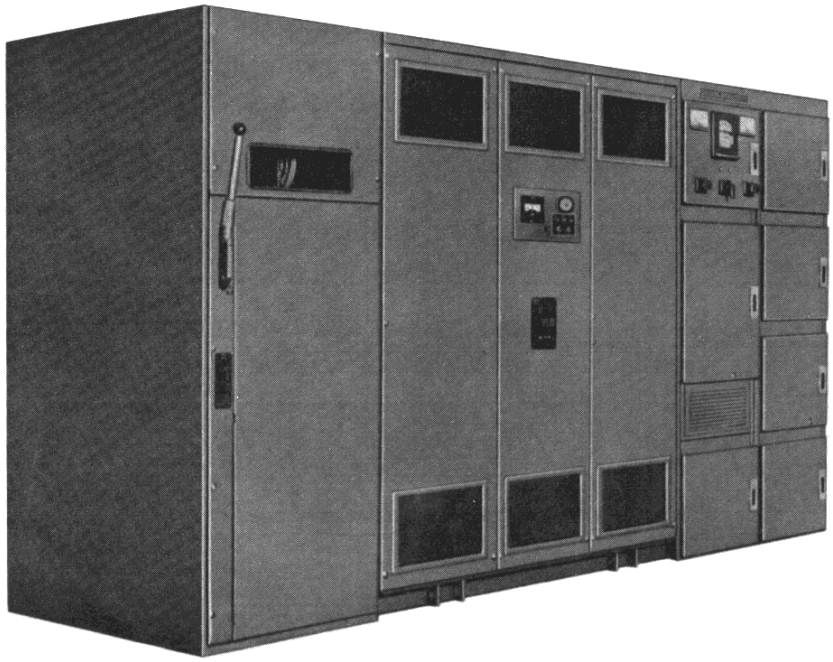
Product Data

File 6120

Subject **POWER-ZONE**
SECONDARY LOAD CENTER UNIT SUBSTATIONS
WITH DRY TYPE TRANSFORMERS



Dimensional Layout and Specification Guide

TABLE OF CONTENTS

PURPOSE

The purpose of this bulletin is to assist in the layout and specification of secondary load center unit substations utilizing open ventilated dry type transformers. There are three parts to the bulletin which are as follows:

I. Primary section.
II. Transformer section.
III. Secondary distribution section.

Parts I, II and III are tabulated to provide a check list for each component, accessory, or important feature which will be required. This is done so that no item will be left out of the final specification for the complete equipment. There are also valuable tables which contain information for selecting primary fuses, determining fuse interrupting capacities, and calculating available secondary fault currents. It is suggested the check list of the required equipment, complete with all electrical characteristics, be made before attempting to determine the dimensions of the unit substation. Once all components are selected a complete layout of the unit substation can be accomplished from the incoming line cables to the outgoing feeder cables. Pads of drawings that simplify the illustration of the complete layout are available from the Middletown Advertising Department. (Request Pad Drawings) For suggested specifications refer to:

Catalog section 6120 — Transformers

Catalog section 6130 — Low Voltage Drawout Switchgear

Catalog section 6140 — High Voltage Switchgear

Catalog sections 2600 — Low Voltage Secondary
2620 — Distribution Sections

Part I Primary Section:

A) Cable Termination: ☐ Cable Lugs ☐ 3-1/C Potheads ☐ 1-3/C Pothead

Cable size _____

(Specify quantity if more than one cable per phase)

If Pothead specify incoming cable, type and outside dimensions

_____

_____

B) Lighting Arresters:

☐ Distribution Class
☐ Intermediate Class
☐ Station Class

Voltage Rating

☐ 3KV ☐ 4.5 KV ☐ 6 KV ☐ 9 KV
☐ 10 KV ☐ 12 KV ☐ 15 KV

C) HVL Load Interrupter Switches, 600 A/3 Pole:

☐ Single Two position switch
☐ Duplex switch, consisting of two, two position switches
☐ Not fused
☐ Current limiting fuse, General Electric type EJ
☐ Current limiting fuse, Westinghouse type CLE
☐ Current limiting fuse, ITE type CL-14
☐ Westinghouse, RBA-200, vented boric acid fuses
☐ Westinghouse, RBA-400, vented boric acid fuses
☐ S & C, SM-4Z, vented boric acid fuses
☐ S & C, SM-5S, vented boric acid fuses

Supply_____-3Ø sets of spare current limiting fuses
Supply_____-3Ø sets of spare boric acid refill units
Other fuses: _____

_____

D) Cable Terminal Compartment: ☐

E) Transformer location as viewed from the front:

☐ Transformer located to right of high voltage switch or terminal compartment
☐ Transformer located to left of high voltage switch or terminal compartment

F) Notes or Comments _____

_____

_____

_____

_____

_____

FUSE SELECTION TABLES

Recommended General Electric Type EJ Current Limiting Fuse Sizes For Three Phase Transformers.

Transformer KVA	Primary Voltage						
	2.4 KV	4.16 KV	4.8 KV	7.2 KV	+ 12.0 KV	13.2 KV	13.8 KV
225	100E	—	—	—	—	—	—
300	125E	—	—	—	—	—	—
500	200E	125E	100E	—	—	—	—
750	250E	200E	150E	—	—	—	—
1000	325E	—	200E	—	—	—	—
1500	450E	300E	250E	—	125A	—	—
2000	—	375E	325E	—	150A	150A	150A
2500	—	400E	400E	—	175A	175A	175A

Table No. 1

Recommended Westinghouse Type CLE Current Limiting Fuse Sizes For Three Phase Transformers.

