



# **AD-575**

## **Installation / Service / Parts**

### **Manual**

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ADC Part No. 450066

IMPORTANT

RETAIN THIS MANUAL IN A SECURE PLACE FOR FUTURE REFERENCE.

THE PURCHASER SHOULD CONSULT THE LOCAL GAS SUPPLIER FOR PROPER INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE USER SMELLS GAS. THE INSTRUCTIONS SHOULD BE POSTED IN A PROMINENT LOCATION.

INSTALL THIS DRYER IN ACCORDANCE WITH LOCAL CODES AND/OR THE NATIONAL FUEL GAS CODE ANSI Z223.1-1980.

DRYER MUST BE ELECTRICALLY GROUNDED IN ACCORDANCE WITH LOCAL CODES AND/OR THE NATIONAL ELECTRIC CODE ANSI/NFPA NO. 70-1981.

DRYER MUST BE PROPERLY GROUNDED

"REPLACEMENT PARTS AND SERVICE ARE AVAILABLE FROM YOUR DISTRIBUTOR. IF THE DISTRIBUTOR IS UNKNOWN, CONTACT THE AMERICAN DRYER CORPORATION FACTORY." (WHEN CONTACTING FACTORY, BE SURE TO HAVE DRYER MODEL AND SERIAL NUMBER AVAILABLE)

ALL DRYERS ARE INSPECTED AND TESTED PRIOR TO SHIPMENT. EFFICIENCY AND MACHINE LIFE WILL DEPEND GREATLY ON PROPER INSTALLATION AND MAINTENANCE.

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CAUTION-FOR YOUR SAFETY DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

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SECTION I  
INSTALLATION

1. REASSEMBLY OF DRYER

ALWAYS KEEP DRYER IN AN UPRIGHT POSITION WHEN MOVING IT.

THE AD-575 DRYER IS MOST OFTEN SHIPPED WITH THE TOP MODULE REMOVED. AT INSTALLATION, THIS MODULE MUST BE PUT ON TOP OF THE DRYER AND REBOLTED TO THE DRYER WITH THE SIX 3/8-16 BOLTS SUPPLIED WITH THE DRYER.

ALL OF THE ELECTRICAL CONNECTIONS BETWEEN THE TOP MODULE AND THE DRYER ARE MADE BY QUICK CONNECT PLUGS. GAS DRYERS HAVE THREE PLUGS WHICH MUST BE RECONNECTED, AND STEAM DRYERS HAVE ONLY ONE PLUG.

FOR SOME INSTALLATIONS THE DRYER IS SHIPPED IN THREE PIECES, WITH THE BASE AS WELL AS THE TOP MODULE REMOVED. SO, AT INSTALLATION, THE DRYER MUST BE LIFTED ONTO THE BASE AND REBOLTED WITH SIX 3/8-16 BOLTS. ALL ELECTRICAL CONNECTIONS BETWEEN THE BASE AND DRYER ARE MADE BY TWO QUICK CONNECT PLUGS. THE SET OF V-BELTS RUNNING FROM THE IDLER SHAFT TO THE TUMBLER SHAFT MUST BE INSTALLED, AND THE BELT GUARD REATTACHED TO THE BACK OF THE DRYER.

2. LOCATION OF DRYER

THE AD-575 MODEL DRYER IS DESIGNED SO THAT ALL SERVICING CAN BE DONE FROM THE FRONT AND BACK. THE DRYERS CAN BE LOCATED SIDE BY SIDE OR NEXT TO A WALL. AT LEAST 2 FEET OF SPACE SHOULD BE LEFT IN BACK OF THE DRYER TO ALLOW FOR SERVICING ACCESS.

THE DRYER MUST BE LAGGED TO THE FLOOR.

IT IS VERY IMPORTANT TO MOUNT THE DRYER IN A LEVEL POSITION. IF THE DRYER NEEDS TO BE SHIMMED, USE SHIMS THAT ARE THE SAME SIZE AS THE DRYER'S BASE FOOT.

3. SERVICE CONNECTIONS

A. ELECTRICAL

THE ELECTRICAL POWER SUPPLY CONNECTION TO THE DRYER IS MADE INTO THE ELECTRICAL BOX WHICH IS LOCATED IN THE REAR OF THE DRYER'S BASE. TO GET INTO THE BOX, REMOVE ITS SCREW-ON COVER. CONNECT THE SUPPLY POWER WIRES INTO THE POWER DISTRIBUTION BLOCK WHICH IS LOCATED AT THE LOWER CENTER OF THE BOX'S BACK.

THE POWER DISTRIBUTION BLOCK HAS 3 POLES FOR CONNECTING THE 3 LINES OF 3 PHASE POWER. IF THE DRYER WAS BUILT TO RUN ON 3 PHASE/4 WIRE POWER, CONNECT THE NEUTRAL WIRE INTO THE 3-POSITION TERMINAL BLOCK, LOCATED ABOVE THE POWER DISTRIBUTION BLOCK.

BEFORE TURNING ON POWER TO THE DRYER, MEASURE THE SUPPLY VOLTAGE TO ENSURE THAT IT MATCHES THE DRYER'S SPECIFIED INPUT VOLTAGE. THIS INPUT VOLTAGE IS MARKED ON THE ALUMINUM DATA TAG, LOCATED ON THE INNER RIGHT WALL OF THE DRYER'S RIGHT HAND CONTROL BOX. SUPPLYING THE WRONG VOLTAGE OR LOW VOLTAGE WILL RESULT IN SERIOUS DAMAGE TO THE DRYER OR LEAD TO POOR DRYER PERFORMANCE. A FUSED DISCONNECT SWITCH FOR THE SUPPLY POWER MUST BE PROVIDED NEAR THE DRYER.

<u>MODEL</u>	<u>SUPPLY VOLTAGE</u>	<u>MINIMUM DISCONNECT SWITCH FUSE RATING</u>	<u>APPROX. AMP DRAW</u>
ADG-575 GAS DRYER	208V, 3PH, 60HZ	25 AMPS	12.5 AMPS
	230V, 3PH, 60HZ	25 AMPS	11.5 AMPS
	380V, 3PH, 50HZ	15 AMPS	7.5 AMPS
	460V, 3PH, 60HZ	15 AMPS	6.0 AMPS
ADS-575 STEAM DRYER	208V, 3PH, 60HZ	35 AMPS	19.0 AMPS
	230V, 3PH, 60HZ	35 AMPS	17.0 AMPS
	380V, 3PH, 50HZ	20 AMPS	10.5 AMPS
	460V, 3PH, 60HZ	20 AMPS	8.5 AMPS

SIZE THE SAFETY DISCONNECT SWITCH AND THE POWER SUPPLY WIRES PER THE AMP RATINGS LISTED UNDER THE MINIMUM DISCONNECT SWITCH FUSE RATING COLUMN OF THE ABOVE CHART. DO NOT USE THE DRYER'S APPROXIMATE AMP DRAW TO SIZE WIRING AND FUSING.

ELECTRICAL CONNECTIONS SHOULD BE MADE BY QUALIFIED PERSONNEL ONLY.

INSTALL DRYER PER ALL RELEVANT ELECTRICAL CODES.

DRYER MUST BE ELECTRICALLY GROUNDED FOR PROPER OPERATION. GROUND EACH DRYER INDIVIDUALLY. A COPPER OR BRASS STAKE DRIVEN INTO THE GROUND IS THE BEST GROUNDING METHOD.

CAUTION: USE ONLY COPPER CABLE FOR ELECTRICAL HOOKUP. USE OF ALUMINUM CABLE WILL VOID YOUR WARRANTY.

#### B. EXHAUST AIR DUCTING

PLANT DUCTING MUST BE KEPT AS SHORT AS POSSIBLE, AND THE NUMBER OF BENDS MUST BE KEPT TO A MINIMUM. AVOID 90° BENDS; IF POSSIBLE, USE 45 DEGREE BENDS. THE RADIUS OF ALL ELBOWS SHOULD BE AT LEAST 1-1/2 TIMES THE DUCT DIAMETER. THE END OF THE DUCT THAT LEAVES THE BUILDING MUST BE PROTECTED FROM THE WEATHER. USE EITHER A HOOD OR A TURN DOWN TO PROTECT THE END

OF THE DUCT. IF A TURNDOWN IS USED, LEAVE AT LEAST TWICE THE DUCT'S DIAMETER (OR IF RECTANGULAR DUCT IS USED, LEAVE TWICE THE SMALLEST DIMENSION OF THE DUCT FACE) AS CLEARANCE TO THE NEAREST OBSTRUCTION. CLEANOUT DOORS MUST BE PROVIDED IN THE PLANT'S EXHAUST DUCTING, SO THAT ANY LINT BUILDUP CAN BE REMOVED FROM THE DUCTING.

THE DRYER CAN BE EXHAUSTED FROM THE TOP OR FROM THE BACK.

<u>DRYER MODEL</u>	<u>TOP EXHAUST CONNECTION</u>	<u>REAR EXHAUST CONNECTION</u>
ADG-575	12" DIA. ROUND	6-5/8"X16-1/8" RECTANGULAR
ADS-575	14" DIA. ROUND	7-13/16"X14-11/16" RECT.

THE PLANTS EXHAUST DUCT MUST BE AT LEAST AS LARGE AS THE DRYER'S EXHAUST CONNECTION.

IF THE PLANT'S EXHAUST DUCTING HAS MORE THAN ONE 90 DEGREE ELBOW AND IS LONGER THAN 20 FEET, RUN 16" DIAMETER FOR GAS DRYERS AND 18" DIAMETER FOR STEAM DRYERS.

AVOID USING SCREWS ON ANY OBJECTS WHICH WILL PROTRUDE INSIDE THE EXHAUST DUCTING AND CATCH LINT.

AN EXTREMELY LONG RUN OF EXHAUST DUCTING OR EXHAUST DUCTING WITH MANY TURNS IN IT WILL RESULT IN REDUCED AIR FLOW THROUGH THE DRYER, CAUSING POOR DRYING PERFORMANCE. IF THIS IS THE CASE, AN AUXILIARY FAN MAY HAVE TO BE INSTALLED TO BOOST THE EXHAUST AIR FLOW.

C. GAS HOOKUP (GAS DRYERS ONLY)

THE 1" FPT GAS INLET CONNECTION IS LOCATED AT THE UPPER REAR OF THE DRYER. FOR NATURAL GAS THE SUPPLY PRESSURE DELIVERED TO THE DRYER MUST BE 7" WATER COLUMN, MINIMUM, AND 13" WATER COLUMN MAXIMUM. IF THE SUPPLY PRESSURE IS HIGHER THAN 13" WATER COLUMN, THEN AN EXTERNAL PRESSURE REDUCER MUST BE PUT INTO THE SUPPLY LINE TO REDUCE THE GAS PRESSURE BELOW 13" WATER COLUMN. FOR L.P. GAS DRYERS, THE PRESSURE DELIVERED TO THE DRYER MUST BE 10.5" TO 11" WATER COLUMN.

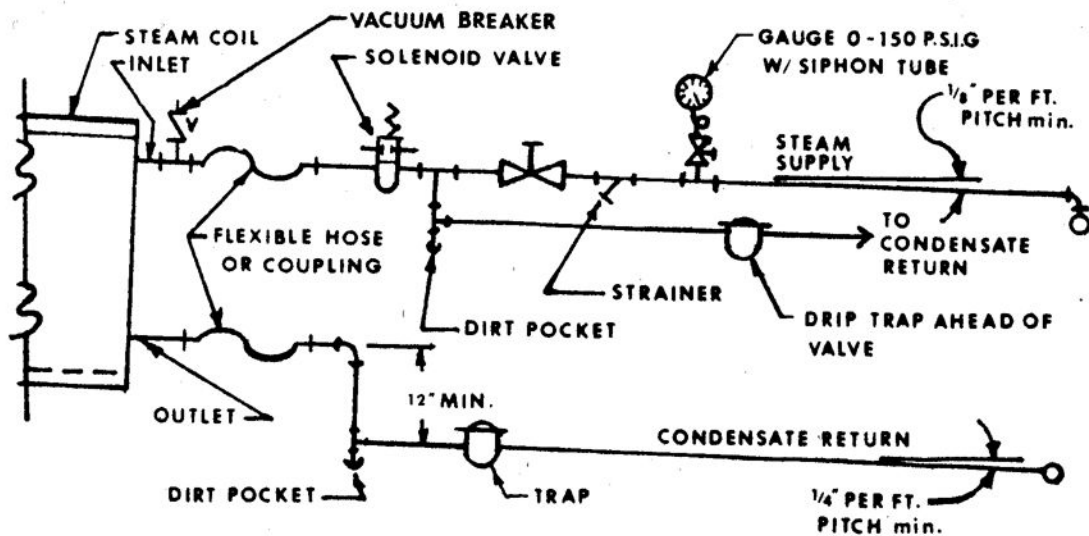
A SHUT-OFF VALVE IS SUPPLIED WITH THE DRYER FOR EASE OF SERVICING.

GAS CONNECTIONS SHOULD BE MADE BY QUALIFIED PERSONNEL ONLY.

NEVER CHECK FOR A GAS LEAK WITH A FLAME. USE A SOAPY WATER SOLUTION TO SPRAY ON PIPE JOINTS.

D. STEAM HOOKUP (STEAM DRYERS ONLY)

THE STEAM INLET CONNECTION OF THE STEAM COIL IS 1-1/2" MPT, AND THE CONDENSATE OUTLET CONNECTION IS 3/4" MPT. THE WORKING STEAM PRESSURE OF THE DRYER IS 125 PSI. SUPPLYING A LOWER PRESSURE TO THE DRYER WILL RESULT IN SLOWER DRYING TIMES.



**SUGGESTED STEAM COIL PIPING ARRANGEMENT**

FIG. 1

WHEN STEAM MAINS ARE LOWER THAN STEAM COIL, PITCH SUPPLY AND RETURN LINES DOWNWARD TO MAIN PIPES.

WHEN STEAM RETURN RUNS OVERHEAD, A CHECK VALVE MUST BE INSTALLED AFTER MAIN TRAP.

IT IS GOOD PRACTICE, AND YOU WILL SAVE ENERGY BY INSULATING THE STEAM SUPPLY PIPING.

1. STEAM SOLENOID ELECTRICAL HOOKUP - THE STEAM SOLENOID MUST BE WIRED INTO THE TERMINAL STRIP WHICH IS LOCATED AT THE TOP OF THE RIGHT HAND CONTROL BOX. THE SOLENOID MUST BE 110 VOLT, SINGLE PHASE.

#### E. AIR INTAKE

WHEN THE DRYER IS OPERATING, IT DRAWS IN ROOM AIR, HEATS IT, PASSES THIS AIR THROUGH THE TUMBLER, AND EXHAUSTS IT OUT OF THE BUILDING. THEREFORE, THE ROOM AIR MUST BE CONTINUALLY REPLENISHED FROM THE OUTDOORS. IF THE MAKE UP AIR IS INADEQUATE, DRYING TIME AND DRYING EFFICIENCY WILL BE ADVERSLY AFFECTED. YOU MAY HAVE IGNITION PROBLEMS AND SAIL SWITCH "FLUTTERING" PROBLEMS ON GAS DRYERS, AND YOU ALSO COULD HAVE PREMATURE MOTOR FAILURES FROM OVERHEATING.

FOR A GAS DRYER, AN OPENING TO THE OUTDOORS OF AT LEAST 3-1/2 SQUARE FEET IS REQUIRED.

FOR A STEAM DRYER, THE OPENING MUST BE AT LEAST 5 SQUARE FEET.

IF THE OPENING TO THE OUTDOORS IS GOING TO BE LOUVERED, INCREASE THE SIZE OF THE OPENING BY 25 PERCENT.

A SUFFICIENT SIZED OPENING TO AN OUTSIDE AIR SOURCE MUST BE PROVIDED TO ASSURE AN ADEQUATE SUPPLY OF AIR FOR PROPER GAS COMBUSTION AND EFFICIENT DRYING. THE OPENING SHOULD BE POSITIONED WITHIN A FEW YARDS FROM THE REAR AIR ENTRANCE OF THE DRYER. THE AIR ENTRANCE TO THE DRYER MUST BE FREE OF ANY OBSTRUCTIONS CLOSER THAN THE REAR WALL OF THE BELTGUARD. INADEQUATE AIR SUPPLY AND EXHAUST FACILITIES CAN RESULT IN IMPROPER OPERATION OF THE GAS BURNER, EXCESSIVE TEMPERATURES, POOR DRYING PERFORMANCE, PREMATURE FAILURE OF CONTROLS, DAMAGE TO MATERIALS BEING DRIED, AND REDUCED FIRE SAFETY MARGINS. DO NOT OBSTRUCT FLOW OF COMBUSTION AND VENTILATING AIR OF DRYER. DO NOT DISABLE THERMOSTAT OR AIR FLOW CONTROLS. DETERMINE THE CAUSE(S), AND MAKE THE PROPER CORRECTIONS.

## SECTION II

### COMPUTER OPERATING INSTRUCTIONS

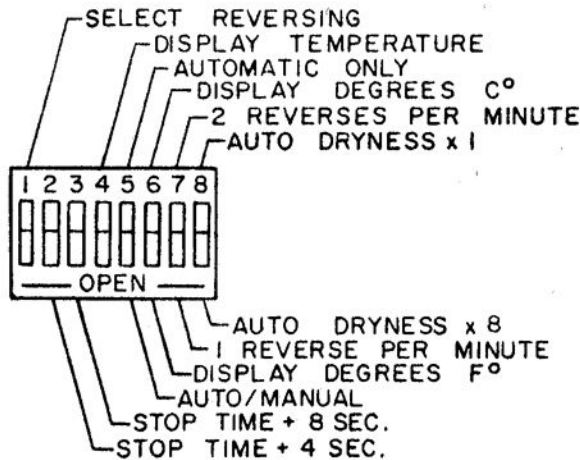
#### 1) FEATURES

1. AUTOMATIC OPERATION--USER SELECTS FABRIC AND LEVEL OF DRYNESS DESIRED. THE DRYER AUTOMATICALLY TURNS HEAT OFF WHEN LEVEL OF DRYNESS HAS BEEN REACHED, AND GOES INTO COOL DOWN FOR 5 MINUTES OR UNTIL A TEMPERATURE OF 100 DEGREES F IS REACHED.
2. MANUAL OPERATION--USER SELECTS DRYING TIME AND COOLING TIME (UP TO 99 MINUTES EACH) AND TYPE OF FABRIC THAT IS BEING DRYED.
3. NINE FABRIC SELECTIONS (TEMPERATURE RANGE FROM 110 DEGREES F TO 190 DEGREES F).
4. THE COMPUTER CAN DISPLAY THE DRYER'S TEMPERATURE IN EITHER DEGREES FAHRENHEIT OR CENTIGRADE. THIS FEATURE AIDS IN TROUBLE SHOOTING THE DRYER'S HEATING CAPABILITY.
5. TROUBLE SHOOTING--DETECTS TROUBLE IN THE DOOR CIRCUIT, TEMPERATURE CIRCUIT, MOTOR CIRCUIT, AND HEAT CIRCUIT.
6. A SLIGHT BEEP TONE SIGNIFIES A COMMAND ENTRY SUCH AS TEMPERATURE OR TIME, AND ALSO SOUNDS FOR 5 SECONDS AT THE END OF A CYCLE.
7. THE COMPUTER AUTOMATICALLY ADJUSTS FOR 50 CYCLE OR 60 CYCLE OPERATION.
8. THE DRYNESS LEVEL IS ADJUSTABLE FROM 1 (LESS DRY) TO 9 (MORE DRY) OR BY FLIPPING A DIP SWITCH. THE DRYNESS LEVEL RANGE IS MULTIPLIED BY 8.
9. YOU HAVE THE OPTION TO SELECT EITHER REVERSING OR NON-REVERSING DRUM ROTATION.
10. THE NUMBER OF REVERSES PER MINUTE IS SELECTABLE (1 OR 2 REVERSES PER MINUTE).
11. REVERSING STOP TIME IS ADJUSTABLE FROM 6-18 SECONDS IN 4 SECOND INCREMENTS.



## 2) COMPUTER DIP SWITCH CAPABILITIES

THE DIP SWITCH IS AN EIGHT POSITION RED AND WHITE SPST SWITCH MOUNTED ON THE BACK OF THE COMPUTER. IT HAS THE FOLLOWING CAPABILITIES.



DIP SWITCH LEGEND		
NO.	OPEN	CLOSE
1		SELECT REV.
2	STOP+4SEC	
3	STOP+8SEC	
4		DISP. TEMP.
5	AUTO/MAN	AUTO ONLY
6	DISPLAY F	DISPLAY C
7	1 REV/MIN	2 REV/MIN
8	DRY x 8	DRY x 1

SWITCH #1--THIS IS THE SELECT REVERSING SWITCH. IF THIS SWITCH IS PUT INTO THE OPEN (DOWN) POSITION, THE TUMBLER WILL HAVE REVERSING ACTION DURING ALL DRYING CYCLES. IF THIS SWITCH IS CLOSED (UP) THE DRYER'S OPERATOR CAN SELECT EITHER REVERSING OR NON-REVERSING TUMBLER ACTION WHEN STARTING EACH DRYING CYCLE.

IF THIS DIP SWITCH IS SET SO THAT REVERSING TUMBLER ACTION IS SELECTABLE WHILE STARTING EACH DRYING CYCLE, THE DISPLAY WILL SHOW "SR\_". PRESS "0", IF NON-REVERSING TUMBLER ACTION IS REQUIRED FOR THAT PARTICULAR DRYING CYCLE, OR PRESS "ENTER/START" IF REVERSING ACTION IS REQUIRED.

SWITCH #2 & #3--IT IS IMPORTANT, WHEN THE TUMBLER REVERSES, THAT THE TUMBLER COME TO A COMPLETE STOP BEFORE IT CHANGES ITS ROTATIONAL DIRECTION. THESE TWO SWITCHES CONTROL THIS STOP TIME. WHEN BOTH SWITCHES ARE IN THE CLOSED (UP) POSITION, THE STOP TIME IS 6 SECONDS. WHEN SWITCH 2 IS OPENED AND 3 IS CLOSED, THE STOP TIME IS 10 SECONDS. WHEN SWITCH 2 IS CLOSED AND 3 IS OPENED, THE STOP TIME IS 14 SECONDS. WHEN BOTH SWITCHES ARE OPENED, THE STOP TIME IS 18 SECONDS.

SWITCH #4--IF SWITCH 4 IS CLOSED, THE COMPUTER WILL DISPLAY THE OPERATING TEMPERATURE OF THE DRYER. THIS IS ONLY USED FOR SERVICING THE DRYER. THIS SWITCH SHOULD BE

CLOSED ONLY AFTER THE DRYER IS RUNNING. FOR NORMAL DRYER OPERATION, THIS SWITCH MUST BE IN THE OPEN POSITION.

SWITCH #5--BY PLACING THIS SWITCH INTO THE CLOSED POSITION, THE DRYER WILL ONLY OPERATE IN THE AUTOMATIC MODE. ON DRYERS EQUIPPED WITH THE OPTIONAL AUTOMATIC/MANUAL KEYBOARD, THIS SWITCH SHOULD BE PUT INTO THE OPENED (DOWN) POSITION.

