 3/8-16x1 1/2
18.	1319	Take up bracket
19.	1284	Jam nut 3/8-16
20.	1475	
21.	1176	
22.	27214	
23.	1470	

The Top End Drive should be assembled as shown above in Figure No. 3. The roller chain drive has a screw type take-up as shown in the end view drawing above. Take-up bracket, Key No. 22, mounts on top of the bearing. If the bearing collars are loosened during repairs, be sure to tighten these eccentric locking collars by turning them in the same direction (clockwise looking at the end of the shaft) as the shaft will be rotating in operation.

Note: Make sure that the Thrust Collar (Key No. 15) is tight up against the Roller Chain Sprocket (Key No. 9) to take care of the thrust load produced by the auger screw.

Install all the Line Shaft Bearings as shown in Figure No. 4 below by starting at the Top Drive and working down to the Gear box. Be sure to maintain the 59" spacings between all bearings. It is also important to keep all the bearings in alignment so that the Line Shaft will turn true and not vibrate excessively. Refer to the chart below to determine the Line shafts required for each model of the auger.

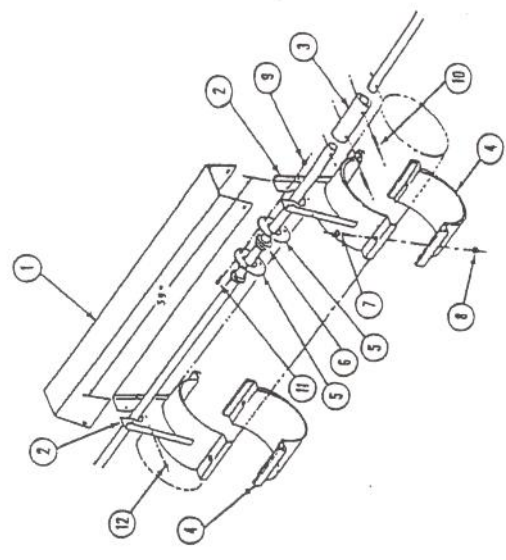
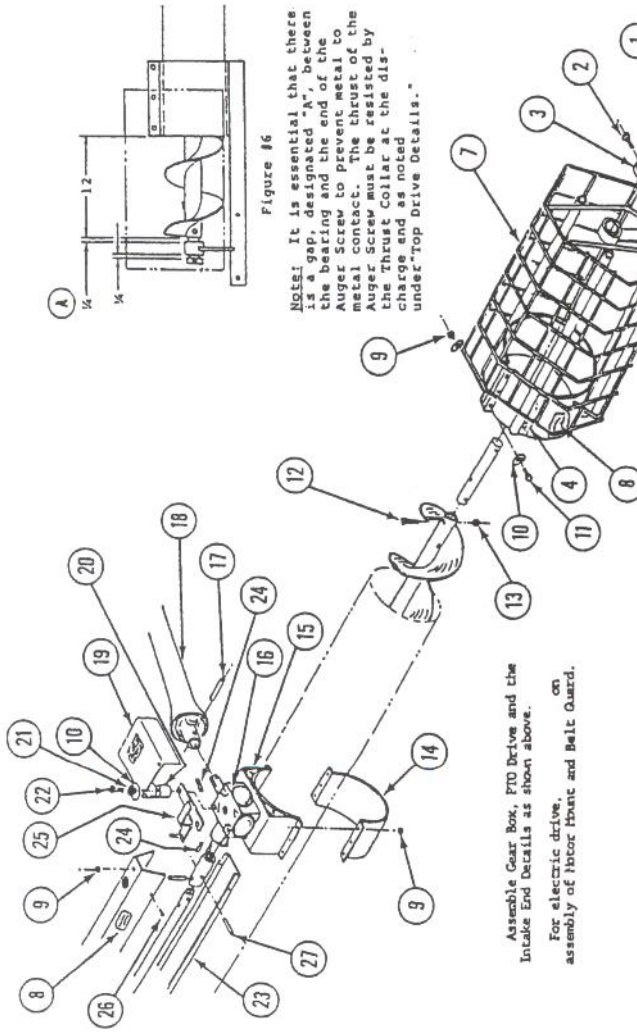


Figure #4
Line Shaft Details

Figure #4 Key Nos.	Part No.	Description
1.	26499	Cover
2.	A28363	Bearing Support
3.	26475	Line Shaft Coupler
4.	28364	Track Clamp Band HALF
5.	15341	Bearing Stamping
6.	A26519	Bearing (includes collar)
7.	1404	HRCS 3/8-16x1 1/2 GRDS (pltd)
8.	1274	3/8-16 hex locknut (nylok)(pltd)
9.	1273	5/16-18NC (nylok)(pltd) LOCKWMT
10.	26437	Roll pin
11.	1214	Carriage bolt 5/16-18x3/4
12.	1319	Self tap screw 1/2 x hex hd (pltd)

