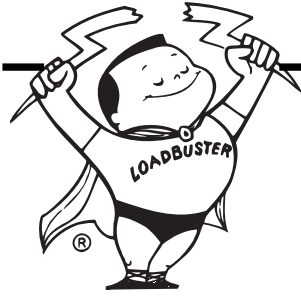


Loadbuster® — The S&C Loadbreak Tool
Outdoor Distribution (14.4 kV through 34.5 kV)

Minimum Construction Specifications
for Disconnects, Cutouts, and
Power Fuses Qualifying for Use
with Loadbuster



Loadbuster can be used with all makes of hook-equipped disconnects, cutouts, and power fuses which meet the following requirements:

- There must be an attachment hook at the upper (jaw) end of the device, over which Loadbuster's anchor can be hooked; and a pull ring on the device's switch blade or fuse tube which can be readily engaged with Loadbuster's pull-ring hook and held fast by the pull-ring latch.
- The device must be capable of easy, positive manipulation with Loadbuster from all practical angles and directions—and in all mounting positions intended for the device—while maintaining the minimum mechanical

and electrical requirements, as listed in Table I and Table II.

- The device must mechanically coordinate with Loadbuster's operating sequence such that (a) engagement of Loadbuster will not cause or allow the switch blade or fuse tube to drop open prematurely and (b) the attachment hook will keep Loadbuster positively anchored until tripping occurs, while (c) permitting easy removal of Loadbuster whether the opening stroke has been completed or whether, for any reason, the device being switched has been reclosed after partial (incomplete) opening.

TABLE I—Quantitative Requirements for Disconnects, Cutouts, and Power Fuses Qualifying for Use with Loadbuster Models 4700 and 5300

I Disconnect, Cutout, or Power Fuse Application— Max System Operating Voltage, Three-Phase kV	II ^① Min. Dry Withstand Voltages across External Disconnect Gap ^②		III ^⑥ Suggested Min. External Disconnect Gap Separation ^② at Time of Tripping ^④ Inches (mm)	IV ^⑦ Suggested Min. External Disconnect Gap Separation ^② with Loadbuster Fully Extended to "Latched Open" Position Inches (mm)
	60-Hertz ^③ — at Time of Tripping ^④	Capacitance Switching Test ^⑤ — Circuit Voltage		
	kV, RMS	kV, RMS		
9	18	9	3½ (89)	4 (102)
15	30	15	3½ (89)	4½ (115)
18	36	18	3⅞ (99)	5 (127)
27	41	20.5	3⅞ (99)	5 (127)

① Disconnects, cutouts, or power fuses (while being switched with Loadbuster) must be capable of withstanding at least one of these tests without flashover, preferably with the mounting bracket or base of the device under test grounded. However, in the case of disconnects, cutouts, or power fuses, with insulation just meeting minimum ANSI standards, it may be necessary to test with mounting bracket or base floating. The specified voltages are given for standard atmospheric conditions of temperature, barometric pressure, and humidity, and must be corrected for the existing atmospheric conditions at the time of test.

② Between all live parts of the combination of Loadbuster and disconnect, cutout, or power fuse for the most unfavorable practical operating position of Loadbuster.

③ These minimum voltages must be applied for a period of 10 seconds. The voltage shall be applied starting at 75% of the ultimate value and raised to the listed test voltage at a constant rate such that the test voltage is reached in not less than 5 seconds nor more than 10 seconds. An appropriately calibrated means must be used to measure the voltage.

④ To simulate the "time of tripping" condition, telescope Loadbuster 1⅞ inches (48 mm) from its "latched open" position.

⑤ This test consists of interruption of a 0% PF leading capacitance current of 2 to 5 amperes with Loadbuster used in the most unfavorable operating position. The test circuit is to be energized by a 60-hertz source at the voltage specified. A test series of 20 successive operations must be performed without flashover across the external disconnect gap.

⑥ These dimensions are approximately those required to meet the voltages specified in Column II. They are based on designs where sharp points, sharp edges, protrusions, etc., are avoided so that essentially rod-gap configuration is obtained on disconnect, cutout, or power fuse contacts. Sharp points, edges, etc., may require minimum gaps measuring as much as 25% greater than the dimensions listed to achieve the same dry withstand values.

