



Cutler-Hammer

Generator Quick Connect Switchboard

Technical Data TD0150001E

Effective September 2005
New Information



Generator Quick Connect Switchboard (Typical of 1600 A) With Type 3R Enclosure

Product Description

The Eaton Generator Quick Connect Switchboard is an engineered assembly designed to allow safe and fast connection of a mobile generator to your facility's electrical system or a portable load bank.

Through inclusion of cam-type receptacles, standard mechanical lugs, dedicated generator-service disconnect, and a manual key-interlock transfer scheme, you can quickly and safely supply emergency power parts of your electrical power system that are not currently covered by your emergency power system, or you can back-up existing generators.

Loads connected to the Generator Quick Connect Switchboard, available in both Type 1 and Type 3R enclosures, can immediately be safely transitioned to an alternative power source, made possible by the Generator Quick Connect Switchboard.

Benefits of the Generator Quick Connect Switchboard

Speed of Connection

With a Generator Quick Connect Switchboard installed, the owner does not have to do any of the following that are common in emergency power situations:

- No making additional field modifications to an internal switchboard in order to connect the generator cables after the initial installation.
- No modifying the building's physical structure to accommodate generator cables (e.g., drilling holes in walls).
- No running cables through doorways or windows and through hallways or up stairs.

Safer and More Reliable

Reduction of the potential for safety problems associated with connecting the mobile generator to the facility's electrical system under lost-power conditions.

- A permanent connection point for mobile power, not a temporary connection.
- Installed under normal circumstances, not during a possibly chaotic lost power situation.
- Tested as part of the installation, providing assurance when needed.
- Eliminates the safety hazards of generator cables run through doorways and up stairways. Building doors and/or windows remain closed for security and safety reasons.

Less Disruptive

The Eaton Generator Quick Connect Switchboard with the Type 3R enclosure can be installed in a position outside of a building that allows the parking of large mobile units so that they have the least negative impact on establishment entrances and parking areas.

Reduced Emergency Costs

Costs associated with temporarily connecting mobile generators, such as modifying switchboards, making physical modifications to buildings, and installing cables to connect the mobile generator, are eliminated or greatly reduced.

Easier to Manage

With this connection task greatly simplified, facility staff can direct their attention to other important situations that occur during power losses.

Significant Components and Assemblies

The Generator Quick Connect Switchboard is based on the Cutler-Hammer® brand Pow-R-Line C switchboard construction.

As part of the larger assembly, there are several sub-assemblies that provide greater function and benefit to facilities.

- **Generator Service Disconnect:** The generator service disconnect is a UL® listed circuit breaker interlocked with the service disconnect. The generator disconnect can be rated up to 4000 amperes continuous and may include ground fault protection, shunt trips, alarms, single-phase protection and auxiliary contacts. Such options can allow for integration into a larger control system to accomplish load shedding while the facility is under backup power.
- **Cam-Type Receptacle Sub-Assembly:** This sub-assembly is designed to work with the cam-type plugs that are commonly found on mobile generator cables. Also, it includes color-coding for easy phase connector identification to help ensure proper field connection of the generator.
- **Permanent Operation Instructions:** Affixed to each Generator Quick Connect Switchboard is a set of simple operating instructions. Through the inclusion of these instructions, operation of the mechanisms can be performed by any authorized personnel.
- **Generator Connection Lugs:** In addition to the cam-type receptacles, a set of standard mechanical lugs is provided with the Generator Quick Connect Switchboard to allow an alternate method of connecting generator cables.
- **Bus Connection Sub-Assembly:** All connection methods described previously are connected together using only factory stamped and formed bus. Bus connection, as opposed to cable, provides a more robust and smaller construction.

Application Description

Eaton's Generator Quick Connect Switchboard can be applied to both retrofits/upgrades of existing facilities and to new construction projects.

Upgrading or Retrofitting of Current Facilities

For facilities that lack the capability for quick, safe generator connection, the Generator Quick Connect Switchboard is the ideal product for retrofitting in this function.

When considering the best method for retrofit, it is significant to consider the manner in which the electrical system selected for backup service is connected to the main service. In order for the Generator Quick Connect Switchboard to be connected, the facility must possess the ability to disconnect the system from the utility service to prevent a back-feed scenario. If a facility does not possess this ability, it must be retrofitted so it does.

There are two primary methods for connecting Eaton's Generator Quick Connect Switchboard to an existing switchboard.

1. The Generator Quick Connect Switchboard can be remotely mounted and cabled into an existing switchboard. This process is accomplished by cabling from the generator disconnect breaker to a new set of lugs in the existing switchboard.
2. The Generator Quick Connect Switchboard can be connected through matching cross bus. To identify existing cross bus position and size in a switchboard, Eaton - Electrical Services & Systems (E-ESS) can do a qualified survey.

