

## Specifications

### Conditions of Sale

**STANDARD:** The seller’s standard conditions of sale set forth in Price Sheet 150 apply except as modified under the “Warranty Qualifications” section on page 2.

### SPECIAL TO THIS PRODUCT:

**INCLUSIONS:** Nonresettable operation counter.

Loadbuster tools, catalog numbers 5300R3, 5300R3-E, and 5400R3, manufactured within the last 20 years, may be returned to the S&C factory for a complete overhaul, as described in Table 5 on pages 6 and 7. Completely overhauled Loadbuster tools are subject to S&C’s standard 2-year new-product warranty, effective from the date of the complete overhaul (as indicated by a new date-stamp on the tool chassis) and in accordance with the terms of the standard warranty contained in the seller’s standard conditions of sale set forth in Price Sheet 150.

Loadbuster tools, catalog numbers 5300R3, 5300R3-E, and 5400R3, manufactured within the last 20 years, can be upgraded to achieve enhanced operating life of 1,500 to 2,000 operations before inspection and maintenance are required. Order the applicable upgrade kit from Table 5 on pages 6 and 7. Upgrade kits include a moving contact assembly, a silencer with a non-resettable **Operation** counter, a label, and instructions.

**APPLICATION NOTES:** When used with appropriately designed “hook-equipped” disconnects, cutouts, power fuses, dropout reclosers, fuse limiters, and pad-mounted gear, the Loadbuster tool is suitable for these live-switching duties of single- or three-phase overhead distribution circuits through 34.5 kV and underground distribution circuits through 25 kV:

- **Transformer switching**—Transformer load currents up through 600 amperes nominal, 900 amperes maximum, as well as transformer magnetizing currents associated with the applicable loads
- **Line switching**—Load splitting (parallel or loop switching) and load dropping of currents up through

600 amperes nominal, 900 amperes maximum; also, line dropping (charging currents typical for distribution systems of these voltage ratings)

- **Cable switching**—Load splitting (parallel or loop switching) and load dropping of currents up through 600 amperes nominal, 900 amperes maximum; also cable dropping (charging currents typical for distribution systems of these voltage ratings)
- **Capacitor-bank switching**—Switching of single capacitor banks (See Table 1.)

**Table 1. Capacitor Bank Switch Ratings**

Loadbuster Catalog Number	Nominal System Voltage, kV, Three-Phase	Maximum Capacitor Bank Rating, kVac, Three-Phase		
		Solidly or Effectively Grounded System		Ungrounded System
		Single <sup>①</sup> Banks, Grounded-Wye Connected	Single <sup>①</sup> Banks, Ungrounded-Wye Connected	Single <sup>①</sup> Banks, Grounded- or Ungrounded-Wye Connected
5300R3	12 thru 14.4	1800	1800	1800
	16	2400	2400	2400
	20.8 thru 23.9	3000	●	●
	24.9 and 26	3600	●	●
5400R3	20.8 thru 23.9	3000	3000	3000
	24.9 and 26	3600	3600	3600
	27.6	3600	3600	3600
	34.5	4800	●	●

① Loadbuster tools must not be used for switching parallel (“back-to-back”) capacitor banks.

● Loadbuster tools must not be used for switching ungrounded-wye connected banks—or grounded-wye connected banks on ungrounded systems—where maximum system operating voltage exceeds 18 kV for Loadbuster tool catalog number 5300R3; or 29 kV for Loadbuster tool catalog number 5400R3.

★ The S&C Loadbuster loadbreak tool is manufactured in accordance with quality system certified to ISO 9001:2000.



## Conditions of Sale—Continued

### Single-Pole Switching

In single-pole switching of ungrounded-primary three-phase transformers or banks (or single-phase transformers connected line to line), circuit connections or parameters may, in some cases, produce excessive overvoltages. In particular, for the following applications above 22 kV, single-pole switching by any means—including using a Loadbuser tool—should be performed only under the conditions stated in italics:

