KS-20183 L1 AND L2 AIR DRYERS
(DIELECTRIC COMMUNICATIONS)
REPLACEMENT PARTS AND PROCEDURES

CONTENTS PAGE

1. GENERAL

1.01 This section covers the ordering information and replacement procedures for parts used in maintaining KS-20183 L1 and L2 air dryers manufactured by Dielectric Communications. These dryers supply dry air to pressurized waveguide runs and horn reflector antennas in microwave radio systems.

1.02 This section is reissued to:

(a) Change the KS-15707 L3 blower, which has been manufacture discontinued (Mfr Disc.) to the KS-21784 L2 blower.

(b) Change the Rotron spiral blower to the KS-21784 L2 blower.

Revision arrows are used to emphasize the more significant changes.

1.03 The KS-20183 L1 and L2 air dryers have been rated Mfr Disc. and are replaced by the KS-21403 L1 air dryer. This section is for the maintenance of those dryers still in service and having the SI-437 retrofit kit for the KS-20183 L1 and L2 air dryers installed. Replacement parts will still be available.

1.04 Refer to Section 161-309-701 for requirements and adjusting procedures for KS-20183 L1 and L2 air dryers and for the installation of the L101, L102, and L103 modification kits.

1.05 The L2 dryer is similar to the L1 dryer except for the following:

- L2 dryers are supplied with the AO-96076 Rotron spiral blower.

- The finned tubing used in the L1 dryer is replaced by smooth copper tubing in the L2.
- Alarm lock-in features and reset switch have been omitted on L2 dryers.

1.06 Those parts which can be replaced in the field are illustrated in Fig. 1 through 6 for the L1 dryers and in Fig. 7 through 11 for the L2 dryers.

2. PRECAUTIONS

2.01 The following procedures must be observed ***before*** replacing parts:

(1) Shut off the dry air supply from the dryer to the waveguide system (for location of valve, check installation drawing).

(2) Move the ON-OFF switch to the OFF position and disconnect the dryer from the ac power supply.

(3) Disable the alarm circuit by removing the K1 and K2 relays (Fig. 2 or Fig. 7).

Danger: Avoid contact with the surfaces of the desiccant towers during and immediately after the tower heating period. The outer surfaces of the towers reach temperatures of over 250°F during this period.

2.02 When shutting down the dryer for any reason, always wait at least ***5 minutes*** before restarting the dryer. This will allow the refrigeration compressor to unload, thereby avoiding an excessive load on the compressor motor.

2.03 After all work is completed, the dryer is placed back in operation as follows:

(1) Reconnect the ac power supply.

(2) Move the ON-OFF switch to the ON position.

(3) When the dryer reaches normal operating temperature (38° to 40°F) and pressure (9 inches ±0.5 inch of water), replace the K1 and K2 alarm circuit relays and the alarm lamps will extinguish.

(4) Open the valve in the air pipe system and resume supplying air from the dryer to the waveguide system.

3. REPLACEMENT PROCEDURES

3.01 When the dryer must be shut down for maintenance, follow local instructions for supplying an interim dry air source.

REFRIGERATOR AND EVAPORATOR ASSEMBLY

3.02 Replacement of components of the refrigeration system must be done by personnel trained in refrigeration equipment maintenance. Therefore, replacement procedures for these parts are not covered in this section.

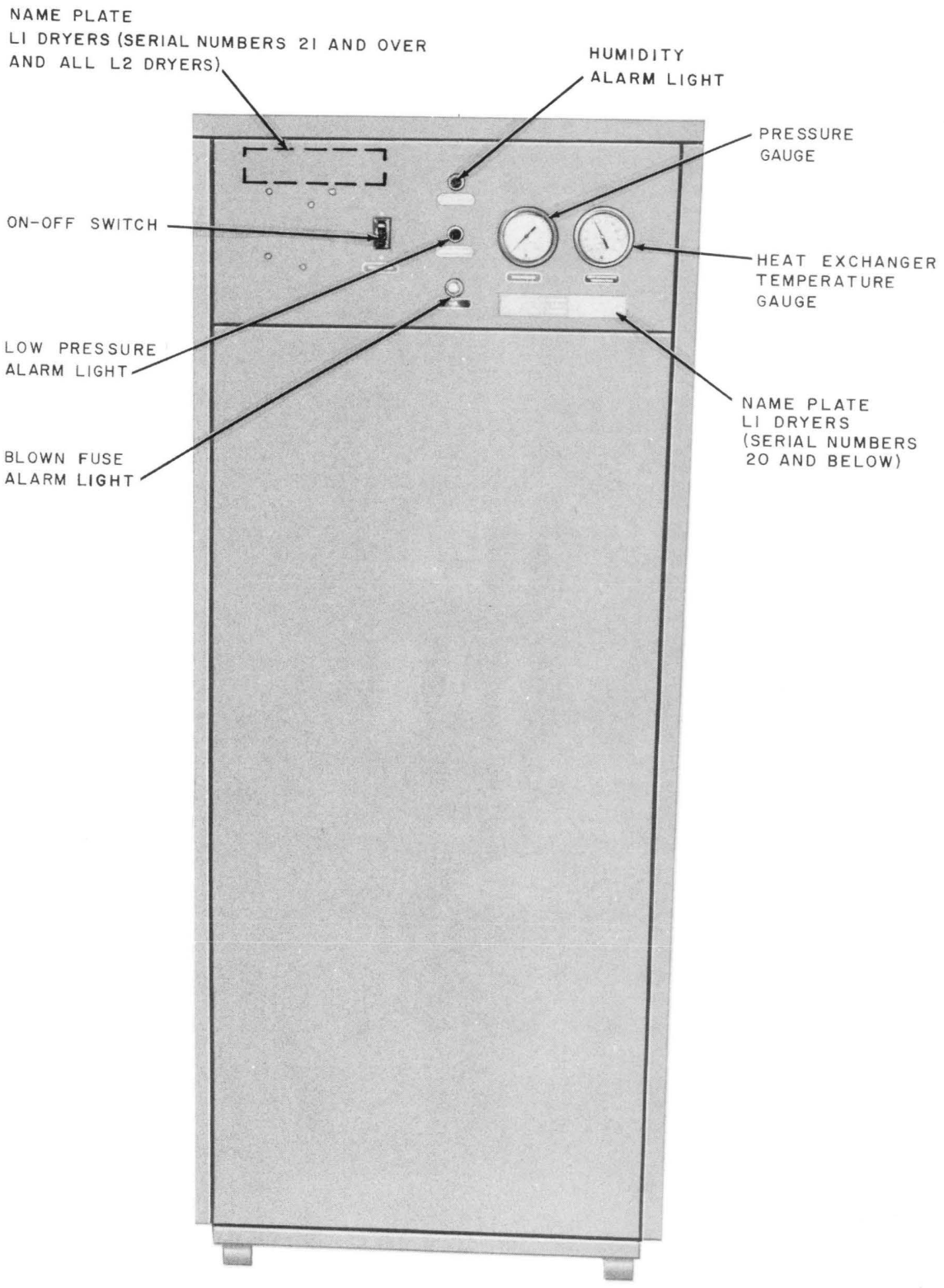

Fig. 1—KS-20183 L1 and L2 air Dryers (Dielectric Communications)

