14053 SERVICE MANUAL

HU-60-1053

GAS-FIRED HUMIDAIRE UNIT

This machine produces warm humid air which is used to humidify cotton in ginning plants. Includes a modulating gas burner, fired by natural gas, propane or butane, which burns directly in the air stream ahead of the water spray chamber. Water spray pressure may be changed at the machine to allow for seasonal changes. Burner output is modulated by the operator at a remote manual control station, or when used as a dryer, it may be modulated by the 12670A Automatic Temperature Control.

SAMUEL JACKSON MANUFACTURING CORP.
P.O. BOX 16587
LUBBOCK, TEXAS 79490

PRINTED IN U.S.A.

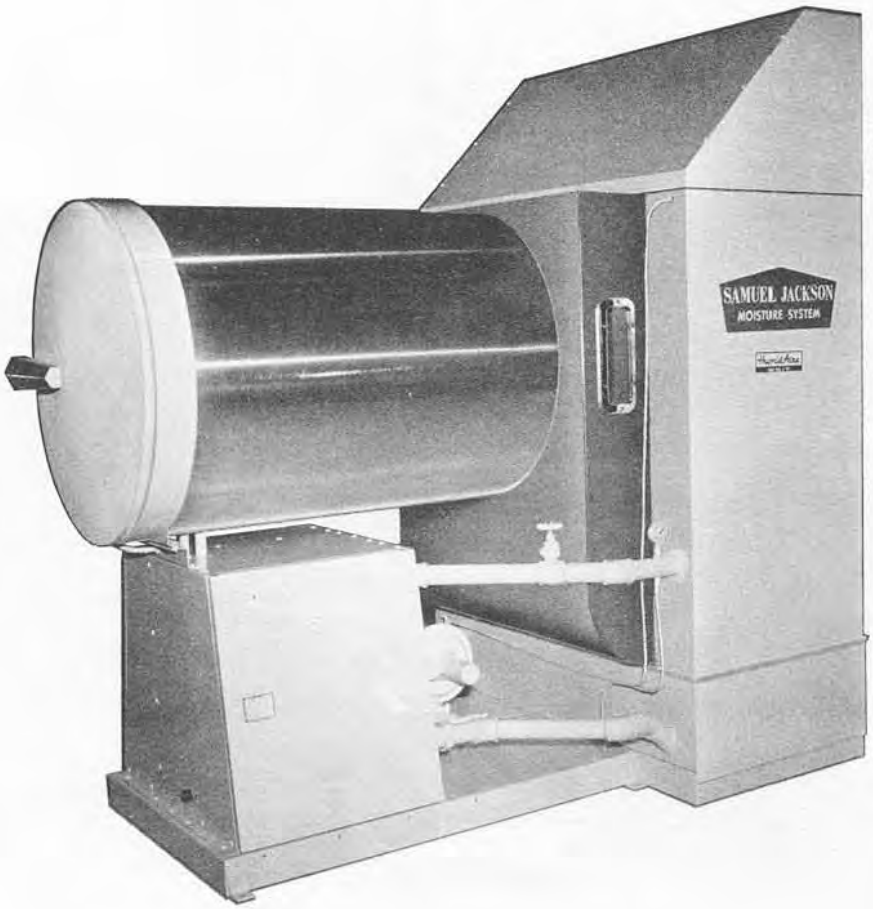
TABLE OF CONTENTS

SAMUEL JACKSON MANUFACTURING CORP.

HU-60 HUMIDAIRE UNIT

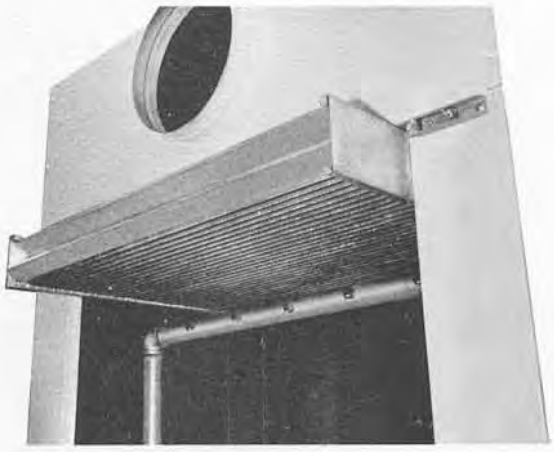
GAS - FIRED

BULLETIN HU-2



The function of the HU-60 Humidaire Unit is to generate and supply a large volume of 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 in Jackson Conditioning Hoppers, in the conveyor distributor, in tower dryers or through the new lint slide grid. With the water pump turned off, the unit serves as a drying heater.

The HU-60 model is the result of over 20 years of experience. It is easy to maintain and service. The controls are dependable and simple to check. The burner is placed where no water can touch it. Air flow is upward through the spray chamber and mist eliminator, giving greater air flow capacity and efficiency.



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

HumidAire UNIT

Remove the large access panel and all parts of the HU-60 spray chamber are accessible from outside the machine. The mist eliminators slide out at the top. The nozzles, float valve and water tank screen are easily serviced.

SAMUEL JACKSON MANUFACTURING CORP -- P O BOX 16587 -- LUBBOCK, TEXAS 79490

TELEPHONE 806-795-5218

How The Humidaire Unit Works

The HU-60 Humidaire Unit produces warm humid air by heating the air then passing it through a water spray air washer. This is the basic system originated by Samuel Jackson in 1955, and is still the practical way to produce air at high relative humidity and high temperature.

The air enters the HU-60 and passes through the burner section where it is heated to about 600 F (315 C) at full throttle. Standard burner size is 2 million Btu/hr (500,000 kg-cal/hr). The gas burner operates on either natural gas or butane or propane. An oil-fired model is available.

The hot air enters the spray chamber where it is scrubbed by a large volume of sprayed water. The water is continuously recirculated through the spray nozzles by a 2 HP pump. The heat in the air is used to vaporize a portion of the sprayed water. This brings the temperature down to about 130 F (55 C) and the relative humidity up to about 90%.

The air moves upward through the spray chamber and then through zig-zag mist eliminator baffles. These pass only humid air and retain the water droplets in the spray chamber. 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 pump and a dial to turn the burner up or down. Turning the burner up when the pump is on vaporizes more water and results in higher cotton moisture content. Doing the same with the pump off results in drying the cotton.

SPECIFICATIONS

At full throttle and 4000 cfm air delivery:

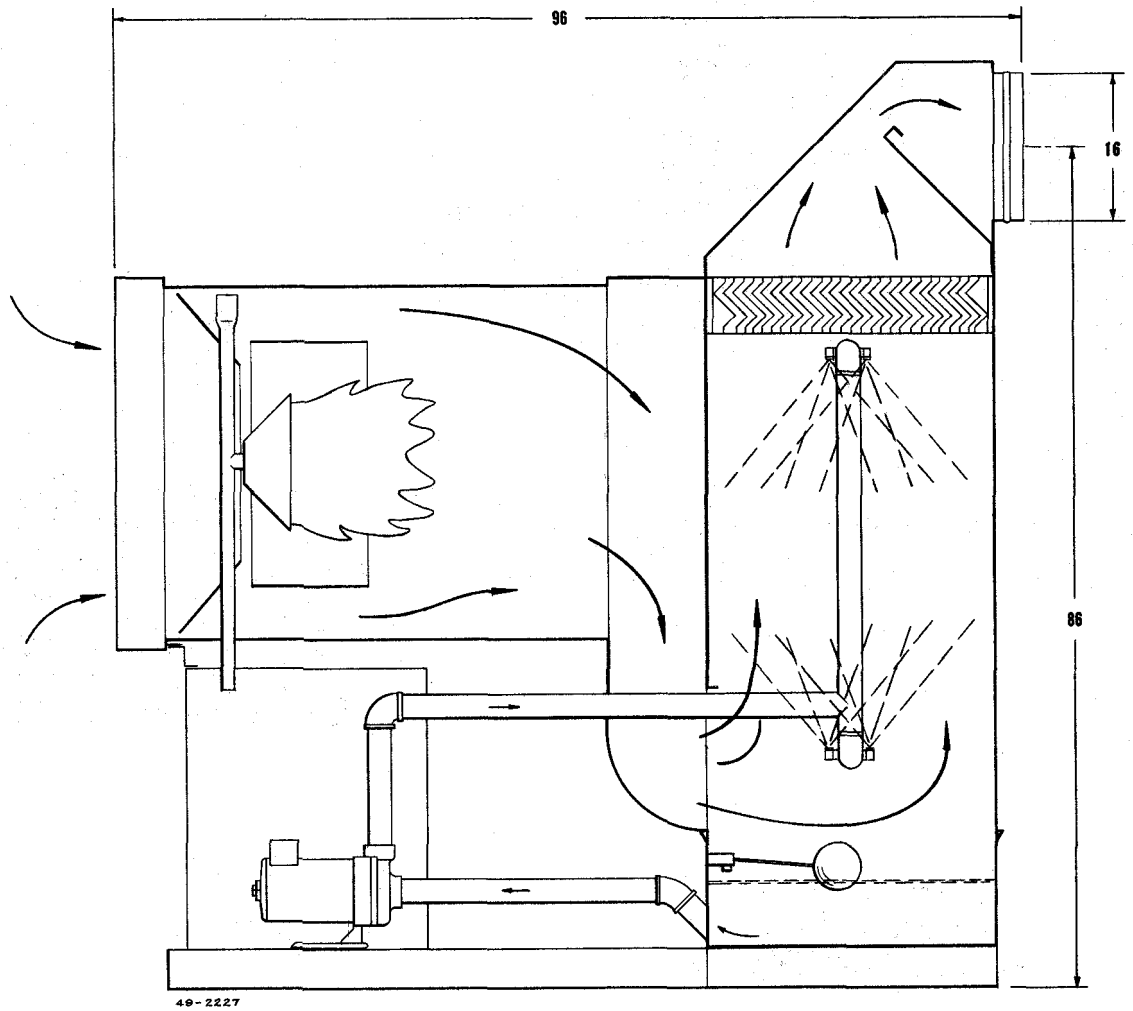
Burner input capacity	2,000,000 Btu/hr
Natural gas consumption	2,000 cf/hr
Propane consumption	22 US gal/hr
Water evaporation	180 US gal/hr
Water consumption (with bleed-off)	220 US gal/hr
Length	8 feet
Width	5 feet
Height	8 feet

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.



49-2227

SAMUEL JACKSON MFG. CORP.

HU-60-1053

SECTIONAL ILLUSTRATION

DWN. BY SGJ | DRAWING NO. 49-2227
DATE 3-20-76

GENERAL INFORMATION

SAMUEL JACKSON MOISTURE SYSTEM

There are many variations to the Samuel Jackson Moisture System. Different gins have different problems which are solved by applying moisture to cotton in different ways. Each application consists basically of a Humidaire unit to generate warm humid air and a device to expose the cotton to the humid air. We will briefly describe the two basic Humidaire units and several of the devices or points of application of the air. More detailed information is available upon request.

HUMIDAIRE UNITS

The HU-60-1066 Gas-Fired Humidaire Unit is used wherever natural gas, propane or butane can be economically obtained. Since its modulating gas burner burns directly in the air stream ahead of the water spray chamber, it can be used not only to humidify, but can be used to dry cotton if the recirculating water pump is turned off. This is the less expensive of the two Humidaire units available.

The HU-60-1065 Oil-Fired Humidaire Unit burns either diesel oil, kerosene (gas-oil), or jet aircraft fuel. The fuel is burned inside a stainless steel combustion chamber, which is located inside the water spray chamber and is cooled by the water spray. If the fuel used has a significant amount of sulfur, the gaseous products of combustion must be vented to the outside of the building. If low-sulfur fuel is used, a recirculation duct, furnished with the unit can mix the products of combustion with the incoming air stream thus utilizing all of the heat energy of the fuel. This will reduce the fuel consumption by about one-half or allow increased humid air output. This must never be done with high-sulfur fuel as the sulfur oxides will form sulfuric acid in the water and seriously damage the machine.

Since combustion takes place in the separate chamber, the HU-60-1065 cannot be used to heat the air stream for drying purposes. It is only for humidification.

LINT SLIDE GRID

The most popular application device is the LSG-1070 Lint Slide Grid Assembly. It is a relatively new method of restoring moisture. The batt of cotton passes over the grid on its way from the battery condenser to the press box, and humid air is blown upward through the grid and through the cotton, adding moisture to it. This air may then escape into the atmosphere of the gin building.

A recent improvement is to cover the lint slide with a hood arrangement to collect the used humid air and lint fly and return it to the lint flue rising to the battery condenser. No fan is used for this, only the vacuum on the lint flue. This method keeps the gin plant cleaner, and uses the humid air twice.

Adding moisture in this manner reduces strain on the tramper and press, eliminates problems with broken straps or bale ties and brings the moisture content of the cotton up to between six and eight per cent. The weight added is typically 7 kilos (15 pounds) per bale. The 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. Of course, if sampling knives on the press platens are used in conjunction with a bale-bagging system, this sample will be representative in moisture content.

CONDENSER AIR SWITCH CONTROL

This device is used with the lint slide grid to switch the Humidaire unit from producing humid air to warm, dry air when no cotton is coming from the battery condenser. It does this by sensing the difference between air pressures in the condenser riser and inside the condenser drum.

CONDITIONING HOPPERS

Humid air is often applied to seed cotton in Jackson Conditioning Hoppers, which are installed between the conveyor distributor and the feeders over the gin stands. These conditioning hoppers retain the cotton between perforated screens while humid air is blown through. With such long exposure time, it is possible to raise the moisture content to the recommended level of 6 to 8% for optimum ginning. This high level of moisture content is necessary to preserve the staple length and spinning qualities of the cotton. Usually, only those gins which maintain close liaison with the spinning mills will be financially rewarded for this. Other gins in dry areas use conditioning hoppers to kill static electricity so thoroughtly that it will flow smoothly down the feeder aprons, through the lint cleaners and out the battery condenser without any problems.

Jackson Conditioning Hoppers have recently been improved in several ways. They are now made in sizes to replace the existing change-bale hoppers in modern gin plants without raising the conveyor distributor. No suction manifold or fan is now necessary. The used humid air is made to follow the cotton down into the feeder. An air-operated valve now stops the flow of humid air into the hopper when the feeder below stops operating.

