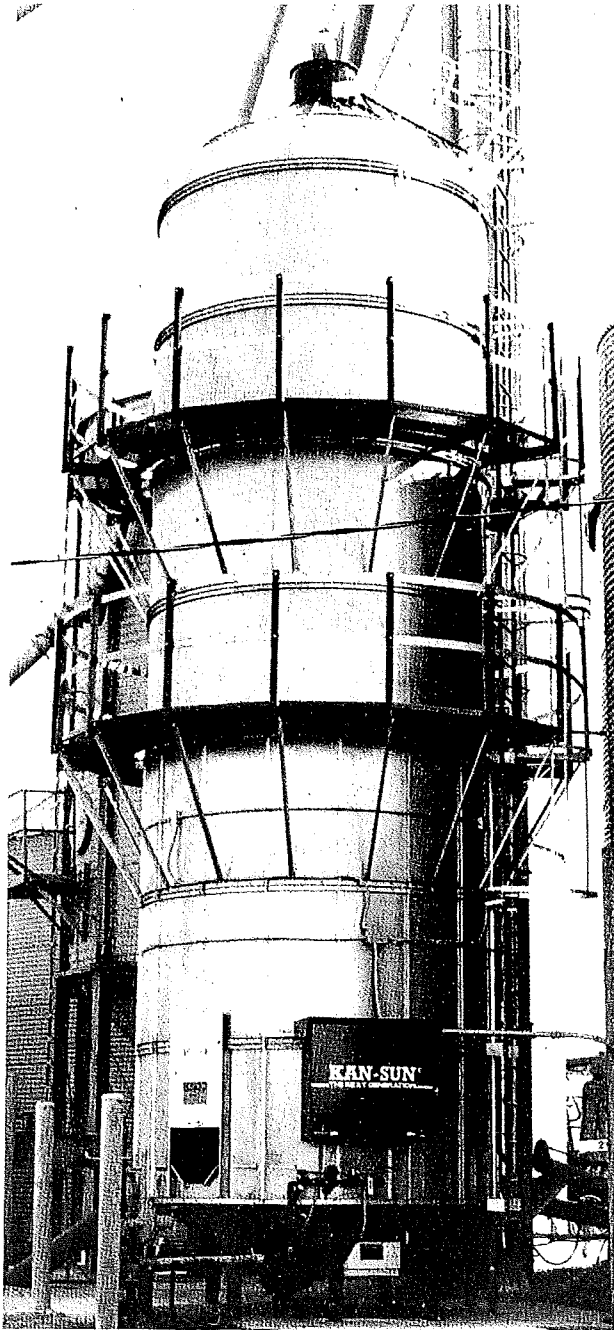




# TOWER DRYERS

Models 10420, 10530,  
10630 & 10750

(Starting with S/N 55970)



## OPERATOR'S and PARTS MANUAL

Form No. TD355  
February 1998

Model 10750 w/(2) Optional  
Outside Walkways

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# INTRODUCTION

## To The Owner - Operator

This manual provides information on set-up, initial start-up, operation, shutdown, and maintenance as well as a parts breakdown for M-C Tower Dryer Models 10420, 10530, 10630 and 10750 to keep your Tower Dryer operating at peak efficiency.

Use this manual before operating your Grain Dryer. Read the Start-Up and Operating Instructions. Check each item referred to and become familiar with the controls, adjustments and settings required to obtain efficient operation.

To keep the Dryer operating efficiently, refer to "Pre-Season Check" in the Maintenance section. The pre-season check can be made when the dryer is empty and any necessary repairs or adjustments can be made so the dryer will be ready to operate before the drying season.

## Safety Precautions



This symbol is used to call your attention to instructions concerning your personal safety. Be sure to observe and follow these instructions.

A safe operator is the best insurance against accidents. The precautions listed below must be observed at all times.

- Do not allow children or bystanders to be near the Grain Dryer or grain handling machinery while it is operating.
- Do not operate the Grain Dryer without all safety shields in place and secure.

A trained electrician should do all electrical work. When electrical work is being done, the main disconnect should be locked and tagged out. Disconnect all electrical power before servicing or opening control box, adjusting, or lubricating the equipment.

**NOTE:** To provide clear illustrations some of the covers, guards and shields were removed.

## Warranty Registration

It is important to send in your warranty registration sheet as soon as your new Tower

Dryer is delivered. The sheet validates your Grain Dryer Warranty and it is also our way of knowing who has purchased M-C equipment so we can keep in touch with you.

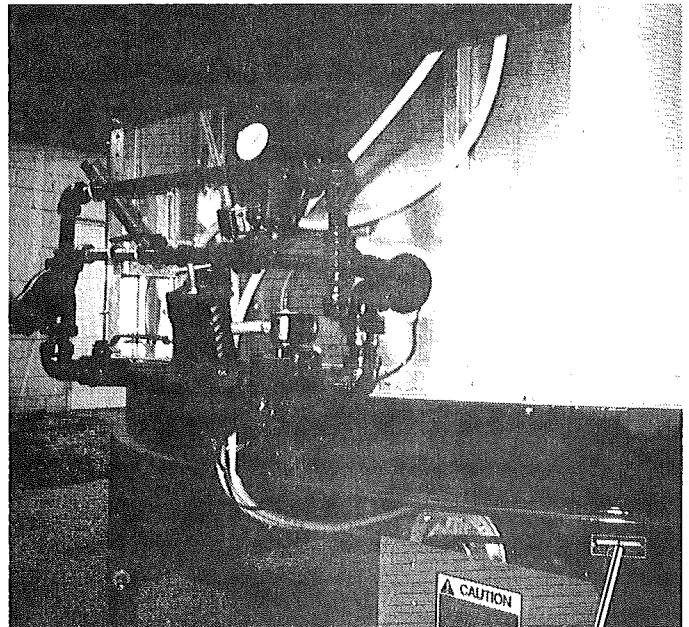


Figure 1

## Model and Serial Number Location

The model and serial number of your Grain Dryer are stamped on a plate located on the triangular support leg next to the control panel. For future reference, record the model and serial number in the blank spaces in Figure 1.

## Location of Dryer

The dryer must be installed on a level concrete foundation designed to carry the weight of the dryer when full of grain. The foundation must be engineered locally for ground and weather conditions to prevent settling and frost upheaval. See Figures 2, 3 & 4.

Allow for unrestricted air flow around the dryer and a clean supply of intake air.

It is recommended that the dryer be at least 10 feet from another dryer.





## CAPSCREW GRADE IDENTIFICATION

There are four grades of hex-head capscrews. Grade 1 and 2 are common capscrews, grade 5 and grade 8 are used when greater strength is required. Each grade can be identified by

the marking on the head of the capscrew, see chart.

When servicing the Dryer and/or replacing capscrews, be sure to use the correct size and grade.

### CAPSCREW GRADE IDENTIFICATION CHART

S.A.E. Grade	Description	Capscrew Head Marking*
1	WILL HAVE A PLAIN HEAD - NO RADIAL LINES	
2	Low or Medium Carbon Steel Not Heat Treated	
5	WILL HAVE 3 RADIAL LINES Quenched and Tempered Medium Carbon Steel	
8	WILL HAVE 6 RADIAL LINES Quenched and Tempered Special Carbon or Alloy Steel	

\*The center marking identifies the capscrew manufacturer.

## Metric (SI) Measurements

### (English Units & Metric (SI) Equivalents)

#### Area

1 square inch = 6.4516 square centimeters  
 1 square foot = 0.0929 square meters  
 1 square yard = 0.8361 square meters  
 1 acre = 4047 square meters  
 1 acre = 0.4047 hectare

#### Force

1 pound (force) = 4.45 newtons

#### Length

1 inch = 25.4 millimeters  
 1 inch = 2.54 centimeters  
 1 foot = 304.8 millimeters  
 1 foot = 30.5 centimeters  
 1 foot = 0.305 meters  
 1 yard = 0.9144 meters  
 1 mile = 1.6093 kilometers

#### Mass

1 ounce = 28.35 grams  
 1 pound = 0.454 kilograms  
 1 ton = 907.1848 kilograms

#### Power

1 horsepower = 0.7457 kilowatts

#### Pressure

1 psi = 6.89 kilopascals  
 1 psi = 0.00689 megapascals  
 1 inch of mercury = 3.377 kilopascals

#### Temperature

1 degree Fahrenheit ( $^{\circ}\text{F} - 32$ )  $\div$  1.8 =  $^{\circ}\text{Celsius}$

#### Torque

1 inch pound = 0.113 newton meters  
 1 foot pound = 1.356 newton meters

#### Velocity

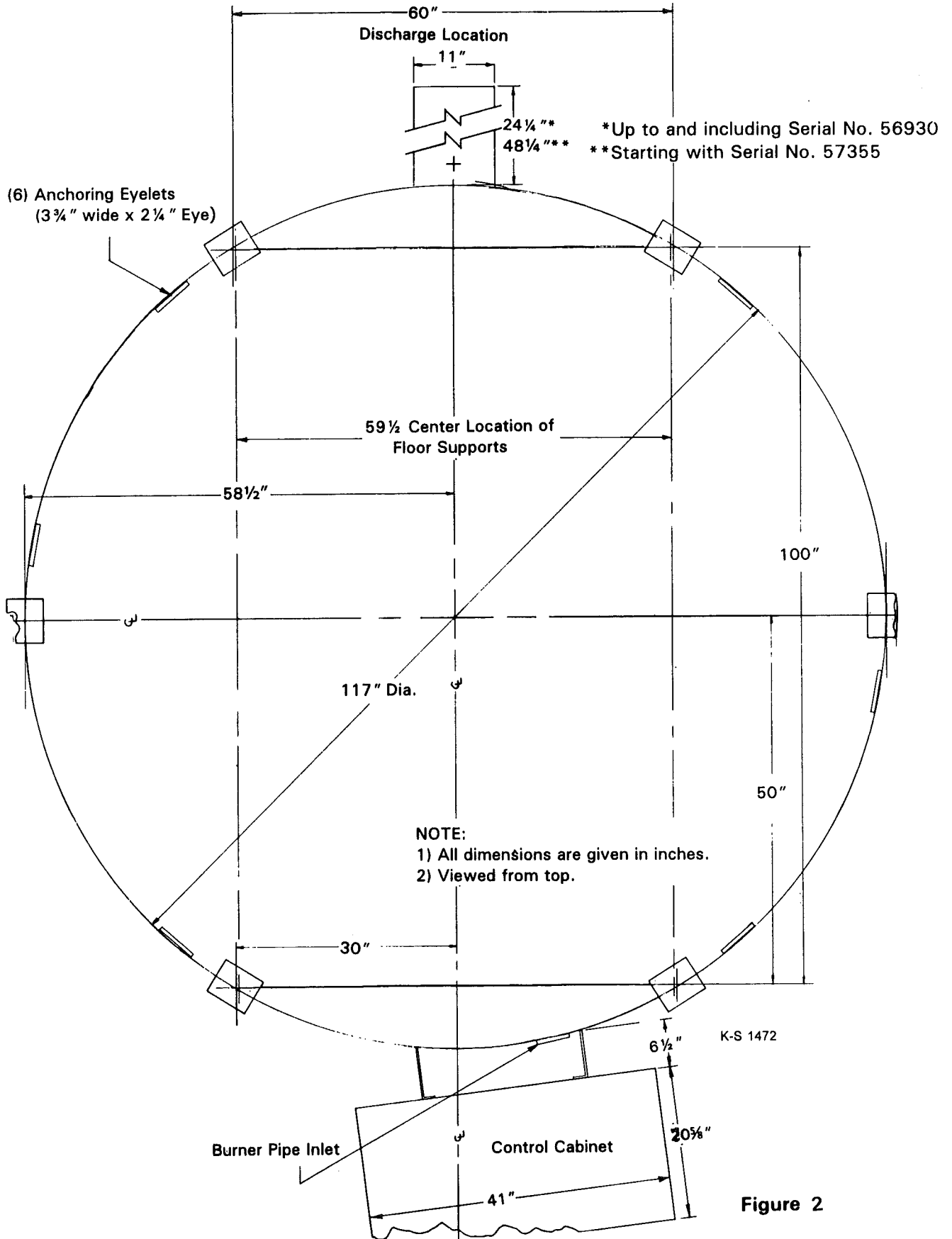
1 mile per hour = 1.61 kilometers per hour

#### Volume

1 bushel = 35.24 liters  
 1 bushel = 0.0352 cubic meters  
 1 pint = 0.4731 liters  
 1 quart = 0.9464 liters  
 1 gallon = 3.7854 liters  
 1 cubic inch = 16.387 cubic centimeters  
 1 cubic foot = 0.0283 cubic meters  
 1 cubic yard = 0.7646 cubic meters

**NOTE:** The Mathews Company reserves the right to incorporate changes in design without obligation to make these changes on units previously sold.

# FOUNDATION LAYOUT AND ANCHORING INFORMATION FOR 10420, 10530, & 10630

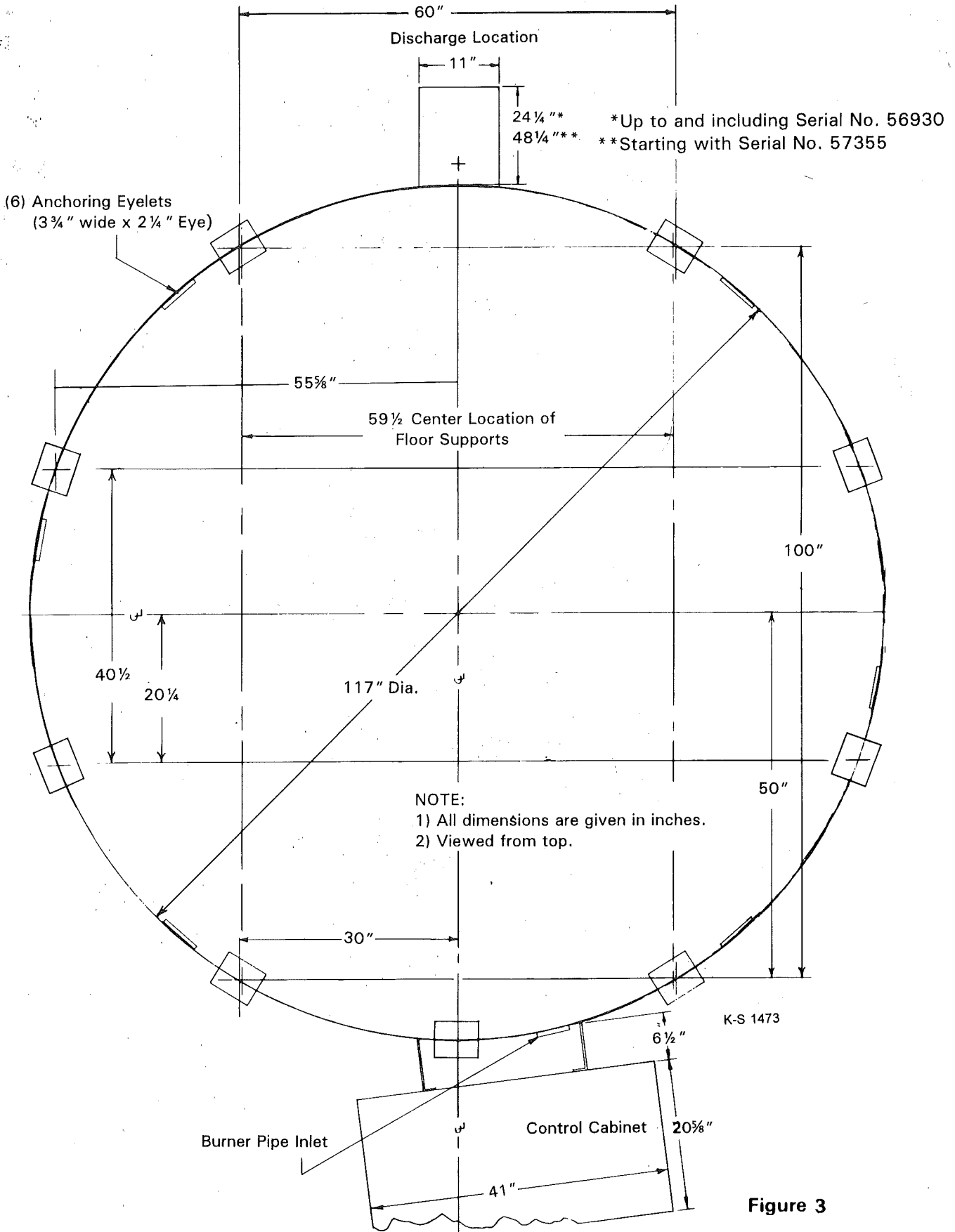


\*Up to and including Serial No. 56930  
\*\*Starting with Serial No. 57355

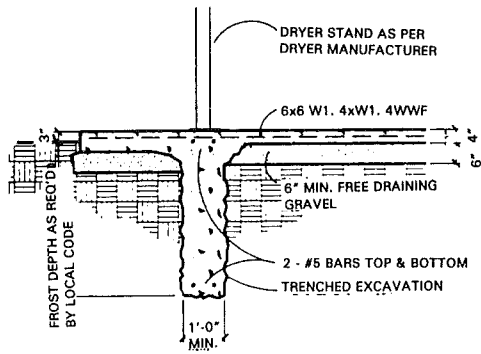
**Figure 2**



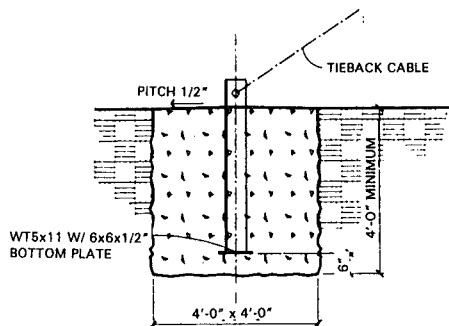
# FOUNDATION LAYOUT AND ANCHORING INFORMATION FOR 10750



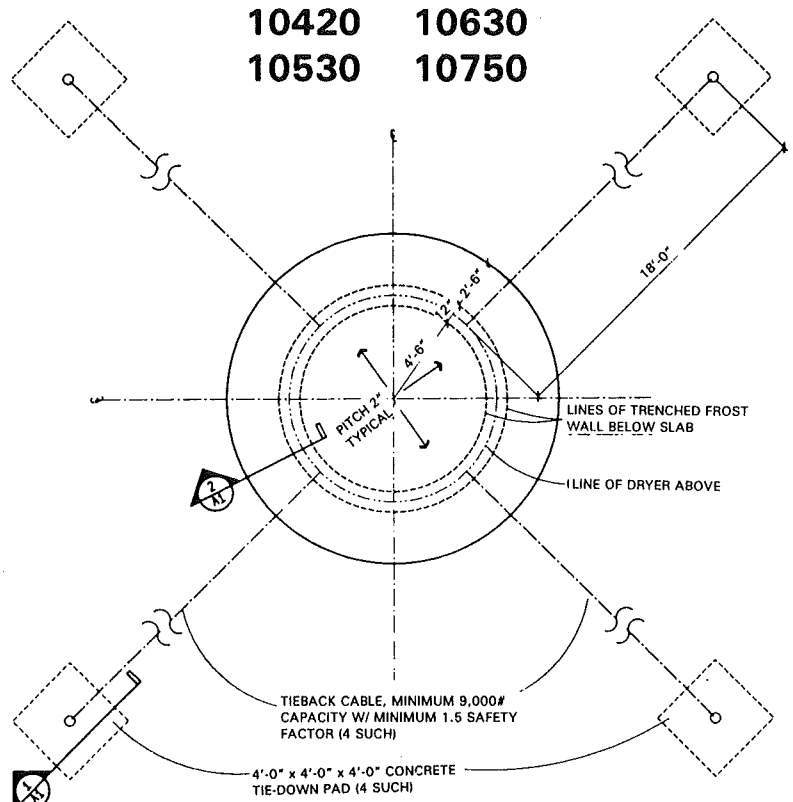
**Figure 3**



**PAD FOR DETAIL** 2  
SCALE: 1/2"=1'-0"



**TIE-DOWN PAD** 1  
SCALE: 1/2"=1'-0"



**Figure 4 PIER AND FOOTING PLAN**  
SCALE: 1/4"=1'-0"

**GENERAL NOTES**

**GENERAL**

1. REFER TO DESIGN LOADS LISTED BELOW.
2. CONTRACTORS TO ASSUME FULL RESPONSIBILITY FOR:
  - a. COMPLIANCE WITH THE CONTRACT DOCUMENTS.
  - b. DIMENSIONS TO BE CONFIRMED AND CORRELATED ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS OR SET OF DRAWINGS.
  - c. FABRICATION PROCESSES AND CONSTRUCTION TECHNIQUES (INCLUDING EXCAVATION, SHORING, SCAFFOLDING, BRACING, ERECTION, FORMWORK, ETC.)
  - d. COORDINATION OF THE VARIOUS TRADES.
  - e. SAFE CONDITIONS ON THE JOB SITE.
3. UNLESS OTHERWISE NOTED, ALL DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS ARE INTENDED TO BE TYPICAL FOR SIMILAR SITUATIONS ELSEWHERE.

**FOUNDATIONS**

1. FOOTINGS ARE DESIGNED FOR A MINIMUM SOIL BEARING CAPACITY OF 3,000 PSF.
2. ALL FOUNDATIONS SHALL BE CARRIED DOWN TO DEPTHS SHOWN ON THE DRAWINGS, OR DEEPER, IF NECESSARY TO REACH UNDISTURBED SOIL OF DESIGN CAPACITY.
3. APPROVED FILL MATERIAL IN LOCATIONS WHERE ENGINEERED FILL IS REQUIRED TO OBTAIN PROPER FOUNDATION BEARING CONDITIONS SHALL BE PLACED IN LAYERS NOT EXCEEDING 9" IN LOOSE THICKNESS AND COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY OBTAINED IN ACCORDANCE WITH ASTM SPECIFICATION D1557, MODIFIED PROCTOR METHOD, LATEST EDITION.
4. BENEATH SILO AREA SUBGRADE PREPARATION SHALL INCLUDE THE REMOVAL OF ALL UNSUITABLE SURFACE SOILS INCLUDING SOFT CLAYS, HIGHLY ORGANIC TOPSOIL, ROOT MATTER, DEBRIS AND OTHER DELETERIOUS MATERIALS.
5. IF FILL MATERIAL IS REQUIRED, THE ZONE OF COMPACTED FILL SHALL EXTEND BEYOND THE EDGES OF THE FOOTING A DISTANCE OF ONE FOOT FOR EACH FOOT OF THICKNESS COMPACTED FILL BELOW THE FOOTINGS.

**CONCRETE**

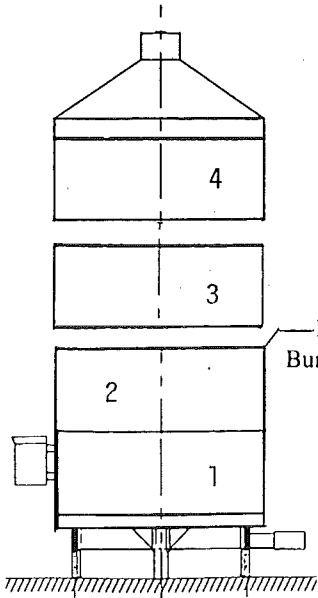
1. CONCRETE WORK SHALL CONFORM TO:
  - a. ACI 318-89.R92 STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
  - b. ACI 301, SPECIFICATION FOR STRUCTURAL CONCRETE IN BUILDINGS.
2. ULTIMATE COMPRESSIVE STRENGTH OF PORTLAND CONCRETE, STANDARD WEIGHT, AT 28 DAYS, SHALL BE 3,000 PSI, AIR ENTRAINED (6% +/- 1%)
3. CONCRETE CONTRACTOR SHALL NOT POUR ANY CONCRETE IN ADVERSE WEATHER CONDITIONS OR WHEN SUCH ARE FORECAST FOR THE TIME PERIOD FOLLOWING THE POUR UNLESS PROPER CURING AND PROTECTION IS PROVIDED CONTINUOUSLY UNTIL CONCRETE DEVELOPS ITS DESIGN STRENGTH.
4. CONCRETE CONTRACTOR SHALL SUPERVISE ALL TRADES REGARDING PIPING, ELECTRICAL CONDUIT, FIXTURE INSERTS, ANCHORS, ETC., PASSING THRU CONCRETE. BARS SHALL NOT BE CUT OR DISPLACED UNLESS ABSOLUTELY NECESSARY, AND THEN ONLY BY CONCRETE CONTRACTOR. MATCHING BARS EQUAL TO CUT BARS SHALL BE ADDED WITH PROPER LAPS AND EMBEDMENTS. CLEAR DISTANCE BETWEEN SLEEVES SHALL BE MINIMUM OF 8".
5. NO ALUMINUM OF ANY TYPE SHALL BE ALLOWED IN THE CONCRETE WORK UNLESS COATED TO PREVENT ALUMINUM-CONCRETE REACTION. THIS INCLUDES PUMPING THROUGH ALUMINUM PIPE.
6. REINFORCING BARS SHALL CONFORM TO ASTM SPECIFICATIONS A-615, GRADE 60.
7. ALL LAPS FOR REBAR, WHEN NOT DIMENSIONED ON DRAWINGS, SHALL BE 40 BAR DIAMETERS.
8. UNLESS OTHERWISE NOTED, PRINCIPAL REINFORCEMENT SHALL HAVE THE FOLLOWING CONCRETE PROTECTION:
  - a. SURFACES NOT FORMED - 3" COVER MINIMUM.
  - b. FORMED SURFACES IN CONTACT WITH SOIL OR WATER OR EXPOSED TO WEATHER - 2" COVER MINIMUM.

**NOTES**

1. MAX. DRYER OPERATING WEIGHT - 110,000#
2. DESIGN WIND SPEED: 80 MPH (35 PSF)
3. DESIGN SOIL PRESSURE: 3,000 PSF (SOILS ENGINEER TO VERIFY)
4. CONCRETE: F'c - 3,000 PSI, AIR ENTRAINED (6% +/- 1%)

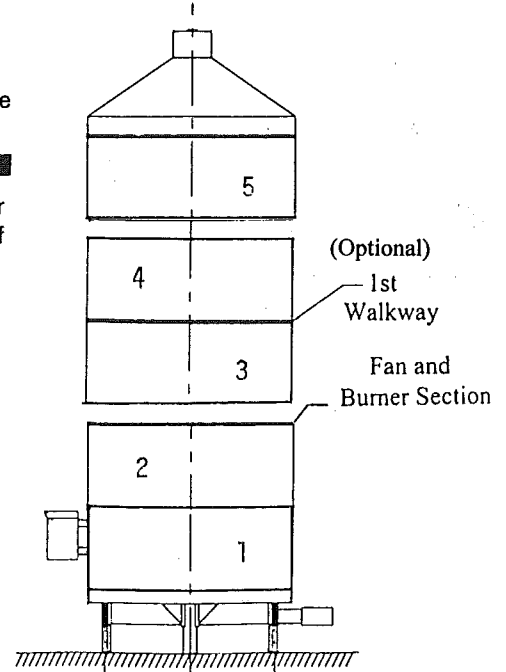
# SHIPPING

The 10420 and the 10530 Tower Dryers are shipped in (3) sections:



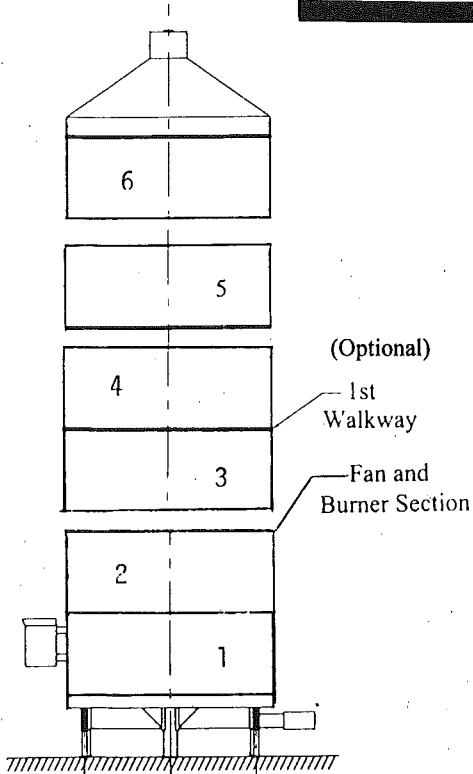
Each section is marked at the center ladder bracket to assist in the proper placement of each section when stacking.

- 10420** - (1) Base with (2) 4 ft. Screen Sections attached,  
 (1) 4 ft. Screen Section, and  
 (1) 4 ft. Screen Section with Top.

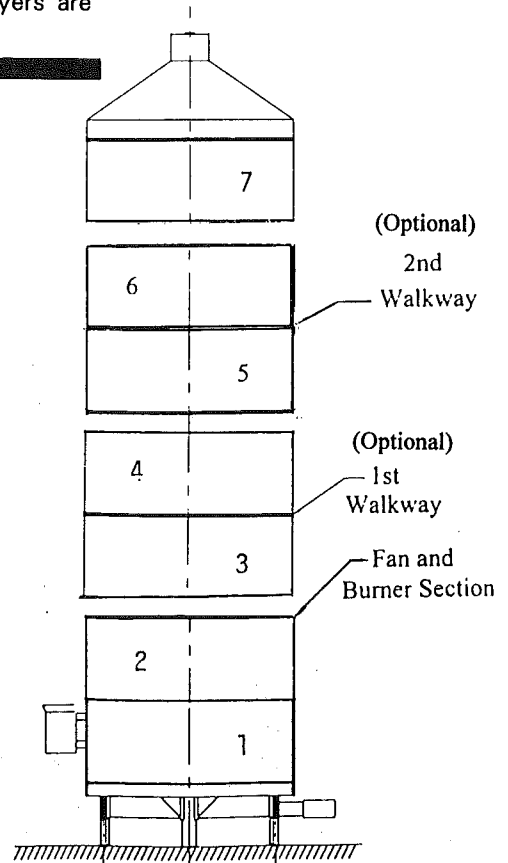


- 10530** - (1) Base with (2) 4 ft. Screen Sections attached,  
 (1) 8 ft. Screen Section (two 4 ft. sections bolted together),  
 (1) 4 ft. Screen Section with Top.

The 10630 and the 10750 Tower Dryers are shipped in (4) sections:



- 10630** - (1) Base with (2) 4 ft. Screen Sections attached,  
 (1) 8 ft. Screen Section (two 4 ft. sections bolted together),  
 (1) 4 ft. Screen Section, and  
 (1) 4 ft. Screen Section with Top.



- 10750** - (1) Base with (2) 4 ft. Screen Sections attached,  
 (2) 8 ft. Screen Sections (two 4 ft. sections bolted together), and  
 (1) 4 ft. Screen Section with Top.

**Figure 5**

## Unloading

When unloading the sections from the delivering carrier, start by positioning the Base Section on the concrete foundation using the lifting brackets located beneath the base in a (4) point lift.

Discard the shipping legs and attached the (6) Leg Extensions to the base of Models 10420, 10530 and 10630. Model 10750 has (9) Leg Extensions. The top of each leg should make contact with the base to support the weight of the dryer and crop to be dried. When the top of the leg makes contact with the base, only (1) set of holes will line up to accept the 5/8-11 x 7" Grade 5 Hex Head Capscrew, (2) Flatwashers and Hex Nut to secure each leg.

Set the base section into place so the discharge auger is correctly positioned. Level base section using metal shims as required.

Now unload the remaining Screen Sections using the (3) Lifting Brackets or the Inside Walkway Support Gussets that connect the Inner Walkway Platform #475330 to the inner screens. See page 64.

Screen Section #4 (10420), #5 (10530), #6 (10630) and #7 (10750) that are bolted to the Top Section are lifted by placing a hook into the "U" Bolt attached to the Roof Cap #439063. Access to the "U" Bolt is through the Receiving Tube of the Grain Receiving Top Assembly. See page 55.

Be sure to place the Screen Sections so that there is enough space between them to allow easy installation of the Ladders and Ladder Safety Cages to screen sections and top.

This spacing is especially important if one or more of the optional Outside Walkways #475345 were purchased with the dryer.

Both the Ladder Safety Cages and the optional Walkway(s) should be placed onto the Screen Sections before they are stacked.

**Do not lift more than (1) 8 ft. double screen section.**

## SET-UP INSTRUCTIONS

### General

Check to make sure that all the parts and hardware listed on the packing list have been received.

## Ladder Installation

All 8 ft. Screen Sections will have the Outside Ladders installed except the 8 ft. Screen Section that is bolted to the base.

A 9 ft. Ladder is to be installed on this base section and the bottom of this Ladder may have to be shortened to fit the installation.

All Ladder Brackets will be bolted to the Screen Sections at the factory.

On 104 and 106 Models a 9 ft. Ladder will be shared between the top 4 ft. Screen Section with the Roof and the 4 ft. Screen Section shipped by itself.

The method used to install this 9 ft. Ladder and its Safety Cage will have to be made at the drying site and will depend upon the equipment available.

### Assembly of the Ladder Safety Cages

There are 5 ft., 8 ft. and 9 ft. Ladder Safety Cages that should be bolted to the Outside Ladders before the Screen Sections are stacked.

A 5 ft. Ladder Safety Cage must be bolted to the 5 ft. Ladder that is bolted to all roof sections and to the 5 ft. Ladder that is bolted to the side of the Top 4 ft. Screen Section of a Model 105 or 107. This Top Screen Section is delivered with the Roof Section attached.

The 5 ft. ladder cage for the roof section Ladder uses (3) hoops and (4) 5 ft. cage straps. On this cage the bolts at the bottom of the cage straps are also used as the top bolts of the (4) Connecting Straps #475090..

The 5 ft. cage on the top screen section uses (2) hoops and (4) 5 ft. cage straps. The bolts at the top of the cage straps are also used as the bottom bolts for the Connecting Straps #475090 that are attached to a cage hoop bolted to the (2) Ladder Connecting Brackets #475059.

To assemble an 8 ft. ladder safety cage, bolt (1) Ladder Cage Hoop #475063 to the top and (1) hoop to the bottom of the ladder brackets of the 8 ft. ladder. Use the 5/16 x 3/4" hex washer head capscrews that are holding ladder to brackets.

