



UL 1558

STANDARD FOR SAFETY

Metal-Enclosed Low-Voltage Power
Circuit Breaker Switchgear

UL Standard for Safety for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear, UL 1558

Sixth Edition, Dated April 2, 2025

SUMMARY OF TOPICS

This new Sixth Edition ANSI/UL 1558 dated April 2, 2025 includes the following changes in requirements:

– Revision of Requirements for Multiple Source Switchgear; [2.2](#), [13.3.1](#), Section [14](#), Section [19](#), and Section [20.10](#).

– Editorial updates and addition of Referenced Publications; [1.3](#), [2.1](#), Section [3](#), [4.1](#), [5.1](#), [6.1.1](#), [6.2.7](#), [6.2.8](#), [7.1](#), [8.1.1](#), [10.1](#), [11.1](#), [12.1.1](#), [12.2.2](#), [13.1.1](#), [15.1](#), [16.1.1](#), [16.3.1](#), [16.3.2](#), [16.4.1](#), [18.1](#), [20.1.1](#), [20.8.1](#), and [21.1](#).

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated January 31, 2025.

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Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear

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Sixth Edition

April 2, 2025

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The most recent designation of ANSI/UL 1558 as an American National Standard (ANSI) occurred on April 2, 2025. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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INTRODUCTION

1 Scope

1.1 These requirements cover metal-enclosed low-voltage power circuit breaker switchgear assemblies containing but not limited to such devices as low-voltage power circuit breakers, other interrupting devices, switches, control, instrumentation and metering, protective and regulating equipment.

1.2 These requirements cover equipment intended for use in ordinary locations in accordance with the National Electrical Code.

1.3 These requirements are intended to supplement and be used in conjunction with IEEE C37.20.1, Metal-Enclosed Low-Voltage (1000 Vac and below, 3200 Vdc and below) Power Circuit Breaker Switchgear, and ANSI C37.51, Switchgear – Metal-Enclosed Low Voltage AC Power Circuit Breaker Switchgear Assemblies – Conformance Test Procedures.

1.4 These requirements cover equipment rated 1000 V ac or less nominal, 1058 V ac maximum.

2 Glossary

2.1 TAP – A terminal or provision for a terminal intended for field wiring that is located on the supply side of the service disconnecting means. The tap is intended to be used in accordance with NFPA 70.

2.2 SYNCHRONIZATION – The condition achieved when the two sources are in phase, not exceeding specified differences in voltage, frequency, and phase angle between sources being paralleled.

3 Referenced Publications

3.1 Any undated reference to a code or standard appearing in the requirements of this Standard shall be interpreted as referring to the latest edition of that code or standard.

3.2 The following publications are referenced in this Standard:

ANSI C37.51, *Switchgear – Metal-Enclosed Low Voltage AC Power Circuit Breaker Switchgear Assemblies – Conformance Test Procedures*

IEEE C37.20.1, *Metal-Enclosed Low-Voltage (1000 Vac and below, 3200 Vdc and below) Power Circuit Breaker Switchgear*