TOWER DRYERS

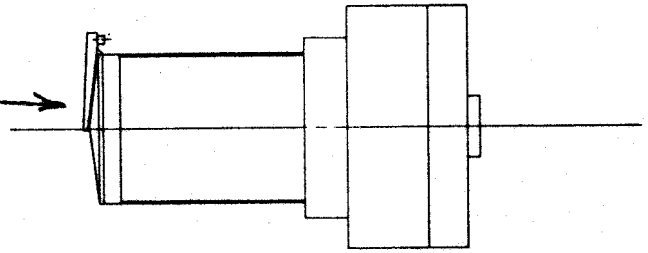
In many parts of the American Southwest, climatic conditions are sometimes so dry that static electricity holds the dirt and trash in the cotton so strongly that it cannot be removed in the cleaners. Under such conditions, some gins have found it advantageous to apply humid air in the last tower dryers. With this method, the static is killed so the last cleaners can function, and all of the cotton receives uniform exposure to the humid air.

With each final tower dryer, a gas-fired Humidaire Unit is used instead of a conventional burner, and supplies all of the air for its tower dryer. The Humidaire unit functions as a burner when its water pump is turned off. While the burner capacity of the gas-fired HU-60 is normally set at 2 millon btu/hr when it leaves the factory, it is simple to change it to a 3 million btu/hr burner by changing the burner orifice disc. In tower dryer applications, the 13800 Automatic Control is used. It maintains a constant temperature in the tower when drying cotton and a constant relative humidity when humidifying.

CONVEYOR DISTRIBUTOR

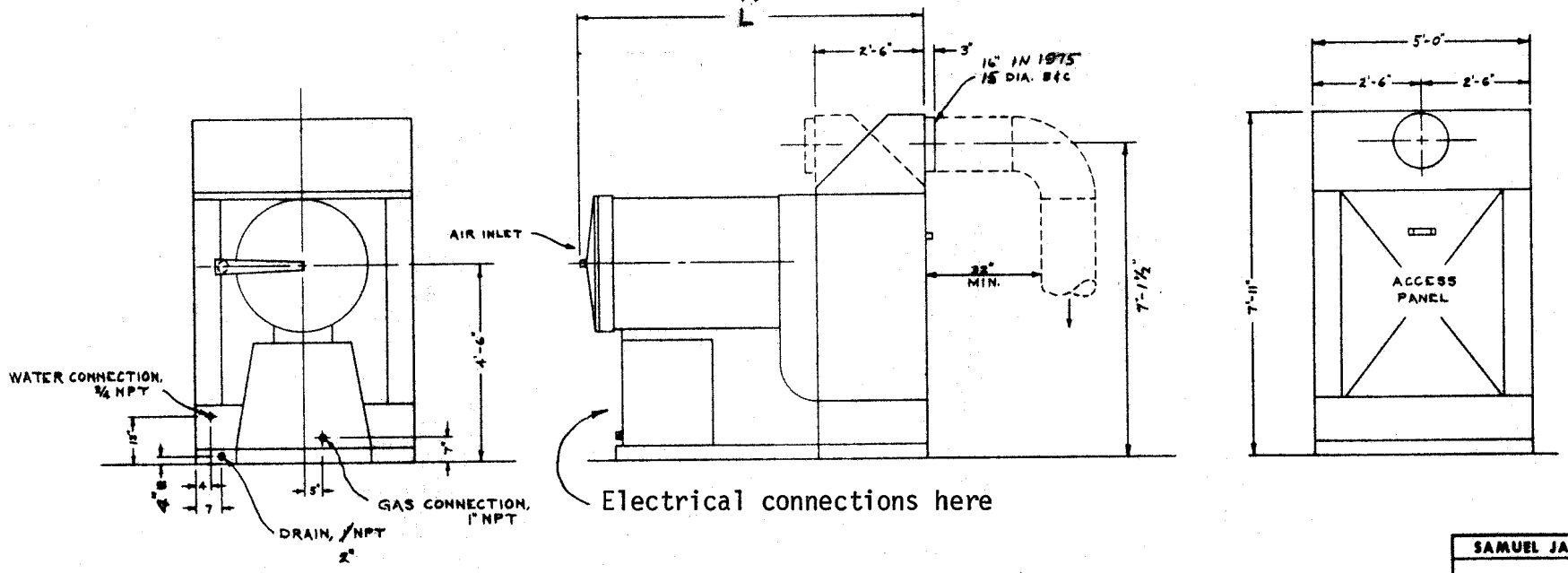
In gins which have static electricity problems only occacionally, humid air can be introduced with the seed cotton into the conveyor distributor and allowed to escape at the overflow end. The Humidaire unit for the lint slide grid is sometimes used for both purposes. This method does not add much moisture, and what it does add is not uniform; however, in some cases it has provided an economical answer to the static problem.

When this Humidaire Unit is to be used with Lint Slide Grid or other low air flow application, order 13320 Air Intake Screen Assembly with adjustment shutters.



I-4

8'-6" FOR 13000 INLET SCREEN
9'-11" FOR 13160 INLET SCREEN



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

SAMUEL JACKSON MFG. CORP.	
HU-60-1053 B HUMIDAIRE UNIT DIMENSIONS	
DRAWN BY SGJ DATE 2-8-71	DRAWING NO. 14-2036A

NOTES ON UNPACKING AND INSTALLING YOUR

HU-60-1053B HUMIDAIRE UNIT

The air discharge hood which goes on top of the spray chamber is shipped disassembled inside the spray chamber. Refer to sheet 10-12029A to assemble it.

The pump suction cover and two water screens are also shipped in the spray chamber. Refer to Sheet 10-12028 to see how these are installed in the water tank. Note that only one water screen is used at a time. Two are furnished to simplify daily replacement and cleaning.

In gins where it is necessary to install the HU-60 overhead, ask for Drawing 14-2185A for construction details of a suitable platform.

If it is necessary to hoist the Hu-60 over obstacles to install it, eyebolts can be attached to the holes in the mist eliminator supports at the top of the spray chamber. Use the two holes nearest the burner.

For making electrical connections, appropriate instructions are attached which you can give to your electrician. Different instructions are available for the 12400 Manual Control, 12980A Relay Control, and the 12670A Temperature Control.

Hook up natural gas or LPG to the pipe at inlet end of HU-60. Gas cock, union and gas regulator are provided with the HU-60. If more convenient, gas pipe can be connected directly to regulator in center of unit. 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. Regulator installed in the HU-60 will lower this to the proper level (to be adjusted by serviceman at start-up). Ordinarily 1¼-inch pipe will be adequate, but if more than one HU-60 is served or long distances are involved, refer to Sheet 14-1899. The burner capacity of the HU-60-1053B is 2 million Btu/hr.

For LPG installations, some gins are using 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, this dangerous condition exists and should be corrected. For LPG, we recommend installation of a float switch in the gas line ahead of the HU-60 to turn it off if liquid should appear in the line.

Your burner is shipped with the proper burner orifice disc for natural gas or LPG as noted on the shipping tag. If you plan to change fuels, request another orifice disc. We'll send it promptly. See Drawing 14-2130 for changing orifice disc (shim).

Connect a ½-inch water supply pipe to the float valve in water tank. Maximum water consumption will be 220 gallons per hour. Install a shut-off valve ahead of the float valve. It will be advisable to have a hydrant in this water line near the HU-60 for convenience in washing out the unit.

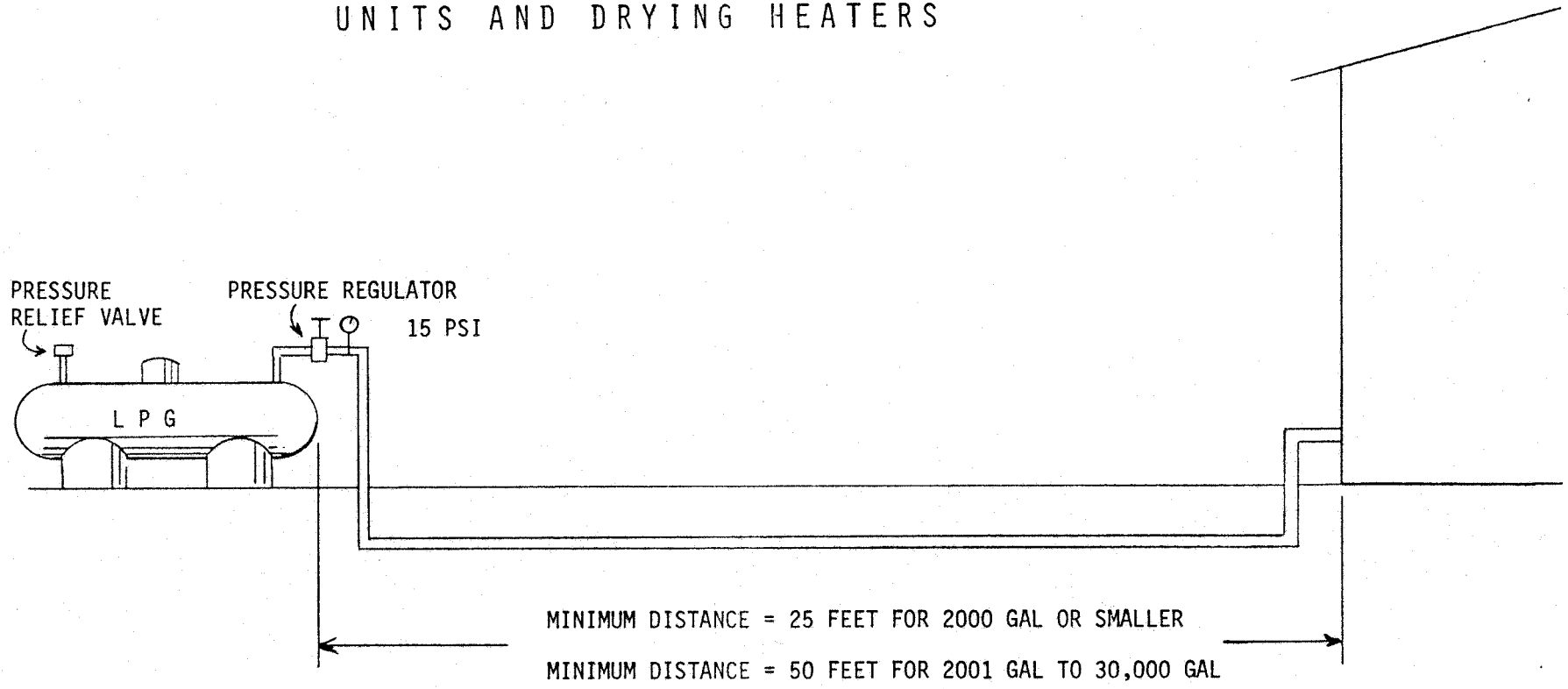
Connect the 2" water drain fitting to a suitable waste line such as a sewer or soakage pit. There is a bleed-off valve which is intended to waste a small stream of water into this drain whenever the water pump is running. The purpose of this is to reduce maintenance by getting rid of the minerals in the water. The water evaporated by the HU-60 is distilled water. All natural minerals are left behind in the machine. This stream of bleed-off water provides a way to get rid of them.

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

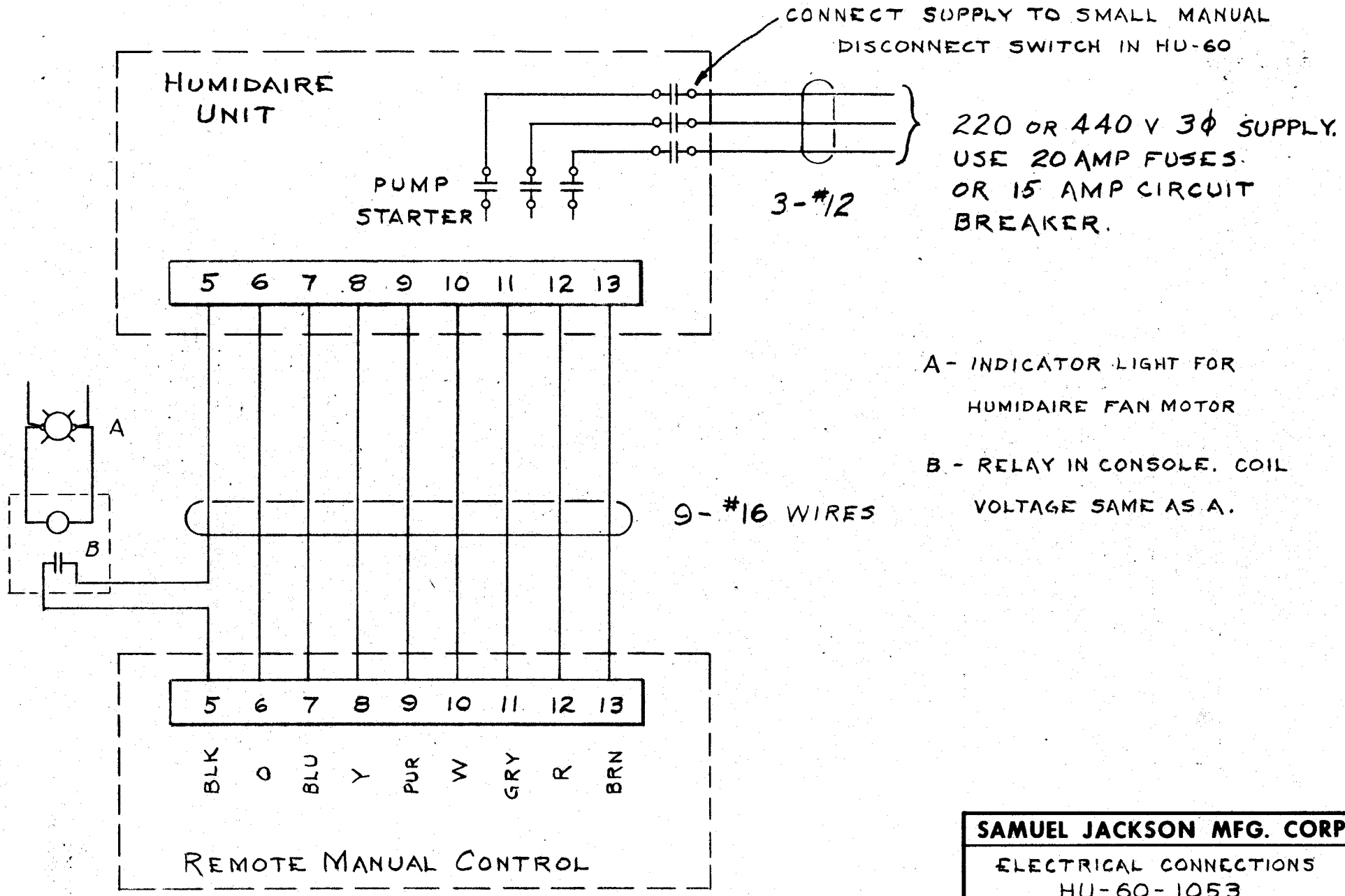
PIPE SIZES ARE NOMINAL DIAMETERS, SCHEDULE 40, AND ARE BASED ON 5 PSIG BEING REQUIRED AT INLETS OF COMBUSTION REGULATORS.

