INCH-POUND

MIL-C-17588E(SH)
AMENDMENT 5
24 June 1993
SUPERSEDING
AMENDMENT 4
5 July 1988

MILITARY SPECIFICATION

CIRCUIT BREAKERS (AUTOMATIC - ALB-1) AND SWITCH, TOGGLE (CIRCUIT BREAKER, NON-AUTOMATIC - NLB-1) AIR, INSULATED HOUSING, 125 VOLTS AND BELOW, A.C. AND D.C., (NAVAL SHIPBOARD USE)

This amendment forms a part of MIL-C-17588ED(SH), dated 26 November 1985, and is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 2

* 1.2.1, line 2: After "I", add "and table IA".

* After "Table I", Insert new Table 1A:

"Table: 1A Mounting Base type designation.

Type	Application
MB-SP	Single circuit breaker (Figure 1B)
MB-TP	Two circuit breaker (Figure 1C)
MB-AB/BC	Phase A-B or B-C (Figure 1D)
MB-AC	Phase A-C (Figure 1D)
MB-CA	Phase C-A (Figure 1D)
MB-ABC	Phase ABC (three phase) (Figure 1E)

"

* 2.1, under "SPECIFICATIONS, Military" add:

"MIL-P-38477 - Plastic Material, Pressure Sensitive Adhesive for Aircraft Identification and Marking."

AMSC N/A FSC 5925
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PAGE 3

* 3.1, line 1: Delete "Circuit breakers furnished under this specification" and substitute "Circuit breakers and mounting bases furnished under this specification".

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* 3.3, line 1: Delete "Circuit breakers shall have the physical" and substitute "Circuit breakers and mounting bases shall have the physical".

* 3.3.3: Delete and substitute:

"3.3.3 Housing. Circuit breaker housing and mounting bases shall be made of molded insulating material in accordance with MIL-M-14, types MAT 30, MAI 60, MAI 30 or MMI 30."

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* 3.4.1, line 3: Delete "(see figure 1D)" and substitute "(see figures 1B thru 1E)".

PAGE 7

3.5.2, Table IV under Time - seconds: Delete "0.028" and substitute "0.400".

* 3.8: Delete and substitute:

"3.8 Dielectric withstanding voltage. Circuit breakers and mounting bases shall withstand a maximum dielectric withstanding voltage not greater than 1250 volts for qualification inspection and not less than 750 volts after interrupting performance for circuit breakers (see 4.8.2)."

* 3.9, line 1: Delete "When circuit breakers are tested as specified" and substitute "When circuit breakers and mounting bases are tested as specified".

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* 3.15 Delete and substitute:

"3.15 Designation and marking. Identification plates and other designation markings shall be in accordance with the designation, marking, and environmental requirements of MIL-P-15024 and MIL-P-15024/5 or MIL-P-38477 type I class I. Identification plates, when used shall be constructed of nonconducting material. Plates and or markings shall be installed or inscribed as part of the circuit breakers and mounting bases."

* 3.15.1, lines 1 through 4: Delete and substitute:

"3.15.1 Identification marking. Identification markings for circuit breakers and mounting bases shall be provided either on an identification plate/label attached to the circuit breaker or mounting base or shall be provided by directly marking on the molded enclosure. Data on the identification markings shall consist of the following:"

* 3.15.1(e): Delete and substitute:

"(e) Voltage and kind of current (60 or 400 Hz, ac and dc for circuit breakers)."

* 3.15.1(f): Delete and substitute:

"(f) Element rating (for circuit breakers) - The element rating shall be stamped or engraved on the circuit breaker operating handle."

* 3.15.1: Add the following:

"(g) Date code, serial or objective evidence number"

PAGES 9 and 10

* Delete and substitute:

"TABLE V. Qualification inspection of circuit breakers.

