

10. ACCEPTED EQUIPMENT

10.1 GENERAL

In order to meet the minimum specifications of these Electric Service Requirements, certain equipment shall have the acceptance of the Company. Manufacturers of equipment covered by these regulations may be required to submit samples of such equipment for Company acceptance. The Company will list the manufacturer's catalog number of accepted equipment in the following tables of this section. Each table lists equipment that is accepted only for the class of service and conditions described in the table heading. Accepted equipment is not interchangeable between tables unless listed in each table by manufacturer's catalog number.

Prefix/suffix, number/letter variations to catalog numbers as listed, that identify items such as hub size of hub plate, are acceptable with local regional approval.

The company reserves the right to install security devices on equipment that contains un-metered conductors.

Table 10.01
Connections for House End of Secondary Services
(1 of 3)



COPPER OR ALUMINUM
SOLID, STRANDED, OR ACSR

INSULATED ALUMINUM SLEEVE
PREFILLED WITH COMPOUND AND SEALED

COPPER OR ALUMINUM
SOLID, STRANDED, OR ACSR

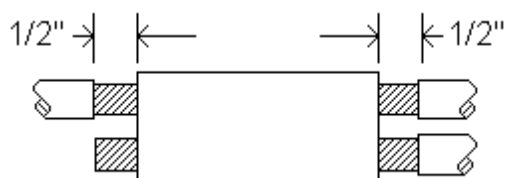
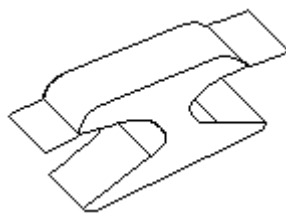
INSTRUCTIONS

- Strip covering from wire according to manufacturer's instructions. Be sure not to nick or cut conductor, file off all burrs, and wire brush until conductor is clean. Do not coat conductor with compound unless sleeves are unfilled.
- After conductor is clean, remove or puncture plastic seal of sleeve and, using a slight twisting motion, slide conductor into sleeve until the stop is reached. On concentric neutrals, form (do not twist) the fine strands into a round conductor. Remove or puncture plastic seal and insert the formed conductor fully into sleeve. Be sure that strands are not broken or left out of the sleeve. (See Table).
- With the conductors inserted fully, indent each side of sleeve working from the center out. Follow manufacturer's instructions concerning the tool, die, and number of crimps.

PECO Service (AWG) Conductor "A"	Customer Cable (AWG) Conductor "B"	Homac Cat # (or equivalent)	Color Code ("A"- "B")
#4 Str/ACSR	#8 Str #6 Sol	UOG 48	ORANGE-GREEN
#4 Str/ACSR	#6 Str, #4 Sol	UOB 46	ORANGE-BLUE
#4 Str/ACSR	#4 Str, #2 Sol	UOO 44	ORANGE-ORANGE
#4 Str/ACSR	#2 Str*, #1 Sol	URO 24	ORANGE-RED
#4 Sol	#6 Str #4 Sol	LIBB 66	BLUE- BLUE
#4 Sol	#4 Str, #2 Sol	UOB 46	ORANGE- BLUE
#4 Sol	#2 Str*	URB 26	RED- BLUE
1/0 Str/ACSR	1/0 Str	X 1 N 1010	YELLOW-YELLOW
1/0 Str/ACSR	2/0 Str	X 1 N 2010	YELLOW-GRAY
1/0 Str/ACSR	4/0 Str	X 1 N 4010	YELLOW-PINK
4/0 Str/ACSR	1/0 Str	X 1 N 4010	PINK- YELLOW
4/0 Str/ACSR	2/0 Str	X 1 N 4020	PINK- GRAY
4/0 Str/ACSR	4/0 Str	X 1 N 4040	PINK- PINK

* #2 Str. Compact wire may require the use of a connector listed in block one (1) on page 3 of 3 of this table to make a proper electrical connection.

Table 10.01
Connectors for House End of Secondary Services
(2 of 3)



INSTRUCTIONS FOR INSTALLING COMPRESSION “ H “ TAP CONNECTORS

1. Use these connectors for non-tension splice or tap connections of aluminum-to-aluminum conductors, or of aluminum to copper conductors, as shown above.
2. Be sure to use the correct size connectors and tooling as per manufacturers recommendations.
3. Install the connectors so that the aluminum or ACSR conductors are physically above the copper conductors.
4. Strip conductor as shown above, wire brush until metal is clean. Apply anti-oxidant compound and make connection **immediately**.

CAUTION: Do not nick or cut conductors in stripping process!

5. Place stripped conductor in groove, allowing it to extend $\frac{1}{2}$ " beyond connector from end to end using full number of indents as per manufacturers recommendations.
6. Install an insulated tap cover if appropriate.