Transformer KVA	Primary Voltage						
	2.4 KV	4.16 KV	4.8 KV	7.2 KV	+ 12.0 KV	13.2 KV	13.8 KV
225	80E	50E	50E	30E	20E	—	15E
300	100E	65E	65E	40E	25E	—	20E
500	200E	100E	100E	65E	30E	30E	—
750	280X	150E	125E	80E	40E	40E	40E
1000	325X	200E	150E	100E	65E	50E	50E
1500	400X	280X	280X	150E	80E	80E	80E
2000	—	365X	325X	200E	150E	100E	100E
2500	—	400X	365X	—	200X	150E	150E

Table No. 2

Recommended ITE Type CL-14 Current Limiting Fuse Sizes For Three Phase Transformers.

Transformer KVA	Primary Voltage						
	2.4 KV	4.16 KV	4.8 KV	7.2 KV	+ 12.0 KV	13.2 KV	13.8 KV
225	100E	50E	50E	30E	20E	15E	15E
300	125E	65E	65E	40E	25E	20E	20E
500	200E	125E	100E	65E	40E	40E	40E
750	300E	200E	150E	100E	65E	50E	50E
1000	400E	250E	200E	150E	80E	80E	65E
1500	400E	400E	300E	200E	125E	100E	100E
2000	—	400E	400E	200E	150E	150E	150E
2500	—	400E	400E	—	200E	200E	150E

+ Also Applicable to 12.47 KV.

Table No. 3

Note — Fuse sizes were selected on the bases of NEC 450-3(2) (I) when there is no main overcurrent protection on the secondary side.

FUSE SELECTION TABLES

Recommended Westinghouse Type RBA Fuse Sizes For Three Phase Transformers.

Transformer KVA	Primary Voltage						
	2.4 KV	4.16 KV	4.8 KV	7.2 KV	+ 12.0 KV	13.2 KV	13.8 KV
225	100E	50E	50E	30E	20E	15E	15E
300	125E	65E	65E	40E	25E	20E	20E
500	200E	125E	100E	65E	40E	40E	40E
750	300E	200E	150E	100E	65E	—	—
1000	400E	250E	200E	125E	80E	80E	65E
1500	720A	400E	300E	200E	125E	100E	100E
2000	720A	450A	400E	250E	150E	150E	150E
2500	—	540A	540A	400E	200E	200E	200E

Table No. 4

Recommended S & C Type SM Fuse Sizes For Three Phase Transformers.

Transformer KVA	Primary Voltage						
	2.4 KV	4.16 KV	4.8 KV	7.2 KV	+ 12.0 KV	13.2 KV	13.8 KV
225	100E	50E	50E	30E	20E	15E	15E
300	125E	65E	65E	40E	25E	20E	20E
500	200E	125E	100E	65E	40E	40E	40E
750	300E	175E	150E	100E	65E	50E	50E
1000	400E	250E	200E	125E	80E	80E	65E
1500	720A	400E	300E	200E	125E	100E	100E
2000	720A	450A	400E	250E	150E	150E	150E
2500	720A	540A	540A	400E	200E	175E	175E

Table No. 5

+ Also Applicable to 12.47 KV.

Note — Fuse sizes were selected on the bases of NEC 450-3(2) (I) when there is no main overcurrent protection on the secondary side.

FUSE INTERRUPTING TABLE

INTERRUPTING AND MAXIMUM CONTINUOUS RATINGS OF FUSES AS PUBLISHED BY FUSE MANUFACTURERS

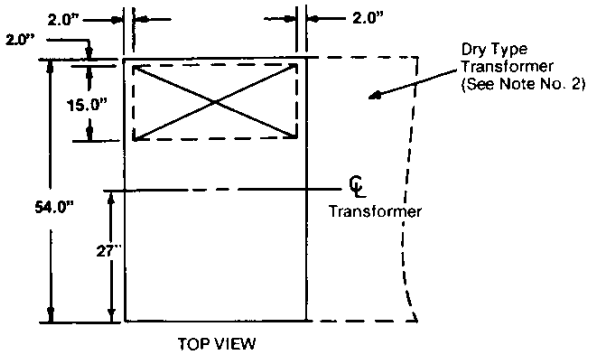
	CURRENT LIMITING FUSES							BORIC ACID FUSES						
Manufacturer	GE		WESTINGHOUSE				ITE	S & C		WESTINGHOUSE				
Type / System Voltage (kV)	EJO-1	EJ-1	CLE-1	CLE-2	CLE-3	CLE-750	CL-14	SM-4Z	SM-5S	RBA-200 with Condenser	RBA-200 with Discharge Filter	RBA-400 with Condenser	RBA-400 with Discharge Filter	RBA-800 with Discharge Filter
2.4	80000A 210MVA 200E	80000A 210MVA 450A	80000A 205MVA 225E	63000A 166MVA 450X	Not Available	63000A 166MVA 750E	96000A 250MVA 400E	27500A 70MVA 200E	60000A 155MVA 400E	16000A 42MVA 200E	30000A 80MVA 200E	32000A 84MVA 400E	60000A 150MVA 400E	60000A 150MVA 720E
4.16	80000A 360MVA 200E	80000A 360MVA 450A	80000A 360MVA 225E	80000A 360MVA 450X	Not Available	63000A 288MVA 750E	96000A 430MVA 400E	27500A 125MVA 200E	60000A 270MVA 400E	16000A 72MVA 200E	30000A 137MVA 200E	32000A 144MVA 400E	60000A 270MVA 400E	60000A 270MVA 720E
4.8	80000A 415MVA 200E	80000A 415MVA 450A	80000A 415MVA 225E	80000A 415MVA 450X	Not Available	63000A 332MVA 750E	96000A 500MVA 400E	27500A 145MVA 200E	43500A 225MVA 400E	16000A 83MVA 200E	30000A 158MVA 200E	32000A 166MVA 400E	60000A 310MVA 400E	60000A 310MVA 720E
7.2	80000A 623MVA 200E	Not Available	80000A 623MVA 125E	63000A 498MVA 200X	Not Available	Not Available	64000A 500MVA 200E	25000A 195MVA 200E	41500A 325MVA 400E	16000A 125MVA 200E	26500A 205MVA 200E	25600A 200MVA 400E	47000A 365MVA 400E	47000A 365MVA 720E
12.0	60000A 778MVA 100E	50000A 648MVA 175A	135000A 1754MVA 65E	135000A 1754MVA 125X	80000A 1038MVA 200X	Not Available	64000A 830MVA 200E	20000A 260MVA 200E	40000A 520MVA 400E	12800A 166MVA 200E	23000A 299MVA 200E	20000A 260MVA 400E	47000A 610MVA 400E	47000A 610MVA 720E
12.47	60000A 808MVA 100E	50000A 674MVA 175A	135000A 1822MVA 65E	135000A 1822MVA 125X	80000A 1076MVA 200X	Not Available	64000A 860MVA 200E	20000A 270MVA 200E	40000A 540MVA 400E	12800A 172MVA 200E	23000A 312MVA 200E	20000A 269MVA 400E	470000A 635MVA 400E	47000A 635MVA 720E
13.2	60000A 856MVA 100E	50000A 713MVA 175A	135000A 1929MVA 65E	135000A 1929MVA 125X	80000A 1140MVA 200X	Not Available	64000A 910MVA 200E	20000A 285MVA 200E	40000A 285MVA 400E	12800A 182MVA 200E	23000A 329MVA 200E	20000A 285MVA 400E	47000A 672MVA 400E	47000A 672MVA 720E
13.8	60000A 895MVA 100E	50000A 746MVA 175A	135000A 2017MVA 65E	135000A 2017MVA 125X	80000A 1192MVA 200X	Not Available	64000A 955MVA 200E	20000A 300MVA 200E	40000A 600MVA 400E	12800A 191MVA 200E	28000A 345MVA 200E	20000A 300MVA 400E	47000A 700MVA 400E	47000A 700MVA 720E