⑦ These dimensions permit Loadbuster to be removed without reducing the gap below the values listed in Column III, which should be maintained after circuit interruption even though the transient recovery voltage may not then be a factor, to provide a margin of safety for possible inattentive manipulation of Loadbuster.



TABLE I I—Quantitative Requirements for Disconnects, Cutouts, and Power Fuses Qualifying for Use with Loadbuster Model 5400

I Disconnect, Cutout, or Power Fuse Application— Max System Operating Voltage, Three-Phase kV	II ^① Min. Dry Withstand Voltages across External Disconnect Gap ^②		III ^⑥ Suggested Min. External Disconnect Gap Separation ^② at Time of Tripping ^④ Inches (mm)	IV ^⑦ Suggested Min. External Disconnect Gap Separation ^② with Loadbuster Fully Extended to “Latched Open” Position Inches (mm)
	60-Hertz ^③ — at Time of Tripping ^④	Capacitance Switching Test ^⑤ — Circuit Voltage		
	kV, RMS	kV, RMS		
15▲	30	15	3 ⁷ / ₈ (99)	5 (127)
18▲	36	18	3 ⁷ / ₈ (99)	5 (127)
27▲	54	27	4 ³ / ₄ (121)	6 (153)
29▲	◆	29	5 ¹ / ₄ (134)	6 ¹ / ₂ (166)
38	◆	29	5 ¹ / ₄ (134)	6 ¹ / ₂ (166)

① Disconnects, cutouts, or power fuses (while being switched with Loadbuster) must be capable of withstanding at least one of these tests without flashover, preferably with the mounting bracket or base of the device under test grounded. However, in the case of disconnects, cutouts, or power fuses with insulation just meeting minimum ANSI standards, it may be necessary to test with mounting bracket or base floating. The specified voltages are given for standard atmospheric conditions of temperature, barometric pressure, and humidity, and must be corrected for the existing atmospheric conditions at the time of test.

② Between all live parts of the combination of Loadbuster and disconnect, cutout, or power fuse for the most unfavorable practical operating position of Loadbuster.

③ These minimum voltages must be applied for a period of 10 seconds. The voltage shall be applied starting at 75% of the ultimate value and raised to the listed test voltage at a constant rate such that the test voltage is reached in not less than 5 seconds nor more than 10 seconds. An appropriately calibrated means must be used to measure the voltage.

④ To simulate the “time of tripping” condition, telescope Loadbuster 1³/₈ inches (35 mm) from its “latched open” position.

⑤ This test consists of interruption of a 0% PF leading capacitance current of 2 to 5 amperes with Loadbuster used in the most unfavorable operating position. The test circuit is to be energized by a 60-hertz source at the voltage specified. A test series of 20 successive operations must be performed without flashover across the external disconnect gap.

⑥ These dimensions are approximately those required to meet the voltages specified in Column II. They are based on designs where sharp

points, sharp edges, protrusions, etc., are avoided so that essentially rod-gap configuration is obtained on disconnect, cutout, or power fuse contacts. Sharp points, edges, etc., may require minimum gaps measuring as much as 25% greater than the dimensions listed to achieve the same dry withstand values.

⑦ These dimensions permit Loadbuster to be removed without reducing the gap below the values listed in Column III, which should be maintained after circuit interruption even though the transient recovery voltage may not then be a factor, to provide a margin of safety for possible inattentive manipulation of Loadbuster.

▲ Loadbuster Model 5400 must not be used with metal-enclosed switchgear, metal-enclosed switches or fuses, or pad-mounted gear, of any make. Moreover, although the interrupting ratings of Loadbuster Model 5400 are equally applicable at lower voltages, it must not be used with the following devices, since the fuse tube or blade travel of such devices is too short to accommodate the Loadbuster’s operating stroke:

- a. Cutouts or power fuses, of any make, rated 110 kV BIL or less;
- b. Disconnects, cutouts, or power fuses, of any make, rated 7.2/14.4 kV, 7.8/13.8 kV, 8.25 kV, or less;
- c. Disconnects, of any make, rated 125 kV BIL or less;
- d. S&C Fuse Cutouts—Type XS, Station Style, Catalog Number 189131 (with or without catalog number supplements).

◆ Loadbuster should not be subjected to sustained 60-hertz voltage of the value that would be required for this test. Only the “Capacitance Switching Transient” text (column at right) is applicable at this voltage.