Inspection	Reqmt. para.	Insp. para.	Sample Units ALB/NLB 1 2 3 4 5 6 7	Mounting Base 8 9 10 11
GROUP 1				
Visual Exam.	3.2, 3.3, 3.4	4.8.1	x x x x x x	x x x x
Calibration	3.5	4.8.4	x x x x x x	
Dielectric withstand voltage	3.8	4.8.2	x x x x x x	x x x x
Insulation resistance	3.9	4.8.3	x x x x x x	x x x x
Inclination	3.13	4.8.11	x x x x x x	
GROUP 2				
Creepage/Clearance	3.10	4.8.5	x x x	x x x x
Temperature rise	3.7	4.8.6	x x x	
Endurance	3.14	4.8.7	x x x	
Interruption performance	3.6	4.8.8	x x x	
Dielect. withstand voltage	3.8	4.8.2	x x x	
Insulation resistance	3.9	4.8.3	x x x	
Temperature rise 1/	3.7	4.8.6	x x x	x x x x
GROUP 3				
Vibration 2/	3.11	4.8.9	x	x x x x
Shock 2/	3.12	4.8.10	x	x x x x
Calibration	3.5	4.8.4	x	
Dielect. withstand voltage	3.8	4.8.2	x	
Insulation resistance	3.9	4.8.3	x	
Temperature rise	3.7	4.8.6	x	

1/ The temperature rise test shall be conducted with a 50 ampere ALB-1 circuit breaker.

2/ The circuit breaker mounting blocks shall have an ALB-1 circuit breaker mounted in each block position."

PAGE 10

* 4.4.1 Samples for qualification inspection. Add:

"Sample no. 8 - One circuit breaker unit (type MB-SP).
Sample no. 9 - Two circuit breaker unit (type MB-TP).
Sample no. 10 - Four circuit breaker unit (type MB-AB/BC, AC or CA).
Sample no. 11 - Six circuit breaker unit (type MB-ABC)."

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Table VI: Delete and substitute:

"TABLE VI. Sampling for quality conformance inspection.

Lot Size	Sample Size
2 - 8	2
9 - 90	3
91 - 150	12
151 - 280	19
281 - 500	21
501 - 1200	27
1201 - 3200	35

"

* 4.7.1 Delete and Substitute:

"4.7.1 Comparison inspection samples. One each circuit breaker sample numbers 1, 3, 6, and the largest and smallest mounting base offered for qualification, specified in 4.4.1 shall be subjected to the tests shown in table V."

4.7.3: Delete and substitute:

"4.7.3 Quality conformance production shock testing. Five units of each ampere rating produced during a month shall be selected at random and subjected to production shock testing. If more than 2 ampere ratings are produced during a month, the total number of circuit breakers shocked may be limited to 10 units which will be divided equitably among the production lots."

PAGE 12

4.7.3.1, line 1 thru 5: Delete and substitute:

"4.7.3.1 Test interval. Test periods shall begin with the first production run circuit breaker. Circuit breakers produced during the time period (month) shall be tested during that month. The manufacturer shall conduct the shock tests on the sample circuit breakers and file the data as production shock test records. Several circuit breakers of different ampere ratings may be tested simultaneously during the same month; for example, the mounting plate may be modified to accommodate one circuit breaker of each ampere rating, and any multiple of one-to-ten circuit breakers of different ampere ratings may be tested simultaneously. The following tests shall apply:

(a) The circuit breaker shall be tested in the closed position.
(b) The circuit breaker shall be tested when mounted in its vertical and closed position and no load voltage is necessary.
(c) The circuit breaker shall be subjected to one hammer blow of a 3-foot drop from each direction--top, back, and side."

PAGE 13

* 4.8.1, line 1: Delete " Circuit breakers shall be" and substitute "Circuit breakers and mounting bases shall be".

* 4.8.1, line 4: Delete "shall be measured on two different circuit breakers of the same type for" and substitute "shall be measured on two different circuit breakers or mounting bases of the same type for".

* 4.8.2 Delete the first sentence and substitute:

"4.8.2 Dielectric withstanding voltage. Circuit breakers and mounting bases shall be tested in accordance with method 301 of MIL- STD-202.

* 4.8.2 Add as new subparagraph (e):

"(e) Points of application of test voltage.
Mounting bases
(1) Between live parts and metal parts which are considered ground potential.
(2) Between terminals on adjacent phases."

* 4.8.3: Delete the first sentence and substitute:

"4.8.3 Insulation resistance. Circuit breakers and mounting bases shall be tested in accordance with method 302 of MIL-STD 202."

