



# SUNBELT™ transformer

1922 S. M.L.K. Jr. Drive  
Temple, TX 76504  
1-800-433-3128 - www.sunbeltusa.com

## MOBILE UNIT SUBSTATION TRANSFORMER

WINDING 69000 x 138000 VOLTS 75' C. AVG. RISE  
4160Y/2400 x 8320Y/4800 x 13200Y/7620 x 26400Y/15240 VOLTS 20000 KVA  
20000 KVA  
THREE PHASE 60 HERTZ ODAF  
MFG. DATE 6-26-2003 SERIAL ST060311038-1

IMPEDANCE % AT 20000 KVA, 138000 TO 132000 VOLTS

### APPROX. WEIGHTS IN LBS.

CORE AND COILS 27400 TANK, TRAILER AND FITTINGS 37050 OIL 19300 TOTAL 83750  
GALLONS OIL: MINERAL OIL NON-PCB TRANS. TANK 2530 PUMP & COOLER 60 TOTAL 2590

FOR DIAGRAM OF CONNECTIONS SEE INSTRUCTION PLATE A11038-1-03

DO NOT ATTEMPT TO HANDLE, INSTALL, USE OR SERVICE THIS TRANSFORMER BEFORE READING INSTRUCTION BOOK TO DO SO MAY LEAD TO BODILY INJURY OR PROPERTY DAMAGE OR BOTH.

HIGH VOLTAGE CONNECTIONS						BASIC INSULATION LEVELS	
LINES ON 1, 5, 9						ITEM & CONNECTION	IMPULSE LEVEL FULL WAVE KV
VOLTS	AMPERES	TAP CHANGERS		SERIES PARALLEL SWITCH			
		POSITION	CONNECTS	POSITION	CONNECTS		
144900	79.7	1	A - B			H1, H2, H3 (138000 v.)	450
141450	81.6	2	B - C			H1, H2, H3 (69000 v.)	350
138000	83.7	3	C - D	2	2 - 3	X1, X2, X3 (24940Y, 26180Y, 26400Y)	150
134550	85.8	4	D - E		6 - 7	X0 (24940Y, 26180Y, 26400Y)	110
131100	88.1	5	E - F		10 - 11	X0, X1, X2, X3 (12470Y, 13090Y, 13200Y, 13800Y)	110
72450	159	1	A - B			X0, X1, X2, X3 (4160Y & 8320Y)	75
70725	163	2	B - C	1	1 - 3, 2 - 4	HV BUSHING	650
69000	167	3	C - D		5 - 7, 6 - 8	X0, X1, X2, X3 BUSHING	150
67275	172	4	D - E		9 - 11, 10 - 12	X4, X5, X6 BUSHING	110
65550	176	5	E - F				

LOW VOLTAGE CONNECTIONS						
LINES ON 15, 27, 39						
VOLTS	AMPERES	SERIES-PARALLEL SWITCH NO. 1		SERIES-PARALLEL SWITCH NO. 2		TAP BOARD
		POSITION	CONNECTS	POSITION	CONNECTS	CONNECTS
26400	437		16-17, 18-19		22-23, 24-25	20-26
26180	441	2	28-29, 30-31	2	34-35, 36-37	32-38
24940 (2)	463		40-41, 42-43		46-47, 48-49	44-50
13800 (3)	837		16-17, 18-19		22-23, 24-25	20-21, 15-26
13200	875	2	28-29, 30-31	2	34-35, 36-37	32-33, 27-38
13090	882		40-41, 42-43		46-47, 48-49	44-45, 39-50
12470 (2)	926		15-17-19		21-23-25	
			16-18-20		22-24-26	20-26
			27-29-31	1	33-35-37	32-38
			28-30-32		34-36-38	44-50
			39-41-43		45-47-49	
			40-42-44		46-48-50	
			15-17-19		21-23-25	20-21, 15-26
			16-18-20		22-24-26	32-33, 27-38
			27-29-31	1	33-35-37	44-45, 39-50
			28-30-32		34-36-38	
			39-41-43		45-47-49	
			40-42-44		46-48-50	

(1) LIMITED TO 1200 AMPERES THROUGH LOW VOLTAGE SWITCH GEAR  
(2) WITH HIGH VOLTAGE TAP CHANGERS IN POSITION 1 APPLYING RATED VOLTAGE  
(3) WITH HIGH VOLTAGE TAP CHANGER IN POSITION 5 APPLYING RATED VOLTAGE

CONDUCTOR MATERIALS - H-WDG CU, X-WDG CU.

TRANSFORMER WILL BE FILLED WITH MINERAL OIL CONTAINING LESS THAN 2 PPM PCB

UNTANKING WEIGHT (HEAVIEST PIECE) 27400 LBS.

THE 25°C LIQUID LEVEL IS 9.00 INCHES BELOW TOP OF HIGHEST MANHOLE FLANGE. LIQUID LEVEL CHANGES .69 INCHES FOR EACH 10°C CHANGE IN AVERAGE LIQUID TEMPERATURE.

