

CONTACTOR - REVERSING TYPES KS-5626, KS-5757, KS-15674

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1. GENERAL

1.1 Scope

1.11 The section covers the requirements and adjusting procedures to be followed when installing or testing KS-5626 contactors.

1.12 For additional information on the application of the requirements listed herein, reference shall be made to the section in the Relay Handbook covering Requirements and Definitions.

1.2 Description

1.21 KS-5626, KS-5757, KS-15674 contactors are of the reversing type and consist of two individual multiple contactor units mounted on a common base and provided with a mechanical interlock, which prevents the closing of both contactor units at the same time. Each individual contactor is, in effect, a magnetically operated, normally open, single throw switch, and consists essentially of a magnet coil and a plunger mechanism supported on a yoke structure. Contact finger assemblies bridge a corresponding number of contact studs when the coil is energized. The contactor is arranged for vertical panel mounting and front of board wiring. For internal wiring diagram of KS-5626 see Figure 1. The coil and auxiliary contacts are arranged for dc control circuits and the main contacts are rated as follows:

TYPE	AMPERES	VOLTS DC	VOLTS AC
KS-5626	20	160	250
KS-5757	25-100	-	220
KS-15674	25	-	220

1.3 Precautions

1.31 If adjustments are to be verified on a contactor in an operating circuit, precautions should be taken to see that service is maintained.

1.32 Before starting work on any contactor which is in service, consideration should be given to the section in Handbook 0 which covers the following:

1.321 Cooperation with the telephone company.

1.322 Precautions and safeguards to prevent service interruptions.

1.323 General protection of working equipment.

1.33 Do not touch the contacts with the hands nor do any work on them with tools while connected to the 230 volt ac or the 160 volt dc circuit.

1.34 Do not touch, at the same time, live terminals or parts which are at different potentials or otherwise short circuit them.

1.4 Definitions

1.41 Contacts: Whether contacts are normally open (NO) or normally closed (NC) depends on the position of these contacts when no operating current is flowing in the coil, and not on the position the contact may normally be in for a particular application.

1.42 Operate: A contactor is said to operate when the armature has moved sufficiently for normally closed contacts to open and normally open contacts to close with reliable contact.

1.43 Release: A contactor is said to release when the armature has moved sufficiently for normally open contacts to open and normally closed contacts to close with reliable contact.

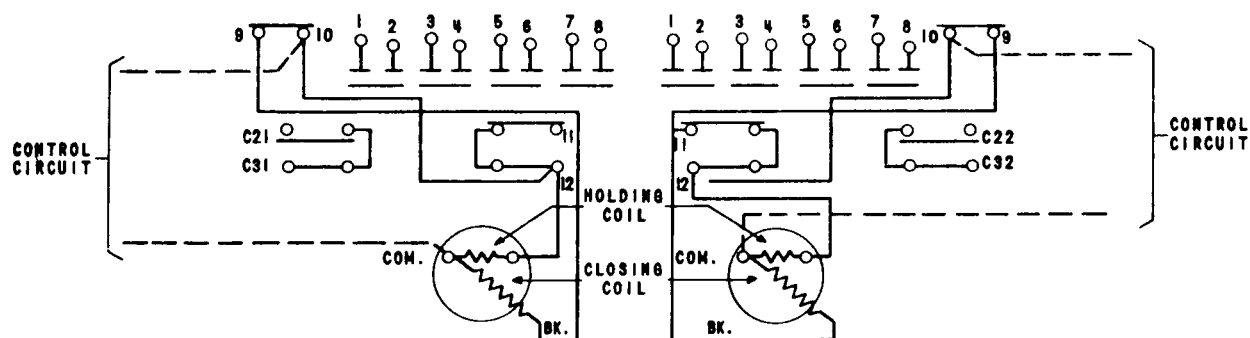


FIG. 1 SCHEMATIC DIAGRAM OF KS-5626 CONTACTOR CONNECTIONS

2. INSTALLING EQUIPMENT

2.1 Tools

Code	Description
R-2120	Pliers, Long Nose
R-2443	Screwdriver, Cabinet, 3"

2.2 Gauges

131A	Gauge, Feeler, .004" to .074"
70J	Gauge, Gram Tension, 0-150
R-1032	Thermometer, Centigrade, 0-200°

2.3 Test Equipment

ITE-4137	Continuity Test Set
ITE-4034	
or	Volt-Ohmmeter
ITE-4442	

2.4 Supplies

KS-14208	Brush
KS-14666	Cloth, Cleaning
Obtain Locally	Pad, Felt
Obtain Locally	Abrasive Paper, 8/0
R-3250	Trichloroethylene

3. MOUNTING

3.1 The contactor shall be fastened securely to the panel and the screws holding the components together shall be tight. Check by feel.

