

Overhead Primary Switch Installation

1. Scope

This standard covers the information necessary to install manual overhead primary switches on wood poles in the Seattle City Light (SCL) 26 kV primary distribution system. Requirements for vertical spacing and hardware, and installation instructions to connect the termination assembly to the pole are included.

Composite, steel, laminated, and other non-wood poles are outside the scope of this standard.

Refer to SCL 0125.07 for the installation of Scada-Mate primary switches.

Refer to SCL 0126.01 for the installation of primary pole terminations.

2. Application

This standard provides direction to SCL engineers, crews, and contractors for the installation of manual overhead primary switches on 26 kV distribution poles.

3. Requirements

Overhead primary switches that SCL installs come in 600 A and 1200 A ratings and in both horizontal and vertical orientations. Horizontal switches are used for sectionalizing feeders. Vertical switches are used on terminal poles. Poles with switches shall be a minimum length of 55 feet. Refer to SCL 4501.50 for switch specifications.

The horizontal 600 A and 1200 A manually operated overhead primary switch shall be constructed as shown in figures 3a, 3b and 3c.

The vertical 600 and 1200 Amp manually operated overhead primary switch shall be constructed as shown in figures 3d and 3e.

All overhead switches shall be installed with the top bolt hole of the switch bracket located 6 ft below the top of the pole.



Figure 3a. Three-Phase Horizontal Switch Assembly (Front View)