Line Shaft Chart

Discharge Line Shaft	32P	32E	47P	47E	52P	52E	57P	57E	62P	62E	72P	72E
Line Shaft	27201	27201	27201	27201	27201	27201	27201	27201	27201	27201	27201	27201
2nd Line Shaft	A27961	A27963	A27156	A27156	A27156	A27156	A27156	A27156	A27156	A27156	A27156	A27156
3rd Line Shaft			A27212	A27157	A27959	A27157	A27156	A27212	A27156	A27959	A27156	A27156
4th Line Shaft												
5th Line Shaft												
Part No.	27201		27201	27201	27201	27201	27201	27201	27201	27201	27201	27201
Length	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"	16' 0"
Part No.	A27156		A27157	A27208	A27157	A27156	A27207	A27208	A27156	A27208	A27156	A27209
Length	16' 0"	16' 0"	4' 11 1/4"	9' 10 1/4"	3' 8 1/4"	11' 1 1/4"	12' 4 3/8"	12' 4 3/8"	12' 4 3/8"	12' 4 3/8"	12' 4 3/8"	12' 4 3/8"



Assemble Gear Box, PTO Drive and the Intake End Details as shown above.
For electric drive, on assembly of motor front and Belt Guard.

Figure #6

Note: It is essential that there is a gap designated "A", between the bearing and the end of the Auger Screw to prevent metal to metal contact. The thrust of the Auger Screw must be resisted by the Thrust Collar at the discharge end as noted under "Top Drive Details."

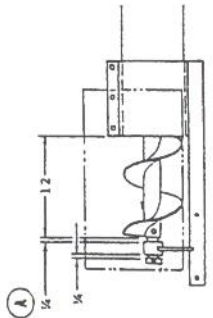
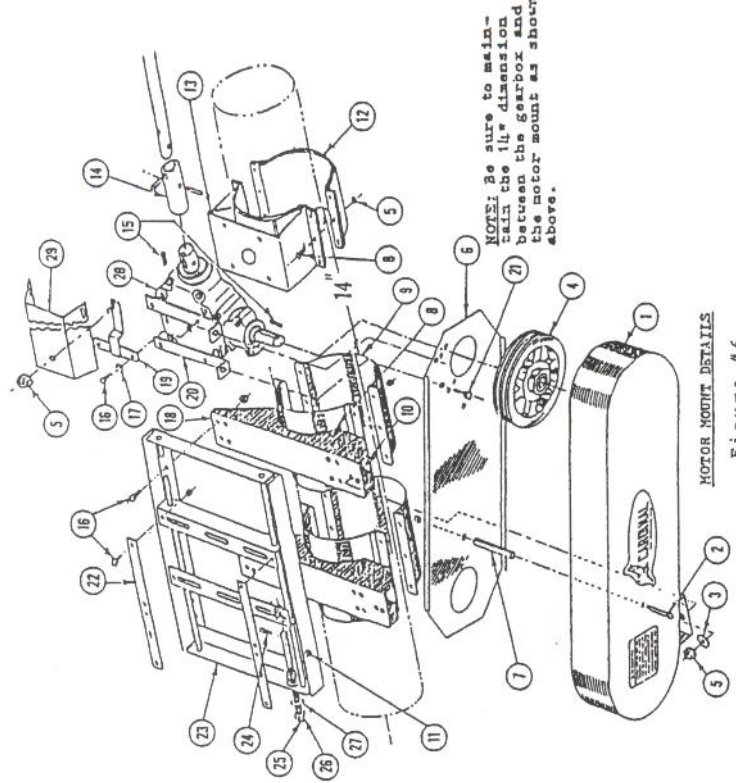


Figure #5

Gear Box & Intake End Detail

Figure #5 Key Nos.	Part No.	Description
1.	26403	Hitch
2.	1179	HHCS 3/8-16x2
3.	26706	Collar
4.	19961	Serial Number
5.	1427	HHCS 1/2-13x3 GRD5(pltd)
6.	1276	Locknut 1/2-13 (nylok)(pltd)
7.	A26489	Intake Housing
8.	23491	Decal "Danger"
9.	1274	3/8-16 Hex Locknut (nylok)(pltd)
10.	28453	Flat Clamp Washer 7/16 I.D.
11.	1404	HHCS 3/8-16x 1 1/2 GRD5 (pltd)
12.	1201	HHCS 3/8-24NFx2 GRD5
13.	1280	Locknut 3/8-24NF (nylok)(pltd)
14.	28107	Clamp Band Half
15.	A28190	Gear Box Mount
16.	A26347	Gear Box
17.	26649	Spring Pin 5/16x2 (pltd)
18.	A25221	PTO Shaft W/O Clutch
19.	A27935	PTO Shield W/Decal
20.	24728	Spacer
21.	1302	Lockwasher (pltd)
22.	1180	HHCS 3/8-16x2 1/2 (pltd)
23.	26501	Line Shaft Guard
24.	19179	Sq. Key 1/2x1 1/2
25.	A26378	Drive Shaft Shield Mtg. Brkt.
26.	1319	Self Tap Screw 1/2x 1/2 hex hd. (pltd)
27.	26437	Roll Pin

