TYPE LU-8 TRANSFORMERS—DESCRIPTION AND SPECIFICATIONS

Liquid-filled transformer, oil and askarel, 65°C and 55/65°C, 3-phase, 60 Hertz, with side wall primary and secondary bushings enclosed with a mounting flange (close-coupled molding) for use in secondary unit substations.

COILS:

a. All thermally up-graded class "A" insulation suitable for a maximum temperature of 120°C.
b. Rectangular coil construction with aluminum sheet-wound secondary and insulated, aluminum wire-wound primary.
c. Axial short circuit forces in the coils are virtually eliminated by the use of the sheet-wound secondary and the primary wound with no interleaved components.

CORE:

a. Core steel is grain oriented silicon electrical steel, stress relieved and annealed with an oxide insulation coating.
b. Core clamping structure is welded together during assembly, eliminating any bolting.
c. Core structure end plates support the sides of the 2 outside coils for mechanical stability during short-circuit forces.

CORE AND COIL:

Internal Assembly

a. LV aluminum bus with all welded connections to coils.
b. Primary tap leads welded to their respective stationary tap contacts.
c. Complete core and coil is vacuum impregnated in insulating liquid after drying for optium air and moisture removal.
d. Primary and secondary flexible leads bolted to the internal shank of their respective bushings.
e. Tap changer of the in-line type with handle located on cover and suitable for pad locking in each position.

TANK:

a. All welded assembly, including cover, with a maximum design pressure of 7.5 psi and a nominal operating range of $\pm$ 6.0 psi.
b. Panel type radiators are used to provide maximum cooling capability with minimum space requirement.

The complete line of LU-8 transformers utilize a constant 55" dimension from base to center line of HV & LV bushings and are enclosed in a universal close-coupled molding.

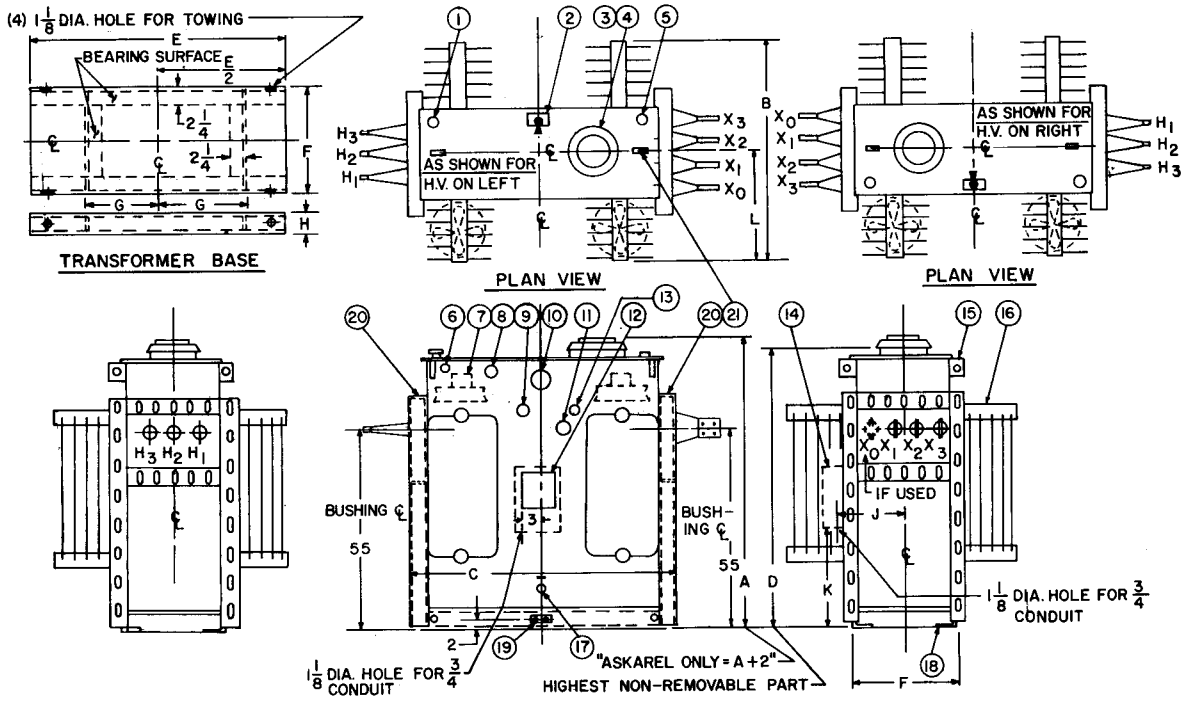
Standard accessories and tests conform to latest industry standards, including ANSI, IEEE and NEMA.

Each kVA size has been heat run, impulse tested and sound tested. Copies of those test reports are available upon request. In addition 225, 1000 and 2500 kVA units have been short-circuit tested.

Copies of the basic short-circuits design calculations or test reports are available upon request.

LIQUID-FILLED TRANSFORMER, TYPE LU-8

5KV & 15KV, 112½-2500 KVA, 65°C RISE



DESCRIPTION			
1	1" Fill pipe with cap also filter press connection	11	Dial Type Thermometer
2	Tap changer handle w/provision for padlocking & position nameplate	12	Stainless Steel Diagrammatic nameplate
		13	Liquid sampling valve - Askarel only
3	Handhole	14	Terminal box for fan(s) or alarm contacts when specified
4	Mechanical relief device with indicator - Askarel only	15	Transformer lifting eyes
		16	Radiators
5	1" Vent plug	17	1" drain valve with 1" pipe plug - with sampling device for oil only — See page 4
6	Pressure test device		
7	Fan(s) when specified (number as required)	18	Base with provision for rolling, jacking, and skidding
8	Pressure vacuum gauge	19	Ground pad with (2) ½-13 N.C. tapped holes on 1¾ ℄'s
9	Magnetic liquid level gauge	20	Close coupled molding
10	I-T-E Monogram	21	Cover lifting eyes (only)

Use connection diagram 532446 or 532447 when instrument(s) with contacts and/or fan(s) are specified.

NOTE: Location of instruments & quantity of radiators not necessarily as shown. "This drawing is the property of the I-T-E Imperial Corp. and contains proprietary & confidential information which must not be duplicated, used, or disclosed other than as expressly authorized by I-T-E."

kVA	A	B	C	D	E	F	G	H	J	K	L	† Gals. Liquid	Wg't. Tank and Fitt's.	Wg't. Core and Coil	Total Wg't. Incl. Oil	Total Wg't. Incl. Ask.	Unt'g. Ht.Not Incl. Sling
112½	74½	34	45½	73	41	21	13	24	14	33	17½	105	800	1300	2900	3500	104
150	74½	34	45½	73	41	21	13	24	14	33	17½	105	800	1300	2900	3500	104
225	74½	38	45½	73	41	21	13	24	14	33	17½	110	1000	1300	3100	3700	104
300	73½	47	45½	72	41	22	13	23	14½	33	18	120	1050	1500	3400	4100	104
500	74½	52½	45½	73	41	24	13	19	15½	31	30	140	1250	2000	4300	5100	108
750	78½	62	48½	77	44	26	14	16	16	28	39	200	1750	2600	5800	6900	117
750*	78½	70	48½	77	44	26	14	16	16	28	39	200	1700	2600	5800	6900	117
1000	77	70	48½	75½	44	27	14	13½	16½	26	39	200	1900	3000	6400	7500	117
1000*	77	78	48½	75½	44	27	14	13½	16½	26	39	210	2000	3000	6600	7700	117
1000**	77	79	53	75½	49	27	15	13½	17	26	39	235	2100	2900	6700	8000	117
1500	82½	87	53	81	49	27	15	8½	17	32	47½	305	2400	3900	8600	10300	128
2000	80	97	53	78½	49	29	15	5½	18	33	48½	315	2900	4800	10000	11800	138
2500	85	99	53	83½	49	31	15	4	19	27	49½	380	3200	5600	11600	13800	145

* Use these dimensions when secondary voltage is 208Y/120

† NOTE: Oil - 7.45 lb/gal. Askarel - 13.1 lb/gal.