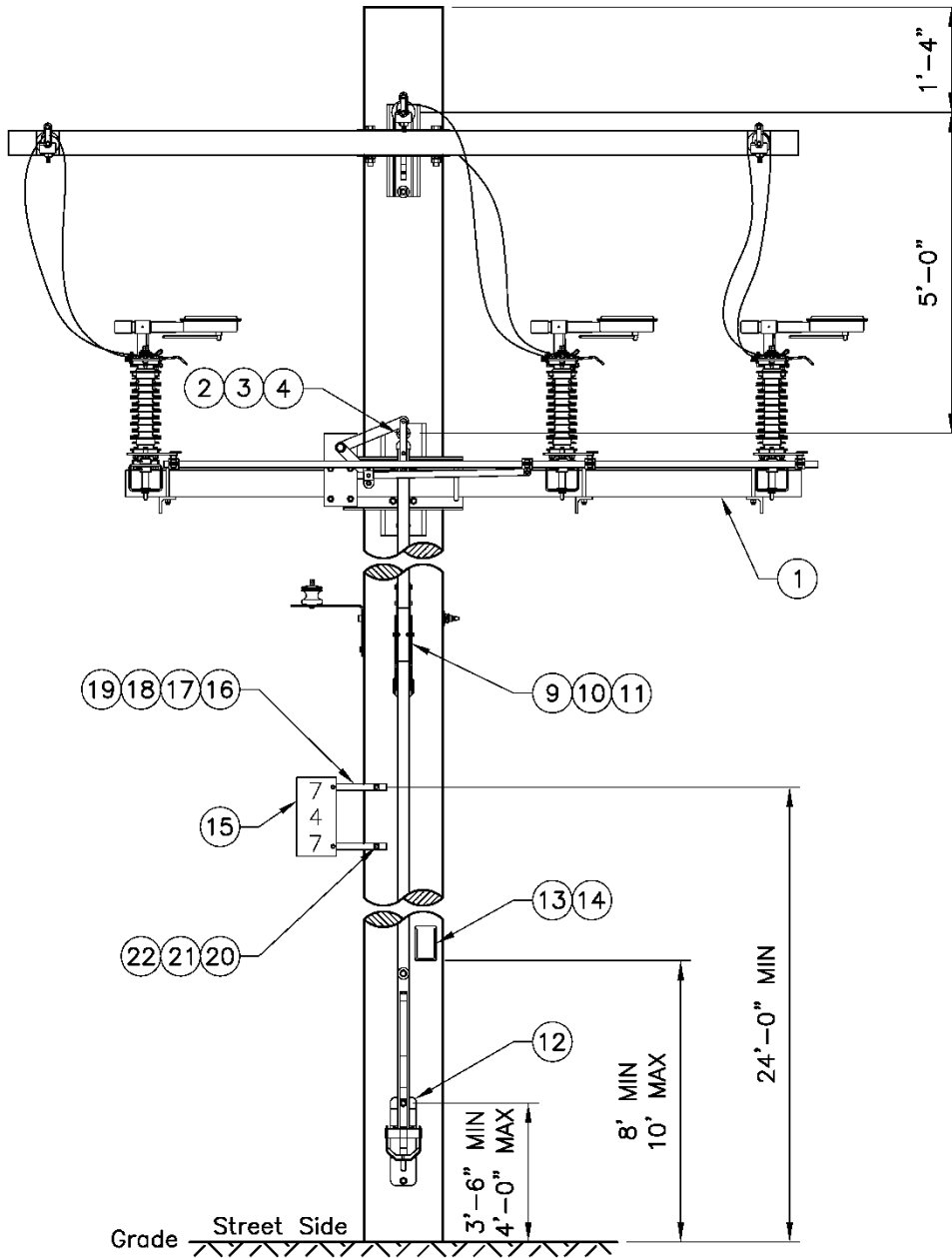


Figure 3b. Three-Phase Horizontal Switch Assembly (Side View)