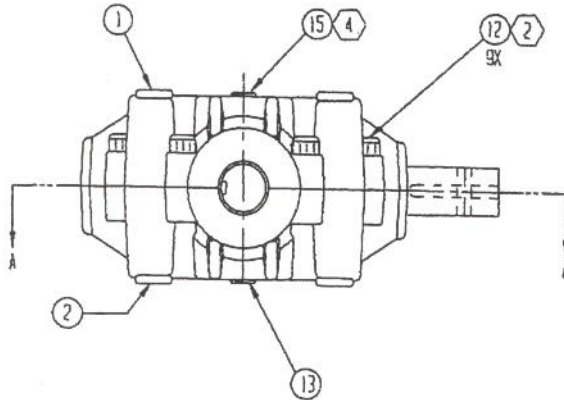
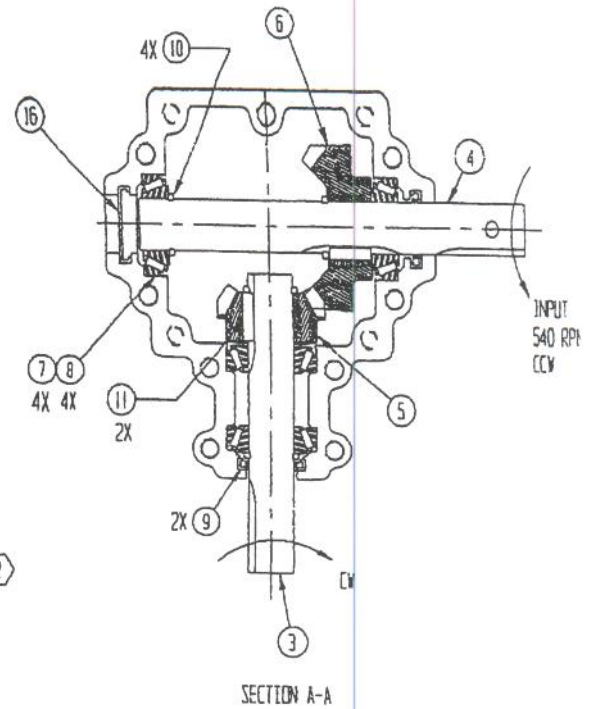
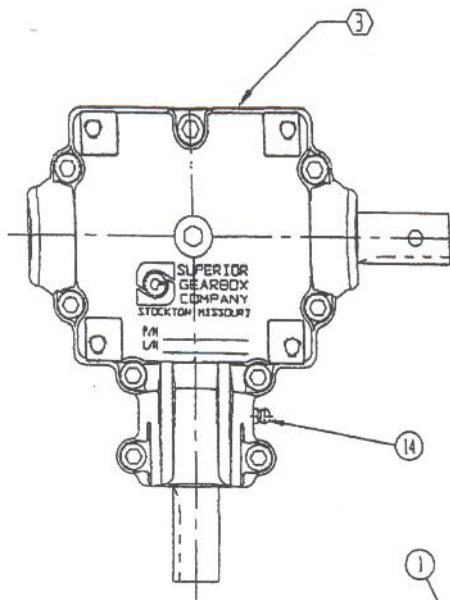


NOTE: Be sure to maintain the 1 1/2" dimension between the gears and the motor mount as shown above.

Figure #6

Figure #6 Key Nos.

Figure #6 Key Nos.	Part No.	Description
1.	A25133	Guard Front Cover
2.	1369	HHCS 5/16-18NCx5
3.	28453	Flat Clamp Washer 7/16 I.D.
4.	A26413	V-Belt Pulley
5.	1274	Hex Locknut 3/8-16 (nylok)(pltd)
6.	25125	Guard Back Plate
7.	25128	Cover Scandoff
8.	1404	HHCS 3/8-16x1 1/2 GRD5 (pltd)
9.	A25137	Clamp Band
10.	1175	HHCS 3/8-16x1 (pltd)
11.	1273	Locknut 5/16-18Nc (nylok)(pltd)
12.	28107	Clamp Band Half
13.	A28190	Gear Box Mount
14.	A27356	Coupler (Gearbox)
15.	19179	Sq. Key 1/2x1 1/2
16.	1174	HHCS 3/8-16x3/4 (pltd)
17.	1302	Lockwasher 3/8 (pltd)
18.	A25078	Support
19.	A26378	Drive Shaft Shield Mtg. Brkt.
20.	26752	Belt Guard Bracket
21.	1357	HHCS 5/16-18NCx3/4
22.	20766	Spacer Strap
23.	A25138	Motor Base
24.	1357	5/16-16NCx3/4 HHCS
25.	20771	Adjusting Rod
26.	1278	Hex Locknut 3/4-10 (nylok)(pltd)
27.	1297	Flatwasher 3/4
28.	A26347	Gear Box
29.	26500	Line Shaft Cover