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, reliquefication 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.



SAMUEL JACKSON MFG. CORP.	
ELECTRICAL CONNECTIONS HU-60-1053 HUMIDAIRE UNIT	
DWN. BY SGJ	DRAWING NO. 14-2071
DATE 8-10-71	

FORM 19-1372

13290A

CONDENSER AIR SWITCH CONTROL

INSTALLATION INSTRUCTIONS

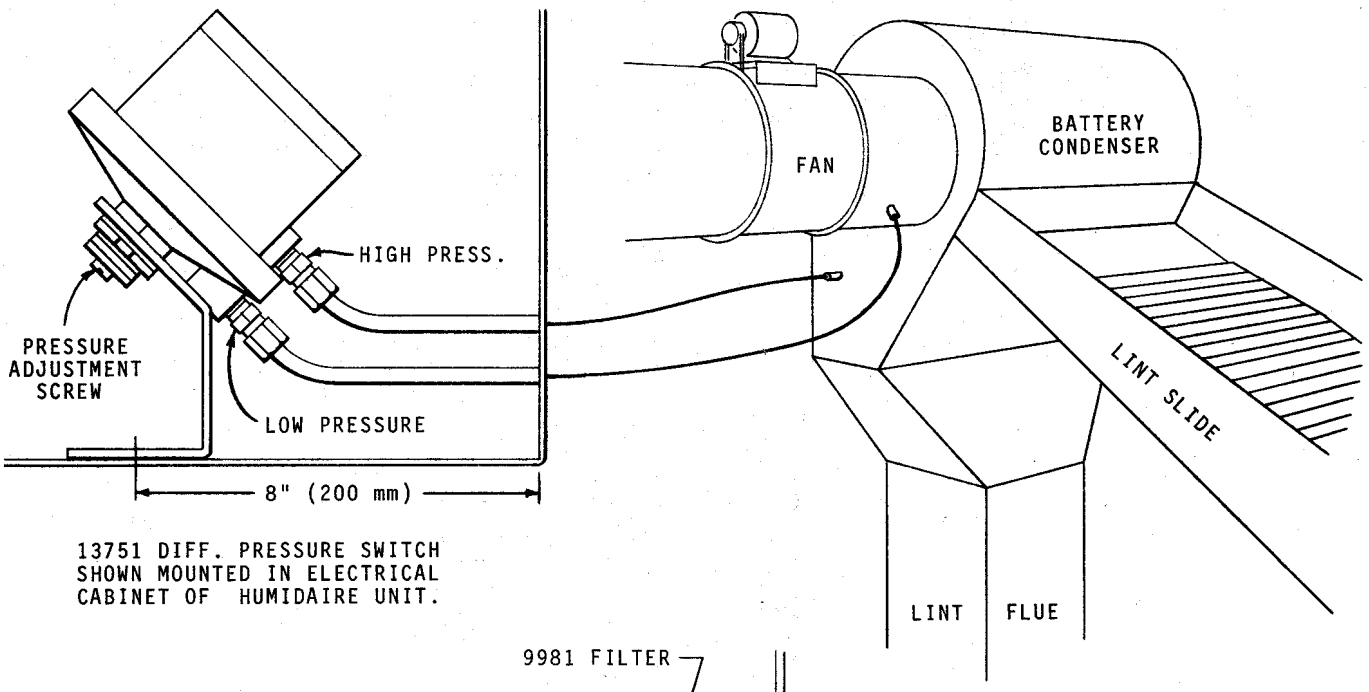
1. Application The 13290A control is used to determine when cotton is passing through a battery condenser. It is used with the Samuel Jackson Humidaire Unit to stop its water pump and turn down its burner when no cotton is being ginned. It can also be used to control a model LS Lint Slide Spray unit.

This control works by sensing the difference in air pressure between the two sides of the condenser screen. When no cotton is on the screen, the pressure difference will be almost zero. When a batt of cotton is being condensed, the air pressure inside the screen will be lower than the air pressure in the lint flue. The control senses this difference and closes an electrical contact.

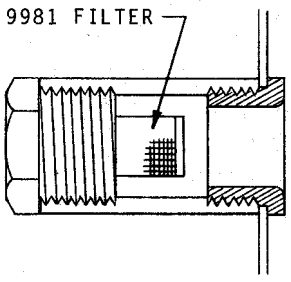
2. Pressure Range With the previous 13290 control, the differential pressure across the screen had to be at least .6 inches (15 mm) water column when a batt was being condensed. The 13290A control will operate on .3 inches (8 mm). If even greater sensitivity is required, the operating point can be reduced to .15 inches (4 mm) by installing the 13760 orange calibration spring in place of the red spring which is in the 13751 differential pressure switch. One can replace the calibration spring by removing the pressure adjustment screw in the center of the mounting stud.

3. Pressure Taps Pressure taps should be made as shown in the sketch. The high-pressure tap should be made in the lint flue or in the side of the battery condenser. The low-pressure tap should be made in the condenser air discharge line between the condenser and its suction fan. Both taps should be made within arms length of an access door to facilitate installation. Both taps should be located where they will be easily accessible for occasional inspection and cleaning of the filter. The high pressure tap should usually be located near the condenser screen. It should not be located upstream of an elbow or other restriction in the lint flue. It is necessary to make a 7/8-inch diameter (22 mm) hole for each pressure tap. A hole saw is provided for this purpose.

4. Mounting the Switch The 13751 differential pressure switch should be mounted near the battery condenser. Enough tubing is supplied for the switch to be 25 ft. (7.6 m) from the condenser. If more tubing is obtained, the switch may be mounted at twice this distance and still operate satisfactorily. The switch may be mounted in the electrical control cabinet of the HU-60 Humidaire unit as shown in the sketch. Be sure to connect the high-pressure port to the lint flue pressure tap and connect the low-pressure port to the other pressure tap.



13751 DIFF. PRESSURE SWITCH SHOWN MOUNTED IN ELECTRICAL CABINET OF HUMIDAIRE UNIT.



PRESSURE TAP DETAIL

5. Electrical Wiring The wiring diagram below shows how this control may be connected to a Humidaire unit. If used to control a model LS Lint Slide Spray unit, connect the 13751 pressure switch to terminals 9 and 10 of the LS unit in place of the wand switches. In both cases, use only the "common" and "normally open" terminals of the 13751 pressure switch. Do not use the center terminal.

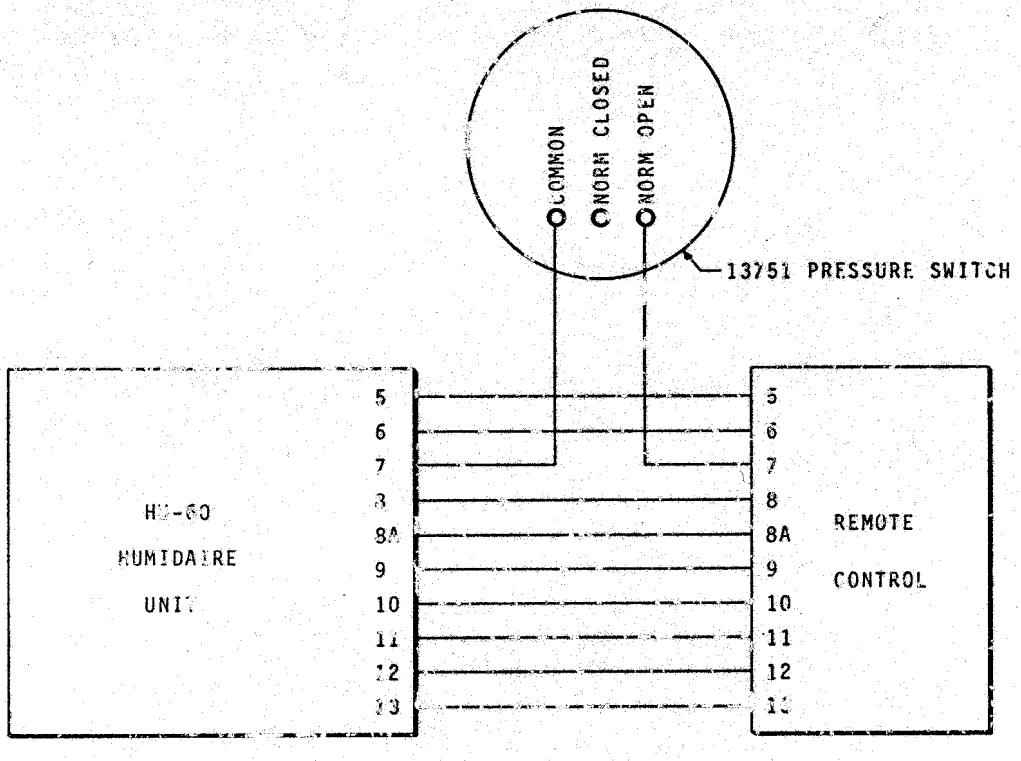
6. Adjustment The 13751 pressure switch can be adjusted only while the cotton gin is in operation. The pressure adjustment screw is located in the center of the mounting stud. The differential pressure required to operate the switch (operating point) is increased by turning the screw clockwise and decreased by turning it counter clockwise. The operating point should be increased if necessary to make the switch contacts open when no batt is being condensed. The operating point should be decreased if necessary to make the switch contacts close when a batt is being condensed.

If the adjustment screw has been turned all the way to the left and the contacts still will not close, it may be necessary to change the calibration spring as described in Section 2. Before doing this, make sure the high-pressure port is connected to the high-pressure tap, and that the tubes are not reversed. This can be checked by connecting a sensitive manometer to the tubes in place of the pressure switch and observing the differential pressure when a batt is being condensed and when not. Observe not only which tube has the higher pressure, but that the pressure differential does increase when a batt is being condensed and that its magnitude is greater than the values given in Section 2. If a proper pressure signal is not obtained, re-examine the location of the pressure taps. The high-pressure tap in particular may be subjected to a blast of air which affects its operation.

7. Periodic Maintenance The only maintenance required is to clean the filter screens at the pressure taps once a year. If necessary to blow accumulated dust out of the pressure sensing lines, DO NOT APPLY COMPRESSED AIR TO THE CONTROL SWITCH. This will rupture its diaphragm.

PACKING LIST

1	13751	Dwyer Pressure Switch 1823-1
1	13354A	Mounting Bracket for switch
1	13293	50-ft. roll 1/4-inch copper tubing
1	14-2300	Instruction Sheet
		Bag assembly:
2	13294A	Pressure tap and filter assemblies
2	13299	1/4 x 1/8 MPT tube elbow connector
2	10200	1/4 x 1/8 MPT tube connector
1	13298	7/8 Holesaw (Mandrel and saw)
1	13760	Orange spring and label to reduce pressure range of 13751 switch
2		1/4 x 3/4 Hex cap screw
2		1/4 Hex nut



NOTES ON WIRING

12400A MANUAL CONTROL

Refer to Drawing 44-2275 for external electrical connections with the HU-60-1066 Gas-fired and HU-60-1065 Oil-fired Humidaire Units. If being used with an older model Humidaire unit, ask for Drawing 14-2186 which gives the equivalent terminal block numbers on the older machines.

Location of 12400A Control Locate the control near or in the gin console or wherever the ginner thinks will be most convenient. The control can be mounted in the console if space is available. The face of the control measures 7 inches left to right and 5 inches top to bottom. Depth required behind console is at least 6 inches. For mounting, a rectangular cutout is required, 6-1/8 wide and 4-5/8 high (155 mm wide by 118 mm high.) When mounting in console, use parts 4 and 5 and discard parts 1 and 19.

If room is not available in console, use the 12401 box provided. Note from Drawing 10-12400A that the control is held in the box by a clamp at the bottom of the box. Be sure this clamp is at the bottom when box is mounted.

Three-phase Supply to Humidaire Unit If the Humidaire unit is also being installed, run three-phase power to it from a fusible disconnect switch or circuit breaker which you will install. A motor starter for the water pump motor is included in the Humidaire unit, as is a step-down transformer for 120-volt control power. Look at slinger on pump motor shaft to check proper rotation direction. If three-phase voltage supplied does not correspond with that shown on shipping tag of Humidaire unit, the following must be changed:

Water pump motor lead connections
Water pump motor starter overload heaters
(B 4.15 for 480 V., B 9.10 for 240 V)
Control voltage transformer connections

Humidaire Unit to Control Run ten control wires from the Humidaire unit to 12400A control. These may be 16 or 18 gage. Connect wires directly to the terminal block on back of control.

Fan Safety Relay Although every Humidaire unit has an air-flow switch, the 12400A control has an extra relay to turn off the burner and pump instantly when the fan motor stop button is touched. To operate this relay, run two wires directly to the relay coil through the grommet in the back of the control chassis. These wires can pick up operating voltage from the indicator light for the Humidaire fan. (This fan and motor are not furnished by Samuel Jackson Mfg Corp). Make sure that the voltage stamped on the relay coil agrees with the voltage of the indicator light, which may be different from the voltage of the fan motor itself. Since it is difficult to obtain this voltage information before shipment, it is quite possible that the coil voltage will be wrong. Do not connect these two wires if coil voltage is wrong. Notify us and we will replace the coil with one of the proper voltage.