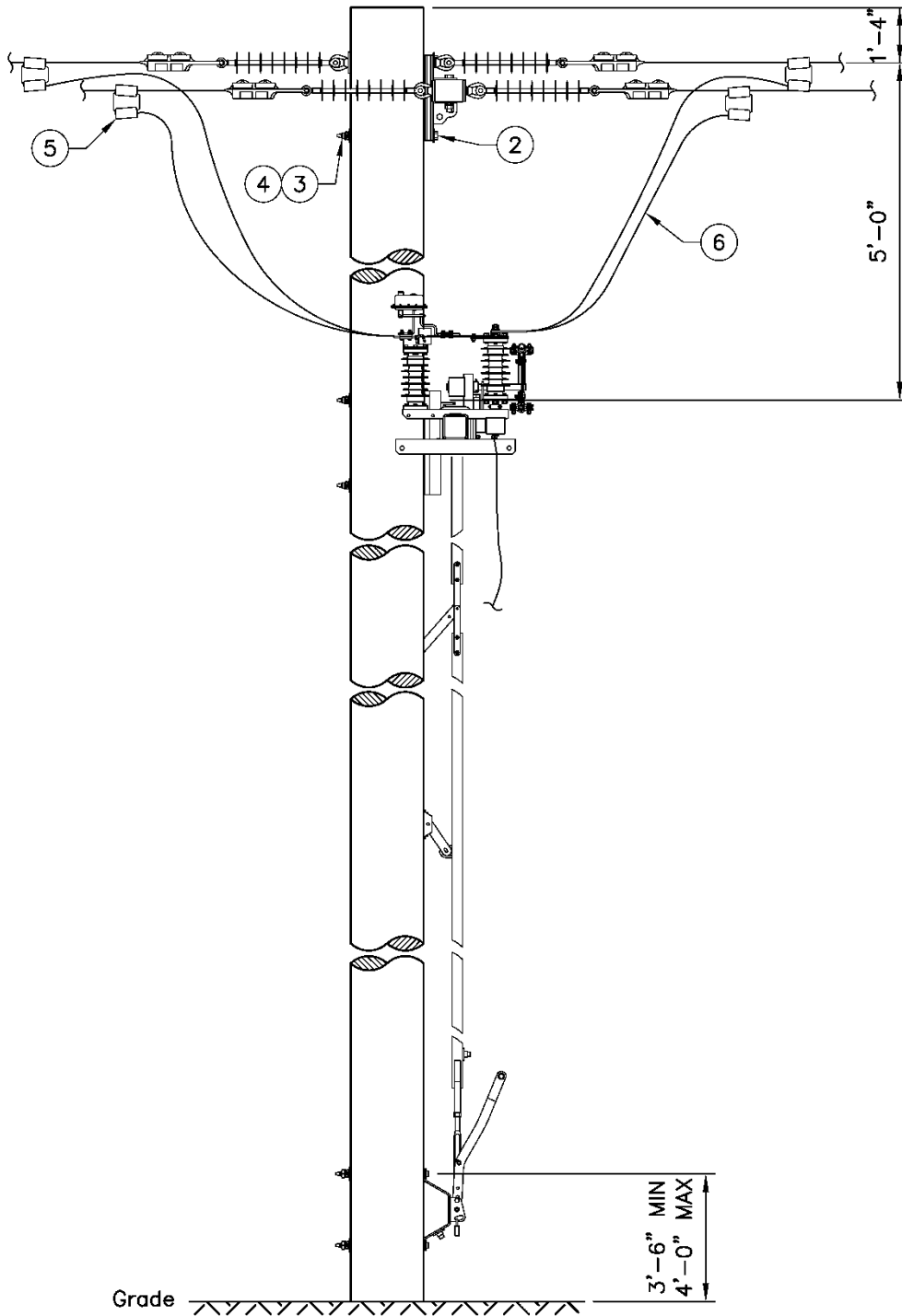


Figure 3c. Three-Phase Horizontal Switch Assembly (Top View)

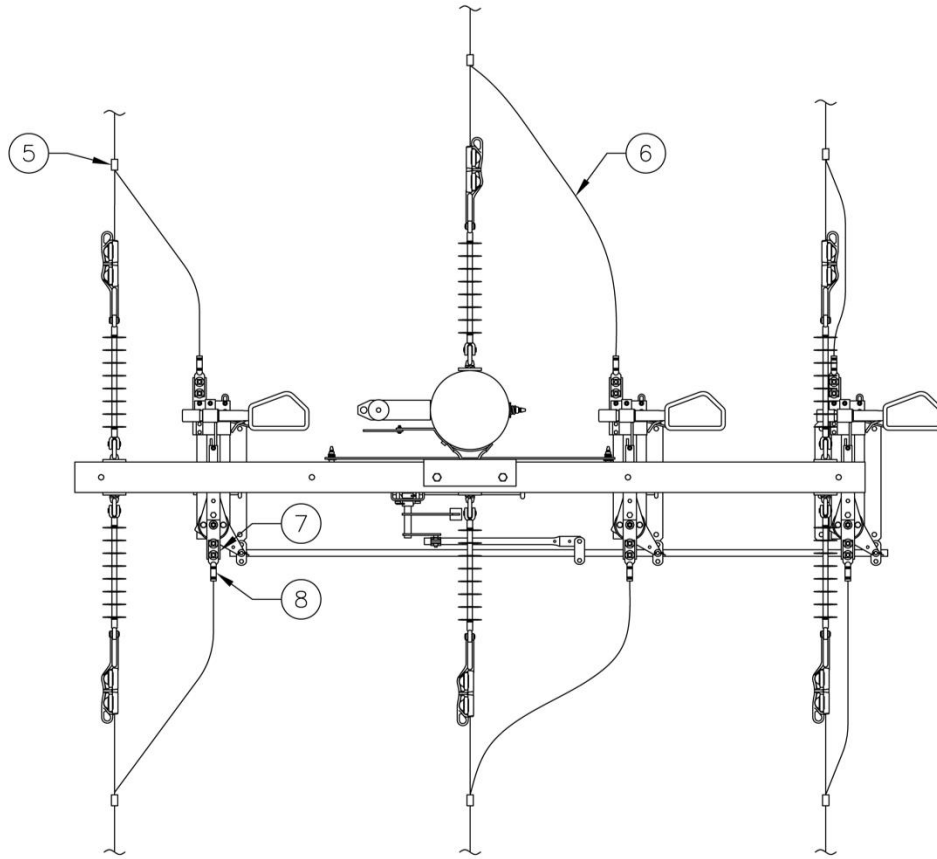


Figure 3d. Three-Phase Vertical Switch Assembly (Front View)