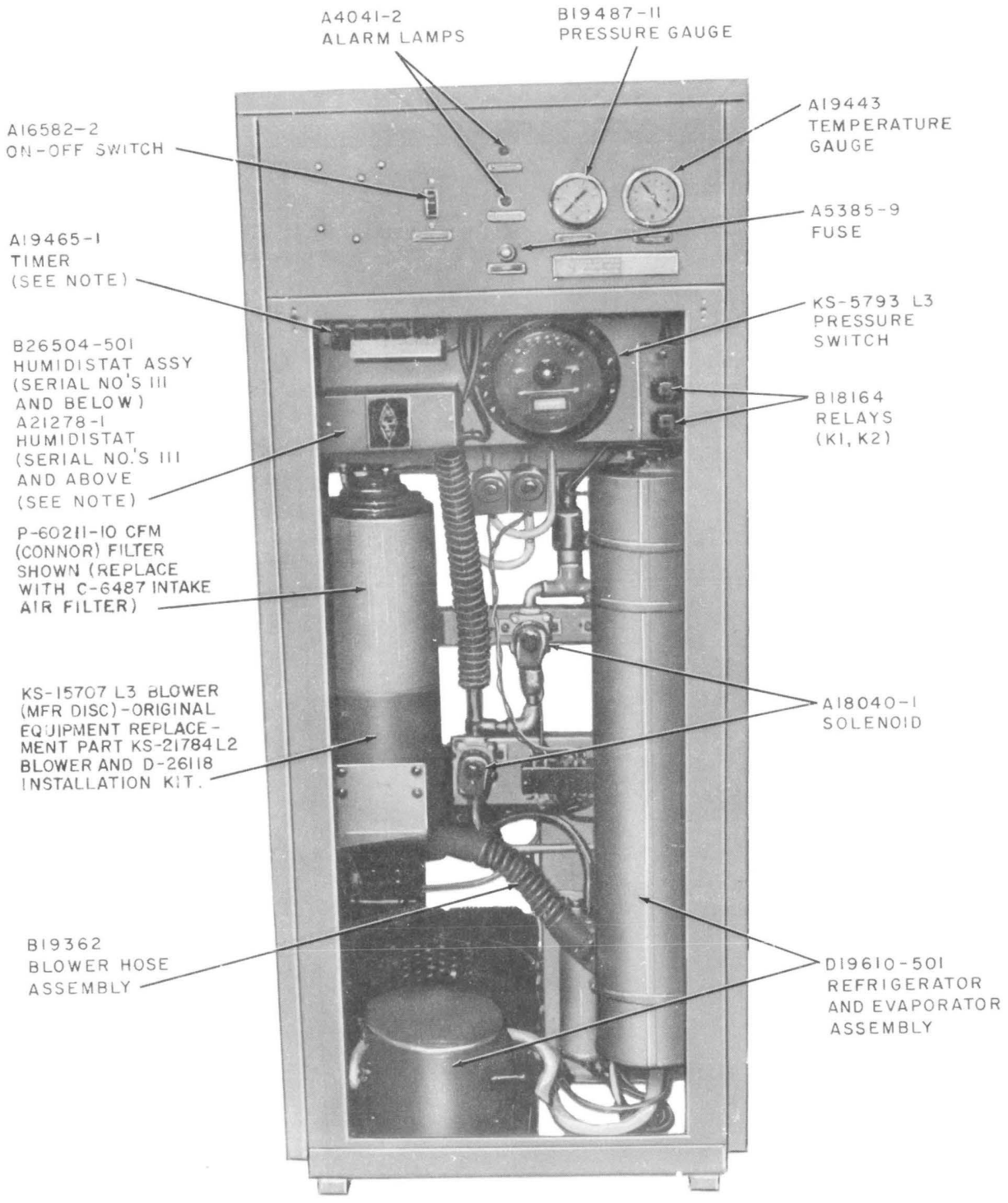

Fig. 2—KS-20183 L1 Air Dryer—Front View—Cover Removed

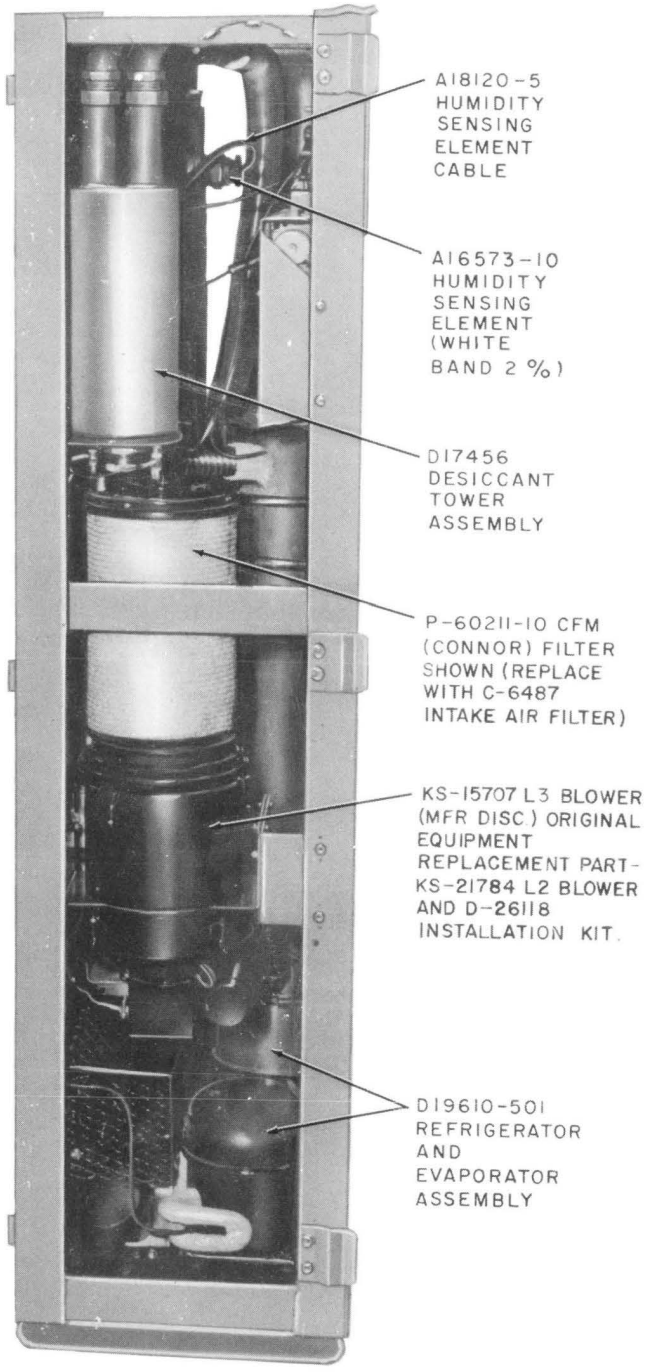

Fig. 3—Fig. 3—KS-20183 L1 Air Dryer—Left Side View—Cover Removed

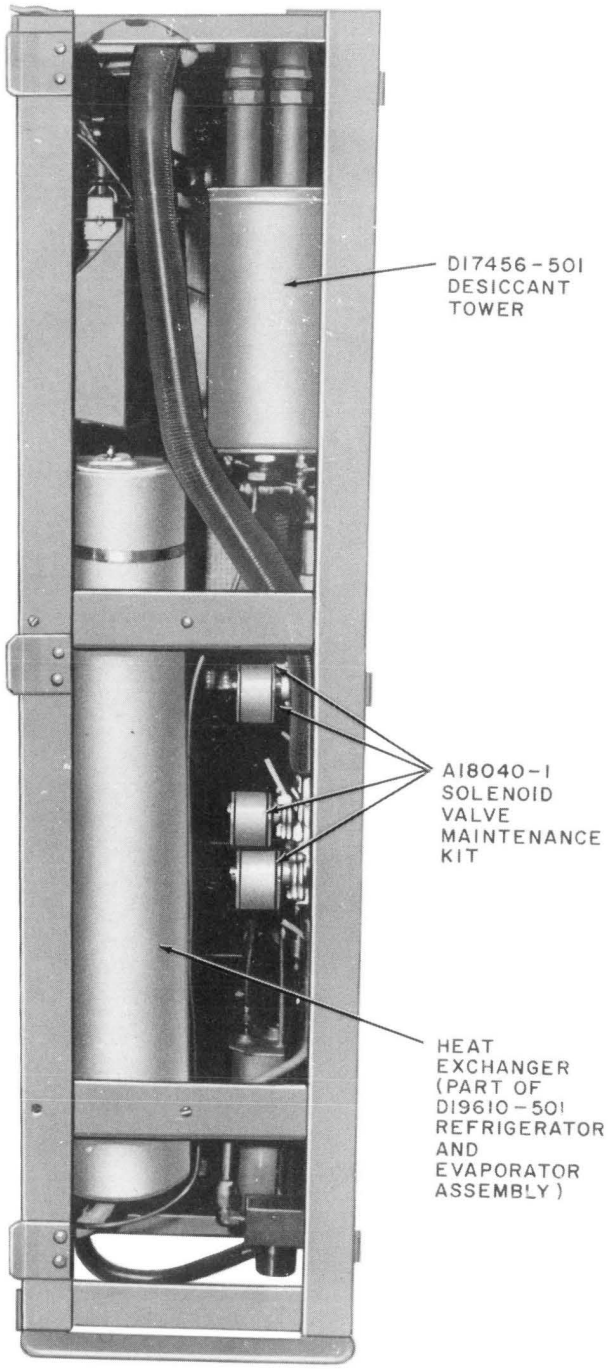

Fig. 4—KS-20183 L1 Air Dryer—Right Side View—Cover Removed

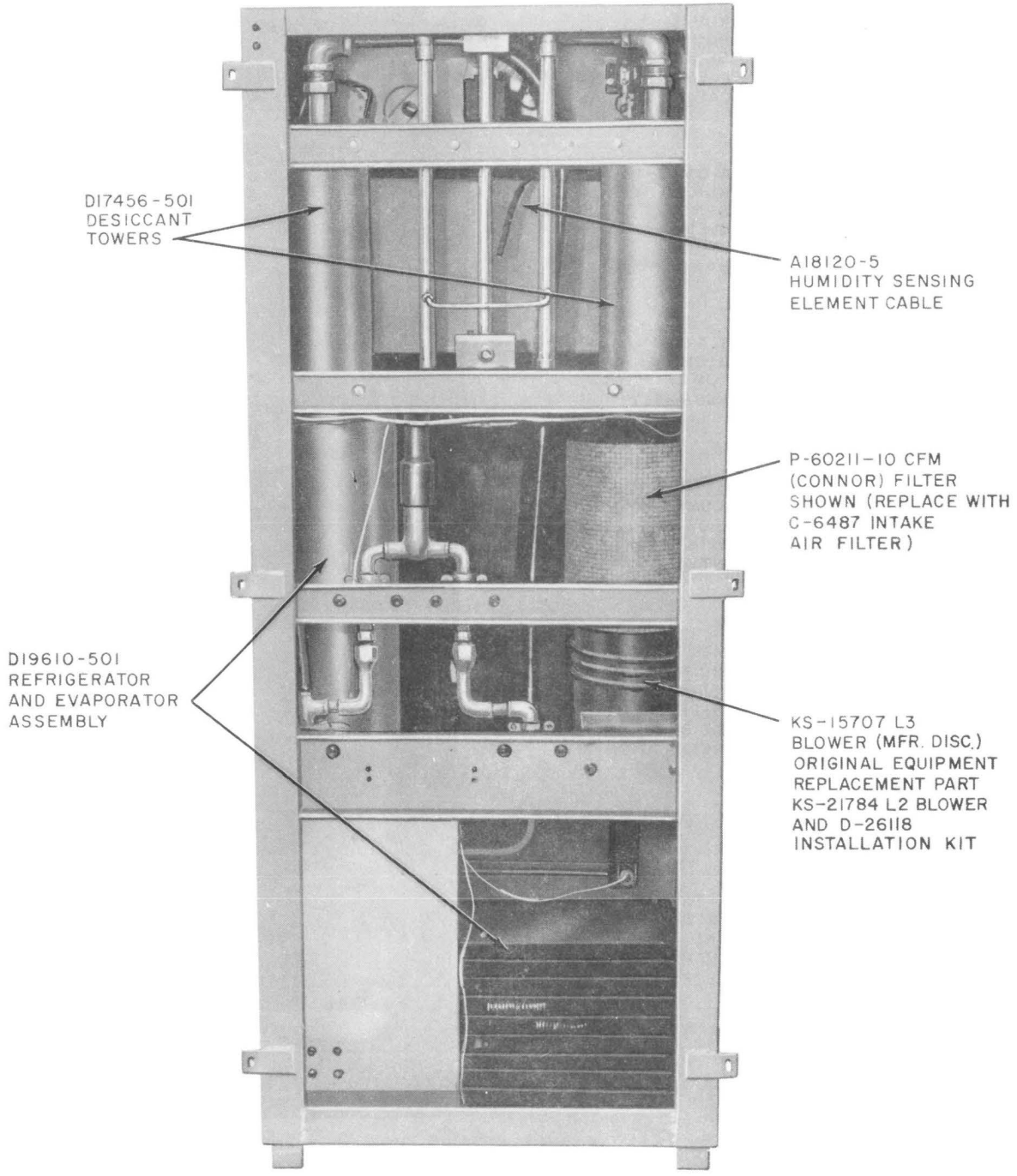

Fig. 5—KS-20183 L1 Air Dryer—Rear View—Cover Removed

