

## NORTH ELECTRIC MULTICONTACT RELAYS CLEANING AND TREATING CONTACTS

### 1. GENERAL

1.01 This section covers a method of cleaning and treating contacts of North Electric multicontact relays. The procedures given in this section are intended for multicontact relays used in North Electric CX-type dial equipment where excessive transmission noise is experienced.

1.02 This section is reissued to revise the method of treating contacts to specify KS-16885 L7 compound in place of KS-13713 contact protectant and to revise the information covering preparation of KS-14586 hot-air gun connections. Detailed reasons for reissue will be found at the end of the section.

1.03 A column of KS-16885 L7 compound (contact protectant) for the purpose of this section is a cylindrical-shaped quantity of compound of the length specified in the procedure, discharged from the applicator nozzle provided with the tube of compound having the tip cut back 1/8 inch and drilled, see 3.05.

1.04 **Recommended Interval Between Treating of Contacts:** Ordinarily, treating of contacts at intervals of approximately 5 years should be sufficient to insure satisfactory operation of the relays. These intervals may be extended if periodic inspections indicate that satisfactory performance will be obtained over longer periods.

1.05 To remove the contact protectant from the relay contacts, the pressure of the compressed air furnished by the compressor to the KS-14586 hot-air gun and control unit should be minimum 45, maximum 50 pounds. The heater control switch mounted in the heater control unit is preset to operate on 40 pounds minimum air pressure.

*Caution: The condenser provided on the compressor should be drained at least hourly to prevent moisture passing to the heater control unit. Failure to observe this caution may result in damage to the unit.*

*Caution: No attempt should be made to readjust the heater control switch in the field.*

1.06 **Make-Busy Information:** Before cleaning or treating contacts, make busy in the approved manner the circuit associated with the relay whose contacts are to be worked on.

### 2. LIST OF TOOLS AND MATERIALS

CODE OR SPEC NO.	DESCRIPTION
<b>TOOLS</b>	
KS-14514L1	Compressor Set (or equivalent)
KS-14586	Hot-Air Gun
KS-14586L22 (as reqd)	Coupler (Snap-tite coupler)
R-1542 (2 reqd)	6-Inch Single-End Adjustable Wrench
—	3-Inch C Screwdriver
—	P-Long-Nose Pliers
—	Paddle (or other suitable device for stirring and scooping up contact protectant)
—	Safety Goggles
—	60 Gauge Twist Drill
<b>MATERIALS</b>	
KS-2423	Cloth
KS-14662L1	Blotter
KS-16885L7	Compound (contact protectant)

### 3. PREPARATION OF TOOLS AND MATERIALS

#### For Removing Contact Protectant Compound

3.01 **KS-14586 Hot-Air-Gun Connections:** Initially, the hot-air gun control unit was equipped with the male fitting of a Snap-tite coupler. Later, the control unit was equipped