SWITCH #6--WHEN THE DRYER IS BEING SERVICED, THE OPERATING TEMPERATURE OF THE DRYER CAN BE DISPLAYED (DIP SWITCH 4 IS CLOSED) IN EITHER FAHRENHEIT (SWITCH 6 OPEN) OR CENTIGRADE (SWITCH 6 CLOSED).

SWITCH #7--THE NUMBER OF REVERSES PER MINUTE CAN BE SET BY THIS DIP SWITCH. THE TUMBLER WILL REVERSE ONCE PER MINUTE IF THIS SWITCH IS OPENED, OR TWICE PER MINUTE IF THIS SWITCH IS CLOSED.

SWITCH #8--WHEN THE COMPUTER IS BEING PROGRAMMED IN THE AUTOMATIC MODE, A DRYNESS LEVEL OF 1 THRU 9 MUST BE SELECTED. IN SOME CASES, A DRYNESS LEVEL OF MORE THAN 9 IS REQUIRED. IF THIS SWITCH IS OPENED, THE COMPUTER WILL MULTIPLY THE DRYNESS LEVEL SELECTED BY EIGHT, SO THE DRYNESS LEVELS AVAILABLE WOULD BE 8, 16, 24, 32, 40, 48, 56, 64, AND 72.

THE DIP SWITCHES HAVE BEEN FACTORY SET FOR THE CUSTOMERS REQUIREMENTS. THESE SWITCHES SHOULD ONLY BE CHANGED IF THE DRYER'S OPERATIONAL REQUIREMENTS CHANGE.

### 3) OPERATING INSTRUCTIONS--AD-575 COMPUTER DRYER

THE DOOR MUST BE CLOSED FOR ALL DATA ENTRIES. DURING DATA ENTRY, PRESSING "CLEAR/STOP" ONCE WILL CLEAR PRESENT ENTRY. PRESSING IT TWICE IN SUCCESSION, RESETS THE COMPUTER TO ITS INITIAL POSITION. IF THE DOOR IS OPENED DURING A CYCLE, BOTH TUMBLER AND HEAT WILL STOP. THE CYCLE WILL CONTINUE ONLY AFTER THE DOOR IS CLOSED AND "ENTER/START" IS PRESSED. HOWEVER, IN THE MANUAL MODE THE COMPUTER WILL CONTINUE TO COUNT THE TIME WHILE THE DOOR IS OPENED.



## COMPUTER DISPLAY CODES

- FILL - EMPTY MACHINE PRIOR TO DATA ENTRY (AUTO/MANUAL DRYER).
- F D - DISPLAY PRIOR TO DATA ENTRY WHEN AUTO CYCLE IS SELECTED, OR INDICATES EMPTY MACHINE FOR AUTO ONLY MACHINE.
- LD - LOAD DRYING TIME (MANUAL MODE)
- LC - LOAD COOLING TIME (MANUAL MODE)
- F - FABRIC SELECTION (MANUAL MODE)
- DR - MACHINE IS OPERATING IN DRYING MODE
- CL - MACHINE IS OPERATING IN COOL DOWN MODE
- CC - CYCLE COMPLETE, DRYER HAS FINISHED A COMPLETE CYCLE AND SHUT OFF.
- DSFL - TEMPERATURE SENSOR FAILURE
- DOOR - DOOR SWITCH FAILURE, OR ATTEMPTED START HAS BEEN MADE WITH DOOR OPEN.

## AUTOMATIC VS. MANUAL DRYING CYCLE

THE COMPUTER ON THE AD-575 CAN CONTROL A DRYING CYCLE IN TWO WAYS. THE FIRST METHOD IS STRICTLY BASED ON TIME. A DRYING TIME, COOL DOWN TIME, AND A DRYING TEMPERATURE ARE SELECTED AT THE BEGINNING OF THE DRYING CYCLE AND THE DRYER RUNS UNTIL THE DRYING TIME AND COOL DOWN TIME HAVE ELAPSED. THEN THE DRYER SHUTS OFF. WE CALL THIS THE "MANUAL" MODE OF DRYING.

THE SECOND TYPE OF DRYING CYCLE IS CALLED THE "AUTOMATIC" MODE OF DRYING. WITH THIS METHOD OF DRYING, THE OPERATOR SELECTS THE TYPE OF MATERIAL THAT IS BEING DRIED (FABRIC SELECTION) AND ALSO SELECTS THE "DRYNESS LEVEL" DESIRED. IN THIS MODE OF DRYING THERE IS NO PRESET DRYING TIME, THE DRYER WILL CONTINUE TO RUN UNTIL THE SPECIFIED DRYNESS LEVEL HAS BEEN REACHED. LET'S SAY THAT YOU HAVE ENTERED A "7" FOR FABRIC SELECTION (THIS IS EQUIVALENT TO A DRYING TEMPERATURE OF 170 DEGREES F). THEN THE DRYER STARTS, THE HI FIRE HEAT COMES ON AND AFTER A PERIOD OF TIME THE TUMBLER WILL REACH 170 DEGREES F. AT THIS TIME THE COMPUTER WILL REDUCE THE GAS FLOW TO LO FIRE HEAT FOR A SHORT PERIOD OF TIME, SO THE TUMBLER'S TEMPERATURE WILL FALL ONLY A FEW DEGREES. THE COMPUTER WILL TURN THE

HI FIRE BACK ON AND THE TUMBLER'S TEMPERATURE WILL AGAIN REACH 170 DEGREES F. UNTIL THE DRYER HAS REACHED THE SELECTED DRYNESS LEVEL.

WE HAVE FOUND THE AUTOMATIC DRYING MODE TO BE ADVANTAGEOUS. BECAUSE WHEN THE DRYING CYCLE IS OVER, THE DRYING LOADS WILL HAVE A CONSISTANCY OF DRYNESS, REGARDLESS OF AMBIENT TEMPERATURES AND HUMIDITY.

UPON START-UP OF THE DRYER, WHEN RUNNING IN THE AUTOMATIC MODE, YOU WILL HAVE TO TRY DIFFERENT DRYNESS LEVELS UNTIL YOU FIND THE LEVEL THAT BEST FITS WHAT YOU NEED.

THE DRYER IS USUALLY SHIPPED WITH THE COMPUTER SET TO RUN EXCLUSIVELY IN THE AUTOMATIC MODE. WHEN DIP SWITCH #5 IS PUT IN THE CLOSED (UP) POSITION, THE COMPUTER WILL ONLY OPERATE IN THE AUTOMATIC DRYING MODE. IF THE DIP SWITCH #5 IS OPEN (DOWN), THEN THE OPERATOR CAN SELECT EITHER THE AUTOMATIC OR MANUAL MODE OF DRYING AT THE BEGINNING OF EACH DRYING CYCLE. REFER TO THE FOLLOWING SECTIONS FOR COMPUTER PROGRAMMING SEQUENCE.

A) AUTOMATIC MODE ONLY

DIP SWITCH SETTINGS - SWITCH 1 OPEN (CONTINUOUS REVERSING ACTION), 2 CLOSED, 3 CLOSED, 4 OPEN, 5 CLOSED, 6 OPEN, 7 OPEN, 8 CLOSED (OPEN #8 FOR DRYNESS LEVEL MULTIPLIED BY 8).

1. DISPLAY SHOWS "F\_D\_".
2. ENTER FABRIC SELECTION; "1 THRU 9" SELECTION APPEARS AFTER THE LETTER "F\_" IN THE DISPLAY.
3. ENTER DESIRED DRYNESS LEVEL (NUMBER OF TEMPERATURE PEAKS); "1 (LESS DRY) THRU 9 (MORE DRYER)" SELECTION APPEARS AFTER LETTER "D " IN THE DISPLAY. IF DIP SWITCH #8 IS OPEN, COMPUTER WILL TRIPLE THE SELECTED DRYNESS LEVEL.
4. PRESS ENTER/START
  - 4A. IF DIP SWITCH #1 IS IN THE CLOSED POSITION (SELECT REVERSING), THE COMPUTER DISPLAY WILL SHOW "SR\_\_", (MEANING SELECT REVERSING).
    1. PRESS "ENTER/START" IF REVERSING TUMBLER ACTION IS DESIRED FOR THIS DRYING CYCLE.
    2. PRESS "0" FOR NON-REVERSING TUMBLER.

NOTE--IF DIP SWITCH #1 IS IN THE OPEN POSITION, THE TUMBLER WILL REVERSE FOR ALL DRYING CYCLES SO THE COMPUTER WILL NOT DISPLAY "SR\_\_".

5. DISPLAY READS "DROO" AND WILL COUNT UPWARD UNTIL PRE-SET DRYNESS LEVEL IS REACHED.
6. AT THE END OF DRYING CYCLE, THE DRYER THEN STARTS THE COOL DOWN CYCLE FOR 5 MINUTES, OR UNTIL THE TUMBLER TEMPERATURE DROPS TO APPROXIMATELY 100 DEGREES. DURING THE COOLING CYCLE, THE DISPLAY SHOWS CL IN THE LEFT TWO DIGITS, WHILE THE ELAPSED TIME FROM THE INITIAL START IS DISPLAYED IN THE RIGHT TWO DIGITS.
7. AT THE END OF THE COOLING CYCLE, AN AUDIBLE TONE WILL SOUND, AND THE DISPLAY WILL SHOW "CCOO" MEANING THE CYCLE IS COMPLETE. DOOR MUST NOW BE OPENED TO CANCEL "CCOO" DISPLAY.

B) AUTOMATIC/MANUAL MODE SELECTABLE (DIP SWITCH #5 OPEN)

DIP SWITCH SETTINGS--SWITCH #1 OPEN (CONTINUOUS REVERSING ACTION), 2 CLOSED, 3 CLOSED, 4 OPEN, 5 OPEN, 6 OPEN, 7 OPEN, 8 CLOSED (OPEN FOR DRYNESS LEVEL TRIPLER).

TO SELECT THE AUTOMATIC MODE:

- 1) DISPLAY SHOWS "FILL"
- 2) TO ENTER AUTOMATIC MODE SELECTION, PRESS "3".
- 3) DISPLAY SHOWS "F\_D\_"
- 4) REFER TO SECTION "A" FOR AUTOMATIC MODE PROGRAMMING.

C) AUTOMATIC/MANUAL MODE SELECTABLE (DIP SWITCH #5 OPEN)

TO SELECT THE MANUAL MODE:

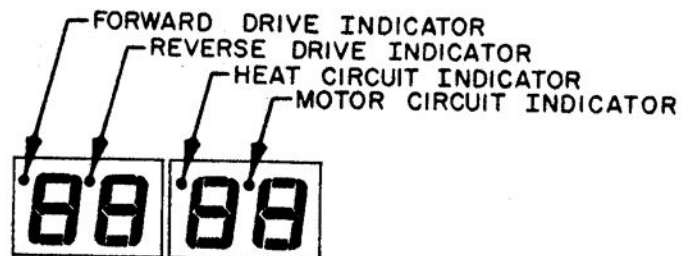
1. DISPLAY SHOWS "FILL".
2. ENTER MANUAL SELECTION, PRESS "1".
3. DISPLAY SHOWS "LD\_\_"
4. ENTER DRYING TIME (1 THRU 99 MINUTES).
5. PRESS "ENTER/START".
6. DISPLAY SHOWS "LC\_\_".

7. ENTER COOL DOWN TIME (1 THRU 99 MINUTES).
8. PRESS "ENTER/START".
9. DISPLAY SHOWS "F\_".
10. ENTER FABRIC (TEMP) (1 THRU 9).
11. PRESS "ENTER/START".
  - 11A. IF DIP SWITCH #1 IS IN THE CLOSED POSITION THE COMPUTER DISPLAY "SR\_\_" (MEANING SELECT REVERSING).
  1. PRESS "ENTER/START" IF REVERSING TUMBLER ACTION IS DESIRED.
  2. PRESS "0" FOR NON-REVERSING TUMBLER ACTION.

NOTE--IF DIP SWITCH #1 IS IN THE OPEN POSITION THE TUMBLER WILL REVERSE FOR ALL DRYING CYCLES SO THE COMPUTER WILL DISPLAY "SR\_\_".

12. DISPLAY SHOWS "DR AND DRYING TIME ENTERED", DISPLAY WILL THEN COUNT DOWN UNTIL SELECTED TIME REACHES ZERO.
13. DISPLAY SHOWS "CL AND COOL TIME ENTERED", DISPLAY WILL THEN COUNT DOWN UNTIL SELECTED TIME REACHES ZERO.
14. AT THE END OF THE COOLING CYCLE, AN AUDIBLE TONE WILL SOUND, AND THE DISPLAY WILL SHOW "CCOO" MEANING CYCLE IS COMPLETE. DOOR MUST NOW BE OPENED TO CANCEL DISPLAY.

YOU WILL NOTICE THAT IN THE AUTOMATIC MODE THE COMPUTER'S COUNT OF THE DRYING TIME STARTS AT "00" AND COUNTS UPWARD. THIS IS BECAUSE THERE IS NO PRE-SET DRYING TIME AND THE COMPUTER WILL RUN UNTIL THE SELECTED DRYNESS LEVEL IS REACHED.



LOOKING AT THE DISPLAY YOU WILL NOTICE THERE ARE FOUR RED INDICATOR DOTS; ONE IN THE UPPER LEFT CORNER OF EACH DISPLAY DIGIT. THESE DOTS ARE USEFUL IN MAINTENANCE AS THEY "MONITOR" DIFFERENT DRYER FUNCTIONS. THE DOT ON THE FAR RIGHT MONITORS THE TUMBLER DRIVE MOTOR. WHENEVER THE COMPUTER TURNS THE

DRYER ON, THIS DOT SHOULD BE LIT. THE SECOND DOT FROM THE RIGHT MONITORS THE HEAT CIRCUIT. WHENEVER THE COMPUTER CALLS FOR HEAT THIS DOT WILL COME ON. THE TWO DOTS ON THE LEFT SIDE OF THE DISPLAY MONITOR THE DIRECTION IN WHICH THE TUMBLER IS SPINNING. THE DOT FURTHEST TO THE LEFT IS LIT WHEN TUMBLER IS SPINNING IN THE FORWARD DIRECTION AND THE DOT WHICH IS NEXT TO IT IS LIT WHEN THE TUMBLER IS SPINNING IN THE REVERSE DIRECTION.

#### MOTORIZED STEAM VALVE

A MOTORIZED QUARTER TURN BALL VALVE CONTROLS THE FLOW OF STEAM TO THE STEAM COIL. THE MOTOR HAS A QUARTER TURN CYCLE TIME OF 35 SECONDS. BECAUSE THE VALVE OPENS AND CLOSES SLOWLY, THE STEAM COIL WILL NOT BE DAMAGED BY WATER HAMMER. POWER TO THE STEAM VALVE MOTOR IS SUPPLIED THRU A SINGLE POLE-DOUBLE THROW STEAM VALVE RELAY. WHEN THE COMPUTER CALLS FOR HEAT, POWER IS SUPPLIED TO THE MOTOR FROM THE NORMALLY OPEN CONTACT OF THE SP-DT RELAY. WHEN NO STEAM IS REQUIRED, POWER IS SUPPLIED TO THE MOTOR FROM THE NORMALLY CLOSED CONTACT OF THE RELAY. WHEN POWER IS SUPPLIED TO THE MOTOR THRU EITHER CONTACT OF THE RELAY, THE MOTOR WILL START TO TURN. THE MOTOR IS STOPPED AFTER IT TURNS 90 DEGREES BY THE SMALL MICRO SWITCHES UNDER THE MOTOR'S SHEET METAL COVER.

WHEN THE COMPUTER CALLS FOR HEAT (THE HEAT DOT WILL LIGHT), POWER IS SUPPLIED TO THE COIL OF THE STEAM VALVE RELAY WHICH WILL SUPPLY POWER TO THE STEAM VALVE MOTOR FROM ITS NORMALLY OPEN CONTACT. THE MOTOR WILL SLOWLY OPEN THE STEAM VALVE, TAKING ABOUT 35 SECONDS TO FULLY OPEN THE VALVE. THE MOTOR WILL BE STOPPED AFTER 90 DEGREES OF TURN BY AN INTERNAL MICRO SWITCH.

ON A CALL FOR COOLING, THE STEAM DOT ON THE COMPUTER'S DISPLAY WILL GO OFF AND POWER WILL BE REMOVED FROM THE STEAM RELAY. THE RELAY WILL SWITCH POWER TO THE MOTOR FROM ITS NORMALLY OPEN CONTACT TO ITS NORMALLY CLOSED CONTACT, AND THE MOTOR WILL START TO TURN AGAIN. AFTER ABOUT 35 SECONDS, IT WILL HAVE TURNED 90 DEGREES AND A SECOND INTERNAL MICRO SWITCH WILL STOP IT. THE STEAM WILL NOW BE OFF.

THE MOTOR ALWAYS SPINS IN A CLOCKWISE DIRECTION IN 90 DEGREE INCREMENTS. IT IS STARTED BY THE STEAM VALVE RELAY SWITCHING POWER BETWEEN ITS CONTACTS AND IS STOPPED BY INTERNAL MICRO SWITCHES.

THE MANUAL RESET THERMOSTAT AND THE DOOR SWITCH CAN PREVENT THE STEAM VALVE FROM OPENING. IF THE VALVE DOESN'T OPEN ON A CALL FOR HEAT, THESE SAFETY DEVICES SHOULD BE CHECKED.

## SECTION III

### COMPUTER CONTROLLED HI/LO GAS VALVE SYSTEM

#### 1. INTRODUCTION

THE COMPUTER CONTROLLED HI-LO GAS VALVE SYSTEM DEVELOPED BY AMERICAN DRYER CORP. IS A NEW ADVANCEMENT IN CLOTHES DRYING. THE SYSTEM CONSISTS OF A HI-LO GAS VALVE, HI-LO CONTROL BOARD, PHASE II COMPUTER, GLO-BAR AND I R SENSOR. WITH COMPUTER CONTROL OF THE GAS VALVE, THREE STAGES OF GAS FLOW ARE AVAILABLE: GAS ON HIGH FIRE, GAS ON LOW FIRE AND GAS OFF. DURING DRYER OPERATION, WHEN THE TUMBLER CAVITY REACHES THE SELECTED DRYING TEMPERATURE, THE COMPUTER CYCLES THE GAS VALVE BETWEEN ITS HIGH-FIRE AND LOW-FIRE STAGES TO MAINTAIN A CONSTANT DRYING TEMPERATURE. THE RESULT OF THIS CONSTANT DRYING TEMPERATURE IS A SIGNIFICANT DECREASE IN DRYING TIME AND INCREASE IN DRYER EFFICIENCY.

THE ADG-575 CONTAINS 2 SEPERATE GAS BURNERS, AND EACH BURNER HAS ITS OWN GAS VALVE, GLO-BAR, AND I R SENSOR. THE IGNITION SEQUENCE AND OPERATION OF EACH BURNER IS CONTROLLED BY ITS OWN HI/LO BOARD. HOWEVER, THERE IS ONLY ONE COMPUTER CONTROLLING ALL OF THIS. THE COMPUTER CONTROLS THE BURNERS IN A PARALLEL SYSTEM. BOTH BURNERS ARE AT HI FIRE TOGETHER, LO FIRE TOGETHER AND OFF TOGETHER.

#### 2. SYSTEM COMPONENTS

- A) 1/2" HI-LO GAS VALVE, (NAT. GAS P/N 140010)  
(L.P. GAS P/N 140011)

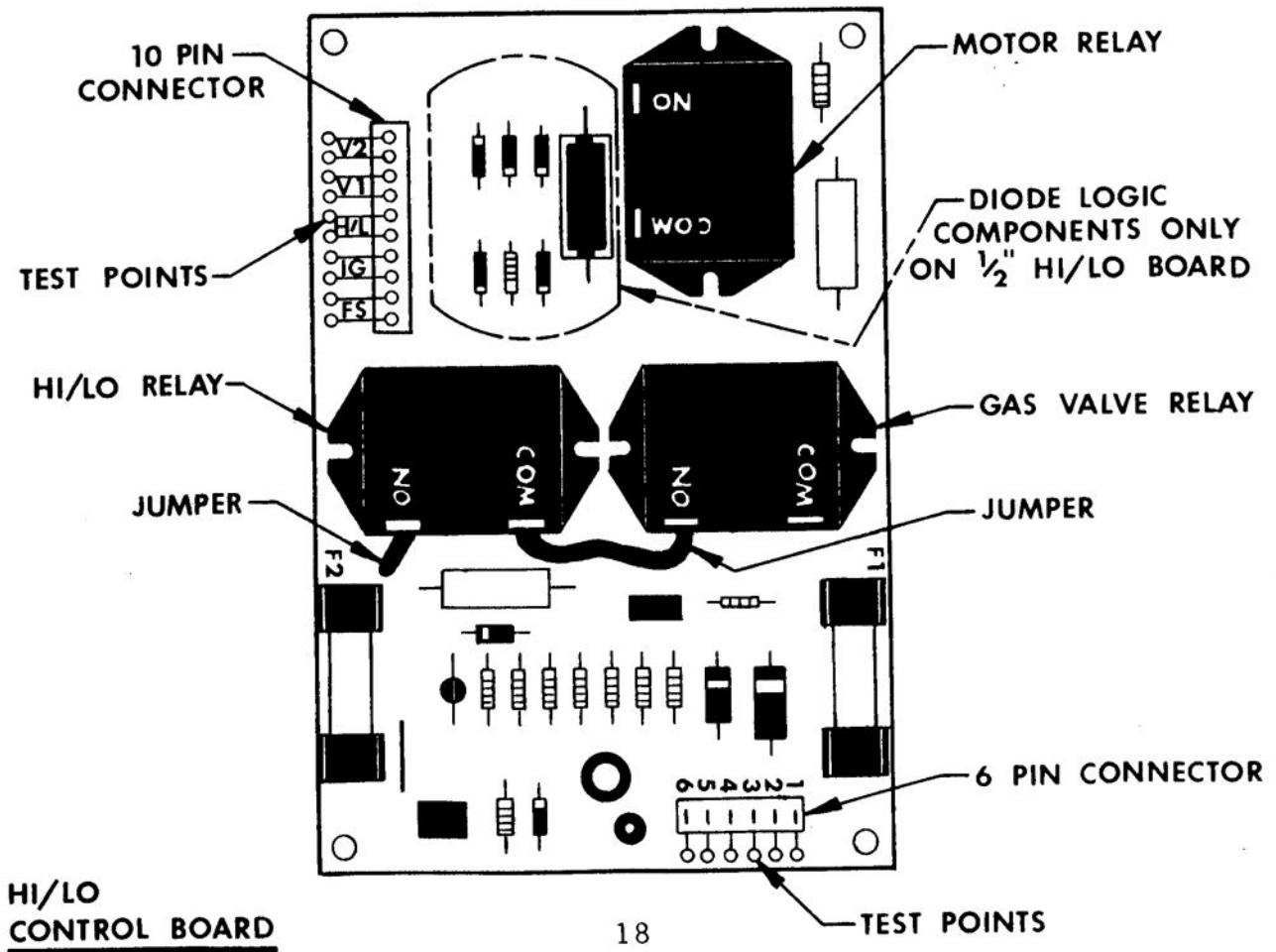
THIS VALVE CONTAINS THE SAME TWO REDUNDANT ON-OFF SOLENOID VALVES AS THE STANDARD 1/2" GLO-BAR IGNITION GAS VALVE, AND THESE TWO SOLENOIDS OPERATE IN THE SAME MANNER AND SEQUENCE IN BOTH VALVES. THE DIFFERENCE OF THE HI-LO VALVE IS THE ADDITION OF A HI-LO CAP ASSEMBLY LOCATED ON TOP OF THE VALVE. THIS CAP ASSEMBLY, PROTECTED BY A SHEET METAL COVER, CHANGES THE GAS FLOW FROM HIGH FIRE TO LOW FIRE. IT CANNOT SHUT OFF GAS FLOW. ONLY THE TWO REDUNDANT SOLENOIDS CAN DO THIS. REMOVING ITS COVER, REVEALS A RELAY COIL AND LEVER ARM WITH THE HIGH FIRE ADJUSTMENT SCREW LOCATED AT THE LEVER ARM'S END. POWER TO THE RELAY COIL IS SUPPLIED THROUGH THE WHITE PLASTIC PLUG LOCATED AT THE FRONT RIGHT BOTTOM OF THE CAP ASSEMBLY BASE PLATE. WHEN 115 VOLTS ARE APPLIED HERE, THE RELAY COILS PULL THE LEVER ARM DOWN AND THE VALVE IS IN THE HIGH-FIRE STAGE. WITH ZERO VOLTS TO THE RELAY COIL, THE ARM LIFTS UP AND THE VALVE IS IN LOW FIRE. TO INCREASE THE HIGH-FIRE GAS FLOW, TURN THE HIGH-FIRE ADJUSTMENT SCREW



CLOCKWISE. TURN IT COUNTERCLOCKWISE FOR A HIGH-FIRE FLOW DECREASE. LOW FIRE HAS BEEN SET AT APPROXIMATELY 50 PERCENT OF HIGH FIRE, AND IT CANNOT BE ADJUSTED. EACH GAS VALVE IS CONNECTED TO THE 10 PIN CONNECTOR ON ITS CONTROL BOARD WITH SIX WIRES. THE FOUR WIRES THAT CONNECT TO THE TOP OF THE VALVE CONTROL THE TWO ON-OFF REDUNDANT SOLENOIDS, AND THE TWO WIRES RUNNING INTO THE WHITE PLASTIC PLUG CONTROL THE HI-LO RELAY COIL.

