OPERATOR'S
and
SET-UP MANUAL

CARDINAL
FARM MECHANIZATION EQUIPMENT

Model 800

BUCKET ELEVATOR

Cardinal Grain Systems, Inc. • P.O. Box 992 • Columbia City, Indiana 46725 • 219/244-4654

12/90

Due to changes which may occur as a result of Cardinal's ongoing Quality Evaluation Program, Cardinal reserves the right to modify features, specifications, and prices without advance notice.

Cardinal$_{TM}$ 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 $_{TM}$ 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

CARDINAL

- SYSTEM PLANNING -

A GRAIN SYSTEM BUILT AROUND A CARDINAL BUCKET ELEVATOR AFFORDS THE MOST VERSATILE SYSTEM TO OPERATE, MAINTAIN, AND EXPAND THAN ANY OTHER TYPE OF SYSTEM.

WHEN PLANNING YOUR SYSTEM TAKE WHAT YOU NEED TODAY AND DOUBLE YOUR PLAN. YOU MIGHT NOT INSTALL THIS PLAN TODAY, BUT YOU MUST ALLOW FOR IT TODAY TO ASSURE YOURSELF OF A COMPLETE WORKABLE SYSTEM WHEN THE TIME ARISES.

USE THIS FUTURE PLAN AND LEAVE ROOM FOR IT WHEN YOU PICK THE SITE. ALSO, LOOK FOR A PLACE WHICH WILL BE FREE FROM SURFACE WATER DRAINING INTO OR STANDING AROUND THE COMPLETED SYSTEM. THE SITE MUST ALSO OFFER A GOOD WORKABLE TRAFFIC PATTERN TO ASSURE A MORE EFFICIENT LOADING AND UNLOADING OPERATION.

WHEN THE SITE AND THE SYSTEM IS ESTABLISHED, THE DISCHARGE HEIGHT CAN BE DETERMINED. ALWAYS HAVE EACH SPOUT RUN FALLING AT LEAST AT A 37° ANGLE FOR DRY GRAIN AND AT LEAST 45° FOR WET GRAIN. THESE ANGLES ARE ABSOLUTE MINUMUMS WHICH MAY NOT WORK PROPERLY WITH LESS THAN TOP QUALITY GRAIN. THE 37° FALL ANGLES ARE MEANT FOR NO MORE THAN 15% MOISTURE CONTENT WITH MINIMAL FOREIGN MATERIAL, AND FINE CONTENT. THE 45° FALL ANGLES ARE MEANT FOR GOOD QUALITY GRAIN AND A MAXIMUM OF 28% MOISTURE CONTENT. AS THE MOISTURE CONTENT RISES AND/OR THE QUALITY DROPS, STEEPER FALL ANGLES ARE REQUIRED. IN GENERAL, IF ALL DRY GRAIN SPOUTS ARE 45° AND ALL WET GRAIN SPOUTS ARE 60°, THESE STEEPER FALLS WILL ALLOW FOR ERRORS AND THE FUTURE ADDITIONS OF BINS AND ACCESSORIES. (ALL FALL ANGLES ARE STATED IN DEGREES FROM HORIZONTAL.)

PROPER SIZING OF SPOUTING DIAMETER WILL INCREASE THE FLOW CHARACTERISTICS OF A GIVEN SPOUT. IF THE MINIMAL FALL ANGLES ARE USED, ALWAYS USE SPOUT DIAMETERS AS SHOWN IN THE FOLLOWING TABLE:

THROUGHPUT CAPACITY (BU/HR) DRY GRAIN 15% MC

SPOUTING DIAMETER	37° FALL	45° FALL
6"	0-1500	0-2000
8"	2000-3500	2500-4000
10"	3500-7000	4500-8000

THROUGHPUT CAPACITY (BU/HR) 28% MC MAXIMUM

SPOUTING DIAMETER	45° FALL	60° FALL
6"	0-1500	0-2000
8"	2000-3500	2500-4000
10"	3500-7000	4500-8000

(THESE CAPACITIES RELATE TO GOOD QUALITY #2 GRADE SHELLED CORN)

EACH SPOUT SHOULD BE TERMINATED WITH A SELF-CLEANING BIN ENTRANCE CUSHION BOX. THIS UNIT HAS A REMOVEABLE END PLATE WHICH ALLOWS THE OPERATOR TO CHECK FOR PLUGGING OR EXCESSIVE WEAR. IT ALSO AFFORDS A CUSHION OF GRAIN TO BUILD UP IN THE BIN ENTRANCE SO THE INCOMING GRAIN IMPACTS AGAINST GRAIN INSTEAD OF METAL.

WHEN THE SYSTEM IS PLANNED, A DISTRIBUTOR HEAD WHICH ALLOWS FOR THE FUTURE ADDITIONS OF SPOUT RUNS SHOULD BE INCORPORATED.

FOR EACH RUN OF SPOUT WHICH IS LONGER THAN 30' LONG AND IS AT LEAST 45° NEEDS TO BE TRUSSED WITH CARDINAL TRUSS SUPPORTS. IF YOUR SPOUT RUNS ARE AT A STEEPER 60° ANGLE, BEGIN TRUSSING AT 50' OF SPOUT RUN. SEE THE FOLLOWING TABLE FOR FIGURING YOUR TRUSS REQUIREMENT. THE CHART SHOWS THE NUMBER OF TRUSS SUPPORTS NEEDED AND THE SPAN OF EACH TRUSS SUPPORT.

LENGTH OF SPOUT

SPOUT DIA.	30'-50'	50'-70'	70'-90'	90'-110'	110'-130'
6"	1-3'	2-4'	2-3';1-6'	2-4';1-8'	N/R
8"	1-4'	2-6'	2-4';1-6'	2-4';1-8'	2-6';1-8'
10"	1-6'	2-6'	2-6';1-8'	2-6';1-8'	2-6';1-8'

EACH TRUSS SUPPORT MUST BE ORDERED SEPARATELY AND ONE HOOK-UP KIT FOR EACH RUN OF SPOUT MUST BE ORDERED. THE HOOK-UP KIT INCLUDES THE TURNBUCKLES AND THE THIMBLES LESS THE CABLE REQUIRED. ORDER CABLE 5 TIMES THE SPOUT RUN FOR EACH SPOUT.

FOR ALL PRACTICAL PURPOSES, THE DISTRIBUTOR HEAD DOES NOT REQUIRE ANY ADDITIONAL HEIGHT TO BE ADDED TO THE BUCKET ELEVATOR. HOWEVER, THE HEAD DISCHARGE ADAPTOR, WHICH ATTACHES DIRECTLY ABOVE THE DISTRIBUTOR, REQUIRES AN ADDITIONAL ONE FOOT TO THE DISCHARGE HEIGHT OF THE BUCKET ELEVATOR. ALWAYS USE THE HEAD DISCHARGE ADAPTOR, EXCEPT WHEN THE GRAIN CLEANER IS ATTACHED TO THE DISCHARGE OF THE ELEVATOR THE HEAD DISCHARGE ADAPTOR CREATES A GOOD FLOW PATTERN WITHIN THE GRAIN FLOW BEFORE THE GRAIN ENTERS ANY SORT OF DISCHARGE ACCESSORIES.

WITH ALL OF THE DISCHARGE EQUIPMENT REQUIREMENTS DECIDED, A SCHEMATIC DRAWING (SEE FIGURE #1) OF THE ELEVATOR SHOULD BE DONE. THIS DRAWING WILL HELP YOU DECIDE WHAT SUPPORT EQUIPMENT IS REQUIRED AND WHAT SERVICE EQUIPMENT WILL BE NEEDED.

WHEN THE MODEL NUMBER IS USED FOR ORDERING, IT WILL GIVE YOU THE REQUIRED LEG SECTIONS, BOOT SECTION AND HEAD SECTION TO PRODUCE YOUR REQUIRED HEIGHT. THE DISCHARGE HEIGHT ADDED BY THE HEAD IS FIGURED IN THE MODEL NUMBER FOR THE BASIC ELEVATOR. THE EQUIPMENT THAT COMES WITH THE BASIC ELEVATOR IS CHARTED BELOW WITH IT'S DISTANCE TAKEN UP IN THE FINAL STRUCTURE.

	HEIGHT	
BOOT SECTION	22"	
ACCESS LEG. SECTION	4 FT.	
STD. LEG SECTION	8 FT.	SEE FIGURE #1
UPPER LEG SECTION	8 FT.	
ALL HEAD SECTIONS	25"	
4 FT. LEG SECTIONS (IF REQUIRED)	4 FT.	

- SAFETY -

1. LADDERS AND CAGES MUST BE INSTALLED CORRECTLY AND SECURELY.

2. PERSONS OF POOR HEALTH OR IRRESPONSIBLE PERSONNEL SHOULD NOT ASCEND THE LADDER.

3. BE SURE GUARDS ARE INTACT AT ALL TIMES DURING OPERATIONS.

4. DO NOT REMOVE OR OPEN ANY INSPECTION DOORS OR COVERS WHILE THE ELEVATOR IS IN OPERATION. FLYING GRAIN MAY INJURE YOUR EYES.

5. ENCLOSED AREAS AROUND THE ELEVATOR MUST BE VENTILATED TO PREVENT DUST EXPLOSIONS.

6. DO NOT WELD ON ANY PART OF THE UNIT AFTER THE ELEVATOR HAS BEEN USED TO MOVE GRAIN, AS THIS MAY CAUSE A DUST EXPLOSION.

