



HU-60-1106B
GAS-FIRED
HUMIDAIRE UNIT
WITH 14800B CONTROL



SAMUEL JACKSON MANUFACTURING CORP.

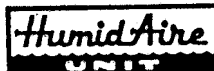
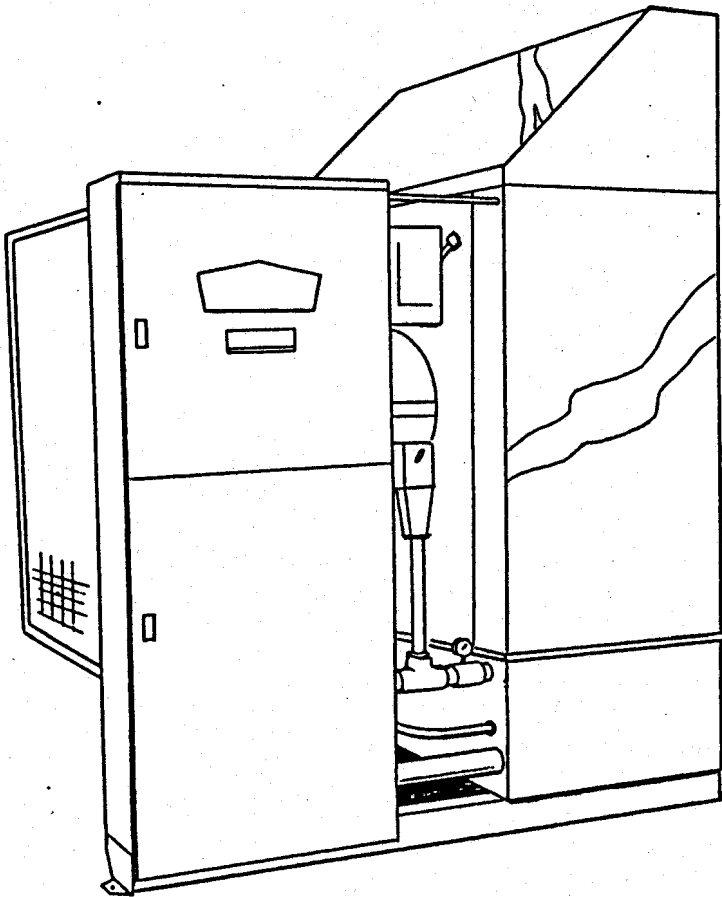
LUBBOCK, TEXAS 79490

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HU-60

GAS-FIRED HUMIDAIRE UNIT



SPECIFICATIONS

At full throttle and 4000 cfm air delivery:

Burner input capacity.....2,000,000 Btu/hr
Natural gas consumption.....2,000 cf/hr
Propane consumption.....22 US gal/hr
Water evaporation.....180 US gal/hr
Water consumption (with bleed-off)

220 US gal/hr

Length.....8 feet
Width.....5 feet
Height.....8 feet

Utilities Requirements:

Minimum Water pressure.....15 psi
Normal Fuel pressure.....5 psi
Minimum fuel gas pressure.....4 psi
Standard electrical power:
220 or 440 volts, 3 phase, 60 HZ
380 volt, 3 phase, 50 HZ

Drainage facilities should be provided for water drained or bled off.

The function of the Humidair Unit is to generate and supply warm humid air. This humid air, which carries water vapor in a form quickly absorbed by cotton fibers, is blown into the cotton in various places in the gin plant. It is applied at the lint slide with the Lint Slide Grid and sometimes blown into the conveyor distributor. The HU-60 is being used in the final tower dryers to kill static electricity with humid air or dry the cotton with its burner.

This model is the result of over 20 years of experience, in fact, many Humidair Units that old are still in use. This one is easy to maintain. The controls are dependable and simple to check. All parts of the spray chamber are quickly accessible through a large access panel. The mist eliminators slide out, and the nozzles, float valve and water tank screen are easily serviced.

HOW THE HUMIDAIRE UNIT WORKS

The HU-60 Humidair Unit produces warm humid air by heating the air with a gas burner then passing it through a water spray chamber. The gas burner operates on either natural gas or LPG, and burns in the entering air stream.

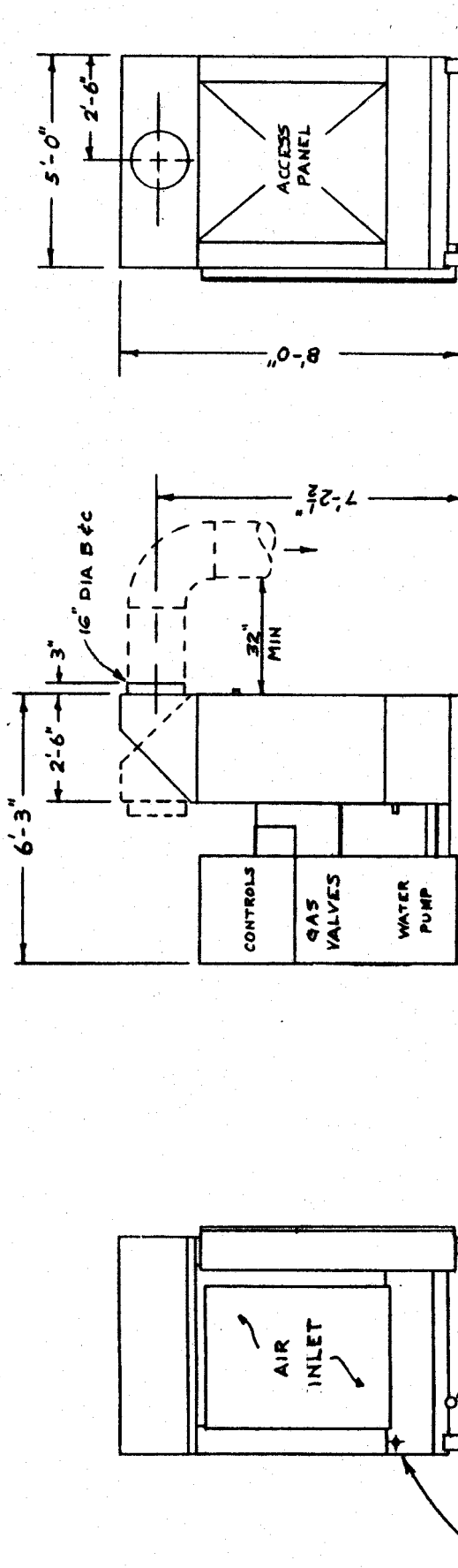
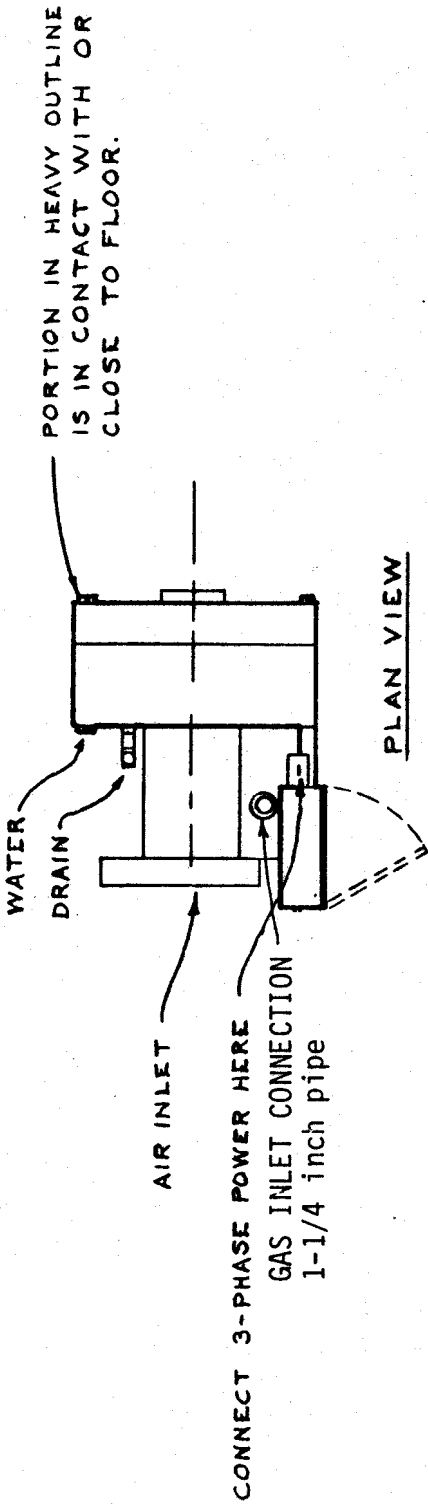
The hot air is scrubbed, cooled and humidified by a large volume of sprayed water in the spray chamber. The water is recirculated through the spray nozzles by a 2 HP pump. Zig-zag mist eliminator baffles at the top of the spray chamber allow the humid air to leave while retaining water droplets. The external fan which pulls air through the HU-60 blows it to the point where it is mixed with the cotton.

A float valve in the water tank replaces the evaporated water.

The HU-60 is usually regulated from a remote manual control station which has switches and indicator lights for the burner and water pump and a dial to turn the unit up or down. An automatic control is available

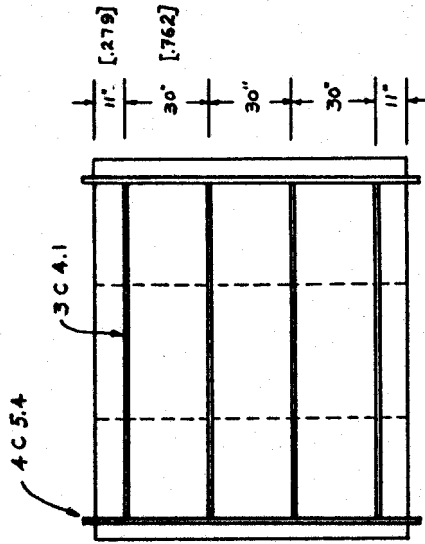
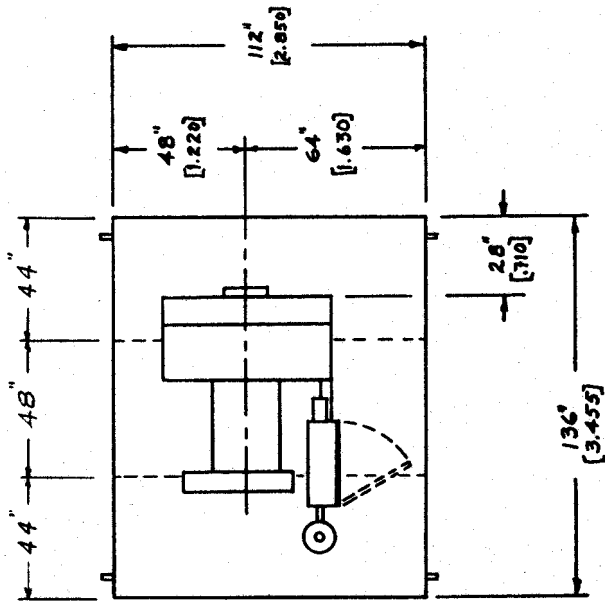
- POSITIVELY ELIMINATES STATIC
- REDUCES STRAIN ON PRESS
- ELIMINATES TIE BREAKAGE
- PRESERVES STAPLE LENGTH
- IMPROVES TURNOUT

SAMUEL JACKSON MANUFACTURING CORP -- P O BOX 16587 -- LUBBOCK, TEXAS 79490
TELEPHONE 806-795-5218



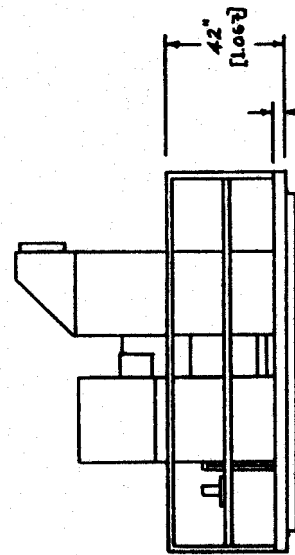
A REV. 4-12-79		SAMUEL JACKSON MFG. CORP.	
B REV. 4-8-81		DIMENSIONS	
C REV. 8-86		HU - 60 - 1106B	
		GAS - FIRED HUMIDAIRE UNIT	
		DWN. GJH	DRAWING NO.
		DATE 3/18/77	14-2266C

1/48 SCALE 1/4" = 1'-0"



BOTTOM VIEW

QUAN.	MATERIAL	SIZE
3	1/8 FLOOR PLATE	4' X 10' [1.220 X 3.048]
2	4 C 5.4 CHANNEL	10'-0" [3.048]
4	3 C 4.1 CHANNEL	10'-0" [3.048]
100'	[30] ANGLE OR TUBE FOR HAND RAIL	



TURN UP 4" [102] ALL AROUND

SAMUEL JACKSON MFG. CORP.	
OVERHEAD PLATFORM FOR HU - 60 - 1066 HUMIDAIRE UNIT	
DWN BY SGJ	DRAWING NO. 14-2290
DATE 4-28-78	

SECTION 2

INSTALLING THE HU-60

HUMIDAIRE UNIT

HOISTING Do not attempt to lift the Humidaire Unit with a fork lift unless using a special attachment on the right fork. The center of gravity is behind the base of the spray chamber, and the unit will tip over. A hoisting ring is welded to the base frame between the control cabinet and the spray chamber. The unit is shipped with a piece of plywood bolted to the top of the spray chamber. This plywood has a hole which is over the center of gravity. Pass a chain or cable down through this hole and hook it in the hoisting ring. The unit can now be lifted from above using a boom truck, fork lift, or chain hoist.

LOCATION If the location of the Humidaire unit has not been specified on gin plans, it should be located in a clean place fairly close to the point of application of humid air. If the pipes are insulated (lagged), the humid air pipe can be run 80 to 100 feet (25 to 30 m) without difficulty.

Outside the USA, some insurance companies or government authorities may require the Humidaire unit to be located in a room separate from cotton processing operations.

HOOD ASSEMBLY The air discharge hood which goes on top of the spray chamber is shipped disassembled. Assemble it as shown in figure 1, paying particular attention not to get the internal baffle backwards. Note that the discharge opening can face either direction.

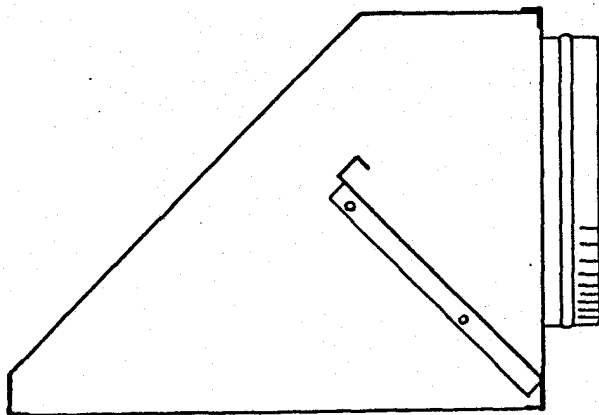


FIGURE 1

AIR PIPES Connect air pipes in accordance with installation drawings. **IMPORTANT:** Even if not shown on drawings, make sure a slide valve is installed to regulate the flow of air through the Humidaire Unit. This is usually installed between the HU-60 and the fan. It may be located on the discharge side of the fan, especially where two valves are used to distribute humid air to two points of application.

Joints should be taped to prevent air leakage before draw bands are applied to joints. The pipe which conducts the humid air to the point of application is often insulated or lagged to prevent condensation. If the insulation has an outer covering which is impervious, then it should not be applied to the pipe joints. Otherwise, slight leaks of vapor through the pipe joints will fill the insulation with water vapor which will cause condensation. Interrupting the insulation at the pipe joints allows this vapor to escape.

OTHER ASSEMBLY The water screen is also shipped in the spray chamber. It goes in the bottom of the water tank, covering the pump intake pipe, but not the drain outlet as shown in figure 2.

The gas regulator assembly is in a separate carton, and should be connected to the union on the side of the cabinet, the extended pipe resting in the bracket provided.

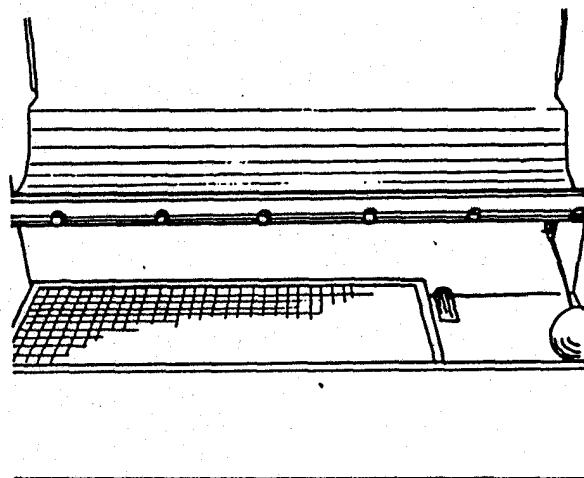


FIGURE 2

ELECTRICAL For making electrical connections, see pages 2-7 and 2-8.

FUEL GAS Connect the pipe supplying natural gas or LPG to the gas cock on the gas regulator assembly. Make sure gas supply pipe does not interfere with removing air inlet screen. The pipe used should be free of sand, metal chips and other debris. Even if it is, use the gas to flush the pipe by removing the pipe cap at the bottom of the gas regulator assembly and opening the gas cock until clean gas comes out.

DO NOT take gas supply from downstream side of low pressure regulator serving another burner. Go ahead of such regulators to get a pressure of 5 to 25 psi (.3 to 1.7 bars). Regulator installed in the HU-60 will lower this to the proper level (to be adjusted by serviceman at start-up). Ordinarily 1½-inch pipe will be adequate, but if more than one HU-60 is served or long distances are involved, refer to page 2-9 for pipe sizes.

The burner capacity of the HU-60-1066 is nominally 2 million Btu/hr (500,000 Kg-Cal/hr), but it can be increased to 3 million Btu/hr for tower dryer installations or reduced to 1 million for short lint slide grids simply by changing the orifice disc in the burner head. The required burner capacity is determined by the quantity of air flowing through the unit.

Typical full-throttle fuel consumption at 2 - million Btu/hr is as follows: Natural gas--2,000 cu. ft/hr (57 cu m/hr); Propane--22 gal/hr (80 liters/hr or 47 Kg/hr).