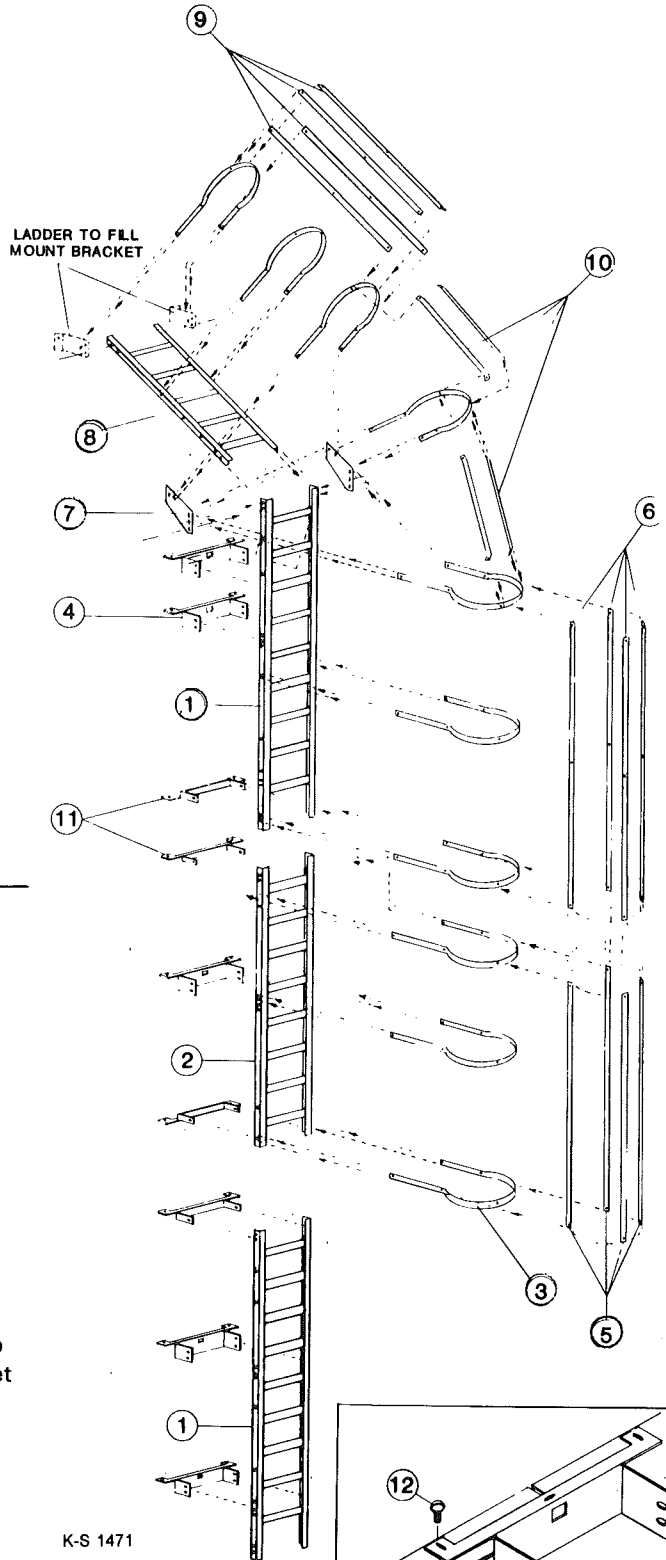
# OUTSIDE LADDER & SAFETY CAGE ASSEMBLY

10630 Shown

Now bolt (2) 8 ft. Cage Straps #475066 to the (2) hoops with 5/16 x 3/4" hex washer head capscrews and whiz locknuts. Bolt the 3rd cage hoop to the cage straps to locate correct hole on center ladder bracket to be used to attach the 3rd hoop. Now install the remaining (2) cage straps.

The 9 ft. Ladder Safety Cage for Models 104 and 106 is assembled in the same way as the 8 ft. Safety Cage. See Figure 6

Ref. Part No.	Qty. 104	Qty. 105	Qty. 106	Qty. 107	Description
1 475951	2	1	2	1	9 ft. Ladder
2 475062	0	1	1	2	8 ft. Ladder
3 1282015	7	10	10	13	Ladder Cage Hoop
4 475394	4	4	5	5	Main Ladder Bracket
5 475066	0	4	4	0	8 ft. Ladder Cage Strap
6 1282017	4	0	4	0	9 ft. Ladder Cage Strap
8 475060	1	2	1	2	5 ft. Ladder
9 475067	4	8	4	8	5 ft. Ladder Cage Strap
10 475090	4	4	4	4	Safety Cage Conn. Strap
11 475352	2	4	4	6	Ladder Bracket
12 837524	110	110	110	110	5/16-18x3/4" HWHCS
13 0008169	110	110	110	110	5/16-18 Whiz Locknut



K-S 1471

Figure 6

# OUTSIDE WALKWAY ASSEMBLY

## Optional Walkway Installation

When an Optional Outside Walkway is purchased with the dryer, the Walkway Floor Brackets are mounted to the center Outside Channel Rings of the designated 8 ft. Screen Section. These brackets must be pulled out until they are perpendicular to the rings allowing the channels of the Walkway Sections to slide over the Floor Brackets. Bolt brackets to channels with 5/16" x 3/4" hex washer head capscrews and whiz locknuts. There are (5) Walkway Floor Sections for each double screen section.

**Only hand tighten bolts until entire walkway is installed.**

Be sure to install the first Walkway Floor Section on either side of the Ladder Mount Bracket and work around the section and back to the ladder bracket.

The first Walkway Floor Section will slide onto (4) Walkway Mount Brackets. However, the second floor section side will be bolted to the side of the first floor section using the (3) bolts of the first Walkway Floor Mount Bracket. Therefore, the second floor section will only use (3) Walkway Mount Brackets as it will be sharing the end bracket of the first floor section. The same will be true for the remaining

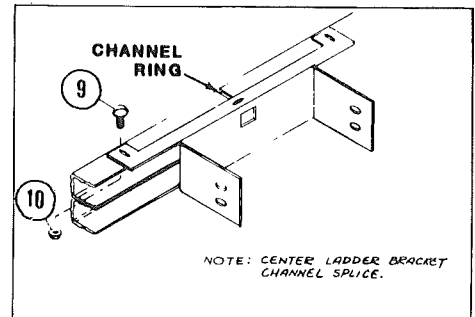
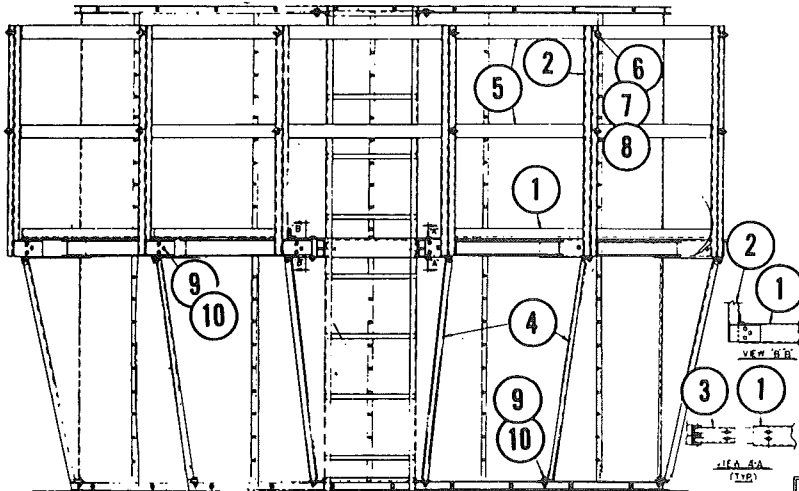
(3) Walkway Floor Sections.

Once a Walkway Section is bolted to the Floor Brackets, install (4) #475342 Walkway Diagonal Supports to front end of the mounting channels with (2) 5/16" hex washer head capscrews and whiz locknuts. The lower end of the diagonal support is bolted to the top of the lower ring with (1) 5/16" hex washer head capscrew and a whiz locknut.

After the Walkway Floor Sections and the Diagonal Supports are installed, the Upright Posts #475347 are to be installed. Place each Post so that the side plate at the bottom faces into the walkway floor mount channel. The Post will rest against the front edge of the Walkway Floor Section. Here again, when the Floor Sections meet, the (3) bolts used to hold the Post to the floor section will also be used to join the floor sections at the front. Be sure that all Posts are placed in the same way (on one side of the joint or the other) all the way around the dryer. If they are not, the holes in the Hand Rails #475353 will not match the holes in the Posts.

Install the Hand Rails to the Upright Posts (center and top holes) with 5/16 x 3/4" hex washer head capscrews and whiz locknuts.

Once the complete Walkway Assembly is put together **all the bolts can be tightened.**



**Dryer Weight** – Approximate in pounds (kgs)

Ref.	Part No.	Qty.	Description
1	475348	5	Walkway Floor Section
2	475347	16	Upright Post Weldment
3	475343	16	Floor Mounting Bracket
4	475342	16	Walkway Diagonal Support
5	475353	8	Walkway Hand Rail
6	097121	34	3/8-16 x 2 3/4" Hex Head Capscrew
7	095013	34	3/8 Flatwasher
8	434111	34	3/8-16 Flange Whiz Locknut
9	837524	170	5/16-18 x 3/4" HWH Screw
10	434632	170	5/16-18 Flange Whiz Locknut

MODEL	EMPTY	FILLED (w/No. 2 Corn)
10420	8090 (3670)	32,690 (14,828)
10530	8710 (3951)	38,710 (17,559)
10630	9330 (4232)	44,670 (20,262)
10750	10,050 (4559)	50,850 (23,066)

**Stacking of the Screen Sections and Roof Onto Dryer Base**

With the Safety Ladder Cages and Optional Outside Walkway (if any) installed, the Screen Sections are ready to be placed into position on top of the Base Section.

Be sure that the base is level and anchored to the foundation using turn buckles attached to the base section frame and secured to the foundation.

The ladders are used as a guide to correctly position each double screen section as it is stacked.

Attach the special lifting brackets to the next double Screen Section or use the Inside Walkway Support Gussets that connect the Inner Walkway Platform #475330 to the inner screens (page 65), attach crane hooks to the Lift Brackets or Support Gussets, and place Screen Section onto the Base Section using drift pins to align holes in Channel Rings. Use 5/16 x 3/4" hex washer head capscrews #0018202 and 5/16" whiz locknuts #0008169 to secure inner and outer Channel Rings to Base Section.

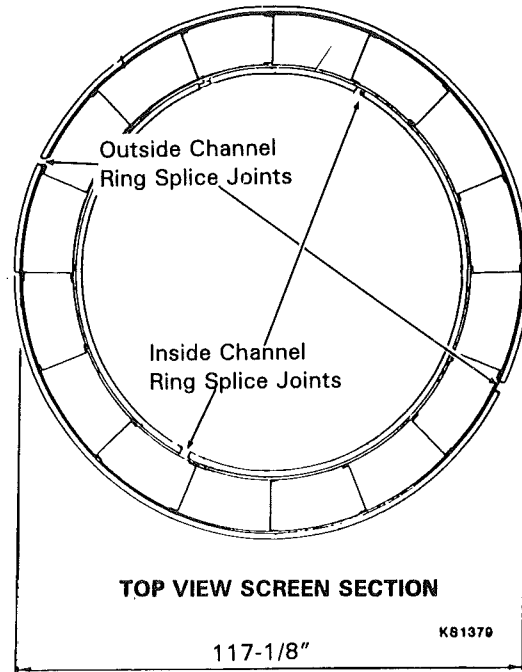
**Only hand tighten bolts until all sections are in place.**

Now use the same procedure for the remaining 4 ft. or 8 ft. Screen Sections.

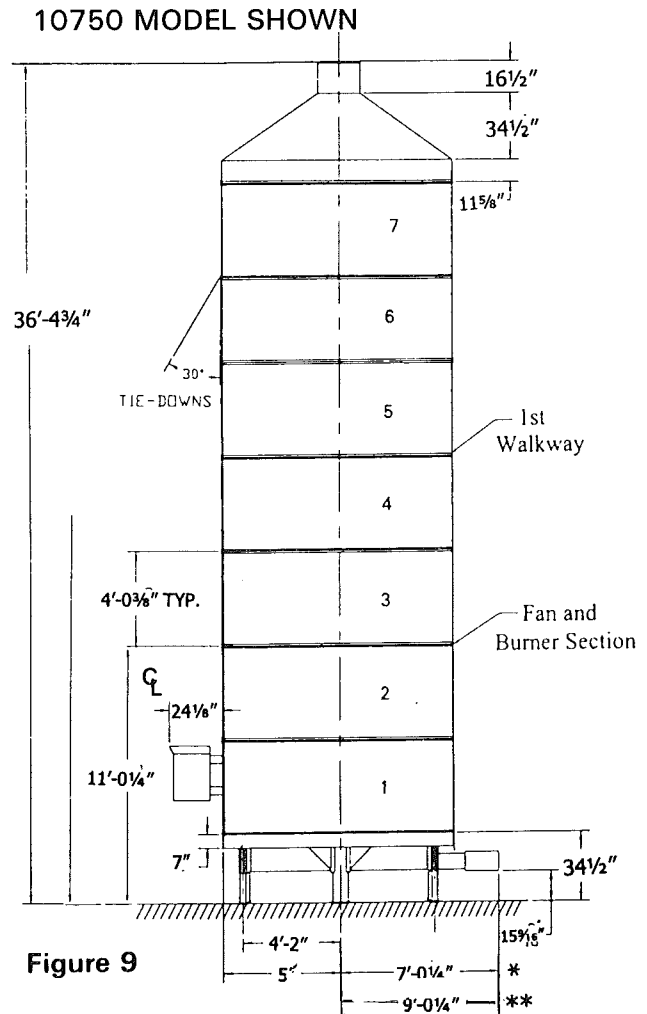
As Screen Sections are placed onto the Section below, the (2) **Inside** Channel Ring splice joints should align with the (2) splice joints of the **Outside** Channel Rings of the Screen Section below. When positioned correctly, all Screen Seams should line up. See Figure 8 .

The Top 4 ft. Screen and Roof Section is lifted by placing the crane lift hook into the "U" Bolt attached to the Roof Cap. See page 55. Again use ladders for correct positioning and drift pins to align holes in Channel Rings. Use 5/16 x 3/4" hex washer head capscrews #0018202 and 5/16" whiz locknuts #0008169 to secure inner and outer Channel Rings to lower Screen Section.

**Now wrench tighten all Inner and Outer Channel Ring bolts that were hand tightened during stacking process.**



**Figure 8**



**Figure 9**

\*Up to and including S/N 56930  
 \*\* Starting with S/N 57355

## Wiring

### Level (Rotary Fill) Switch

There is a  $\frac{3}{8}$ " flexible conduit that is rolled up next to the right side of the control cabinet (as you face it) that will have to be unrolled and taken up to the top of the roof section and connected to the  $\frac{3}{4}$ " NPT opening of the Rotary Fill Switch. The Rotary Fill Switch is located between the ladder to fill mount brackets, see page 56. The (2) yellow wires and (1) white wire are to be connected to the switch. Yellow wire LASW→LSW-5- is connected to terminal #5 and the yellow wire LSW-3→LASW is connected to terminal #3. The white wire TB5→LSW-2- is connected to terminal #2.

### Moisture Control Thermistors

Unwind the  $\frac{1}{2}$ " gray flexible conduit from the center (3) way Thermistor Box on the side of the 3<sup>rd</sup> Screen Section and connect end with wires to left side of (4) way Thermistor Box just above Control Cabinet. There are (3) Thermistor Sheathed Cables, each with (3) wires, (1) black, (1) gray, and (1) bare silver. The (3) bare silver ground wires are to be fitted with a ring terminal and connected to one of the (4) ground screws in each corner of the box. The remaining black and gray wires from the Thermistors are to be connected to the terminal blocks according to the Thermistor Wiring Diagram on page 37.

**IMPORTANT:** Check resistance reading of Thermistor wires when disconnected from Moisture Control Board. Determine that neither wire is shorted to ground and resistance reading is correct for current outside temperature. Check page 34.

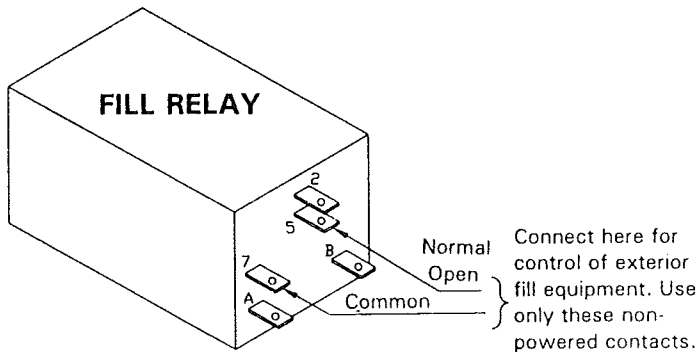


Figure 10 - Fill Relay Non-Powered Contacts

### Filling Equipment (Customer Supplied)

1. Be sure that the system used has the grain moving capacity to fill the dryer faster than the grain shrinks and dries. If it does not, the Low Grain Timer will time out and shut down the dryer when the Wet Grain Switch is in the AUTOMATIC position. If this happens, the EMPTY and FILLING indicator lamps will be on.
2. The filling equipment MUST be controlled by the dryer. The take-away equipment can be controlled by the dryer or separately.
3. The power for the fill equipment motor magnetic starter coil is controlled by the non-powered contacts of the relay provided in the control cabinet. Use terminals #5 and #7. See Figure 10.

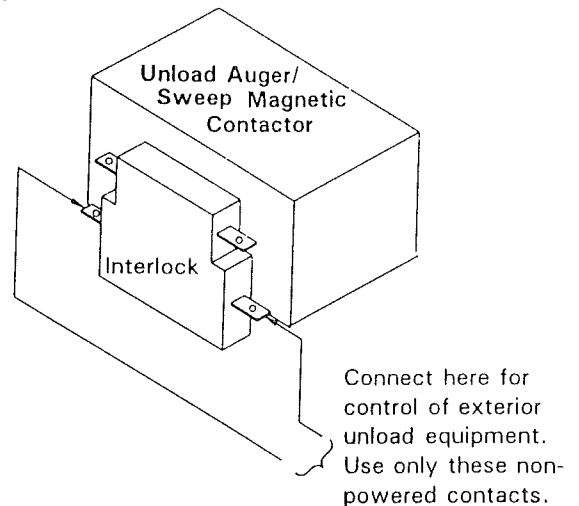


Figure 11 - Unload Auger Magnetic Contactor Non-Powered Auxiliary Contacts

### Unloading Equipment (Customer Supplied)

The dryer unload auger/sweep contactor is equipped with a set of non-powered auxiliary contacts (interlock switch) that can be used to control the customer supplied take-away equipment. See Figure 11.



## Electric Power Supply

**NOTE:** All wiring must be done by a qualified electrician.

### Power Supply Requirements

DRYER MODEL	SUPPLY POWER	FULL LOAD AMPS
10420 10530 10630	230 Volt 1 Phase	128 150 150
10420 10530 10630 10750	230 Volt 3 Phase	98 125 125 167
10420 10530 10630 10750	460 Volt 3 Phase	65 78 78 100

1. It is the customer's responsibility to provide the power source to the control cabinet power distribution block that meets all requirements of the local electrical codes. The power source must be adequately fused and have a main disconnect.
2. Connect the power source to the lugs on the power distribution block. See Figure 13.
3. The dryer must be grounded to the grounding rod that is supplied with the dryer. Connect the grounding rod to the ground lug mounted in the control cabinet with at least a #6 copper wire or in accordance with local code.

**IMPORTANT:** The dryer controls operate on 60 cycle single phase 115V power. Dryers that operate on 230V three phase power must have the 230V supply wire connected to the center lug of the distribution block as shown in Figure 13. If the 230V power supply is connected to a 115V lug and the 115V wire that supplies power to the dryer controls is connected to this lug by mistake, the dryer controls will be damaged by the 230 high voltage power. For this reason, the 115V power supply wire to the dryer control panel is not connected to the distribution block at the factory. There is a loose black wire close to the distribution block with an orange tag attached that reads "115VOLTS." Dryers that will be operated on 460V power will have a step-down transformer

installed and wired to provide the 115V electricity for the dryer controls.

## Fan Rotation

**IMPORTANT:** Before checking fan rotation, inspect for and remove any foreign material (nuts, bolts, tools, parts, etc. ) from the cool and heat chambers.



**CAUTION:** Do not turn the electric power on until the fan guards have been installed.

1. Flip all switches on the control panel OFF. Turn on the electric power supply to the dryer. The 115V POWER ON light will be on.
2. Flip the control circuit toggle switch ON. The control circuit ON light and high limit light will be on. If the high limit light is not on, push the reset button on the high limit switch.
3. Push the spring loaded control circuit toggle switch up to the START position and release it. The READY light and LEVEL light will be on.
4. With everyone clear of the dryer, push the fan start button and let fans run for (10) seconds. Then push stop button, let fans slow down for (20) seconds and check fan rotation by looking into the cool section crawl door. (Be sure to wear safety glasses.) Fans should be turning clockwise.

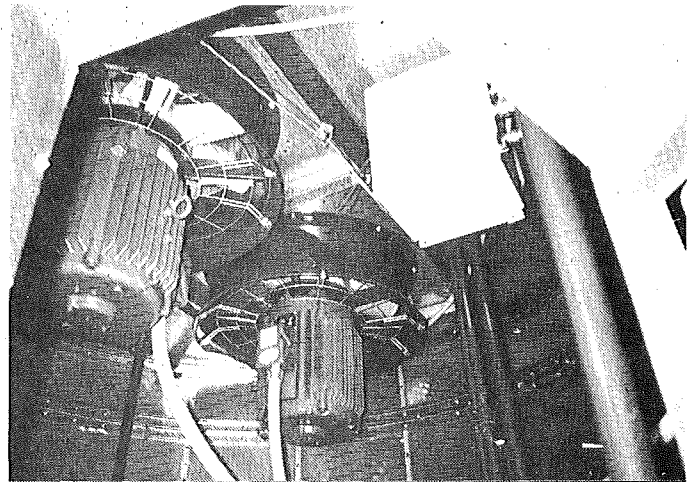


Figure 12

5. If fan rotation(s) is not correct, it can be changed as follows:



**CAUTION:** Turn off and lock the electric power supply to the dryer.

Continued on Page 14

# CONTROL CABINET (INSIDE)

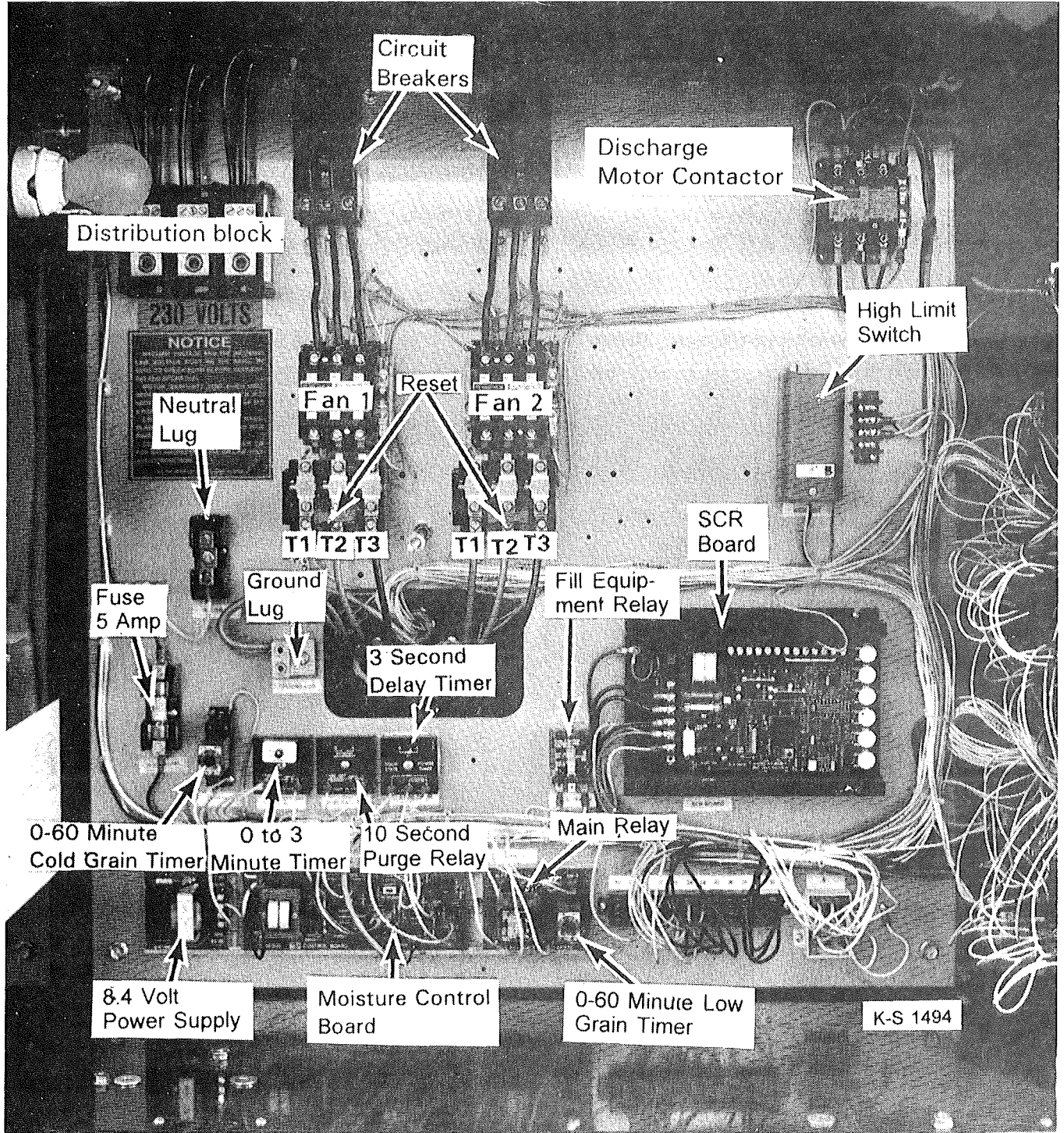


Figure 13

**Three phase motors** - Move the wire from terminal T1 to T3 and T3 to T1 on the fan magnetic starter in the control cabinet. See Figure 13.

## Gas Supply and Connections

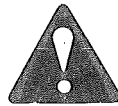
### Liquid Propane (LP)

1. Advise your LP gas supplier that the burners require liquid propane from the LP tank (not vapor).
2. The burners require 25 (172 Kpa) to 30 lbs. (207 KPa) of gas pressure at the gauge on the manifold when operating.
3. Consult the LP gas supplier for gas line size required from the supply tank to the dryer gas manifold that will provide the amount of fuel to meet the dryer BTU/Hr. requirement at the recommended operating pressure. See Gas Consumption BTU/Hr. Chart.

**IMPORTANT:** Use type of supply line specified by local codes.

4. Connect the LP gas liquid line from the tank valve to the  $\frac{1}{2}$ " (12.7mm.) extra heavy duty intake pipe below the left side of the Control Cabinet (as you look at cabinet).

**NOTE:** LP Burners for models 104, 105 and 106 have a  $\frac{3}{16}$ " (4.8mm.) orifice and Model 107 has a  $\frac{1}{4}$ " (6.35mm.) orifice.



**CAUTION:** Before starting the dryer test for any gas leaks. Turn the gas supply on and apply soap water to ALL pipe joints and unions, including pipes assembled on site and those assembled at the factory.

### Natural Gas (NG)

The natural gas supply line must be large enough to provide the volume of gas for the burners at an operating pressure of 15 to 20 psig. See BTU/Hr. Chart. Connect NG supply line to 1" hand valve below control cabinet.

### Gas Consumption (BTU/Hr.)\*

Model	Dry & Cool	Maximum
10420	3,800,000	8,500,000
10530	5,500,000	8,500,000
10630	5,500,000	8,500,000
10750	6,600,000	8,500,000

\*Based on 220°F (104°C) drying temperature and 50°F (10°C) outside air temperature.

- Liquid Propane – 91,500 BTU's/Gal.
- Natural Gas – 1,000 BTU's/Cubic Foot

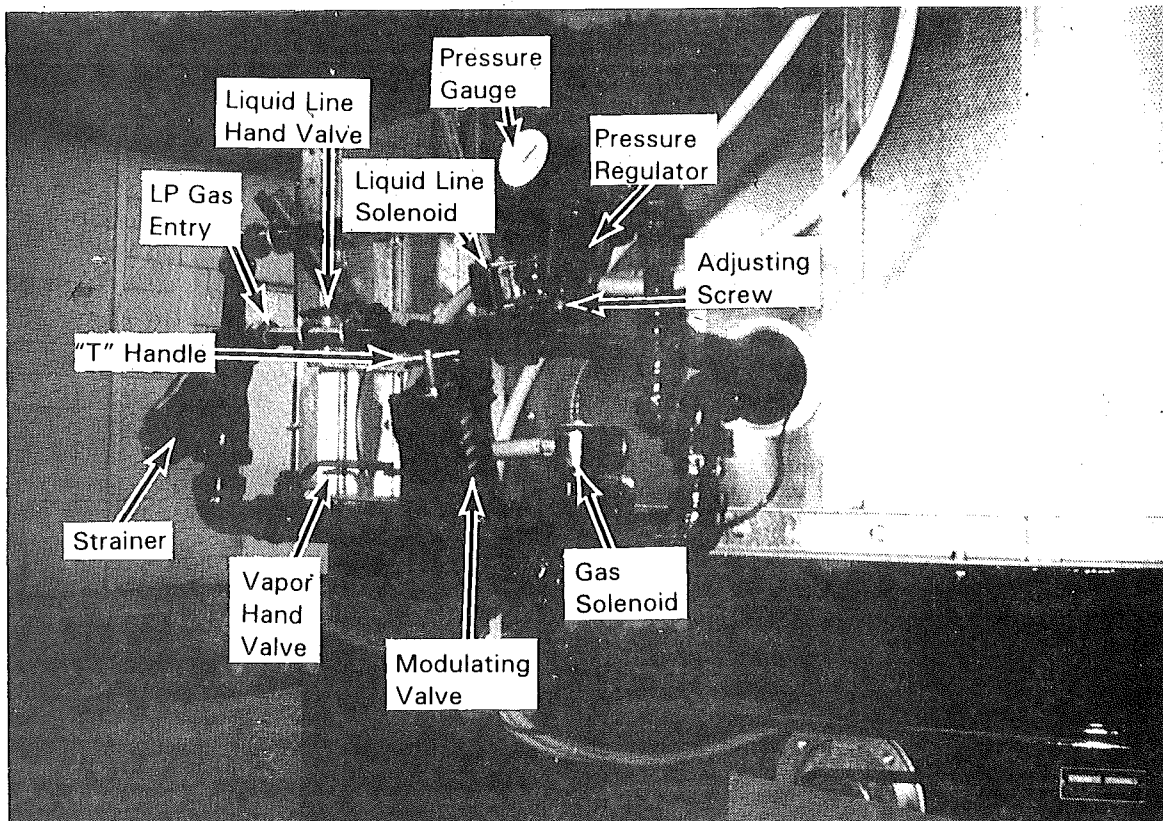
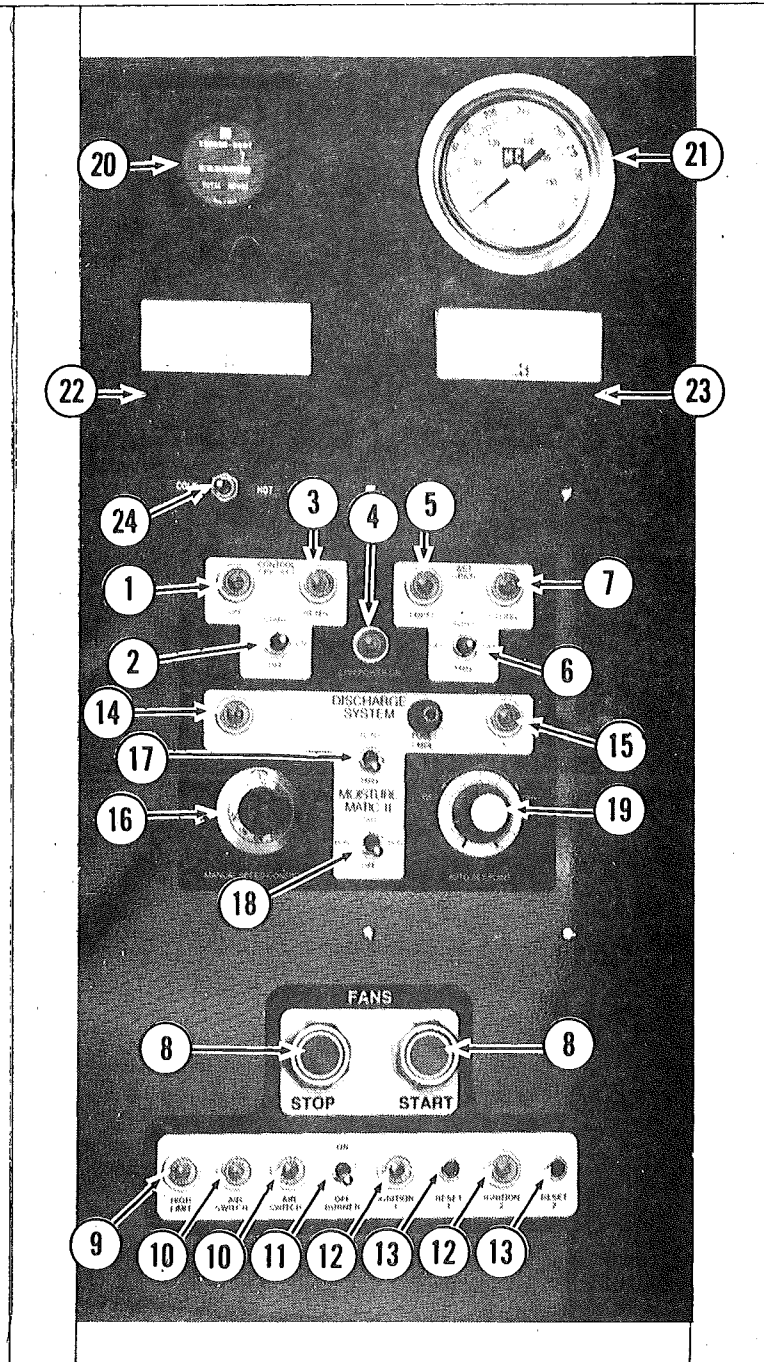


Figure 14

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# CONTROL PANEL



K-S 1474

Figure 15 - Control Panel

# CONTROLS, PANEL LIGHTS, SWITCHES & METERS

## Ref. 1 - Control Circuit On Light

Indicates that the CONTROL CIRCUIT toggle switch is in the ON position, the IGNITION RESETS are closed, the fan motor magnetic starter overloads are closed and the unload auger rear discharge door switch is closed.

## Ref. 2- Control Circuit Switch

When the switch is in the ON position, the control light will be ON if the IGNITION RESETS are closed, the fan motor magnetic starter overload relay blocks are closed and the unload auger rear discharge door switch is closed. The HIGH LIMIT light will also be ON.

When the switch is pushed up to the START position, the ready light will be ON if the HIGH LIMIT light is on. When the READY light is ON, the dryer can be started.

**NOTE:** If there is a momentary loss of electric power, the dryer will shut down. When the power comes back on, the 115V POWER ON light will be ON. The dryer will have to be restarted. This feature prevents an unattended dryer from restarting.

## Ref. 3 - Control Circuit Ready Light

Indicates that the CONTROL CIRCUIT toggle switch has been pushed up to the START position and the dryer is ready to be started.

## Ref. 4 - 115V Power On Light

Indicates that 115 Volt electric power to the dryer control panel is ON.

## Ref. 5 - Empty Light

Indicates low grain level in the wet hopper. The dryer will shut down when this light comes on.

## Ref. 6 - Wet Grain Switch

When the switch is in the MANUAL position, the wet hopper fill equipment will start immediately when the rotary FILL switch in the hopper calls for grain and stops when the hopper is full.

When the switch is in the AUTOMATIC position, the rotary FILL switch will start and stop the fill equipment automatically after the preset time on the delay.

## Ref. 7 - Filling Light

Indicates that the grain level in the hopper is low and the rotary FILL switch in the hopper has closed activating the customer fill equipment.

## Ref. 8 - Fan Start-Stop Buttons

Green button starts and red button stops the fans.

## Ref. 9 - High Limit Light

Indicates that the HIGH LIMIT switch is closed and the temperature in the plenum chamber has not exceeded the high limit setting.

## Ref. 10 - Air Switch Light

Indicates that the respective burner fan is running.

## Ref. 11 - Burner Switch

Flip this switch ON to light the burner. After a (10) second delay the IGNITION light will come on and the burner will light. If the burner does not light in (5) seconds, the ignition board will "lock out" closing the gas solenoid valves.

## Ref. 12 - Ignition Lights 1 and 2

Ignition Light (1) indicates that the ignition board for burner (1) is providing high voltage for ignition, a flame sensing circuit, and a power circuit for the ignition board for burner (2). The trial period for establishing a flame is (10) seconds; if flame is not sensed, the ignition board will "lock out" and the light will go out.

Ignition Light (2) indicates that the ignition board for burner (2) is providing high voltage for ignition, a relay circuit for the gas solenoids, and a flame sensing circuit. The trial period for establishing a flame is (10) seconds; if flame is not sensed, board will "lock out" and the light will go out.

As the (2) ignition boards are connected in series, if (1) "locks out" the other will lock out closing the gas solenoid valves and ignition lights will be out.