PAGE 14

4.8.4.2: Delete the last sentence.

PAGE 16

* Add as new paragraph 4.8.10.1:

"4.8.10.1 Shock for mounting bases. Mounting bases shall be shocked with circuit breakers in accordance with the requirements in MIL-S-901 for grade A class I, type C equipment. There shall be no evidence of electrical or mechanical damage or loosening of parts on the mounting base(s) or dislodging of circuit breaker(s)."

PAGE 24

* Figure 1: Delete and substitute attached figure 1B.

PAGE 25

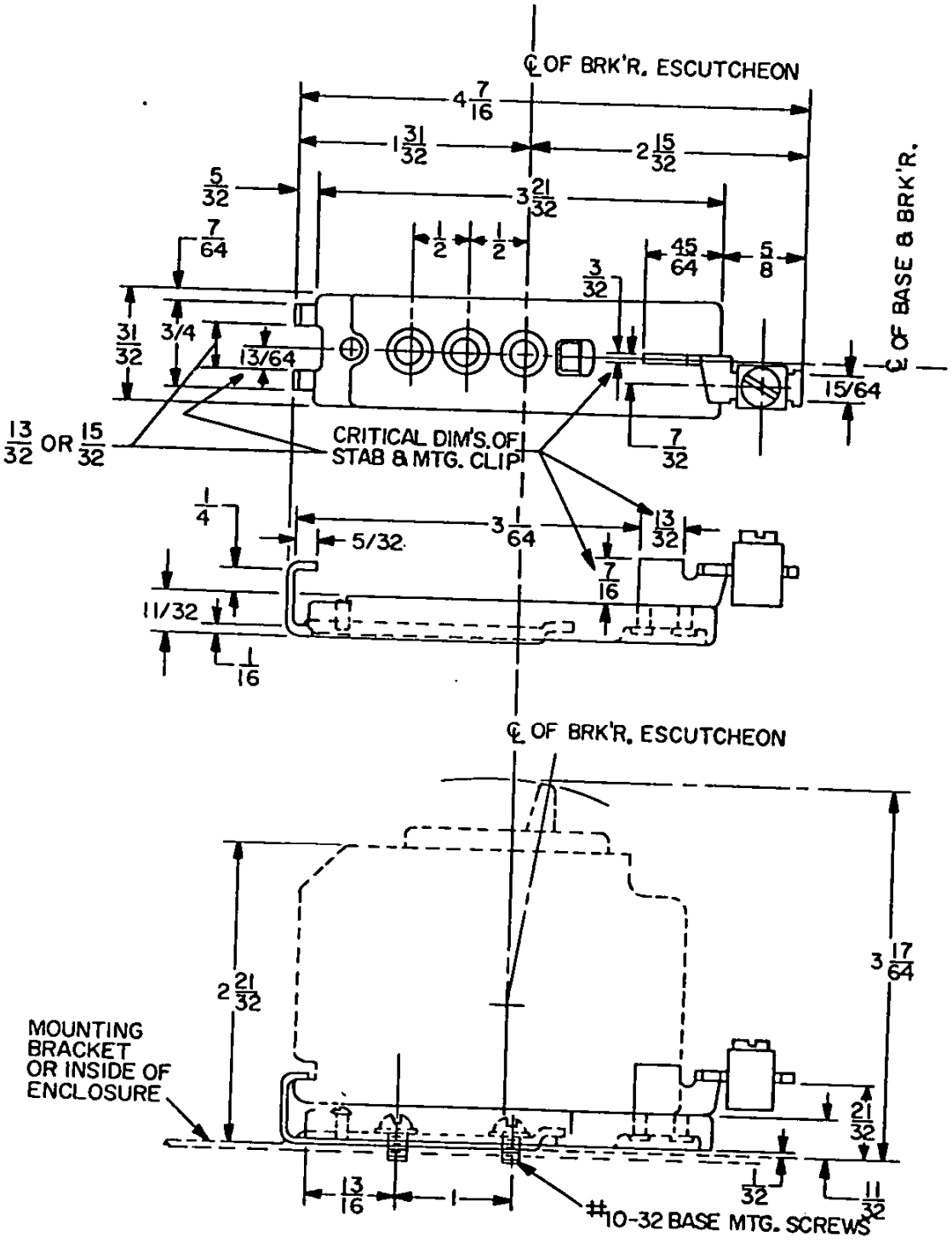
* Figure 1: Delete and substituted attached figure 1C.