For LPG (propane or butane) installations, some gins use a large storage tank without a vaporizer. In such cases, make sure that your gas man installs a 15-pound regulator at the tank. **DO NOT** run the high-pressure gas underground ahead of the regulator. To do so will cause condensation of liquid LPG in your gas line. This will damage the HU-60 and other burners, and will create a dangerous condition. If the gas line in your building feels extremely cold during operation, you have liquid in your line, and you should correct the situation immediately.

Some local authorities may require piping the screened vent opening of the gas regulator and the vent pipe on the cabinet to the outside of the building.

WATER SUPPLY Connect a ½-inch water supply pipe to the connection at the float valve in the water tank. We have provided a hydrant at this point for convenience in washing out the unit. Supply pressure should be at least 20 psi (1.4 bars).

Maximum water consumption at full throttle will be about 220 gal/hr (850 liters/hr) of which about 85 per cent is evaporated and the remainder is bled off to the drain. Average water consumption will be much less than this, perhaps as little as 50 gal/hr when the unit supplies humid air only to the Lint Slide Grid.

Some users have installed water softeners to minimize scale deposits in the HU-60. Make sure the softener cannot recharge while the HU-60 is running. If it does, the salt it puts in the water will cause corrosion damage far more expensive than scale accumulation. We can supply our No. 14000 Powdered Acid Descaler in 50-pound pails. To remove scale, 10 pounds of the powder is added to the water in the tank while the unit continues to operate normally. The scale is usually removed in 24 hours. These practices will not eliminate the need for water bleed-off as described below.

WATER DRAINAGE FACILITY Connect the 2-inch water drain fitting to a sewer or soakage pit to receive the water periodically released by draining and cleaning the unit as well as that continuously bled off while the unit is running. The purpose of bleeding off is to reduce maintenance by getting rid of the minerals in the water. The water evaporated by the HU-60 is distilled water. All minerals are left behind in the machine. This stream of bleed-off water provides the only way to get rid of them. A water softener exchanges sodium ions for harder ions, so some bleed-off is still necessary to avoid scale.

GAS PIPING

Size of pipe supplying gas to heaters and other appliances should be large enough to prevent excessive pressure losses when all of them are in use. See following Table of sizes, flows and pressure losses.

Where LPG (Liquefied Petroleum Gas, Propane, Butane) is used as the fuel, see following drawing which shows recommended practices.

Emergency shut-off valves should be provided to permit turning off the fuel in an emergency. They should be located so that they are accessible in an emergency situation.

IRI (Industrial Risk Insurers) and some state and local authorities require venting the gas regulator and normally-open vent valve. NFPA 86* states:

3-3.4.3.2 Regulators shall be vented to a safe location, where vented gas cannot re-enter the building without extreme dilution. The terminating end shall be protected against water entry and bug-screened. Vent pipe shall be of adequate size so as to not lengthen response time.

3-3.4.3.3 Vent lines from multiple regulators, where manifolded together, shall be piped in such a manner that diaphragm rupture of one will not backload the others.

3-3.4.3.4 Vents from gas pressure switches, but from no other devices, may be vented into the regulator vent lines provided that switch or regulator diaphragm failure will not backload the regulator.

*Reprinted with permission from NFPA 86-1985, Standard for Ovens and Furnaces, copyright © 1985, National Fire Protection Association, Quincy, Mass. 02269. This reprint of material is not the complete and official position of the NFPA on the referenced subject which is represented only by the standard in its entirety.

DRAWING NO.
14-2491

ELECTRICAL INSTALLATION NOTES

THREE-PHASE SUPPLY TO HUMIDAIRE UNIT Run three-phase power to the Humidaire Unit from a 30-ampere fusible disconnect switch or circuit breaker which you will install. A motor starter for the water pump motor is included in the Humidaire unit, also a stepdown transformer for 120-volt control power. Look at the slinger on pump motor shaft to check proper rotation direction. Note that a time delay relay normally prevents the water pump from starting until the burner has operated for 90 seconds, but the water pump "Jog" pushbutton will run the pump to check rotation. If three-phase voltage supplied does not correspond with that shown on shipping tag of Humidaire Unit, the overload relay on the water pump motor starter and the connections on the control voltage transformer must be changed.

14800 AUTOMATIC CONTROL See pages 6-31 et seq for installation instructions.

FAN SAFETY RELAY The installing electrician must connect the coil of this relay to the pilot light for the Humidaire fan. Although every Humidaire Unit has an air flow switch, this relay is an extra safety device. It turns off the burner instantly when the fan motor stop button is touched. This relay is mounted under the chassis of the automatic control. Make sure the voltage stamped on the relay coil agrees with the voltage of the pilot light.

TOTAL HEATER CAPACITY MILLION BTU/HR	PIPE LENGTH FEET	RECOMMENDED MINIMUM PIPE SIZES				
		PRESSURE AT SERVICE REGULATOR OR VAPORIZER OUTLET, PSIG				
		NATURAL GAS			PROPANE*	
		6	10	15	10	15
2	100	1-1/4	1	3/4	3/4	3/4
	200	1-1/4	1	1	3/4	3/4
	500	1-1/2	1-1/4	1	1	3/4
4	100	1-1/2	1-1/4	1	3/4	3/4
	200	2	1-1/2	1-1/4	1	1
	500	2	1-1/2	1-1/4	1-1/4	1-1/4
8	100	2	1-1/2	1-1/4	1-1/4	1
	200	2-1/2	2	1-1/2	1-1/4	1-1/4
	500	3	2	2	1-1/2	1-1/2
16	100	3	2	1-1/2	1-1/2	1-1/4
	200	3	2-1/2	2	2	1-1/2
	500	4	2-1/2	2-1/2	2-1/2	2
24	100	3	2-1/2	2	2	1-1/2
	200	4	3	2-1/2	2-1/2	2
	500	5	3	2-1/2	2-1/2	2-1/2

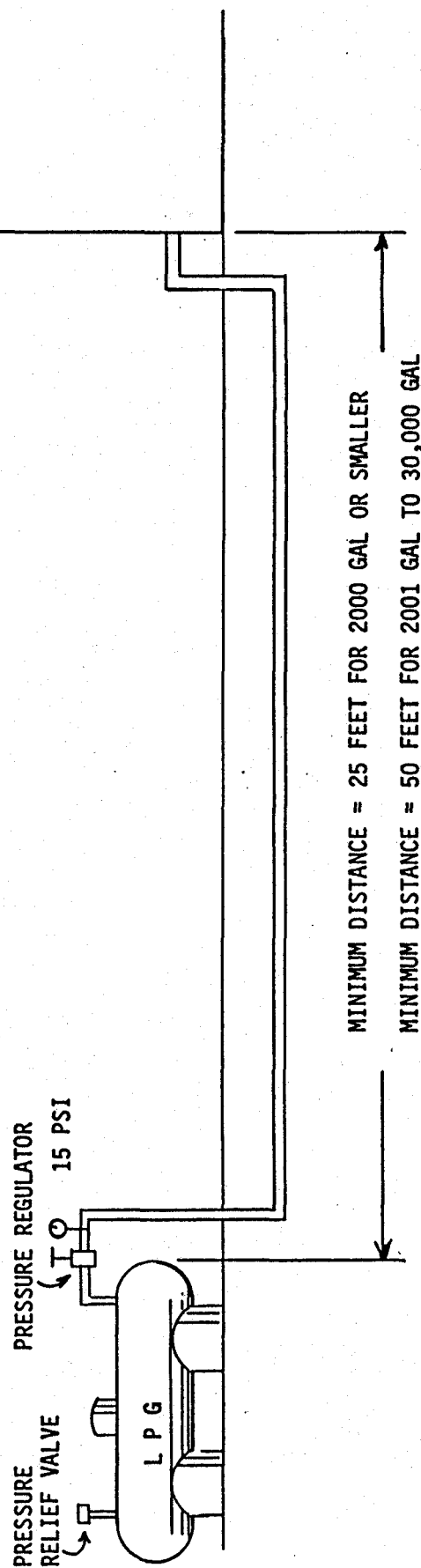
* OR BUTANE

FILE: 14-1899

PIPE SIZES ARE NOMINAL DIAMETERS, SCHEDULE 40, AND ARE BASED ON 5 PSIG BEING REQUIRED AT INLETS OF COMBUSTION REGULATORS.

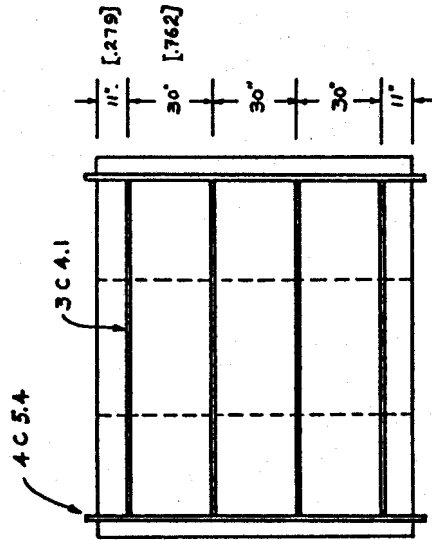
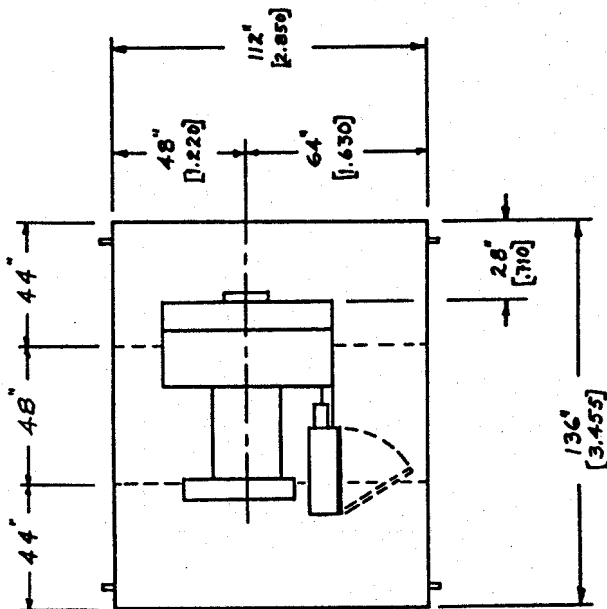
LIQUEFIED PETROLEUM GAS TANK INSTALLATION FOR HUMIDAIRE

UNITS AND DRYING HEATERS



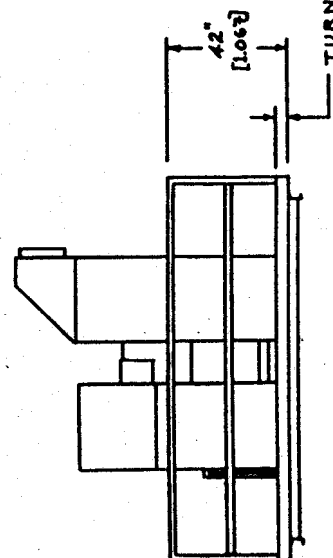
For LPG installations, the tank should be at least 1200 Gals. (US) to provide adequate surface area to absorb heat of vaporization from the atmosphere so that a vaporizer will not be necessary. To be compatible with the quantity of LPG received in each delivery, a larger tank may be necessary. A battery of small tanks of the desired total capacity has more heat-absorbing area than one large tank.

Whether or not a vaporizer is used, make sure that a regulator reduces the pressure to 15 psi (1 bar) BEFORE the pipe goes underground. Otherwise, reliquefaction will take place in the cool earth and cause MUCH trouble. If the gas line in your building feels extremely cold during operation, liquid is in the line and the situation should be corrected IMMEDIATELY.



BOTTOM VIEW

QUAN.	MATERIAL	SIZE
3	1/8 FLOOR PLATE	4' x 10' [1.220 x 3.048]
2	4 C 5.4 CHANNEL	10'-0" [3.048]
4	3 C 4.1 CHANNEL	10'-0" [3.048]
100'	[30] ANGLE OR TUBE FOR HAND RAIL	



TURN UP 4" [102] ALL AROUND

SAMUEL JACKSON MFG. CORP.	
OVERHEAD PLATFORM	
FOR	
HU - 60	
HUMIDAIRE UNIT	
DWN. BY	SGJ
DATE	4-28-78
DRAWING NO.	
14-2290	

14900A

LINT FLUE SCANNER INSTALLATION INSTRUCTIONS

APPLICATION: The 14900A control is used to determine when cotton is passing through a lint flue. It is used with the Samuel Jackson Humidaire Unit to operate its water pump only when cotton is being ginned. It can also be used with the Lint Slide Spray Unit.

The 14900A control has a special mount which allows the 14953 photoelectric infrared scanner to look through a tiny window at the oncoming flow of air and lint. When cotton is detected, the control closes its circuit, and turns the water pump on. A built-in time delay keeps the circuit closed even though the presence of lint is interrupted for a few seconds.

MOUNTING THE CONTROL: The 14900A Lint Flue Scanner should be mounted in a flat area of the lint flue, usually in the riser to the battery condenser. Avoid locations where elbows and offsets might divert lint away from the control. The 14775 mount fits into a 3 x 4 inch (75 x 100mm) rectangular hole in the wall of the flue. The stream of air and lint should blow against the small window.

ELECTRICAL WIRING: Be sure to follow the wiring drawing supplied with the Humidaire Unit or Lint Slide Sprayer. The 3 wires going to the 14900A control MUST be in a separate conduit from any power wires.

ADJUSTMENT: The 14900A Lint Flue Scanner has been adjusted at the factory, but may require further adjustment. If further adjustment is necessary:

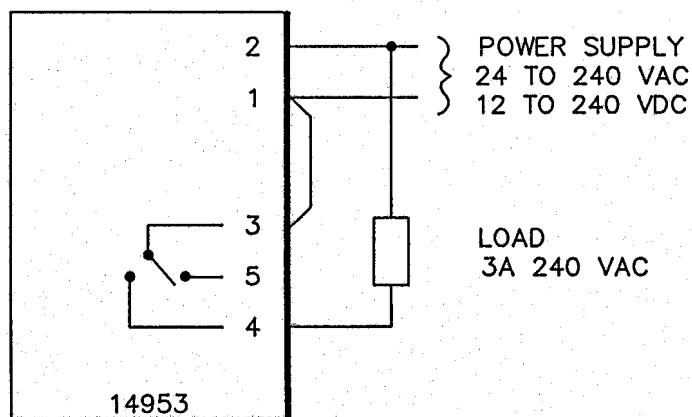
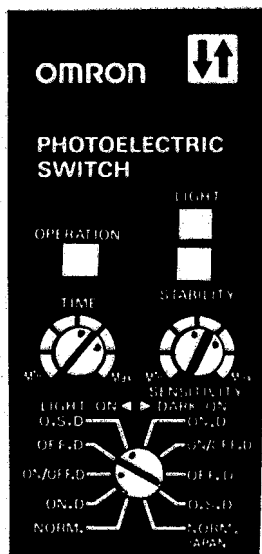
1. Insure that 14900A has been wired into the system correctly. Apply power.
2. With the 14900A installed correctly in the lint flue and with cotton coming through the lint flue, the red "LIGHT" LED should be on. The yellow "operation" LED should be on and remain on until cotton is no longer present and the time delay has timed out. If the "LIGHT" LED fails to turn on with cotton in the system, turn the sensitivity adjustment clockwise until "LIGHT" comes on. This adjustment is located on top of the 14900A.
3. When no cotton is present in the lint flue, the "LIGHT" LED should be off. If the "LIGHT" LED fails to turn off, adjust sensitivity counterclockwise until it goes off.
4. Set the sensitivity pot midway between the two operating points determined in steps 3 and 4 for optimum operation. Make sure the green "STABILITY" light illuminates in both detecting and non-detecting states.
5. The off time delay is set to maximum (12 seconds) and should not need further adjustment. This prevents cycling the water pump.

TROUBLESHOOTING: If the control does not operate properly, follow the steps below. An AC voltmeter is the only test equipment needed.

1. Remove the scanner from its mount. Look through the window and see if cotton can be seen going past the window. If not, the scanner and mount must be moved to a better location.
2. Make certain that window glass and lenses of the control are clean and dry. An accumulation of dust or lint on the window glass next to the control can affect its operation.
3. Check power to 14900A, by removing switch from mount, then remove top cover. Connect voltmeter across terminals 1 and 2. With the Humidaire Unit on and running, there should be 95 to 130 volts present. (For the Lint Slide Spray Unit this should be about 24 volts.) With the scanner seeing cotton, the same voltage should appear across terminals 4 and 2. If no voltage can be found, then trouble lies elsewhere in the circuit, not in this control.
4. If control does not respond to cotton properly, see Adjustment steps 2 to 4 above.
5. If, when the switch is tested, the yellow "OPERATION" LED comes on but the water pump stays off, check the pump wiring and overload.

If the unit is still inoperable, contact: SAMUEL JACKSON MFG. CO. Telephone 806-795-5218, Lubbock, Texas.

LINT FLUE SCANNER SETTING AND WIRING



The diagram above shows the normal setting and wiring of the 14953 Photoelectric Switch, which is part of the 14900A Lint Flue Scanner.

The lower selector determines the operating mode for the scanner. The setting for the lint flue is LIGHT ON and OFF DELAY.

The SENSITIVITY adjustment is at right. Moving the pointer from MIN toward MAX will make the scanner respond to less cotton or cotton which is farther away. If the red "LIGHT" LED will not come on when cotton is present, increase the setting. If it will not go off when cotton is not present, decrease the setting. The green LED shows the stability of the detection.

The TIME adjustment is for the time delay which keeps the load relay ON when no cotton is in the scan range. This is shown by the yellow "OPERATION" LED. This delay keeps the water pump or solenoid valve from cycling ON and OFF. Adjust it to "Max."