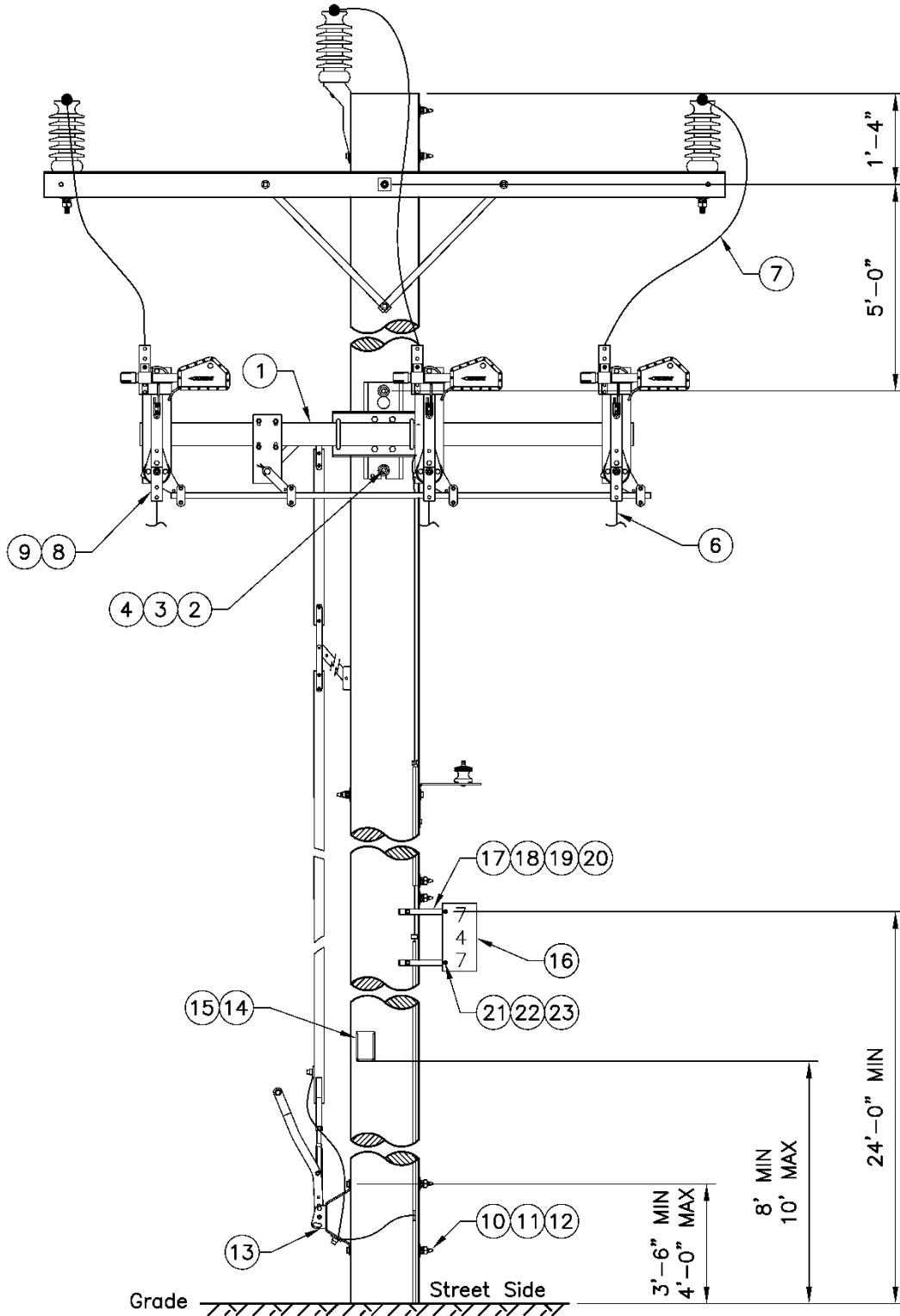