PAGE 26

* Figure 1: Delete and substitute attached figure 1D (pages 10, 11 and 12).

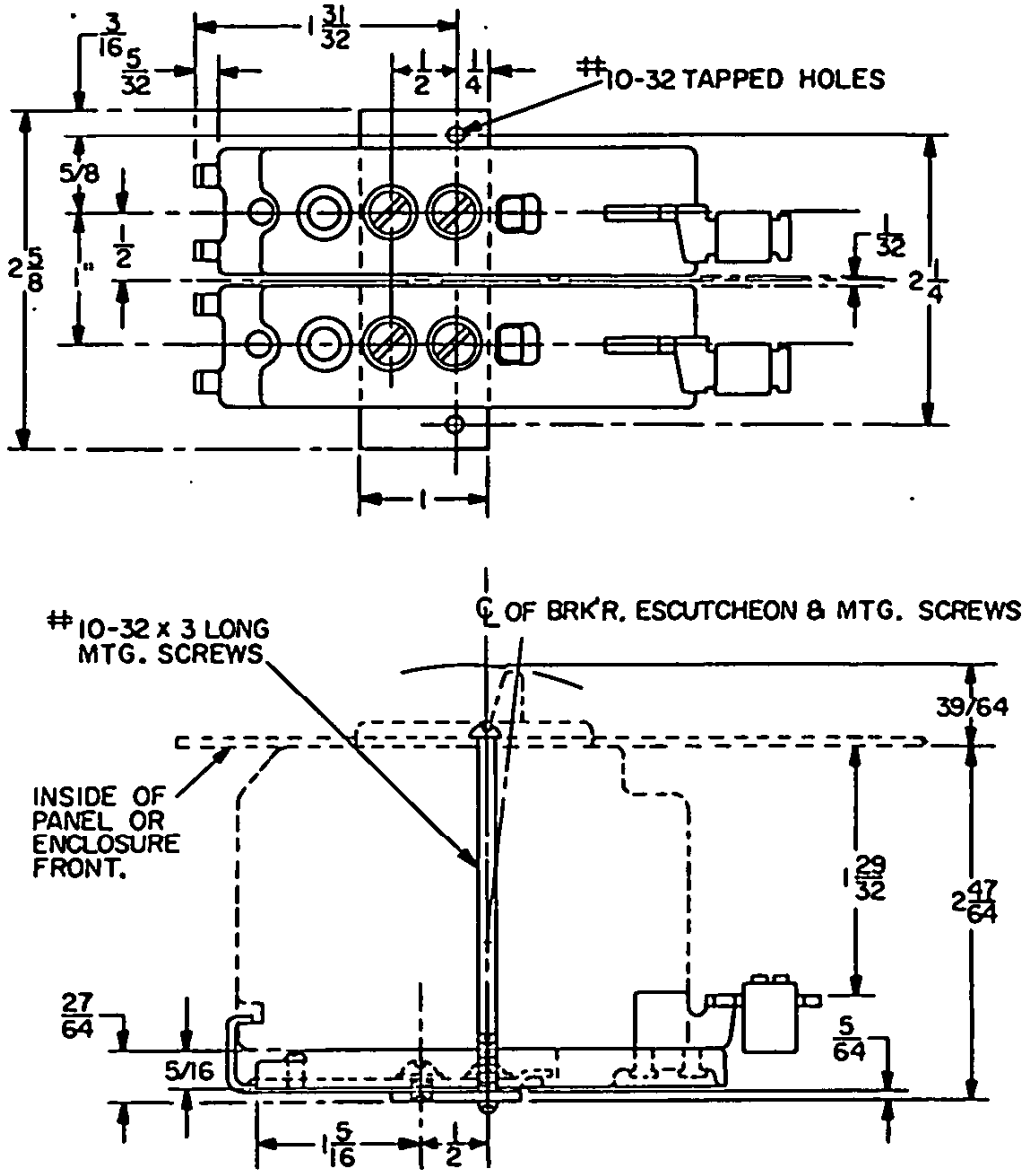
NOTE: The margins of this amendment are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Preparing activity:
Navy - SH
(Project 5925-N139)