NFPA 70, *National Electrical Code*

UL 248-1, *Low-Voltage Fuses – Part 1: General Requirements*

UL 248-4, *Low-Voltage Fuses – Part 4: Class CC Fuses*

UL 248-5, *Low-Voltage Fuses – Part 5: Class G Fuses*

UL 248-6, *Low-Voltage Fuses – Part 6: Class H Non-Renewable Fuses*

UL 248-8, *Low-Voltage Fuses – Part 8: Class J Fuses*

UL 248-10, *Low-Voltage Fuses – Part 10: Class L Fuses*

UL 248-11, *Low-Voltage Fuses – Part 11: Plug Fuses*

UL 248-12, *Low-Voltage Fuses – Part 12: Class R Fuses*

UL 248-15, *Low-Voltage Fuses – Part 15: Class T Fuses*

UL 746C, *Polymeric Materials – Use in Electrical Equipment Evaluations*

UL 1741, *Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources*

UL 3141, *Outline of Investigation for Power Control Systems*

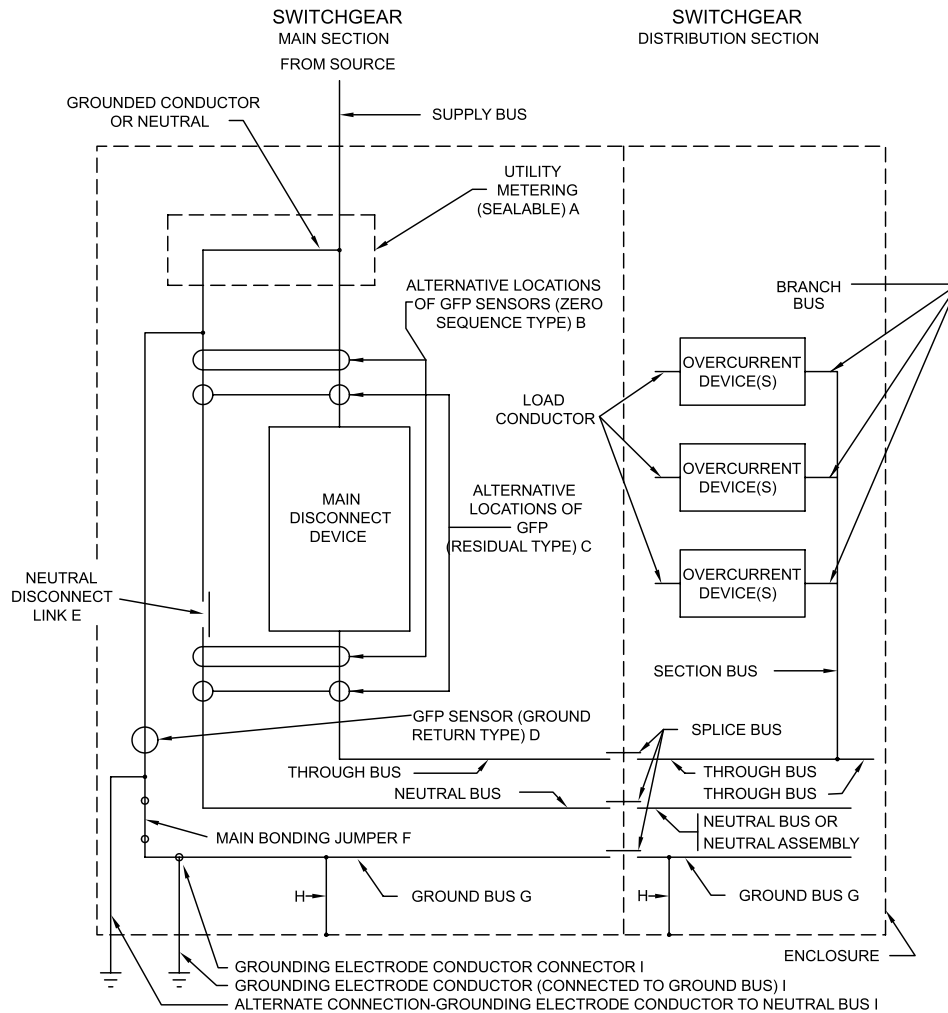
4 General

4.1 Requirements for the equipment covered by this Standard are contained in IEEE C37.20.1 and ANSI C37.51. The requirements in this Standard shall be applied in addition to those contained in the above documents, or as alternatives where so specified.

4.2 It is specifically not intended that these requirements be used alone to evaluate these devices.

4.3 [Figure 4.1](#) – [Figure 4.3](#) show typical switchgear layouts. It is recognized that other arrangements are possible.