B) 1/2" HI/LO CONTROL BOARD, P/N 137066 (SEE FIGURE BELOW)

THIS BOARD CONTAINS ALL THE COMPONENTS OF THE DIODE LOGIC BOARD AND ARC SUPPRESSOR BOARD USED ON THE STANDARD 1/2" GLO-BAR IGNITION SYSTEM (MOTOR RELAY, GAS VALVE RELAY AND ARC SUPPRESSION RESISTORS AND CAPACITORS) AS WELL AS A HI-LO TIMING RELAY AND ADDITIONAL HI-LO TIMING ELECTRONIC COMPONENTS. ELECTRICAL CONNECTIONS TO THE BOARD CONSISTS OF A 6 PIN AMP CONNECTOR LOCATED IN THE LOWER RIGHT-HAND CORNER OF THE BOARD'S BACK, A 10 PIN CONNECTOR LOCATED IN THE UPPER LEFT-HAND CORNER TO THE REAR OF THE BOARD AND THREE-1/4" FEMALE SPADE TERMINALS FASTENED TO THE BOARD'S MOTOR RELAY. THE 6 PIN CONNECTOR JOINS THE BOARD TO THE COMPUTER AND PROVIDES POWER TO THE CONTROL BOARD AND ITS SWITCHING RELAYS. THE 10 PIN CONNECTOR CONNECTS THE GAS VALVE, GLO-BAR AND I R SENSOR TO THE CONTROL BOARD.



### 3. OPERATION SEQUENCE

WHEN THE DRYER IS STARTED AND THE HEAT INDICATOR DOT IN THE COMPUTER DISPLAY IS ON, THE FIRST ON-OFF SOLENOID IN THE GAS VALVE OPENS, THE VALVE IS PUT INTO ITS HIGH-FIRE STAGE AND CURRENT IS SUPPLIED TO THE GLO-BAR. WHEN THE GLO-BAR REDDENS AND REACHES SUFFICIENT TEMPERATURE, THE I R SENSOR SWITCH OPENS WHICH OPENS THE SECOND ON-OFF SOLENOID IN THE GAS VALVE. THIS ALLOWS GAS TO FLOW INTO THE BURNERS AND BE IGNITED. WHEN THE TUMBLER CAVITY REACHES THE SELECTED DRYING TEMPERATURE, THE GAS FLOW IS REDUCED TO LOW FIRE FOR 15 SECONDS. AT THE END OF THIS 15-SECOND PERIOD, THE COMPUTER CHECKS THE TUMBLER TEMPERATURE. IF THE TUMBLER TEMPERATURE HAS DROPPED BELOW THE SELECTED DRYING TEMPERATURE, THEN THE COMPUTER RETURNS THE GAS VALVE TO ITS HIGH-FIRE STAGE. HIGH FIRE REMAINS ON UNTIL THE SELECTED DRYING TEMPERATURE IS AGAIN REACHED. AT WHICH POINT, THE LOW FIRE STAGE IS AGAIN ACTIVATED. THIS HIGH-FIRE-LOW FIRE CYCLING WILL CONTINUE AS LONG AS THE TUMBLER'S TEMPERATURE IS BELOW THE SELECTED DRYING TEMPERATURE AT THE END OF THE 15-SECOND LOW-FIRE STAGE. AS THE CLOTHES IN THE TUMBLER GET DRYER, LOW-FIRE GAS FLOW WILL EVENTUALLY PRODUCE ENOUGH HEAT TO KEEP THE TUMBLER AT OR ABOVE THE SELECTED DRYING TEMPERATURE. WHEN AT THE END OF THE 15-SECOND LOW-FIRE PERIOD THE TUMBLER'S TEMPERATURE IS EQUAL TO OR ABOVE THE SELECTED DRYING TEMPERATURE, THE HI-LO CONTROL BOARD TAKES OVER AND KEEPS THE GAS VALVE IN ITS LO-FIRE STAGE FOR APPROXIMATELY 23 MORE SECONDS. AT THE END OF THIS 23-SECOND PERIOD OF LOW FIRE, THE COMPUTER AGAIN CHECKS THE TUMBLER'S TEMPERATURE. IF THE TUMBLER'S TEMPERATURE HAS DROPPED BELOW THE SELECTED DRYING TEMPERATURE, THEN THE HIGH-FIRE STAGE IS TURNED BACK ON. IF, HOWEVER, THE TUMBLER'S TEMPERATURE IS STILL ABOVE THE SELECTED DRYING TEMPERATURE, THEN THE GAS FLOW IS SHUT OFF. AT THIS POINT, THE GLO-BAR IGNITION SEQUENCE IS RESTARTED.

THE DRYER WILL CONTINUE TO OPERATE UNTIL EITHER THE DRYING TIME RUNS OUT (COMPUTER IN MANUAL MODE) OR PRESET NUMBER OF DRYING CYCLES (DRYNESS LEVEL) HAVE BEEN RUN (AUTOMATIC MODE).

SO IN THE HI-LO DRYING SYSTEM, THERE ARE TWO TYPES OF DRYING CYCLES. THE HIGH-FIRE TO LOW-FIRE BACK TO HIGH-FIRE CYCLES ARE EVENTUALLY FOLLOWED BY THE HIGH-FIRE TO LOW-FIRE TO GAS OFF TYPE OF CYCLE. FOR EXAMPLE, IF THE DRYERS' COMPUTER IS RUN IN THE AUTOMATIC MODE AND A DRYNESS LEVEL OF 4 IS SELECTED WITH THE RANGE MULTIPLIER ON (TOTAL OF 32 CYCLES), THE DRYING SEQUENCE MAY CONSIST OF 29 HIGH-TO-LOW BACK TO HIGH-FIRE CYCLES FOLLOWED BY 3 HIGH-TO-LOW TO GAS OFF CYCLES. THE POINT AT WHICH THE CLOTHES BECOME DRY ENOUGH SO THAT LOW-FIRE GAS FLOW IS SUFFICIENT TO HOLD THE TUMBLER'S TEMPERATURE AT OR ABOVE THE SELECTING DRYING TEMPERATURE RESULTING IN THE GAS



SHUTTING OFF, DEPENDS ON THE WEIGHT, WETNESS AND TYPE OF MATERIAL IN THE LOAD. IF A DRYER IS RUN WITH NO LOAD OR AN EXTREMELY LIGHT LOAD, THEN ONLY HIGH FIRE-LOW FIRE-GAS OFF CYCLES WILL BE RUN SINCE THE LOW-FIRE GAS FLOW WOULD BE SUFFICIENT TO MAINTAIN THE SELECTED DRYING TEMPERATURE. DRYERS SHOULD NEVER BE RUN WITH NO LOAD OR VERY LIGHT LOADS BECAUSE THIS IS AN EXTREMELY WASTEFUL WAY TO OPERATE ANY DRYER.

4. TROUBLE SHOOTING (REFER TO SECTION VI FOR ADDITIONAL INSTRUCTION)

TO LOCATE ANY BREAKDOWN IN THE HI-LO SYSTEM, VOLTAGE MEASUREMENTS CAN BE TAKEN AT THE TEST POINTS BESIDE THE 6 AND 10 PIN CONNECTORS ON THE HI-LO BOARD'S FRONT. EACH TEST POINT IS TAKEN OFF OF A DIFFERENT PIN. A TABLE OF THESE VOLTAGES FOLLOWS. WHEN USING AN ANALOG METER TO MEASURE THE VOLTAGES, IT MAY BE NECESSARY TO REVERSE THE METER PROBES IF A VOLTAGE READING CANNOT BE OBTAINED.

A) 1/2" HI/LO SYSTEM VOLTAGE CHART

10 PIN CONNECTOR TEST POINTS	DRYER STARTED GLO-BAR REDDENS HEAT INDICATOR DOT ON	GAS FLOWS AND IGNITES HEAT INDICATOR DOT ON	DRYER REACHES SELECTED TEMP. HEAT INDICATOR DOT GOES OFF. VALVE IN LO FIRE
V2 <sup>1</sup> / <sub>2</sub>		60-70v	60-70v
V1 <sup>3</sup> / <sub>4</sub>	60-70v	18-30v	18-30v
HL <sup>5</sup> / <sub>6</sub>	115v	115v	0v
IG <sup>7</sup> / <sub>8</sub>	100-115v	1-2v	1-2v
FS <sup>9</sup> / <sub>10</sub>	0v	115v	115v

V1 AND V2 SUPPLY VOLTAGE TO THE GAS VALVE'S TWO REDUNDANT ON-OFF SOLENOIDS. HL SUPPLIES VOLTAGE TO THE HI-LO RELAY COIL. IG SUPPLIES THE GLO-BAR (IGNITOR), AND FS SUPPLIES AND I R SENSOR (FLAME SWITCH).

B) 6 PIN CONNECTORS VOLTAGES

THE 6 PIN CONNECTOR IS LOCATED IN THE UPPER RIGHT HAND CORNER OF THE HI/LO CONTROL BOARD. PINS 1 AND 5 SUPPLY

THE POWER TO THE MICROPROCESSOR. THE MICROPROCESSOR TURNS THE DRYER MOTOR ON BY SUPPLYING VOLTAGE TO PINS 2 AND 5 WHICH WILL CLOSE THE MOTOR CONTROL RELAY. WHENEVER THE MOTOR INDICATOR DOT ON THE COMPUTER'S DISPLAY IS ON, THERE SHOULD BE VOLTAGE AT THESE TWO PINS. THE MICROPROCESSOR SUPPLIES POWER TO THE GAS VALVE CIRCUIT THROUGH PINS 4 AND 5. WHENEVER THE HEAT INDICATOR DOT IN ON, THERE SHOULD BE VOLTAGE BETWEEN THESE TWO PINS. THE VOLTAGE BETWEEN PINS 1 AND 5, 2 AND 5, AND 4 AND 5 WILL BE 115 VOLTS. POWER IS SUPPLIED TO THE CONTROL BOARD THROUGH PINS 3 AND 5. THE VOLTAGE HERE IS ALWAYS 115 VOLTS.

5. L P GAS

TO CONVERT FROM NATURAL TO L P GAS:

FOR THE 1/2" HI-LO SYSTEM, THE BURNER ORIFICES MUST BE CHANGED, AND THE ENTIRE GAS VALVE MUST BE CHANGED. THE NATURAL GAS VALVE IS P/N 140010; AND FOR LP GAS, THE VALVE PART NO. IS 140011.

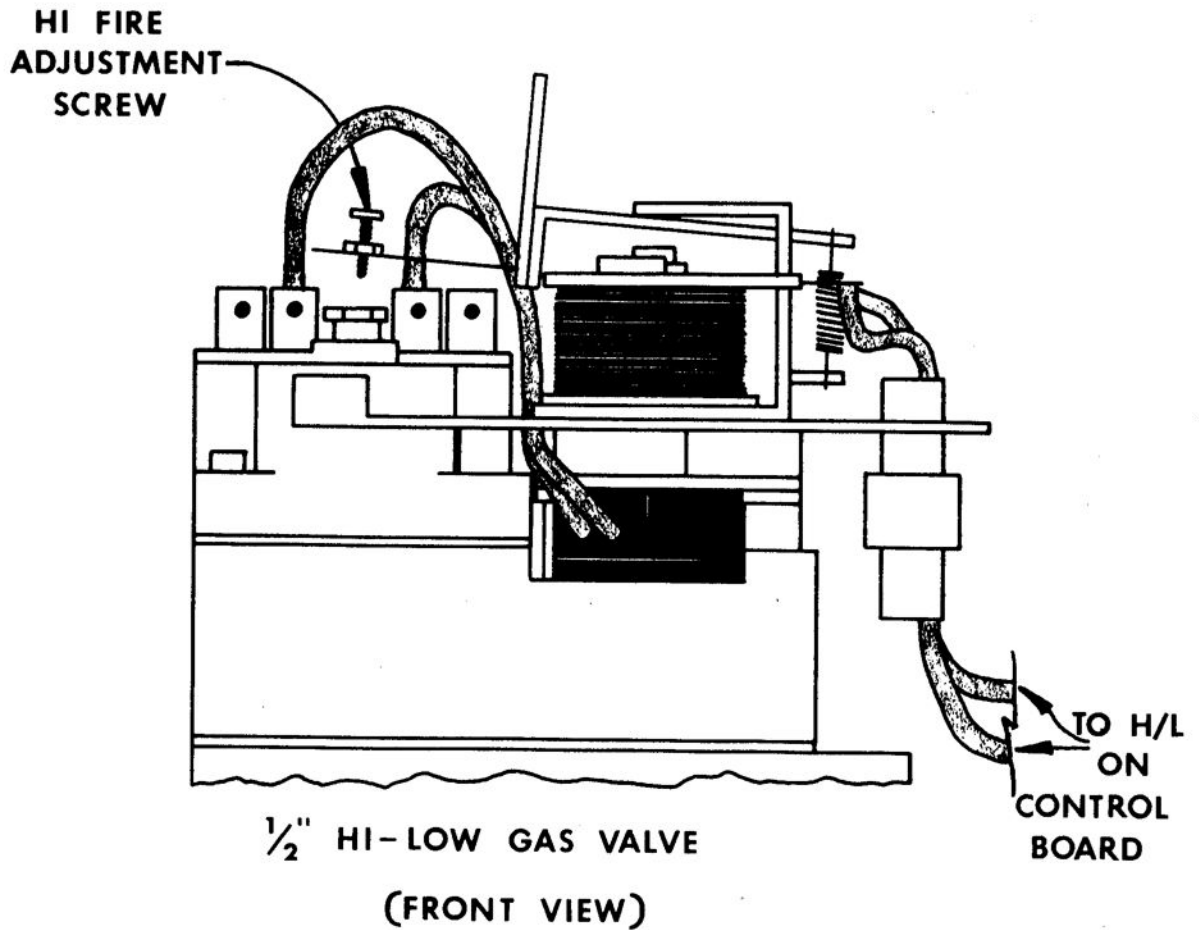
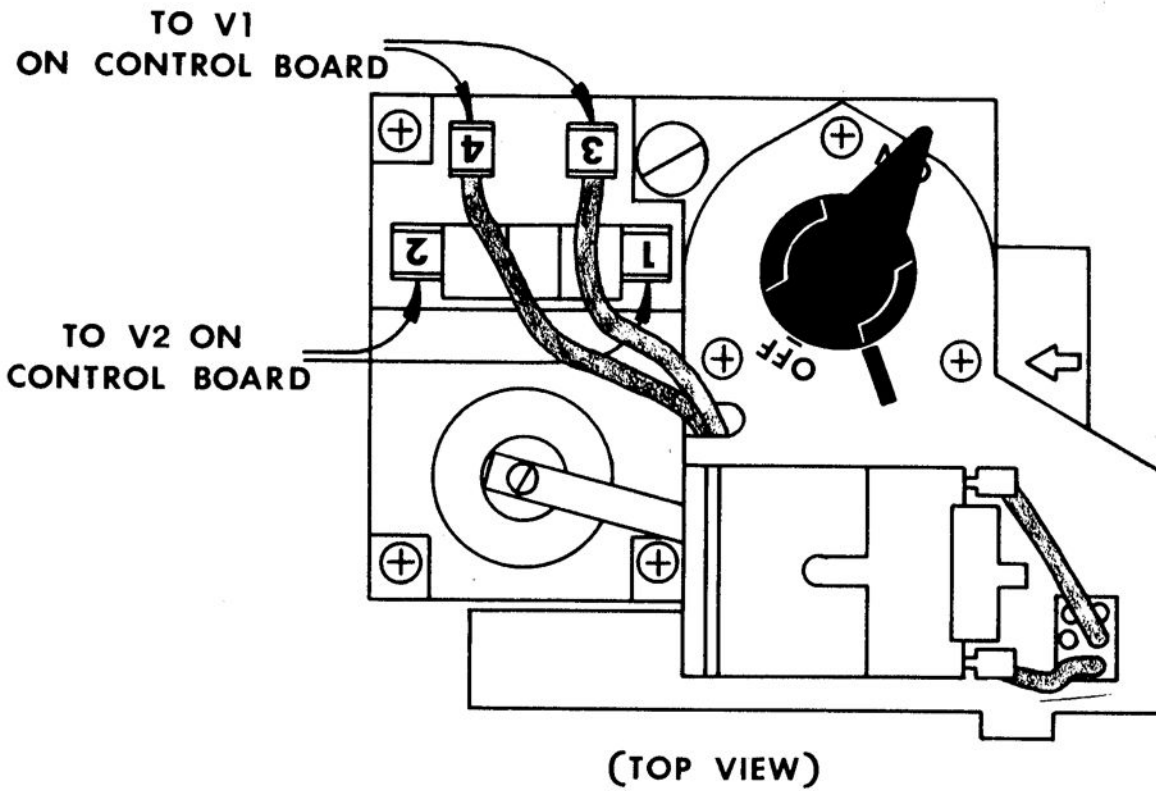
ADG-575 ORIFICE SIZING CHART

	NATURAL GAS	L.P. GAS
ORIFICE PART NO.	140822	140808
ORIFICE DRILL SIZE	#27	#44
ORIFICE DIAMETER IN INCHES	.144"	.086"

(8 ORIFICES REQUIRED PER DRYER)

MAXIMUM FLOW RATE IS 496,000 BTUH

**FIGURE 3.- GAS VALVE WITH SOLENOID COVER REMOVED.**



## SECTION IV

### Routine Maintenance

#### DAILY

CLEAN LINT SCREEN. THIS MAY HAVE TO BE DONE MORE THAN ONCE A DAY DEPENDING ON THE TYPE OF MATERIAL BEING DRIED. A CLOGGED LINT SCREEN WILL CAUSE POOR DRYER PERFORMANCE. THE LINT SCREEN IS LOCATED IN THE LEFT HAND CONTROL BOX. PULL OUT THE SCREEN AND USE THE BRUSH SUPPLIED WITH DRYER TO CLEAN OFF THE LINT.

#### BI-WEEKLY

REMOVE THE SMALL PANEL AT THE BOTTOM REAR OF THE LEFT CONTROL BOX AND REMOVE ANY LINT BUILD-UP FROM AROUND THE SENSOR BRACKET AND ANY BUILD-UP FROM THE BOTTOM OF THE TUMBLER CHAMBER. YOU WILL HAVE TO USE THE BRUSH SUPPLIED WITH THE DRYER TO REACH THE LINT BUILD-UP IN THE REAR OF THE DRYER.

CLEAN LINT ACCUMULATION FROM DRIVE AND BLOWER MOTORS.

REMOVE LINT BUILD-UP FROM STEAM COIL LINT SCREEN (STEAM DRYERS ONLY).

#### MONTHLY

APPLY A HIGH TEMPERATURE GREASE TO THE ZIRC FITTINGS WHICH FEED THE TUMBLER SHAFT PILLOW BLOCK BEARINGS. THESE ZIRC FITTINGS ARE LOCATED IN THE LOWER BACK OF EACH CONTROL BOX. THERE ARE TWO IN THE LEFT BOX AND TWO IN THE RIGHT BOX.

CLEAN LINT ACCUMULATION FROM AROUND THE GAS BURNERS, ELECTRICAL BOX, AND MOTORS.

CHECK V-BELTS. RETIGHTEN IF REQUIRED.

#### EVERY SIX MONTHS

GREASE TUMBLER DRIVE MOTOR WITH CHEVRON SR#1-2 GREASE OR EQUIVALENT, UNLESS OTHERWISE STAMPED ON THE MOTOR LABEL.

GREASE THE TWO 1 1/4" SPEED REDUCING DRIVE BEARINGS.

CLEAN LINT ACCUMULATION FROM PLANT EXHAUST DUCT.