** 8% impedance (480Y & 480 Δ only)

TERMINATIONS FOR LIQUID-FILLED TRANSFORMERS, TYPE LU-8, 65°C RISE

H.V. BUSHINGS

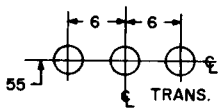


FIGURE 1

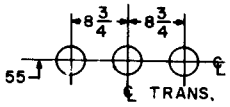


FIGURE 2

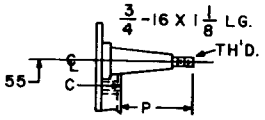


FIGURE 9 P = 5

FIGURE 10 P = 7 7/8

Bushing Arrangements		
kVA	High Voltage	
	5kV	15kV
112½	Fig. 1&9	Fig. 2&10
150	Fig. 1&9	Fig. 2&10
225	Fif. 1&9	Fig. 2&10
300	Fig. 1&9	Fig. 2&10
500	Fig. 1&9	Fig. 2&10
750	Fig. 2&9	Fig. 2&10
1000	Fig. 2&9	Fig. 2&10
1500	Fig. 2&9	Fig. 2&10
2000	Fig. 2&9	Fig. 2&10
2500	Fig. 2&9	Fig. 2&10

L.V. BUSHINGS

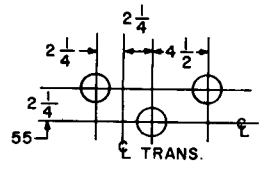


FIGURE 3

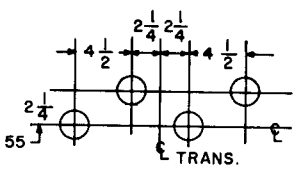


FIGURE 4

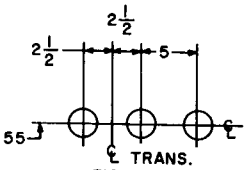


FIGURE 5

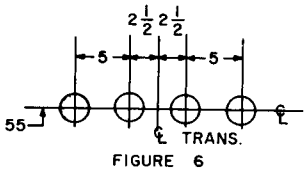


FIGURE 6

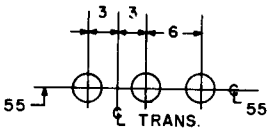


FIGURE 7

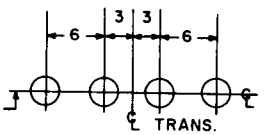


FIGURE 8

Bushing Arrangements				
kVA	Low Voltage			
	208Y/120	240 Δ	480Y/277	480 Δ
112½	Fig. 4&11	Fig. 3&11	Fig. 4&11	Fig. 3&11
150	Fig. 4&11	Fig. 3&11	Fig. 4&11	Fig. 3&11
225	Fig. 4&11	Fig. 3&11	Fig. 4&11	Fig. 3&11
300	Fig. 6&11	Fig. 5&11	Fig. 6&11	Fig. 5&11
500	Fig. 6&12	Fig. 5&12	Fig. 6&11	Fig. 5&11
750	Fig. 8&12	Fig. 7&12	Fig. 8&12	Fig. 7&12
1000	Fig. 8&13	Fig. 7&13	Fig. 8&12	Fig. 7&12
1500			Fig. 8&12	Fig. 7&12
2000			Fig. 8&13	Fig. 7&13
2500			Fig. 8&14	Fig. 7&14

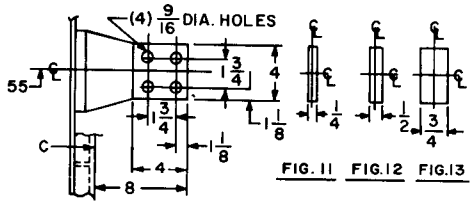


FIG. 11 FIG. 12 FIG. 13

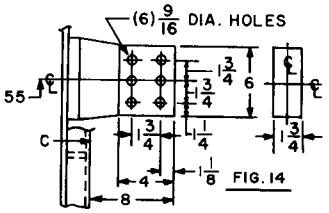
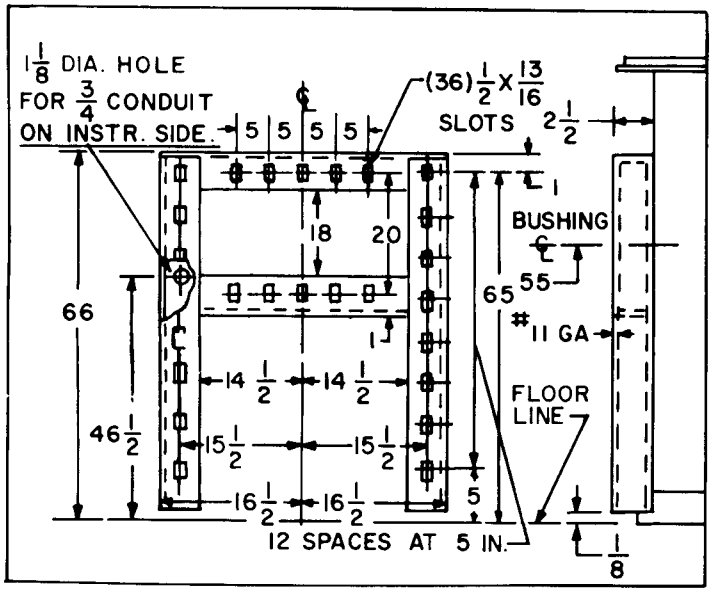
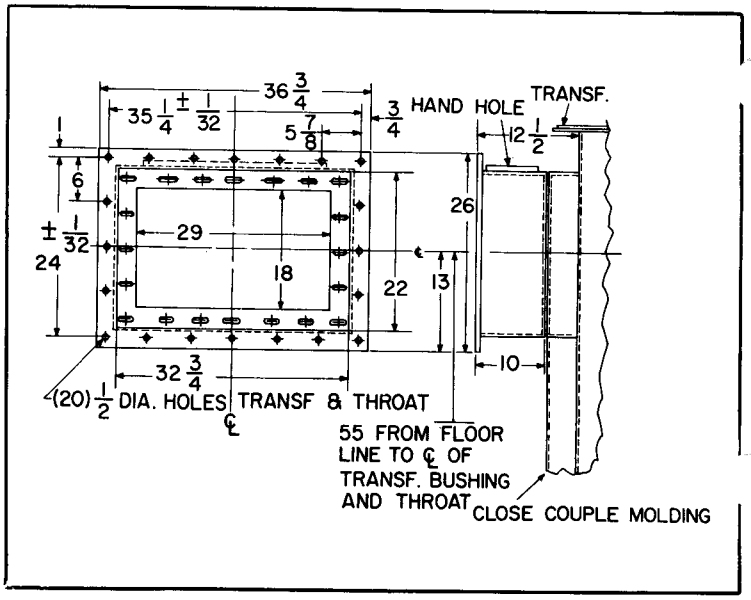