# CONTROL PANEL

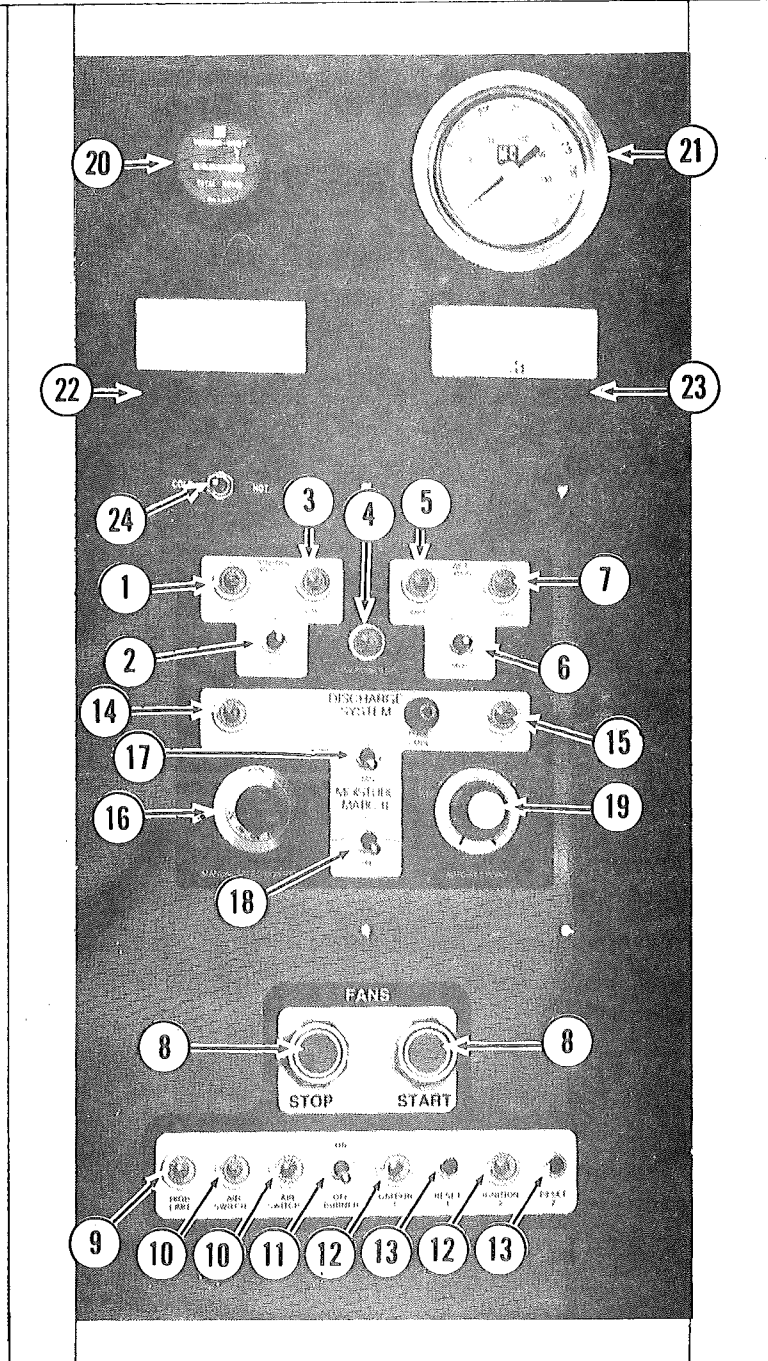


Figure 15 - Control Panel

K-S 1474

### **Ref. 13 - Ignition Reset Buttons**

These resets trip out any time the ignition board goes through a (10) second trial for ignition and does not sense flame.

### **Ref. 14 - (-) Light**

Indicates that the discharge rate is slowing down if Moisture Control Switch is in automatic.

### **Ref. 15 - (+) Light**

Indicates that the discharge rate is speeding up if Moisture Control Switch is in automatic.

### **Ref. 16 - Manual Speed Control**

The MANUAL SPEED CONTROL potentiometer is used to set the grain discharge rate in the manual mode.

### **Ref. 17 - Moisture Control Automatic/Manual Switch**

Used to set the moisture control for manual or automatic operation. When it is in MANUAL, the MANUAL SPEED CONTROL potentiometer controls the grain discharge speed. When it is in AUTOMATIC, the Moisture Control Board controls the grain discharge speed.

### **Ref. 18 - Discharge System Start-Run-Off Switch**

Controls the discharge auger and auxiliary take-away equipment if connected.

### **Ref. 19 - Auto Set Point Potentiometer**

Used when the Moisture Control is in the MANUAL position to balance the system. When the Moisture Control is in the AUTOMATIC position, the AUTO SET POINT potentiometer can be used to increase or decrease the desired moisture content of discharge grain. To increase the moisture content of discharge grain the AUTO SET POINT potentiometer must be turned counterclockwise. To decrease the moisture content of discharge grain the AUTO SET POINT potentiometer must be turned clockwise.

### **Ref. 20 - Total Hour Meter**

Records the number of hours of dryer operation.

### **Ref. 21 - Plenum Temperature Meter**

Indicates the temperature inside the plenum.

### **Ref. 22 - Grain Temperature Meter**

Indicates the grain temperature in the dryer in the heat (HOT) or cool (COLD) chambers. It has no effect on operation.

### **Ref. 23 - Discharge Speed Meter**

Indicates the speed of the discharge system.

### **Ref. 24 - Hot-Cold Switch**

Used to read grain temperature from two thermistors. One thermistor is located in the heat section (HOT) and one thermistor is located in the cool section (COLD). This switch does not effect operation in any way.

Balance lamps may be on when in the MANUAL mode of operation.

When in the AUTOMATIC mode and incoming grain moisture content is constant, the BALANCE lamps are normally OFF. BALANCE lamps ON indicate a change in the moisture content of incoming grain has taken place and that the Moisture Control system is adjusting the discharge speed to maintain the preset moisture content of discharged grain.

## **Drying Information**

### **Drying Rate**

Drying rate is largely affected by physical characteristics of the grain. Variety, fertilization program, rainfall, sunlight (degree days), planting date and hail and storm damage all affect drying rate. Dryer capacity changes of up to 30% have been observed simply by changing from one field of corn to another of equal moisture content.

Capacity stated by industry standards is for 10 point moisture removal based on 25% dried to 15% moisture content. Five point is from 20% to 15%. Drying below 15% is slower and drying to 13% will reduce capacity as much as 30%.

Trash in grain reduces the drying rate and may cause uneven drying and flow patterns.

### **Drying Temperature Limits**

Commonly dried grains have various maximum allowable drying temperatures depending upon anticipated storage, handling, and end usage.

Excessive temperatures affect palatability to livestock, milling, germination and cracking. Commonly accepted temperature limits are shown in the chart on page 20.



## Suggested Burner Operating Temperature Settings °F (°C)

**IMPORTANT:** Use this chart as a starting point for drying the crops listed. Depending on the condition of the crop, you may have to increase or decrease the temperature shown.

Dryer Model	Corn (Maize)	Sorghum & Wheat	Sunflowers, Oats, Barley, Soybeans
10420, 10530	Dry & Cool	Dry & Cool	Dry & Cool
& 10750	220°F (104°C)	170°F (77°C)	140°F (60°C)

**NOTE:** When drying grains for seed or food processing, lower temperatures must be used which results in a reduced drying capacity.

The standard modulating valve has a minimum control range of 140°F (60°C). Drying below 140°F requires manual regulation of the gas supply or replacing the 140° to 250°F standard power element with a 90° to 210°F (32 to 99°C) low temperature power element.

### DRYING IN GENERAL

#### CORN

Corn is the most commonly dried grain, thus general drying instructions apply to it.

Clean grain dries faster, more cheaply and more uniformly. All possible trash should be removed in harvesting.

**IMPORTANT:** Drying equipment should be serviced at least daily. Heating and cooling chambers should be inspected and all foreign material removed. Perforated walls may need cleaning to remove foreign material. Drying temperature, flow rate, and moisture content are established as shown in the operation section.

#### SOYBEANS

Soybeans are not dried as a common practice; however, they are dried successfully by operating at a lower temperature with added inspection for cracks and special handling care.

#### WHEAT

Wheat kernels are smaller than corn and pack more densely causing higher resistance to air flow. The increased resistance results in drying capacity somewhat below that of corn.

Fill dryer with fan off.



**WARNING:** Check and clean the inside of the dryer heating and cooling chambers daily or more often if needed. Most dryer fires are caused by poor house-keeping.

**NOTE:** When drying seed or food grade lower temperatures must be used and capacity will be reduced.

\*Standard modulating valves supplied with Kan-Sun Dryers have a minimum control range of 140°F. Drying below this temperature requires manual regulation or substitution of a low temperature modulating valve.

#### COOLING

Cooling is controlled by the cooling chamber doors. Maximum cooling occurs with the doors closed and minimum cooling with them open. Less cooling allows faster drying. To achieve a maximum drying rate, use an aeration bin to cool the grain with a minimum airflow of 1/2 CFM per bushel and leave the cooling doors open. If the cooling doors are abruptly closed, the plenum temperature will rise so rapidly (faster than the modulating valve can operate) it will trip the high limit switch.

# INITIAL START-UP INSTRUCTIONS

## General

**IMPORTANT:** Inspect for and remove any foreign material (nuts, bolts, tools, parts, etc.) from the grain columns, discharge auger and heat chambers before filling the dryer with grain.

1. Flip all the toggle switches on the control panel to the OFF position.
2. Liquid Propane (LP) Fuel:
  - A. Turn the LP liquid line hand valve (Figure 16) 90° to the piping to shut off the LP at the dryer.
  - B. Turn the vapor hand valve (Figure 16) 90° to the piping to shut off the gas to the burner.
  - C. Open the LP valve at the source.
3. Natural Gas (NG) Fuel:
  - A. Turn the NG hand valve 90° to the piping to shut off the NG at the dryer.
  - B. Open the NG valve at the source.

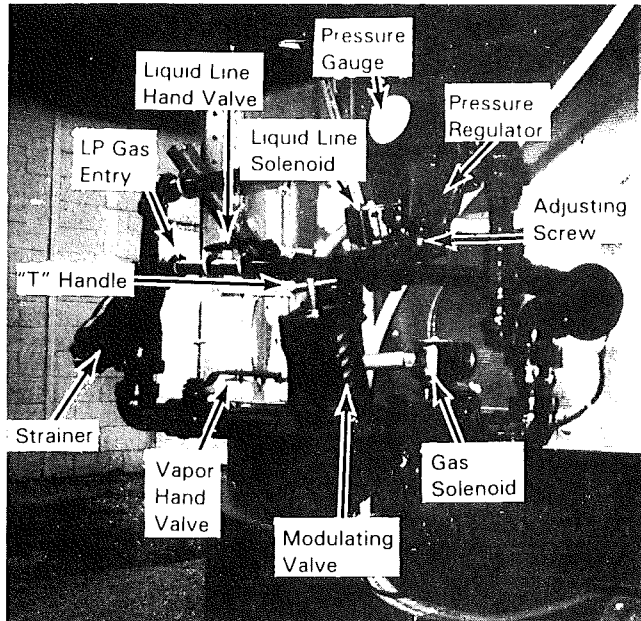


Figure 16

4. Adjust the high limit thermostat (Figure 18), located in the upper right side of the control cabinet, 30-50° above the desired drying temperature or just enough to avoid nuisance shutdowns. (See Recommended Drying Temperatures, page 20.)

5. A. Turn the LP inlet hand valve parallel to the piping.
- B. Set the LP gas pressure at 25 to 30 PSI as indicated by the gas pressure gauge on the pressure regulator using the "T" handle but only while burner is operating.



**CAUTION:** Check the modulating valve in gas manifold to be sure the "T" handle has **NOT** been turned all the way in to the wide open position. The "T" handle should be halfway between the closed and fully open position.

6. Turn on the electric power supply to the dryer. The 115V POWER ON light will be on.

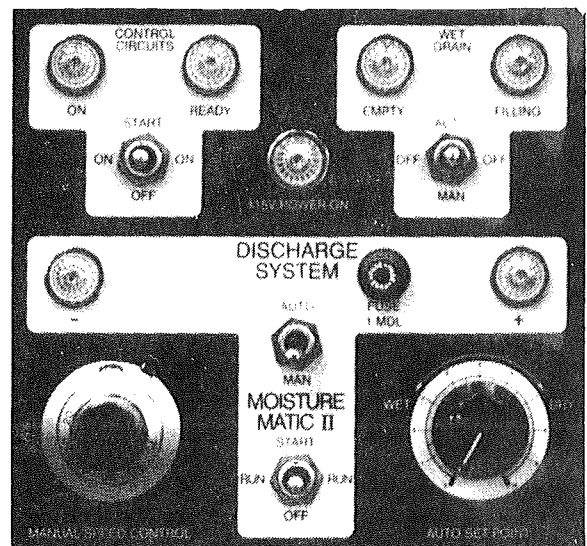


Figure 17

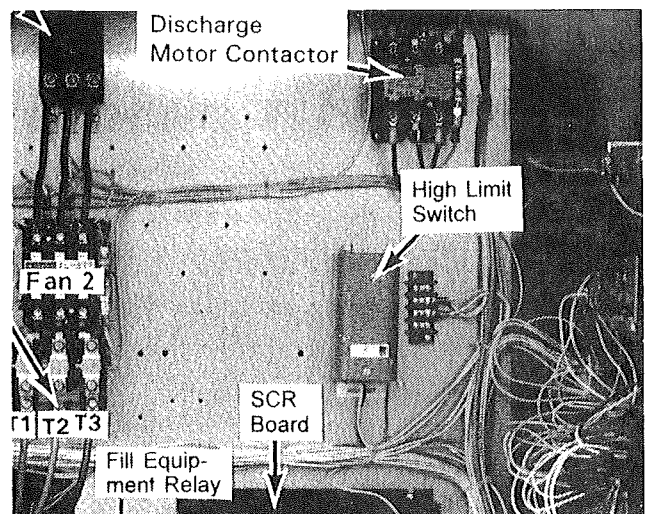


Figure 18

- Flip the control circuit toggle switch ON. The control circuit ON light and high limit light will be on. If the high limit light is not on, push the reset button on the high limit switch. See Figure 18.
- Push the spring loaded control circuit toggle switch up to the START position and release it. The READY light will be on.

## Filling the Dryer

**NOTE:** Either start with dry grain in the cool section or be prepared to catch wet grain and recycle it back into the dryer.

- Flip the Wet Grain switch (AUTOMATIC/OFF/MANUAL) to the MANUAL position (bypassing the 0 to 3 minute delay and 0 to 60 minute Low Grain Timer). The Filling Light will now be on.

The fill system will start to fill the dryer with wet grain until it reaches the Rotary Fill Switch in the hopper. When the rotary switch opens from the pressure of the wet grain, the fill system stops and the Filling Light goes out.

- There is an adjustable 0 to 3 minute delay in the dryer wet fill circuit. See Figure 19. The delay is activated when the Wet Grain Filling Switch is in the AUTOMATIC position and the filling light is signaling for grain.

Set the adjustable 0 to 3 minute fill switch delay (Figure 19) to time desired.

This delay prevents nuisance starting and stopping of the fill system. If the wet grain filling switch is placed in the OFF and back to the AUTOMATIC position, the delay will recycle.

## Setting the Grain Flow Timer

**IMPORTANT:** If the timer has not been set, the dryer will shut down when the wet grain toggle switch is flipped from MANUAL TO AUTOMATIC.

- Set the adjustable wet fill delay, Figure 19, for time desired (0 to 3 minutes) if not already set.
- Set the Grain Flow Timer arrows at the bottom of the timer face to X10 (times ten) and to M (minutes). It may be necessary to

remove the timer from its socket to make this adjustment. Now turn the timer control knob to 3 (3x10) or 30 minutes and flip the wet grain switch to AUTOMATIC. The fill system will start after the 0 to 3 minute delay if the filling light is on signaling for grain.

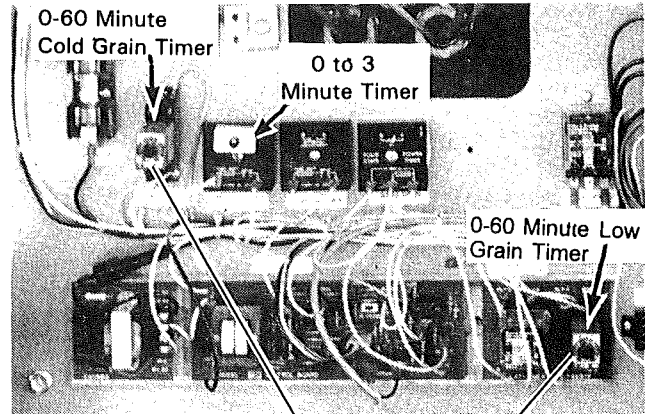
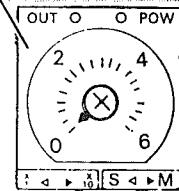


Figure 19



**NOTE:** SET TIMER FOR X 10 AND MINUTES. ADJUST FROM UNDERSIDE OF TIMER.

- Check the refill time a minimum of 6 times. The filling light will come ON when the rotary fill switch in the hopper signals for grain and will go OUT when the hopper is full. The length of time that the filling light is on, is the refill time (including the 0 to 3 minute delay).
- Average (6) refill times and reset the Grain Flow Timer, Figure 19, to run 5 minutes longer. For example, if it takes the fill system an average of 5 minutes to refill the dryer, set the Grain Flow Timer to run 10 minutes.

**NOTE:** The timer does not operate when the wet grain toggle switch is in the MANUAL or OFF position.

## Grain Flow Timer Operation

With the Grain Flow Timer set to run 5 minutes longer than the refilling time, the timer will work as follows:

- The timer will start when the fill system starts. The red light on the face of the timer will be on and the timer will start to count down to zero.

2. After the fill system refills the dryer and shuts off, the filling light will go out and the timer will automatically reset. The red light on the face of the timer will be out.
3. If there is an insufficient grain supply, the fill system will continue to run beyond the 5 minute refilling period. When the fill system has run the length of time that the Grain Flow Timer has been set, the dryer will shut down.
4. The empty, high limit, control circuit ON, and the 115V power ON lights, plus the two red lights at the top of the Grain Flow Timer will be on.

Flip the wet grain toggle switch OFF.

**NOTE:** When the Grain Flow Timer shuts the dryer down determine the problem.



**CAUTION:** Turn off and lock the electric power supply to the dryer before any service work is performed.

5. When the problem has been corrected, flip the control circuit switch OFF, then ON to reset the Grain Flow Timer. Flip the control circuit switch up to the START position and release it, the READY light will go on.

**NOTE:** If equipped - the main gas supply safety shut-off valve must be opened manually before the burners can be started.

6. Flip the wet grain switch to MANUAL. Restart the fans, burners and discharge system. Flip the wet grain switch to the AUTOMATIC position. The fill system 0 to 3 minute delay will be activated if the filling light is on signaling for grain.



**CAUTION:** Do not allow anyone to be near the fill system as it will start automatically.

## Starting the Burners

1. Start fans by pressing the FAN START BUTTON. There is a (6) second delay between Fan No. 1 starting and Fan No. 2 starting. Check to make sure that both Air Switch Indicator Lights are ON.
2. Open the gas vapor hand valve (Figure 20) half way.

3. Flip the BURNER SWITCH up to the ON position. After a (10) second purge delay, the Ignition Indicator Lights will be on and the burners will ignite.

**NOTE:** The (10) second purge is a safety feature that allows the fans to purge the heat chamber of any unburned gases that may remain after burners have been shut down for any reason.

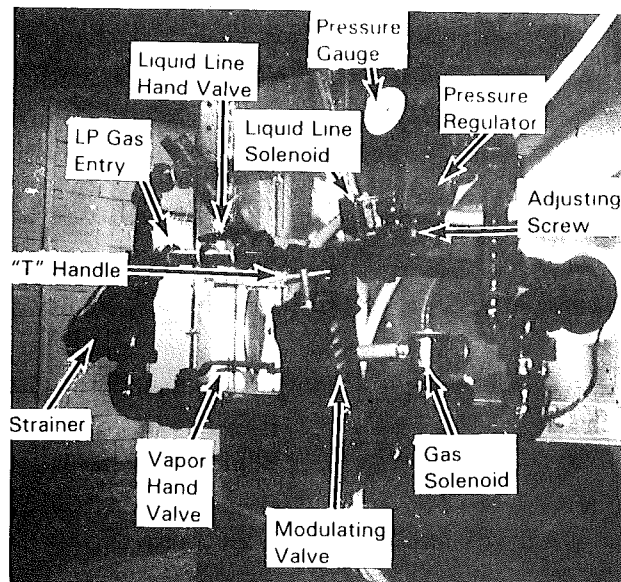


Figure 20

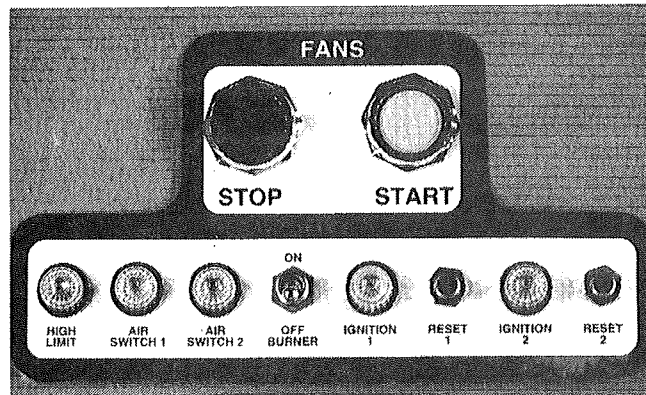


Figure 21

4. After the flame is established, slowly open the gas vapor hand valve all the way (handle parallel to the piping).

**NOTE:** Opening the gas vapor hand valve slowly will prevent possible freezing of the LP gas line and also prevent the temperature from rising too fast which will open the high limit switch and shut down the dryer.

5. If the LP gas line freezes, close the gas vapor hand valve and flip the BURNER switch OFF. After the gas line thaws, repeat steps 3 and 4 but open the gas vapor hand valve **slower**.

**NOTE:** The Ignition Board is electronically timed so that the ignition system will spark and hold the gas solenoid valves open for a "trial ignition" of period (10) seconds. If the burner does not light, the system will "lock out" (after the 10 second trial period) closing the gas solenoid valves, tripping the ignition resets, and shutting down the dryer completely.

6. Push the ignition reset buttons and then restart the dryer. Flip the BURNER switch OFF then ON again; a new trial for ignition will take place.

**NOTE:** If the burners fail to light, turn OFF and LOCK electric power to dryer. Close liquid LP intake valve and gas vapor valve. Now check wires to electrode, flame sensing probe, and ignition boards looking for loose, burned or broken wires or poor connections. Also check ignition switch with a continuity tester.

7. If the High Limit Switch trips out, close the gas vapor hand valve and flip the BURNER switch OFF. Push the reset button on the High Limit Switch (located in the upper right side of the control cabinet).

**NOTE:** When the High Limit Switch trips out, the dryer will shut down. The fans and burners will have to be restarted.

8. Start the fans by pressing the FAN START BUTTON. Check to make sure that the indicator lights for Air Pressure Switches 1 and 2 are on.
9. Open the gas vapor hand valve half way.
10. Flip the BURNER switch to the ON position; the IGNITION lights come on and the burners ignite.
11. Gas Pressure - gas pressure should read 2-3 pounds above what is required to maintain operating temperature and allow for temperature variations from day to night operation.

### Setting Burner Operating Temperature

**NOTE:** Refer to the Recommended Drying Temperatures on page 20. Temperatures shown are initial settings and may have to be adjusted for local crop and weather conditions.

1. With the burners operating, set the operating temperature by adjusting the modulating valve "T" handle.

2. Turn the "T" handle on the modulating valve IN to increase temperature and OUT to decrease temperature (see Figure 20 ). There is a temperature gauge mounted on the control panel.

**NOTE:** After the dryer has been operating for about (1) hour, check the thermometer to make sure drying temperature is correct. If not, adjust Modulating Valve "T" handle. Turn handle clockwise to increase and counterclockwise to decrease temperature. It will not be necessary to adjust the modulating valve "T" for future start-ups unless the burner temperature is to be changed.

### Operation of the Discharge System with the Automatic Moisture Control System

1. The dryer discharge auger and sweep are driven by a 3HP (DC) electric motor.
2. The discharge system is started by placing the DISCHARGE SYSTEM START/RUN/OFF spring loaded switch up to the START position and released so that it moves down to the RUN position.
3. When the Moisture Control Switch is in the MANUAL position, the Automatic Moisture Control System is bypassed and power flows directly to the 3HP discharge system drive motor. The speed of the discharge system motor is controlled by the setting on the Manual Speed Control Dial and appears on the Discharge Speed Meter. The Speed Control Dial is graduated from (0) slow to (10) fast.
4. When the Moisture Control Switch is in the AUTOMATIC position, the speed of the Discharge System Motor is determined by the Moisture Control Board, Thermistors and setting of the Auto Set Point Dial.

When the moisture content of the incoming grain increases, the Thermistors sense the change in grain temperature (cooler) and signal the Automatic Moisture Control Board to slow down or stop the discharge system motor to prevent the discharge of wet grain from the dryer when moisture is above setting of the Auto Set Point Dial.

When the moisture content of the incoming grain decreases, the Thermistors sense the change in grain temperature (warmer) and signal the Automatic Moisture Control Board to increase the speed of the discharge motor to prevent the over drying of the grain.

## Rear Discharge Overload Door

1. If the customer supplied grain take away system fails, the dryer will continue to discharge grain until the rear discharge overload door, Figure 22, is raised by the grain.
2. When the overload door rises, the dryer will shut down and all of the lights except the 115V POWER ON light will be out. The Grain Flow Timer will automatically reset.
3. When the problem has been corrected and the rear discharge overload door closes, the control circuit ON and the high limit light will be on. Flip the control circuit switch up to the start position and release it, the READY light will be on.
4. If the WET GRAIN-AUTOMATIC/OFF/MANUAL switch is in the AUTOMATIC position and the 0 to 3 minute delay timer for the Rotary Fill Switch times out, the fill system will start to fill the dryer.
5. Place the ignition switch in the OFF position and restart the fans, burner and discharge system.

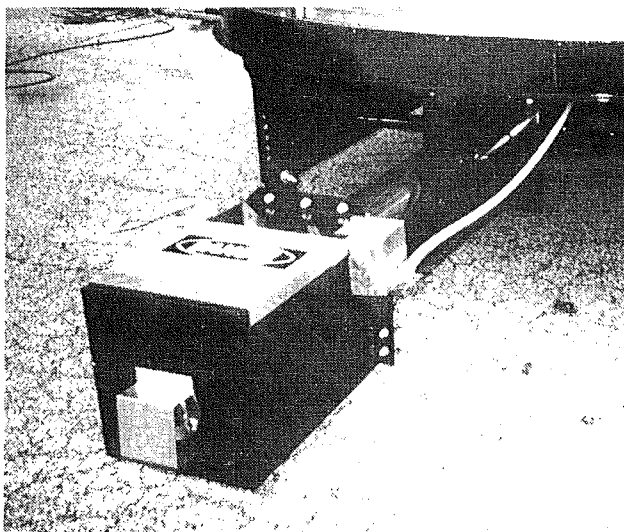


Figure 22

## Automatic Moisture Control System

There is a direct relationship between grain temperature and grain moisture. Any change in grain temperature will mean a change in grain moisture. If the temperature of the grain goes down, the moisture content will have increased. If the temperature of the grain goes up, the moisture content will have gone down.

The automatic moisture control on M-C Dryers maintains uniform moisture content of the grain being discharged from the dryer by changing the unloading speed of the dryer.

The moisture control is sensing grain temperature and reacting to it by slowing down or speeding up the unload rate of the metering rolls.

## Drying Grain

1. Flip all of the toggle switches on the control panels to the OFF position.
  2. Turn on the electric power supply to the dryer. The 115V POWER ON light will be on.
  3. Flip the Control Circuit Switch ON. The control circuit ON light and high limit light will be on.
  4. Push the Control Circuit Switch up to the START position and release it. The READY light will be on. The filling light will be on if the dryer is not full of grain.
  5. Flip the Wet Grain Switch to the MANUAL position. Set the Grain Flow Timer as explained under "Filling the Dryer" on page 22.
  6. With the dryer full of grain, flip the Wet Grain Switch to AUTOMATIC and start the fans.
- NOTE:** As the dryer is operated "Dry and Cool" it will be necessary to recycle the wet grain in the cooling section back through the heat section after drying the first load or start with dry grain in the cooling section.
7. Start the burner.
  8. Running on continuous heat, it will take approximately 6 minutes per point of moisture being removed to dry the first load.
  9. When the first load is dry, push the Discharge System Spring Loaded Toggle Switch up to the START position and release it. It will move down to the RUN position.
  10. Flip the Moisture Control System (Moisture-Matic II) Switch down to the MANUAL position. The discharge system drive motor will start and the dryer will begin unloading grain.

- Set the Manual Speed Control Dial to establish a discharge rate that will unload dry grain at the desired moisture content. Use the Manual Speed Control Setting Chart Figure 23.

Start-Up SCR Manual Drive Speed Settings						
NOTE: These dial settings are not final and are based on normal drying temperature (see page 18). Exact settings will vary with outside temperatures, humidity, crop maturity, variety, cleanliness of grain, test weight, drying temperatures, etc. All values based on 180 volts as SCR maximum voltage.						
CROP AND DRYING MODE	MOISTURE REMOVAL	SCR SETTING				
		MODELS				
		10420	10530	10630	10750	101075
Corn - Dry&Cool	25% - 15%	3.65	4.55	5.18	5.86	6.19
Corn - Dry&Cool	20% - 15%	6.0	7.0	7.9	8.9	9.10

Figure 23

- Test the moisture content of the grain being discharged every 15 minutes until it stabilizes.
- If the moisture content is too high after it stabilizes, turn the Manual Speed Control Dial down to a lower number to decrease the unloading speed. If it is too low, turn the speed control up to a higher number to increase the unloading speed.

**NOTE:** After any adjustment of the discharge speed, wait 1½ to 2 hours to make further speed adjustments since it takes that long for grain to pass through the dryer and for the full effect of the speed adjustment to be made on the moisture content.

#### Switching from Manual to Automatic

- When the moisture content of the discharged grain has been consistent for (2) or more hours, it is time to switch up to AUTOMATIC.
- While the Moisture Control System (Moisture-Matic) Switch is in MANUAL, turn the Auto Set Point Dial to balance the Moisture Control System to the point where both the (-) and (+) lights are off. At that point the Moisture Control System is calibrated to the

moisture content established in the MANUAL position.

- Flip the Moisture Control System Switch up to the AUTOMATIC position.

Now the Manual Speed Control is OFF and the discharge rate is being controlled by the Moisture Control System Board and the Thermistors (sensing probes).

The unloading speed on the discharge meter should be the same as when the switch was in MANUAL, but the meter will begin to change automatically.

When the moisture content of the incoming grain changes (wetter or drier), the discharge rate will change automatically. If the speed slows down because the incoming grain is wetter, the (-) light will come on and the discharge meter indicator will drop until the unload speed is automatically adjusted. When the adjustment is completed, the (-) light will go out and the discharge meter indicator and the unload speed will remain constant until another change is required.

If the discharge speed increases because the incoming grain is drier, the (+) light will come on and the discharge meter indicator will move up until the unload speed is automatically adjusted. When the adjustment is completed, the (+) light will go out and the discharge meter indicator and the unload speed will remain constant until another change is required.

The system will automatically change speed (+) or (-) to keep the discharge grain at the moisture content that was selected when the Moisture Control System was in the MANUAL position.

#### Auto Set Point Dial (Moisture Control) Setting and Adjustments When in Automatic

The discharge rate will change to keep moisture content the same as when in manual. However, if you want to change the discharge moisture content when operating in automatic, simply turn the Auto Set Point Dial up to a higher number for drier grain or down to a lower number for wetter grain. When you turn the dial either the (+) light or the (-) light will come on and you will see the discharge meter indicator change to reflect the change in speed.

## Cold Grain Shut-Down Timer (Starting with Serial Number 56052)

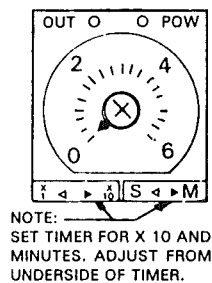
This 0 to 60 minute timer is provided to limit the time that the dryer will discharge grain after the burner unexpectedly goes out (lack of fuel, etc.).

The timer is only activated when the Moisture Control System (Moisture-Matic) Switch is in the AUTOMATIC position and Moisture Control reduces the speed of the Discharge System. At this time one of the red lights on the face of the timer will be on and the timer will start to count down to zero.

If the speed of the Discharge System is not increased before the time selected on the timer is reached, the dryer will be shut down and only the 115V power ON, control circuit ON, and high limit light will be on.

Set the timer arrows at the bottom of the timer face to X10 (times ten) and to M (minutes). Now turn the time control knob to 3 (3x10) or 30 minutes for a starting point.

Figure 2 4



## End of Day Shutdown

1. To shut off the dryer, close the liquid propane gas supply valve at the tank or close the natural gas supply valve. Operate burner until the flame goes out then turn off ignition switch.
2. Close gas vapor hand valve and liquid line intake valve on dryers equipped with a liquid propane (LP) burner.
3. To make next day start-up much easier, check the reading of the needle on the Discharge Speed Meter while the Moisture Control System Switch is in AUTOMATIC. Now place the Moisture Control Switch into MANUAL and turn the Manual Speed Control Dial until the Discharge Speed Meter Needle is at the same reading as when the Moisture Control System was in AUTOMATIC. Now

place the Discharge System Switch into the OFF position. Another choice would be to place the Moisture Control System Switch into MANUAL and then place the Discharge System Switch into the OFF position.

4. Operate fans about 15 to 20 minutes to cool grain in dryer, then turn off fans and flip the Control Circuit Toggle Switch to the OFF position.
5. Turn off and lock the electric power supply to the dryer.

## Next Day Start-Up

1. Turn on electrical power to dryer, flip Control Circuit Switch up to START, place Wet Grain Switch into AUTOMATIC, and start fans.
2. Open liquid propane (LP) gas supply valve at tank or natural gas (NG) supply valve and liquid line intake valve on dryers equipped with a liquid propane burner. Now open the vapor hand valve.
3. Start burner. Allow burner to operate for a couple of minutes before placing the Discharge System Switch into the RUN position and the Moisture Control System Switch into MANUAL position.
4. After the dryer has been unloading grain for at least (45) minutes, the Moisture Control System Switch can be placed into AUTOMATIC. DO NOT ATTEMPT TO RE-BALANCE THE MOISTURE CONTROL SYSTEM.

## Going Back to Manual

You can switch back to manual at any time. Just flip the Moisture Control System Switch down to the MANUAL position. At this time the Moisture Control System will be off and the discharge system speed will be controlled by the Manual Speed Control Dial. The discharge meter will indicate the manual speed setting. If you want to unload at the same speed in manual as automatic, adjust the Manual Speed Control Dial until the discharge meter needle is at the same reading as in automatic.

When operating in manual the (+) and (-) lights may be lit. However, they are only indicating what would happen if you were in automatic based on the set point of the moisture control knob. When in manual you can balance the (+)



and (-) lights. However, unless you go to the automatic position nothing will change. In the manual position the discharge rate can only be changed by adjusting the Manual Speed Control Dial.



**Warning:** Check and clean the inside of the dryer heating and cooling chambers daily or more often if needed. Most dryer fires are caused by poor housekeeping.

## Final Shut Down

When the last grain to be dried has been put into the dryer, place the discharge system switch into the OFF position to stop the discharge system motor before the grain has dropped below the perforated area in the wet grain holding area of the Roof Section.

Dry this remaining grain for approximately (6) minutes per point of moisture to be removed. When grain is dry, close the LP gas supply valve at the tank or close the natural gas supply valve.