Run-Date: Fri 01/10/2003



SUPERIOR GEARBOX COMPANY BILL of MATERIAL

Customer-Name: **CARDINAL GRAIN**

Superior Gearbox P/N: **R200-9DXE-B0491**

Customer P/N: **A26347 (TD 6i8")**

Seq	Component-Item	Description	Qty-Per	PART #
1	R200-004M-B0492	HSG, R200 MACH THRU Ø.234 ZERK	1	30430
2	210003-0	HSG, R200 MACH TAP STD	1	30427
3	200100-01	SHAFT, R200 STUB KW .25KW (PINION)	1	27027
4	200111-127	SHAFT, R200 CROSS-S KW .25KW Ø	1	27028
5	251016	GEAR, R200 1.50 16T KW Ø1.0005	1	26227
6	251024	GEAR, R200 1.50 24T KW Ø1.0005	1	26226
7	244610	BEARING, CUP 1.9800 VN-L44610	4	23197
8	244643	BEARING, CONE 1.000 VN-L44643	4	23198
9	209843	SEAL, 1.000-1.499-.250 (R) TC	2	26225
10	203293	RETAINING RING, EXT 1.000 SHFT	4	27030
11	200200	KEY, 1/4 X 1/4, .930	2	27029
12	203815	BOLT, 3/8-16 X 1.50 SHCS	9	27710
13	200300	PLUG, 1/4-18 NPT SCHD W/3M	2	27711
14	205010	ZERK, GREASE SPJN DRIVE	1	30426
15	20030V	PLUG, VENT 1/4 NPT SCHD PLN	1	27712
16	400301	END CAP, CP-2.000-.312 D.#0689	1	30428
17	X000-48A0-A0165	LUBE/EP 80W90	14	

CHASSIS ASSEMBLY

9 Assemble the chassis pipes and axle together as shown in Figure 9. With a cable or chain sling fastened securely around 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. 7, 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. 7 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. 9) 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. 8). Attach the chassis stop with four ½-13NCx1 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 top end heavy and tip.

String the truss cables as shown in Figure No. 7. Tighten cables only enough to maintain a straight auger. Note:

Assemble the rear stop, Key No. 2, in Figure No. 8 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 truss supports (trussed models only), Key No. 10 in Figure No. 7, to the tube placing it as shown on the component placement diagram.

