

PRESSURE TESTING SPLICE TYPE CONTACTORS

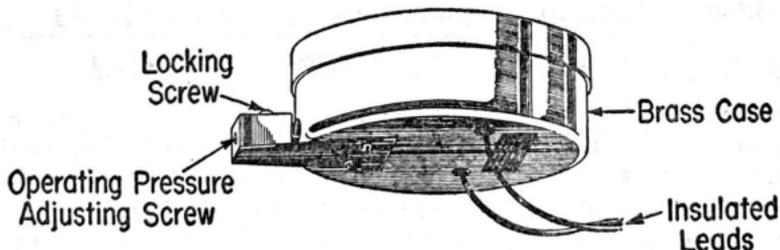
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1. GENERAL

1.01 This section covers the description, testing and installation of the H Pressure Contactor or similar contactors supplied under Drawing BO-170439.

2. DESCRIPTION

2.01 The H contactor illustrated below is designed for installation inside the lead sleeve at a splice. It consists of a standard Bourdon tube and contact spring assembly housed in a brass case. Wire leads three feet long are provided for making connections to the alarm pair in the cable. It is equipped with an externally operated screw for adjusting the mechanism to the desired operating pressure. There is also a set screw for locking the adjustment screw in position. The Bourdon tube of these contactors is sealed at a pressure of 3 pounds above normal sea level atmospheric pressure. Gas enters the brass case through the opening for the adjusting screw.



3. OPERATING PRESSURE ADJUSTMENT LIMITS

3.01 The following table gives the desired operating pressures and the allowable variations for splice type contactors. No adjustment of the contactor is necessary if the operating pressure is found to be within the limits given in the table.

PRESSURE CONTACTOR ADJUSTMENT LIMITS

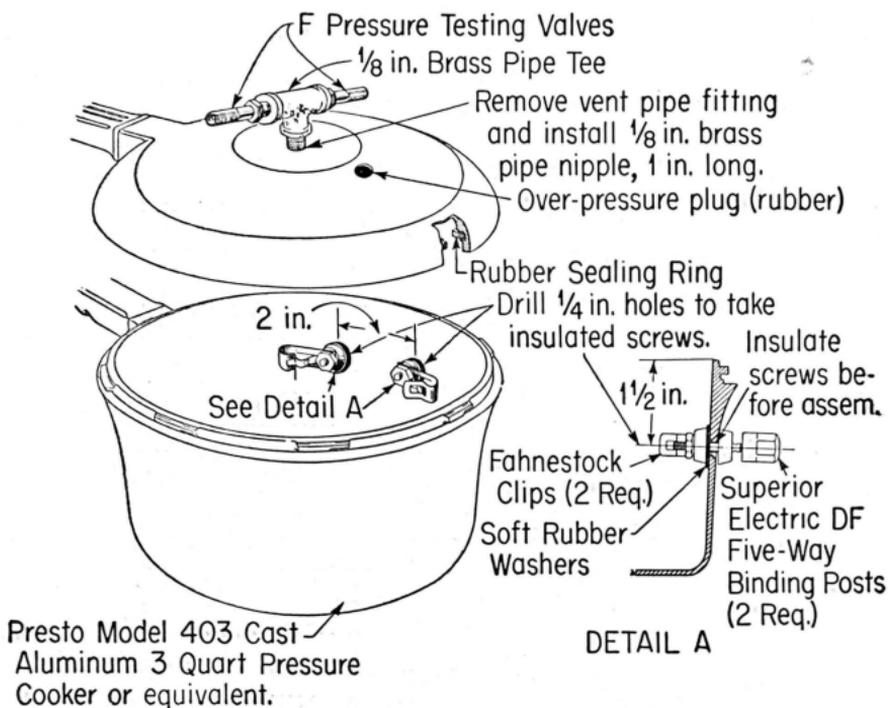
For Contactor - Terminals and Contactors Equipped with Bourdon Tube Sealed at 3 Pounds							
Cable Temp. Degrees Fahrenheit	For Cables Maintained at 6 Lbs.			For Cables Maintained at 9 Lbs.			Cable Temp. Degrees Fahrenheit
	Not Less Than	Desired	Not More Than	Not Less Than	Desired	Not More Than	
130	4.9	5.4	5.9	7.9	8.4	8.9	130
125	4.7	5.2	5.7	7.7	8.2	8.7	125
120	4.5	5.0	5.5	7.5	8.0	8.5	120
115	4.4	4.9	5.4	7.4	7.9	8.4	115
110	4.2	4.7	5.2	7.2	7.7	8.2	110
105	4.0	4.5	5.0	7.0	7.5	8.0	105
100	3.8	4.3	4.8	6.8	7.3	7.8	100
95	3.7	4.2	4.7	6.7	7.2	7.7	95
90	3.5	4.0	4.5	6.5	7.0	7.5	90
85	3.3	3.8	4.3	6.3	6.8	7.3	85
80	3.2	3.7	4.2	6.2	6.7	7.2	80
75	3.0	3.5	4.0	6.0	6.5	7.0	75
70	2.8	3.3	3.8	5.8	6.3	6.8	70
65	2.7	3.2	3.7	5.7	6.2	6.7	65
60	2.5	3.0	3.5	5.5	6.0	6.5	60
55	2.3	2.8	3.3	5.3	5.8	6.3	55
50	2.2	2.7	3.2	5.2	5.7	6.2	50
45	2.0	2.5	3.0	5.0	5.5	6.0	45
40	1.8	2.3	2.8	4.8	5.3	5.8	40
35	1.7	2.2	2.7	4.7	5.2	5.7	35
30	1.5	2.0	2.5	4.5	5.0	5.5	30
25	1.3	1.8	2.3	4.3	4.8	5.3	25
20	1.1	1.6	2.1	4.1	4.6	5.1	20
15	1.0	1.5	2.0	4.0	4.5	5.0	15
10	.8	1.3	1.8	3.8	4.3	4.8	10
5	.6	1.1	1.6	3.6	4.1	4.6	5
0	.5	1.0	1.5	3.5	4.0	4.5	0