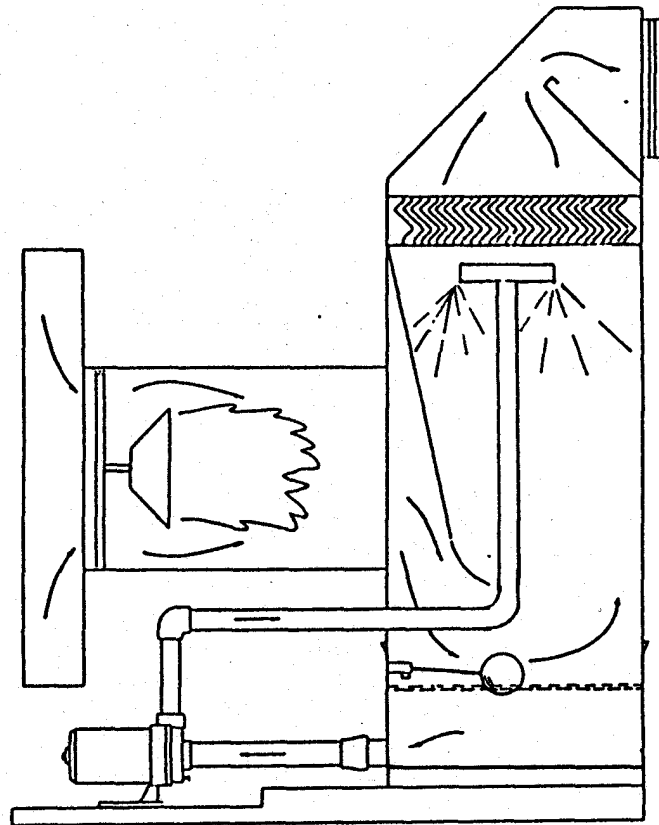
The maximum load for the relay contacts in the scanner is 3 amperes at 240 volts AC. The circuits of Humidair Units and Lint Slide Sprayers are within this limit. If used for other applications with a load greater than this, interpose a contactor or relay between the scanner and the load. The voltage of the power supply for the load can be different from that supplied to the scanner on terminals 1 and 2.

OPERATION

HU-60 HUMIDAIRE UNIT

THEORY OF OPERATION

This unit produces warm, humid air for moistening cotton by drawing the air through a water spray chamber. Since heat is necessary to vaporize the water, the heat is introduced by burning oil in the incoming air stream and allowing the air flow to pull the hot air into the water spray chamber. The hot air vaporizes some of the water, and the water cools the air. This results in warm, humid air. A mist eliminator (zig-zag baffles) at the top of the spray chamber insures that water droplets are removed from the air flow to the cotton because the drops impinge on the baffles.



A modulating motor is incorporated in the gas-fired burner to turn it up and down. The motor is governed by a temperature sensor located in the air discharged. This sensor is part of a system designed to regulate and maintain a constant humid air temperature and to prevent over-heating. The desired temperature can be programmed by the set-point dial

14800 AUTOMATIC CONTROL FOR THE HUMIDAIRE UNIT

OPERATING INSTRUCTIONS

PURPOSE:

The purpose of the 14800 Automatic Control is to cause the Humidaire Unit to put out air of a constant temperature and relative humidity. This enables the operator to set the control for near maximum output without experiencing condensation or having to readjust the controls during the day. The 14800 is an improved version of the 13800A Control.

OPERATION:

The face of the 14800 Automatic control, in addition to the usual switches and pilot lights, has one set-point dial. This dial controls both the temperature and relative humidity. The dial range is 105 to 130, which refers to the air temperature in °F. As the temperature is increased, the relative humidity is also increased, so a higher setting means more humidification. Experiment to find the setting which puts the desired moisture in the cotton. It may be necessary to use a lower setting at night or in wet weather.

If the control causes the Humidaire Unit burner throttling valve to run wide open, it may be necessary to use a larger burner orifice in order to get the desired output.

Remember to turn on the Humidaire Unit before the cotton comes to the lint slide (or other point of application). A time delay relay in the Humidaire Unit keeps the water pump from coming on until the burner has run about a minute. This is to heat the lint slide grid, conditioning hoppers or tower dryer to prevent condensation. If cotton is passing through during this heating interval, it will be dried, not humidified.

PRINCIPLE:

The 14800 controls the temperature by means of a temperature sensor in the air stream which modulates the burner fuel valve. It controls the relative humidity of the air by comparing two temperatures, one in the air stream, the other in the water tank of the Humidaire Unit. The water temperature is about equal to the wet bulb temperature of the air delivered from the Humidaire Unit. By maintaining a constant difference between this temperature and the dry bulb temperature, a constant relative humidity is maintained. This is accomplished by modulating the water spray pressure. Recent Humidaire Units are equipped with an air-injection system to vary the water pressure. The electronic controllers for both the temperature and relative humidity are located inside the electrical control cabinet.

14800 AUTOMATIC CONTROL FOR THE HUMIDAIRE UNIT

NOTES FOR THE INSTALLING ELECTRICIAN

In some instances, this control will be installed in a 13950 Box, furnished with it. This box is usually located at or near the gin's motor control console, but the gin manager may specify another location, perhaps near the press. If the 14800 Control is to be mounted in the console, it requires a CUTOUT 9-1/8" wide by 5-1/8" high (232 x 130 mm). On the face of the console, it occupies a space 10" wide by 6" high, and requires 10" clearance behind the panel (254 x 153 x 254 mm).

Note that each 14800 Control shipped with an HU-60 Humidaire Unit is factory calibrated for that HU-60 and marked with its serial number accordingly. Please match the control unit with its respective HU-60 if multiple installations are being made.

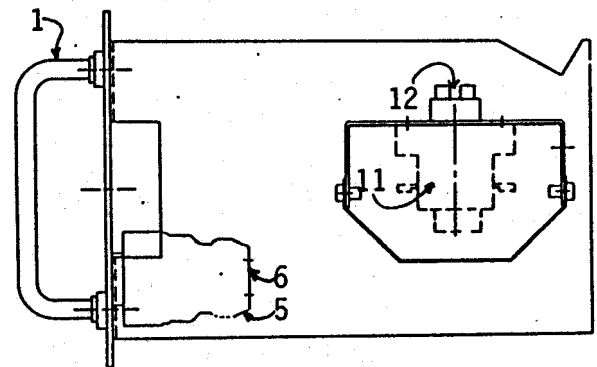
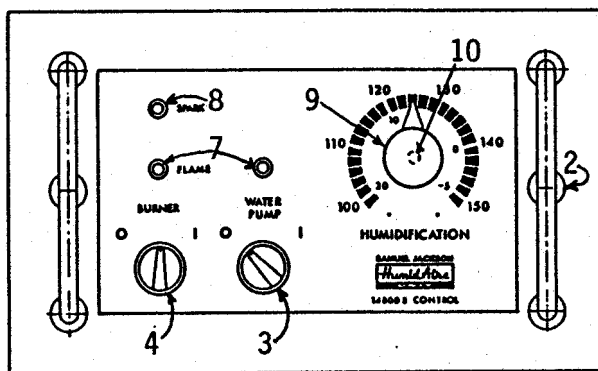
The 14800 Control includes a fan relay which kills the Humidaire Unit burner the instant the fan stop button is touched. This refers to the humid air fan on a lint slide installation or the push fan on a tower dryer installation. It is important that you connect the fan relay coil to the terminals of the fan pilot light. Make sure that the relay coil voltage is the same as the pilot light voltage.

INSTALLING SENSORS

The sensors are not thermocouples, but resistance temperature detectors; therefore, they do not require thermocouple wire. They are sensitive, however, and their wires should be shielded or run in separate conduit. When shielding them, as well as the other sensitive wires shown on the wiring diagram, make sure that the shield is grounded on only one end. No. 16 copper wire is satisfactory for all connecting wires. Both sensors will be installed adjacent to each other and their wires can share one conduit without being shielded from each other.

See following drawings for proper location of sensors.

14800B AUTOMATIC CONTROL FOR HUMIDAIRE UNIT

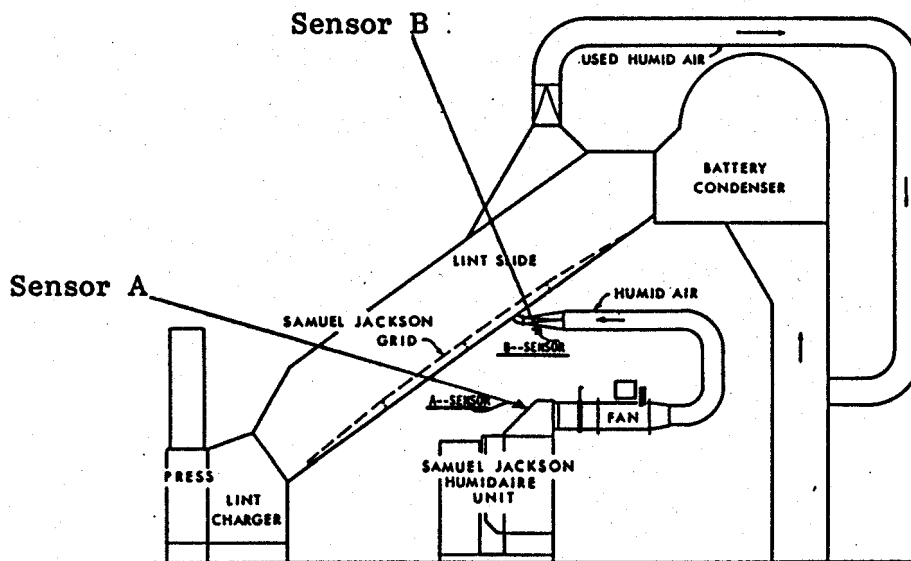


REF.	QUAN.	PART NO.	DESCRIPTION
1	2	13805	Handle
2	2	13811	Latch, Adjustable Grip
3	1	14805	Selector Switch, Less contact
4	1	14495	Selector Switch, Less contact
5	2	14448	Contact, NO
6	1	14449	Contact, NC
7	2	14361	Pilot Light, Amber
8	1	14362	Pilot Light, Red
9	1	14850	Pointer Knob
10	1	14807	Potentiometer, Dual
11	1	13150	Fan Relay, 220V Coil
		13149	Fan Relay, 120V Coil
		13151	Fan Relay, 440V Coil
12	16	14665	Barrier Strip, 1.5 mm

LOCATION OF AIR TEMPERATURE SENSORS

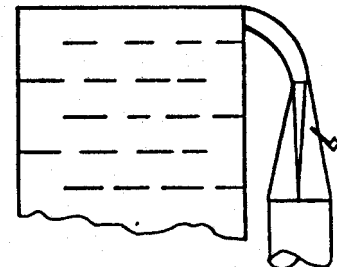
14800 CONTROL

LINT SLIDE AND CONDITIONING HOPPER INSTALLATIONS:



TOWER DRYER INSTALLATIONS:

When used at the tower dryer, the two (A & B) air temperature sensors should be located in the incoming cotton line of the tower. Do NOT mount them in the tower. This location is unusual, but it is IMPORTANT and NECESSARY for proper operation of the control. Use 13740A sensor mounts.



SERVICE NOTES ON 14800 CONTROL

The following procedure is suitable both for shooting trouble and calibrating the 14800 control.

First, consider the different configurations of this control which you will encounter. The oldest version has a room temperature controller which controls the gas valve and uses a CC-8111 differential temperature controller for the water valve control. It also uses the automatic reset module on the water valve. The second version replaced the CC-8111 with another room temperature controller for the water valve control. The present version uses the two room temperature controllers and leaves off the automatic reset module.

On the oldest version, make sure that the CC-8111 has the special resistor and jumper assembly installed to widen its proportional band to about 20%. On both the older versions where the automatic reset module is used, bypass it. It often causes instability.

Unstable operation is most apparent in the water valve control loop. It is often caused by instability in the burner control loop. It is difficult to separate the source of the problem as instability in one control loop causes oscillation in both control loops. If instability is present, make sure the jumpers are set for 20% proportional band on the room temperature controllers. Bypass the reset module. Make sure that the temperature sensor connected to the burner control is either in the hood of the Humidaire unit or is ahead of the fan. Heat storage in a heavy cast iron fan can introduce delayed response which will cause oscillation. The dry bulb temperature sensor for the differential control should be downstream of the fan to make the water temperature conform more accurately to the actual dry bulb temperature of the air going into the cotton.

Temperature sensors sometimes go bad. To check them, go to the terminal block on the 14800 panel and disconnect the wires going to each sensor. Using an ohmmeter, check the resistance between the wires, and compare the value for reasonableness with the table of resistance versus temperature. If no table is available, it should be in the vicinity of 1000 ohms. Check the wires for grounds. Resistance to ground should be greater than 1 megohm. A ground on either wire can disable the control. If the control is to be calibrated, do this before reconnecting the sensor wires.

To calibrate, connect the precision calibration resistors in place of the sensors. These resistors are 1125 ohms, which

corresponds to 125 F. It will also be necessary to apply 115 V power to the temperature control actuator, as it produces the 20 V DC power for the 14800. We should use a special 3-plug lead to feed 115 V AC from terminal 3 to terminals 8 and 9 on the HU-60-1106 and to terminals 14 and 9 on the HU-60-1105. On the 1105, we must also jumper terminals 17 and 18 of relay 3CR to free the burner modulating motor.

To calibrate the burner control, go to the gin console and set the 14800 dial to 125. The DC voltage coming from the top room temperature controller should be about 7.5 V on the yellow and blue wires on terminals 35 and 36. These are connected to the yellow & blue wires of the burner modulator. If it is not 7.5 V, remove the cover of the temperature controller and adjust the set point dial until 7.5 V is attained. If it cannot be attained, see TROUBLESHOOTING TIPS. If the beer can gas valve is used, adjust the temperature controller so the actuator is at mid position, instead of 7.5 V. On kerosene-fired units, either adjust the controller for burner actuator mid position, or adjust for 7.5 V then center the burner motor by means of the screw under the label on the electronic motor drive.

To calibrate the water valve control, go to the console and set the dial so it points to the small 0 on the inner ring of the dial. This will be 140 on present models and 120 on old models. The output signal on the yellow and blue wires (terminals 36 and 37) coming from the differential temperature controller should be about 7.5 V DC. As with the temperature control, calibration adjustment can be made to drive the water valve motor to mid position, but the voltage should be between 6.5 and 8.5. Adjust with the set point dial on the second room temperature control, or adjust one of the control dials inside the CC-8111. Make sure reset module is removed. The water butterfly valve is at mid position when the slot in its shaft is at 45 deg. Using the calibration pot, drive the motor up and down to check the linkage. The slot should go from vertical to horizontal.

Before removing the calibration resistors and reconnecting the sensor wires, check to see that the remote potentiometers and valve actuators operate in the proper direction. When the remote dial is turned high, the fuel and water valve should open. When turned low, they should close.

TROUBLESHOOTING TIPS

Check the sensors as described above.

Check to see that 20 V DC is being supplied to the controller in question. Measure this from the red wire to the blue wire, with the blue common or negative. If the CC-8111 is used, it must have 115 volts AC supplied to it so it will produce 20 V DC for its control loop. Check for presence of 20 V DC in it and also for presence of 6.2 volts on the appropriate terminals.

Check the wiring from the Humidaire unit to the 14800 remote control, specifically the six wires going to the dual potentiometer. Set the control to 140 (or 120 on old models). Remove the wires from the terminal block on the 14800 panel at the Humidaire unit and test them 3 at a time. As you remove them, label them so you can replace them in the proper way. Look at the schematic of the 14800 control to see which wires go to the ends of the potentiometer and which one goes to the wiper. The resistance between the end wires should be 400 ohms on recent models, which have the series resistors mounted at the panel in the Humidaire unit. The resistance from the wiper wire to the end wires should be consistent with the dial setting, one much larger than the other, but each of them smaller than the resistance across the end wires. This will insure that the end wires are not reversed nor interchanged with the center wire. Hold these three wires in contact with one of the ohmmeter leads and make sure that there is no connection to ground or any of the other 14800 wires by probing with the other lead of the ohmmeter. Resistance to ground should be > 1 meg. Repeat this procedure for the other portion of the dual potentiometer.

Make sure that the six potentiometer wires are run in separate conduit from the 115 V AC wires. If they are run in the same conduit, make sure that shielded cable is used for them.

TROUBLESHOOTING THE HU-60-1106B

USING THE 16040 SEQUENCE PANEL

<u>LIGHT CONDITION</u>	<u>POSSIBLE PROBLEMS AND REMEDIES</u>
None lit	Circuit breaker on sequence panel tripped. Push to reset. Large switch at side of cabinet open. Power not being supplied to Humidaire Unit. If 3-phase power is present, but 120-volt control power is not, check transformer in box below large switch at side of cabinet.
3 on, 4 off	Low air flow through HU-60. Increase air flow or adjust air flow switch. Check for water in plastic tube to air flow switch.
4 on, 5 off	High Temperature limit switch open. Clean the air inlet screen.
5 on, 6 off	Humid air fan relay not operating. Check fan operation and wiring at remote control.
5 on 7 off	Same as above. Water pump switch turned off.
6 on, 8A off	(When holding burner selector switch in start position.) Safety switch in Protectorelay has timed out. Press green reset button.
8A on, 8 off	Burner will not light. Check gas pressure. Need at least 3 psi. Clean spark plug tip. Check spark gap at 1/16 inch (1.5 mm). See if "L" relay in Protectorelay pulls in. If not, see if flame rod is grounded or if its wire is burnt and grounded.
7 on, 7A off	Cotton not flowing. Cotton flow switch not operating.
7A on, 9 off	Time delay relay 1TD still open. Burner must be on one minute for water pump to operate.

SECTION 5 — TROUBLESHOOTING HU-60

<u>PROBLEM</u>	<u>POSSIBLE CAUSES AND REMEDIES</u>	<u>REF/PAGE</u>
1. Humidaira Unit completely dead	<p>Humid air fan not on.</p> <p>Air flow choked off.</p> <p>Air flow switch not functioning. If not, drain any condensed water from tube leading to spray chamber, then make sure drain cock is closed. Make sure tube is not clogged.</p> <p>Electric power supply off.</p> <p>Check indicator lights inside control cabinet.</p>	
2. Burner will not light	<p>See if problem 1 applies.</p> <p>Press reset button on protectorelay.</p> <p>Check incoming gas pressure, at least 3 psi</p> <p>See if Terminal 6 is energized.</p> <p>See if "L" relay in Protectorelay pulls in. If not, see if flame electrode is grounded. Or its wire burnt and grounded. If so, see if spark plug is sparking. Check spark gap at 1/16-inch (1.5 mm). Check for carbon on spark plug due to bad fuel gas or low air inlet velocity. If no spark, jiggle "F" relay. Normally closed contacts for ignition might be bad.</p>	
3. Burner goes off and relights	<p>Air flow switch adjustment</p> <p>Low voltage may affect protectorelay.</p> <p>Flame electrode may be coated. Scrape it.</p> <p>Flame may not be contacting flame electrode. Bend it outward, or install 4" long burner nipple.</p>	
4. Burner lights, but will not modulate.	<p>Low gas pressure due to taking gas supply from low-pressure regulator. Check incoming gas pressure, at least 3 psi.</p> <p>Defective gas Modutrol Motor or cover transformer.</p> <p>Temperature set-point dial should be between 100 and 120.</p> <p>Defective main gas solenoid valve.</p>	

PROBLEM

POSSIBLE CAUSES AND REMEDIES

REF/PAGE

5. Water pump will not run

See if problem 1 applies.

