

CONTACTORS — KS-5642
WESTINGHOUSE ELECTRIC CORP.
REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers the KS-5642 contactors, manufactured by the Westinghouse Electric Corporation. They are used in connection with gas-filled rectifier tubes to open the circuit in the event of a flash-back, thereby relieving the tubes of the resultant excessive current, and are self-reclosing. They have single-pole main contacts, held closed by a spring and by the magnetic field of the shunt coil. There is also a series coil which, when sufficiently energized, causes the contactors to operate and open the main contacts. The main contacts are connected in series with the series coil. One set each of normally closed and normally open auxiliary contacts are furnished. These contactors are intended for use in d-c circuits of nominal 152 volts.

Caution: To avoid shock, do not touch the contacts with the hands nor perform any work on them with tools, while the contactor is connected to the office 152-volt battery.

1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.

1.03 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.

1.04 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.

1.05 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.

1.06 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 series coil and not on the position the contact may normally be in for a particular application. It should be noted that current in the shunt coil does not produce operation of the contactor.

1.07 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.

1.08 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.

1.09 When work is being done on a contactor in a working 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.

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 and Gap*

- (a) For the main contacts, the contact pressure, measured while the shunt coil is de-energized, shall be minimum 300 grams. Use 79H push-pull tension gauge.
- (b) For the NC auxiliary contacts, the contact pressure shall be
Min 35 grams, each

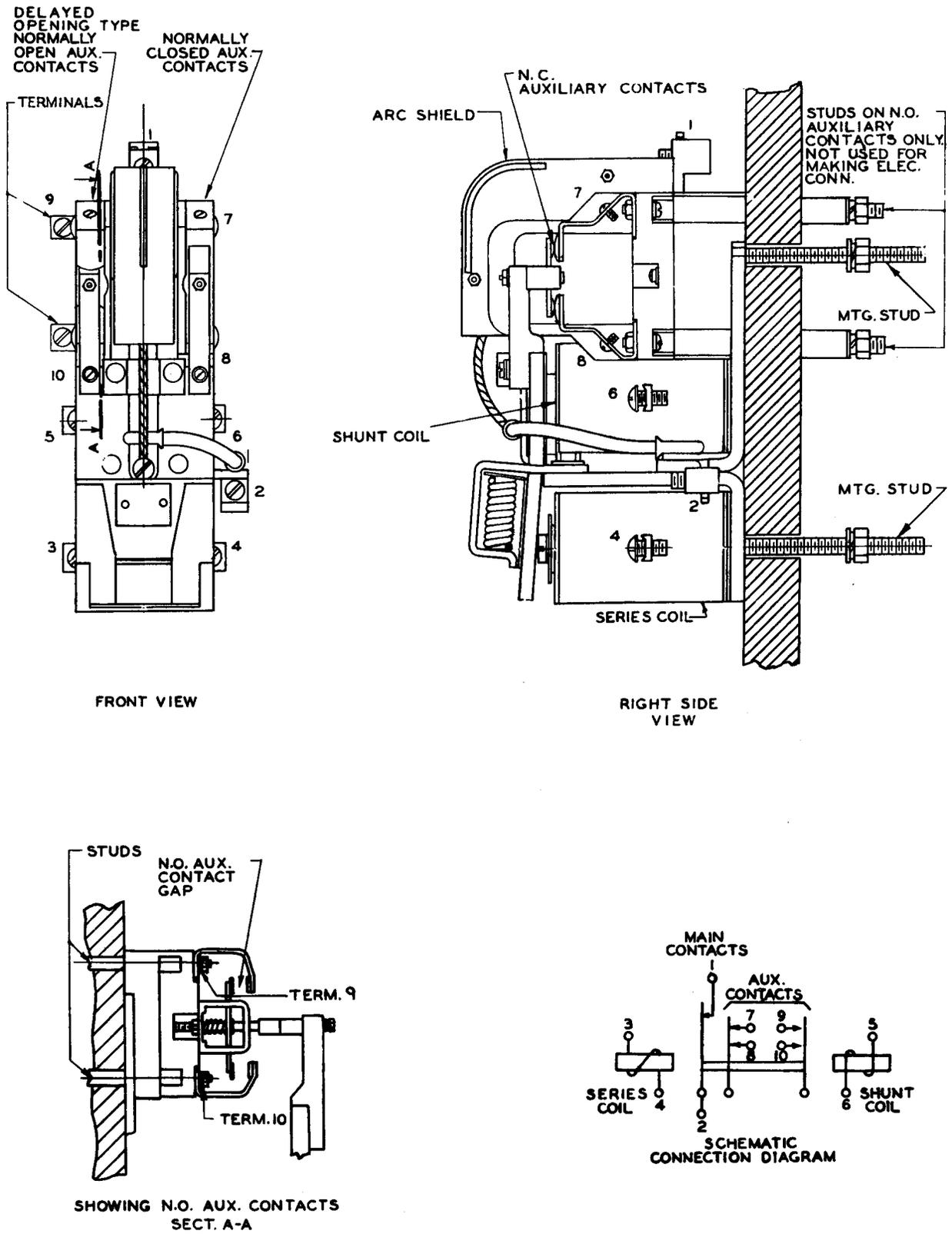


Fig. 1 - Contactor

(c) For the NO auxiliary contacts the contact pressure, measured at the push-rod which operates the contacts shall be

Min 70 grams

Use 79C push-pull tension gauge or 70J fan type gram gauge.