THIS TRANSFORMER TANK IS DESIGNED TO WITHSTAND COMPLETE VACUUM AND AN INTERNAL PRESSURE OF 10 PSI.

THE TRANSFORMER MUST NOT BE ENERGIZED FROM ANY VOLTAGE SOURCE WHEN DE-ENERGIZED TAP CHANGERS ARE OPERATED.

THE TRANSFORMER IS DESIGNED FOR OPERATION BETWEEN PRESSURE LIMITS OF 7.5 PSI POSITIVE AND 5 PSI NEGATIVE.

MADE IN TEMPLE, TX. U. S. A.      MP# A11038-1-02 SUB

9" IN. X 17" .032 STAINLESS STEEL #6240-SATIN FINISH-ETCHED-FILLED WITH BLACK ENAMEL 1/4 IN. DIA. HOLES (4 TOTAL)

REVISIONS	DATE	CHANGED BY:	DATE	CHANGED BY:	DATE	CHANGED BY:	DATE
CHG. BY: ENGINEER		CHG. BY: ENGINEER		CHG. BY: ENGINEER		CHG. BY: ENGINEER	

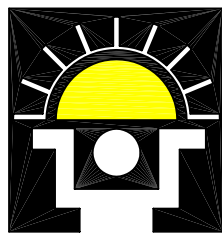
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO SUNBELT TRANSFORMER. IT IS SUBMITTED IN CONFIDENCE AND IS TO BE USED SOLELY FOR THE PURPOSE FOR WHICH IT IS FURNISHED AND RETURNED UPON REQUEST. THIS DRAWING AND SUCH INFORMATION IS NOT TO BE REPRODUCED, TRANSMITTED, DISCLOSED OR USED OTHERWISE IN WHOLE OR IN PART WITHOUT THE WRITTEN AUTHORIZATION OF SUNBELT TRANSFORMER.



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DRAWN BY: K. JACKSON 5/8/03      CHECKED BY: G.H. 5/8/03      TITLE: TRANSFORMER INSTRUCTION NAMEPLATE  
SCALE: N.T.S.      SHEET: 1 of 1      REV.      DWG NO. A11038-1-02



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## MOBILE UNIT SUBSTATION TRANSFORMER