NOTE: Current ratings are asymmetrical rms current (1.6 symmetrical) at system voltage. MVA ratings are symmetrical at system voltage.

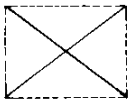
Table No. 6

DIMENSIONS

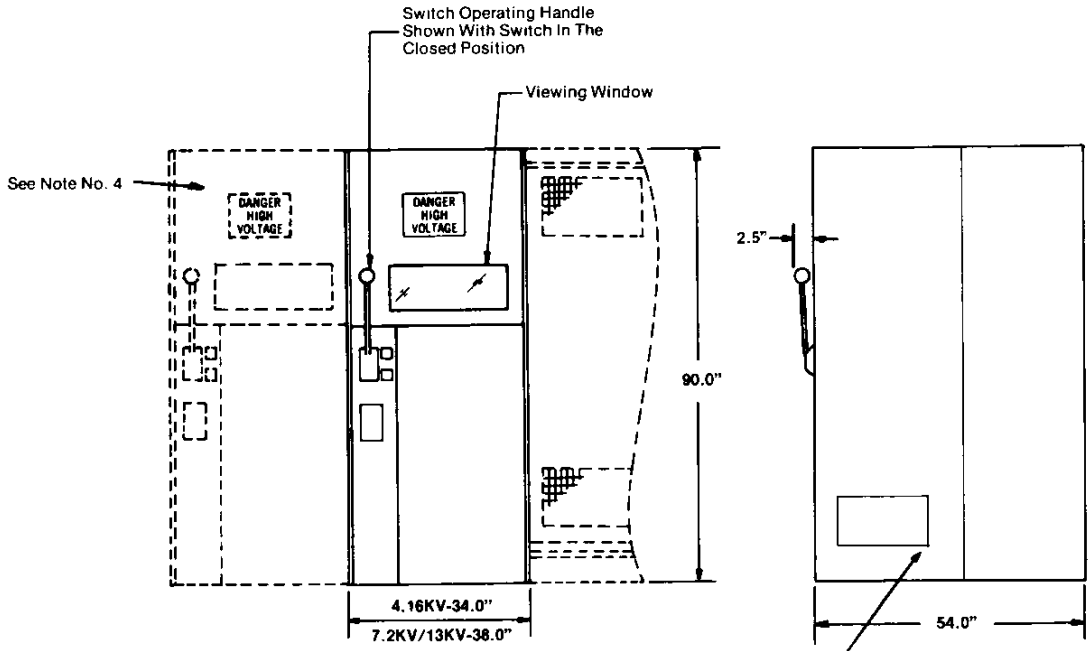
Not for construction purposes



TOP VIEW



Represents Suggested Conduit Entrance Area.

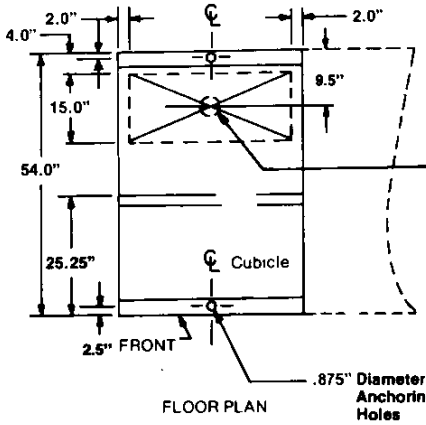


FRONT ELEVATION

RIGHT SIDE VIE

Approximate Weight 1250 lbs. Per Switch

Cutout For Transformer Connections (See Note No. 2)

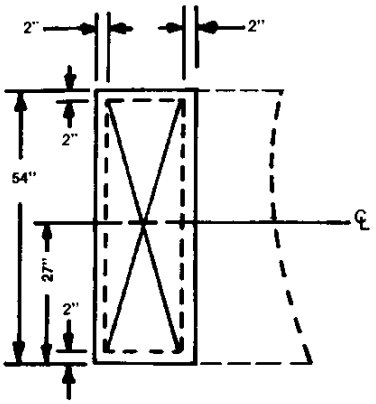


FLOOR PLAN

NOTES

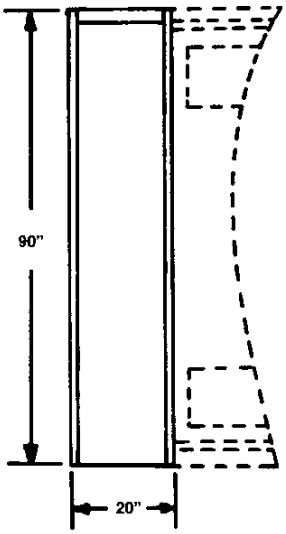
1. See catalog section 6140 for full details on HVL switch ratings.
2. Transformer can be located on left or right side of HVL switch as required.
3. Distribution Class Arresters are connected to load side of switch as standard, when used with CL fuses. For all other applications Arresters are connected to line side of switch
4. Additional switch for duplex arrangement. Conduit Entrance shown not applicable.