Where condenser air switch control is used, cotton may not be coming from battery condenser.

Motor end of water pump shaft is slotted. Using stub screwdriver, see if it turns freely. If not:

- A. Blow lint and dirt from motor.
- B. Check for rust and scale jamming pump impeller in pump bowl. Inspect per page 4-4.
- C. If shaft still is not free, check motor armature and bearings.

Press reset button on motor starter.
Check that all three phases of power are present. One fuse might be blown in distribution panel.

6. Water in humid air coming from unit--

As condensation

System should be preheated.

Air flow from Humidaire unit choked down too much.

Cold air may be blowing on uninsulated pipes.

Not as condensation

Mist eliminator clogged with lint or scale.

Air hood internal baffle assembled backwards.

7. Not enough humidification

Low water pressure, See Problem 8 below.

Water spray nozzles may be clogged. High water pressure indicates this problem.

Too much air being drawn from Humidaire unit.

Air not being properly applied to cotton.

Not enough heat input. See Problem 4 above.

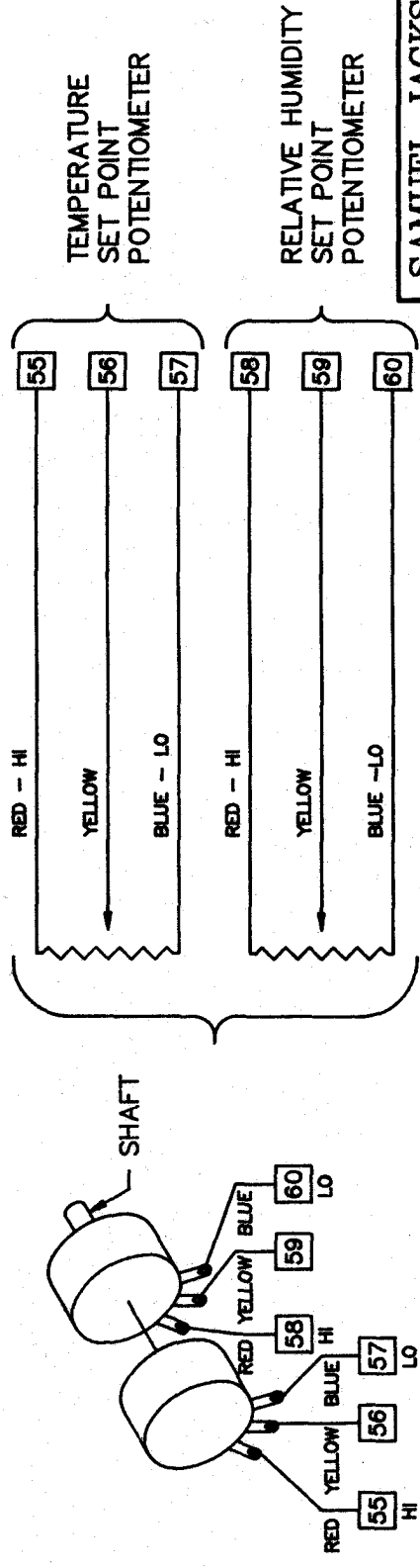
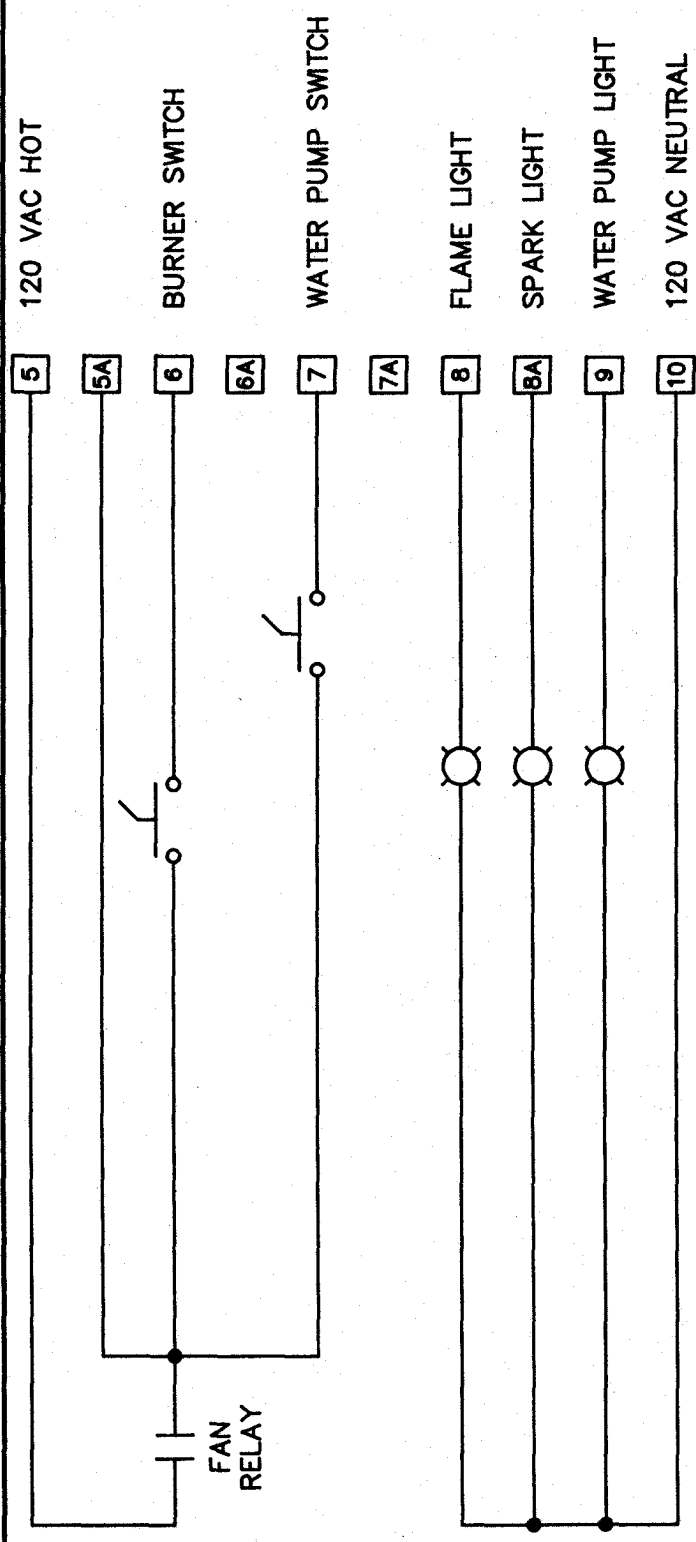
8. Water pressure not normal

See 6th paragraph, page 4-1.

Check for air leak on suction side of water pump.

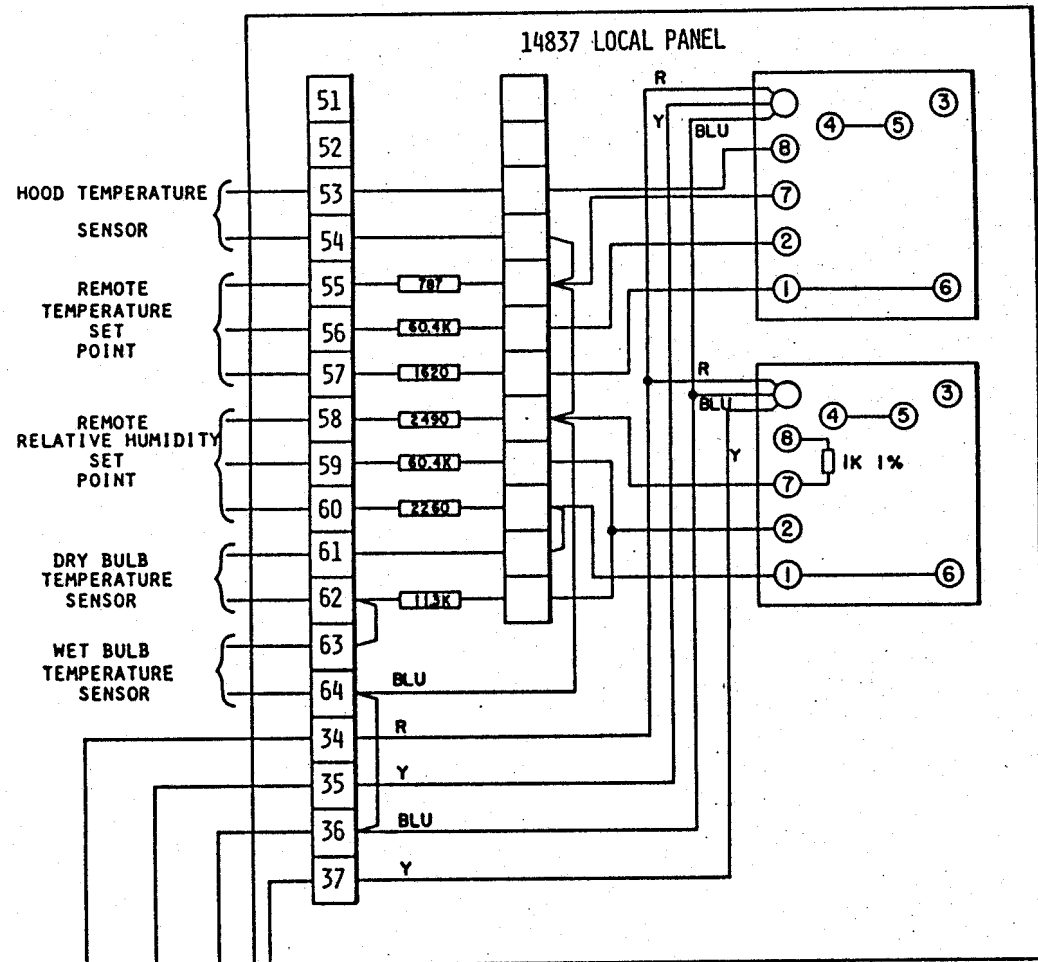
Water level in tank may be so low that water pump sucks air.

Water pump may be running backwards.



SAMUEL JACKSON MFG. CO. ELECTRICAL SCHEMATIC FOR 14810 REMOTE CONTROL REF: 14800B	
DWN. G.F.E. BY	DRAWING NO. 14-2524
DATE 11-88	

10-14807
 DUAL 400 OHMS
 POTENTIOMETER

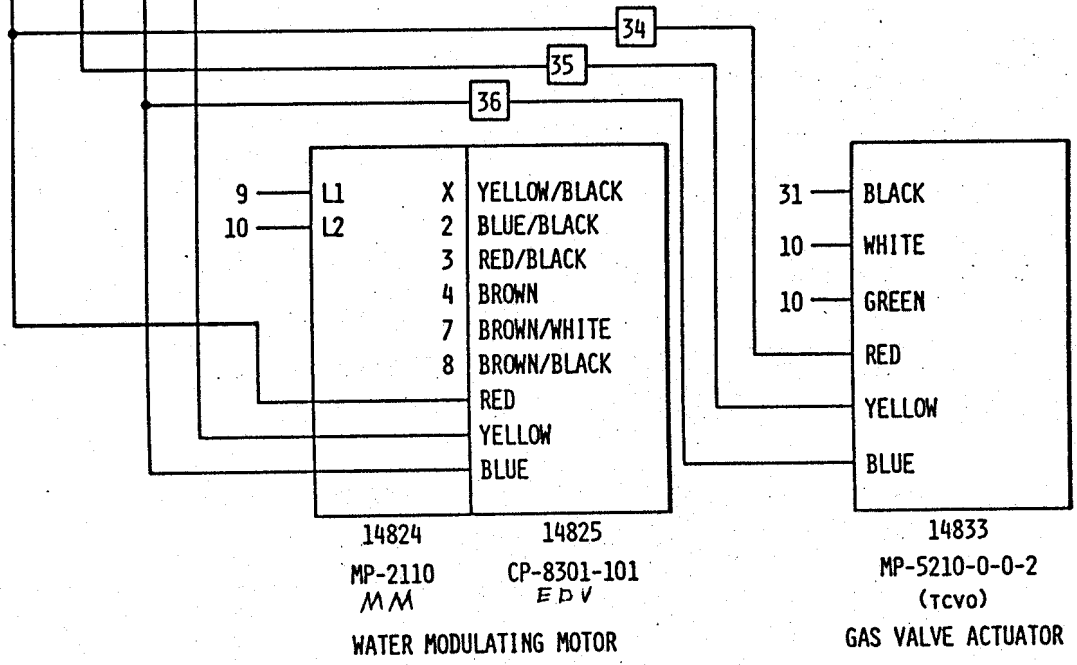


BURNER FUEL CONTROL (TC)
TP-8101-404

SENSOR REMOVED
JUMPERS CLIPPED
20% T.R.

WATER PRESSURE CONTROL (TDC)
TP-8101-404

SENSOR REMOVED
JUMPERS CLIPPED
20% T.R.



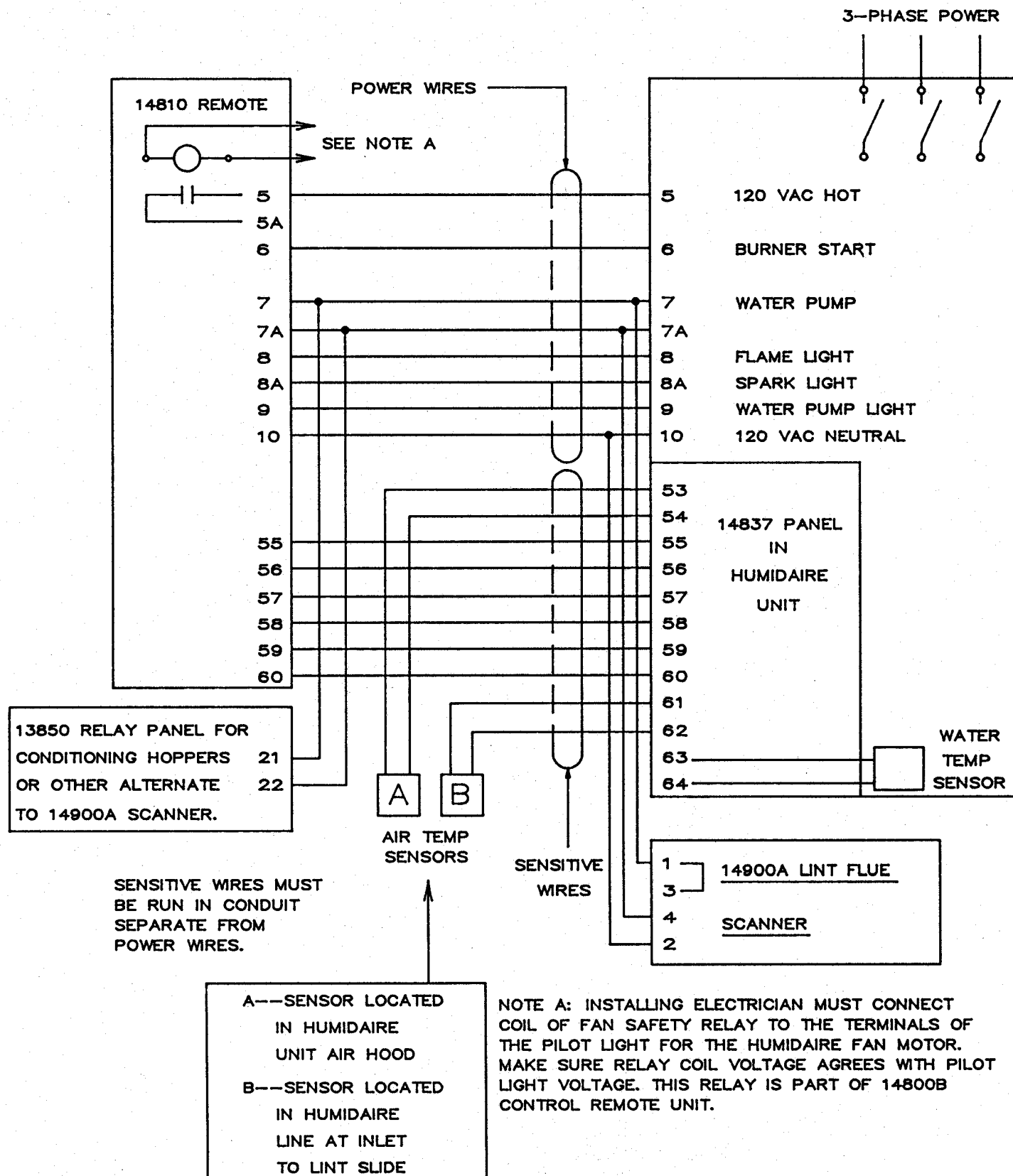
EXTERNAL ELECTRICAL CONNECTIONS

HU-60-1106B HUMIDAIRE UNIT WITH

14800B CONTROL

2122

10-88



FOR JACKSON CONDITIONING HOPPERS



14-2330B

WATER CONDUCTIVITY CONTROL SYSTEM

The Conductivity Control System measures the electrical conductivity of the recirculated water. This conductivity is a measure of the quantity of dissolved minerals, which will cause scale in the Humidaire Unit if not purged. On kerosene-fired Humidaire Units, sulphur in the fuel can cause the water to become acid and more conductive. In this case, the conductivity control prevents corrosion of the metal parts. The dial of the controller is numbered in micromhos (reciprocal megohms).

The Conductivity Control system comprises:

- 14530 Conductivity Controller. This is the instrument mounted in the electrical control cabinet.
- 14532 Sensor, installed in the intake pipe before the water pump. The mark on the electrode must be aligned with the mark on top of its fitting.
- 14783 Solenoid water valve which purges contaminated water from the Humidaire Unit. This is used on Humidaire Units with serial numbers higher than 4855. It is connected to the NO and N contacts of 14530. It replaces the following two items.
- *14465 Solenoid air valve, which controls the compressed air which closes the
- *14680 Air-operated water purge valve. (Part No. 14427 on Humidaire units with serial numbers below 4826.) This valve, when opened, bleeds contaminated water from the Humidaire Unit.
- 14700 Descaler Injector Kit (Optional). When available, this device will inject a small quantity of liquid descaler into the water tank each time water is purged.