FIG. 14

H.V. & L.V. CLOSE-COUPLED MOLDING

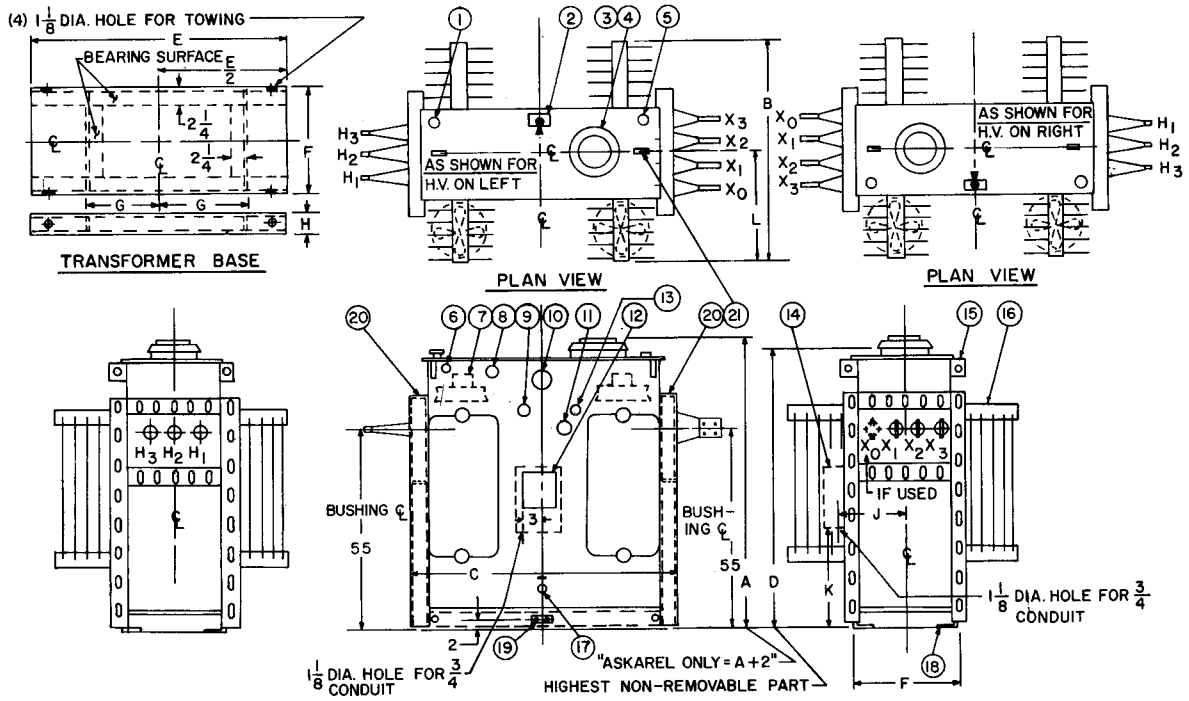


H.V. & L.V. THROAT



LIQUID-FILLED TRANSFORMER, TYPE LU-8

5KV & 15KV, 112½-2500 KVA, 55/65°C RISE



DESCRIPTION			
1	1" Fill pipe with cap also filter press connection	11	Dial Type Thermometer
2	Tap changer handle w/provision for padlocking & position nameplate	12	Stainless Steel Diagrammatic nameplate
		13	Liquid sampling valve - Askarel only
3	Handhole	14	Terminal box for fan(s) or alarm contacts when specified
4	Mechanical relief device with indicator - Askarel only	15	Transformer lifting eyes
		16	Radiators
5	1" Vent plug	17	1" drain valve with 1" pipe plug - with sampling device for oil only — See page 6
6	Pressure test device		
7	Fan(s) when specified (number as required)	18	Base with provision for rolling, jacking, and skidding
8	Pressure vacuum gauge	19	Ground pad with (2) ½-13 N.C. tapped holes on 1¾ ℄'s
9	Magnetic liquid level gauge	20	Close coupled molding
10	I-T-E Monogram	21	Cover lifting eyes (only)
Use connection diagram 532446 or 532447 when instrument(s) with contacts and/or fan(s) are specified.			
NOTE: Location of instruments & quantity of radiators not necessarily as shown. "This drawing is the property of the I-T-E Imperial Corp. and contains proprietary & confidential information which must not be duplicated, used, or disclosed other than as expressly authorized by I-T-E."			

kVA	A	B	C	D	E	F	G	H	J	K	L	† Gals. Liquid	Wg't. Tank and Fitt's.	Wg't. Core and Coil	Total Wg't. Incl. Oil	Total Wg't. Incl. Ask.	Unt'g. Ht.Not Incl. Sling
112½	74½	34	45½	73	41	21	13	24	14	33	17½	105	800	1300	2900	3500	104
150	74½	38	45½	73	41	21	13	24	14	33	17½	110	950	1300	3100	3700	104
225	74½	46	45½	73	41	21	13	24	14	33	17½	120	1100	1300	3300	4000	104
300	73½	50	45½	72	41	22	13	23	14½	33	29	130	1200	1500	3700	4400	104
500	74½	60	45½	73	41	24	13	19	15½	31	30	150	1350	2000	4500	5300	108
750	78	78	48½	76½	44	26	14	16	16	28	39	215	2000	2600	6200	7400	116
750*	78	78	48½	76½	44	26	14	16	16	28	39	215	2000	2600	6200	7400	116
1000	87½	78	48½	86	44	27	14	13½	16½	25	39	275	2200	3000	7200	8800	128
1000*	87½	86	48½	86	44	27	14	13½	16½	25	39	290	2300	3000	7500	9100	128
1000**	87½	86½	53	86	49	27	15	13½	17	25	39	320	2500	2900	7800	9600	128
1500	82½	95	53	81	49	27	15	8½	17	32	47½	320	2500	3900	8800	10600	128
2000	92	97	53	90½	49	29	15	5½	18	30½	48½	405	3300	4800	11100	13400	141
2500	92	103	53	90½	49	31	15	4	19	30	51½	470	3650	5600	12700	15400	143

* Use these dimensions when secondary voltage is 208Y/120
** 8% impedance (480Y & 480 Δ only)

† NOTE: Oil - 7.45 lb/gal. Askarel - 13.1 lb/gal.

