

Meter Base and Socket Configurations

1. Scope

This standard covers the requirements for all meter base and socket configurations that are approved for installation in the Seattle City Light (SCL) electric distribution system.

2. Application

This standard is for customers and contractors who are adding new electric service.

3. Definitions

ANSI/NEMA: American National Standards Institute/National Electrical Manufacturers Association.

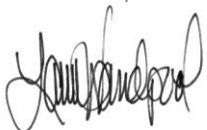
EUSERC: Electric Utility Service Equipment Requirements Committee.

Instrument-Rated Services: Services at or above 400 A that require the use of Current Transformers (CTs) and/or Potential Transformers (PTs).

Block Bypass Socket: A type of continuous-duty meter socket that allows SCL meter electricians to shunt the current, so that a meter can be removed or installed without drawing an electric arc. See figures 3a and 3c.

Safety Socket: A type of meter socket that allows SCL meter electricians to shunt the current and remove the voltage from the meter jaws. See Figure 3b.

Test Switch: A device on the meter base for Instrument-rated services that allows for SCL meter electricians to work on the meter socket without service disruption. Test switches are provided and installed by SCL meter electricians. See Figure 3d.



The figures below provide examples of sockets and test switch provisions.

Figure 3a. Block Bypass Socket, 7-Jaw



Figure 3b. Safety Socket, 7-Jaw

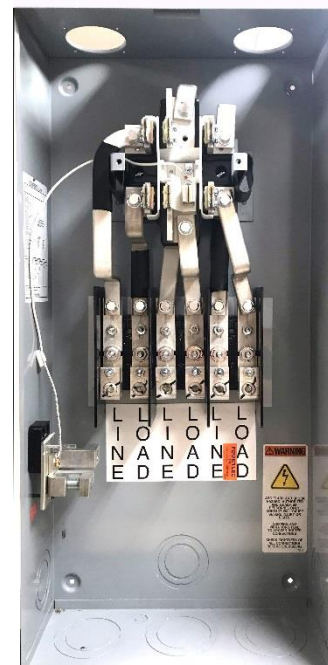


Figure 3c. Class 320 Block Bypass Socket



Figure 3d. Meter Base with Test Switch Provisions



Note: Socket pictured is for example only.
Socket configuration is defined by service type.

4. Requirements, General

All meter base and socket installations shall be EUSERC compliant and meet the applicable requirements of ANSI/NEMA standards C12.1, C12.16, and C12.20 and the UL 414 standard for meter sockets.

SCL does not allow automatic, lever type, or slide-link socket bypass devices.

All 120/208 V single-phase services shall have the fifth jaw (terminal) at the 9 o'clock position and wired to the neutral in the meter socket.

Block bypass sockets are required for commercial use and recommended for all residential use.

Conductors shall not impede access to block bypass or safety sockets. See Figure 4.

Figure 4. Proper Wire Configuration for Safety and Block Bypass Sockets



All 480 V services 225 A or less require a safety socket.

SCL does not allow ringless meter sockets or bases of any type.

The only metering taps allowed in meter sockets are: (1) the 5th and 7th terminal connections to the neutral, and (2) a 5th terminal connection to the unmetered leg, as in existing three phase, three-wire Delta services. See Section 6.

All services designated "Live Work" shall be metered to commercial standards.

For instrument-rated wiring requirements, refer to the City Light Requirements for Electric Service Connection (RESC).

5. Residential Meter Configurations

5.1 Residential Meter Configurations, Metering Capacity Up to 400 A

Figures 5.1a–c show the residential meter configurations for a metering capacity of up to 400 A.