Table 10.01
Connectors for House End of Secondary Services
(3 of 3)

Table 10.01
Connectors for House End of Secondary Services
ALUMINUM TO ALUMINUM OR ALUMINUM TO COPPER COMPRESSION TAP
"H" CONNECTOR TABLE

		MAIN OR TAP CONDUCTOR																									
WIRE SIZE & TYPE		1000 str.	750 str.	556.5 str.	500 str.	477 str.	336.4 acsr	350 str.	4/0 acsr	4/0 str.	3/0 acsr	4/0 comp.	2/0 str	1/0 acsr	2/0 comp	1/0 str.	2/0 sol.	#1 str.	1/0 sol.	#2 str.	#3 str.	#4 acsr	#4 str.	#3 sol.	#4 sol.	#8 sol.	#10 sol.
MAIN OR TAP CONDUCTOR	1000 str.																										
	750 str.	16																									
	556.5 str.																										
	500 str.																										
	477 str.																										
	336.4 acsr																										
	350 str.	15																									
	4/0 acsr																										
	4/0 str.																										
	3/0 acsr																										
	4/0 comp.																										
	2/0 str																										
	1/0 acsr																										
	2/0 comp																										
	1/0 str.																										
	2/0 sol.																										
	#1 str.																										
	1/0 sol.																										
	#2 str.																										
	#3 str.																										
	#2 sol.																										
	#4 acsr																										
	#4 str.	14																									
	#3 sol.																										
	#4 sol.																										
#8 sol.																											
#10 sol.																											

BLOCK	CODE NO.	BLACKBURN	BURNDY	HOMAC	GROVE OR DIE SET	TOOLING		
						NO. OF COMPRESSIONS		
						M06	Y35	45/46
1	132-14892	WR159	YHO-1	OB1	0	4	2	-
2	132-14951	WR189	YHO-2	OB2	0	5	2	-
3	132-14977	WR289	YHO-3	DB3	0	5	2	-
4	132-14894	WR279	YHO-4	DB2020	0	5	2	-
5	132-14952	WR379	YHO-5	DB5	0	5	2	-
6	132-14897	WR399L	YHO-6	DB6	0	7	3	-
7	132-14898	WR419	YHO-7	DB7	0	7	3	-
8	132-14912	WR9	YPC2ABU-L	UB214	BG	3	1	-
9	132-14913	WR139	YPC26RBU-L	---	0	4	2	-
10	132-14914	WR502	---	---	0	4	2	-
11	132-14136	WR885	YHN-525	NB500	N	-	3	-
12	132-14145	WR835	YHN-550	NB50040	N	-	2	-
13	132-14147	WR815	YHN-500	NB60020	N	-	2	-
14	132-12855	---	---	ZB95410	KR OR Z	-	-	3
15	132-14232	WR949	---	ZB95440	KR OR Z	-	-	3
16	132-14233	---	---	ZB954	KR OR Z	-	-	5

Ref.Constr.Std. S-0252 sheet-11

ACCEPTABLE EQUIPMENT

PRECAST MANHOLES

- 4' x 6' x 7' deep inside dimensions (min.(*)) with traffic bearing 30" entry casting and manhole cover
- Local suppliers of precast manholes include A. C. Miller Concrete Products and Rotundo Pre-cast

PRECAST 3 PHASE TRANSFORMER FOUNDATION

- 7' X 7' OR 8' X 8' Top
- Local suppliers of precast transformer foundations include A. C. Miller Concrete Products and Rotundo Pre-cast

WALL MOUNTED METAL SPLICE BOX

- 42" X 42" X 24" deep (min.(*)), NEMA 3R rated; with a 36" piece of perforated Unistrut welded horizontally to the inside back of the cabinet 18" from the top and centered left to right; with 2 hinged, gasketed, lockable doors (3 - point latch mechanism with padlocking handle) - Unity Manufacturing # PEC424224DDCT3 or equivalent.
- 60" X 42" X 24" deep, NEMA 3R rated; with a 54" piece of perforated Unistrut welded horizontally to the inside back of the cabinet 18" from the top and centered left to right; with 2 hinged, gasketed, lockable doors (3 - point latch mechanism with padlocking handle) - Unity Manufacturing # PEC604224DDCT3 or equivalent.

PEDESTAL TYPE SPLICE MODULE (*)

- Durham model # AMSPR32127-0 with fiberglass ground sleeve / without primary hardware
- Nordic model # ND-350 without primary hardware
- Power Design, Inc. model # CJP-30-41-L2-MG-1462-NPJ without primary hardware

FIBERGLASS SWITCH MODULE BASES

- 43" X 37 ½" (4KV & 15KV Distribution)
- 65" x 69 ½" (34KV Distribution)
- Highline Fiberglass Products, Nordic Fiberglass Products, Electraglass

(*) = Sizes listed are minimums. Larger sizes may be necessary dependent upon the load requirements of your project.

Table 10.20A
Circuit Breakers
5 kV Class, 3 Phase*

MANUFACTURER	VACUUM	AIR	SF6
* Siemens	5GM250 5GM350	-	-
* Powell	5PV250 5PV350	-	-

Table 10.20B
Switches
5 kV Class, 3 phase*

Manufacturer	Model No.
* Cutler Hammer	WLI WFS
* Powercon	PI-5
* S&C Co	Minirupter
* Siemens - ITE	LBS
* Square D	HVL

Table 10.20C
Fuses
5 kV Class, 3 phase*

<u>Manufacturer</u>	<u>Type</u>	<u>Max. Size</u>	<u>Recommended Max. Transformer KVA</u>
* Cutler Hammer	BA-200 RBA-400 CLE-1	100E 100E 65E	500 500 300
*General Electric	EJO-1 EJ-1	100E 100E	500 500
*Gould	CL-14	100E	500
* S&C Co	SMU-20 SM-4S	100E 100E	500 500

* 5kV Class equipment listed for replacement of existing service equipment. 4.16kV service is no longer available for new services within PECO Company's service territory.