3.2 Tighten all loose screws, if any, with the screwdriver.

4. CONTACT SURFACES

4.1 Contact surfaces shall be clean and free from build-ups. Check by eye.

4.2 Contact surfaces shall not be lubricated.

4.3 For KS-5626 remove the arc chambers with a screwdriver for access to main contacts. Clean the interior of the chamber by rubbing with a piece of dry cloth (KS-14666) wrapped around the screwdriver, making sure to remove any deposits as a result of contact operation.

4.31 To clean contacts, pour approximately 1 ounce of clean trichloroethylene into a small container, dip a clean KS-14208 brush into it and brush the surface of both contacts. Allow the surfaces to dry and then brush with a clean dry KS-14208 brush. If this does not clean contacts satisfactorily insert 8/0 abrasive paper between the contacts and close them. Holding the contacts closed draw the adhesive paper back and forth.

NOTE: There should be as little smoothing of contacts as is consistent with satisfactory operation.

4.4 Clean and smooth the auxiliary contacts as required in the same manner as covered in Paragraph 4.31 for main contacts. These contacts are mounted below the arc chambers associated with the main contacts and are accessible when the chambers are removed.

4.5 For the KS-5626 contactor, remove the two screws from below the KB unit which holds it to the mounting detail, and remove the unit from its position. The contacts are then accessible for inspection and cleaning. Clean and smooth rough contacts, and check that moving parts are clean and free from binding. Use a brush moistened with trichloroethylene to remove any dirt.

5. CONTACT PRESSURE

5.1 For the main contacts, the contact pressure shall be considered adequate if the movable contact support moves, minimum 1/16", after the contacts make. Gauge by eye.

CAUTION: Remove only one of the arc chambers at a time, leaving the other one in place, when checking the main or auxiliary contacts for pressure. This will preserve the contact alignment.