Both aforementioned procedures can be applied to any UL 891 listed switchboard regardless of original manufacturer.

Please note that cross bus connection may not be possible to switchboards that do not currently contain cross bus. Please consult your Eaton representative to identify feasibility of cross bus connections in switchboards that do not currently contain cross bus.

Also, existing switchboards may require retrofit or replacement of main section due to availability of cable space or unavailability of key interlock for existing breaker.

Alternative Applications

Facility officials may be concerned with the age and performance of an existing permanent emergency generator. The Generator Quick Connect Switchboard could allow for a mobile unit to be delivered and connected in the event of that generator's failure.

A second application, in conjunction with a permanently located generator, involves the connection of a mobile generator during extensive maintenance, testing, or even replacement of such aging facility generators.

A third application involves using the Generator Quick Connect Switchboard as a convenient connection point for a portable load bank. Diesel generators must be run near rated capacity to prevent unburned diesel from building in the exhaust system ("wet stacking") If a facility's loads are not sufficient to ensure fully loading a generator, a portable load bank can be connected to provide the additional loading required.

Construction of New Facilities

For facilities soon to be constructed, the Generator Quick Connect Switchboard can be positioned in the most convenient location and then cable connected. Also, it can be added to a proposed switchboard lineup and connected through cross bus if the lineup is positioned in the facility at a place where mobile generators can be efficiently connected allowing non-intrusive generator cable accessibility.

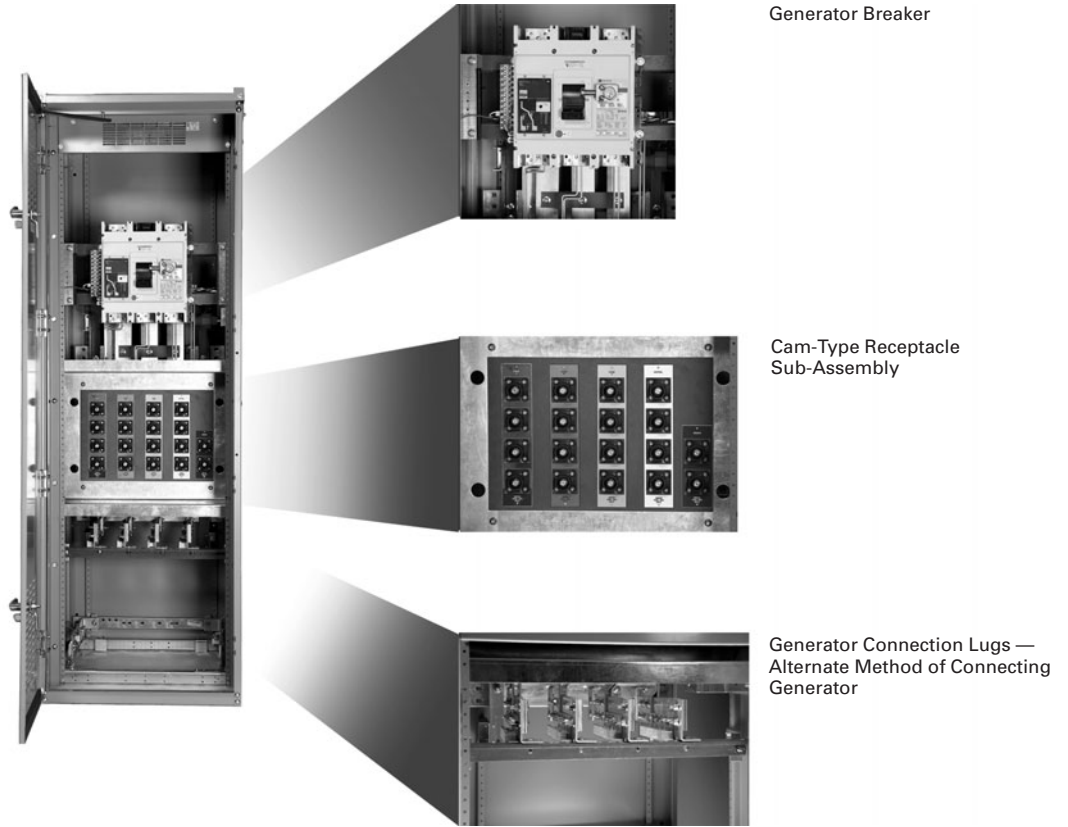
Construction Specifications

The Eaton Corporation Generator Quick Connect Switchboard is built to the UL 891 listed Pow-R-line C switchboard standards. As such, the sizing rules of standard switchboard apply. Similarly, all modifications for Pow-R-Line C switchboard are available.

For sizing information and available modifications, contact your local Eaton sales representative.

For specific sizing and proposals for this assembly, please consult the factory.

