Class 6035
JUNE, 1988
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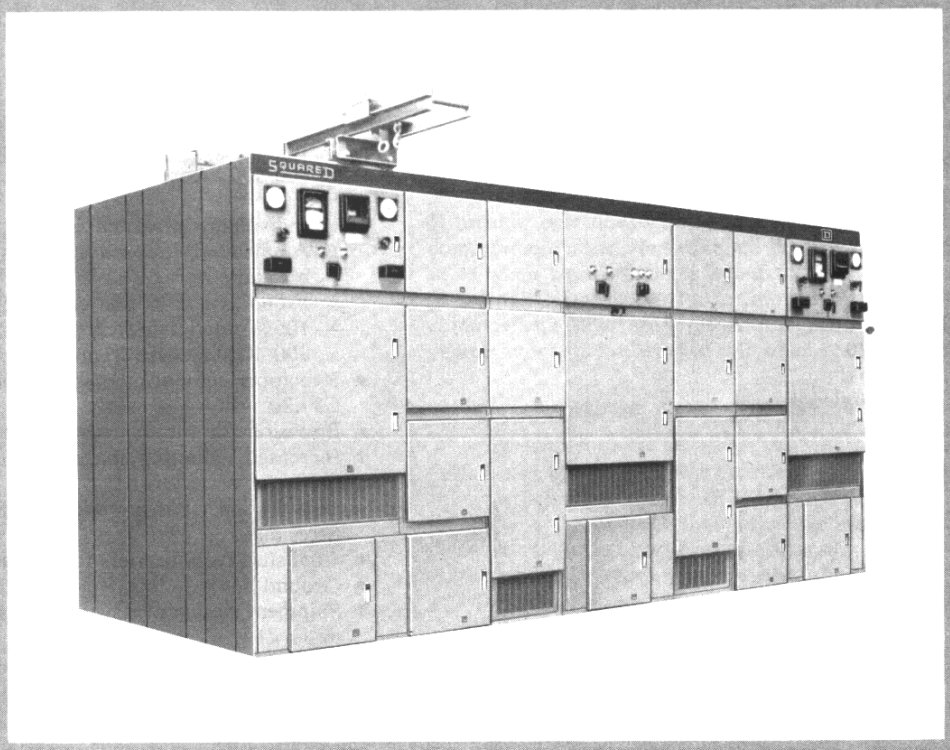

POWER-ZONE® III

Type PZ Low Voltage Metal-Enclosed Drawout Switchgear

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FILE: Distribution Products Catalog

CLASS 6035

POWER-ZONE® III PZ LOW VOLTAGE METAL-ENCLOSED DRAWOUT SWITCHGEAR

JUNE, 1988

Ratings:

Main Bus—5000 ampere maximum
120/208 to 600 Volts, AC, 1Ø 3W. or 3Ø 4W.

Available Breakers:

DS, DSL-206, DS-206S	800A. Frame
DS, DSL-416, DS-416S	1600A. Frame
DS-420	2000A. Frame
DS, DSL-632	3200A. Frame
DS, DSL-840	4000A. Frame

Applicable Standards:

Circuit Breakers:

NEMA SG3
ANSI C37.13
ANSI C37.16

Structures:

NEMA SG5
ANSI C37.20
ANSI C37.51
UL 1558 (Optional)

Features:

- Totally enclosed, dead front, free standing
- Front and rear alignment
- Covers installed with single tool, slotted hex-head screws
- Removable top plate, rear panel and side panel
- Corrosion-resistant finish
- Single or multiple mains
  1. Individually mounted drawout
  2. ANSI-rated low voltage iron frame power circuit breaker
  3. Front accessible, rear connected
  4. 100% rated, two-step stored energy
  5. 800-4000 ampere frame
- Feeders
  1. Individually mounted drawout
  2. ANSI-rated low voltage iron frame power circuit breaker
  3. Front accessible, rear connected
  4. 100% rated, two-step stored energy
  5. 800-4000 ampere frame
- Structures compartmentalized and barriered per ANSI C37.20
- Provision for future extension provided as standard
- Increased mounting space within main and feeder sections
- Bolted copper bus provided as standard up to 5000 amperes max.
- Dual steel front barriers for operator safety
- Ground bus with lugs
- Shipment as separate switchgear section or up to a maximum of five sections
- Removable lifting bars on all shipping sections
- Interrupting capacity* — 30kA to 85kA at 480 VAC
  *(200,000 AIC when fused)

GENERAL

POWER-ZONE® III PZ Switchgear is premium distribution equipment designed to offer the user many safety features, minimum down-time, system selectivity, ease of maintenance, and large functional capacity.

The types DS (not fusible) and DSL (fused) low voltage power circuit breakers are the primary components of POWER-ZONE III PZ switchgear. These circuit breakers employ a solid state tripping device offering the latest in circuit protection.

Functional and operational advantages are:

Safety Features — Compartmentalized and barriered construction per ANSI C37.20 assures protection to operating personnel even under severe short circuit conditions.