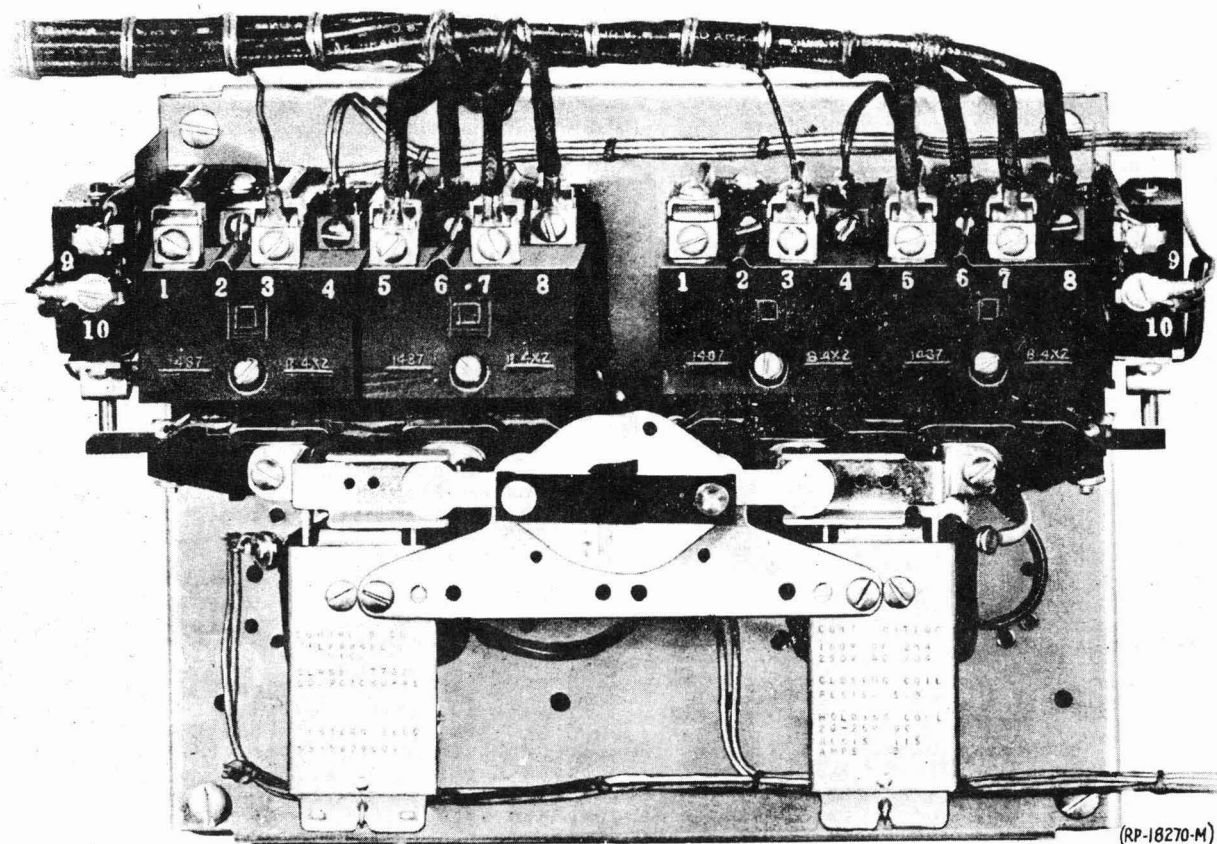


FIG. 2 FRONT VIEW OF KS-5626 CONTACTOR

5.2 Check the main contacts as follows:

5.21 Operate the contactor slowly by hand. Observe the position of the movable contact support when the contact bridges first make contact with the rear contacts.

5.22 Observe the distance covered by the movable contact support from the first contact position noted in 5.21 to the end of its travel.

5.3 The auxiliary contacts shall be adjusted according to the following table.

TYPE	PRESSURE	FOLLOW	GAUGE
KS-5626		1/16	131A
KS-5757		1/16	131A
KS-15674	100 gms		70J
KS-5626 K.B. UNIT	100 gms		70J

5.4 Check the auxiliary contacts as follows:

5.41 Close the contactor slowly by hand and note the follow of the movable contact support after the normally open contacts close or after the normally closed

contacts open. Check for appreciable follow. Use the ITE-4137 buzzer set to indicate the opening or closing of the contacts.

5.5 To measure the contact pressure of the KB unit contacts, disconnect the 9 and 10 contacts from the coil and connect the buzzer to indicate contact opening. Apply the reed of the 70J gauge under the plunger with the KB unit in place (see Figure 3) and measure for a minimum pressure of 100 grams. It may be necessary to replace this unit if the requirement is not met.

6. CONTACT SEQUENCE

6.1 The sequence of operation of the contacts of KS-5626 shall be as follows. Check with ITE-4137 buzzer.

6.11 Operating:

(1) Close main contacts.

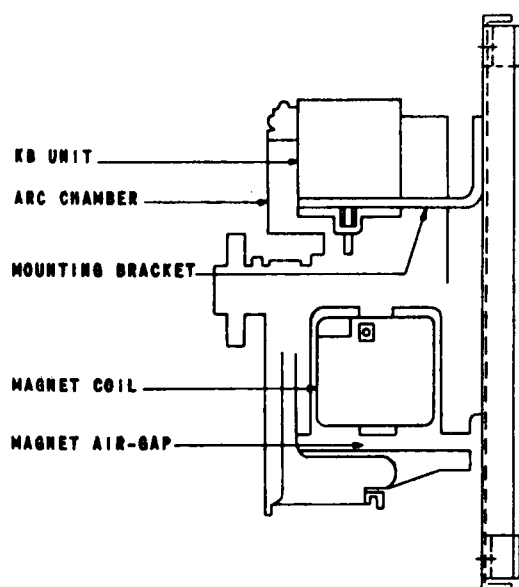


FIG. 3 END VIEW OF KS-5626 CONTACTOR

(2) Open NC contacts 9-10 in the KB unit.

(3) Close magnetic air-gap.