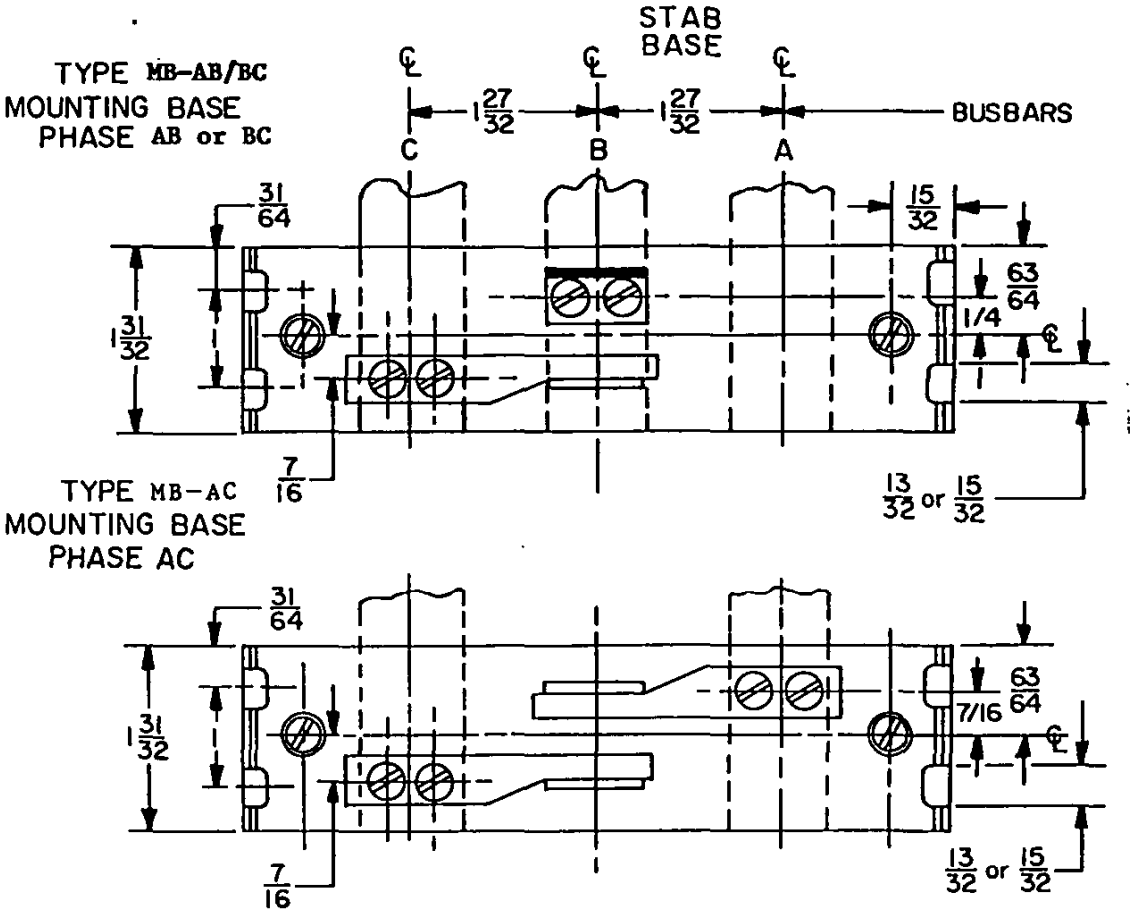
1B. Outline dimensions for mounting bases for one circuit breakers, (Type MB-SP)

FIGURE 1. Type ALB-1 thermal-magnetic, enclosed, trip free (single pole) and type NLB-1, switch, toggle (nonautomatic). - Continued