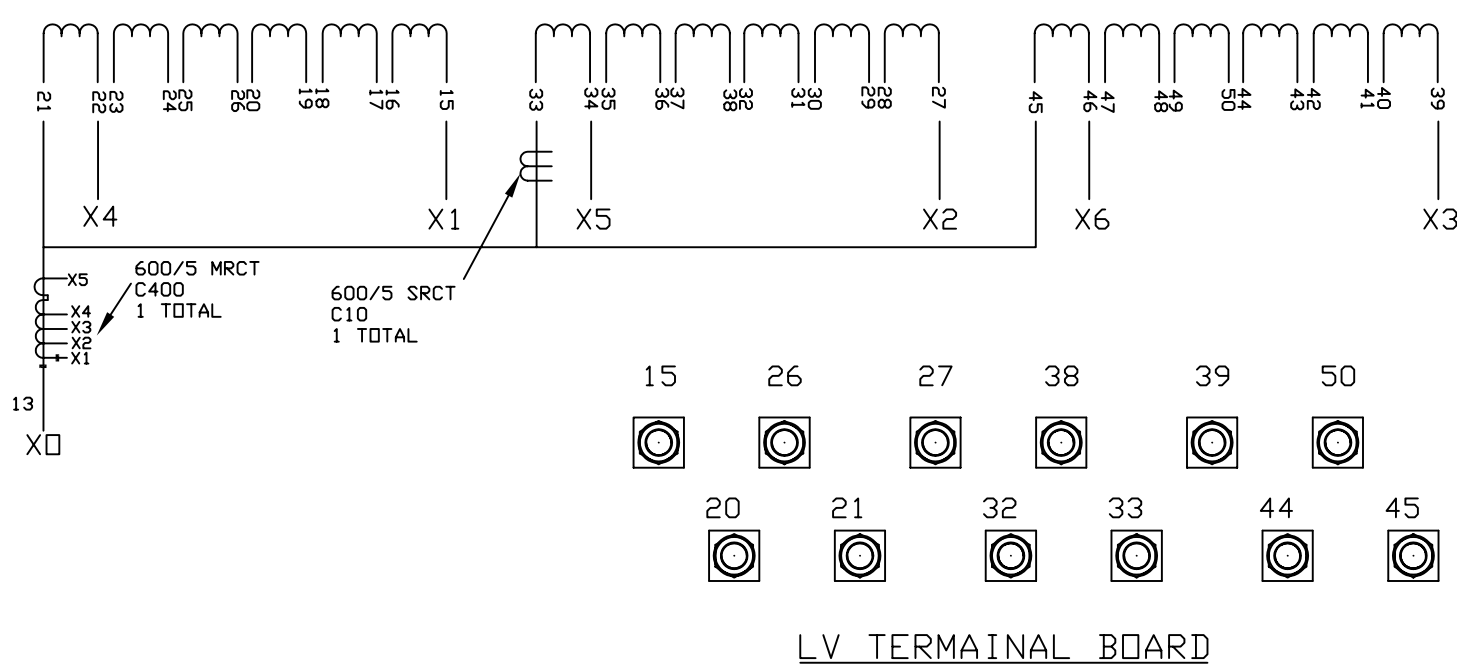
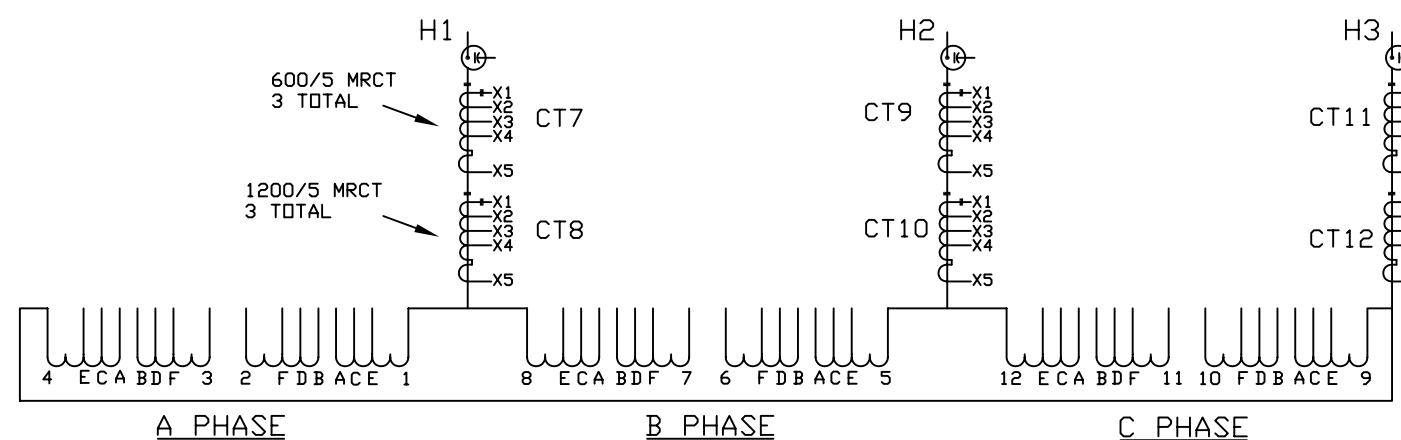
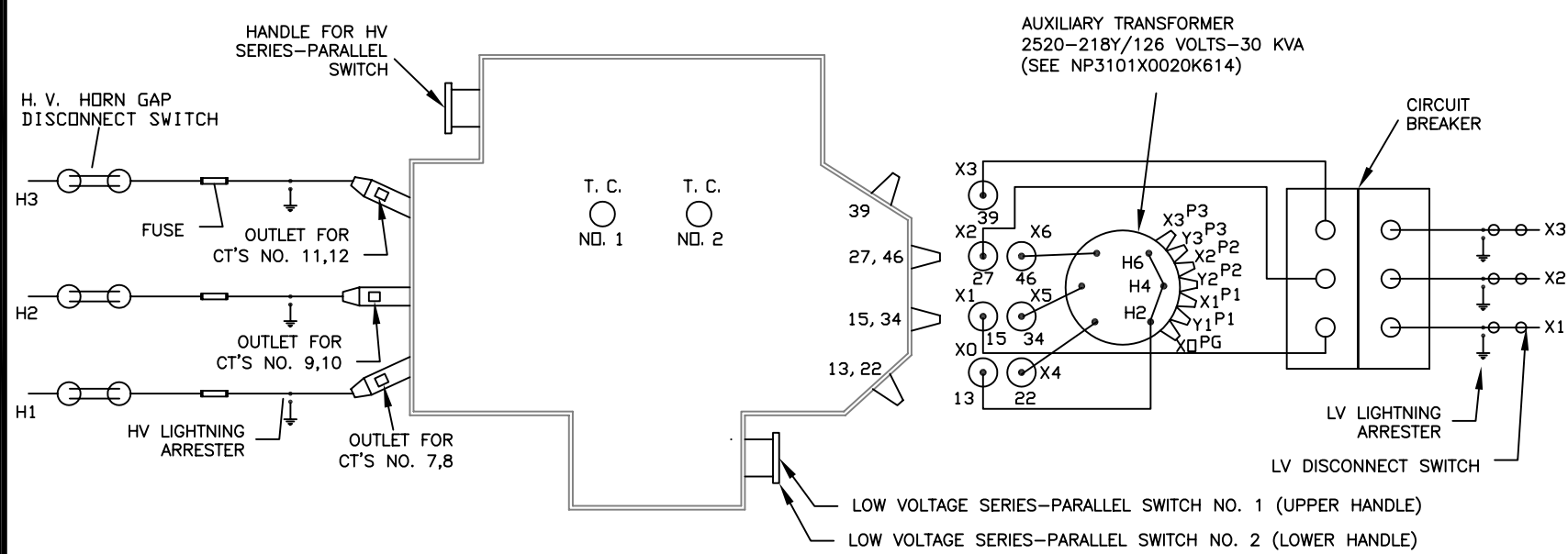
**WINDING** 75° C. AVG. RISE  
69000 x 138000 VOLTS 20000 KVA  
4160Y/2400 x 8320Y/4800 x 13200Y/7620 x 26400Y/15240 VOLTS 20000 KVA