CHECK LIST FOR STARTING UP HU-60-1053B

(This will normally be done by Samuel Jackson serviceman in USA)

1. Remove cover from pump motor starter and see if 460V, 380V, or 230V is present on L1, L2, L3. Check disconnect switches if voltage not present.
2. See if proper heater units are in starter. (B8.20 for 220V, B4.15 for 460 or 380V.)
3. Push in red reset bar in starter.
4. Check pump rotation by jumpering Terminal 7 to 2, momentarily. Look at slinger on pump shaft.
5. Adjust water float valve to ½" to 1" below overflow. (10 to 25 MM)
6. Open water supply valve all the way.
7. Open 2" water valve, in pump discharge line, all the way. Pressure on nozzles should be over 20 psi when pump runs. (Approx. 15 psi on 50 HZ)
8. Turn on Humidaire fan and adjust slide gate valve for reasonable air flow. Make sure air flow is not so great as to disrupt operation of gin, for example affecting the batt in a condenser. If air is being applied in a tower dryer, make sure it is not pulling water through mist eliminators.
9. Check gas pressure on lower gage. At least 2 psi. If this much not present, check for low pressure regulator in gas supply line.
10. Purge gas line until air is removed. Do this by loosening union in gas line.
11. With fan on, jumper Terminal 6 to 5 and see if burner ignites.
12. Set remote control on zero and adjust low fire with pilot cock.
13. Check to see if it will ignite several times by removing and reconnecting 5-6 jumper.
14. With burner on, and control on zero, kill fan to see if air flow switch turns off and that pilot solenoid valve actually stops flow of gas. Adjust air flow switch if necessary. Turning adjustment screw clockwise increases pressure or air flow at which it will turn off. If pilot solenoid valve does not stop flow of gas completely, turn off main gas cock and disassemble pilot valve. To do this, do not attempt to remove valve from line. Pry up "red hat" on top of coil housing and remove it from sleeve. Slide off coil. Unscrew sleeve and examine inside of solenoid valve for foreign matter preventing proper closure of valve.
15. Test operation of air flow switch several times more.
16. With control potentiometer set on above 50 so that Modutrol motor will not close throttling valve, again test operation of air flow switch by killing fans. If flame does not go out completely, disassemble main solenoid gas valve and inspect.
17. Set control potentiometer to 50 and operate burner and pump. Remove cap from gas pressure regulator and use ½" square extension bar to adjust gas pressure until desired amount of humidification is being accomplished. Check this with moisture meter. If gas pressure cannot be set low enough, change spring in regulator from black to orange. If gas pressure cannot be set high enough, increase burner jet shim thickness one step in accordance with table in Dw. 14-2130.
18. Turn-down rheostat is located above terminal block in HU-60. Its purpose is to turn down the burner valve when water pump is off. When water pump is on, it should be shorted and have no effect.

    First, turn it completely counterclockwise (to left). If humid air is applied only in condenser, leave it setting on full counterclockwise. Check to see that motorized gas valve does close down half way when pump is turned off.
    If HU-60 is to be used as dryer burner, set remote manual control on 100 and adjust turn-down rheostat to give high air temperature without burning paint on HU-60.

SECTION 4

ADJUSTMENT AND MAINTENANCE

A detailed prodecure for adjustment is given on pages 2-1 and 2-2 of the Installation Instructions. Routine adjustment and maintenance procedures are given below.

The most important maintenance procedure is to keep the Humidaire Unit clean. The water tank should be drained daily and all dirt and lint removed from the spray chamber, especially from the water screen. This screen covers the water pump inlet and prevents trash from clogging the pump impeller and spray nozzles. Many gins use two screens so they can be exchanged daily. The screen is available as Part No. 13930.

To remove scale deposits, put about 10 pounds (5 kilos) of powdered acid in the water and continue to operate the unit. After about a day, the scale will be dissolved. This treatment should be performed at the first sign of scale formation. Powdered acid is available from the factory as Part No. 14000 in 50-pound pails. If this is used, disassembly of the header pipes for cleaning purposes can usually be avoided. Be sure to check for an adequate bleed-off stream.

If the water pressure gage reads more than about 15 psi on 50 Hz (22 psi on 60 Hz) this is an indication that some nozzles may be clogged. If it reads less, check the water screen, or the water pump impeller may be clogged. To inspect the pump impeller, simply leave the pump bowl connected to the pipes and remove the four cap screws which hold the pump bowl to the adapter cover plate. The motor and impeller can be removed from the pump bowl for inspection.

If water is seen to leak from the space between the motor and pump during operation, the shaft seal needs replacement. See page 4-2 for instruction. Remember, never use a wheel puller on the impeller. Unscrew it from the shaft. Keep the shaft from turning by means of the slot in the motor end of the shaft. Also the sealing surfaces are hard and smooth. Do not scratch or crack them. One is black plastic or carbon. The other is ceramic. One slides on the other, and not on the rubber surface.

At the end of the ginning season, drain the water tank. Drain the pump bowl with the small drain cock to keep the pump from rusting or freezing during the off season. Before starting the pump the following year, turn the motor shaft by hand to make sure it is free. Use a stub screwdriver in the slotted shaft end.

Periodically blow lint and dirt out of the pump motor to prevent overheating or even jamming. Late models have totally enclosed fan cooled motors, but the air passages on these also need to be blown out.

Periodically inspect the zig-zag mist eliminator baffles at the top of the spray chamber. Any accumulation of dirt, lint, or scale on the baffles will impede the airflow and may cause water drops to pass through. It is a good idea to keep a spare mist eliminator assembly on hand, especially where the ginning season is long.

WATER PUMP

INSPECTION & REPLACING SHAFT SEAL

DISASSEMBLY

1. Remove four bolts (A) using 9/16" short end wrench. The pump casing (B) can usually be left connected to the pipes. Pry casing (B) from adapter (C). At this point, inspection and cleaning (steps 6-9) can be performed. Steps 2-5 are necessary to replace shaft seal.

2. Hold pump impeller (D) and remove impeller nut (E) using 3/8" socket wrench. Take care not to lose the impeller lockwasher (F).

3. Hold shaft from rotating by means of slot in motor end of shaft, and UNSCREW impeller from shaft. DO NOT USE A WHEELPULLER ON IMPELLER.

4. Remove rotating portion (G) of shaft seal from shaft.

5. Remove stationary portion (H) of shaft seal from adapter. Removal will usually destroy it, so never remove it unless you have a replacement available.

INSPECTION AND CLEANING

6. Make sure internal passages of impeller (D) are not clogged.

7. Make sure close-fitting surfaces (J) of impeller and casing are clean so impeller will not be jammed.

8. If steps 2 to 4 have been performed, inspect mating surfaces of shaft seal. If they are not flat and smooth, replace the seal.

9. If body gasket (K) has been damaged, replace it.

REPLACING SHAFT SEAL

10. Thoroughly clean shaft and recess for stationary portion (H) of seal.

11. Apply grease to shaft, to recess and to outside rubber part of stationary portion of seal.

12. Install stationary portion in recess with smooth ceramic surface out and rubber part in. Press firmly into place with fingers. DO NOT SCRATCH SEALING SURFACE.

13. Install rotating portion (G) of seal on shaft with smooth carbon sealing face next to stationary portion.

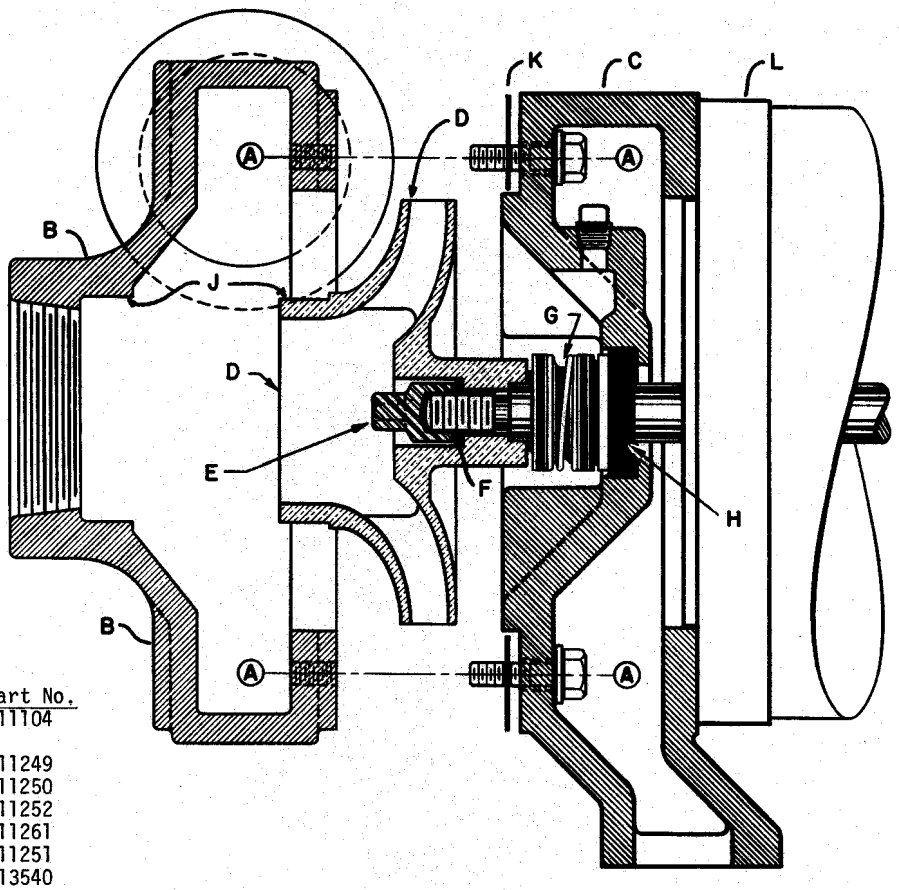
REASSEMBLY

14. Replace impeller (D), lockwasher (F) and impeller nut (E). Tighten securely.

15. Bolt adapter and casing together using new gasket if necessary.

16. Using stub screwdriver in slotted motor end of shaft, make sure shaft turns freely before applying power to motor.

17. If it was necessary to disconnect electrical wires, check rotation and motor current.



- PARTS -

		Part No.
Complete Water Pump Assembly:		11104
D	Impeller	11249
E	Impeller Nut	11250
F	Impeller lockwasher	11252
G & H	Shaft seal	11261
K	Body Gasket	11251
L	Complete Motor Assembly	13540

SECTION 5 -- TROUBLESHOOTING

HU-60-1053

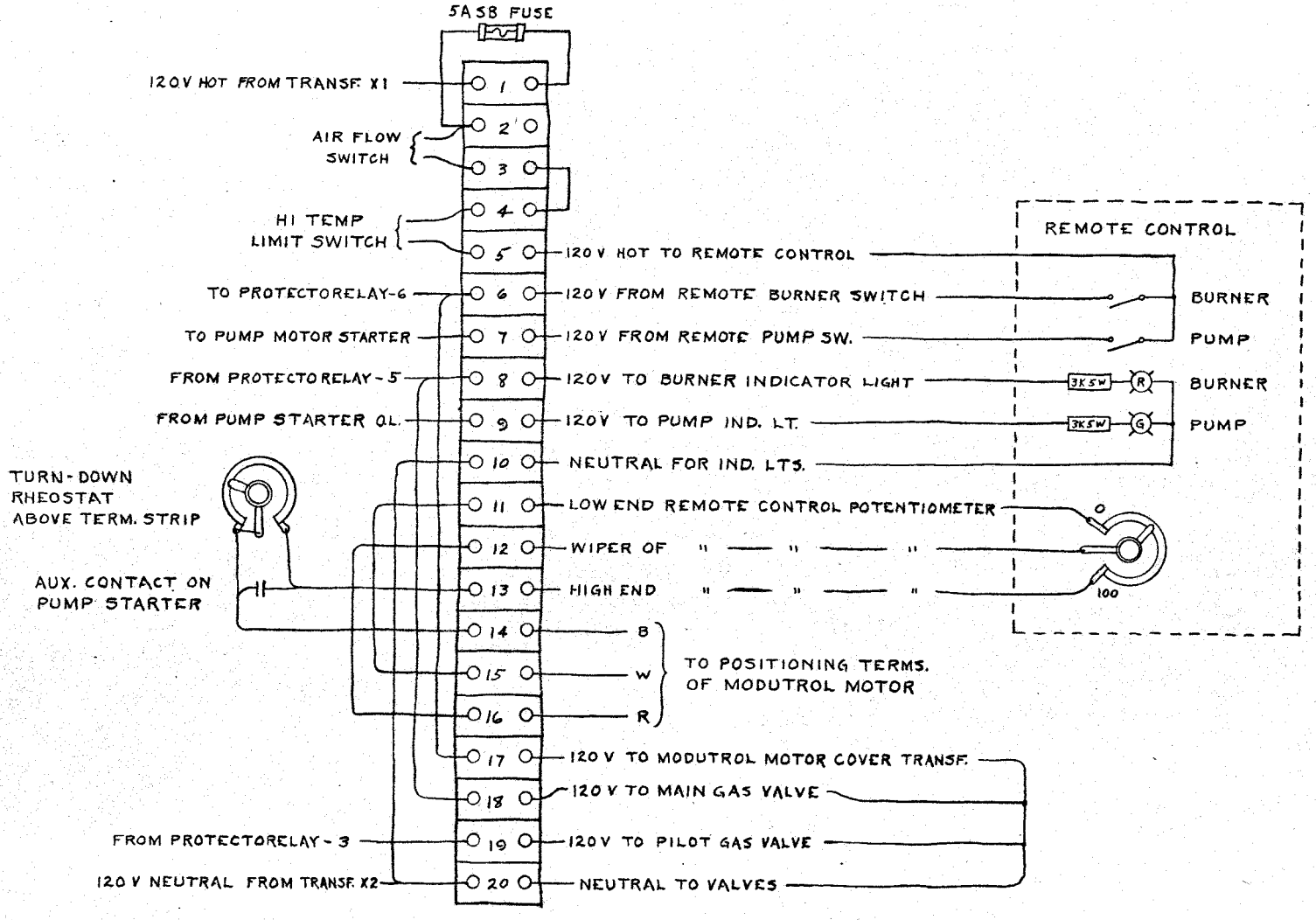
PROBLEM	POSSIBLE CAUSES AND REMEDIES
1. Humidaire Unit completely dead	Humid air fan not on. Air flow choked off. Air flow switch not functioning. If not, drain any condensed water from tube leading to spray chamber. Make sure tube is not clogged. Electric power supply off. 5-Ampere fuse blown. Perform voltage check shown on page 5-4.
2. Burner will not light	See if problem 1 applies. Press reset button on protectorelay. Check incoming gas pressure, at least 3 psi. See if Terminal 6 is energized. If Terminal 6 is energized, Protectorelay may be bad. Replace it or see below. 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.
3. Burner goes off and relights	Air flow switch adjustment Low voltage may affect protectorelay. Flame electrode may be coated. Scrape it. Flame may not be contacting flame electrode. Bend it outward, or install 4" long burner nipple.

