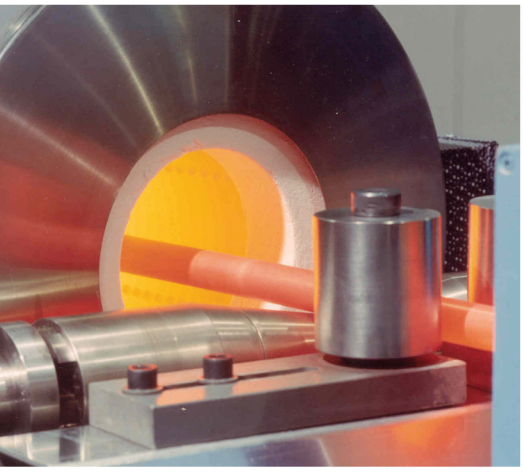
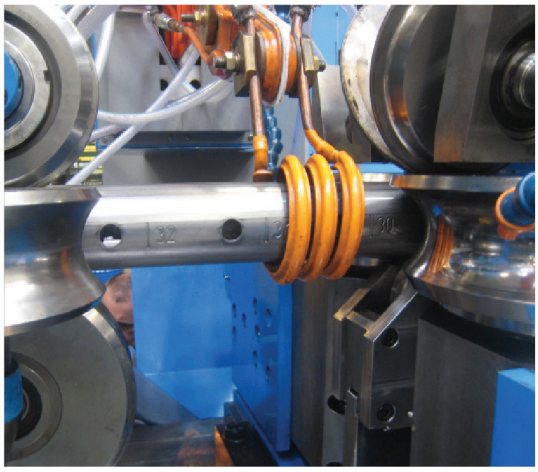
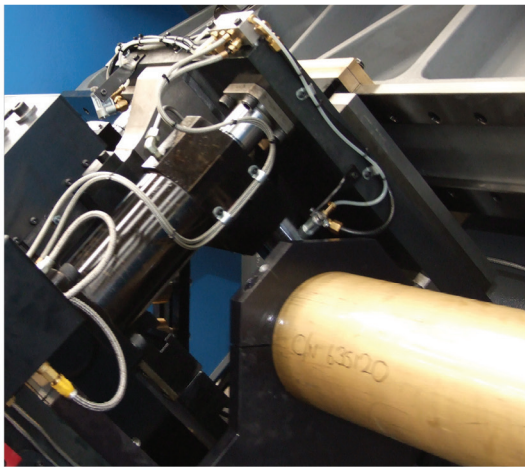
THERMATOOL
An Inductotherm Group Company

CUSTOMER DOCUMENTATION

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THERMATOOL

Customer Drawing List

CFI 350kW 300kHz Equipment No. **T2400**

OTO MILLS S.p.A, Italy

	Drawing Title		***Drg No.***		***Rev***
1	Schematic Electrical		**WW5107**	Sht 1-44	**F**
2	Interconnection Cable List		**WW0094**	Sht 1-24	**L**
3	Thermatool Wiring Colours		**XS0051**	Sht 1-2	**A**
4	Interconnect Wiring - AGP3600 - S7-300 PLC,TV2		**WW5400**	Sht 1/1	**1**
5	External Water Circuit (HF12 50-350KW)		**WW0090**	Sht 1/1	**H**
6	DC PSU Cabinet - Water Schematic (200-350kW)		**WW0091**	Sht 2/2	**J**
7	HF12 Inverter Water Schematic - Bus 5		**WW5069**	Sht 1-3	**A**
8	Work Coils (DRAWING NOT SUPPLIED)		**Refer to Mill Layout**		
9	Work Coils (DRAWING NOT SUPPLIED)		**Refer to Mill Layout**		
10	Tacho-Generator Type: Reo N		**WD0083**	Sht 1/1	**0**
11	Basic Dimensions - Thermaview Mk 2 Console		**VC0061**	Sht 1/1	**0**
12	Basic Dimensions - HF12 Inverter Cabinet		**WD0076**	Sht 1/1	**A**
13	Basic Dimensions - Power Unit Cabinet (200-350kW)		**WD0077**	Sht 2/2	**B**
14	Basic Dimensions - Heat Exchanger 50-350kW CFI		**WD0171**	Sht 1/1	**B**
15	Through Flow Impedor details		**WD5066**	Sht 1/2	**C**
16	Return Flow Impedor details		**WD5067**	Sht 1/2	**A**
17	Auto-Match Assembly - HF12	**-001**	**WU5262**	Sht 1/4	**B**
18	Auto-Match Assembly - HF12 BOM	**-001**	**WU5262**	Sht 1-2	**E**
19	Auto-Match Assembly -Common Build - HF12		**WU5261**	Sht 1-2	**B**
20	Auto-Match Assembly -Common Build - HF12 BOM		**WU5261**	Sht 1-2	**B**
21	Output Bus Assembly		**WU5032**	Sht 1/1	**0**
22	Output Bus Assembly - BOM		**WU5032**	Sht 1/1	**0**
23	30° Output Assembly		**WU5311**	Sht 1/1	**0**
24	30° Output Assembly - BOM		**WU5311**	Sht 1/1	**0**
25	Axis Table Assembly		**WU5436**	Sht 1/1	**0**
26	Customer Plinth Requirements - HF12		**WG2210-T2400**	Sht 1/1	**0**

Issue: 0
Date: 07-NOV-2013

DRAWING LIST:

CFI SOLID STATE WELDER
400 (460) VAC, 50/60Hz, 3 PH.

WIRE IDENTIFICATION:

	FIRST NUMBER USED	LAST NUMBER USED
3 PHASE AC 400 (460)/200	L1 L2 L3	16L1 16L2 16L3
ISOLATED CONTROL VOLTAGE AC 115 OR (230)	101 100	140 109
HIGH FREQUENCY GENERATOR ISOLATED CONTROL VOLTAGE AC 115 OR (230)	601 600	621 –
AUXILIARY VOLTAGE AC 115 OR (230)	801 800	– –
HIGH VOLTAGE DC	900	906
CONTROL VOLTAGE (24VDC)	2401 2402 2400	2457 – –
LOW VOLTAGE DC (6–23VDC)	1001 1002 1000	1094 – –

NOTES:

NUMBERS SHOWN ARE RESERVED FOR SUPPLY WIRES.
SEQUENCE CONTINUES FOR SIGNAL WIRES.
EX. 24VDC SIGNAL = 2403

WIRING COLOURS IN ACCORDANCE WITH THERMATOOL STANDARD DRG No: XS0051 (GENERALLY AS RECOMMENDED BY: EN 60204)

PLC ADDRESS IS USED FOR WIRE NUMBER WHEN EVER POSSIBLE.

EX. SLOT 1, GROUP 0, BIT 15 = 01015

CABLE SIZE:– "GENERAL" CONTROL WIRING MINIMUM 1.5MM UNLESS STATED

CONTROL WIRING TO PLC INPUTS/OUTPUTS MAY BE 0.5MM

EARTH/GROUNDING CABLES (UNLESS IN CONDUIT/MULTICORE) TO BE MINIMUM 4MM (UNLESS STATED)

CABLE INTERCONNECTION LIST DRAWING NO: WW0094

REVISIONS

REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03
A	04102	REV.SH.1,2,3,8,10,18,25,27,32,35,36, 37,37A,38,38A		TAT			07/16/04
B	04256	REV. SH.1,8,16,18,22,22A		TAT			11/17/04
C	05222	ADD SH 11A (NEW VARIANT 3 AXIS TABLE)		TAT			11/16/05
D	06151	REV. SH.1,9		TAT			06/23/06
E	09047	REV. SH.1,35		TAT			04/08/09
F		REV SH.1,29 CORRECT WIRE NUMBERS		AM			10/01/12

REV STATUS

A	A	B	0	C	0		A	A	A	E	0	0	A	0	0	1	0	A	0	A	0	0	B	0	0	0	B	0	B	0	0	0	0	0	A	D	B	0	0	0	0	A	A	E	REV
38A	37A	22A	12A	11A	3A		38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SH

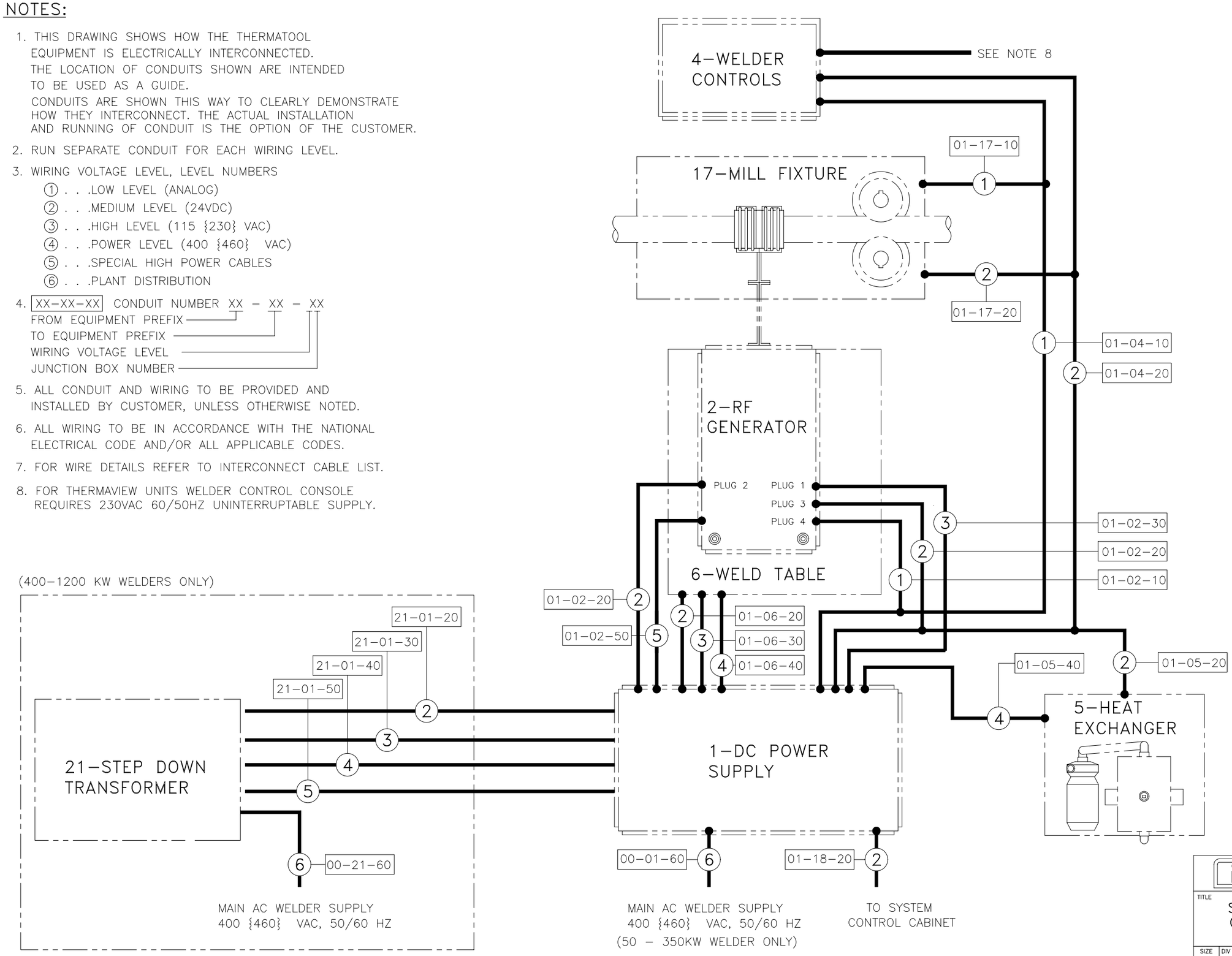
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ON		APPROVALS	DD/MM/YY	THERMATOOL®
		0 PLACE (X) ± 0.5 ANGLE ± 0°30'		DWN TT (CC: WW0200)	10/10/03	TITLE
NEXT ASSY	JOB NO	1 PLACE (X.X) ± 0.3 SURFACE FINISH N8		CHK		SCHEMATIC – ELECTRICAL
FIRST APPLICATION		2 PLACE (X.XX) ± 0.15		ENG/APPD		CFI SOLID STATE WELDER TVIEW
UNIT CFI 50–1200 kW		BREAK AND DEBURR ALL SHARP EDGES		MATL		("OPTIONAL" CUS. INPUTS ,S7–313C PLC, PILZ E–STOPS)
BUYER OR SELLER HEREBY ACKNOWLEDGES THAT THERE MAY BE ERRORS OR OMISSIONS IN THIS DOCUMENT AND THAT THERMATOOL EUROPE LTD SHALL NOT BE LIABLE IN ANY MANNER FOR SUCH ERRORS OR OMISSIONS.		SI–METRIC		FINISH/HEAT TREAT		SIZE A1 | DIV NO 3 | DWG NO WW5107 | REV F
©Copyright THERMATOOL EUROPE LTD		THIRD ANGLE PROJECTION				SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 1 OF 44
THIS DOCUMENT IS THE PROPERTY OF THERMATOOL EUROPE LTD AND IT IS SUBMITTED FOR USE ONLY WITH WORK PROPOSED OR AUTHORIZED BY THIS COMPANY. IT SHOULD NOT BE USED OR DUPLICATED FOR ANY OTHER PURPOSE AND IS TO BE RETURNED TO THERMATOOL EUROPE LTD ON REQUEST WHEN NO LONGER REQUIRED FOR SUCH PURPOSES.						ENG–REF:

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03
A	04102	IMPROVE CLARITY OF XFMER CAB		TAT			07/15/04

NOTES:

1. THIS DRAWING SHOWS HOW THE THERMATOOL EQUIPMENT IS ELECTRICALLY INTERCONNECTED. THE LOCATION OF CONDUITS SHOWN ARE INTENDED TO BE USED AS A GUIDE. CONDUITS ARE SHOWN THIS WAY TO CLEARLY DEMONSTRATE HOW THEY INTERCONNECT. THE ACTUAL INSTALLATION AND RUNNING OF CONDUIT IS THE OPTION OF THE CUSTOMER.
2. RUN SEPARATE CONDUIT FOR EACH WIRING LEVEL.
3. WIRING VOLTAGE LEVEL, LEVEL NUMBERS
   - ① . . .LOW LEVEL (ANALOG)
   - ② . . .MEDIUM LEVEL (24VDC)
   - ③ . . .HIGH LEVEL (115 {230} VAC)
   - ④ . . .POWER LEVEL (400 {460} VAC)
   - ⑤ . . .SPECIAL HIGH POWER CABLES
   - ⑥ . . .PLANT DISTRIBUTION
4. XX–XX–XX CONDUIT NUMBER XX – XX – XX
   - FROM EQUIPMENT PREFIX
   - TO EQUIPMENT PREFIX
   - WIRING VOLTAGE LEVEL
   - JUNCTION BOX NUMBER
5. ALL CONDUIT AND WIRING TO BE PROVIDED AND INSTALLED BY CUSTOMER, UNLESS OTHERWISE NOTED.
6. ALL WIRING TO BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND/OR ALL APPLICABLE CODES.
7. FOR WIRE DETAILS REFER TO INTERCONNECT CABLE LIST.
8. FOR THERMAVIEW UNITS WELDER CONTROL CONSOLE REQUIRES 230VAC 60/50HZ UNINTERRUPTABLE SUPPLY.

SYSTEM INTERCONNECT



TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 2

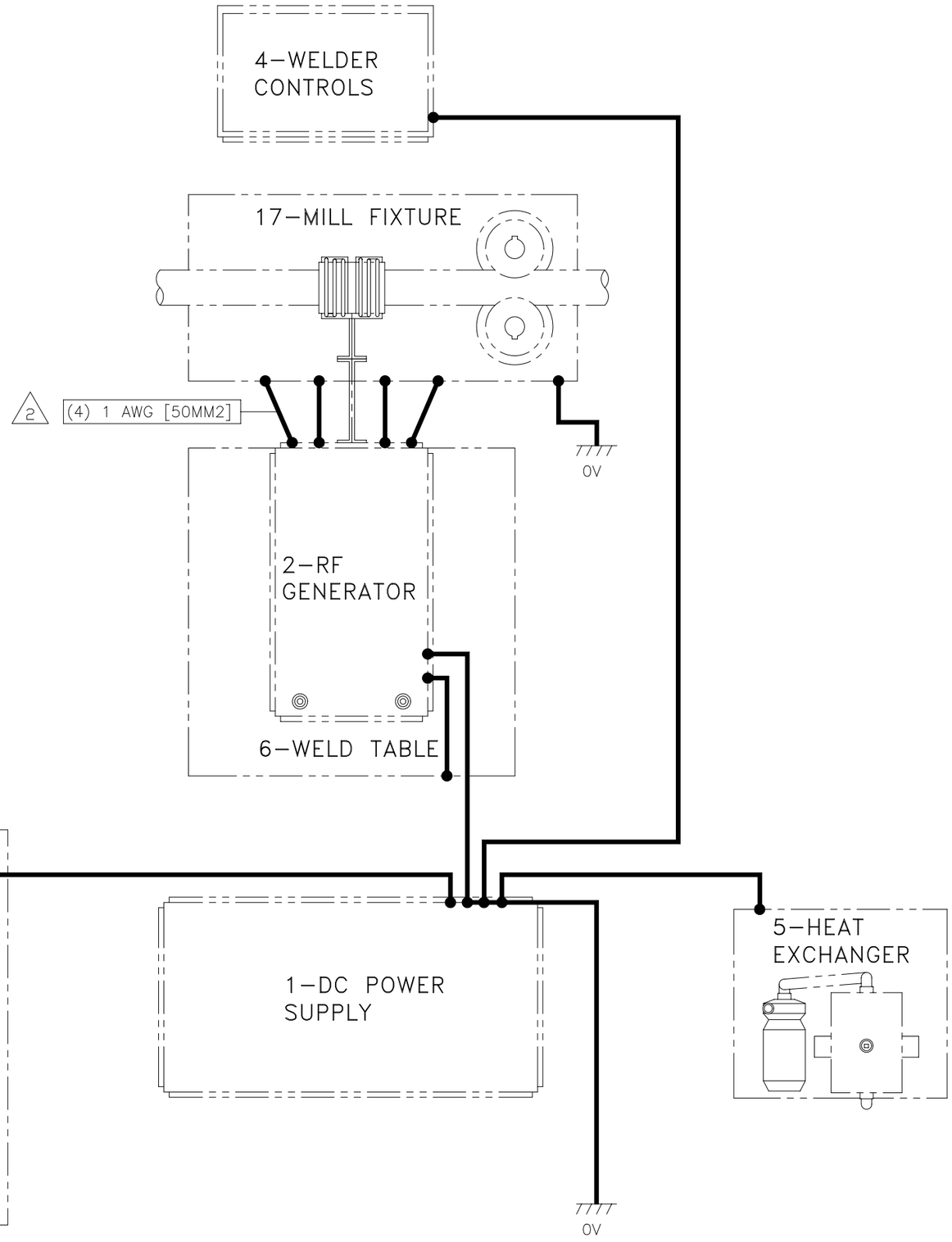
ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03
A	04102	DEL EARTH CABLE SIZES "SEE INTRCNNCT"		TAT			07/15/04

SYSTEM GROUNDING

NOTES:

1. ALL GROUND CABLES ARE 10 AWG [6MM2] GRN/YEL UNLESS OTHERWISE SPECIFIED.
2. RUN GROUNDING CABLES FROM A SINGLE GROUND POINT ON THE RF CAPACITOR BUS TO (4) INDIVIDUAL LOCATIONS ON THE MILL BASE. KEEP WIRES AS SHORT AS POSSIBLE AND EQUAL IN SPACING AND DISTANCE. MINIMUM SPACING ON MILL FIXTURE IS 12 INCHS [305MM].



THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 3

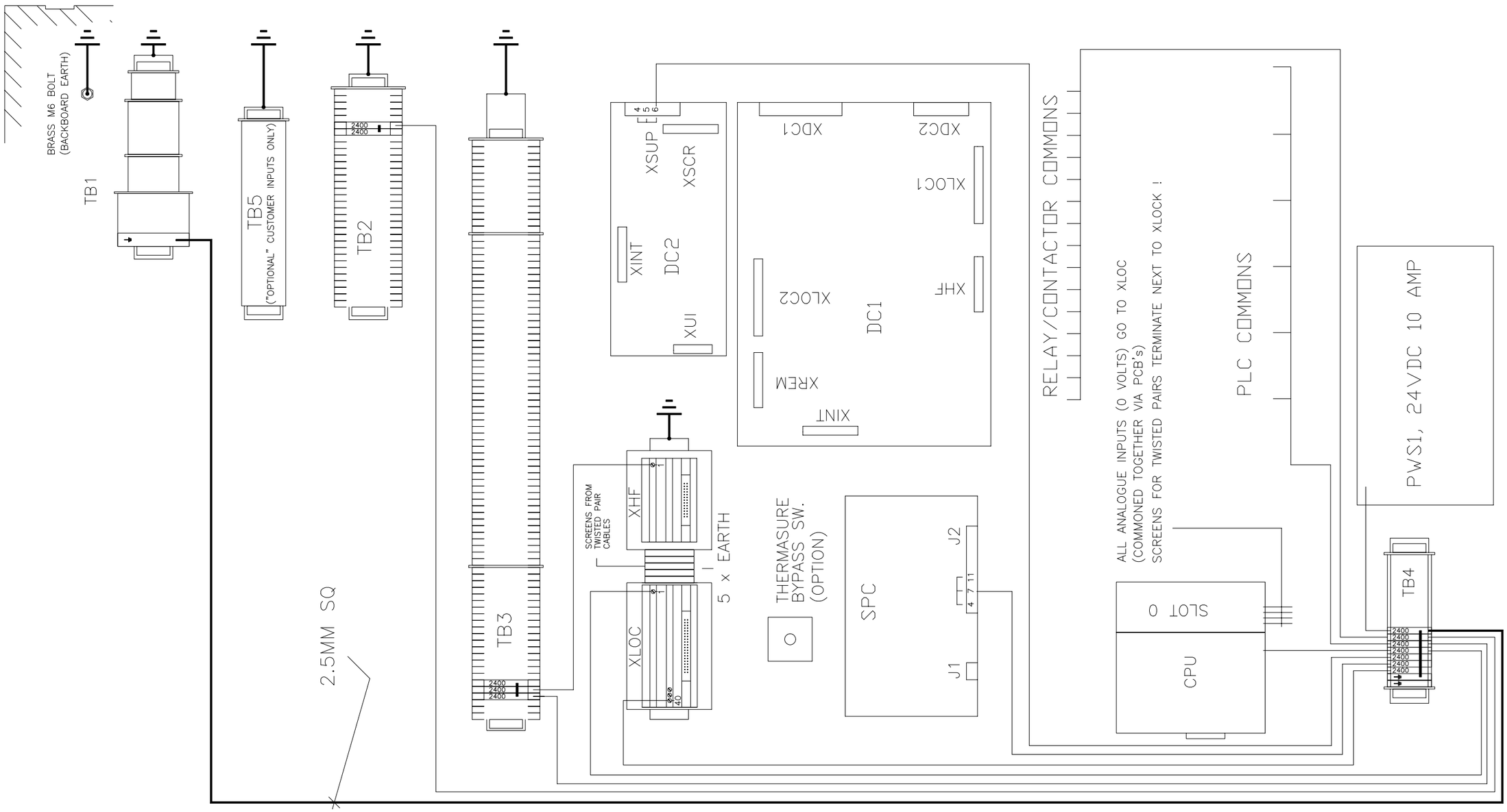
ENG–REF:

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03

TYPICAL DC PANEL 0 VOLT (COM) WIRING

NOTES:–

1. PANEL COMPONENT PREFIX IS "1" (IE, 1–CB1,1–CB2,1–CR1, etc)
2. MINIMUM SIZE CABLE 1.5MM SQ.



THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

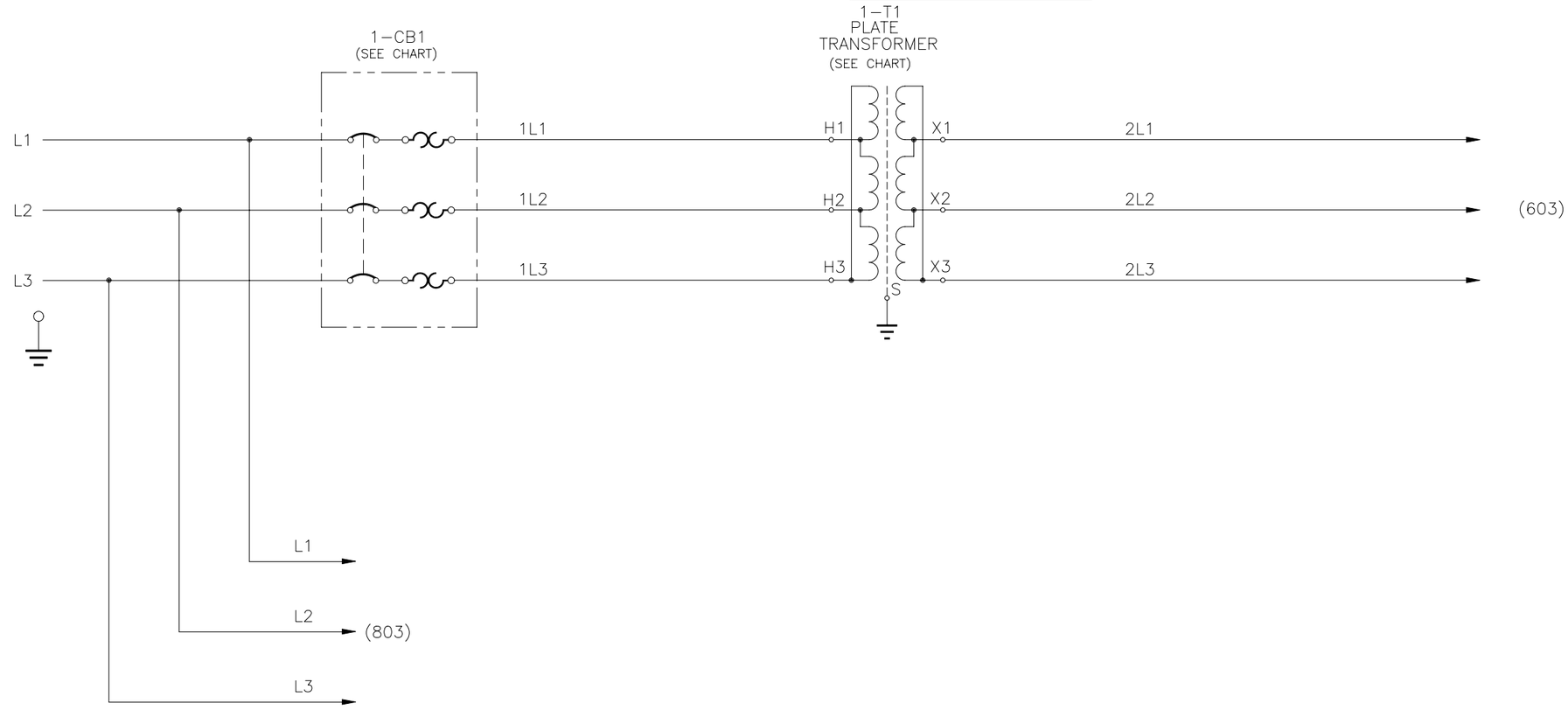
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE	NTS	DO NOT SCALE DRAWING COPY	SHEET	3A

ENG–REF:

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03

50–350 KW UNITS



UNIT KILOWATTS

	50	100	150	200	250	300	350
1–CB1	125A	250A	400A	630A	630A	800	800A
1–T1	75KVA	150KVA	225KVA	300KVA	375KVA	450KVA	525KVA

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE	DO NOT SCALE DRAWING COPY	SHEET
N/A		4

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03

400–1200 KW UNITS

21–CB1 (SEE CHART)

21–T1 PLATE TRANSFORMER (SEE CHART)

L1 L2 L3 — 1L1 1L2 1L3 — H1 H2 H3 — X1 X2 X3 — 2L1 2L2 2L3 — (603)

S

95MM² BLACK

125/200

21–FS1R 21–FS1Y 21–FS1B

ALTERNATIVE ARRANGEMENT IF 21–T1 IS SUPPLIED BY THERMATOOL.