**THREE PHASE 60 HERTZ ODAF**

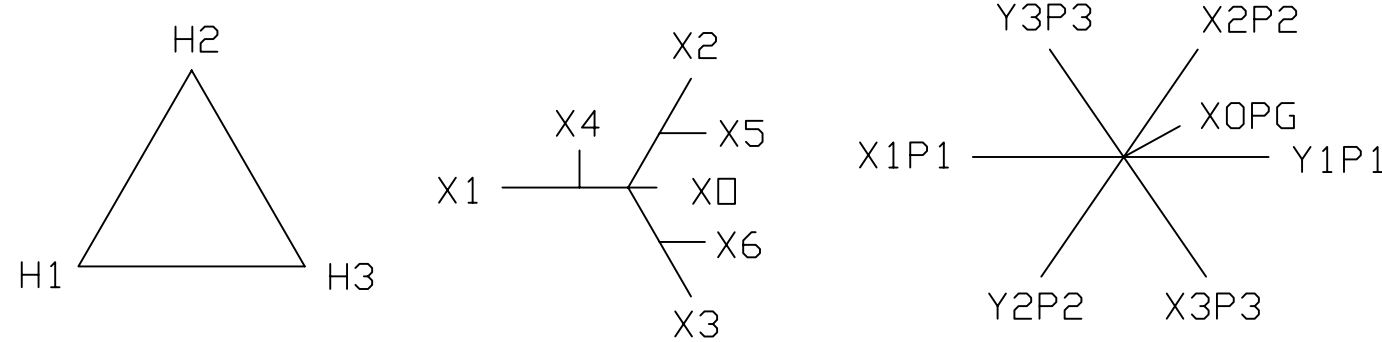
**MFG. DATE** 6-26-2003

**SERIAL** ST060311038-1

FOR TABLE OF CONNECTIONS SEE INSTRUCTION PLATE A11038-1-02



### PHASOR DIAGRAM:



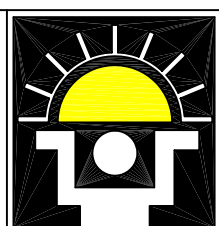
MADE IN TEMPLE, TX. U. S. A.

NP# A11038-1-03 SUB

9" IN. X 17" , .032 STAINLESS STEEL #6240-SATIN FINISH-ETCHED-FILLED WITH BLACK ENAMEL. 1/4 IN. DIA. HOLES (4 TOTAL)

REVISIONS	DATE	CHANGED BY:	DATE	CHANGED BY:	DATE	CHANGED BY:

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DRAWN BY: K. JACKSON 5/8/03  
CHECKED BY: G.H. 6/25/03

TITLE: TRANSFORMER INSTRUCTION NAMEPLATE

SCALE: N.T.S.

SHEET 1 of 1

REV.

DWG NO.

A11038-1-03

NOTES

THIS OUTLINE CAN BE USED FOR ERECTION PURPOSES. IT IS NOT TO BE REGARDED AS INDICATING THE EXACT DETAILS OF CONSTRUCTION. THE TANK IS BRACED FOR FILLING UNDER A FULL VACUUM. BEFORE BREAKING THE SEAL ON ANY OPENING, BE SURE THE LIQUID IS LOWERED BELOW THE OPENING. CHECK OPERATION OF TAP CHANGER MECHANISM BEFORE SEALING TRANSFORMER. THIS TRANSFORMER IS "SEALED-AIR" CONSTRUCTION. THE GAS SPACE IS SEALED TO PREVENT BREATHING UNDER NORMAL OPERATION.

1. ALL DIMENSION IN ELEVATION VIEW ARE TO FLOOR LINE UNLESS OTHERWISE SPECIFIED.
2. LIGHTS AND REFLECTORS PER ICC AND STATE OF TEXAS.
3. ALL DIMENSION ARE IN INCHES.
4. ITEMS #48, #49, #56, #95, #97 & #63 TO BE REMOVED FOR SHIPMENT.
5. 69 KV LIVE PARTS MAY REMAIN IN STORAGE POSITION WHILE OPERATING 138 KV FUSES BUT 138 KV LIVE PARTS MUST BE REMOVED FROM STORAGE POSITION WHEN OPERATING 69 KV FUSES.