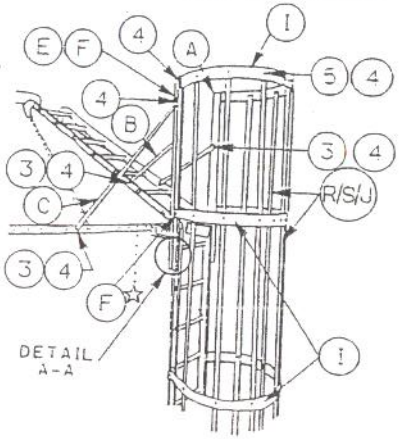
7. ONLY PERSONAL CARE AND COMMON SENSE CAN PREVENT FALLS.

8. DO NOT CLIMB ON ANY PART OF THE UNIT EXCEPT THOSE PLACES MEANT FOR CLIMBING, I.E. LADDERS AND PLATFORM AREAS.

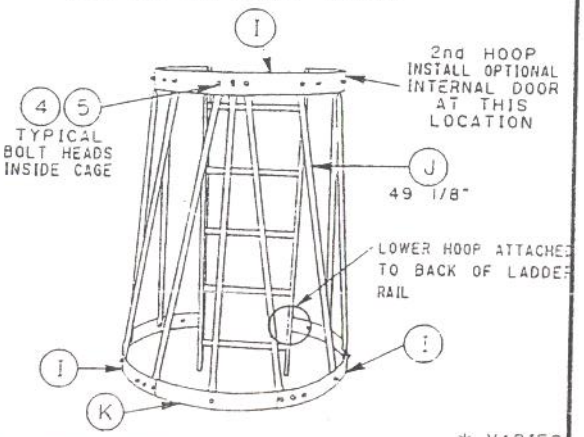
9. STAY CLEAR OF THE ELEVATOR AND IT'S APPURTENANCES WHEN WEATHER CONDITIONS ARE SUSCEPTIBLE TO LIGHTNING OR HIGH WINDS.

CAGE INSTRUCTIONS

HOPPER BIN CAGE ATTACHMENT



CAGE BOTTOM FLARE DETAIL



☆HOOP HALF ATTACHES TO LADDER RAIL WITH LOCKING CLIP

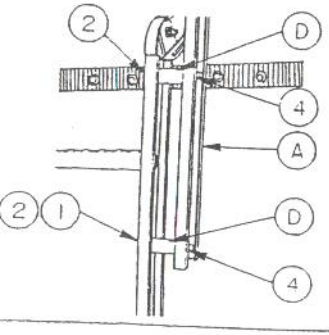
KEY	PART NO.	DESCRIPTION	QTY
1	39-20245	WASHER.FLAT 11/32 I.D. X 1 1/2 O.D.	2
2	39-20246	BOLT.H.H. 5/16 X 2 1/2 #5	4
3	39-20072	BOLT.BIN SEAL 5/16 X 3/4 #8.2	6
4	39-20152	NUT.FLANGE 5/16	*
5	39-20145	BOLT.TR. HD. BIN SEAL 5/16 X 3/4 #8.2	*
6	39-20116	COTTER.HAIR PIN	2

* VARIES

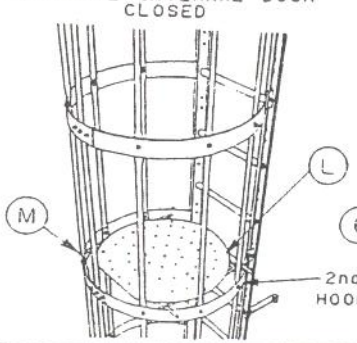
KEY	PART NO.	DESCRIPTION	QTY.
A	9-24142	RAIL.EXTENSION 54" O.A.	2
B	5-24318	BRACE.EXT. RAIL FRONT 25 1/2" O.A.	2
C	9-24317	BRACE.EXT.RAIL SIDE 46" O.A.	2
D	9-24339	SPACER TUBE.EXT. RAIL	4
E	9-24316	BRACKET.EXT. RAIL BRACE	2
F	9-23779	CLIP ASSEMBLY.LOCKING	4
I	9-23777	HOOP HALF.CAGE	*
R	9-24070	TUBE.CAGE 25 1/8" O.A.	*
S	9-24071	TUBE.CAGE 37 1/8" O.A.	*
J	9-24072	TUBE.CAGE 49 1/8" O.A.	*
K	9-24021	EXPANDER.CAGE HOOP	1
L	9-24065	DOOR ASSEMBLY.INTERNAL	1
M	9-24075	ROD.INTERNAL DOOR HINGE	1

NOTE: IF LADDER STANDOFF BRACKETS INTERFERE WITH THE CAGE FLARE HOOP, MOVE THEM UP OR DOWN ONE CORRUGATION. FIELD DRILL AND ATTACH.