TERMINATIONS FOR LIQUID-FILLED TRANSFORMERS, TYPE LU-8, 55/65°C RISE

H.V. BUSHINGS

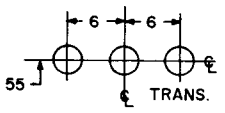


FIGURE 1

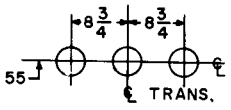


FIGURE 2

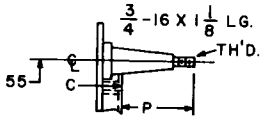


FIGURE 9 P = 5

FIGURE 10 P = 7 7/8

Bushing Arrangements		
kVA	High Voltage	
	5kV	15kV
112½	Fig. 1&9	Fig. 2&10
150	Fig. 1&9	Fig. 2&10
225	Fif. 1&9	Fig. 2&10
300	Fig. 1&9	Fig. 2&10
500	Fig. 1&9	Fig. 2&10
750	Fig. 2&9	Fig. 2&10
1000	Fig. 2&9	Fig. 2&10
1500	Fig. 2&9	Fig. 2&10
2000	Fig. 2&9	Fig. 2&10
2500	Fig. 2&9	Fig. 2&10

L.V. BUSHINGS

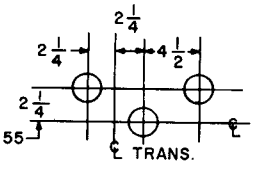


FIGURE 3

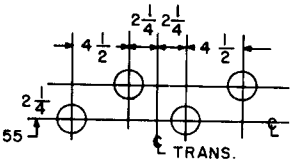


FIGURE 4

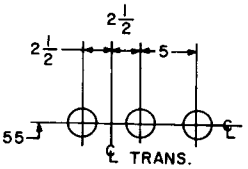


FIGURE 5

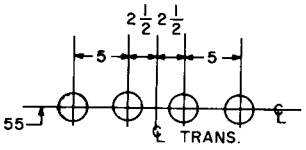


FIGURE 6

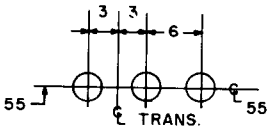


FIGURE 7

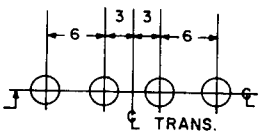
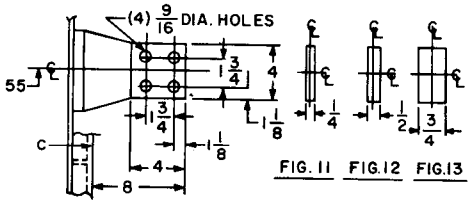
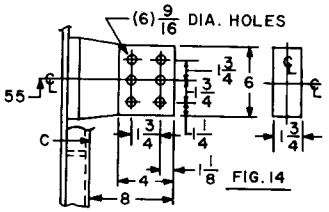


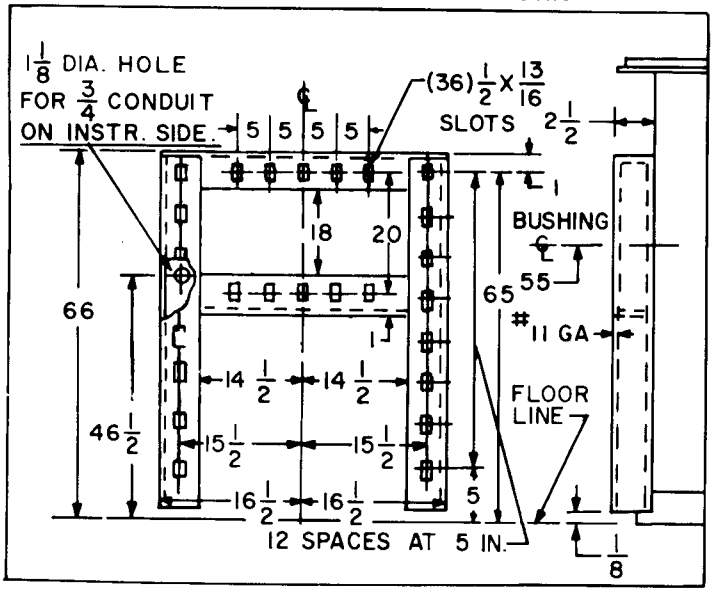
FIGURE 8

Bushing Arrangements				
kVA	Low Voltage			
	208Y/120	240 Δ	480Y/277	480 Δ
112½	Fig. 4&11	Fig. 3&11	Fig. 4&11	Fig. 3&11
150	Fig. 4&11	Fig. 3&11	Fig. 4&11	Fig. 3&11
225	Fig. 4&11	Fig. 3&11	Fig. 4&11	Fig. 3&11
300	Fig. 6&11	Fig. 5&11	Fig. 6&11	Fig. 5&11
500	Fig. 6&12	Fig. 5&12	Fig. 6&11	Fig. 5&11
750	Fig. 8&12	Fig. 7&12	Fig. 8&12	Fig. 7&12
1000	Fig. 8&13	Fig. 7&13	Fig. 8&12	Fig. 7&12
1500			Fig. 8&12	Fig. 7&12
2000			Fig. 8&13	Fig. 7&13
2500			Fig. 8&14	Fig. 7&14

