

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G73.140.1
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AT&T Co Standard

PRESSURE TESTING

CONTACTORS AND CONTACTOR-TERMINALS

SUPERSEDED TYPE

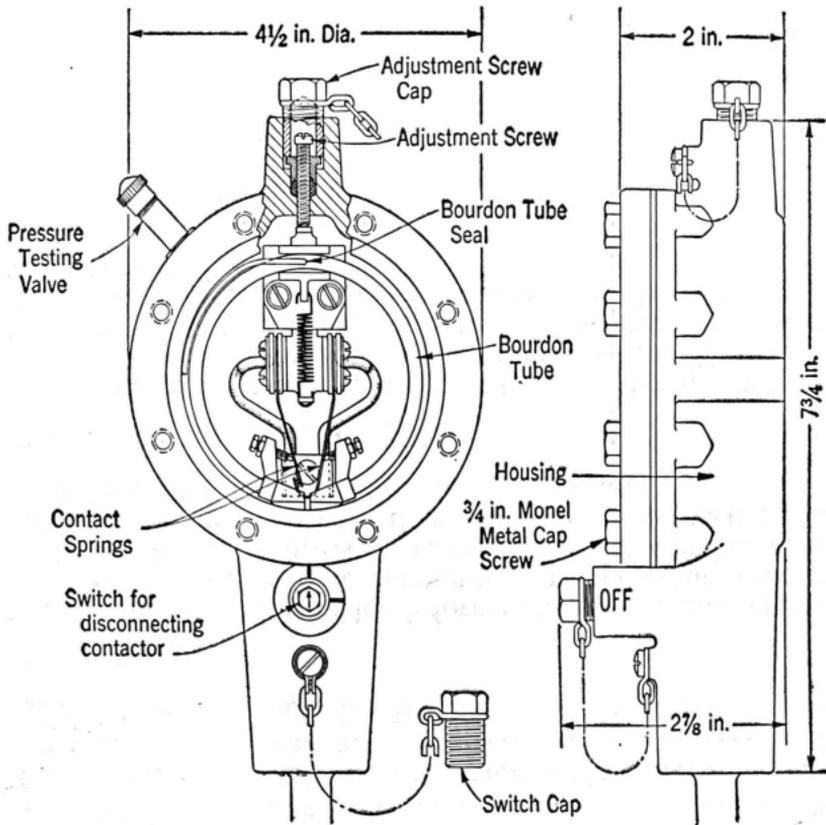
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1. GENERAL

1.01 This section provides information on the maintenance of superseded type contactors and contactor-terminals in order to facilitate pressure testing work on existing cables which may be equipped with these items. This information was previously contained in Section G73.208, Issue 2.

2. S PRESSURE CONTACTOR

2.01 The S Pressure Contactor (switch type), illustrated on the following page, is similar to the C Pressure Contactor except that it has an externally operated mechanism which permits disconnection of the contactor from the alarm circuit when desired.



S PRESSURE CONTACTOR
(Switch Type)