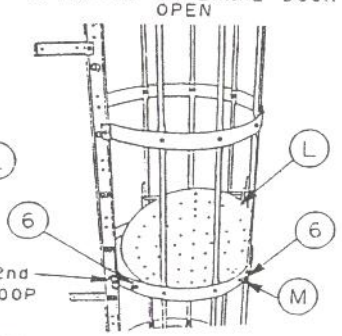
LADDER EXTENSION DETAIL
DETAIL A-A

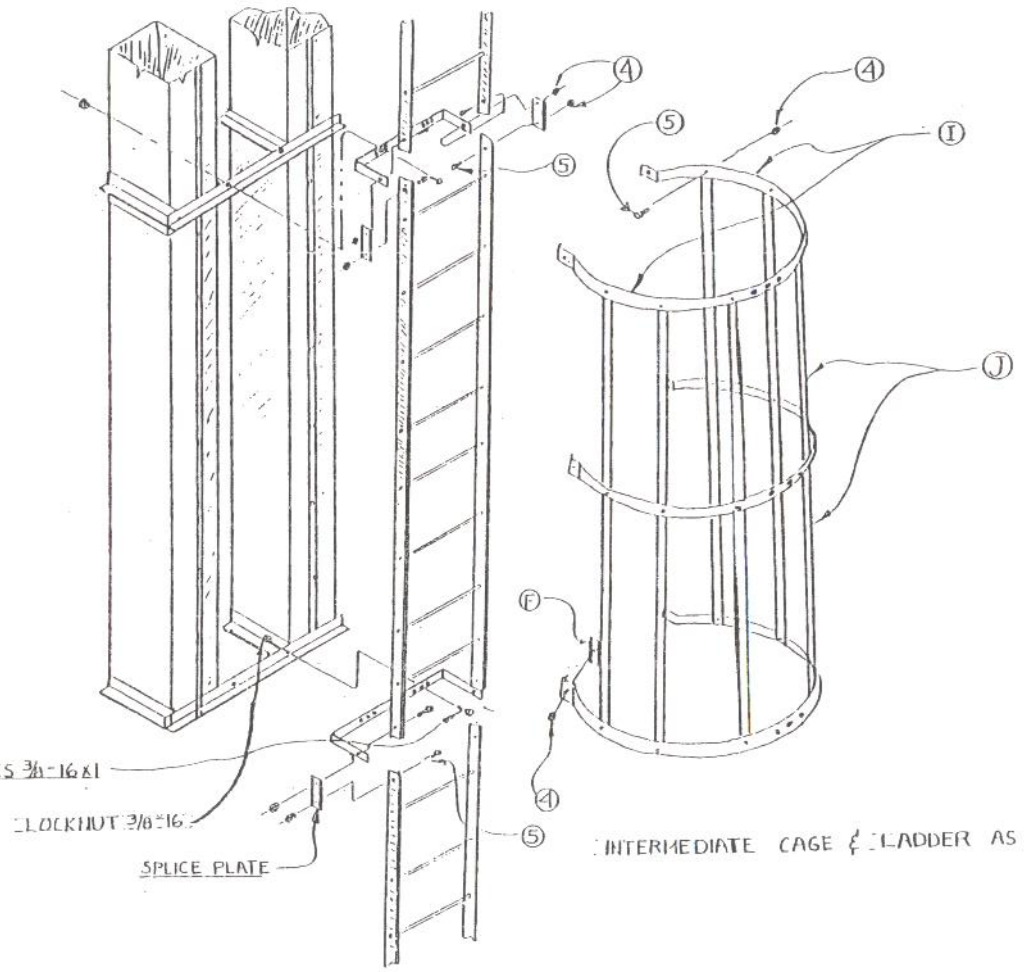


OPTIONAL INTERNAL DOOR CLOSED

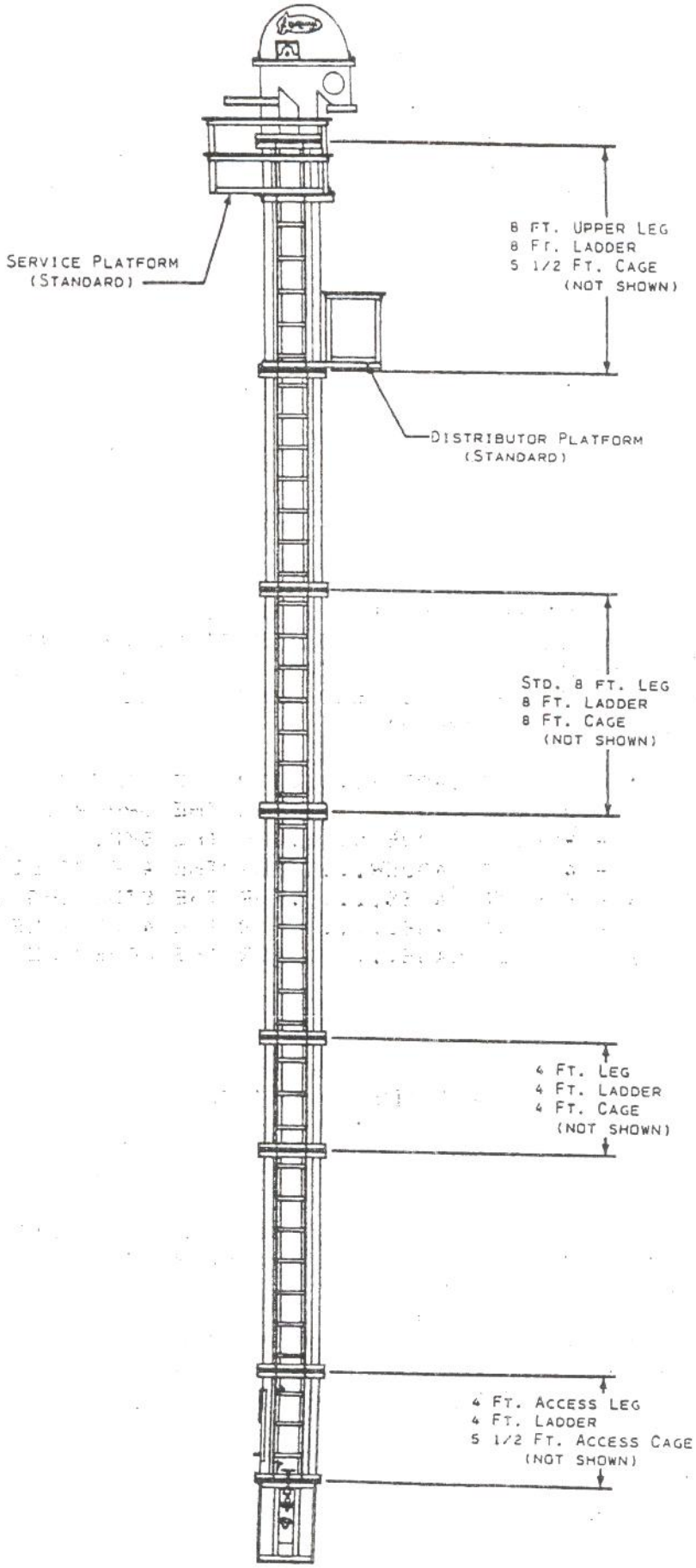


OPTIONAL INTERNAL DOOR OPEN

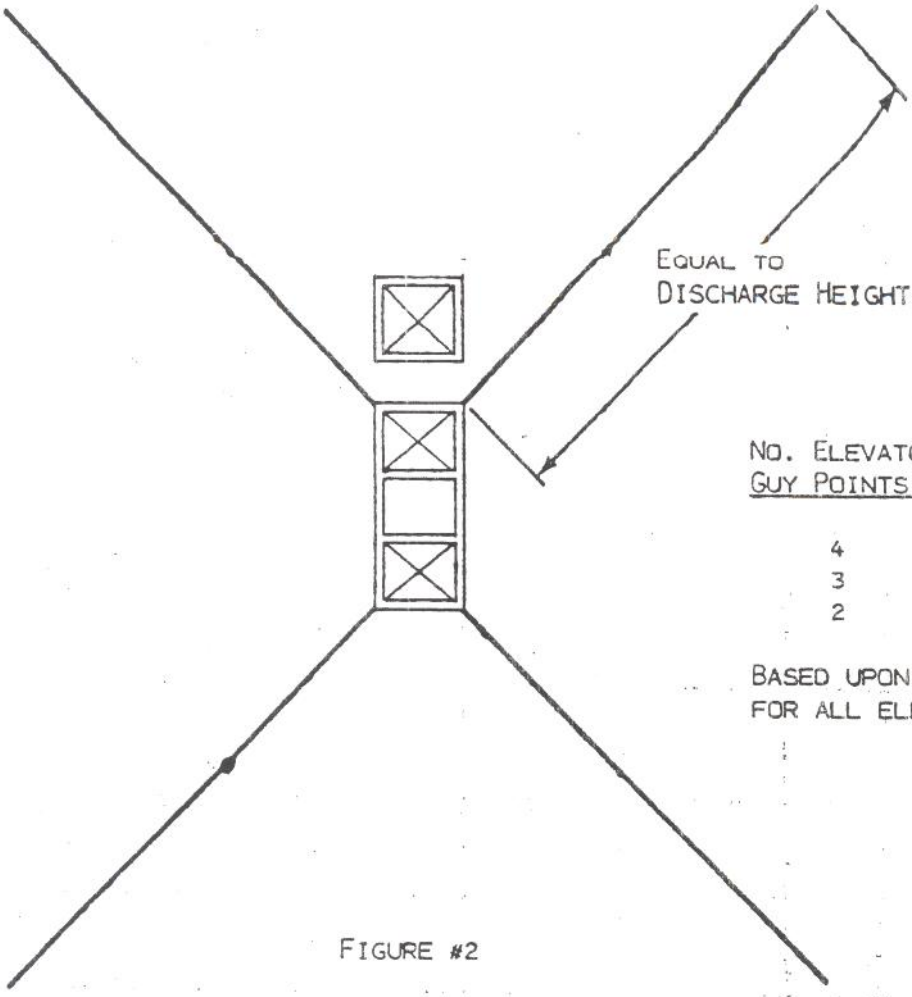




INTERMEDIATE CAGE & LADDER AS



SCHEMATIC
FIGURE #1



NO. ELEVATOR GUY POINTS	TOTAL APPROXIMATE CABLE REQUIRED
4	21 X ELEV. HEIGHT
3	16 X ELEV. HEIGHT
2	11 X ELEV. HEIGHT

BASED UPON ONE GROUND ATTACHMENT FOR ALL ELEVATOR GUY POINTS.

FIGURE #2

- FEED IN-EQUIPMENT -

THIS BUCKET ELEVATOR IS VERY VERSATILE IN THE MANY WAYS IT CAN BE FED. PROPER FEEDING IS THE ONE MAIN CONCERN IN MAKING SURE THE ELEVATOR OPERATES AT FULL CAPACITY. IT CAN BE FED ON EITHER THE UP OR DOWN LEG SIDE, (UP LEG OR DOWN LEG REFERS TO THE DIRECTION OF CUP TRAVEL) WITH THE STANDARD HOPPER, WHICH COMES WITH THE BOOT SECTION, THERE ARE TWO MOUNTINGS, HIGH AND LOW, ON EITHER SIDE OF THE BOOT. FOR UP LEG FEEDING, THE HOPPER SHOULD BE IN THE HIGH POSITION; AND FOR DOWN LEG FEEDING, THE HOPPER SHOULD BE IN THE LOW POSITION. THE LARGE DUMP HOPPER SHOULD BE USED FOR DOWN LEG FEEDING ONLY.

THE FEEDING OF THE ELEVATOR WITH AN AUGER DOES NOT PRESENT ANY PARTICULAR PROBLEMS AS FAR AS PLACEMENT ON THE BOOT.