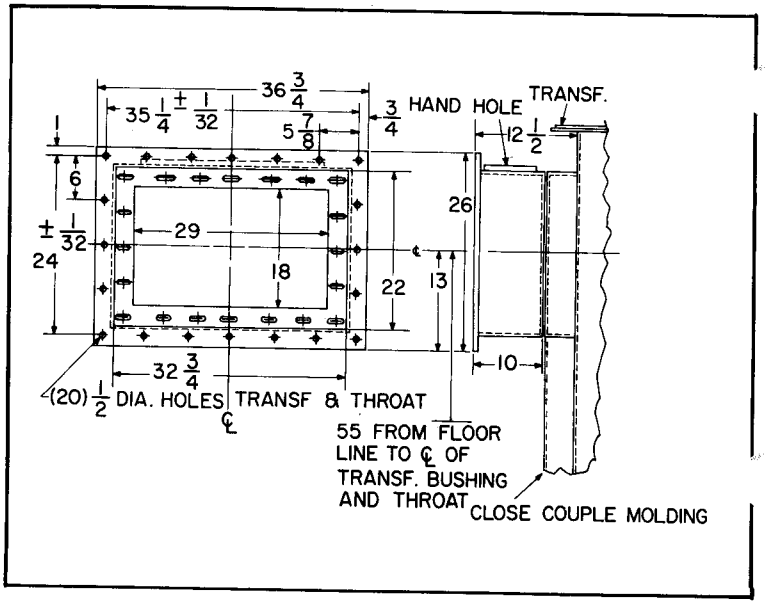




H.V. & L.V. CLOSE-COUPLED MOLDING



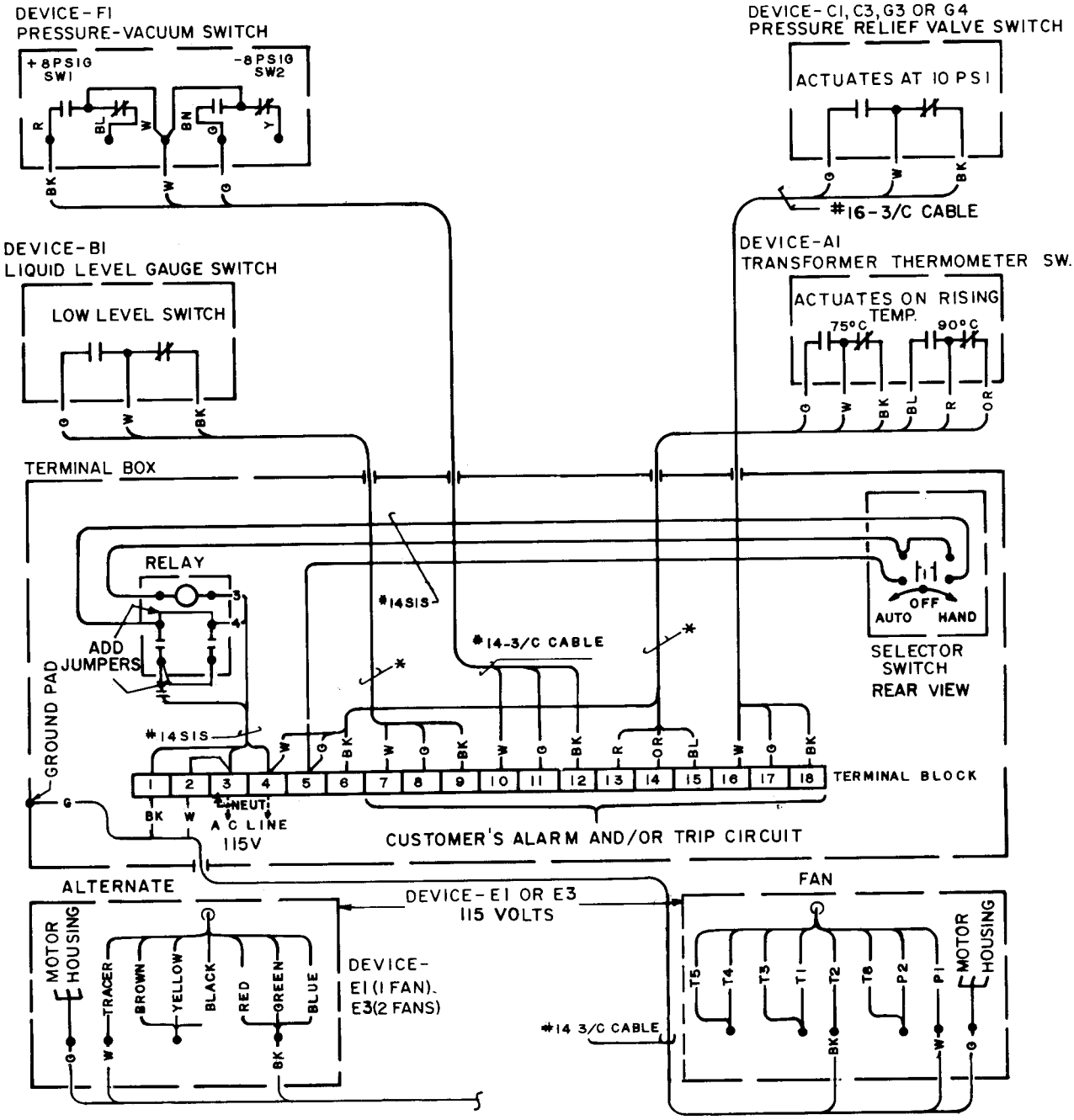
H.V. & L.V. THROAT



Dwg. 532446 Rev. 5

LIQUID-FILLED TRANSFORMER, TYPE LU-8

ACCESSORY CONNECTION DIAGRAM, 115V SUPPLY



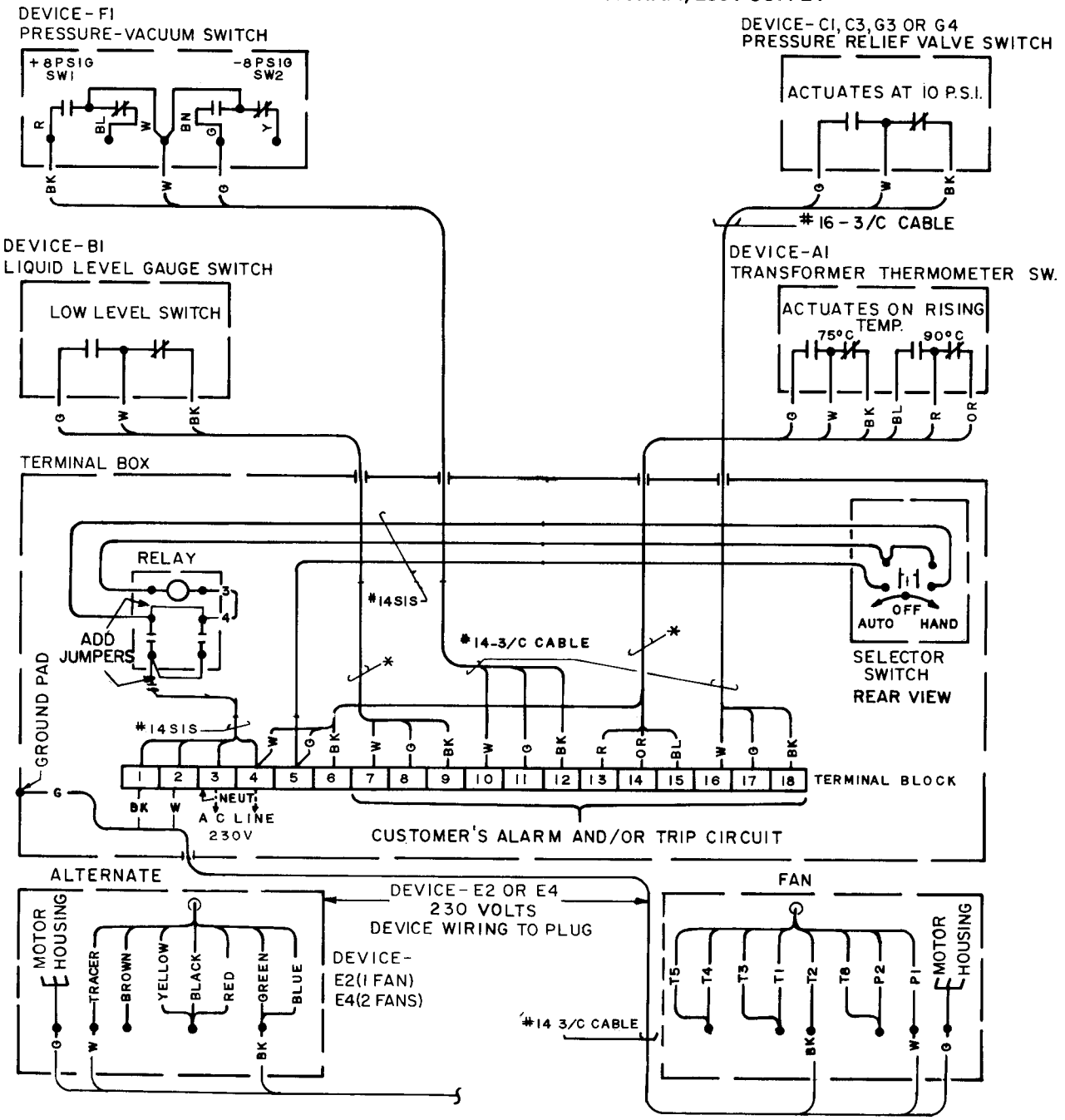
DEVICE	DESCRIPTION
A1	THERMOMETER
B1	LEVEL GAUGE
C1, C3, G3 OR G4	PRESSURE RELIEF DEVICE
EI, AI	THERMOMETER (1) FAN
E3, AI	THERMOMETER (2) FANS
FI	PRESSURE VACUUM SWITCH

NOTES:
1. Cable marked (*) is furnished with the device.
2. Wire size & type indicated on drawing.
3. Switch contacts operate at indicated conditions.
4. Only devices marked are supplied.
5. Terminal box & block supplied for device(s) with contacts.
6. Relay & selector switch supplied only with fan(s) or provisions for fan(s).