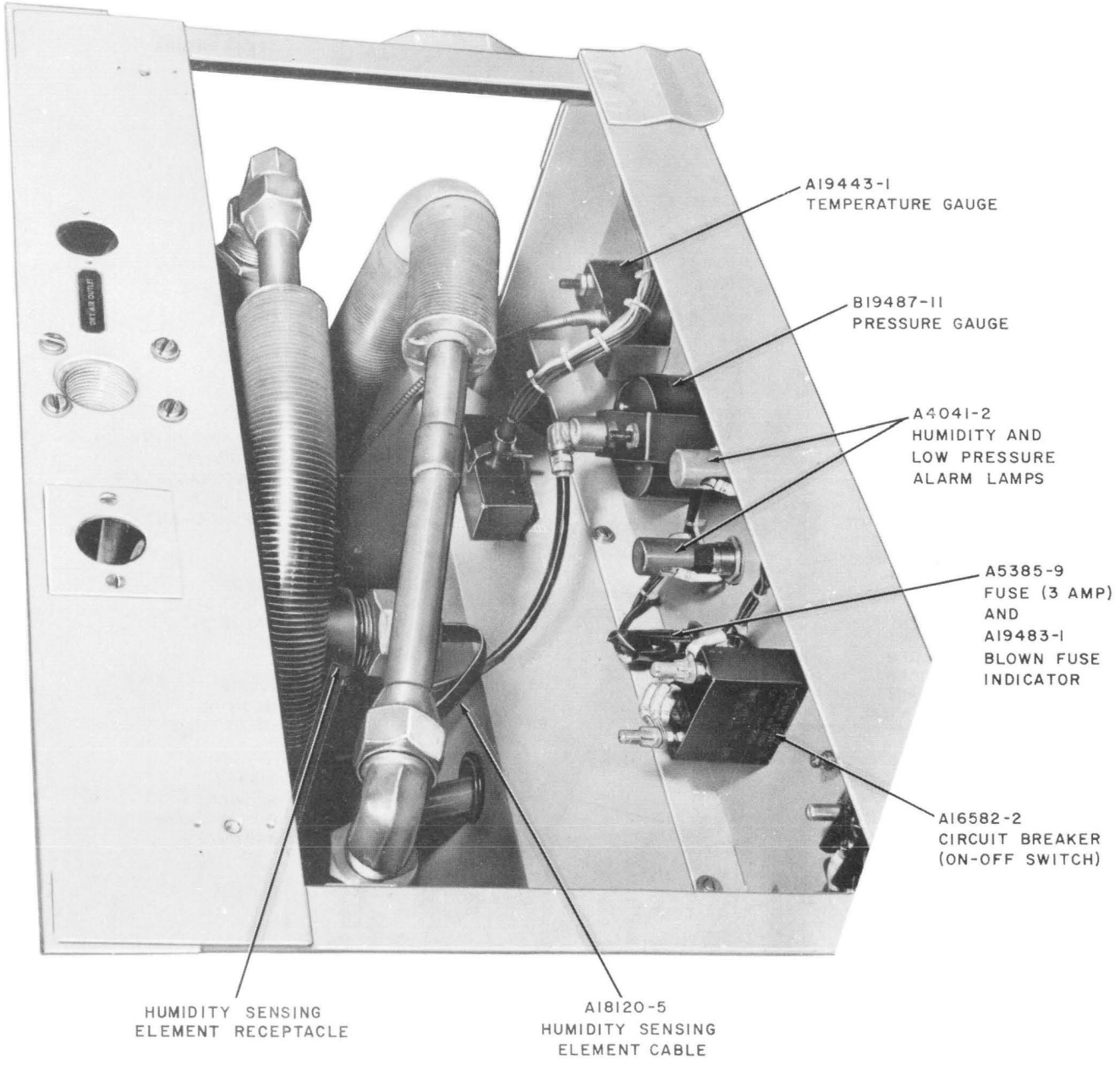

Fig. 6—KS-20183 L1 Air Dryer—Top View—Cover Removed

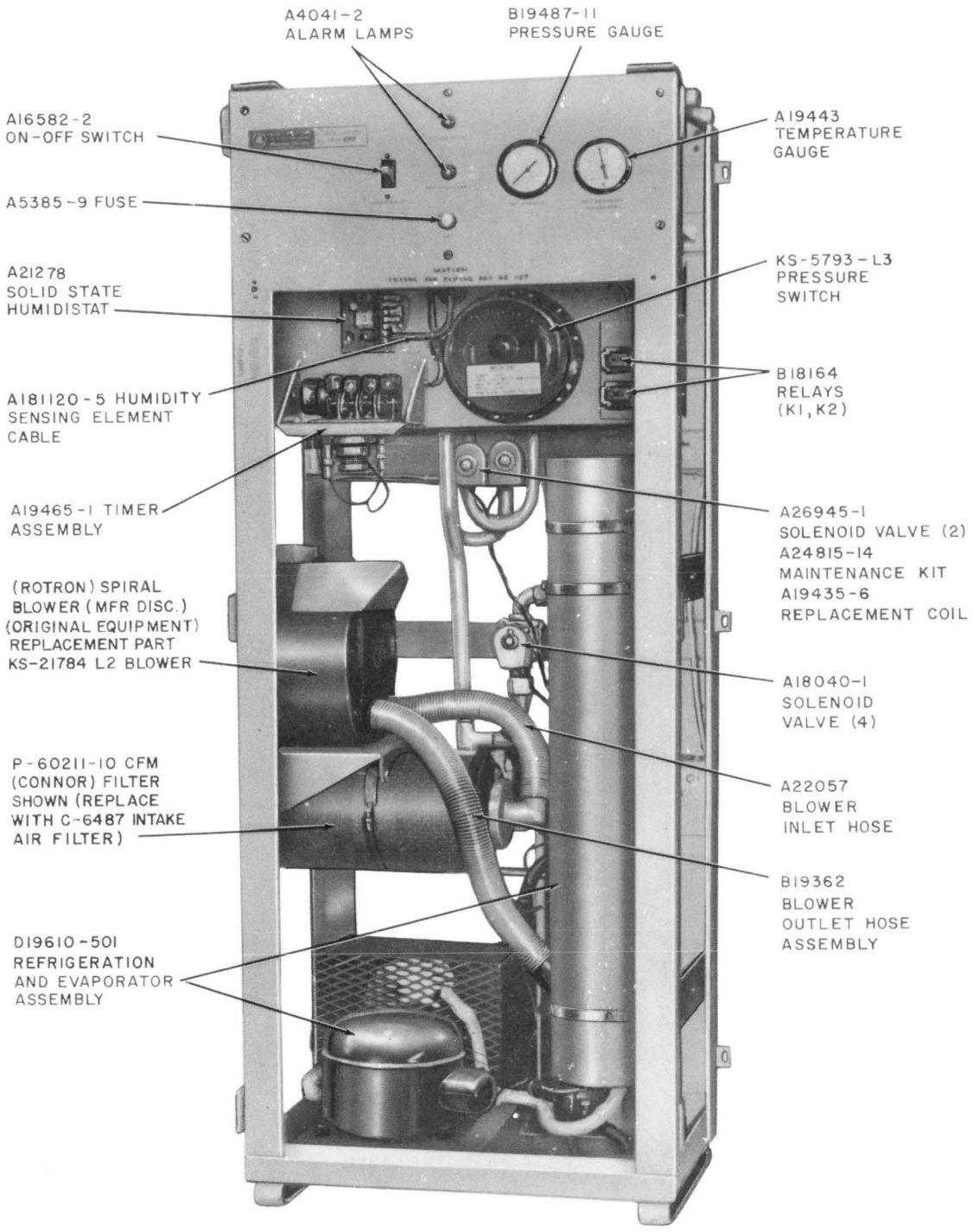

Fig. 7—▶KS-20183 L2 Air Dryer—Front View—Cover Removed◀

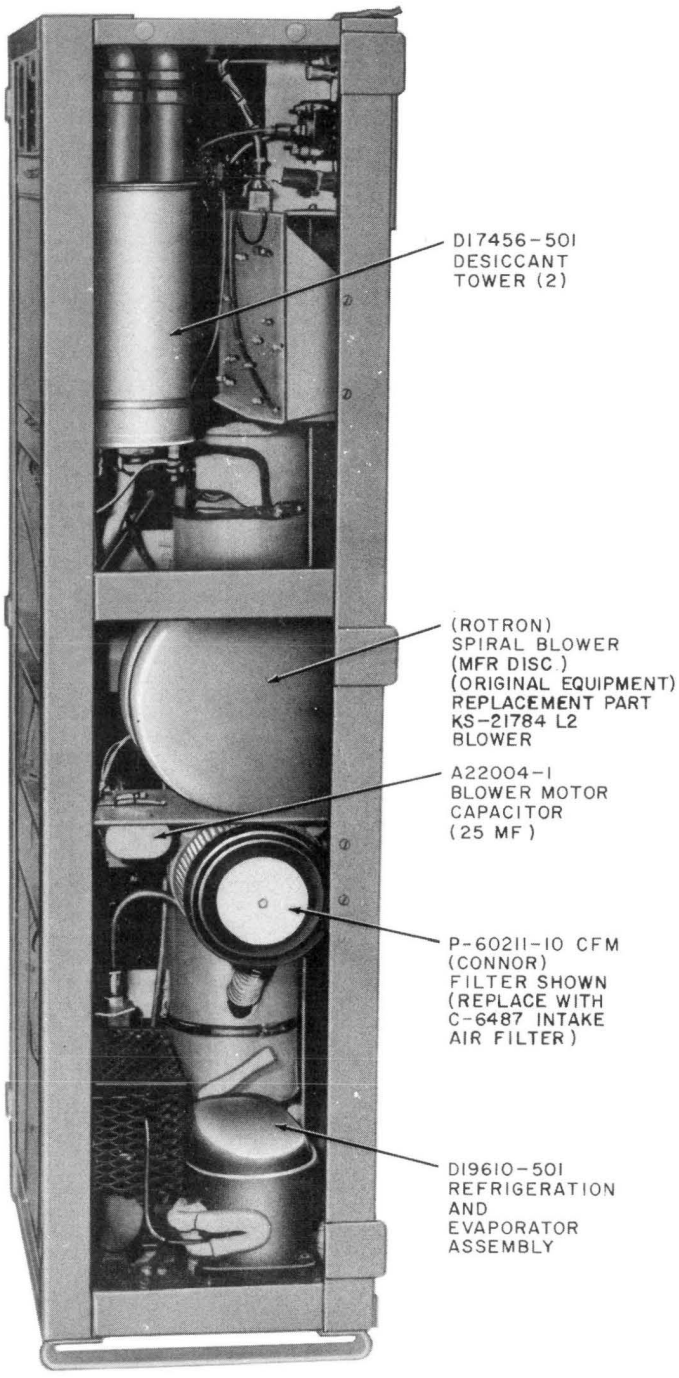

Fig. 8—KS-20183 L2 Air Dryer—Left Side View—Cover Removed

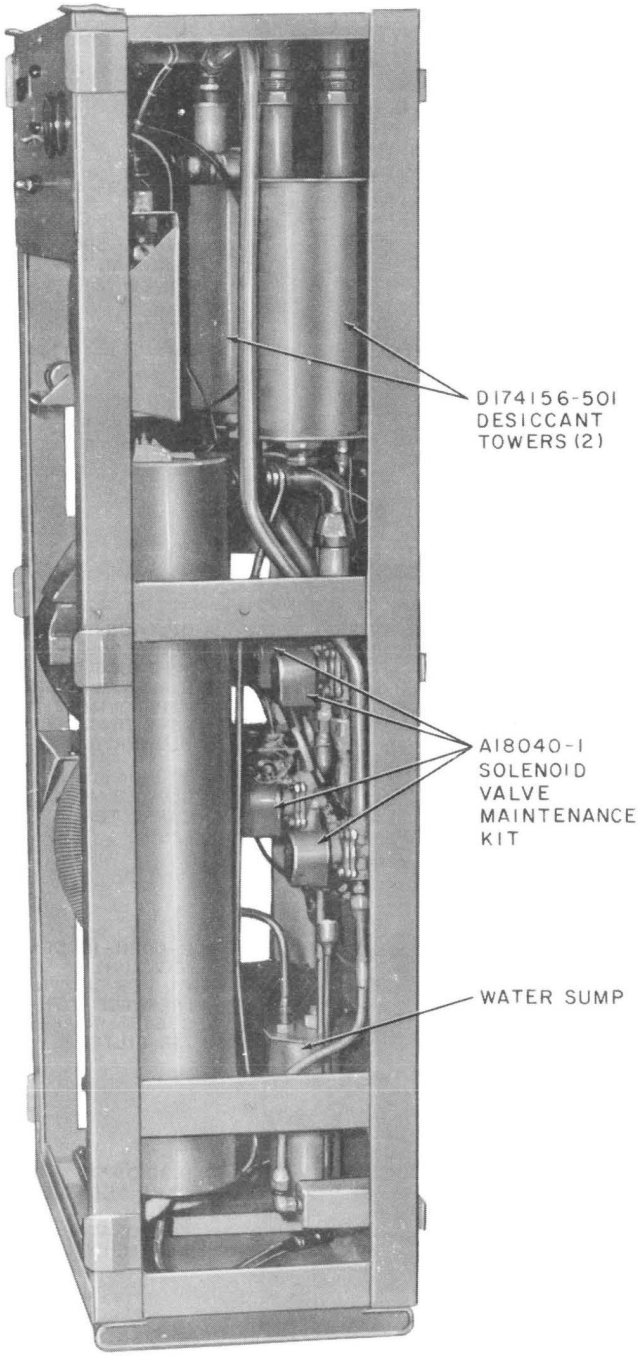

Fig. 9—KS-20183 L2 Air Dryer—Right Side View—Cover Removed

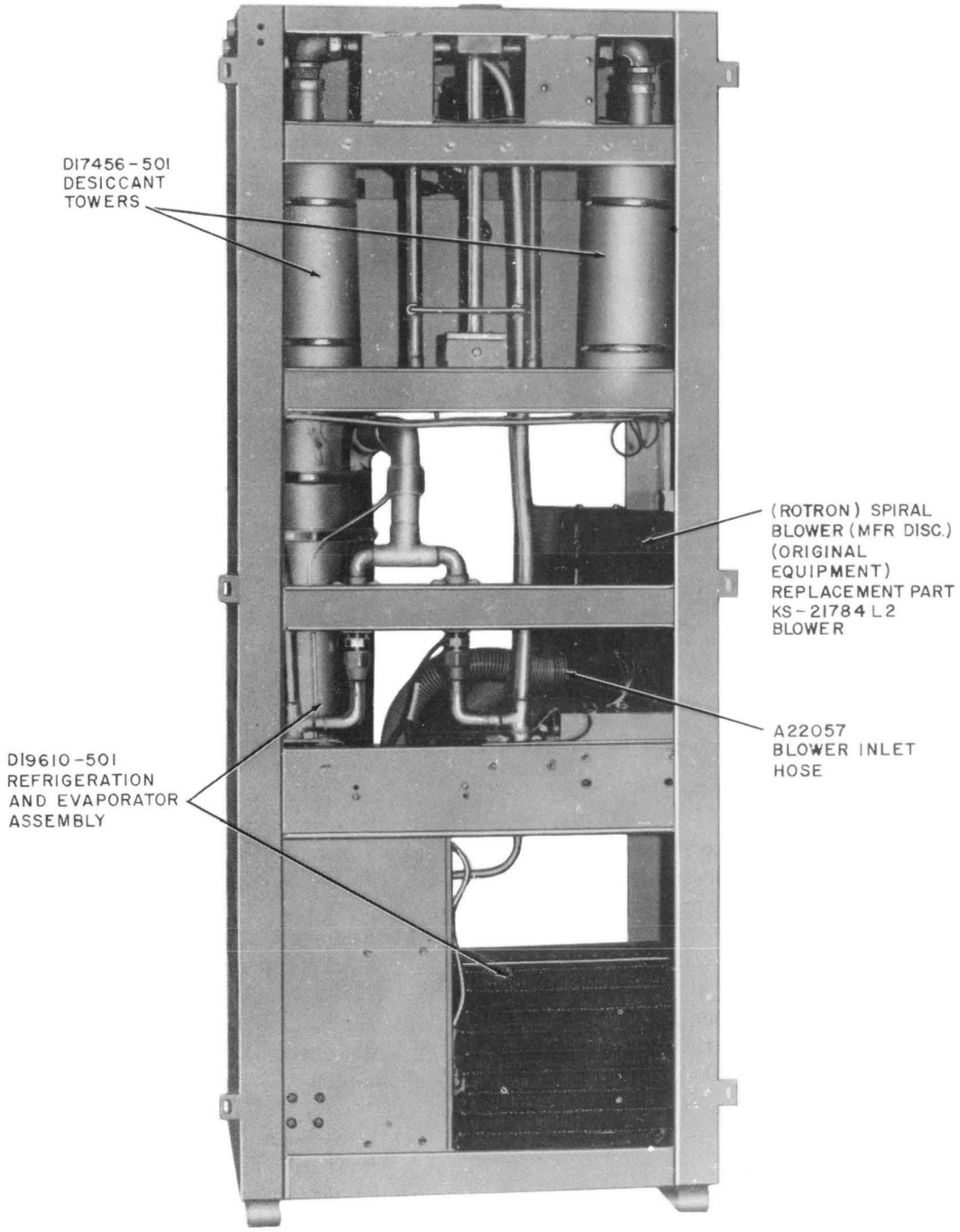