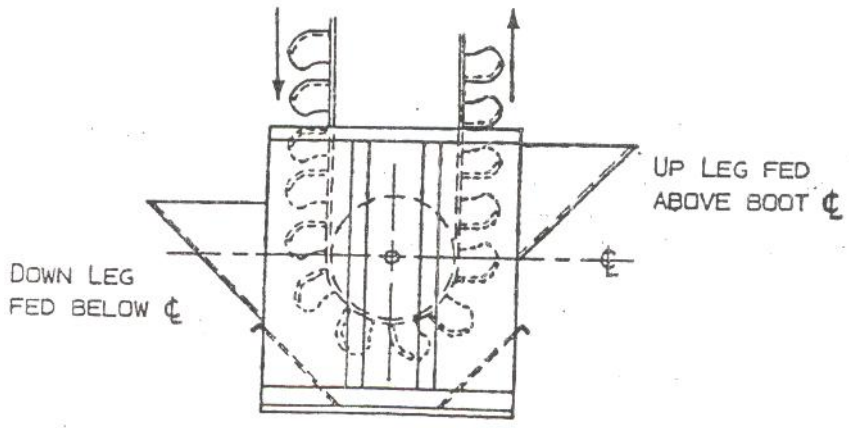


FIGURE #3

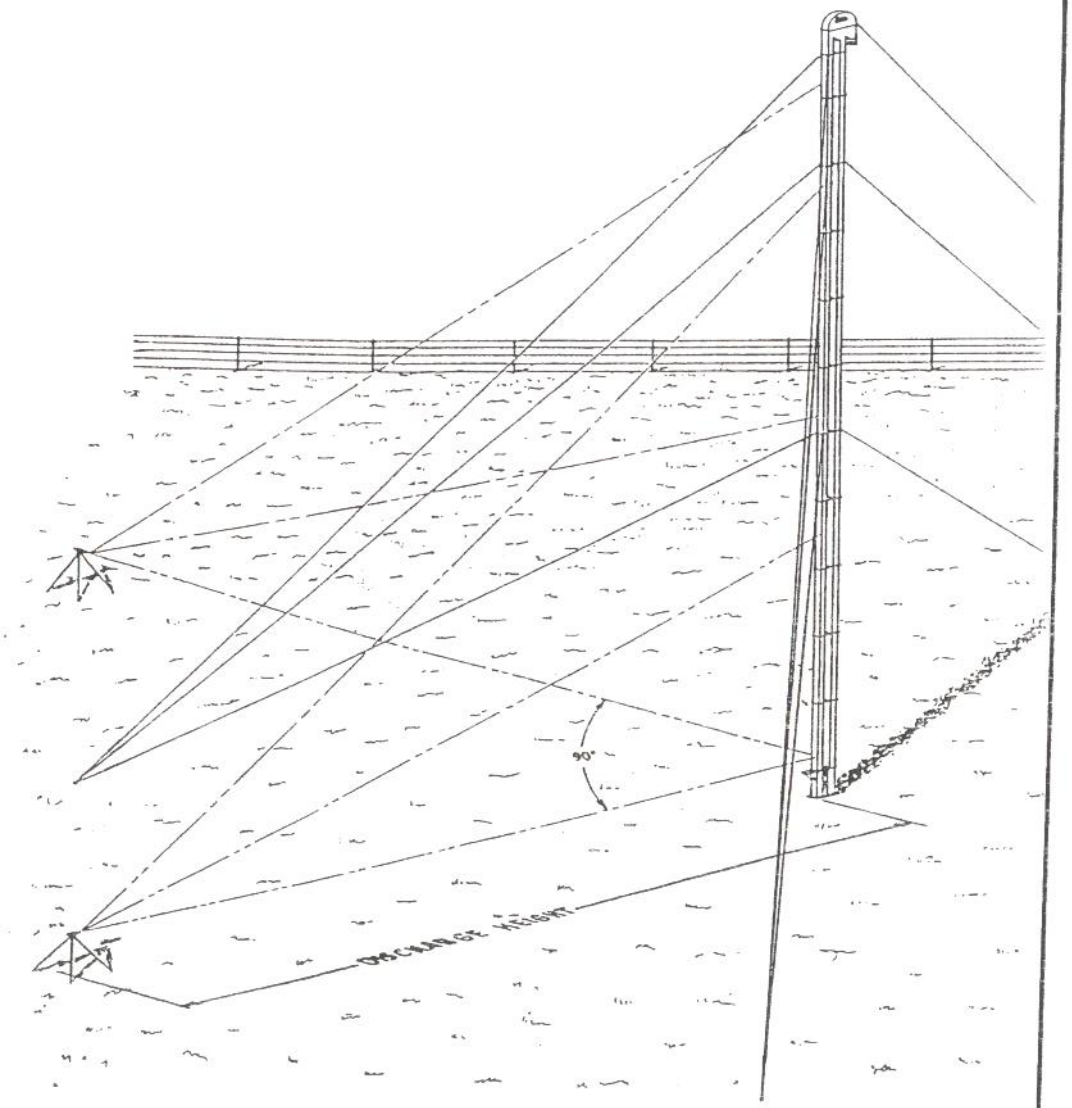
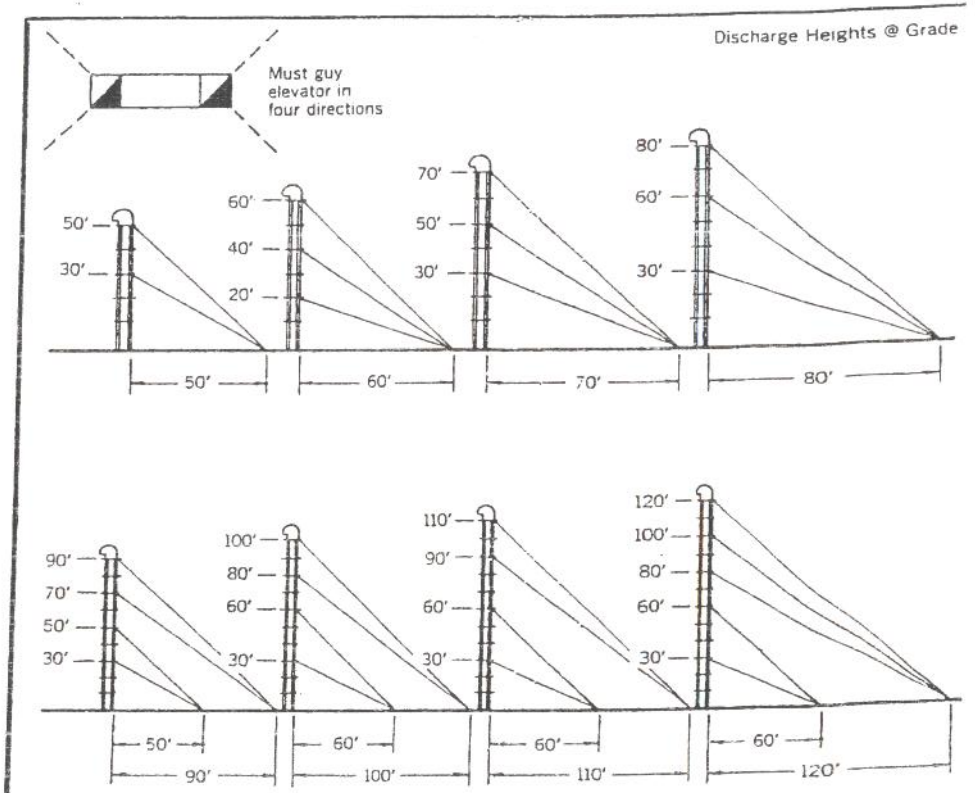


FIGURE # 15

TRANSIT PLUMBING

SUGGESTIONS FOR GUYING BUCKET ELEVATORS



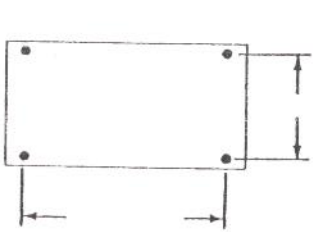
Recommendations are based on using 3/8" dia. (7x19) Aircraft Cable

CABLE AND FITTING REQUIREMENTS								
Discharge Height	50'	60'	70'	80'	90'	100'	110'	120'
Approx. Cable	520'	885'	1050'	1200'	1485'	1690'	1800'	2490'
3/8" Cable Clamp	48	72	72	72	96	96	96	120
1/2"x6" Turnbuckle	8	12	12	12	16	16	16	20

BOOT ASSEMBLY

BOOT ASSEMBLY
PARTS LIST FIGURE #4

KEY NO.	PART NO.	DESCRIPTION
1	28714	END PLATE, LONG
2	A28642	BOOT SECTION
3	1174	3/8-16NC X 3/4 CAP SCREW
4		
5	A28717	SLIDE GATE
6	10137	HOPPER
7	A21126	THUMB SCREW
8	28715	ADJUSTING BOLT
9	1263	END PLATE, SHORT
10	21372	3/4-10NC REG. SQ. NUT
11	15389	SQUARE NUT W/HOLE
12	A28719	SPRING PIN
13	28718	BOOT PULLEY W/BUSHING
14		BOOT SHAFT
15	28669	BOOT PULLEY SLATTED (OPTIONAL)
16	1195	SLIDE ANGLE
17	A20004	5/16-18NC X 3/4 CAP SCREW
18	A28666	BALL BEARING 1 1/16" (COMPLETE)
19	1230	BEARING PLATE
20	28712	3/8-16NC X 1 1/4 FL. HD. MACH. SCREW
		SLIDE GATE



BOOT BASE DIAGRAM

FIGURE #4

- PLANNING THE ERECTION AND ASSEMBLY -

THE BOOT AND AT LEAST ONE LEG SECTION SHOULD BE PLACED IN IT'S PROPER POSITION ON A CONCRETE PAD. THE FIRST LEG SECTION ABOVE THE BOOT CAN BE ANY OF THE REGULAR 4' OR 8' LEG SECTIONS OR THE ACCESS LEG SECTION DEPENDING ON THE DESIRES OF THE CUSTOMER.

PLACE THE BOOT AND LEG SECTION, WITH IT'S LADDER AND CAGE ATTACHED (SEE FIGURE #4 AND #5).

THE ACCESS SECTION OPENINGS ARE USED TO INSTALL THE BELT AND BUCKETS AFTER THE ELEVATOR IS STANDING. THEREFORE, THE OPENINGS SHOULD BE PLACED PROPERLY TO EASE THE INSTALLATION OF THE BELT. DO NOT REMOVE ANY OF THE DOORS BEFORE ERECTION BECAUSE THIS LEG SECTION IS PUT UNDER GREAT STRAIN DURING THE ERECTION PROCEDURE. NO PROBLEMS WILL BE ENCOUNTERED IN REMOVING THE DOOR AFTER THE ELEVATOR IS SET. SEE FIGURE #6

ASSEMBLE THE LEG SECTIONS ON A LEVEL SURFACE WITH ONE TRUNK UP AND ONE TRUNK DOWN. DO NOT ASSEMBLE MORE THAN 40 FEET OF LEG SECTIONS AS THIS IS THE MAXIMUM RECOMMENDED LIFT AT ONE TIME. BE SURE THAT A GUY POINT IS AVAILABLE ON EACH LIFT AND THAT THE GUY BRACKET DOES NOT COME AT A JOINT OF ONE LIFT TO THE NEXT LIFT. SEE FIGURE #7.

ASSEMBLE THE DISTRIBUTOR PLATFORM IN IT'S POSITION. SEE FIGURE #8.

ATTACH THE ASSEMBLED HEAD SECTION TO THE LAST LIFT. PLAN TO LEAVE AT LEAST TWO 8 FOOT LEG SECTIONS AND NO MORE THAN THREE SECTIONS TO BE ERECTED WITH THE HEAD. THE HEAD SECTION IS SOMEWHAT TOP HEAVY AND THE ADDITIONAL LEG SECTIONS WILL STABILIZE THE HEAD CONSIDERABLY. (SEE FIGURE #9.) ALWAYS PUT THE UPPER LEG SECTION DIRECTLY UNDER THE HEAD. STENCILED ON THE UPPER LEG ARE INSTRUCTIONS PERTAINING TO THE PROPER PLACEMENT IN RELATION TO THE HEAD.

ASSEMBLE THE SERVICE PLATFORM TO THE UPPER LEG SECTION. SEE FIGURE #10.

ASSEMBLE THE DISTRIBUTOR HEAD AND HEAD DISCHARGE ADAPTOR TO THE HEAD, SEE FIGURE #11.

ASSEMBLE THE SPOUTS ON A LEVEL SURFACE AND ASSEMBLE THE TRUSS SUPPORTS SEE FIGURE #12 OR #13.