Table 10.21A
Circuit Breakers*
 13 kV, 3 Phase
 13.8 kV, 500 MVA minimum interrupting capacity

MANUFACTURER	VACUUM	AIR	SF6
ABB	15VHK-500	-	-
Cutler Hammer	15VCP-500	150-DH-P-500	-
Federal Pioneer	VRB-15	DST-2A/15	SFA-17
General Electric	VB13.8-500	-	-
Powell	15PV500, 750,1000	-	-
Siemens	15GM500, 750,1000	FC-500	-
Square D	VR-15050-12/ VRO-15050-12	DSE-65	FG-2
Toshiba	VK-10M25	-	-

*In all cases the Company will determine equipment ratings where two or more services are operated in parallel.

Table 10.21B
Switches
 13 kV, 3 Phase

Manufacturer	Model No.
ABB	Versa Rupter-17 kV Versa Switch
Cutler Hammer	WLI, WFS
Federal Pacific	15 kV Autojet-II
Powercon	PIF
S&C Co	Minirupter, Side Break Alduti Outdoor Omni- Rupter
Siemens	QB
Square D	HVL

Other switches meeting the following minimum rating criteria may be submitted for individual acceptance

- 13kV Service
- Indoor: 13.8kV, 200 Amp Load Break, 20,000 Amp Momentary, 20,000 Amp Fault Close
 - Outdoor: 13.8kV, 600 Amp Load Break, 20,000 Amp Momentary, Group Operated.
 - Integral switches recommended to be mounted on a fiberglass base
 - Integral switches mounted on steel base require surge protection on line and load side.

Minimum Requirements for Auxiliary Equipment

For 13kV services, lightning arresters should be 15kV class. Drop out feature or external gaps are not acceptable.

Table 10.21C
 Fuses
 13 kV, 3 Phase
 13.8 kV, 10,000 A. RMS Asymmetrical

<u>Manufacturer</u>	<u>Type</u>	<u>Max. Size</u>	<u>Recommended Max. Transformer KVA</u>
Cutler Hammer	CLE-1	65E	1,000
	RBA-200	125E	2,500
	RBA-400	125E	2,500
Gould	CL-14	100E	1,500
General Electric	EJO-1	100E	1,000
	EJ-1	100E	1,000
S&C	SM-4Z	125E	2,500
	SMU-20	125E	2,500
	814050	**	16,000**

* All Fuses are Standard Time Curves

** S&C Fault Fiter - Consult New Business Customer Engineering

Table 10.21D
 Circuit Interrupters
 15 kV Class, 3 Phase
 150 MVA minimum interrupting capacity

<u>Manufacturer</u>	<u>Model No.</u>
G&W	PVI-5 SF6 Gas Switch & Vacuum Interrupter
S&C	Vista SF6 Gas Switch & Vacuum Interrupter
Square D	Visi-VAC Circuit Interrupter

Table 10.22A
 Circuit Breakers
 33 kV, 3 Phase
 1500 MVA minimum interrupting capacity

MANUFACTURER	OIL 34.5 kV 600 or 1200 A	VAC 34.5 kV 1200 A	SF6 34.5 kV 1200A
ABB	-	-	38PM31-12 38M31-30
Cutler Hammer	-	VM-38-2500	-
Powel	-	PV system 38 AG	-
Siemens	TDO-34-1500	35GM1500	SP
Square D	-	-	FCS3121532, FB
Toshiba	-	VGA2-30M150 VY-30M25	-

Table 10.22B
 Switches
 33 kV, 3 Phase

Manufacturer	Model No.
ABB	VERSA RUPTER
Cutler Hammer	WLI WFS
Powercon	PIF-38-600
S&C Co	Alduti Rupter
Square D	HVL

Minimum Requirements for Auxiliary Equipment

Lightning arresters - Drop out feature with external gaps are not acceptable.
 33kV, 3 phase, 4 wire services - LA's should be 27 kV, Distribution Class.
 33kV, 3 phase, 3 wire services - LA's should be 36 kV, Intermediate Class.
 (See Figure 8.47)

Other switches meeting the following minimum rating criteria may be submitted for individual acceptance

- 33kV Service
- Indoor: 34kV, 200 Amp, 20,000 Amp Momentary, 20,000 Amp Fault Close
 - Outdoor - 34.5kV, 600 Amp, 20,000 Amp Momentary, Group Operated.
 - Integral switches recommended to be mounted on a fiberglass base
 - Integral switches mounted on steel base require surge protection on line and load side..

