DC CONTACTOR PLUNGER TYPE

KS-5722

REQUIREMENTS AND ADJUSTING PROCEDURES

1. GENERAL

1.01 This section covers KS-5722 plunger-type dc contactors.

1.02 This section is being reissued to:

- Include information on the List numbers with 200-ampere rating.
- Add a note to 3.02 regarding the use of KS-6824 sealing compound when replacing the plunger retaining nut.
- Add KS-6824 Sealing Compound to List of Materials.
- Revise the temperature requirements for the coils and contacts.
- Add a note to 3.01 regarding snap-on type covers.

1.03 Refer to Section 020-010-711 which covers Apparatus—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 such a check is advisable.

1.05 Requirements and associated procedures 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 This contactor is said to have operated when the plunger has moved sufficiently for the contacts to close with reliable contact.

1.07 This contactor is said to have released when the plunger has moved sufficiently for the contacts to open.

1.08 When working on a contactor in an operating unit, make certain that service is maintained. Avoid touching live terminals which may be at different potentials. A short circuit could result from such action.

1.09 Part 2 contains explanatory illustrations showing the different parts.

2. REQUIREMENTS

2.01 ***Mounting:*** The contactor shall be fastened securely to the panel.

Gauge by feel.

2.02 ***Contact Surfaces:*** Surfaces shall be clean and free from build-ups which might interfere with reliable contact.

Gauge by eye.

2.03 ***Contact Pressure:*** The contact pressure of each contact shall be as follows:

TYPE	RATING AMPERES	MINIMUM PRESSURE GRAMS
Single-pole	50	350
Single-pole	100	1450
Single-pole	200	425 ←
Double-pole	50	175

Use the 79B, 79C, or 79F Gauge.

2.04 ***Freedom of Operation:*** The plunger mechanism shall operate smoothly, without binding.

Gauge by feel.

2.05 ***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, operation of the relay shall be checked at any voltage available within the voltage range on the relay nameplate.

(c) Check of electrical requirements may be at the temperature at which the relay is found, unless H (hot) or C (cold) is specified in the Circuit Requirements Table.

Note: Where electrical requirements are not specified in the Circuit Requirements Table, (b) and (c) provide that normal operation of the relay is considered a satisfactory check. This would also apply where no nameplate range or other operate values are available.

(d) Where H is specified in the Circuit Requirements Table without heating instructions, the relay coils shall be energized for at least 1 hour prior to the test.

(e) Where C is specified in the Circuit Requirements Table without cooling instructions, the relay shall be de-energized for at least 2 hours prior to the test.

#*2.06 ***Temperature:*** The temperature of the coils and contacts shall not exceed 65°C (149°F).