Figure 5.1a. Single-Phase, 3-Wire, 120/240 V, Up to 225 A

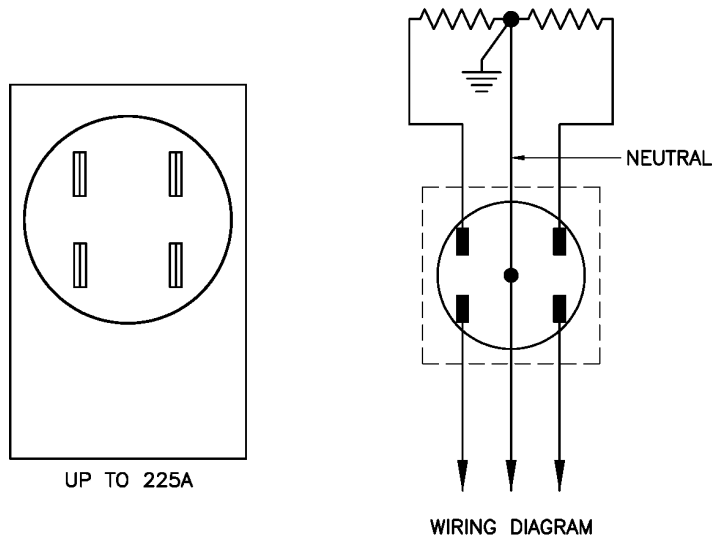


Figure 5.1b. Single-Phase, 3-Wire, 120/240 V, Up to 400A, Class 320

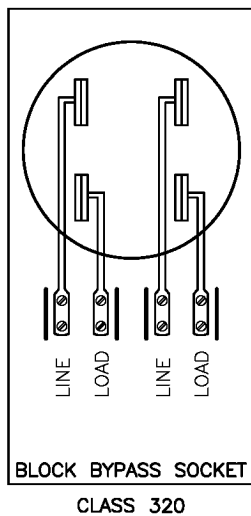
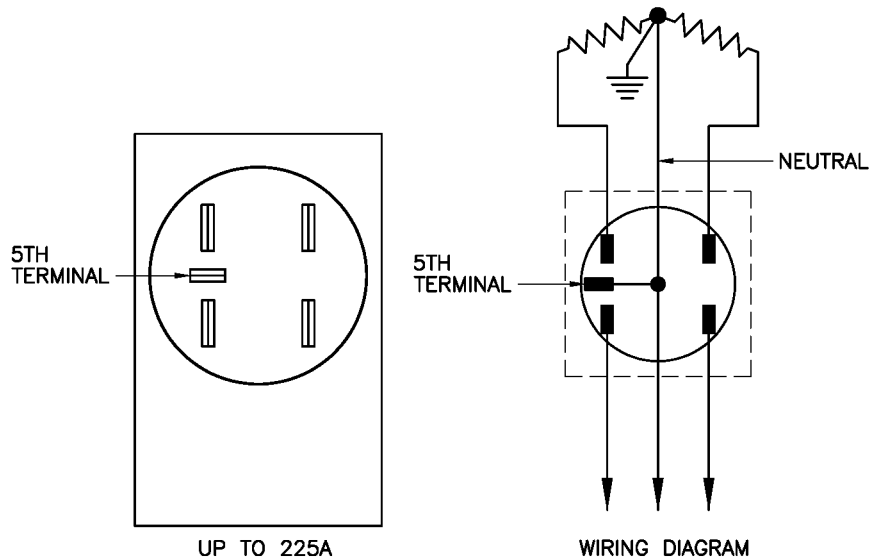


Figure 5.1c. Single-Phase, 3-Wire, 120/208 V, Up to 225 A

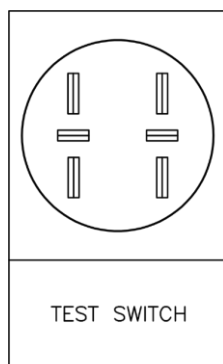


Note: 5th Terminal shall be at the 9 o'clock position.

5.2 Residential Meter Configurations, Metering Capacity 400 A and Greater

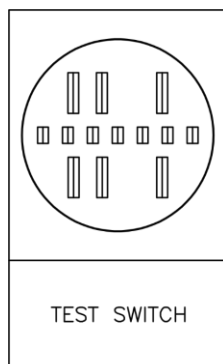
Figures 5.2a and 5.2b show the residential meter configurations for a metering capacity of 400 A and greater.

Figure 5.2a. Single-Phase, 3-Wire, 120/240 V



Note: Test switch provided by SCL.