OPERATION When the water conductivity reaches the value set on the 14530 Controller, it opens the water purge valve, allowing contaminated water to be pumped out. Clean water comes in through the float valve, lowers the conductivity to a satisfactory level and the controller closes the purge valve until another purge cycle is required.

INSTRUMENT SETTINGS

"ON/OFF" SWITCH. This turns controller on and off. No purge will occur in OFF position.

"CAL TEST/OPER" SWITCH. This switch is used to test the instrument independently of the sensor. Position the switches to ON and CAL TEST. The red "control" light should go on and remain on until the dial is turned to 6000 or close to it. Instrument calibration can be adjusted, if necessary, by means of a potentiometer on the printed circuit board inside the control. Return switches to ON and OPER for normal operation and for setting the control point.

SETTING CONTROL POINT. With fresh, clean water in the Humidaire Unit and the water pump operating, set to ON and OPER and allow instrument to warm up for about 3 minutes. Slowly turn the control pointer downscale until

*Obsolete. Superseded by 14783.

"control" light comes on. Note dial reading. This is the normal conductivity of your supply water. For operation, set the dial to a figure 400 to 1000 micromhos above the supply water conductivity. A smaller addition will bleed off more water and keep the water purer. A larger addition will bleed off less water, but increase the possibility of scale formation or acid corrosion. We recommend that you experiment to find the best setting.

If the optional descaler injector is used, a low setting will also inject descaler more often. If some scale does form during the operating season, remove it by applying Part No. 14000 Powdered Acid Descaler.

CLEANING: Periodically remove the 14532 sensor from the pipe and wipe its carbon buttons clean. If stubborn scale is present, a fine grain emery cloth may be used for cleaning. Take care not to disturb the temperature sensor, which is encased in a glass bead just below the surface level.

TROUBLE SHOOTING

PROBLEM

POSSIBLE CAUSES AND REMEDIES

Power light not on.

ON-OFF switch off.

Water pump not running.

Fuse blown. Replace with 10-amp fuse.

Fuse blows.

Short or ground in solenoid valve or wiring to it.

Control light stays on.

Switch in CAL TEST position. Move to OPER.

Drain line plugged or water purge valve not operating.

Control pointer set below conductivity of incoming water supply.

Sensor leads or sensor may be shorted. Unplug to test.

Scale builds up in Humidair unit or corrosion occurs in kerosene-fired unit.

ON-OFF switch off.

Control pointer set too high above conductivity of supply water.

Sensor fouled or dirty. Clean it per instructions or replace it.

Drain line plugged or water purge valve not operating.

Special reminder:

Drain line must be installed and connected to Humidair Unit for this device to work.

COMPONENT LIST FOR HU-60-1106B

SYMBOL	NAME NUMBER, MFR'S TYPE LOCATION
AF	Air flow switch 13750, Dwyer 1823-0 Upper cabinet
CT50	Control voltage transformer, 50 HZ 16480, Class 5802, Type SBE, 50/60 HZ. Box below disconnect switch
CT60	Control voltage transformer, 60 HZ 16480, Class 5802, Type SBE, 50/60 HZ Box below disconnect switch
EDV	Electronic drive, voltage input 14825, CP-8301-101 Water valve
HTL	High temperature limit switch 14392 + 14393, Switch Unit PB-10A, Temp. transducer KJ-11A1 Upper cabinet
GPG	Gas pressure gage (2 ea.) 11278, 5# PR $\frac{1}{4}$, G22702 Lower cabinet
GPR	Gas pressure regulator 11777, 243-8-1 Behind cabinet
IGT	Ignition transformer 11172, Webster 612-6A7 Upper cabinet
MM	Modulating motor 14824, MP-2110 Water valve
M1	Water pump motor, 5 HP 14975, JMM 3613T Lower cabinet
MC1	Water pump motor contactor 14854, 8502/PD 2.10E Upper cabinet
MOL1	Water pump motor overload relay 14856, 9065/TR 5.5 Upper cabinet
PR	Protectorelay 12328A, RA890F 1254 Upper cabinet
PV	Gas pilot valve 14113, S311AF02N6CF5 Lower cabinet
SSOV	Gas safety shut-off valve 13438, MJ8215 B 50 Lower cabinet
TD1	Preheat time delay relay 16061, 115-60-W Upper cabinet

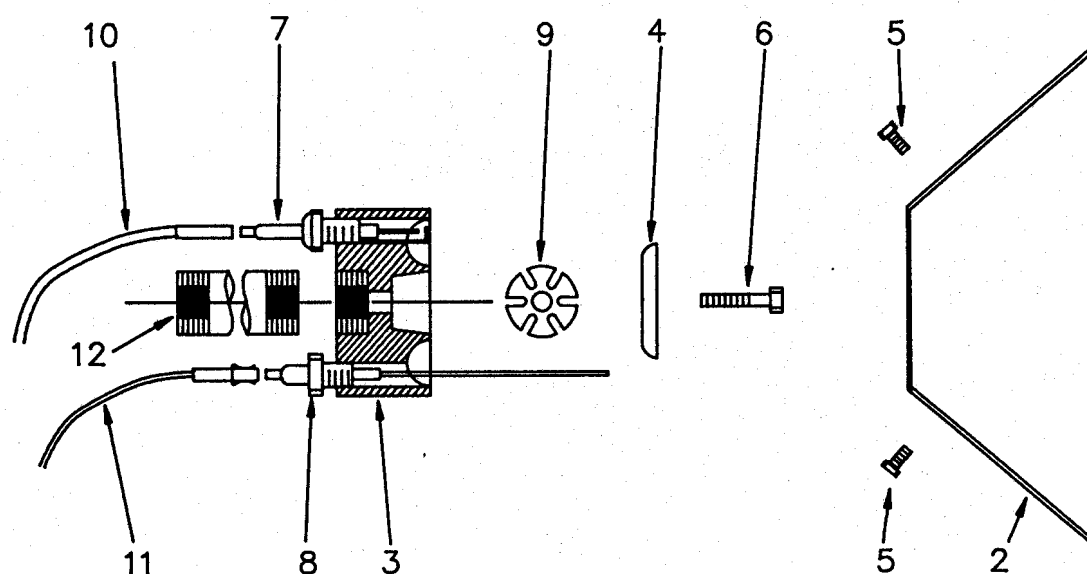
COMPONENT LIST FOR HU-60-1106B

SYMBOL	NAME NUMBER, MFR'S TYPE LOCATION
TCV	Temperature control valve 14834 & 14835, VS-9223-211-4-6 Lower cabinet
TCVO	Temperature control valve operator 14833, MP-5210-0-0-2 Lower cabinet
TS	Temperature sensor (3 ea) 14829, MYDA-77 Water tank and discharged air
WBV	Water butterfly valve 14980, Butterfly Water pipe
WCS	Water conductivity sensor 14532, E-1A Water pipe
WPG	Water pressure gage 11277B, 213-2½", 0-60 psi Water pipe
WPV	Water purge valve 14783, HR1-1 Water pipe
WP50	Water pump, 50 HZ, less motor 14973, 48F50SJM Lower cabinet
WP60	Water pump, 60 HZ, less motor 14972, 48F60SJM Lower cabinet
AR	Automatic reset module 14823, AD-8501-0-0-2 Upper cabinet
TC	Temperature controller 14821, TP-8101-404 Upper cabinet
TDC	Temperature difference controller 14821, TP-8101-404 Upper cabinet

13480A BURNER HEAD ASSEMBLY

3131

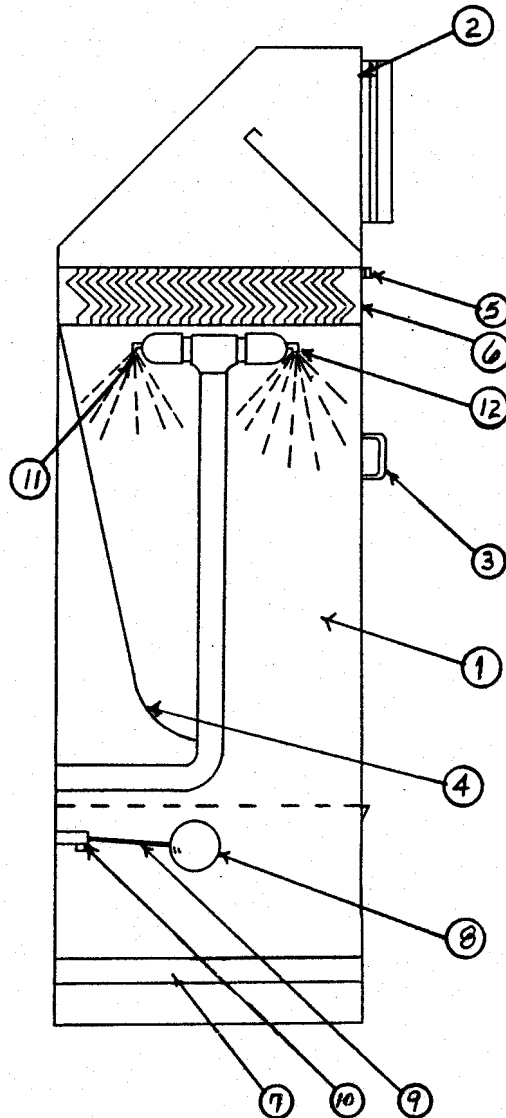
6-89



TOP VIEW

<u>REF</u>	<u>QUANTITY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>																															
2	1	13482	BURNER CONE (FOR NATURAL GAS; USE 12975B FOR LPG)																															
3	1	14620	BURNER BODY																															
4	1	12985B	CONTOURED DISC																															
5	4	15724	5/16 X 1/2 HX HD SS CAP SCREW																															
6	1	15767	3/8 X 1 3/4 HX HD SS CAP SCREW																															
7	1	12398	SPARK PLUG, 1-64-1																															
8	1	12399	FLAME ELECTRODE, FRS-2-6																															
9	1		BURNER ORIFICE DISC:																															
			<table><tr><th><u>SLOT</u></th><th><u>THICK</u></th><th><u>FLOW AREA</u></th></tr><tr><td>13006</td><td>1/8</td><td>.048</td><td>23</td></tr><tr><td>13007</td><td>1/8</td><td>.060</td><td>29</td></tr><tr><td>13008</td><td>1/8</td><td>.075</td><td>36</td></tr><tr><td>13001</td><td>1/4</td><td>.048</td><td>46</td></tr><tr><td>13002</td><td>1/4</td><td>.060</td><td>58</td></tr><tr><td>13003</td><td>1/4</td><td>.075</td><td>73</td></tr><tr><td>13004</td><td>1/4</td><td>.150</td><td>145</td></tr></table>	<u>SLOT</u>	<u>THICK</u>	<u>FLOW AREA</u>	13006	1/8	.048	23	13007	1/8	.060	29	13008	1/8	.075	36	13001	1/4	.048	46	13002	1/4	.060	58	13003	1/4	.075	73	13004	1/4	.150	145
<u>SLOT</u>	<u>THICK</u>	<u>FLOW AREA</u>																																
13006	1/8	.048	23																															
13007	1/8	.060	29																															
13008	1/8	.075	36																															
13001	1/4	.048	46																															
13002	1/4	.060	58																															
13003	1/4	.075	73																															
13004	1/4	.150	145																															
			PARTS NOT INCLUDED IN 13480 BURNER HEAD:																															
10	1	11159	SPARK PLUG WIRE																															
11	1	11158	FLAME ELECTRODE WIRE																															
12	1	15189	1 1/4 X 4 BLACK PIPE NIPPLE																															

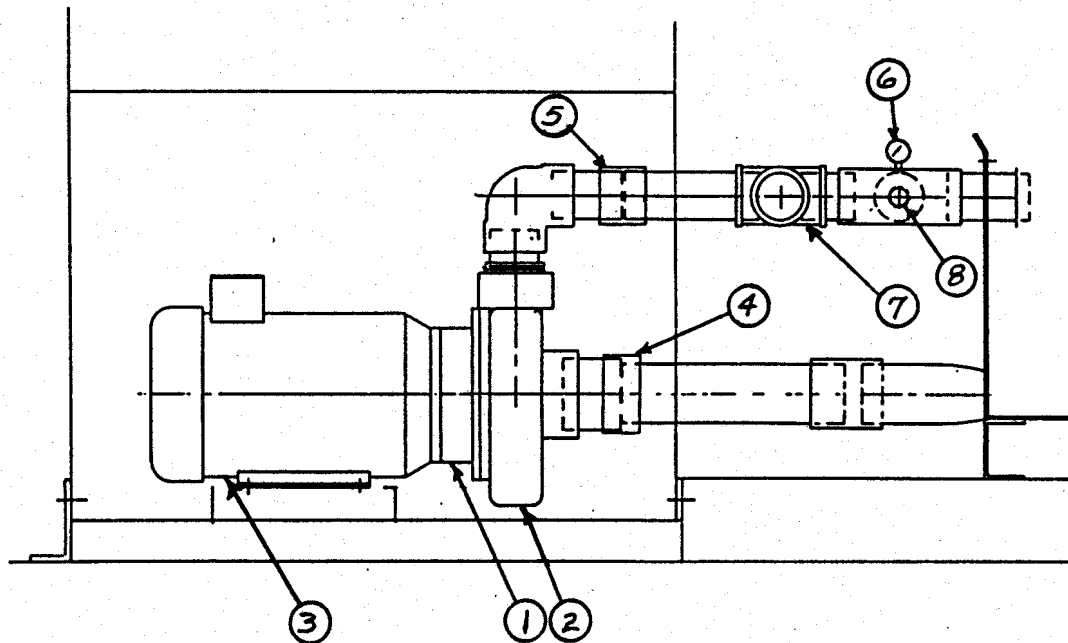
13460A
WATER SPRAY CHAMBER
FOR HU-60-1106B



<u>REF.</u>	<u>QUAN.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	13460A	Spray Chamber, S.S.
2	1	12029B	Air Discharge Hood, S.S.
3	2	13805	Handle
4	1	13911A	Air Deflector Sheet
5	2	12156	Latch Assm.
6	1	12150D	Mist Eliminator Assm.
7	1	14745	Water Tank Screen
8	1	11068A	Float Ball, S.S.
9	1	11069	Brass Stem
10	1	14742	Water Float Valve, 3/4
11	24	13900	Water Spray Nozzles, S.S.
12	2	14774	Header Pipe, S.S.

WATER PUMP AND PIPE ASSEMBLY

FOR HU-60-1106B

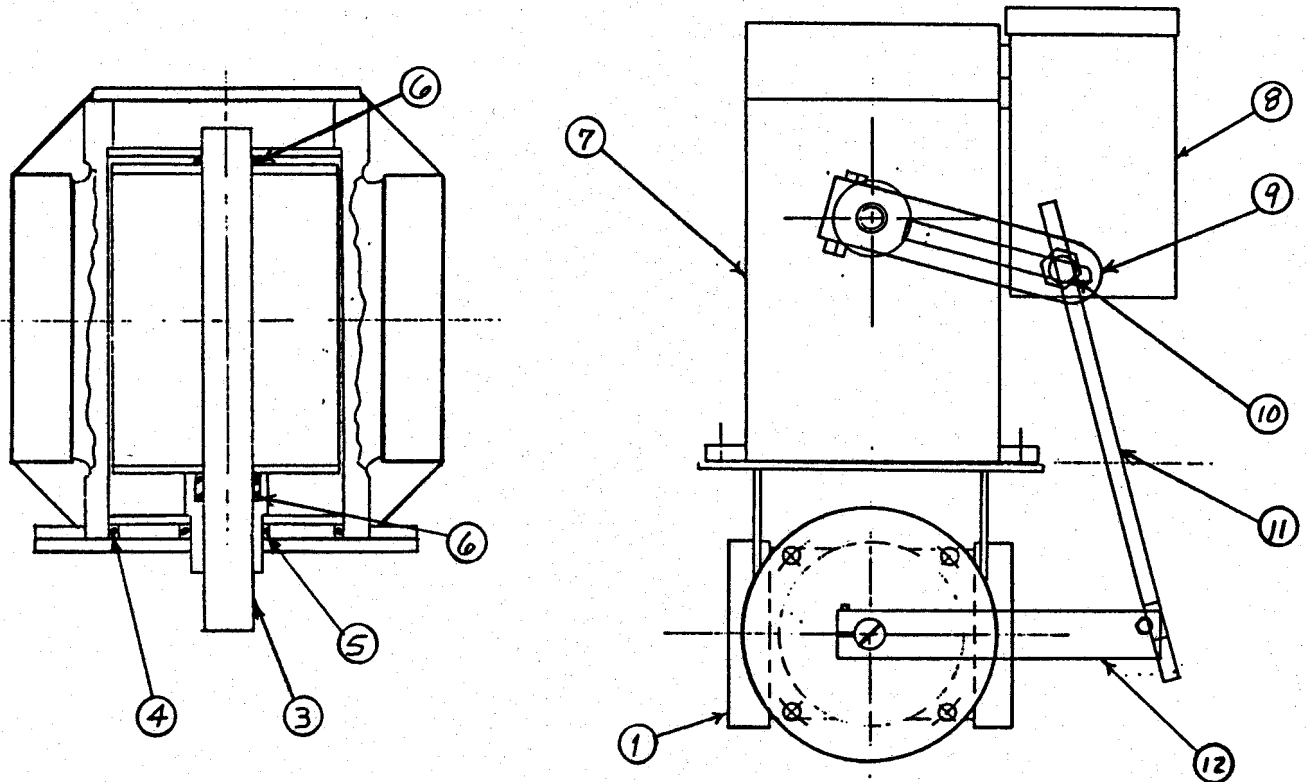


<u>REF. NO.</u>	<u>QUAN.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	14971	Water pump and motor, 50 HZ
2	1	14973	Water pump less motor, 50 HZ
1	1	14970	Water pump and motor, 60 HZ
2	1	14972	Water pump less motor, 60 HZ
3	1	14975	Motor 4 HP, 50 HZ, 5 HP, 60 HZ
*	1	14794	Shaft seal
*	1	14869	Pump body o-ring
4	1	15406	No-Hub coupling, 2½ x 3 inch
5	1	15402	No-Hub coupling, 2 inch
6	1	11277B	Water pressure gage
7	1	14980	Water valve (see separate page)
8	1	14531	Water conductivity control electrode