PRIMARY INCOMING CABLE TERMINAL COMPARTMENT

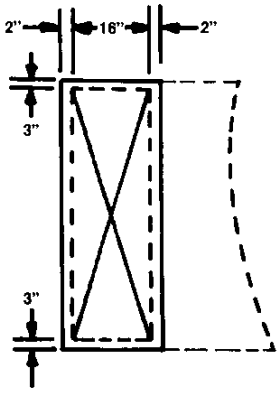


Top View

Represents suggested conduit entrance area.



Front Elevation



Floor Plan

NOTE:
Transformer can be located on left or right side of terminal compartment as required.

Not for construction purposes

Approximate weight 800 lbs.

Part II Transformer Section:

A) Ratings (fill in blanks)

Transformer Size_____KVA

Primary:_____Volts, 3 Ø (DELTA) (WYE)*

Secondary:_____Volts, 3 Ø, _____Wire (DELTA) (WYE)*

Primary Taps:

☐ - Standard (4-2½%, 2 Above & 2 Below Normal Primary Voltage)

☐ - Other (Specify) _____

_____

Insulation: Class H

Temperature Rise: ☐ 150° C ☐ 115° C ☐ 80° C

Basic Insulation Level: ☐ 25 KV ☐ 50 KV ☐ 65 KV ☐ 95 KV

†Impedance :

†Sound Level :

Windings: ☐ Aluminum ☐ Copper

B) Accessories

Temperature Indicator ☐

With Alarm Contacts

Fan Cooling Systems for 33⅓% Increased Capacity:

☐ Provisions only for future addition

☐ Complete provisions for forced air cooling all wired, except omit fans and motors.•

☐ Complete force air cooling system Type 79, Three Bulb Sensing

• Includes: 3 Pilot lights and bell alarm

C) Special Tests (other than those required by NEMA & ANSI standards):

NEMA Basic Insulation Test (BIL) ☐

Temperature Rise Test ☐

Sound Level Test ☐

D) Notes or comments: _____

_____

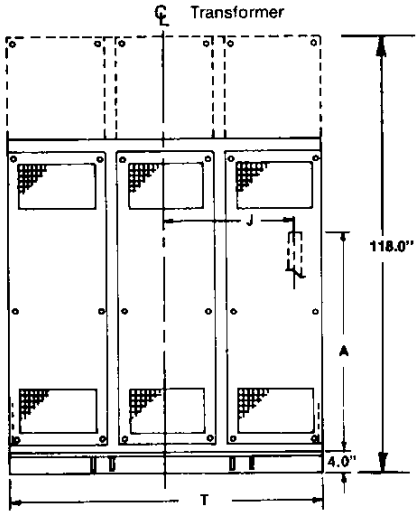
_____

* - Cross Out One

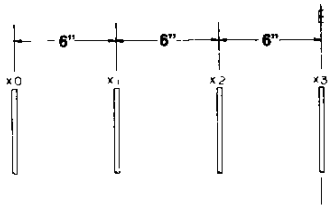
† - See Tables 9 and 10 for standard values