3.02 Fluctuations in atmospheric pressure due to changing weather conditions may affect the gauge reading when checking or adjusting contactor operating pressure. For this reason it is advisable to obtain the barometric pressure and make the necessary corrections. A change in barometric pressure of .2 inch of mercury is equivalent to a change of .1 pound gauge pressure. If the barometric pressure is lower than 30 inches, the correction should be subtracted from the gauge reading; if the barometer registers above 30 inches, the correction should be added to the gauge reading. Before making this correction, consult the sections on the correction of pressure measurements which cover in more detail the methods of applying corrections for varying weather conditions.

3.03 Contactors should be set to operate at a pressure equivalent to 6 or 3 pounds pressure at 60° F. regardless of the elevation of the cable above sea level. The contactor should be adjusted at the location of the contactor point on the cable, or at a storeroom or other convenient place whose elevation above sea level is within about 200 feet of the elevation of the contactor point.

4. CHECKING OPERATING PRESSURE

4.01 A gastight test chamber, as illustrated on the following page, is used to house the contactor while checking the operating pressure. The test chamber should be prepared locally in accordance with the details given on the illustration. The chamber is equipped with terminals for making electrical connections to the contactor leads and also with valves for admitting and bleeding gas and for obtaining pressure readings.



4.02 The following outlines the procedure for determining the operating pressure of a contactor.

- (1) Be sure that the set screw which locks the adjustment screw is tight. Then place the contactor in the test chamber, connect the contactor leads to the terminals in the test chamber and replace the cover.
- (2) Connect the relay circuit of the 76-type test set to the terminals on the outside of the test chamber. The buzzer circuit of the 88A test set or a voltohmmeter or similar devices can be used if the 76-type set is not available.
- (3) Connect a manometer, or a 3-1/2-inch gauge which has been calibrated against a manometer, to one of the valves on the chamber.
- (4) Measure the temperature of the contactor and test chamber. Determine from the table in Part 3 the operating limits of the contactor at this temperature.
- (5) Admit sufficient gas to the chamber through the other valve to open the contacts of the contactor and silence the buzzer of the 76-type set. Then bleed gas from the chamber by carefully depressing the rubber "over-pressure"

plug in the cover, until the contacts just close on decreasing pressure. Read the pressure recorded on the pressure gauge as soon as the buzzer is heard.

