

CONTACTORS — KS-5626

SQUARE D COMPANY

REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers the KS-5626 contactors which are manufactured by the Square D Company. They consist of two 4-pole 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.

1.02 It is reissued to reword 2.04 and 3.05 and cancel paragraphs on magnetic air gap (old 2.05 and 3.05). Changes are marked with arrows.

1.03 The operating coils and auxiliary contacts are arranged for d-c control circuits and the main contacts are rated 20 amperes at 160 volts dc or 250 volts ac.

1.04 Reference shall be made to Section 020-010-711 covering General Requirements and Definitions for additional information necessary for the proper application of the requirements listed herein.

1.05 Requirements and associated procedures marked with a number sign (#) need not be checked by the installer unless it is thought that the requirement is not being met or performance indicates that such a check is advisable.

1.06 Requirements marked with an asterisk (*) need not be checked during maintenance unless the apparatus or part is made accessible for other reasons, or performance indicates that such a check is advisable.

1.07 For the purpose of this section, 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.

1.08 The contacts of the KS-5626 contactor are numbered as follows:

Main contacts (NO)	1 to 8 and 1 to 8
Auxiliary contacts (NO)	C21-C31 and C22-C32
Auxiliary contacts (NC)	11-12 and 11-12
KB unit contacts (NC)	9-10 and 9-10

See Fig. 1.

1.09 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.

1.10 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.

1.11 When work is being done on a contactor in an operating circuit, see that service is maintained. Do not touch, at the same time, live terminals or parts which are at different potentials or otherwise short circuit them.

2. REQUIREMENTS

*#2.01 Mounting: The contactor shall be fastened securely to the panel and the screws holding the components together shall be tight. Check by feel.

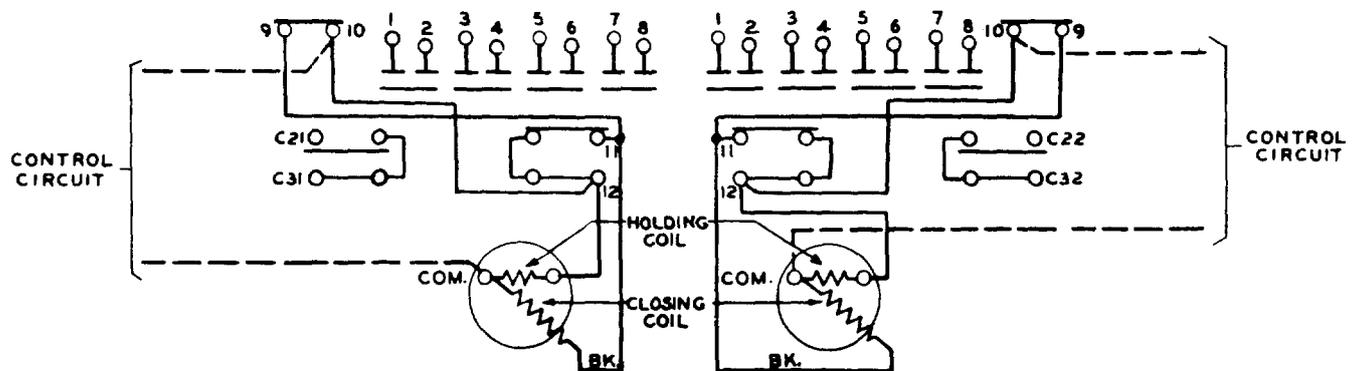


Fig. 1 - Schematic Diagram of Connections

2.02 Contact Surfaces

- (a) Contact surfaces shall be clean and free from build-ups. Check by eye.
- (b) Contact surfaces shall not be lubricated.

2.03 Contact Pressure

- (a) For the main contacts the contact pressure shall be considered adequate if the movable contact support moves, minimum 1/16", after the main contacts make. Gauge by eye.
- (b) The auxiliary contacts shall have appreciable follow. Gauge by eye and use buzzer or equivalent.
- (c) The contacts in the KB unit shall have contact pressure, minimum 100 grams. Use 70J gauge and buzzer or equivalent.

Caution: To avoid shock, do not touch the contacts with the hands nor do any work on them with tools, while connected to the 230-volt a-c or the 160-volt d-c circuits.

2.04 Contact Sequence

- (a) The sequence of operation of the contacts shall be as follows. Check by buzzer or equivalent.

Operating

Close main contacts
Open NC contacts 9-10 in the KB unit
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 the contactor and opening of closing coil circuit.

Releasing

Open magnetic air-gap
Close NC contacts 9-10 in the KB unit
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.