*items not shown

14980

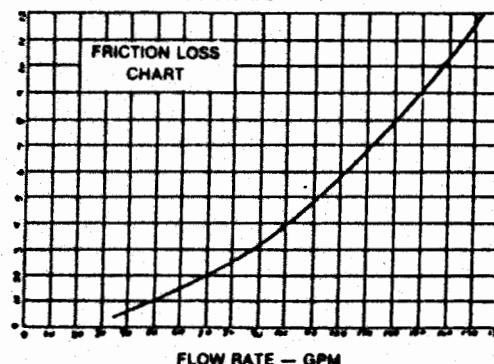
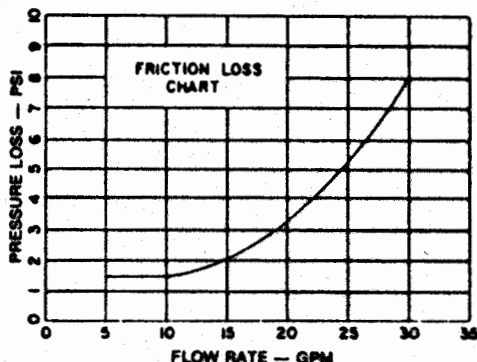
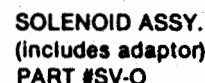
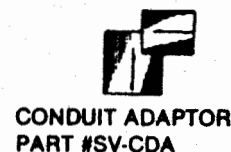
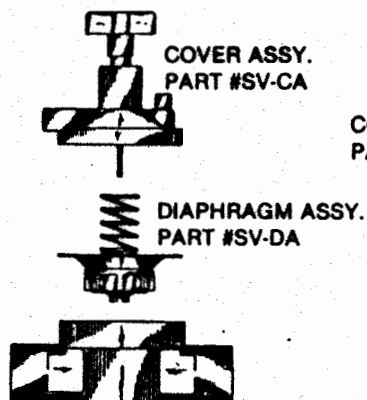
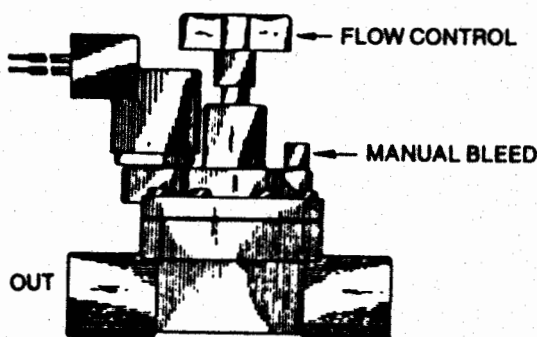
BUTTERFLY WATER VALVE
WITH MODULATING MOTOR



<u>REF.</u>	<u>QUAN.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	14981	Valve body assm.
3	1	14990	Valve core assm.
4	1	15601	O-ring, 2 1/4 ID
5	1	15602	O-ring, 3/4 ID
6	3	15603	O-ring, 1/2 ID
7	1	14824	Water valve actuator
8	1	14831	Electronic drive
9	1	14841	Crank arm
10	1	14842	Straight arm fitting
11	1	14843	Rod
12	1	14952	Crank arm

14783

WATER PURGE VALVE



INSTALLATION INSTRUCTIONS

The SV-1 and SV-2 solenoid valves can be plumbed in any position and have a flow adjustment control and can be operated manually or electrically.

Note: Either valve should have a minimum of 20 psi differential pressure to operate. For cooling tower bleed off this means that when bleeding off to atmosphere pressure 20 psi or more should be available in the supply line. It is always good practice to install a Y strainer ahead of the solenoid valve.

Where static pressures are found to be 150 PSI or greater, it is advisable to use a pressure regulator with any automatic valve. To assure uniform and controllable operating conditions, it is necessary to regulate high pressure systems.

- Step 1. Flush line thoroughly before installing valve. Use teflon pipe tape or standard pipe compound for thread sealant, on male threads.
- Step 2. Screw valve onto supply pipe threads hand tight. Use wrench only to straighten valve into position.
- Step 3. Screw outlet pipe into valve with wrench, hold valve by hand as outlet pipe is tightened.
- Step 4. Use 18 gauge solid wire plastic jacketed thermostat control wire for runs not over 800 feet and 16 gauge over 800 feet. Be sure all splices are soldered or joined with wire nuts and sealed with vinyl cement or other suitable waterproofing cement. A conduit adaptor is provided for running wires in conduit if desired.
- Step 5. Turn flow control clockwise until it seats, closing the valve. Turn water supply on. The valve will remain closed.
- Step 6. Turn manual bleed screw counterclockwise. This will allow water to flow through the valve as the flow control is backed out; adjust the flow control for desired flow. Tighten manual bleed screw and valve will close within a minute. Remove flow control knob to discourage unauthorized adjustment.

NOTE: Due to varying regulations check your local codes.

OPERATING INSTRUCTIONS

Turn manual bleed screw counterclockwise and valve will open. Tighten manual bleed screw and valve will shut off within a minute.

SAMUEL JACKSON MANUFACTURING CORP.

THE LINT SLIDE GRID



The LSG-1070 Lint Slide Grid is used to humidify cotton as it passes down the lint slide to the baling press. It is composed of metal crosspieces which overlap to form louver-like openings. Humid air, introduced through the floor of the lint slide beneath the grid, issues from these openings and passes upward through the batt of cotton, adding moisture to it. The overlapping arrangement of the grid slats not only helps to push the cotton down the slide, but prevents the accumulation of pin trash beneath the grid.

PURPOSE The reasons for adding moisture in this way are to reduce strain on the tramper and press and eliminate problems with broken straps or bale ties. To do this the moisture content of the cotton is typically brought up to between 6 and 8½ per cent. The weight added is typically 15 pounds (7 Kilos) per bale. The added moisture also causes the cotton fibers to straighten so the classer will usually call it 1/32-inch longer than otherwise. For this reason, if an automatic sampler is used, a 4-inch diameter (100 mm) pipe of humid air should be introduced into the pipe taking cotton to the sampler. This will make the sample representative of the baled cotton.

INSTALLATION PROCEDURE is shown in Drawing 14-2306. Note that the two bolt holes in each end of the air inlet are utilized to bolt in place the two 13362 diffuser ends. The 13361 diffuser sheet is bolted under the upper flanges of the diffuser ends.

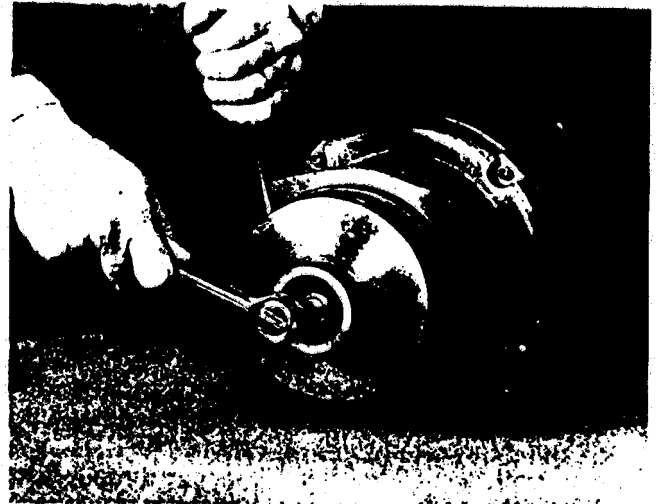
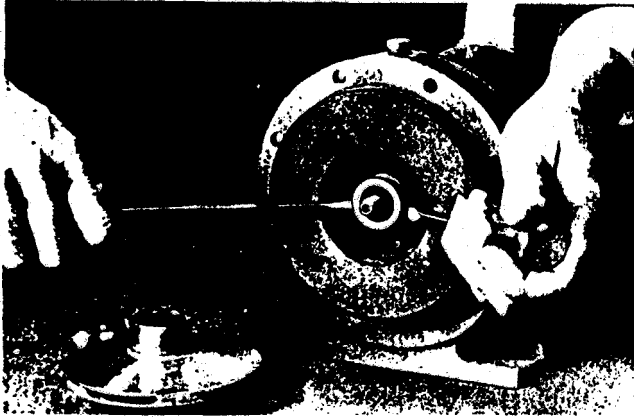
LINT FLUE SCANNER This device is usually used with the lint slide grid to switch the Humidair Unit from producing humid air to warm, dry air, when no cotton is coming from the battery condenser. It does this by scanning the lint riser going to the battery condenser with infrared light.

HOOD OVER LINT SLIDE A useful modification is now being used in many gin plants. The lint slide is covered with a hood to collect the used moist air and pieces of floating lint which would otherwise escape into the air. The collected moisture is returned to the riser below the battery condenser. The normal vacuum of the lint flue is sufficient to pull in this air. The slide is left uncovered near the condenser for outside air to enter. This hood arrangement allows more humid air to be used in the grid without causing a housekeeping problem. It also gives the cotton double exposure to the humid air, and kills static electricity in the battery condenser. Drawings of typical hood designs are available on request. Samuel Jackson Mfg. does not make such hoods. They are made by the cotton gin manufacturers and local sheet metal contractors.



SAMUEL JACKSON MANUFACTURING CORP
P O BOX 16587 --- LUBBOCK, TX 79490
TEL 806-795-5218

WATER PUMP SHAFT SEAL REPLACEMENT



II. REPLACING MECHANICAL SEAL

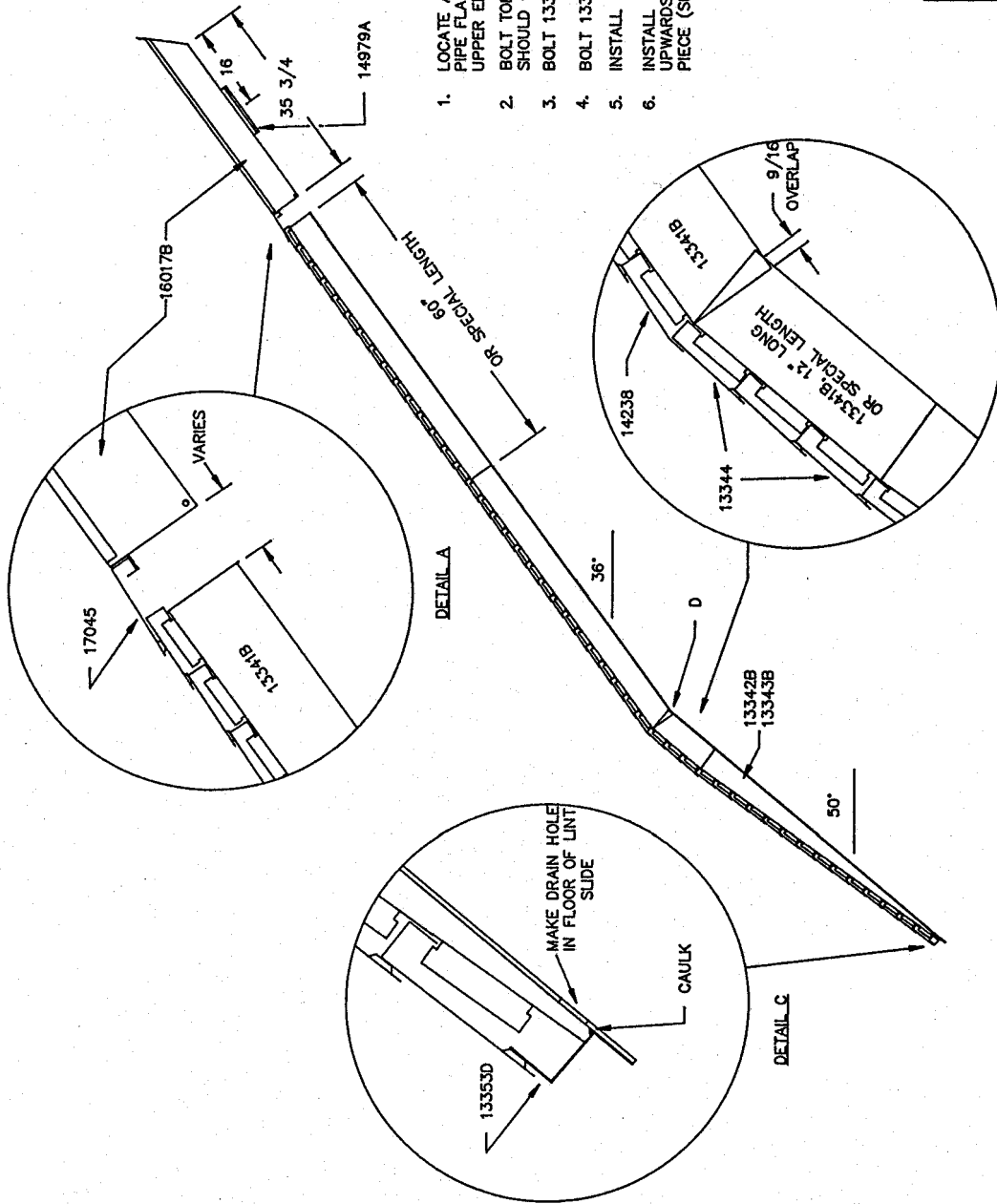
A) Dismantling:

1. Turn off power.
2. Drain system.
3. Remove bolts holding motor to foundation.
4. Remove casing bolts.
5. Remove motor and rotating element from casing, leaving casing and piping undisturbed.
6. Insert a screwdriver in impeller waterway passage and remove impeller bolt with a socket wrench.
7. Remove washer and impeller from shaft. Be careful not to lose impeller key. If impeller is difficult to remove, it may be necessary to insert two (2) screwdrivers, between impeller and adapter, 180° apart, to pry off impeller.
8. Remove bolts holding adapter to motor. Remove adapter, pulling with it the rotating seal part from sleeve.
9. Place adapter on a flat surface. Push out stationary parts of mechanical seal.
10. Inspect shaft sleeve. If damaged, remove from shaft. Heat with torch and use a bearing puller.

B) Reassembly:

1. Clean parts, male and female locks, seal seat counterbore and shaft, in particular where sleeve fits (if sleeve was removed).
2. Spray both shaft sleeve fit and sleeve inside with LOCQUIC®, Primer "T"® — Loctite® product Item No. 74756. (Purchase at Automotive Parts or Hardware.) Let parts dry and then apply Loctite® #271 on same parts. Slide sleeve over shaft, twist sleeve back and forth a couple times. Wipe off excess and let cure according to manufacturer's instructions.

3. Lube counterbore of adapter and rubber bushing of stationary seat with water or light oil. Press stationary seat in counterbore squarely and evenly. Caution: Do not mar lapped face of seat.
4. With motor in vertical position, remount adapter on motor. Make sure motor shaft does not dislocate stationary seat of the seal.
5. Apply a thin coat of light oil or water to sleeve and rubber seal member of rotating seal. Slide rotating member of mechanical seal on sleeve. Attach spring. Be sure rotating seal face stays in the holding collar during installation. Take extra care not to damage the seal lapped faces.
6. Place key in keyway slot and slide impeller on shaft. Place impeller washer on impeller hub and start threading impeller bolt into motor shaft.
7. Insert a screwdriver in a waterway passage of the impeller. Hold from rotating and tighten bolt.
8. Remove burrs caused by screwdriver on periphery of impeller in waterway passages.
9. Slide motor and rotating element in casing. Be sure to replace damaged O-rings.
10. Tighten casing bolts alternately and evenly.
11. Replace hold-down bolts.
12. Check for free rotation after assembly is complete.
13. Close all drain openings. Use pipe joint compound on male threads.
14. Reprime before starting. Do not start unit until pump is completely filled with water.



INSTALLATION PROCEDURE

1. LOCATE AND CUT HOLE IN LINT SLIDE FLOOR FOR 14979A 12" DIA PIPE FLANGE. THIS HOLE SHOULD BE CENTERED ON THE SLIDE AT THE UPPER END, AS SHOWN. INSTALL THE 12" FLANGE.
2. BOLT TOP DIFFUSER SHEET (PART NO. 16017B) IN PLACE. THIS SHEET SHOULD CAULKED AT THE TOP.
3. BOLT 13341B PIECES IN PLACE, STARTING AT POINT D. SEE DETAIL B.
4. BOLT 13342B AND 13343B PIECES IN PLACE.
5. INSTALL 13353D BOTTOM GRID CLOSURE. SEE DETAIL C.
6. INSTALL 13344 GRIDS, STARTING NEAR THE BOTTOM AND WORKING UPWARDS, USING 14238 AT THE HUMP AND FINISHING WITH 17045 PIECE (SEE DETAIL A).

SAMUEL JACKSON MFG. CO.

INSTALLATION OF LUMMUS
LINT SLIDE GRID ASSEMBLY

REF: LSG

DRAWING NO.