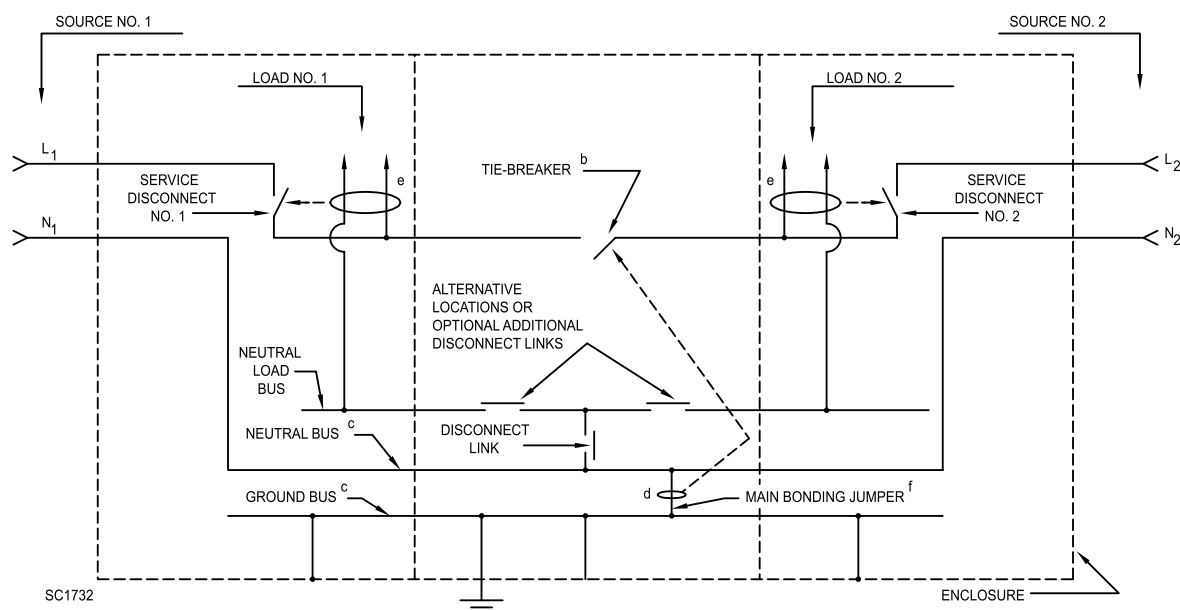
Figure 4.1
Typical Switchgear Layout



SC1177-2

- A. Utility Metering, see [13.2.5](#).
- B. GFP Sensor (Zero Sequence Type), see [13.1.5](#) – [13.1.13](#).
- C. GFP Sensor (Residual Type), see [13.1.5](#) – [13.1.13](#).
- D. GFP Sensor (Ground Return Type), see [13.1.5](#) – [13.1.13](#).
- E. Neutral Disconnect Link, see [7.11](#), [13.1.5](#) – [13.1.13](#), and [13.2.1](#) – [13.2.5](#). (For other than ground return type GFP, the neutral disconnect link may be located on the line or load side of the GFP sensor.)
- F. Main Bonding Jumper, see [7.6](#).
- G. Ground Bus, see [7.1](#) – [7.8](#).
- H. Frame and Structure Grounding, see [7.2](#).
- I. Grounding Electrode Conductor, see [7.4](#) and [13.1.5](#) – [13.1.13](#).

Figure 4.2
Typical Double-Ended Switchgear



^a Other variations are possible.

^b Tie breaker disconnect. See [14.1](#) and [14.2](#).

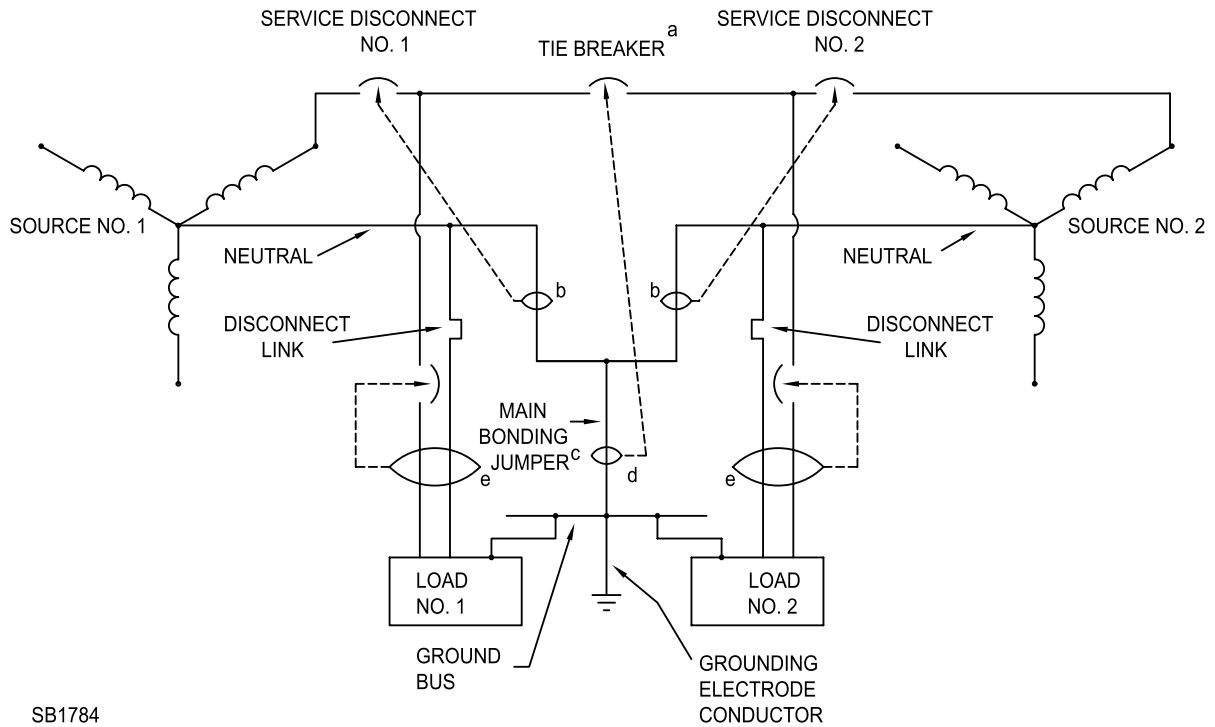
^c The neutral bus and ground bus may be combined if ground return type ground fault protection is not used and the sections are marked "Suitable only for use as service equipment".