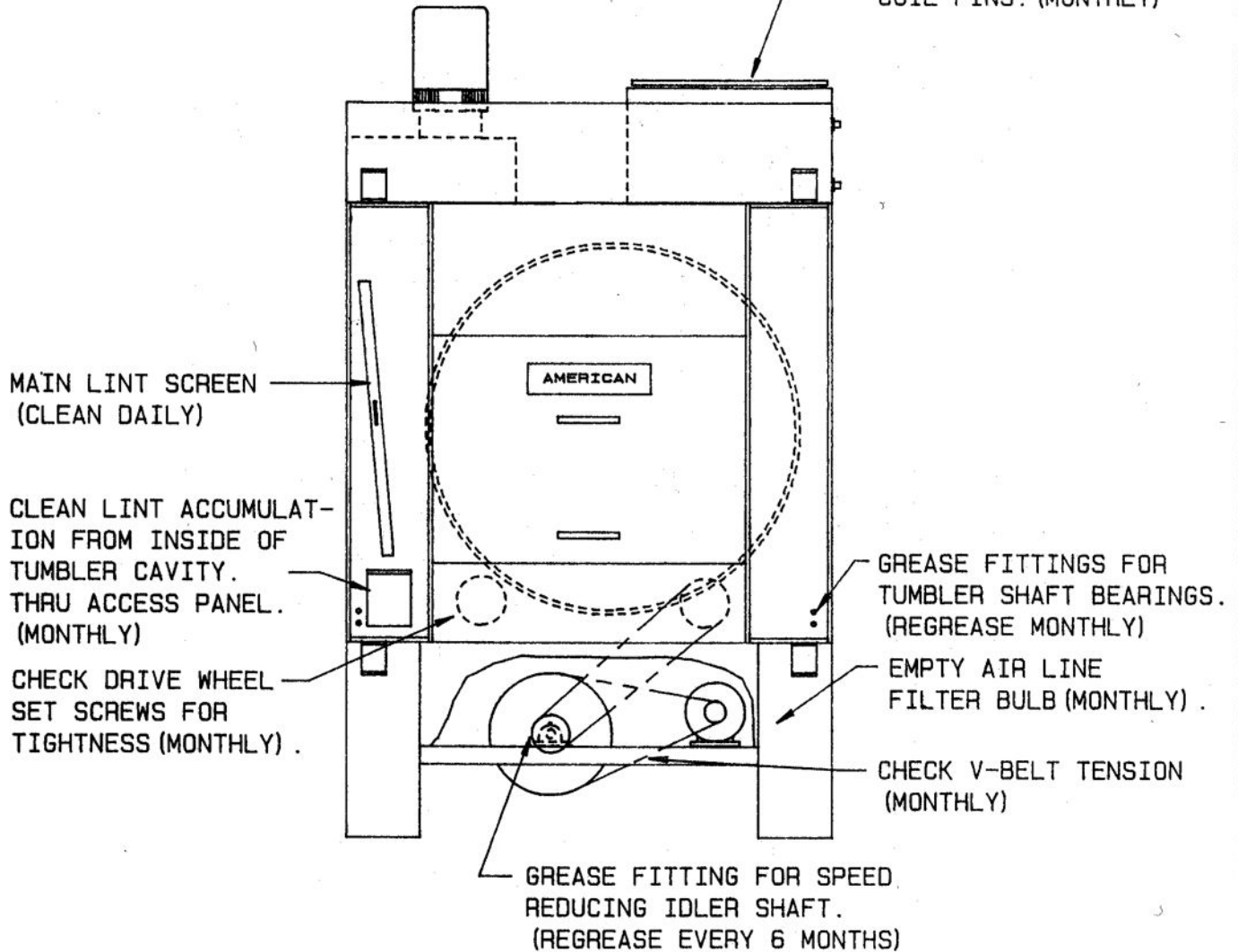
CHECK ELECTRICAL SERVICE AND GROUNDING CONNECTIONS FOR ANY LOOSENESS WHICH MAY HAVE BEEN CAUSED BY VIBRATION.

575

MAINTENANCE DIAGRAM

STEAM DRYERS

- ① CLEAN LINT SCREEN ACCUMULATION. (WEEKLY)
- ② CLEAN LINT ACCUMULATION BETWEEN STEAM COIL FINS. (MONTHLY)



## SECTION V

### DESCRIPTION

THIS SECTION GIVES A DESCRIPTION OF ALL THE MECHANICAL AND ELECTRICAL COMPONENTS AND SYSTEMS.

#### 1) TUMBLER

THE TUMBLER IS MADE OF HEAVY GAUGE STAINLESS STEEL, PERFORATED PANELS, FOUR STAINLESS STEEL RIBS, AND TWO OUTER TUMBLER RINGS MADE OF ROLLED STRUCTURAL STEEL CHANNEL. THE TUMBLER IS A COMPLETELY WELDED ASSEMBLY AND THE PERFORATED PANELS ARE NOT REMOVABLE.

#### 2) TUMBLER SUPPORT SYSTEM

THE TUMBLER SITS ON FOUR RUBBER ROLLER WHEELS WHICH SUPPORT THE TUMBLER AND ALSO DRIVE IT. TWO OF THESE WHEELS ARE ON THE TUMBLER DRIVE SHAFT. THIS DRIVE SHAFT IS CONNECTED TO THE 3HP TUMBLER DRIVE MOTOR BY 2 SETS OF V-BELTS AND PULLEYS. THE OTHER TWO WHEELS ARE ON THE TUMBLER IDLER SHAFT. THIS SHAFT SIMPLY SUPPORTS HALF OF THE WEIGHT OF THE TUMBLER. EACH SHAFT IS 1 1/2 INCHES IN DIAMETER AND SITS IN TWO PILLOW BLOCK BEARINGS. THE POSITION OF THE BEARINGS (AND SO THE POSITION OF THE TUMBLER) CAN BE ADJUSTED BY LOOSENING THE TWO BEARING HOLD DOWN BOLTS AND ADJUSTING THE POSITION OF THE BEARINGS BY LOOSENING OR TIGHTENING THE 1/2-13 BEARING ADJUSTMENT SCREWS. EACH OF THESE BEARINGS HAS A GREASE LINE ATTACHED TO ITS ZIRC FITTINGS, WHICH RUNS TO THE LOWER BACK OF THE CONTROL BOXES ON THE FRONT OF THE DRYER.

#### 3) TUMBLER DRIVE SYSTEM

THE 3HP TUMBLER DRIVE MOTOR IS LOCATED IN THE BASE AT THE REAR OF THE DRYER. IT SITS ON AN ADJUSTABLE BASE SO THAT THE MOTOR CAN BE EASILY ADJUSTED TO THE LEFT OR RIGHT IN ORDER TO TIGHTEN OR LOOSEN THE V-BELTS. THE SPEED REDUCING IDLER SHAFT WHICH IS LOCATED NEXT TO THE DRIVE MOTOR IS SUPPORTED IN TWO PILLOW BLOCK BEARINGS. EACH BEARING CAN BE ADJUSTED FORWARD AND BACKWARD BY TIGHTENING OR LOOSENING THE ADJUSTMENT SCREWS LOCATED TO THE LEFT OF EACH PILLOW BLOCK BEARING. THIS ALLOWS YOU TO KEEP THE PROPER TENSION ON THE V-BELTS.

THE DRIVE MOTOR IS STARTED THRU A REVERSING MAGNETIC STARTER WHICH IS LOCATED IN THE HIGH VOLTAGE ELECTRICAL BOX.

#### 4) DRIVE MOTOR "SOFT START"

AN EXTREMELY IMPORTANT COMPONENT IN THE TUMBLER DRIVE SYSTEM IS THE REDUCED VOLTAGE SOFT START MOTOR CONTROL. THIS IS A FULLY SOLID STATE ELECTRICAL DEVICE WHICH FEEDS A REDUCED VOLTAGE TO THE DRIVE MOTOR UPON START UP SO THE MOTOR WILL START SLOWLY AND BUILDUP GRADUALLY TO FULL SPEED. THIS MAKES FOR A VERY SMOOTH OR "SOFT" START. IT ALSO INCREASES THE LIFE OF THE DRIVE COMPONENTS (ROLLER WHEELS, BELTS, ETC.) BECAUSE OF THE REDUCTION IN THE STARTING TORQUE WHICH IS A RESULT OF THE SLOWER START-UP. A SECOND BENEFIT OF THE SOFT START IS THE REDUCTION IN STARTING AMPERAGE SURGE. THIS DEVICE IS MOUNTED TO THE BACK OF THE HIGH VOLTAGE ELECTRICAL BOX, WHICH IS IN THE DRYER'S BASE.

#### A) SOFT START ADJUSTMENTS

THERE ARE TWO INTERNAL ADJUSTMENTS WHICH CAN BE ALTERED TO CHANGE THE "SOFTNESS" OF THE SOFT START. TO GET ACCESS TO THESE ADJUSTMENT SCREWS, REMOVE THE COVER OF THE SOFT START.

THE INITIAL TORQUE ADJUSTMENT SCREW CONTROLS THE AMOUNT OF STARTING VOLTAGE DELIVERED TO THE MOTOR. THIS SHOULD BE SET SO THAT THE DRIVE MOTOR SHAFT WILL START TO SPIN AS SOON AS VOLTAGE IS APPLIED TO THE MOTOR. THE TUMBLER MUST BE FULLY LOADED WHEN MAKING THIS ADJUSTMENT.

THE START TIME ADJUSTMENT SCREW CONTROLS THE "RAMP UP" TIME TO FULL RUNNING VOLTAGE. THIS SHOULD BE ADJUSTED TO GIVE A SMOOTH INCREASE IN MOTOR SPEED.

THE ADJUSTMENTS HAVE BEEN MADE AT THE FACTORY AND SHOULD NOT HAVE TO BE ADJUSTED IN THE FIELD.

BECAUSE THE INITIAL TORQUE ADJUSTMENT IS SET WITH THE TUMBLER FULLY LOADED, WHEN RUNNING THE DRYER WITH THE TUMBLER EMPTY OR WITH A VERY LIGHT LOAD THE BASKET MAY "BOUNCE" ON THE ROLLER WHEELS CAUSING A RUMBLING NOISE AT START UP. IF YOU KEEP GETTING THE RUMBLING NOISE WHEN RUNNING THE DRYER WITH THE TUMBLER LOADED, YOU WILL WANT TO LOWER THE INITIAL TORQUE (INITIAL STARTING VOLTAGE).

THERE ARE TWO OTHER ADJUSTMENT SCREWS IN THE SOFT START. THE PFC VOLTAGE AND LINE VOLTAGE LIMITER ADJUSTMENTS HAVE BEEN FACTORY SET AND DO NOT HAVE TO BE FIELD ADJUSTED.

FOR MORE DETAILED INFORMATION AND A COMPLETE ADJUSTMENT



PROCEDURE FOR THE FOUR ADJUSTMENT SCREWS, REFER TO THE SOFT START ADJUSTMENT INSTRUCTIONS IN THE TECHNICAL DATA SECTION AT THE END OF THIS MANUAL.

5) AIR BLOWER AND MOTOR

THIS UNIT IS LOCATED ON TOP OF THE DRYER. THE IMPELLOR IS A BACKWARD CURVED PADDLE WHEEL WHICH IS DIRECTLY CONNECTED TO THE SHAFT OF THE BLOWER MOTOR. GAS DRYERS HAVE A 3HP BLOWER MOTOR FOR 60HZ MACHINES, AND ALL STEAM DRYERS AS WELL AS 50HZ GAS DRYERS HAVE A 5HP MOTOR. THESE MOTORS CONTAIN SEALED BEARINGS THAT DO NOT HAVE TO BE LUBRICATED.

THE BLOWER MOTOR IS STARTED BY A NON-REVERSING MAGNETIC STARTER WHICH IS LOCATED IN THE HIGH VOLTAGE ELECTRICAL BOX. THE BLOWER MOTOR ALSO HAS AN INTERNAL THERMAL PROTECTION SWITCH.

6) GAS BURNERS

GAS HEATED DRYERS ARE EQUIPPED WITH TWO BURNER BOXES. THESE BURNER BOXES ARE LOCATED ON TOP OF THE DRYER. EACH BURNER BOX HAS ITS OWN GAS VALVE, GLO-BAR, IR SENSOR, SAIL SWITCH, AND HI-LIMIT THERMOSTAT. THE GAS VALVE AND IGNITION CIRCUITS OF BOTH BURNERS ARE CONTROLLED IN "PARALLEL" BY THE COMPUTER. THIS MEANS THAT BOTH BURNERS ARE IN HI FIRE, LO FIRE AND OFF SIMULTANEOUSLY. IT SHOULD BE NOTED, HOWEVER, THAT AT IGNITION START UP BOTH BURNERS MAY NOT "FLAME ON" SIMULTANEOUSLY. THIS IS BECAUSE EVEN THOUGH THE COMPUTER SIGNALS BOTH BURNERS TO COME ON AT THE SAME TIME, THE DIFFERENCE IS THE RESISTANCE OF THE GLO-BARS OF THE TWO BURNERS MAY RESULT IN ONE GLO-BAR GETTING HOTTER FASTER THAN THE OTHER CAUSING ONE BURNER TO "FLAME ON" A FEW SECONDS BEFORE THE OTHER.

THE SAIL SWITCH AND HI LIMIT THERMOSTAT OF BOTH BURNERS ARE CONNECTED IN SERIES, SO THAT IF ANY ONE OF THESE SAFETY DEVICES TRIPS, BOTH BURNERS WILL SHUT OFF.

7) HIGH VOLTAGE ELECTRICAL BOX

THIS BOX IS LOCATED IN THE BASE AT THE REAR OF THE DRYER. THE MAGNETIC STARTERS FOR BOTH THE TUMBLER DRIVE MOTOR AND THE BLOWER MOTOR ARE LOCATED HERE. EACH STARTER IS EQUIPPED WITH RESETTABLE OVERLOAD HEATERS. EACH OF THESE MOTORS IS ALSO PROTECTED BY SLO-BLOW CARTRIDGE FUSES WHICH ARE LOCATED IN THIS BOX.

THE SOFT START DEVICE AND THE CONTROL VOLTAGE TRANSFORMER ARE BOLTED ON BACK OF THIS BOX. YOU CAN GET ACCESS TO THESE DEVICES FROM THE FRONT OF THE DRYER BY REMOVING THE FRONT BASE PANEL, OR FROM THE LEFT SIDE OF THE BASE IF THERE IS ROOM ON THE LEFT SIDE OF THE DRYER.



## 8) LOAD DOOR

THE LOAD DOOR SLIDES UP AND DOWN IN NYLON TRACKS. THE DOOR IS SUPPORTED BY TWO ROTARY SPRING COUNTER BALANCES SO THAT WHEN THE DOOR IS OPENED, IT WILL MAINTAIN ITS POSITION MAKING LOADING AND UNLOADING VERY EASY. THE DOOR IS INSULATED WITH 1/2" OF INSULATION SO IT REMAINS COOL WHEN THE DRYER IS IN USE. THE DOOR IS EQUIPPED WITH TWO LIFTING HANDLES, ONE LOW AND ONE HIGH, WHICH MAKES OPENING AND CLOSING THE DOOR EASY. THE DOOR OPENING IS 38" HIGH BY 40" WIDE AND THE DOOR IS STILL 38" OFF THE FLOOR.

THE SPRING TENSION OF THE ROTARY COUNTER BALANCES IS ADJUSTABLE. IF YOU LIFT THE DOOR UP HIGH ENOUGH, YOU WILL SEE THE ADJUSTMENT SCREWS OF THE COUNTER BALANCES THROUGH HOLES DRILLED IN THE SIDES OF THE CONTROL BOXES.

## 9) CONTROL BOXES

THERE ARE TWO 14" WIDE X 5 1/2" DEEP X 63" HIGH BOXES ON EACH SIDE OF THE LOADING DOOR ON THE FRONT OF THE DRYER. EACH BOX HAS ITS OWN DOOR WHICH IS LATCHED AND HINGED. THE REAR WALL OF EACH BOX IS INSULATED WITH 1/2" FOIL BACKED INSULATION. TWO ZIRC GREASE FITTINGS COMING FROM THE TUMBLER SHAFT PILLOW BLOCK BEARINGS ARE LOCATED IN THE LOWER REAR OF EACH BOX.

OPENING THE LEFT BOX DOOR GIVES YOU ACCESS TO THE PULL OUT LINT SCREEN. IN THE LOWER BACK OF THIS BOX IS A CLEAN OUT ACCESS PANEL SO THAT YOU CAN CLEAN ANY LINT ACCUMULATION FROM INSIDE THE DRYER. REMOVING THIS PANEL ALSO GIVES YOU ACCESS TO THE TEMPERATURE SENSOR BRACKET. ON THIS BRACKET ARE LOCATED THE COMPUTER TEMP SENSOR AS WELL AS THE MANUAL RESET SAFETY THERMOSTAT.

THE RIGHT BOX HOUSES THE LOAD DOOR SWITCH. MOUNTED ON BACK OF THE RIGHT BOX DOOR IS THE COMPUTER AND THE OTHER ELECTRIC CONTROL VOLTAGE COMPONENTS.

## 10) LINT SCREEN

THE LINT SCREEN IS A PULL OUT TYPE AND IT IS LOCATED IN THE LEFT SIDE CONTROL BOX. SIMPLY GRAB THE LINT SCREEN HANDLE, SLIDE OUT THE SCREEN, BRUSH OFF THE LINT, AND SLIDE THE SCREEN BACK IN. A WOODEN BRUSH IS SHIPPED WITH THE DRYER IN THE LEFT CONTROL BOX.

THE LINT SCREEN MUST BE KEPT CLEAN FOR THE DRYER TO FUNCTION PROPERLY.

## 11) SAFETY DEVICES

### A) DOOR SWITCH

THIS IS LOCATED IN THE RIGHT SIDE CONTROL BOX WITH ITS

LEVER ARM STICKING THRU THE SIDE OF THE CONTROL BOX SO THAT ITS ROLLER WHEEL OVERHANGS THE TOP OF THE DOOR. THIS IS A DOUBLE POLE DOUBLE THROW SWITCH, WHICH WILL PREVENT THE DRYER FROM OPERATING IF THE DOOR IS OPENED.

B) SAIL SWITCH (GAS DRYERS ONLY)

A SAIL SWITCH IS LOCATED ON THE FRONT OF EACH GAS BURNER. A SAIL SWITCH CONSISTS OF A ROUND DAMPER PLATE ON A LEVER ARM WHICH IS IN CONTACT WITH AN ELECTRIC SWITCH. WHEN THE AIR BLOWER COMES ON, IT DRAWS AIR THRU THE GAS BURNER. THIS CREATES A NEGATIVE PRESSURE INSIDE THE BURNER BOX, AND THIS NEGATIVE PRESSURE PULLS IN THE ROUND DAMPER AND ACTIVATES THE SAIL SWITCH. IF THERE IS AN IMPROPER (LOW) AIR FLOW THRU THE DRYER, THE SAIL SWITCH DAMPER WILL NOT PULL IN, PREVENTING THE BURNERS FROM COMING ON.

IMPROPER AIR FLOW CAN BE CAUSED BY IMPROPERLY DESIGNED EXHAUST DUCTING WHERE THE DUCT RUN IS TOO LONG OR HAS TOO MANY SHARP BENDS IN IT. IT CAN ALSO BE CAUSED BY LACK OF MAKE UP AIR.

C) HI-LIMIT (GAS DRYERS ONLY)

A HI-LIMIT THERMOSTAT IS LOCATED AT EACH GAS BURNER. THIS IS AN AUTOMATICALLY RESET DISC TYPE THERMOSTAT SET AT 330 DEGREES FAHRENHEIT. IF THE FLAME IN THE BURNER SHOULD GET TOO HOT, THIS THERMOSTAT WILL SHUT OFF BOTH BURNERS. THIS IS GENERALLY CAUSED BY LOW AIR FLOW THRU THE DRYER.

D) MANUAL RESET THERMOSTAT AND PILOT LIGHT

THIS IS LOCATED INSIDE THE DRYER, ON THE LEFT HAND SIDE AT THE BOTTOM. THIS THERMOSTAT SENSES THE HEATED AIR AFTER IT HAS PASSED THRU THE TUMBLER. IF THE AIR TEMPERATURE GETS TOO HOT, THE SMALL RED RESET BUTTON ON THE BACK OF THIS THERMOSTAT WILL POP OUT SHUTTING OFF THE BURNERS, AND THE MANUAL RESET PILOT LIGHT WILL LIGHT UP. THE DRYER WILL NOT HEAT UP AGAIN UNTIL THIS BUTTON IS PUSHED BACK IN. THE TUMBLER AND BLOWER MOTORS WILL RUN, BUT THE DRYER WILL NOT HEAT.

YOU CAN GAIN ACCESS TO THIS THERMOSTAT BY REMOVING THE SMALL ACCESS PANEL IN THE LOWER BACK OF THE LEFT SIDE CONTROL BOX. THEN YOU MUST REACH INSIDE THE DRYERS' BODY AND PUSH IN THE BUTTON.

BE SURE DRYER POWER IS OFF BEFORE ATTEMPTING TO RESET THERMOSTAT.

## SECTION VI

### TROUBLE SHOOTING CHART

THIS TROUBLE CHART WILL HELP TO ISOLATE THE MOST PROBABLE COMPONENT(S) ASSOCIATED WITH THE DIFFICULTY DESCRIBED. THE EXPERIENCED TECHNICIAN REALIZES, HOWEVER, THAT A LOOSE CONNECTION OR BROKEN OR SHORTED WIRE MAY BE AT FAULT WHERE ELECTRICAL COMPONENTS ARE CONCERNED...NOT NECESSARILY THE SUSPECT COMPONENT ITSELF.

ELECTRICAL PARTS SHOULD ALWAYS BE CHECKED FOR FAILURE BEFORE BEING RETURNED TO THE FACTORY.

THIS CHART SHOULD NOT BE MISCONSTRUED AS A DEVICE FOR USE BY AN UNTRAINED PERSON TOWARD MAKING REPAIRS. ONLY PROPERLY LICENSED TECHNICIANS SHOULD SERVICE THE EQUIPMENT.

OBSERVE ALL SAFETY PRECAUTIONS DISPLAYED ON THE EQUIPMENT OR SPECIFIED IN THIS MANUAL BEFORE AND WHILE MAKING REPAIRS.

ALWAYS DISCONNECT POWER FROM DRYER BEFORE PERFORMING ANY SERVICING WORK ON DRYER.

<u>TROUBLE</u>	<u>POSSIBLE CAUSE</u>
A. COMPUTER DISPLAY SHOWS <u>dOOR</u>	1) LOAD DOOR IS NOT FULLY CLOSED. 2) DOOR SWITCH HAS LOOSE CONNECTION. 3) DOOR SWITCH ROLLER ARM HAS COME LOOSE. 4) OPEN CIRCUIT IN D.C. DOOR SWITCH WIRING. 5) DEFECTIVE DOOR SWITCH.
B. COMPUTER DISPLAYS <u>dSFL</u> .	1) LOOSE OR BROKEN CONNECTION IN COMPUTER TEMPERATURE SENSOR WIRING. 2) DEFECTIVE COMPUTER TEMPERATURE SENSOR.
C. COMPUTER DISPLAY "LOCKS UP" AND DOES NOT RESPOND WHEN TOUCHPADS OF MEMBRANE SWITCH ARE DEPRESSED.	1) TURN MAIN POWER OFF THEN ON. THIS WILL UNLOCK DISPLAY.

