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UL 1008M

TRANSFER SWITCH EQUIPMENT, METER MOUNTED

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Summary of Topics

This Second Issue of Outline of Investigation for Transfer Switch Equipment, Meter Mounted, UL 1008M, is being issued to incorporate requirements for meter mounted transfer switches intended for use with permanently connected generators.

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INTRODUCTION

1 Scope

1.1 These requirements cover automatic and non-automatic (manual) transfer switch equipment, operating at 600 V ac less, and intended for installation in a utility meter base, in ordinary locations only.

1.2 These devices are intended for use in optional standby systems only, and are not intended for use in Emergency or Legally Required Standby Systems. These devices are intended for one of the following applications:

- a) Cord connection of a portable generator to power a premise wiring system, where the neutral (grounded circuit conductor) of the generator is not bonded to ground or the generator frame, and bonding of the neutral (grounded circuit conductor) to ground will occur within the meter base or
- b) Permanent connection of a stationary generator to power a premise wiring system, where the generator is connected as a non-separately derived system, where the neutral (grounded circuit conductor) of the generator is not bonded to ground or the generator frame.

1.3 These devices are connected between the meter mounting equipment and the electric utility meter, on the line side of the service disconnect. As such, the installation of these devices is intended to be under the exclusive control of the serving utility, and these are not considered under the purview of the National Electrical Code, NFPA 70. Generators and associated wiring connected to the generator terminals of the transfer switch are not considered under the exclusive control of the utility, and are under the purview of NFPA 70.

1.4 An automatic transfer switch as covered by these requirements is a device that automatically transfers a common load from a normal supply to an alternate supply in the event of failure of the normal supply, and automatically returns the load to the normal supply when the normal supply is restored. An automatic transfer switch may be provided with a logic control circuit that inhibits automatic operation of the device from either a normal to an alternate supply, or from an alternate to a normal supply when the switch reverts to automatic operation upon loss of power to the load.

1.5 A non-automatic transfer switch as covered by these requirements is a device, operated manually by a physical action, or electrically by a remote control, for transferring a common load between a normal and alternate supply.

1.6 A transfer switch may incorporate overcurrent protection for the main power circuits.

1.7 These requirements only cover transfer switches which are completely enclosed when installed in a meter base in conjunction with the electrical utility meter.

1.8 Transfer switches are rated in amperes and are considered to be acceptable for total system transfer, which includes control of motors, electric-heating loads, and transformer loads.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this Outline of Investigation shall comply with the requirements for that component.

2.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this outline, or
- b) Is superseded by a requirement in this outline.

2.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

4 Undated References

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

CONSTRUCTION

5 General

5.1 Transfer switches shall employ materials throughout which are acceptable for the particular use, and shall be made and finished with the degree of uniformity and grade of workmanship practicable in a well-equipped factory.

6 Enclosure

6.1 A transfer switch shall be provided with an enclosure, which complies with the requirements of the Standard for Meter Sockets, UL 414.

6.2 An external operating means – such as those for a disconnect, a pilot device, or a resetting operation – mounted on or through an enclosure shall withstand the tests specified for the enclosure.

6.3 Marking and instructions on the exterior of the device shall be permanent. See 30.1.

6.4 Meter mounted transfer switches which are intended for outdoor use in wet locations shall comply with the requirements for Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosures, as detailed in the Enclosure Section of the Standard for Transfer Switch Equipment, UL 1008. Transfer switches intended for cord connection to portable generators, shall comply with these requirements with the cord connector installed as well as with the connector withdrawn.

6.5 Enclosures shall have provisions for padlocking or sealing by the serving utility, such that the enclosure may not be opened or removed without removing the utility company padlock or breaking the utility company seal. This requirement does not apply to enclosures (such as generator termination boxes) that contain only wiring or components that are not connected to the utility conductors with the transfer switch in any position.

7 Insulating Material

7.1 Material for the support of uninsulated live parts shall be porcelain, phenolic or cold molded composition, or other material acceptable for the support of such parts in accordance with the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, and shall be capable of withstanding the most severe conditions likely to be met in service.

7.2 Insulating material, including barriers between parts of opposite polarity (phase barriers) and material that may be subject to the influence of an arc formed by the opening of a switch, shall be acceptable for the particular application.

8 Mounting of Parts

8.1 All parts of transfer switches shall be securely mounted in position and prevented from loosening or turning if such motion may affect adversely the intended performance of the equipment, or may affect the risk of fire and injury to persons incident to the operation of the equipment.