Figure 5.2b. Three-Phase, 4-Wire, 208/120 V



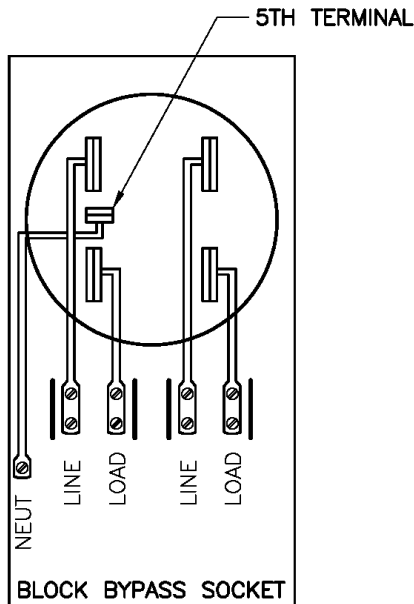
Note: Test switch provided by SCL.

6. Commercial Meter Bases

All commercial services 225 A or less and under 300 V shall have a block bypass socket. Services greater than 300 V shall have a safety socket.

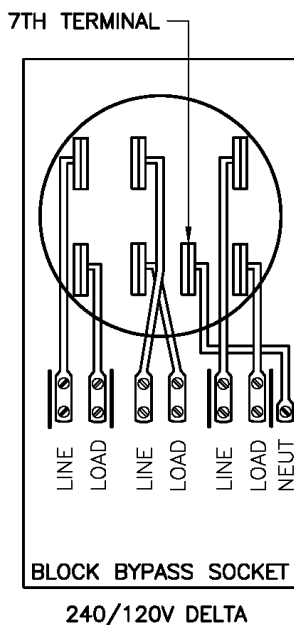
All commercial 120/208 V, single-phase services up to 225 A shall have the 5th terminal at the 9 o'clock position and wired to the neutral in the meter socket. See Figure 6a.

Figure 6a. Commercial 120/208 V, Single-Phase Services up to 225 A



All Delta services (240/120 V, three-phase, 4-wire) up to 225 A shall have the high leg on the right-hand jaws (or C phase) of the 7-terminal meter socket. See Figure 6b.

Figure 6b. Delta Services Up to 225 A



6.1 Commercial Metering Bases with a Metering Capacity Up to 225 A

Figures 6.1a–6.1d show all commercial meter base configurations with a maximum metering capacity of 225 A.