DIMENSIONS

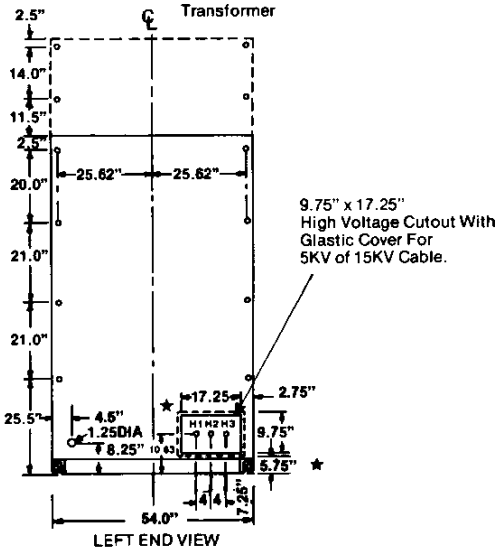
Not for construction purposes



FRONT VIEW

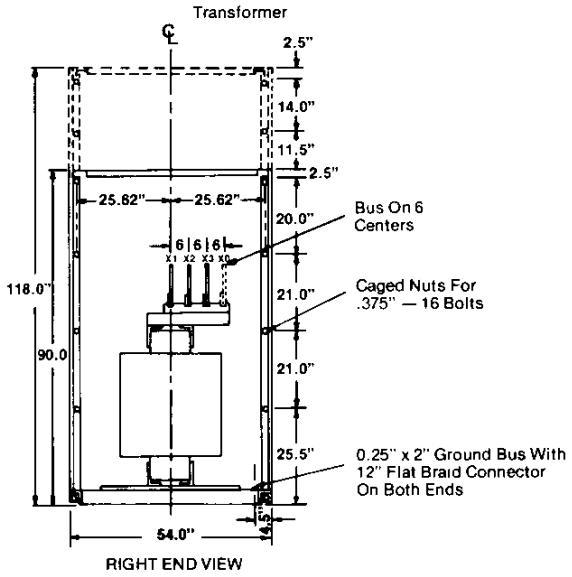


Terminal Arrangement
When L.V. Is On Left



LEFT END VIEW

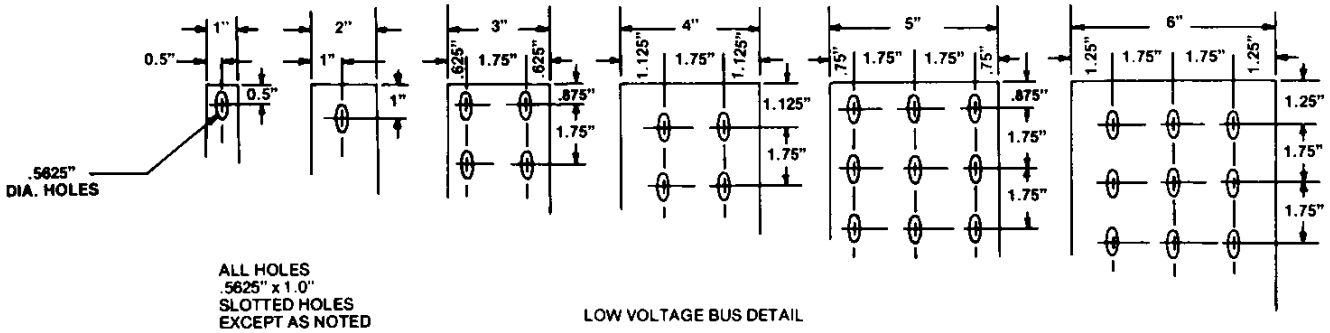
Showing Details Of Cutout And Lead
Location For HVL Load Interrupter Switch



RIGHT END VIEW

Detail Of Low Voltage Terminals On
The Right.
Low Voltage Will Not Have An End Sheet.

★ Add 1.5" for 2500KVA 95KV BIL Transformer and to all 3000KVA Transformers



ALL HOLES
.5625" x 1.0"
SLOTTED HOLES
EXCEPT AS NOTED

LOW VOLTAGE BUS DETAIL

TRANSFORMER DIMENSIONS (CLASS H INSULATION)

SORGEL

KVA RATING	5000 Volt Class 115 C & 150 C Temperature Rise 25 KV BIL				15000 Volt Class 115 C & 150 C Temperature Rise 50 KV BIL				5000 Volt Class 80 C Temperature Rise 50 KV BIL				15000 Volt Class 80 C Temperature Rise 50 KV BIL				15000 Volt Class 115 C & 150 C Temperature Rise 95 KV BIL				15000 Volt Class 80 C Temperature Rise 95 KV BIL				Transformer Low Voltage Aluminum Bus Size		
	T	A	J	Wt Lbs	T	A	J	Wt Lbs	T	A	J	Wt Lbs	T	A	J	Wt Lbs	T	A	J	Wt Lbs	T	A	J	Wt Lbs	480 Volts	240 Volts	208Y/120 Volts
112.5	56	38	20	1900	56	48	20	2600	56	38	20	2400	56	48	20	2700	56	48	20	2600	56	48	20	2900	25 x 1	.25 x 1	25 x 1
150	56	38	20	2200	56	48	20	2900	56	38	20	2700	56	48	20	2800	56	48	20	2800	56	48	20	3800	25 x 1	25 x 1	25 x 2
225	56	40	20	2600	56	48	20	3500	56	44	20	2900	56	56	20	3500	56	56	20	3900	56	58	20	4100	25 x 1	25 x 2	25 x 2
300	56	44	20	2900	56	56	20	3900	56	50	20	3500	56	56	20	4300	72	62	28	4450	72	58	28	4650	25 x 1	25 x 3	25 x 3
500	72	58	28	4300	72	64	28	4750	72	60	28	5250	72	64	28	5850	72	68	28	5600	72	72	28	6100	25 x 2	25 x 4	25 x 5
750	72	62	28	5300	72	68	28	5950	72	62	28	5700	72	70	28	6850	72	74	28	6800	84	76	34	6950	25 x 3	(2) 25 x 3	(2) 25 x 4
1000	84	70	34	6250	84	74	34	7125	84	72	34	7925	84	78	34	8275	84	78	34	8425	84	78	34	9525	25 x 4	(2) 25 x 4	(2) 25 x 6
1500	84	76	34	7450	84	78	34	8225	84	78	34	8400	84	80.5	34	9875	84	80.5	34	10025	84	82.5	34	11725	(2) 25 x 3	(3) 25 x 5	—
2000	84	80.5	34	9325	84	80.5	34	9825	84	80.5	34	9725	84	82.5	34	11825	84	82.5	34	11825	84	82.5	34	12625	(2) 25 x 4	—	—
2500*	84	82.5	34	11075	84	82.5	34	11525	84	82.5	34	11625	96	82.5	40	12700	84	89	34	13400	96	89	40	14850	(3) 25 x 4	—	—
3000*	96	91.75	40	14750	96	91.75	40	15400	96	91.75	40	14950	96	91.75	40	15600	96	97.75	40	15800	96	97.75	40	16600	(3) 25 x 6	—	

+ Transformers are 118" high & add 1.5" to dim. marked with ★

*95KV Transformers are 118" high

NOTE 6" centers are maintained on low voltage bus bars in multiple arrangements

Table No. 7

APPLICABLE VOLTAGES

Primary	Secondary
2400	208Y/120
4160	240 DELTA
4800	480 DELTA
6900	480Y/277
7200	600 DELTA
8320	2400V DELTA
12000	2400Y/1360
12470	4160 DELTA
13200	4160Y/2400
13800	4800 DELTA

Table No. 8

SOUND LEVELS IN DB

KVA Size	NEMA
112.5	58
150	58
225	58
300	58
500	60
750	64
1000	64
1500	65
2000	66
2500	68