Table 10.22C
 Fuses
 33 kV, 3 phase
 34.5 kV, 28000 A. RMS Asymmetrical

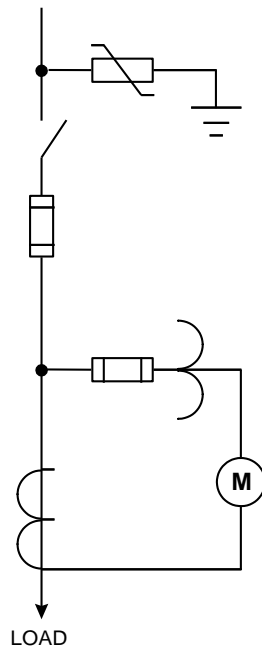
<u>Manufacturer</u>	<u>Type</u>	<u>Max. Size</u>	<u>Recommended Max. Transformer KVA</u>
S&C	SM-5	100E	5000
	SMU-20 *	100E	5000
	SMD-1A**	100E	5000
	SMD-2C**	100E	5000
Westinghouse	RDB/RBA 400	100E	5000

All fuses are standard time curves

* Acceptable where fault duties are limited to 10,000 Amps, symmetrical. Contact New Business Customer Engineering before specifying.

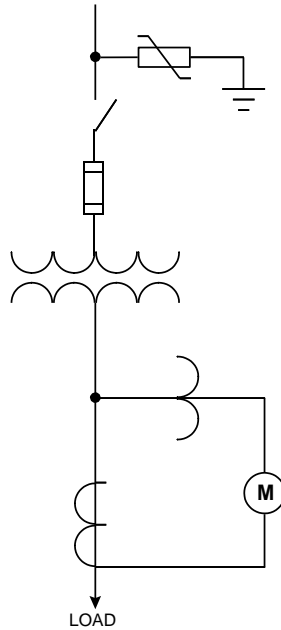
** 53,500 A asymmetrical interrupting rating

TABLE 10.23 P
13 KV SERVICE ASSEMBLIES
FUSED SINGLE SERVICE WITH PRIMARY METERING



MANUFACTURER	DRAWING NO
CUTLER HAMMER	7274A75
FEDERAL PACIFIC	D-28106-A
HAYDEN	PECO.10.23PI/HSPC PECO.10.23PD/HSPC
S&C CO	CD/CDA-709632 CDA-730772
POWER CON	C-8916
PENN PANEL	PPS-4588
SHALLBETTER	17133961, 62 17133951, 52
SIEMENS	84-8040, 84-8041
SQUARE D	DF.17.3463411J.001

TABLE 10.23 S
13 KV SERVICE ASSEMBLIES
FUSED, SINGLE SERVICE, WITHOUT PRIMARY METERING
(METERED SECONDARY, COMPENSATED)



MANUFACTURER	DRAWING NO
CUTLER HAMMER	7274A75 **
FEDERAL PACIFIC	D-28104-A, D-28105-A
FEDERAL PACIFIC	PSI 0107-2-46150
FEDERAL PACIFIC	PSE D-37-3105 ***
G&W	D-9505 3006 0w0
HAYDEN	PECO.10.23S/HSPC
S&C CO	55112R2-S116
S&C CO	PME-5 65112R1-S196 ***
POWER CON	C-10146
PENN PANEL	PPS-4758
SHALLBETTER	17133931, 32
SIEMENS	84-8040
SQUARE D	F.17.165.13.2KV.001

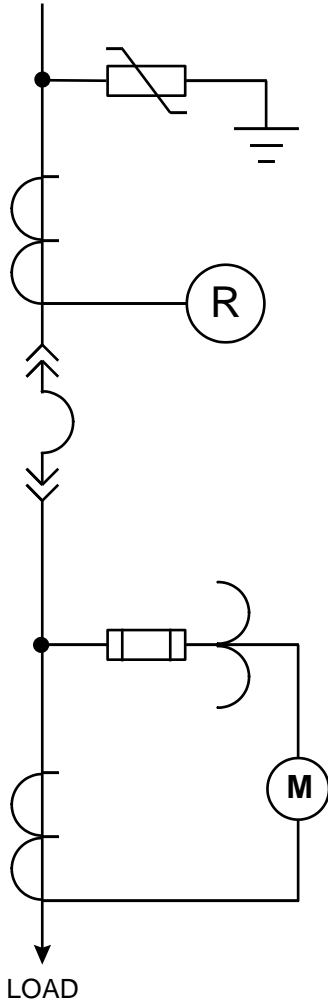
** Meter Unit included on drawing not required.

*** Dead Front Construction with elbow connectors - outdoor application only

ACCEPTED ONLY FOR SINGLE SERVICES WITH NO MORE THAN ONE TRANSFORMER AND RESTRICTED TO THE FOLLOWING TRANSFORMER CAPACITIES AND VOLTAGES:

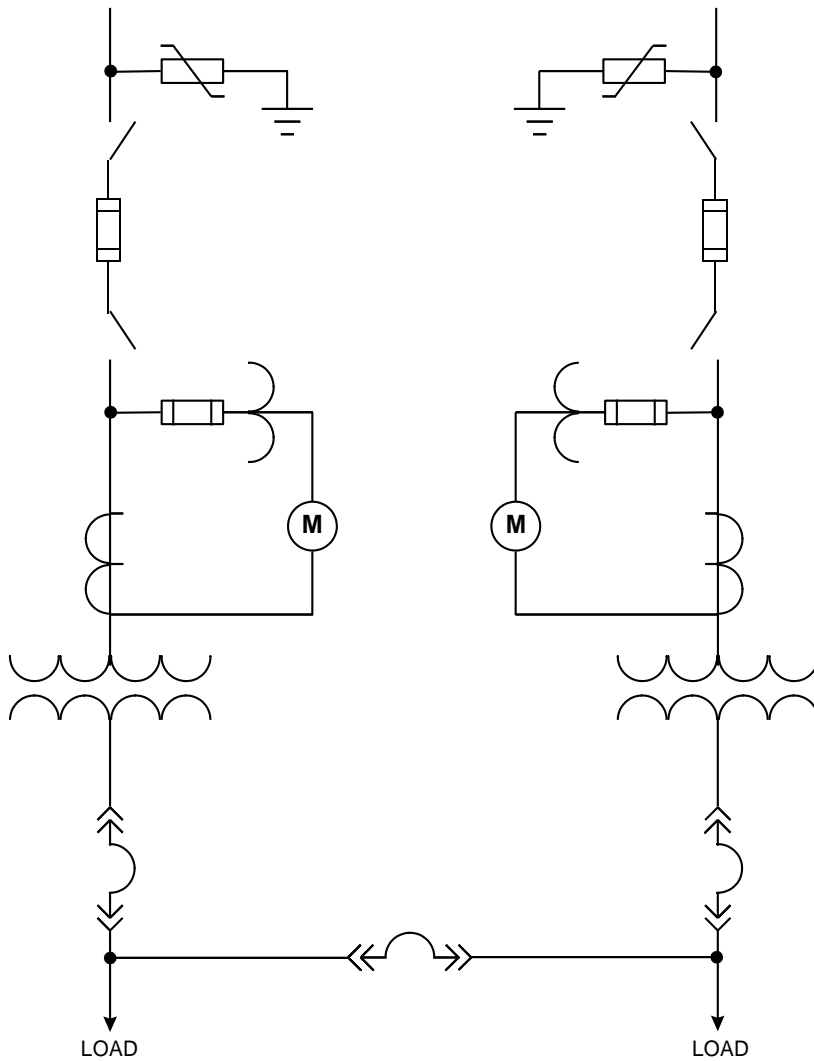
SECONDARY VOLTAGE	MAXIMUM CAPACITY
208 V	1,500 KVA
240 V	2,000 KVA
480 V	3,730 KVA

TABLE 10.24
13 KV SERVICE ASSEMBLIES
CIRCUIT BREAKER, SINGLE SERVICE, PRIMARY METERING



MANUFACTURER	DRAWING NO
CUTLER HAMMER	806A028
PENN PANEL	PPS-3838
POWERCON	D-07416

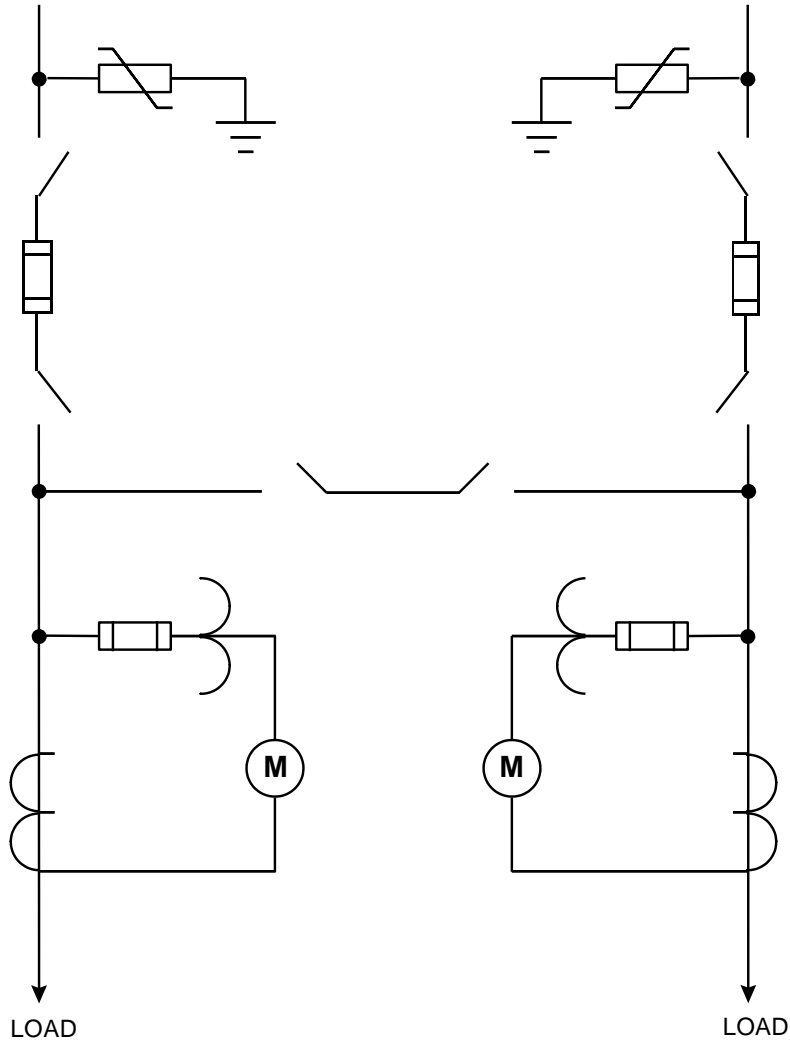
TABLE 10.25 A
 13 KV SERVICE ASSEMBLIES
 FUSED DUAL SERVICES
 SECONDARY SELECTIVE