- ERECTION -

TO PREPARE THE ASSEMBLED ELEVATOR FOR ERECTION FOLLOW THE FOLLOWING CHECK LIST:

1. ATTACH ALL GUY CABLES TO THE LEG SECTIONS AND CUT TO THE LENGTH.
2. CHECK ALL GROUND GUY POINTS TO BE SURE THEY ARE FIRMLY PLANTED AND ALL CONCRETE IS CURED AND HARD.
3. CHECK THAT ALL BOLTS AND NUTS ARE SECURELY TIGHTENED.
4. REMOVE THE HEAD CAP AND SECURELY FASTEN TO THE PLATFORM FLOOR.
5. CHECK THE UP LEG AND DOWN LEG RELATIONSHIPS TO THE HEAD. WILL THE LADDER BE ON THE CORRECT SIDE OF THE ELEVATOR?
6. CHECK AGAIN THE DISCHARGE HEIGHT. IS THE PROPER NUMBER OF LEG SECTIONS ASSEMBLED?
7. CHECK ALL LADDERS, CAGES, PLATFORMS, ETC. TO BE SURE THAT NONE ARE MISSING.
8. CHECK THAT ALL UNASSEMBLED LEG JOINTS ARE CAULKED.
9. CHECK THE TOTAL WEIGHT OF THE LIFTS AGAINST THE CRANE CAPACITIES. SEE TABLE #1

THE MOST EFFECTIVE WAY TO LIFT THE ELEVATOR SECTIONS IS BY USING A CRANE WITH AT LEAST 12 FEET MORE REACH THAN THE DISCHARGE HEIGHT OF THE ERECTED ELEVATOR. A SNATCH BLOCK ARRANGEMENT USING THREE CHOKER CABLES AND TWO SHACKLES SHOULD BE US SEE FIGURES 18A AND 18B ON ATTACHING THE CRANE TO THE LEG SECTIONS AND THE HEAD.

THIS SNATCH BLOCK WILL KEEP ALL THE CABLES TIGHT AT ALL TIMES AND ALLOW FOR THE LIFTED UNIT TO "HANG" STRAIGHT UP AND DOWN WHEN IT CLEARS THE GROUND.

AS EACH SECTION IS "STACKED" ON THE PREVIOUS SECTION BE SURE THE GUY CABLES ARE ALL SECURED TO THE GROUND GUY POINTS BEFORE THE CRANE HOOK IS RELEASED.

EACH LIFT SHOULD BE PLUMBED AFTER THE CRANE IS RELEASED. GOOD PLUMBING PRACTICE DICTATE THAT A TRANSIT SHOULD BE USED TO PLUMB THE ELEVATOR. THE ELEVATOR CONVE BELT IS 10" WIDE RUNNING IN A 12" WIDE TRUNK. IF THE ELEVATOR IS OUT OF PLUME MORE THAN ONE INCH IN ANY SPOT, THE BELT WILL RUB ON TRUNK. SINCE THE BELT MIGHT TRACK TO ONE SIDE OR THE OTHER ONCE IN A WHILE, THE OVERALL PLUMBNESS SHOULD BE WITHIN 1/2" AND NOT BE OUT OF PLUMB AT ANY ONE SPOT MORE THAN 1/2". IT IS NOT OUT OF THE QUESTION TO HAVE THE UNIT STAND PERFECT. SEE FIGURE #19

AFTER THE ELEVATOR IS STANDING AND PLUMBED, THE SPOUTING CAN BE ASSEMBLED TO THE UNIT. AS THE SPOUTING IS BEING ATTACHED WATCH THE PLUMBNESS OF THE ELEVATOR. T PLUMBNESS OF THE UNIT CAN BE MAINTAINED BY BEING SURE THAT THE SPOUTS ARE CUT TO THE PROPER LENGTH AND ATTACHED WITHOUT PULLING THE ELEVATOR ONE WAY OR ANOTHER.

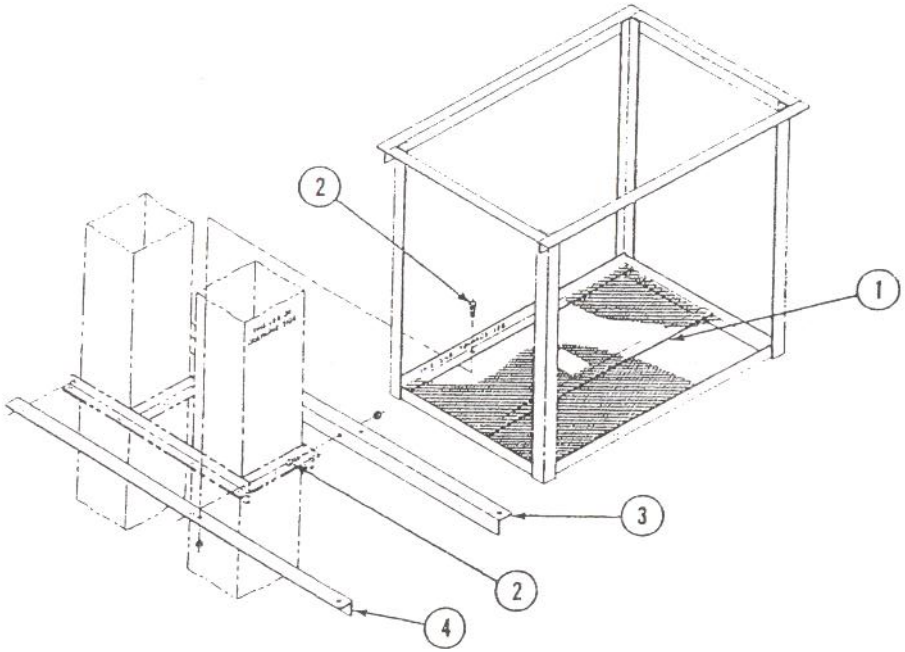


FIGURE #8

KEY NO.	PART NO.	DESCRIPTION
1	A22202	PLATFORM
2	1175	3/8-16NC X 1 CAP SCREW
3	22204	PLATFORM SUPPORT LEFT
4	22203	PLATFORM SUPPORT RIGHT

STANDARD DISTRIBUTOR SERVICE PLATFORM

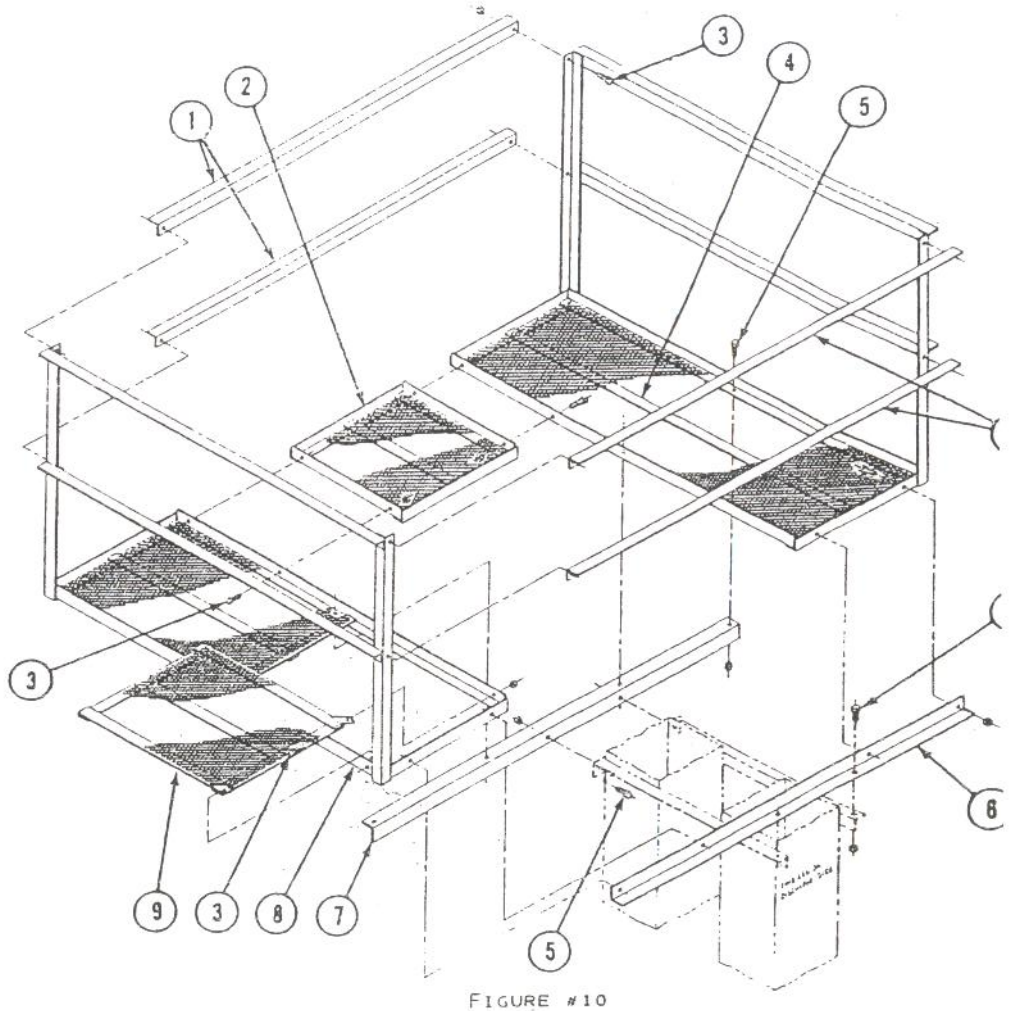


FIGURE #10

KEY NO.	PART NO.	DESCRIPTION
1	22120	RAIL
2	A22117	PLATFORM CENTER
3	1174	3/8-16NC X 3/4 CAP SCREW
4	A22115	PLATFORM, LEFT
5	1175	3/8-16NC X 1 CAP SCREW
6	22118	PLATFORM SUPPORT 50"
7	22119	PLATFORM SUPPORT 55 1/2"
8	A22116	PLATFORM, RIGHT
9	A21532	DOOR