Table No. 9

APPLICATION DATA

FULL LOAD AND SHORTCIRCUIT CALCULATIONS

Transformer Rating 3Ø KVA (%Z)x	Available Primary Short Circuit KVA	SECONDARY DISTRIBUTION VOLTAGE—3 PHASE											
		208			240			480			600		
		Normal Load Cont. Amps.	Short Circuit† RMS Sym. Amps.		Normal Load Cont. Amps.	Short Circuit† RMS Sym. Amps.		Normal Load Cont. Amps.	Short Circuit† RMS Sym. Amps.		Normal Load Cont. Amps.	Short Circuit† RMS Sym. Amps.	
			Transf. Alone	Plus 50% Motor Load		Transf. Alone	Plus 100% Motor Load		Transf. Alone	Plus 100% Motor Load		Transf. Alone	Plus 100% Motor Load
75 (4.5%)	50,000	208	4,470	4,890	180	3,870	4,590	90	1,940	2,300	72	1,550	1,840
	100,000		4,550	4,960		3,930	4,650		1,970	2,330		1,570	1,860
	150,000		4,570	4,990		3,950	4,670		1,980	2,340		1,580	1,870
	250,000		4,590	5,010		3,970	4,690		1,985	2,345		1,590	1,880
	500,000		4,610	5,020		3,990	4,710		1,990	2,350		1,595	1,885
	Unlimited		4,620	5,040		4,000	4,720		2,000	2,360		1,600	1,890
112.5 (4.5%)	50,000	312	6,600	7,230	271	5,740	6,820	135	2,860	3,400	108	2,290	2,720
	100,000		6,760	7,390		5,880	6,950		2,930	3,470		2,340	2,770
	150,000		6,820	7,440		5,920	7,010		2,950	3,490		2,360	2,790
	250,000		6,860	7,490		5,960	7,050		2,970	3,510		2,380	2,810
	500,000		6,900	7,520		5,990	7,080		2,990	3,530		2,390	2,820
	Unlimited		6,930	7,560		6,020	7,110		3,000	3,540		2,400	2,830
150 (4.5%)	50,000	416	8,670	9,500	351	7,520	8,950	180	3,750	4,470	144	3,000	3,580
	100,000		8,950	9,780		7,750	9,210		3,870	4,590		3,100	3,670
	150,000		9,040	9,880		7,850	9,290		3,910	4,630		3,130	3,710
	250,000		9,120	9,950		7,920	9,360		3,950	4,670		3,160	3,730
	500,000		9,180	10,020		7,970	9,410		3,970	4,690		3,180	3,750
	Unlimited		9,240	10,080		8,020	9,470		4,000	4,720		3,200	3,780
225 (4.5%)	50,000	625	12,630	13,880	541	10,930	13,090	271	5,470	6,560	217	4,380	5,250
	100,000		13,230	14,480		11,450	13,610		5,740	6,820		4,590	5,460
	150,000		13,440	14,590		11,530	13,800		5,830	6,910		4,670	5,530
	250,000		13,620	14,870		11,790	13,950		5,900	6,990		4,730	5,600
	500,000		13,750	15,000		11,900	14,070		5,960	7,050		4,770	5,640
	Unlimited		13,890	15,140		12,020	14,190		6,020	7,110		4,820	5,690
300 (4.5%)	50,000	833	16,330	18,000	722	14,150	17,040	351	7,080	8,520	289	5,670	6,820
	100,000		17,350	19,020		15,040	17,930		7,520	8,960		6,020	7,180
	150,000		17,720	19,390		15,360	18,250		7,580	9,120		6,150	7,300
	250,000		18,030	19,700		15,630	18,520		7,810	9,250		6,260	7,410
	500,000		18,270	19,930		15,830	18,720		7,920	9,360		6,340	7,490
	Unlimited		18,510	20,180		16,040	18,930		8 020	9,470		6,420	7,580
500 (5.0%)	50,000	1388	23,130	25,910	1203	20,050	24,850	601	10,020	12,420	481	8,020	9,940
	100,000		25,240	28,010		21,870	25,680		10,930	13,330		8,750	10,670
	150,000		26,030	28,800		22,560	27,370		11,270	13,670		9,020	10,940
	250,000		26,690	29,470		23,130	27,950		11,560	13,950		9,250	11,170
	500,000		27,220	29,990		23,590	28,400		11,780	14,190		9,430	11,360
	Unlimited		27,750	30,540		24,060	28,870		12,020	14,420		9,620	11,540
750 862.5* 1000* (5.75%)	50,000	2082	28,720	32,880	1804	24,880	32,100	902	12,440	15,050	722	9,950	12,850
	100,000	2394*	32,030	36,190	2075*	27,750	34,970	1037*	13,880	17,480	830*	11,110	14,000
	150,000	2776*	33,310	37,480	2406*	28,850	36,080	1203*	14,430	18,040	952*	11,550	14,400
	250,000		34,410	38,580		29,820	37,030		14,910	18,520		11,930	14,820
	500,000		35,290	39,450		30,580	37,790		15,290	18,900		12,240	15,130
	Unlimited		36,210	40,370		31,370	38,590		15,690	19,290		12,560	15,440
1000 1150* 1333* (5.75%)	50,000	2776	35,820	41,370	2406	31,050	40,670	1203	15,520	20,380	962	12,410	16,250
	100,000	3192*	41,130	46,680	2757*	35,640	45,270	1383*	17,820	22,530	1107*	14,250	18,100
	150,000	3701*	43,260	48,810	3208*	37,500	47,120	1604*	18,750	23,560	1283*	14,990	18,840
	250,000		45,140	50,690		39,120	48,750		19,560	24,370		15,640	19,490
	500,000		46,650	52,210		40,440	50,060		20,220	25,030		16,170	20,020
	Unlimited		48,280	53,830		41,840	51,470		20,920	25,730		16,730	20,580
1500 1725* 2000* (5.75%)	50,000	4164	47,590	55,920	3609	41,250	55,580	1804	20,520	27,830	1443	16,490	22,260
	100,000	4788*	57,430	65,760	4150*	49,780	64,220	2075*	24,880	32,100	1660*	19,900	25,680
	150,000	5552*	61,690	70,020	4811*	53,470	67,900	2406*	25,730	33,940	1925*	21,380	27,150
	250,000		65,570	73,900		56,830	71,270		28,410	35,630		22,720	28,500
	500,000		68,830	77,150		59,650	74,090		29,820	37,030		23,850	29,620
	Unlimited		72,420	80,750		62,770	77,200		31,370	38,590		25,100	30,870
2000 2300* 2666* (5.75%)	50,000	5552	56,940	68,050	4811	49,340	68,590	2406	24,680	34,300	1925	19,740	27,440
	100,000	6384*	71,640	82,740	5533*	62,080	81,320	2767*	31,050	40,670	2213*	24,840	32,540
	150,000	7402*	78,380	89,490	6415*	67,920	87,160	3208*	33,970	43,590	2566*	27,180	34,880
	250,000		84,760	95,870		73,450	92,690		36,730	46,360		29,390	37,090
	500,000		90,280	101,380		78,230	97,470		39,120	48,750		31,300	39,000
	Unlimited		95,560	107,660		83,670	102,920		41,840	51,470		33,480	41,180
2500 2875* 3333* (5.75%)	50,000	6940	64,560	78,440	6014	55,940	80,000	3007	27,970	40,000	2406	22,380	32,010
	100,000	7980*	84,120	98,000	6916*	72,900	95,950	3458*	36,450	48,480	2767*	29,160	38,790
	150,000	9253*	93,570	107,450	8019*	81,090	105,140	4009*	40,540	52,570	3208*	32,440	42,050
	250,000		102,810	116,700		89,100	113,150		44,550	56,580		35,640	45,270
	500,000		111,040	124,920		95,220	120,280		48,110	60,140		38,500	48,210
	Unlimited		120,700	134,580		104,590	128,650		52,300	64,320		41,840	51,470
3000 3450* 4000* (5.75%)	50,000	8327	70,870	87,520	7217	61,420	90,290	3609	30,710	45,150	2887	24,570	36,120
	100,000	9577*	95,170	111,820	8300*	82,480	111,350	4150*	41,250	55,680	3320*	33,990	44,540
	150,000	11032*	107,450	124,100	9623*	93,120	121,990	4811*	46,570	61,000	3849*	37,250	48,800
	250,000		119,810	135,470		103,840	132,710		51,930	66,360		41,540	53,090
	500,000		131,130	147,790		113,650	142,520		56,830	71,270		45,450	57,010
	Unlimited		144,820	161,470		125,510	154,380		62,770	77,200		50,210	61,670