Design may be incorporated at 33 kV with New Business Customer Engineering Approval

MANUFACTURER	DRAWING NO
PENN PANEL	PPS-4688

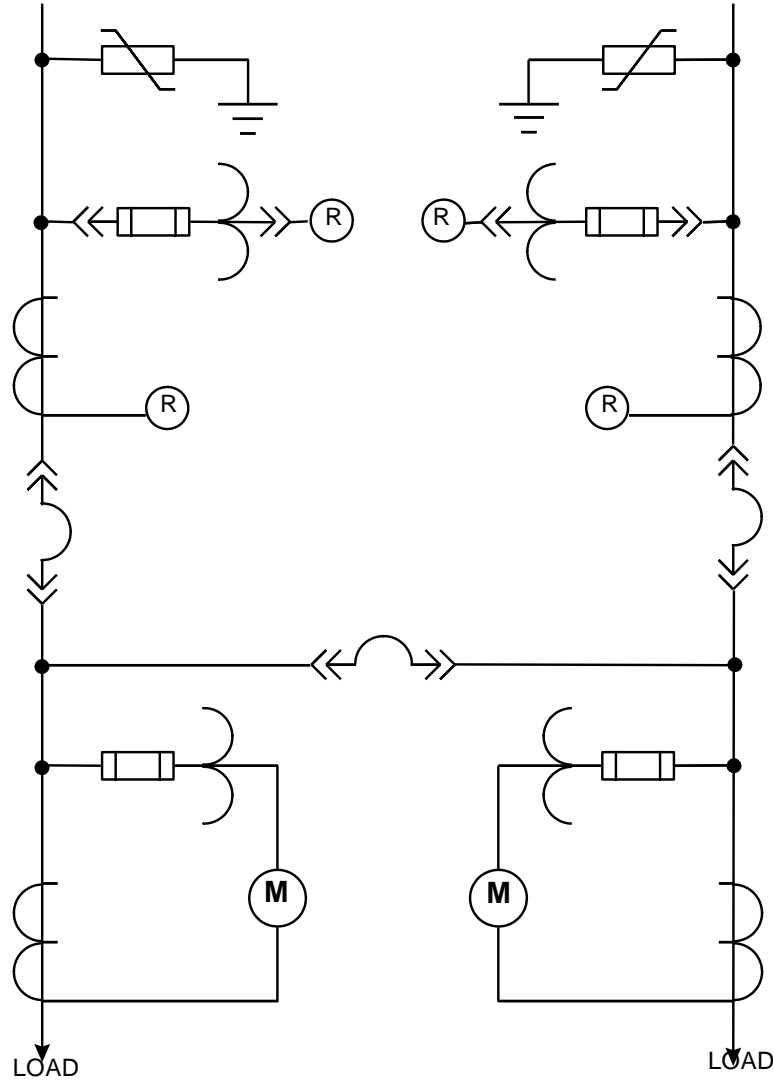
TABLE 10.25 B
13 KV SERVICE ASSEMBLIES
FUSED DUAL SERVICES
PRIMARY SELECTIVE



Design may be incorporated at 33 kV with New Business Customer Engineering Approval

MANUFACTURER	DRAWING NO
PENN PANEL	PPS-4858
POWERCON	D-7947
S&C CO	CD/CDA-708202

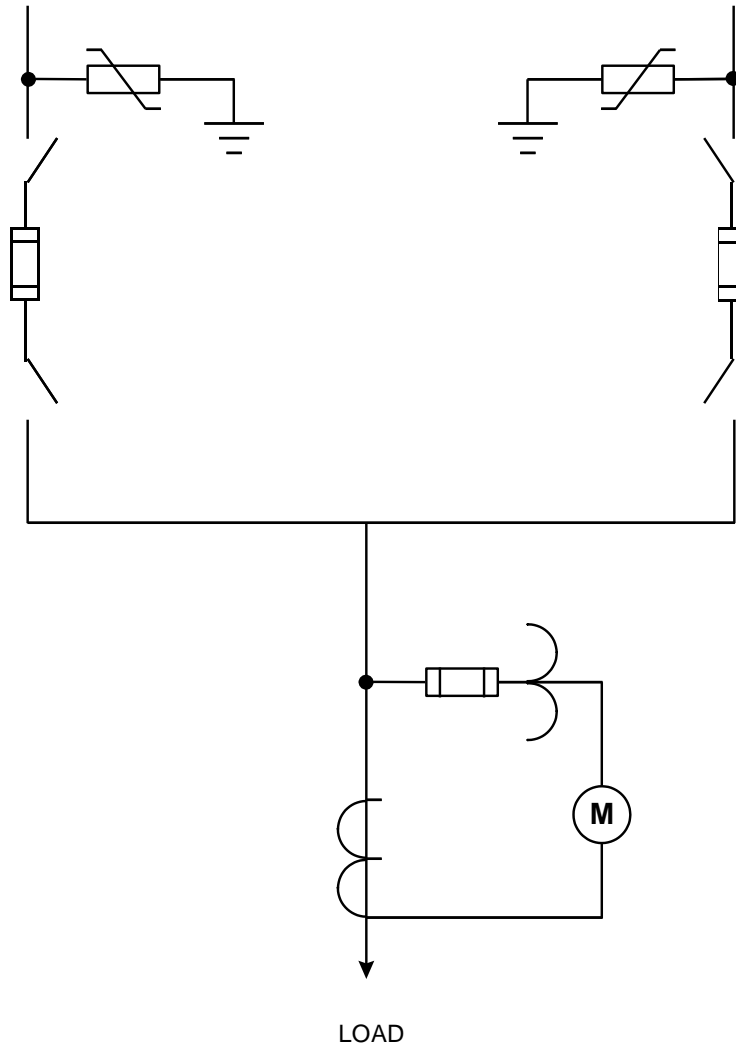
TABLE
 13 KV SERVICE ASSEMBLIES
 CIRCUIT BREAKER, DUAL SERVICE
 PRIMARY SERVICE



Design may be incorporated at 33 kV with New Business Customer Engineering Approval