- Switching unloaded or lightly loaded delta-connected or ungrounded-primary wye-wye connected three-phase transformers or banks (or line-to-line connected single-phase transformers), rated 150 kVA or less three-phase or 50 kVA or less single-phase—or of any kVA rating when combined with unloaded cables or lines—where maximum system operating voltage exceeds 22 kV (*Single-pole switching should be performed only if each phase is carrying 5% load or more or if the transformer or bank is temporarily grounded at the primary neutral during switching.*)
- Switching loaded or unloaded ungrounded primary wye-delta connected three-phase transformers or banks—alone or combined with unloaded cables or lines—where maximum system operating voltage exceeds 22 kV (*Single-pole switching should be performed only if each phase is carrying 5% load or more and if the lighting-load phase is always switched open first (or switched closed last), or if the transformer or bank is temporarily grounded at the primary neutral during switching.*)

**EXCLUSIONS:** Carrying case.

**PACKING NOTE:** When a Loadbuser tool is ordered with the optional carrying case, S&C will use a single shipping carton accommodating both the Loadbuser tool and the carrying case. The exterior of the carton will be clearly marked to indicate this combined shipment.

**WARRANTY QUALIFICATIONS:** For the standard warranty contained in the seller's standard conditions of sale (as set forth in Price Sheet 150) to apply to Loadbuser tools, the following restrictions must be observed:

1. Loadbuser tools must be used only with disconnects, cutouts, power fuses, fuse limiters, dropout reclosers, or pad-mounted gear that meets S&C's applicable minimum construction specifications to be found in the present version of the following publication:

### DATA BULLETIN 811-60:

Loadbuser®—  
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 Loadbuser

2. Loadbuser tool catalog number 5400R3, rated 25/34.5 kV, must not be used with metal-enclosed switchgear, metal-enclosed switches, or fuses or pad-mounted gear of any make.
3. Although the interrupting ratings of the tool catalog number 5400R3, rated 25/34.5 kV, are equally applicable at lower voltages, the tool must not be used with the following devices because the fuse tube or blade travel of such devices is too short to accommodate the Loadbuser tool's operating stroke:
  - (a) Cutouts, power fuses, dropout reclosers, or fuse limiters, of any make, rated 110 kV BIL or less
  - (b) Disconnects, cutouts, power fuses, or fuse limiters, 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) Station-style Type XS Fuse Cutouts, catalog number 189131 (with or without catalog number supplements)
4. Loadbuser tools should not be used for any applications where maximum system operating voltage exceeds the Loadbuser tool's maximum voltage rating.

### How to Order Loadbuser—The S&C Loadbreak Tool

To order, obtain the catalog number for the Loadbuser tool plus, if desired, the optional carrying case, from Table 3 on page 4.

Catalog Number:

**Note:** Parts listed from Table 5 on pages 5 and 6 can be ordered using the same method. Also, for the catalog numbers of S&C Universal Poles for use with Loadbuser tools, refer to Specification Bulletin 851-31.

### Operating Life

The Loadbuster tool is a sturdy and reliable tool that will provide years of excellent service. Only a minimum amount of attention is required to keep it in good operating condition. Inspection intervals are dictated by the number of operations—as indicated on the nonresettable operation counter—and the severity of switching duties. Aside from operations indicated on the counter, there are no audible or visible signals to indicate the need for attention.

From 1,500 to 2,000 Loadbuster tool operations may normally be expected between required inspections, based on typical use involving an intermixture of varied switching duties. Included in these duties are switching of line-charging currents, transformer-magnetizing currents, pole-top capacitor-bank currents, and moderate parallel or loop load currents, with only occasional switching of heavier load currents. Only if the Loadbuster tool is used primarily for switching of load currents approaching the rating of the tool will more frequent inspections be required.

Benchmarks that indicate the need for replacement of Loadbuster parts are the degree of erosion of the trailer portion of the moving contact assembly and the condition of its flexible cable. The simplicity of Loadbuster tool inspection and the ease of parts replacement are described in S&C Instruction Sheet 811-510.

The operating life of a Loadbuster tool can be extended by periodic replacement of certain parts subject to gradual erosion in the course of normal operation. Accordingly, stocking of the replacement parts described in Table 2 and shown in Figure 1 on page 5 is recommended for Loadbuster tool catalog numbers 5300R3, 5300R3-E, and 5400R3.