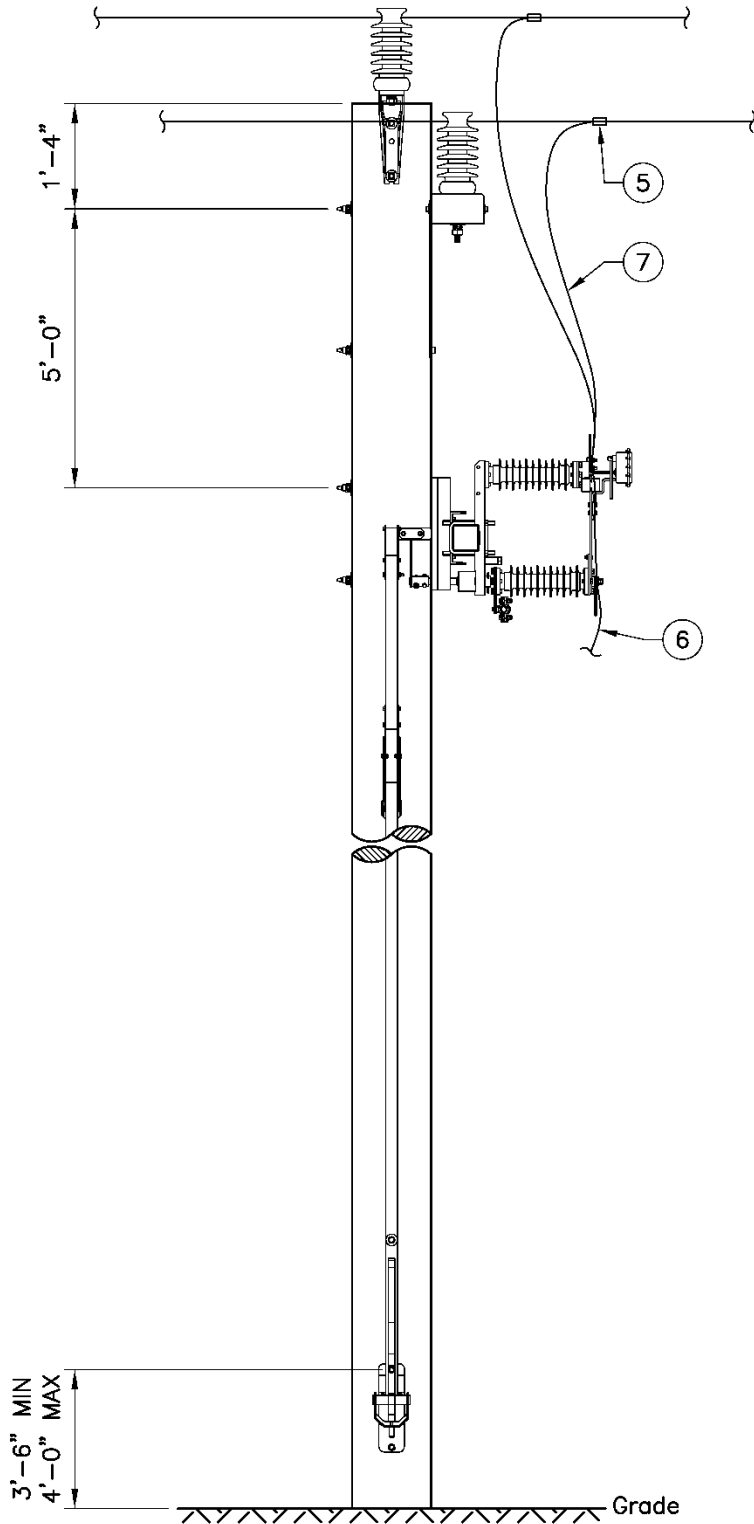