##(b) Where NO contacts C21-C31 or C22-C32 are connected, they shall open simultaneously with, or after, their associated main contacts. This sequence is established in the manufacture of the contactor and will not require checking if the circuit operates normally.

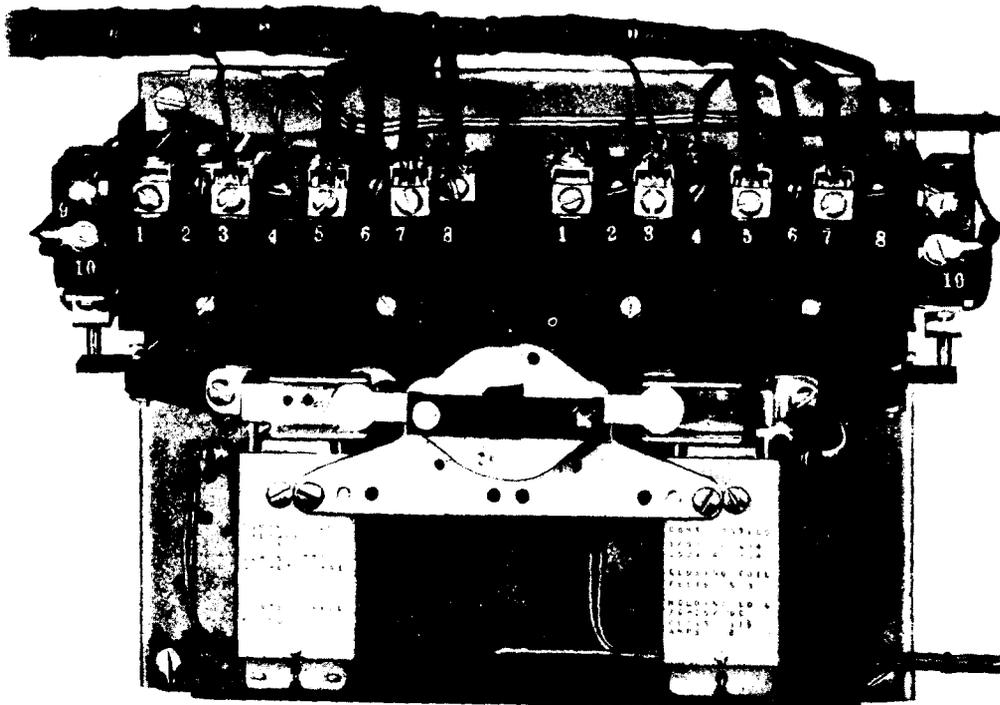


Fig. 2 - Front View

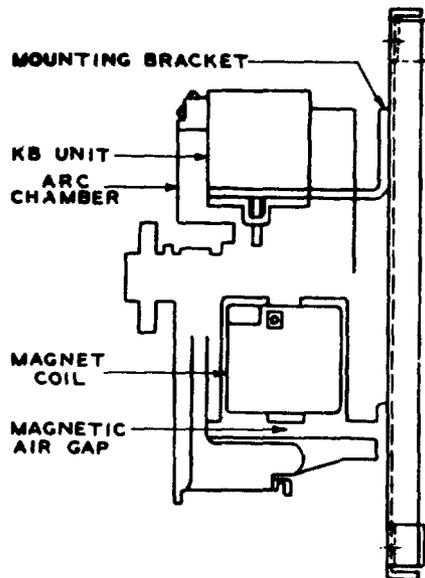


Fig. 3 - End View

2.05 Electrical Requirements

(a) The contactor shall meet the electrical requirements specified on the Circuit Requirements Table.

(b) Where electrical requirements are not specified on the Circuit Requirements Table, the contactor shall operate reliably within the following limits of coil voltage.

- List 1, minimum 20 volts -
maximum 26 volts
List 2, minimum 125 volts -
maximum 160 volts

Use voltmeter.

*#2.06 Temperature: If the temperature of the coil is thought to be excessive, measure by thermometer. The temperature shall not exceed

Maximum - 95C (203F)

Note: Temperature need not be checked periodically. Under normal conditions, coils and other parts may be too hot to touch.