Dual steel front barriers: one as the full cell door covering the circuit manual operating controls and one as the front of the circuit breaker element covering the circuit breaker mechanism.

Minimum Down-Time — Drawout construction allows quick and simple replacement of breaker elements. If an emergency occurs, breakers may be removed from low priority circuits and re-installed to serve high priority circuits.

Ease of Maintenance — Circuit breakers are simple to inspect, adjust, and replace. They can be withdrawn from their compartments for convenient and safe maintenance or inspection.

Functional Capacity — Large frame sizes and high interrupting ratings make the DS and DSL low voltage power circuit breakers ideal for application on today's high capacity distribution systems.

System Selectivity — The solid state trip device provided on each DS and DSL low voltage power breaker is field adjustable, enabling the user to attain optimum selectivity and coordination.

UL Listing — POWER-ZONE III PZ switchgear can be designed and engineered to comply with UL requirements. All DS and DSL power circuit breakers are optionally available with a UL listing with the exception of the DSL-632 and DSL-840. Where UL Standards exist for all component materials, parts and devices in a switchgear section, a UL label can be affixed.

For Additional Information — POWER-ZONE III PZ Switchgear is described in general but brief terms here. More detailed and comprehensive data is also available from your local Square D sales office. (Additionally, Class 6035 PZIII Switchgear data can be found behind the PZ tab in the "Guide to Low Voltage Distribution Equipment" binder.)

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POWER-ZONE® III PZ LOW VOLTAGE METAL-ENCLOSED DRAWOUT SWITCHGEAR

SUGGESTED SPECIFICATIONS

GENERAL

The specifications and associated drawings describe the indoor low voltage metal-enclosed drawout switchgear assembly. The assembly is to be designed for use on a _____volt, (single) (3) phase, _____wire (50) (60) Hz. system, with _____amperes symmetrical fault current available. Equipment is to be complete from the incoming line connections to the outgoing feeder connections. Any items not specifically mentioned but obviously necessary for proper operation are implied in this description.

The low voltage section shall be Power-Zone III PZ switchgear, as manufactured by the Square D Company, or approved equal, designed, manufactured and tested in accordance with applicable NEMA, ANSI and IEEE standards for power circuit breakers and metal-enclosed switchgear.

Applicable Standard

Structures:

NEMA SG5
ANSI C37.20
ANSI C37.51
UL 1558 (optional)

Circuit Breakers:

NEMA SG3
ANSI C37.13
ANSI C37.16

The enclosure shall be finished with medium gray ANSI #49 enamel applied over a rust inhibiting phosphate primer. Equipment shall be equipped with (Service Entrance Label) (and) (UL 1558 label for metal-enclosed low voltage power circuit breaker type switchgear assemblies when UL recognized components are specified.)

ENCLOSURE

The enclosure and internal barriers shall be fabricated of steel members in accordance with NEMA and ANSI standards. Steel lifting straps are to be provided with each shipping group to lift the structure from top with a crane. Supply a wooden skid to permit the use of pipe rollers for moving the switchgear to its final location in the building.

All vertical sections shall be bolted together. Ventilation openings on the front of the switchgear breaker compartments are to be located in such a way as to preclude the possibility of metal objects being inserted through them and easily contacting energized parts. To barrier operator from escaping gases during an interruption, breakers shall be supplied with a steel front plate when ventilation openings are on the front of the breaker compartment door.

The equipment shall be assembled, adjusted and tested at the factory and shall be sectionalized, if required, for shipping as requested or approved. The largest section is not to exceed _____inches wide, _____inches deep, and _____high to enable installation at the job site.

The structure is to consist of three basic compartments from front to rear: the front breaker compartment, the center bus compartment, and the rear cable compartment.

FRONT BREAKER COMPARTMENT

The front breaker compartment is to contain the drawout circuit breaker elements, each mounted in its own barriered cell. Active or future use cells shall be equipped to accept circuit breaker drawout mechanism and all current-carrying parts. Provide each breaker cell with a hinged door equipped with a flush handle and an external trip button. When equipped with a breaker, a double steel barrier shall exist between operating personnel, the breaker mechanism and live parts. Thus, the breaker can be operated with outer steel door open.

If breaker protrudes through a hole in the circuit breaker compartment door, shutters shall be provided to shield live parts when circuit breaker is out for service. Also, a steel plate shall be provided for opening in the circuit breaker compartment door to preclude the possibility of foreign objects entering the breaker cell when breaker is removed.

CENTER BUS COMPARTMENT

The bus compartment is to contain the section riser and main cross bus which is to be rated for a 65°C. temperature rise per ANSI standards. The main cross bus shall be rated for _____continuous amperes. All main and riser bus shall be bolted copper and adequately braced to withstand _____symmetrical amperes short circuit current. All contact surfaces at bolted joints shall be fully silver plated and the joint bolts are to be of high strength grade 5 steel equipped with Belleville type spring washers. Riser bus shall meet industry standard phase-to-phase clearance without the use of insulated/isolated bus. All electrical clearances are to be for 600VAC. (An isolated neutral bus is to be supplied rated at (50) (100) percent of the phase current.)