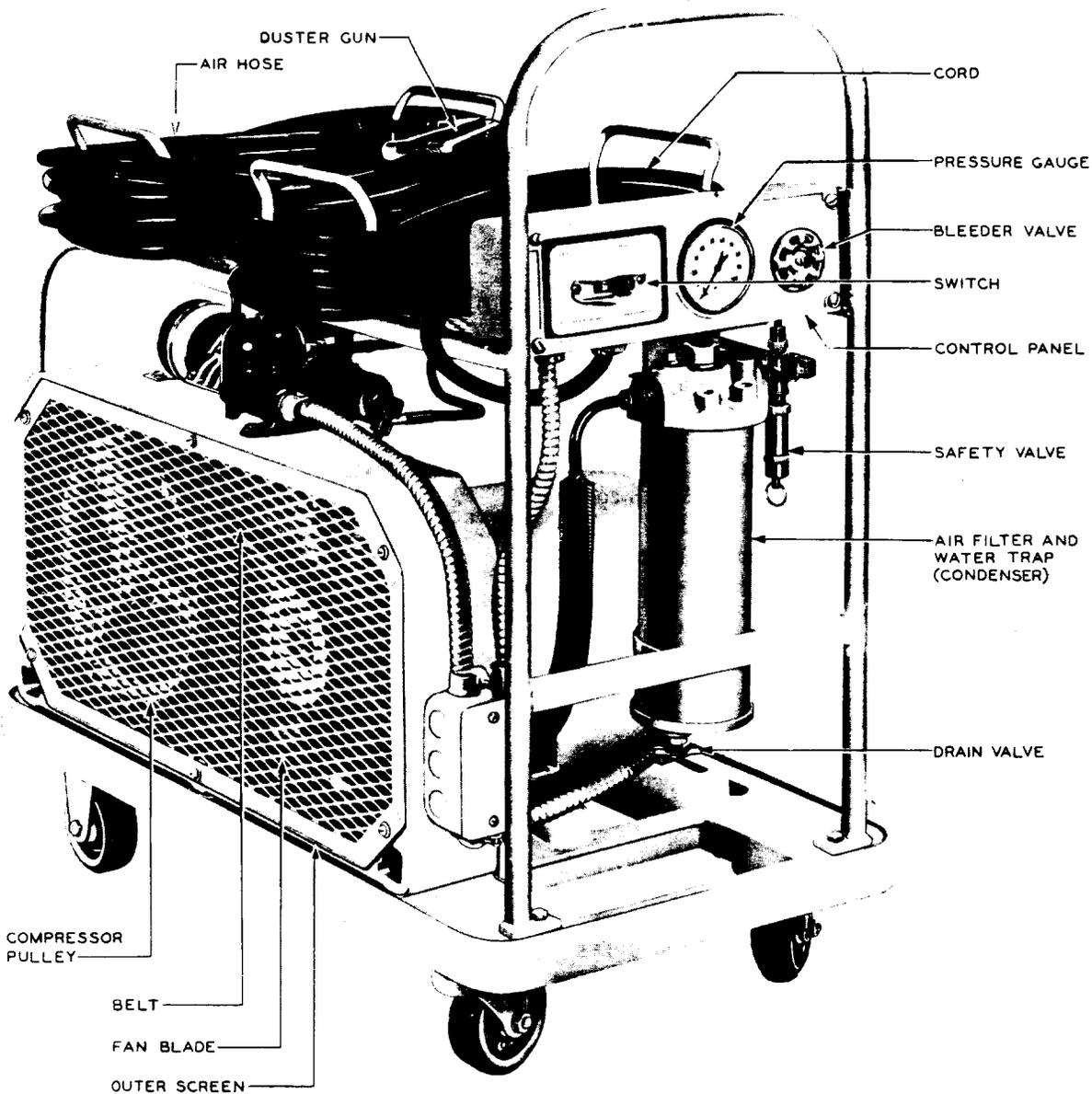


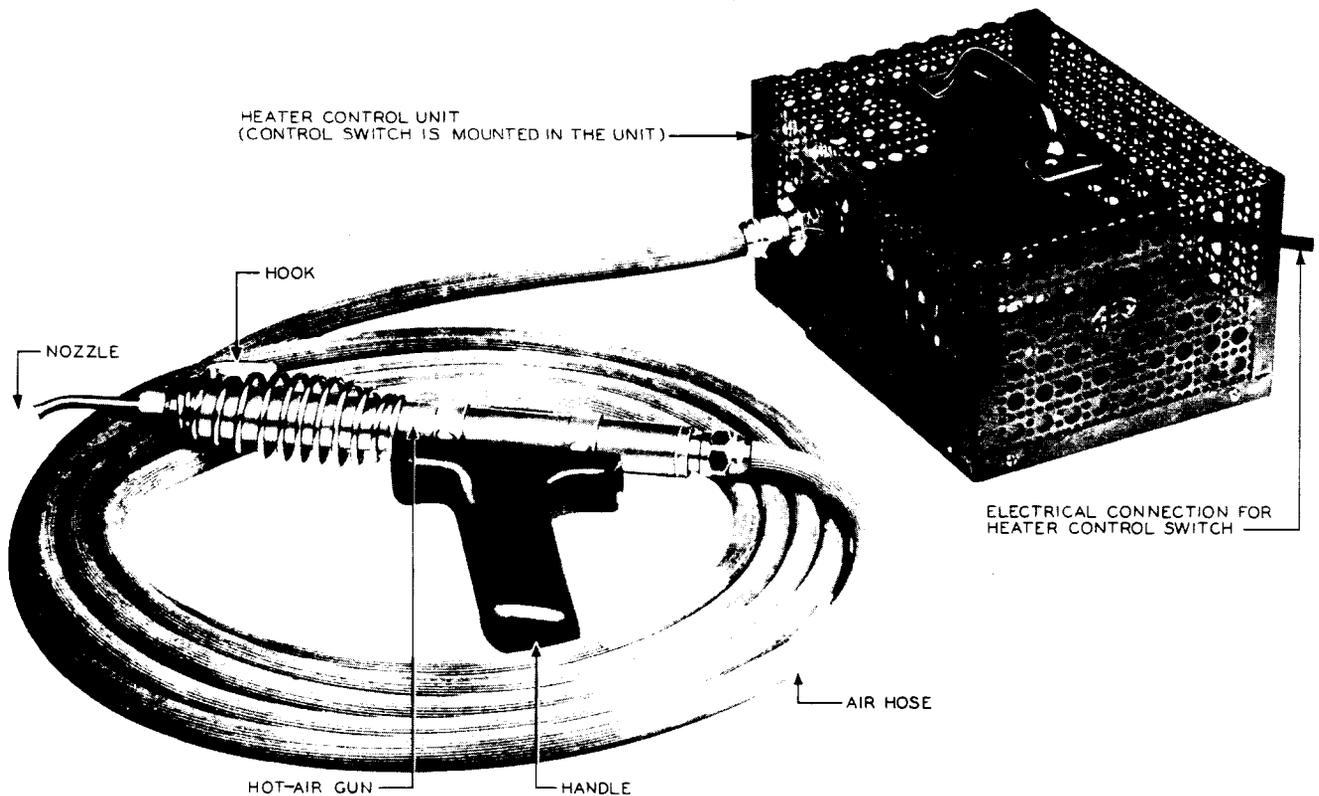
Fig. 1 - KS-14514 L1 Compressor Set

with the KS-14586 L22 coupler which consists of a similar male fitting plus a female fitting having a movable sleeve.

- (a) If the hot-air-gun control unit is not equipped with a coupler having a movable sleeve, install a KS-14586 L22 coupler and connect the compressor set air hose to the hot-air-gun control unit as covered in (b) through (d). If the control unit is equipped with a coupler having a movable sleeve, equip

the unit with a KS-14586 L23 male fitting and proceed as covered in (b) through (d).

- (b) Hold the nipple connecting the air hose to the duster gun, using the R-1542 wrench. Remove the gun from the nipple by rotating the gun.
- (c) Break the connection between the two parts of the KS-14586 L22 coupler by pulling the movable sleeve of the coupler back



**Fig. 2 – KS-14586 Hot-air Gun (Consisting of Hot-air Gun, Heater Control Unit, and Air Hose)**

as far as possible. Separate the parts and release the sleeve. Mount the part of the coupler having the movable sleeve securely in place on the nipple of the air hose, using two R-1542 wrenches. Then mount the other (male fitting) part of the coupler on the duster gun for use as necessary. To do this, insert and securely tighten the externally threaded portion of this part in the duster gun, using the R-1542 wrench.

(d) Pull the movable sleeve of the fitting connected to the air hose back toward the air hose. Insert the nipple of the male fitting on the control unit as far as possible in the movable sleeve on the air hose. Release the movable sleeve to complete the connection. Pull on the connection to make sure it is locked in place.

**3.02 Positioning Nozzle of KS-14586 Hot-Air Gun:** Using the R-1542 wrench, position the nozzle of the KS-14586 hot-air gun so that the nozzle points upward. Do not position the

nozzle while the compressor is operating or while the hot-air gun is hot to the touch.

**3.03 KS-14514 L1 Compressor and KS-14586 Hot-Air Gun Connections:** Connect the compressor and hot-air gun control unit to a source of 110 volts ac.

**3.04 KS-14662 L1 Blotter:** Cut a KS-14662 L1 blotter so that it will fit snugly between the uprights of the frame on which the relays are mounted. Place the blotter on the top of the relays to be cleaned so that it is above the contacts and projects about 1/2 inch beyond the ends of the springs. See Fig. 3.