OWN. SK
BY

DATE 6-29-89

14-2453

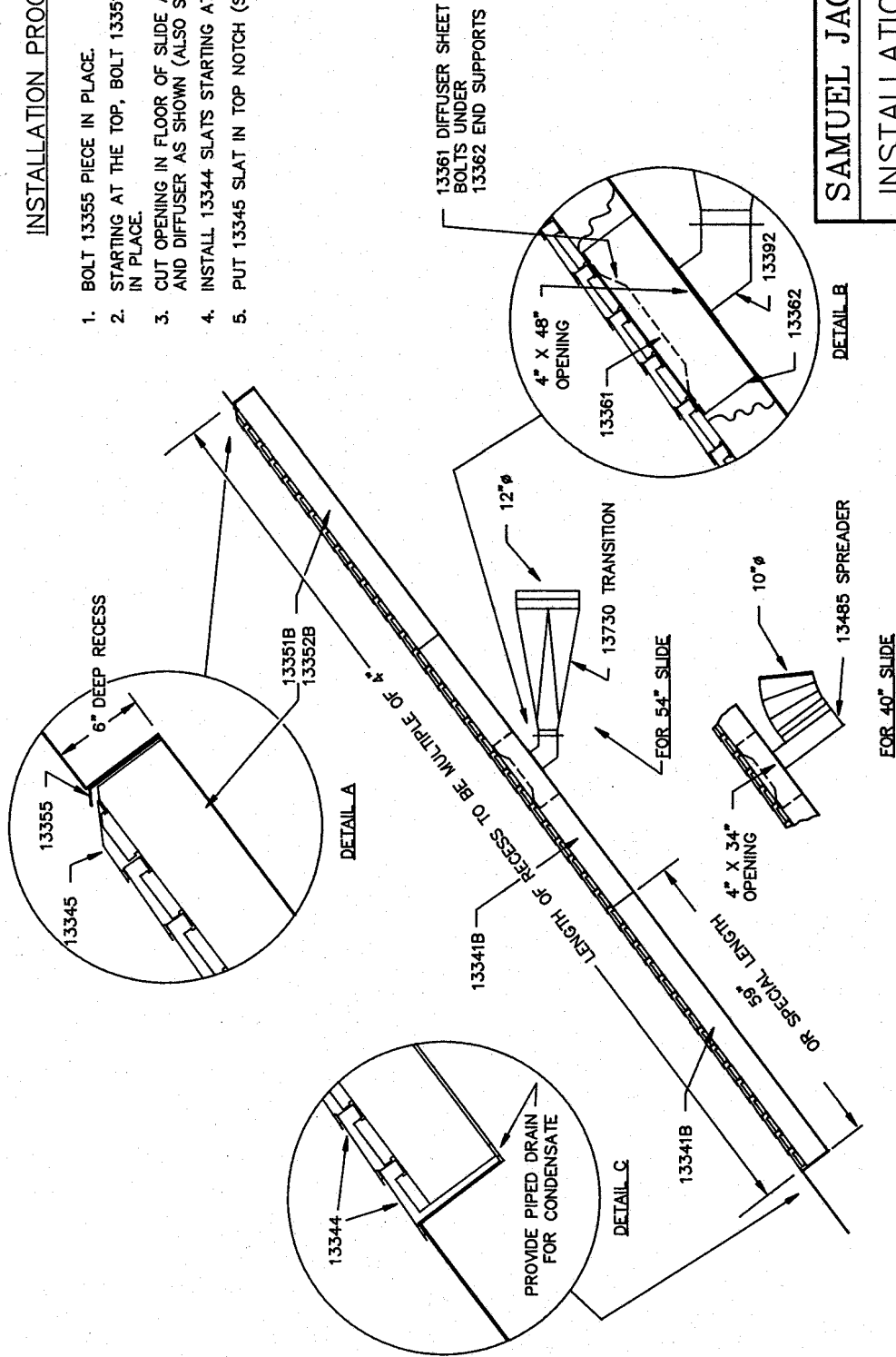
DETAIL B

DETAIL A

DETAIL C

INSTALLATION PROCEDURE

1. BOLT 13355 PIECE IN PLACE.
2. STARTING AT THE TOP, BOLT 13351B, 13352B, AND 13341B PIECES IN PLACE.
3. CUT OPENING IN FLOOR OF SLIDE AND INSTALL INLET TRANSITION AND DIFFUSER AS SHOWN (ALSO SEE DETAIL B).
4. INSTALL 13344 SLATS STARTING AT THE BOTTOM. (SEE DETAIL C)
5. PUT 13345 SLAT IN TOP NOTCH (SEE DETAIL A).



SAMUEL JACKSON MFG. CO.

INSTALLATION OF RECESSED
LINT SLIDE GRID ASSEMBLY

REF: LSG

DRAWING NO.

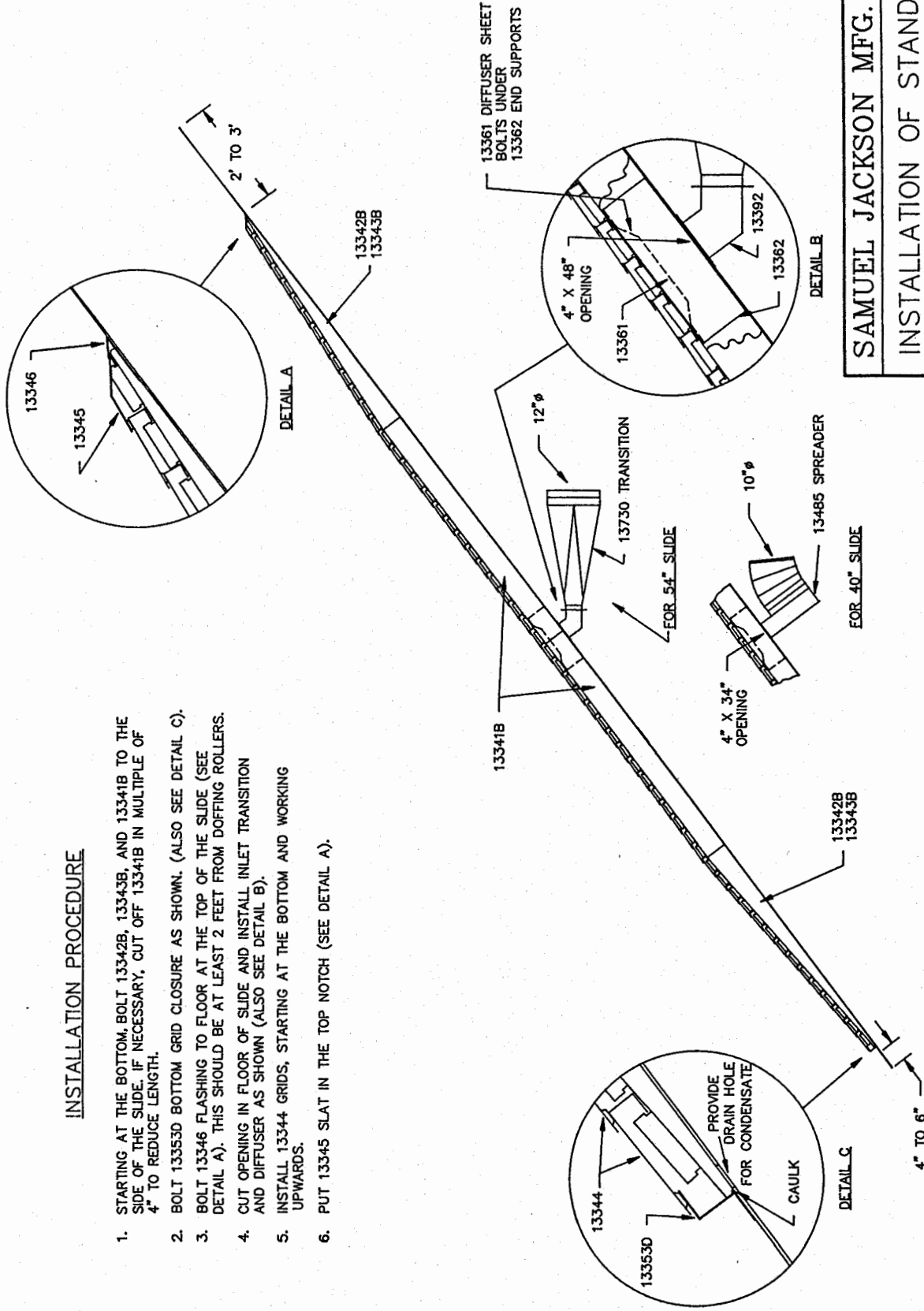
DWN. SK
BY

DATE 6-28-89

14-2557

INSTALLATION PROCEDURE

1. STARTING AT THE BOTTOM, BOLT 13342B, 13343B, AND 13341B TO THE SIDE OF THE SLIDE. IF NECESSARY, CUT OFF 13341B IN MULTIPLE OF 4" TO REDUCE LENGTH.
2. BOLT 13353D BOTTOM GRID CLOSURE AS SHOWN. (ALSO SEE DETAIL C).
3. BOLT 13346 FLASHING TO FLOOR AT THE TOP OF THE SLIDE (SEE DETAIL A). THIS SHOULD BE AT LEAST 2 FEET FROM DOFFING ROLLERS.
4. CUT OPENING IN FLOOR OF SLIDE AND INSTALL INLET TRANSITION AND DIFFUSER AS SHOWN (ALSO SEE DETAIL B).
5. INSTALL 13344 GRIDS, STARTING AT THE BOTTOM AND WORKING UPWARDS.
6. PUT 13345 SLAT IN THE TOP NOTCH (SEE DETAIL A).



SAMUEL JACKSON MFG. CO.

INSTALLATION OF STANDARD
LINT SLIDE GRID ASSEMBLY

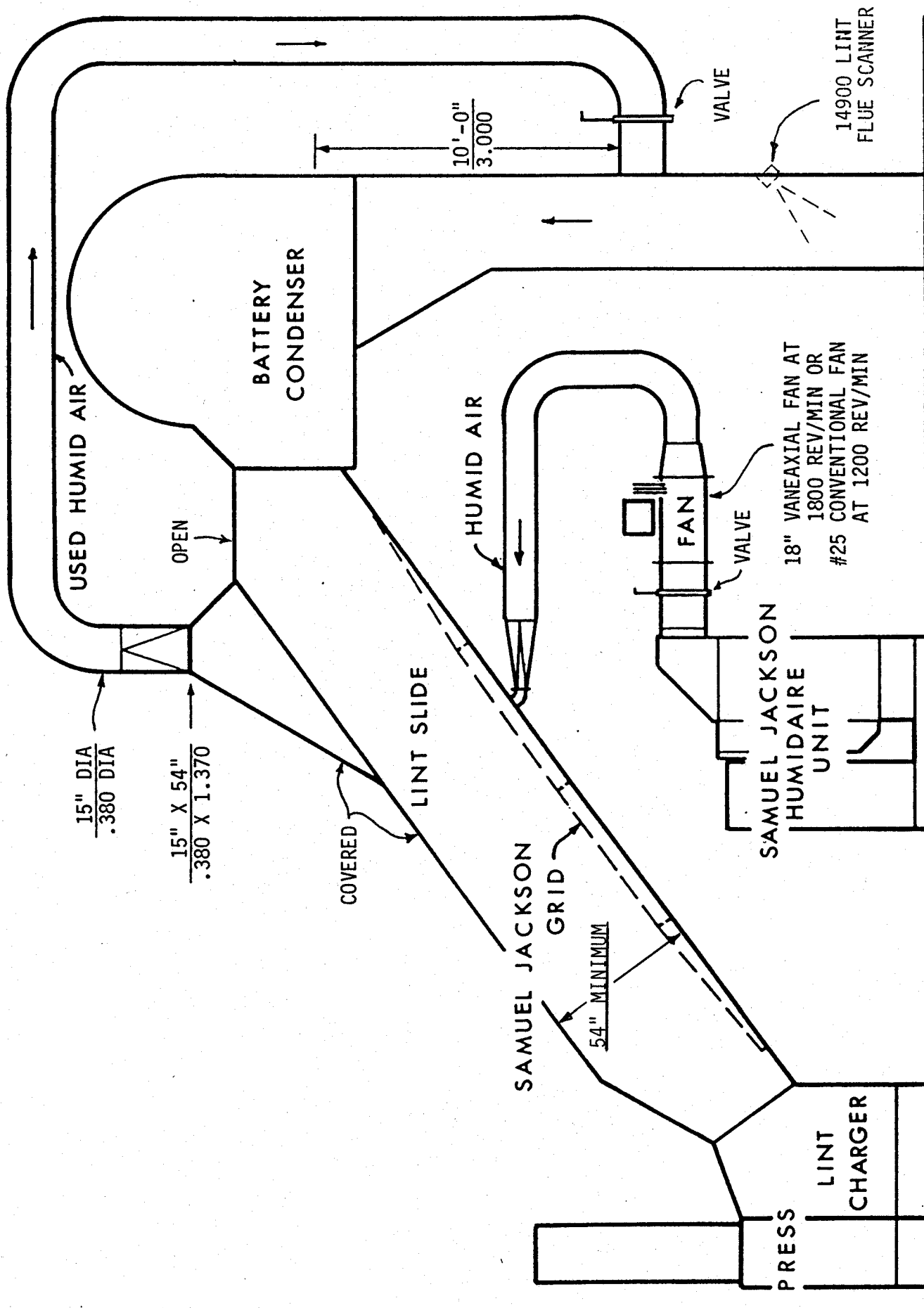
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BY

DRAWING NO.

DATE 6-29-89

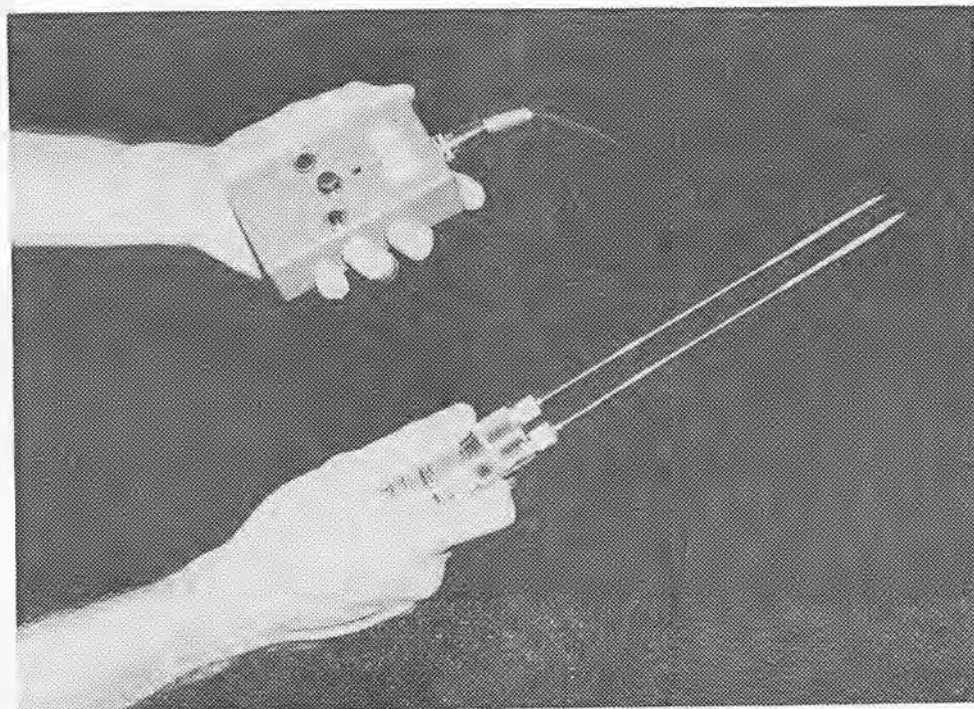
14-2558



SAMUEL JACKSON MANUFACTURING CORP.

MODEL CM-1

COTTON MOISTURE METER



The Model CM-1 Cotton Moisture Meter (made by Delmhorst Instrument Company) is the best and most economical meter we have found to measure the moisture content of baled lint cotton. When using our Lint Slide Grid, it is not practical to take a sample from the slide to determine final moisture content. The bottom of the batt will have a much higher moisture content than the upper part. Once the cotton is baled, the moisture content becomes uniform, and can be quickly measured with the CM-1 meter and its bale probe. The probe is stabbed into the head or side of the bale, the "Read" button is pressed and the moisture content read from the "Lint Cotton" scale. This scale reads from 4 to 16 per cent. Specially insulated needles read internal moisture only, and are not affected by surface moisture or conductive bagging on the bale.

For measuring the moisture content of seed cotton, the 52-E cup electrode is available. The sample is pressed into the cup with the finger, the "Read" button is pressed and the moisture content read from the "Seed Cotton" scale. This scale reads from 6 to 20 per cent. This range is good for seed cotton coming into the gin plant, but is too high to use at the feeder aprons unless Samuel Jackson Conditioning Hoppers are being used.

SPECIFICATIONS

Size: With cup electrode:
2-3/4 x 1-3/4 x 6-1/2 inches (70 x 42 x 168 mm)

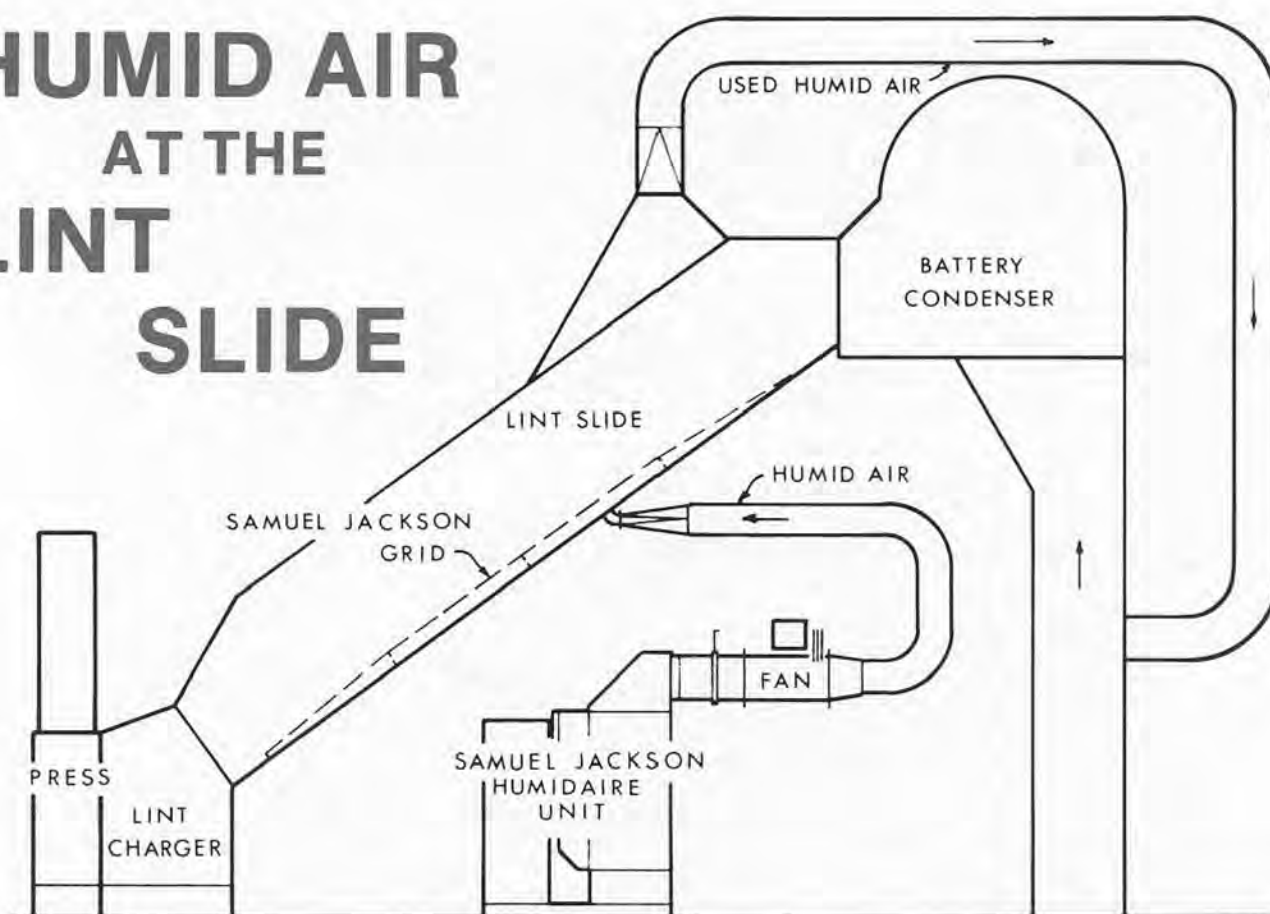
Meter only:
2-3/4 x 1-3/4 x 5 inches (70 x 42 x 130 mm)

Weight: 1 pound (540 grams) with cup electrode

Batteries: Two 9-volt, NEDA 1604

Ranges: Lint Cotton 4-16%; Seed cotton 6-20%

HUMID AIR AT THE LINT SLIDE



THE SOLUTION TO HUMIDIFYING COTTON — OUR LINT SLIDE GRID AND HUMIDAIRE UNIT

The need to humidify cotton before the baling press is known to everyone. Dry cotton is hard to press, causes high ram pressure and broken bale ties. Today's high-capacity gins with universal density presses and automatic strapping systems make the problem more acute. The problem is how to humidify this increased volume of cotton uniformly and safely.