21–T1 PLATE TRANSFORMER (SEE CHART)

1–CB1 (SEE CHART)

L1 L2 L3 — H1 H2 H3 — X1 X2 X3 — 1L1 1L2 1L3 — (603)

L1 — (803)

L2 — (803)

L3

UNIT KILOWATTS

	400	500	600	800	1000	1200	
1–CB1	2000A	2500A	3200A	4000A	5000A	6300A	WHEN 21–T1 IS CUSTOMER SUPPLY.
21–CB1	1000A	1250A	1600A	2000A	2500A	3200A	WHEN 21–T1 IS THERMATOOL SUPPLY.
21–T1	600KVA	750KVA	900KVA	1200KVA	1600KVA	1800KVA	

15L1 15L2 15L3

3x35MM² BLACK

3x10MM² BLACK

21–FS2R 21–FS2Y 21–FS2B — 100/100

400–600KW UNITS
16MM² CABLE/TERMS

4L1 4L2 4L3

(803)
DC POWER & CONTROL CABINET

21–FS3R 21–FS3Y 21–FS3B — 20/20

6MM² BLACK

16L1 16L2 16L3

21–CB3 0.5A

134 135

21–T2 1A
100VA
400/115 (230) VAC

21–CON1 25A

11L1 11L2 11L3

(1206)

21–SS1 — 139 140

109

21–LT3 21–LT4 — TRANSFORMER CABINET LIGHTING

1–SS1 — 141

DC & CONTROL CABINET LIGHTING
(1–LT3 IN CONTROL PANEL)

21–MS1 (4A) — 4T1 4T2 4T3 — M

21–MTR1
TRANSFORMER CABINET
FAN #1
1.1KW
FLC 2.8A

(1317)

21–MS2 (4A) — 5T1 5T2 5T3 — M

21–MTR2
TRANSFORMER CABINET
FAN #2
1.1KW
FLC 2.8A

(1317)

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 5

ENG–REF:

AC POWER DISTRIBUTION (CURRENT FEEDBACK)

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
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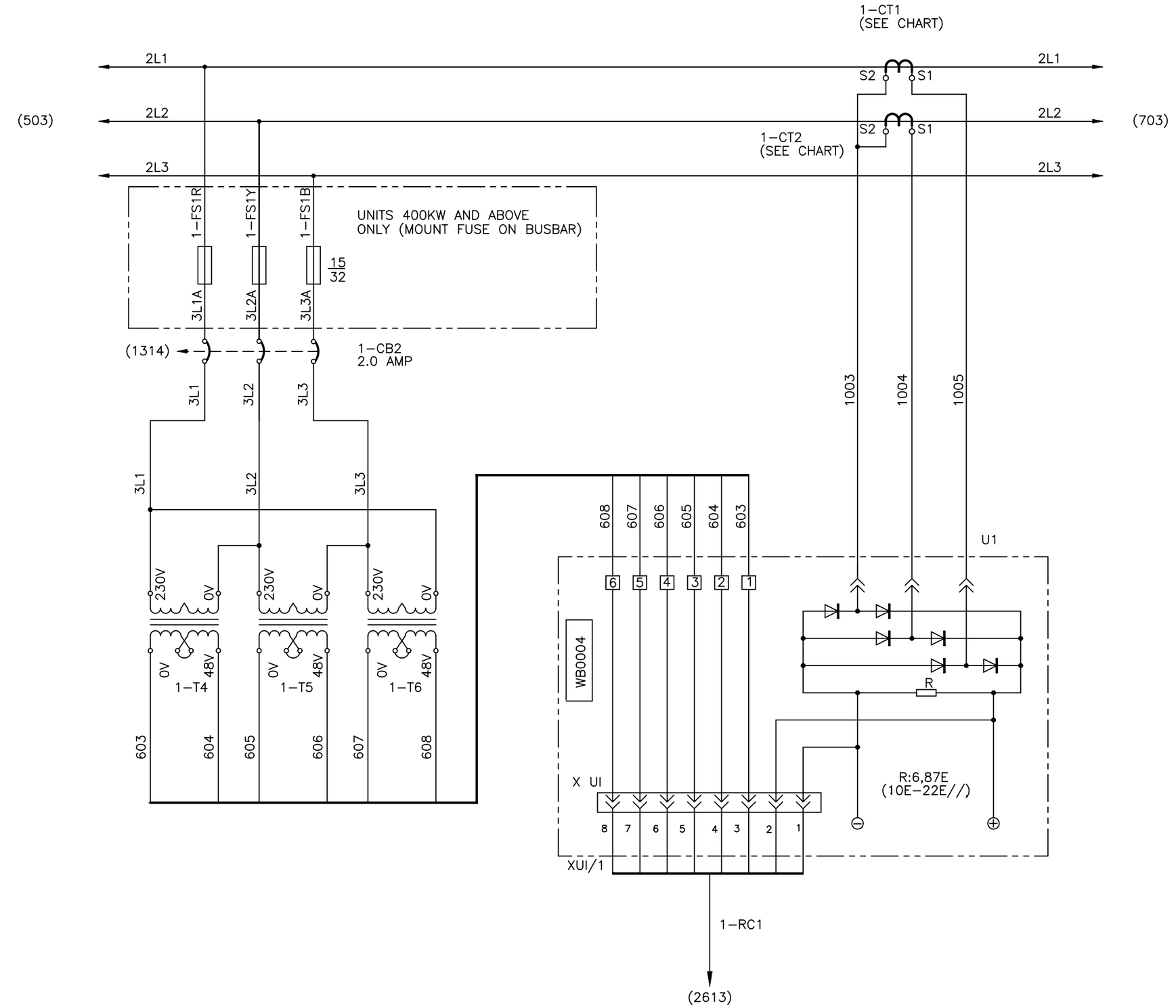


UNIT KILOWATTS	1–CT1,1–CT2 RATIO
50KW	300:1
100KW	600:1
150KW	1000:1
200KW	1250:1
250KW	1800:1
300KW	1800:1
350KW	2500:1
400KW	2500:1
500KW	3500:1
600KW	3500:1
800KW	5000:1
1000KW	6000:1
1200KW	8000:1

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE	DO NOT SCALE DRAWING COPY	SHEET
N/A		6

ENG–REF:

AC POWER DISTRIBUTION (DC RECTIFIERS)

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03

2L1

(603) 2L2

2L3

1-PF1
SCR PULSE FIRING BOARD
WB0005

TO 1-DC2 CONTROL BOARD (2613)

1-RC5

XSCR/1

L1 (D) – G 611 K 612

L1 (A) + G 609 K 610

XSCR/2

L2 (E) – G 615 K 616

L2 (B) + G 613 K 614

L3 (F) – G 619 K 620

L3 (C) + G 617 K 618

SCR PANEL

2L3 2L2 2L1

1-MOV1 1-MOV2 1-MOV3

901 902

1-SCR4 (612/611) 1-R4 1-C4

1-SCR1 (610/609) 1-C1 1-R1

1-SCR5 (616/615) 1-R5 1-C5

1-SCR2 (614/613) 1-C2 1-R2

1-SCR6 (620/619) 1-R6 1-C6

1-SCR3 (618/617) 1-C3 1-R3

901 902

–VE +VE

SNUBBER

2.5MM SQ GRN/YEL

10 Ohm 25W (METAL CLAD)

1µF 450vAC (PP)

1µF 450vAC (PP)

10 Ohm 25W (METAL CLAD)

WD0118

2.5MM SQ BLK

E1 S2

1-L1
(SEE CHART)

S1 E2

903 +

904 –

(3201)

901 902

S2 E1

1-L1

E2 S1

903

904

ALTERNATE 4-600KW ARRANGEMENT

UNIT KILOWATTS	1-L1	"ALTERNATE"
50	4.22mH –	
100	2.11mH @520ADC	
150	1.40mH @781ADC	1.40mH @1042@DC
200	1.05mH @1042ADC	
250	0.84mH @1302ADC	0.84mH @1563ADC
300	0.70mH @1563ADC	
350	0.61mH @1800ADC	0.61mH @2057ADC
400	0.53mH @2057ADC	
500	0.42mH @2575ADC	0.42mH @3091ADC
600	0.35mH @3091ADC	
800	0.27mH @4096ADC	0.27mH @5121ADC
1000	0.21mH @5121ADC	
1200	0.18mH –	

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 7

ENG-REF:

AC POWER DISTRIBUTION (AUXILLARY CONTROLS)

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03
A	04102	CB4 WAS 6A (INRUSH 30x ON T2 FROM BWS)		TAT			07/16/04
B	04256	CB6 WAS 7A (INRUSH 30x ON T3 FROM BWS)		TAT			11/17/04

(409) 50–350KW – L1,L2,L3. & 6MM²

(516) 400–600KW – 4L1,4L2,4L3. & 16MM²

BLK

1–CB3 AUXILLARY BREAKER (SEE CHART)

1–DISC1 AUXILLARY DISCONNECT

1–CON1 ON/OFF CONTACTOR

L1 4L1 — 5L1 — 6L1 — 7L1

L2 4L2 — 5L2 — 6L2 — 7L2 — (903)

L3 4L3 — 5L3 — 6L3 — 7L3

(12A02)

6MM SQ. BLK

1–CB18 1A

134 — 135

1–T7 1A 100VA 380/115V (230)

109 — 139

1–SS1 OFF ON

141 — 1–LT3

CONTROL CABINET LIGHTING

APPLIES ONLY TO 50–350KW WELDER (SINGLE CABINET)

(1316) ← 1–MS5 (2.5–4A) |> |> |>

6L1A 6L2A 6L3A

1–CON3A (12A10) ← → 1–CON3B (12A11)

6T1 6T2 6T3

BRAKE RECTIFIER (Typ.LENSE14.630.14.004)

+ve −ve

M

6–MTR3 Z AXIS MOTOR 415/380VAC 1.1KW

BRAKE.

INSTALLED ONLY ON WELDER FITTED WITH 3 AXIS TABLE

1–T2 380/420/460/115 (230) 1.5 KVA

8L1 — 8L2

1–CB4 10 AMP

(1313) ← 1–CB6 10 AMP

9L2 — 9L3

2.5MM SQ. RED

1–T3 380/420/460/115 (230) (SEE CHART)

601

2.5MM SQ. WHT

1–CB7 (SEE CHART)

(1313) ← (FOR 230V MULTIPLY CHART BY 0.5)

600 → (3503)

602 → (3501)

1–CB16 0.5A

621 → (3516)

(1313)

101 — 100

1–CB5 16 AMP (10 AMP FOR 230V)

1–LT2 — 21–LT2

100 → (1001) (2803)

1–ESR2

103 → (1716) (1101)

13 — 14

(1216)

102 → (1001) (2802)

CONTROL ON LAMP (POWER CAB)

CONTROL ON LAMP (TRANS CAB)

UNIT KILOWATTS

	50–200	250–350	400–600	800	1000–1200
1–CB3	25A	25A	30A	40A	100A
1–CB7	10	20	20	20	32
1–T3	1 KVA	2 KVA	2 KVA	2 KVA	3 KVA
1–DISC1	32A	32A	32A	63A	63A

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

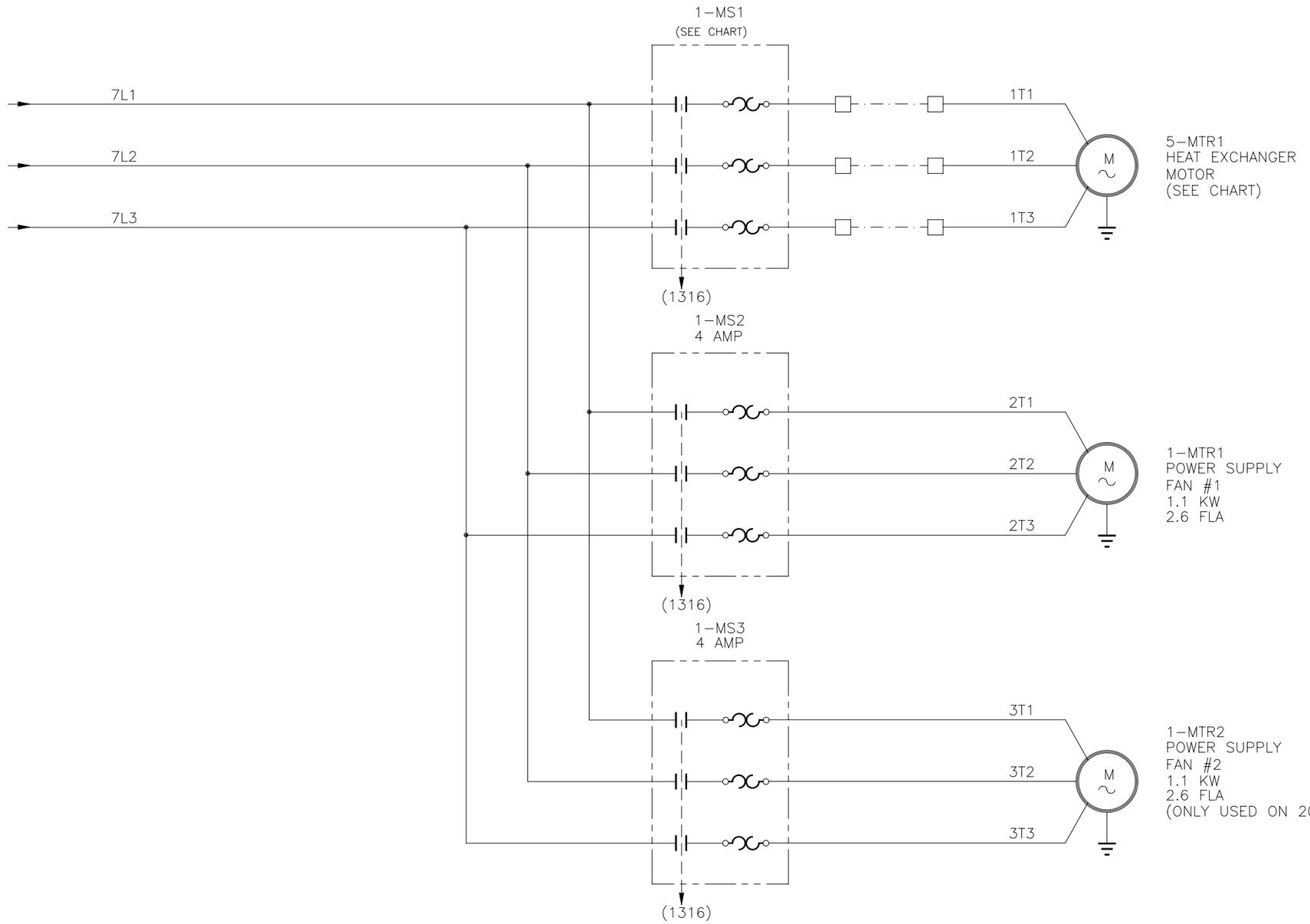
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	B

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 8

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03
D	06151	50–150KW PUMPS WERE 2.2KW NOW 5.5KW	10A	TAT			06/23/06

AC POWER DISTRIBUTION



UNIT KILOWATTS

		50–350	400–600	800–1200
50/60HZ	1–MS1	16A	16 A	50 A
	5–MTR1	5.5 KW	7.5 KW	22 KW

THERMATOOL

TITLE
ELECTRICAL – SCHEMATIC
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	D

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 9

ENG–REF:

AC CONTROL

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03
A	04102	ALTRNT WIRNG 1-CB1(NZM1,2,3,4,7,10,12+IZM)		TAT			07/15/04

(816)
102
115 (230) VAC
SUPPLY

(814)
100
115 (230) VAC
NEUTRAL

1-ESR2
23 24
(1216)

104
105
106
108

1-CR1
5 3
5 1
(1303)

DC1
K2
XDC1-1 XDC1-2

72 M 74
71 E
70 A
D1 D2

MAIN CIRCUIT BREAKER
MOTORS
(1811)

UNDER VOLTAGE
TRIP

CIRCUIT BREAKER ARRANGEMENT
UP TO 350kW UNIT
(MOELLER NZM 1,2,3,4,7,&10 125-800A)

1-CB10
10 AMP

112

1-PWS1
24VDC SWITCHED MODE PS
115/230VAC-24VDC @10AMP
L N
+ -

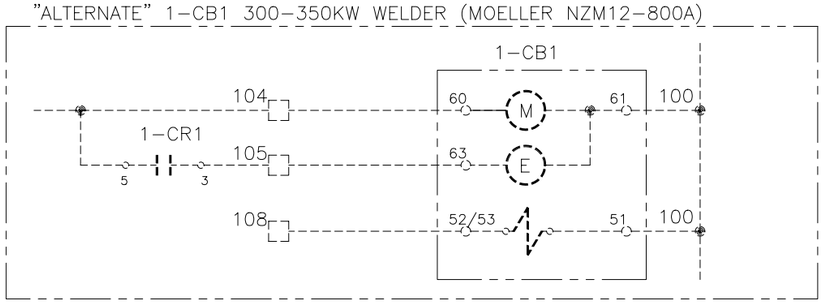
24VDC POWER SUPPLY

2403
1-ESR2 43 (1216) 44
2404

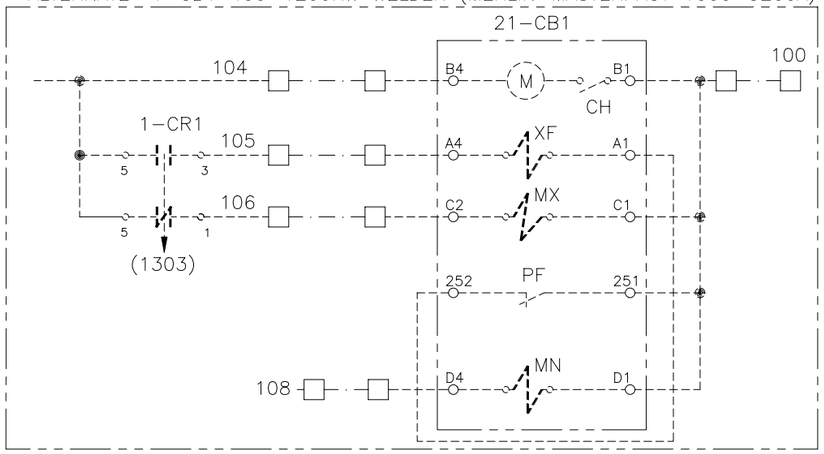
2403
2400
100

(2001) (2806) (1201) (1201) (2812) (3511)

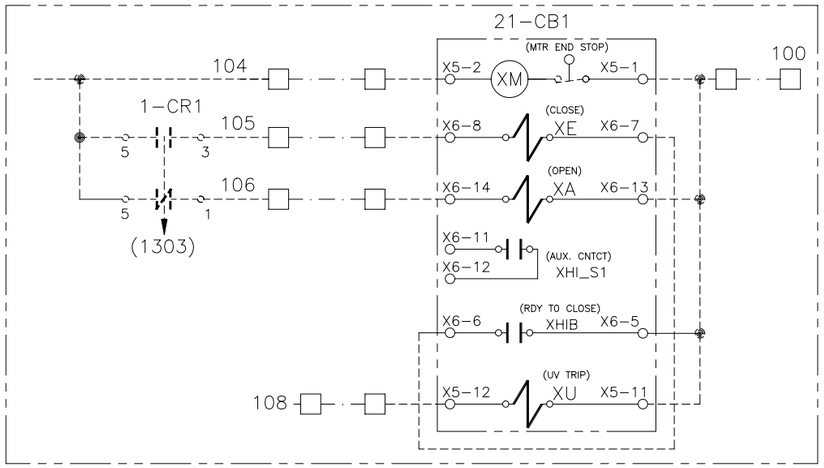
"ALTERNATE" 1-CB1 300-350KW WELDER (MOELLER NZM12-800A)



"ALTERNATE" 1-CB1 400-1200KW WELDER (MERLIN-MASTERPACT 1000-3200A)



"ALTERNATE" 1-CB1 400-1200KW WELDER (MOELLER_IZM SERIES 1000-6300A)



THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 10

ENG-REF:

SINGLE PHASE AC MOTORS, CONTROL

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/10/03

(815)
103

115 (230) VAC
SUPPLY

1-CB12
2 AMP

103

113

(1313)

1-CR11
(2007)
3 5
4 6

114

(3512)

1-CR12
(2008)
3 5
4 6

115

(3513)

1-CR13
(2009)
3 5
4 6

116

(3514)

1-CR14
(2010)
3 5
4 6

117

(3515)

(3511)
100

115 (230) VAC
NEUTRAL

INSTALLED ONLY ON WELDER
FITTED WITH AUTOMATCH

2-MTR1
PARALLEL INDUCTOR
MOTOR
(230) 115VAC
(.2 FLA) .4 FLA

2-MTR2
SERIES INDUCTOR
MOTOR
(230) 115VAC
(.4FLA) .8FLA

OMITTED ON 600 & 800kHz WELDERS

— — — DENOTES 230V SYSTEM WIRING ONLY (IF USING DAYTON 115V – 60Hz, 1/10 HP. ACTUATOR)

1-CON1

103
51
52
(12A01)

118

1-CB20
2 AMP

(1313)

118A

1-T20
230/115V

100
(1019)

118B

1-CR3
(1306)
5 3

1-9

120
5
RED

6
WHT

100

6-MTR1
X AXIS
MOTOR
115VAC
1.4 FLA

1-CB13
2 AMP

118

119

1-CR4
5 3

1-10

121
4
BLK

3

NOT ON 230V SYSTEMS

(1313)

(1307)

1-CB14
2 AMP

118

(1313)

122

FWD. LIMIT

123B

1-CR5
(1308)
5 3

123

123
BLK

1-CR5
6 4

4μF

M

WHT

6-MTR2

SINGLE PHASE/BRAKED/50W
RACK & PINION MOTOR
110/230VAC
1.7/0.8 FLA

REV. LIMIT

124B

1-CR6
5 3
(1309)

124

124
GRY

1-CR6
6 4

122A

122A

BRAKE
115/230VAC

100

SUPPRESSOR
100Ω 0.1μF

INSTALLED ONLY ON WELDERS
FITTED WITH 3 AXIS TABLE

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

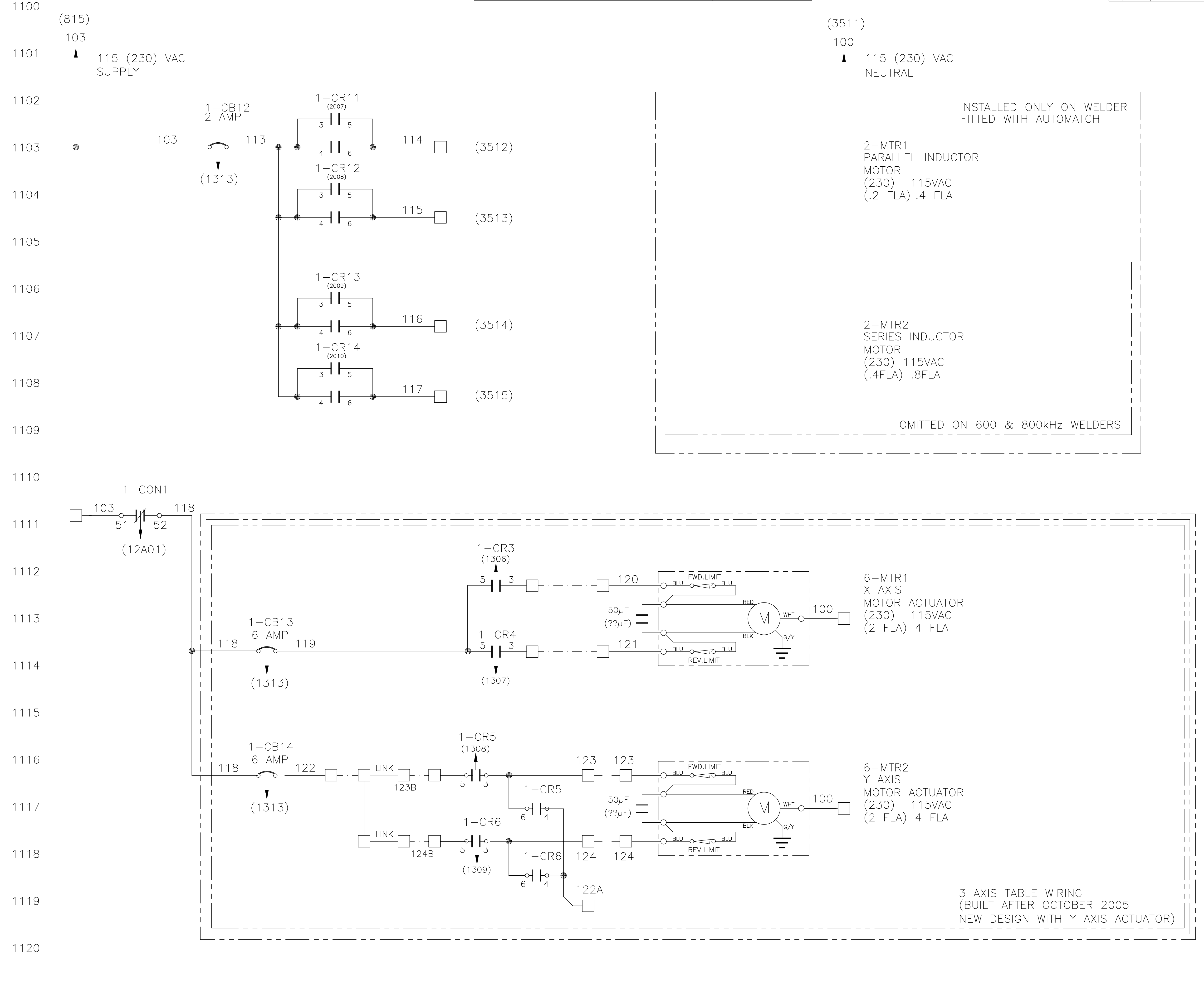
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 11

ENG-REF:

SINGLE PHASE AC MOTORS, CONTROL

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
C	05222	ADD SH11A "FIRST ISSUE"		TAT			11/16/05



(815)
103
115 (230) VAC
SUPPLY
1-CB12
2 AMP
103
113
(1313)
1-CR11
(2007)
114
(3512)
1-CR12
(2008)
115
(3513)
1-CR13
(2009)
116
(3514)
1-CR14
(2010)
117
(3515)
(3511)
100
115 (230) VAC
NEUTRAL
INSTALLED ONLY ON WELDER
FITTED WITH AUTOMATCH
2-MTR1
PARALLEL INDUCTOR
MOTOR
(230) 115VAC
(.2 FLA) .4 FLA
2-MTR2
SERIES INDUCTOR
MOTOR
(230) 115VAC
(.4FLA) .8FLA
OMITTED ON 600 & 800kHz WELDERS
1-CON1
103
51
52
118
(12A01)
1-CR3
(1306)
120
FWD.LIMIT
BLU
RED
WHT
BLK
G/Y
REV.LIMIT
50µF
(??µF)
1-CB13
6 AMP
118
119
(1313)
1-CR4
121
(1307)
6-MTR1
X AXIS
MOTOR ACTUATOR
(230) 115VAC
(2 FLA) 4 FLA
1-CB14
6 AMP
118
122
(1313)
LINK
123B
1-CR5
(1308)
123
1-CR6
124B
124
(1309)
122A
6-MTR2
Y AXIS
MOTOR ACTUATOR
(230) 115VAC
(2 FLA) 4 FLA
3 AXIS TABLE WIRING
(BUILT AFTER OCTOBER 2005
NEW DESIGN WITH Y AXIS ACTUATOR)

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	C

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 11A

ENG-REF:

DC CONTROL

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/21/03

(1019) 2403 +24VDC

1 21-PB1 XFORMER CAB E-STOP: 7004A, 07004

2-PB1 HF GENERATOR E-STOP: (3603) 2-1, (3603) 2-6, (3604) 2-8, (3604) 2-7

1-PB1 DC PWR. SUP. E-STOP: 4007A, 4007

2 4-PB4 CONSOLE E-STOP: 4006A, 4006

4008A, 4008, 2400, 2406A

(1904) (1911) (1910) (22A10)

1-DS1 2457A 2457

1-DS2 3

4009A 4009 (1905)

2-DS5 2455A 2455
2-DS4 2454A 2454
2-DS3 2453A 2453
2-DS2 2452A 2452
2-DS1

(3609) 2-16 (3608) 2-15 (3602) 2-4 (3602) 2-5

4010A 4010 (1906)

1 21-DS3 2436A 2436
21-DS2 2437A 2437
21-DS1 7003A 07003 (22A09)

MILL/PFC GUARD SWITCH: 2506A 2506

1-ESR1 (1019) 2400

S21 (A2) A2 -VE — 24VDC COM

S31 (X3)

S11 DUAL CH. OP.
S12 DUAL CH. OP.
PILZ PNOZ13 ONLY

LINK X1 & X3 SIEMENS 3TK2805 RELAYS ONLY

PNOZ X13 (3TK2805)

S22 (X6) 2506A
S32 (X5) 2506

A1 (A1) +VE

2 4-PB3 RESET: 2504, 2406

S33 (X1) RST
S34 (X4) RST

1-ESR2 PNOZ X13 (3TK2805)

S14 (X4) RST
S13 (X1) RST
A1 (A1) +VE
S31 (X3)

LINK X1 & X3 SIEMENS 3TK2805 RELAYS ONLY

2407

MILL E-STOP: 2400

4005A 1-ESR1 33 34 2507A

2407 04005 1-ESR1 43 44 2507

(1909)

S22 (X6) 2507A
S32 (X5) 2507

S11 DUAL CH. OP.
S12 DUAL CH. OP.
PILZ PNOZ13 ONLY

2400

S21 (A2) A2 -VE

(12A01) (12A01)

1-ESR1 EMERGENCY STOP RELAY (WELDER)

1218	1907
1219	
2303	
2304	
–	

1-ESR2 SYSTEM EMERGENCY STOP RELAY (MILL)

814	–
1003	
1018	
12A02	
2616	

NOTES:

1. ONLY USED ON 400–1200KW UNIT WITH THERMATOOL SUPPLIED TRANSFORMER.
2. NORMALLY FITTED ON CONSOLE BUT MAY BE FITTED IN REMOTE LOCATION
3. 1-DS2 NOT FITTED ON 50 – 150KW UNITS

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 12

ENG-REF:

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/21/03

DC CONTROL

(1220) 2403

+24VDC

2403

1–ESR2

53 54

(1215)

04012

(1908)

1–CR9

5 3

(2005)

2405

1–CON1

A1 A2

2400

(1220) 2400

24VDC COM

ON/OFF CONTACTOR
(803,1111,1811, 12A10)

21–CON1

A1 A2

TRANSFORMER CABINET CONTACTOR
(400–1200KW UNITS ONLY)

UNIT KILOWATTS

	50–350	400–600	800	1000–1200
1–CON1	24A	24A	30A	38A

1–CON1 61 62 (12A03)

2445

LIMIT UP

2500

1–CR7 5 3 (1310)

2438A

1–CON3B 21 22

2439A

1–CON3A A1 A2

Z AXIS UP

2–MTR2
STARTER AUXILLARIES
(813)

LIMIT DOWN

2501

1–CR8 5 3 (1311)

2440A

1–CON3A 21 22

2441A

1–CON3B A1 A2

Z AXIS DOWN

INSTALLED ON WELDER
WITH 3 PHASE Z AXIS MOTOR.

REMOVE EARTH LINK!