Figure 6.1a. Single-Phase, 2-Wire, 120 V and 277 V

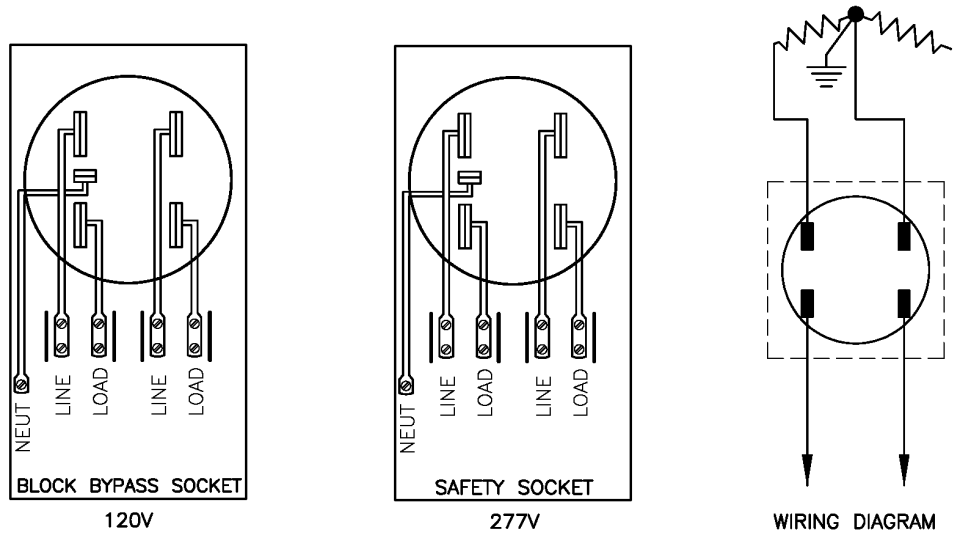


Figure 6.1b Single-Phase, 3-Wire, 120/240 V and 240/480 V

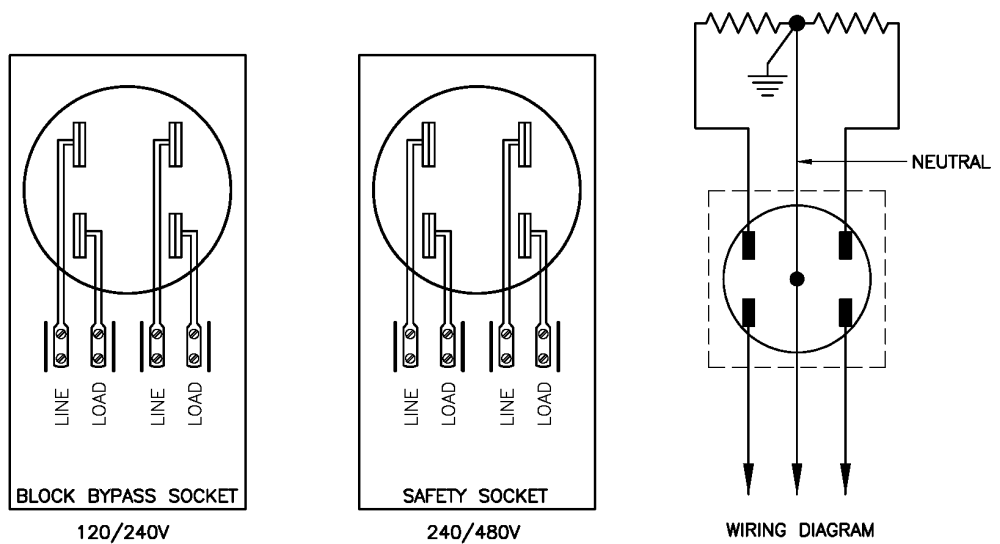


Figure 6.1c Single-Phase, 3-Wire, 120/208 V and 277/480 V

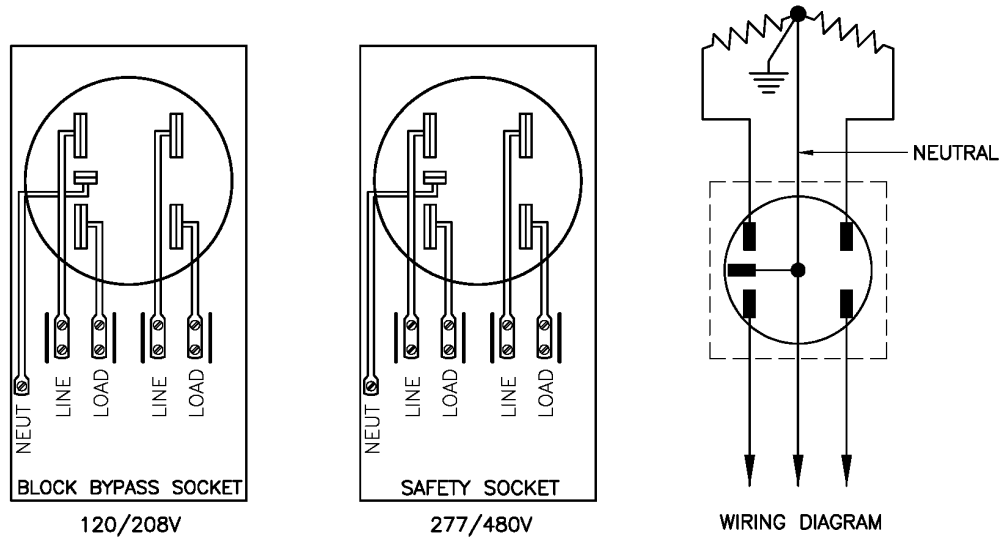
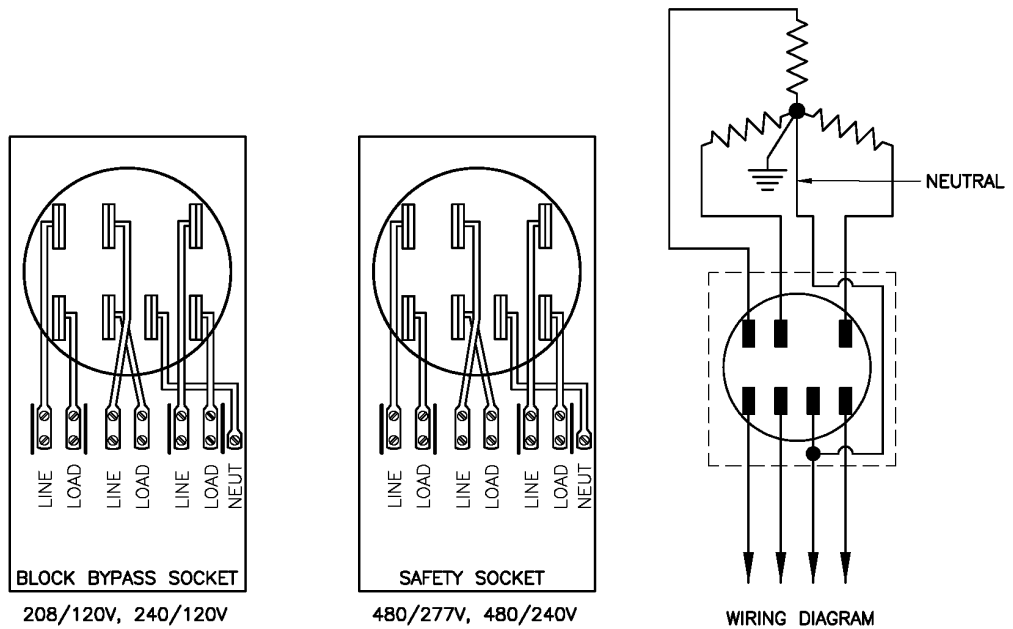