Significant Components and Assemblies (Typical)

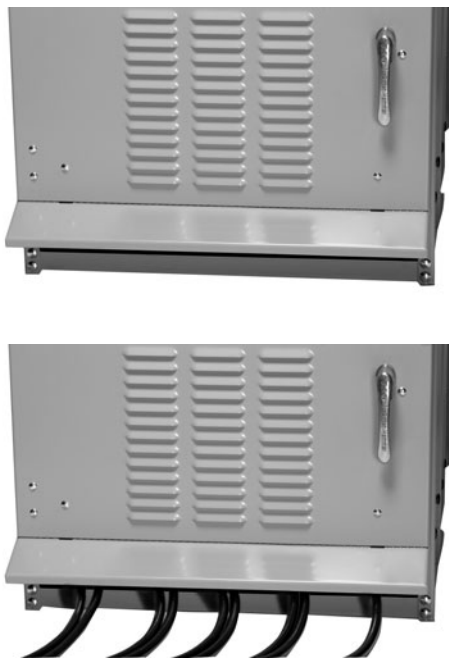


Generator Breaker

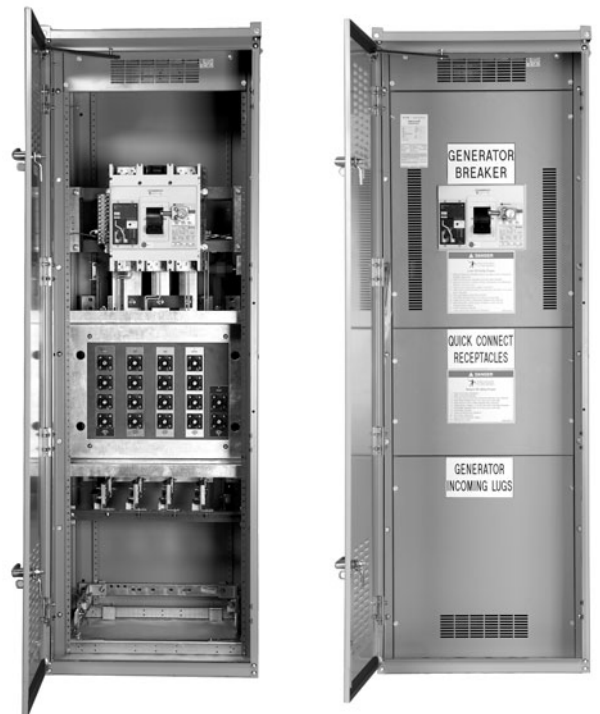
Cam-Type Receptacle Sub-Assembly

Generator Connection Lugs — Alternate Method of Connecting Generator

Typical (1600 A) Generator Quick Connect Switchboard



Bottom Door and Cables (Type 3R)
 The Hinged Cable Entry Trap Door Allows Cable Access to Both the Receptacles and Lugs, While Maintaining Type 3R Enclosure Integrity



Typical Generator Quick Connect Switchboard (Typical of 1600 A)
 Shown with Covers Removed (Left) and In-place (Right)

Generator Quick Connect Specifications

GENERATOR QUICK CONNECT DIMENSIONS AND kW RATINGS (RATED UP TO 480 V) ①

AMPERE RATING	NUMBER OF STRUCTURES	DIMENSIONS IN INCHES (MM)			kW (MAX.) RATING ③			
		DEPTH ②	STRUCTURE WIDTH	TOTAL WIDTH	80% RATED GENERATOR DISCONNECT BREAKER		100% RATED GENERATOR DISCONNECT BREAKER	
					480 V	208 V	480 V	208 V
400	1	30 (762)	30 (762)	30 (762)	213	92	266	115
600	1	30 (762)	30 (762)	30 (762)	319	138	399	173
800	1	30 (762)	30 (762)	30 (762)	425	184	531	230
1200	1	30 (762)	30 (762)	30 (762)	638	276	797	345
1600	1	30 (762)	30 (762)	30 (762)	850	368	1063	461
2000	1	30 (762)	30 (762)	30 (762)	1063	461	1329	576
2500	2	30 (762)	30 & 30 (762 & 762)	60 (1524)	1329	576	1661	720
3000	2	30 (762)	36 & 36 (914 & 914)	72 (1829)	N/A	N/A	1993	864
4000	2	36 (914)	45 & 36 (1143 & 914)	92 (2337)	N/A	N/A	2657	1151

① 65 kAIC standard bus bracing.

② Type 3R enclosures shall be equipped with a 13-inch (330 mm) front structure extension.

③ Calculated using the following: kW (max.) = $[(V \cdot A \cdot 1.73 \cdot PF) / 1000] \cdot (\text{Breaker Rating})$ with PF (power factor) equalling 0.8.

Cutler-Hammer is a federally registered trademark of Eaton Corporation. UL is a federally registered trademark of Underwriters Laboratories Inc.

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