SHIPMENT WILL BE MADE IN LIQUID IN ITS OWN TANK.

DO NOT ENTER UNIT WITHOUT CHECKING OXYGEN CONTENT FOR SAFETY.

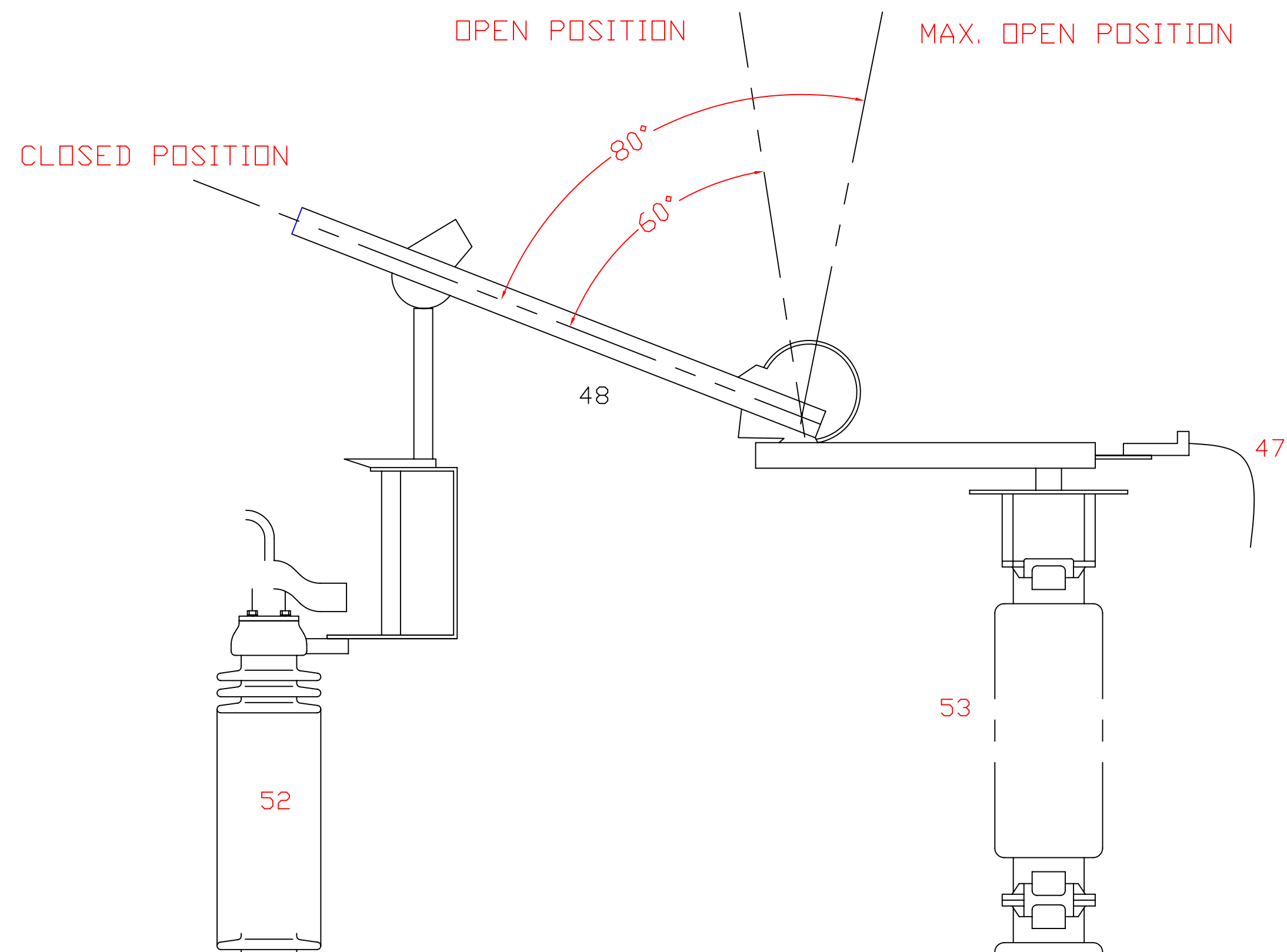
APPROXIMATE NET WEIGHT	
CORE AND COILS (MAIN)-----	27400 LBS.
TANK, TRAILER, AND FITTINGS-----	37050 LBS.
OIL (MAIN) -----	18850 LBS.---(2530 GAL.)
OIL (PUMP & COOLER) -----	450 LBS.---(60 GAL.)
TOTAL -----	83750 LBS.