1–PLC1

M

L+ DC

M 24V

1–CB8 2A

2431

SIEMENS PLC CPU

2403 (1301)

2400 (1301)

NOTES:

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 12A

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

DC CONTROL

(12A19)
2403
+24VDC

DC1
K3
XDC1–3 XDC1–4

04000
(1904)

1–CR1
A1 A2
MAIN CIRCUIT BREAKER RELAY (1004,1005)

(12A19)
2400
24VDC COM

4–SS5 ⚠2
3 4 LEFT
2411
1–CR3
A1 A2
WELD TABLE X–AXIS LEFT (1109)

3 4 RIGHT
2412
1–CR4
A1 A2
WELD TABLE X–AXIS RIGHT (1110)

4–SS6
3 4 LEFT
2413
1–CR5
A1 A2
WELD TABLE Y–AXIS IN (1112)

3 4 RIGHT
2414
1–CR6
A1 A2
WELD TABLE Y–AXIS OUT (1113)

4–SS7
3 4 LEFT
2415
1–CR7
A1 A2
WELD TABLE Z–AXIS UP (12A10)

3 4 RIGHT
2416
1–CR8
A1 A2
WELD TABLE Z–AXIS DOWN (12A11)

OPTIONAL – INSTALLED ON 3–AXIS TABLE ONLY

1–CB2 (605) 2417
1–CB6 (806) 2418
1–CB7 (811) 2419
1–CB12 (1103) 2420
1–CB13 (1109) 2421
1–CB14 (1116) 2422
1–CB16 (813) 2434
1–CB20 (11A11) 03008
(1804)
⚠3
CIRCUIT BREAKER AUXILLARIES

1–MS1 (905) 2423
1–MS2 (910) 2458
1–MS5 (808) 2424
1–MS3 (915) 03009
(1805)
⚠4
⚠1
MOTOR STARTER AUXILLARIES

21–MS1 (512) 2432
21–MS2 (515) 07005
(22A11)
TRANSFORMER CABINET MOTOR STARTER AUXILLARIES (400–1200KW ONLY)

1–CR18
A1 A2
2433
(2409)
VOLTAGE OR CURRENT LIMIT RELAY

2403
(1701)

2400
(1701)

NOTES:

⚠1 IF 1–MS3 (FITTED ON 200–350 UNITS ONLY) IS NOT INSTALLED OMIT 2424.

⚠2 NORMALLY FITTED ON CONSOLE BUT MAY BE FITTED IN REMOTE LOCATION

⚠3 OMIT 1–CB20 AND 2434A IF 115V CONTROL

⚠4 IF 1–MS5 (FITTED ON 3 AXIS TABLES WELDER ONLY) IS NOT INSTALLED OMIT 2458

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0
SCALE N/A	DO NOT SCALE DRAWING COPY	SHEET 13	

ENG–REF:

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

1400
1401
1402
1403
1404
1405
1406
1407
1408
1409
1410
1411
1412
1413
1414
1415
1416
1417
1418
1419

BLANK PAGE

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE			SHEET
N/A		DO NOT SCALE DRAWING COPY	14

ENG–REF:

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

1500
1501
1502
1503
1504
1505
1506
1507
1508
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519

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TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE			SHEET
N/A		DO NOT SCALE DRAWING COPY	15

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
B	04256	PLC,CH 0, CORRECT TERM.NO FROM 3 TO 4	4F	TAT			11/16/04

PLC ANALOG INPUTS

CONSOLE

(MAY BE FITTED IN OPTIONAL REMOTE LOCATION)

SLOT 0,2

(PART OF CPU)

313C (314IFM)

(2817) 01000 — 2 (8) (PIW 752) (PIW 128) — CH 0 — MILL SPEED SIGNAL (10VDC = 100%)

(2816) 2400 — 4 (10)

V — 01001A — 12K — 01001 — 5 (11) (PIW 754) (PIW 130) — CH 1 — OUTPUT VOLTAGE SIGNAL (8VDC = 100%)

2400 — 7 (13)

(2405) (2414)

A — 01002A — 12K — 01002 — 8 (14) (PIW 756) (PIW 132) — CH 2 — OUTPUT CURRENT SIGNAL (8VDC = 100%)

2400 — 10 (16)

(2414) (2406)

Hz — 01003A — 12K — 01003 — 11 (17) (PIW 758) (PIW 134) — CH 3 — OUTPUT FREQUENCY SIGNAL (8VDC = 100%)

2400 — 13 (19)

(2415) (2407)

NOTES:
1. NORMALLY FITTED ON CONSOLE BUT MAY BE FITTED IN REMOTE LOCATION

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

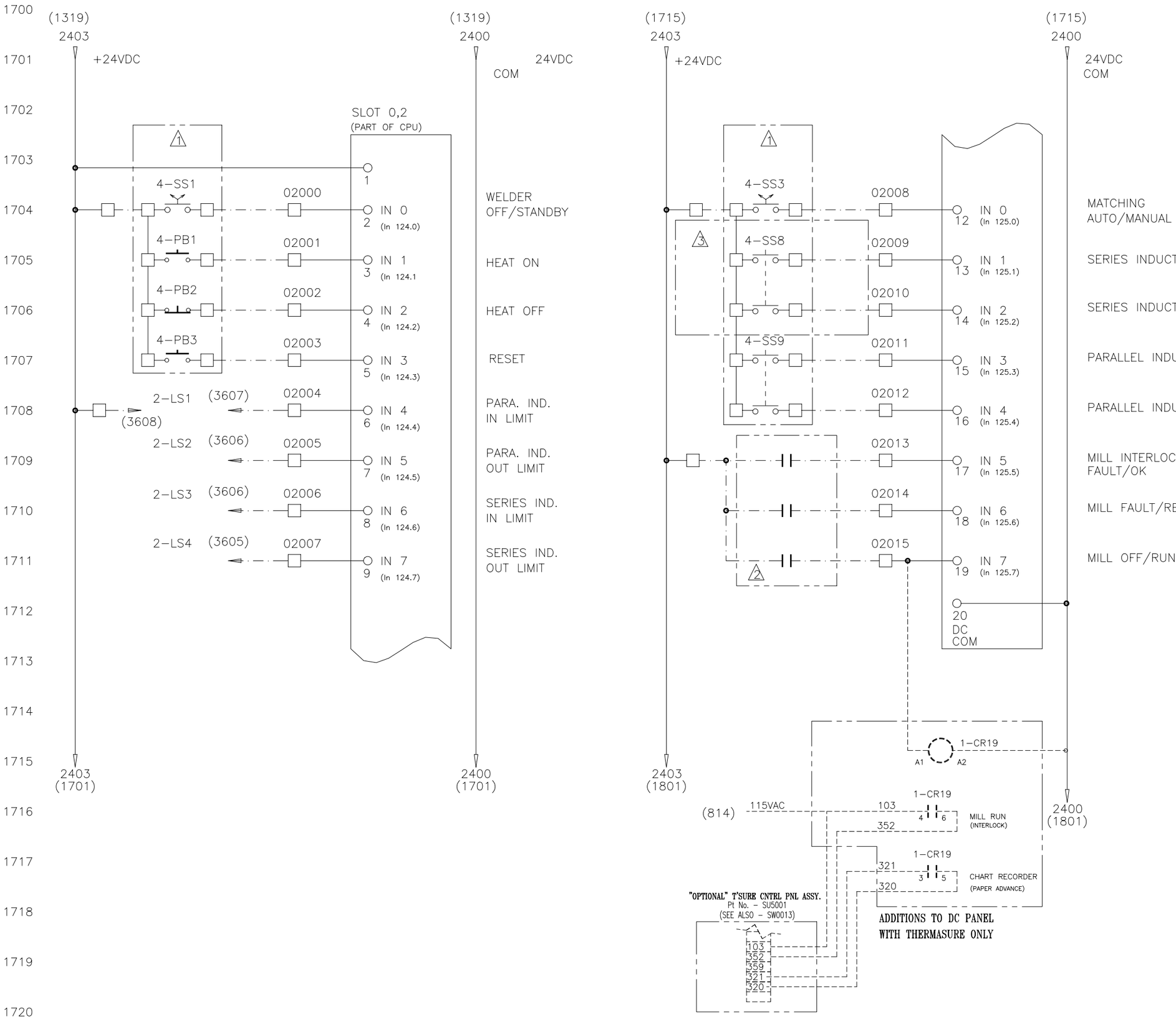
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	B

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 16

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

PLC DIGITAL INPUTS



NOTES:-

1. NORMALLY FITTED ON CONSOLE BUT MAY BE FITTED IN REMOTE LOCATION
2. CUSTOMER INTERLOCK (SEE SHEET 23)
3. OMITTED ON 600 & 800kHz WELDERS

THERMATOOL

TITLE: SCHEMATIC - ELECTRICAL CFI SOLID STATE WELDER

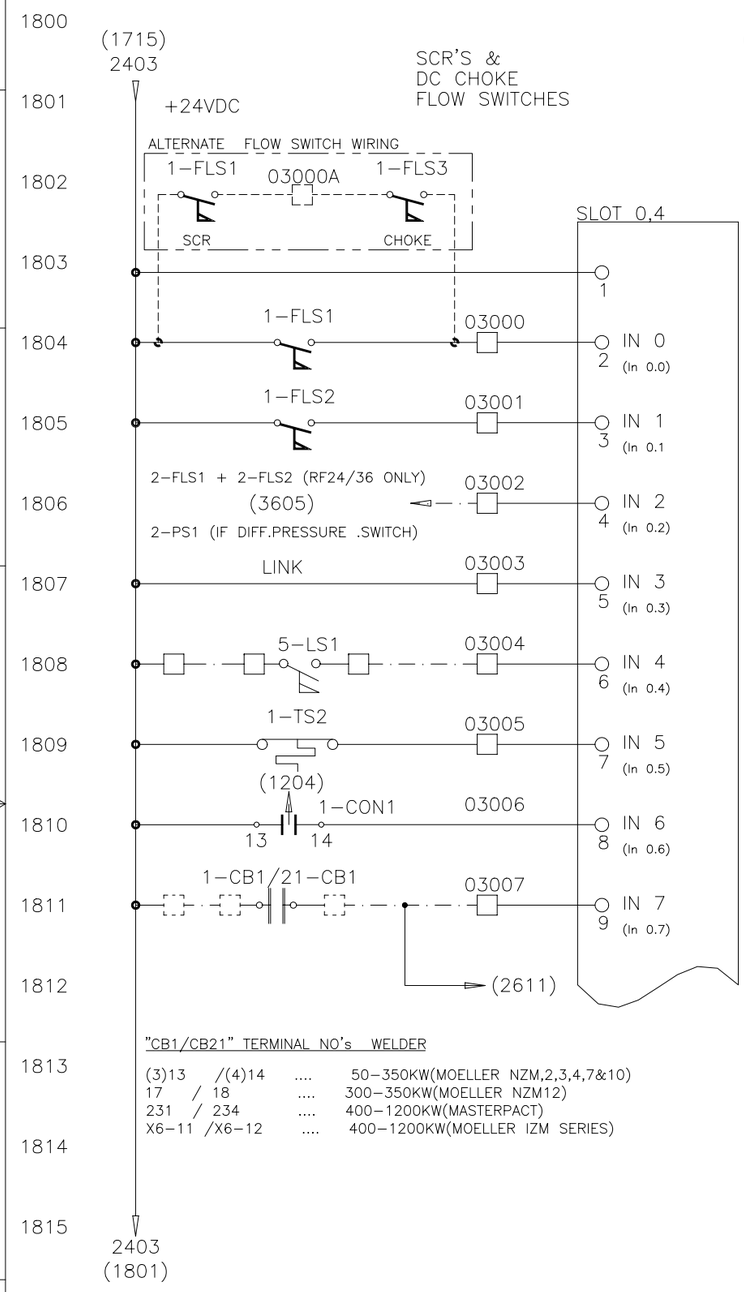
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

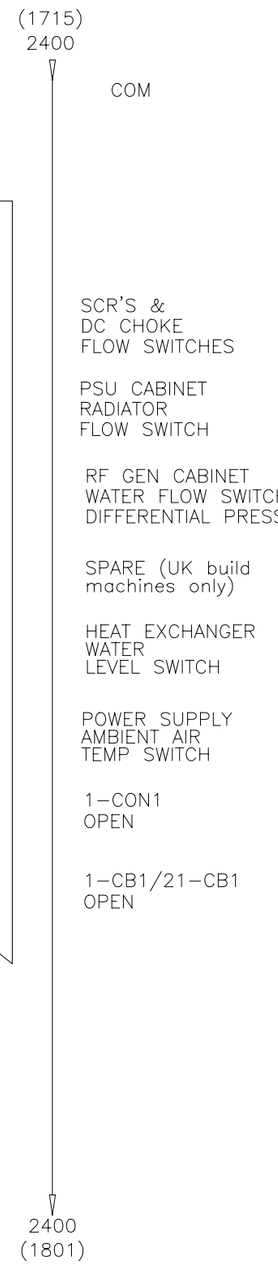
SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 17

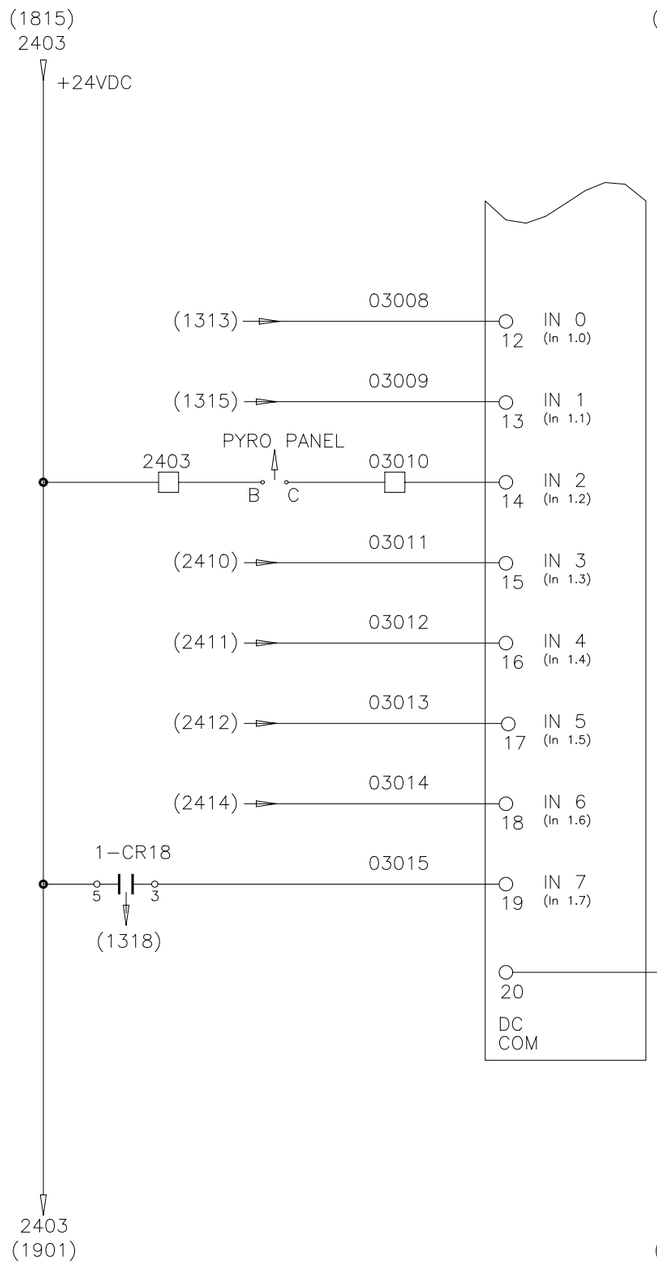
ENG-REF:

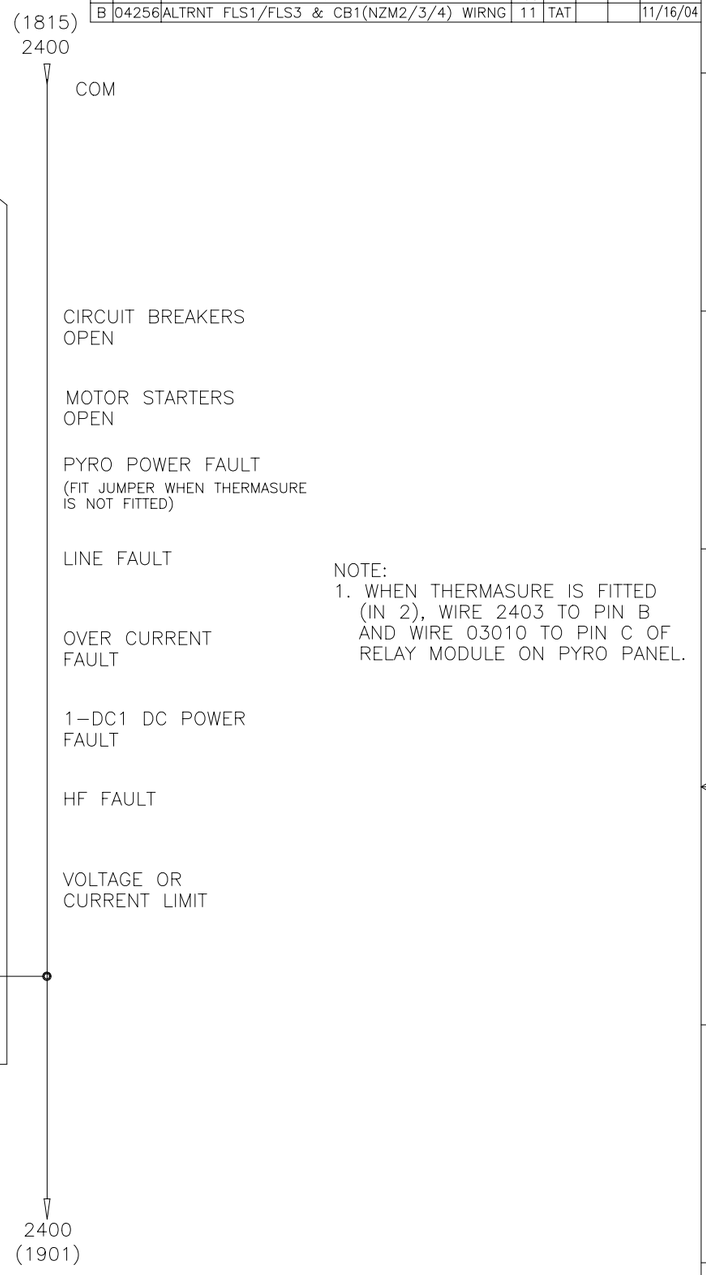
PLC DIGITAL INPUTS

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	SHOW ALTRNT 1-FLS & 1-PS1 WIRING SHOW ALTRNT MAIN 1-CB1 WIRNG	10F 10C	TAT			07/15/04
B	04256	ALTRNT FLS1/FLS3 & CB1(NZM2/3/4) WIRNG	11	TAT			11/16/04









THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	B
SCALE N/A		DO NOT SCALE DRAWING COPY	SHEET 18

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

PLC DIGITAL INPUTS

SLOT 0,5

(1815) 2403 — +24VDC

1903 — 1

1904 — (1303) (2606) — 04000 — IN 0 (In 4.0) — 2

1905 — X-DC1 — K4 6 7 — 04001 — IN 1 (In 4.1) — 3

1906 — X-DC1 — K5 9 10 — 04002 — IN 2 (In 4.2) — 4

1907 — 1-SPC1 1 2 — 04003 — IN 3 (In 4.3) — 5

1908 — 1-SPC1 13 14 — 04004 — IN 4 (In 4.4) — 6

1909 — (1219) — 04005 — IN 5 (In 4.5) — 7

1910 — (1203) — 04006 — IN 6 (In 4.6) — 8

1911 — (1203) — 04007 — IN 7 (In 4.7) — 9

(1815) 2400 — 24VDC COM

1-CB1 OPEN/CLOSED

HEAT OFF/ON

INVERTER OFF/READY

MAN/AUTO SPEED POWER MODE

MILL OFF/RUN FROM SPC

MILL E-STOP

CONSOLE E-STOP

DC PWR. SUPPLY E-STOP

(1915) 2403 — +24VDC

(1203) — 04008 — IN 0 (In 5.0) — 12 — RF GEN. E-STOP

(1205) — 04009 — IN 1 (In 5.1) — 13 — DC POWER SUPPLY DOORS CLOSED

(1208) — 04010 — IN 2 (In 5.2) — 14 — RF GENERATOR DOORS CLOSED

1-ESR1 — PILZ X13 (SIEMENS 3TK2805) — 61 62 (65) (66) — (1206) — 04011 — IN 3 (In 5.3) — 15 — E-STOP RELAY 1 (WELDER)

(12A03) — 04012 — IN 4 (In 5.4) — 16 — E-STOP RELAY 2 (MILL)

1-TS1 — 04013 — IN 5 (In 5.5) — 17 — POWER SUPPLY INPUT WATER TEMP SWITCH

2-TS 1/5 — (3601) — 04014 — IN 6 (In 5.6) — 18 — RF GENERATOR WATER TEMP SWITCH 1/5

2-TS 6/12 — (3601) — 04015 — IN 7 (In 5.7) — 19 — RF GENERATOR LEADS WATER TEMP SWITCH 6/12

20

DC COM

(1915) 2400 — 24VDC COM

2403 (1901)

2400 (1901)

2403 (2101)

2400 (2001)

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 19

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

PLC DIGITAL OUTPUTS (E-STOPPED)

(1019) 2404

+24VDC

SLOT 0,2 (PART OF CPU)

21

31

VAC/ VDC1

OUT 0 (Out 124.0)	22	05000	(2409)
OUT 1 (Out 124.1	23	05001	(2413)
OUT 2 (Out 124.2)	24	05002	(2410)
OUT 3 (Out 124.3)	25	05003	(2411)
OUT 4 (Out 124.4)	26	05004	(2414)
OUT 5 (Out 124.5)	27	05005	
OUT 6 (Out 124.6)	28	05006	
OUT 7 (Out 124.7)	29	05007	

(1915) 2400

24VDC COM

CLOSE BREAKER (1-CB1)	
OPEN BREAKER (1-CB1))	
HEAT ON	
HEAT OFF	
RESET	
SPARE	
SPARE	
SPARE	

2400 (2001)

(2016) 2400

24VDC COM

OUT 0 (Out 125.0)	32	05008	1-CR9	ON/OFF CONTACTOR CONTROL RELAY (1204)
OUT 1 (Out 125.1)	33			
OUT 2 (Out 125.2)	34	05010	1-CR11	PARALLEL INDUCTOR IN (1103)
OUT 3 (Out 125.3)	35	05011	1-CR12	PARALLEL INDUCTOR OUT (1104)
OUT 4 (Out 125.4)	36	05012	1-CR13	SERIES INDUCTOR IN (1106)
OUT 5 (Out 125.5)	37	05013	1-CR14	SERIES INDUCTOR OUT (1107)
OUT 6 (Out 125.6)	38	05014	1-CR15	WELDER OFF/READY (2305)
OUT 7 (Out 125.7)	39	05015	1-CR16	HEAT OFF/ON (2307)

A1 A2

INSTALLED ONLY ON WELDER FITTED WITH AUTOMATCH

OMITTED ON 600 & 800kHz WELDERS

30

40

2400 (2101)

THERMATOOL

TITLE

SCHEMATIC – DIAGRAM
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 20

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

PLC DIGITAL OUTPUTS

(1915) 2403

+24VDC

SLOT 0,6

1

11

VAC/ VDC1

OUT 0 (Out 8.0) 2

OUT 1 (Out 8.1 3

OUT 2 (Out 8.2) 4

OUT 3 (Out 8.3) 5

OUT 4 (Out 8.4) 6

OUT 5 (Out 8.5) 7

OUT 6 (Out 8.6) 8

OUT 7 (Out 8.7) 9

2403 (2101)

(2016) 2400

24VDC COM

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

2400 (2101)

(2116) 2403

+24VDC

OUT 0 (Out 9.0) 12 — 06008

OUT 1 (Out 9.1) 13 — 06009

OUT 2 (Out 9.2) 14 — 06010

OUT 3 (Out 9.3) 15 — 06011

OUT 4 (Out 9.4) 16 — 06012

OUT 5 (Out 9.5) 17 — 06013

OUT 6 (Out 9.6) 18 — 06014

OUT 7 (Out 9.7) 19 — 06015

10

20

4-LT1 (R)

4-LT2 (G)

4-LT3 (Y)

⚠1

2403 (2201)

(2116) 2400

24VDC COM

SPARE

SPARE

SPARE

SPARE

SPARE

HEAT OFF

HEAT ON

RESET

2400 (2201)

⚠1 NORMALLY FITTED ON CONSOLE BUT MAY BE FITTED IN REMOTE LOCATION

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 21

ENG-REF:

PLC DIGITAL INPUTS (CUSTOMER FAULTS)

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
B	04256	ADD COMMENTS TO CUSTOMER FAULTS		TAT			11/16/04

(2115) 2403 +24VDC

(2115) 2400 24VDC COM

(2215) 2403 +24VDC

(2215) 2400 24VDC COM

F1	2 IN 0 (In 12.0)	CUST. FAULT 1 (STOP CB1)	F9 — 12 IN 0 (In 13.0) — CUST. FAULT 9 (HEAT OFF)
F2	3 IN 1 (In 12.1	CUST. FAULT 2 (STOP CB1)	F10 — 13 IN 1 (In 13.1) — CUST. FAULT 10 (HEAT OFF)
F3	4 IN 2 (In 12.2)	CUST. FAULT 3 (STOP CB1)	F11 — 14 IN 2 (In 13.2) — CUST. FAULT 11 (HEAT OFF)
F4	5 IN 3 (In 12.3)	CUST. FAULT 4 (STOP CB1)	F12 — 15 IN 3 (In 13.3) — CUST. FAULT 12 (HEAT OFF)
F5	6 IN 4 (In 12.4)	CUST. FAULT 5 (HEAT OFF)	F13 — 16 IN 4 (In 13.4) — CUST. FAULT 13 (ALARM)
F6	7 IN 5 (In 12.5)	CUST. FAULT 6 (HEAT OFF)	F14 — 17 IN 5 (In 13.5) — CUST. FAULT 14 (ALARM)
F7	8 IN 6 (In 12.6)	CUST. FAULT 7 (HEAT OFF)	F15 — 18 IN 6 (In 13.6) — CUST. FAULT 15 (ALARM)
F8	9 IN 7 (In 12.7)	CUST. FAULT 8 (HEAT OFF)	F16 — 19 IN 7 (In 13.7) — CUST. FAULT 16 (ALARM)

1 — +24VDC

20 — DC COM

"OPTIONAL" CUSTOMER INPUTS OMITTED IF NOT REQUIRED

2403 (2201)

2400 (2201)

2403 (22A01)

2400 (22A01)

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER.

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	B

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 22

ENG–REF:

PLC DIGITAL INPUTS (CUSTOMER FAULTS)

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
B	04256	ADD COMMENTS TO CUSTOMER FAULTS		TAT			11/16/04

22A00

(2215) 2403 +24VDC

22A01

22A02

SLOT 0,8

22A03

1

F17

22A04

IN 0 (In 16.0) — 2

F18

22A05

IN 1 (In 16.1) — 3

F19

22A06

IN 2 (In 16.2) — 4

F20

22A07

IN 3 (In 16.3) — 5

F21

22A08

IN 4 (In 16.4) — 6

F22

22A09

IN 5 (In 16.5) — 7

F23

22A10

IN 6 (In 16.6) — 8

F24

22A11

IN 7 (In 16.7) — 9

"OPTIONAL" CUSTOMER INPUTS
OMITTED IF NOT REQUIRED

22A12

20

DC COM

22A13

22A14

22A15

2403 (22A01)

(2215) 2400 24VDC COM

CUST. FAULT 17 (ALARM)

CUST. FAULT 18 (ALARM)

CUST. FAULT 19 (ALARM)

CUST. FAULT 20 (ALARM)

CUST. FAULT 21 (ALARM)

CUST. FAULT 22 (ALARM)

CUST. FAULT 23 (ALARM)

CUST. FAULT 24 (ALARM)

2400 (22A01)

(22A15) 2403 +24VDC

21-FLS1 — 07000 — IN 0 (In 17.0) — 12 — TRANSFORMER CABINET RADIATOR FLOW SWITCH.

21-TS1 — 07001 — IN 1 (In 17.1) — 13 — TRANSFORMER CABINET WATER TEMP. SWITCH

21-TS2 — 07002 — IN 2 (In 17.2) — 14 — TRANSFORMER CABINET AIR TEMP. SWITCH

(1210) — 07003 — IN 3 (In 17.3) — 15 — TRANSFORMER CABINET DOORS CLOSED.

(1204) — 07004 — IN 4 (In 17.4) — 16 — TRANSFORMER CABINET E-STOP

(1317) — 07005 — IN 5 (In 17.5) — 17 — TRANSFORMER CABINET MOTOR STARTERS OPEN

21-TS3 — 07006 — IN 6 (In 17.6) — 18 — TRANSFORMER WINDING TEMP. SWITCH

6-PS1 — 07007 — IN 7 (In 17.7) — 19 — COIL CLAMP AIR PRESSURE SWITCH

NOTE
ONLY USED ON 400-1200 Kw UNITS

2403 (2603)

(22A15) 2400 24VDC COM

2400 (2609)

22A16

22A17

22A18

22A19

22A20

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	B

SCALE	DO NOT SCALE DRAWING COPY	SHEET
N/A		22A

ENG-REF:

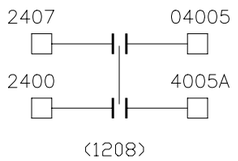
REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

MILL INTERLOCKS

INPUTS FROM MILL CONTROLS

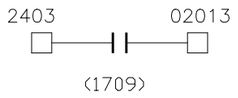
TO WELDER CONTROLS

CUSTOMER SUPPLIED
DRY CONTACTS



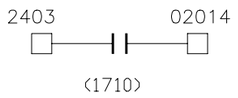
MILL EMERGENCY STOP

WHEN THESE CONTACTS ARE OPENED IT WILL OPEN THE WELDER MAIN CIRCUIT BREAKER (1-CB1) REMOVING ALL POWER EXCEPT AUXILLIARY POWER FOR CONTROLS.



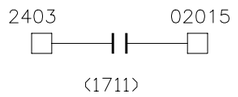
MILL INTERLOCK FAULT/OK

WHEN THIS CONTACT IS OPEN IT WILL TURN THE WELDER HEAT OFF. SHOULD BE USED TO MONITOR WORK COIL AND IMPEDER COOLANT FLOW. JUMPER IF NOT BEING USED.



MILL FAULT/READY

WHEN THIS CONTACT IS OPEN IT WILL TURN HEAT OFF. THIS CONTACT MUST BE OPEN WHEN JOGGING MILL.

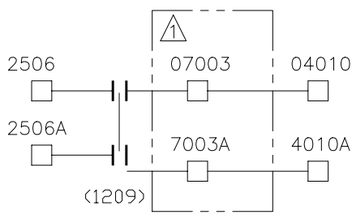


MILL OFF/RUN

THIS CONTACT MUST BE CLOSED TO TURN OUTPUT HEAT ON.

"MANUAL" SPEED POWER MODE – IN "MANUAL" MODE THE OUTPUT HEAT WILL TURN OFF WHEN THIS CONTACT OPENS.