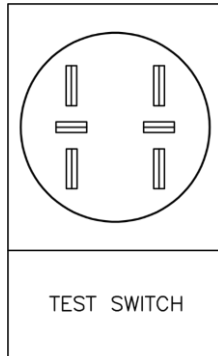
Figure 6.1d Three-Phase, 4-Wire:
 208Y/120 V
 480Y/277 V
 480/240 V Delta
 240/120 V Delta



6.2 Commercial Meter Bases with a Metering Capacity of Greater Than 225 A

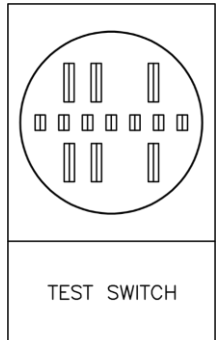
Figures 6.2a and 6.2b show the commercial meter base configurations with a metering capacity of greater than 225 A.

Figure 6.2a Single-Phase, 3-Wire, 120/240 V and 240/480 V



Note: Test switch provided by SCL.

**Figure 6.2b Three-Phase, 4-Wire
208Y/120 V
480Y/277 V
480/240 V Delta
240/120 V Delta**



Note: Test switch provided by SCL.

7. References

ANSI/NEMA C12.1; “Code for Electricity Metering”

ANSI/NEMA C12.16; “Solid-State Electricity Meters”

ANSI/NEMA C12.20; “Electricity Meters – 0.1, 0.2, and 0.5 Accuracy Classes”

Underwriters Laboratories (UL) 414, “Standard for Meter Sockets”

8. Sources

Electric Utility Service Equipment Requirements Committee (EUSERC) Manual

Ellermeier, Todd; Technical Metering Crew Chief and subject matter expert for 1553.03 (todd.ellermeier@seattle.gov)

Kimball, Aimee; Technical Metering Electrical Power Systems Engineer (EPSE), subject matter expert for 1553.03 (aimee.kimball@seattle.gov)

Langdon, Dan; Supervisor, Customer Engineering, co-originator and subject matter expert for 1553.03 (dan.langdon@seattle.gov)

SCL Construction DU13-4/NMT-30; "Meter Base Arrangements" (canceled)

SCL Construction Standard U12-5/NMT-20; "Meter Socket Connections and Conductor Identification, 200 Ampere Maximum" (canceled)

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