**Table 2. Recommended Replacement Parts**

Item	Catalog Number
Moving Contact Assembly Loadbuster tool, cat. no. 5300R3 Loadbuster tool, cat. no. 5400R3	NA-1068-1 NA-1068-2
Stationary contact assembly	NA-1048
Hook frame attachment assembly	NA-1047
Inner Tube Assembly Loadbuster tool, cat. no. 5300R3 Loadbuster tool, cat. no. 5400R3	NA-1019-1 NA-1019-2
Inner tube seal	NA-1023
Guide bearing	N-1069
Trigger assembly	5277

**Table 3. Complete Units and Accessories**

Item	Rating				Catalog Number
	kV		Amps, Interrupting		
	Nom.	Max	Nom.	Max	
Loadbuster tool for use with overhead distribution devices	14.4/25●	27●	600	900	5300R3
Loadbuster tool for use in suitably designed pad-mounted gear	14.4/25●	27●	600	900	5300R3-E
Loadbuster tool for use with overhead distribution devices	25/34.5●	38●	600	900	5400R3
Carrying case (fits all Loadbuster tools)	—	—	—	—	5380R1■

● For certain limitations on application, refer to the “Warranty Qualifications” section on page 2.

■ Accommodates Loadbuster tool catalog numbers 5300R3 and 5400R3 equipped with a silencer with nonresettable **Operation** counter. Carrying case catalog number 5380 (i.e., with no catalog number “R” supplement) will not accommodate 5400R3 tools equipped with the silencer with nonresettable **Operation** counter.

**Table 4. Optional Features**

Item	Applicable to Models	Add Suffix to Catalog Number
Portuguese labels	5300R3, 5400R3, 5380R1	-S100
Spanish labels	5300R3, 5300R3-E, 5400R3, 5380R1	-S101
In-line hook-frame assembly①	5300R3-E	-S102
In-line hook-frame assembly① plus insulating sleeve	5300R3-E	-S103

① Reduces width of the Loadbuster tool when attached parallel to a hookstick. Facilitates use of the Loadbuster tool in pad-mounted gear with minimal clearances to barriers.