CONTINUED ON PAGE 5-2

PROBLEM	POSSIBLE CAUSES AND REMEDIES
4. Burner lights, but will not modulate.	Low gas pressure due to taking gas supply from low-pressure regulator. Check incoming gas pressure, at least 3 psi. Defective gas Modutrol Motor or cover transformer. Defective main gas solenoid valve.
5. Burner lights, but will not turn down.	Pilot valve not closed down enough.
6. 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 4-2. 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.
7. 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.

CONTINUED ON PAGE 5-3

PROBLEM	POSSIBLE CAUSES AND REMEDIES
8. Not enough humidification	Close the small vent door between the burner section and spray chamber and use water gate valve to regulate humidification. Low water pressure, See Problem 9 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.
9. Water pressure not normal	See 4th 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 or suction cover may not be in place. See p. 6-1. Water pump may be running backwards.



TO LOCALIZE TROUBLE IN HU-60, USE VOLTMETER WITH ONE PROBE ON TERMINAL 20. APPLY OTHER PROBE TO TERMINALS 1, 2, 3 ETC. NOTE WHERE VOLTAGE DISAPPEARS.

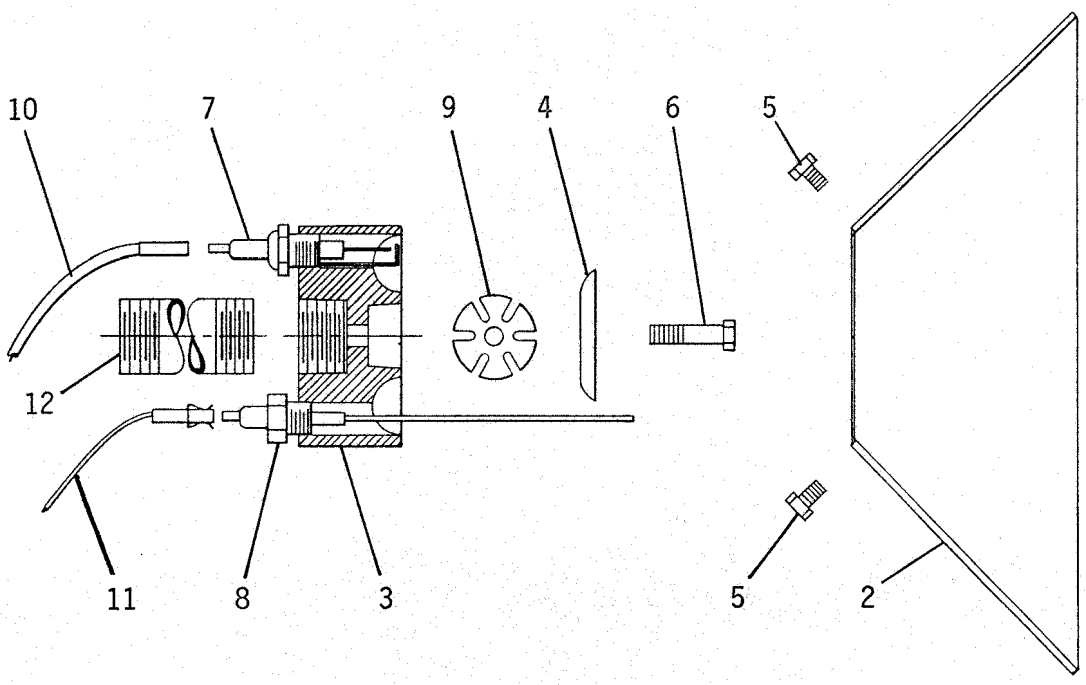
SAMUEL JACKSON MFG. CORP.

TERMINAL STRIP FOR HU-60-1053A HUMIDAIRE UNIT

DWN. BY SGJ

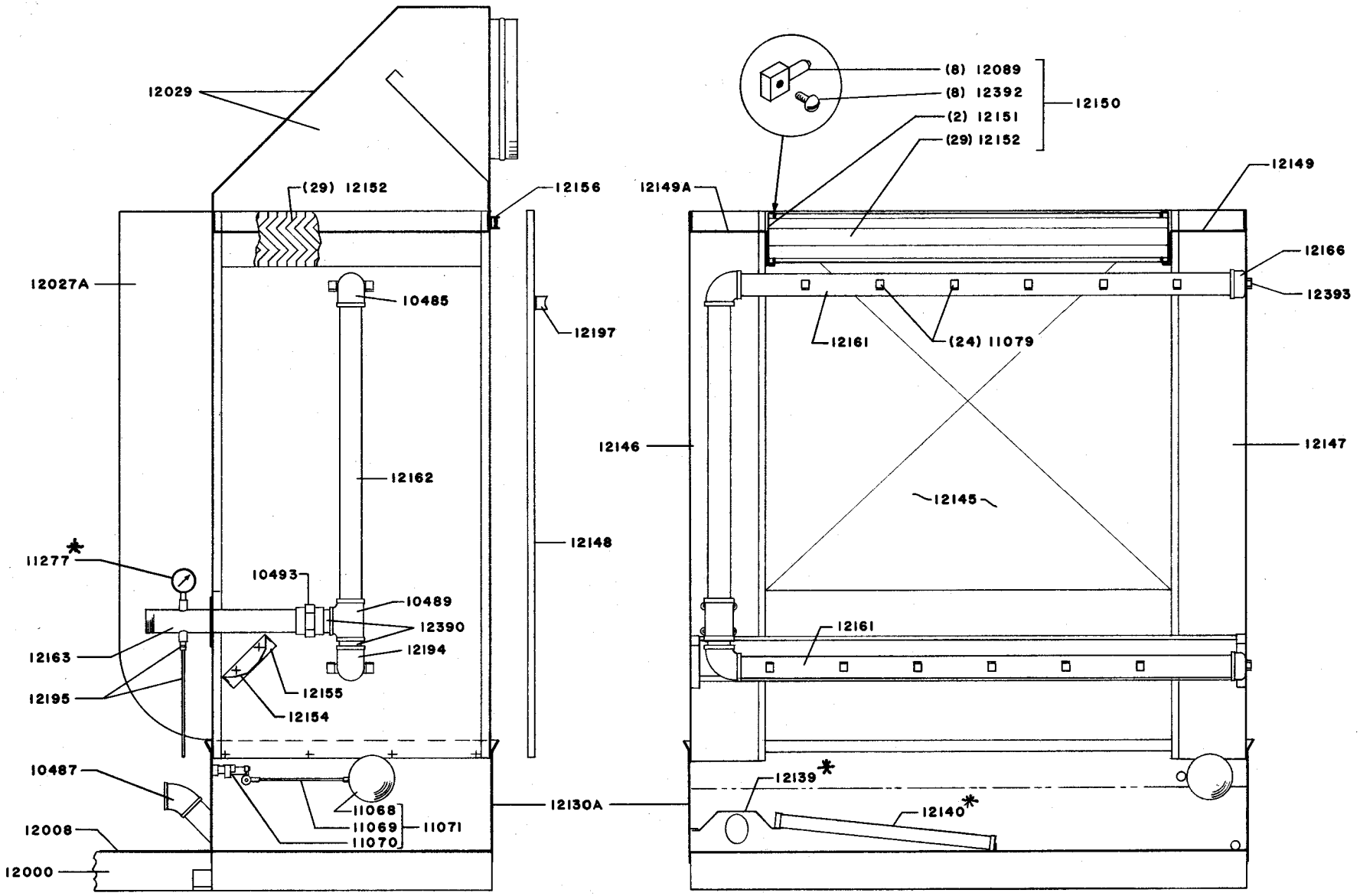
DATE 11-8-74

DRAWING NO. 14-2141



REF.	QUAN.	PART NO.	DESCRIPTION
	1	13480	BURNER HEAD, COMPLETE
			WHICH CONSISTS OF:
2	1	13482	BURNER CONE
3	1	13481	BURNER BODY
4	1	12985A	CONTOURED DISC
5	4	13483	5/16 X 1/2 HX HD CAP SCREW SS
6	1	13490	3/8 X 1-1/2 HX HD CAP SCREW SS
7	1	12398	SPARK PLUG, I-64-1
8	1	12399	FLAME ELECTRODE, FRS-2-6
9	1		BURNER ORIFICE DISC:
			SLOT THICK FLOW AREA
		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	13909	SPARK PLUG WIRE
11	1	13908	FLAME ELECTRODE WIRE
12	1	13922	1-1/4 X 4 BLACK PIPE NIPPLE (THIS LENGTH FIRST USED ON SN 4621. RECOMMENDED FOR ALL PREVIOUS UNITS.)

Burner head shown was not furnished with the HU-60-1053 but should be ordered as replacement. Flame rod and spark plug shown are used on all burner heads except in some cases where 13250 spark plug with 1½" long electrodes was used.



T-9

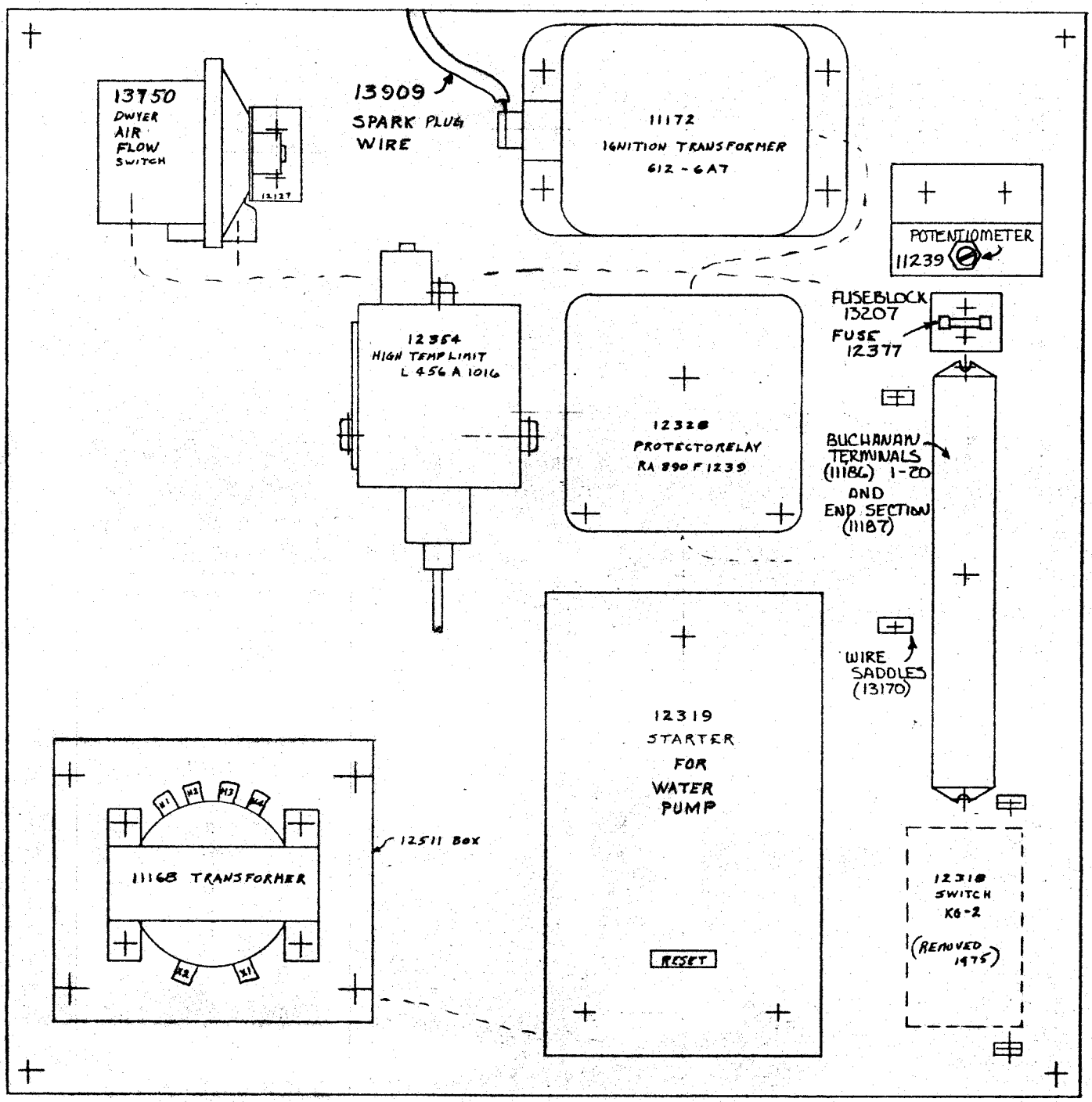
* 11277A Pressure Gage, 0-30 PSI, 50 HZ
11277B Pressure Gage, 0-60 PSI, 60 HZ

These parts may be ordered made from stainless steel instead of galvanized steel.

