



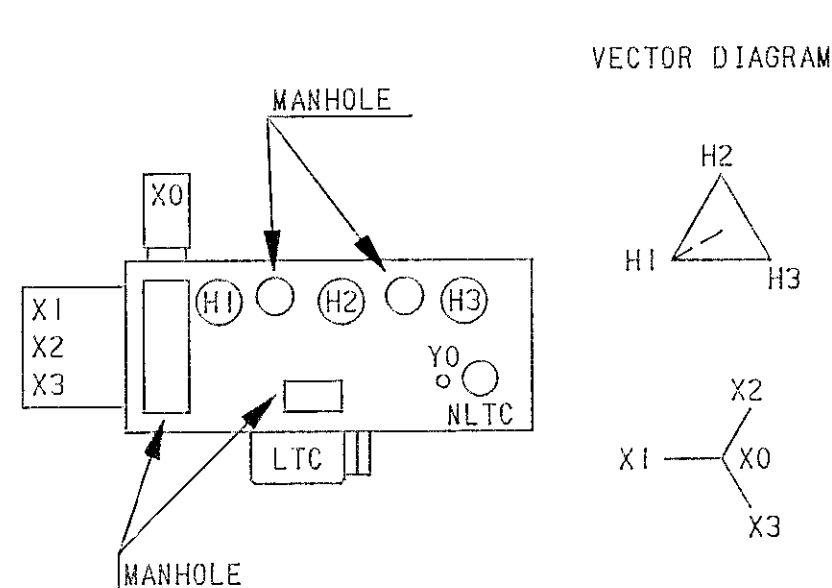
NATIONAL INDUSTRI
NORWAY

3 - PHASE 60Hz POWER - TRANSFORMER

Type **TKTOK-L** Serial No Year **1987**

CLASS	0A	FA	FA	TEMP. °C RISE BY RESISTANCE	TEMP. °C RISE BY HOT SPOT	H.V. 115000 Y	L.V. 13800 Y / 7967
MVA	24	32	40	65	80		

STANDARD **ANSI** CONNECTION DIAGRAM **TI-104 535** % IMPEDANCE AT **24** MVA



BASIC IMPULSE INSULATION LEVEL KV			
H.V. WDG	550	L.V. WDG	110
H.V. BUSHING			650
L.V. & NEUTRAL BUSHING			150
L.V. REGULATING BUSHING			150

APPROXIMATE WEIGHT		
	LBS	KG
UNTANKING	81 570	37 000
SERIES TRANSFORMER	15 880	7 200
TANK & FITTINGS	44 760	20 300
TRANSPORT WITH OIL	165 350	75 000
WEIGHT WITHOUT OIL	121 260	55 000
OIL	55 560	25 200
TOTAL WEIGHT	200 400	90 900

BUSHING CURRENT TRANSFORMER			
CT 1 THRU 3	600 :5	MULTI-RATIO	ACC. C400
CT 4 THRU 6	2000 :5	MULTI-RATIO	ACC. C800
CT 7 THRU 9	600 :5	MULTI-RATIO	ACC. C400
CT 10	2000 :5	MULTI-RATIO	ACC. C800
CT 11 THRU 16	2000 :5	MULTI-RATIO	ACC. C800
CT 17	2200 :5	SINGLE-RATIO	CLASS 3.0
CT 18	2200 :1.5	SINGLE-RATIO	CLASS 3.0

CURRENT TRANSFORMER		
CT 19	330 :5	SINGLE-RATIO CLASS 3.0

LOAD TAP CHANGER			
RAISE REVERSING SWITCH ON 17 - 19			
LOW VOLTAGE	AMP AT 40 MVA	INDICATOR POSITION	CONTACTS ON
16 840	1372	R22	16 - 20
16 700	1383	R21	15 - 20
16 560	1395	R20	14 - 20
16 420	1406	R19	13 - 20
16 230	1419	R18	12 - 20
16 150	1430	R17	11 - 20
16 010	1442	R16	10 - 20
15 870	1455	R15	9 - 20
15 730	1468	R14	8 - 20
15 590	1481	R13	7 - 20
15 460	1494	R12	6 - 20
15 320	1507	R11	5 - 20
15 180	1521	R10	4 - 20
15 040	1536	R 9	3 - 20
14 900	1550	R 8	2 - 20
14 770	1564	R 7	1 - 20
14 630	1579	R 6A	17 - 20