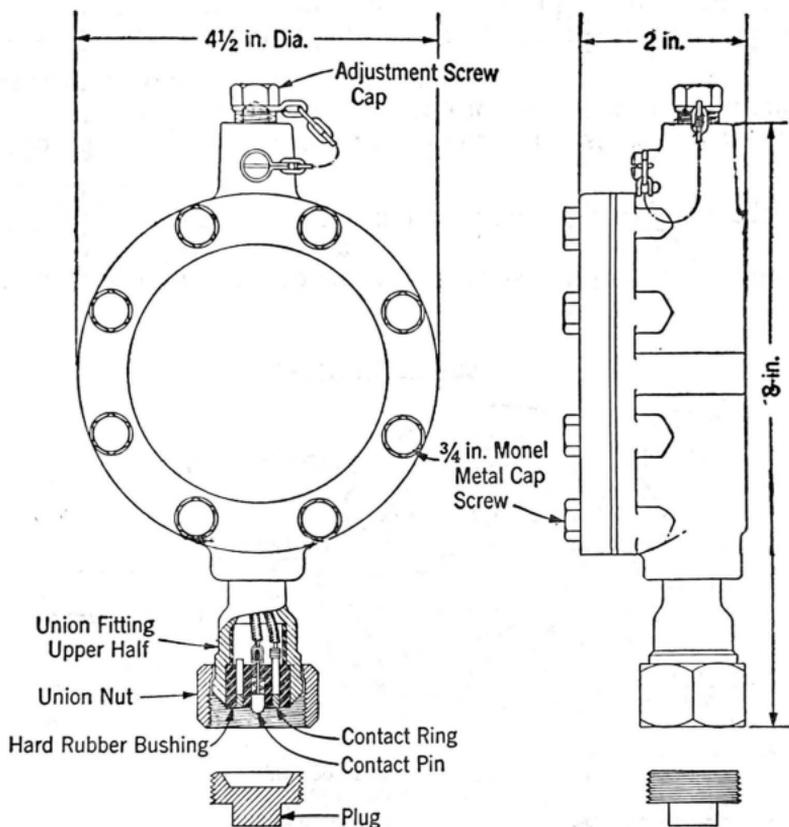
2.02 The switch type contactor can be disconnected by removing the switch cap and turning the bolt 1/4 turn to the "Off" position as indicated by the arrow on the bolt head. Turning the bolt so that the arrow points to the "On" position will restore the contactor to normal operation.

2.03 The contactor mechanism of the S Contactor is identical to that of the C Contactor. In the event the mechanism becomes inoperative it can be replaced by a new contactor mechanism unit in the same manner as for the C Contactor. The disconnect switch should be set in the "On" position before the replacement is made.

2.04 The method of checking and adjusting contactor operating pressure is identical to that for the C Pressure Contactor.

3. U PRESSURE CONTACTOR

3.01 The U Pressure Contactor (union type) illustrated below was provided as a replacement unit for use on existing installations of Specification D-92581 contactor-terminals. A pipe plug is screwed into the union fitting of these contactors to protect the ground joint.

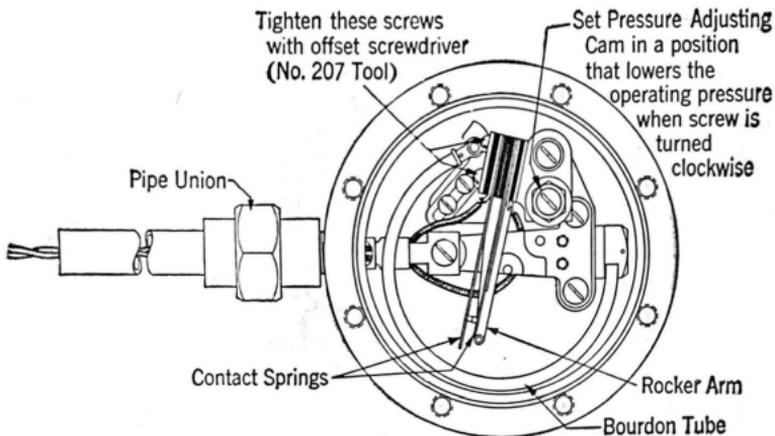


U PRESSURE CONTACTOR
(Union Type)

3.02 The contactor mechanism in this unit is identical to that of the C Contactor. The method of adjusting the operating pressure and replacing the contactor mechanism is the same as that for the C Contactor.

4. BB-100 CONTACTOR

4.01 **Maintenance of BB-100 Contactor:** The following sketch shows the operating mechanism of the BB-100 contactor. If successive readings of the operating pressures vary by more than 0.3 to 0.5 pound or if the pressure at which the contacts open differs from that at which the contacts close by more than .5 pound there is a possibility that some of the screws of the contactor mechanism are loose.



BB-100 CONTACTOR

4.02 As indicated above, the screws on the spring pile-up should be tightened with an offset screwdriver (No. 207 tool). The other screws can be tightened with an ordinary screwdriver.

4.03 If tightening the screws does not restore the contactor to satisfactory operation the contactor should be replaced with one of current design.