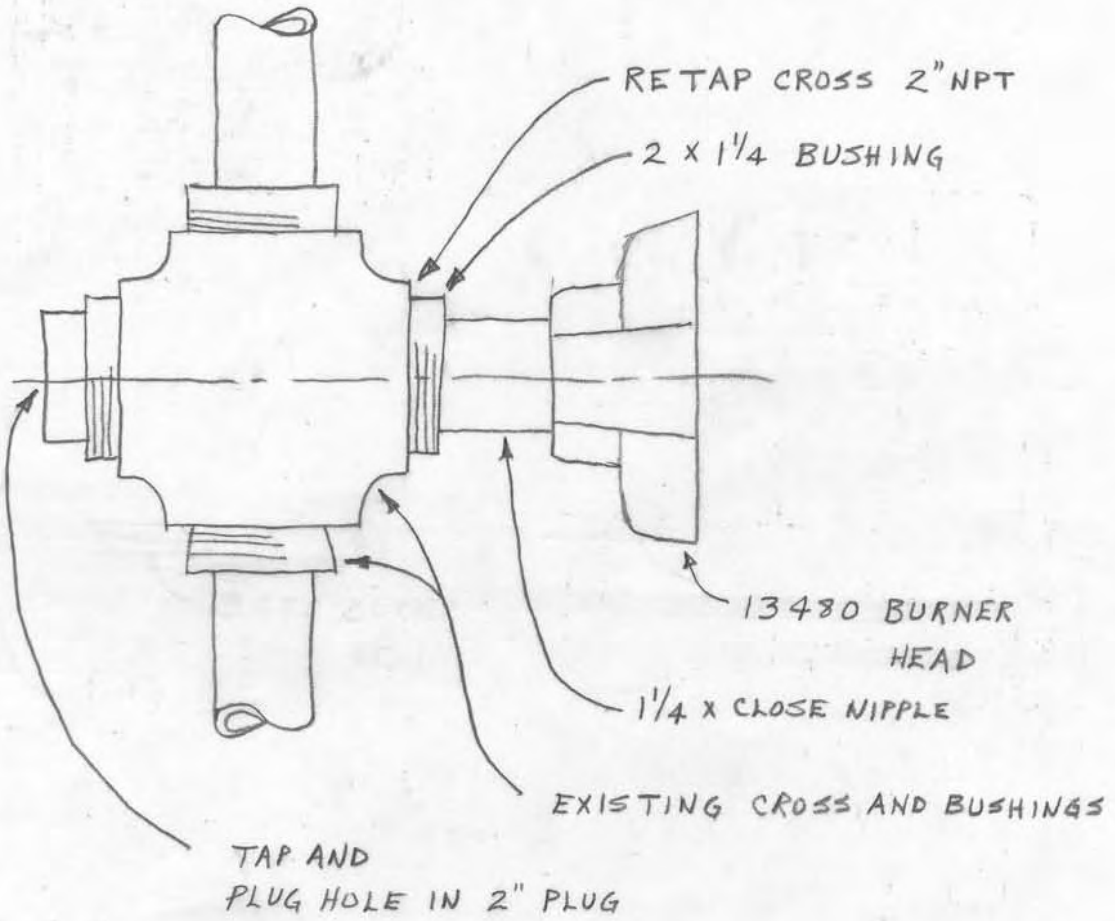
* 12139 Suction Cover and 12140 Water Screen now furnished as one unit: 13930 Water Tank Screen.

SAMUEL JACKSON MFG. CORP.	
12028 SPRAY CHAMBER SECTION	
DWN. BY S G J	DRAWING NO.
DATE 3-4-70	10-12028

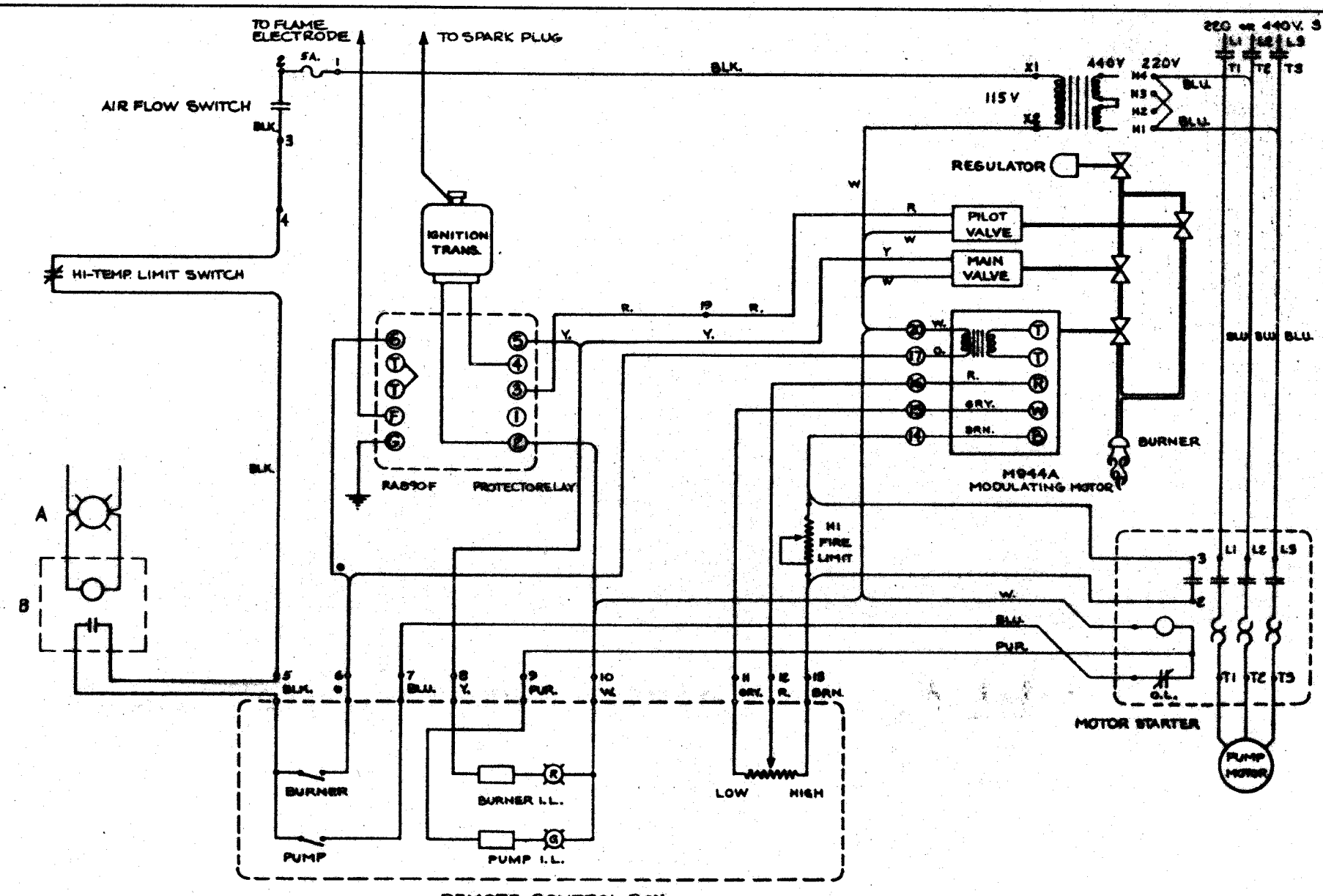
FORM 49-1374



CONTROL PANEL PARTS



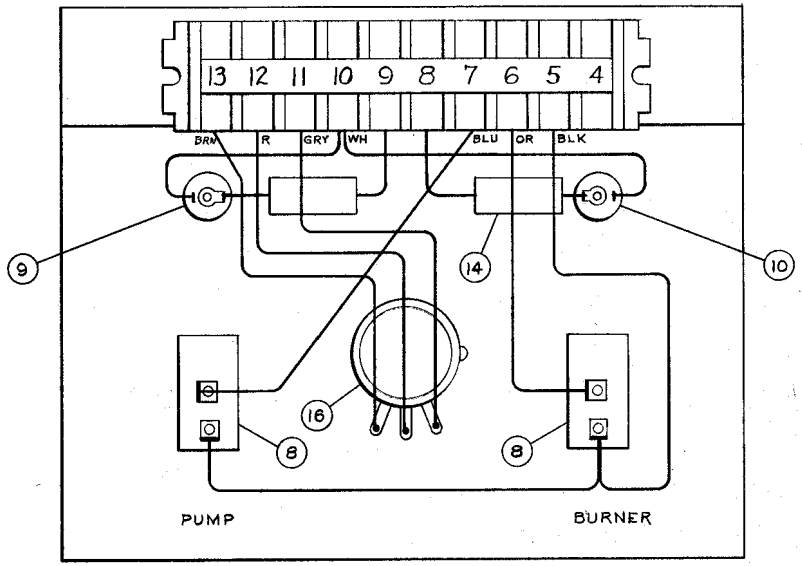
INSTALLATION OF 13480 BURNER HEAD



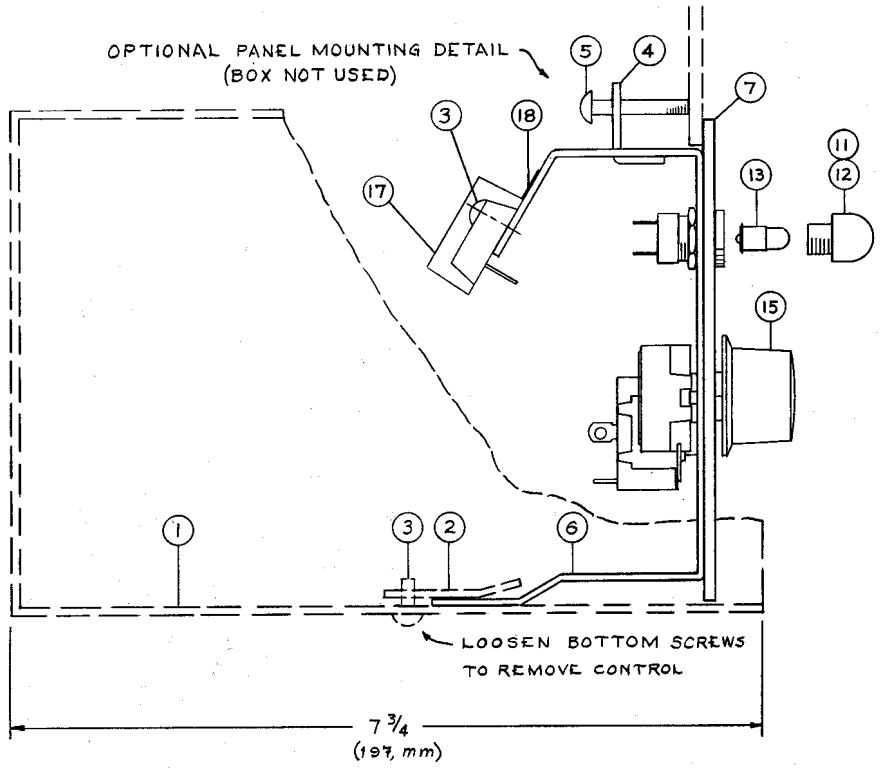
A - INDICATOR LIGHT FOR HUMIDAIRE FAN MOTOR

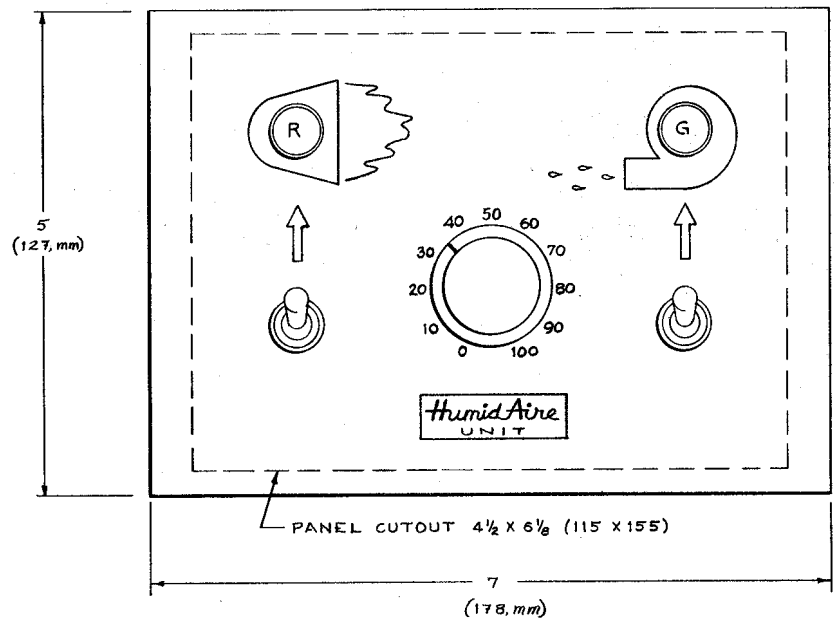
B - RELAY IN CONSOLE (OPTIONAL). COIL VOLTAGE SAME AS A.

8-14-74	SAMUEL JACKSON MFG. CORP.
	ELECTRIC SCHEMATIC HU-60-1053A GAS FIRED HUMIDAIRE UNIT
DRWN BY A.E.E.	DRAWING NO. 14-1946 A
DATE 2/6/70	



REAR VIEW





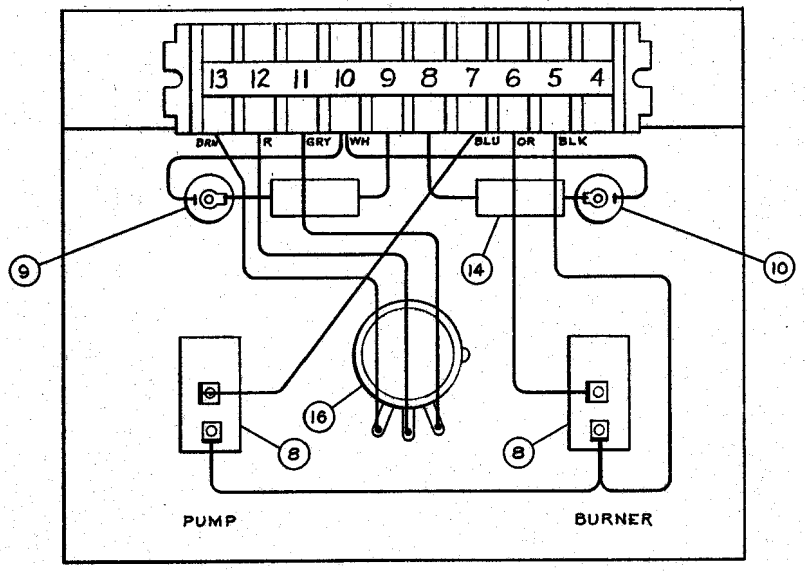
FRONT VIEW

Ref. No.	Quan.	Part No.	Description
1	1	12401	Remote Control Box
2	1	11609	Clamp
3	2	11668	8-32 x 1/2 RH machine screw
4	2	11666	Panel Clamp
5	2	11669	8-32 x 1 RH machine screw
6	1	12406	Internal Bracket
7	1	12465	Face Plate Assy
8	2	11229	Toggle Switch, SPST
9	1	11673	Green Indicator Light, complete
10	1	11675	Red Indicator Light, complete
11	1	11674	Green lens
12	1	11676	Red lens
13	2	11227	327 lamp
14	2	11320	Resistor, 3000-ohm, 5 W
15	1	11672	Pointer knob
16	1	11239	Potentiometer, 100-ohm, 2 W
17	1	12784	Terminal Strip, 10-141 Y
18	1	12963	Number Strip, 4-13

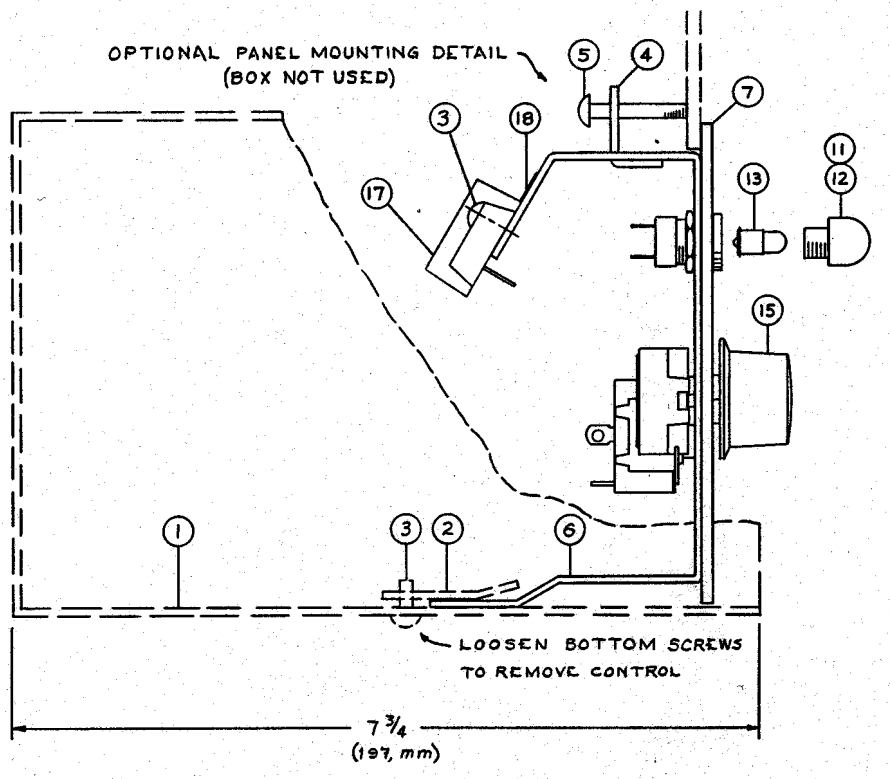
SAMUEL JACKSON MFG. CORP.