NOTE: NC auxiliary contacts 11-12, which are wired in parallel with NC contacts 9-10 in the KB unit, may open with or before contacts 9 and 10 but shall not open after contacts 9 and 10. Steps 2 and 3 should occur as close together as feasible to assure positive operation of this contactor and opening of the closing coil circuit.

6.12 Releasing:

(1) Open Magnetic air-gap.

(2) Close NC contacts 9-10 in the KB unit.

(3) Open main contacts.

NOTE: NC auxiliary contacts 11-12 may close with or after contacts 9 and 10 but shall not close before contacts 9 and 10.

6.13 Where NO contacts C-21C-31 or C22-C32 are connected, they shall open simultaneously with, or after, their associated main contacts.

NOTE: This sequence is established in the manufacture of the contactor and will not require checking if the circuit operates normally.

6.14 Check the operating contact sequence as follows:

6.141 Place all arc chambers in position.

6.142 Remove the external leads from the contacts to be checked and connect buzzers to indicate the operation of the contacts.

6.15 Close the contactor slowly by hand, applying an upward pressure to the underside of the armature assembly, and observe the contact operation as indicated by the buzzers.

6.16 To check opening of contacts 9-10 in the KB unit disconnect the lead from terminal 9 (or 10) and connect a buzzer across 9 and 10. Operate contactor and note when opening occurs with reference to operation of contactor plunger. If unsatisfactory, adjust by bending the mounting bracket which holds the KB unit. Use pliers (R-2120). Move the unit upward to decrease the gap and downward to increase it.

6.17 Check that leads have been disconnected so that contacts 11-12 are cleared from contacts 9-10 and verify that there is reliable contact between terminals 11 and 12 with the contactor in the unoperated position.

6.18 Check the releasing sequence in a manner similar to that covered in Paragraph 6.14 opening the contactor slowly by hand.

6.19 To check the releasing sequence of NO contacts C21-C31 or C-22-C32, connect one buzzer to their terminals and another buzzer to the terminals of the associated main contacts. Where the main contacts are connected with two pairs in series, connect the buzzer so that both pairs are included. For example, use terminals 6 and 7 when checking auxiliary contacts C22-C32. If necessary, the fixed auxiliary contacts can be adjusted with the pliers (R-2120) to correct the sequence.

6.2 The contact sequence of KS-5757 and KS-15674 shall be as follows:

6.21 Unless otherwise specified all NO Main contacts shall make and break simultaneously. All NC contacts shall make and break simultaneously.

6.22 Auxiliary NO contacts, shall make just before the main contacts make.

7. ELECTRICAL

7.1 The contactor shall meet the electrical requirements specified on the Circuit Requirements Table.

7.2 Where electrical requirements are not specified on the Circuit Requirements Table, the contactor shall operate reliably at some point within the following limits of coil voltage shown below. Use voltmeter.

Type	List	Coil Voltage
KS-5757	1, 2, 3	42-56
	4, 5	22-28
	6	20-28
	7	120-155
KS-5626	1	20-26
	2	125-160
KS-15674	1	42-56

7.3 Operate the contactor electrically.

If it fails to operate, measure the voltage across both the holding and closing coils with the ITE-4034 or ITE-4442 volt-ohmmeter. For KS-5626, check contacts 9-10 and 11-12 for contact and see that neither coil is open-circuited.

7.4 If the contactors starts to operate

but fail to seal up and chatter and the voltage at the coil terminals meets the minimum requirements; check the requirements of Paragraph 6.

8. TEMPERATURE

8.1 If the temperature of the coil is thought to be excessive, measure by thermometer. The temperature shall not exceed

Maximum - 95°C (203°F)

NOTE: The coil and other parts may normally be too hot to touch.

8.2 Measure the temperature of the coil by holding the bulb of the thermometer (R-1032) at the hottest spot, covering that part of the bulb which is not in contact with the coil with a pad of felt or equivalent. Observe the highest temperature indicated. Report any temperature in excess of 95°C.

➔ Arrowed lines indicate new or changed information.

Vertical line at side of paragraph indicates requirements.

R. E. RAHMES

Engineer of Installation

Reason for Reissue:

- (1) To add requirements for contactors KS-5757 and KS-15674.

Replaces Section 118 dated 10-6-55.