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**Square D Company - Technical Services Division**  
**STANDARD PRACTICE BULLETIN**

**SUBJECT: Start-up and Maintenance Procedure for: TSD 1027  
SWITCHBOARDS/SWITCHGEAR/MCC**

**HEADER**

**27.01 JOB NAME**

27.01.01 Record the company, hospital, manufacturing facility, etc. where the equipment is located.

**27.02 LOCATION**

27.02.01 Record the city and state where the equipment is located.

**27.03 EQUIPMENT DESIGNATION**

27.03.01 Record customer's identification of the equipment.

**27.04 JOB NUMBER**

27.04.01 Record the TSD incident number.

**27.05 DATE**

27.05.01 Record the date(s) the report is filled out.

**27.06 TSR**

27.06.01 Record the name(s) of TSR(s) doing the work.

**NAMEPLATE DATA**

**27.07 MANUFACTURER**

27.07.01 Record the manufacturer of the switchboard/switchgear/motor control center.

**27.08 SERIAL NUMBER**

27.08.01 Record serial number and/or factory order number of switchboard/switchgear/motor control center.

**27.09 STYLE**

27.08.01 Record the style of the switchboard/switchgear/motor control center.

**27.10 CLASS**

27.10.01 Record Class number of switchboard/switchgear/motor control center, if Square D.

**27.11 SYSTEM VOLTAGE**

27.11.01 Record system voltage rating.

<b>Approvals</b>			
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**27.12 MAIN BUS RATING**

27.12.01 Record the main bus rating in volts, amps, or short circuit amps.

**27.13 INDOOR/OUTDOOR**

27.13.01 Record whether indoor or outdoor type enclosure.

**27.14 MAIN PROTECTIVE DEVICE IC RATING**

27.14.01 Record the interrupting current rating of the main protective device.

**27.15 MINIMUM PROTECTIVE DEVICE IC RATING**

27.15.01 Record the interrupting current rating of the main protective device.

**27.16 MAXIMUM AVAILABLE FAULT CURRENT**

27.16.01 Record the maximum available fault current, if available.

**REFER TO MANUFACTURER'S PRODUCT BULLETIN FOR THE FOLLOWING PROCEDURES:**

**INSPECTION CHECKLIST**

Indicate status of each checklist item using the following codes:

- A - Use when all items are acceptable at time of inspection.
- R - Use when an item needs repair, replacement, or adjustment but not done at time of inspection. Indicate reason(s) for not correcting at this time.
- C - Use when an item is found in need of repair, replacement, or adjustment and that item is corrected during the inspection.
- NA - Use when an item is not part of the equipment, or give explanation for not completing this task.

**27.17 WORKING SPACE**

27.17.01 Check that the working space about the switchboard/switchgear/MCC complies with NEC110-16.

**27.18 EXTERIOR CONDITION**

27.18.01 Check for any dents or other damage that reduces electrical clearances inside the equipment.

27.18.02 Check for scratches in the paint, rust, or excess dirt.

**27.19 PANEL INDICATORS**

27.19.01 Check the physical condition of panel indicators.

**27.20 INSTRUMENTATION**

27.20.01 Check the physical condition of instrumentation.

**27.21 MECHANICAL CONDITION**

27.21.01 Check for free operation and correct alignment of doors and panels.

27.21.02 Check for manual operation of devices.

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**27.22 EXERCISE DEVICES**

- 27.22.01 Obtain a temporary source of power.
- 27.22.02 Exercise all devices electrically (do not energize equipment).

**27.23 ANCHORAGE**

- 27.23.01 Check for adequate flooring or foundation. It must be smooth and level and able to support the weight of the equipment. The equipment must be firmly secured to it.
- 27.23.02 Check for distortion of the equipment structure and proper alignment between companion sections (ie. level and plumb).

**27.24 INTERIOR CONDITION**

- 27.24.02 Check for damage that reduces electrical clearances.
- 27.24.02 Check for excess dirt and loose or missing parts.
- 27.24.03 Check for missing or damaged barriers.