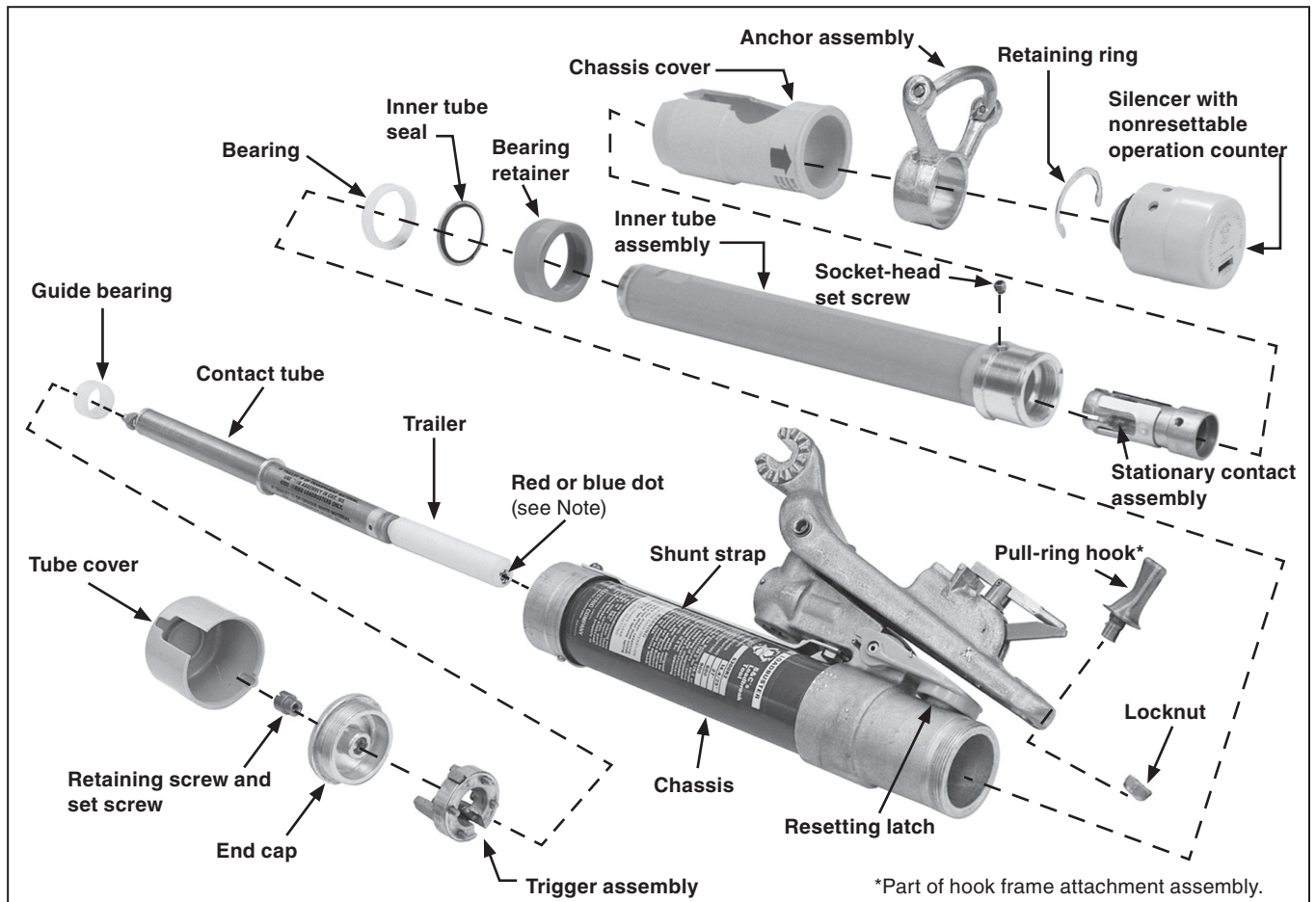


Figure 1. Replacement Parts for Loadbuster—The S&C Loadbreak Tool (exploded view of the Loadbuster tool).

**Note:** Tools with a red dot on the trailer (manufactured before July 2002) can be operated 500 to 1,000 times before inspection and maintenance are required. Tools with a blue dot on the trailer (manufactured during or after July 2002) can be operated 1,500 to 2,000 times before inspection and maintenance are required.

Table 5. Parts for Loadbuster Tools, Catalog Numbers 5300R3, 5300R3-E, and 5400R3

Item		For Use on Loadbuster, Catalog Number	Catalog Number	Net Weight		
				Lbs.	Oz.	Gr.
Chassis parts	Complete chassis	5300R3 AND 5300R3-E	NA-1026-1	2	5½	1063
		5400R3	NA-1026-2	2	8½	1148
	End cap assembly (includes retaining screw and set screw)	5300R3, 5300R3-E, and 5400R3	NA-1044	—	1¼	50
	Resetting latch assembly (includes spring and roll pin)	5300R3, 5300R3-E, and 5400R3	NA-1045	—	1	28
	Shunt strap (includes screw and locking washer)	5300R3 and 5300R3-E	NA-1046-1	—	½	14
		5400R3	NA-1046-2	—	¾	22
	Hook frame attachment assembly (includes pull-ring hook, pivot, pivot contact, and appropriate springs and roll pins)	5300R3, 5300R3-E, and 5400R3	NA-1047	—	3	85
	Chassis cover (includes label)	5300R3, 5300R3-E, and 5400R3	NA-1063	—	2	57
Tube cover	5300R3, 5300R3-E, and 5400R3	N-1125	—	½	14	
Moving contact assembly parts	Complete moving contact assembly①	5300R3 and 5300R3-E	NA-1068-1●	—	7½	213
		5400R3	NA-1068-2●	—	9	255
	Contact tube①	5300R3 and 5300R3-E	NA-1020-1	—	2	57
		5400R3	NA-1020-2	—	3	85
	Guide bearing	5300R3, 5300R3-E, and 5400R3	N-1069	—	⅛	4
Inner tube assembly parts	Complete inner tube assembly	5300R3 and 5300R3-E	NA-1019-1	—	15¼	432
		5400R3	NA-1019-2	1	3	539
	Stationary contact assembly (includes socket-head set screw)	5300R3, 5300R3-E, and 5400R3	NA-1048	—	3¾	106
	Socket-head set screws for stationary contact assembly②	5300R3, 5300R3-E, and 5400R3	NA-1049	—	½	14
	Silencer without operation counter	5300R3, 5300R3-E, and 5400R3	NA-1058	—	3	85
	Silencer with nonresettable operation counter	5300R3, 5300R3-E, and 5400R3	NA-1071■	—	4	113
	Silencer snubber	5300R3, 5300R3-E, and 5400R3	N-1165	—	¾	21
	Anchor assembly	5300R3, 5300R3-E, and 5400R3	NA-1037	—	5¼	149
	Trigger assembly (includes screws and washers)①	5300R3, 5300R3-E, and 5400R3	5277	—	1¼	35
	Trigger assembly hardware (screws and washers)②	5300R3, 5300R3-E, and 5400R3	NA-1050	—	3¼	92
	Retaining ring	5300R3, 5300R3-E, and 5400R3	N-1140	—	¼	7
	Bearing	5300R3, 5300R3-E, and 5400R3	N-1128	—	¾	21
	Bearing retainer	5300R3, 5300R3-E, and 5400R3	N-1127	—	¼	7
	Inner tube seal	5300R3, 5300R3-E, and 5400R3	NA-1023	—	¼	7
	Extended insulating hood for converting Loadbuster tool catalog number 5300R3 to catalog number 5300R3-E	5300R3	NA-1034▲	—	1	28
NA-1075◆			—	1	28	