Operate the burner until flame goes out, then place ignition switch into the OFF position. Close gas vapor hand valve (handle 90° to the piping). LP Gas - Close the liquid intake valve. Run the fans approximately (20) minutes to cool grain in the dryer.

After cooling, shut off fans and empty dryer by placing the discharge system switch into the RUN position. Wait until the last of the grain has been removed from the dryer discharge auger by the customer's dry grain take-away equipment. Now place discharge system switch into the OFF position to stop the discharge motor.

## Off Season Storage



**CAUTION:** Before starting the following steps, turn off and lock the electric power supply to the dryer. Place all of the circuit breakers in the control cabinet into the OFF position and lock the control cabinet doors.

1. Cover burner shields with plastic. See page 49, Ref. #3.
2. Remove cooling floor sections and remove grain from the bottom of dryer.
3. Brush (non-metallic), blow or wash all dirt and residue from the dryer walls and floors.

Use power washer on the outer screens if dirt has filled the perforations.

4. Remove discharge auger sump trough and clean out trash. See page 47, Ref. #2.
5. Replace the cooling floor sections.
6. Grease fan motor bearings with Chevron SR1-2 or equivalent.
7. Use compressed air to blow any dirt from control cabinet.
8. Release spring tension on discharge system belt tightener.

## Preseason Check

**CAUTION:** Before starting the following steps, turn off and lock the electric power supply to the dryer. Place all of the circuit breakers in the control cabinet into the OFF position and lock the control cabinet doors.

1. Clean out heating and cooling chambers.
2. Remove covers from burner shields. At this time also check ignition electrodes and wires for cracks, heat damage and loose connections.
3. Check wires in 12 x 10 x 8" Ignition Board Box located in upper cool section for cracks and loose connections.
4. Grease fan motor bearings. Apply grease until it comes out relief port. Use Chevron SRI-2 grease or equivalent.
5. Check oil in 50:1 gearbox and grease.
  - A. Oil must be at least ¼" over gears.
  - B. Grease top bearing.
6. Grease U-Joint on 50:1 gearbox drive shaft.
7. Grease Belt Tightener Pivot.
8. Replace spring tension on Belt Tightener.
9. Grease 1" discharge system Jackshaft Bearings.
10. LP Gas - Remove Plug at end of Gas Strainer, remove and clean Screen. Replace Screen and Plug.
11. Unlock control cabinet door (**Be Sure Power Still OFF**) and check all wires for cracks, nicks and loose connections, especially on High Voltage Wires. Also be sure to check connections on earth Ground Wire Lug in control cabinet and at copper Ground Rod next to dryer.



# Discharge System

## Description

The Discharge System is driven by a 3HP variable speed permanent magnet DC motor and reduction gearbox.

The speed of the motor is directly proportional to the amount of DC voltage supplied to it. When voltage increases speed increases and when voltage decreases speed decreases.

The SCR control board (Figure 26) converts incoming AC current to DC current and controls the amount of DC voltage going to the motor. The Manual Speed Control Dial regulates the amount of DC voltage the SCR control board supplies to the motor.

When the Moisture Control Switch is in the AUTOMATIC position, the Moisture Control Board controls the amount of DC voltage the SCR control board supplies to the discharge motor.

## SCR Board

### Terminal Strip Connections

- P2.4 WIPER - Connects to (+) of Moisture Control Board
- P1.4 +ARM - Connects to motor armature wires 0-180 volts DC. **MUST NOT BE SWITCHED OR BROKEN WHILE POWER IS ON** or serious damage to SCR board may result.
- P1.5 -ARM - Connects to motor armature wires. Reverse + and - motor leads to reverse motor rotation. **MUST NOT BE SWITCHED OR BROKEN WHILE POWER IS ON** or serious damage to SCR board may result.
- P1.6 -FIELD - Connects to (-) of Moisture Control Board.
- P1.3 AC LINE - Connects to hot wire 115 volt AC.
- P1.2 AC LINE - Connects to hot wire 115 volt AC.

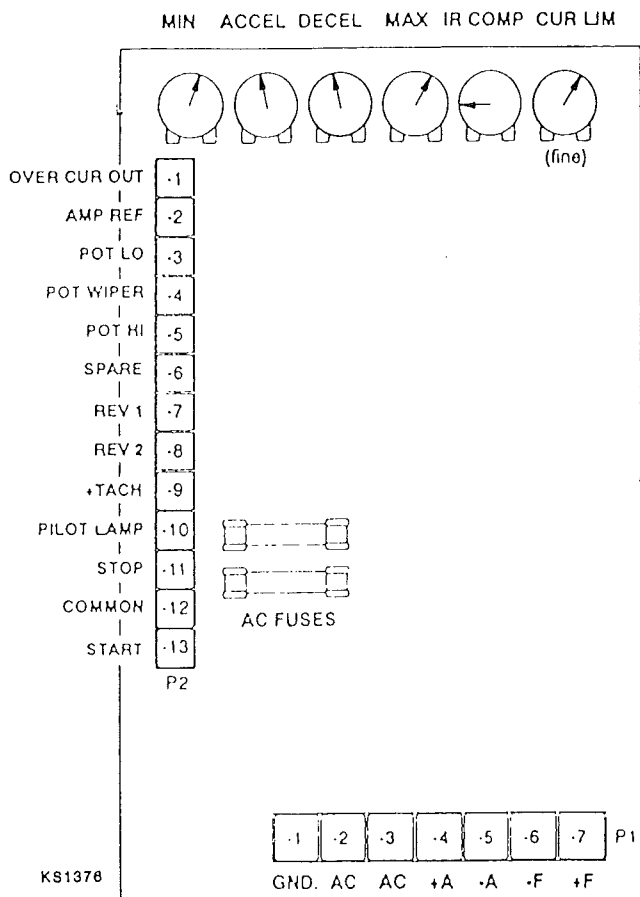


Figure 25 - 500 SERIES SCR BOARD

## SCR Board Trim Pot Adjustment Procedure

**NOTE:** Figure 25 shows approximate trim pot settings. Follow adjustment procedure below for final calibration.

Trim Pot	Function	Adjustment
<b>MIN.</b>	The Dart SCR Board minimum speed trim pot is non-functional. The minimum speed is now fixed by the M-C Moisture Control Board for both the auto and manual mode.	None.
<b>MAX.</b>	Sets Maximum Motor Speed when Speed Control is set at maximum (10) 100% rotation CW. CW rotation of MAX trim pot increases maximum motor speed.	<ol style="list-style-type: none"> <li>1. TURN DRIVE POWER OFF!</li> <li>2. Connect DC Voltmeter + to + ARM, - to - ARM.</li> <li>3. Turn power on. Set SPEED control at 100% (10).</li> <li>4. Adjust MAX pot for 170 volts on DC meter connected between Arm (-) and Arm (+), or 1.0 reading on discharge meter or 1750 RPM on DC motor output shaft.</li> </ol>
<b>ACCEL</b>	Allows Adjustment of Acceleration	<ol style="list-style-type: none"> <li>1. CW rotation increases time of acceleration.</li> </ol>
<b>DECEL</b>	Allows adjustment of Deceleration.	<ol style="list-style-type: none"> <li>1. CW trim pot rotation increases deceleration time.</li> </ol>
<b>I.R. COMP.</b>	Provides a means of improving speed regulation in the armature feedback mode. If a change in motor speed during a load change is of no concern, rotate this trim pot fully CCW.	<ol style="list-style-type: none"> <li>1. Set SPEED pot at 50%.</li> <li>2. Observe motor speed during a no load condition.</li> <li>3. Apply a full load to the motor.</li> <li>4. Adjust the I.R. COMP. trim pot CW (while the load is applied) until the no load motor speed is maintained.</li> </ol>
<b>CUR. LIM.</b>	Limits DC motor armature current (torque) to prevent damage to the motor or control. The current limit is set for 125% of the rated motor current. CW rotation of this trim pot increases the armature current (or torque produced).	<ol style="list-style-type: none"> <li>1. TURN DRIVE POWER OFF!</li> <li>2. Connect a DC ammeter in series with the + Arm line (between + A on motor and + Arm on the control). Preset the current limit trim pot CCW.</li> <li>3. Turn power on and set Speed pot to 50%.</li> <li>4. Increase the motor load until the motor stalls (zero RPM).</li> <li>5. Set CUR.LIM. trim pot to 125% of the rated motor armature current (see "TRIM POT CHART" on page 30).</li> </ol>

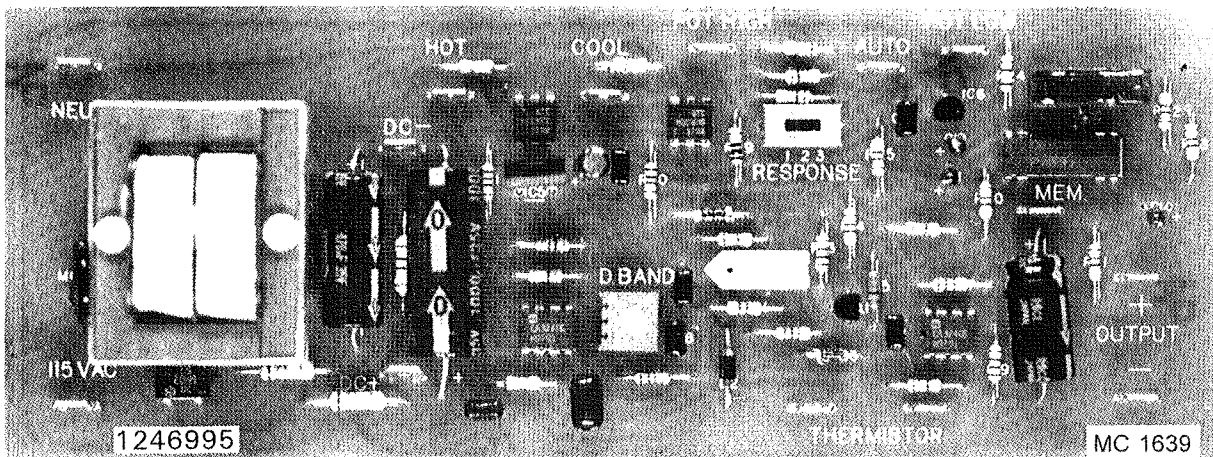
## TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Plus (+) and minus (-) lights will not go off when calibrating Moisture-Matic® control system.	Deadband potentiometer out of adjustment.	Adjust the deadband trim pot on Moisture-Matic® board (R-7) until both lights stay off when turning moisture control dial two spaces on the scale.
Sweep and discharge auger DC motor will not run.	<p>High limit light off. (High Limit control not reset.)</p> <p>Discharge motor relay coil burned out.</p> <p>SCR board fuse(s) blown.</p> <p>Moisture-Matic® 1 amp fuse blown.</p> <p>Moisture-Matic® board inoperative.</p> <p>SCR board inoperative.</p> <p>No power source</p> <p>Min pot on SCR board set too low.</p> <p>Worn or broken motor brushes.</p>	<p>Reset.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Check output voltage between Arm (+) and Arm (-) which should be approximately 20 to 170 volts DC depending on the SCR speed control potentiometer setting. If no voltage, consult factory.</p> <p>Check output voltage between (+) and (-) terminals on Moisture-Matic® board. Voltage should be approximately 3 to 10 volts DC depending on the SCR speed control potentiometer setting. If no voltage, consult factory.</p> <p>Repair power source.</p> <p>Adjust Min pot for 18 VDC between Arm (+) and Arm (-).</p> <p>Replace brushes.</p>
Sweep and discharge auger will not run.	<p>Belts loose.</p> <p>Belts broken.</p>	<p>Tighten belts.</p> <p>Replace belts.</p>

## TROUBLESHOOTING

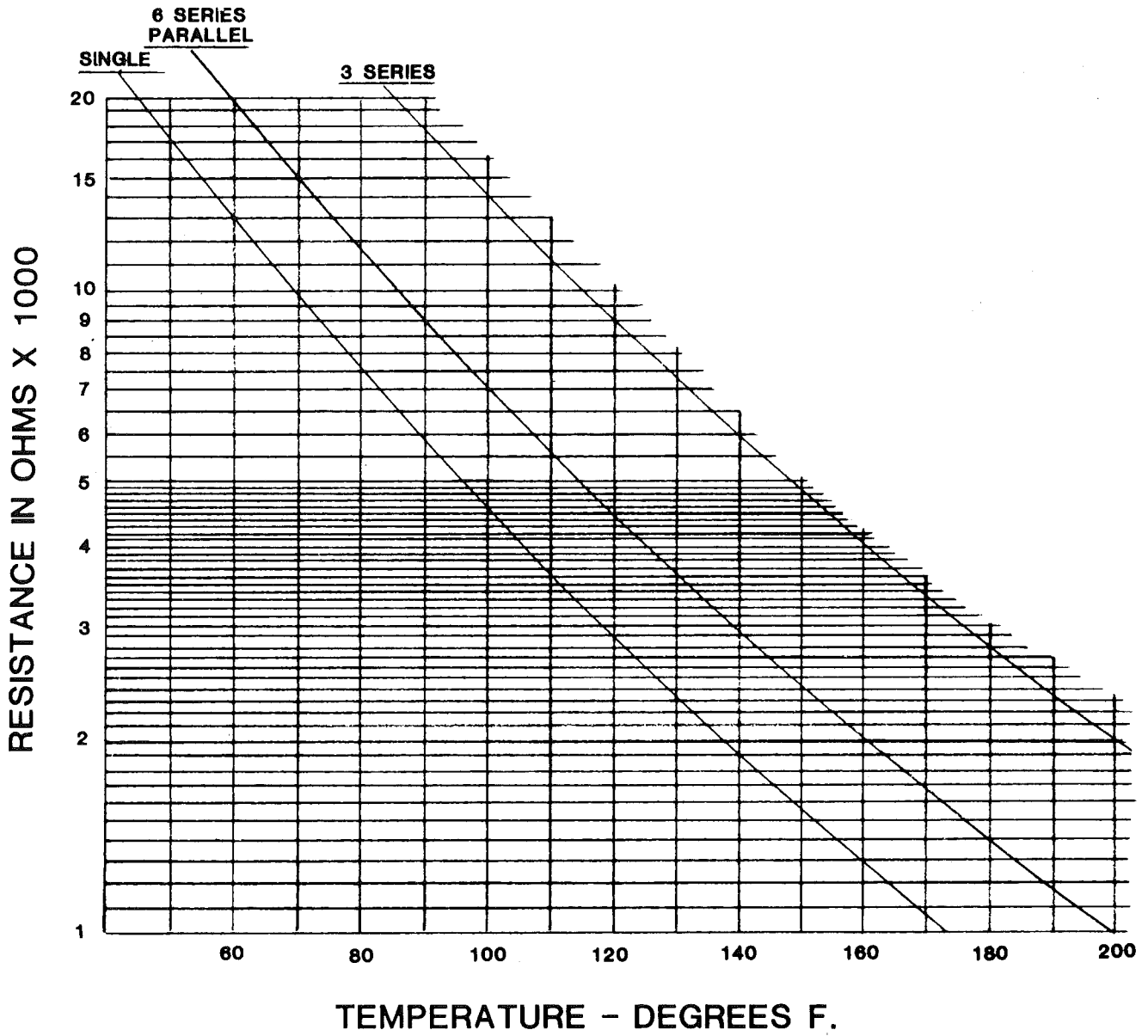
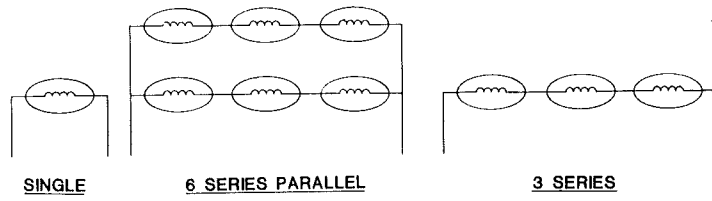
PROBLEM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Moisture-Matic® does not control grain moisture.	Moisture-Matic® MANUAL-AUTO switch in MANUAL position. Bad thermistor. Check response with ohmmeter Reference thermistor chart, page 34. Bad Moisture-Matic® board. Bad moisture control potentiometer. Check potentiometer with ohmmeter.	Switch to AUTOMATIC.  Replace if bad.  Replace. Replace.
Motor stalls or runs very slowly with speed control turned fully CW.	Low DC voltage.  Overload condition.  Worn motor brushes.	Should be above 108V. Max. speed set incorrectly. See "Adjustment Procedure" page 31. Reduce load or readjust Current Limit. Replace motor brushes.
Repeated SCR Board fuse blowing.* *Fuse Size: 20 Amp Fuse Type: Bussman ABC-20 or Littlefuse 314020	Low AC voltage. Overload condition. Worn motor brushes. Defective motor bearings. Failed electrical components.	Check AC supply voltage. Reduce load. Replace motor brushes. Replace motor bearings.  Return SCR board for repair.
Motor runs but will not stop.	Incorrect wiring.  Defective wiring. Failed component.	Check "Terminal Strip Wiring" sections. Check wiring. Return SCR board for repair.

**NOTE:** Both sides of VAC input to SCR board are fused.



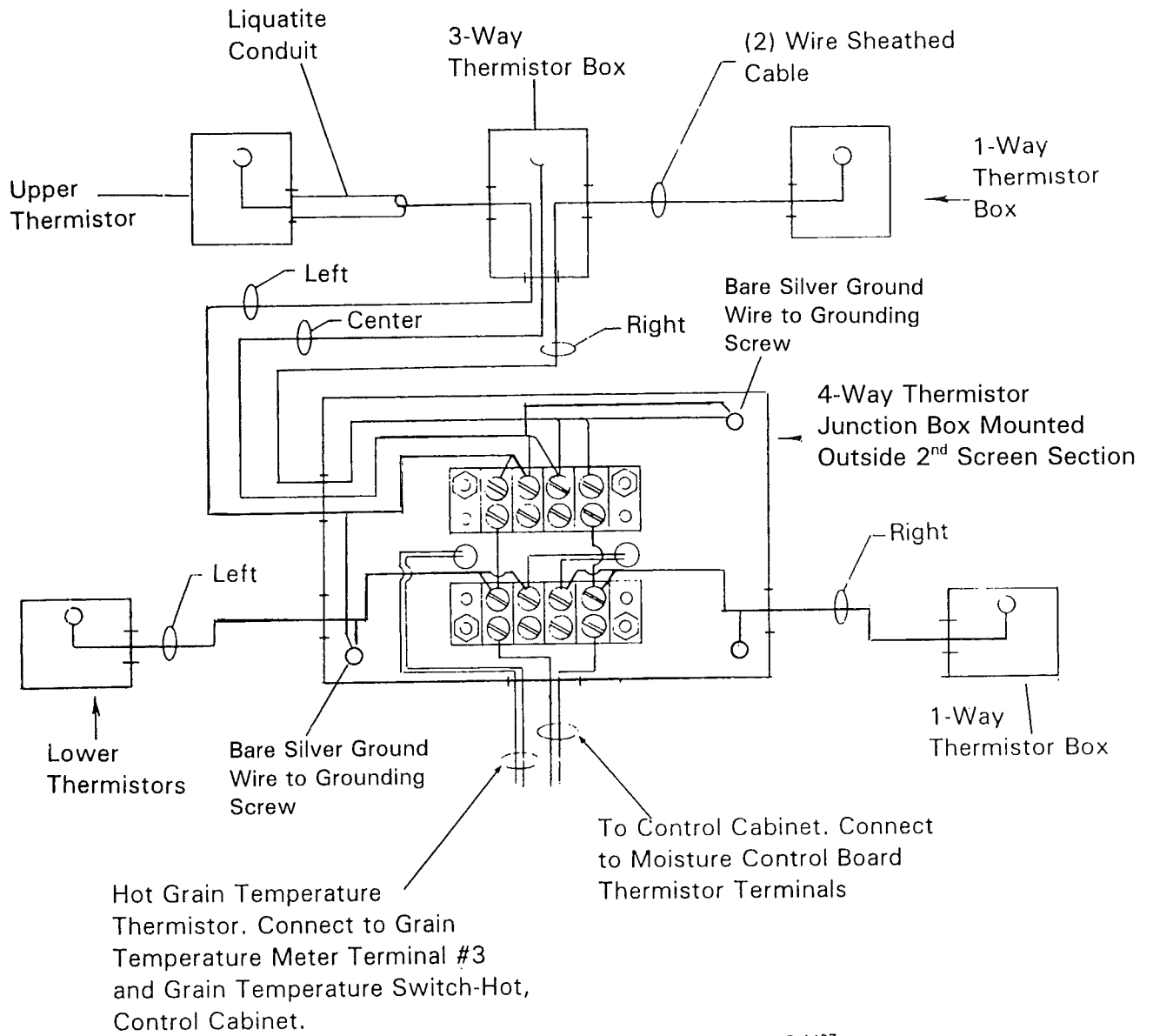
**Figure 26**

# THERMISTOR CHART



KS1367

# THERMISTOR WIRING



K-S 1487

Figure 27



**M-C TOWER DRYER  
MODELS 10420, 10530, 10630 & 10750  
GENERAL TROUBLESHOOTING  
START-UP AND RUNNING OF DRYER**

Main power to the dryer comes into the Starter Cabinet and to the splitter block. Control voltage (115) is obtained through one leg to neutral for 230 volt or by using a step-down transformer.

All dryers are to be grounded. A ground rod is supplied with all dryers. Ground wires are all green and run from chassis to motors, control panels and control doors.

Isolated neutral block wired to all 230 volt dryers only. "B" phase 230 volt excluded. For 208, 460, 575 voltage and 230 "B" phase voltage, neutral from transformer will wire direct to TB5/neutral.

When dryer is ready for testing operation, make sure Lexan Guard for HIGH VOLTAGE is properly installed. This Lexan Guard is on every dryer.

	PROCEDURE	TROUBLESHOOTING
1.	Start of Operation of Dryer: 115 volt Power Light should be ON.	If not, check: a. Main disconnect (customer supplied disconnect) b. Fuse is not functional. c. TB33 for connection (115 volts). d. 115 volt bulb and socket.
2.	Place Control Toggle Switch up to ON position. ON and HIGH LIMIT lights should be ON.	If not, check: a. Ignition reset. b. Overload Circuit through starters. c. Cold Grain Flow Timer. d. Unload Auger Overload Door Switch. e. High Limit – reset.
3.	Push Control Toggle Switch up to START position and release. READY and FILL lights will be ON.	If not, check: a. FILL light will only come on when FILL switch is in MANUAL or AUTO position. b. Main relay. c. Rotary Fill Switch is not calling for grain. d. Grain Flow Timer elapsed (EMPTY light) – reset.
<b>PRIMARY CIRCUIT IS NOW COMPLETE (SAFETY CIRCUIT), TB24 IS ENERGIZED.</b>		
4.	Switch Fill Relay ON to MANUAL. Fill Relay closes to provide 115 volts to customer supplied fill equipment.	
5.	Adjust 0 to 3 minute Fill Timer to desired setting.	
6.	After dryer has filled with grain, switch Fill Toggle to AUTO position.	
7.	Fill Timer and Grain Flow Timer are only in the circuit in AUTO position.	
8.	Set both Fill Timer and Grain Flow Timer for 30 minutes.	
<b>DRYER IS NOW FILLED AND READY TO DRY GRAIN</b>		
9.	Start fans by pushing green start button. Fan #1 starts immediately, then Sail Switch #1 closes and Air Switch Light #1 is lit. Now (6) Second Delay Timer begins counting down to start Fan #2, closing Sail Switch #2 and Air Switch Light #2 is lit.	If problem with sequence, check: a. If Sail Switch for a fan fails, that fan's Air Switch light will not come ON. b. If (6) Second Timer fails, Fan #2 will not start. c. Problem with Start and Stop Button contacts. d. Problem with Fan Starter, Reset Overloads or Contactor Coil. e. Fan rotation incorrect.

Continued . . . . .

**GENERAL TROUBLESHOOTING – M-C TOWER DRYER MODELS 10420, 10530, 10630 & 10750  
START-UP AND RUNNING OF DRYER – continued**

	<b>PROCEDURE</b>	<b>TROUBLESHOOTING</b>
10.	Place Ignition Toggle Switch up into the ON position. After 10 Second Purge Timer times out, #1 & 2 Ignition Lights will come ON. This will ignite burners.	If not, check: a. Ignition Board #1 as follows: b. L1 is hot, L2 is neutral (115 volt power to unit). c. V1 is hot, V2 is neutral (115 volt power to Ignition Board #2 at L1 and Ignition Light #1 is ON). d. E1 is HIGH VOLTAGE to Electrode. <b>(DANGER! Never test with meter.)</b> e. E2 is LOW VOLTAGE from Electrode (completes Electrode circuit). f. Ignition Board #2 as follows: g. L1 is hot, L2 is neutral (115 volt power from V1 of Ignition Board #1). h. V1 is hot, V2 is neutral (115 volt power to Gas Solenoids and Ignition Light #2 is ON). i. E1 is HIGH VOLTAGE to Electrode. <b>(DANGER! Never test with meter.)</b> j. E2 is LOW VOLTAGE from Electrode (completes Electrode circuit). k. Solenoid problems usually result from poor ground.
11.	Place Discharge System Toggle Switch up to START position and release. Sweep and Discharge Auger should start.	If not, check: a. AC Fuse on SCR Board. b. Brushes on DC Motor (seated properly). c. AC Fuse (on control panel). d. Cold Grain Timer and Grain Flow Timer elapsed. e. Input AC and Output DC of Moisture Control Board. f. Input AC (230 volts) and Output DC (18 to 170 DC volts).
12.	Grain Flow Timer and Cold Grain Flow Timer have a 1 second to 60 minute range. Set the Moisture Control Board response switch to 2. Responses 1, 2, 3: 1 being fastest response, 3 the slowest response from Thermistors to change speed of Discharge System. Set maximum DC volts of SCR Board at 170 volts or maximum of Discharge System. To set maximum: Turn Manual Speed Control Dial to 10. Then measure voltage between ARM + and ARM- with multimeter to read 170 DC volts.	
13.	Use Manual Speed Control Dial to adjust discharge speed. Adjust speed until moisture content of grain is the desired percentage. After running dryer long enough to stabilize moisture output, the Moisture Control (Moisture-Matic) Switch is ready to be placed up into Automatic.	
14.	Use Auto Set Point Dial to balance lights so that both are OFF. Before switching to Automatic, adjust Cold Grain Timer. Timer will shut down entire dryer if (-) light is held on past the setting of the Cold Grain Timer.	
15.	Place Discharge System into Automatic at this point by placing Moisture Control (Moisture-Matic) Switch up into Automatic.	If not, check: a. Auto/Manual Switch for wiring problem. b. 1.0 Amp Fuse (Moisture Control Board). c. SCR Board and 3HP Discharge System (DC) Motor.

## Quick Reference Troubleshooting Chart

The following chart is provided as an aid to the Operator in determining the probable cause and corrective action required to solve operating problems that may occur during the drying process. If the corrective action recommended does not solve the problem, contact your authorized M-C Dealer.

**\*FIRST SHUT OFF & LOCKOUT POWER AND GAS SUPPLY!**

Problem	Possible Cause(s)	Corrective Action
115V Power Light Off	Power disconnected. Control Circuit 5 amp. fuse blown.	Turn on power. Replace.*
On Light Off	Control Circuit Switch off. Flame Monitor Reset(s) tripped. Fan Overloads tripped. Rear Discharge Door open. Auxiliary Fill or Take-Away Equipment safety switches tripped.	Reset.  Reset.* Determine cause.* Reset.*
Motors fail to start (no power).	High Limit Switch tripped. Motor Overload tripped.	Reset.* Reset.*
Magnetic Starter(s) trip out repeatedly.	Starter Contacts dirty or rusty. Defective Interlock Switch on Starter. Starter Coil weak. Low Voltage Power Supply	Call qualified Electrician.*
Fan runs, but Air Switch Light does not light.	Bad bulb in Lamp Assembly. Flap on Air Switch stuck or missing. Fan rotation wrong.	Replace.* Make sure flap is free and not missing.* All fans turn counterclockwise. Check page 12.*
Dryer runs through purge period, but fails to ignite or flame out occurs before drying temperature reached.	Low gas pressure.  Improper air adjustment.  Modulating Valve improperly adjusted.  Improper Electrode gap or cracks in Electrode.	Adjust pressure with regulator: Liquid Propane 20-25 psig. Natural Gas 14-18 psig. @ 55°F outside air temp.  Check Air Damper opening, page 51, item 6.*  Adjust Modulating Valve "T" Handle.  Adjust or replace.*

## Quick Reference Troubleshooting Chart

**\*FIRST SHUT OFF & LOCKOUT POWER AND GAS SUPPLY!**

Problem	Possible Causes(s)	Corrective Action
High Limit Thermostat kicks out repeatedly	High Limit Thermostat set too low. Heat Chamber walls (screens) clogged with fines and chaff. Temperature Gauge reading incorrect.	Adjust as required.*  Clean drying chamber.*  Replace gauge.*
Dryer will not achieve desired temperature or temperature is erratic.	Low gas supply in tank. Gas Pressure Regulator and Modulating Valve out of adjustment. Temperature Gauge bad. Excess Flow Valve at supply tank with clicking noise or frost indicating blockage of LP line. Incorrect burner orifice: LP - $\frac{3}{16}$ " orifice-10 & 15HP motors LP - $\frac{1}{4}$ " orifice-25 HP motors Natural Gas – no orifice	Contact gas supplier. Adjust as required.  Replace.* Replace if incorrect size.  Remove if orifice installed in Natural Gas Burner.
Uneven moisture content of discharged grain.	Sweep arms not level.  Dirt built up on Sweep Floor.  Dryer not level.	Check that sweep arms are sweeping parallel to the lower edge of the inner perforated sheets.*  Clean Sweep Floor.*  Level dryer when empty.*
Dryer shuts down.	Grain Flow Timer times out - no wet grain.  Cold Grain Timer times out.  Rear Discharge Door open because of shut down of dry grain take-away system.  Magnetic overload drops out because of low voltage, bad interlock switch, bad coil, loose wire connections, or dirt build up on contactors.	Check fill system and wet grain supply.  Wet grain at Thermistors because burner out. Restart burner. Check (LP) gas supply tank.  Determine problem with take-away equipment.* Then restart dryer.  Reset.* If starter still drops out, call qualified Electrician.

## Quick Reference Troubleshooting Chart

**\*FIRST SHUT OFF & LOCKOUT POWER AND GAS SUPPLY!**

Problem	Possible Cause(s)	Corrective Action
Dryer shuts down. (Continued)	Burner Reset Switch drops out because of no gas supply, bad electrode, loose wire connections to electrode, cracked wires to electrode, or improper air adjustment on burner.	Check gas supply tank. Check electrode connections and condition of wires. * Check Air Damper on burner. *
Indicator Lamps (lights) flicker, solenoids chatter, or dryer shuts down repeatedly.	Poor machine ground.  Loose wire connections.  Improper air damper adjustment on burner resulting in weak flame that is moving in and out of electrode. This action causes temporary loss of flame sensing by Ignition Board and shut down of burner.	Tighten connections for ground at machine lug terminal and at earth ground rod supplied with dryer. *  Check and tighten connections. *  Check position of Air Damper on burner. *
Low drying capacity.	Grain overdried.  More than (10) points of moisture being removed.  Moisture Tester out of calibration.  Drying Temperature too low.  Plugged inner or outer perforated sheets.	Adjust Auto Set Point Dial to lower number.  Allow more time for drying under this condition.  Re-calibrate or replace.  Adjust "T" Handle of Modulating Valve by turning clockwise to increase drying temperature.  Clean as required. *

# PARTS CATALOG INTRODUCTION

## Parts Ordering Instructions

1. Order parts from your local M-C Dealer.
2. Always furnish the model and serial number. This information is stamped on the serial number plate.
3. When ordering parts be sure to furnish the part number, description and quantity required.

**NOTE:** Attaching hardware is listed, but not included, with the main part. It must be ordered separately.

4. Inspect all shipments upon receipt. If any packages and/or boxes are missing, or parts are damaged, file a claim with the carrier immediately. Failure to do so may void a claim. Check the shipment against the packing list carefully. Report any shortages to the shipper immediately.
5. Do not return any parts to the Mathews Company without a "Return Goods Authorization" from the factory. All return parts shipments must be shipped prepaid (COD shipments will not be accepted). Shipments must also include the following:
  - A. A letter of explanation including the "Return Goods Authorization Number," your name and address.
  - B. A list of all parts being returned. List must include part numbers, description, quantity, and original invoice number.

## Model and Serial Number Location

The model and serial number of your Grain Dryer are stamped on a plate located on the leg support gusset just to the lower right of the control cabinet, see Figure 1. Record the model and serial number in the blank spaces provided in Figure 28.