**For Applying KS-16885 L7 Contact Protectant Compound**

**3.05 Applicator Nozzle of KS-16885 L7 Contact Protectant Compound:** The tube of KS-16885 L7 compound is closed by a removable cap and provided with an applicator nozzle. Before the first use of the nozzle, cut about 1/8 inch

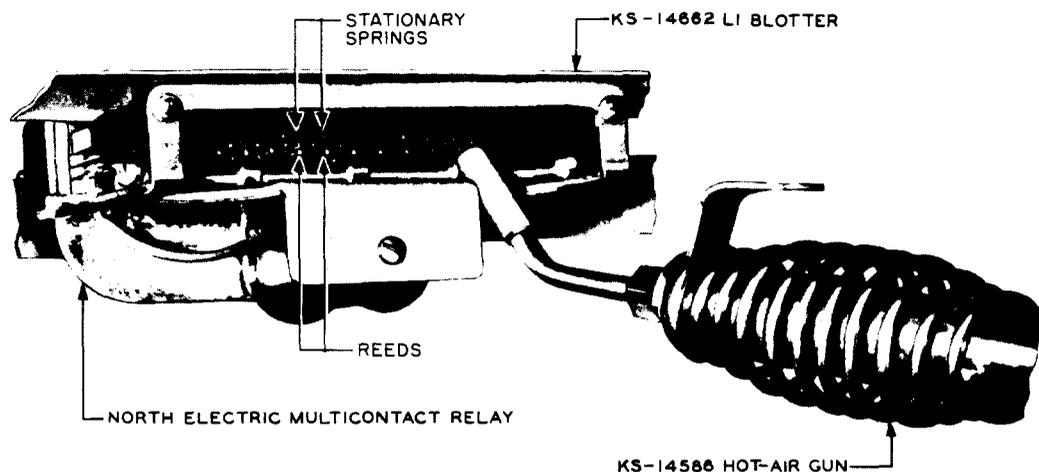


Fig. 3 - Removing Contact Protectant

from the tip of the nozzle with a razor blade or sharp knife. Then using a 60 gauge twist drill, drill a hole in the center of the nozzle tip to connect with the hollow passage through the nozzle. Blow through the nozzle to remove any plastic chips resulting from the blowing operation.

#### 4. PROCEDURES FOR CLEANING AND TREATING

##### General

4.01 If the treatment is an initial application of the contact protectant compound, proceed as covered in 4.05. If the contacts have been treated with contact protectant, remove the old contact protectant as covered in 4.02 through 4.04, and then apply the compound as covered in 4.05.

##### Removing Contact Protectant

4.02 Start the KS-14514 L1 compressor set and allow the air discharged from the nozzle of the KS-14586 hot-air gun to become hot before using the gun. This may be checked by lightly touching the hand on the heater tube of the gun through which the air travels. When the tube is fairly hot to the touch, the air is heated satisfactorily.

**Caution:** Never direct the air stream at the hand or other part of the body as this may result in personal injury. Always use safety goggles to protect the eyes during cleaning operations.

4.03 Clean the relay contact springs by directing the hot air from the gun upward against the springs, as shown in Fig. 3. Keep the nozzle of the gun approximately 1/16 inch below the springs. Move the nozzle slowly in and out below the contacting portion of the springs to melt and blow the old contact protectant and other debris from the springs onto the blotter.

**Caution:** It is important to move the gun continually while cleaning the relay contact springs to avoid excessive heating of parts of the relay. Do not direct the hot-air stream toward the insulators or relay coils at any time.

4.04 After cleaning all relay contact springs, remove and discard the blotter. Disconnect the compressor and hot-air gun. Do not store the hot-air gun until it has thoroughly cooled.

**Note:** Cooling of the hot-air gun will be expedited by disconnecting the power supply to the heater control unit and allowing the air from the compressor to pass through the gun.

##### Applying KS-16885 L7 Contact Protectant Compound

4.05 Remove the cap from the tube of KS-16885 L7 contact protectant compound and mount the applicator nozzle in its place, see 3.05. Apply about a 3/8 inch column of KS-16885 L7 compound, see 1.03, between the contacting areas of each pair of stationary springs.

4.06 After treating all relay contacts, replace the cap on the tube of KS-16885 L7 contact protectant compound. Clean the applicator nozzle and store for future use. Restore the circuits to service.

**REASONS FOR REISSUE**

1. To omit information covering definition of one discharge of KS-13713 contact protectant (1.03 of previous issue).
2. To add description of a column of KS-16885 L7 compound (1.03).

3. To revise List of Tools and Materials (Part 2).
4. To revise information covering hot-air gun connections (3.01).
5. To add information covering preparation of applicator nozzle (3.05).
6. To omit information covering KS-13713 contact protectant (3.07 through 3.12, 4.05, 4.06 and Fig. 5 of previous issue).
7. To add procedures for applying KS-16885 L7 compound (4.05 and 4.06).
8. To omit Fig. 3 of previous issue.