

## Your Reliable Guide for Power Solutions

To fulfill our commitment to be the leading supplier in the power generation industry, the Total Energy Systems, LLC. team ensures they are always up-to-date with the current power industry standards as well as industry trends. As a service, our **Information Sheets** are circulated on a regular basis to existing and potential power customers to maintain their awareness of changes and developments in standards, codes and technology within the power industry.

### SERVICE ENTRANCE RATED TRANSFER SWITCHES

#### 1.0 Introduction

A service entrance disconnect is a device that interrupts excessive voltage and allows for the manual disconnect of your home or business from the electrical utility.

***This information sheet discusses when to use a service entrance disconnect device and the requirements of National Electrical Code (NEC) and National Fire Protection Association (NFPA) 70.***

#### 2.0 Definition of Service Disconnect Device

Generally defined as a circuit breaker that either forms part of your utility meter base or the main panel, and is often called the 'main breaker'.

#### 3.0 Article 230 Clauses of the National Electrical Code Specific to Service Entrance Devices

The designer of a generator system should ensure that the system complies with all codes, specifically NEC and NFPA. NEC codes specific to service entrance devices are covered in the following NEC clauses.

**230.70** - Means shall be provided to disconnect all conductors in a building or structure from the service entrance conductors.

**230.70 (1)** - The service disconnecting means shall be installed at a readily accessible location, either outside or inside the building, nearest the point of entrance of the service conductors.

**230.72** - Equipment connected to the supply side of service disconnect. Only the following equipment shall be permitted to be connected to the supply side of the service disconnecting means:

*Taps used only to supply load management devices, circuits for standby power systems, fire pump equipment, fire and sprinkler alarms, control circuits for power-operable service disconnecting means, ground-fault protection systems, meters, meter sockets or meter disconnect switches, if provided with service equipment and installed in accordance with requirements for service entrance conductors*

**230.90** - Each ungrounded conductor shall have over-current protection

**230.91** - The service over-current device shall be integral part of the service disconnecting means or shall be located immediately adjacent hereto.

#### 4.0 NEC 230 Applicable to Transfer Switches

Article 230 becomes applicable to Transfer Switches when the planned installation places them on the utility side of the existing Service Entrance. In many areas, it is common practice for the Service Entrance to be a circuit breaker in the main distribution panel. This requires either installing a new service entrance, or to install a Service – rated transfer switch.

#### 5.0 Definition of a Service Rated Transfer Switch

A Service Entrance - rated transfer switch is just a normal transfer switch with a circuit breaker added in series with the utility input, and a bonding jumper between neutral and ground. Service Entrance – rated transfer switches should be code compliant and have Underwriters Laboratories UL– 891 and UL–1008 labels and meet all national and local codes. *(continued over)*

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## 5.0 Options for Service Entrance Disconnect

The following details options for service entrance disconnect and refers to the illustration detailed overleaf.

**Option One** - Service entrance disconnect switch with integral fuses located upstream of the ATS (see diagram)

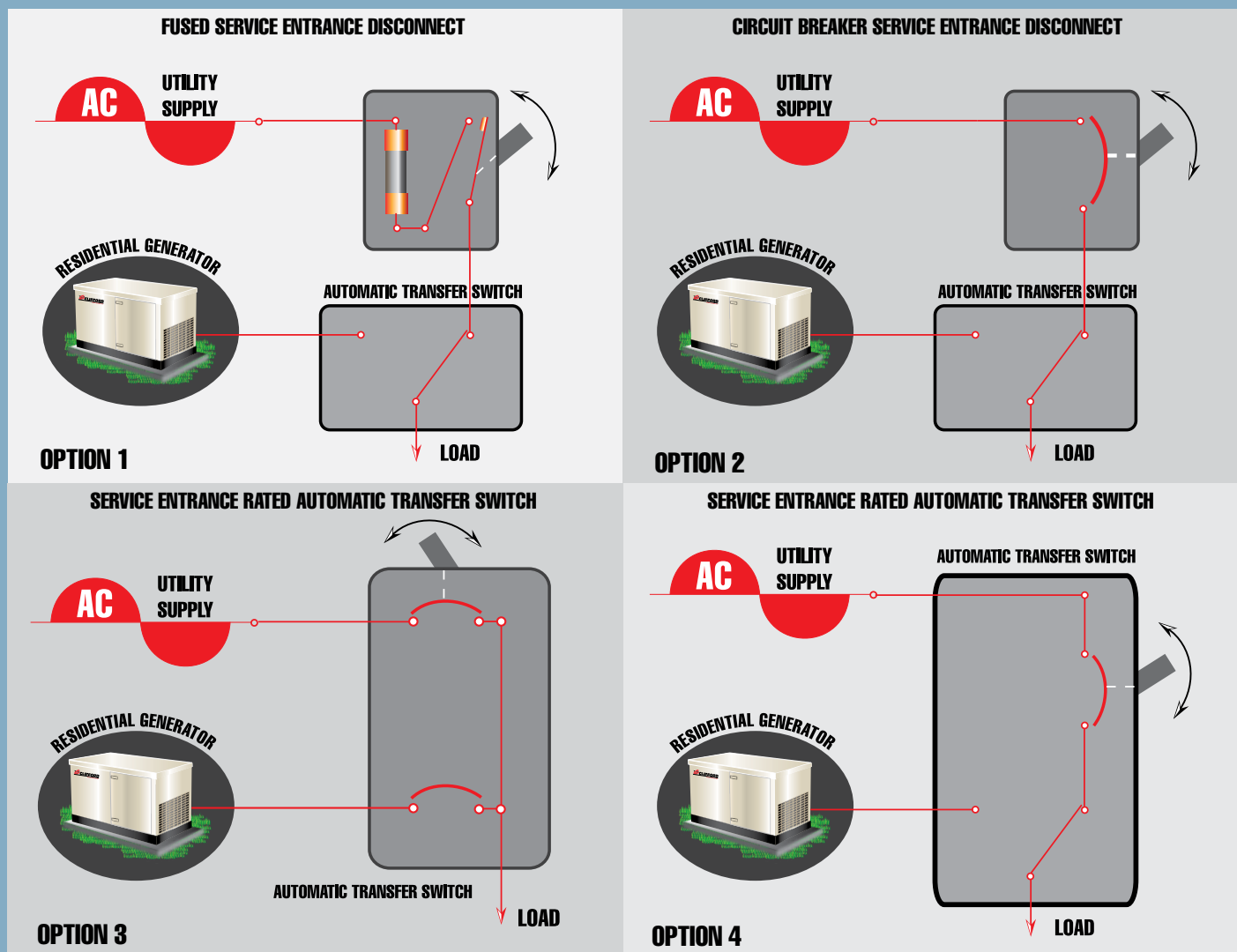
**Option Two** - Service entrance circuit breaker located upstream of the ATS – the least expensive if no other equipment is required to meet code (see diagram)

**Option Three** - Service entrance ATS with circuit breakers as switching mechanism – uses two circuit breakers and can be very physically large (see diagram)

**Option Four** - Service entrance ATS with switch mechanism and integral circuit breaker – also calls for very large enclosure (see diagram)

*(This information sheet is for a guide only before installation or designing any electrical system you must consult with your power system supplier and a qualified consulting engineer familiar with all the specific codes)*

### SERVICE SIDE EQUIPMENT OPTIONS



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