x Per cent impedance (%Z) may vary for different types of transformers of the same rating; minimum is shown.
* Forced air cooled transformer ratings–result of 15% (liquid filled transformer) or 33⅓% (dry open ventilated type).
† Based on standard self cooled ratings, short circuit currents are calculated by dividing transformer full load current by the sum of tansformer and system impedance expressed per unit; meter contribution assumed 4 times full load current (2 times on 208 volts). Applies when power factor of 15% or greater (XIR—6 5); if less, check asymmetrical ratings of secondary distribution devices used—see appropriate catalog sections for ratings.

Table No. 10

Part III Low Voltage Secondary Distribution Section:

A) Power Zone II Low Voltage Drawout Switchgear:

Descriptive and dimensional information for this equipment can be found in Catalog Section 6130. This Catalog Section used in conjunction with the transformer connection information given on the next page will provide complete layout information for a unit substation with low voltage drawout switchgear as distribution equipment.

Main Bus Size

☐ 1600 A ☐ 3200 A ☐ 4000 A

Neutral Bus

☐ None ☐ 50% capacity of main bus ☐ 100% capacity of main bus

Bus Type

☐ Aluminum ☐ Copper

Metering On Main Bus

☐ Ammeter & Phase Selector Switch ☐ Potential Transformers (2) (3)

☐ Voltmeter & Phase Selector Switch ☐ Current Transformers (2) (3)

☐ Watthour Meter ☐ Demand Register

Metering On Feeder Circuits

☐ Ammeter and Phase Selector Switch ☐ Current Transformer (2) (3)

Ground Fault Sensing

☐ Main Breaker ☐ Feeder Breakers

Transformer Location as viewed from the front

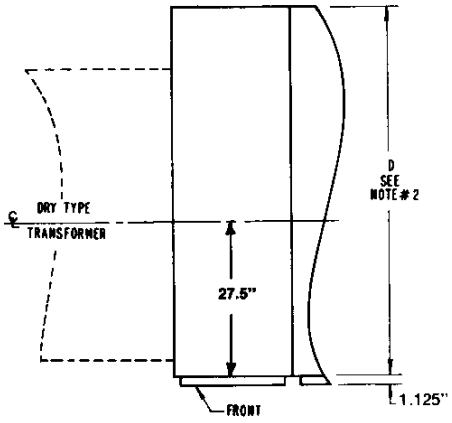
☐ Transformer Located to Left of Secondary Switchgear

☐ Transformer Located to Right of Secondary Switchgear

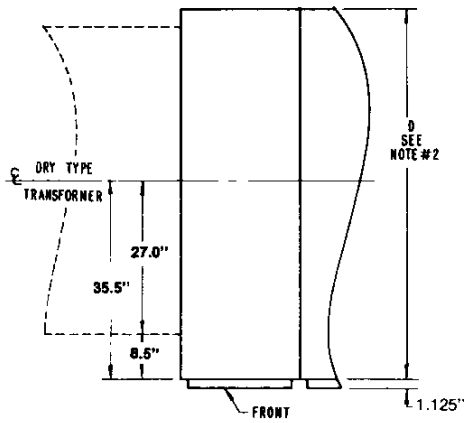
CIRCUIT LEGEND

Circuit #	Breaker Frame Size	Trip Setting	Circuit Function or Designation	Load Side Cable Size	Remarks