LOAD TAP CHANGER			
LOWER REVERSING SWITCH ON 17 - 18			
LOW VOLTAGE	AMP AT 40 MVA	INDICATOR POSITION	CONTACTS ON
14 630	1579	R 6	17 - 20
14 490	1594	R 5	16 - 20
14 350	1609	R 4	15 - 20
14 210	1625	R 3	14 - 20
14 080	1640	R 2	13 - 20
13 940	1657	R 1	12 - 20
13 800	1673	N	11 - 20
13 660	1691	L 1	10 - 20
13 520	1708	L 2	9 - 20
13 390	1725	L 3	8 - 20
13 250	1743	L 4	7 - 20
13 110	1762	L 5	6 - 20
12 970	1781	L 6	5 - 20
12 830	1800	L 7	4 - 20
12 700	1818	L 8	3 - 20
12 560	1839	L 9	2 - 20
12 420	1859	L 10	1 - 20

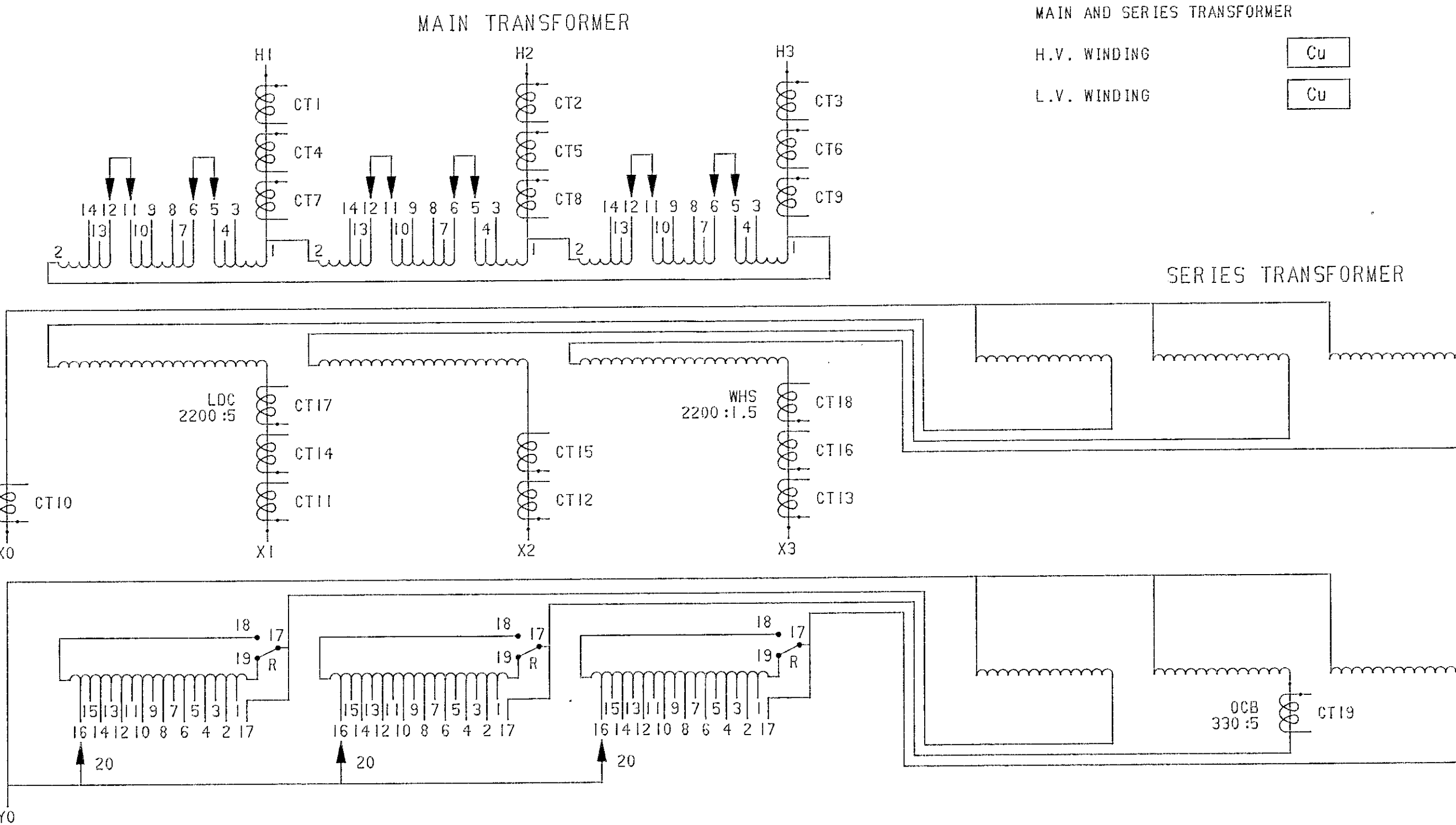
NO-LOAD TAP CHANGER			
HIGH VOLTAGE	AMP AT 40 MVA	INDICATOR POSITION	CONTACTS ON
117 900	196	1	5 - 6 11 - 12
115 000	201	2	5 - 7 11 - 13
112 100	206	3	4 - 7 10 - 13
109 300	211	4	4 - 8 10 - 14
106 400	217	5	3 - 8 9 - 14