Dwg. 532447 Rev. 6

LIQUID-FILLED TRANSFORMER, TYPE LU-8

ACCESSORY CONNECTION DIAGRAM, 230V SUPPLY

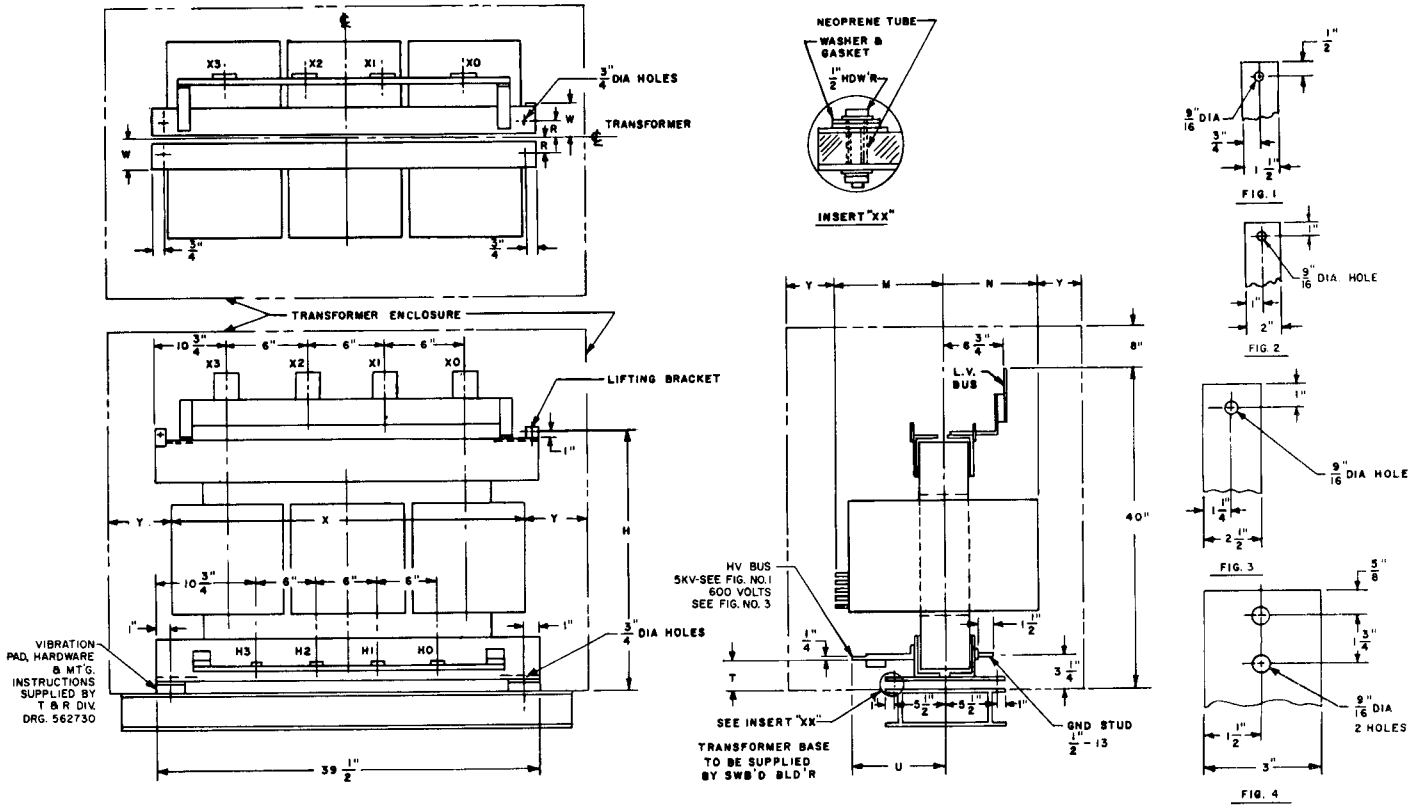


DEVICE	DESCRIPTION
A1	THERMOMETER
B1	LEVEL GAUGE
C1, C3, G3 OR G4	PRESSURE RELIEF DEVICE
E2, A1	THERMOMETER (1) FAN
E4, A1	THERMOMETER (2) FANS
F1	PRESSURE VACUUM SWITCH

NOTES:
1. Cable marked (*) is furnished with the device.
2. Wire size & type indicated on drawing.
3. Switch contacts operate at indicated conditions.
4. Only devices marked are supplied.
5. Terminal box 7 block supplied for device(s) with contacts.
6. Relay and selector switch supplied only with fan(s) or provisions for fan(s).

VENTILATED-DRY TRANSFORMER, TYPE VU-A

5KV, 45-500 kVA 150°C RISE



KVA	H	M	N	R	T	U	W	X	Core & Coil Weight
45	21-7/8	7-11/16	5-11/16	1-7/16	2-7/16	7-15/16	2-13/16	26-1/8	500#
75	23¾	7¾	5¾	1-11/16	2-7/8	8-3/16	3-1/16	26-5/8	700#
112½	25¾	8-3/8	6-3/8	1-11/16	3-5/8	8-7/16	3-5/16	27¾	1050#
150	27-3/8	9-5/16	7-5/16	1-15/16	4	8-11/16	3-9/16	30¾	1350#
225	29½	9-11/16	7-11/16	2-5/16	4-5/8	9-1/16	3-15/16	32-7/8	1550#
300	30¾	10-7/8	8-7/8	2-7/16	4	9-3/16	4-1/16	36-5/8	1900#
500	34¼	11-13/16	9-13/16	2-7/16	4¼	9-11/16	4-9/16	41	2800#

Class	"Y"*
5KV	3½
600v	1

kVA	Secondary Voltage							
	480 Volts		240 Volts		208/120 Volts		480y/277 Volts	
	Cu. Bus Size	Fig. No	Cu. Bus Size	Fig. No.	Cu. Bus Size	Fig. No.	Cu. Bus Size	Fig. No.
45	¼ x 1½	1	¼ x 1½	1	¼ x 1½	1	¼ x 1½	1
75	¼ x 1½	1	¼ x 1½	1	¼ x 1½	1	¼ x 1½	1
112½	¼ x 2	2	¼ x 2	2	¼ x 2	2	¼ x 2	2
150	¼ x 2½	3	¼ x 2½	3	¼ x 2½	3	¼ x 2½	3
225	¼ x 2½	3	¼ x 2½	3	¼ x 2½	3	¼ x 2½	3
300	¼ x 3	4	¼ x 3	4	¼ x 3	4	¼ x 3	4
500	¼ x 3	4	3/8 x 3	4	3/8 x 3	4	¼ x 3	4