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

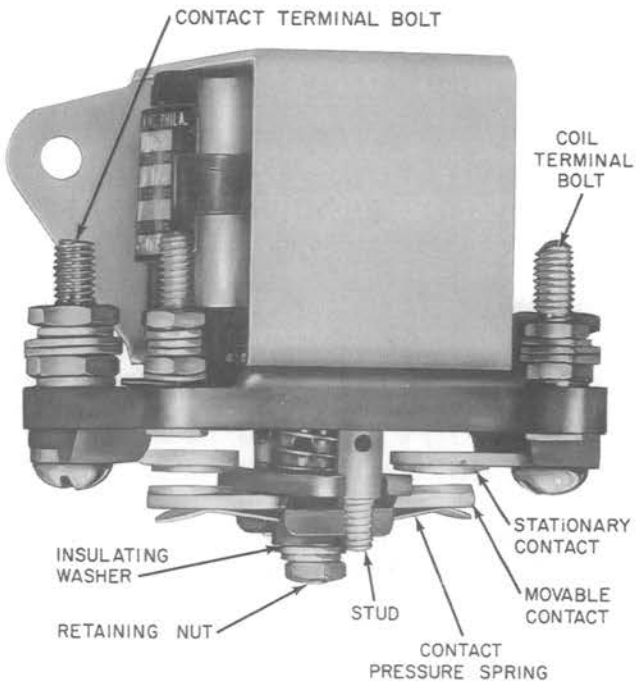

Fig. 1—Single-Pole, 50-Ampere Contactor

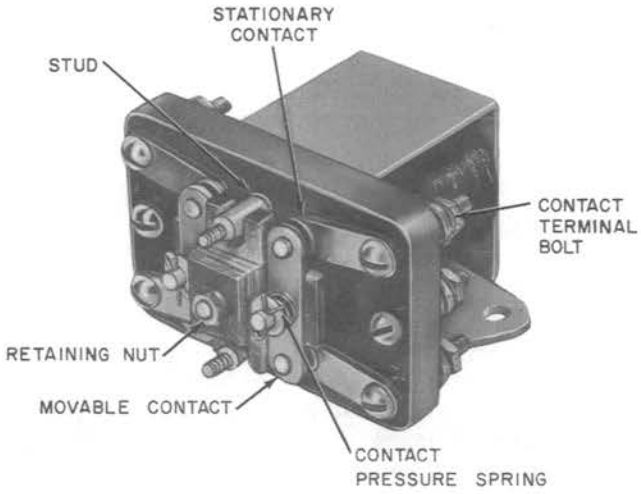

Fig. 2—Double-Pole, 50-Ampere Contactor

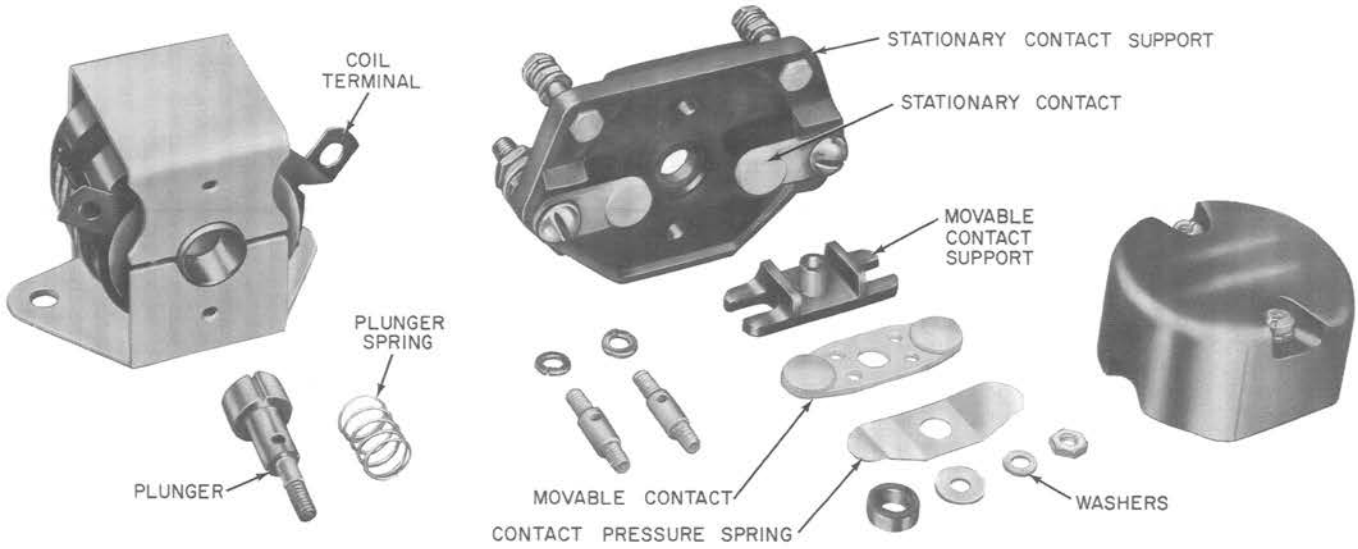

Fig. 3—Single-Pole, 50-Ampere Contactor—Exploded View

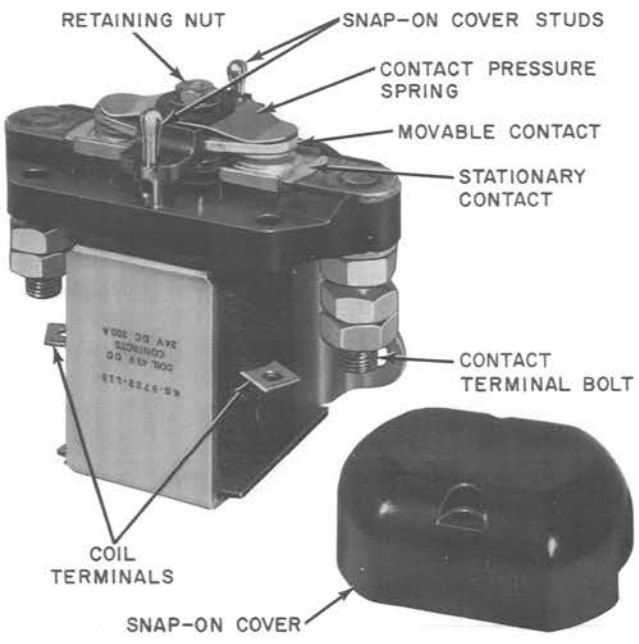

Fig. 4—Single-Pole, 200-Ampere Contactor

3. ADJUSTING PROCEDURES

3.001 *List of Tools, Gauges, Materials, and Test Apparatus*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
265C	Burnisher
—	P Long-nose Pliers
—	3-Inch C Screwdriver
417A	1/4- and 3/8-Inch Hex Open Double-End Flat Wrench
418A	5/16- and 7/32-Inch Hex Open Double-End Flat Wrench

CODE OR SPEC NO.	DESCRIPTION
GAUGES	
79B	0-1000 Gram Push-Pull Tension Gauge
79C	0-200 Gram Push-Pull Tension Gauge
79F	0-6000 Gram Push-Pull Tension Gauge
R-1032, Det. 1	Thermometer
MATERIALS	
—	150 grade Abrasive Cloth
KS-14666	Cloth
—	Felt Pad
KS-7860	Petroleum Spirits
→ KS-6824	Sealing Compound
TEST APPARATUS	
35F	Test Set

3.002 *General Procedure*

(1) It is recommended that requirements be checked and any required adjustments be made in the order outlined in 3.01 through 3.06.