TROUBLE

POSSIBLE CAUSE

- D. DRYER STARTS, AIRBLOWER COMES ON BUT TUMBLER WON'T TURN.
- A) TUMBLER MOTOR RUNS
  - B) TUMBLER MOTOR DOESN'T RUN BUT COMPUTER DISPLAY MOTOR CIRCUIT INDICATOR DOT IS LIT.
- E. TUMBLER DOES NOT REVERSE PROPERLY.
- F. DRYER STARTS, AIR BLOWER TUMBLER MOTOR START BUT DRYER DOESN'T HEAT UP THOUGH HEAT INDICATOR DOT IS LIT.
- G. DRYER STARTS, TUMBLER SPINS BUT AIR BLOWER DOES NOT FUNCTION.
- 2) END OF TAIL OF MEMBRANE SWITCH, PLUGGED INTO COMPUTER SOCKET IS DAMAGED. CUT OFF LAST 1/8" OF TAIL AND REINSERT INTO SOCKET.
- 1) LOOSE OR BROKEN V-BELTS.
  - 1) OVERLOAD HEATER RESET BUTTON ON MAGNETIC STARTER POPPED OUT.
  - 2) CARTRIDGE FUSE IS BLOWN.
  - 3) DEFECTIVE COIL ON DRIVE MOTOR REVERSING STARTER.
  - 4) DEFECTIVE MOTOR RELAY ON MICROPROCESSOR.
  - 1) DEFECTIVE MICROPROCESSOR.
  - 2) DEFECTIVE COIL ON DRIVE MOTOR REVERSING STARTER.
  - 1) THE MANUAL RESET AND THERMOSTAT HAS TRIPPED.
  - 2) A SAIL SWITCH IS NOT PULLING IN.
  - 3) IGNITION SYSTEM MALFUNCTION (REFER TO TROUBLE SHOOTING, PART OF SECTION III).
  - 4) DEFECTIVE HI-LIMIT THERMOSTAT.
  - 5) STEAM SOLENOID IS DEFECTIVE.
  - 1) OVERLOAD HEATER RESET BUTTON ON MAGNETIC STARTER HAS POPPED OUT.

TROUBLE

POSSIBLE CAUSE

H. DRYER'S HEAT IS CYCLING ON AND OFF THE HI-LIMIT THERMOSTAT.

- 2) CARTRIDGE FUSE IS BLOWN.
- 3) DEFECTIVE COIL ON BLOWER MOTOR STARTER.
- 4) DEFECTIVE MOTOR RELAY ON MICROPROCESSOR
- 5) INTERNAL THERMAL PROTECTION ON MOTOR HAS TRIPPED.

I. EXCESSIVE NOISE OR VIBRATION IN THE DRYER.

- 1) LOW AIR FLOW THRU DRYER BECAUSE OF CLOGGED LINT SCREEN, INSUFFICIENT MAKE UP AIR, OR INSUFFICIENT EXHAUST DUCT WORK SYSTEM.
- 2) BLOWER MOTOR DOESN'T FUNCTION.
- 3) HEAT RELAY ON HI/LO BOARD IS DEFECTIVE.

J. OVERLOAD HEATER RESET BUTTON ON MAGNETIC STARTER KEEPS POPPING OUT.

- 1) IF RUMBLING NOISE IS HEARD WHEN TUMBLER STARTS, SOFT START MAY HAVE TO BE ADJUSTED.
  - 2) POSITION OF TUMBLER MAY HAVE TO BE ADJUSTED.
  - 3) V-BELTS ARE TOO TIGHT.
  - 4) TUMBLER SHAFT PILLOW BLOCK BEARING IS FAILING.
  - 5) LOOSE MOTOR MOUNT OR SPEED REDUCING IDLER MOUNT.
- 1) SUPPLY VOLTAGE IS TOO HIGH OR LOW.
  - 2) MOTOR AIR VENTS ARE CLOGGED WITH LINT.
  - 3) INSUFFICIENT MAKE UP AIR TO DRYER.
  - 4) V-BELTS ON DRIVE MOTOR ARE TOO TIGHT.

TROUBLE

POSSIBLE CAUSE

- 5) DEFECTIVE MOTOR.
- 6) TUMBLER DRIVE SHAFT  
PILLOW BLOCK BEARING  
FAILURE CAUSING DRIVE  
MOTOR TO OVER WORK.
- 7) SPEED REDUCING IDLER  
PILLOW BLOCK BEARING  
FAILURE CAUSING DRIVE  
MOTOR TO OVER WORK.
- K. BOTH DRYER DRIVE MOTOR AND  
BLOWER MOTOR DO NOT START  
BUT MICRO-PROCESSOR INDICATOR  
DOTS ARE ON.
  - 1) OPEN CIRCUIT IN A.C. DOOR  
SWITCH WIRING.
  - 2) DEFECTIVE DOOR SWITCH.

1. TROUBLESHOOTING THE HI/LO GAS VALVE SYSTEM

USE CARE WHEN MAKING VOLTAGE MEASUREMENTS SINCE VOLTAGE TO DRYER IS ON. DISCONTINUE POWER BEFORE UNPLUGGING OR REPLACING ANY COMPONENTS.

REFER BACK TO THE DRAWING OF THE HI/LO BOARD ON PAGE 18 AND VOLTAGE CHART ON PAGE 20.

- A. ELECTRIC SERVICE IS  
PROVIDING VOLTAGE TO DRYER  
BUT MICROPROCESSOR DISPLAY  
IS NOT LIT AND DRYER WON'T  
RUN.
  - 1) 4 AMP FUSE(S) BLOWN -  
CHECK FOR VOLTAGE ACROSS  
1 AND 6 ON THE 6 PIN  
CONNECTOR OF THE CONTROL  
BOARD. REPLACE.
  - 2) BROKEN OR LOOSE CONNEC-  
TION IN 6 PIN CONTROL  
BOARD CONNECTOR OR BLACK  
15 PIN MICROPROCESSOR  
BOARD CONNECTOR - UNPLUG  
AND INSPECT PLUGS,  
REINSERT AND CHECK FOR  
PROPER SEATING.
- B. DRYER OPERATES, BUT GLO-BAR  
DOES NOT HEAT UP.
  - 1) SAIL SWITCH NOT CLOSING -  
ADJUST ACTION OR REPLACE.
  - 2) GLO-BAR IS BROKEN -  
REPLACE.
  - 3) INFRARED SENSOR FAILURE -  
CHECK FOR VOLTAGE AT FS  
ON 10 PIN CONNECTOR. IF  
VOLTAGE IS 115V, CONTACTS  
ARE NOT CLOSING. REPLACE.

TROUBLE

POSSIBLE CAUSE

C. DRYER OPERATES, GLO-BAR HEATS UP AND STAYS RED.

4) CONTROL BOARD NOT PROVIDING VOLTAGE TO GLO-BAR - CHECK FOR VOLTAGE AT IG ON 10 PIN CONNECTOR (100V-115V). REPLACE CONTROL BOARD.

1) INFRARED SENSOR FAILURE - CHECK FOR VOLTAGE AT FS ON 10 PIN CONNECTOR. IF VOLTAGE IS 0, CONTACTS ARE NOT OPENING. REPLACE.

D. DRYER OPERATES, GLO-BAR HEATS UP AND GOES OUT BUT GAS DOES NOT FLOW.

1) SOLENOID FOR V1 NOT ACTIVATING - CHECK FOR VOLTAGE AT V1 ON THE 10 PIN CONNECTOR (SEE TABLE ON PAGE 20). IF PROPER VOLTAGE READING IS NOT OBTAINED, REPLACE CONTROL BOARD. IF PROPER VOLTAGE IS READ, DISCONNECT POWER TO DRYER, DISCONNECT WIRES AT THE TERMINALS OF V1 ON THE GAS VALVE AND APPLY 115VAC DIRECTLY TO V1 AT THESE TERMINALS WITH A TEST CABLE. REPLACE GAS VALVE IF SOLENOID WON'T OPERATE. IF SOLENOID OPERATES, TURN OFF POWER AND CHECK CONTINUITY OF ORIGINAL WIRES WITH AN OHM METER OR CONTINUITY TESTER BETWEEN 10 PIN CONNECTOR AND SPADE CONNECTOR AT THE VALVE.

2) SOLENOID FOR V2 NOT ACTIVATING - FOLLOW ABOVE PROCEDURE FOR V2.

E. DRYER, GLO-BAR AND GAS VALVE OPERATE BUT BURNER DOES NOT LIGHT.

1) GAS SUPPLY MANUAL VALVE NOT OPEN - CHECK GAS SUPPLY LINE.



TROUBLE

POSSIBLE CAUSE

F. DRYER, GLO-BAR AND GAS VALVE OPERATE, GAS IGNITES BUT HIGH FLAME IS NOT ON.

- 2) GAS MANIFOLD PRESSURE TOO LOW - CHECK MANIFOLD PRESSURE AND ADJUST REGULATOR IN VALVE. GAS PRESSURE SHOULD BE 4" W.C. AT THE TAP ON THE GAS VALVE BODY.
- 3) ADJUST AIR INLET RING AT FRONT OF EACH BURNER TUBE.
- 4) GLO-BAR IS OUT OF POSITION - REPOSITION DIRECTLY OVER BURNER PORTS (1/4 - 1/2" SPACE ABOVE BURNER). TURN OFF POWER TO DRYER BEFORE HANDLING GLO-BAR.
- 1) HEAT CIRCUIT NOT ACTIVATING ON MICRO-PROCESSOR BOARD - CHECK FOR HEAT INDICATOR DOT ON DISPLAY. CHECK FOR VOLTAGE (115V) ACROSS 4 AND 5 ON THE 6 PIN CONNECTOR OF THE CONTROL BOARD. REPLACE MICROPROCESSOR BOARD.
- 2) HI FIRE AJUSTMENT SCREW IS OUT OF ADJUSTMENT - (1/2" HI/LO VALVE ONLY) WITH MACHINE RUNNING AND GRAY SHEET METAL HI/LO SOLENOID COVER REMOVED, GENTLY DEPRESS THE HIGH FIRE ACTUATOR ARM CONNECTED TO THE HI/LO SOLENOID SO THAT IT ACTIVATES THE PLUNGER. IF BURNER GOES TO DESIRED HI FIRE LEVEL, ADJUST SCREW TO OBTAIN THE SAME RESULTS.
- 3) CONTROL BOARD NOT PROVIDING VOLTAGE TO HI/LO SOLENOID - CHECK FOR VOLTAGE AT HI/LO ON THE 10 PIN CONNECTOR (115V). REPLACE.



TROUBLE

POSSIBLE CAUSE

G. DRYER OPERATING SATIS-  
FACTORILY BUT GLO-BARS  
ARE FAILING FREQUENTLY.

4) HI/LO SOLENOID IS NOT  
ACTIVATING - DISCONTINUE  
POWER TO DRYER, REMOVE 10  
PIN PLUG FROM CONTROL  
BOARD AND APPLY 115VAC TO  
THE HI/LO SOLENOID.  
REPLACE VALVE. IF  
SOLENOID ACTIVATES, CHECK  
CONTINUITY OF WIRES WITH  
AN OHM METER OR  
CONTINUITY TESTER.

1) GLO-BAR IS POSITIONED TOO  
FAR IN OVER BURNER TIPS  
AND THE CEMENT OF THE  
CERAMIC SUPPORT IS  
BREAKING DOWN FROM  
EXCESSIVE HEAT - LOOSEN  
GLO-BAR HOLDER AND  
SUPPORT BRACKET;  
REPOSITION GLO-BAR SO  
ONLY TIP END PORTION OF  
THE GLO-BAR IS OVER THE  
BURNER TIPS; RETIGHTEN  
SUPPORT BRACKET (DO NOT  
CRACK CERAMIC) AND HOLDER  
AND TEST DRYER WITH  
SERVICE DOOR CLOSED TO BE  
SURE OF REPEATED  
IGNITION. TURN DRYER  
POWER OFF BEFORE HANDLING  
GLO-BAR.

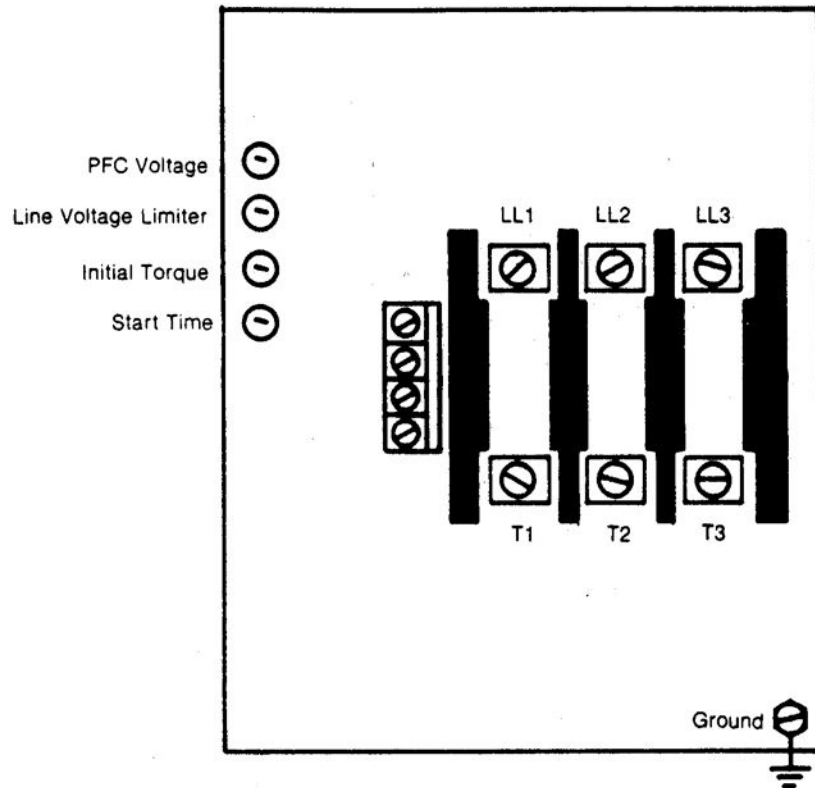
2) EXCESSIVE DRYER VIBRATION  
- LOOK FOR CAUSE OF  
VIBRATION AND CORRECT.  
EXCESSIVE VIBRATION WILL  
RESULT IF BLOWER WHEEL IS  
UNBALANCED OR IF THE  
TUMBLER DOES NOT RIDE  
SMOOTHLY ON ITS ROLLER  
WHEELS.

3) ADVERSE AIR DISTURBANCE  
AROUND FRONT OF BURNER  
MAY BE CAUSING GAS FLAME  
TO IMPINGE ON THE CERAMIC  
SUPPORT - DETERMINE CAUSE  
OF DRAFT, ELIMINATE IT.

## START-UP

The ES-3 contains four field adjustable functions which allow it to be set-up for optimal performance on any application. Each adjustment is a single turn industrial grade potentiometer, with a locking nut to prevent any accidental change of a desired setting.

**CAUTION:** To prevent the possibility of electrical shock, the orange safety cover should always be in place when making any adjustments.

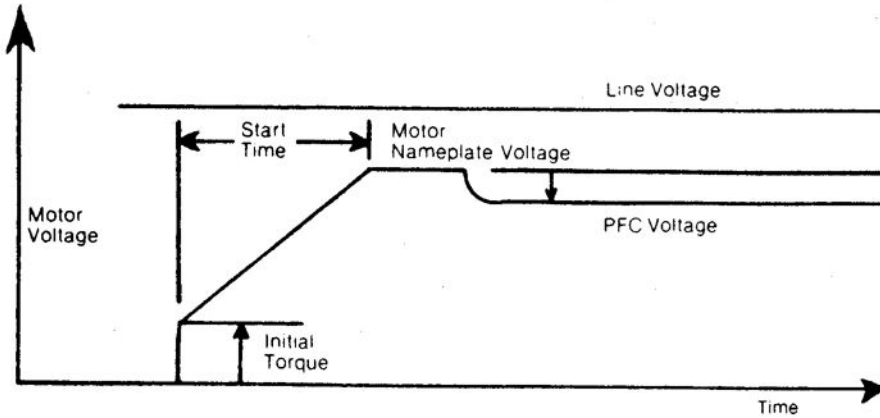


The PFC adjustment is used to reduce the output voltage of the ES-3 to a motor that is lightly loaded. The ES-3 will continually monitor the motor power factor and reduce the motor voltage to a level no lower than that as set by the PFC adjustment. This minimum level is always found when the motor is operating under its lightest operating load.

The Line Voltage Limiter adjustment is used to limit the maximum output voltage of the controller. The Line Voltage Limiter should be adjusted such that its output voltage never exceeds the value indicated on the motor nameplate. Regardless of the value of the incoming line voltage, the motor will never see more than the value set by the adjustment.

The Initial Torque and Start Time adjustments are used to adjust the soft start ramp. The initial torque adjustment sets the value of the voltage that the motor first sees at the beginning of a soft start. The Start Time adjustment sets the duration of the soft start.

## Soft Start Adjustment



NOTE: Adjustments must be made in the order as listed below. Failure to do so may result in improper operation of the controller and motor.

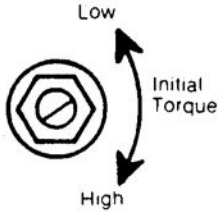
## Soft Start Adjustment

When adjusting the soft start, two characteristics of the motor and load must be taken into consideration. These two characteristics will effect the performance of the soft start and the way in which it is adjusted. First, as the frictional load on the motor or the resistance to motion of the load due to the touching of surfaces increases, the soft start becomes harder. The break-away voltage required by the system will require a higher initial voltage, thus producing a shorter soft start. Second, as the inertial load or tendency of a load to remain at a constant speed unless it is acted upon by an external force increases, the softness of the start will increase. The softest possible start will occur when the start time adjustment is set to maximum and the initial torque adjustment is set at the point where the motor starts the load moving when power is first applied.

### A. INITIAL TORQUE Adjustment

The **INITIAL TORQUE** adjustment is preset for maximum torque (maximum starting voltage). When adjusting the **INITIAL TORQUE**, a jumper or external contact must be wired between Reset Ramp and Common.

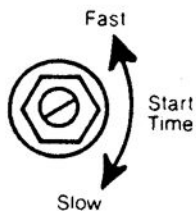
1. Turn off control power and remove cover.
2. Rotate the **START TIME** adjustment such that the slowest (longest) starting time is obtained.
3. Rotate the **INITIAL TORQUE** adjustment to lower (reduce) the value of the starting torque.
4. Start the motor. If more or less torque is desired, turn off the power, rotate the **INITIAL TORQUE** adjustment in the appropriate direction until an acceptable soft start is obtained.
5. Lock the adjustment by tightening the locking nut on the adjustment potentiometer.



### B. START TIME Adjustment

The Soft Start adjustment range is  $\frac{1}{2}$  to 30 seconds for a motor voltage from 10% to 100% of line voltage. The higher the value of the **INITIAL TORQUE**, the shorter the overall duration of the Time period.

1. Turn off power.
2. During the **INITIAL TORQUE** adjustment process, the **START TIME** was adjusted for the slowest Start possible. If a faster time is required, rotate the adjustment as shown.
3. Start the motor and determine if the Soft Start is acceptable. If yes, move on. If not, rotate the adjustment in the appropriate direction to achieve the desired Soft Start.
4. Lock the adjustment by tightening the locking nut on the adjustment potentiometer.

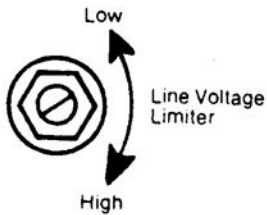


C. **LINE VOLTAGE LIMITER** Adjustment

The **LINE VOLTAGE LIMITER** adjustment is preset for the rating of the ES-3 (NEMA standard motor voltages) and should be adjusted only if the motor nameplate voltage differs from this value.

The **LINE VOLTAGE LIMITER** adjustment limits the output voltage of the ES-3 to a level which does not exceed the nameplate voltage of the motor. To adjust perform the following.

NOTE: The Line Voltage Limiter adjustment can reduce the motor terminal voltage to a level not less than the value of the Soft Start Initial Voltage. If unable to lower the nameplate voltage, reduce the Soft Start Initial Voltage until an acceptable output is obtained.



1. Turn off control power and remove cover.
2. Rotate the PFC voltage adjustment such that the highest voltage is obtained.
3. Connect a voltmeter to any two of the three output terminals on the ES-3 (T1, T2 or T3).
4. Turn power on. Wait at least one minute for the soft start circuit to bring the ES-3 output up to line voltage.  
(Note: If the line voltage is equal to or less than the nameplate voltage of the motor, no adjustment is possible).
5. To lower the output voltage of the ES-3, rotate the **LINE VOLTAGE LIMITER** adjustment as shown at left.
6. Continue to slowly lower the voltage until the reading on the voltmeter matches the nameplate voltage of the motor.
7. Lock the adjustment by tightening the locking nut on the adjustment potentiometer.
8. For proper adjustment of the energy saving circuit move on to section D.

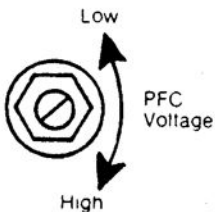
D. **Energy Saving** Adjustment

The ES-3 senses the motor power factor and automatically adjusts the motor voltage to reduce power consumption of lightly loaded motors. The result is a significant reduction in wasted energy consumption at light loads.

NOTE: For Soft Start applications with multiple motors, the **PFC VOLTAGE** must be set to its highest value.

The **PFC VOLTAGE** adjustment is preset for line voltage and should be adjusted with the motor running. The ideal setting is where the voltage is reduced to a point slightly above the minimum current level. This is the objective! As you reduce the voltage, the current is reduced simultaneously. However, if you reduce the voltage too far, the current will begin to rise—indicating you have gone too far.

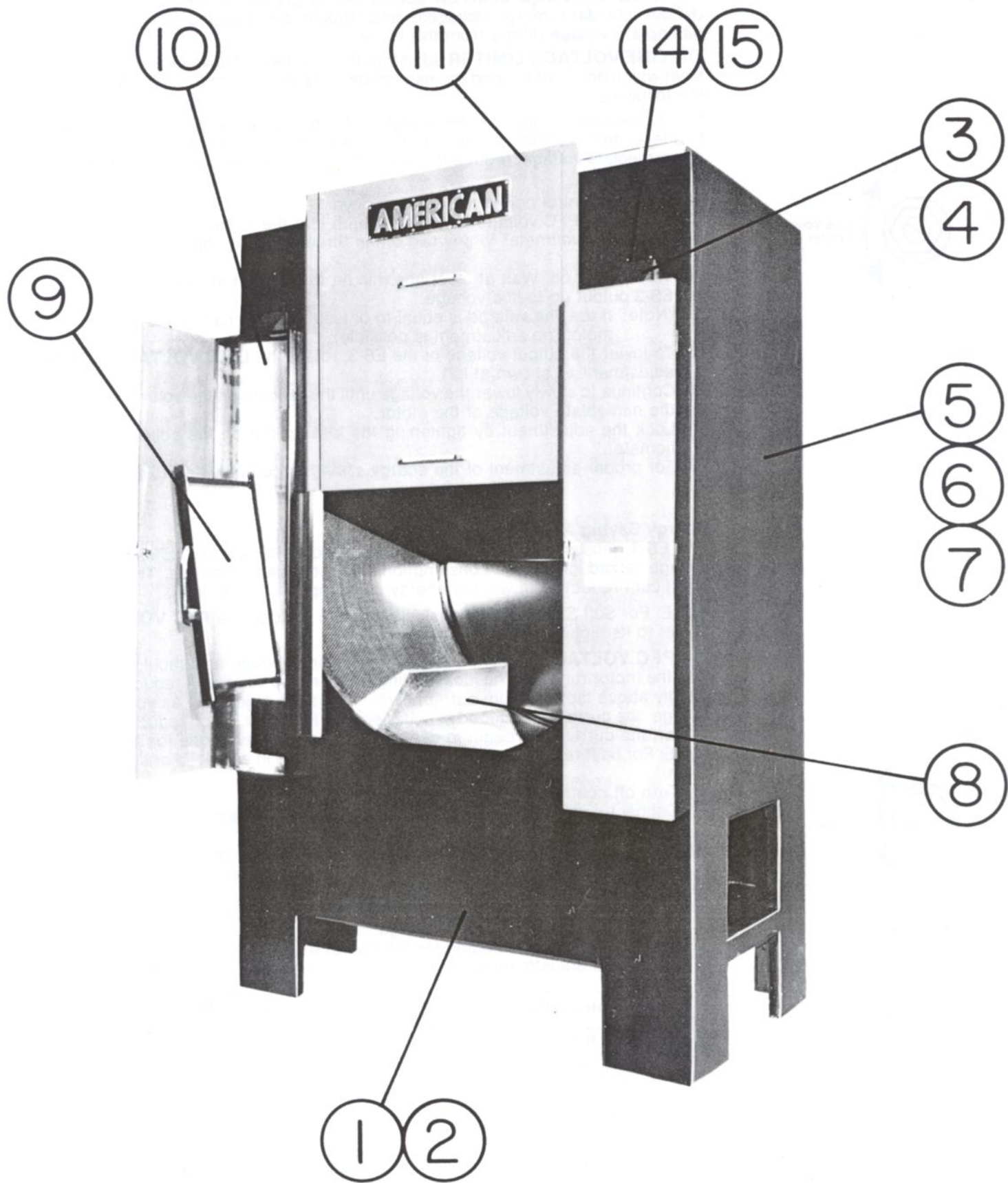
NOTE: For best results, adjustments should be made in a no load or light load condition.