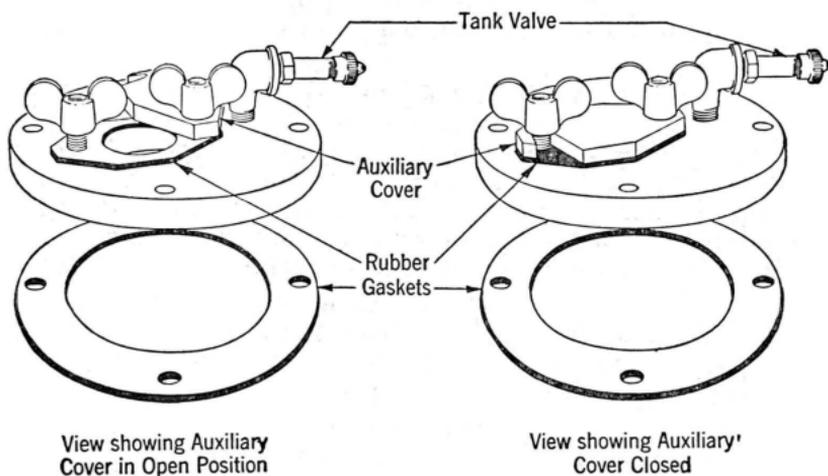
4.04 It is advisable when checking the operation of BB-100 contactors to set the pressure adjusting cam so that the operating pressure is lowered when the screw is turned clockwise.

4.05 The BB-100 contactors are so designed that they cannot readily be adjusted to operate at 3 pounds per square inch. Where the pressure in existing cables is reduced to 6 pounds, it will be necessary to replace the BB-100 contactors with the newer type.

5. ADJUSTMENT OF BB-100 CONTACTORS AND D-92581 CONTACTOR-TERMINALS

5.01 **Contactor Testing Cover:** The contactor testing cover is used to adjust the operating pressure of Specification D-92581 contactor-terminals, BB-100 contactors and other contactors of similar type. The device consists of a gasketed plate equipped with a pressure testing valve and with an auxiliary gasketed cover placed over an opening through which the contactor adjusting mechanism can be reached when the testing cover is substituted for the regular cover of the contactor.

PRESSURE CONTACTOR TESTING COVER



5.02 The valve provided on the cover should be used only for pressure measurements, and never for gas admission purposes.

5.03 **Checking Operating Pressure:** The operating pressure of the contactor should be checked as described in the following paragraphs, before any adjustment is made of the operating pressure.

- (1) Place a pressure testing thermometer on or near the contactor and after about five minutes observe the temperature. Determine from the table in Paragraph 6.01 the limits within which the contactor should operate.

- (2) Disconnect the contactor from the alarm circuit by opening the connections at the terminal. Connect the contactor binding posts in the terminal to the Wet Section test circuit of the 76-type test set, or other approved buzzer circuit.
- (3) To test the BB-100 contactor it is necessary to have two pressure testing valves in the sleeve at which the terminal stub is connected to the cable. Connect a 3-1/2-inch gauge or a mercury manometer to one of the two pressure testing valves in the sleeve, or to the valve on the terminal in the case of the contactor-terminal.
- (4) Remove the core from the valve in the sleeve (the second valve in the case of the BB-100 contactor), so that the gas may escape and lower the cable pressure. The rate at which gas escapes should be controlled by placing a finger over the open valve stem.
- (5) Allow the pressure to fall to a point where the contacts of the contactor close, whereupon the buzzer will operate. Observe the pressure, as measured by the gauge at the instant the buzzer operates.
- (6) After the buzzer operates, stop the escape of the gas, and allow the pressure in the cable to build up until the contacts of the contactor open, whereupon the buzzer will cease to operate. The pressure at which the contacts open should not differ by more than 0.3 to 0.5 pound from that at which the contacts close. If the variation is more than 0.5 pound it is usually an indication that some parts of the contactor are loose.
- (7) The pressures at which the contacts close on decreasing pressure should be rechecked several times. The average pressure at which the contacts close on decreasing pressure is the operating pressure of the contactor.

5.04 In some cases, the contactor operating pressure is checked before a contactor is installed by connecting to a pressure source. When this is done care should be taken to apply the testing pressure gradually, and the maximum pressure used should not greatly exceed the contactor operating pressure.

5.05 Adjusting Operating Pressure: If the check of the operating pressure indicates that the contactor does not operate within the limits given in Paragraph 6.01 the operating pressure should be adjusted to these limits as described below, using the contactor testing cover.