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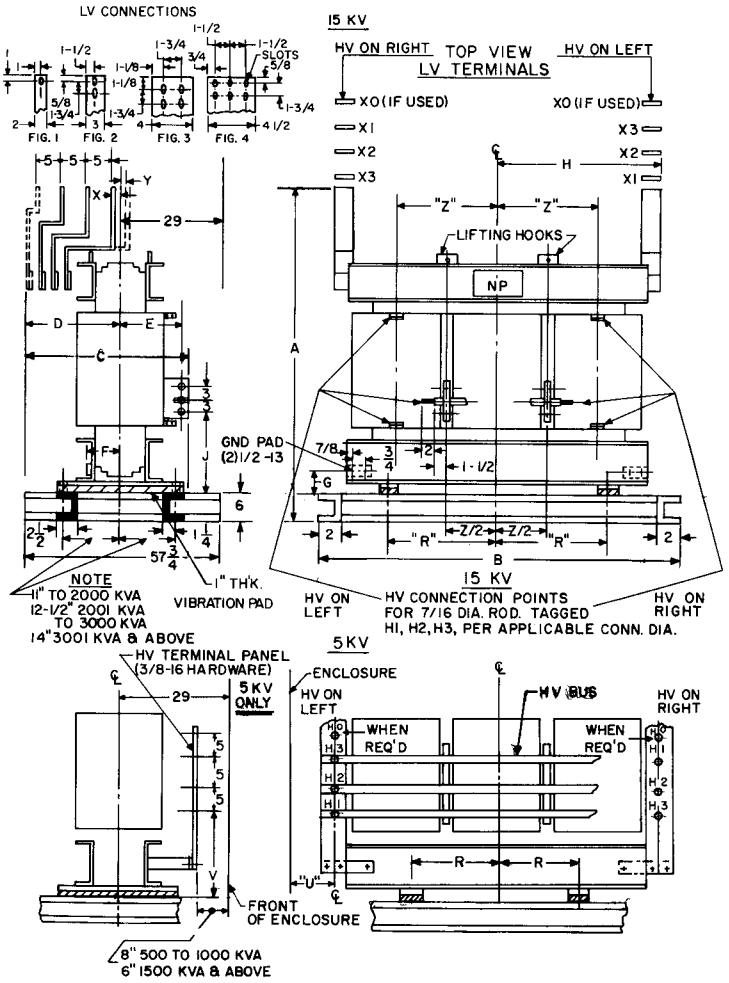
VENTILATED-DRY TRANSFORMER, TYPE VU-8

5KV & 15KV, 750-2500 kVA, 150°C RISE



H.V.	L.V.	KVA	A	B	C	D	E	F	G	H	J	X	Y	Z	R	L.V. Conn. Size	U	V	Wt. With Base
2400Δ, 4160Δ, 4800Δ	208Y/120	750	74	78	35	18½	14½	6	7½	34	16½	3	–	21	21	½ x 4	8½	21½	4500
		1000	74	78	36	19	15	6½	8	34	18	3	–	22	21	½ x 4½	6½	23	5800
	480Y/277, 480Δ	750	74	78	33¾	17¼	14½	6	7½	34	16½	3	–	21	21	¼ x 3	8½	21½	4400
		1000	74	78	35	18	15	6½	8	34	18	3	–	22	21	¼ x 4	6½	23	5700
		1500	84	90	37¾	19¾	16	7¼	9	40	19½	–	2	25	24	½ x 3	9½	24	8000
		2000	84	90	39¼	20¾	16½	7¾	9	40	20½	–	2	26	24	½ x 4	7½	25	9700
		2500	98	102	40¼	21¼	17	8¼	9½	46	21½	–	2	27½	26	½ x 4½	10	26	12000
12000Δ, 13200Δ, 13800Δ	208Y/120	750	74	78	34¾	18¼	14½	6	5	34	17½	3	–	20½	21	½ x 4	–	–	4800
		1000	74	78	35½	18½	15	6½	6	34	18½	3	–	23	21	½ x 4½	–	–	6200
	480Y/277, 480Δ	750	74	78	33½	17	14½	6	5	34	17½	3	–	20½	21	¼ x 3	–	–	4700
		1000	74	78	34½	17½	15	6½	6	34	18½	3	–	23	21	¼ x 4	–	–	6100
		1500	84	90	37½	19½	16	7¼	6	40	20	–	2	25	24	½ x 3	–	–	8400
		2000	84	90	38¾	20¼	16½	7¾	6½	40	21	–	2	26	24	½ x 4	–	–	10300
		2500	98	102	39¾	20¾	17	8¼	7½	46	22	–	2	27½	26	½ x 4½	–	–	12500

NOTE: Subtract 2½" from C & D for 480Δ.

VENTILATED-DRY TRANSFORMER ENCLOSURE

FOR 5KV, 45-500 kVA, TYPE VU-A, 150°C RISE TRANSFORMERS

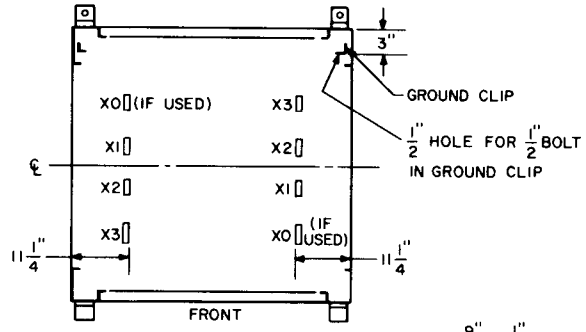


FIG. 1

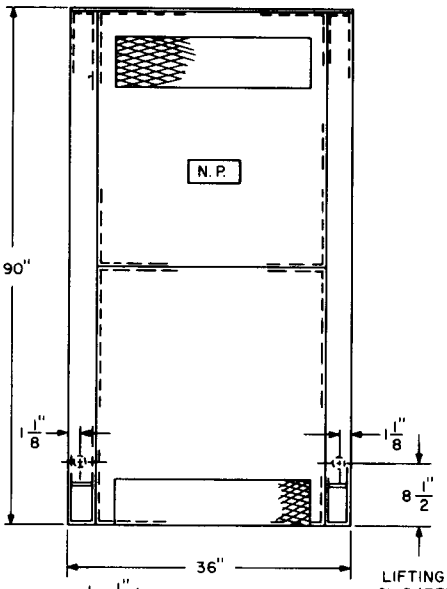


FIG. 2

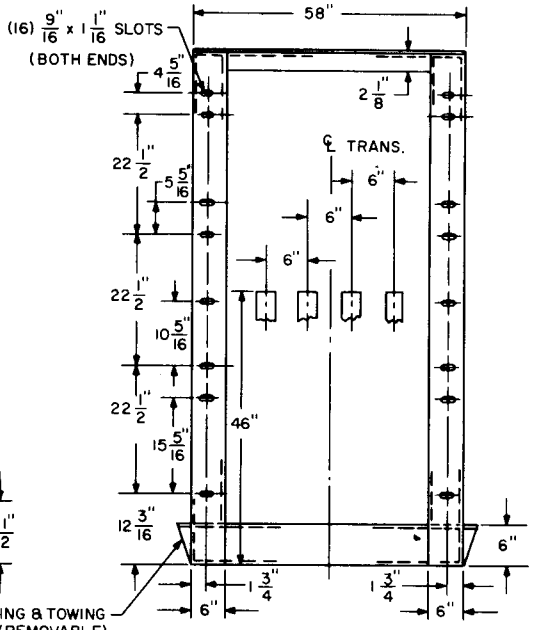


FIG. 3

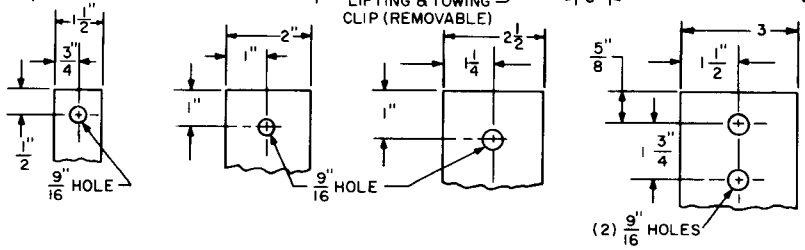


FIG. 4

HV	LV	KVA	LV Conn. Size	LV Conn. Fig.	Weights Trans.	Weights Frame
2400 Δ, 4160 Δ, 4800 Δ	208y/120	45	¼ x 1	1	500	400
		75	¼ x 1	2	700	
		112½	¼ x 1½	2	1050	
		150	¼ x 2	3	1350	
		225	¼ x 2	3	1550	
		300	¼ x 3	4	1900	
		500	3/8 x 3	4	2800	
	480y/277	45	¼ x 1	1	500	
		75	¼ x 1	1	700	
		112½	¼ x 1½	2	1050	
		150	¼ x 2	3	1350	
		225	¼ x 2	3	1550	
		300	¼ x 3	4	1900	
		500	¼ x 3	4	2800	