MANUFACTURER	DRAWING NO
CUTLER HAMMER	806A024
PENN PANEL	PPS-4268
POWERCON	D-8164
SQUARE D	DF.17.3991096A.001

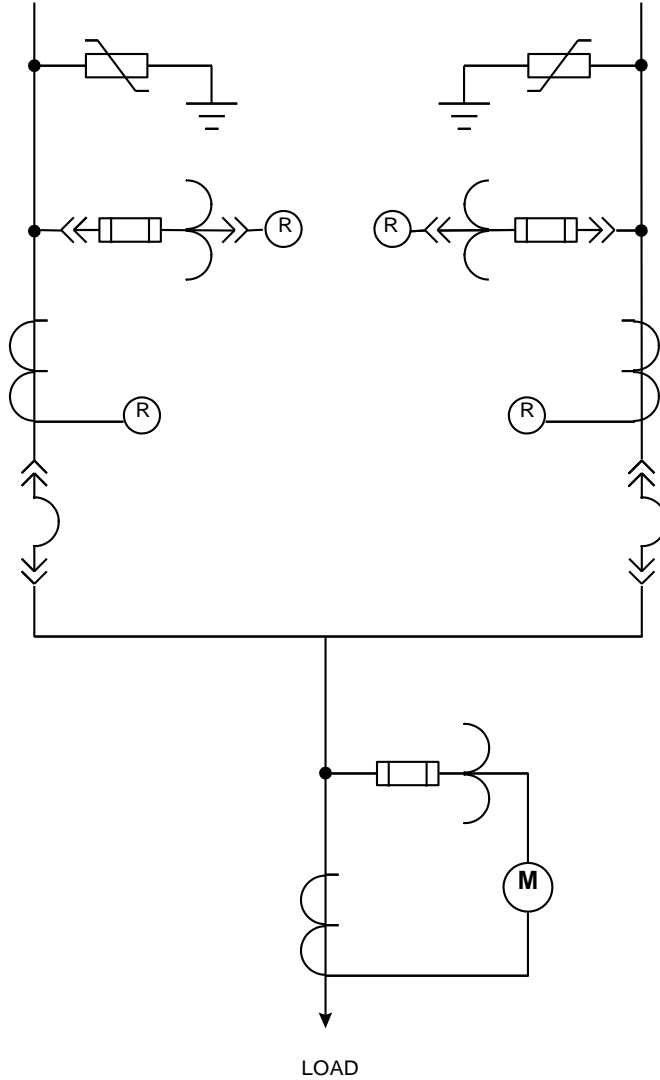
TABLE 10.27
13 KV SERVICES ASSEMBLIES
FUSED, REGULAR AND RESERVE SERVICES



Design may be incorporated at 33 kV with New Business Customer Engineering Approval

C	DRAWING NO
PENN PANEL	PPS-4468
POWERCON	D-7350
SQUARE D	DF.17.3974992.00.001 AUTO XFR BF.17.39191213A.001 MAN XFR

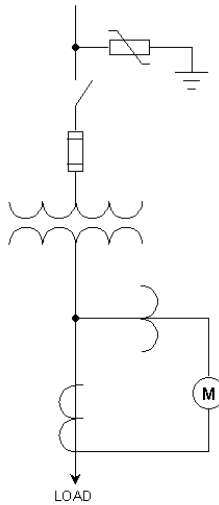
TABLE
 13 KV SERVICE ASSEMBLIES
 CIRCUIT BREAKERS, REGULAR AND RESERVE SERVICE



Design may be incorporated at 33 kV with New Business Customer Engineering Approval

MANUFACTURER	DRAWING NO
CUTLER HAMMER	886A026
PENN PANEL	PPS-4698
POWERCON	D-9331
SQUARE D	DF.17.4358589A0.001

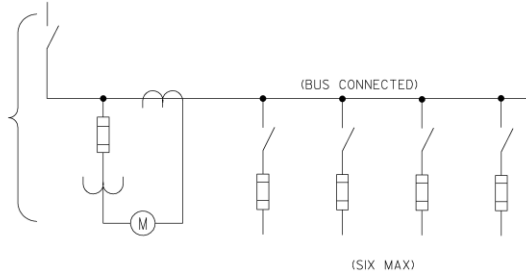
TABLE 10.29
 33 KV SINGLE SERVICE ASSEMBLIES
 FUSED TYPE STRUCTURES
 (METERED SECONDARY, COMPENSATED)*