- (1) Disconnect the pressure gauge and replace the core of the valve from which the gas was allowed to escape while checking the operating pressure.

- (2) Make a scratch mark across the joint between the contactor case and its regular cover to assist in identifying the original position of the latter when it is replaced. Unscrew the cap screws of the contactor by means of an open end wrench and remove the cover. Take care to protect the lead gasket from injury. When working with a BB-100 contactor, allow the gasket to remain undisturbed on the contactor case, or, if the gasket tends to stick to the cover, remove it with the cover.
- (3) Place the testing cover on the contactor case in such a position that the opening in the cover is directly over the contactor adjusting mechanism. Fasten the cover in place with four cap screws. The testing cover should be placed without undue delay to prevent unnecessary loss of gas. Time should be taken, however, to inspect the contactor mechanism to make sure that there are no loose screws or defective parts.
- (4) Open the auxiliary cover so as to expose the contactor adjusting mechanism and proceed as follows:
 - (a) If a BB-100 contactor is being adjusted, loosen the locknut of the pressure adjusting cam, turn the adjusting screw, and retighten the locknut using a 216-B tool. Since the entire adjustment range of the contactor is covered by a half turn of the cam, a slight change in the position of the cam will alter the operating pressure considerably. The contactors are normally supplied with their adjusting cams in such a position that the operating pressure will be raised when the cam is turned in a clockwise direction. This may not always hold true, however, and the direction in which the cam must be turned to secure the desired adjustment should be determined by trial.
 - (b) If a contactor-terminal is being adjusted, turn the adjusting nut by means of a 3/8-inch, No. 1124 Williams double end wrench or equivalent. To raise the operating pressure turn the nut towards the union fitting; to lower, turn the nut away from the union fitting. One complete turn of the nut changes the operating pressure about one pound per square inch.
- (5) Close the auxiliary cover and tighten the wing nuts so as to provide a gastight seal. Connect the gauge to the valve in the cover and allow the pressure to build up. Then determine the new operating pressure of the contactor by allowing gas to escape from the valve on the main cable. If the contactor does not operate within the proper limits,

open the auxiliary cover, readjust the contactor and again check the operating pressure. The operating limits for BB-100 contactors are given in Part 6.

(6) When the adjustment of operating pressure is satisfactory, remove the testing cover. Replace the regular contactor cover after carefully inspecting the inside of both the contactor and cover for dirt and moisture. It is important to replace the cover and lead gasket in the same position as before removal.

(7) Make a final check of the operating pressure of the contactor.

6. ADJUSTMENT LIMITS FOR BB-100 CONTACTORS

6.01 The following table gives the desired operating pressures and the allowable variations for BB-100 contactors. The adjustment limits for other types of contactors and contactor-terminals are given in another section.

BB-100 CONTACTOR ADJUSTMENT LIMITS

Cable Temp. Degrees Fahrenheit	For Cables Maintained at 9 Lbs.			Cable Temp. Degrees Fahrenheit
	Not Less Than	Desired	Not More Than	
130	7.0	8.0	8.5	130
125	6.8	7.8	8.3	125
120	6.7	7.7	8.2	120
115	6.6	7.6	8.1	115
110	6.4	7.4	7.9	110
105	6.3	7.3	7.8	105
100	6.1	7.1	7.6	100
95	6.0	7.0	7.5	95
90	5.8	6.8	7.3	90
85	5.7	6.7	7.2	85
80	5.6	6.6	7.1	80
75	5.4	6.4	6.9	75
70	5.3	6.3	6.8	70
65	5.1	6.1	6.6	65
60	5.0	6.0	6.5	60
55	4.9	5.9	6.4	55
50	4.7	5.7	6.2	50
45	4.6	5.6	6.1	45
40	4.4	5.4	5.9	40
35	4.3	5.3	5.8	35
30	4.2	5.2	5.7	30
25	4.0	5.0	5.5	25
20	3.9	4.9	5.4	20
15	3.7	4.7	5.2	15
10	3.6	4.6	5.1	10
5	3.4	4.4	4.9	5
0	3.3	4.3	4.8	0