**27.25 ONE-LINE VERIFICATION**

- 27.25.01 Check that the actual equipment agrees with the one-line drawings.

**27.26 MAINTENANCE ACCESSORIES**

- 27.26.01 Check for presence and operating condition of maintenance accessories.

**27.27 BREAKER CELL AND MECHANISM**

- 27.27.01 Check for condition of breaker cell and for proper operation of mechanism.

**27.28 INTERLOCKS**

- 27.28.01 Check for proper operation of mechanical interlocks, including cover, door, racking, and handle interlocks.

**27.29 LUBRICATION**

- 27.29.01 Check condition and type of lubrication. Plug type connectors.

**27.30 BUS SUPPORTS**

- 27.30.01 Check for type and rigidity of bus supports.

**27.31 TORQUE (BUSING)**

- 27.31.01 Check all accessible busing connections for tightness.

**27.32 INDUCTIVE HEATING**

- 27.32.01 Check structure for possible areas of inductive heating.

**27.33 CABLE & CONDUITS**

- 27.33.01 Check for condition, placement, and bracing of cables within the equipment.
- 27.33.02 Check for proper size of cable and conduits.

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**34 GROUNDING**

27.34.01 Check for proper size and placement of grounding (NEC 250).

**35 MEGGER CT SECONDARY WIRING**

27.35.01 Megger CT secondary wiring. Enter status not value. Single point ground.

**36 CONTROL WIRING**

27.36.01 Check condition of control wiring.

27.36.02 Check tightness of control wiring terminations.

**37 BREAKERS**

27.37.01 Complete circuit breaker report form if applicable and record usage.

**38 PROTECTIVE RELAYS**

27.38.01 Complete protective relay report form if applicable and record usage.

**39 GROUND FAULT**

27.39.01 Complete ground fault report form if applicable and record usage.

**40 METAL ENCLOSED AIR SWITCH**

27.40.01 Complete metal enclosed air switch report form if applicable and record usage.

**41 BOLTED PRESSURE SWITCH**

27.41.01 Complete bolted pressure switch report form if applicable and record usage.

**42 TRANSFER SWITCH (Not available at this time)**

27.42.01 Complete transfer switch report form if applicable and record usage.

**43 FUSIBLE DISCONNECT**

27.43.01 Check contact resistance and enter status not value.

**44 MOTOR STARTER**

27.44.01 Not available at this time.

**ELECTRICAL TESTING**

**45 INSULATION RESISTANCE**

27.45.01 Check insulation resistance using megger per megger instructions. Conduct all tests for one (1) minute.

27.45.02 Record megger voltage used.

27.45.03 Record insulation resistance between each phase and the other phases and between each phase and ground.

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**27.46 OVERPOTENTIAL/MEDIUM VOLTAGE RATED**

- 27.46.01 Check the dielectric leakage current with an overpotential test set per test set instructions. Conduct all tests for one (1) minute.
- 27.46.02 Record overpotential voltage used.
- 27.46.03 Record dielectric leakage between each phase and the other phases and between each phase and ground.

**ENERGIZED CHECKS**

**27.47 GROUND FAULT SELF TEST**

- 27.47.01 Check push-to-test ground fault test feature.

**27.48 CONTROLS**

- 27.48.01 Check operation of controls.

**27.49 VOLTAGE MEASUREMENTS**

- 27.49.01 Record voltage between each phase and the other phases and between each phase and ground.

**27.50 PHASE ROTATION**

- 27.50.01 Record phase rotation.

Notes may be made for any item on the report form by a circled number sequentially entered in the NOTES area of the report form.

**27.51 SERVICE STICKERS**

- 27.51.01 If the equipment passes inspection/testing, complete and apply either sticker TSD1044 or TSD1045 in a visible location. The size and the available surface area of the equipment will dictate which sticker is used. See Procedures Number TSD1044/45/46A for details on service stickers.
- 27.51.02 If the equipment needs repair, replacement, or adjustment, complete and apply sticker TSD1046 to alert the user that service is required. See Procedure Number TSD1044/45/46A for details on service stickers.
- 27.51.03 Record which service sticker was used.