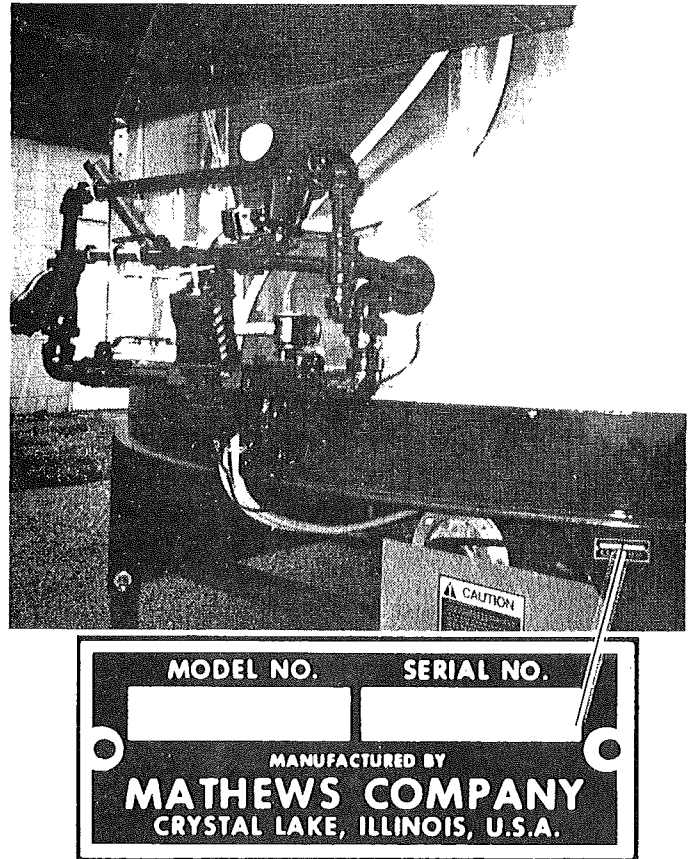
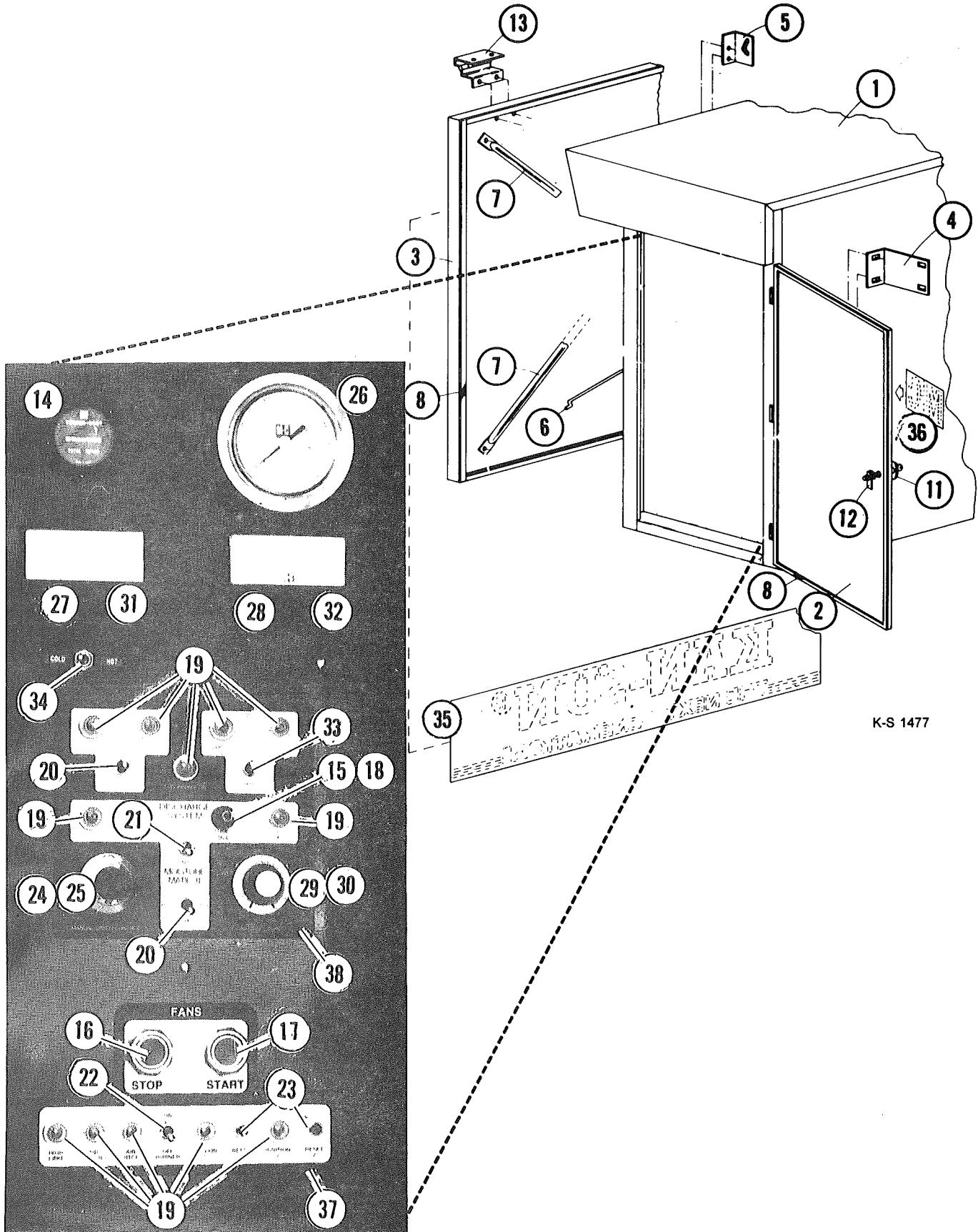


Figure 28

# CONTROL PANEL CABINET



K-S 1477

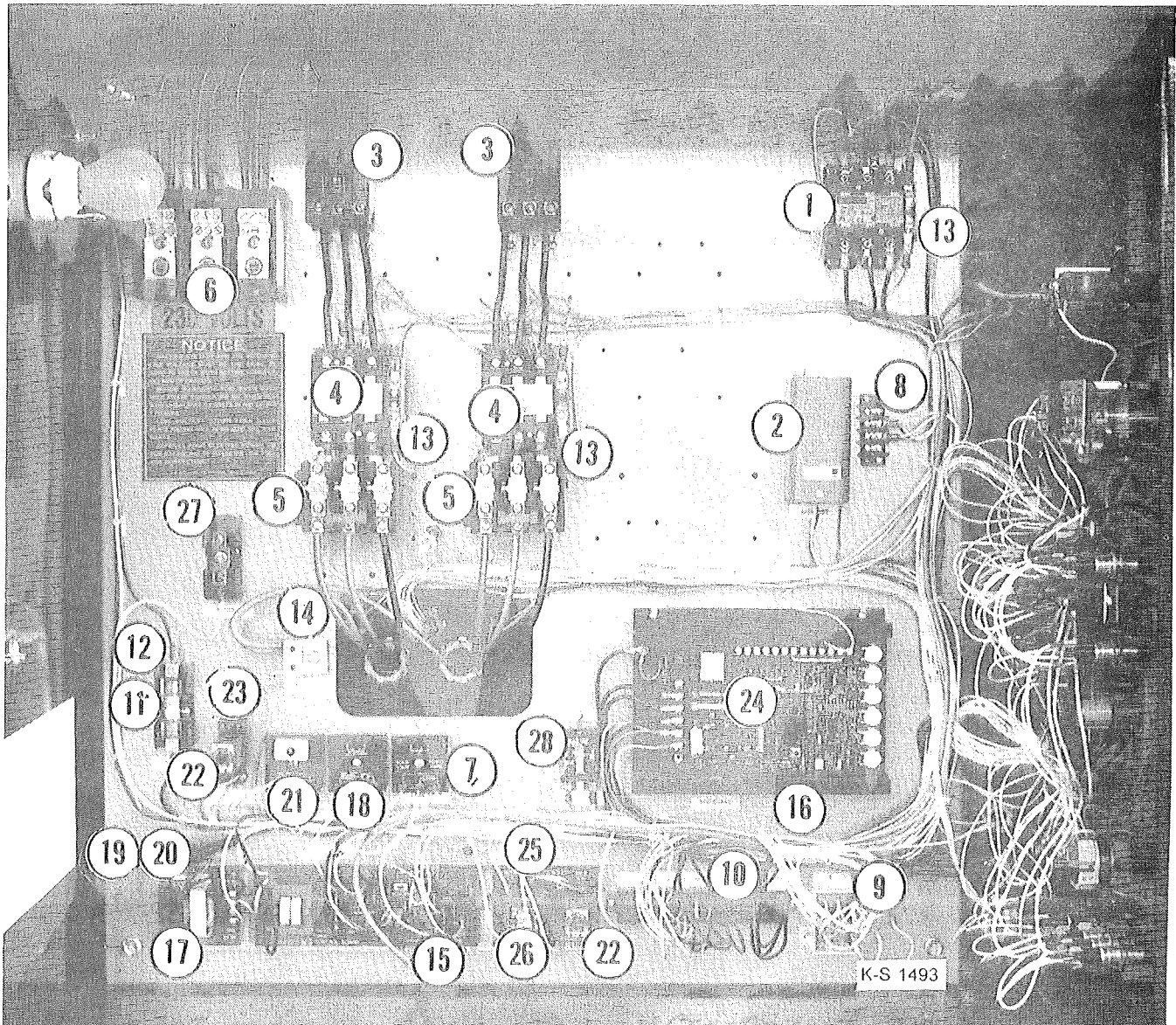
# CONTROL PANEL PARTS LIST

Ref.	Part No.	Qty.	Description
1	475375	1	Control Cabinet Assembly
2	445690	1	Control Door Cover Assembly
3	448109	1	Control Cabinet Cover
4	836894	4	Control Cabinet Mounting Bracket
5	445507	1	Door Support Bracket
6	445509	1	Door Support Rod
7	445527	2	Cross Brace
8	436448	-	Gasket Strip - 30" Long (Quantity as required)
9	445508*	1	Door Support Rod Pivot Mount
10	420005*	2	Cover Door Slot
11	444589	3	Locking "T" Handle
12	433800	3	Locking Cam
13	444628	2	Hinge
14	444645	1	Hour Meter
15	433100	1	Fuse Holder
16	475364	1	Stop Switch Red
17	475365	1	Start Switch Green
18	833447*	1	Fuse (1 Amp)
19	475016	12	Indicator Lamp Assembly
20	1206827	2	Start Up-Run Momentary Contact Switch
21	475326	1	Auto-Manual On-None-On DPDT Switch
22	438907	1	Burner On-Off Switch
23	441959	2	Remote Reset Switch
24	475013*	1	10 Turn Potentiometer
25	475014	1	Speed Control Dial
26	475015	1	Temperature Gauge
27	444782	1	Grain Temperature Meter (Gasket #475269)
28	1246981	1	Discharge Speed Meter (Gasket #475269)
29	438698*	1	Potentiometer
30	438699	1	Knob
31	445961*	1	Temperature Bridge
32	475428*	1	88K Resistor
33	1246895	1	Wet Grain Fill Switch
34	475194	1	Cold-Hot Switch
35	475182	1	Decal "Kan-Sun - The Next Generation"
36	475273	1	Decal "M-C"
37	475366	1	Fan/Burner Control Bezel
38	475367	1	115 Power Control Bezel

\*Items Not Shown.



# ELECTRICAL COMPONENTS



Ref.	Part No.	Qty.	Description
1	475307*	1	Contactor 30 Amp-3 Pole (3HP Discharge Motor)
2	835916	1	High Limit Control 10 Ft. Lead
3	475295	2	Circuit Breaker 10HP Fan Motor 3Ø 230V QOU 350
	475299	2	Circuit Breaker 10HP Fan Motor 3Ø 460V FAL 36025
	475297	2	Circuit Breaker 15HP Fan Motor 3Ø 230V QOU 380
	475298	2	Circuit Breaker 15HP Fan Motor 3Ø 460V FAL 36040
	1286966	2	Circuit Breaker 25HP Fan Motor 3Ø 230V QOU 3100
	1246905	2	Circuit Breaker 25HP Fan Motor 3Ø 460V FAL 36070
4	475294	2	Starter 10HP Fan Motor 3Ø 230V DPS053
	1246931	2	Starter 10HP Fan Motor 3Ø 460V DPS033
	475294	2	Starter 15HP Fan Motor 3Ø 230V DPS053
	1246931	2	Starter 15HP Fan Motor 3Ø 460V DPS033
	1241082	2	Starter 25HP Fan Motor 3Ø 230V DPA73
	1246930	2	Starter 25HP Fan Motor 3Ø 460V DPS053

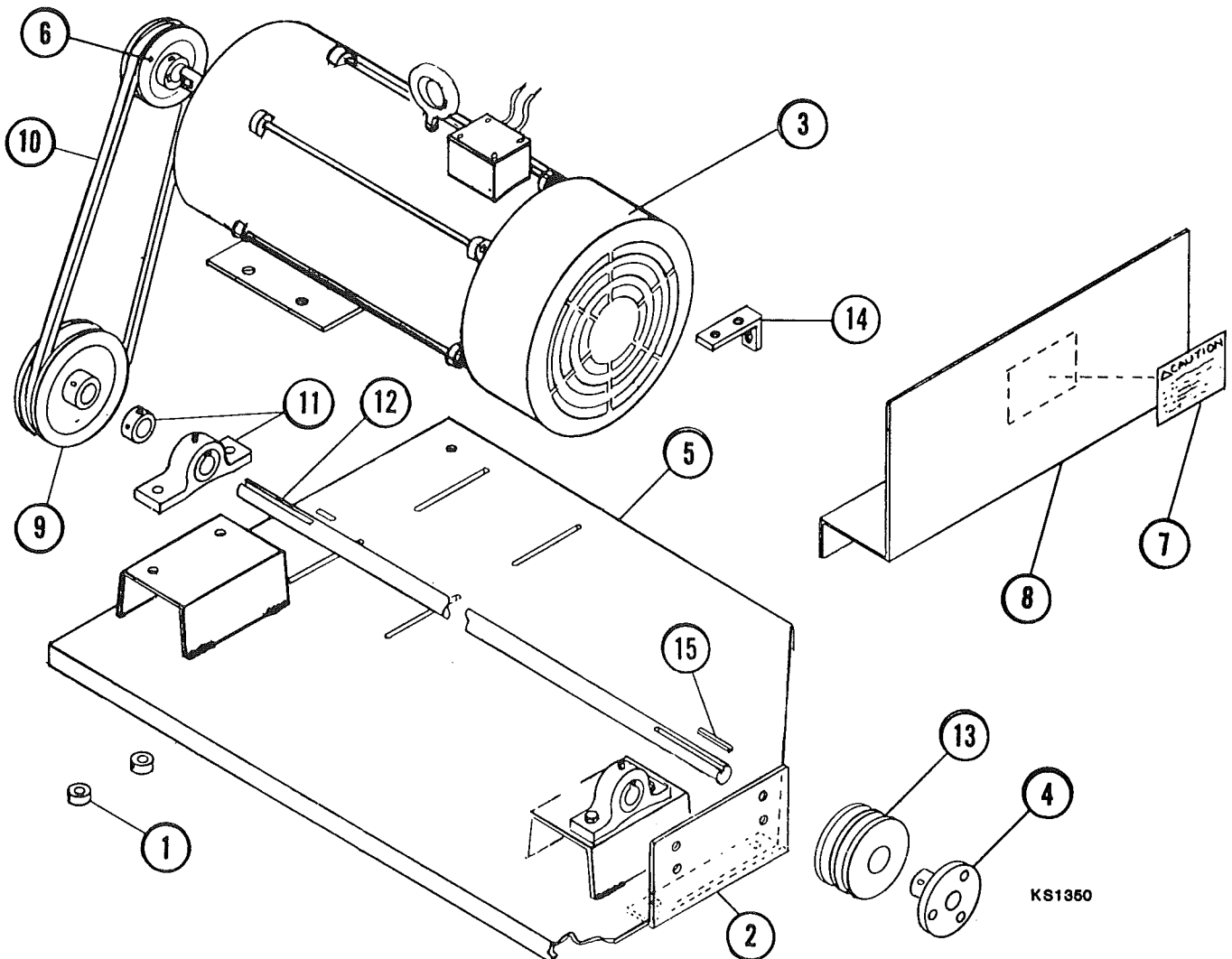
# ELECTRICAL COMPONENTS

Ref.	Part No.	Qty.	Description
5	475303	3	Thermal Units 10HP Motor 3Ø 230V B36
	475301	3	Thermal Units 10HP Motor 3Ø 460V B17.5
	475305	3	Thermal Units 15HP Motor 3Ø 230V B50
	475302	3	Thermal Units 15HP Motor 3Ø 460V B28
	1286827	3	Thermal Units 25HP Motor 3Ø 230V CC87.7
	1286983	3	Thermal Units 25HP Motor 3Ø 460V B56
6	475372	1	Power Distribution Block (3 Pole)
7	442533	1	Time Delay Relay (6 Second)
8	835872	1	Terminal Block (4 Position)
9	475012	1	Terminal Block (4 Position) - Neutral
10	475025	1	Terminal Block (12 Position)
11	475325	1	Fuse 5 Amp
12	475426	1	Fuse Block
13	1246933	3	Auxiliary Interlock (Normally Open)
14	475308	1	Ground Lug
15	1246995	1	Moisture Control Board
16	475008	1	SCR Board
17	1246966	1	8 Volt Power Supply
18	1246831	1	Time Delay Relay (10 Second)
19	444613	1	Fuse (1/2 Amp.)
20	475368	1	In Line Fuse Holder
21	1246996	1	0 to 3 Minute Timer
22	1246978	2	0 to 60 Minute Timer
23	1246987	1	Cold Grain Timer Base
24	475202	2	SCR Fuse
25	1246972	1	Main Relay and Timer Base
26	0216809	1	Main Relay
27	1276823	1	Neutral Lug
28	1246954	1	Fill Relay
29	475218	1	Step Down Transformer 7500VA (460V)*
30	475204	2	35 Amp Ferrule Fuse (460V)*
31	475219	1	Fuse Holder (460V)*

\* Not Shown

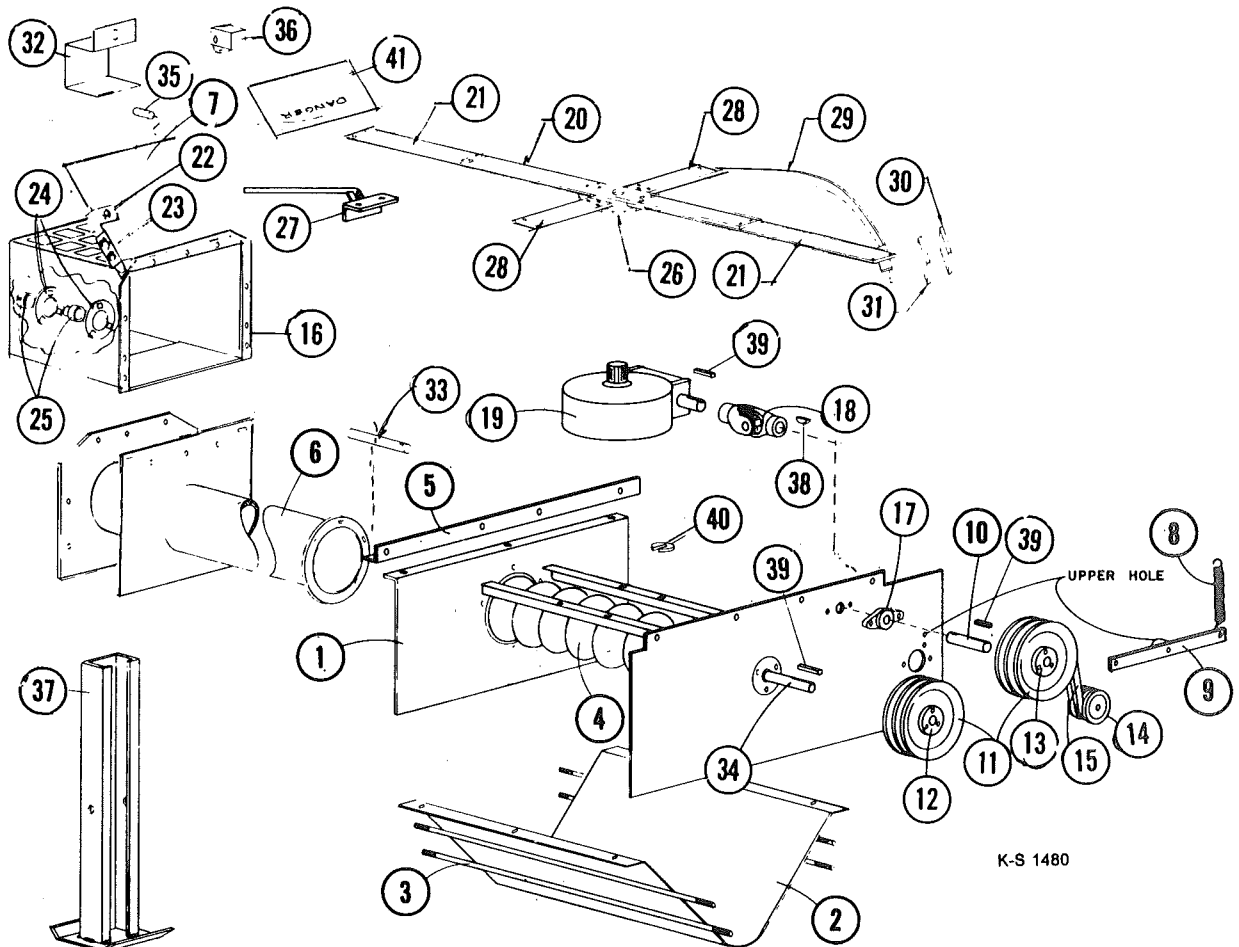
# DISCHARGE SYSTEM 3HP (DC) MOTOR DRIVE AND MOUNT

Ref.	Part No.	Qty.	Description
1	441021	2	Spacer, Motor Mount
2	441969	1	Sweep Motor Attach. Plate
3	475010	1	3HP DC Motor
4	475236	1	1" J.A. Bushing
5	475240	1	Drive Plate DC Motor Weldment
6	475235	1	Pulley, 3 3/4" O.D.
7	475272	1	Decal, Caution
8	475244	1	Belt Guard
9	475234	1	Pulley, 6 1/2" O.D.
10	475237	1	Drive Belt
11	475239	2	Bearing, Jack Shaft, 1" and Collar
12	475241	1	Jack Shaft 1" Diameter
13	837357	1	Sheave, 2.65 O.D.
14	475243	1	Belt Tension Adjusting Bracket
15	475246	3	1/4 x 1/4 x 1 1/2 Key Stock



# PARTS LIST – SWEEP & DISCHARGE AUGER

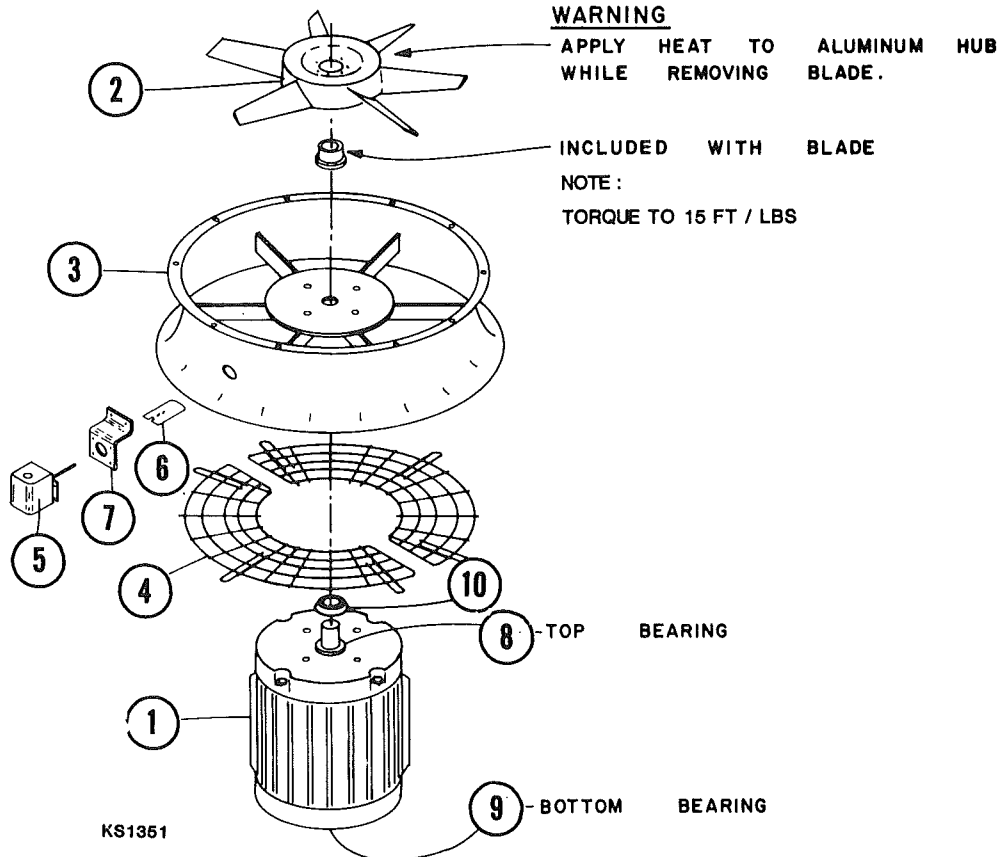
Ref.	Part No.	Qty.	Description	Ref.	Part No.	Qty.	Description
1	475044	1	Discharge Sump Body	18	820026	1	"U" Joint
2	475071	1	Sump Trough	19	437752	1	Gear Box, 50:1
3	475053	4	Sump Tie Bolts	20	475522	1	Sweep Arm Brace
4	475086	1	Auger 8 x 97½" up to & incl. SN 56930	21	834683	2	Sweep Arm, Long
	475435	1	Auger 8x120" starting with SN 57355	22	475170	1	Switch Mount Clip
	475593	1	Auger 8x120" for Moisture Monitor Sensor	23	475171	1	Switch Mount
5	439779	1	Attachment Angle	24	475050	4	1¼" Bearing Flangette
6	475315	1	Discharge Auger Tube up to & incl. SN 56930	25	475051	2	1¼" Bearing w/Locking Collar
	475437	1	Discharge Auger Tube starting with SN 57355	26	821633	1	Sweep Arm Hub Assembly
	475595	1	Discharge Auger Tube for Moisture Monitor Sensor	27	821364	1	Sweep Arm Finger Assembly
7	475052	1	Auger Extension Overload Door	28	446360	2	Sweep Fin Tail Bracket
8	441966	1	Spring, 6" Long	29	475439	1	Sweep Fin
9	444601	1	Belt Tightener	30	833278	2	Sweep Fin Finger
10	830017	1	Drive Shaft	31	441965	2	Sweep Fin Finger Cleaner, Teflon
11	837742	2	Sheave, 6.9" O.D.	32	475069	1	Auger Stub Shaft Guard
12	475074	1	Hub, 1¼" Bore w/Key	33	475073	1	Auger Stub Shaft
13	837739	1	Hub, 1" Bore	34	475072	1	Auger Drive Shaft
14	833318	1	Belt Idler	35	475147	1	Discharge Switch
15	837356	1	Drive "V" Belt	36	475172	1	Discharge Switch Cover
16	475049	1	Unload Auger Discharge	37	475150	6	Leg Extension
17	821372	1	Bearing, 1" Bore w/Casting	38	833607	1	¼ X 7/8" Woodruff Key
				39	475246	3	¼ x ¼ x 1½" Keystock
				40	475140	-	Shim, 20 Ga. (Qty. as required)
				41	836424	1	"DANGER" Discharge Auger Decal



# FAN ASSEMBLY 10, 15 & 25 HP

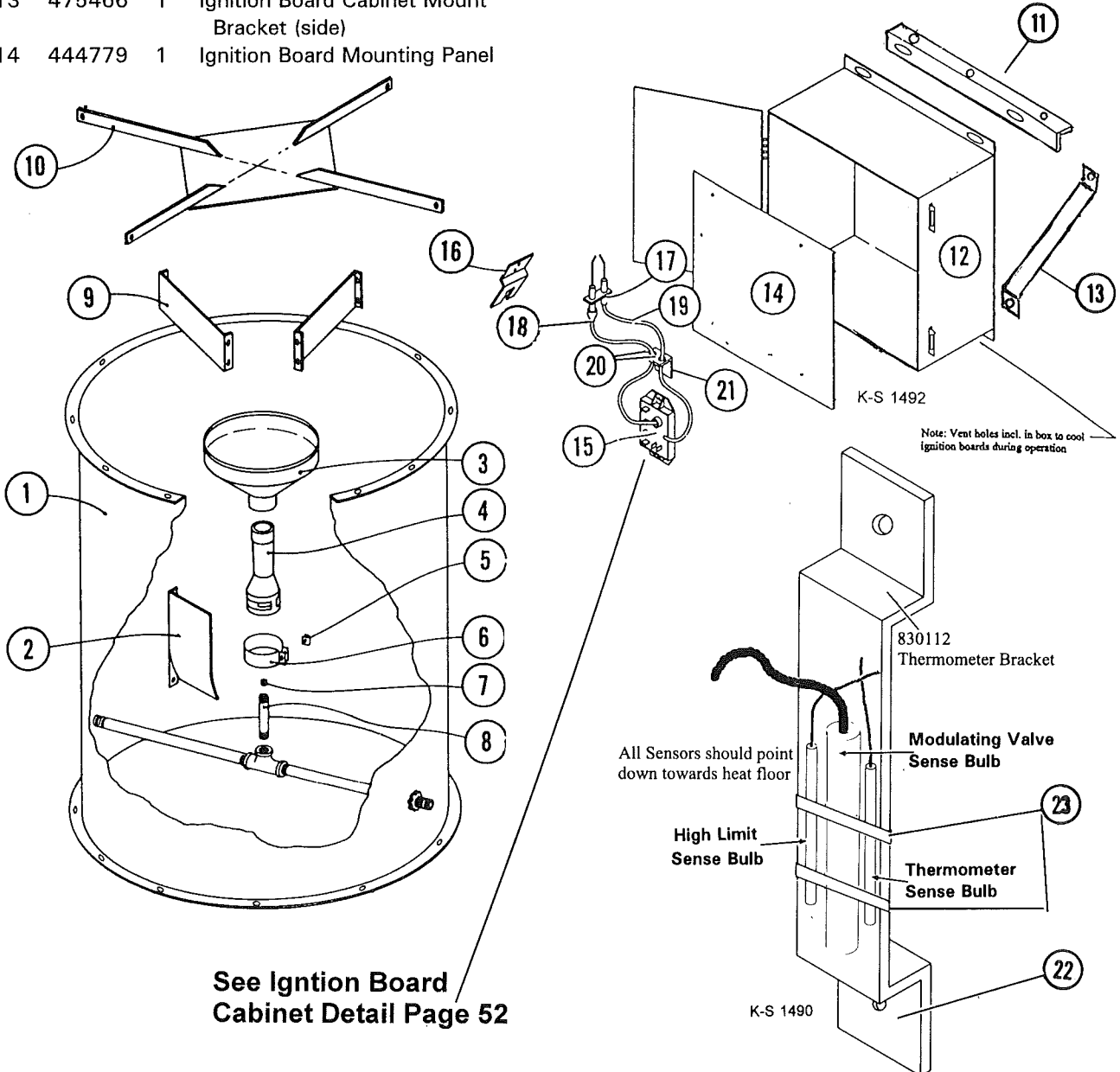
Ref.	Part No.	Qty.	Description
1	821576	2	Motor 10HP 3Ø - 10420
	821577	2	Motor 15HP 3Ø - 10530, 10630 & 10730
	475467*	2	Motor 25HP 3Ø - 10750
2	835253	2	Blade Assembly 10HP (includes Bushing) 10420
	835258	2	Blade Assembly 15HP (includes Bushing) 10530, 10630 & 10730
	475528*	2	Blade Assembly 25HP (includes Bushing) 10750
3	821316	2	Venturi - 10420, 10630 & 10730
	475525*	2	Venturi - 10750
4	833220	4	Fan Guard (Half)
5	821632	2	Air Switch
6	837253	2	Air Switch Sail
7	834568	2	Air Switch Bracket
8	835184	2	Top Replacement Bearing
9	835185	2	Bottom Replacement Bearing
10	444766	2	Slinger

\*Model 10750 starting with Serial Number 55970 June 30, 1998.



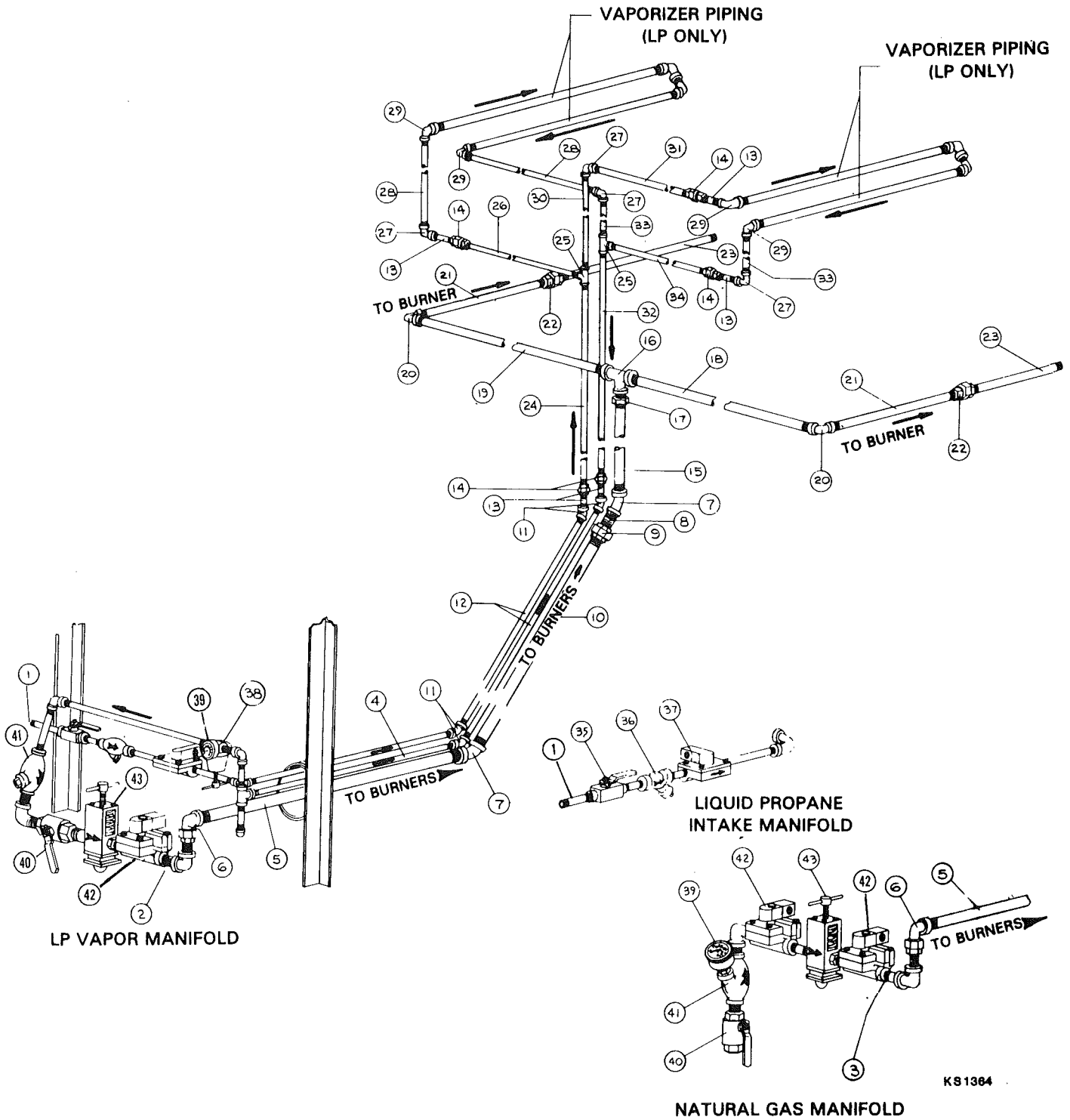
# BURNER

Ref.	Part No.	Qty.	Description	Ref.	Part No.	Qty.	Description
1	438499	2	Burner Shell	15	978389	2	Ignition/Flame Monitor Board w/Reset
2	833224	12	Air Fin	1246929	1	Terminal Block 3 Position (not shown)	
3	835368	2	Burner Shield	835872	1	Terminal Block (4) Screw (not shown)	
4	835367	2	Burner	16	448064	2	Probe Clip
5	837537	2	Tinnerman Clip	17	448068	2	Flame Control Probe
6	833745	2	Air Damper	18	823551	2	High Voltage Ignition Wire
7	433888	2	LP Orifice 3/16"-10420/10530/10630	19	823552	2	Low Voltage Sense Wire
	475496	2	LP Orifice 1/4" - 10750	20	833468	4	Bushing
	437168	2	LP Orifice 1/8" - 10420, 10530 & 10630 Low Temp.	21	833461	2	Wire Holder
8	835366	2	Pipe	22	830112	1	Thermometer/High Limit/Mod. Valve Sense Bulb Mount Bracket
9	440105	2	Burner Retainer	23	1286964	2	Tie Wraps 14"
10	441000	2	Vaporizer Baffle Assembly				
11	475469	1	Cabinet Mount Bracket (Top)				
12	475253	1	Ignition Board Cabinet				
13	475466	1	Ignition Board Cabinet Mount Bracket (side)				
14	444779	1	Ignition Board Mounting Panel				



See Ignition Board Cabinet Detail Page 52

# LP/NG PLUMBING ASSEMBLY



K81364

ALL PIPING MUST BE SCHEDULE 80 PIPE

# LP/NG PLUMBING ASSEMBLY

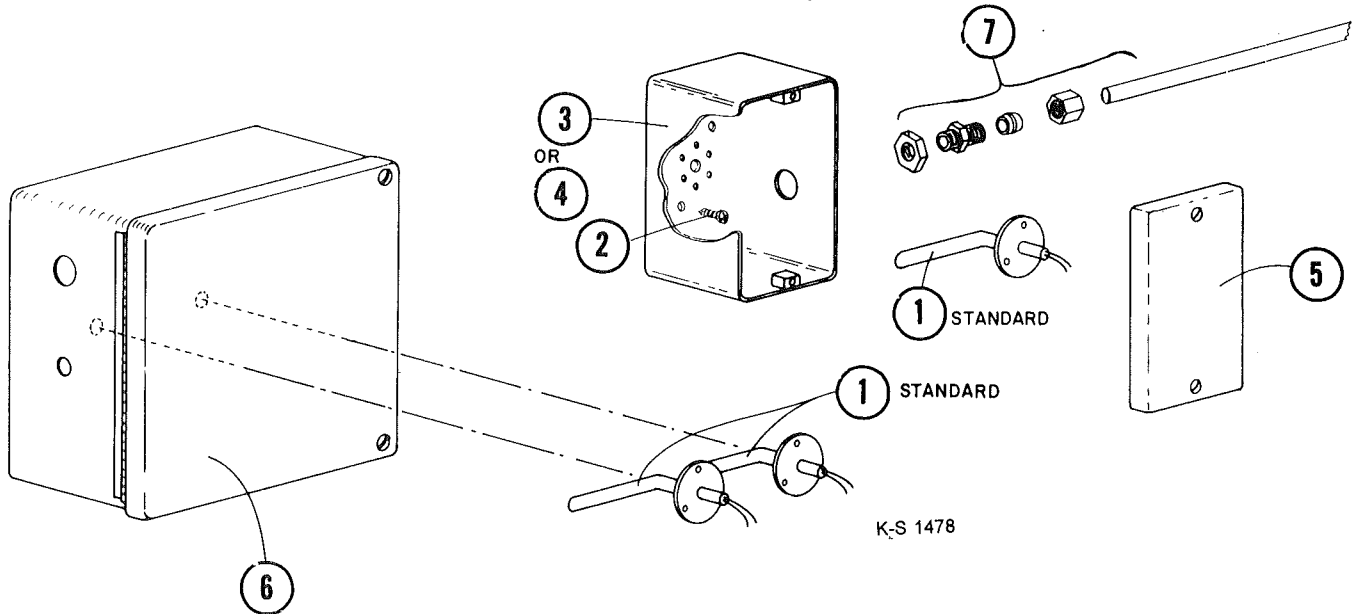
Ref.	Part No.	Qty.	Description	Ref.	Part No.	Qty.	Description
1	475099	1	LP Assembly	30	440812	1	½" x 18½" Ex. Hvy. Nipple
2	475115	1	LP Manifold Ass'y	31	475114	1	½" x 5" Ex. Hvy. Nipple
3	475141	1	NG Manifold Ass'y	32	475221	1	½" x 40" Ex. Hvy. Nipple
4	475142	1	½" x 23¼" Ex. Hvy. Nipple		475392	1	½" x 44-5/8" Ex. Hvy. Nipple - 10750 Only
5	475126	1	1" x 19" Ex. Hvy. Nipple	33	475142	2	½" x 23¼" Ex. Hvy. Nipple
6	475128	1	1" x 90° Ex. Hvy. Union Elbow	34	475143	1	½" x 10" Ex. Hvy. Nipple
7	475129	2	1" x 45° Ex. Hvy. Elbow	35	823387	1	½" Hand Valve (LP only)
8	475119	1	1" Close Ex. Hvy. Nipple	36	823297	1	½" Strainer (LP only)
9	475130	1	1" Ex. Hvy. Union		837657	1	Replacement Screens ½"
10	475127	1	1" x 19½" Ex. Hvy. Nipple	37	465554	1	½" Solenoid Valve (LP only)
11	475125	4	½" x 45° Ex. Hvy. Elbow		834656	1	Replcmnt. Diaphragm Assembly
12	475124	2	½" x 24½" Ex. Hvy. Nipple		833618	1	Replacement Coil
13	096370	5	½" x 1½" Ex. Hvy. Nipple	38	445521	1	½" Gas Regulator (LP only)
14	096834	5	½" Ex. Hvy. Union	39	445520	1	0-60 PSI Pressure Gauge
15	475132	1	1" x 43" Ex. Hvy. Nipple	40	822284	1	1" Hand Valve
	475393	1	1" x 47-5/8" Ex. Hvy. Nipple - 10750 Only	41	823293	1	1" Strainer
16	475135	1	3/4" x 3/4" x 1¼" Tee		837659	1	Replacement Screen 1"
17	475131	1	1¼" to 1" Red Bushing	42	465556	1	1" Solenoid Valve
18	475133	1	3/4" x 10" Ex. Hvy. Nipple		475309	1	Replcmnt. Diaphragm Ass'y
19	475134	1	3/4" x 19½" Ex. Hvy. Nipple		475310	1	Replacement Coil
20	475136	2	3/4" x 90° Ex. Hvy. Elbow	43	437086	1	1" Modulating Valve
21	833708	2	3/4" x 8" Ex. Hvy. Nipple		437214	1	Replacement Power Element 140-250
22	475137	2	3/4" Ex. Hvy. Union		437215	1	Replcmnt. Diaphragm Kit
23	438659	2	3/4" x 13-3/8" Ex. Hvy. Nipple		437216	1	Replacement Valve & Seat Kit
24	475138	1	½" x 48" Ex. Hvy. Nipple	*	837524	4	5/16-18 x 3/4" HWHCS Whiz
	475391	1	½" x 52-5/8" Ex. Hvy. Nipple - 10750 Only	*	434632	4	5/16-18 Whiz Hex Nut
25	096357	2	½" Ex. Hvy. Tee	*	834038	8	¼-20 Whiz Locknut
26	440957	1	½" x 20" Ex. Hvy. Nipple	*	436359	4	U Bolt/½" Pipe
27	096360	4	½" x 90° Ex. Hvy. Elbow	*	436349	2	LP-NG Piping Brkt.
28	475139	2	½" x 17½" Ex. Hvy. Nipple	*	437081	1	NG Mtg. Channel
29	440930	4	1" to ½" 90° Ex. Hvy. Elbow				

\*Items not shown.