"AUTOMATIC" SPEED POWER CONTROL MODE – IN "AUTOMATIC" MODE THE OUTPUT HEAT WILL TURN OFF WHEN THIS CONTACT IS OPEN AND THE MILL TACH HAS STOPPED.



MILL GUARDSWITCH

WHEN THIS CONTACT IS OPEN IT WILL EMERGENCY STOP THE WELDER

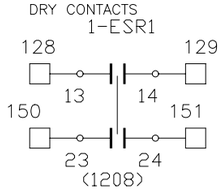
IT CAN BE USED FOR MILL GUARDS OR "OTHER" SAFETY INTERFACES

JUMPER IF NOT BEING USED.

OUTPUTS FROM WELDER CONTROLS

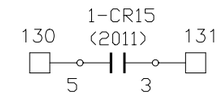
TO MILL CONTROLS

THERMATOOL SUPPLIED
DRY CONTACTS



WELDER EMERGENCY STOP

THIS NORMALLY OPEN CONTACT IS OPEN IF A WELDER DOOR SWITCH OR EMERGENCY PUSH BUTTON IS PRESSED. AFTER ALL CABINET DOOR SWITCHES AND EMERGENCY STOP BUTTONS ARE RETURNED TO A SAFE CONDITION THE EMERGENCY STOP RELAY MAY BE RESET BY PUSHING THE WELDER "RESET" PUSH BUTTON.



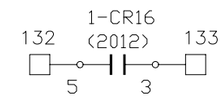
WELDER FAULT/READY

THIS NORMALLY OPEN CONTACT IS CLOSED UNDER THE FOLLOWING CONDITIONS

1.) IF THE WELDER "SHUT DOWN/STANDBY" SWITCH IS IN "SHUTDOWN" POSITION AND THE EMERGENCY STOP RELAY IS RESET.

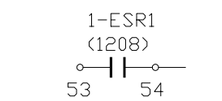
2.) IN "MANUAL" SPEED POWER CONTROL MODE – THE "SHUTDOWN/STANDBY" SWITCH IS IN "STANDBY" POSITION AND THERE ARE NO WELDER FAULTS.

3.) IN "AUTOMATIC" SPEED POWER CONTROL MODE – THE CONDITION IS THE SAME AS IN "MANUAL" WITH THE ADDITION OF THE WELDER "HEAT ON" PUSH BUTTON MUST BE PRESSED.



WELD HEAT OFF/ON

THIS NORMALLY OPEN CONTACT IS OPEN WHEN OUTPUT HEAT IS OFF. THE CONTACT IS CLOSED WHEN OUTPUT HEAT IS ON.



WELDER EMERGENCY STOP (AUXILIARY SIGNAL)

AVAILABLE AUXILIARY CONTACT FROM EMERGENCY STOP "MAY BE USED FOR INDICATION"
NOT WIRED TO TERMINALS!

NOTES:–

1. ONLY USED ON 400–1200KW UNIT WITH THERMATOOL SUPPLIED TRANSFORMER

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

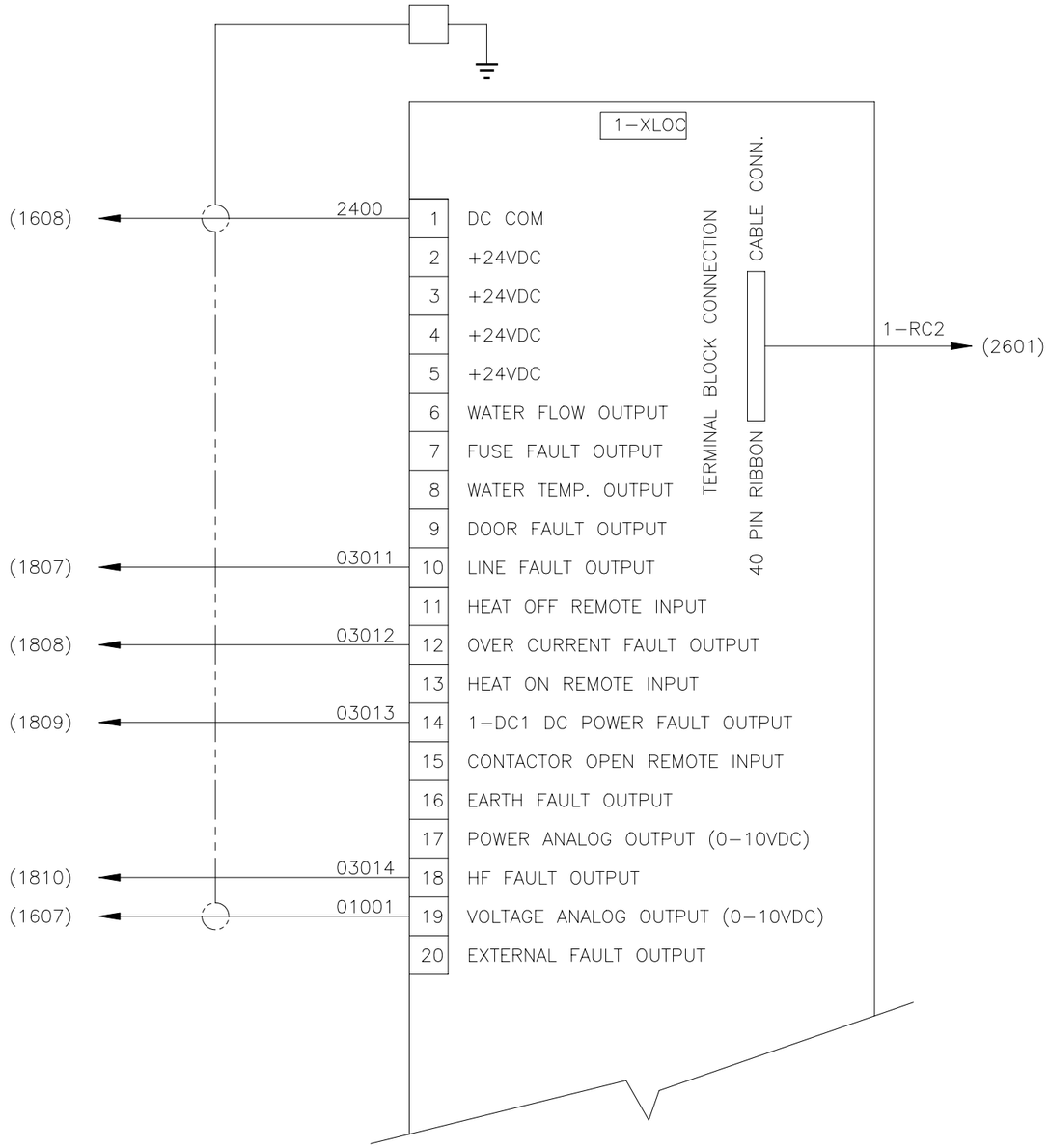
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

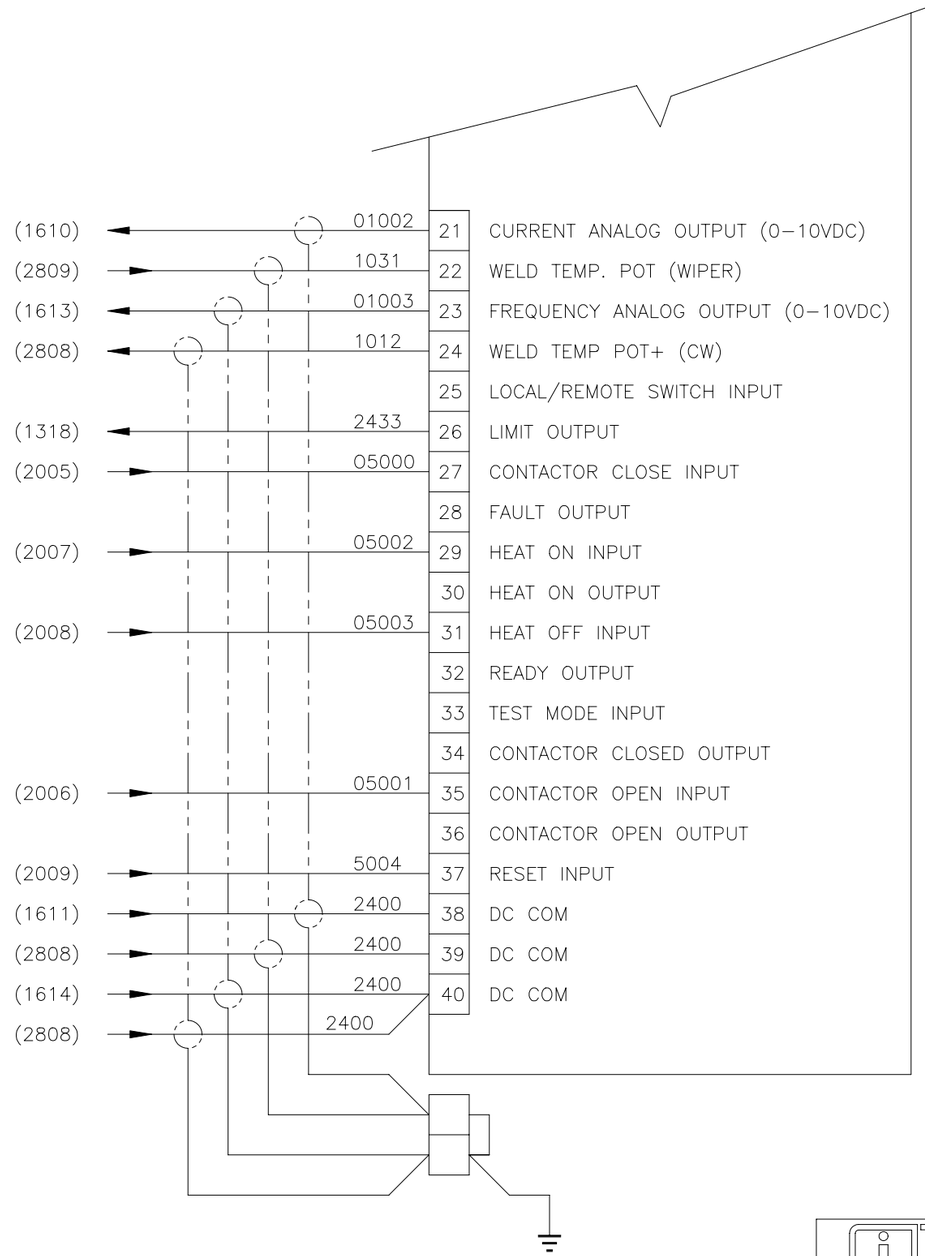
SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 23

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

1–XLOC TERM. BLOCK





THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

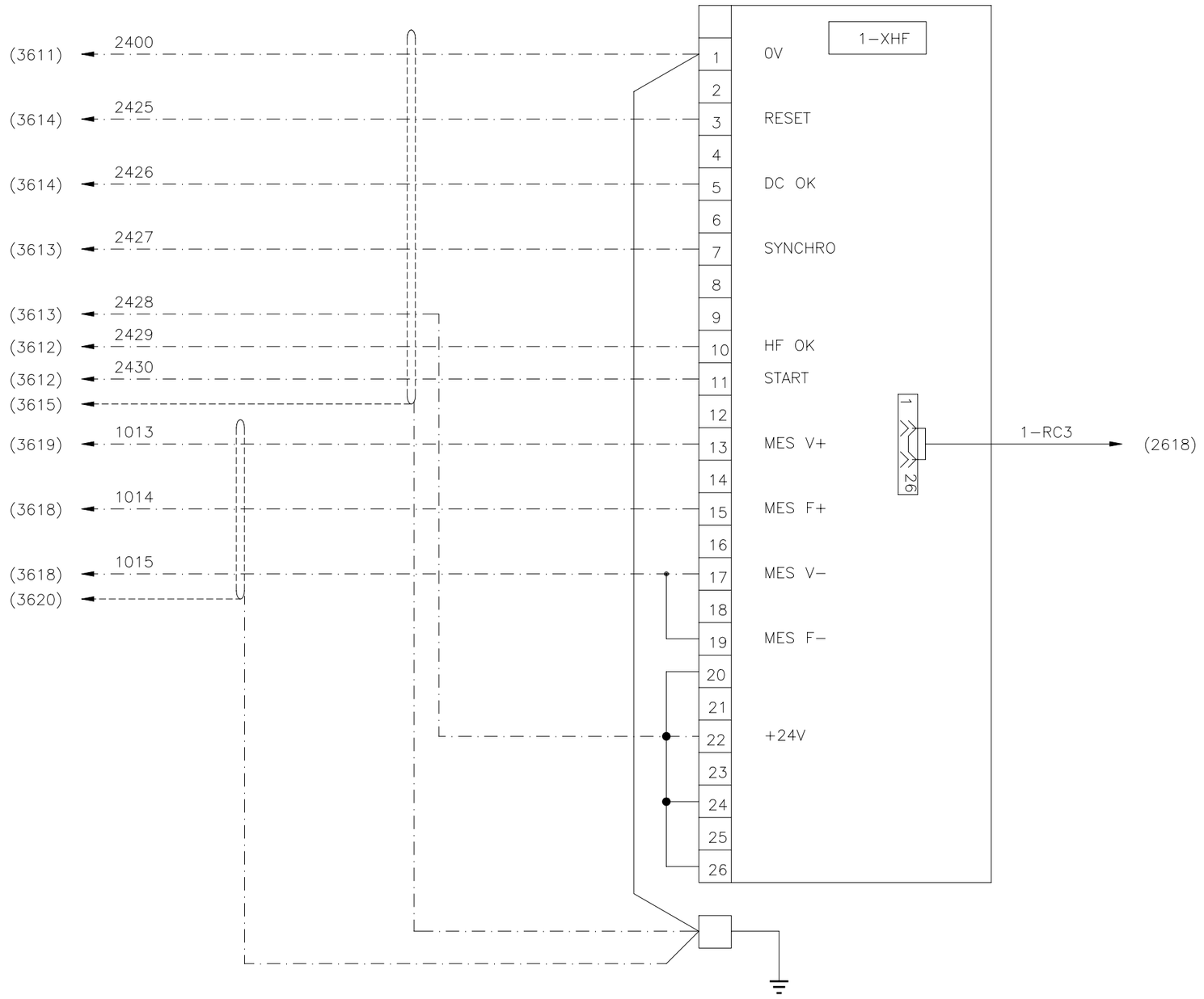
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 24

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	CABLE 2400 CONNECTED TO GROUND		TAT			07/16/04

1–XHF TERM. BLOCK



THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 25

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

1–DC1 & 1–DC2 CONTROL BOARDS

(2407)

1–RC2

X REMOTE (1, 5, 26)

X LOCAL 2 (1, 40)

WELDER OFF/READY — K5

HEAT OFF/ON — K4

CLOSE 1–CB1 — K3

1–CB1 UV TRIP — K2

XDC1

10	04002	(1906)
9	2403	(22A16)
8		
7	04001	(1905)
6		
5		
4	04000	(1904)
3	2403	(2615)
2	108	(1006)
1	104	(1006)

1–RC4

X INT – BRD (26, 1)

DC CONTROL 1

WB0001

XDC2

MAIN BREAKER ON	10	03007 (1812)
24VDC	9	
24VDC	8	
CONTACTOR ON	7	JUMPER
EARTH FAULT	6	
AUX. BREAKER	5	
WATER TEMP	4	
WATER FLOW	3	
FUSES	2	
STOP DOORS	1	2442 — 1–ESR2 (34, 33) — 2403 (2607), (2611)

SEE NOTE 1

X HF (1, 26)

X LOCAL 1 (1, 40)

1–RC3

1–RC2

(2508)

1–RC4

X INT BRD (26, 1)

X SUP

DC CONTROL 2

WB0002

	10	
–12VDC	9	
	8	
+12VDC	7	
	6	2400 (22A16)
24VDC COM	5	
	4	
	3	
+24VDC	2	2403 (2616)
	1	

X SCR (26, 1) — 1–RC5 (708)

X UI (1, 14) — 1–RC1 (618)

F1 2A

NOTES;

1. UP TO 250KW WELDER, LINK RT13 ON DC CONTROL BOARD 1.

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 26

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	ADD ALTRNT COOLING FAN DATA	10E	TAT			07/16/04

2-HF1 CONTROL BOARD

2700

2701 (3501) — 602 — (RS:214-5947) 2200pF 250V

2702 (3502) — 600

2703

2704

2705

2706

602 → (2902 , 2913)

600 → (3002 , 3013) (3102 , 3113)

NOTE
50-300 kW UNITS ONLY
350KW AND ABOVE SEE WW5074

2707

2708 (3516) — 621 — 2-MTR3 — M — COOLING FAN

2709

2710 2-MTR4 — M — COOLING FAN

2711 (2910) (3010) (3110) — 2-RC37 — X1R

2712

2713 (2909) (3009) (3109) — 2-RC39 — X2R

2714

2715

2716 (2908) (3008) (3108) — 2-RC38 — X1D

2717

2718 (2909) (3009) (3109) — 2-RC40 — X2D

2719

2720

L (4) (1) + N (5) 2-PWS1 G (3) (2) −

1000UF 50V +15V

L (4) (1) + N (5) 2-PWS2 G (3) (2) −

−15V

1019 → (2903)

AUX DIST. BOARD 2-AS1

1018 → (2903)

BLUE

RED

2-HF1

10	9	8	7	6	5	4	3	2	1	X10
DC COM	DC COM	+15VDC		MODFAULT-	MODFAULT+		−15VDC	DC COM		
1021		1020		1019	1018			1017	1016	

2	1	X11

14 1 — X 12

HF CONTROL
WB0003-###

X8			
DC ON	10		
DC OK	9	2426	RED → (3614)
SYNCHRO	8	2427	BLUE → (3613)
HF OK	7	2429	GREEN → (3612)
DOORS	6		
START	5	2430	PURPLE → (3612)
RESET	4	2425	BROWN → (3614)
+24VDC	3	2428	YELLOW → (3613)
DC COM	2	2400	BLACK → (3611)
+24VDC	1		→ (3615)

X9				
REF	10			
VHF-	9			
VHF COM	8	1024	V- → (3308)	BLUE
VHF+	7	1023	→ (3312)	RED
VHFD	6	1023	→ (3309)	BLUE
MES V-	5	1022	V+ → (3314)	RED
MES V+	4			
MES F+	3	1015	BLUE → (3618)	
	2	1013	RED → (3619)	
	1	1014	YELLOW → (3618)	
			→ (3620)	

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

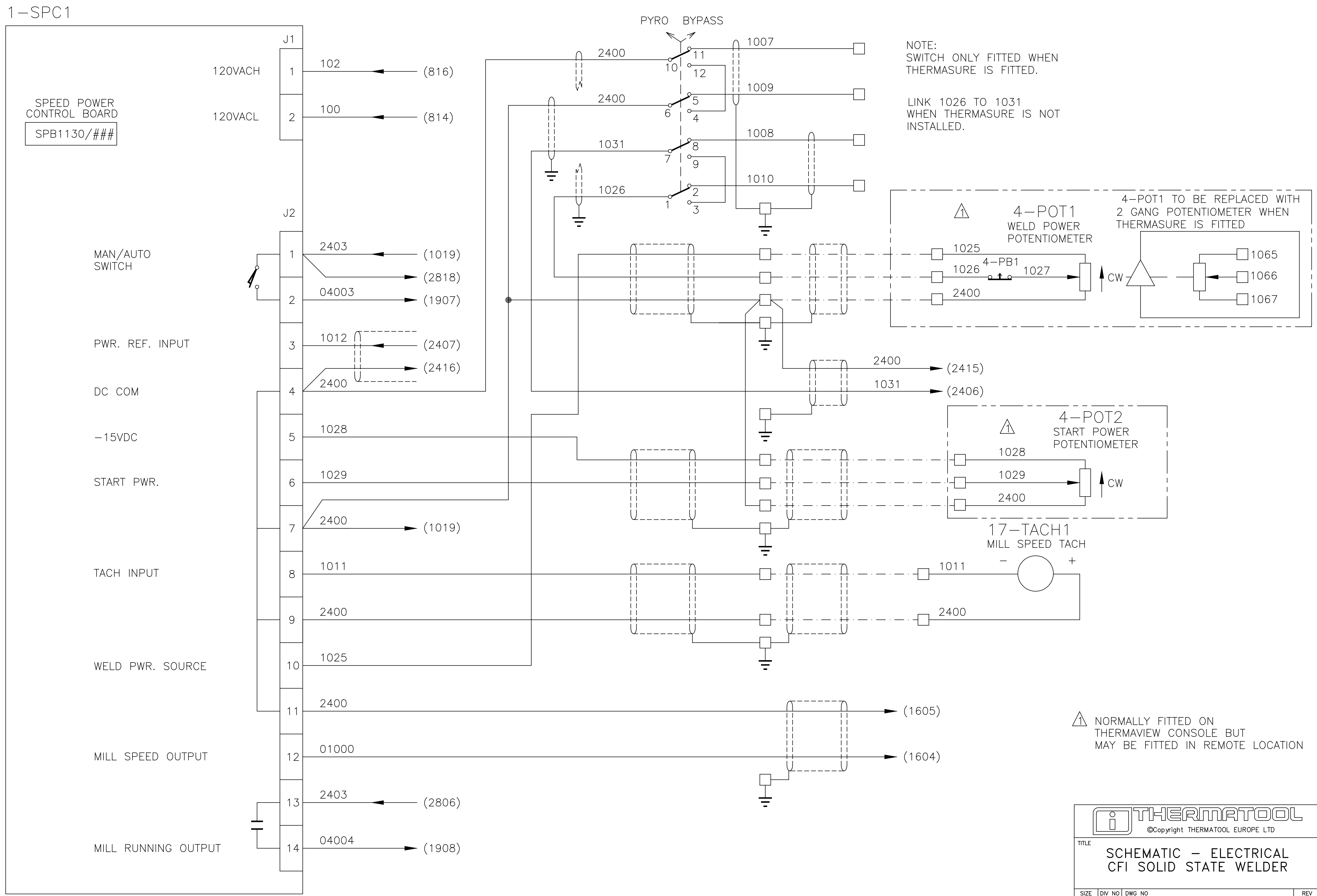
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 27

ENG-REF:

REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

1-SPC1 SPEED POWER CONTROL BOARD



1-SPC1
SPEED POWER CONTROL BOARD
SPB1130/###
J1
120VACH 1 102 (816)
120VACL 2 100 (814)
J2
MAN/AUTO SWITCH
1 2403 (1019) (2818)
2 04003 (1907)
PWR. REF. INPUT 3 1012 (2407)
DC COM 4 2400 (2416)
−15VDC 5 1028
START PWR. 6 1029
7 2400 (1019)
TACH INPUT 8 1011
9 2400
WELD PWR. SOURCE 10 1025
11 2400 (1605)
MILL SPEED OUTPUT 12 01000 (1604)
13 2403 (2806)
MILL RUNNING OUTPUT 14 04004 (1908)
PYRO BYPASS
2400 1007 1009 1031 1008 1026 1010
NOTE: SWITCH ONLY FITTED WHEN THERMASURE IS FITTED.
LINK 1026 TO 1031 WHEN THERMASURE IS NOT INSTALLED.
4-POT1 WELD POWER POTENTIOMETER
1025 1026 4-PB1 1027 2400 CW
4-POT1 TO BE REPLACED WITH 2 GANG POTENTIOMETER WHEN THERMASURE IS FITTED
1065 1066 1067
2400 (2415)
1031 (2406)
4-POT2 START POWER POTENTIOMETER
1028 1029 2400 CW
17-TACH1 MILL SPEED TACH
1011 2400
NORMALLY FITTED ON THERMAVIEW CONSOLE BUT MAY BE FITTED IN REMOTE LOCATION

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

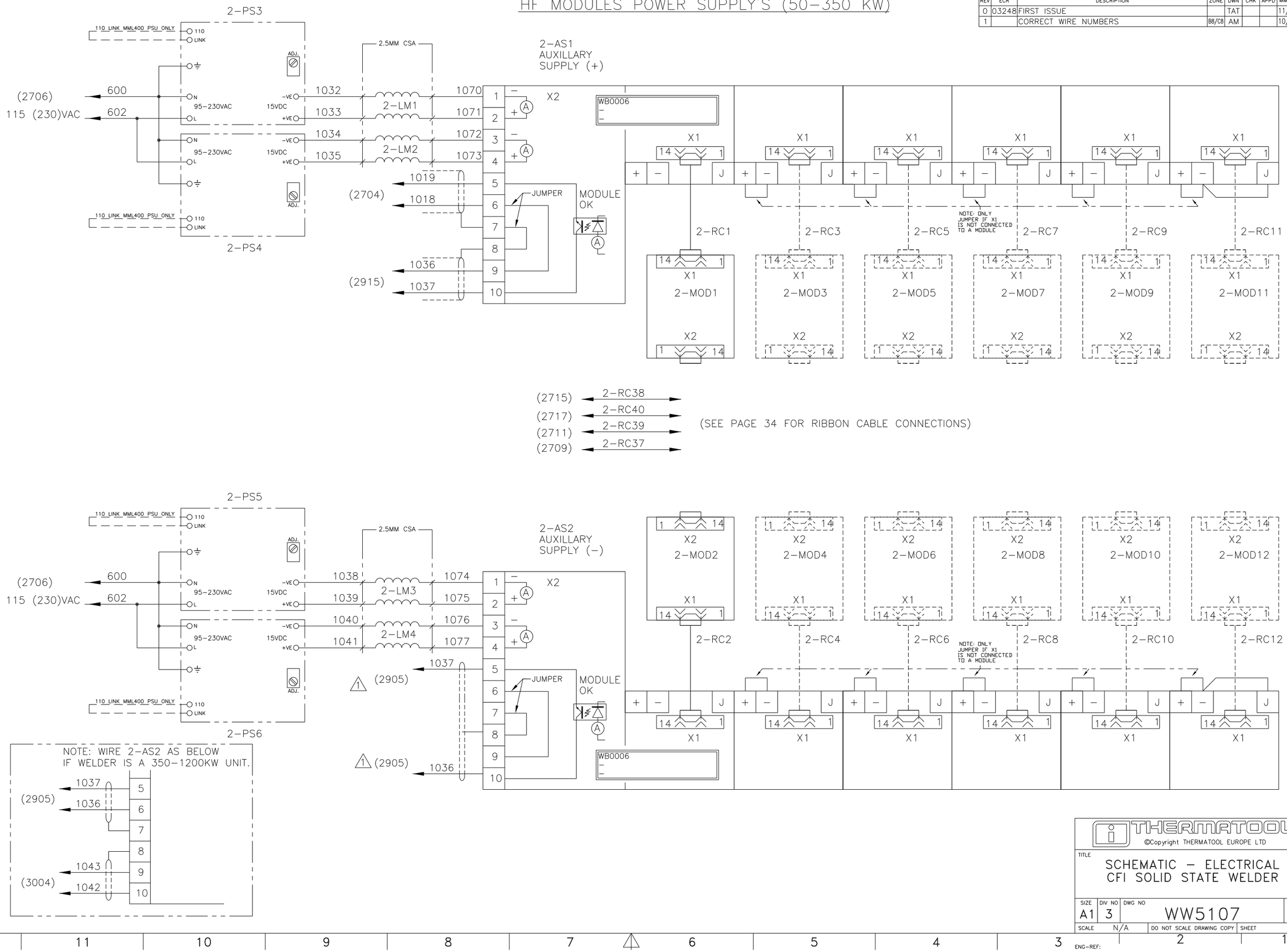
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A — DO NOT SCALE DRAWING COPY — SHEET 28

ENG-REF:

HF MODULES POWER SUPPLY'S (50–350 KW)

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
1		CORRECT WIRE NUMBERS	B8/C8	AM			10/01/12



THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

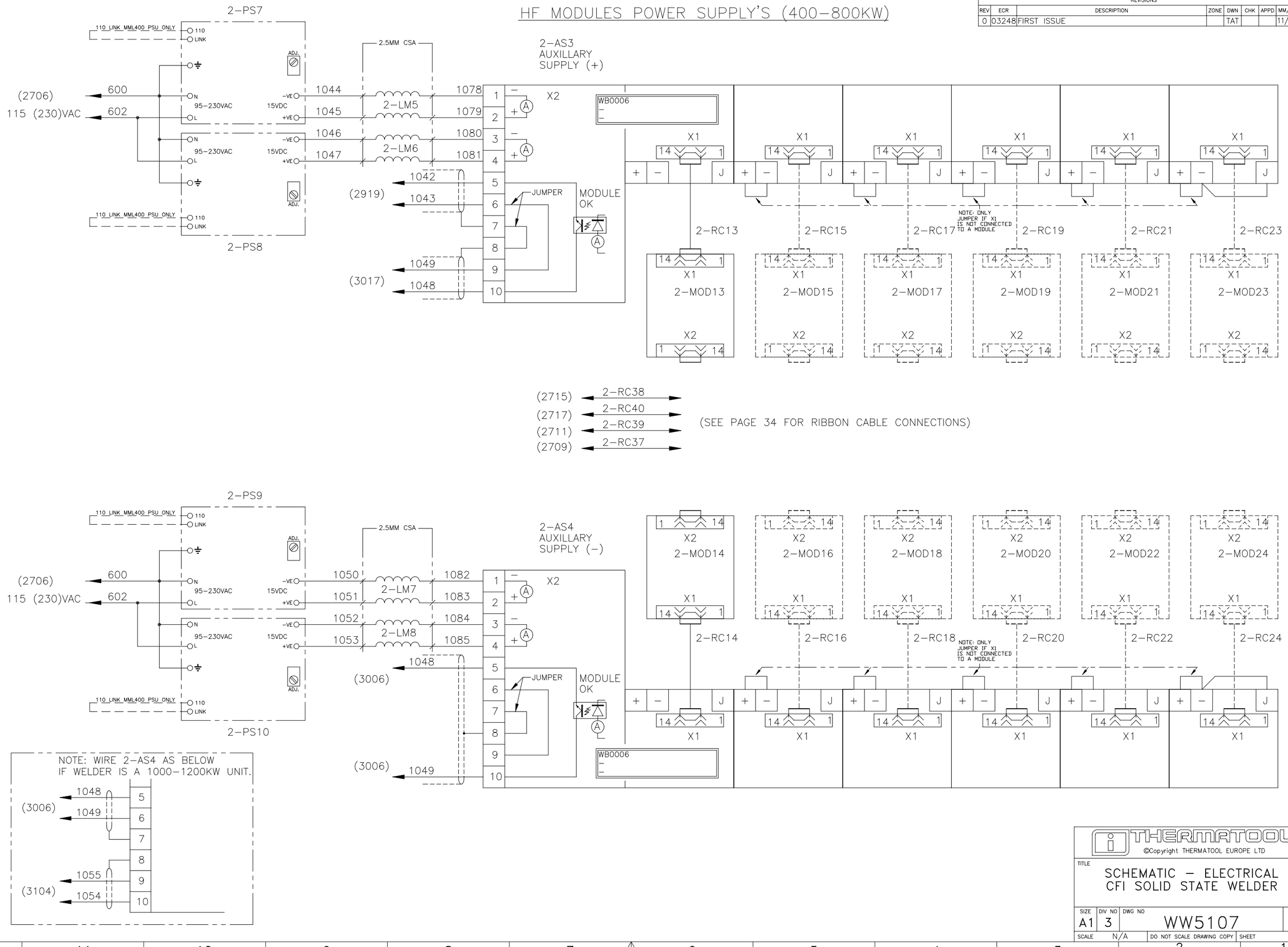
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	1