SECONDARY COMPENSATED METERING ACCEPTABLE FOR UP TO 4 TRANSFORMERS PER 33,000 VOLT SERVICE. FOR TRANSFORMER SIZE LIMITATIONS, SEE TABLE 10.23S

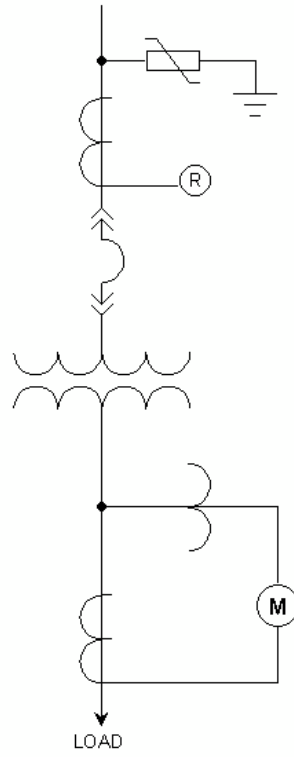
MANUFACTURER	DRAWING NO
CUTLER HAMMER	221C338
FEDERAL PACIFIC	D38-1738A-002
G&W	D9515-3006-0E0
HAYDEN	PECO.10.29A/HSPC
S&C CO	CD/CDA-705264
SHALLBETTER	17133941, 42
PENN PANEL	PPS-4318
POWERCON	D-9116
SQUARE D	DF.17.165.34.5KV.001

TABLE 10.30
 33KV PRIMARY METERING
 SWITCH/FUSE



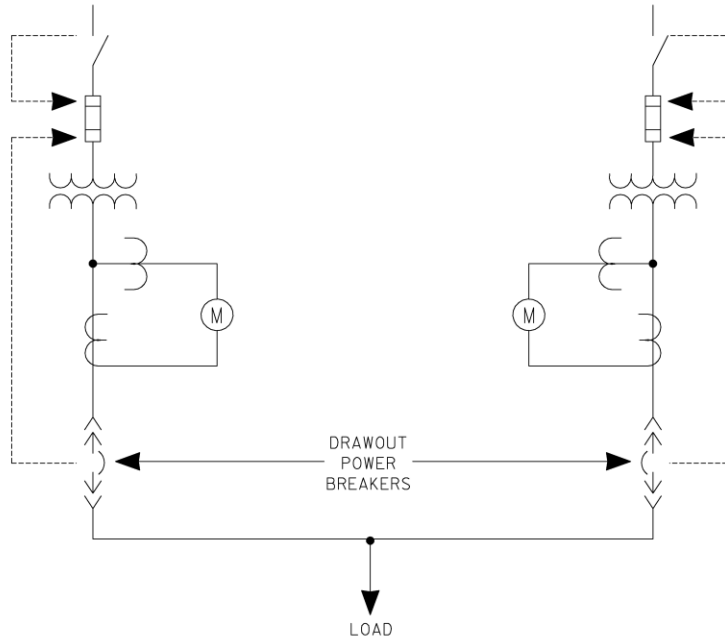
MANUFACTURER	DRAWING NO
FEDERAL PACIFIC	D38-1738A-001
PENN PANEL	PPS-499

TABLE 10.31
 33 KV SINGLE SERVICE ASSEMBLIES
 CIRCUIT BREAKER TYPE STRUCTURE
 (METERED SECONDARY, COMPENSATED)*



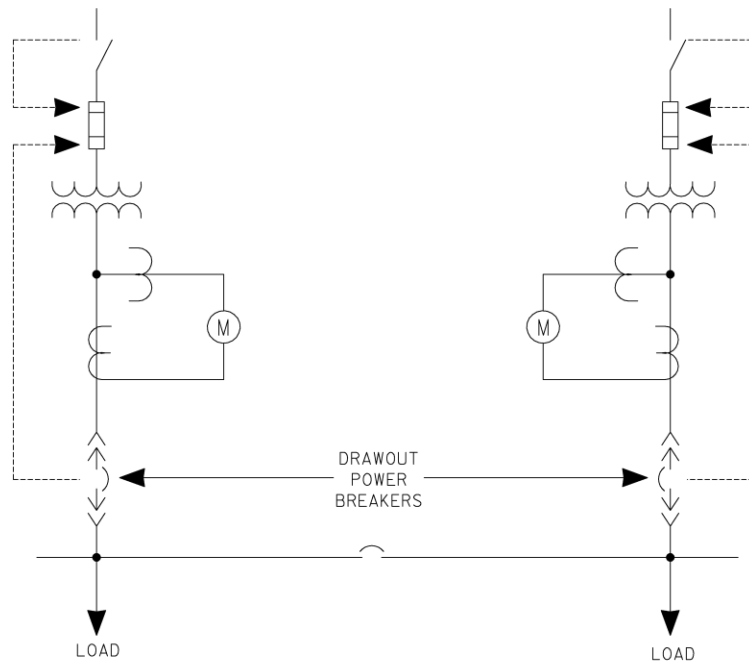
MANUFACTURER	DRAWING NO

TABLE 10.32
33KV REGULAR/RESERVE



MANUFACTURER	DRAWING NO

TABLE 10.33
 33KV DUAL SERVICE
 SECONDARY COMPENSATED METERING
 SECONDARY TRANSFER



MANUFACTURER	DRAWING NO