FITTINGS AND DESCRIPTIONS

- 63 HANDLE FOR OPERATING RETRACTABLE FRAME.
- 64 XV SURGE ARRESTER, 3-TOTAL, OHIO BRASS CAT#2159113001, 2.55 MCOV.
- 65 XV SURGE ARRESTER, 3-TOTAL, OHIO BRASS CAT#2159113006, 8.4 MCOV.
- 66 XV SURGE ARRESTER, 3-TOTAL, OHIO BRASS CAT#PVN314017-3001, 17 MCOV.
- 67 LV LOAD BREAKER SWITCH 23 KV, 1200 AMPS, 3 TOTAL.
- 68 VACUUM CIRCUIT BREAKER, SIEMENS CAT#SDV4A-27.6-20-1200, 27.6 KV, 1200 AMPS, 1 TOTAL.
- 72 RED DANGER LIGHT, 2 TOTAL.
- 73 STORAGE POSITION FOR ITEM #64 OR 65 WHEN NOT IN USE.
- 74 STRAIN 4x89 FRAME DRILLING SPACE FOR USER'S MOUNTING OF STRAIN INSULATORS FOR DEAD ENDING LINES.
- 76 CONTROL POWER TRANSFORMER
- 77 IMPACT RECORDER
- 78 BRAKE CONNECTION STD. AIR BRAKE 8 FT. JUMPER.
- 79 CHOCK BLOCKS FOR PARKING
- 80 CRANK REMOVABLE FOR ITEM #82, 1 TOTAL.
- 81 ELECTRICAL CONNECTOR 6 POINT, 12 VOLT, 1 TOTAL.
- 82 FRONT SUPPORT (2 SPEED INDEPENDENT - FOR LEVELING)
- 83 KING PIN
- 84 LINKAGE - HV DISCONNECT SWITCH
- 85 MUD FLAP
- 86 2 PULLING EYE
- 87 TIRES 10 x 22.5, 2 PLY, 12 TOTAL.
- 89 WHEELS STEEL, 12 TOTAL
- 90 JACK PAD, 4 TOTAL.
- 92 CONNECTOR FOR ITEM #69 AND 64 OR 65.
- 93 CONNECTOR FOR ITEM #4 AND 76.
- 94 CONNECTOR FOR ITEM #3 AND 76.
- 95 INTERPHASE PIPE CONNECTOR, 2 TOTAL.
- 96 STORAGE FOR ITEM #95, 2 TOTAL.
- 97 LV INSULATOR, 6 TOTAL.
- 98 MAIN TRANSFORMER CORE GROUND, WITH CAPTIVE BOLTS.
- 99 MOUNTING BASE FOR UNI-HOIST FALL PROTECTION SYSTEM.
- 100 GAS DETECTOR RELAY, HYDRAN CAT#H201R MODEL i
- 101 CT FEED THRU BOX
- 102 LIGHTNING ARRESTER SUPPORT (NON-REMOVABLE) FOR ITEMS #64, #65, #66