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 29

ENG-REF:

HF MODULES POWER SUPPLY'S (400–800KW)

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03



THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

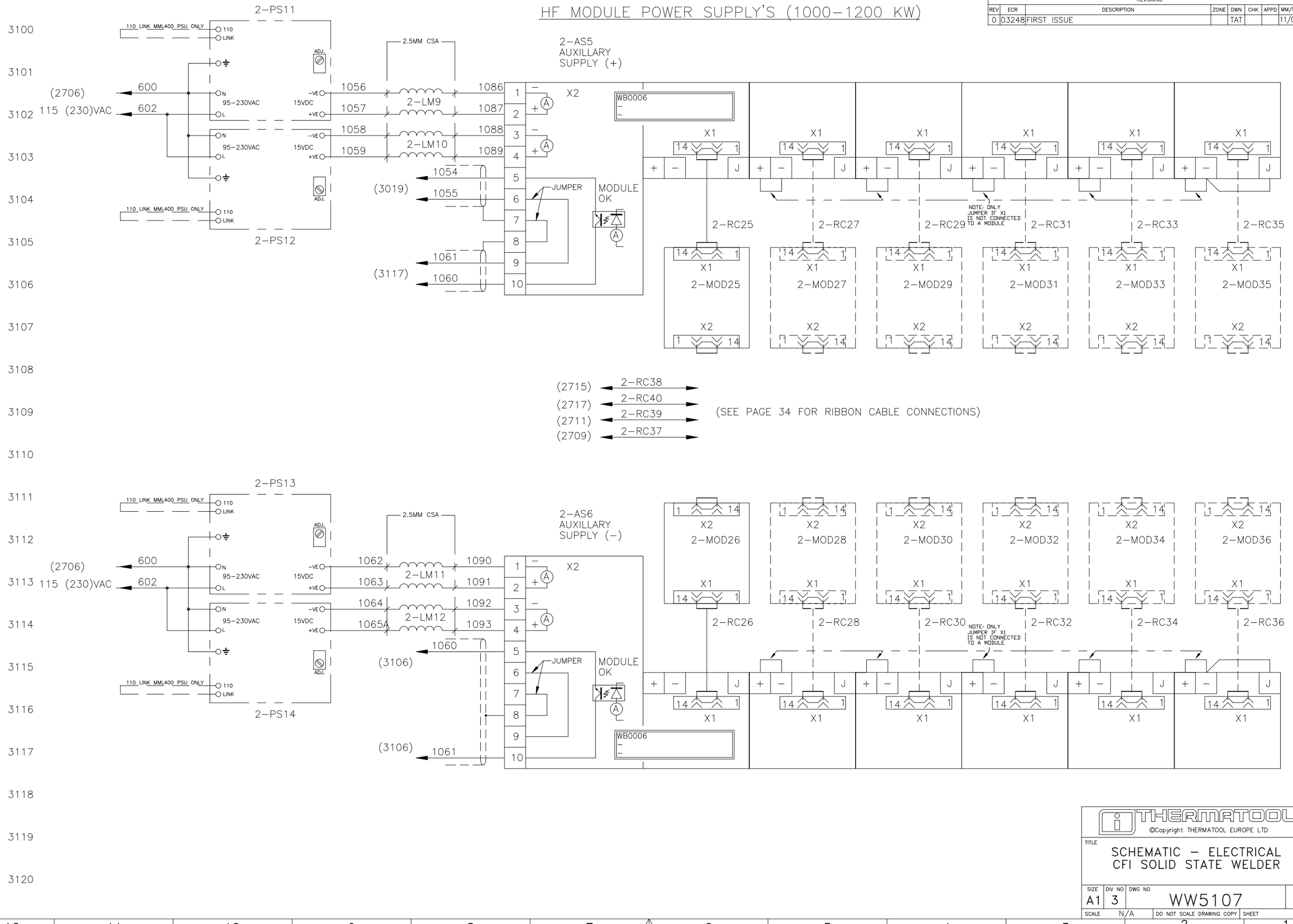
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 30

ENG–REF:

HF MODULE POWER SUPPLY'S (1000–1200 KW)

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03



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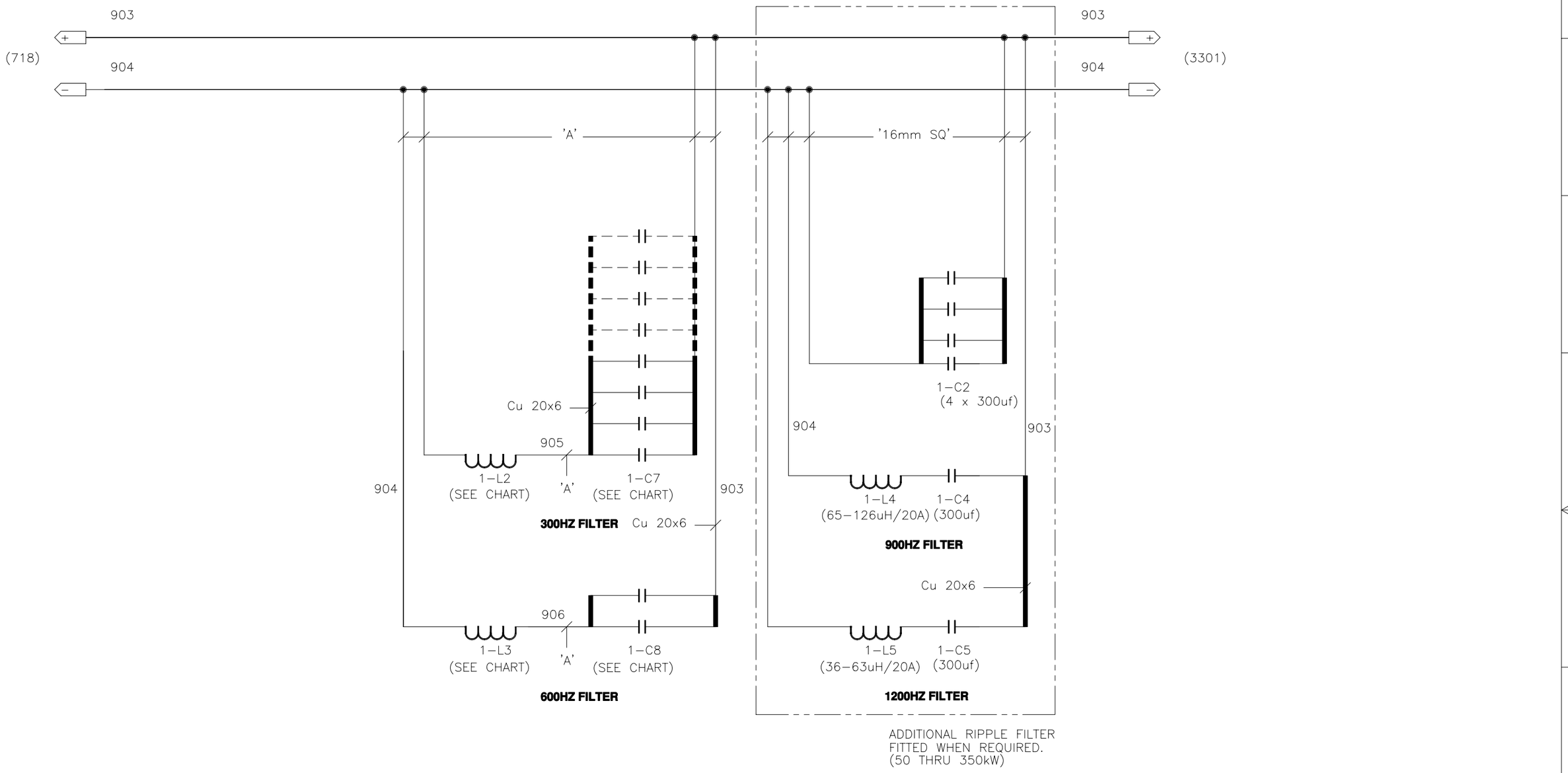
TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0
SCALE N/A		DO NOT SCALE DRAWING COPY	SHEET 31

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	1000–1200KW L2 WAS 74–130 µH/250A & CABLE @ A WAS 95MM, RECORDED "TRUE AS BUILT" STATUS	8B 8A	TAT			07/16/04

DC HARMONIC FILTER



UNIT KILOWATTS

	50-350	400-800	1000-1200
1–C7	(4) x 300uf	(6) x 300uf	(8) x 300uf
1–L2	148–260 µH/70A	98–173 µH/180A	98–173 µH/180A
1–C8	(2) x 300uf	(2) x 300uf	(2) x 300uf
1–L3	74–130 µH/20A	74–130 µH/70A	74–130 µH/70A
MAX. CURRENT@ "A"	70AMPS	180AMPS	180AMPS
CABLE SIZE 'A'	16MM SQ	70MM SQ	70MM SQ

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 32

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

RF OUTPUT CIRCUIT

(3201) 904 903

(* = 300kHz UNITS ONLY)

2-C7 *7.7uF

2-C5 7.7uF

2-C6 7.7uF

2-L1 2-L2

MOD 1-35 MOD 2-36

3EL702206 3EL702206

907 900

1.5 SQ. SILICONE CABLE (BLK)
(TWISTED TOGETHER "MANUALLY")

TR4
X1 X2 V- V+ C
VHF- 1024 (2715)
COM 1023 (2716)

TR5
X1 X2 V- V+ C
COM 1023 (2716)
VHF+ 1022 (2717)

COOLING WATER PIPES EARTH BONDING

PHASE GROUND
(2702) 600

6MM SQ.

900 908

95MM SQ.

2-C2 # 2-C3

2 x 95MM SQ.

20x6 Cu

2-L3

2-C1 # 2-C0 2-L4 # 2-C5 # 2-C4

INSULATOR

EARTH STUDS
CONNECT TO MILL BASE

ALUMIN. (CE FILTER) (NO CE FILTER) POLYPROPYLENE

EARTH STUD
CONNECT TO POWER SUPPLY

1 2-L5

2-L6

NOTES:-

= CONSULT THERMATOOL FOR VALUES & QUANTITY (APPLICATION SPECIFIC)

1 = OMITED ON 600 & 800kHz MACHINES

THERMATOOL

TITLE
SCHEMATIC - ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 33

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03

2–HF1 BOARD TO HF MODULE CONNECTIONS

RIBBON CABLE CONNECTIONS FROM 2–HF1 BOARD TO HF MODULES:

CABINET	NUMBER OF MODULES	2–RC37 FROM 2–HF1 (X1R) TO	2–RC39 FROM 2–HF1 (X2R) TO	2–RC38 FROM 2–HF1 (X1D) TO	2–RC40 FROM 2–HF1 (X2D) TO
RF12	2	2–MOD1	–	2–MOD2	–
RF12	4	2–MOD1,3	–	2–MOD2,4	–
RF12	6	2–MOD1,3,5	–	2–MOD2,4,6	–
RF12	8	2–MOD1,3,5,7	–	2–MOD2,4,6,8	–
RF12	10	2–MOD1,3,5,7,9	–	2–MOD2,4,6,8,10	–
RF12	12	2–MOD1,3,5,7,9,11	–	2–MOD2,4,6,8,10,12	–
RF24	14	2–MOD1,3,5,7	2–MOD9,11,13	2–MOD2,4,6,8	2–MOD10,12,14
RF24	16	2–MOD1,3,5,7	2–MOD9,11,13,15	2–MOD2,4,6,8	2–MOD10,12,14,16
RF24	18	2–MOD1,3,5,7,9	2–MOD11,13,15,17	2–MOD2,4,6,8,10	2–MOD12,14,16,18
RF24	20	2–MOD1,3,5,7,9	2–MOD11,13,15,17,19	2–MOD2,4,6,8,10	2–MOD12,14,16,18,20
RF24	22	2–MOD1,3,5,7,9,11	2–MOD13,15,17,19,21	2–MOD2,4,6,8,10,12	2–MOD14,16,18,20,22
RF24	24	2–MOD1,3,5,7,9,11	2–MOD13,15,17,19,21,23	2–MOD2,4,6,8,10,12	2–MOD14,16,18,20,22,24
RF36	26	2–MOD1,3,5,7,9,11,13	2–MOD15,17,19,21,23,25	2–MOD2,4,6,8,10,12,14	2–MOD16,18,20,22,24,26
RF36	28	2–MOD1,3,5,7,9,11,13	2–MOD15,17,19,21,23,25,27	2–MOD2,4,6,8,10,12,14	2–MOD16,18,20,22,24,26,28
RF36	30	2–MOD1,3,5,7,9,11,13,15	2–MOD17,19,21,23,25,27,29	2–MOD2,4,6,8,10,12,14,16	2–MOD18,20,22,24,26,28,30
RF36	32	2–MOD1,3,5,7,9,11,13,15	2–MOD17,19,21,23,25,27,29,31	2–MOD2,4,6,8,10,12,14,16	2–MOD18,20,22,24,26,28,30,32
RF36	34	2–MOD1,3,5,7,9,11,13,15,17	2–MOD19,21,23,25,27,29,31,33	2–MOD2,4,6,8,10,12,14,16,18	2–MOD18,20,22,24,26,28,30,32,34
RF36	36	2–MOD1,3,5,7,9,11,13,15,17	2–MOD19,21,23,25,27,29,31,33,35	2–MOD2,4,6,8,10,12,14,16,18	2–MOD18,20,22,24,26,28,30,32,34

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

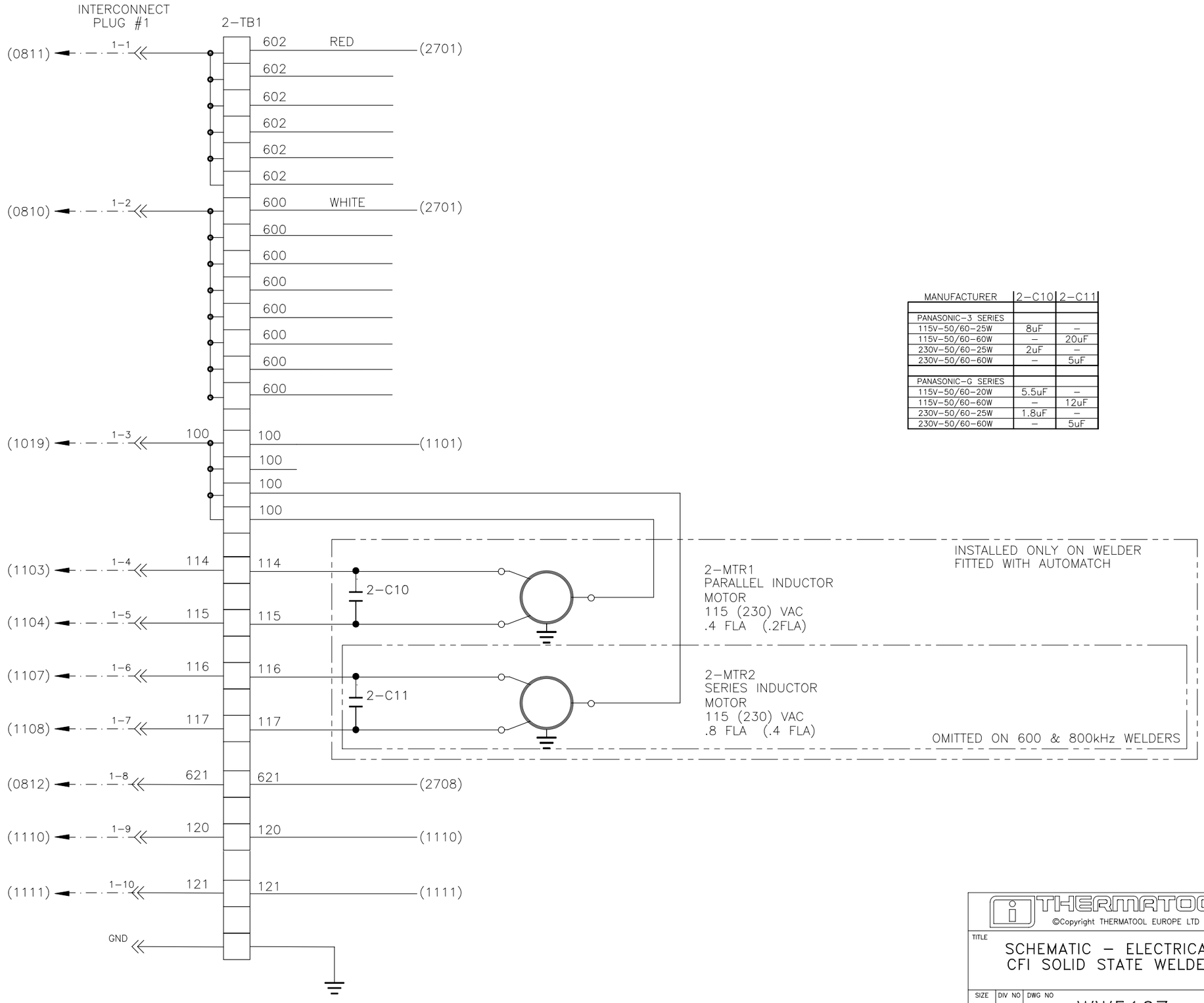
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	0

SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 34

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	DEL PHYSCL PLG BLOCKING PIN DATA	4F	TAT			07/16/04
E	09047	UPDATE MTR & CAP DETAIL PANASONIC G SERIES TO 3 SERIES, SHOW TERM BOX ON 2-MTR1, DEL 2-MTR1/2 TERM NO's & CABL CLRS		TAT			04/08/09

HF GENERATOR PLUG INTERCONNECTION DETAILS



MANUFACTURER	2–C10	2–C11
PANASONIC–3 SERIES		
115V–50/60–25W	8uF	–
115V–50/60–60W	–	20uF
230V–50/60–25W	2uF	–
230V–50/60–60W	–	5uF
PANASONIC–G SERIES		
115V–50/60–20W	5.5uF	–
115V–50/60–60W	–	12uF
230V–50/60–25W	1.8uF	–
230V–50/60–60W	–	5uF

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	E

SCALE	DO NOT SCALE DRAWING COPY	SHEET
N/A		35

ENG–REF:

HF GENERATOR PLUG INTERCONNECTION DETAILS

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			10/21/03
A	04102	DEL.PHYSCL PLG BLCKNG PIN DATA,ADD DS6&7 (RF36) ALTRNT 1-FLS1/1-FLS2 & 1-PS1 ARRANGEMENTS	6B 4E	TAT			07/16/04

INTERCONNECT PLUG #2

2-TB1

(1202)	2-1	4008A	4008A		
(1909)	2-2	04014	04014		
(1911)	2-3	04015	04015		
(1207)	2-4	04010	04010		
(1205)	2-5	04009	04009		
(1202)	2-6	04008	04008		
(1202)	2-7	04007	04007		
(1202)	2-8	4007A	4007A		
(1806)	2-9	03002	03002		
(1711)	2-10	02007	02007		
(1710)	2-11	02006	02006		
(1709)	2-12	02005	02005		
(1708)	2-13	02004	02004		
(1708)	2-14	2403	2403		
(1205)	2-15	4009A	4009A		
(1205)	2-16	4010A	4010A		
		GND	GND		

RF36 ONLY

2-DS1 2-DS2 2-DS3 2-DS4 2-DS5 2-DS6 2-DS7

04009 2452 2453 2454 2455 2456 2457 04010

4009A 2452A 2453A 2454A 2455A 2456A 2457A 4010A

HF GENERATOR DOOR SWITCHES

2-PB1

04007 04008

4007A 4008A

HF GENERATOR E-STOP

04014 2-TS1-5 HF GENERATOR CABINET WATER TEMP. SWITCH

04015 2-TS6-12 HF GENERATOR LEADS WATER TEMP. SWITCH

ALTERNATE FLOWSWITCH WIRING

03002 2-FLS1 03002A 2-FLS2 (RF24/36 ONLY) HF GENERATOR CABINET FLOW SWITCH/OUTPUT LEADS (RF24/36)

2-PS1 DIFFERENTIAL PRESSURE (CLOSES P1 > P2)

03002 (DIFFERENTIAL PRESSURE SWITCH)

02007 2-LS4 SERIES IND. OUT

02006 2-LS3 SERIES IND. IN

02005 2-LS2 PARA. IND. OUT LIMIT

02004 2-LS1 PARA. IND. IN LIMIT

02403

INTERCONNECT PLUG #3

(2502)	3-1	2400	2400	BLK	(2712)	
(2507)	3-2	2430	2430	PURPLE	(2711)	
(2506)	3-3	2429	2429	GRN	(2710)	
(2506)	3-4	2428	2428	YEL	(2712)	
(2505)	3-5	2427	2427	BLU	(2710)	
(2504)	3-6	2426	2426	RED	(2709)	
(2503)	3-7	2425	2425	BRN	(2712)	
	3-8	SHLD	SHLD		(2714)	
	GND		GND			

INTERCONNECT PLUG #4

(2510)	4-1	1015	1015	BLUE	(2718)
(2509)	4-2	1014	1014	YELLOW	(2719)
(2508)	4-3	1013	1013	RED	(2718)
	4-4	SHLD	SHLD		(2719)
	GND				

THERMATOOL

TITLE: SCHEMATIC – ELECTRICAL CFI SOLID STATE WELDER

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

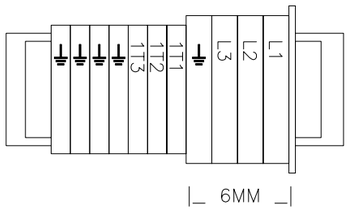
SCALE N/A | DO NOT SCALE DRAWING COPY | SHEET 36

ENG-REF:

TERM LAYOUT TYPICAL 50–350 KW DC PANELS

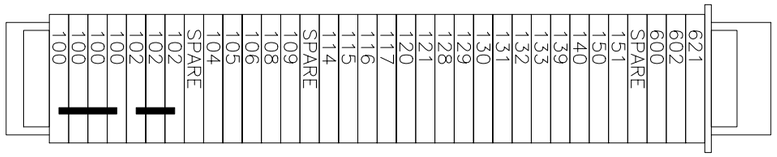
REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	ADD TWO OF 2403 TERMS TO TB3		TAT			07/16/04

TB1



|_ 6MM _|

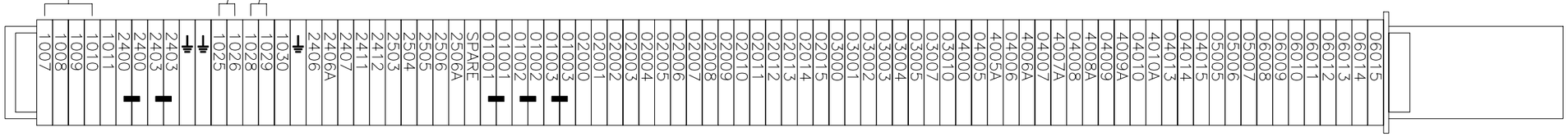
TB2



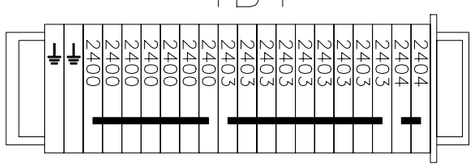
START PWR
WELD PWR

T'SURE ONLY

TB3

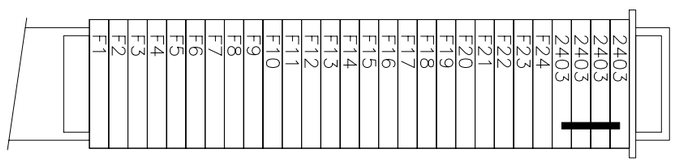


TB4



ALL TERMINALS 4MM UNLESS OTHERWISE STATED

TB5



"OPTIONAL" CUSTOMER INPUTS
OMITTED IF NOT REQUIRED

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER.

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

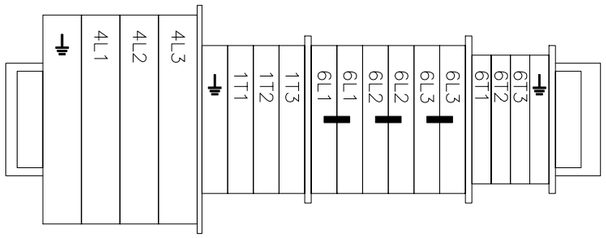
SCALE 1:1 ON A1 | DO NOT SCALE DRAWING COPY | SHEET 37

ENG–REF:

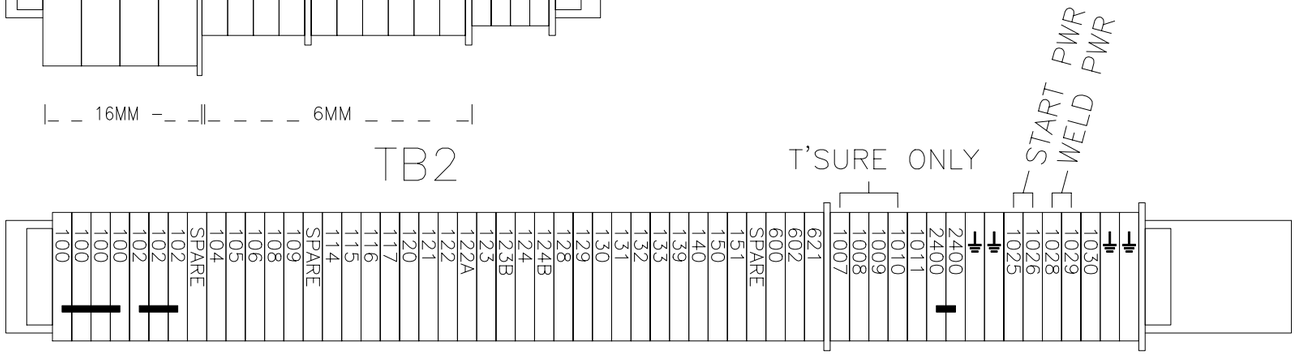
TERM LAYOUT TYPICAL 400–600 KW DC PANELS

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	ADD TWO TERMS 2403		TAT			07/16/04

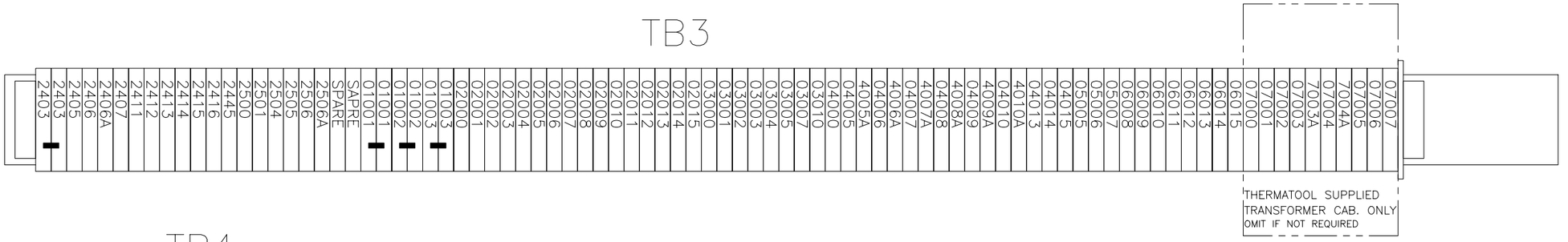
TB1



TB2

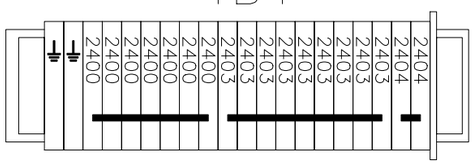


TB3



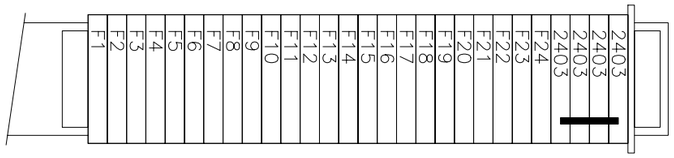
THERMATOOL SUPPLIED
TRANSFORMER CAB. ONLY
OMIT IF NOT REQUIRED

TB4



ALL TERMINALS 4MM UNLESS OTHERWISE STATED

TB5



"OPTIONAL" CUSTOMER INPUTS
OMITTED IF NOT REQUIRED

THERMATOOL

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER.