(6) Repeat (5) for three readings and record and average the three values. The pressure at which the contacts open should not differ by more than 0.2 to 0.3 pound from that at which the contacts close. If the variation is substantially more than this it is usually an indication of loose screws or binding in the contactor mechanism.

4.03 If the operating pressure of the contactor is within the required limits at the observed temperature, the contactor is ready for installation in the splice.

4.04 Generally, no further check of operating pressure is required, after a splice type contactor has been installed, unless faulty operation develops. If, for any reason, it is desired to check the operating pressure, it can be done in the same manner as described for a C or a G contactor in another section.

5. ADJUSTING OPERATING PRESSURE

5.01 Where the contactor operating pressure is outside the allowable range remove the contactor from the test chamber and adjust the operating pressure in accordance with the following procedure.

(1) Loosen the set screw.

(2) Turn the adjusting screw clockwise to lower the operating pressure and counterclockwise to raise the operating pressure. One-quarter turn of the adjusting screw changes the operating pressure of the contactor by about one pound per square inch.

(3) After the adjustment has been made, tighten the set screw to lock the adjusting screw. Then place the contactor in the gastight chamber and recheck the operating pressure as covered in Paragraph 4.02. If the operating pressure is within the prescribed limits the contactor is ready for installation. If the operating pressure is still out of limits the adjustment procedure should be repeated.

6. INSTALLATION OF CONTACTORS

6.01 **Paper Insulated Cable**—Splice type contactors are installed in cables that contain no coaxials in essentially the same manner as used in installing splice type loading coils.

6.02 Place a band of two or three layers of two-inch muslin around the perimeter of the contactor to cushion the edges of the adjustment screw housing. The muslin band should be held in place with scotch tape so placed that it will not inter-

ferre with admission of gas into the contactor housing. Then wrap the contactor with a half lapped layer of muslin.

6.03 After splicing the paper insulated conductors place the wrapped contactor at any convenient location in the splice and lash it in place with muslin or one-inch cotton tape. The core of the cable can be offset within the sleeve, if necessary, to avoid using an unnecessarily large lead sleeve.

6.04 Connect the contactor leads to the alarm pair. Add the required quantity of **C Desiccant** and complete the wrapping of the splice in the usual manner. The contactor should be included under the wrappings. Loose desiccant **must not** be used at a splice containing a contactor.

6.05 **Coaxial Cable**—After the coaxials have been spliced, place a 2-1/2-inch length of fiber tubing at each end of the coaxial assembly. Place a bag of C Desiccant in one of the fiber tubes. The 2-1/2-inch lengths of tube should be sawed from a standard length of tubing.

6.06 Center the contactor in the coaxial assembly with the flat surfaces of the contactor housing parallel to the coaxials. The contactor may be placed in a horizontal or vertical position depending upon the configuration of the coaxial assembly. The guard over the adjusting screw may extend into one of the fiber tubes.

6.07 Lay the contactor leads along the coaxials and bring the leads out past one end of the splice. The leads should not pass through either fiber tube.

7. SLEEVE SIZES

7.01 ON COAXIAL CABLES containing eight .375-inch coaxials use the same size sleeve at contactor splices as would be required for a straight splice.

7.02 ON PAPER INSULATED CABLES use the following table as a guide in determining the sleeve size.

<u>Cable Make-up</u> <u>19 Ga. Quads</u>	<u>Sleeve Size</u>
40	4-1/2 in.
70	5 "
110	5-1/2 "
150	6 "