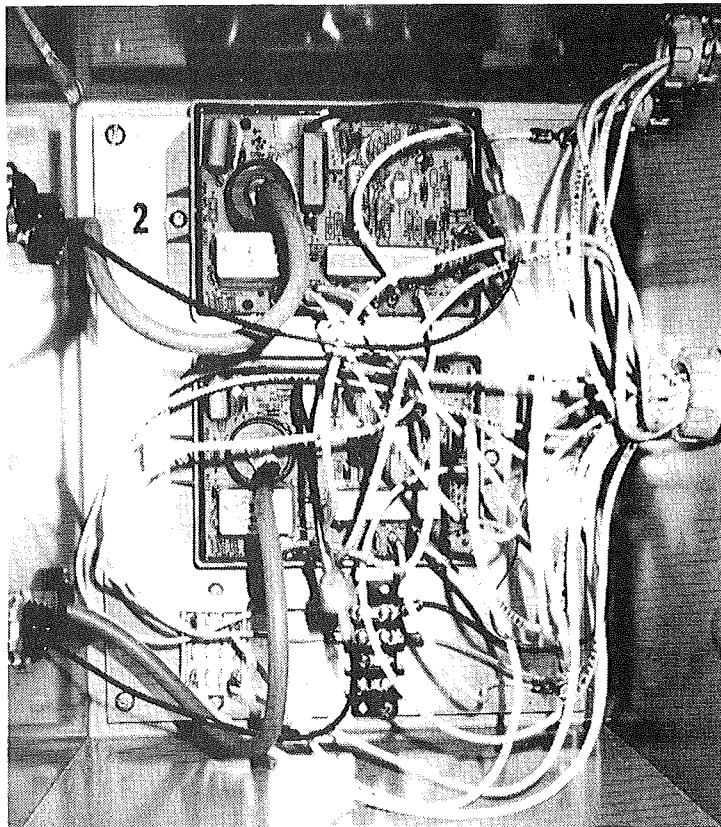


# THERMISTORS

Ref.	Part No.	Qty.	Description
1	438700	8	Thermistor (Standard)
2	095180	12	8-18 x 1/2 Pan Head Self Tap Screw
3	475195	5	Thermistor Box - 1 Way
4	475196	1	Thermistor Box - 3 Way
5	435507	6	Thermistor Box Cover
6	475275	1	Thermistor Box - 4 Way - 6 x 6 x 4"
7	475389	4	Liquatite Assembly 3/8"



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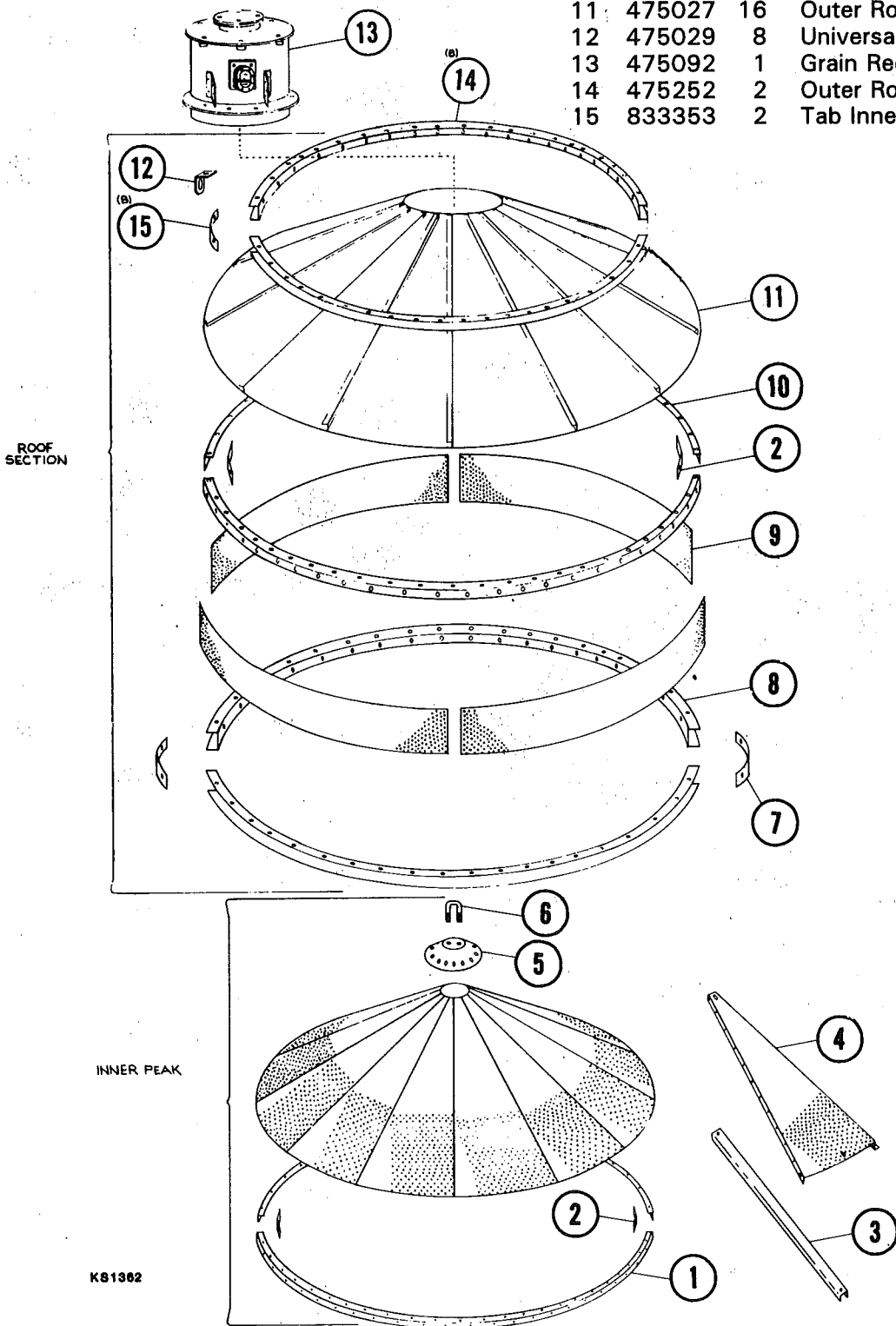


**Ignition Board  
Cabinet Mounted  
Inside (Base) Cool  
Section**

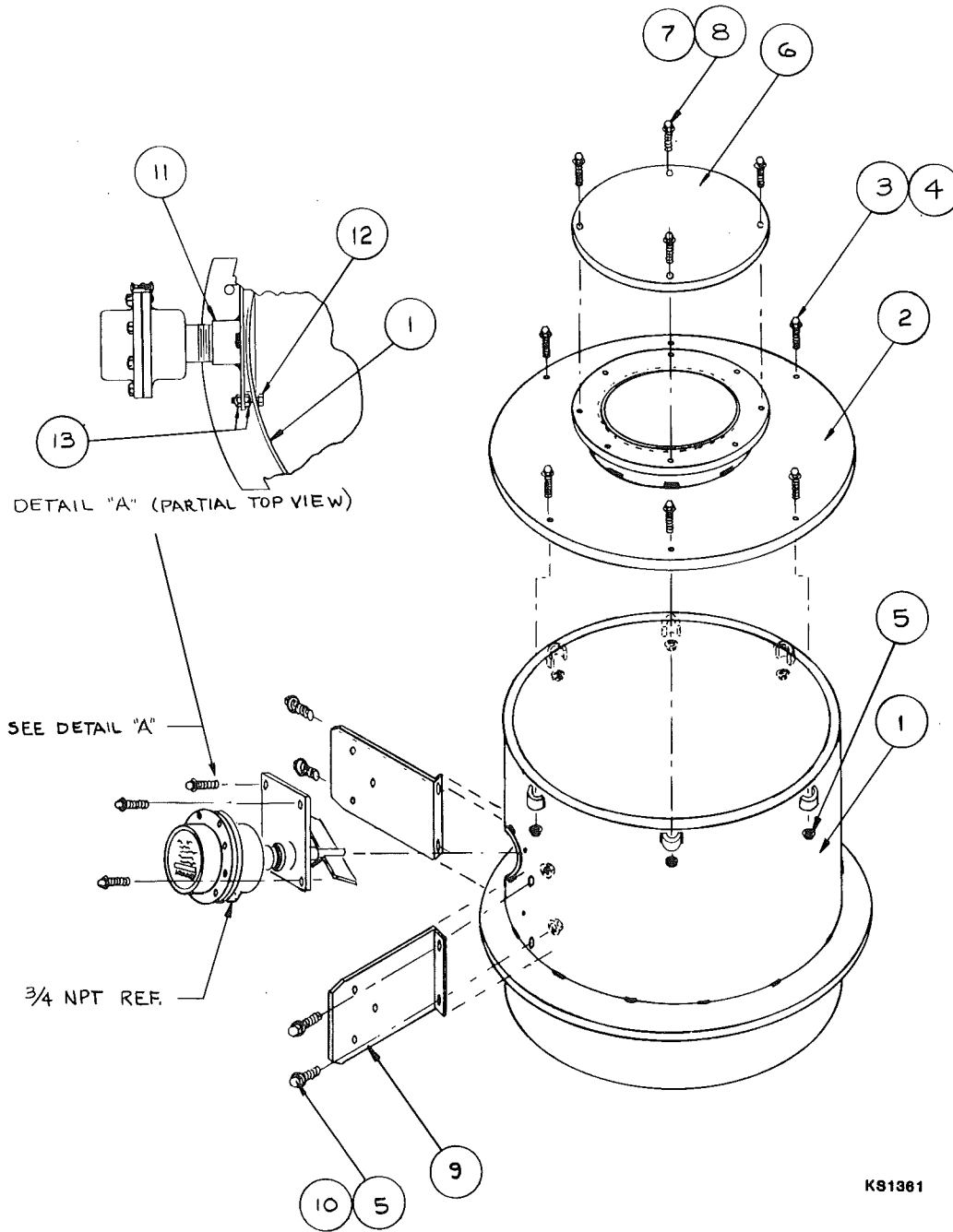
# ROOF SECTION

Ref. Part No. Qty. Description

Ref.	Part No.	Qty.	Description
1	833219	2	Ring, Transition
2	834721	4	Clip, Filler M480
3	441551	16	Rein Channel 10' KS Roof
4	439780	16	Inner Perforated Peak Panel 10'
5	439063	1	Roof Cap M001
6	830109	1	U-Bolt, Roof Cap M021
7	438649	2	Tab Outer Ring Bolting
8	438761	2	Outside Channel Ring
9	475028	4	Wet Holding Bin Screen
10	475026	2	Outer 10' Transition Ring
11	475027	16	Outer Roof Panel
12	475029	8	Universal Angle
13	475092	1	Grain Receiving Assembly
14	475252	2	Outer Roof Channel Ring
15	833353	2	Tab Inner Ring Bolting



# GRAIN RECEIVING TOP ASSEMBLY



KS1361

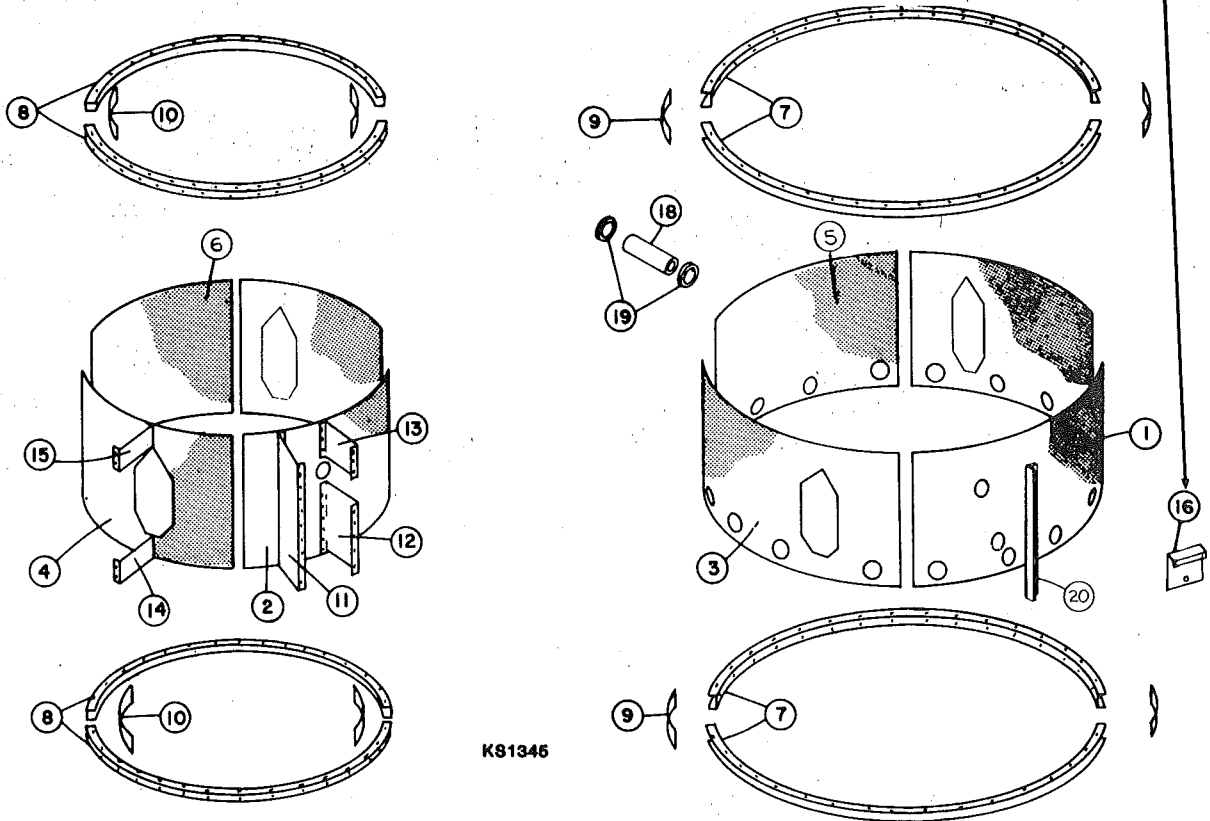
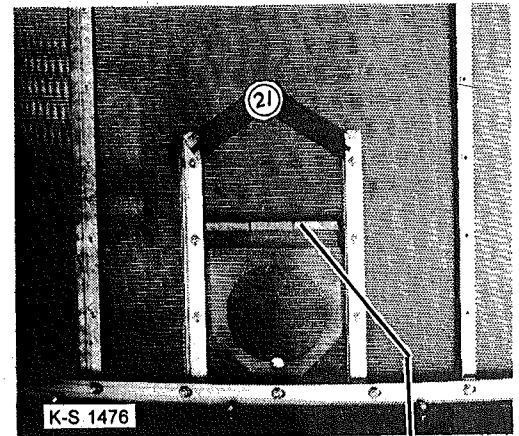
Ref.	Part No.	Qty.	Description
1	475030	1	Grain Receiving Weld.
2	475091	1	Receiving Tube Weld.
3	475094	6	3/8-16 x 2" HHCS
4	095013	6	3/8 Flat Washer
5	434111	10	3/8-16 Whiz Hex Nut
6	475037	1	Receiving Tube Cover
7	837524	4	5/16-18 x 3/4" HWHCS Whiz

Ref.	Part No.	Qty.	Description
8	434632	4	5/16-18 Whiz Hex Nut
9	475058	2	Ladder to Fill Mount
10	095078	4	3/8-16 x 3/4" HHCS
11	475232	1	Rotary Fill Switch Ass'y
12	095058	4	1/4-20 x 1 1/2" HHCS Gr.5
13	834038	8	1/4-20 Whiz Hex Locknut

# COOLING SECTION

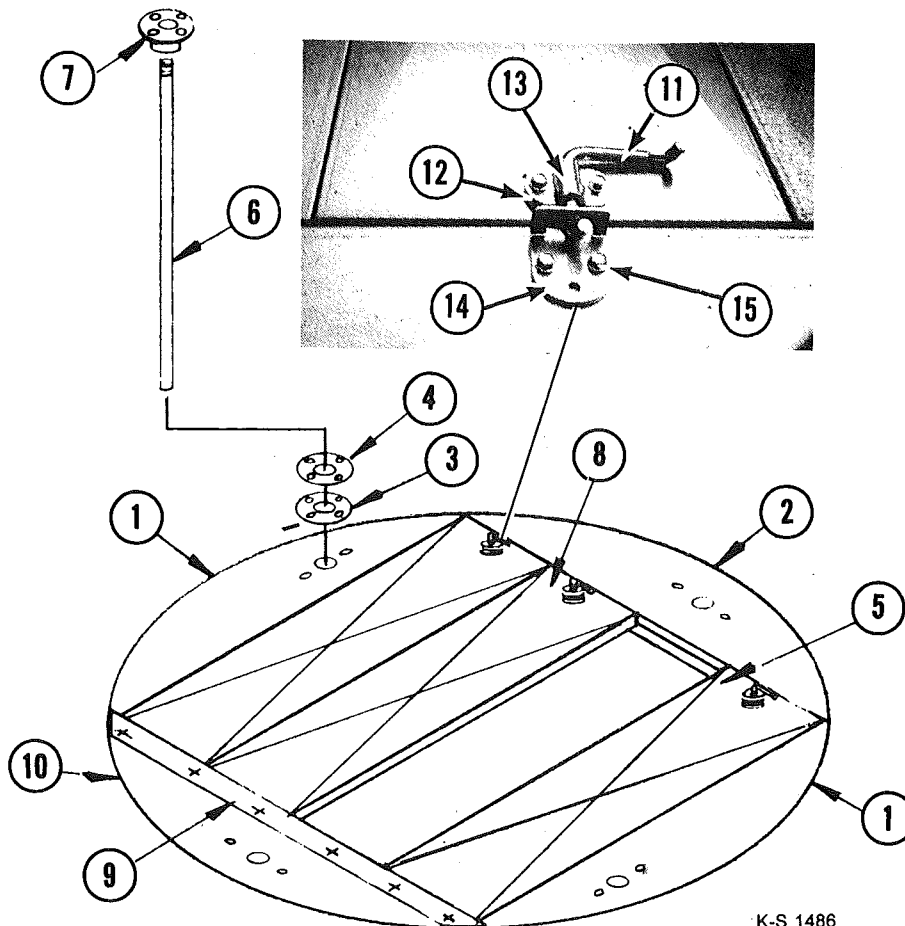
Ref.	Part No.	Qty.	Description
1	475024	1	Outer Control Box Sheet
2	834536	1	Inner Control Box Sheet
3	475023	2	Outer Door Sheet
4	834534	2	Inner Door Sheet
5	475022	1	Outer Cooling Sheet
6	834531	1	48" 10' Inner Sheet
7	438761	4	Outside Channel Ring
8	438760	6	Inside Channel Ring
9	438649	4	Outer Ring Bolting Tab
10	833353	4	Inner Ring Bolting Tab
11	834589	13	Partition 4'
12	834600	1	Partition Bottom PVC
13	834599	1	Partition Top PVC
14	834598	2	Partition Bottom Door
15	834597	2	Partition Top Door
16	475011	16	Dump Gate
17*	833194	32	Step, Cooling Chamber
18	438912	2	Entrance Tube
19	438913	4	Collar
20	834718	13	Brace Angle
21	475384	24	Quick Dump Screen Stiffener

\*Items not shown.



# COOLING FLOOR

Ref.	Part No.	Qty.	Description
1	475397	2	Cooling Floor Panel - "AA"
2	475396	1	Cooling Floor Panel - "A"
3	475108	4	Clean-out Pipe Gasket
4	475109	4	Clean-out Floor Seal
5	475398	3	Cooling Floor Panel - "B"
6	475106	4	Clean-out Pipe
7	475107	4	Floor Flange
8	475399	1	Cooling Floor Panel - "C"
9	475087	1	Seal Plate
10	475242	1	Cooling Floor Panel - "D"
11	438709	4	Handle
12	438711	4	Bearing Plate
13	438710	4	Bearing Latch Plate
14	438712	4	Latch Side Plate
15	0018202	16	5/16-18 x 3/4" HWH Bolt Gr. 5
	0008169	16	5/16-18 Whiz Locknut



K-S 1486

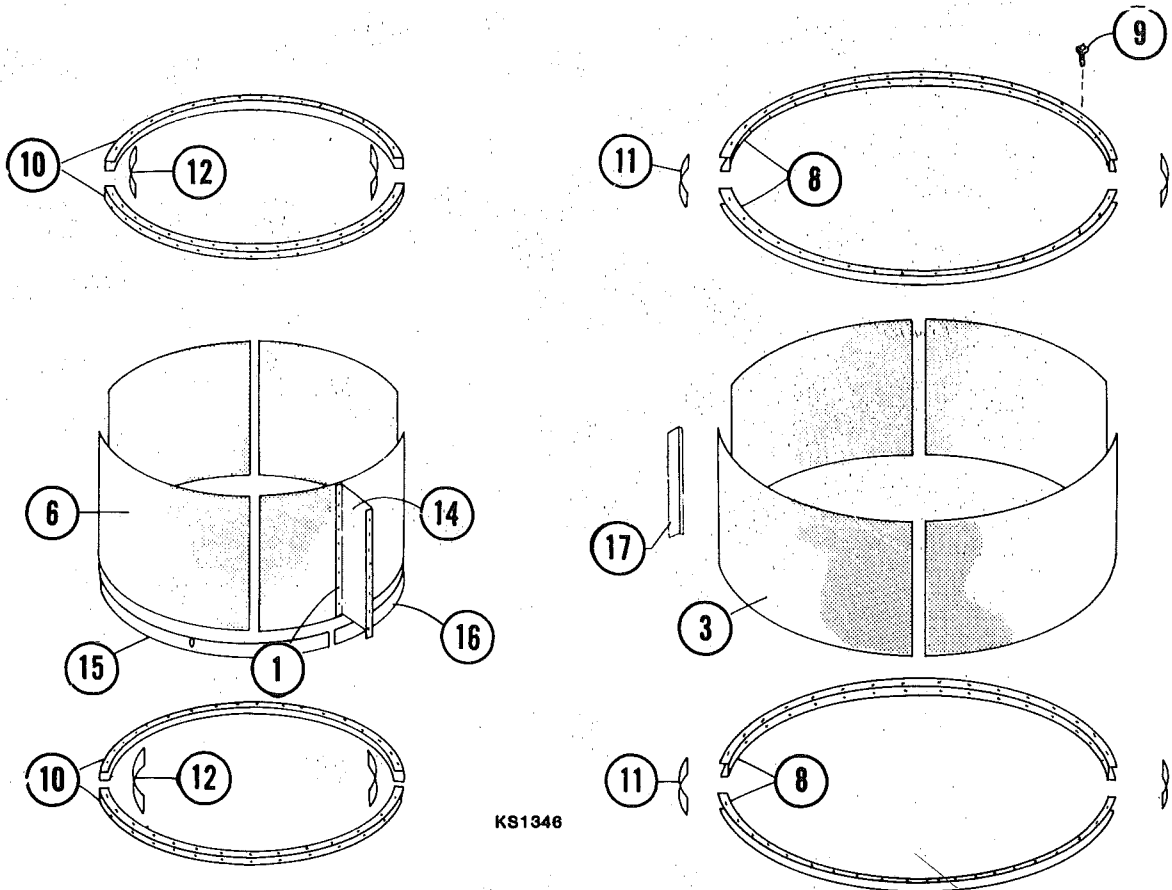
# HEAT SECTION

Ref.	Part No.	Qty.	Description
1	834065	288	¼ x ½" Pop Rivet
2*	834133	144	¼ x 9/16" Pop Rivet
3	444762	4	Outer 4' Sheet-10' AL
4*	475440	100	5/16-18 x ¾ Truss Bolt
5*	095316	76	5/16-18 x ½" Truss Bolt
6	834531	4	Inner 4' Sheet-10'
7*	434632	304	5/16-18 Whiz Hex Nut
8	438761	4	Outside Channel Ring-10'
9	837524	128	5/16-18 x ¾" Hex Washer Head Capscrew
10	438760	4	Inside Channel Ring-10'
11	438649	4	Outer Ring Bolting Tab
12	833353	4	Inner Ring Bolting Tab
14	834589	16	Partition 4'
15	475104	2	Cleanout Plenum Strip Long
16	475105	2	Cleanout Plenum Strip Short
17**	475447	10	Outer Screen Support Angle

\*Items Not Shown

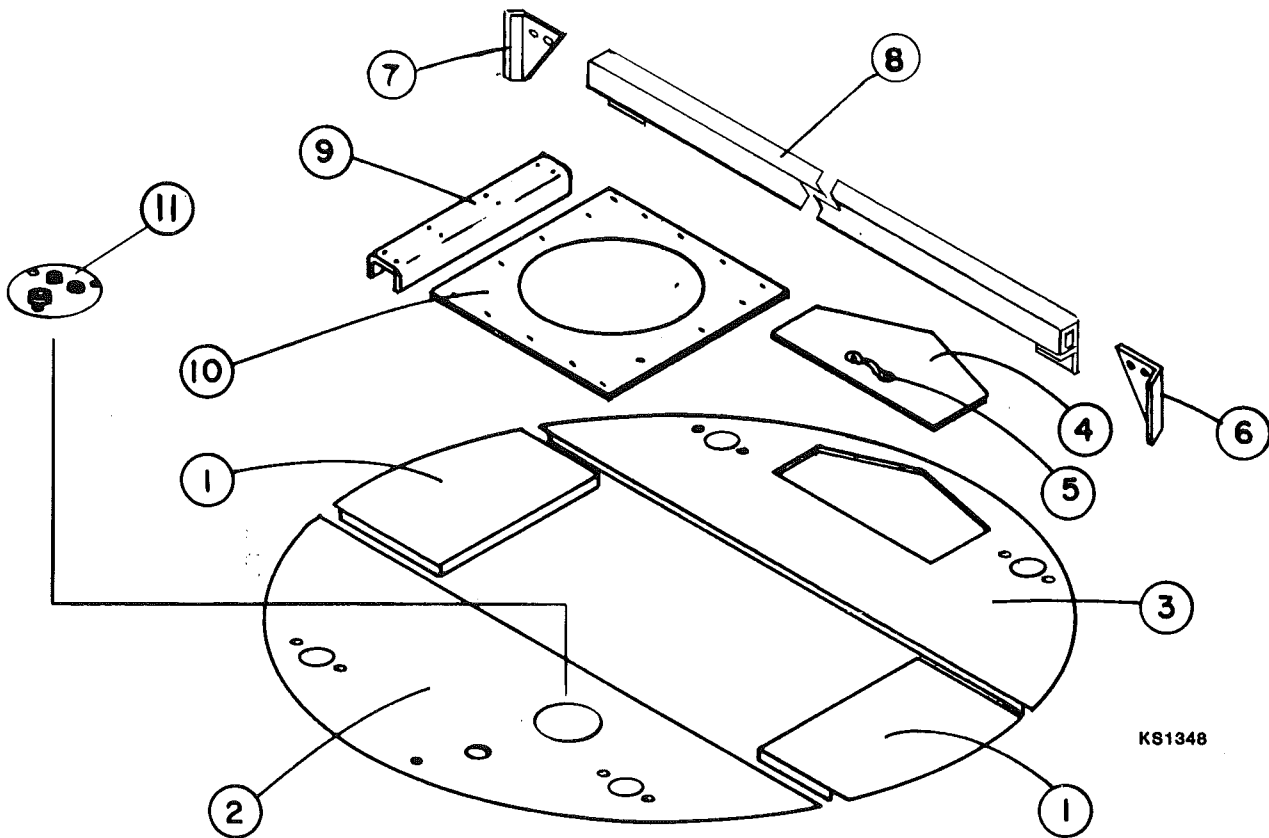
\*\*Used on Base Section and First Heat Section Only!

REPLACEMENT POP RIVETS - 834065 - ¼" DIA. x ½"  
 8' DIA. - 3' SECTION - 168 REQ'D  
 8' DIA. - 4' SECTION - 216 REQ'D  
 10' DIA. - 4' SECTION - 288 REQ'D



# 10' HEAT FLOOR

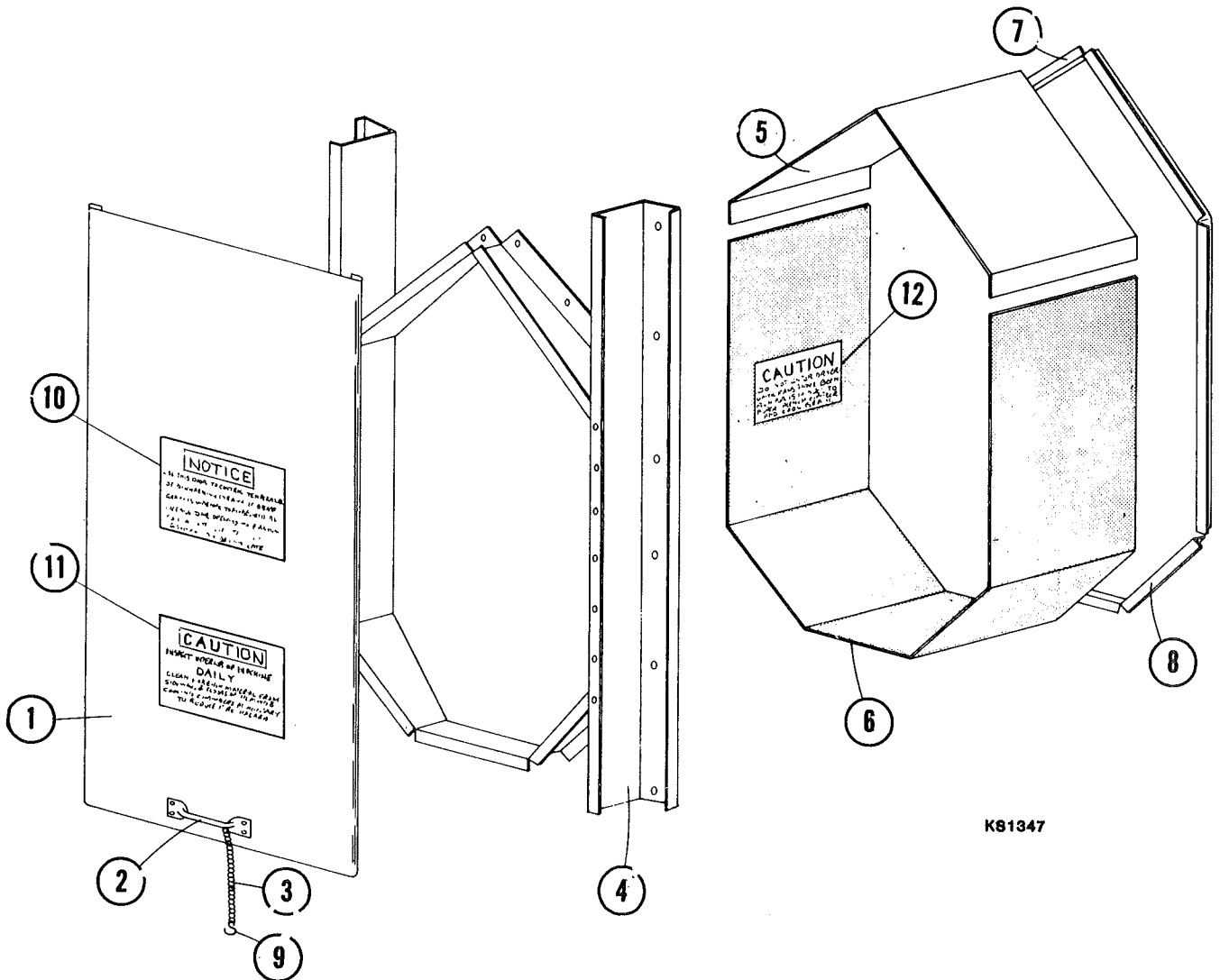
Ref.	Part No.	Qty.	Description
1	833372	2	Plenum Floor End
2	475185	1	Plenum Floor Side
3	475184	1	Plenum Floor Entrance
4	821305	1	Plenum Door Assembly (includes handle)
5	830126	1	Door Handle
6	475057	2	Right Hand Support Gusset
7	475056	2	Left Hand Support Gusset
8	821659	2	Plenum Support Weldment
9	833727	1	Burner Shroud Support
10	833221	2	Floor Plate
11	475169	1	Pipe Bushing Mount Weldment



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# CRAWL DOOR

Ref.	Part No.	Qty.	Description
1	830125	2	Crawl Door Cover
2	830126	2	Door Handle
3	830127	2	Door Chain
4	440504	2	Crawl Door Frame
5	830114	2	Crawl Door Top
6	830115	2	Crawl Door Bottom
7	830116	2	Top Filler Angle
8	830117	2	Bottom Filler Angle
9	475210	2	"S" Hook
10	836427	2	Decal - "Notice-Use This Door, etc."
11	836425	2	Decal - "Caution-Inspect Interior, etc."
12	837667	2	Decal - "Caution-Do Not Enter, etc."