Figure 3e. Three-Phase Vertical Switch Assembly (Side View)



3.1 Switch Handle

For a horizontal switch, the handle shall be installed with the top bolt hole located between 42–48 inches above ground level on the face side of the pole.

For a vertical switch, the handle shall be installed with the top bolt hole located between 42–48 inches above ground level on the sidewalk side of the pole.

3.2 Operator Tag Holder

The operator tag holder shall be installed on the pole face at a minimum height of 8 ft and a maximum height of 10 ft.

3.3 Switch Number Board

The switch number board shall be installed on the street side at a minimum of 24 ft above street level.

3.4 Grounding

The switch handle shall be bonded to the pole ground and switch riser as shown in Figure 3.4.

Figure 3.4 Switch Handle Grounding



4. Construction Notes

4.1 Poles

If a pole on which a switch is to be installed is located in poor soil, a taller pole must be used.

4.2 Switch Handle

If the handle cannot be installed on the required side of the pole, it can be installed in the following locations:

- **On the street side of the pole, less than 3 ft from the street:** The switch handle, when in the down position, shall be installed at a minimum of 15 ft above the ground line.
- **On the street side of the pole, 3 ft or more from the street:** The switch handle shall be installed at 3 ft-6 in above the ground line.
- **On the sidewalk side of the pole, 2 ft or less from the sidewalk:** The switch handle, when in the down position, shall be installed at a minimum of 10 ft above the ground line
- **On the sidewalk side of the pole, more than 2 ft from sidewalk:** The switch handle shall be installed at 3 ft-6 in above the ground line.

4.3 Wedge Taps

Two sets of wedge taps are provided with 1/0, 350, and 500 kcmil, underground conductor, 600 A terminal poles to accommodate either 397.5 kcmil or 954 kcmil conductors. Use the appropriate taps and return the others to the warehouse.

5. Material Lists

Table 5a. Materials for Three-Phase 600 A Horizontal Switch

Fig	Compatible Unit	ID	Quantity	
3a, b, c	600 A three-phase horizontal switch, 397-397 kcmil	SWOH-H600-397		
3a, b, c	600 A three-phase horizontal switch, 954-397 kcmil	SWOH-H600-954		
#	Material Description	ID		
1	Switch, 600 A, horizontal	250150	1	1
2	Bolt, 3/4" x 16"	780877	2	2
3	Washer, curved, 4" x 4"	584775	2	2
4	Washer, double coil lock, 3/4"	584267	2	2
5	Wedge taps, 954 kcmil:954 kcmil	013624	3	-
5	Wedge taps, 397.5 kcmil :397.5 kcmil	013620	3	6
6	Jumper wire, 397.5 kcmil AAC	600113	30	60
6	Jumper wire, 954 kcmil AAC	600126	30	-
7	Washer bolt assembly, 2-1/2"	782041	12	12
8	Connector, compression terminal, 500 kcmil Al	651270	3	6
8	Connector, compression terminal, 1000 kcmil Al	651295	3	-
9	Bolt, 5/8" x 16"	780847	2	2
10	Washer, curved, 2-1/2" x 2-1/2"	585135	2	2
11	Washer, double coil lock, 5/8"	584261	2	2
12	Padlock, SNM-1	N/A	1	1
13	Tag holder	581799	1	1
14	Nail, large head	782416	2	2
15	Number board	N/A	1	1
16	Flat washer, 1/4" bronze	788022	2	2
17	Hex nut, 1/4" bronze	783321	2	2
18	Cap screw, 1/4" x 1", bronze	784505	2	2
19	Lock washer, 1/4" bronze	788121	2	2
20	Lag screw, 1/4" x 4"	785261	2	2
21	Flat washer, 3/8" x 1" galvanized	585020	2	2
22	Bracket, number board mounting	563225	2	2
23	Cartridge, Burndy, yellow shell	013631	6	6