STANDARD SERVICE PLATFORM

DRIVE HEAD SECTION

ASSEMBLY PARTS LIST FIGURE #9

KEY NO.	PART NO.	DESCRIPTION
1	A28695	CAP SECTION
2	1174	3/8-16NC X 3/4 CAP SCREW
3	28685	DISCHARGE FLAP
4	28693	BACKING PLATE
5	1292	FLAT WASHER 1/4"
6	1224	1/4-20NC X 3/4 FLAT HD. ELEVATOR BOLT
7	A28681	HEAD SECTION
8	1271	1/4-20NC LOCKNUT
9	23935	COVER PLATE
10	21361	3/8" SQUARE KEY
11	28721	HEAD SHAFT
12	21872	WING NUT 1/4 - 20 NC
13	1187	1/2-13NC X 1 CAP SCREW
14	1295	FLAT WASHER 1/2"
15		V-BELT SHEAVE
16		MOTOR BELTS
17		
18	19179	1/4" SQUARE KEY
19		
20	1294	FLAT WASHER 3/8''
21	21547	3/8-16NC X 4 TAKE-UP BOLT
22	A22163	MOTOR MOUNT PLATE
23		
24		
25	A21352	PILLOW BLOCK BEARING COMPLETE 1-7/16''
26	1190	1/2-13 X 1-1/2 CAP SCREW
27		
28	A28722	HEAD PULLEY COMPLETE
29	26320	CARDINAL DECAL

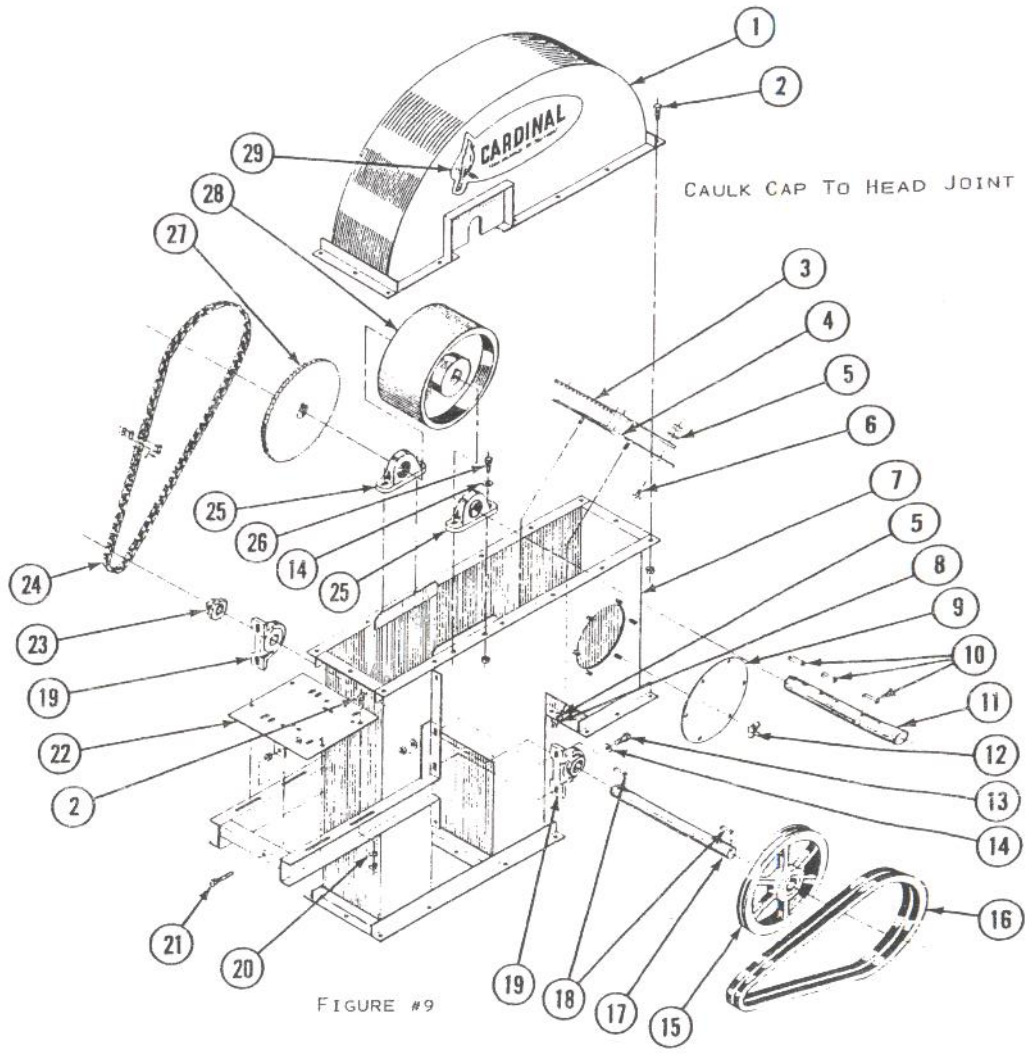


FIGURE #9

DRIVE HEAD SECTION ASSEMBLY

KEY NO.	PART NO.	DESCRIPTION
1	1174	3/8-16NC X 3/4 CAP SCREW
2		6" HEAD DISCHARGE ADAPTER
3	1195	5/16-18NC X 3/4 CAP SCREW GRADE 5
4	A25175	DISTRIBUTOR 8 WAY 6"
5	1213	1/4-20NC X 3/4 CARRIAGE BOLT
6	25418	6" RISER LINER
7	25391	ACCESS DOOR
8	1256	1/4 X 3/4 SELF-DRILLING SCREWS
9	A25040	HANDLE
10	1179	3/8-16NC X 2 CAP SCREW
11	1194	1/4-20NC X 1-1/2 CAP SCREW
12	1342	FLAT WASHER 5/8"
13	25401	ROLLER
14	A25039	AXLE
15	1159	5/16-18NC X 1 CAP SCREW
16	25403	CLAMP
17	25404	DIRECTIONAL GUIDE CLAMP
18		CONTROL STAND
19	1159	5/16-18NC X 1 CAP SCREW
20		CLAMP HALF

CONTROL PIPE BY CUSTOMER 1" STD. PIPE

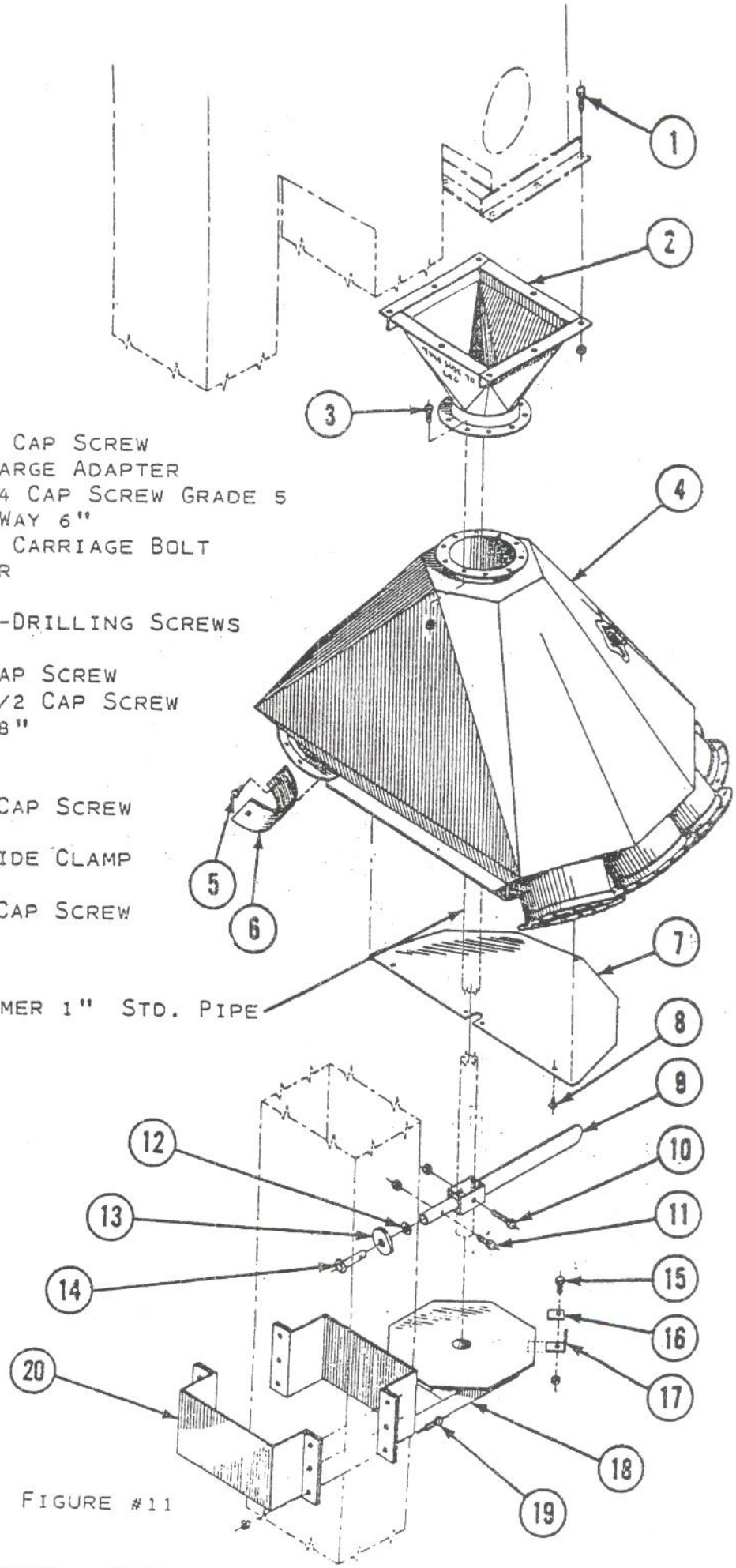
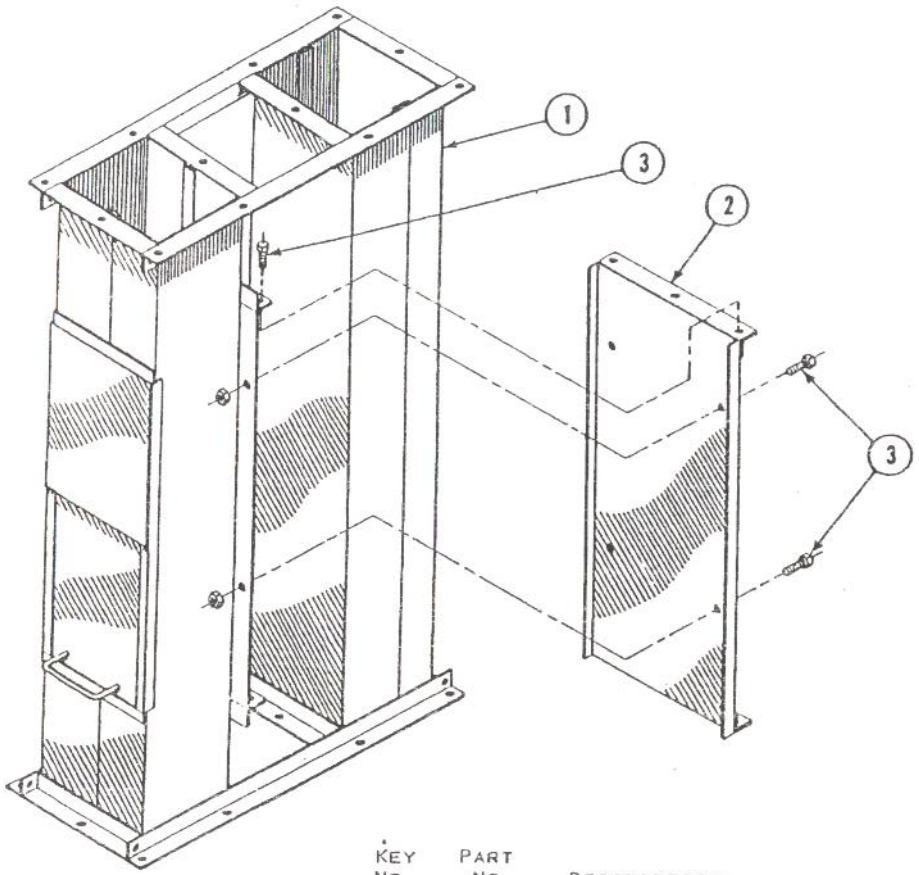