1. Turn off control power and remove cover.
2. Connect a voltmeter to any two of the three output terminals on the ES-3 (T1, T2, or T3).
3. Then connect a clamp-on ammeter to any one of the power wires.
4. Start the motor. Allow the soft start circuit at least 60 seconds to reach nameplate voltage.
5. Turn the **PFC VOLTAGE** adjustment fully to the highest setting. Then slowly lower it to reduce the motor voltage.
6. Check the ammeter reading for the lowest motor current. Then turn the **PFC VOLTAGE** adjustment back per the following:

ES-3 Rated Voltage	200 Volts	230 Volts	460 Volts	575 Volts
Voltage Above Lowest Current Reading	5 Volts	5 Volts	10 Volts	15 Volts
Minimum Allowable PFC Voltage	96 Volts	110 Volts	220 Volts	275 Volts

7. Lock the adjustment by tightening the locking nut on the adjustment potentiometer.

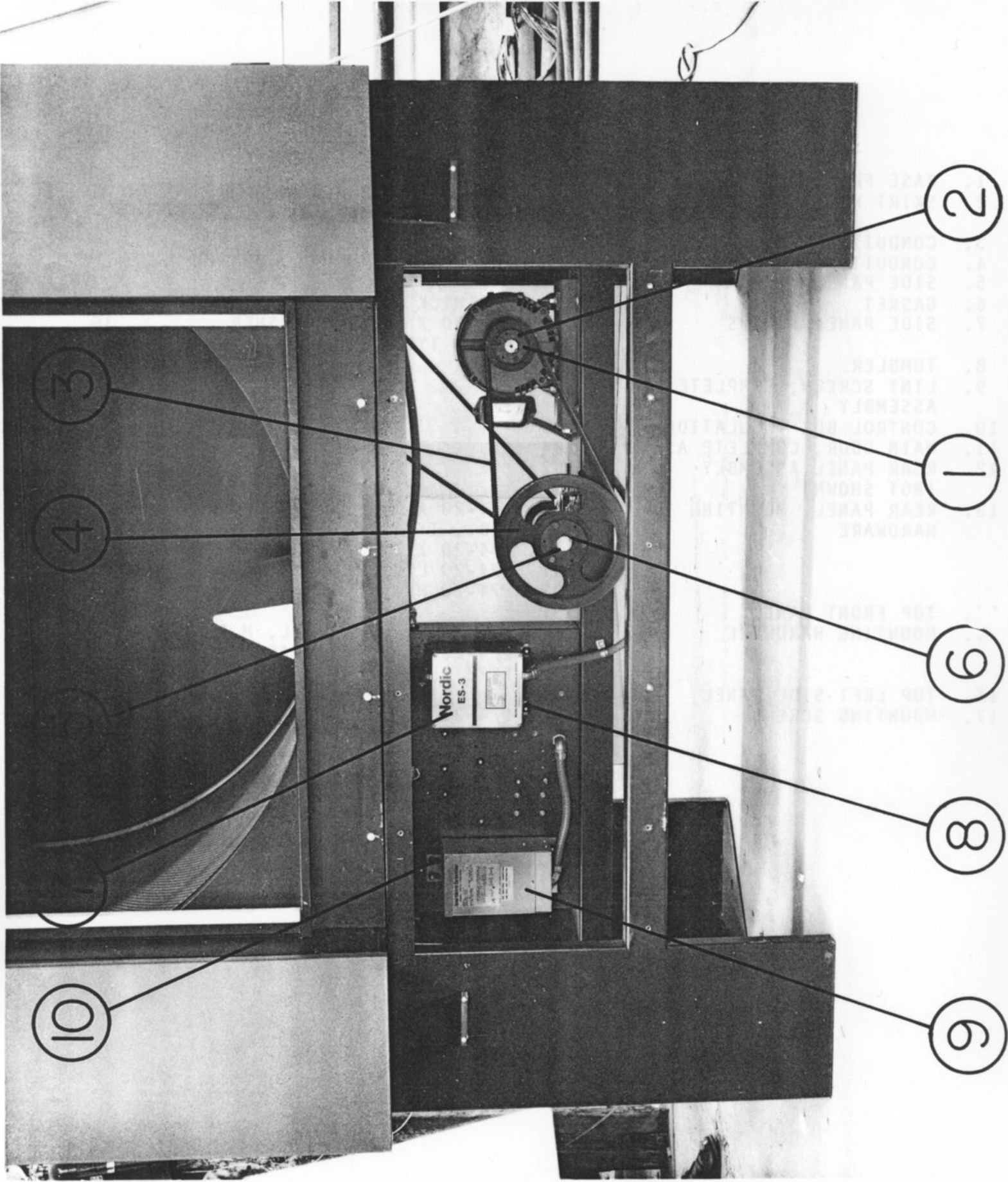


## SECTION VIII

## OVERALL VIEW

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. BASE FRONT SKIRT	341025		1
2. SKIRT MOUNTING BOLTS	150522	1/4-20 X 1/2 HEX WASHER M.B., TYPE "F", PL	10
3. CONDUIT COVER	844360		4
4. CONDUIT COVER SCREWS	150301	#8-18 X 7/16 PHIL., PH TEK	16
5. SIDE PANEL	844071		2
6. GASKET	102312	1/8THICK X 1/2WIDE, SILICONE	AR
7. SIDE PANEL SCREWS	150523	1/4-20 X 3/4 HEX WASHER M.B., TYPE "F", PL	36
8. TUMBLER	844040		1
9. LINT SCREEN, COMPLETE ASSEMBLY	844301		1
10. CONTROL BOX INSULATION	116200		2
11. MAIN DOOR, COMPLETE ASSY.	844204		1
12. REAR PANEL ASSEMBLY (NOT SHOWN)	844062		1
13. REAR PANEL, MOUNTING HARDWARE	150522	1/4-20 X 1/2 HEX WASHER, M.B., TYPE "F", PL	30
	150510	1/4-20 X 3/4 HEX HD, PL	7
	153007	1/4-20 LOCK WASHER	7
	152002	1/4-20 HEX NUT	7
14. TOP FRONT PANEL	341331		1
15. MOUNTING HARDWARE	150111	1/4-20 X 1/2 PH, PL, M.B.	4
	150522	1/4-20 X 1/2 HEX WASHER, M.B. TYPE "F", PL	5
16. TOP LEFT SIDE PANEL	341331		1
17. MOUNTING SCREWS	150522	1/4-20 X 1/2 HEX WASHER M.B., TYPE "F", PL	10





2

1

6

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Nordic  
ES-3

WARRANTY  
This product is warranted for a period of 1 year from the date of purchase. The warranty is void if the product is used for any purpose other than that intended by the manufacturer.

## SECTION VIII

## BASE - FRONT VIEW (PANEL REMOVED)

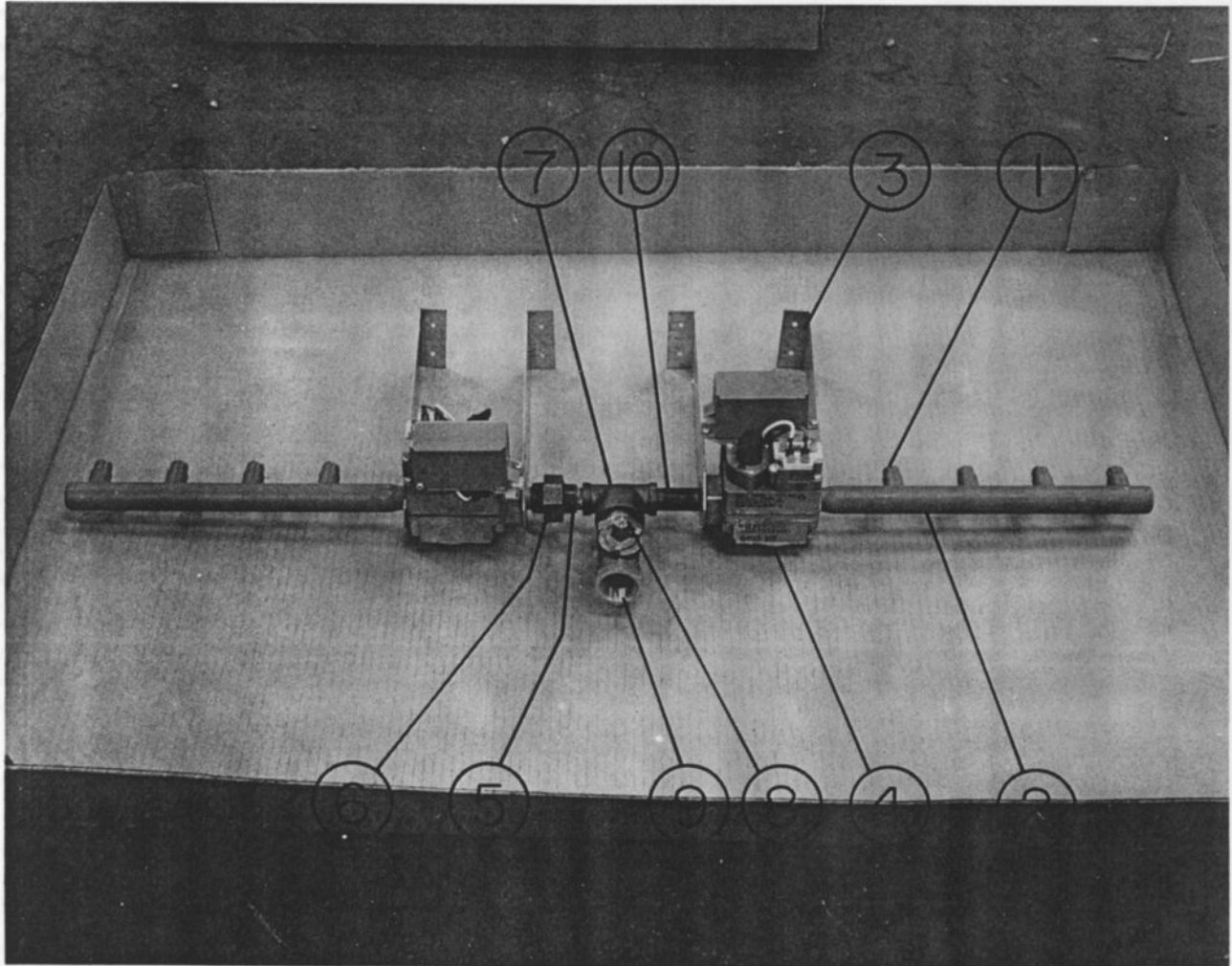
ITEM	PART #	DESCRIPTION	QTY
1. DRIVE MOTOR SHEAVE	101143	2B X 3.8	1
2. BUSHING	101144	SH X 1-1/8	1
3. MOTOR V-BELTS	100120	B X 56	2
4. IDLER SHEAVE (LARGE)	101145	2B X 11.0	1
5. BUSHING	101146	SK X 1-1/4	1
6. KEY	100711	1/4 X 1/4 X 1-1/2" LONG	1
7. SOFT START DEVICE			1
-208V/60HZ	132253		
-220V/50HZ	132257		
-240V/60HZ	132250		
-380V/50HZ	132255		
-416V/50HZ	132256		
-480V/60HZ	132251		
8. SOFT START MOUNTING	150111	1/4-20 X 1/2 LG, PH, PL, M.B.	3
HARDWARE	152014	1/4-20 X 3/4 FREE SPIN WASHER NUT	3
9. CONTROL VOLTAGE			
TRANSFORMER			1
-208V/60HZ	132012		
-220V/50HZ	132014		
-240V/60HZ	132013		
-380V/50HZ	132014		
-416V/50HZ	132014		
-480V/60HZ	132013		
10. TRANSFORMER MOUNTING	150111	1/4-20 X 1/2 LG, PH, PL, M.B.	4
HARDWARE	152014	1/4-20 X 3/4 FREE SPIN WASHER NUT	4
BASE HARNESS - FROM HIGH VOLTAGE		ELECTRICAL BOX TO RIGHT	
CONTROL BOX, CONSISTING OF:			1
	120111	1/2" CONNECTOR, 45°	2
	120602	1/2" LIQUATITE CONDUIT	77-1/2"
	318700	LIQUATITE BRACKET 1-1/4" X 4"	3
		LIQUATITE BRACKET 2" X 4"	1
	150301	#8-18 X 7/16 PHIL., PH TEK	8
BASE HARNESS - FROM HIGH VOLTAGE		ELECTRICAL BOX TO LEFT	
CONTROL BOX, CONSISTING OF:			
	120111	1/2" CONNECTOR, 45°	2
	120602	1/2" LIQUATITE CONDUIT	34-1/2"
	318700	LIQUATITE BRACKET 1-1/4" X 4"	1
		LIQUATITE BRACKET 2" X 4"	1
	150301	#8-18 X 7/16 PHIL., PH TEK	4
BASE HARNESS - FROM SOFT START DEVICE		TO DRIVE MOTOR,	
CONSISTING OF:			1
	120107	3/8" CONNECTOR, 45°	1
	120105	3/8" CONNECTOR, 90°	1
	120106	3/8" LIQUATITE	37-1/2"
	120116	EMT HANGER	1

	153027	REDUCING WASHER 3/4" TO 1/2"	2
BASE HARNESS - FROM HIGH VOLTAGE		ELECTRICAL BOX TO TRANSFORMER	1
	120105	3/8" CONNECTOR, 90°	2
	120106	3/8" LIQUATITE CONDUIT	7-1/2"
BASE HARNESS - FROM HIGH VOLTAGE		ELECTRICAL BOX TO SOFT START	1
	120105	3/8" CONNECTOR, 90°	2
	120106	3/8" LIQUATITE CONDUIT	9"

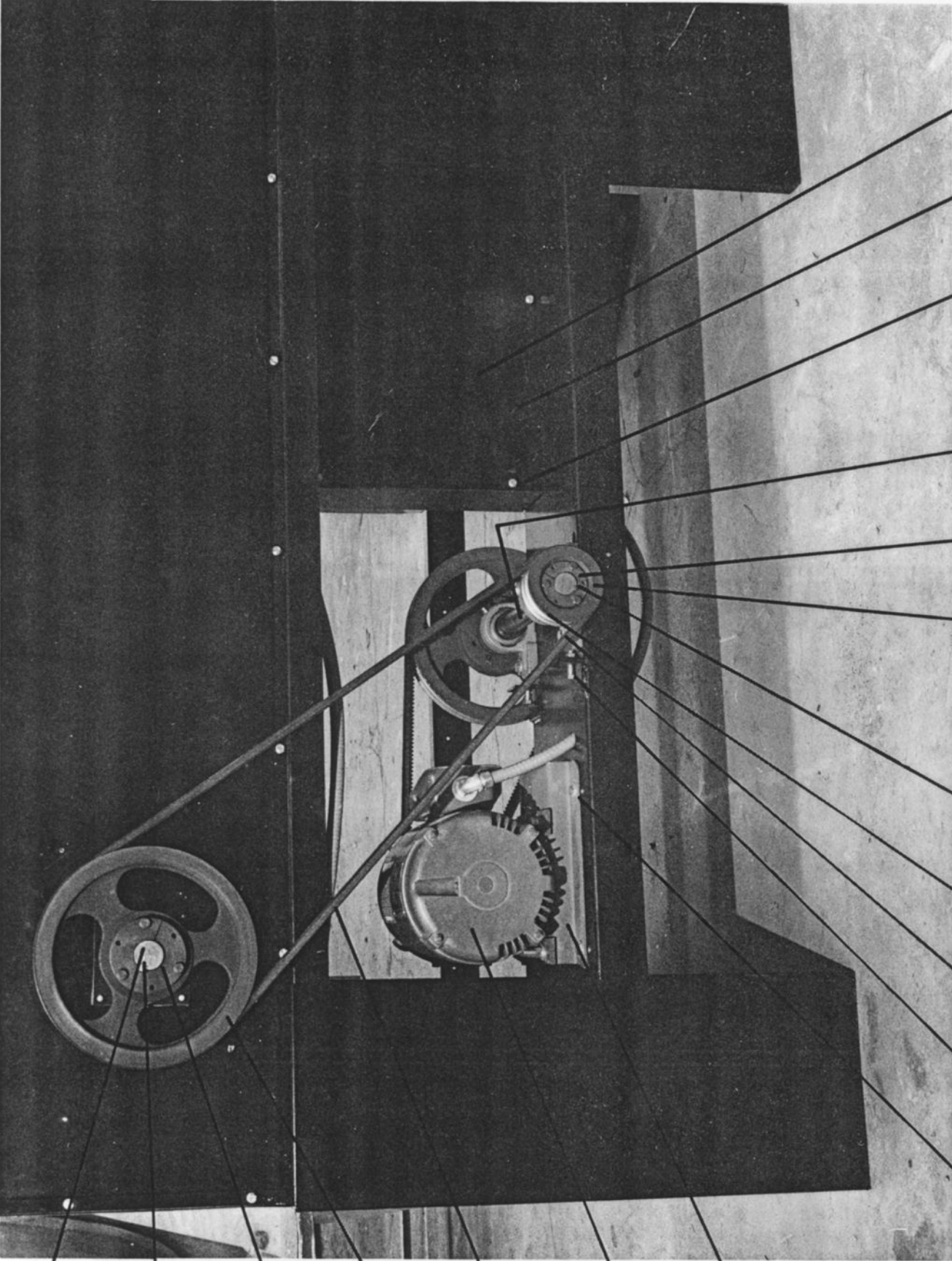
SECTION VIII

GAS TRAIN

	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1.	140822	ORIFICE (NATURAL)	8
	140808	ORIFICE (L.P.)	8
2.	141207	MANIFOLD	2
3.	318367	PIPE BRACKET	4
4.	140010	1/2" HI/LO GAS VALVE (NATURAL)	2
	140011	1/2" HI/LO GAS VALVE (L.P.)	2
5.	142700	1/2" CLOSE NIPPLE, B.I.	2
6.	142600	1/2" UNION, B.I.	1
7.	142510	1/2" X 1/2" X 1" TEE, B.I.	1
8.	142711	1" CLOSE NIPPLE, B.I.	1
9.	141302	1" SHUTOFF VALVE	1
10.	142814	1/2" X 2-1/2" NIPPLE, B.I.	1







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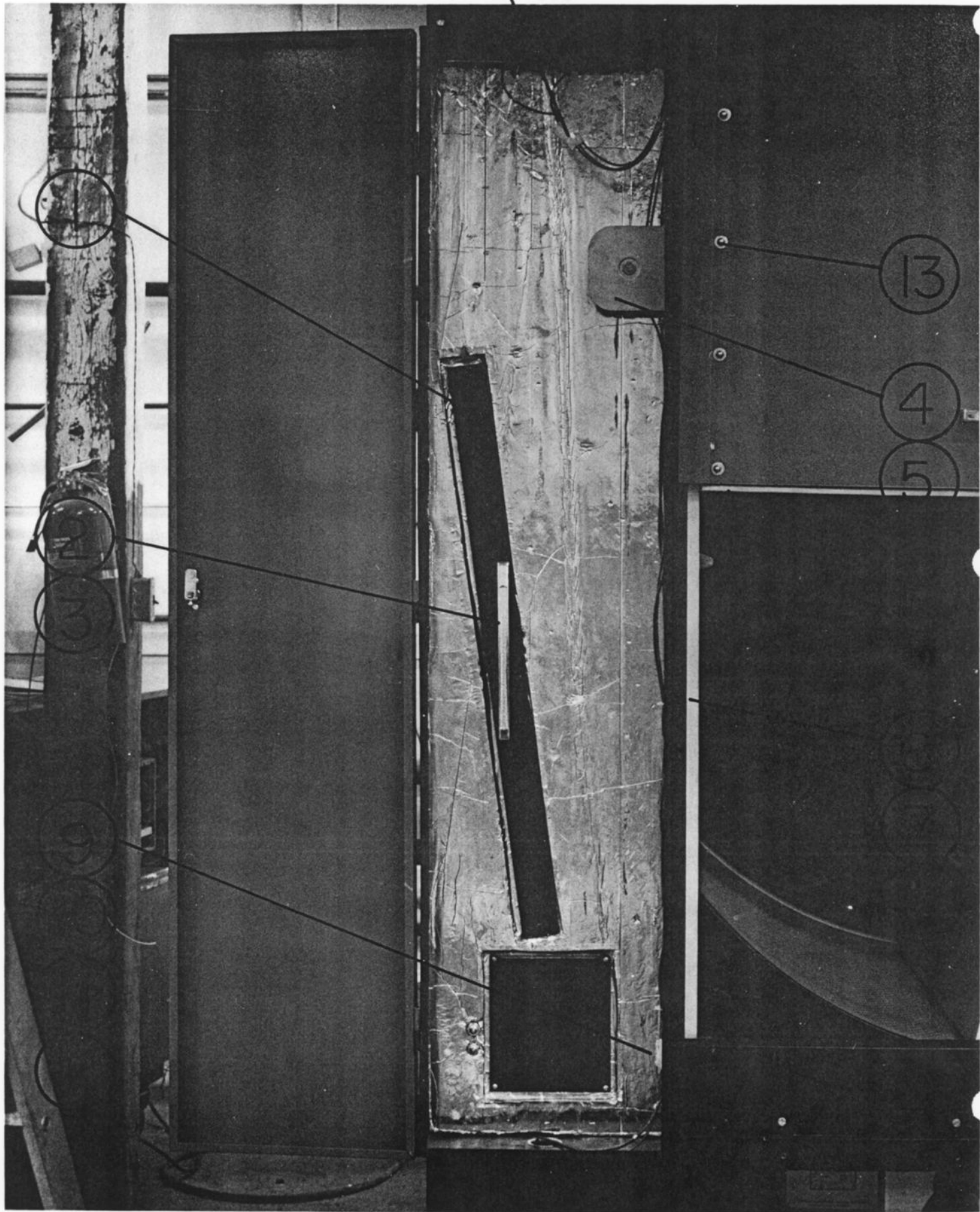
## SECTION VIII