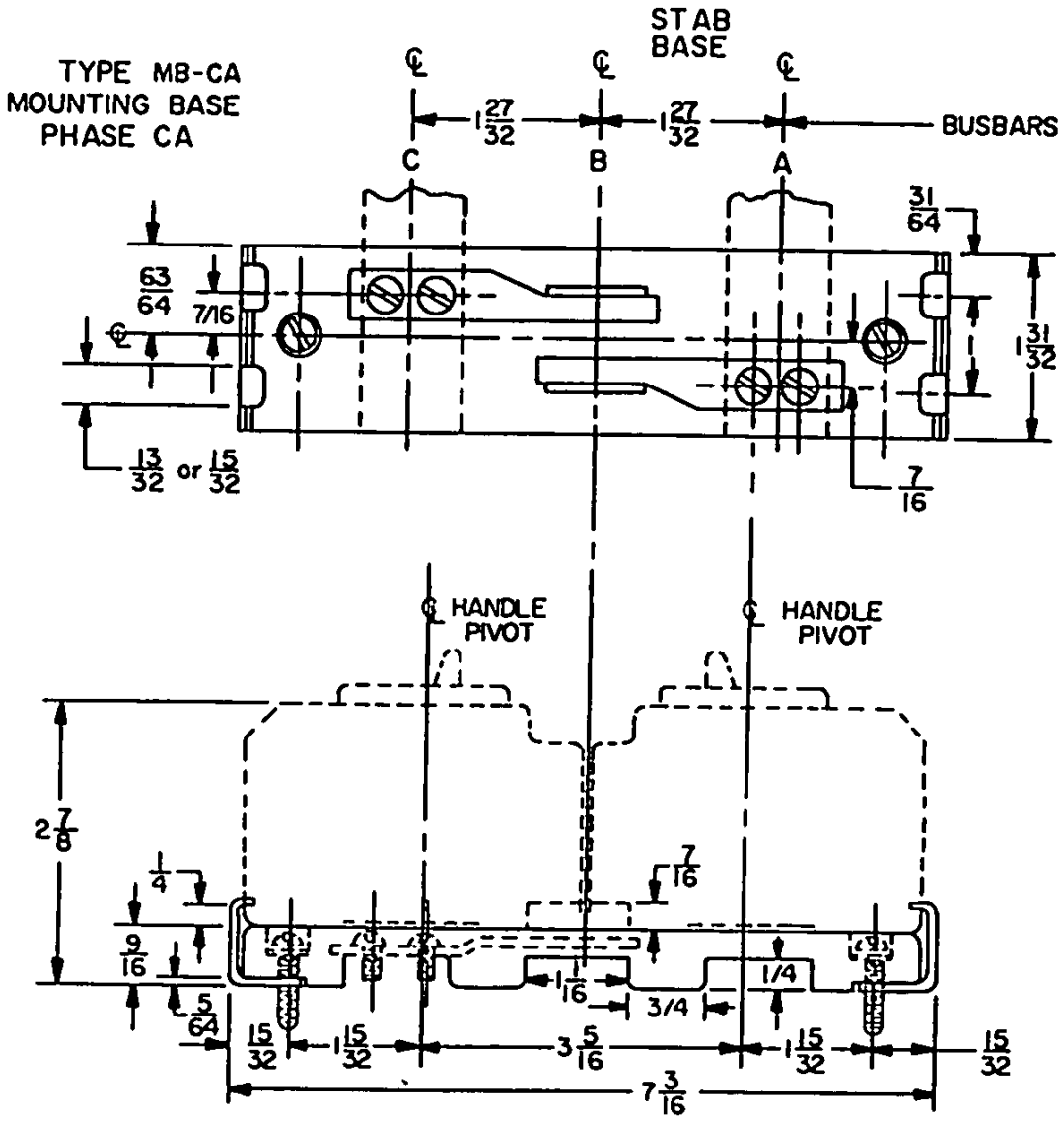
1C. Outline dimensions for mounting bases for two circuit breakers, (Type MB-TP)

FIGURE 1. Type ALB-1 thermal-magnetic, enclosed, trip free (single pole) and type NLB-1, switch, toggle (nonautomatic). - Continued