3. ADJUSTING PROCEDURES

3.001 List of Tools, Gauges, and Materials (Equivalents may be substituted.)

Tools

- Bellows, hand, 10"
Clip, No. 365 tool (one required per cord for use with flashlight)
Cord No. 1W13A (two required per flashlight)

- Pliers, P-long nose 6-1/2"
Screwdriver, 3" cabinet
Test set, buzzer, or flashlight equipped with KS-7742 bottom cap (two required)

Gauges

- Gauge, 70J gram, 0-150
Gauge, thickness, nest, No. 131A
Thermometer, R1032, Detail 1
Voltmeter, d-c, Weston Model 280, ranges 150-60-3 or ranges 180-60-3

Materials

- Cloth, cleaning, KS-14666
Pad, felt (for temperature readings)
Sandpaper, 4/0 or abrasive cloth, 150 grade
Spirits, petroleum

*#3.01 Mounting (Rq. 2.01)

- (1) If necessary, tighten loose screws with the screwdriver.

*#3.02 Contact Surfaces (Rq. 2.02)

- (1) To obtain access to the main contacts, remove the arc chambers with the screwdriver. While removed, the interior of each chamber should be cleaned by rubbing with a piece of dry cloth wrapped around the blade of the screwdriver, to remove any deposits which appear as a result of operation of the contacts. If dirty, the contacts may be cleaned by rubbing with a cleaning cloth moistened with petroleum spirits, followed by a clean cloth. If rough they may be smoothed by inserting sandpaper between the contacts, drawing it back and forth while they are being held closed, until the build-ups are removed entirely or reduced considerably. Blow away the dust with the bellows.

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

- (2) The auxiliary contacts are mounted below the arc chambers associated with the main contacts and are accessible when the chambers are removed. They should be cleaned and smoothed, as required, in the same manner as the main contacts.

- (3) The contacts in the KB units are accessible for inspection and cleaning only after the unit has been removed from its mounting detail. The unit can be removed by removing from below, the two screws which hold it to its mounting detail. In addition to cleaning and smoothing the contacts, see that the moving parts are clean and free from binding, using petroleum spirits on a cloth to remove dirt.

3.03 Contact Pressure (Rq. 2.03)

- (1) When checking the main or auxiliary contacts for pressure, remove only one of the arc chambers at a time leaving the other one in place to preserve the alignment of the contacts.
- (2) When checking the main contacts, close the contactor slowly by hand, observing the position of the movable contact support when the contact bridges first make contact with the stationary contacts. Observe the distance covered by the movable contact support, from this point to the end of its travel. If the requirement is not met, refer to the supervisor.
- (3) When checking the auxiliary contacts, close the contactor slowly by hand observing the follow of the movable contact support after the NO contacts close or after the NC contacts open. Use a buzzer or equivalent to indicate the closing or opening of the contacts. If the requirement is not met, refer to the supervisor.
- (4) To measure the contact pressure of the KB unit contacts, with the unit in place on the contactor, apply the reed of the 70J gauge under the steel plunger. Disconnect the contacts from the coil and connect a buzzer or equivalent to indicate the opening of the contacts. If the requirement is not met, it may be necessary to replace the unit. Refer to the supervisor.

3.04 Contact Sequence (Rq. 2.04)

- (1) In checking the contact sequence see that the arc chambers are in place. It will also be necessary to clear the contacts being checked from the external circuit by the removal of leads, and to connect buzzers or equivalent to indicate the operation of the contacts.

Operating Sequence

- (2) To check the operating sequence close the contactor slowly by hand, by applying an upward pressure to the underside of the armature assembly, and observe the operation of the contacts as indicated by the buzzers.
- (3) 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 this is unsatisfactory adjust by bending with the pliers the mounting bracket which holds the KB unit. Move the unit upward to decrease the gap and downward to increase it.

- (4) Contacts 11-12 should be cleared from contacts 9-10 by disconnecting leads, and checked for reliable contact with the contactor in the unoperated position.

Releasing Sequence

- (5) The checking of the releasing sequence may be done in a similar manner, allowing the contactor to open slowly, restraining it by hand.
- ##(6) To check the releasing sequence of NO contacts C21-C31 or C22-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 as to include both pairs, 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 to correct the sequence.

3.05 Electrical Requirements (Rq. 2.05)

- (1) If the contactor fails to operate, measure with the voltmeter, the voltage applied to the closing coil and to the holding coil. Check contacts 9-10 and 11-12 for contact and see that neither coil is open-circuited. Open-circuited coils should be replaced.
- (2) If the contactor starts to operate but fails to seal up, resulting in continuous chattering, and the voltage at the coil terminals is above the minimum requirement, check 2.04.

3.06 Temperature (Rq. 2.06)

- (1) If necessary, the temperature of the coil may be determined by holding the bulb of the thermometer at the hottest spot, covering that part of the bulb which is not in contact with the coil with a pad of felt or the equivalent. Observe the highest temperature indicated.

Bell Telephone Laboratories, Inc.