Fig. 10—▶KS-20183 L2 Air Dryer—Rear View—Cover Removed◀

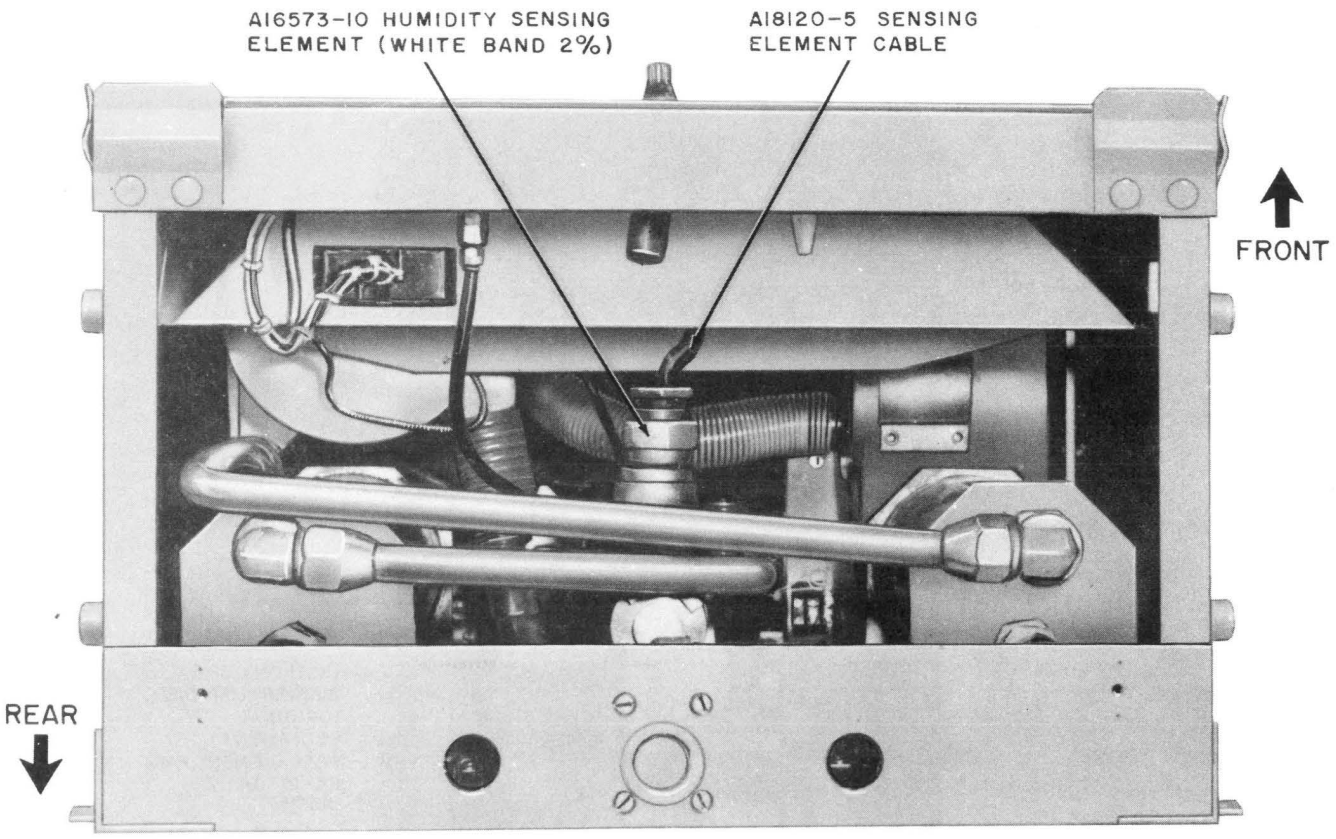

Fig. 11—KS-20183 L2 Air Dryer—Top View—Cover Removed

3.03 Replacement of the entire refrigeration system can be made by field personnel with the D19610-501 refrigerator and evaporator assembly (Fig. 12).

3.04 ***Tools:*** The only tools required to remove and replace the refrigeration system are a screwdriver and 7/16-inch socket wrench with ratchet.

3.05 The refrigeration system is removed and replaced as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel of the dryer.

(3) Remove the refrigeration fan guard.

(4) Tag and disconnect the incoming wire leads at the refrigeration compressor.

(5) Remove the temperature bulb from the well at the top of the heat exchanger.

(6) At the bottom of the water reservoir, disconnect the tubing leading from the heat exchanger.

(7) Loosen the hose clamp securing the blower hose to the air inlet fitting on the heat exchanger and pull the hose from the fitting.

(8) Using a 7/16-inch socket wrench with ratchet, remove the four hex-head mounting bolts securing the refrigeration compressor and condenser to the dryer frame.

(9) Unfasten the three support clamps securing the heat exchanger to the dryer frame.