8.2 Uninsulated live parts other than pressure wire connectors, shall be secured to their supporting surfaces so that they will be prevented from turning or shifting in position if such motion may result in a reduction of spacings to less than those indicated in Section 17. The security of contact assemblies shall be such as to provide the continued alignment of contacts.

8.3 Friction between surfaces is not acceptable as a means to prevent turning, loosening, or shifting of a part as required in 8.1 and 8.2, but a lock washer, properly applied, may be accepted.

8.4 If the mechanism of a switching device is such that automatic operation of the transfer switch, or operation of a remote or automatic tripping devices will permit sudden movement of an operating handle, the motion of the handle shall be restricted or the handle shall be guarded to prevent injury to persons in the vicinity of the handle.

9 Guarding and Accessibility of Live Parts

9.1 When the transfer switch is installed in a meter base in conjunction with an electrical utility meter, there shall be no uninsulated live parts accessible.

9.2 Inlets for connection of portable generators shall be of the type with male blades, and shall be arranged such that they are not energized unless mated with the appropriate connector.

10 Current-Carrying Parts

10.1 A current-carrying part shall have mechanical strength and current-carrying capacity for the service, and shall be of metal that is acceptable for the particular application.

10.2 If parts are held together by screws, a threaded part shall have no fewer than two full, clean-cut threads engaged. If the screw does not extend all the way through a threaded part, the taper or lead and the first full thread are to be disregarded in a determination of the number of threads engaged.

11 Field Wiring Terminals

11.1 Transfer switch equipment shall be provided with blades and jaws for mating with a meter base and an electrical utility meter. These blades and jaws shall comply with the requirements of the Standard for Meter Sockets, UL 414.

11.2 Meter mounted transfer switches for connection to a portable generator shall be provided only with an integral inlet for cord connection of a portable generator. Flexible cord shall not be an integral part of the transfer switch. Field wiring terminals for connection of a portable generator are not allowed.

11.3 Meter mounted transfer switches for permanent connection to a stationary generator shall have provisions for permanent connection of wiring contained in appropriate flexible metal or non-metallic conduit in accordance with NFPA 70, the National Electrical Code. The use of non-flexible conduit is not permitted.

12 Internal Wiring

12.1 The internal wiring of transfer switches shall consist of general use wire or appliance wiring material acceptable for the particular application when considered with respect to the temperature and voltage and conditions of service to which the wiring is likely to be subjected.

12.2 Wireways shall be smooth and entirely free from sharp edges, burrs, fins, moving parts, and the like, which may cause abrasion of the conductor insulation.

12.3 All joints and connections shall be mechanically secure and shall provide effective electrical contact without strain on connections and terminals.

12.4 Stranded conductors clamped under wire-binding screws or similar parts shall have the individual strands restrained by cupped washers or the equivalent to provide connections.

12.5 A splice shall be provided with insulation equivalent to that of the wires involved.

12.6 An opening in a barrier through which factory installed wiring passes, or through which field installed wiring may pass, shall be provided with a bushing, or shall be formed so that there are no sharp edges with which conductors may come in contact.

12.7 A bushing employed as described in 12.6 shall be of glass, ceramic, hard fiber, phenolic composition, cold-molded composition, or other polymeric material which has been investigated and found suitable for the application. Rubber, neoprene, and similar materials are not acceptable for this bushing.

13 Grounding and Bonding

13.1 Transfer switches shall have provision for grounding all dead metal parts that are exposed or that are likely to be touched by a person during adjustment or intended operation of the device, and that are likely to become energized.

13.2 Small, isolated (insulated) dead metal parts are not required to be grounded.

13.3 A dead metal part is not considered likely to become energized if acceptable results are obtained during dielectric voltage withstand with the part connected to ground during the tests.

13.4 The equipment grounding conductor and neutral (grounded circuit conductor) from the generator shall be bonded within the transfer switch enclosure to the neutral (grounded circuit conductor) of the normal supply circuit. The size of the bonding conductor shall be based on the rating of the alternate supply circuit in accordance with the main bonding jumper requirements from Table 17.1 of the Standard for Transfer Switch Equipment, UL 1008.

13.5 The bonding conductor required by 13.4 shall be installed in the transfer switch, and shall have provisions for connection to the neutral terminal of the meter base.