FIGURE #11

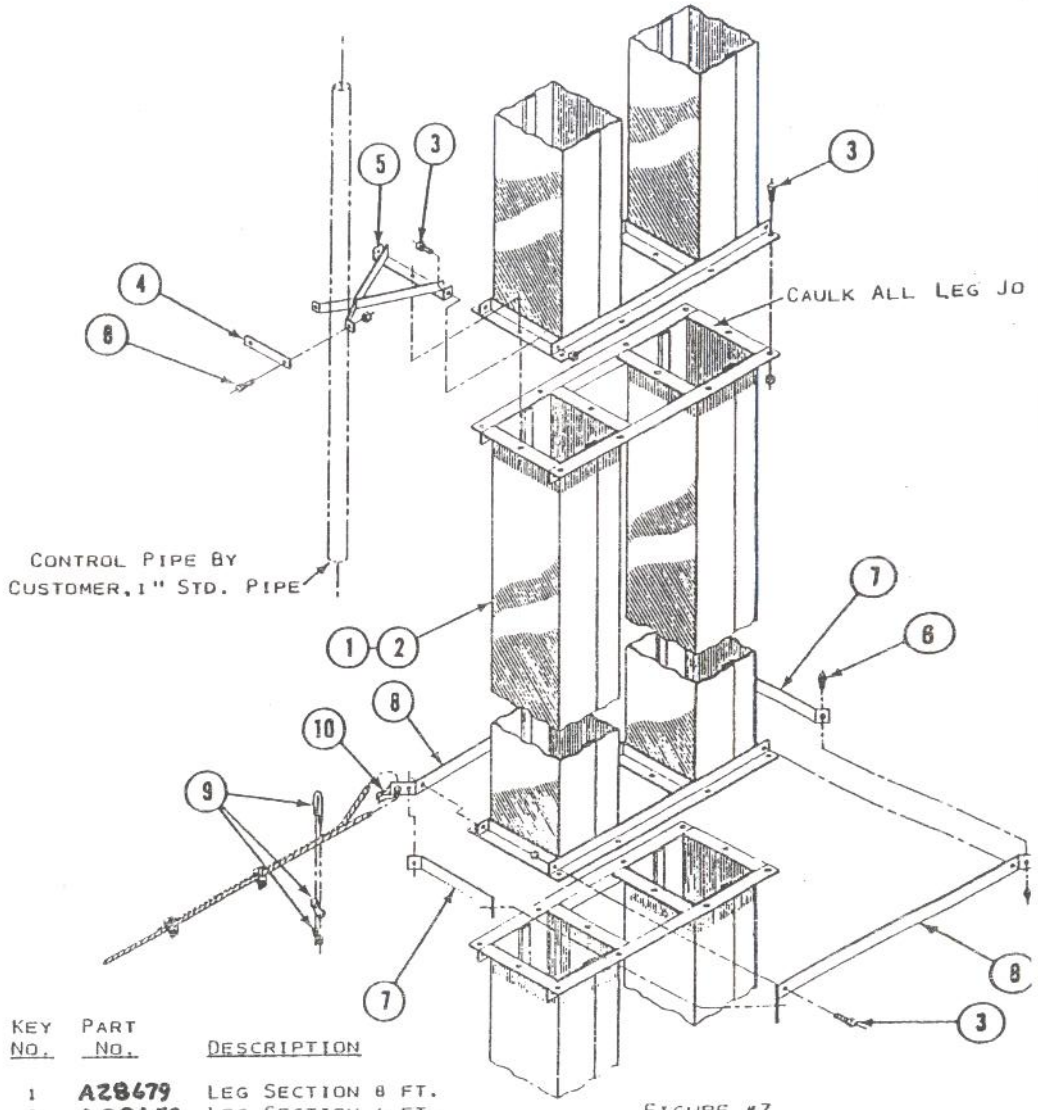
8 WAY DISTRIBUTOR HEAD & DISCHARGE ADAPTER ASSEMBLY



KEY NO.	PART NO.	DESCRIPTION
1	A28709	ACCESS LEG 4 FT.
2	28711	ACCESS PANEL
3	1174	3/8-16NC X 3/4 CAP SCREW

FIGURE #6

ACCESS SECTION ASSEMBLY



KEY NO.	PART NO.	DESCRIPTION
1	A28479	LEG SECTION 8 FT.
2	A28459	LEG SECTION 4 FT.
3	1174	3/8-16NC X 3/4 CAP SCREW
4		CAP BAR
5	A29789	ROD GUIDE
6	1175	3/8-16NC X 1 CAP SCREW
7	28806	END STRAP
8	28805	SIDE STRAP
9	15266	5/16 CABLE CLAMP
10	19480	CABLE THIMBLE

FIGURE #7

LEG SECTION - GUY BRACKET - ROD CONTROL ASSEMBLY

- BELT INSTALLATION -

AFTER THE ELEVATOR AND IT'S SPOUTING IS COMPLETED, THE BELT CAN BE INSTALLED. REMOVE THE INSPECTION DOOR FROM THE ACCESS LEG. STRING A ROPE OR CABLE OVER THE HEAD PULLEY. ATTACH ONE END OF THE ROPE OR CABLE TO THE END OF THE BELT. RUN THE OPPOSITE END OF THE ROPE OR CABLE UNDER THE BOOT PULLEY. PULL ON THIS END OF THE ROPE OR CABLE PULLING THE BELT THROUGH ONE OF THE INSPECTION DOORS. BE SURE THE CUPS, IF THEY ARE ASSEMBLED TO THE BELT, ARE ORIENTED CORRECTLY.

LET THE BELT HANG OVER THE HEAD PULLEY OVER NIGHT BEFORE SPLICING. SEE FIGURE #16 FOR SPLICING INSTRUCTIONS.

- OPERATIONAL CHECK -

WITH ALL OF THE DRIVE COMPONENTS INSTALLED AND THE UNIT CHECKED OUT, THE ELEVATOR IS READY FOR AN OPERATIONAL CHECK. REMOVE THE HEAD CAP AND REPLACE ALL DRIVE COVERS BEFORE STARTING THE ELEVATOR. START THE ELEVATOR AND CHECK THE BELT FOR TRACKING ON THE HEAD PULLEY. SHIM THE BEARINGS AS NEEDED TO CENTER THE BELT. REINSTALL THE HEAD CAP.