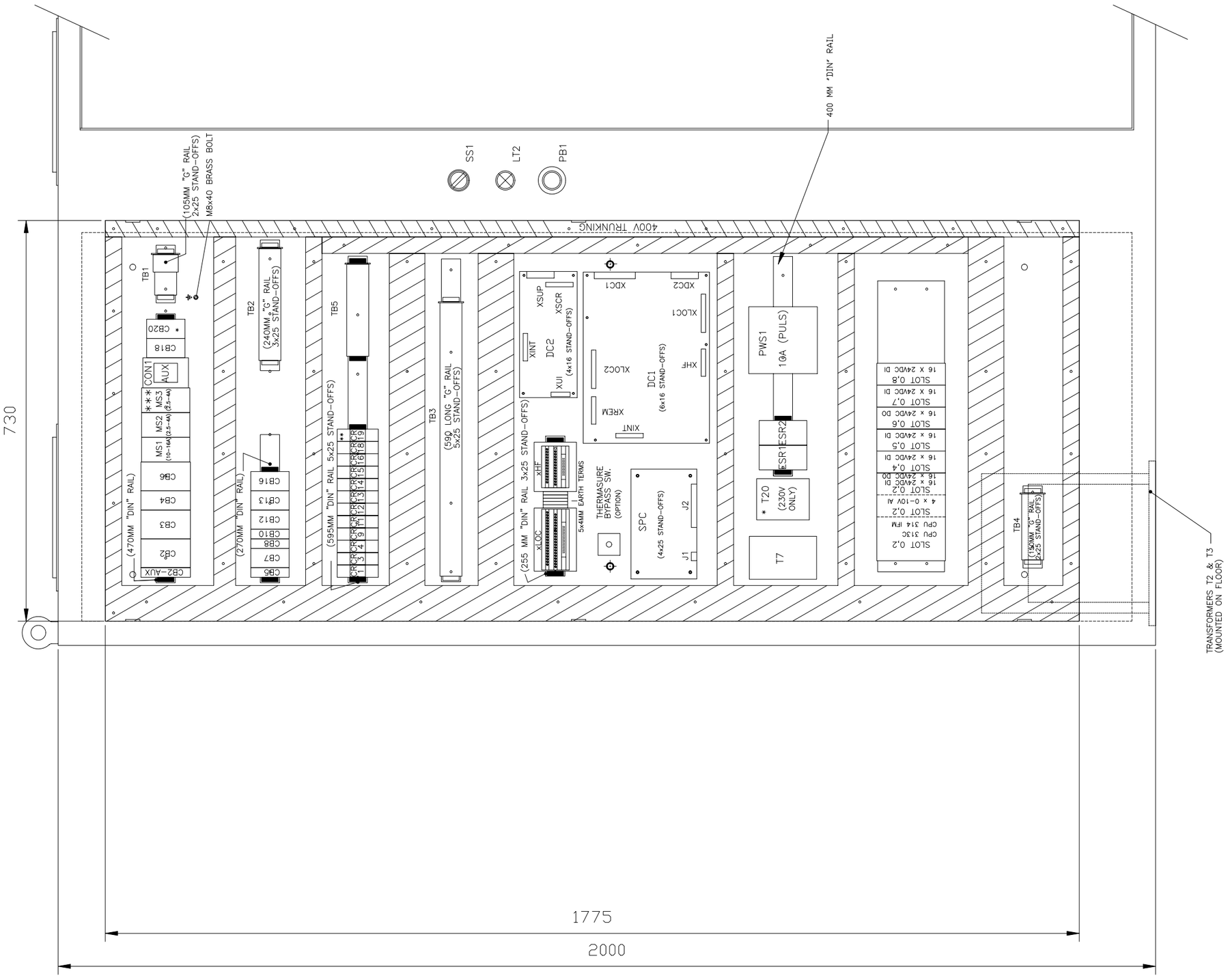
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE 1:1 ON A1 | DO NOT SCALE DRAWING COPY | SHEET 37A

ENG–REF:

TYPICAL DC PANEL LAYOUT 50–350KW

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	VIEW ROTATED 90 DEG		TAT			07/13/04



NOTES:–

1. PANEL COMPONENT PREFIX IS "1" (IE, 1–CB1,1–CB2,1–CR1, etc)
2. TRUNKING SIZES, 30W×80H & 45WX80H & 65W×80H
3. * COMPONENTS ON 230V SYSTEMS ONLY
4. ** COMPONENTS ON SYSTEMS WITH THERMASURE ONLY
5. *** COMPONENTS ON 200–350KW SYSTEMS ONLY
6. IDENTIFY ALL COMPONENTS (PERMANENT ON COMPONENT OR BACKBOARD)

THERMATOOL

TITLE

SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER.

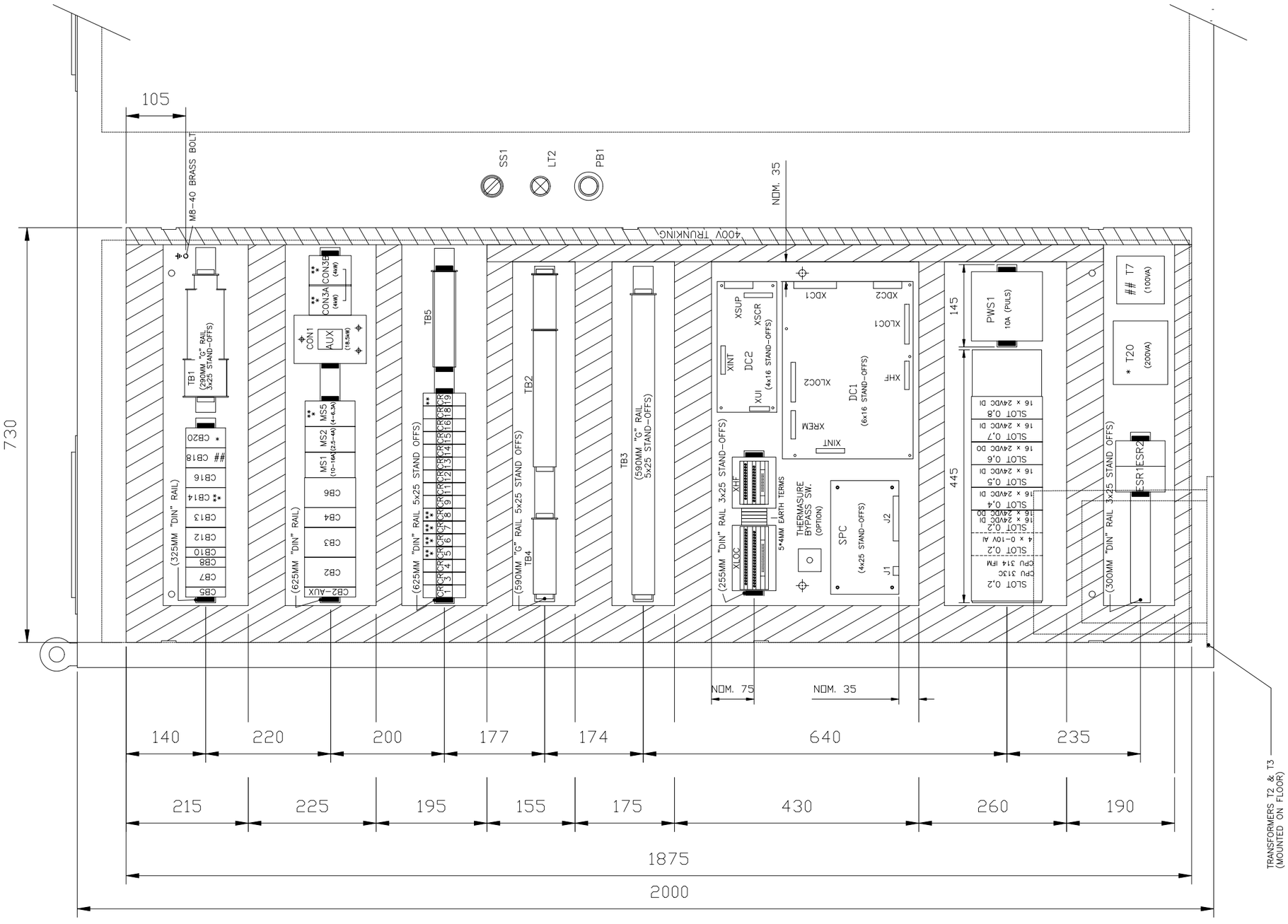
SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE 1:4 ON A1 | DO NOT SCALE DRAWING COPY | SHEET 38

ENG–REF:

TYPICAL DC PANEL LAYOUT 400–600KW

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03248	FIRST ISSUE		TAT			11/06/03
A	04102	RE–DRAWN SINGLE PANEL DC		TAT			07/13/04



NOTES:–

1. PANEL COMPONENT PREFIX IS "1" (IE, 1–CB1,1–CB2,1–CR1, etc)
2. TRUNKING SIZES, 30Wx80H & 45WX80H & 65Wx80H
3. * COMPONENTS ON 230V SYSTEMS ONLY
4. ** COMPONENTS ON SYSTEMS WITH THERMASURE ONLY
5. –
6. ## COMPONENTS OMITED IF THERMATOOL SUPPLIED XFORMER CABINET
7. ** COMPONENTS OMITED IF SINGLE AXIS TABLE
8. IDENTIFY ALL COMPONENTS (PERMANENT ON COMPONENT OR BACKBOARD)

TITLE
SCHEMATIC – ELECTRICAL
CFI SOLID STATE WELDER.

SIZE	DIV NO	DWG NO	REV
A1	3	WW5107	A

SCALE 1:4 ON A1 | DO NOT SCALE DRAWING COPY | SHEET 38A

ENG–REF:

WW0094

Interconnection Cable List

REV	ECR	DESCRIPTION	DWN	CHK	APPD	MM/DD/YY
A	282	01-06-30 CONDUIT, SINGLE AXIS MOTOR ADDED	TAT	AB	AB	9/4/98
"	"	01-02-30 CONDUIT SINGLE AXIS MTR REMOVED	"	"	"	"
B		DUAL E-STOP CIRCUIT	TAT	AB	AB	6/18/98
C		CONTACT/INDUCTION PNEU.CAB WIRING ADDED	TAT	AB	AB	8/14/98
D	N062	01-02-40 CONDUIT,(3PH SERIES MOTOR WIRING) DELETED	TAT	AB	AB	10/9/98
		01-06-30 CONDUIT, (1PH Z & X AXIS MOTORS) DELETED				
		01-20-30 CONDUIT, SINGLE AXIS (X AXIS) MOTOR ADDED				
		01-18-20 CONDUIT, MIILLGUARD SW CH1&2 TERMS RE-DEFINED				
		AS 07003,7003A ON UNITS >400Kw (T'TOOL XFORMER SUPLLY)				
		AND 04010,4010A ON ALL OTHER.				
		01-06-30 CONDUIT, ADDED Y AXIS LIMIT SWITCHES				
		01-06-20 CONDUIT, ADDED PNEUMATIC CLAMP OPEN/CLOSE SW				
		01-05-40 CONDUIT, DEFINED HEAT EXCHANGER VARIANTS				
		01-04-20 CONDUIT DELETE WIRES 2407,2503				
		GENERALLY RE-ARRANGED DOCUMENT TO CLARIFY				
E	-	DEFINE POWER FACTOR CORRECTION CABLE SIZE FOR 200 & 300kW WELDERS	TAT	ABr	ABr	3/31/99
F	N258	RE-DEFINE PFC. CURRENT XFORMER CABLING DETAIL, ADD DETAIL FOR PFC DOOR SWITCHES	TAT	ABr	ABr	4/14/99
G	01065	ADD EARTHS IN PLUG CONNECTORS SH.8&9,250KW GND CABLE WAS 1X240 SH.6,DELETE CONDUIT NO 01-06-40 Z AXIS BRAKE SOLENOID, ADD 400KVAR PFC ON SH.23, CORRECT COMMENTS ON OTHER KVAR RATINGS	TAT	ABr	ABr	3/30/01
H	01091	X AXIS MOTOR WIRING ADDED TO THE MULTICORE DIRECT TO 3 AXIS TABLE (CONDUIT 01-06-30), CORRECTED MISC.COMMENT ERRORS PLUG 1 (CONDUIT 01-02-30)	TAT	Abr	ABr	4/25/00
I	01244	Sh. 8 CORRECTED CONDUIT ID FOR PLUG 2, WAS 01-02-60 NOW 01-02-20 (24V DC)	TAT	Abr	ABr	10/19/01
J	01323	CABLE/TERM 621 (Sh.8 Plug I Pin 8- Conduit 01-02-30) PREVIOUSLY IDENTIFIED AS 603	TAT	Abr	ABr	1/15/02
K	04256	SH 10, CONDUIT 01-04-20, ADD CABLE 2406A	TAT			11/16/04
L	06151	SH.13 AMENDED 50-15OKW HE PUMP WAS 2.2KW, NOW 5.5KW, CABLES WERE 1.5MM NOW 2.5MM	TAT			06/23/06

THERMATOOL

TITLE

INTERCONNECT CABLE LIST FOR CFI SOLID STATE WELDERS

DWG No	Rev
WW0094	**L**

SOURCE/ DEST'N CODE		DESCRIPTION	COMMENTS
0		PLANT DISTRIBUTION PANEL	CUSTOMER SUPPLY
1		WELDER DC POWER SUPPLY	
2		RF GENERATOR/OSCILLATOR	
3		UNUSED	UNUSED
4		WELDER REMOTE CONTROLS	
5		WELDER HEAT EXCHANGER	
6		WELD TABLE	
7		WELD HEAD	
8		THERMASURE OPERATOR PANEL	OPTIONAL EQUIPMENT
9		THERMASURE CHART RECORDER	OPTIONAL EQUIPMENT
10		THERMASURE PYROMETER HEAD	OPTIONAL EQUIPMENT
11		PYROMETER AIR FILTER ASSEMBLY	OPTIONAL EQUIPMENT
12		THERMASURE TEMP. DISPLAY UNIT	OPTIONAL EQUIPMENT
13		SIL - SIGNAL ISOLATOR/CONVERTER	OPTIONAL EQUIPMENT
17		SYSTEM MILL FIXTURE	
18		SYSTEM CONTROL CABINET	
19		SYSTEM CONSOLE	
20		SYSTEM PENDANT STATION	
21		STEP DOWN TRANSFORMER CABINET	ONLY ON 400Kw AND ABOVE
31		POWER FACTOR CORRECTION CABINET	OPTIONAL EQUIPMENT

VOLTAGE LEVEL CODE		DESCRIPTION
1		SIGNAL LEVEL (ANALOGUE)
2		EXTRA LOW VOLTAGE 24VDC
3		LOW VOLTAGE 115V OR 230V 50Hz
4		LOW VOLTAGE POWER LEVEL 400V 50Hz
5		SPECIAL HIGH POWER CABLES/BUSBARS
6		LV PLANT DISTRIBUTION 400V 50Hz

CONDUIT NUMBER SYSTEM		FORMAT
		AA - BB - C D
AA		SOURCE EQUIPMENT CODE
BB		DESTINATION EQUIPMENT CODE
C		VOLTAGE LEVEL CODE
D		JUNCTION BOX No. (WHERE USED)

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 0 - 0 1 - 6 0
SOURCE -	CUSTOMER

APPLICATION	SEE UNIT RATING
DESCRIPTION	CUSTOMER SUPPLIED 400V 50Hz
FROM	PLANT DISTRIBUTION PANEL
TO	WELDER DC POWER SUPPLY

UNIT RATING	PHASE	CONDUCTOR NUMBER	CONDUCTOR QUANTITY	COND. SIZE	COND. COLOUR
50Kw	R	L1	1	70mm2	BLACK
(123A)	S	L2	1	70mm2	BLACK
	T	L3	1	70mm2	BLACK
	GND	GND	1	35mm2	GRN/YEL
100Kw	R	L1	1	95mm2	BLACK
(231A)	S	L2	1	95mm2	BLACK
	T	L3	1	95mm2	BLACK
	GND	GND	1	50mm2	GRN/YEL
150Kw	R	L1	2	70mm2	BLACK
(348A)	S	L2	2	70mm2	BLACK
	T	L3	2	70mm2	BLACK
	GND	GND	1	70mm2	GRN/YEL
200Kw	R	L1	2	120mm2	BLACK
(464A)	S	L2	2	120mm2	BLACK
	T	L3	2	120mm2	BLACK
	GND	GND	1	120mm2	GRN/YEL
250Kw	R	L1	2	150mm2	BLACK
(578A)	S	L2	2	150mm2	BLACK
	T	L3	2	150mm2	BLACK
	GND	GND	1	150mm2	GRN/YEL
300Kw	R	L1	2	185mm2	BLACK
(690A)	S	L2	2	185mm2	BLACK
	T	L3	2	185mm2	BLACK
	GND	GND	1	185mm2	GRN/YEL
350Kw	R	L1	3	120mm2	BLACK
(795A)	S	L2	3	120mm2	BLACK
	T	L3	3	120mm2	BLACK
	GND	GND	1	185mm2	GRN/YEL

NOTES

CABLES ON THIS PAGE ARE BASED ON COPPER UNARMOURED SINGLE CORE
CONDUCTORS ENCLOSED IN CONDUIT TO BS 6004, BS 6231, BS 6346
AT 30 DEG C AMBIENT AND 70 DEG C CONDUCTOR TEMPERATURE.

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 0 - 2 1 - 6 0
SOURCE -	CUSTOMER

APPLICATION	SEE UNIT RATING
DESCRIPTION	CUSTOMER SUPPLIED 400V 50Hz
FROM	PLANT DISTRIBUTION PANEL
TO	WELDER TRANSFORMER CABINET

UNIT RATING	PHASE	CONDUCTOR NUMBER	CONDUCTOR QUANTITY	COND. SIZE	COND. COLOUR
400Kw	R	L1	3	150mm2	BLACK
(911A)	S	L2	3	150mm2	BLACK
	T	L3	3	150mm2	BLACK
	GND	GND	1	240mm2	GRN/YEL
500Kw	R	L1	4	150mm2	BLACK
(1130A)	S	L2	4	150mm2	BLACK
	T	L3	4	150mm2	BLACK
	GND	GND	2	150mm2	GRN/YEL
600Kw	R	L1	4	185mm2	BLACK
(1361A)	S	L2	4	185mm2	BLACK
	T	L3	4	185mm2	BLACK
	GND	GND	2	185mm2	GRN/YEL
800Kw	R	L1	5	240mm2	BLACK
(1805A)	S	L2	5	240mm2	BLACK
	T	L3	5	240mm2	BLACK
	GND	GND	3	240mm2	GRN/YEL
1000Kw	R	L1	6	240mm2	BLACK
(2257A)	S	L2	6	240mm2	BLACK
	T	L3	6	240mm2	BLACK
	GND	GND	3	240mm2	GRN/YEL
1200Kw	R	L1	7	240mm2	BLACK
(2703A)	S	L2	7	240mm2	BLACK
	T	L3	7	240mm2	BLACK
	GND	GND	4	240mm2	GRN/YEL

NOTES

CABLES ON THIS PAGE ARE BASED ON COPPER UNARMOURED SINGLE CORE
CONDUCTORS ENCLOSED IN CONDUIT TO BS 6004, BS 6231, BS 6346
AT 30 DEG C AMBIENT AND 70 DEG C CONDUCTOR TEMPERATURE.

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	2 1 - 0 1 - 5 0
SOURCE -	CUSTOMER

APPLICATION	SEE UNIT RATING
DESCRIPTION	WELDER SUPPLY 200V 50Hz
FROM	WELDER TRANSFORMER CABINET
TO	WELDER DC POWER SUPPLY

CONDUCTOR DESCRIPTION	HIGH CONDUCTIVITY COPPER BUSBARS

UNIT RATING	PHASE	CONDUCTOR NUMBER	CONDUCTOR QUANTITY	COND. SIZE	COND. COLOUR
400Kw	R	2L1	1	100X10mm	N/A
(1680A)	S	2L2	1	100X10mm	N/A
	T	2L3	1	100X10mm	N/A
	GND	GND	1	100X5mm	N/A
500Kw	R	2L1	2	60X10mm	N/A
(2097A)	S	2L2	2	60X10mm	N/A
	T	2L3	2	60X10mm	N/A
	GND	GND	1	60X10mm	N/A
600Kw	R	2L1	2	80X10mm	N/A
(2525A)	S	2L2	2	80X10mm	N/A
	T	2L3	2	80X10mm	N/A
	GND	GND	1	80X10mm	N/A
800Kw	R	2L1	2	100X10mm	N/A
(3347A)	S	2L2	2	100X10mm	N/A
	T	2L3	2	100X10mm	N/A
	GND	GND	1	100X10mm	N/A
1000Kw	R	2L1	3	100X10mm	N/A
(4183A)	S	2L2	3	100X10mm	N/A
	T	2L3	3	100X10mm	N/A
	GND	GND	2	100X10mm	N/A
1200Kw	R	2L1	3	120X10mm	N/A
(5020A)	S	2L2	3	120X10mm	N/A
	T	2L3	3	120X10mm	N/A
	GND	GND	2	120X10mm	N/A

NOTES

CONDUCTORS ON THIS PAGE ARE BASED ON PURE COPPER BUSBARS OPERATING AT 80 DEG C IN AN AMBIENT OF 35 DEG C.

SUFFICIENT VENTILATION MUST BE PROVIDED.

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 2 - 5 0
SOURCE -	CUSTOMER

APPLICATION	SEE UNIT RATING
DESCRIPTION	SPECIAL HIGH POWER CABLES
FROM	WELDER DC POWER SUPPLY
TO	RF GENERATOR/OSCILLATOR

UNIT RATING	PHASE	CONDUCTOR NUMBER	CONDUCTOR QUANTITY	COND. SIZE	COND. COLOUR
50Kw	+	9 0 3	1	95mm2	BLACK
(260A DC)	-	9 0 4	1	95mm2	BLACK
	GND	GND	1	50mm2	GRN/YEL
100Kw	+	9 0 3	2	95mm2	BLACK
(521A DC)	-	9 0 4	2	95mm2	BLACK
	GND	GND	1	95mm2	GRN/YEL
150Kw	+	9 0 3	3	95mm2	BLACK
(781 A DC)	-	9 0 4	3	95mm2	BLACK
	GND	GND	1	150mm2	GRN/YEL
200Kw	+	9 0 3	3	120mm2	BLACK
(1042A DC)	-	9 0 4	3	120mm2	BLACK
	GND	GND	1	185mm2	GRN/YEL
250Kw	+	9 0 3	4	120mm2	BLACK
(1302A DC)	-	9 0 4	4	120mm2	BLACK
	GND	GND	2	120mm2	GRN/YEL
300Kw	+	9 0 3	4	150mm2	BLACK
(1563A DC)	-	9 0 4	4	150mm2	BLACK
	GND	GND	2	150mm2	GRN/YEL
350Kw	+	9 0 3	4	185mm2	BLACK
(1800A DC)	-	9 0 4	4	185mm2	BLACK
	GND	GND	2	185mm2	GRN/YEL

NOTES

CABLES ON THIS PAGE ARE BASED ON COPPER UNARMOURED SINGLE CORE
CONDUCTORS ENCLOSED IN CONDUIT TO BS 6004, BS 6231, BS 6346
AT 30 DEG C AMBIENT AND 70 DEG C CONDUCTOR TEMPERATURE.

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 2 - 5 0
SOURCE -	CUSTOMER

APPLICATION	SEE UNIT RATING
DESCRIPTION	SPECIAL HIGH POWER CABLES
FROM	WELDER DC POWER SUPPLY
TO	RF GENERATOR/OSCILLATOR

UNIT RATING	PHASE	CONDUCTOR NUMBER	CONDUCTOR QUANTITY	COND. SIZE	COND. COLOUR
400Kw	+	9 0 3	4	240mm2	BLACK
(2057A DC)	-	9 0 4	4	240mm2	BLACK
	GND	GND	2	240mm2	GRN/YEL
500Kw	+	9 0 3	5	240mm2	BLACK
(2567A DC)	-	9 0 4	5	240mm2	BLACK
	GND	GND	3	240mm2	GRN/YEL
600Kw	+	9 0 3	6	240mm2	BLACK
(3091A DC)	-	9 0 4	6	240mm2	BLACK
	GND	GND	3	240mm2	GRN/YEL
800Kw	+	9 0 3	8	240mm2	BLACK
(4096A DC)	-	9 0 4	8	240mm2	BLACK
	GND	GND	4	240mm2	GRN/YEL
1000Kw	+	9 0 3	9	240mm2	BLACK
(5121A DC)	-	9 0 4	9	240mm2	BLACK
	GND	GND	5	240mm2	GRN/YEL
1200Kw	+	9 0 3	11	240mm2	BLACK
(6145A DC)	-	9 0 4	11	240mm2	BLACK
	GND	GND	6	240mm2	GRN/YEL

NOTES

CABLES ON THIS PAGE ARE BASED ON COPPER UNARMOURED SINGLE CORE
CONDUCTORS ENCLOSED IN CONDUITTO BS 6004, BS 6231, BS 6346
AT 30 DEG C AMBIENT AND 70 DEG C CONDUCTOR TEMPERATURE.

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 2 - 3 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
FROM	WELDER DC POWER SUPPLY
TO	RF GENERATOR PLUG 1

CONDUCTOR DESCRIPTION	12 CONDUCTOR SCREENED CABLE

PLUG PIN NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1..2	6 0 0	2.5mm2		
1..1	6 0 2	2.5mm2		
1..8	6 2 1	2.5mm2		COOLING FAN POWER
1..3	1 0 0	2.5mm2		
1..4	1 1 4	2.5mm2		(PARALLEL) ONLY ON AUTOMATCH
1..5	1 1 5	2.5mm2		(PARALLEL) ONLY ON AUTOMATCH
1..6	1 1 6	2.5mm2		(SERIES) ONLY ON AUTOMATCH
1..7	1 1 7	2.5mm2		(SERIES) ONLY ON AUTOMATCH
1..9	1 2 0	2.5mm2		(X AXIS) SINGLE AXIS TABLES 0NLY
1..10	1 2 1	2.5mm2		(X AXIS) SINGLE AXIS TABLES 0NLY
GND ⏚	G N D ⏚	2.5mm2	GRN/YELLOW	EARTH

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 2 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	WELDER DC POWER SUPPLY
TO	RF GENERATOR PLUG 2

CONDUCTOR DESCRIPTION	16 CONDUCTOR SHIELDED CABLE

PLUG PIN NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
2..7	0 4 0 0 7	0.75mm2		E STOP CH. 1
2..8	4 0 0 7 A	0.75mm2		E STOP CH. 2
2..6	0 4 0 0 8	0.75mm2		E STOP CH. 1
2..1	4 0 0 8 A	0.75mm2		E STOP CH. 2
2..5	0 4 0 0 9	0.75mm2		DOOR SWITCHES CH.1
2..15	4 0 0 9 A	0.75mm2		DOOR SWITCHES CH.2
2..4	0 4 0 1 0	0.75mm2		DOOR SWITCHES CH.1
2..16	4 0 1 0 A	0.75mm2		DOOR SWITCHES CH.2
2..2	0 4 0 1 4	0.75mm2		2-TS1-5
2..3	0 4 0 1 5	0.75mm2		2-TS6-12
2..9	0 3 0 0 2	0.75mm2		2-FLS1
2..13	0 2 0 0 4	0.75mm2		AUTOMATCH ONLY (Lim.Sw Parallel In.)
2..12	0 2 0 0 5	0 0.75mm2		AUTOMATCH ONLY (Lim.Sw ParallelOut)
2..11	0 2 0 0 6	0.75mm2		AUTOMATCH ONLY (Lim.Sw Series In.)
2..10	0 2 0 0 7	0.75mm2		AUTOMATCH ONLY (Lim.Sw Series Out)
2..14	2 4 0 3	0.75mm2		24V DC SUPPLY
GND ⏚	G N D ⏚	0.75mm2	GRN/YELLOW	EARTH

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 2 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	WELDER DC POWER SUPPLY
TO	RF GENERATOR PLUG 3

CONDUCTOR DESCRIPTION: 12 CONDUCTOR SHIELDED CABLE

PLUG PIN NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
3..1	2 4 0 0	0.75mm2		TO 1-XHF TERM 1
3..7	2 4 2 5	0.75mm2		TO 1-XHF TERM 3
3..6	2 4 2 6	0.75mm2		TO 1-XHF TERM 5
3..5	2 4 2 7	0.75mm2		TO 1-XHF TERM 7
3..4	2 4 2 8	0.75mm2		TO 1-XHF TERM 20
3..3	2 4 2 9	0.75mm2		TO 1-XHF TERM 10
3..2	2 4 3 0	0.75mm2		TO 1-XHF TERM 11
3..8	S C R N			SCREEN
3..9				SPARE
3..10				SPARE
3..11				SPARE
3..12				SPARE
GND ⏚	G N D ⏚	2.5mm2	GRN/YELLOW	EARTH

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 2 - 1 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	SIGNAL LEVEL (ANALOG)
FROM	WELDER DC POWER SUPPLY
TO	RF GENERATOR PLUG 4

CONDUCTOR DESCRIPTION: 4 CONDUCTOR SHIELDED CABLE

PLUG PIN NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
4..3	1 0 1 3	0.5mm2	RED	TO 1-XHF TERM 13
4..2	1 0 1 4	0.5mm2	BLUE	TO 1-XHF TERM 15
4..1	1 0 1 5	0.5mm2	GREEN	TO 1-XHF TERM 17 & 19
4..4	S C R N			SCREEN
GND ⏚	G N D ⏚	0.5mm2	GRN/YELLOW	EARTH

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 1 7 - 1 0
SOURCE -	THERMATOOL

APPLICATION	ALL UNITS
DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
FROM	WELDER DC POWER SUPPLY
TO	MILL FIXTURE

CONDUCTOR DESCRIPTION: 2 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	2 4 0 0	1.5mm2		MILL SPEED TACHO +Ve
2	1 0 1 1	1.5mm2		MILL SPEED TACHO -Ve
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 4 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	WELDER DC POWER SUPPLY
TO	WELDER REMOTE CONTROLS