The answer to this problem is to use warm humid air blown gently upward through the cotton in the lint slide ahead of the baling press. The Samuel Jackson Lint Slide Grid can be installed on top of the floor of the existing lint slide. Warm humid air from the Samuel Jackson Humidaire Unit is blown into an opening in the floor of the lint slide under the grid. This humid air then passes up through the grid slots and through the cotton in the slide. This method puts more moisture in the cotton than is possible with water sprays, and does it uniformly. There will be no possibility of claims from wet spots in the baled cotton.

In many installations, the used humid air simply goes upward out of the lint slide along with some wisps of cotton. It is preferable to collect this humid air and return it into the riser going to the battery condenser. This returned air helps to humidify the cotton. In arid regions, it eliminates

any static electricity which might interfere with the discharge of cotton from the battery condenser.

It is important that the cotton be sampled in such a way that the sample has moisture in it, just as the bale does. The moisture makes the cotton fibers lay out straight and helps the classer to recognize its full staple length.

The well known Humidaire Unit works by passing air through a spray chamber where it is scrubbed by recirculating water sprays. Heat is added to increase the amount and availability of water vapor in the air. Humidaire Units are available in models which burn natural gas, butane, propane, or kerosene.

Since fuels are so expensive, one might wonder how the use of such a system can be justified. Disregarding all other benefits, the weight of the added moisture (about 15 pounds) is worth many times the cost of the fuel consumed. In a typical installation, the value of the moisture added will exceed the cost of the fuel consumed to the extent of \$7.00 per bale.

Humid air is extensively used elsewhere in the gin to kill static electricity and to preserve the spinning quality of the cotton. We will be happy to furnish information on these applications. Call us.

SAMUEL JACKSON MANUFACTURING CORP.

P.O. BOX 16587 / LUBBOCK, TEXAS 79490 / TELEPHONE 806-795-5218

GAS PIPING

Size of pipe supplying gas to heaters and other appliances should be large enough to prevent excessive pressure losses when all of them are in use. See following Table of sizes, flows and pressure losses.

Where LPG (Liquefied Petroleum Gas, Propane, Butane) is used as the fuel, see following drawing which shows recommended practices.

Emergency shut-off valves should be provided to permit turning off the fuel in an emergency. They should be located so that they are accessible in an emergency situation.

IRI (Industrial Risk Insurers) and some state and local authorities require venting the gas regulator and normally-open vent valve. NFPA 86* states:

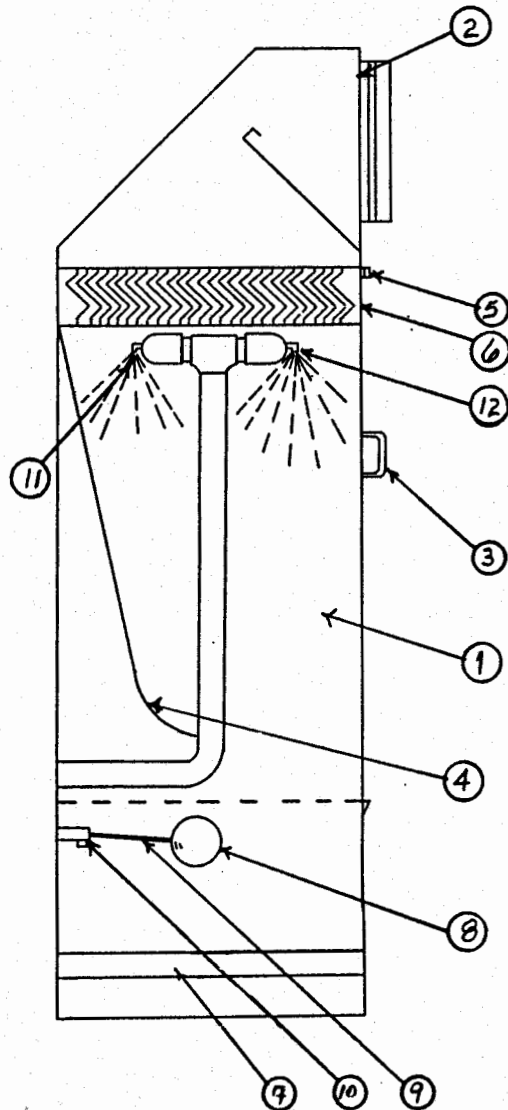
3-3.4.3.2 Regulators shall be vented to a safe location, where vented gas cannot re-enter the building without extreme dilution. The terminating end shall be protected against water entry and bug-screened. Vent pipe shall be of adequate size so as to not lengthen response time.

3-3.4.3.3 Vent lines from multiple regulators, where manifolded together, shall be piped in such a manner that diaphragm rupture of one will not backload the others.

3-3.4.3.4 Vents from gas pressure switches, but from no other devices, may be vented into the regulator vent lines provided that switch or regulator diaphragm failure will not backload the regulator.

*Reprinted with permission from NFPA 86-1985, Standard for Ovens and Furnaces, copyright © 1985, National Fire Protection Association, Quincy, Mass. 02269. This reprint of material is not the complete and official position of the NFPA on the referenced subject which is represented only by the standard in its entirety.

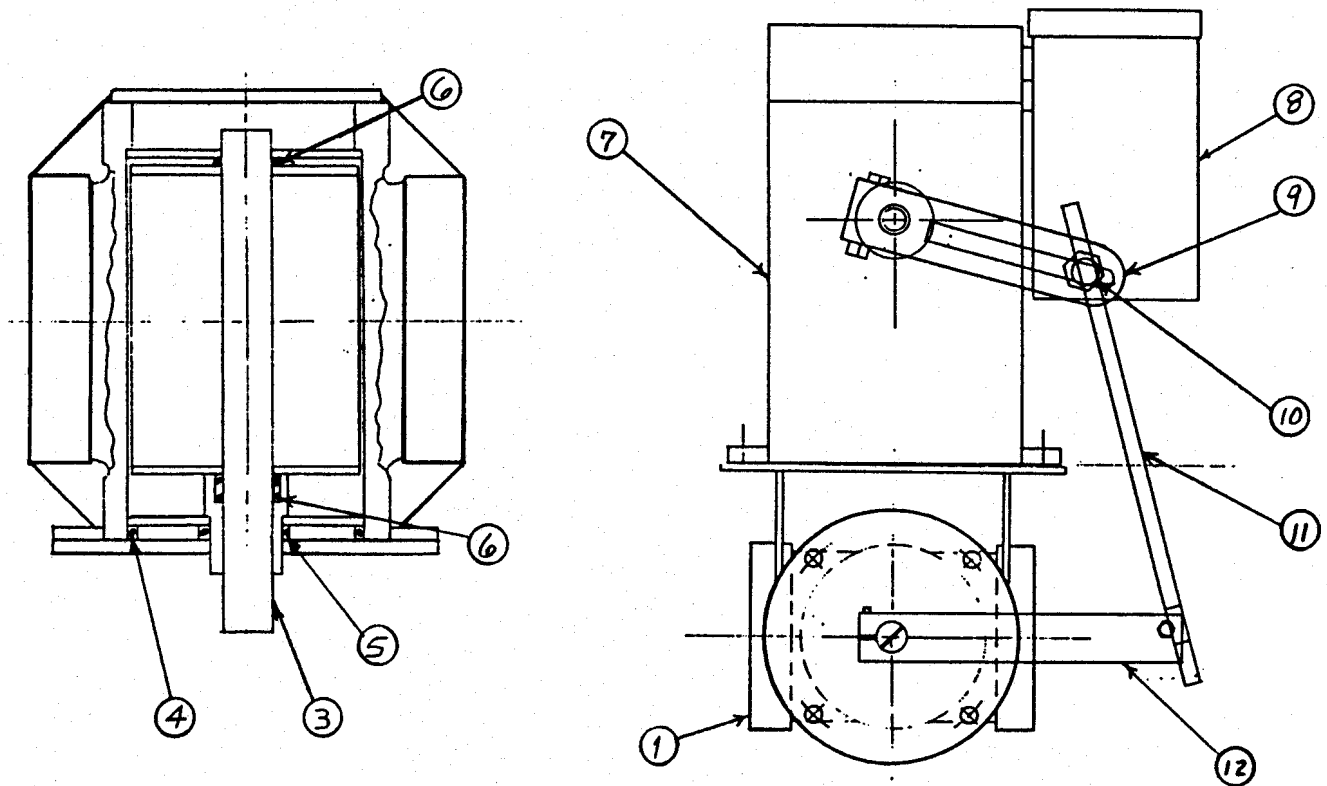
13460A
WATER SPRAY CHAMBER
FOR HU-60-1105B



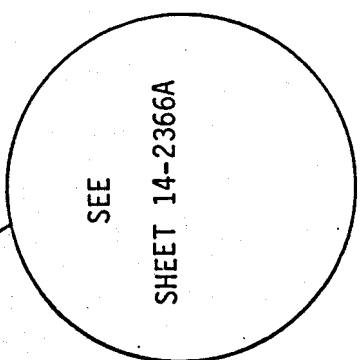
<u>REF.</u>	<u>QUAN.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	13460A	Spray Chamber, S.S.
2	1	12029B	Air Discharge Hood, S.S.
3	2	13805	Handle
4	1	13911A	Air Deflector Sheet
5	2	12156	Latch Assm.
6	1	12150D	Mist Eliminator Assm.
7	1	14745	Water Tank Screen
8	1	11068A	Float Ball, S.S.
9	1	11069	Brass Stem
10	1	14742	Water Float Valve, 3/4
11	24	13900	Water Spray Nozzles, S.S.
12	2	14774	Header Pipe, S.S.

14980

BUTTERFLY WATER VALVE
WITH MODULATING MOTOR



<u>REF.</u>	<u>QUAN.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	14981	Valve body assm.
3	1	14990	Valve core assm.
4	1	15601	O-ring, 2 1/4 ID
5	1	15602	O-ring, 3/4 ID
6	3	15603	O-ring, 1/2 ID
7	1	14824	Water valve actuator
8	1	14831	Electronic drive
9	1	14841	Crank arm
10	1	14842	Straight arm fitting
11	1	14843	Rod
12	1	14952	Crank arm



BE SURE TO MAINTAIN 4" OR MORE CLEARANCE FOR DIFFUSER

14-2306 A

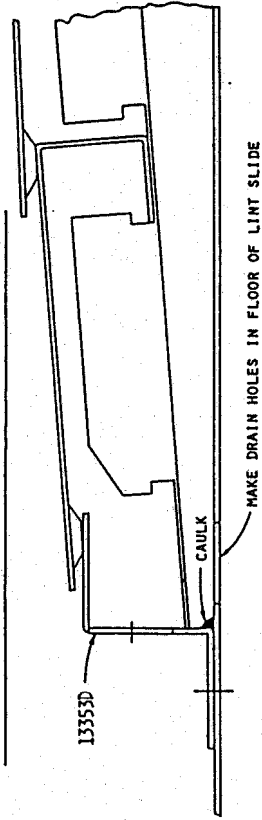
- SAMUEL JACKSON MFG. CORP.**
- INSTALLATION OF LSS-1070**
- LINT SLIDE GRID ASSEMBLY**

DETAIL OF LINT SLIDE
WITH RECESS FOR GRID

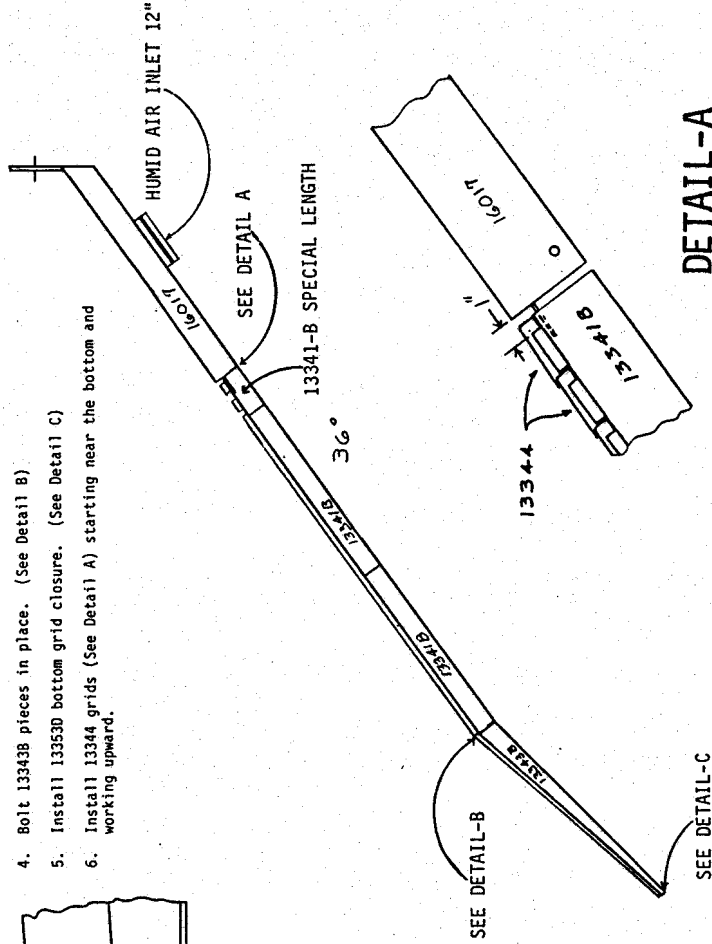
INSTALLATION PROCEDURE

1. Locate and cut hole in lint slide floor for 14979 - 12" Ø pipe flange. this hole should be centered on the slide, at the upper end, and indicated about 18" from the upper end of the slide. Install the 12" flange.
2. Bolt top diffuser sheet (part no. 16017) in place. At the top, this sheet should be caulked. Remove excess caulk after drying.
3. Bolt 13341B pieces in place, starting at the end of 16017 diffuser. Note 1" space (See Detail A).
4. Bolt 13343B pieces in place. (See Detail B)
5. Install 13353D bottom grid closure. (See Detail C)
6. Install 13344 grids (See Detail A) starting near the bottom and working upward.

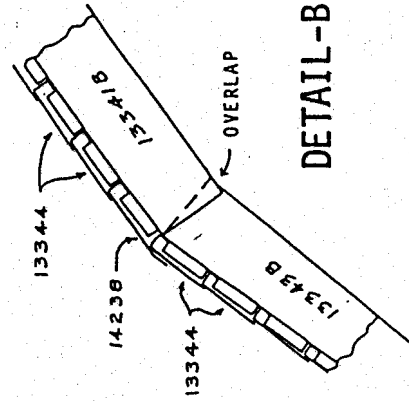
INSTALLATION OF 13353 D BOTTOM GRID CLOSURE



DETAIL-C



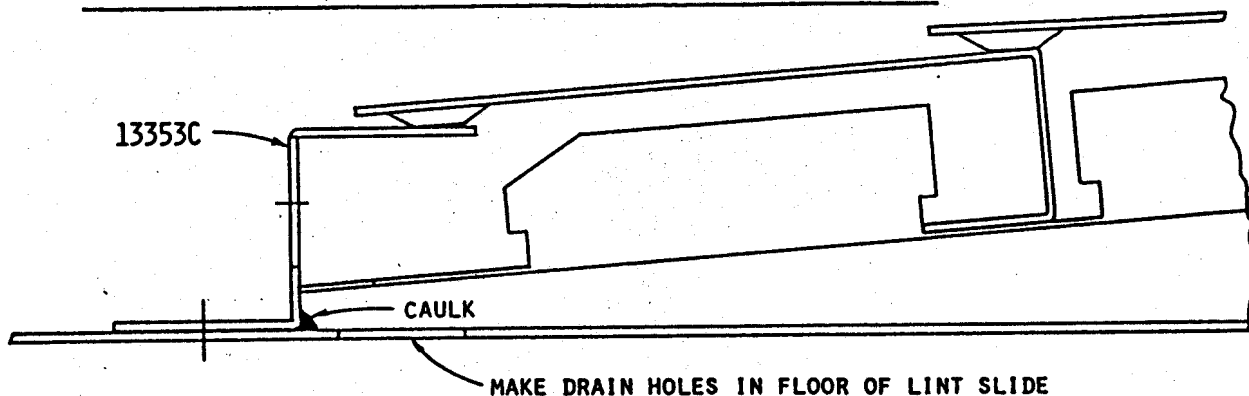
DETAIL-A



DETAIL-B

SAMUEL JACKSON MFG. CORP.	
INSTALLATION of LSG-1070	
Lint Slide Grid Assembly	
DWN. TRS	DRAWING NO.
DATE 3-11-86	14-2453

INSTALLATION OF 13353 C BOTTOM GRID CLOSURE



GRID INSTALLATION IN LUMMUS SLIDE