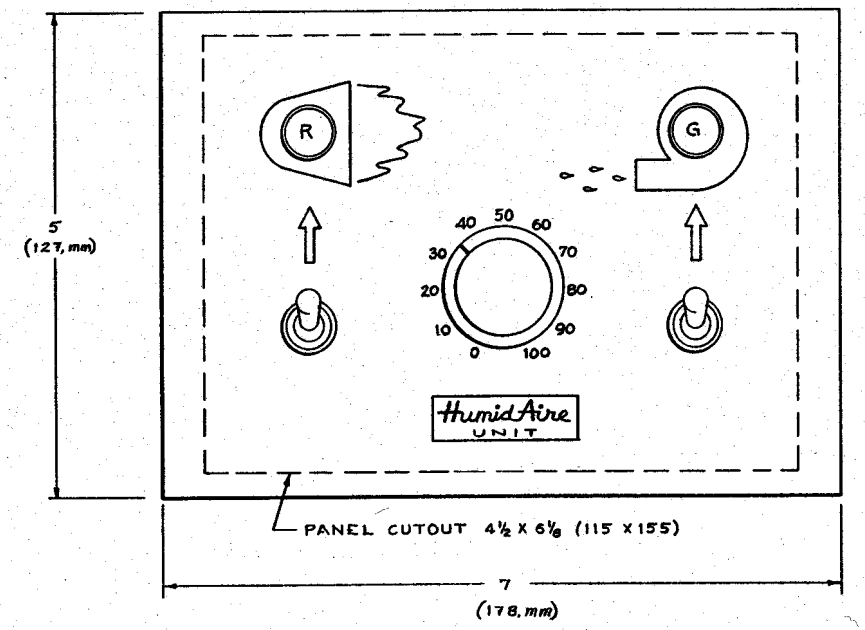
12400
REMOTE MANUAL CONTROL
HU-60

DWN. BY	SGJ	DRAWING NO.
DATE	5-27-74	10-12400



REAR VIEW





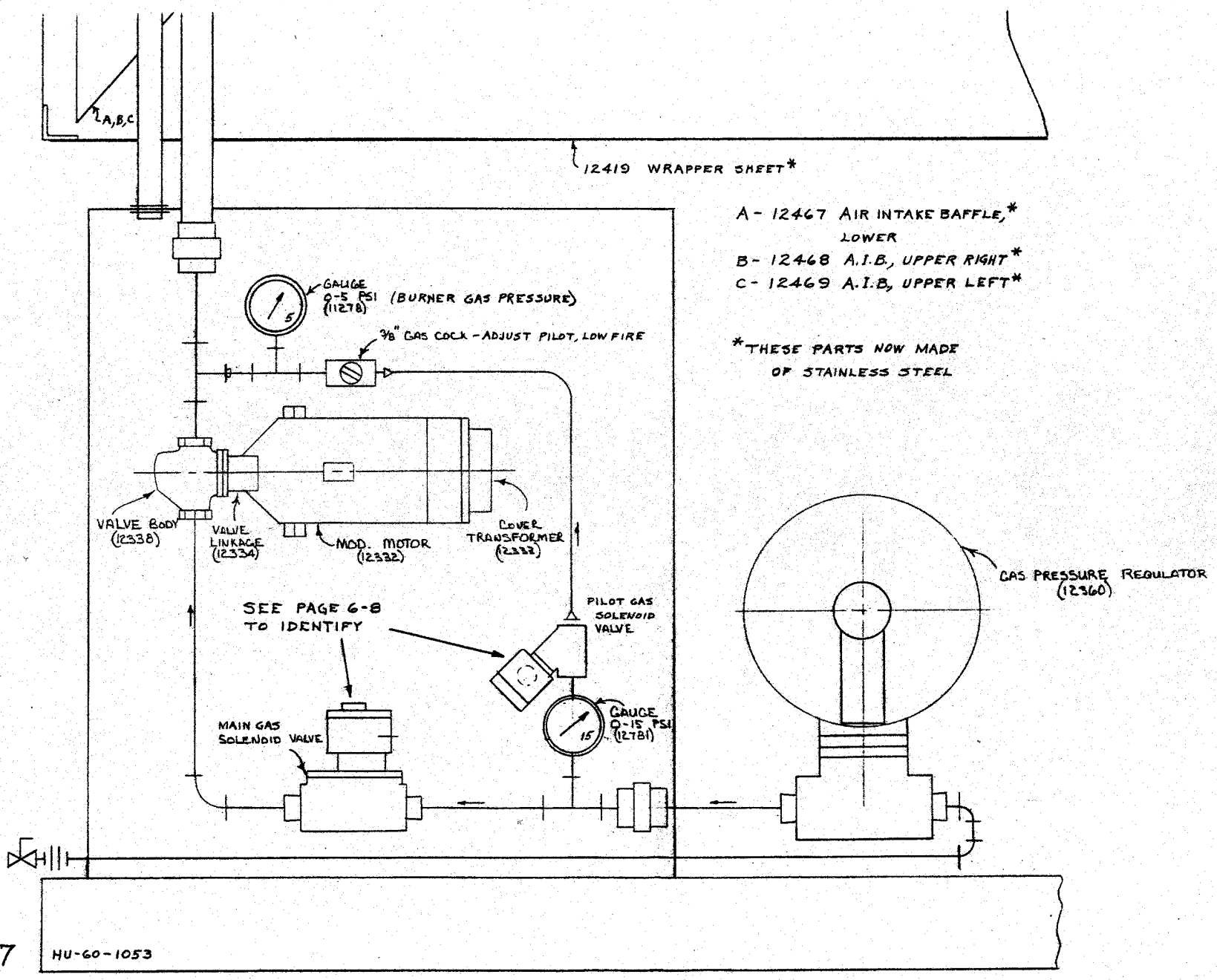
FRONT VIEW

Ref. No.	Quan.	Part No.	Description
1	1	12401	Remote Control Box
2	1	11609	Clamp
3	2	11668	8-32 x 1/2 RH machine screw
4	2	11666	Panel Clamp
5	2	11669	8-32 x 1 RH machine screw
6	1	12406	Internal Bracket
7	1	12465	Face Plate Assy
8	2	11229	Toggle Switch, SPST
9	1	11673	Green Indicator Light, complete
10	1	11675	Red Indicator Light, complete
11	1	11674	Green lens
12	1	11676	Red lens
13	2	11227	327 lamp
14	2	11320	Resistor, 3000-ohm, 5 W
15	1	11672	Pointer knob
16	1	11239	Potentiometer, 100-ohm, 2 W
17	1	12784	Terminal Strip, 10-141 Y
18	1	12963	Number Strip, 4-13

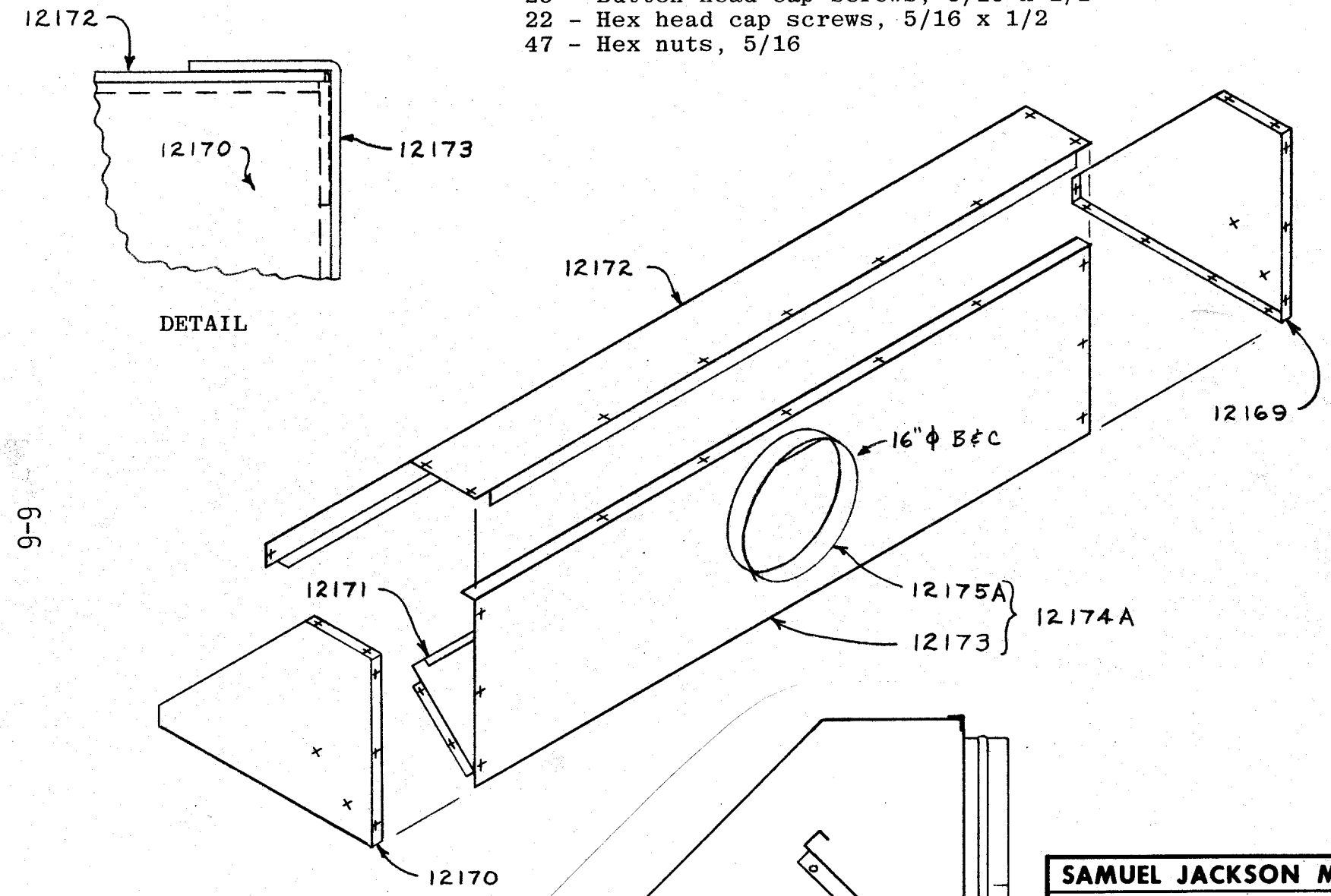
SAMUEL JACKSON MFG. CORP.

12400
REMOTE MANUAL CONTROL
HU-60

DWN. BY	SGJ	DRAWING NO.
DATE	5-27-74	10-12400


A,B,C
12419 WRAPPER SHEET*
A - 12467 AIR INTAKE BAFFLE,* LOWER
B - 12468 A.I.B., UPPER RIGHT*
C - 12469 A.I.B, UPPER LEFT*
*THESE PARTS NOW MADE OF STAINLESS STEEL
GAUGE 0-5 PSI (11278) (BURNER GAS PRESSURE)
3/8" GAS COCK - ADJUST PILOT, LOW FIRE
VALVE BODY (12338)
VALVE LINKAGE (12334)
MOD. MOTOR (12332)
COVER TRANSFORMER (12332)
GAS PRESSURE REGULATOR (12360)
SEE PAGE 6-8 TO IDENTIFY
PILOT GAS SOLENOID VALVE
GAUGE 0-15 PSI (12781)
MAIN GAS SOLENOID VALVE

25 - Button head cap screws, 5/16 x 1/2
22 - Hex head cap screws, 5/16 x 1/2
47 - Hex nuts, 5/16



9-9

These parts may be ordered made from stainless steel instead of galvanized steel.