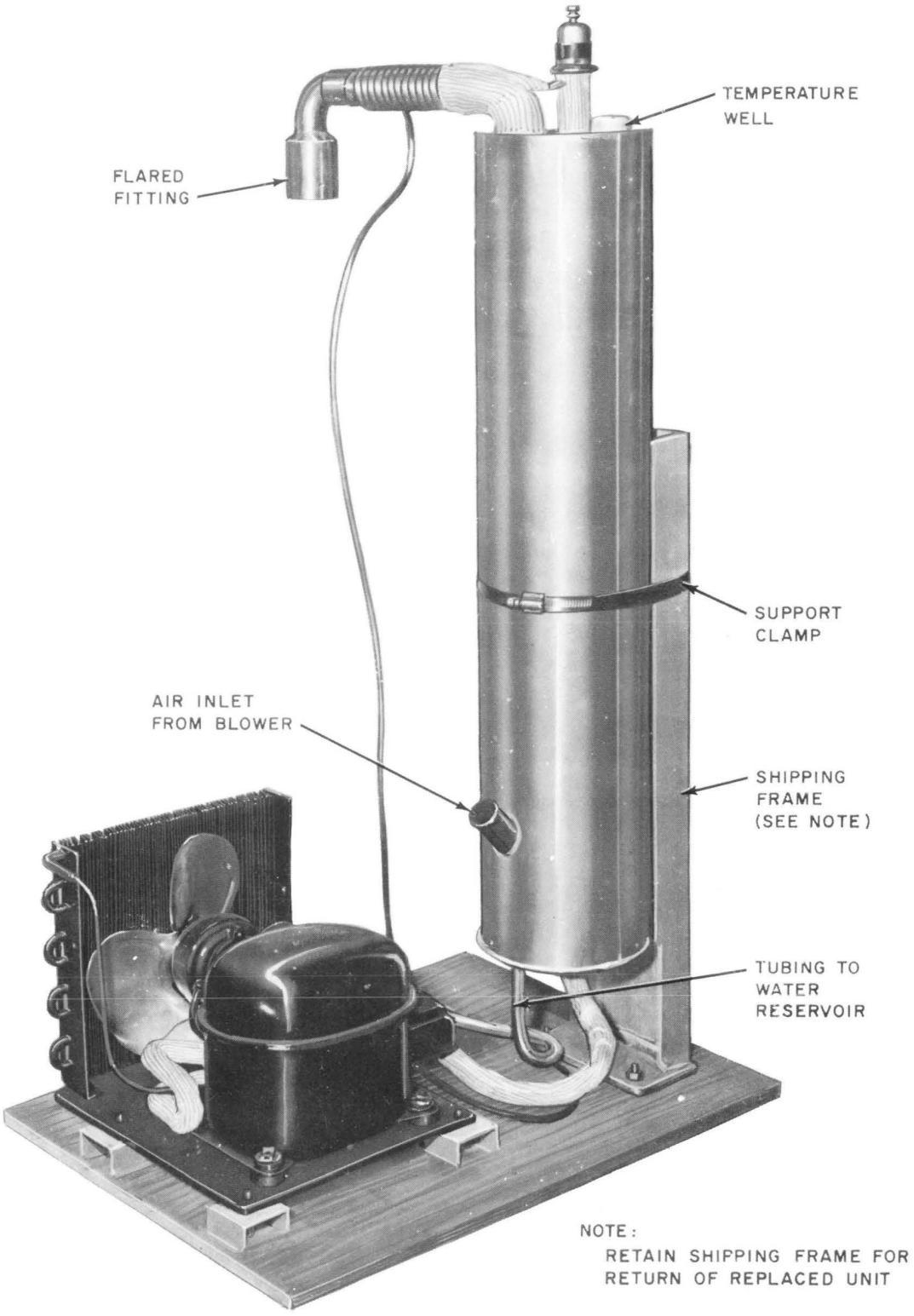

Fig. 12—D19610-501 Refrigerator and Evaporator Assembly

(10) Carefully raise the heat exchanger until the flared O-ring fitting is clear of the Tee fitting leading to the solenoid valve assembly (Fig. 13).

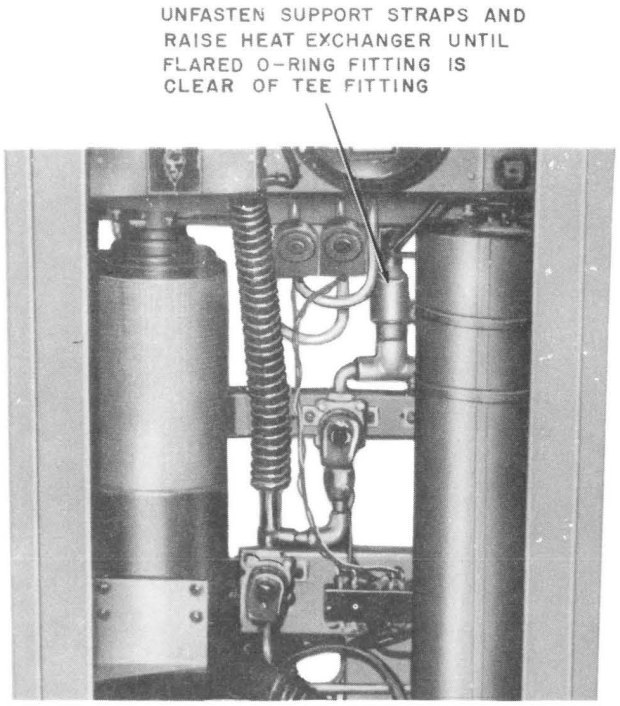

Fig. 13—Refrigerator and Evaporator for Assembly Removal

(11) Simultaneously lift the refrigerator and the evaporator assembly from the dryer.

Warning: When lifting the refrigerator and evaporator assembly, maintain their same relative positions to avoid damaging the interconnecting tubing.

(12) Remove the replacement unit from the shipping frame and place it in position in the dryer.

(13) Fasten the supporting clamps, tighten bolts, and reconnect all fittings and wiring in reverse order of removal.

(14) Resume dryer operation as covered in paragraph 2.03.

(15) Return the old unit for disposition, using the shipping frame supplied with the replacement unit.

BLOWER

3.06 The Rotron spiral blower ▶was◀ furnished as original equipment on all L2 dryers. This blower ▶was◀ also used in conjunction with the D-26118 installation kit as a replacement for the KS-15707 L3 blower furnished with all L1 dryers. ▶The KS-21784 L2 blower is now furnished as a replacement for both the Rotron spiral blower and the KS-15707 L3 blower. The D-26118 installation kit is also required for the KS-21784 L2 blower when used in the L1 dryers.◀

3.07 Instructions for replacing the KS-15707 L3 blower (L1 dryers only) with the ▶KS-21784◀ blower are furnished with the D-26118 installation kit.

3.08 In ▶L2◀ dryers, the ▶spiral◀ blower is removed and replaced as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Tag and disconnect the leads at the blower motor.

(4) Loosen the hose clamp securing the blower outlet hose to the blower and pull the hose from the blower.

(5) Pull the blower inlet hose from the blower.

(6) Remove the filter as covered in paragraph 3.18.

(7) Remove the four mounting bolts from the blower mounting bracket and remove blower.

(8) Install the replacement blower, tighten bolts, and reconnect wiring, hoses, and filter in reverse order of removal.

(9) Resume dryer operation as covered in paragraph 2.03.

KS-5793 L3 PRESSURE SWITCH AND DUAL PRESSURE SWITCH PROVIDED WITH L103 MODIFICATION KIT

3.09 The pressure switch is removed and replaced as follows (Fig. 2):

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Loosen the two cover mounting screws on the sides of the switch and remove the switch cover.

(4) Disconnect all leads from terminals and pull the leads through the grommet in the side of the switch.

(5) Loosen the tubing nut and disconnect the tubing from the switch.

(6) Remove the three mounting screws securing the switch to the electrical panel and remove the switch.

(7) Mount the new switch, remove the cover, reconnect all leads and tubing, and remove the tie-down device from the switch contacts.

(8) Resume dryer operation as covered in paragraph 2.03.

(9) Check and adjust, as required, the operation of the new switch as covered in Section 161-309-701.

HUMIDISTAT

3.10 The humidistat furnished with L1 dryers (serial numbers 111 and below) is removed and replaced with the B26504-501 humidistat assembly (includes humidistat and adapter plate) as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Loosen the two humidistat cover mounting screws and remove cover.

(4) Tag and disconnect the external leads from the humidistat terminal strip and withdraw the leads from the housing.

(5) Loosen the mounting screws securing the housing to the electrical panel and remove housing (humidistat is contained within housing).

(6) Install the B26504-501 humidistat assembly to the electrical panel, using the mounting screws removed in Step (5).

(7) Reconnect the external leads to the humidistat terminal strip.

(8) Resume dryer operation as covered in paragraph 2.03.

(9) Check the operation of the new humidistat as covered in Section 161-309-701.

3.11 The humidistat furnished in L1 dryers (serial numbers 111 and above) and in all L2 dryers is removed and replaced as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Tag and disconnect external leads from the humidistat terminal strip.

(4) Remove the mounting screws securing the humidistat to the electrical panel and remove humidistat.

(5) Install the new humidistat in reverse order of removal.

(6) Resume dryer operation as covered in paragraph 2.03.

(7) Check the operation of the new humidistat as covered in Section 161-309-701.

HUMIDITY SENSING ELEMENT

3.12 The humidity sensing element is removed and replaced as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove top cover.

(3) Remove the nut in the end of the sensing element receptacle (Fig. 6 or Fig. 11).

(4) Carefully remove the sensing element from the receptacle by pulling on the cable.

(5) Remove the element from its socket by removing the mounting screw located inside the sensing element, using a small blade screwdriver. Mount the new element and tighten the mounting screw.

(6) Insert the sensing element into the receptacle in reverse order of removal.

Warning: The receptacle nut should be handtightened only. Do not use a wrench.

(7) Resume dryer operation as covered in paragraph 2.03.

SENSING ELEMENT CABLE

3.13 The sensing element cable is removed and replaced as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the sensing element from its receptacle and the element from the cable as covered in paragraph 3.12.