## BASE - REAR VIEW

ITEM	PART #	DESCRIPTION	QTY
1. DRIVE MOTOR	100043	3HP, 1725 RPM, 182T FRAME	1
2. MOTOR MOUNT BASE	100060	FOR 3HP MOTOR	1
3. MOTOR BASE MOUNTING HARDWARE	150600	3/8-16 X 1-1/2 HH, PL BOLT	4
	153004	3/8 FLAT WASHER	4
	153005	3/8 LOCK WASHER	4
4. DRIVE SHAFT SHEAVE	101145	2B X 11.0	1
5. DRIVE SHAFT BUSHING	101150	SK X 1-1/2" DIA.	1
6. KEY	100709	3/8" X 3/8" X 2" LG	1
7. TUMBLER SHAFT V-BELTS	100122	B84 (60HZ DRYERS)	2
" " "	100121	B86 (50HZ DRYERS)	2
8. IDLER SHEAVE (SMALL)	101148	2B X 4.0 (60HZ DRYERS)	1
" " "	101147	2B X 4.8 (50HZ DRYERS)	1
9. IDLER SHEAVE BUSHING	101149	SH X 1-1/4 (60HZ DRYERS)	1
" " "	101169	SDS X 1-1/4 (50HZ DRYERS)	1
10. KEY	100711	1/4 x 1/4 x 1-1/2" LG	1
11. IDLER SHAFT BEARING	100219	PILLOW BLOCK, 1-1/4" DIA.	2
12. BEARING MOUNTING HARDWARE	SAME AS	NO. 3	
13. BEARING ADJUSTMENT HARDWARE	150600	3/8-16 X 1-1/2 HH, PL BOLT	2
	152005	3/8-16 PL HEX NUT	2
14. TUMBLER DRIVE SHAFT	100420	1-1/2" DIA. X 45-1/4" LG	1
15. SPEED-REDUCING IDLER SHAFT	100425	1-1/4" DIA. X 18" LG	1
' ELECTRICAL BOX COVER			1
17. COVER MOUNTING SCREWS	150522	1/4-20 x 1/2 HEX WASHER, M.B. TYPE "F", PL	8
18. ELECTRICAL BOX ASSEMBLY	SEE PAGE	56	1
19. BELT GUARD (NOT SHOWN)			1
20. BELT GUARD MOUNTING SCREWS	150301	#8-18 X 7/16 PHIL., PH TEK	3



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## SECTION VIII

## LEFT CONTROL BOX

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. LIST SCREEN			1
2. LINT SCREEN HANDLE	170202		3
3. HANDLE MOUNTING HARDWARE	150115	1/4-20 X 3/4 RH M.S.	6
	153007	1/4" LOCK WASHER	6
4. DOOR COUNTER SPRING	170400		
5. COUNTER SPRING MOUNTING HARDWARE	150510	1/4-20 X 3/4 HH, PL BOLTS	4
	153018	1/4" FLAT WASHER	4
	152014	1/4-20 X 3/4 FREE SPIN NUT	4
6. NYLON TRACK	170352	1-1/2 X 1 X 57-1/4 WHITE NYLON	2
7. NYLON TRACK HOLDER	341180		2
8. TRACK BOLTS	150552	1/4-20 X 1/2 SL, PH, M.S., PL, TYPE "F"	8
9. 4-POSITION PLUG	122622		2
10. SOCKETS	122705		6
11. 4-POSITION CAP	122621		2
12. PINS	122704		6
13. LOAD DOOR HARDWARE	151003	1/4-20 CAP NUTS	14
	153007	1/4" LOCK WASHER	14
	153018	1/4" FLAT WASHER	14
14. DOOR FELT	116005	1/4" X 1" FELT STRIP, 38-1/4 LG	1

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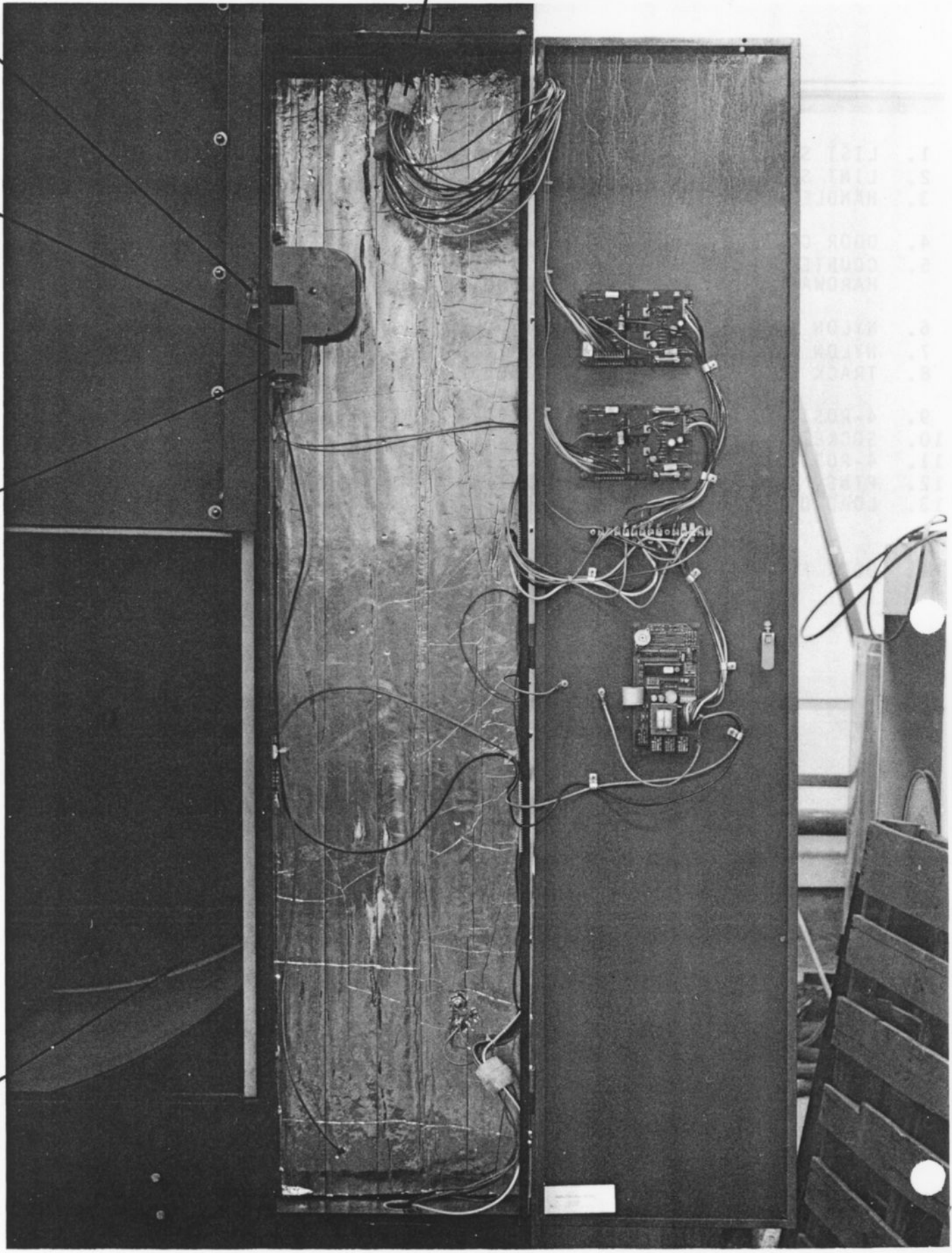
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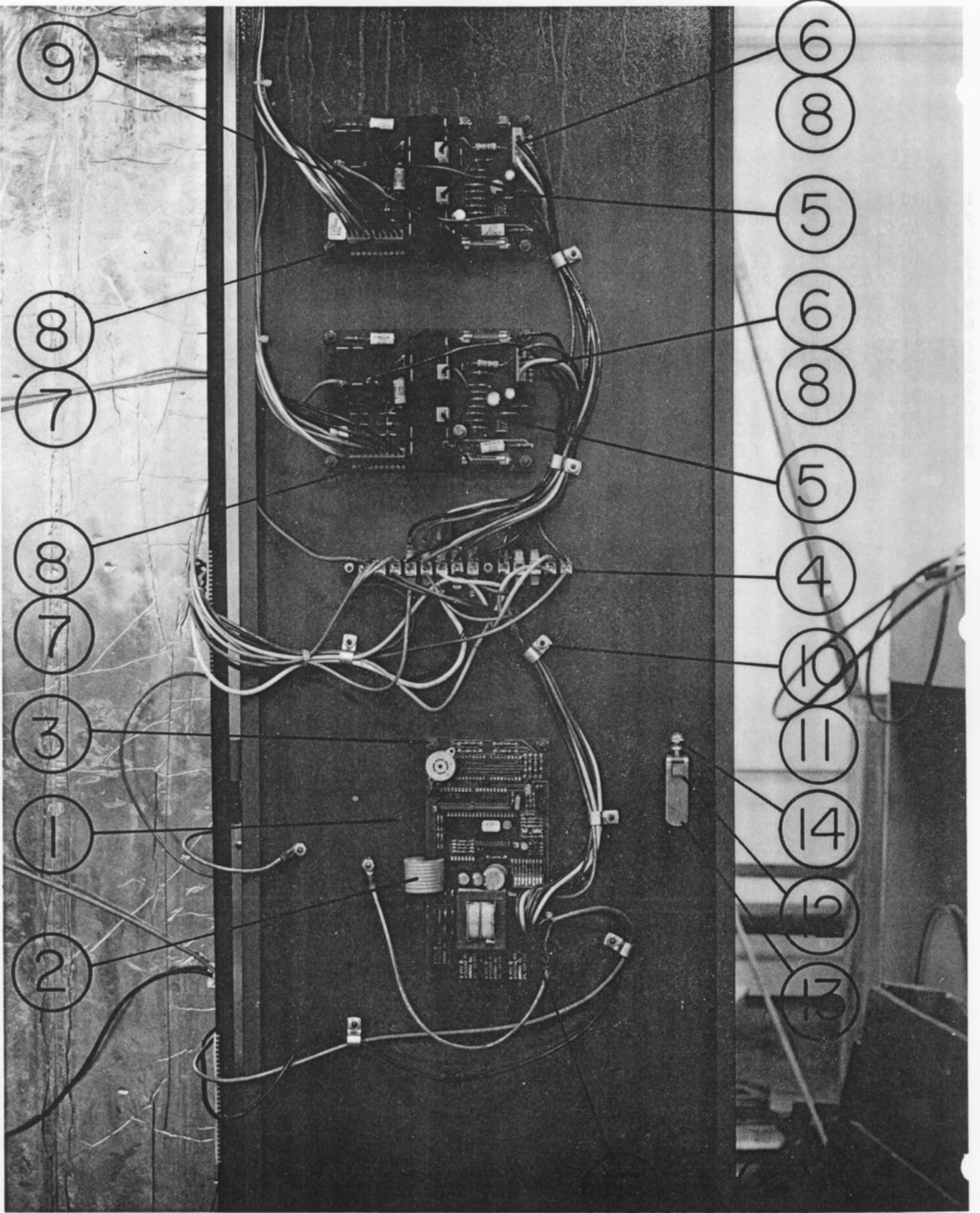
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## SECTION VIII

## RIGHT CONTROL BOX

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. DOOR SWITCH	122153	10AMP, HEAVY DUTY	1
2. DOOR SWITCH MOUNTING HARDWARE	150208	10-32 X 1/2 OVAL SLOT M.S.	2
	150700	#8 COUNTERSUNK WASHER	2
3. DOOR SWITCH LEVER ARM	122152	ADJUSTABLE ROLLER	1
4. 15-POSITION PLUG	122625		3
5. SOCKETS	122705		27
6. 15-POSITION CAP	122626		3
7. PINS	122704		27
8. DOOR SWITCH CONNECTOR	120103		1
9. WIRE TIE	121499		AR
10. TIE MOUNTING PAD	121503		AR
11. CATERPILLAR GROMMET	156000		AR
12. TUMBLER RING FELT	116005	FRONT AND BACK RINGS	2



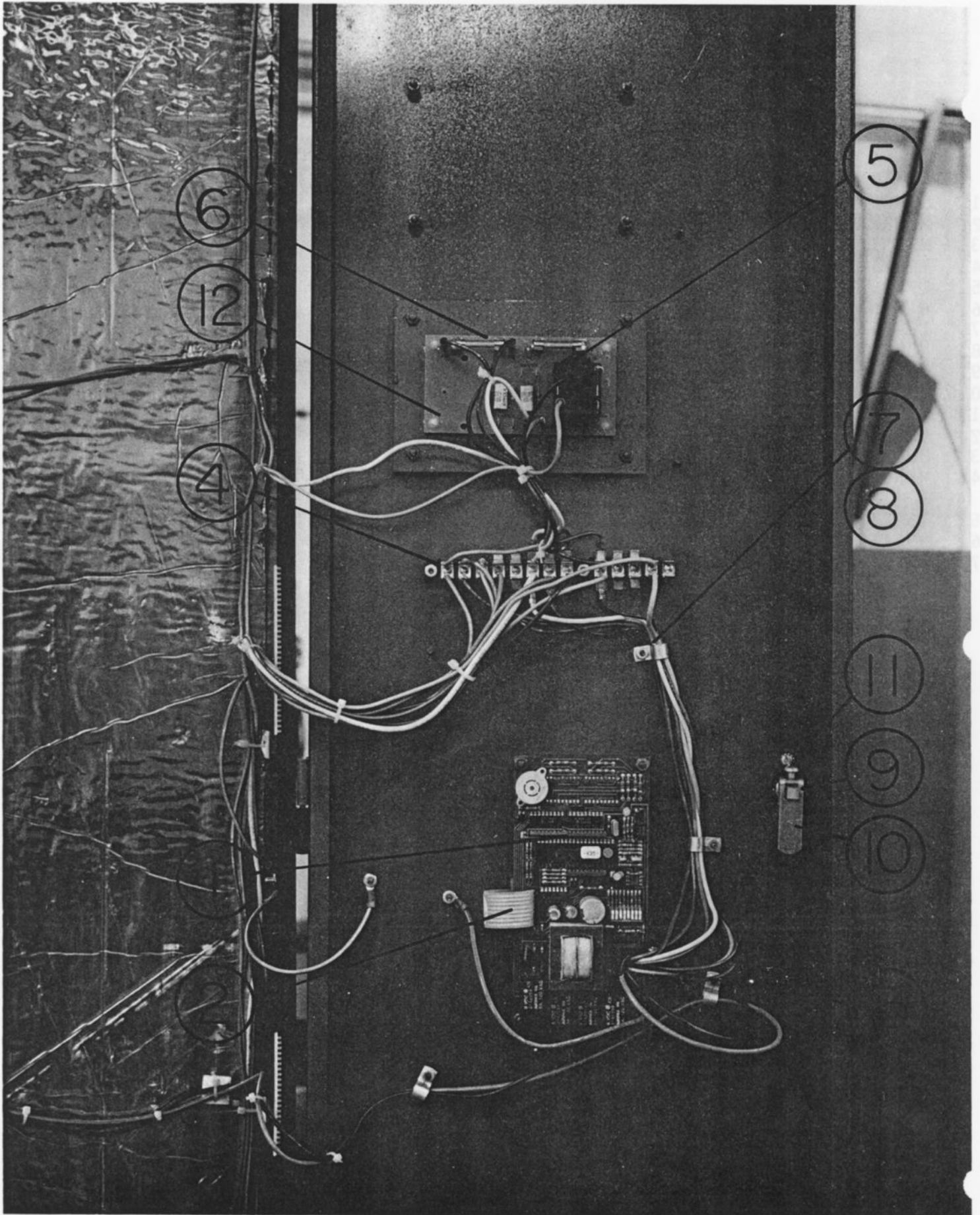


## SECTION VIII

## RIGHT CONTROL DOOR - GAS DRYER

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. COMPUTER	137052	NON-COIN, REV.	1
2. MEMBRANE/LABEL SWITCH	112511	AUTOMATIC ONLY	1
3. MOUNTING NUT	152001	#8-32 HEX NUT	12
4. TERMINAL STRIP	120700	14-POSITION	1
5. 1/2" HI/LO BOARD	137066	115 VOLT	2
6. 6-PIN HOUSING	122615		2
7. 10-PIN HOUSING	122614		2
8. HOUSING, WIRE TERMINALS	122702		32
9. FUSE	136052	4 AMP, 250 VOLT	3
10. JIFFY CLIP	120300		7
11. MOUNTING NUT	152000	6-32 HEX NUT	11
12. DOOR HANDLE	160200		2
13. DOOR LATCH CAM	160009		2
14. HANDLE MOUNTING HARDWARE	150100	8-32 X 1/2" RH M.S.	4
	153012	#8 STAR LOCK WASHER	4
15. 15-PIN CONNECTOR, M.P.	137020		1
16. SOCKETS, M.P.	137021		15
17. 15-PIN, STRAIN RELIEF	137022		1





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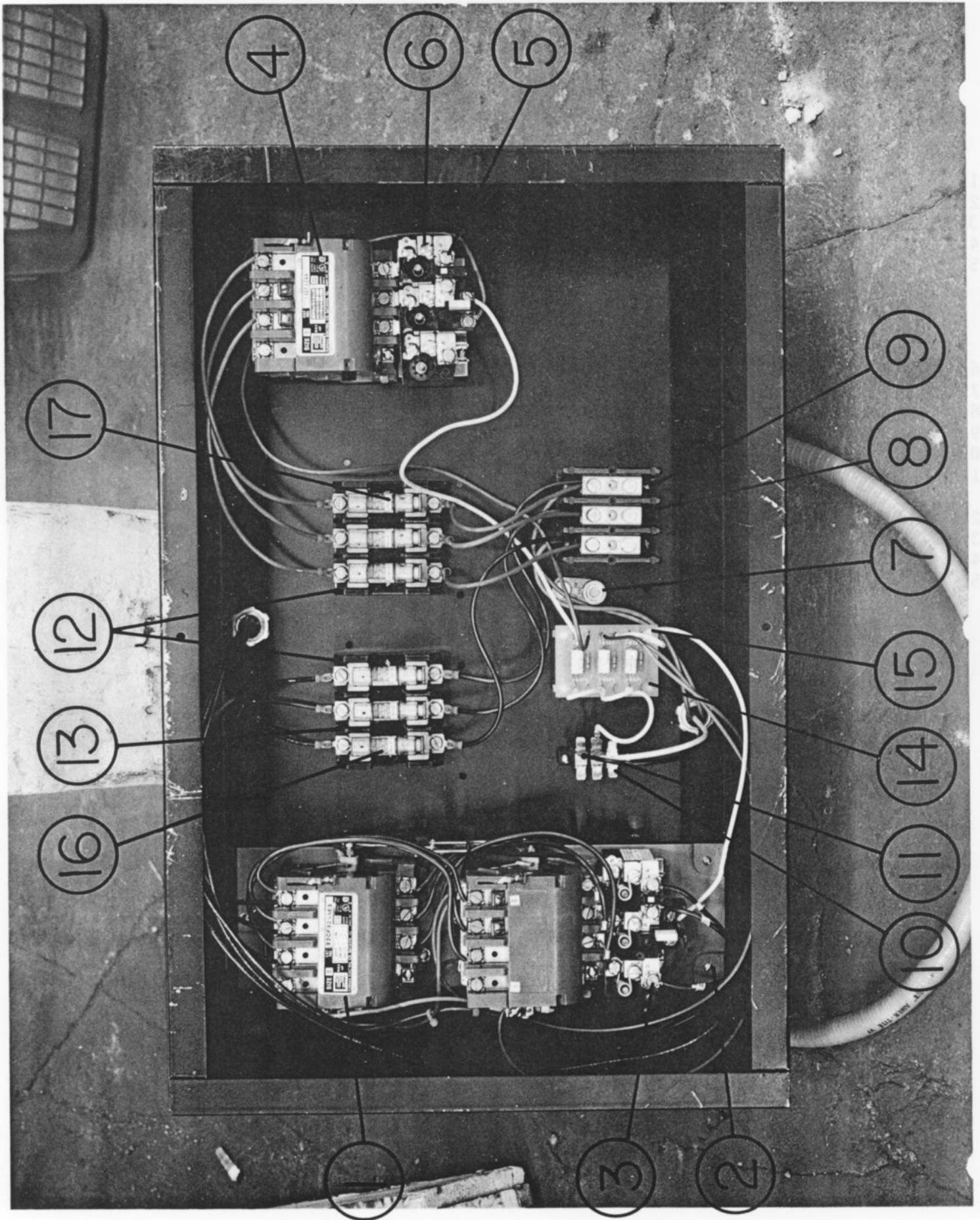
## SECTION VIII

## RIGHT CONTROL DOOR - STEAM DRYER

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. COMPUTER	137052	NON-COIN, REV.	1
2. MEMBRANE/LABEL SWITCH	112511	AUTOMATIC ONLY	1
3. MOUNTING NUT	152001	8-32 HEX NUT	8
4. TERMINAL STRIP	120700	14 POSITION	1
5. RELAY BOARD	842010	INCLUDES ARC SUPPRESSOR BOARD (P/N 137061), 115 VOLT RELAY (P/N 131916) AND ONE FUSE (P/N 136053) NOTE - MOUNT RELAY ON HEAT SIDE OF BOARD. 5 AMP, 250 VOLT	1
6. FUSE	136053		1
7. JIFFY CLIP	120300		4
8. MOUNTING NUT	152000	6-32 HEX NUT	8
9. DOOR HANDLE	160200		2
10. DOOR LATCH CAM	160009		2
11. HANDLE MOUNTING HARDWARE	150100	8-32 X 1/2" RH M.S.	4
	153012	#8 STAR LOCK WASHER	4
12. STANDOFFS	137013	NYLON	4
13. 15-PIN CONNECTOR, M.P.	137020		1
14. SOCKETS, M.P.	137021		1
15. 15-PIN, STRAIN RELIEF	137022		1

## STEAM DRYER PARTS

STEAM COIL	165016		1
STEAM VALVE	165104		1
STEAM COIL LINT SCREEN			1
EYE BOLT	154290	3/8-16 X 4" LONG	4
NUT	152005	3/8-16 HEX NUT	4