SAMUEL JACKSON MFG. CORP.	
12029A AIR HOOD ASSY.	
HU-60	
DWN. BY S G J	DRAWING NO. 10-12029A
DATE 9-24-69	

FORM 19-1372

ASCO Valves used on HU-60 Gas-fired Humidaire Units
(All Coils 120/60 110/50)

MODEL	SERIALS	YEARS	DESCRIPTION	PORT	VALVE	REPAIR KIT	COIL
1053	3851-3979	69-71	MAIN, ALUM, DIAPH	1	12341/8215A50	13513/103-228	13511/96-817-1-D
			PILOT, ALUM, DIAPH	1/2	12342/8215B20	13517/158-398	13516/27-462-1-D
1053A	4000-4049	74	MAIN, BRASS, DIAPH	1	12341A/8210B54	13518/168-385	13511/96-817-1-D
			PILOT, BRASS, ANGLE	1/2	12342A/8030A17	13519/103-019	13511/96-817-1-D
1053B	4252-4301	75	MAIN, ALUM, DIAPH	1¼	13214/8215A60	13513/103-228	13511/96-817-1-D
			PILOT, BRASS, ANGLE	3/8	13213/8030B13	13520/158-562	13516/27-462-1-D
1066	4440-4592	77-79	MAIN & SSOV	1	13438/J8215A50	13513/103-228	13511/96-817-1-D
			N.O. VENT	3/4	13433/J821533	13514/162-218	13511/96-817-1-D
			PILOT	3/8	13434/J8040B8	13515/180-660	13512/96-619-1-D
1066	4621-	80	MAIN & SSOV	1	13438/J8215B50	13852/208-441	13511/96-817-1-D
			N.O. VENT	3/4	13433/J8215A33	13853/208-754	13854/27-462-1-D
			PILOT	3/8	13434/J8040B8	13515/180-660	13512/96-619-1-D

AUTOMATIC CONTROLS
FOR THE HU-60-1053 HUMIDAIRE UNIT

12980A RELAY CONTROL

This control used a series of microswitches placed on each gin stand to regulate the amount of humid air fed to the battery condenser. The Humidaire Unit was throttled proportionately to the number of gin stands in operation keeping the moisture content of the air consistent with the cotton flow to the battery condenser. When all of the gin stands went out of operation, the 12980A automatically shut off the water pump but maintained a low flow of warm air to help reduce condensation when ginning resumed. The 12980A was discontinued with the introduction of the 13290A Condenser Air Switch Control, a simple, but more effective control with proven reliability.

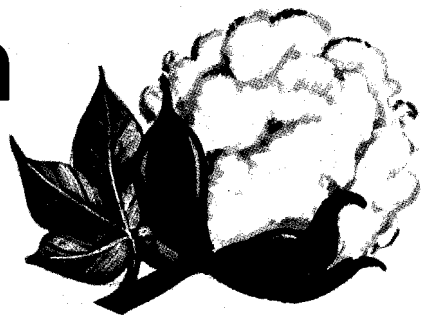
13290A CONDENSER AIR SWITCH CONTROL

A detailed description of this control is included in Section 2 along with installation instructions. It is used in conjunction with the Jackson Lint Slide Grid to turn the water pump of the Humidaire Unit on and off with the flow of cotton from the battery condenser. The burner remains in operation when the pump turns off to prevent condensation.

12670A AUTOMATIC CONTROL

The 12670A control used the Honeywell "Dialatrol" to change the burner output when the Humidaire Unit was being used as a drying heater in tower dryer installations. Manual control was required when the water pump was energized to humidify the cotton. Wiring information is available on request. The 12670A has been superseded by our current 13800A Automatic Control which is recommended in both tower dryer applications and the Lint Slide Grid. It can be furnished for use with the HU-60-1053 Humidaire Unit.

Moistening Cotton With Humid Air



Recent developments have aroused new interest in the ***HUMID AIR*** *method of adding moisture to cotton at the gin, a principle originated by Samuel Jackson over 20 years ago. This is the* ***"Humidaire Story"****:*

A new method of applying humid air to cotton at the lint slide before the ginnery's baling press has provided the solution to several problems. For years, ginners have known that moistening dry cotton with a fine spray of water will reduce the hydraulic pressure on the press ram and prevent broken bale ties. Today's high-capacity ginneries with universal density presses and automatic strapping system require that there be no pressing problems. At the same time, the increased volume of cotton is more than the water spray systems can treat effectively. This is where the well-known humid air generator, the Samuel Jackson Humidaire Unit, provides an economical solution.

The Samuel Jackson Lint Slide Grid is installed on top of the floor of the existing lint slide. This grid is made of preformed metal pieces which extend across the slide forming a new smooth floor having slotted openings for the passage of air. Warm, humid air from the 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 lint cotton passing over the grid, imparting to the cotton more moisture than is possible by water sprays, and doing it more uniformly.

In most of the grid installations made so far, the used humid air simply goes out of the slide into the ginnery along with some wisps of cotton. Late in 1979, several installations were made in which the slide was covered, with a hood on top to collect this used air and cotton fly and pipe it into the riser going to the battery condenser. This allows more humid air to be blown into the grid without causing a nuisance, reclaims the cotton fly and uses the humid air twice. The existing vacuum in the lint flue is used to collect and move this air so no extra fan is required. We recommend this arrangement for all present and future installations.

Where an automatic sampler is used, a small amount of the humid air is introduced into the sampler pipe so the sample will have the same treatment as the bale.

The Humidaire Unit —

The machine which produces warm humid air was invented by Samuel Jackson and first marketed in 1959. It has been used ever since to kill static electricity in dry areas and to protect cotton from fiber damage during the ginning process. It is the essential part of any humid air system, and is used in more than 20 cotton-producing countries. Although it has been improved in many ways through the years, it still works by passing air through a spray chamber where it is scrubbed by recirculating water. A gas burner adds heat to increase the amount and availability of water vapor in the air.

Cost of Operation —

Since the installed cost of the Humidaire Unit and Lint Slide Grid will be ten to 15 times as much as the water spray system and will consume expensive fuel as well, we must examine its economics. Let's look at a typical case.

The Humidaire Unit consumes 1500 cubic feet per hour of natural gas which costs $4.05 per hour. If the hourly ginning rate is 20 bales of 480 pounds each, and the moisture content is increased three per cent (from four to seven) the added weight is 288 pounds per hour. If cotton is worth 60 cents per pound, this amounts to $172.80 per hour, a net increase of $168.75 per hour or $8.44 per bale. If 10,000 bales are ginned, this gives $84,400 which is several times the installed cost of the equipment.

Tower Dryers —

In parts of the American Southwest, climatic conditions are often so dry that static electricity impedes the movement of cotton through the plant and holds dirt and trash in the cotton. Static usually appears first at the feeder aprons and the lint cleaner feed works.

To solve this problem, a Humidaire Unit is used with each second-stage tower dryer in place of the conventional burner. All of the seedcotton is exposed to the humid air so it can be cleaned and move freely without static clear through the battery condenser. The Humidaire Unit also serves as a drying burner when its water pump is switched off.

Further Information —

If you are interested in using humid air in your gin, telephone us. We'll answer your questions, quote prices, and send detailed information for the type of application which fits your need.

SAMUEL JACKSON MANUFACTURING CORP.

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

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.

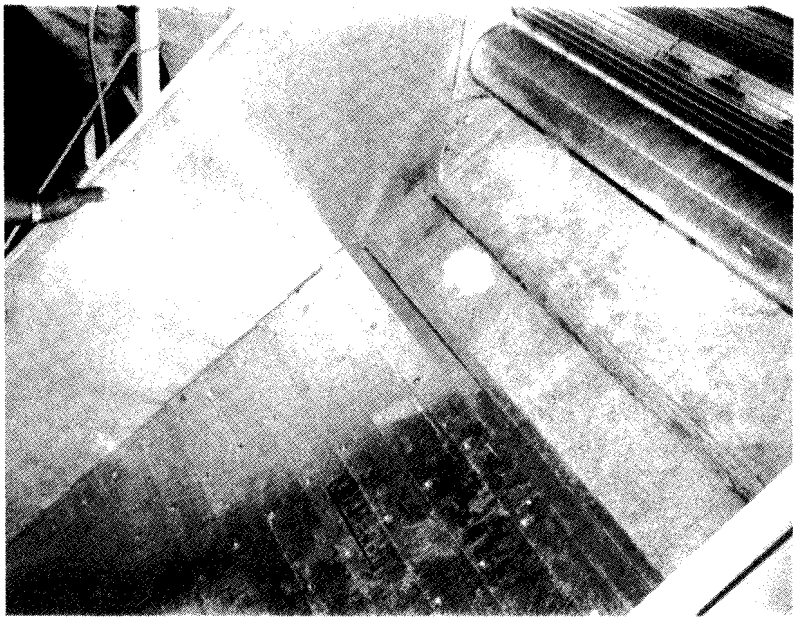
PURPOSE The reasons for adding moisture in this way are to reduce strain on the tramper and press and eliminate problems with broken straps or bale ties. To do this the moisture content of the cotton is typically brought up to between 6 and 8½ per cent. The weight added is typically 15 pounds (7 Kilos) 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.

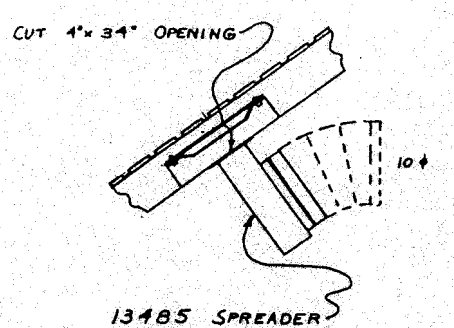
For lint slides which are 40 inches (1.016 m) wide, the LSG-1071 Grid is substituted for the LSG-1070, which is designed for 54-inch (1.372 m) slides.

CONDENSER AIR SWITCH CONTROL This device is usually used with the lint slide grid to switch the Humidaire Unit from producing humid air to warm, dry air when no cotton is coming from the battery condenser. It does this by sensing the difference between air pressure in the condenser riser and inside the condenser drum.

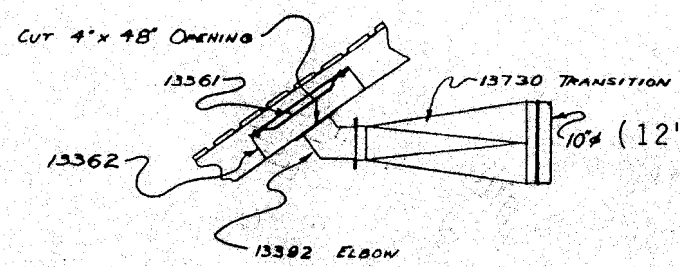
HOOD OVER LINT SLIDE A useful modification is now being used in many gin plants. The lint slide is covered with a hood to collect the used moist air and pieces of floating lint which would otherwise escape into the air. The collected moisture is returned to the riser below the battery condenser. The normal vaccum 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



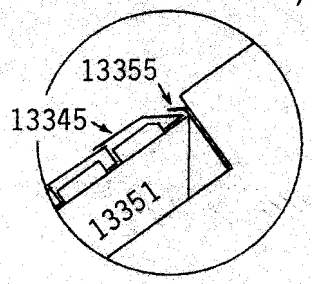
DETAIL — 40-INCH SLIDE



DETAIL — 54-INCH SLIDE

INSTALLATION PROCEDURE

1. BOLT 13353 TO FLOOR OF SLIDE LOCATED AS SHOWN.
2. BOLT NOTCHED SUPPORTS TO SIDE OF SLIDE. IF NECESSARY TO REDUCE TOTAL LENGTH, CUT OFF 13341A IN MULTIPLE OF 4 INCHES.
3. BOLT 13346 TO FLOOR AT TOP OF SLIDE. THIS SHOULD BE AT LEAST 2 FEET (600 MM) FROM DOFFING ROLLERS.
4. CUT OPENING IN FLOOR OF SLIDE AND INSTALL INLET TRANSITION AND DIFFUSER AS SHOWN IN DETAIL.
5. PUT 13345 SLAT IN TOP NOTCH.
6. INSTALL OTHER SLATS, BEGINNING AT BOTTOM.



DETAIL OF LINT SLIDE WITH RECESS FOR GRID

FOR VERY SHORT SLIDES WHERE GRID LENGTH IS 9'-6" OR LESS:

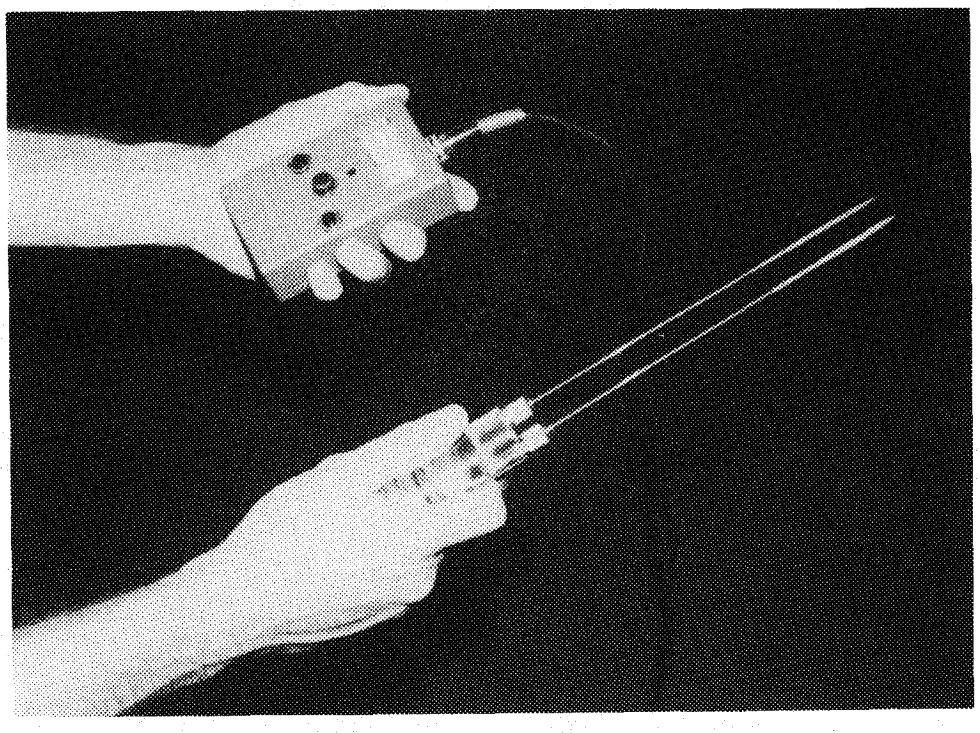
BE SURE TO MAINTAIN 4" OR MORE CLEARANCE FOR DIFFUSER

14-2306

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

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 cap electrode

Batteries: Two 9-volt, NEDA 1604

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

SAMUEL JACKSON MFG CORP -- P O BOX 16587 -- LUBBOCK, TEXAS 79490 -- TEL 806-795-5218