Table 5b. Materials for Three-Phase 600 A Vertical Switch

Fig	Compatible Unit	ID	Quantity				
3d, e	600 A three-phase vertical switch, 1000 kcmil	SWOH-V600-1000					
3d, e	600 A three-phase vertical switch, 750 kcmil	SWOH-V600-750					
3d, e	600 A three-phase vertical switch, 500 kcmil	SWOH-V600-500					
3d, e	600 A three-phase vertical switch, 350 kcmil	SWOH-V600-350					
3d, e	600 A three-phase vertical switch, 1/0 AWG	SWOH-V600-1/0					
#	Material Description	ID	1	2	3	4	5
1	Switch, 600 A riser	250151	1	1	1	1	1
2	Bolt, 3/4" x 16"	780877	2	2	2	2	2
3	Washer, curved, 4" x 4"	584775	2	2	2	2	2
4	Washer, double coil lock, 3/4"	584267	2	2	2	2	2
5	Wedge taps, 954:954	013624	-	-	-	3	3
5	Wedge taps, 954:397.5	013619	3	3	3	-	-
5	Wedge taps, 397.5:397.5	013620	3	3	3	-	-
6	Wire, #4 AWG, bare, Cu, solid, HD	610008	30	-	-	-	-
6	Wire, 500 kcmil, bare, Cu	610397	-	30	30	30	30
7	Jumper wire, 397.5 AAC	600113	30	30	30	-	-
7	Jumper Wire, 954 AAC	600126	-	-	-	30	30
8	Washer bolt assembly, 2-1/2"	782041	12	12	12	12	12
9	Connector, compression terminal, 250 kcmil Cu	677083	3	-	-	-	-
9	Connector, compression terminal, 500 kcmil Cu	677091	-	3	3	3	3
9	Connector compression terminal, 500 kcmil Al	651270	3	3	3	-	-
9	Connector, compression terminal, 1000 kcmil Al	651295	-	-	-	3	3
10	Bolt, 5/8" x 16"	780847	2	2	2	2	2
11	Washer, curved, 2-1/2" x 2-1/2"	585135	2	2	2	2	2
12	Washer, double coil lock, 5/8"	584261	2	2	2	2	2
13	Padlock, SNM-1	N/A	1	1	1	1	1
14	Tag holder	581799	1	1	1	1	1
15	Nail, large head	782416	2	2	2	2	2
16	Number board	N/A	1	1	1	1	1
17	Flat washer, 1/4" bronze	788022	2	2	2	2	2
18	Hex nut, 1/4" bronze	783321	2	2	2	2	2
19	Cap screw, 1/4" x 1", bronze	784505	2	2	2	2	2
20	Lock washer, 1/4" bronze	788121	2	2	2	2	2
21	Lag screw, 1/4" x 4"	785261	2	2	2	2	2
22	Flat washer, 3/8" x 1", galvanized	585020	2	2	2	2	2
23	Bracket, number board mounting	563225	2	2	2	2	2
24	Cartridge, Burndy, yellow shell	013631	6	6	6	3	3