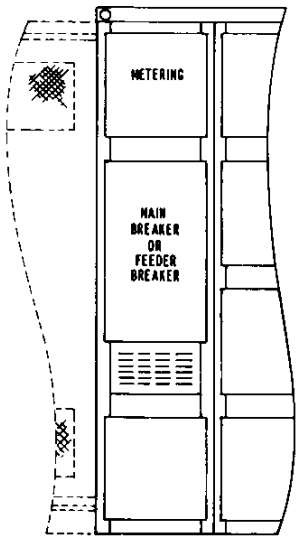
TRANSFORMER CONNECTIONS



TOP VIEW
DS SWITCHGEAR



TOP VIEW
DSL SWITCHGEAR



FRONT ELEVATION
DS OR DSL

NOTES

1. A 21" wide transition section is required between transformer and main breaker section when used in double ended arrangement and there are no separate feeder sections.
2. Dimension "D" can be determined from Catalog Section 6130.

Power Zone II Switchgear connected to a Sorgel dry type transformer

Not for construction purposes

Part III Low Voltage Secondary Distrivution Section (Cont.): — Example

B) Power Style Switchboards:

Descriptive and dimensional information for this equipment can be found in catalog sections 2600 and 2620. These Catalog Sections used in conjunction with the transformer connection information given on the next page will provide complete layout information for a unit substation with a low voltage switchboard in the secondary. All low voltage sections will be 54" deep.

Main Bus

☐ 600 A ☐ 800 A ☐ 1000 A ☐ 1200 A ☐ 1600 A
☐ 2000 A ☐ 2500 A ☐ 3000 A ☐ 4000 A

Neutral Bus

☐ None ☐ 50% capacity of main bus ☐ 100% capacity of main bus

Bus Type

☐ Aluminum ☐ Copper

Metering on Main Bus

☐ Ammeter & Phase Selector Switch ☐ Potential Transformers (2) (3)
☐ Voltmeter & Phase Selector Switch ☐ Current Transformers (2) (3)
☐ Watthour Meter ☐ Demand Register

Ground Fault Sensing

☐ Main Disconnect ☐ Feeder Circuits

Transformer Location as viewed from the front:

☐ Transformer Located to Left of Secondary Switchboard
☐ Transformer Located to Right of Secondary Switchboard

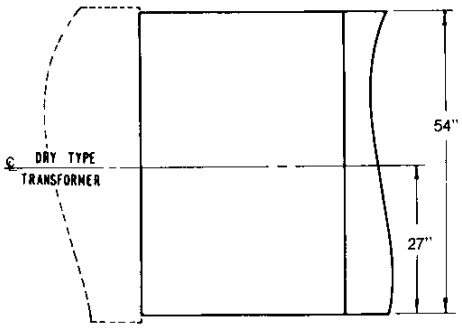
CIRCUIT LEGEND

Circuit #	Frame Size	Trip Setting or Fuse Size	Circuit Function or Designation	Load Side Cable Size	Remarks

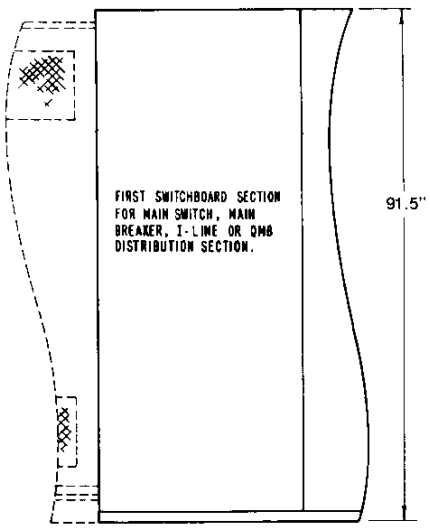
TRANSFORMER CONNECTIONS

Not for construction purposes

Main Bus 4000A maximum
(with main metering 1200A max.)*

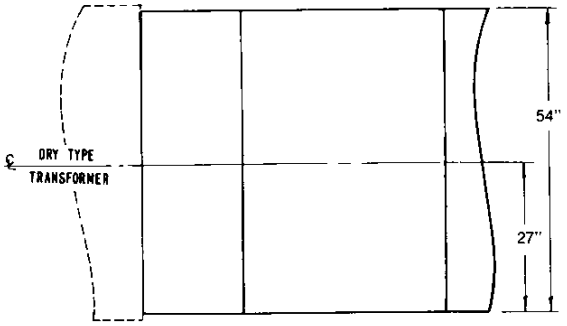


TOP VIEW

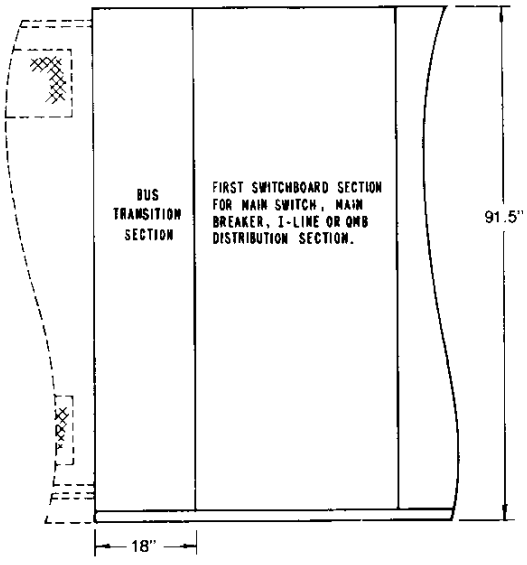


FRONT ELEVATION

Main Bus 4000A maximum
(with main meter 1600A to 4000A max.)*



TOP VIEW



FRONT ELEVATION

Power style Switchboard
connected to a dry type
Sorgel Transformer

* - Bus transition must be used when main metering is required and main bus is larger than 1200A

note - All low voltage switchboard sections will be 54" deep