## SECTION VIII

## HIGH VOLTAGE ELECTRICAL BOX

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. DRIVE MOTOR STARTER	132205	SIZE 0, VERTICAL	1
2. DRIVE STARTER MOUNTING	150100	8-32 X 1/2 RH M.S.	4
HARDWARE	153012	#8 STAR LOCK WASHER	4
	152001	8-32 HEX NUT	4
3. DRIVE STARTER OVERLOAD HEATERS			
-208V/60HZ	132356	9.6 TO 10.7 AMPS	3
-220V/50HZ	132367	8.6 TO 9.5 AMPS	3
-240V/60HZ	132369	8.6 TO 9.5 AMPS	3
-380V/50HZ	132369	5.1 TO 6.3 AMPS	3
-416V/50HZ	132355	4.5 to 5.1 AMPS	3
-480V/60HZ	132365	4.0 TO 4.5 AMPS	3
4. BLOWER MOTOR STARTER			
-208V/60HZ	132210	SIZE 0, GAS DRYER	1
-208V/60HZ	132207	SIZE 1, STEAM DRYER	1
-220V/50HZ	132207	SIZE 1, GAS AND STEAM	1
-240V/60HZ	132210	SIZE 0, GAS DRYER	1
-240V/60HZ	132207	SIZE 1, STEAM DRYER	1
-380V/50HZ	132207	SIZE 1, GAS AND STEAM	1
-416V/50HZ	132207	SIZE 1, GAS AND STEAM	1
-480V/60HZ	132207	SIZE 1, GAS AND STEAM	1
5. BLOWER STARTER MOUNTING	SAME AS 2		
HARDWARE			
6. BLOWER STARTER OVERLOAD HEATERS			
-208V/60HZ	132367	8.6 TO 9.5 AMPS	3
-208V/60HZ	132363	14.1 TO 14.9 AMPS	3
-220V/50HZ	132363	14.1 TO 14.9 AMPS	3
-240V/60HZ	132366	7.7 TO 8.5 AMPS	3
-240V/60HZ	132371	12.8 TO 14.0 AMPS	3
-380V/50HZ	132366	7.7 TO 8.5 AMPS	3
-416V/50HZ	132362	6.8 TO 7.7 AMPS	3
-480V/60HZ	132372	3.6 TO 4.0 AMPS	3
-480V/60HZ	132362	6.8 TO 7.7 AMPS	3
7. GROUNDING LUG	121012		1
8. POWER DISTRIBUTION BLOCK	120704		1
9. POWER DISTRIBUTION BLOCK	SAME AS NO. 2		4
MOUNTING HARDWARE			
10. TERMINAL BLOCK	120708	3-POSITION	1
11. TERMINAL BLOCK MOUNTING	SAME AS NO. 2		2
HARDWARE			
12. FUSE BLOCK			
-208V, 220V, 240V	136003	250 VOLT, 3 POLE, 30 AMP	2
-380V, 416V, 480V	136006	600 VOLT, 3 POLE, 30 AMP	2
13. FUSE BLOCK MOUNTING	SAME AS NO. 2		4
HARDWARE			
14. ARC SUPPRESSOR BOARD	137060	3 ARC SUPPRESSORS	1
15. A.S. BOARD STANDOFFS	137013	NYLON	4

16. DRIVE MOTOR CARTRIDGE FUSES

-208V/60HZ	136064	250 VOLT, 15 AMP	3
-220V/50HZ	136075	250 VOLT, 12 AMP	3
-240V/60HZ	136075	250 VOLT, 12 AMP	3
-380V/50HZ	136077	600 VOLT, 6 AMP	3
-416V/50HZ	136077	600 VOLT, 6 AMP	3
-480V/60HZ	136077	600 VOLT, 6 AMP	3

17. BLOWER MOTOR CARTRIDGE FUSES

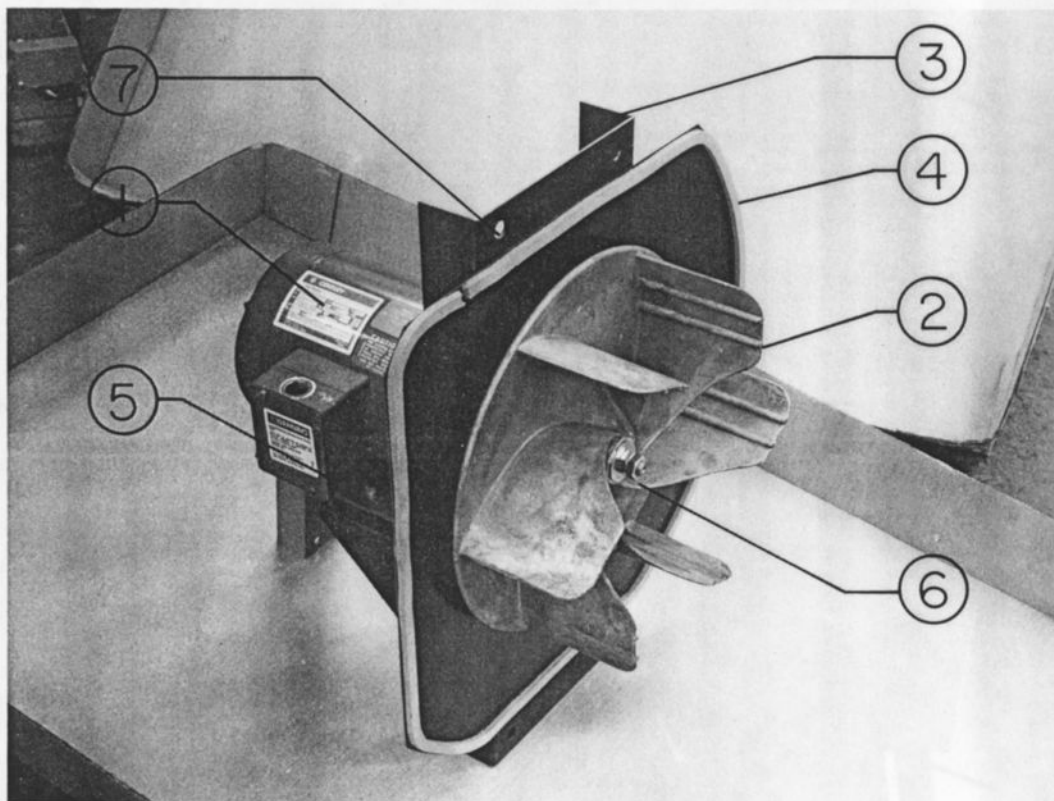
-208V/60HZ	136075	250 VOLT, 12 AMP, GAS DRYER	3
-208V/60HZ	136079	250 VOLT, 18 AMP, STEAM DRYER	3
-220V/50HZ	136066	250 VOLT, 20 AMP, GAS AND STEAM	3
-240V/60HZ	136072	250 VOLT, 10 AMP, GAS DRYER	3
-240V/60HZ	136064	250 VOLT, 15 AMP, STEAM	3
-380V/50HZ	136063	600 VOLT, 10 AMP, GAS AND STEAM	3
-416V/50HZ	136063	600 VOLT, 10 AMP, GAS AND STEAM	3
-480V/60HZ	136077	600 VOLT, 6 AMP, GAS	3
-480V/60HZ	136080	600 VOLT, 9 AMP, STEAM	3

## SECTION VIII

## BLOWER MOTOR ASSEMBLY

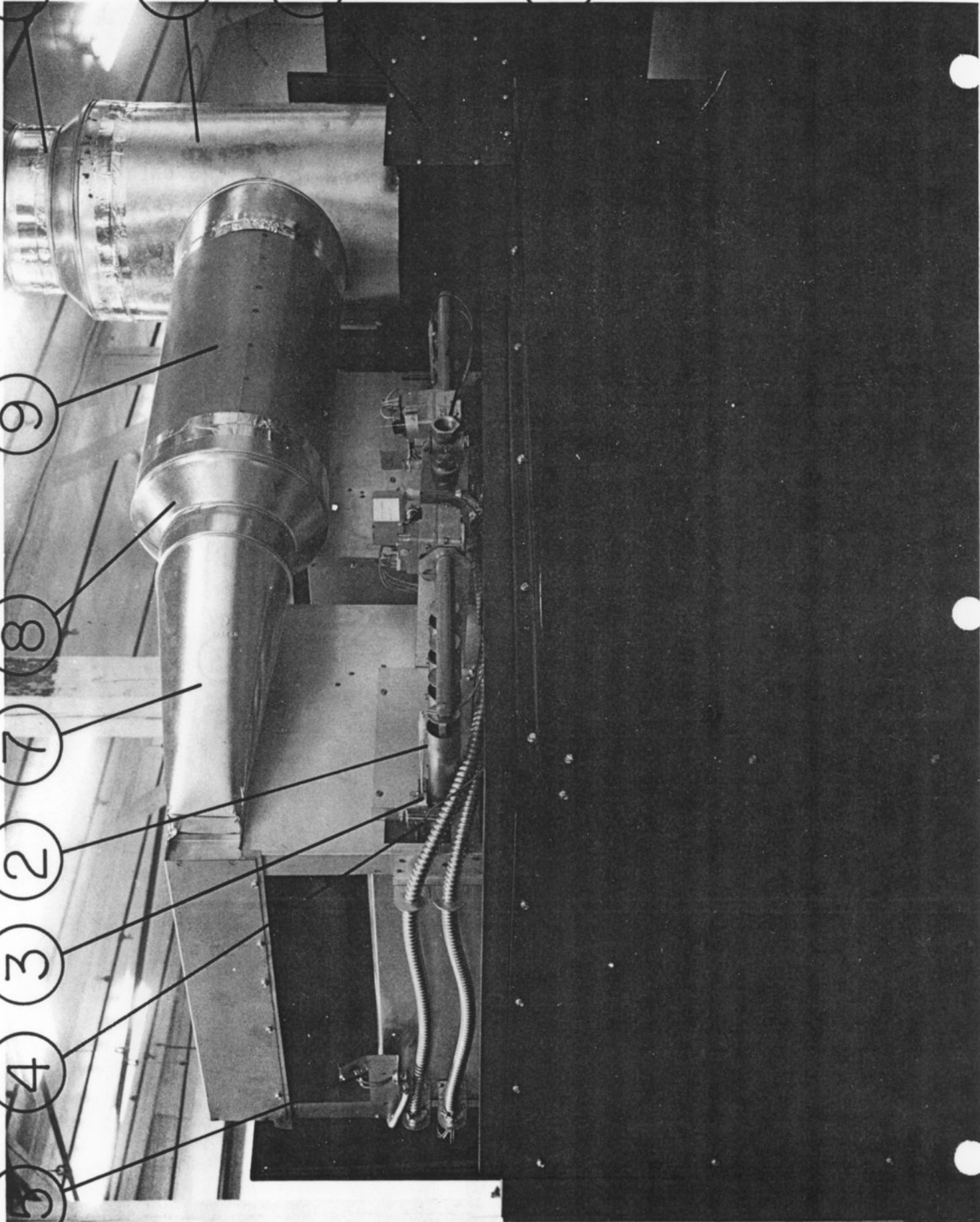
<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. BLOWER MOTOR	100023	3 HP (60 HZ, GAS DRYERS ONLY)	1
	100025	5 HP *	1*
2. IMPELLOR	100605	13" MAGNESIUM (60 HZ, GAS DRYERS ONLY)	1
	100606	13-3/4" ALUMINUM*	1*
3. MOTOR MOUNT	800913	3 HP MOTOR MOUNT (60 HZ, GAS DRYERS ONLY)	1
	800917	5 HP MOTOR MOUNT*	1*
4. GASKET	117600	NOISE SUPPRESSION TAPE	4 FT.
5. MOTOR MOUNTING HARDWARE	150501	5/16-18 X 3/4 HH PL M.B.	4
	153002	5/16 LOCK WASHER	4
	154000	5/16-18 TINNEMAN NUT	4
6. IMPELLOR MOUNTING HARDWARE	153023	3/4 X 1-1/2 MOTOR WASHER	AR
	100705	3/16 X 3/16 X 1-3/8 KEY	1
	153024	1/2 x 1-1/4 x 1/16 FLAT WASHER	AR
	152006	1/2-20 LH JAM NUT	2
7. MOTOR MOUNT MOUNTING HARDWARE	152005	3/8-16 HEX NUT	4
	153005	3/8 LOCK WASHER	4
	153004	3/8 FLAT WASHER	4

\*USED ON 60 HZ STEAM DRYERS AND 50 HZ GAS AND STEAM DRYERS





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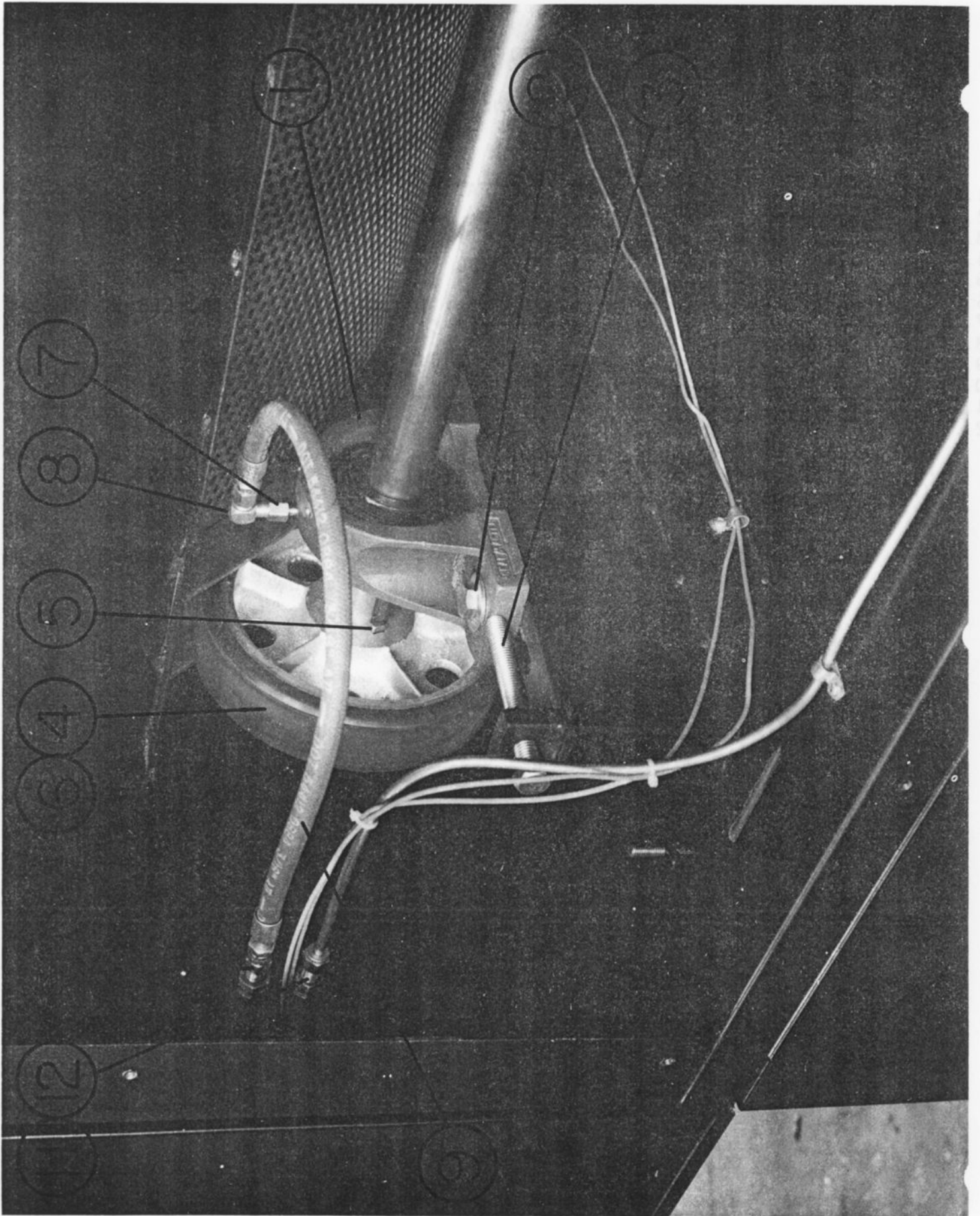


## SECTION VIII

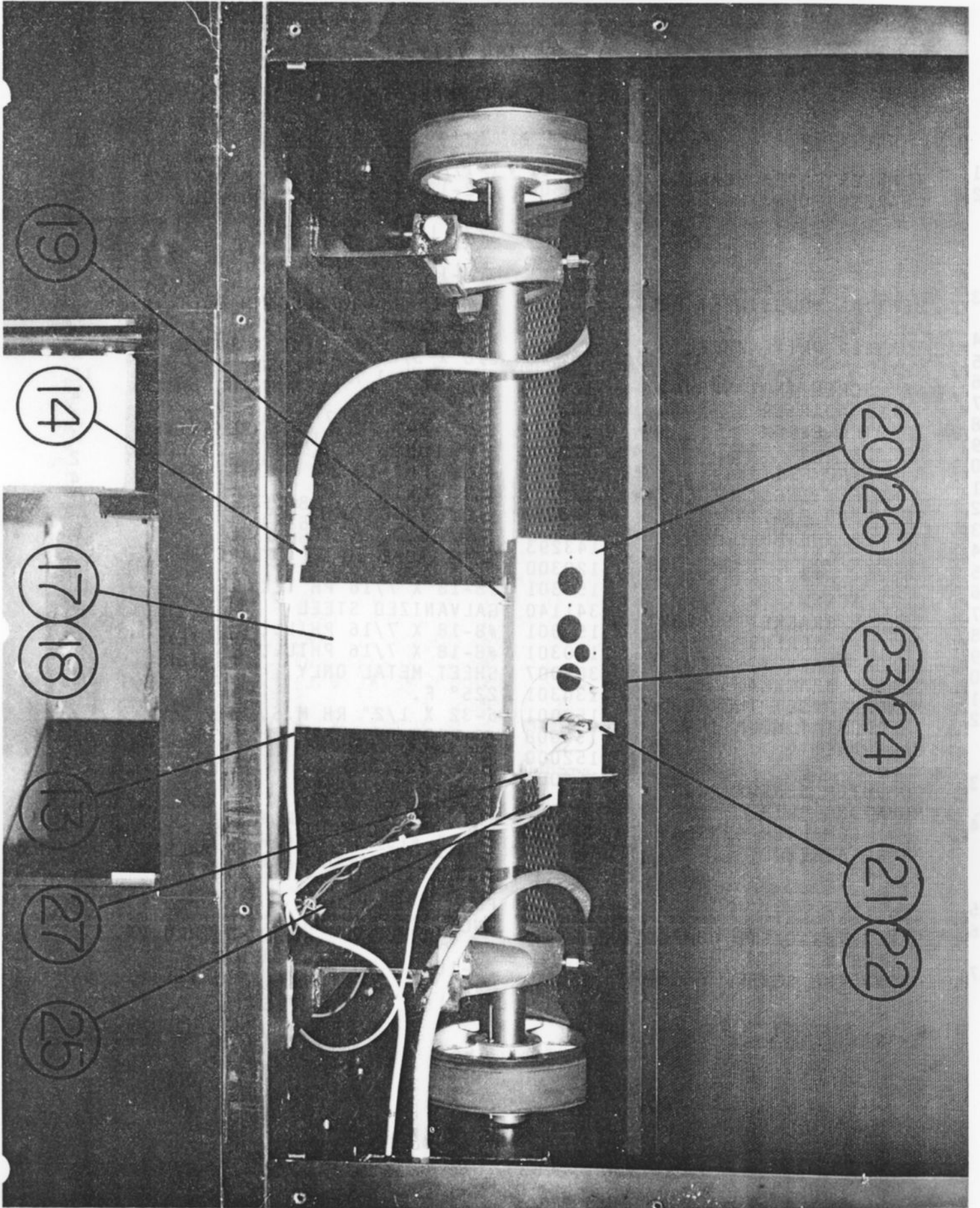
## GAS BURNERS

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1. GAS TRAIN	REFER TO PAGE 44		
2. BURNER TUBE	141106		8
3. GLO-BAR	128910		2
4. IR SENSOR	130500		2
5. HI LIMIT THERMOSTAT	130401	330° F.	2
6. SAIL SWITCH (NOT SHOWN)	122200		2
7. CENTERBOOT	143523	4" X 12" RECT. X 8" DIA. ELBOW	1
8. REDUCER	143522	12" DIA. TO 8" DIA.	1
9. MANUFACTURED DUCT			1
10. TEE (TOP EXHAUST)	143520	16" X 16" X 12" TEE	1
11. REDUCER (TOP EXHAUST)	143521	12" DIA. TO 12" DIA.	1
12. CAP (TOP EXHAUST)			1

NOTE: TOP EXHAUST MODEL IS SHOWN. FOR REAR EXHAUST REPLACE ITEM NO. 10 WITH PART #143528; REPLACE ITEM NO. 11 WITH CAP - REAR EXHAUST, PART #143524; AND DELETE ITEM NO. 12.







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## SECTION VIII

## SIDE VIEW - TUMBLER SHAFT

ITEM	PART #	DESCRIPTION	QTY
1. TUMBLER SHAFT BEARING	100217	1-1/2" DIA. PILLOW BLOCK	4
2. BEARING MOUNTING HARDWARE	150607	1/2-13 X 2-1/4 LG HH BOLT	8
	153021	1/2" FLAT WASHER	8
	153026	1/2" LOCK WASHER	8
	154291	1/2" BEVEL WASHER	8
	152001	1/2-13 HEX NUT	8
3. BEARING ADJUSTMENT BOLT AND NUT	150609	1/2-13 X 4-1/2 LG HH BOLT	4
	152001	1/2-13 HEX NUT	4
4. TUMBLER DRIVE WHEEL	180001	8" O.D. X 2" WIDE X 1-1/2" BORE	4
5. KEY	100710	3/8 X 3/8 X 3" LONG	4
6. SET SCREW (NOT SHOWN)	154305	3/8-16 X 1 ALLEN HEAD	12
7. INLET ADAPTER	143217		4
8. ADAPTER ELBOW	143216	1/8" MPT TO 37° FLARE SWIVEL	4
9. GREASE LINE	170500	24" LONG, P. WIRE BRAID LOOSE	4
10. BULKHEAD FITTING	143258	1/8" FPT TO 37° FLARE	2
11. ZIRC FITTING (NOT SHOWN)	170511	1/8" MPT	4
12. BULKHEAD FITTING	143259	1/4" TUBE TO 1/8" FPT	2
13. COPPER TUBING	143103	1/4" O.D. X .035 WALL	10 FT.
14. CONNECTOR	143293	1/4" TUBE TO 37° FLARE	2
15. JIFFY CLIP	120300		10
16. CLIP SCREW	150301	#8-18 X 7/16 PH TEK	10
17. SENSOR BRACKET SUPPORT	341140	GALVANIZED STEEL	1
18. SUPPORT SCREWS	150301	#8-18 X 7/16 PHIL., PH TEK	2
19. SENOR BRACKET SCREWS	150301	#8-18 X 7/16 PHIL., PH TEK	2
20. SENSOR BRACKET	305007	SHEET METAL ONLY	1
21. MANUAL RESET THERMOSTAT	130301	225° F.	1
22. THERMOSTAT MOUNTING HARDWARE	150001	6-32 X 1/2" RH M.S.	2
	153008	#6 LOCK WASHER	2
	152000	6-32 HEX NUT	2
23. COMPUTER SENSOR PROBE MOUNTING CLIP	154007		2
24. 1/4" COMPUTER SENSOR PROBE ASSEMBLY	880251	INCLUDES COMPUTER PROBE (PART #137014), 4-PIN MALE CONNECTOR (PART #122604), AND WIRES.	1
25. 4-PIN SOCKET	122605	FEMALE SOCKET	1
26. SENSOR BRACKET, COMPLETE ASSEMBLY	801425	INCLUDES ITEM NOS. 20 THRU 24	1
27. GROUNDING SCREW	150301	#8-18 X 7/16 PHIL., PH TEK	1

ADC450066 1- 02/85-500 2- 05/26/98-25