Table 5c. Materials for Three-Phase 1200 A Horizontal Switch

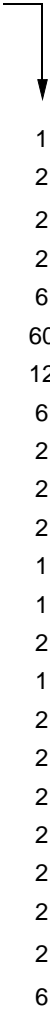
Fig	Compatible Unit	ID	Qty	
3a, b, c	1200A three-phase horizontal switch	SWOH-H1200-954		
#	Material Description	ID		
1	Switch, 1200 A, horizontal	250152		1
2	Bolt, 3/4" x 16"	780877		2
3	Washer, curved, 4" x 4"	584775		2
4	Washer, double coil lock, 3/4"	584267		2
5	Wedge taps, 954 kcmil:954 kcmil	013624		6
6	Jumper wire, 954 AAC	600126		60
7	Washer bolt assembly, 2-1/2"	782041		12
8	Connector, compression terminal, 1000 kcmil	651295		6
9	Bolt, 5/8" x 16"	780847		2
10	Washer, curved, 2-1/2" x 2-1/2"	585135		2
11	Washer, double coil lock, 5/8"	584261		2
12	Padlock, SNM-1	N/A		1
13	Tag holder	581799		1
14	Nail, large head	782416		2
15	Number board	N/A		1
16	Flat washer, 1/4" bronze	788022		2
17	Hex nut, 1/4" bronze	783321		2
18	Cap screw, 1/4" x 1", bronze	784505		2
19	Lock washer, 1/4" bronze	788121		2
20	Lag screw, 1/4" x 4"	785261		2
21	Flat washer, 3/8" x 1" galvanized	585020		2
22	Bracket, number board mounting	563225	2	
23	Cartridge, Burndy, yellow shell	013631	6	

Table 5d. Materials for Three-Phase 1200 A Vertical Switch

Fig	Compatible Unit	ID	Qty
3d, e	1200 A three-phase vertical switch	SWOH-V1200-1000	
#	Material Description	ID	
1	Switch, 1200 A riser	250153	1
2	Bolt, 3/4" x 16"	780877	2
3	Washer, curved, 4" x 4"	584775	2
4	Washer, double coil lock, 3/4"	584267	2
5	Wedge taps, 954 kcmil:954 kcmil	013624	3
6	Wire, 500 kcmil, bare, Cu	610397	60
7	Jumper wire, 954 AAC	600126	30
8	Washer bolt assembly, 2-1/2"	782041	12
9	Connector, compression terminal, 500 kcmil Cu	677091	6
9	Connector, compression terminal, 1000 kcmil Al	651295	3
10	Bolt, 5/8" x 16"	780847	2
11	Washer, curved, 2-1/2" x 2-1/2"	585135	2
12	Washer, double coil lock, 5/8"	584261	2
13	Padlock, SNM-1	N/A	1
14	Tag holder	581799	1
15	Nail, large head	782416	2
16	Number board	N/A	1
17	Flat washer, 1/4", bronze	788022	2
18	Hex nut, 1/4" bronze	783321	2
19	Cap screw, 1/4"x1", bronze	784505	2
20	Lock washer, 1/4", bronze	788121	2
21	Lag screw, 1/4"x4"	785261	2
22	Flat washer, 3/8"x1", galvanized	585020	2
23	Bracket, number board mounting	563225	2
24	Cartridge, Burndy, yellow shell	013631	3

6. References

- SCL Construction Standard 0125.07;** "Scada-Mate Primary Switch, 600 A"
- SCL Construction Standard 0126.01;** "Primary Pole Termination Installation"
- SCL Construction Standard 0451.01;** "Grounding Electrodes for Distribution Poles"
- SCL Construction Standard 4501.50;** "Overhead Distribution Switch, 27 kV, Gang-Operated"
- SCL Material Standard 4501.50;** "Overhead Distribution Switch, 27 kV, Gang Operated"

7. Sources

Hall, Alan; SCL Electrical Engineer and subject matter expert for 0125.05
(alan.hall@seattle.gov)

Lu, Curtis; SCL Standards Engineer and originator of 0125.05 (curtis.lu@seattle.gov)

SCL Construction Standard D8-17 (canceled); “Switch, 600 A, 3-Pole, Gang-Operated, for Wood Pole Mounting, Upright”

SCL Construction Standard D8-19 (canceled); “26/34.5 kV Upright Switch, 1200 A, 3-Pole, Gang-Operated, for Wood Pole Mounting”