FITTINGS AND DESCRIPTIONS

- 1 HV BUSHING, 3-TOTAL, LAPP CAT#PDC650G0800CS. 138 KV, 800 AMPS, 650 KV BIL. EXTERNAL STUD SIZE 1.50 INCH DIA. - 12 THD. x 2.00 INCHES LONG. INTERNAL TOP CONNECTED-DRAW THRU LEAD.
- 2 XV BUSHING, 3-TOTAL, WARCO CAT#41A05144-2 25 KV, 1767 AMPS, 150 KV BIL. EXTERNAL STUD SIZE 1.13 INCH DIA. - 12 THD. x 2.50 INCHES LONG. INTERNAL BOTTOM CONNECTED-BOLTED TERMINAL.
- 3 AUXILIARY BUSHING FOR LV, 3-TOTAL, WARCO CAT#41A03026-2. 15 KV, 400 AMPS, 110 KV BIL. EXTERNAL STUD SIZE 1.13 INCH DIA. - 12 THD. x 2.25 INCHES LONG. INTERNAL TOP CONNECTED-DRAW THRU LEAD.
- 4 XV BUSHING, 1-TOTAL, WARCO CAT#41A05144-2. 25 KV, 1767 AMPS, 150 KV BIL. EXTERNAL STUD SIZE 1.13 INCH DIA. - 12 THD. x 2.50 INCHES LONG. INTERNAL BOTTOM CONNECTED-BOLTED TERMINAL.
- 5 BUSHING ADAPTER, 3 TOTAL, WITH .125" AIR VENT FOR ITEM #1.
- 6 BUSHING ADAPTER, 7 TOTAL, FOR ITEM #2 & #3
- 7 CAPILLARY TUBE GUARD FOR ITEM #36.
- 8 CONTROL HOUSING
- 9 COOLER, 2 TOTAL.
- 10 VALVE 2 INCH FOR COMBINATION LOWER FILTER PRESS CONNECTION AND MAIN DRAIN WITH .375 INCH SAMPLING DEVICE.
- 11 VALVE 1 INCH FOR UPPER FILTER PRESS CONNECTION.
- 12 GROUND TERMINAL, 2 TOTAL (CLAMP-TYPE) FOR 1/0 TO 300 MCM CABLE.
- 13 HANDLEHOLE, 2 TOTAL.
- 14 LIFTING LUGS FOR LIFTING COVER, 4 TOTAL.
- 15 LIFTING BLOCK, 4 TOTAL.
- 16 LIQUID FLOW GAUGE WITH ALARM CONTACTS FOR 250 VOLTS MAX, 2 TOTAL.
- 17 MAGNETIC LIQUID LEVEL GAUGE
- 18 MANHOLE (12 x 22" OPENING).
- 19 MANHOLE (20" DIAMETER OPENING), 2 TOTAL.
- 20 MANHOLE (14 x 30" OPENING).
- 21 NAMEPLATE.
- 22 OIL SHUT-OFF 2" VALVE BETWEEN MAIN TANK AND COOLER, 2 TOTAL.
- 23 OIL SHUT-OFF 2" VALVE BETWEEN MAIN TANK AND PUMP, 2 TOTAL.
- 24 OUTLET HOUSING FOR CURRENT TRANSFORMER LEADS, 3 TOTAL.
- 25 PRESSURE GAUGE & PRESSURE VACUUM BLEEDER DEVICE, 1 TOTAL.
- 26 PUMP, 2 TOTAL.
- 27 RECEPTACLE (FEMALE) 120 VOLTS, 1 TOTAL.
- 28 RECEPTACLE (MALE) 120 VOLTS, 1 TOTAL.
- 30 PIPE PLUGS .375 NPT, 4 TOTAL.
- 31 THERMAL PLATE, 1 TOTAL CAT#1WTL-1026-1.
- 32 SWITCH HV SERIES PARALLEL
- 33 SWITCH LV SERIES PARALLEL #1.
- 34 SWITCH LV SERIES PARALLEL #2.
- 35 TAP CHANGER MECHANISM FOR HV DWG. FOR DE-ENERGIZED OPERATION, 2 TOTAL.
- 37 LIQUID TEMPERATURE INDICATOR, DIAL TYPE WITH CAPILLARY TUBE AND WITH MAXIMUM INDICATING HAND AND ALARM & TRIP CLOSING CONTACTS. QUALITROL CAT#TR6000-00010114.
- 38 HOTSPOT TEMPERATURE INDICATOR, DIAL TYPE WITH CAPILLARY TUBE AND WITH MAXIMUM INDICATING HAND WITH ALARM CLOSING CONTACTS. QUALITROL CAT#TR6000-00010114.
- 39 PRESSURE RELIEF DEVICE, WITH ALARM CONTACTS AND FLAG INDICATOR, QUALITROL CAT#208-60E.
- 40 TRANSFORMER SEALED TANK WELDED COVER
- 41 VALVE .125 NPT FEMALE FOR VENTING, 4 TOTAL.
- 42 PLUG .125 NPT, 4 TOTAL.
- 43 STRAIN PLATE FOR USER'S CONNECTION, 3 TOTAL.
- 44 LUGS USED TO TIEDOWN TRANSFORMER FOR SHIPMENT, 4 TOTAL.
- 45 ARCHING HORN, 3 TOTAL.
- 46 BLADE FOR ITEM #51, 3 TOTAL.
- 47 CABLE CONNECTOR FOR ITEM #1, 3 TOTAL.
- 48 FUSE 69 KV AND LIVE PART, 3 TOTAL.
- 49 FUSE 138 KV AND LIVE PART, 3 TOTAL.
- 50 GROUND CONNECTION FOR ITEM #4, 1 TOTAL.
- 51 HIGH VOLTAGE HORN GAP DISCONNECT SWITCH, 1 TOTAL.
- 52 INSULATOR FOR ITEM #51, 9 TOTAL.
- 53 LIGHTNING ARRESTER CAT#9L11LBC704 FOR ITEM #1, 3 TOTAL.
- 54 LIGHTNING ARRESTER BRACE (REMOVE BEFORE PUTTING TRANSFORMER INTO OPERATION), 11 TOTAL.
- 55 RETRACTABLE SUPPORT FOR ITEM #53, 2 TOTAL.
- 56 SWITCH OPERATING HANDLE (REMOVABLE) FOR ITEM #51, 1 TOTAL.
- 57 TERMINAL FOR USER'S CONNECTION, 3 TOTAL.
- 58 BRACE WITH HOLES FOR USER'S CONNECTION, 3 TOTAL.
- 59 STORAGE SPACE FOR 69 KV LIVE PARTS WHEN NOT IN USE. (SEE NOTE 5)
- 60 STORAGE SPACE FOR 138 KV LIVE PARTS WHEN NOT IN USE. (SEE NOTE 5)
- 61 CONNECTOR FOR ITEMS #2 & #68, 3 TOTAL.
- 62 CONNECTOR FOR ITEMS #64, #65, OR #66 AND #67, 3 TOTAL.