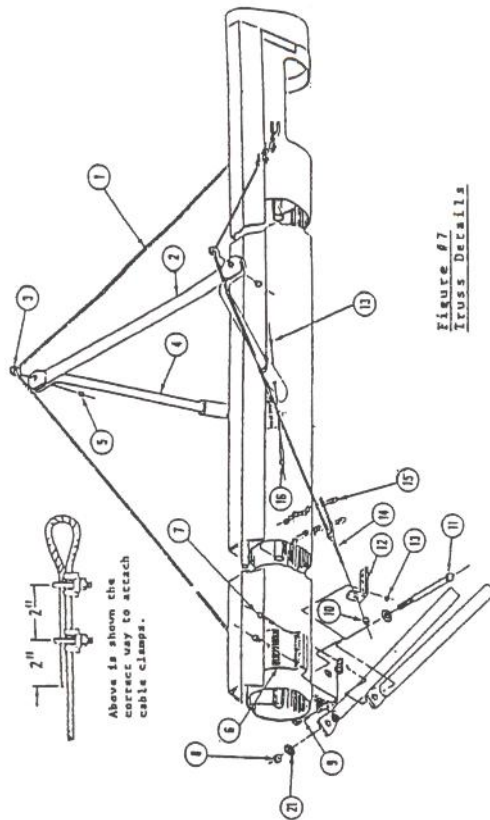
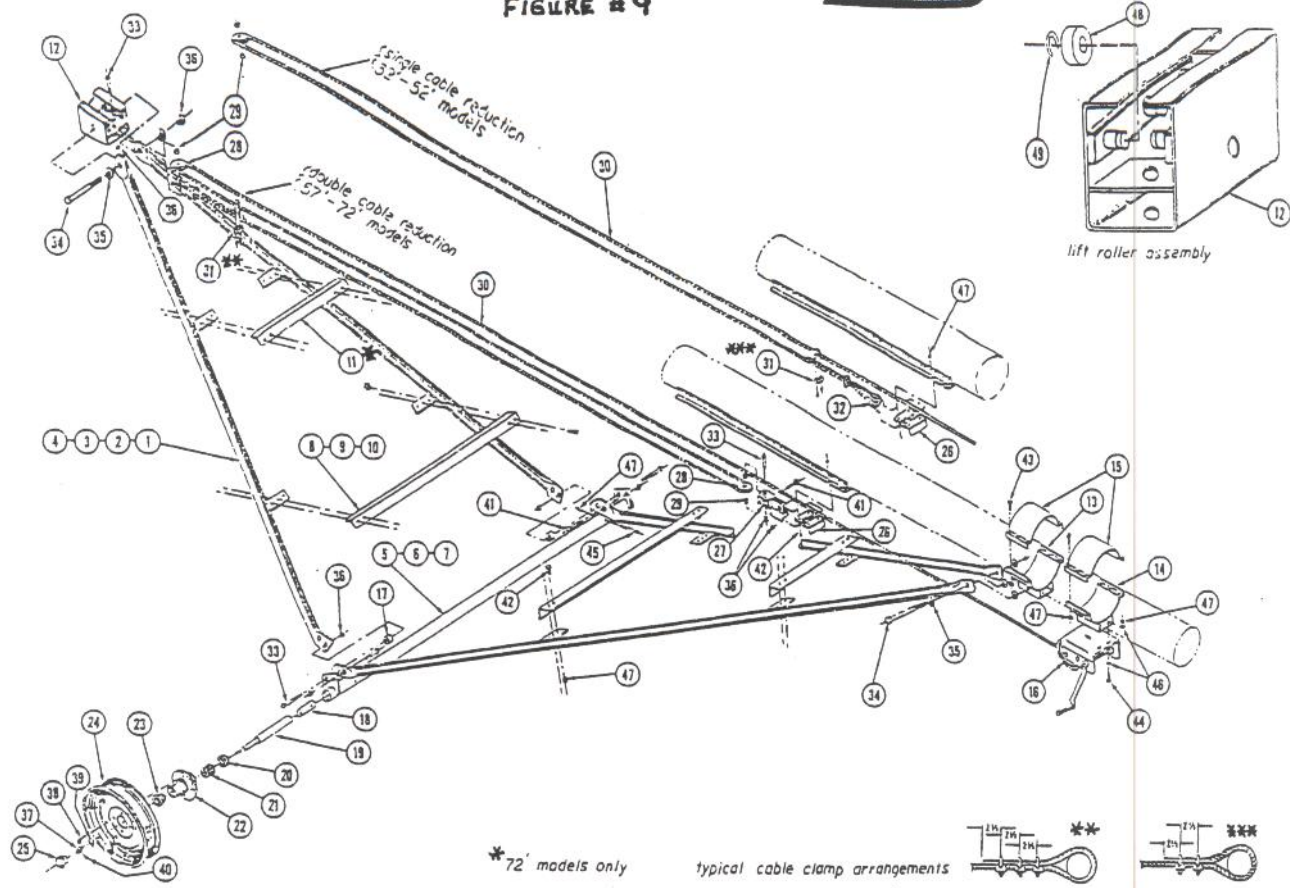


Figure #7
Truss Details

Figure #7 Rev. Nos.	Part. No.	Description
-A	A23231	½ Dia. x 45' Cable (52'-47") Augers
-B	A26068	½ Dia. x 25' Cable (92'-53") Augers
-C	A26673	1 Dia. x 25' Cable (72' Augers)
1.	A28414	Truss Truss Pipes
2.	A28414	Eye Bolt 3/8-18x4
3.	1231	Truss Support 3/8-16
4.	28100	Clamp Band Half
5.	1404	HECS 3/8-16x14 CRDS
6.	28185	Hex Locknut 3/4-10
7.	1278	Chassis Hook Up
8.	A28370	Reg. Nut ½-13
9.	1269	HECS 3/4-10x7
10.	1508	Anchor Bracket
11.	28391	Hex Locknut 3/8-16
12.	1274	Eye Bolt ½-13x8
13.	A28415	½ Cable Clamp (complete)
14.	15188	HECS 3/8-16
15.	1178	