(2) When checking mechanical requirements, disconnect the contactor from the working circuit. If it becomes necessary to remove the contactor from its mounting in order to obtain access to its parts, disconnect all power from the winding and contact circuits by opening switches, if provided, or removing the fuse or fuses. Then disconnect the leads from the terminals.

3.01 *Mounting* (Rq. 2.01)

(1) Tighten loose mounting screws with the screwdriver.

Note: ◗On Lists equipped with snap-on type covers, make sure cover is securely snapped in place.◖

3.02 *Contact Surfaces* (Rq. 2.02)

(1) The purpose of cleaning contacts is to remove any gummy or dirty substance that could interfere with reliable contact. It is not necessary or desirable to keep contacts polished or shining. Clean contacts by wiping with a cloth moistened with petroleum spirits, followed by a dry cloth.

(2) There shall be as little smoothing of contacts as is consistent with satisfactory operation. Contacts should be smoothed while closed against a burnisher or a strip of abrasive cloth. Draw the burnisher or cloth back and forth until the buildups are reduced sufficiently to ensure reliable contact. Then clean the contacts as outlined in (1).

(3) Contacts which are badly worn should be replaced. When replacement is required, replace the entire set of movable and stationary contacts To remove the movable contact of a single-pole contactor, insert a piece of stiff wire in the hole in the plunger to prevent turning, and remove the retaining nut with the 418A wrench. Lift off the metal washers, the insulating washer, the contact pressure spring, and the contacts. Replace in the reverse order. To remove the movable contacts of a double-pole contactor, remove the cotter-pin, washer, and pressure spring. The stationary contacts can be replaced by the use of the 418A wrench and a screwdriver.

Note: ◗When replacing the movable contacts apply KS-6824 sealing compound to the threads of the plunger retaining nut.◖

3.03 *Contact Pressure* (Rq. 2.03)

(1) To measure contact pressure, disconnect the contacts from the power supply and energize the operating coil or hold the contactor operated manually, taking care not to press on any part of the contact pressure spring. Insert the tip of the gauge at the edge of the movable contact farthest from the middle of the supporting bar and exert a pull away from the stationary contact. Read the gauge as the movable contact leaves the stationary contact.

(2) Replace the contact pressure spring where contact pressures are below the minimum.

3.04 ***Freedom of Operation*** (Rq. 2.04)

(1) ▸With the contacts disconnected from power, operate the contactor by hand, observing its operation. If it is sticky, disconnect the coil terminals and remove contactor from its mounting.◂ In the case of a single-pole contactor, unscrew the studs which hold the stationary contact support in place by inserting a stiff wire in the hole provided for the purpose. The plunger and the chamber in which it operates are now accessible for cleaning.

(2) In the case of a double-pole contactor, it is necessary to remove the movable contact assembly. To accomplish this, restrain the plunger from turning by inserting a stiff wire in the hole which is accessible between the movable contact assembly and the stationary contact support. Unscrew the retaining nut using the 417A wrench and unscrew the studs. The plunger and the chamber in which it operates are now accessible for cleaning.

3.05 ***Electrical Requirements*** (Rq. 2.05)

(1) ▸A check of contactor operation may be made by either connecting a voltmeter across the coil terminals or by placing an ammeter in series with the coil. If there is no indication of voltage, then a study of the associated circuits is necessary to determine whether the absence of voltage indicates a circuit fault, or a condition to be overcome by blocking a relay, or otherwise changing circuit conditions. If there is no indication of current, then the coil is open and should be replaced.◂

(2) When checking for any electrical requirement, except the check of operation discussed in (1) above, the contactor should be disconnected from the working circuit.

(3) Where requirements are in volts, direct current is meant unless otherwise specified, and a 35F Test Set should be used. Where test set preparation has not been specified in the Circuit Requirements Table, disconnect both coil terminals and furnish both battery and ground through the test set with B/G or B/G/V preparation.

(4) If the contactor does not release, check the armature for freedom of operation. Clean or replace. Check the plunger spring to see that it has sufficient compression to return the plunger to the open position and stretch the spring or replace it, as necessary.

#***3.06** ***Temperature*** (Rq. 2.06)

(1) Hold the bulb of the thermometer against the hottest spot in question, covering that part of the bulb not in contact with the contactor by a piece of felt or the equivalent.

(2) If the temperature exceeds the specified limit, see that requirements 2.02 to 2.04 are met. If the temperature is above the limit, with nameplate rated coil voltage not exceeded, refer the matter to the supervisor, as the coil or contacts may need to be replaced.