CONDUCTOR DESCRIPTION	40 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	0 2 0 0 0	0.75mm2		
2	0 2 0 0 1	0.75mm2		
3	0 2 0 0 2	0.75mm2		
4	0 2 0 0 3	0.75mm2		
5	0 2 0 0 8	0.75mm2		ONLY AUTOMATCH UNITS
6	0 2 0 0 9	0.75mm2		ONLY AUTOMATCH UNITS
7	0 2 0 1 0	0.75mm2		ONLY AUTOMATCH UNITS
8	0 2 0 1 1	0.75mm2		ONLY AUTOMATCH UNITS
9	0 2 0 1 2	0.75mm2		ONLY AUTOMATCH UNITS
10	2 4 0 0	0.75mm2		24V DC COM
11	2 4 0 3	0.75mm2		
12	2 4 0 6	0.75mm2		RESET
13	2 4 0 6 A	0.75mm2		E-STOP CH.2
14	2 4 1 1	0.75mm2		X AXIS
15	2 4 1 2	0.75mm2		X AXIS
16	2 4 1 3	0.75mm2		(Y AXIS) 3 AXIS TABLE ONLY
17	2 4 1 4	0.75mm2		(Y AXIS) 3 AXIS TABLE ONLY
18	2 4 1 5	0.75mm2		(Z AXIS) 3 AXIS TABLE ONLY
19	2 4 1 6	0.75mm2		(Z AXIS) 3 AXIS TABLE ONLY
20		0.75mm2		SPARE
21	2 5 0 4	0.75mm2		RESET
22	0 4 0 0 6	0.75mm2		E-STOP CH.2
23	4 0 0 6 A	0.75mm2		E-STOP CH.1
24	0 6 0 0 0	0.75mm2		PMD ONLY
25	0 6 0 0 1	0.75mm2		PMD ONLY
26	0 6 0 0 2	0.75mm2		PMD ONLY
27	0 6 0 0 3	0.75mm2		PMD ONLY
28	0 6 0 0 4	0.75mm2		PMD ONLY
29	0 6 0 0 5	0.75mm2		PMD ONLY
30	0 6 0 0 6	0.75mm2		PMD ONLY
31	0 6 0 0 7	0.75mm2		PMD ONLY
32	0 6 0 0 8	0.75mm2		PMD ONLY
33	0 6 0 0 9	0.75mm2		PMD ONLY
34	0 6 0 1 0	0.75mm2		PMD ONLY
35	0 6 0 1 1	0.75mm2		PMD ONLY
36	0 6 0 1 2	0.75mm2		PMD ONLY
37	0 6 0 1 3	0.75mm2		"HEAT OFF" LAMP
38	0 6 0 1 4	0.75mm2		"HEAT ON" LAMP
39	0 6 0 1 5	0.75mm2		RESET PUSHBUTTON
40		0.75mm2		SPARE
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 1 8 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	WELDER DC POWER SUPPLY
TO	SYSTEM CONTROL CABINET

CONDUCTOR DESCRIPTION	20 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	0 4 0 0 5	0.75mm2		MILL E-STOP CH.2
2	4 0 0 5 A	0.75mm2		MILL E-STOP CH.1
3	2 4 0 0	0.75mm2		24V DC COM
4	2 4 0 3	0.75mm2		24V DC SUPPLY
5	2 4 0 7	0.75mm2		MILL E-STOP CH 2
6	0 2 0 1 3	0.75mm2		MILL INTERLOCK
7	0 2 0 1 4	0.75mm2		MILL FAULT/READY
8	0 2 0 1 5	0.75mm2		MILL OFF/RUN
9	1 3 0	0.75mm2		WELDER FAULT/READY
10	1 3 1	0.75mm2		
11	1 3 2	0.75mm2		WELD HEAT OFF/ON
12	1 3 3	0.75mm2		
13	1 2 8	0.75mm2		WELDER E-STOP CH.1
14	1 2 9	0.75mm2		WELDER E-STOP CH.1
15	1 5 0	0.75mm2		WELDER E-STOP CH.2
16	1 5 1	0.75mm2		WELDER E-STOP CH.2
17	2 5 0 6	0.75mm2		MILL/PFC GUARD SWITCH CH 2
18	0 4 0 1 0	0.75mm2		MILL/PFC GUARD SW. CH2 <350Kw UNITS ONLY
18	0 7 0 0 3			MILL/PFC GUARD SW. CH 2 >400Kw UNITS WITH XFORMER CAB.ONLY
19	2 5 0 6 A	0.75mm2		MILL/PFC GUARD SWITCH CH 1
20	4 0 1 0 A	0.75mm1		MILL/PFC GUARD SW. CH1 <350Kw UNITS ONLY
20	7 0 0 3 A			MILL/PFC GUARD SW. CH 1 >400Kw UNITS WITH XFORMER CAB.ONLY
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 5 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	EXTRA LOW VOLTAGE 24V DC
FROM	WELDER DC POWER SUPPLY
TO	HEAT EXCHANGER

CONDUCTOR DESCRIPTION	2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	2 4 0 3	0.75mm2		HEAT EXCHANGER
2	3 0 0 4	0.75mm2		WATER LEVEL
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 4 - 1 0
SOURCE -	CUSTOMER

APPLICATION	ALL UNITS
DESCRIPTION	SIGNAL LEVEL (ANALOG)
FROM	WELDER DC POWER SUPPLY
TO	WELDER REMOTE CONTROLS

CONDUCTOR DESCRIPTION	4 x 4 CONDUCTOR SHIELDED CABLES OR 1 x 16 CONDUCTOR CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	2 4 0 0	0.5mm2	BLUE	
2	1 0 0 1	0.5mm2	RED	ANALOGUE METERS
3	1 0 0 2	0.5mm2	GREEN	
4	1 0 0 3	0.5mm2	YELLOW	THERMAVIEW ONLY
SCRN	SCRN			
5	2 4 0 0	0.5mm2	BLUE	WELD
6	1 0 2 6	0.5mm2	RED	POWER
7	1 0 2 5	0.5mm2	GREEN	POTENTIOMETER
8		0.5mm2	YELLOW	UNUSED
SCRN	SCRN			
9	2 4 0 0	0.5mm2	BLUE	START
10	1 0 2 8	0.5mm2	RED	POWER
11	1 0 2 9	0.5mm2	GREEN	POTENTIOMETER
12		0.5mm2	YELLOW	UNUSED
SCRN	SCRN			
13	1 0 6 5	0.5mm2	BLUE	SECOND GANG OF WELD
14	1 0 6 6	0.5mm2	RED	POWER POT.
15	1 0 6 7	0.5mm2	GREEN	THERMASURE UNITS ONLY.
16		0.5mm2	YELLOW	UNUSED
SCRN	SCRN			

		APPLICATION	50Kw UPTO 350Kw UNITS ONLY
CONDUIT ID -	A A - B B - C D	DESCRIPTION	LOW VOLTAGE POWER 400V 50Hz
CONDUIT No.-	0 1 - 0 5 - 4 0	FROM	WELDER DC POWER SUPPLY
SOURCE -	CUSTOMER	TO	HEAT EXCHANGER

CONDUCTOR DESCRIPTION	3 + EARTH CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	1 T 1	2.5mm2		TO
2	1 T 2	2.5mm2		HEAT EXCHANGER
3	1 T 3	2.5mm2		MOTOR.(5.5Kw)
4	GND	2.5mm2	GRN/YELLOW	

		APPLICATION	400Kw UPTO 600Kw UNITS ONLY
CONDUIT ID -	A A - B B - C D	DESCRIPTION	LOW VOLTAGE POWER 400V 50Hz
CONDUIT No.-	O 1 - 0 5 - 4 0	FROM	WELDER DC POWER SUPPLY
SOURCE -	CUSTOMER	TO	HEAT EXCHANGER

CONDUCTOR DESCRIPTION	3 + EARTH CONDUCTOR CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	1 T 1	4mm2		TO
2	1 T 2	4mm2		HEAT EXCHANGER
3	1 T 3	4mm2		MOTOR. (7.5Kw)
4	GND	4mm2	GRN/YELLOW	

		APPLICATION	800Kw AND ABOVE ONLY
CONDUIT ID -	A A - B B - C D	DESCRIPTION	LOW VOLTAGE POWER 400V 50Hz
CONDUIT No.-	O 1 - 0 5 - 4 0	FROM	WELDER DC POWER SUPPLY
SOURCE -	CUSTOMER	TO	HEAT EXCHANGER

CONDUCTOR DESCRIPTION	3 + EARTH CONDUCTOR CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	1 T 1	16mm2		TO
2	1 T 2	16mm2		HEAT EXCHANGER
3	1 T 3	16mm2		MOTOR (22Kw)
4	GND	10mm2	GRN/YELLOW	

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	2 1 - 0 1 - 4 0
SOURCE -	CUSTOMER

APPLICATION	ONLY UNITS 400Kw AND ABOVE
DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
FROM	TRANSFORMER CABINET
TO	WELDER DC POWER SUPPLY

CONDUCTOR DESCRIPTION	2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	1 0 9	1.5mm2		DC & CONTROL
2	1 4 1	1.5mm2		CABINET LIGHTING
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	2 1 - 0 1 - 3 0
SOURCE -	CUSTOMER

APPLICATION	ONLY UNITS 400kW & ABOVE
DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
FROM	TRANSFORMER CABINET
TO	WELDER DC POWER SUPPLY

CONDUCTOR DESCRIPTION	6 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	1 0 0	1.5mm2		AC COMMON
2	1 0 2	1.5mm2		AC SUPPLY
3	1 0 4	1.5mm2		CB MOTOR
4	1 0 5	1.5mm2		CB CLOSE COIL
5	1 0 6	1.5mm2		CB OPEN COIL
6	1 0 8	1.5mm2		CB UV RELEASE
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	2 1 - 0 1 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ONLY UNITS 400Kw AND ABOVE
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	TRANSFORMER CABINET
TO	WELDER DC POWER SUPPLY

CONDUCTOR DESCRIPTION	20 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	0 4 0 0 8	0.75mm2		E-STOP CH.1
2	4 0 0 8 A	0.75mm2		E-STOP CH.2
3	0 4 0 1 0	0.75mm2		DOOR SWITCH CH.1
4	4 0 1 0 A	0.75mm2		DOOR SWITCH CH.2
5	0 3 0 0 7	0.75mm2		MAIN CIRCUIT BREAKER CLOSED
6	2 4 0 3	0.75mm2		+24VDC
7	2 4 0 5	0.75mm2		
8	0 7 0 0 0	0.75mm2		
9	0 7 0 0 1	0.75mm2		
10	0 7 0 0 2	0.75mm2		
11	0 7 0 0 3	0.75mm2		DOOR SWITCH CH.1
12	7 0 0 3 A	0.75mm2		DOOR SWITCH CH.2
13	0 7 0 0 4	0.75mm2		E-STOP CH.1
14	7 0 0 4 A	0.75mm2		E-STOP CH.2
15	0 7 0 0 5	0.75mm2		
16	0 7 0 0 6	0.75mm2		
17	2 4 0 0	0.75mm2		
18		0.75mm2		UNUSED
19		0.75mm2		UNUSED
20		0.75mm2		UNUSED
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	2 1 - 0 1 - 4 0
SOURCE -	CUSTOMER

APPLICATION	ONLY UNITS 400 TO 600Kw
DESCRIPTION	LOW VOLTAGE POWER 400V 50Hz
FROM	TRANSFORMER CABINET
TO	WELDER DC POWER SUPPLY

CONDUCTOR DESCRIPTION	3 CONDUCTOR ARMOURED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	4 L 1	16mm2		400V CONTROL SUPPLY
2	4 L 2	16mm2		400V CONTROL SUPPLY
3	4 L 3	16mm2		400V CONTROL SUPPLY
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 0 6 - 4 0
SOURCE -	CUSTOMER

APPLICATION	3 AXIS TABLE ONLY
DESCRIPTION	LOW VOLTAGE POWER 400V 50Hz
FROM	WELDER DC POWER SUPPLY
TO	WELD TABLE

CONDUCTOR DESCRIPTION: 3 + EARTH CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	6 T 1	1.5mm2		TO
2	6 T 2	1.5mm2		Z AXIS
3	6 T 3	1.5mm2		MOTOR.
4	GND	1.5mm2	GRN/YELLOW	

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 6 - 2 0
SOURCE -	CUSTOMER

APPLICATION	3 AXIS TABLES ONLY
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	WELDER DC POWER SUPPLY
TO	WELD TABLE

CONDUCTOR DESCRIPTION: 3 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	2 4 4 5	1.5mm2		Z AXIS LIMIT SWITCHES
2	2 5 0 0	1.5mm2		LIMIT UP
3	2 5 0 1	1.5mm2		LIMIT DOWN
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 6 - 3 0
SOURCE -	CUSTOMER

APPLICATION	3 AXIS TABLE ONLY
DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
FROM	WELDER DC POWER SUPPLY
TO	WELD TABLE

CONDUCTOR DESCRIPTION	10 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	1 0 0	1.5mm2		Y AXIS MOTOR (NEUTRAL)
2	1 2 2 A	1.5mm2		Y AXIS MOTOR (BRAKE)
3	1 2 3	1.5mm2		Y AXIS MOTOR (FORWARD)
4	1 2 4	1.5mm2		Y AXIS MOTOR (REVERSE) BRAKE
5	1 2 2	1.5mm2		Y AXIS LIMIT (COMMON SUPPLY)
6	1 2 3 B	1.5mm2		Y AXIS LIMIT (FORWARD)
7	1 2 4 B	1.5mm2		Y AXIS LIMIT (REVERSE)
8	1 2 0	1.5mm2		X AXIS MOTOR
9	1 2 1	1.5mm2		X AXIS MOTOR
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 1 7 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ONLY WITH PNEUMATIC CLAMP
DESCRIPTION	EXTRA LOW VOLTAGE 24V DC
FROM	WELDER DC POWER SUPPLY
TO	SYSTEM MILL FIXTURE

CONDUCTOR DESCRIPTION	2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	2 4 0 3	0.5mm2		COIL CLAMP
2	7 0 0 7	0.5mm2		AIR PRESSURE SWITCH
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	1 - 0 8 - 3 0
SOURCE -	CUSTOMER

APPLICATION	THERMASURE SYSTEMS ONLY
DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
FROM	WELDER DC POWER SUPPLY
TO	THERMASURE OPERATOR PANEL

CONDUCTOR DESCRIPTION: 3 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 5 9	1mm2		
2	3 6 0	1mm2		
3	3 6 1	1mm2		
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 8 - 1 0
SOURCE -	CUSTOMER

APPLICATION	THERMASURE SYSTEMS ONLY
DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
FROM	WELDER DC POWER SUPPLY
TO	THERMASURE OPERATOR PANEL

CONDUCTOR DESCRIPTION: 4 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 6 3	1mm2		
2	3 6 4	1mm2		
3	3 6 5	1mm2		
4	3 6 6	1mm2		
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 9 - 1 0
SOURCE -	CUSTOMER

APPLICATION	THERMASURE SYTEMS ONLY
DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
FROM	WELDER DC POWER SUPPLY
TO	THERMASURE CHART RECORDER

CONDUCTOR DESCRIPTION	4 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 6 8	1mm2		CHART
2	3 6 9	1mm2		RECORDER
3	3 7 0	1mm2		ANALOGUE
4	3 7 1	1mm2		SIGNALS
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 9 - 3 0
SOURCE -	CUSTOMER

APPLICATION	THERMASURE SYSTEMS ONLY
DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
FROM	WELDER DC POWER SUPPLY
TO	THERMASURE CHART RECORDER

CONDUCTOR DESCRIPTION	2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 5 9	1mm2		POWER
2	3 6 0	1mm2		SUPPLY
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 9 - 2 0
SOURCE -	CUSTOMER

APPLICATION	THERMASURE SYSTEMS ONLY
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	WELDER DC POWER SUPPLY
TO	THERMASURE CHART RECORDER

CONDUCTOR DESCRIPTION	2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 2 0	1mm2		PAPER
2	3 2 1	1mm2		ADVANCE
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 1 0 - 1 0
SOURCE -	THERMATOOL

APPLICATION	IRCON THERMASURE SYTEMS ONLY
DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
FROM	WELDER DC POWER SUPPLY
TO	PYROMETER SENSING HEAD

CONDUCTOR DESCRIPTION: 8 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 7 5	SCRN	SCREEN	
2	3 7 6	1mm2	RED	
3	3 7 7	1mm2	BLACK	
4	3 7 8	1mm2	GREEN	
5	3 7 9	1mm2	ORANGE	
6	3 8 0	1mm2	VIOLET	
7	3 8 1	1mm2	BROWN	
8	3 8 2	1mm2	BLUE	

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 1 8 - 1 0
SOURCE -	CUSTOMER

APPLICATION	THERMASURE SYSTEMS ONLY
DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
FROM	WELDER DC POWER SUPPLY
TO	SYSTEM CONTROL CABINET

CONDUCTOR DESCRIPTION: 2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 7 2	1mm2		OPTIONAL 0 - 7V ANALOGUE
2	3 7 3	1mm2		SIGNAL
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	1 2 - 1 0 - 1 0
SOURCE -	THERMATOOL

APPLICATION	WILLIAMSON THERMASURE SYTEMS ONLY
DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
FROM	TEMPERATURE DISPLAY UNIT
TO	PYROMETER SENSING HEAD

CONDUCTOR DESCRIPTION: 6 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
SCRN		SCRN	SCREEN	To Terminal 4 of Temp. Display Unit
1		1mm2	RED	To Terminal 1 of Temp. Display Unit
2		1mm2	BLACK	To Terminal 4 of Temp. Display Unit
3		1mm2	GREEN	To Terminal 3 of Temp. Display Unit
4		1mm2	ORANGE	To Terminal 6 of Temp. Display Unit
5		1mm2	WHITE	To Terminal 2 of Temp. Display Unit
6		1mm2	BLUE	To Terminal 5 of Temp. Display Unit

		APPLICATION	WILLIAMSON THERMASURE SYTEMS ONLY
CONDUIT ID -	A A - B B - C D	DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
CONDUIT No.-	O 1 - 1 3 - 1 0	FROM	WELDER DC POWER SUPPLY
SOURCE -	THERMATOOL	TO	SIL - SIGNAL ISOLATOR/CONVERTER

CONDUCTOR DESCRIPTION	2 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
SCRN		SCRN	SCREEN	
1	3 7 6	1mm2	RED	To Terminal 5 of SIL
2	3 7 7	1mm2	BLACK	To Terminal 4 of SIL

		APPLICATION	WILLIAMSON THERMASURE SYTEMS ONLY
CONDUIT ID -	A A - B B - C D	DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
CONDUIT No.-	1 2 - 1 3 - 1 0	FROM	TEMPERATURE DISPLAY UNIT
SOURCE -	THERMATOOL	TO	SIL - SIGNAL ISOLATOR/CONVERTER

CONDUCTOR DESCRIPTION	2 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
SCRN		SCRN	SCREEN	No Connection
1	3 7 6 A	1mm2	RED	From Terminal 8, SIL to Terminal 24 Temp. Display Unit
2	3 7 7 A	1mm2	BLACK	From Terminal 7, SIL to Terminal 25 Temp. Display Unit

		APPLICATION	THERMASURE SYSTEMS ONLY
CONDUIT ID -	A A - B B - C D	DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
CONDUIT No.-	O 1 - 1 2 - 3 0	FROM	WELDER DC POWER SUPPLY
SOURCE -	CUSTOMER	TO	TEMPERATURE DISPLAY UNIT

CONDUCTOR DESCRIPTION	2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 5 9	1mm2		To Terminal 15 of Temp. Display Unit
2	3 6 0	1mm2		To Terminal 14 of Temp. Display Unit
3	GND	1mm2		To Terminal 13 of Temp. Display Unit
SCRN	SCRN			No Connection

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 1 3 - 3 0
SOURCE -	CUSTOMER

APPLICATION	THERMASURE SYSTEMS ONLY
DESCRIPTION	LOW VOLTAGE 115V OR 230V 50Hz
FROM	WELDER DC POWER SUPPLY
TO	SIL - SIGNAL ISOLATOR/CONVERTER

CONDUCTOR DESCRIPTION: 2 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	3 5 9	1mm2		To Terminal 1 of SIL
2	3 6 0	1mm2		To Terminal 2 of SIL
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	O 1 - 0 6 - 2 0
SOURCE -	CUSTOMER

APPLICATION	CONTACT WELDERS ONLY
DESCRIPTION	24VDC PNEU.CONTROLS + H2O FLO
FROM	WELDER DC POWER SUPPLY
TO	PNEUMATIC CONTROL PANEL

CONDUCTOR DESCRIPTION: 20 CONDUCTOR + EARTH SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	2 4 0 0	0.75MM2		24VDC COMMON (2 TERMS)
2	2 4 0 3	0.75MM2		24VDC +ve (5TERMS)
3	2 4 5 9	0.75MM2		X / Y AXIS LOCK
4	2 4 6 0	0.75MM2		CONTACTS FITTED LIMIT SW (2TERM)
5	0 5 0 0 5	0.75MM2		COIL CLAMP RELEASE
6	0 5 0 0 6	0.75MM2		CONTACTS APPY
7	0 5 0 0 7	0.75MM2		CONTACTS RETRACT
8	0 5 0 0 9	0.75MM2		PNEUMATICS SOFT START
9	0 8 0 0 0	0.75MM2		SYSTEM AIR PRESURE SWITCH
10	0 8 0 0 1	0.75MM2		X / Y AXIS L0CK PRESSURE SWITCH
11	0 8 0 0 2	0.75MM2		CONTACTS APPLY PRESSURE SW.
12	0 8 0 0 3	0.75MM2		CONTACTS RETRACT PRESSURE SW
13	0 8 0 0 4	0.75MM2		COIL CLAMP PRESSURE SWITCH
14	0 8 0 0 5	0.75MM2		CONTACT COOLANT FLOW SWITCH
15	0 8 0 0 8	0.75MM2		CONTACT / INDUCTION SELECT
16	0 8 0 0 9	0.75MM2		CONTACTS APPLY
17	0 8 0 1 0	0.75MM2		CONTACTS RETRACT
18	0 8 0 1 1	0.75MM3		COIL CLAMP OPEN/CLOSE
19		0.75MM2		SPARE
20		0.75MM2		SPARE
GND ⏚	G N D ⏚	0.75MM2	GRN/YELLOW	EARTH (5 TERMS)
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	2 1 - 3 1 - 4 0
SOURCE -	CUSTOMER

APPLICATION	SEE UNIT RATING
DESCRIPTION	LOW VOLTAGE 400V 50Hz
FROM	TRANSFORMER CABINET
TO	POWER FACTOR CORRECTION

UNIT RATING	PHASE	CONDUCTOR NUMBER	CONDUCTOR QUANTITY	COND. SIZE	COND. COLOUR
125KVAr	R	L1	1	95mm2	BLACK
(195A)	S	L2	1	95mm2	BLACK
(150kW MCH)	T	L3	1	95mm2	BLACK
	GND	GND	1	50mm2	GRN/YEL
150KVAr	R	L1	1	120mm2	BLACK
(230A)	S	L2	1	120mm2	BLACK
(200kW MCH)	T	L3	1	120mm2	BLACK
	GND	GND	1	70mm2	GRN/YEL
275KVAr	R	L1	2	95mm2	BLACK
(420A)	S	L2	2	95mm2	BLACK
(350kW MCH)	T	L3	2	95mm2	BLACK
	GND	GND	1	95mm2	GRN/YEL
400KVAr	R	L1	2	120mm2	BLACK
(600A)	S	L2	2	120mm2	BLACK
(600kw MCH)	T	L3	2	120mm2	BLACK
	GND	GND	1	120mm2	GRN/YEL
328KVAr	R	L1	2	120mm2	BLACK
(500A)	S	L2	2	120mm2	BLACK
(800kW MCH + ALGORITHM)	T	L3	2	120mm2	BLACK
	GND	GND	1	120mm2	GRN/YEL
410KVAr	R	L1	2	120mm2	BLACK
(600A)	S	L2	2	120mm2	BLACK
(1MW MCH + ALGORITHM)	T	L3	2	120mm2	BLACK
	GND	GND	1	120mm2	GRN/YEL

NOTES

CABLES ON THIS PAGE ARE BASED ON COPPER UNARMOURED SINGLE CORE

CONDUCTORS ENCLOSED IN CONDUIT TO BS 6004, BS 6231, BS 6346

AT 30 DEG C AMBIENT AND 70 DEG C CONDUCTOR TEMPERATURE.

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	2 1 - 3 1 - 1 0
SOURCE -	CUSTOMER

APPLICATION	ONLY WHERE PFC FITTED
DESCRIPTION	SIGNAL LEVEL (ANALOGUE)
FROM	TRANSFORMER CABINET
TO	POWER FACTOR CORRECTION

CONDUCTOR DESCRIPTION	2 CONDUCTOR SHIELDED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	L 0	2.5mm2		CURRENT TRANSFORMER
2	K 0	2.5mm2		CURRENT TRANSFORMER
SCRN	SCRN			

CONDUIT ID -	A A - B B - C D
CONDUIT No.-	0 1 - 3 1 - 2 0
SOURCE -	CUSTOMER

APPLICATION	ONLY WHERE PFC FITTED
DESCRIPTION	EXTRA LOW VOLTAGE 24VDC
FROM	WELDER DC POWER SUPPLY
TO	POWER FACTOR CORRECTION

CONDUCTOR DESCRIPTION	4 CONDUCTOR SCREENED CABLE

CONDUCTOR NUMBER	WIRE NUMBER	CONDUCTOR SIZE	CONDUCTOR COLOUR	COMMENTS
1	2 5 0 6	0.5mm2		PFC DOOR SW.SERIES WITH MILL GUARD SW
2	2 5 0 6 A	0.5mm2		PFC DOOR SW.SERIES WITH MILL GUARD SW
2	0 4 0 1 0	0.5mm2		PFC DOOR SW.SERIES WITH MILL GUARD SW
2	4 0 1 0 A	0.5mm2		PFC DOOR SW.SERIES WITH MILL GUARD SW
SCRN	SCRN			

XS0051

Thermatool Wiring Colours

Thermatool Europe Ltd,
Thermatool House, Crockford Lane,
Basingstoke, Hants RG24 8NA

File name: XS0051A.doc

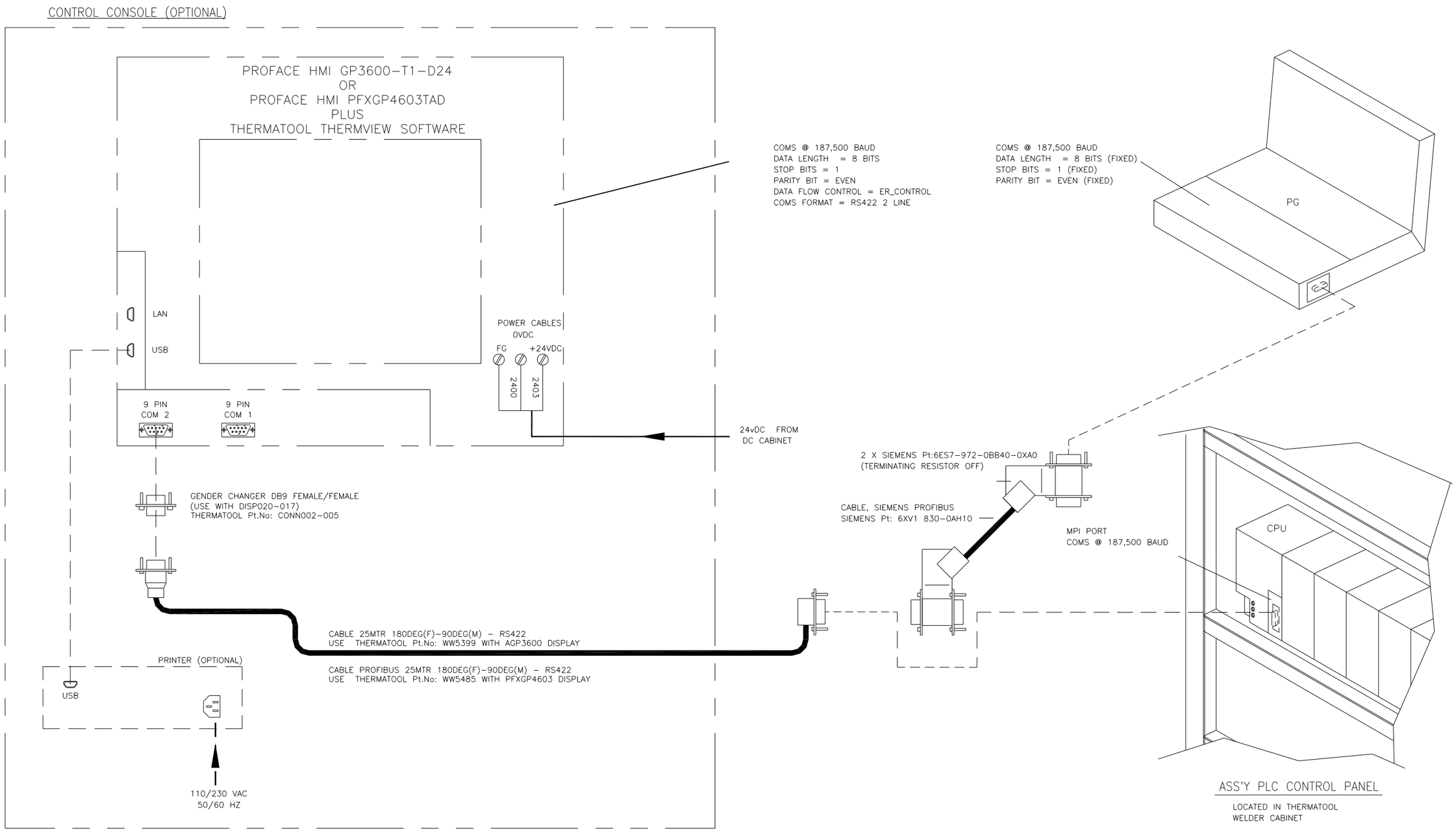
HISTORY SHEET

REV	EC	DWN	DATE	CHKD	DESCRIPTION
0	-	TAT	03/02/99	TAT	
A	N230	TAT	08/04/99	A Baller	Grounded side of 24V dc control circuits. Colour change from blue to white

Thermatool Europe Ltd,
Thermatool House, Crockford Lane,
Basingstoke, Hants RG24 8NA

Wiring Colours. ("Generally" According to EN60204)

Type of Circuit / Conductor	**Colour**	**Description**
PE Earth (Phase Earth)	Green/Yellow	Incoming Earth, Connection point should be denoted as PE by suitable marking **(See also EN60204 for "minimum" conductor size)**
Power Circuits AC & DC	Black	Incoming 3 Phase/ Wiring to Motors/ 2 Phases to Transformers)
AC Control Circuits **Line**	Red	Live of a Live and Neutral Supply/ Control Circuits/ Single phase Motors/ All wiring on Secondary side of Isolating Transformers
AC Control Circuits **Neutral**	White	Secondary side of Isolating Transformers **(After being taken to ground)**
Neutral Conductor	Light Blue	Incoming Neutral Conductor Only (Supply to a panel), Not generally required, **Should never be grounded within a panel!**
Earth	Green/Yellow	General earth cables through out panel
DC Control Circuits	Dark Blue	General Control Circuits
DC Control Circuits **Neutral**	White	Secondary side of Isolating Transformers/Power Supply's **(After being taken to ground)**
Interlock Control Circuits (Foreign Voltages from External Power sources)	Orange	Any wiring to Volt free contacts, Or where an external source will be used to provide switching voltages.
Analogue Signals +ve Screened Grey Outer	Red	Positive
Analogue Signals -ve Screened Grey Outer	Blue	Negative
Screen	Green/Yellow Sleeve	Screen wires