FIGURE #9

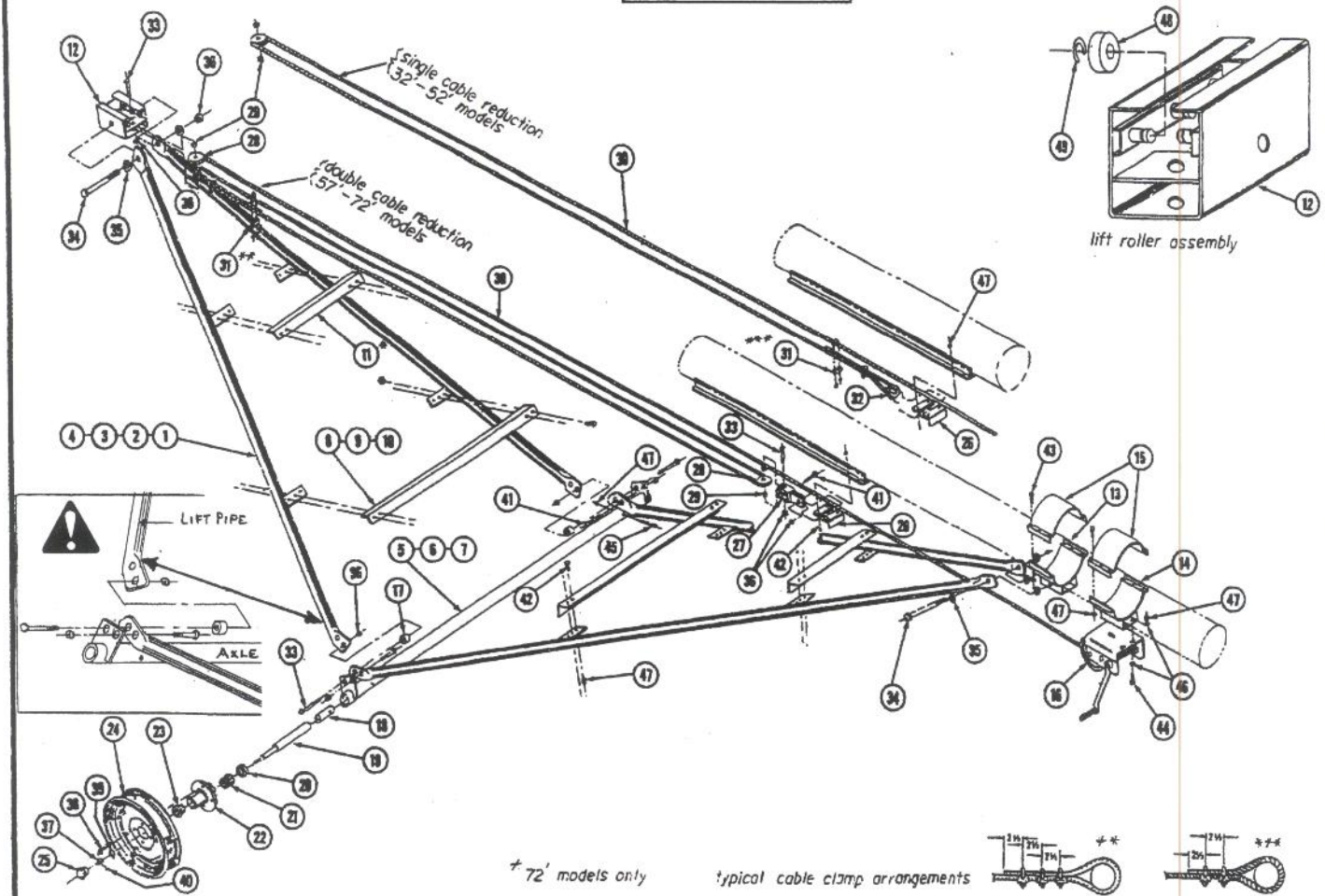


*72' models only

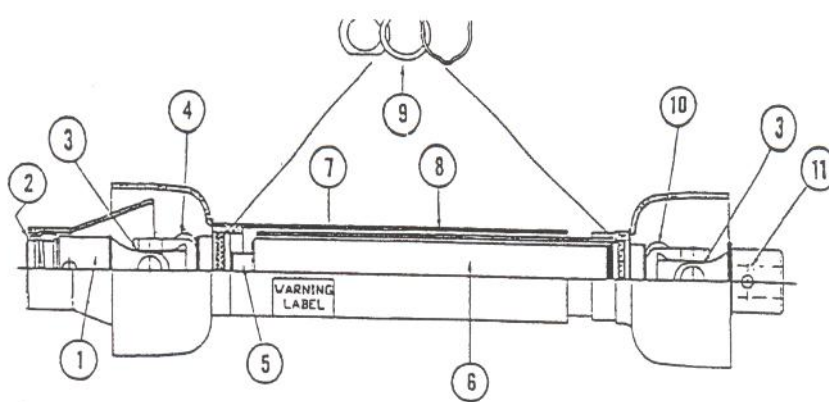
typical cable clamp arrangements

Figure #9 Key Nos.	Part No.	Description			
1.	A28542	2 3/8" O.D.x9' 2 7/8" Chassis	25.	28509	Cap
2.	A28543	2 3/8" O.D.x14' 8 1/2" Chassis Pipe	26.	A28395	Stop W/A
3.	A28547	2 7/8" O.D.x18' 5 1/2" Chassis Pipe	27.	A26033	Fulley Bracket
4.	A28544	2 7/8" O.D.x21' Chassis Pipe	28.	15144	Cable Sheave
5.	A28476	65.25" Axle Pipe (32' Auger)	29.	20660	Spacer
6.	A28477	83.25" Axle Pipe (47'-62' Auger)	30. A.	A28627	1/4" Dia.x36' Winch Cable (32' Auger)
7.	A28478	94.75" Axle Pipe (72' Auger)	B.	A28581	1/4" Dia.x56' Winch Cable (47' Aug)
8.	28540	35 1/2" Chassis Angle (32' auger)	C.	A27163	1/4" Dia.x58' Winch Cable (52' Au
9.	28541	47 1/2" Chassis Angle (47'-62' Auger)	D.	A28635	5/16 Dia.x94' Winch Cable (57' Auger)
10.	28539	59 1/2" Chassis Angle (72' Auger)	E.	A28637	5/16 Dia.x96' Winch Cable (62' Auger)
11.	28538	28 1/8" Chassis Angle (72' Auger)	F.	A28514	5/16 Dia.x108' Winch Cable (72' Auger)