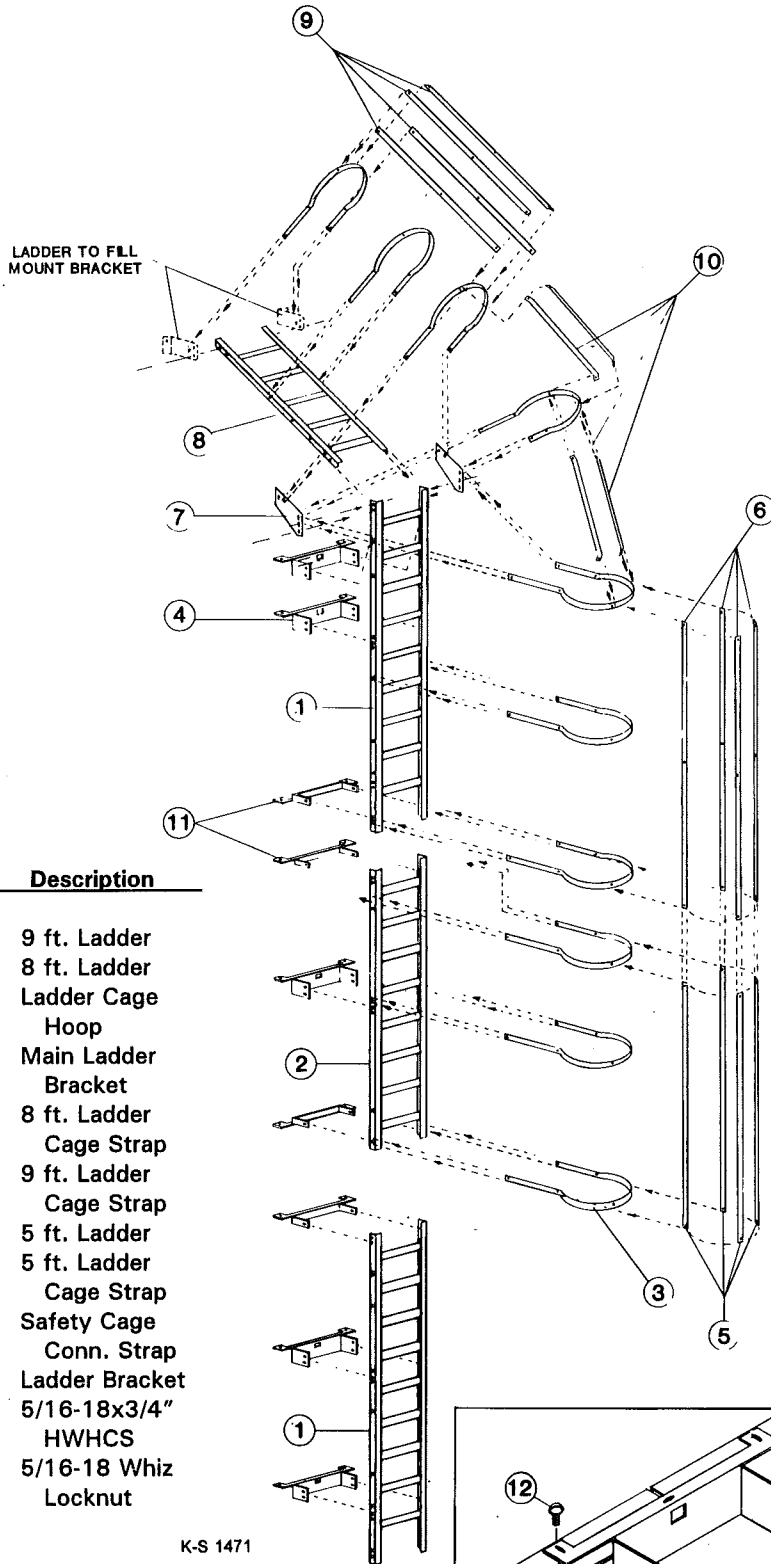


K81347



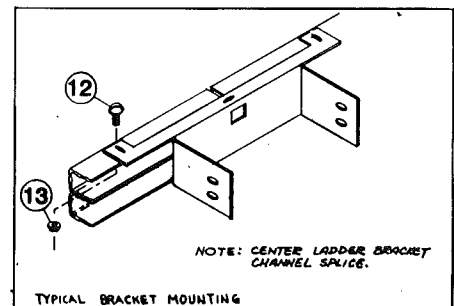
# OUTSIDE LADDER & SAFETY CAGE ASSEMBLY

10630 Shown



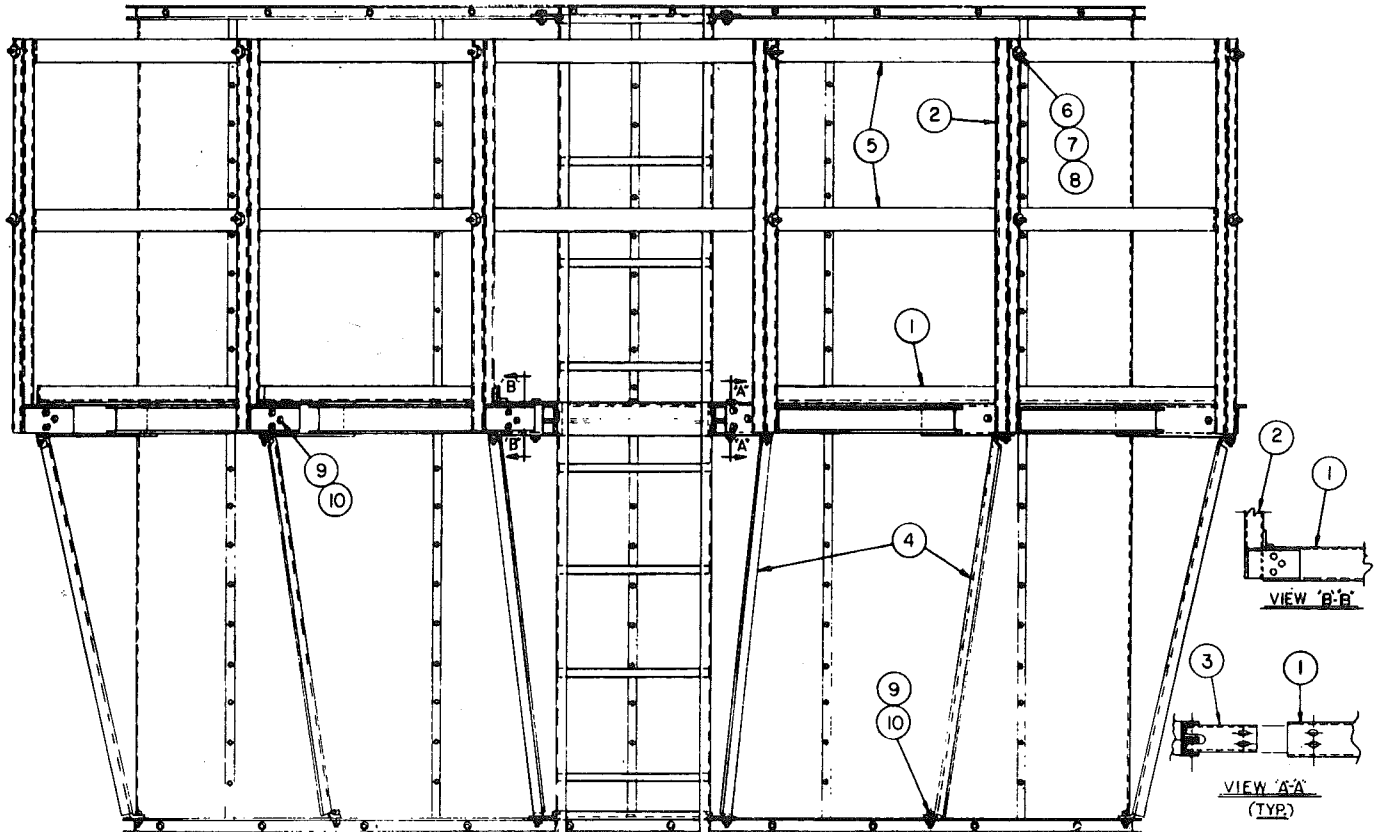
Ref. Part No.	Qty. 104	Qty. 105	Qty. 106	Qty. 107	Description
1 475951	2	1	2	1	9 ft. Ladder
2 475062	0	1	1	2	8 ft. Ladder
3 1282015	7	10	10	13	Ladder Cage Hoop
4 475394	4	4	5	5	Main Ladder Bracket
5 475066	0	4	4	0	8 ft. Ladder Cage Strap
6 1282017	4	0	4	0	9 ft. Ladder Cage Strap
8 475060	1	2	1	2	5 ft. Ladder
9 475067	4	8	4	8	5 ft. Ladder Cage Strap
10 475090	4	4	4	4	Safety Cage Conn. Strap
11 475352	2	4	4	6	Ladder Bracket
12 837524	110	110	110	110	5/16-18x3/4" HWHCS
13 0008169	110	110	110	110	5/16-18 Whiz Locknut

K-S 1471



# OUTSIDE WALKWAY ASSEMBLY #475345

(Optional)

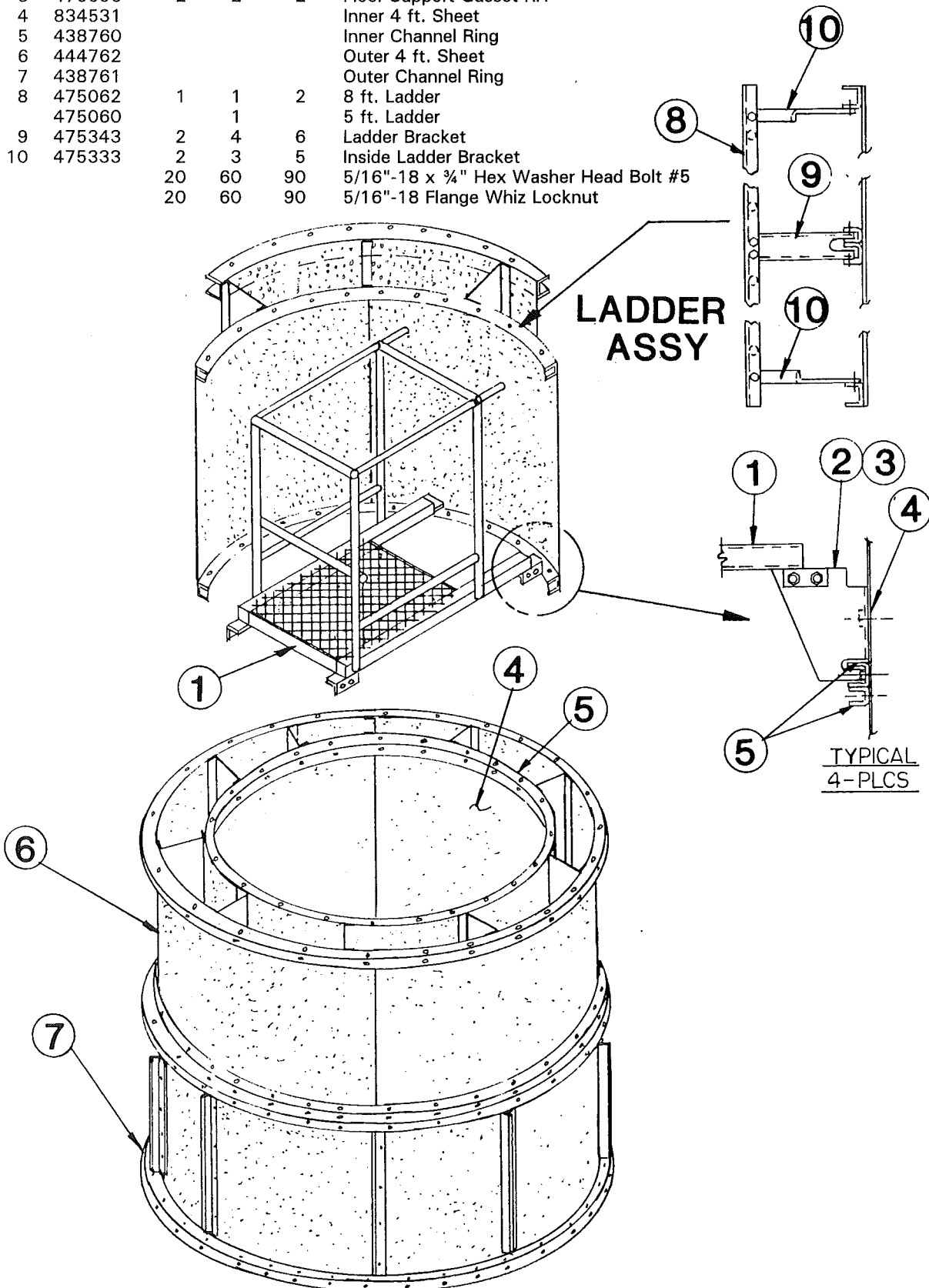


**NOTE:** Quantities shown are for (1) Walkway Assembly

Ref.	Part No.	Qty.	Description
1	475348	5	Walkway Floor Section
2	475347	16	Upright Post Weldment
3	475343	16	Floor Mounting Bracket
4	475342	16	Walkway Diagonal Support
5	475353	8	Walkway Hand Rail
6	097121	34	3/8-16 x 2 3/4" Hex Head Capscrew
7	095013	34	3/8 Flatwasher
8	434111	34	3/8-16 Flange Whiz Locknut
9	837524	170	5/16-18 x 3/4" HWH Screw
10	434632	170	5/16-18 Flange Whiz Locknut

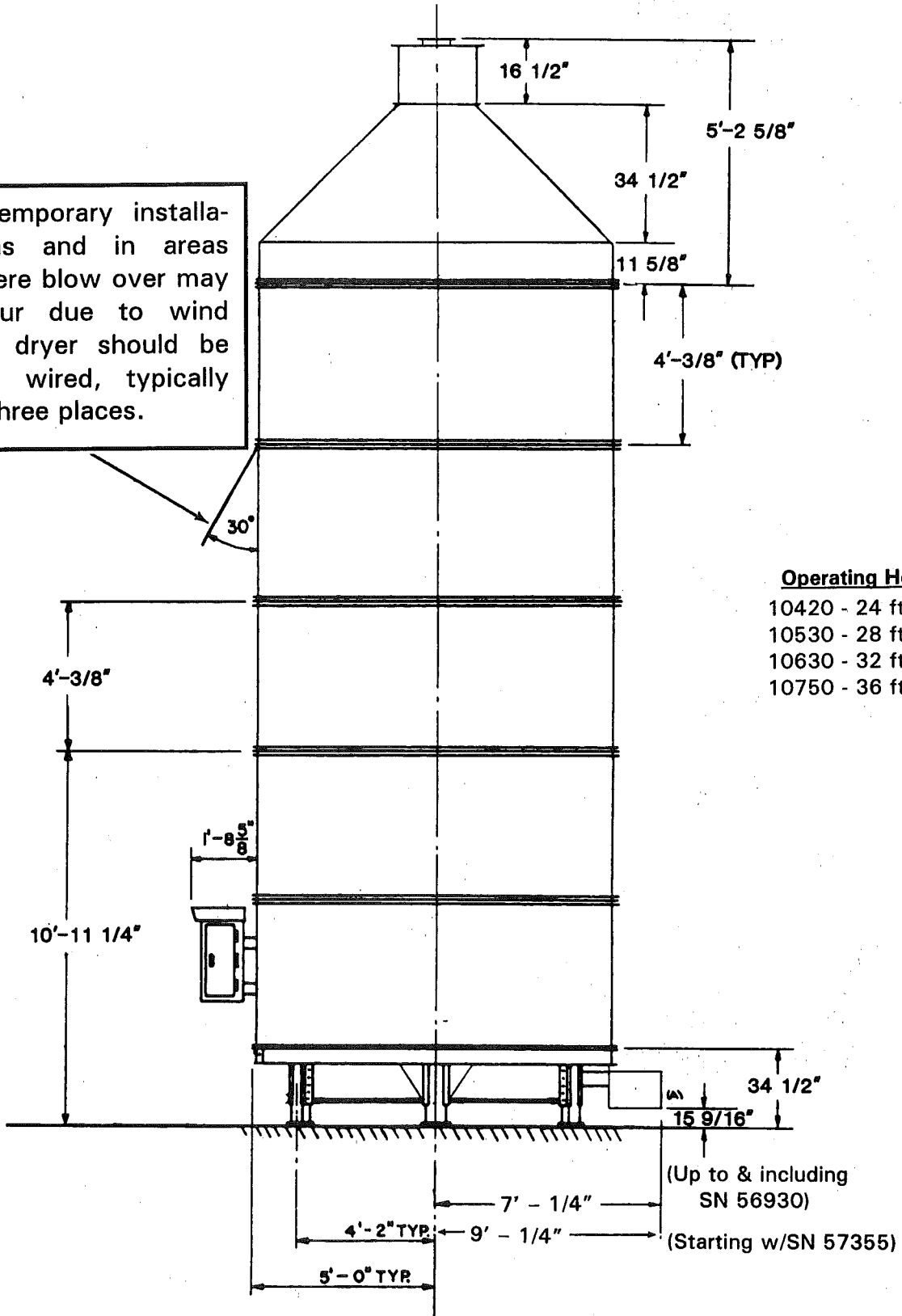
# CLEAN-OUT WALKWAY & LADDER - 10 FT.

Ref.	Part No.	10530 Qty.	10630 Qty.	10750 Qty.	Description
1	475330	1	1	2	Cleaning Walkway
2	475057	2	2	2	Floor Support Gusset LH
3	475056	2	2	2	Floor Support Gusset RH
4	834531				Inner 4 ft. Sheet
5	438760				Inner Channel Ring
6	444762				Outer 4 ft. Sheet
7	438761				Outer Channel Ring
8	475062	1	1	2	8 ft. Ladder
	475060		1		5 ft. Ladder
9	475343	2	4	6	Ladder Bracket
10	475333	2	3	5	Inside Ladder Bracket
		20	60	90	5/16"-18 x 3/4" Hex Washer Head Bolt #5
		20	60	90	5/16"-18 Flange Whiz Locknut



# DIMENSION DATA

In temporary installations and in areas where blow over may occur due to wind the dryer should be guy wired, typically in three places.



**Operating Height**

10420	- 24 ft. 4 in.
10530	- 28 ft. 4 in.
10630	- 32 ft. 4 in.
10750	- 36 ft. 4 in.

10530 Model Shown

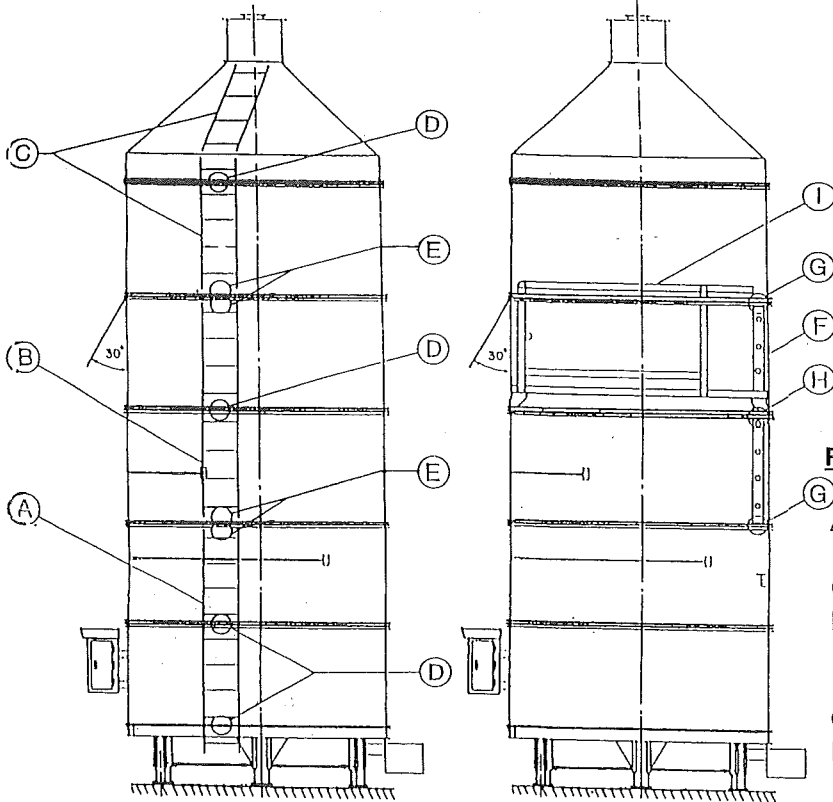
K-S 1479

## 10' DIAMETER DRYER

# OUTSIDE & INSIDE LADDERS, MOUNT BRACKETS & INSIDE WALKWAY PLATFORM LOCATION

**OUTSIDE VIEW**

**INSIDE VIEW**



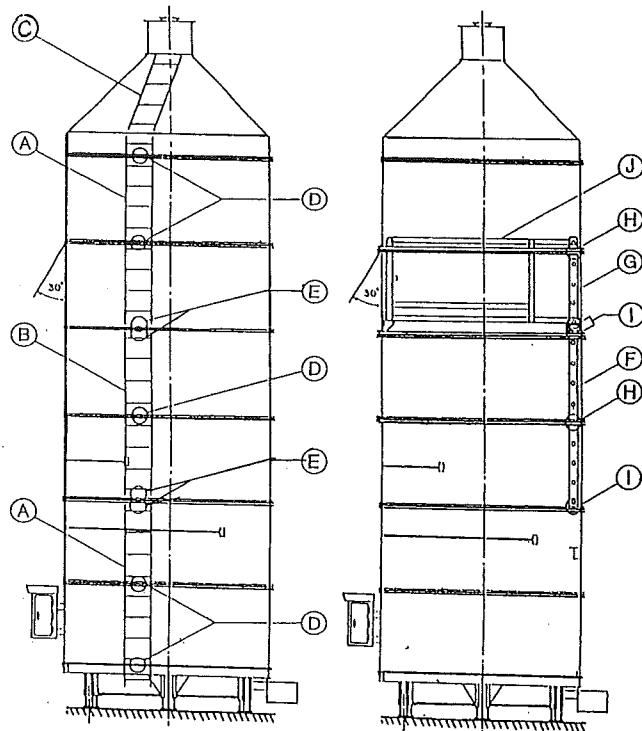
**MODEL 10530**

Ref.	Part No.	Qty.	Description
A	475061	1	9 Ft. Ladder
B	475062	1	8 Ft. Ladder
C	475060	2	5 Ft. Ladder
D	475351	4	Main Ladder Bracket
E	475352	4	Ladder Bracket
F	475062	1	8 Ft. Ladder
G	475333	2	Inside Ladder Bracket
H	475343	2	Ladder Bracket Channel
I	475330	1	Walkway Platform

**MODEL 10630**

**OUTSIDE VIEW**

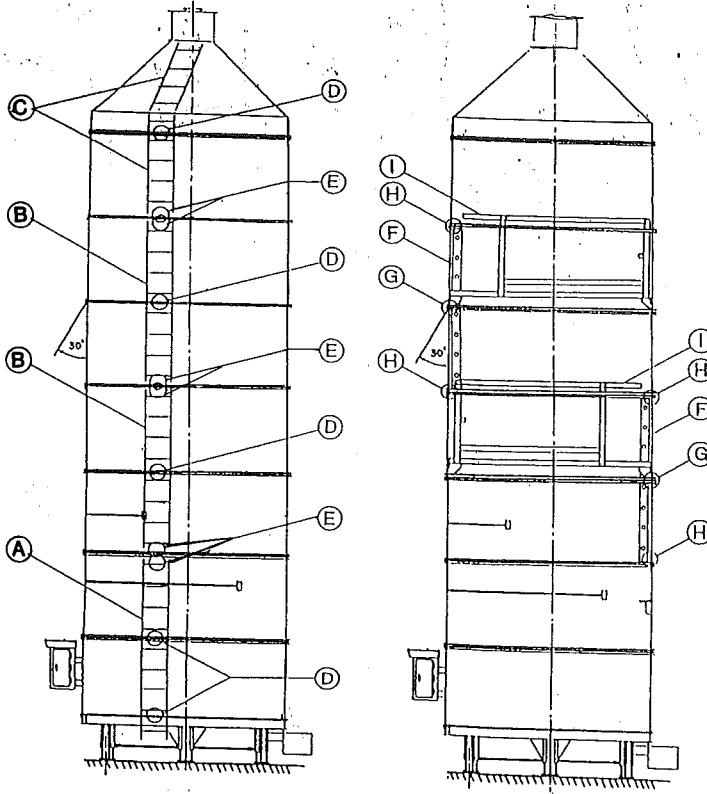
**INSIDE VIEW**



Ref.	Part No.	Qty.	Description
A	475061	2	9 Ft. Ladder
B	475062	1	8 Ft. Ladder
C	475060	1	5 Ft. Ladder
D	475351	5	Main Ladder Bracket
E	475352	4	Ladder Bracket
F	475062	1	8 Ft. Ladder
G	475060	1	5 Ft. Ladder
H	475343	4	Ladder Bracket Channel
I	475333	3	Inside Ladder Bracket
J	475330	1	Walkway Platform

**OUTSIDE VIEW**

**INSIDE VIEW**

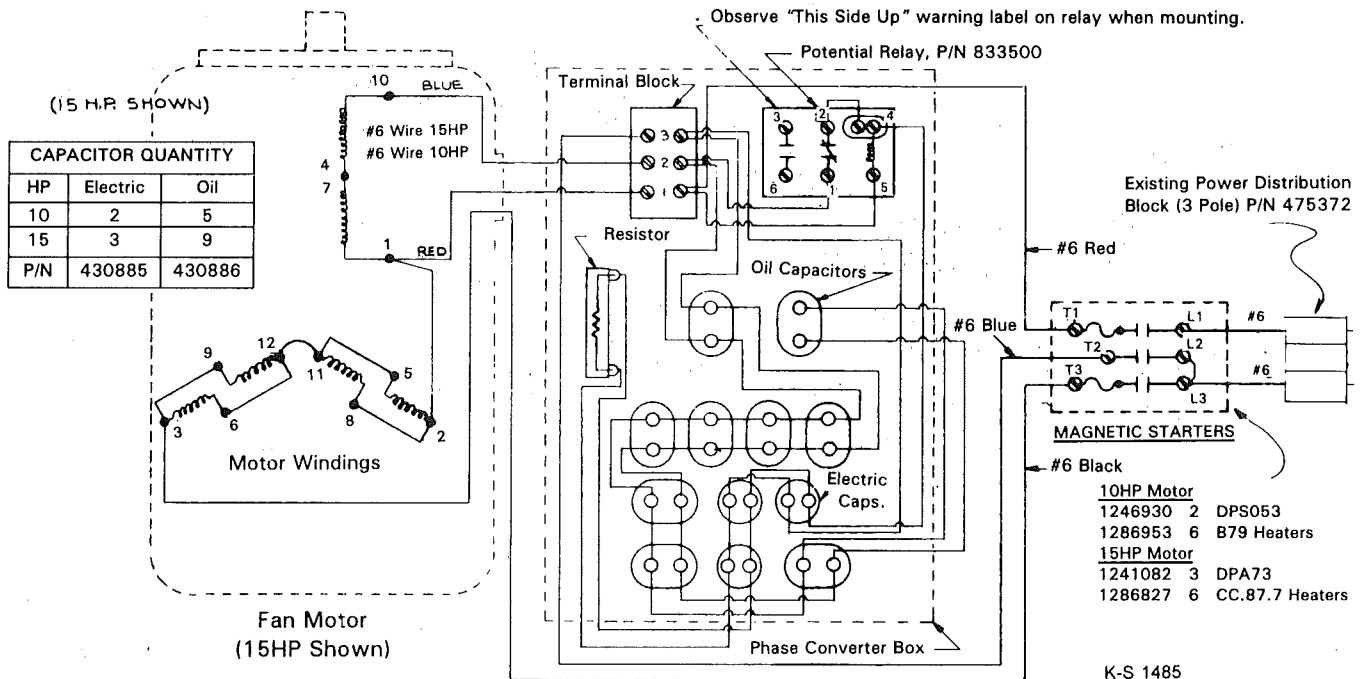


**MODEL 10750**

Ref.	Part No.	Qty.	Description
A	475061	1	9 Ft. Ladder
B	475062	2	8 Ft. Ladder
C	475060	2	5 Ft. Ladder
D	475351	5	Main Ladder Bracket
E	475352	6	Ladder Bracket
F	475062	2	8 Ft. Ladder
G	475343	4	Ladder Bracket Channel
H	475333	2	Inside Ladder Bracket
I	475330	1	Walkway Platform

**PHASE CONVERTER WIRING DETAILS**  
**230 VAC - 1Ø 10 OR 15 HP - 3Ø - 230 VOLT MOTOR**

To reverse motor rotation interchange 1 and 10.



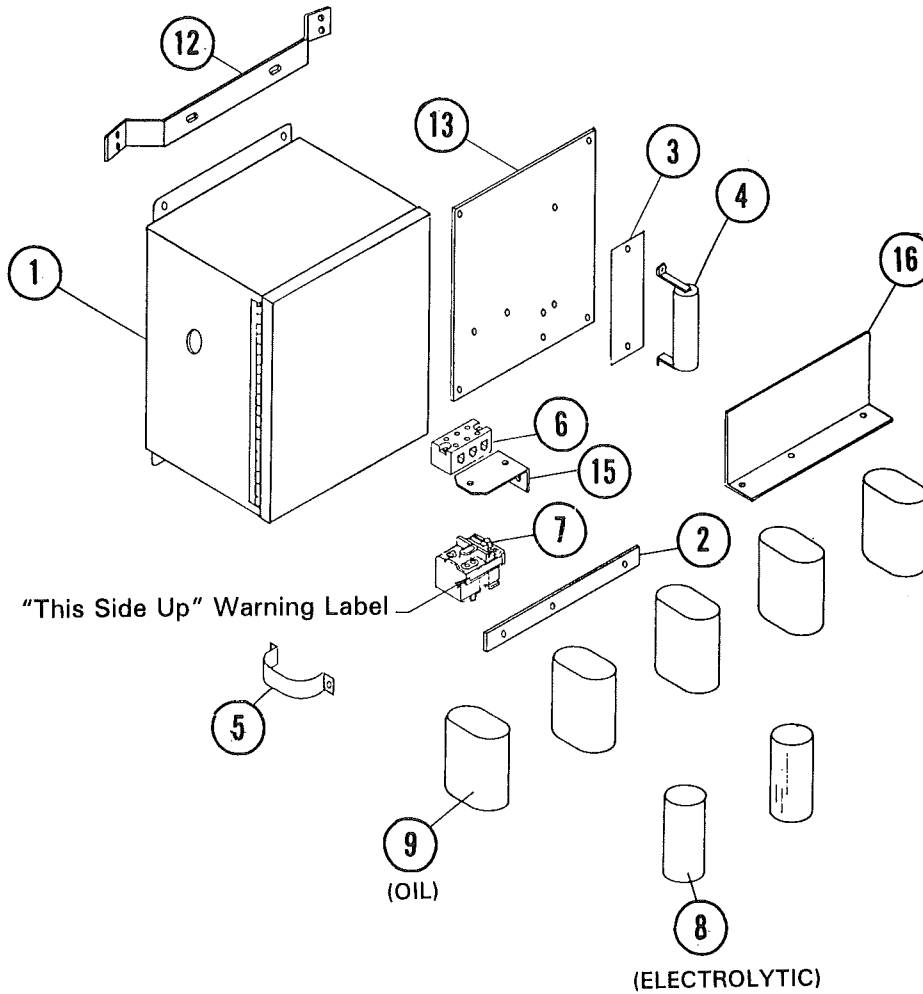
# 230VAC 1Ø

## PHASE CONVERTER ASSEMBLY

### 10HP 820796 – 15HP 821420

Ref.	Part No.	Qty.		Description
		10HP	15HP	
1	475253	1	1	Box
2	475256	1	2	Capacitor Hold Down
3	475257	1	1	Insulator, Resistor
4	837526	1	1	Resistor
5	475224	1	2	Capacitor Hold Down Strap
6	837527	1	1	Terminal Board
7	833500	1	1	Relay
8	430885	2	3	Capacitor (Electrolytic) 216 MFD
9	430886	5	9	Capacitor (Oil) 20 MFD
12	833411	4	4	Bracket, Phase Box Mounting
13	475255	1	1	Component Mount Plate
14	475259*	A/R		Rubber Sponge Insulation
15	475260	1	1	Bracket, Terminal Board
16	833700	1	-	Bracket, Hold Down

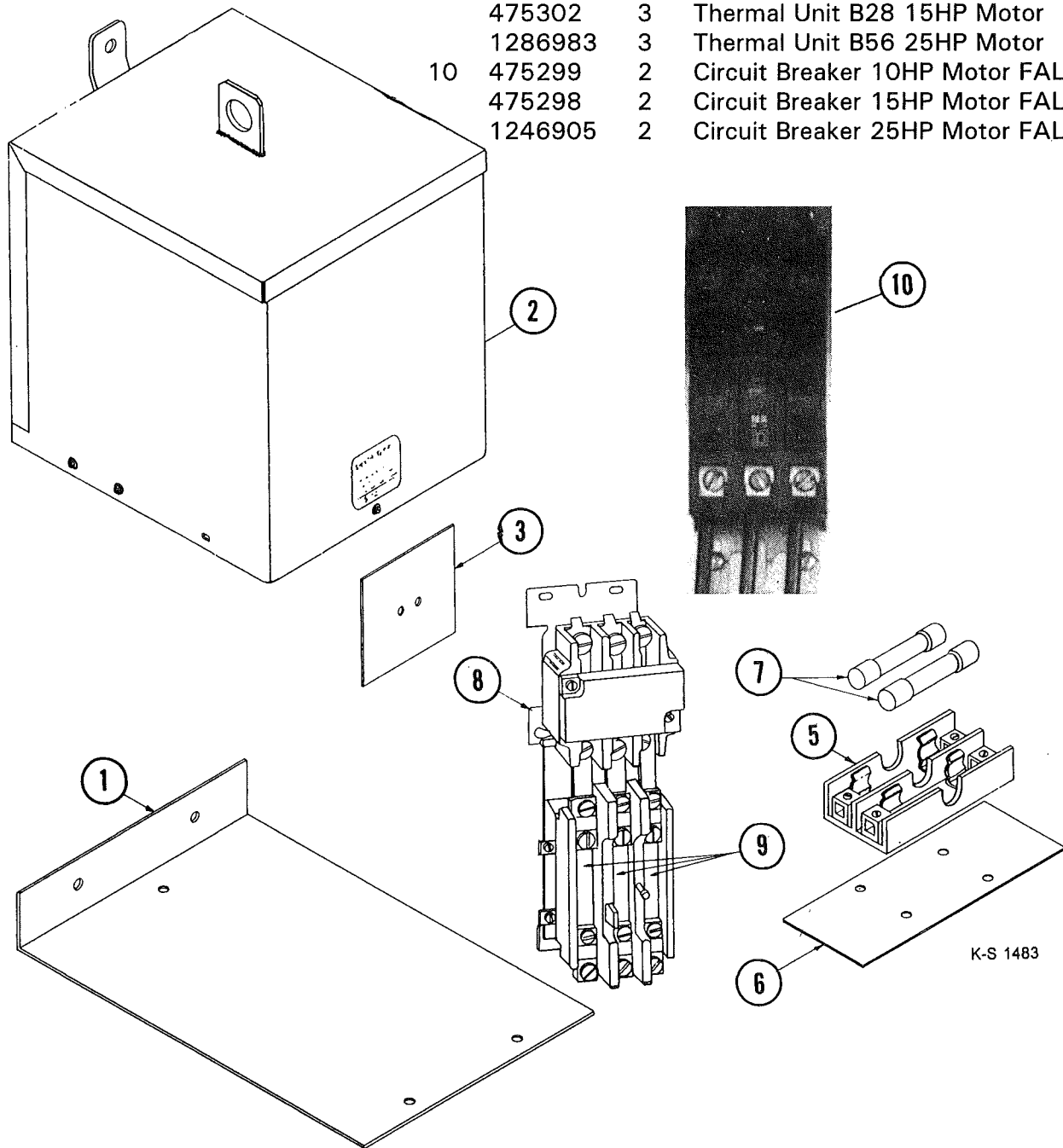
\*Item not shown.