SKETCH "A" 69 KV ASSEMBLY

CUSTOMER: <b>SUNBELT TRANSFORMER</b>	JOB ORDER #: A11038-1	FINISH COLOR: ANSI #70 GRAY
TYPE: CORE FORM OUTDOOR TRANSFORMER CLASS: F0A, 3 PHASE, 60 HERTZ, OIL FILLED HV: 69000 x 138000 DELTA XV: 4160Y/2400 x 13200Y/7620 x 26400Y/15240 VOLTS TEMP. RISE: 75° RISE KVA 20000		
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DRAWN BY: K. JACKSON 6/3/03	CHECKED BY: E.M. 6/3/03	TITLE <b>CUSTOMER OUTLINE</b>
SCALE: N.T.S.	SHEET 1 of 3	REV. DWG NO. <b>A11038-1-01</b>

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

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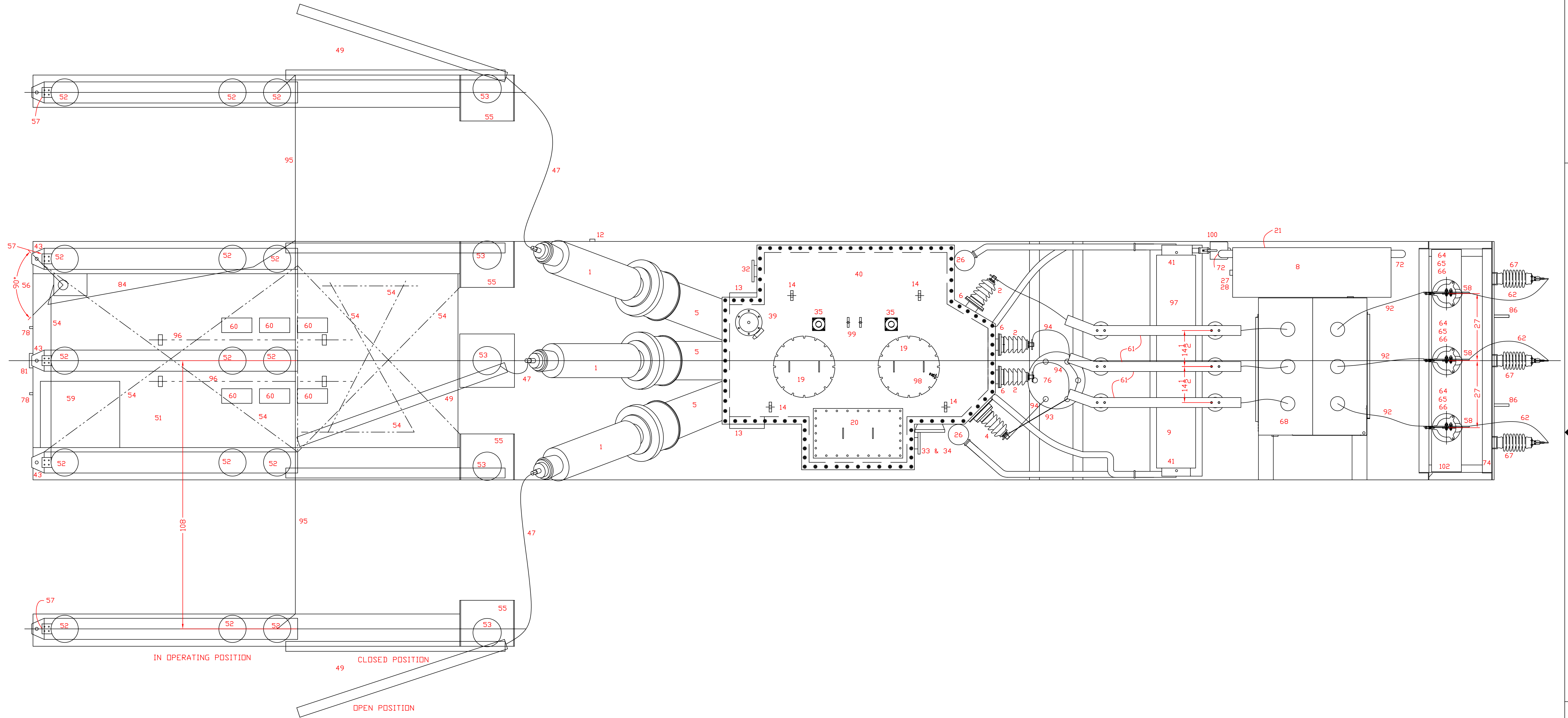
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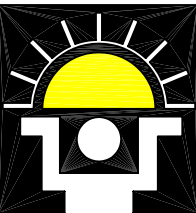


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DRAWN BY: K. JACKSON 6/3/03  
 CHECKED BY: E.M. 6/3/03  
 SCALE: N.T.S.

TITLE: CUSTOMER OUTLINE  
 SHEET: 2 of 3  
 REV:      DWG NO. A11038-1-01



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