TANK DESIGNED FOR **15** P.S.I. VACUUM

TRANSFORMER IS FILLED WITH INHIBITED OIL
7650 US GALLONS **28970** LITRE

MAIN AND SERIES TRANSFORMER

H.V. WINDING **Cu**
L.V. WINDING **Cu**



NATIONAL INDUSTRI	DESCRIPTION		DIAGRAM PLATE & RATING PLATE		DWS. NO.	T1-104 766 c	
	PRODUCT		TRANSFORMER		INTERNAL STANDARD		
DRAWING CHECKED BY	CUSTOMER/PLANT	LORD & MASS / MBTA		REPL.			
DESIGN CHECKED BY	SC.	I : 1.00	APPR.	DATE	MFG.	DATE	
DRAWN BY	DATE	ERR. CRU. NO.	STR. CODE	QTY.	DWG. NO.	ORDER NO.	
ESA	NOV 25 1986		ZO		T1-104 766	110-73355-58	
ITEM	QTY./ORDER	DESCRIPTION/MATERIAL/QUAL./DIMENSION			MR.	TOT. QTY.	U.

Serial No **110-73 355** **16,4** % IMPEDANCE AT **24** MVA

Serial No **110-73 356** **16,4** % IMPEDANCE AT **24** MVA

Serial No **110-73 357** **16,3** % IMPEDANCE AT **24** MVA

Serial No **110-73 358** **16,3** % IMPEDANCE AT **24** MVA

STAINLESS STEEL

AS BUILT

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY			
POWER SYSTEM IMPROVEMENTS BULK POWER FACILITY CONTRACT PICN21			
c	AS BUILT added	AUG 11 1987	AMG
b	REV. POUNDS WEIGHT	MAR 25 1987	ESA
a	REF. IMP. FROM 40 TO 24 MVA	FEB 12 1987	ESA
e	ADD POUNDS WEIGHT		
REV. ZONE	REV. DESC.	DATE	SIGN.
INTERNAL STANDARD	DWG. NO.	T1-104 766 c	

LORD & MASS / MBTA
P.O. No. 7782-61-1380

THIS DRAWING IS OUR PROPERTY AND MUST NOT BE COPIED OR SHOWN TO UNAUTHORIZED PERSONS. PROJECT METHOD

TOLERANCES FOR MEASURES WITHOUT TOLERANCES