(3) Disconnect the leads of the cable from the humidistat terminal strip as covered in paragraph 3.10.

(4) Mount the sensing element on the new cable and return the sensing element to its receptacle.

(5) Reconnect the cable leads to the humidistat terminal strip.

(6) Resume dryer operation as covered in paragraph 2.03.

DESICCANT TOWERS

3.14 Desiccant towers are removed and replaced as follows:

Danger: If the tower to be replaced is in the heating portion of the reactivation cycle, delay the replacement until the tower has cooled.

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Disconnect conduit and dry air line and move dryer away from wall. Where necessary, unbolt from floor.

(3) Remove the side panel on the same side of the dryer as the tower to be replaced.

(4) Tag and disconnect the tower heater leads at the tower.

(5) Disconnect the tubing connections at the tower.

(6) Remove the four bolts holding the tower mounting brackets to the frame of the dryer cabinet and remove the tower.

(7) Install the new tower by following the reverse order of removal, Steps (5) through (2).

(8) Resume dryer operation as covered in paragraph 2.03.

RELAYS

3.15 The K1 humidity alarm and K2 pressure alarm relays are plug-in type relays. To replace a relay, pull the defective relay from its socket and insert the replacement relay, making certain to match the relay pins and the pin sockets.

ALARM LAMPS

3.16 Replacement humidity and pressure alarm lamps may be obtained locally. Replace with General Electric Company NE51 or equivalent. To replace a lamp, unscrew the lampholder, remove and replace the defective lamp, and return the lampholder to the panel.

FILTER

3.17 To replace the filter in L1 dryers equipped with ▶the KS-15707 L3 blower,◀ proceed as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Remove the wingnut at the top of the cannister.

(4) Tilt the filter forward and partially raise it from the hold-down rod.

(5) Release the hold-down rod from the blower air inlet.

(6) Remove the filter and hold-down rod.

(7) Place the hold-down rod through the center of the replacement filter and follow the reverse order of removal.

(8) Resume dryer operation as covered in paragraph 2.03.

3.18 To replace the filter in L1 or L2 dryers equipped with either the AO-96076 Rotron spiral blower or the KS-21784 L2 blowers, proceed as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Pull the blower inlet hose from the filter.

(4) Remove the strap securing the filter to the blower mounting bracket and remove filter from dryer cabinet.

(5) Install the replacement filter in reverse order of removal.

FUSE (3-AMPERE)

3.19 Replacement fuses may be obtained locally. Replace with Bussman AGC 3-ampere or equivalent. To replace the fuse, unscrew the fuseholder, remove and replace the blown fuse, and return the fuseholder to the panel.

SOLENOID VALVE MAINTENANCE KIT

3.20 The solenoid valve maintenance kit contains a replacement diaphragm and attached plunger. The kit is installed as follows:

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Remove the four mounting bolts securing the solenoid to the valve body and separate the solenoid from the valve body.

(4) Withdraw the diaphragm and plunger from the valve body. Take care not to lose the spring at the top of the plunger.

(5) Remove the spring from the old plunger and install it on the replacement plunger.

(6) Install the replacement diaphragm and plunger in reverse order of removal.

(7) Resume dryer operation as covered in paragraph 2.03.

TIMER ASSEMBLY

3.21 The timer assembly is removed and replaced as follows:

Note: KS-20183 L1 air dryers bearing W.E. Co. serial numbers 1 to 60 have timer assemblies containing four microswitches, only three of which are connected. The L1 dryers bearing W.E. Co. serial numbers 61 and above and all L2 dryers have timer assemblies containing three microswitches, all of which are connected.

(1) Shut down the dryer as covered in paragraph 2.01.

(2) Remove the front panel.

(3) Note the position of the cams on the timer assembly.

(4) Tag and disconnect the external leads at the timer.

(5) Remove the four mounting screws securing the timer assembly to the electrical panel.

(6) Remove the timer assembly and install the new timer in reverse order of removal.

(7) Manually rotate the timer thumbwheel until the cams are in the same position as noted in Step (3).

(8) Resume dryer operation as covered in paragraph 2.03.

(9) Check the operation of the timer as covered in Section 161-309-701.

FINAL CHECK

3.22 After completing work on the dryer, check that any tubing and wiring disconnected have been reconnected and that any panels removed have been remounted.

3.23 Make certain that the part or parts replaced meet the requirements specified in Section 161-309-701. Other parts where adjustment may have been disturbed shall be checked to the applicable requirements.

4. REPLACEMENT PARTS

4.01 Parts that can be replaced in the field are shown in the illustrations and/or identified in the text by part name and number. No attempt should be made to replace parts not designated in this section.

4.02 When ordering replacement parts, give the part name, part number, manufacturer's name (when identified), and dryer identification.

4.03 The following list of replacement parts gives ordering information, including part number, and the supplier's name and location.

D19611-501 Refrigerator and Evaporator Assembly, for KS-20183 L1 and L2 Air Dryers (Dielectric Communications, Raymond, Maine)

A21278-1 Humidistat for KS-20183 L1 (Serial No. 111 and above) and L2 Air Dryers (Dielectric Communications)

B26504-501 Humidistat Assembly for KS-20183 L1 Air Dryers (Serial No. 111 and below) (Dielectric Communications)

A16573-10 Humidity Sensing Element (white band 2 percent) for KS-20183 L1 and L2 Air Dryers (Dielectric Communications)

A18120-5 Sensing Element Cable for KS-20183 L1 and L2 Air Dryers (Dielectric Communications)

A19465-1 Timer Assembly for KS-20183 L1 and L2 Air Dryers (Dielectric Communications)

B-18164-2 Relay for KS-20183 L1 and L2 Air Dryers (Dielectric Communications)

A4041-2 Alarm Lamp for KS-20183 L1 and L2 Air Dryers (Dielectric Communications) or obtain locally as General Electric NE51 Lamp or equivalent

A5385-9 Fuse (3-ampere) for KS-20183 L1 and L2 Air Dryers (Dielectric Communications) or obtain locally as Bussman AGC 3-Ampere Fuse or equivalent

A18040-1 Solenoid Valve Maintenance Kit for KS-20183 L1 and L2 Air Dryers (Dieletric Communications)

C-6487 Intake Air Filter for KS-20183 L1 and L2 Air Dryers (Lectrodryer Division—Ajax Magnethermic Corporation)

▶KS-21784 L2 Blower◀

KS-5793 L3 Pressure Switch for KS-20183 L1 and L2 Air Dryers (Western Electric)

L101 Low Ambient Temperature Modification Kit for KS-20183 L1 and L2 Air Dryers (Western Electric)

L102 By-Pass Block Modification Kit for KS-20183 L2 Air Dryer (Western Electric)

L103 Freeze-Up Protection Modification Kit for KS-20183 L1 and L2 Air Dryers (Western Electric)

A22004 Blower Motor Capacitor (25 μf) for KS-20183 L1 and L2 Air Dryers (Dielectric Communications)

D-26118 Installation Kit (used in conjunction with AO-96076 Rotron Spiral Blower for L1 Air Dryer only) (Dielectric Communications). ▶This kit is also required for the KS-21784 blower.◀

D26900-501 Desiccant Tower used in SI-437 Retrofit Kit (Dielectric Communications)

A14465-9 Desiccant—8-pound quantity required for replacement charge in each SI-437 Retrofit Kit Tower (Dielectric Communications)

A24815-14 Solenoid Valve Maintenance Kit for SI-437 Retrofit Kit Solenoid Valves (Dielectric Communications)

A19435-6 Replacement Coil for SI-437 Retrofit Kit Solenoid Valves (Dielectric Communications)