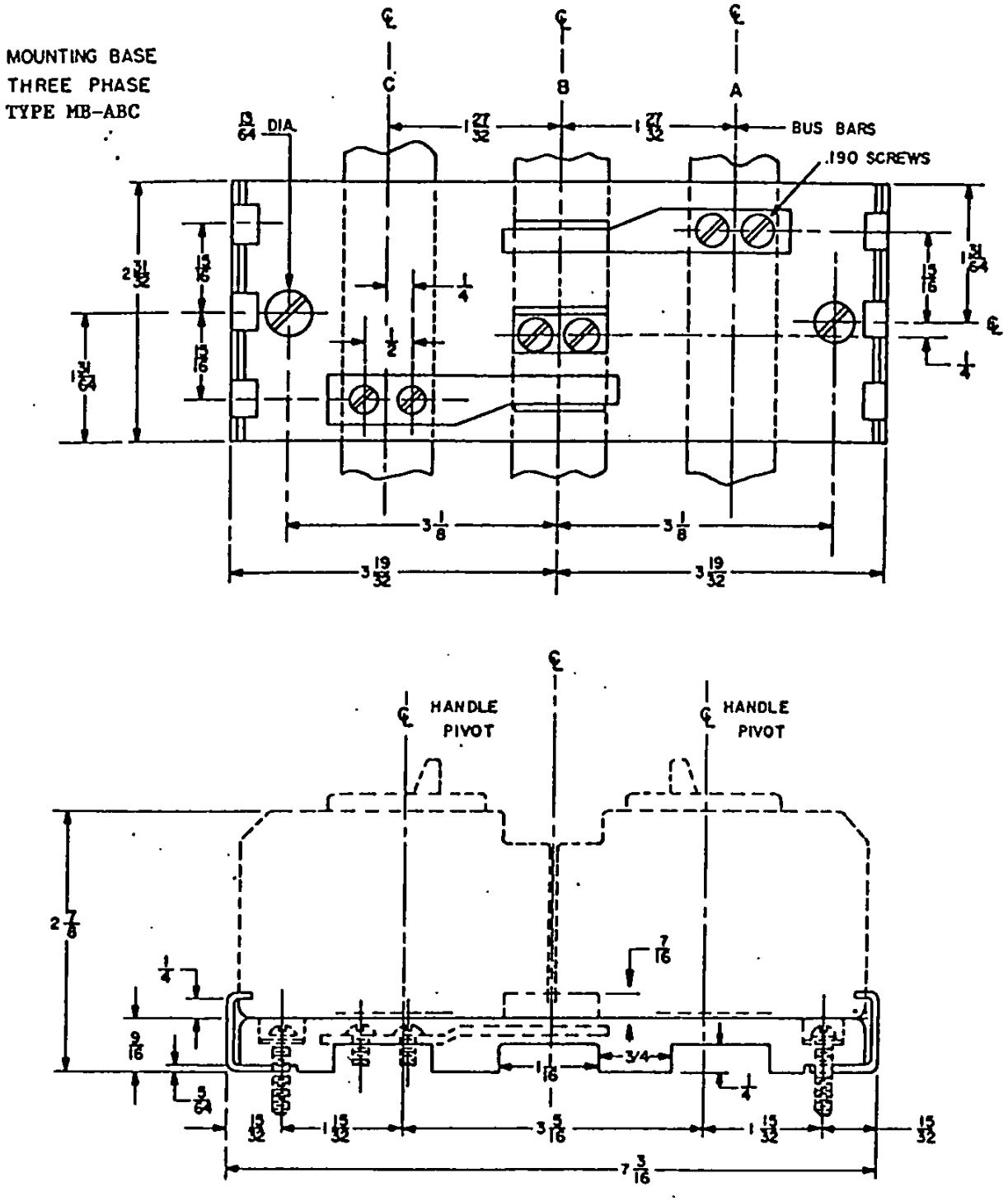
1D. Outline dimensions for mounting bases for circuit breakers

FIGURE 1. Type ALB-1, thermal-magnetic, enclosed, trip free (single pole) and type NLB-1, switch, toggle (nonautomatic). - Continued



1D. Outline dimensions for mounting bases for circuit breakers

FIGURE 1. Type ALB-1, thermal-magnetic, enclosed, trip free (single pole) and type NLB-1, switch, toggle (nonautomatic). - Continued



1E. Outline dimensions for mounting bases for six circuit breakers.

FIGURE 1. Type ALB-1, thermal-magnetic, enclosed, trip free (single pole) and type NLB-1, switch, toggle (nonautomatic). - Continued