Footnotes for this table are on page 7.

TABLE CONTINUED ►

**Table 5. Parts for Loadbuster Tools, Catalog Numbers 5300R3, 5300R3-E, and 5400R3—Continued**

Item		For Use on Loadbuster, Catalog Number	Catalog Number	Net Weight		
				Lbs.	Oz.	Gr.
Upgrade kit <sup>③</sup> (includes moving contact assembly, silencer with non-resettable operation counter, label, and instructions)		5300R3 and 5300R3-E	NA-1073	—	12	340
		5400R3	NA-1074	—	14	397
Miscellaneous parts	DC-MOLY-GN lubricant ¼-oz. tube <sup>④</sup>	5300R3, 5300R3-E, and 5400R3	0352-407	—	½	14
	Spanner wrench <sup>⑤</sup>	5300R3, 5300R3-E, and 5400R3	NA-1057	—	3	85
Labels and instructions	Chassis label	5300R3 and 5300R3-E	G-4401	—	1	28
		5400R3	G-4320	—	1¼	35
	Chassis cover label	5300R3, 5300R3-E, and 5400R3	G-5840R1	—	¼	7
	Insulating hood label	5300R3-E	G-4585	—	¼	7
	Instruction sheet	5300R3, 5300R3-E, and 5400R3	811-505	—	¾	21
Services	Complete overhaul <sup>⑥⑦</sup>	5300R3, 5300R3-E, and 5400R3▼	—	—	—	—

- ① Requires DC-MOLY-GN lubricant (listed in this table on page 7).
- ② Includes hardware sufficient to service 10 tools.
- ③ Upgraded tools can be operated 1,500 to 2,000 times before inspection and maintenance are required.
- ④ Contains lubricant sufficient to service approximately 10 tools.
- ⑤ Used to remove contact tube from moving contact assembly to facilitate inspection of spring and cable assembly.
- ⑥ To ensure proper handling, purchasers are asked to obtain from the nearest S&C Sales Office a special serially numbered label to place on one of the shipping boxes in which the Loadbuster tools are returned. Loadbuster tools should be packed carefully, with a packing slip enclosed showing the purchase-order or requisition number covering the overhaul, and should be shipped, transportation charges prepaid, to S&C Electric Company.
- ⑦ Includes S&C's standard two-year warranty, effective from the date of complete overhaul and in accordance with the terms of the standard warranty set forth in Price Sheet 150. See the "Conditions of Sale" section on page 1.
- Supersedes NA-1022-1 and NA-1022-2 respectively.

- For use on Loadbuster tool catalog numbers 5300R3, 5300R3-E, and 5400R3 manufactured after June 2002.
- ▲ Body is approximately 2⅞ inches (73 mm) in length. For use on Loadbuster tool catalog number 5300R3 manufactured before June 2002. The NA-1034 extended insulating hood will not fit over the silencer with a nonresettable operation counter.
- ◆ Body is approximately 3¾ inches (95 mm) in length. For use on Loadbuster tool catalog number 5300R3 manufactured after June 2002. The NA-1075 extended insulating hood will not fit over the silencer without an operation counter.
- ▼ Applicable only to tools manufactured within the last 20 years. The date of manufacture can be determined from the serial number stamped on the aluminum strap attached to the chassis. The first three (or four) digits of the serial number represent the month and year of manufacture.