HV	LV	KVA	LV Conn. Size	LV Conn. Fig.	Weights Trans.	Weights Frame
2400 Δ, 4160 Δ, 4800 Δ	480	45	¼ x 1	1	500	400
		75	¼ x 1	1	700	
		112½	¼ x 1½	2	1050	
		150	¼ x 2	3	1350	
		225	¼ x 2	3	1550	
		300	¼ x 3	4	1900	
		500	¼ x 3	4	2800	
	240	45	¼ x 1	1	500	
		75	¼ x 1	1	700	
		112½	¼ x 1½	2	1050	
		150	¼ x 2	3	1350	
		225	¼ x 2	3	1550	
		300	¼ x 3	4	1900	
		500	3/8 x 3	4	2800	

VENTILATED-DRY TRANSFORMER ENCLOSURE

FOR 5 & 15KV, 500-2500 kVA, TYPES VU 8 & KT-3, 80° & 150°C RISE TRANSFORMERS

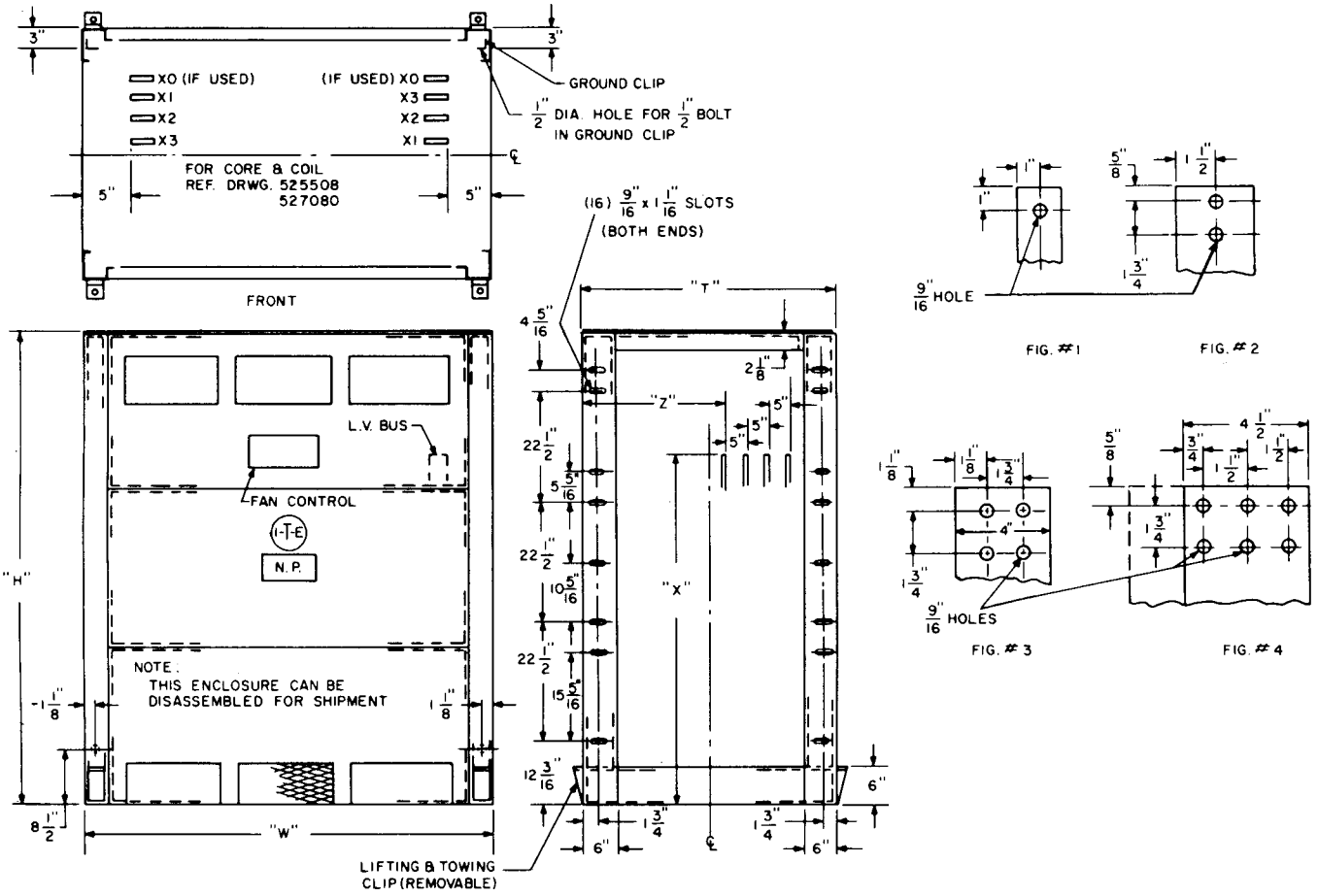


FIG. #1 FIG. #2

FIG. #3 FIG. #4

HV	LV	kVA	H	T	W	X	Z	LV Conn. Size	LV Conn. Fig.	Weights Transf. 80°C	Weights Transf. 150°C	Weights Frame
2400Δ, 4160Δ, 4800Δ	208Y/120	750	90	58	78	74	32	½ x 4	3	5600	4500	850
		1000	90	58	78	74	32	½ x 4½	4	6900	5800	850
	480Y/277, 480Δ	750	90	58	78	74	32	¼ x 3	2	5400	4400	850
		1000	90	58	78	74	32	¼ x 4	3	6800	5700	850
		1500	90	58	90	84	27	½ x 3	2	9200	8000	975
		2000	90	58	90	84	27	½ x 4	3	11250	9700	975
		2500	104	58	102	98	27	½ x 4½	4	13750	12000	1100
12,000Δ, 13,200Δ, 13,800Δ	208Y/120	500	90	58	78	74	32	½ x 3	2	4900	–	850
		750	90	58	78	74	32	½ x 4	3	5700	4800	850
		1000	90	58	78	74	32	½ x 4½	4	7200	6200	850
	480Y/277, 480Δ	500	90	58	78	74	32	¼ x 2	1	4800	–	850
		750	90	58	78	74	32	¼ x 3	2	5600	4700	850
		1000	90	58	78	74	32	¼ x 4	3	7100	6100	850
		1500	90	58	90	84	27	½ x 3	2	9700	8400	975
		2000	90	58	90	84	27	½ x 4	3	11800	10300	975
		2500	104	58	102	98	27	½ x 4½	4	14150	12500	1100