12.	A28588	Lift Roller Frame W/A	31.A.	15188	1/2" Cable Clamp (32'-52' Auger)
13.	A28369	8" Chassis Hook-up W/A	B.	15266	5/16" Cable Clamp (57'-72' Auger)
14.	A28033	8" Winch Mount W/A	32.	19480	5/16" Cable Thimble
15.	28107	8" 3 Bolt Half Band	33.	1192	HRCS 3/4-10x3
16. A.	A20532	Winch 1000# (32' Auger)	34.	1508	HRCS 3/4-10x7
B.	A20385	Winch 1500# (47'-52' Auger)	35.	1297	3/4 Flatwasher
C.	A28057	Winch 2500# (57'-72' Auger)	36.	1278	Locknut 3/4-10
17.	28484	Frame Spacer	37.	28507	Spindle Nut
18.	28483	Axle Tube Sleeve	38.	28510	Wheel Bolt
19.	28513	Axle Spindle	39.	28506	Spindle Washer
20.	28511	Seal	40.	28508	Spindle Cotter Pin
21.	15128	Wheel Bearing - Inner Cone	41.	1191	HRCS 3/4-10x2
22.	15184	Wheel Hub	42.	1187	HRCS 1/2-13x1
23.	15127	Wheel Bearing - Outer Cone	43.	1404	HRCS 3/8-16x1 1/2 GRD5
24.	15124	15" 4 Bolt Rim	44.	1175	HRCS 3/8-16x1
			45.	1514	3/8-16x2 3/4 GRD5
			46.	1294	3/8 "Type A" Flatwasher
			47.	1274	Locknut 3/8-16
			48.	27689	Plastic Roller
			49.	27690	Retaining Ring