^d Ground return type ground fault protection sensor in accordance with [13.1.9](#).

^e Zero sequence or residual type ground fault protection sensor in accordance with [13.1.7](#) and [13.1.8](#).

^f Size of main bonding jumper based on largest service disconnect.

Figure 4.3
Typical Double-Ended Switchgear



SB1784

^a Tie breaker disconnect. See [14.1](#) and [14.2](#).

^b Additional ground return type ground fault protection sensors utility interlocked with (d) so as to function only when fault current is also sensed by (d).

^c Size of main bonding jumper based on largest service disconnect.

^d Ground return type ground fault protection sensor in accordance with [13.1.9](#).

^e Zero sequence or residual type ground fault protection sensor in accordance with [13.1.7](#) and [13.1.8](#).

CONSTRUCTION

5 Accelerated Aging of Gaskets

5.1 The requirements of this section are applicable to gaskets relied upon to enable an enclosure to meet the rain test specified in 6.2.11 of IEEE C37.20.1.

5.2 A gasket of an elastomeric or thermoplastic material or a composition gasket utilizing an elastomeric material employed to make an enclosure rainproof shall comply with [5.3](#) and [5.4](#).

5.3 If an enclosure is provided with a rubber or rubber-like gasket, samples of the gasket shall be subjected to a temperature of 70 ± 1 °C (158 ± 1.8 °F) in circulating air for 168 hours. The tensile strength after the exposure shall not be less than 60 % and the elongation shall not be less than 75 % of the values determined with unaged samples.

5.4 A gasket of thermoplastic material, or a composition thereof, may be accepted after consideration of the effects of heat aging, distortion under conditions of use, and the means of securing the gasket to the cover or enclosure.

6 Primary or Power Carrying Circuits

6.1 General

6.1.1 The requirements of this section shall be applied in addition to those specified in 7.1.1 of IEEE C37.20.1.

6.2 Bus bars

6.2.1 The bending of a bus bar shall not result in visible cracks, but roughening or slight surface crazing is acceptable.

6.2.2 A bolted joint involving aluminum bus bars shall comply with the requirements of [6.2.3](#) and [6.2.4](#), unless:

- a) A spring washer as described in [6.2.6](#) is used at one end of each bolt securing current-carrying parts together is used, or
- b) A locknut or a split-ring lock washer and a flat washer as described in [6.2.5](#) is used and each aluminum bus in the joint has a tensile yield strength of at least 20,000 psi (138 MPa).
- c) A flat washer, as described in [6.2.5](#), and aluminum bolts are used with aluminum bus bars.

6.2.3 A switchgear bus, as mentioned in [6.2.2](#), that employs a bolted joint construction with aluminum bus bars shall be subjected to the test described in [6.2.4](#). The temperature rise at the joint during the 500th cycle shall not be more than 15 °C (27 °F) higher than the temperature rise at the 25th cycle.

Exception: Constructions described in [6.2.2](#) (a), (b), or (c), need not comply with this requirement.

6.2.4 The test sample is to consist of an assembly of bus bars connected together to form a series circuit. The bus bars are to be clamped together with the joint construction used in actual production. The number and size of the bus bars are to represent the maximum ampere rating and the maximum current density in which the joint construction is to be employed. This may necessitate more than one test. The length of each bus bar is to be not less than 2 feet (610 mm). The bus bar is to be connected to a power supply by any convenient means that will not affect the joint temperature. The power supply is to be