*(d) For the NO auxiliary contacts only, the contact gaps, measured while the shunt coil is de-energized shall each be

Min 1/16"

Max 1/8"

Use scale.

2.04 *Electrical Requirements*

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

*#(b) Where electrical requirements are not specified in the Circuit Requirements Table, with the shunt coil de-energized, the series coil shall operate the contactor at any value of current between

Min 25 amp.

Max 30 amp.

Note: Operation of the contactor need not be checked under (b) if it can be done under a section applying to the equipment of which the contactor is a part.

*#2.05 **Temperature:** When in an operating circuit, the temperature of the coils, frames, and other parts in contact with insulation, shall not exceed

Max 95C (203F)

The temperature of the main contacts shall not exceed

Max 105C (221F)

If the temperature is thought to be excessive, measure by thermometer.

3. ADJUSTING PROCEDURES

3.001 *List of Tools, Gauges, and Materials*

(Equivalents may be substituted if desired)

Tools

Bellows, hand, 10"

Clip, No. 365 tool (two required per cord for use with test set, one required per cord for use with flashlight)

Tools

Cord, No. 1W13A (two required)

Screwdriver, 4" regular

Screwdriver, 5" regular

Test set, 66A, or flashlight equipped with KS-7742 bottom cap

Wrench, adjustable, 8", R2512

Gauges

Gauge, 79B, 0-1000 gram

Gauge, 79C, 0-200 gram or 70J, 0-150 gram

Scale, steel, 6", R-8550

Thermometer, R-1032, Detail 1

Materials

Cloth, abrasive, 150 grade, or sandpaper 4/0

Cloth, cleaning, KS-14666

Felt, pad for temperature readings

Spirits, petroleum

*#3.01 *Mounting* (Req't 2.01)

(1) If necessary, tighten mounting nuts with a wrench and the screws which hold the components together with a wrench or a screwdriver as appropriate.

#3.02 *Contact Surfaces* (Req't 2.02)

(1) To obtain access to the main contacts, remove the arc shield. If necessary, the interior of the shield should be cleaned by rubbing with a dry cleaning cloth, wrapped around the blade of a screwdriver, to remove any deposits which appear as the result of operation of the contacts. If dirty the contact 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 a strip of sandpaper or abrasive cloth 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.

3.03 Contact Pressure and Gap (Reqt 2.03)

(1) To measure the pressure of the main contacts, apply the gauge to the back of the movable contact at a point immediately below the fixed contact, and pulling horizontally away from the panel, note the indication of the gauge as the contact begins to move. If the requirement is not met, refer to the supervisor, as the spring may require replacement.

(2) To measure the pressure of the NO auxiliary contacts, remove the battery from them and from the shunt coil, and connect a buzzer, or equivalent across terminals 9 and 10. With the contactor held operated manually, apply the gauge to the push-rod which operates the contacts. Note the indication of the gauge as the circuit through the contacts is opened. If the requirement is not met, refer to the supervisor, as the spring may require replacement.

*(3) For measuring the contact gap of the NO auxiliary contacts, use the scale. The contactor should be in the released position, with the contacts and the shunt coil de-energized. If the requirement is not met, examine the contacts and their operating mechanism for mechanical trouble.

(4) To measure the pressure of the NC auxiliary contacts, with the contacts and the shunt coil disconnected from the battery, apply the gauge behind one of the movable contacts and exert pressure away from the fixed contact. Note the indication of the gauge as the contact begins to move. Repeat for the other movable contact. If the requirement is not met, refer to the supervisor, as the spring may require replacement.

3.04 Electrical Requirements (Reqt 2.04)

(1) If the contactor fails to operate, examine for obstructions or mechanical trouble and correct the condition, as required.

*#(2) If it becomes necessary to check the operation of the contactor under this section, set up a testing circuit including, in series with the series coil of the contactor, a source of d-c voltage, an ammeter having a 30-ampere range, a switch, and a rheostat. The following is suggested. Rheostat, Allen Bradley, 438197 Bulletin 410, Size 5, Form WM used with 4-volt, (2-cell) storage battery. This apparatus has been omitted from the list of tools, gauges, and materials since it is expected that it will seldom be necessary to make this test.

***#3.05 Temperature** (Reqt 2.05)

(1) If necessary, the temperature may be determined by holding the bulb of the thermometer against the part under consideration, covering that part of the bulb which is not in contact with it with a pad of felt or the equivalent. Observe the highest temperature indicated.