REAR CABLE COMPARTMENT

Size the cable compartment to accommodate all incoming and outgoing cable required within each vertical switchgear section. Cable lugs are to be mounted on the load side (or line side as applicable) run-back bus which is extended into this compartment from the bus compartment. Run-back bus for main or feeder breakers to be insulated from the section riser and cross bus. This compartment shall also contain a copper ground bus bolted directly to the switchgear frame. (Extend a neutral run-back into the cable compartment in each vertical section for connecting the neutral to the ground bus with a removable isolating link.) (Clamp type cable lugs suitable for use with aluminum or copper cable are to be supplied as shown on the plans.)

(Option 1)

As a safety precaution to prevent accidental contact with the main bus during maintenance procedures, the center bus compartment containing the section riser bus and main cross bus shall be segregated from the rear cable compartment by means of grounded metal barriers. Using plastic covers over bus in lieu of rear barriers for this safety precaution is not acceptable.

POWER-ZONE® III PZ LOW VOLTAGE METAL-ENCLOSED DRAWOUT SWITCHGEAR

SUGGESTED SPECIFICATIONS

CIRCUIT BREAKERS

The circuit breakers shall be the drawout type, manually or electrically operated type DS (DSL) as shown on the associated drawings or as listed in the equipment tabulation. The breakers are to mount on a rigid, self-aligning drawout mechanism with "connected", "test", "disconnected", and "removed" positions. The front door shall be capable of being closed in the "connected", "test" or "disconnected" positions. Provide interlocks to ensure the breaker is open before it can be moved from any position or when it is between positions. Include an interlock to discharge the stored energy spring before the breaker element can be withdrawn from its cell. In the "test" and "connected" positions, provide a positive ground contact between the breaker element and the structure.

Breakers of like frame sizes shall be interchangeable. All circuit breaker operating mechanisms are to be fully stored energy devices with a two-step stored energy quick-make, quick-break. Actuation of the operating handle or an operation cycle of the breaker motor is to charge the closing springs and operation of a local "close" button is to close the breaker contact. Closing of the breaker contacts shall automatically charge the opening springs to ensure quick-break operation.

Low voltage power breaker arc chutes containing asbestos will by no means be accepted.

The circuit breaker trip device is to be of a solid-state design which requires no external power connections and is provided with an adjustable long-time delay, instantaneous and (short-time delay) over-current/short circuit protection. (Include ground fault tripping as an integral part of the solid-state trip device.) Settings are to be continuous between calibrated points. Provisions for testing and calibrating shall be provided. Indicators for overload, short circuit and ground trip shall be provided. (Breakers are to have UL label.)

Padlocking provisions shall be furnished to receive up to three padlocks when breaker is in the open position, positively preventing unauthorized closing of the breaker contacts. A manual trip button and position indicator shall be furnished on all breakers. "Push to Close" button shall be conveniently located on face of breaker for easy access, thereby avoiding the need to reach behind or around other devices located on the face of the breaker.

(Include the following only when type DSL breakers are specified:) (Circuit breakers shall be equipped with current limiters. Current limiters shall be integrally mounted on 800A and 1600A frame sizes and separately mounted on 3200A and 4000A frame sizes. Equip each breaker with a blown limiter indicator visible from the front of the breaker, and with an anti-single phase device which will trip the breaker when any limiter blows, and which will prevent reclosing the breaker on a single phase condition resulting from blown or missing limiters.)

The following equipment shall be provided:

(1)(2) ____Type DS-_____ main breaker(s), _____ ampere frame, 3-pole, (manually) (electrically) operated. Tripping sensors rated _____ amperes.

____Type DS-_____ tie breaker, _____ ampere frame, 3-pole, (manually) (electrically) operated. Tripping sensors rated _____ amperes.

____Type DS-_____ feeder breaker(s), _____ ampere frame, 3-pole, (manually) (electrically) operated. Tripping sensors rated _____ amperes.

____Type DS-_____ feeder breaker(s), _____ ampere frame, 3-pole, (manually) (electrically) operated. Tripping sensors rated _____ amperes.

METERING COMPONENTS

Main Bus

(1)(2) ____(2%) (1%) voltmeter and 3-phase selector switch with OFF position.

(1)(2) ____(2%) (1%) ammeter and 3-phase selector switch with OFF position.

(1)(2) ____Watthour meter, (2) (2½) (3) element type, (with) (without) demand register.

_____ ____Current transformer, suitable ratio.

_____ ____Potential transformer, suitable ratio.

Feeder Circuits

_____ ____2% ammeter and 3-phase selector switch with OFF position.

_____ ____Current transformer, suitable ratio.

(Option 2)

A portable testing and calibration device shall be provided.

(Option 3)

A top mounted traveling breaker lifting device shall be provided.

*_____( ) Indicates a selection is to be made for quantity or applicability.