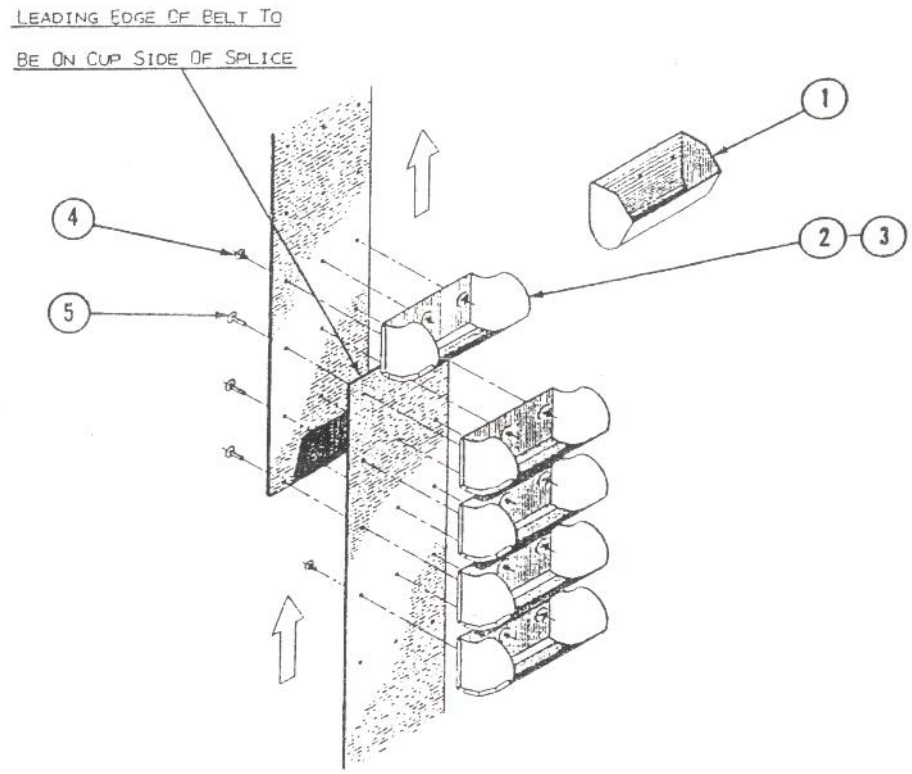
STAND CLEAR OF THE HEAD SECTION TO PREVENT CONTACT WITH THE ROTATING HEAD PULLEY, CUPS, BELT, ETC.

BE CAREFUL OF FLYING MATERIAL WHEN THE HEAD CAP IS OFF. EYE PROTECTION SHOULD BE WORN.

1. CENTER THE BELT IN THE BOOT WITH THE ADJUSTMENT SCREW.
2. RECHECK ALL COMPONENTS FOR LUBRICATION.
3. ADJUST THE DISCHARGE FLAP TO WITHIN 1/2" OF A CUP. SEE FIGURE #9.

LET THE UNIT RUN WITHOUT GRAIN FOR A PERIOD OF TIME AND LISTEN FOR CUPS OR THE BELT HITTING THE TRUNKS. IF THIS OCCURS, RECHECK THE PLUMBNESS AND/OR TIGHTEN THE BELT.

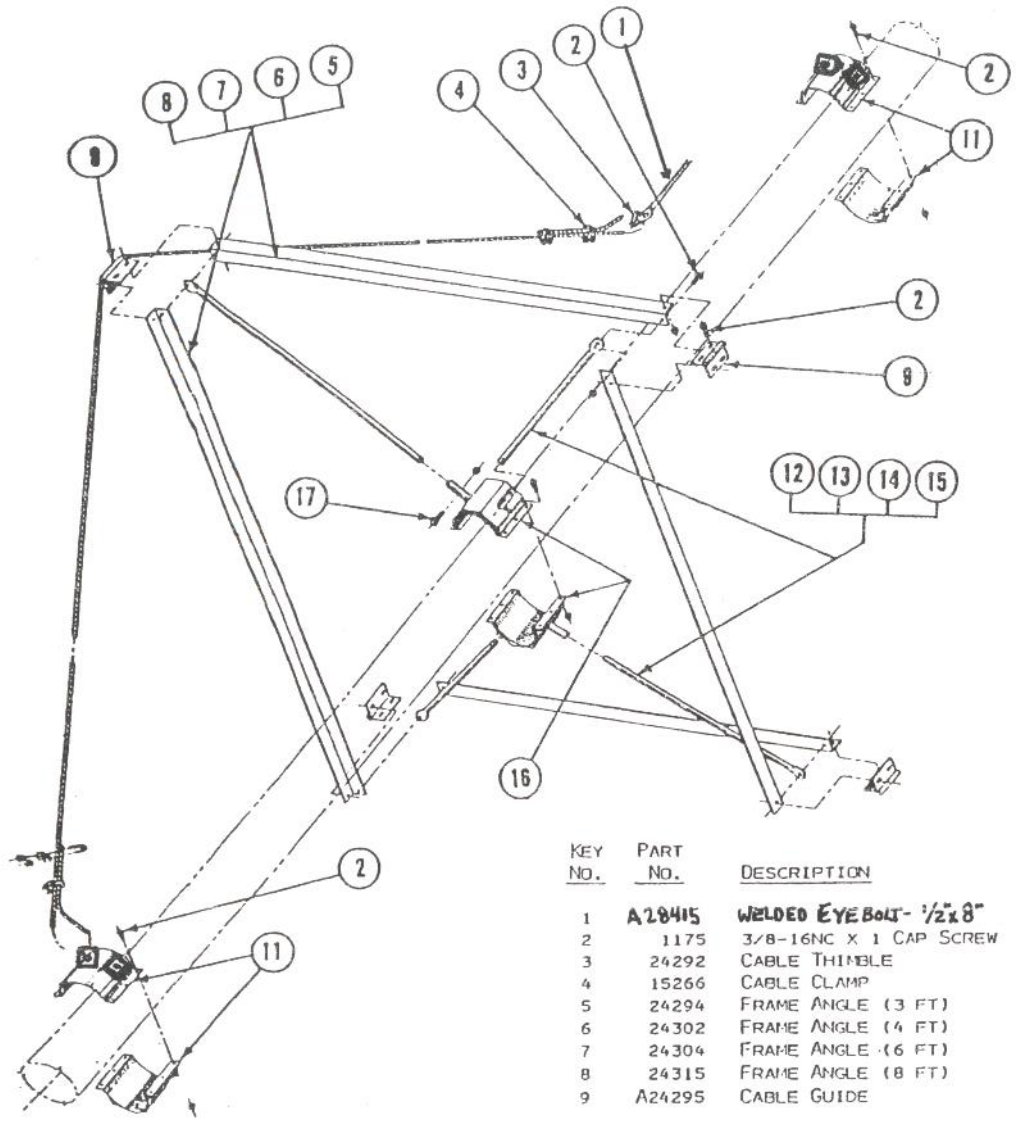
RUN SMALL AMOUNTS OF GRAIN THROUGH ALL PARTS OF THE SYSTEM TO CHECK FOR OBSTRUCTIONS AND ALIGNMENTS OF SPOUTS.



KEY NO.	PART NO.	DESCRIPTION
1	30025	5x4 PLASTIC CUP (2 BOLTS PER CUP)
4	1461	1/4-20NC x 1" ELEVATOR BOLT
5	1462	1/4-20NC x 1½" ELEVATOR BOLT (SPLICE)
6	1384	1/4-20 WHIZ NUT

FIGURE # 16

BELT SPLICE ASSEMBLY



KEY NO.	PART NO.	DESCRIPTION
1	A28415	WELDED EYE BOLT - 1/2"x8"
2	1175	3/8-16NC X 1 CAP SCREW
3	24292	CABLE THIMBLE
4	15266	CABLE CLAMP
5	24294	FRAME ANGLE (3 FT)
6	24302	FRAME ANGLE (4 FT)
7	24304	FRAME ANGLE (6 FT)
8	24315	FRAME ANGLE (8 FT)
9	A24295	CABLE GUIDE
11	A30026	CABLE HOOK-UP 6"
12	24293	TRUSS SUPPORT (3 FT)
13	24301	TRUSS SUPPORT (4 FT)
14	24303	TRUSS SUPPORT (6 FT)
15	24311	TRUSS SUPPORT (8 FT)
16	A25017	SPIDER HOOK-UP 6"
17	1196	5/16-18NC X 1-1/2 CAP SCREW

WELD ALL JOINTS AFTER ASSEMBLY

PAINT ALL WELDS W/PART NO. 23485 AEROSOL RED

FIGURE #12

6" SPOUTING TRUSS ASSEMBLY

TOUCH-UP WELDED AREA WITH PART NO. 23485 RED AEROSOL PAINT

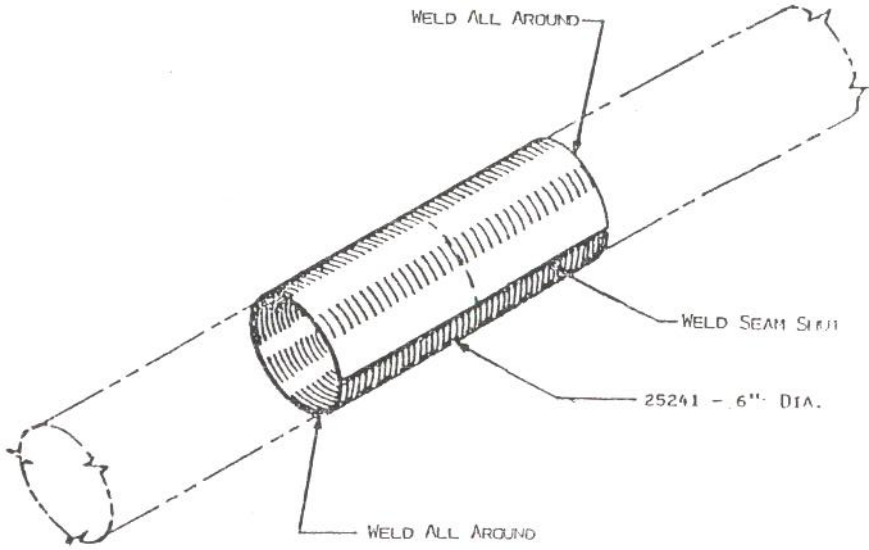


FIGURE #13

SPOUTING JOINER DETAILS