### Selecting a Disconnect, Cutout, Power Fuse, Dropout Recloser, or Fuse Limiter

Here's what to look for when selecting a disconnect, cutout, power fuse, dropout recloser, or fuse limiter to be switched with the Loadbuster tool:

- There must be an attachment hook at the upper (jaw) end of the device over which the Loadbuster tool's anchor can be hooked. There also is a pull-ring on the device's switch blade or fuse tube that can be readily engaged with the Loadbuster's tool pull-ring hook and held fast by the pull-ring latch.
- The device must mechanically coordinate with the Loadbuster tool's operating sequence such that (a) engagement of the Loadbuster tool will not cause or allow the

switch blade, fuse tube, or dropout recloser to drop open prematurely and (b) the attachment hook will keep the Loadbuster tool positively anchored until tripping occurs, while (c) permitting easy removal of the Loadbuster tool, regardless of whether the opening stroke has been completed or whether, for any reason, the device being switched has been reclosed after partial (incomplete) opening.

- The device must be capable of easy, positive manipulation with the Loadbuster tool 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 6 on page 9.



**Table 6. Quantitative Requirements for Disconnects, Cutouts, Power Fuses, Dropout Reclosers, or Fuse Limiters Qualifying for Use with a Loadbuster Tool, Catalog Numbers 5300R3 and 5400R3**

I Loadbuster Catalog Number	II Disconnect, Cutout, Power Fuse, Dropout Recloser, or Fuse Limiter Application— Max System Operating Voltage, Three-Phase	III <sup>①</sup> Min. Dry Withstand Voltages across External Disconnect Gap <sup>②</sup>				IV <sup>⑥</sup> Suggested Min. External Disconnect Gap Separation <sup>②</sup> at Time of Tripping <sup>④</sup>		V <sup>⑦</sup> Suggested Min. External Disconnect Gap Separation <sup>②</sup> with Loadbuster Fully Extended To “Latched Open” Position	
		60-Hertz <sup>③</sup> —at Time of Tripping <sup>④</sup>		Capacitance Switching Test <sup>⑤</sup> — Circuit Voltage					
		kV	kV, RMS	kV, RMS	kV, RMS	Inches (mm)		Inches (mm)	
5300R3	9	18		9		3½ (89)		4 (102)	
5300R3 & 5400R3	15	30		15		3½ (89)●	3¾ (98)■	4½ (114)●	5 (127)■
5300R3 & 5400R3	18	36		18		3⅞ (98)		5 (127)	
5300R3 & 5400R3	27	41●	54■	20.5●	27■	3⅞ (98)●	4¼ (121)■	5 (127)●	6 (152)■
5400R3	29	▲		29		5¼ (133)		6½ (165)	
5400R3	38	▲		29		5¼ (133)		6½ (165)	

① Disconnects, cutouts, power fuses, dropout reclosers, or fuse limiters (while being switched with a Loadbuster tool) 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, power fuses, or fuse limiters with insulation just meeting minimum ANSI standards, it may be necessary to test with the mounting bracket or base floating. The specified voltages are given for standard atmospheric conditions of temperature, barometric pressure, and humidity, and they must be corrected for the existing atmospheric conditions at the time of test.

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

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 be 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 Tripped condition is simulated when Loadbuster tool catalog number 5300R3 is telescoped to 1⅞ inches (48 mm) from the **Latched Open** position or when the Loadbuster tool catalog number 5400R3 is telescoped 1⅞ inches (35 mm) from the **Latched Open** position.

⑤ This test consists of interruption of a 0% PF leading capacitance current of 2 to 5 amperes with the Loadbuster tool 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 III. They are based on designs where sharp points, sharp edges, protrusions, etc., are avoided so essentially rod-gap configuration is obtained on the disconnect, cutout, power fuse, or fuse limiter 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 the Loadbuster tool to be removed without reducing the gap below the values listed in Column IV, which should be maintained after circuit interruption even though the transient recovery voltage may not then be a factor to provide margin for possible inattentive manipulation of the Loadbuster tool.

● Catalog number 5300R3.

■ Catalog number 5400R3.

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