KS1357

# 460 VOLT ELECTRICAL COMPONENTS

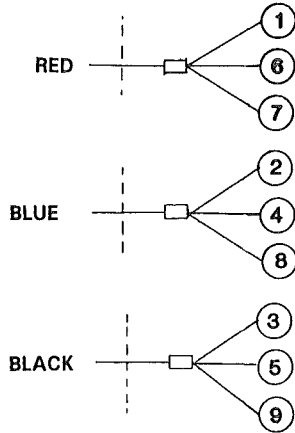
Ref.	Part No.	Qty.	Description
1	475220	1	Transformer Mount
2	475218	1	460 Volt Transformer
3	475207	1	Insulator Plate
5	475217	1	70 Amp 2 Pole Fuse Holder
6	475219	1	Insulator Fuse Holder
7	475204	2	35 Amp Ferrule Fuse
8	1246931	2	Starter 10HP Fan Motor DPS033
	1246931	2	Starter 15HP Fan Motor DPS033
	1246930	2	Starter 25HP Fan Motor DPS053
9	475301	3	Thermal Unit B17.5 10HP Motor
	475302	3	Thermal Unit B28 15HP Motor
	1286983	3	Thermal Unit B56 25HP Motor
10	475299	2	Circuit Breaker 10HP Motor FAL36025
	475298	2	Circuit Breaker 15HP Motor FAL36040
	1246905	2	Circuit Breaker 25HP Motor FAL36070



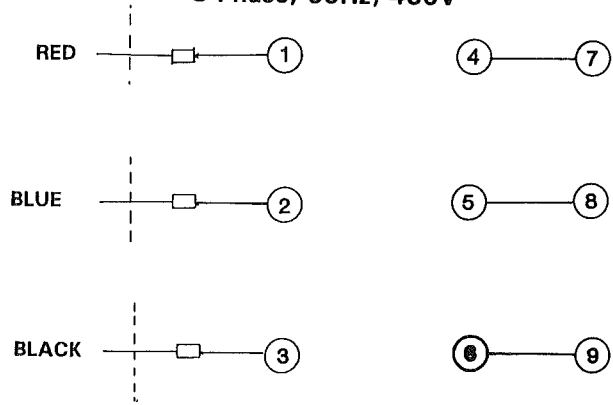


# Motor Wiring

**10750**  
25HP Baldor Fan Motor Wiring  
3 Phase, 60Hz, 230V



**10750**  
25HP Baldor Fan Motor Wiring  
3 Phase, 60Hz, 460V

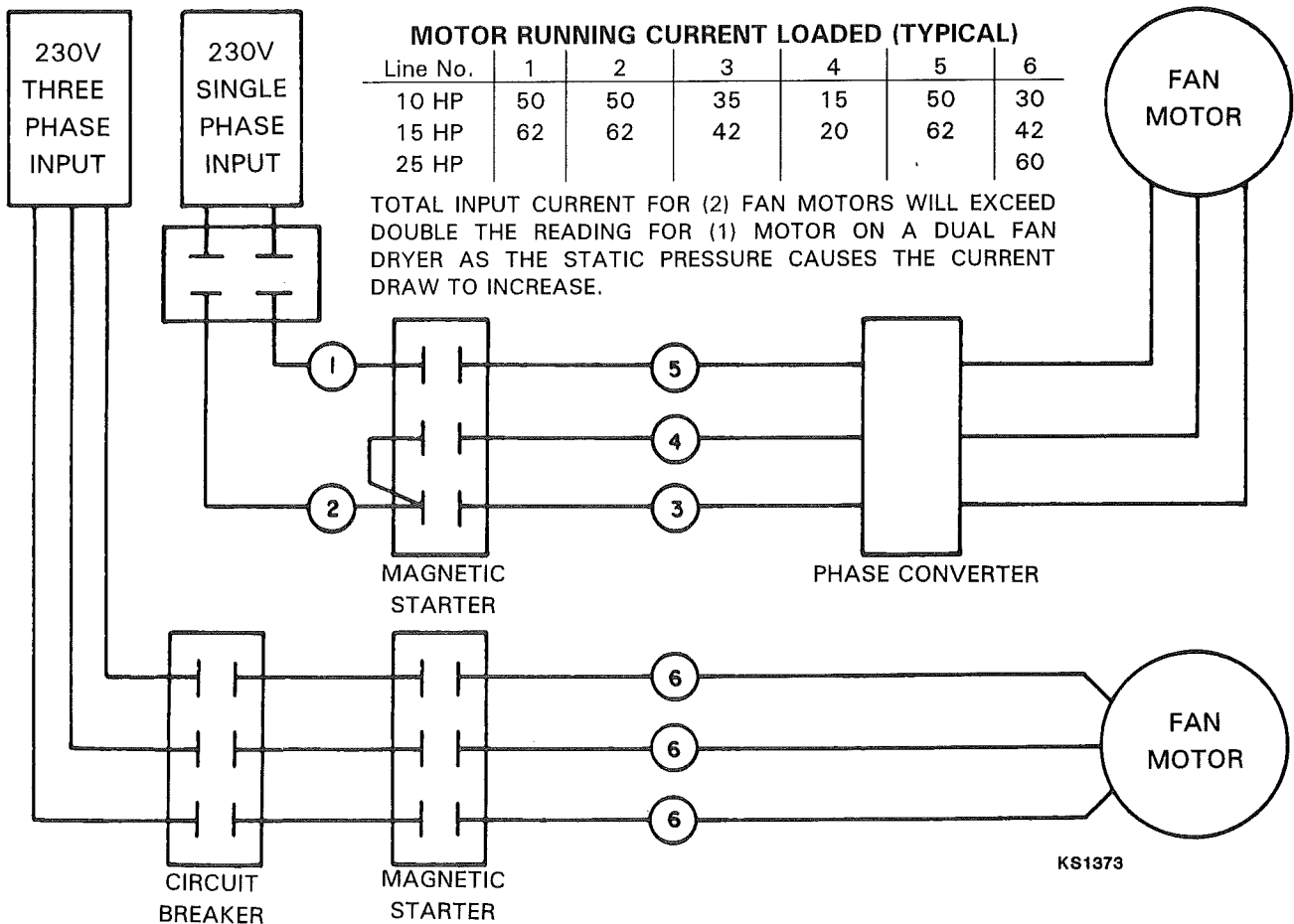


## Fan Motor Current Data

**MOTOR RUNNING CURRENT LOADED (TYPICAL)**

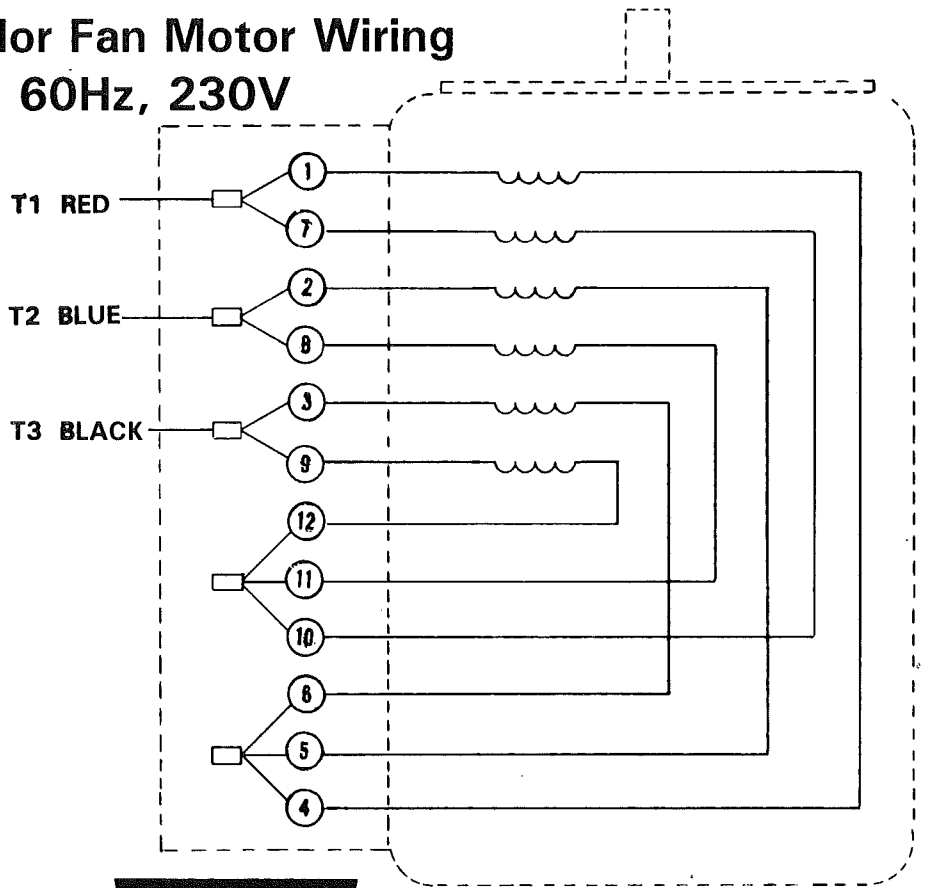
Line No.	1	2	3	4	5	6
10 HP	50	50	35	15	50	30
15 HP	62	62	42	20	62	42
25 HP						60

TOTAL INPUT CURRENT FOR (2) FAN MOTORS WILL EXCEED DOUBLE THE READING FOR (1) MOTOR ON A DUAL FAN DRYER AS THE STATIC PRESSURE CAUSES THE CURRENT DRAW TO INCREASE.

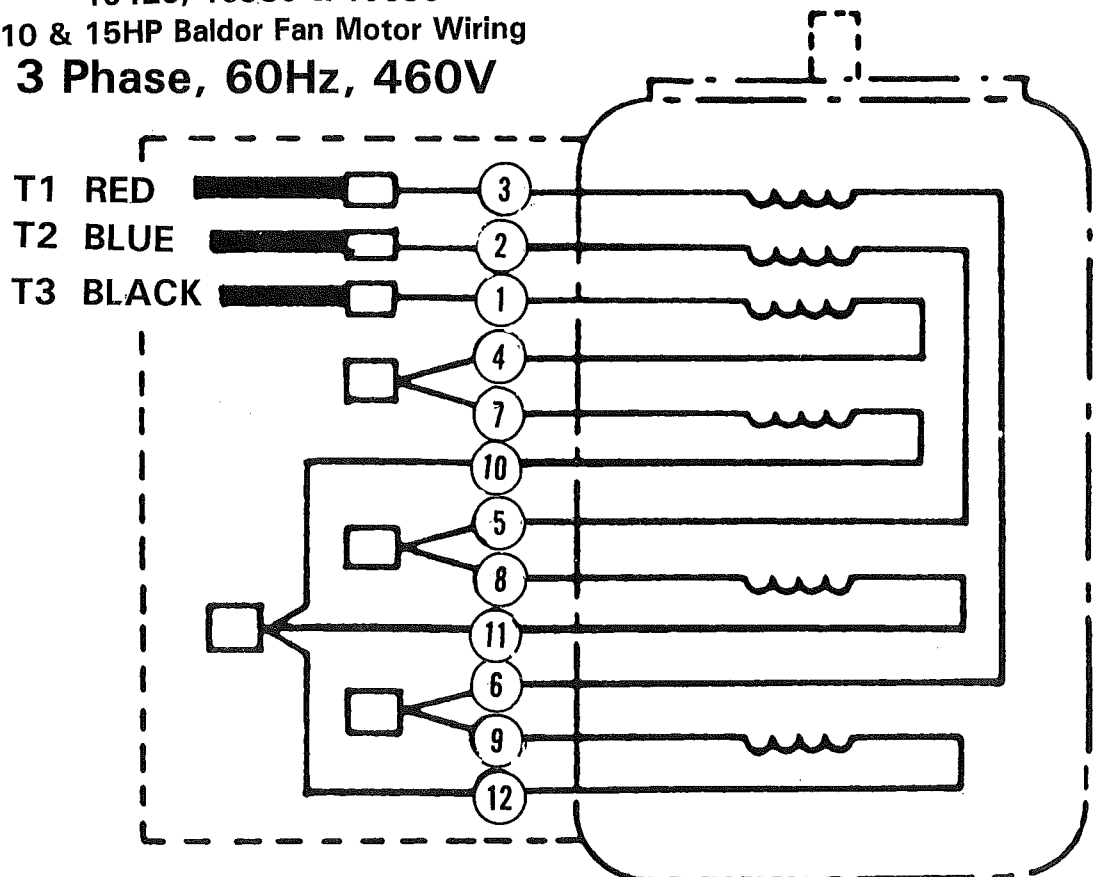


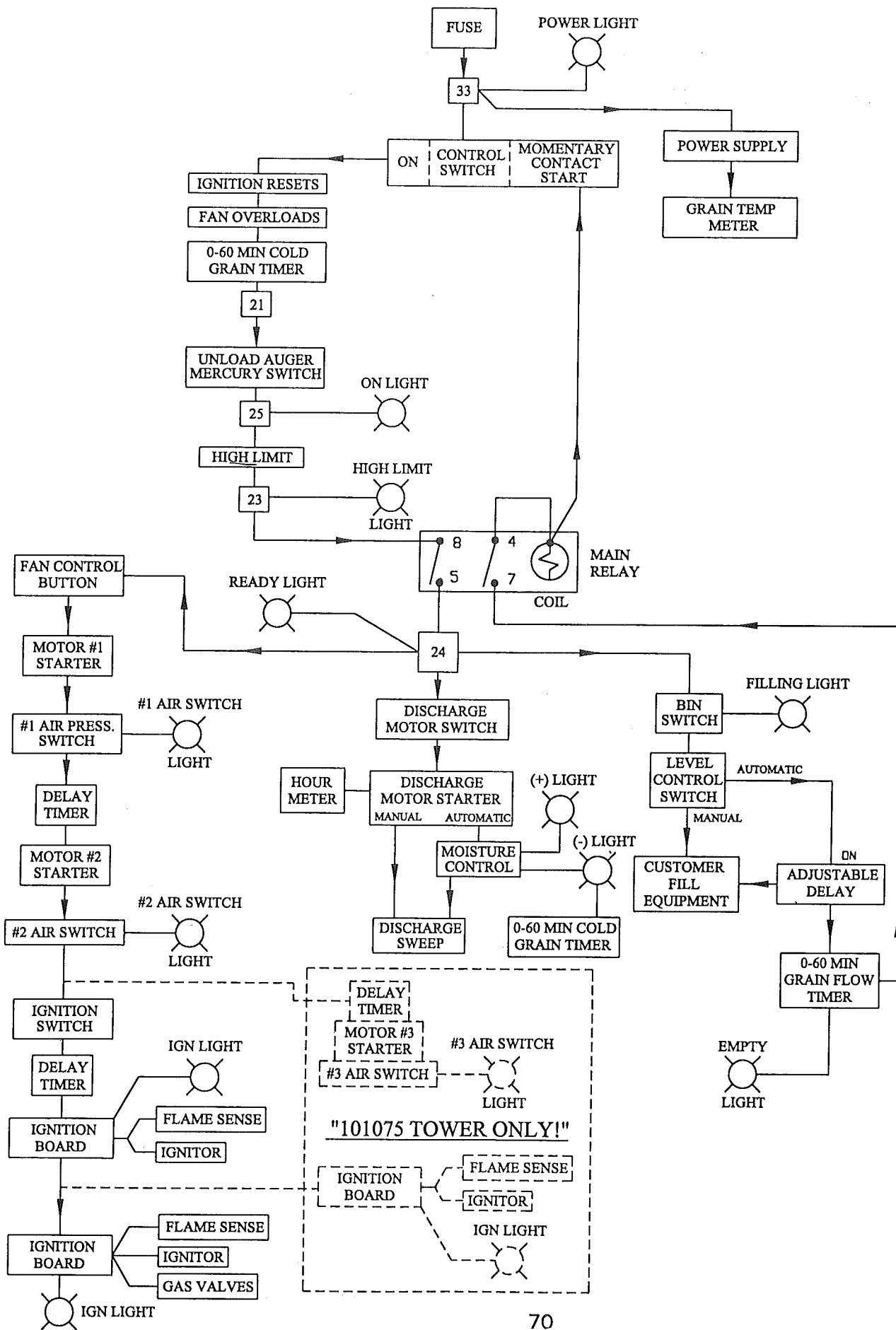
KS1373

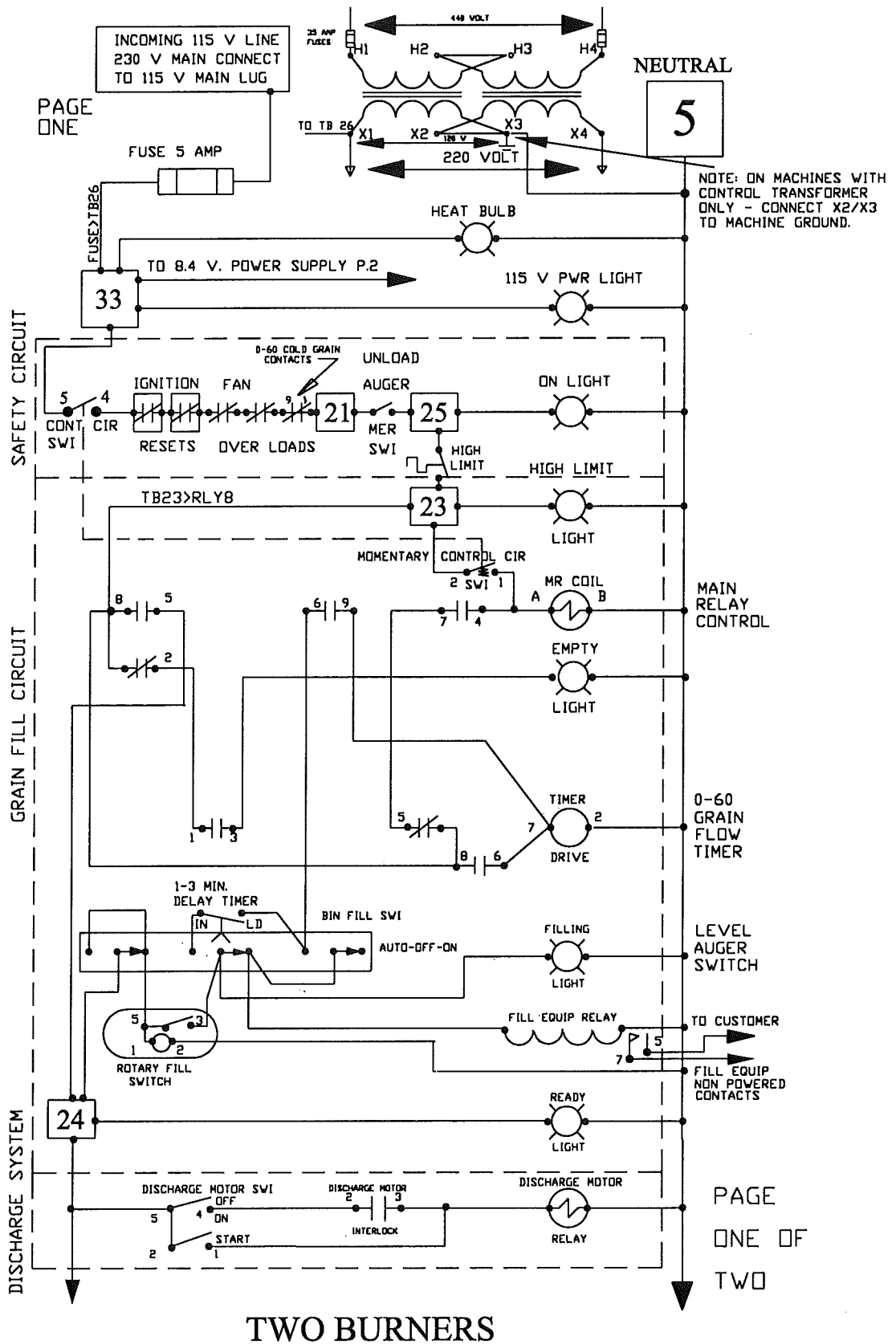
**10420, 10530 & 10630**  
**10 & 15HP Baldor Fan Motor Wiring**  
**3 Phase, 60Hz, 230V**



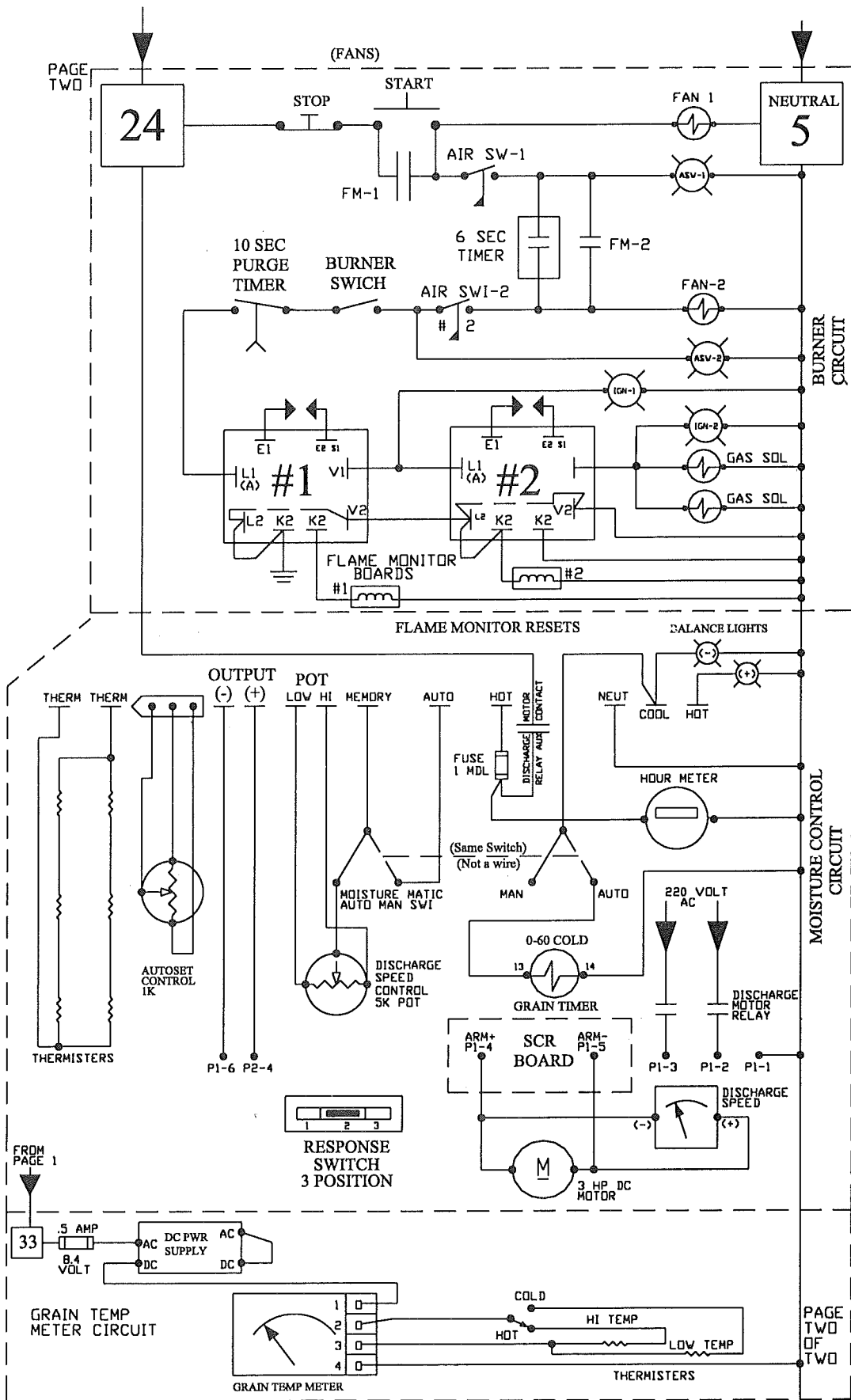
**10420, 10530 & 10630**  
**10 & 15HP Baldor Fan Motor Wiring**  
**3 Phase, 60Hz, 460V**





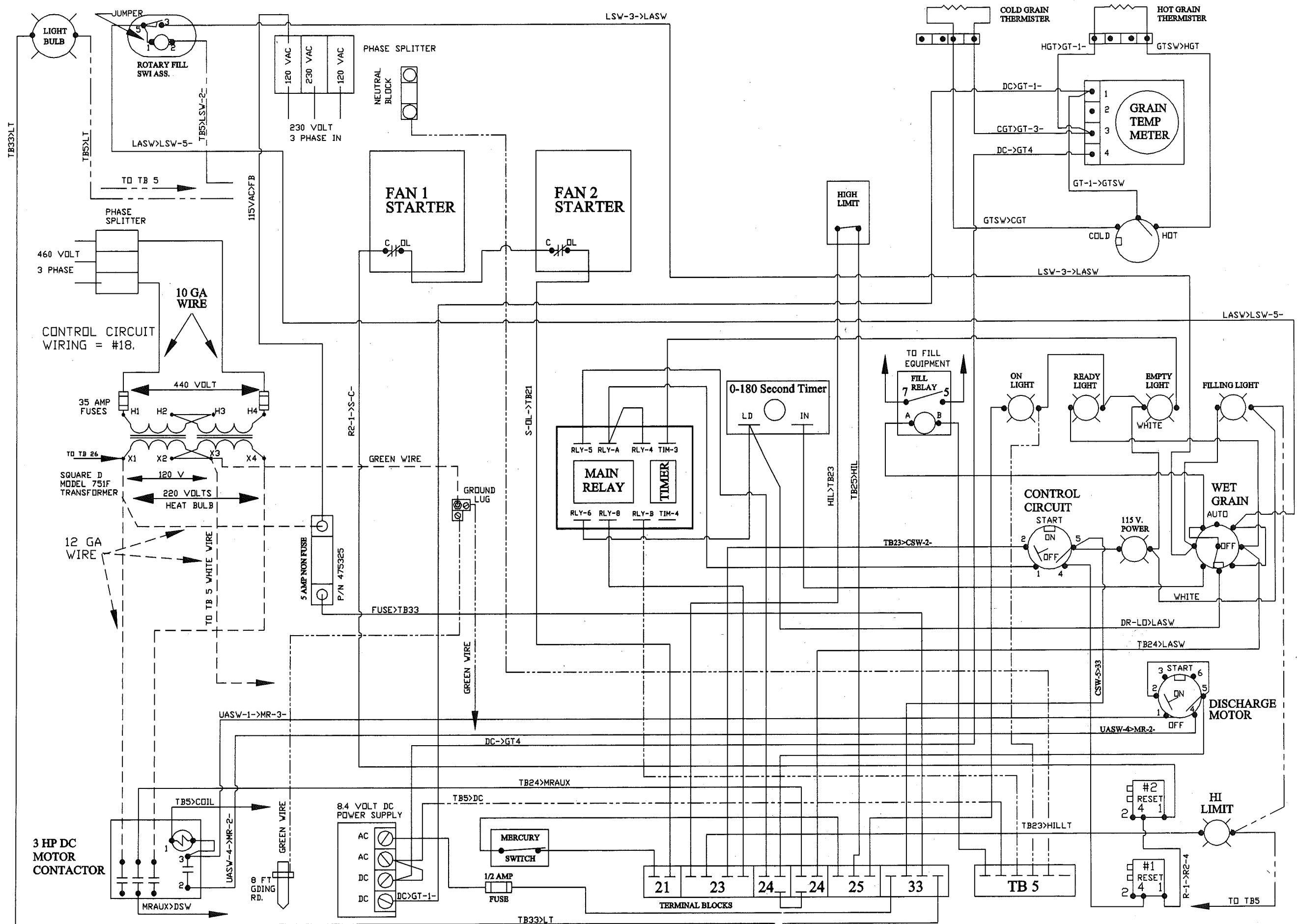


MC TOWER DRYER MODELS-10420 TO 10750	SAFETY, GRAIN FLOW & DISCHARGE SYSTEM CIRCUIT.	SCHEMATIC		START S/N #52695
		1615012	REVISION 10-25-2000	PG.2

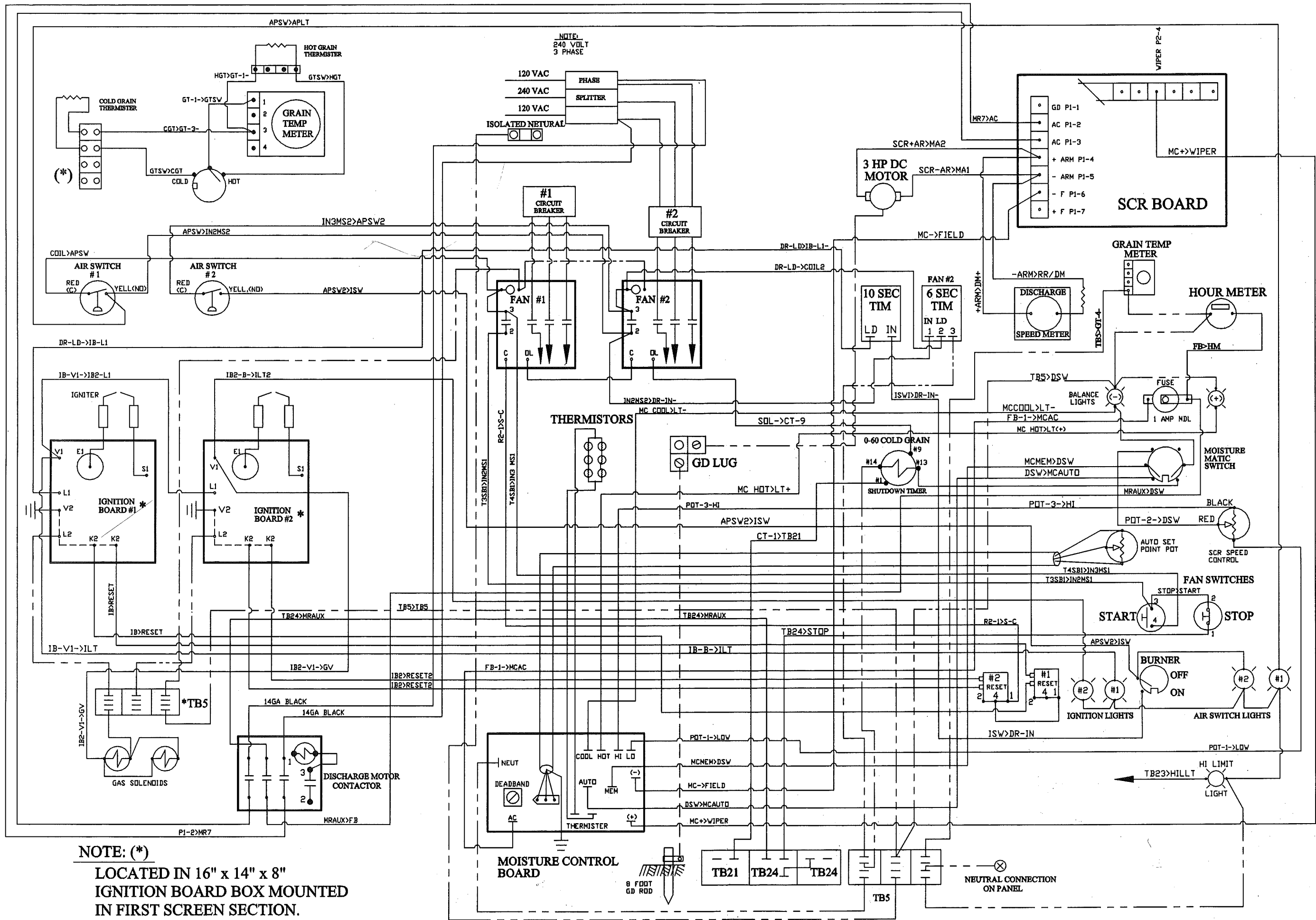


### TWO BURNERS

<b>MC TOWER DRYER</b> MODELS-10420 TO 10750	BURNER, MOISTURE CONTROL & TEMP- ERATURE CIRCUIT	SCHEMATIC	START S/N #52695	
		1615012	REVISION 11-16-2000	PG.3

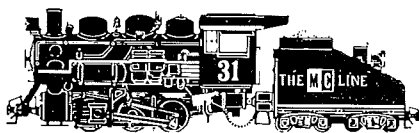
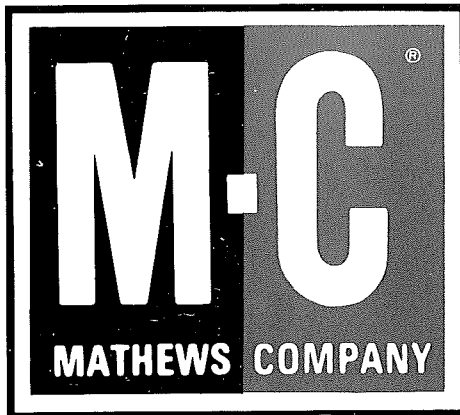


START S/N #25695	PG.2
POINT TO POINT ELECT DRAWING	REVISION 10-18-2000
<b>1615013</b>	
<b>MC TOWER DRYER - 2 BURNER MODELS - 10420 to 10750</b>	



NOTE: (\*)  
 LOCATED IN 16" x 14" x 8"  
 IGNITION BOARD BOX MOUNTED  
 IN FIRST SCREEN SECTION.

START S/N #55974	POINT TO POINT 1615013	FAN/BURNER CIRCUITS	<b>MC TOWER DRYER        MODELS - 10420 to 10750</b>
REVISIONS 1-2-2001	PG.3		



*Iron Horse Quality*