FIGURE-9

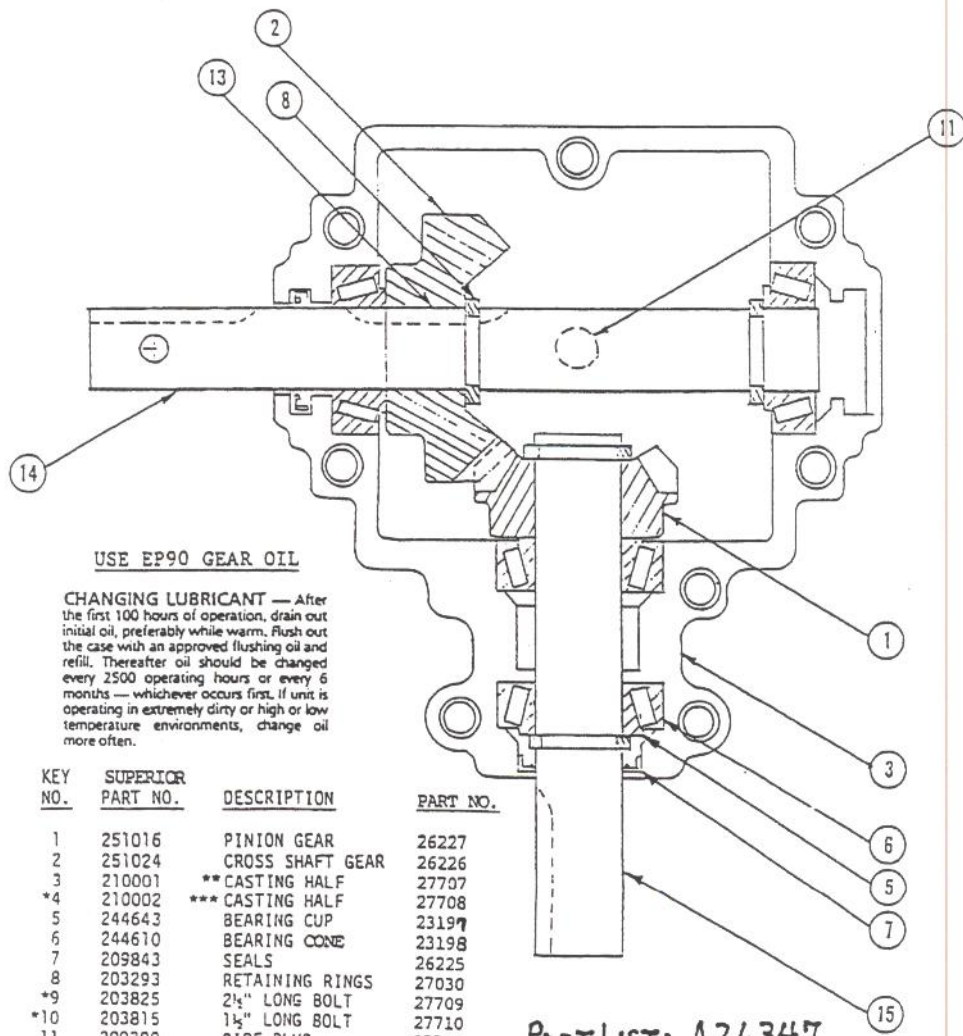


- | | | | |
|------------|---|------------|---|
| 1. A28542 | 2 3/8" O.D. x 9' 2 7/8" CHASSIS PIPE | 26. A28395 | STOP W/A |
| 2. A28543 | 2 3/8" O.D. x 14' 8 1/2" CHASSIS PIPE | 27. A26033 | PULLEY BRACKET |
| 3. A28547 | 2 7/8" O.D. x 18' 5 1/2" CHASSIS PIPE | 28. 15144 | CABLE SHEAVE |
| 4. A28544 | 2 7/8" 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) | A27163 | 1/4" x 58' WINCH CABLE (47' & 52' AUGER) |
| 7. A28478 | 94.75" AXLE PIPE (72' AUGER) | A28637 | 5/16" x 96' WINCH CABLE (57' & 62' AUGER) |
| 8. A28540 | 35 1/2" CHASSIS ANGLE (32' AUGER) | A28514 | 5/16" x 108' WINCH CABLE (72' AUGER) |
| 9. A28541 | 47 1/2" CHASSIS ANGLE (47' thru 62' AUGERS) | 31. 15188 | 1/4" CABLE CLAMP |
| 10. A28539 | 59 1/2" CHASSIS ANGLE (72' AUGER) | 15266 | 5/16" CABLE CLAMP |
| 11. A28538 | 28 1/8" CHASSIS ANGLE (72' AUGER) | 32. 19480 | 5/16" CABLE THIMBLE |
| 12. A28588 | LIFT ROLLER FRAME -W/A | 33. 1192 | HHCS 3/4"-10x3" |
| 13. A28369 | CHASSIS HOOKUP-W/A | 34. 1508 | HHCS 3/4"-10x7" |
| 14. A28033 | WINCH MOUNT-W/A | 35. 1297 | 3/4" FLATWASHER |
| 15. 28107 | 3 BOLT- HALF BAND | 36. 1278 | 3/4" LOCKNUT |
| 16. A20532 | 1000 # WINCH- (32' AUGER) | 37. 28507 | SPINDLE NUT |
| A20385 | 1500 # WINCH- (47' & 52' AUGERS) | 38. 28510 | WHEEL BOLT |
| A28057 | 2500 # WINCH- (57' thru 72' AUGERS) | 39. 28506 | SPINDLE WASHER |
| 17. 28484 | FRAME SPACER | 40. 28508 | SPINDLE COTTER PIN |
| 18. 28483 | AXLE TUBE SLEEVE | 41. 1191 | HHCS 3/4"-10x2" |
| 19. 28513 | AXLE SPINDLE | 42. 1187 | HHCS 1/2"-13x1" |
| 20. 28511 | SEAL | 43. 1404 | HHCS 3/8"-16x1 1/2" GR.5 |
| 21. 15128 | WHEEL BEARING-INNER CONE | 44. 1175 | HHCS 3/8"-16x1" |
| 22. 15184 | WHEEL HUB | 45. 1514 | HHCS 3/8"-16x2 3/4" GR.5 |
| 23. 15127 | WHEEL BEARING-OUTER CONE | 46. 1294 | 3/8" FLATWASHER |
| 24. 15124 | 15" 4 BOLT RIM | 47. 1274 | 3/8"-16 LOCKNUT |
| 25. 28509 | CAP | 48. 27689 | PLASTIC ROLLER |
| | | 49. 27690 | RETAINING RING |



PARTS LIST: A27849 (183-63) G16

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 } No Key Number



USE EP90 GEAR OIL

CHANGING LUBRICANT — After the first 100 hours of operation, drain out initial oil, preferably while warm. Flush out the case with an approved flushing oil and refill. 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 more often.

KEY NO.	SUPERIOR PART NO.	DESCRIPTION	PART NO.
1	251016	PINION GEAR	26227
2	251024	CROSS SHAFT GEAR	26226
3	210001	**CASTING HALF	27707
*4	210002	***CASTING HALF	27708
5	244643	BEARING CUP	23197
6	244610	BEARING CONE	23198
7	209843	SEALS	26225
8	203293	RETAINING RINGS	27030
*9	203825	2 1/4" LONG BOLT	27709
*10	203815	1 1/4" LONG BOLT	27710
11	200300	PIPE PLUG	27711
*12	20030V	VENTED PLUG	27712
13	200200	KEY	27029
14	200111-127	CROSS SHAFT	27028
15	200100-01	PINION SHAFT	27027
*	207597	GREASE ZERK	27713

PART LIST: A26347

*PARTS NOT SHOWN
 **THREADED HOLES
 ***THROUGH HOLES