NOTE:

1. ALL WIRING PROVIDED BY THERMATOOL/ INSTALLED BY CUSTOMER EXCEPT AS NOTED.
2. ALL WIRING TO BE INSTALLED IN ACCORDANCE WITH NAT. ELEC. CODE EN 60204 AND / OR ALL APPLICABLE CODES.
3. ALL CONDUITS AND WIRES SHOULD BE KEPT SEPARATE FROM AC POWER SOURCES AND WIRES.
4. MAXIMUM CABLE LENGTH IS 50M WITHOUT REPEATER

REV	ECN	DESCRIPTION	ZONE	DWN	CHK	APPD	DATE
0	–	FIRST ISSUE (CC: WW0326)	–	TAT	–	–	13/10/10
1	13008	ADD VARIANTS HMI GP4600 / COMS CABLE WW5485	–	TAT	–	–	13/10/10

NEWELCO BANYARD THERMATOOL RADYNE

PROJECT TITLE

INTRCNNCT HMI – PLC TV2

PROFACE AGP3600/GP4603

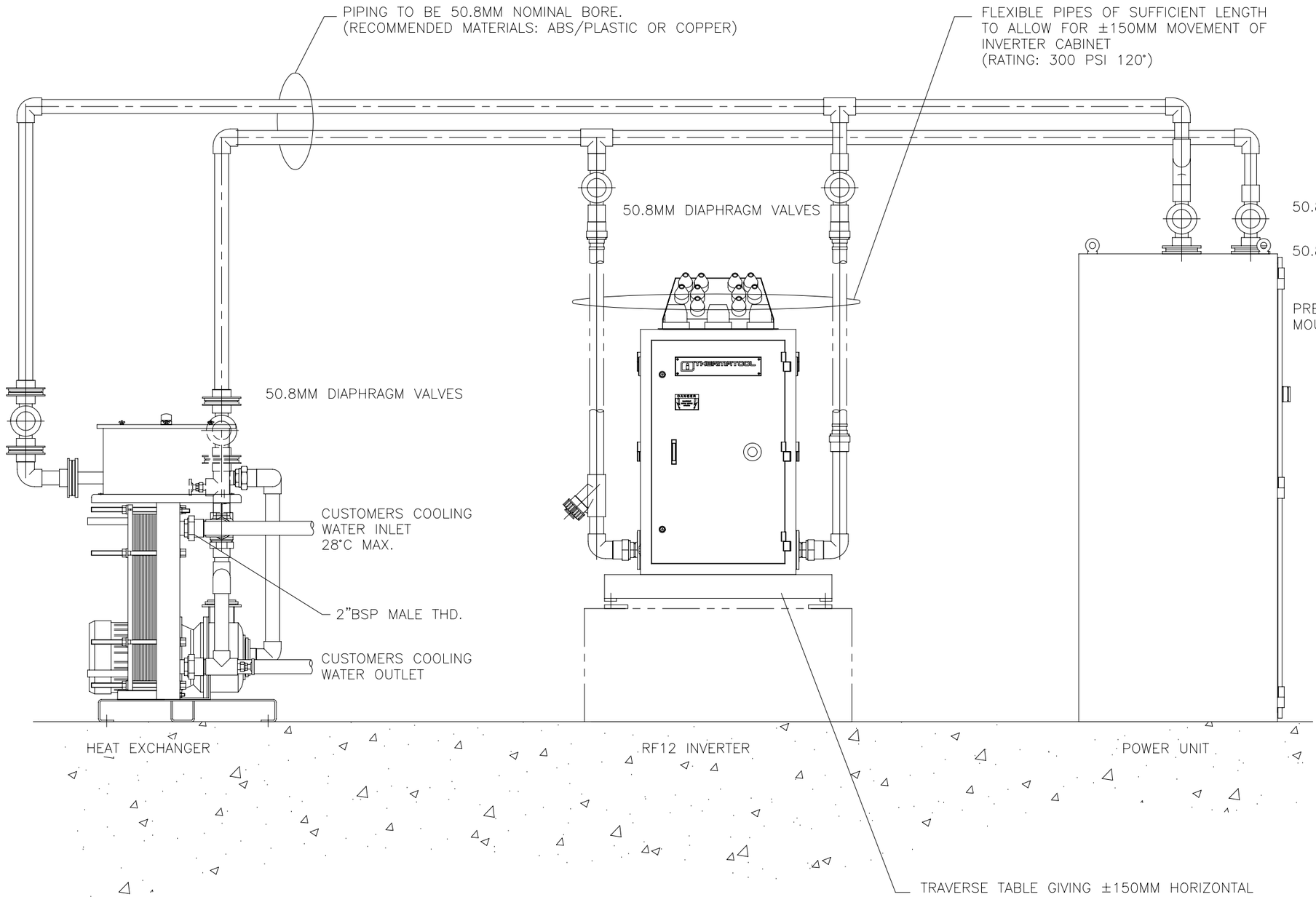
SIEMENS S7-300 PLC (MPI)

CIRCUIT STANDARDS ETC.

INDUCTOTHERM HEATING & WELDING
An Inductotherm Group Company

SIZE	DRAWN BY	W/O No.
A2	TT	–
	DATE 13/10/2010	SHEET No. 1 OF 1
DWG.No. WW5400		REV 1

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
A		INFO ADDED		MWT			
B		STRAINER ADDED		MWT			5/98
C	00149	CUSTOMER OPTION DELETED		SAF			12/00
D	01257	'28°C MAX.' NOTE ADDED	D9	AJH			6/11/01
E	01302	NEW HEAT EXCHANGER ASSY – VIEW CHANGE	D10	AJH			10/12/01
F	02049	Y STRAINER ABS WAS BRONZE– VIEW CHANGE	D7	BWH			25FEB02
G	02029	PLINTH VIEW & FLANGE NOTE CHANGED		BWH			11SEP02
H	08083	REFERENCE TO WD0170 DELETED	A9	BWH			22MAY08



NOTE:
FLANGES USED ARE METRIC
DRILLED TO BS4504 TABLE 16/3 – 10/3
REFER TO WD0171

NEXT ASSY | JOB NO
FIRST APPLICATION
UNIT: 50/300KW CFI

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ON
0 PLACE (X) ± 0.5 ANGLE ± 0°30'
1 PLACE (X.X) ± 0.3 SURFACE FINISH N8
2 PLACE (X.XX) ± 0.15
BREAK AND DEBURR ALL SHARP EDGES

SI–METRIC
THIRD ANGLE PROJECTION

APPROVALS	DD/MM/YY
DWN JAF	2/2/98
CHK	
ENG/APPD	
MATL N.A.	
FINISH/HEAT TREAT N.A.	

THERMATOOL®

TITLE
EXTERNAL WATER CIRCUIT 50 TO 350kW

SIZE	DIV NO	DWG NO	REV
A1	3	WW0090	H

SCALE 1:10 | DO NOT SCALE DRAWING COPY | SHEET 1 OF 1

ENG–REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
A	N464	F/S CONFIGURATION TABLE ADDED		MWT			11/99
B	N537	F/S CONFIGURATION TABLE CORRECTED		MWT			02/00
C	N570	MANIFOLD FOR DC CHOKE ADDED		MWT			03/00
D	03038	AMENDED TO SUIT BUILD, NOTES ADDED		BWH			29JAN03
E	04226	1–FLS3 ADDED, PIPING REROUTED		BWH			07OCT04
F	04254	WATER MANIFOLD DELETED, FLOW SW'S REIDENTIFIED		BWH			15NOV04
G	05039	CHOKE VALUES IN TABLE MODIFIED		BWH			22FEB05
H	06010	SEE SHT 1 OF 2		MWT			12JAN06
J	09083	PLUMB DC CHOKE IN PARALLEL		TAT			14JUL09

NOTES:

1. PIPES TO BE 1800mm LONG
2. PIPE TO BE 2500mm LONG

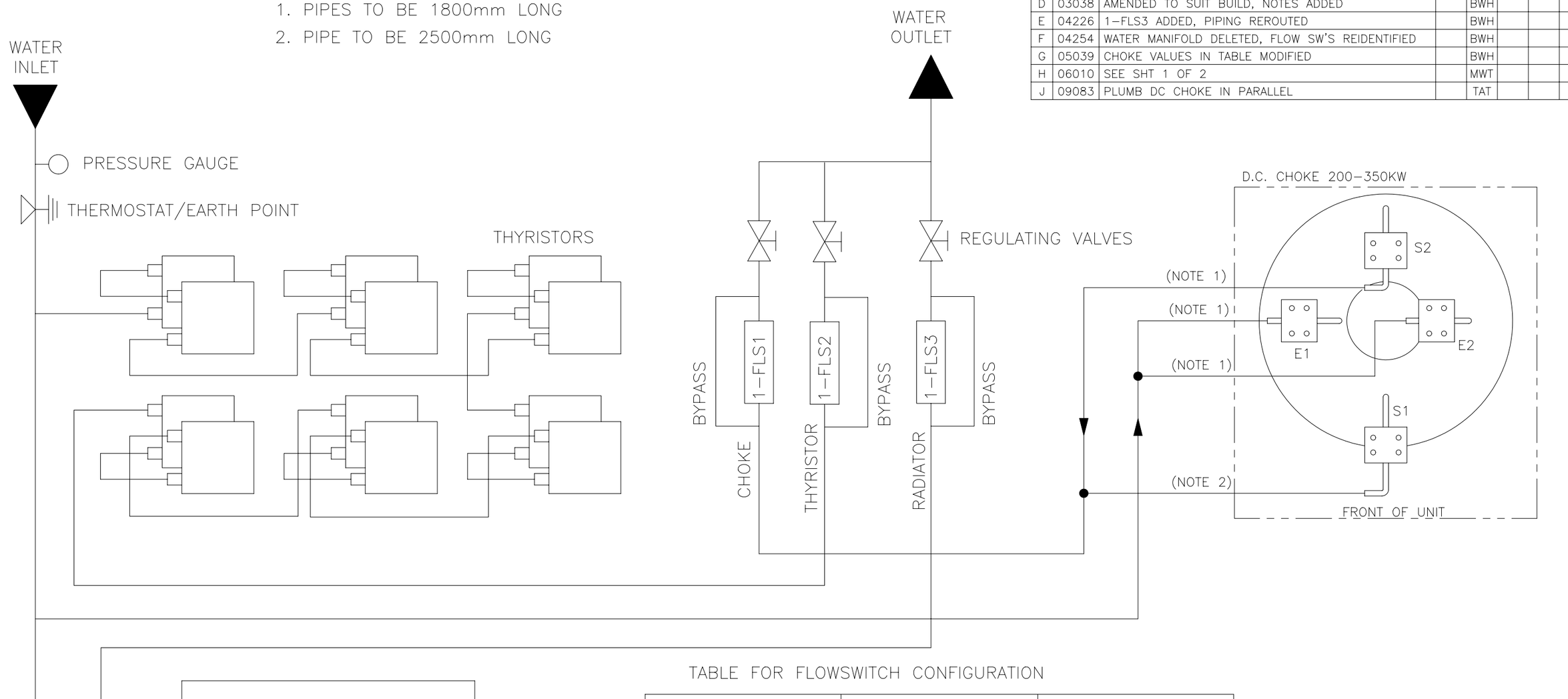


TABLE FOR FLOWSWITCH CONFIGURATION

	CHOKE			THYRISTOR			RADIATOR		
	TRIP L/min	'FLS1' L/min	BYPASS	TRIP L/min	'FLS2' L/min	BYPASS	TRIP L/min	'FLS3' L/min	BYPASS
200kW	9.5	8	ø1.5	9.5	8	ø1.5	15	12	ø5
250kW	9.5	8	ø1.5	9.5	8	ø1.5	15	12	ø5
300kW	9.5	8	ø1.5	9.5	8	ø1.5	30	12	ø10
350kW	9.5	8	ø1.5	9.5	8	ø1.5	30	12	ø10

FLOWSWITCH INDENTIFICATION

8L/min	No. 8 STAMPED ON BRASS FLOAT OR BODY
12L/min	No. 12 STAMPED ON BRASS FLOAT OR BODY

THERMATOOL

TITLE: DC POWER UNIT WATER SCHEMATIC

SIZE	DIV NO	DWG NO	REV
A2	3	WW0091	J
SCALE 1:1		DO NOT SCALE DRAWING COPY	SHEET 2

ENG–REF:

WW5069

HF12 Inverter Water Schematic

Bus 5 Confguration

Sheet 1 – *HF12 Inverter Water Schematic*

Sheet 2 – *HF12 Inverter Water Schematic*

Sheet 3 – *HF12 Inverter Water Schematic*

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03028	FIRST ISSUE		MWT			01/03
A	05058	CORRECTED LAYOUT		MWT			05/05

INLET

PRESSURE SWITCH N/O

SPIGOT NUMBER ON INLET MANIFOLD.

1 – RADIATOR
2 + RADIATOR
4 2–L2 INPUT CHOKE –
21 2–L3 OUTPUT CHOKE
3 2–L1 INPUT CHOKE +
14 CP2 CAPS OUTPUT PLATE
13 CP3 CAPS OUTPUT PLATE
10 + MODULE OUTPUT PLATE
9 – MODULE OUTPUT PLATE
12 GND. PLATE + SIDE
11 GND. PLATE – SIDE
6 + MODULES INPUT PLATE
5 – MODULES INPUT PLATE
7 –HF MODULE 3
7 –HF MODULE 7
7 –HF MODULE 11
8 +HF MODULE 4
8 +HF MODULE 8
8 +HF MODULE 12
7 –HF MODULE 1
7 –HF MODULE 5
7 –HF MODULE 9
8 +HF MODULE 2
8 +HF MODULE 6
8 +HF MODULE 10
38 + FIRST BUS PLATE
34 + SECOND BUS
15 'U' LINK – CAPS
17 CS4 CAPS INPUT PLATE
19 CS4 CAPS OUTPUT PLATE
41 PARALLEL COIL
39 PARALLEL SLUG (OUTLET)
16 'U' LINK + CAPS
18 CS1 CAPS INPUT PLATE
20 CS1 CAPS OUTPUT PLATE
21 'U' LINK – CAPS
23 CS5 CAPS INPUT PLATE
25 – OUTPUT PLATE
22 'U' LINK + CAPS
24 CS0 CAPS INPUT PLATE
26 + OUTPUT PLATE

THERMOSTAT 63°C
THERMOSTAT 52°C
THERMOSTAT 52°C
THERMOSTAT 52°C
THERMOSTAT 52°C
THERMOSTAT 52°C
THERMOSTAT 52°C
THERMOSTAT 52°C
THERMOSTAT 52°C
THERMOSTAT 52°C

TO SHT. 2

OUTLET

PRESSURE SWITCH N/C

THIS RUN 10MM BLUE PIPE.

SPIGOT NUMBER ON OUTLET MANIFOLD.

NOTES:–

1. NUMBERS INSIDE CIRCLES ⑤ REFER TO ITEM No. ON BOM.
2. QUANTITY OF + & – HF MODULES DEPENDANT UPON CONFIGURATION.
3. UNLESS STATED ALL PLUMBING RUNS 12MM BLUE PIPE. ⑨

NEXT ASSY	JOB NO
FIRST APPLICATION	
UNIT	HF12 CFI

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ON
0 PLACE (X) ± 0.5 ANGLE ± 0°30'
1 PLACE (X.X) ± 0.3 SURFACE FINISH N8
2 PLACE (X.XX) ± 0.15
BREAK AND DEBURR ALL SHARP EDGES

SI–METRIC
THIRD ANGLE PROJECTION

APPROVALS	DD/MM/YY
DWN MWT	29/01/03
CHK	
ENG/APPD	
MATL N.A.	
FINISH/HEAT TREAT N.A.	

THERMATOOL®

TITLE
HF12 INVERTER
WATER SCHEMATIC
BUS 5 CONFIGURATION

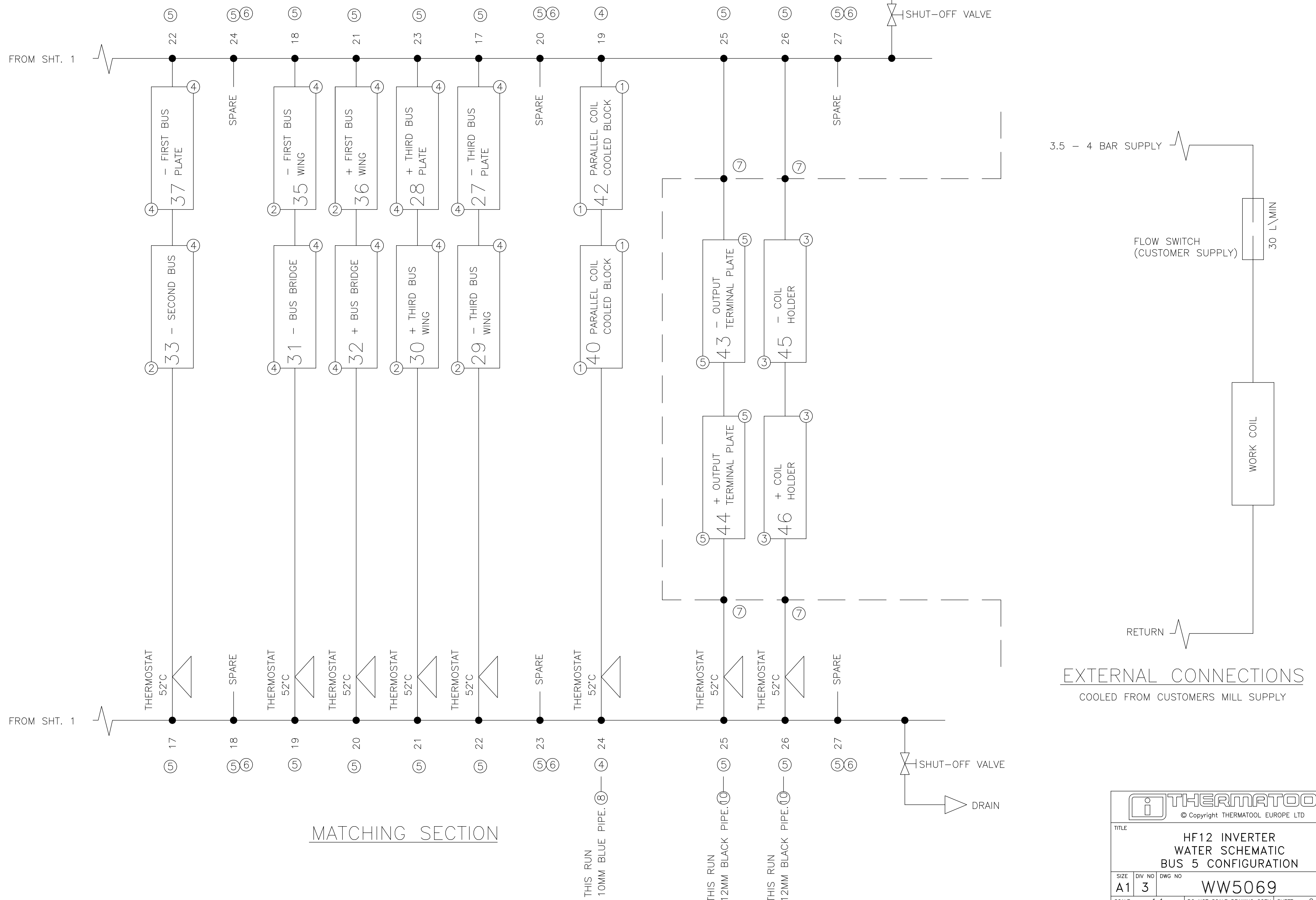
SIZE	DIV NO	DWG NO	REV
A1	3	WW5069	A

SCALE 1:1 | DO NOT SCALE DRAWING COPY | SHEET 1 OF 3

ENG–REF:

REVISIONS

REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03028	FIRST ISSUE		MWT			01/03
A	05058	CORRECTED LAYOUT		MWT			05/05



FROM SHT. 1
DRAIN
SHUT-OFF VALVE
22 24 18 21 23 17 20 19 25 26 27
SPARE
37 – FIRST BUS PLATE
35 – FIRST BUS WING
36 + FIRST BUS WING
28 + THIRD BUS PLATE
27 – THIRD BUS PLATE
42 PARALLEL COIL COOLED BLOCK
33 – SECOND BUS
31 – BUS BRIDGE
32 + BUS BRIDGE
30 + THIRD BUS WING
29 – THIRD BUS WING
40 PARALLEL COIL COOLED BLOCK
43 – OUTPUT TERMINAL PLATE
45 – COIL HOLDER
44 + OUTPUT TERMINAL PLATE
46 + COIL HOLDER
3.5 – 4 BAR SUPPLY
FLOW SWITCH (CUSTOMER SUPPLY)
30 L\MIN
WORK COIL
RETURN
EXTERNAL CONNECTIONS
COOLED FROM CUSTOMERS MILL SUPPLY
THERMOSTAT 52°C
17 18 19 20 21 22 23 24 25 26 27
THIS RUN 10MM BLUE PIPE. 8
THIS RUN 12MM BLACK PIPE. 10
THIS RUN 12MM BLACK PIPE. 10
MATCHING SECTION

THERMATOOL

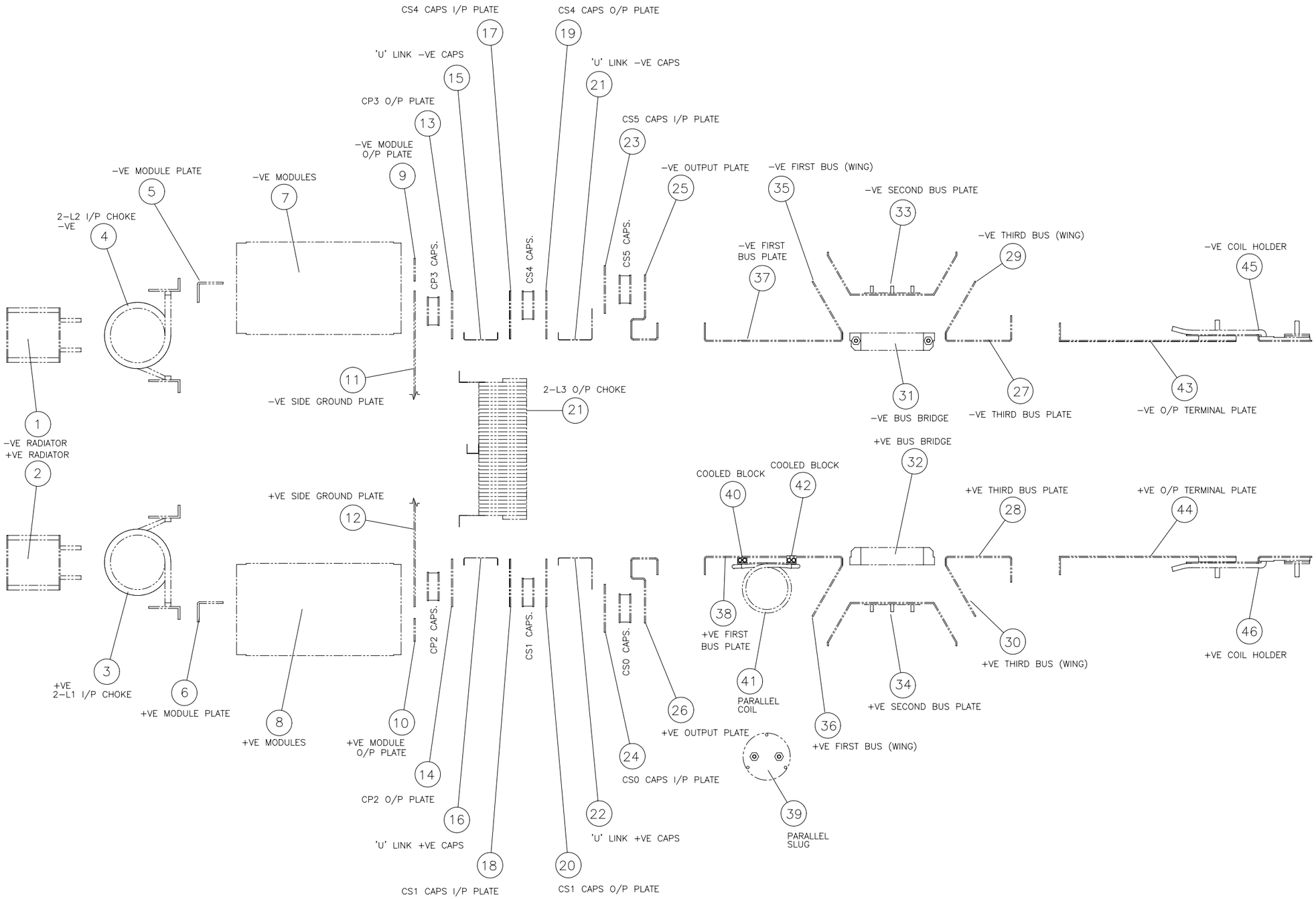
TITLE
HF12 INVERTER
WATER SCHEMATIC
BUS 5 CONFIGURATION

SIZE	DIV NO	DWG NO	REV
A1	3	WW5069	A

SCALE 1:1 | DO NOT SCALE DRAWING COPY | SHEET 2 OF 3

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03028	FIRST ISSUE		MWT			01/03
A	05058	SEE SHTS 1 & 2		MWT			05/05



COMPONENT IDENTIFICATION LAYOUT

THERMATOOL

TITLE
HF12 INVERTER
WATER SCHEMATIC
BUS 5 CONFIGURATION

SIZE	DIV NO	DWG NO	REV
A0	3	WW5069	A

SCALE 1:1 | DO NOT SCALE DRAWING COPY | SHEET 3 OF 3

ENG−REF:

WL0904

Work Coils

REFER TO SALES ENGINEER
FOR QUOTATION FOR WORK COILS

WL5458

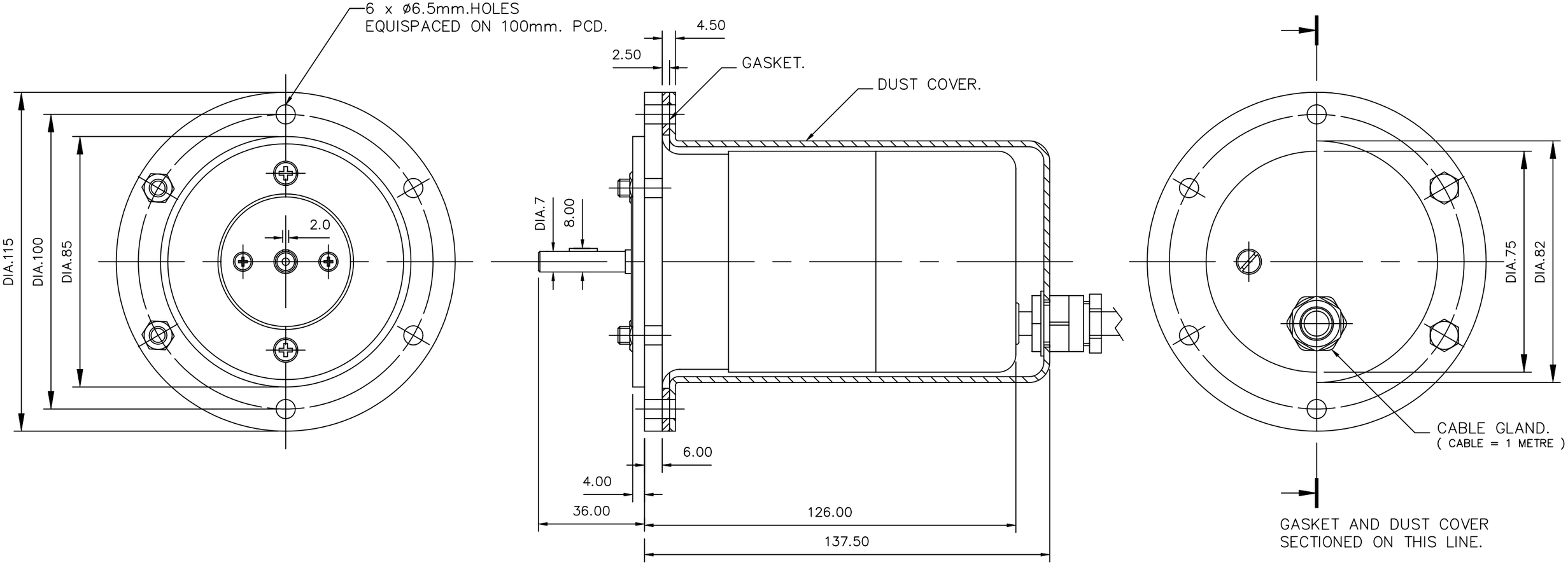
Work Coils

Sheet 1 – Work Coil, *Multi-Turn, Banded Bi Directional*

Sheet 2 – Work Coil, *Multi-Turn, Banded Bi Directional*

REFER TO SALES ENGINEER
FOR COIL QUOTATION

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0							



NOTE:
TACHO–GENERATOR SHOULD BE GEARED TO GIVE 1000 to 1500 RPM. AT MAXIMUM LINE SPEED.

NEXT ASSY	JOB NO
FIRST APPLICATION	
UNIT	CFI

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ON
0 PLACE(X) ±0.5 ANGLE ±0°30'
1 PLACE(X.X) ±0.3 SURFACE FINISH N8
2 PLACE(X.XX) ±0.15
BREAK AND DEBURR ALL SHARP EDGES

SI–METRIC

THIRD ANGLE PROJECTION

APPROVALS	MM/DD/YY
DWN JAF	2/2/98
CHK	
ENG/APPD	
MATL	
FINISH/HEAT TREAT	

THERMATOOL®

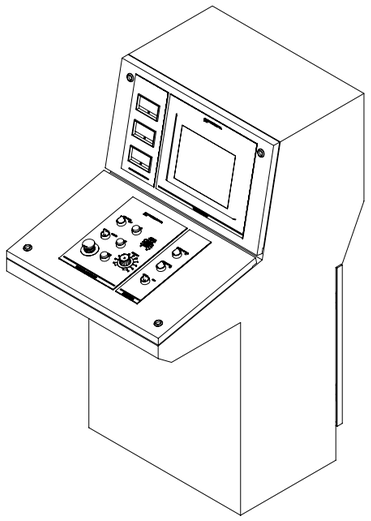
TITLE
TACHO–GENERATOR
TYPE: REo N

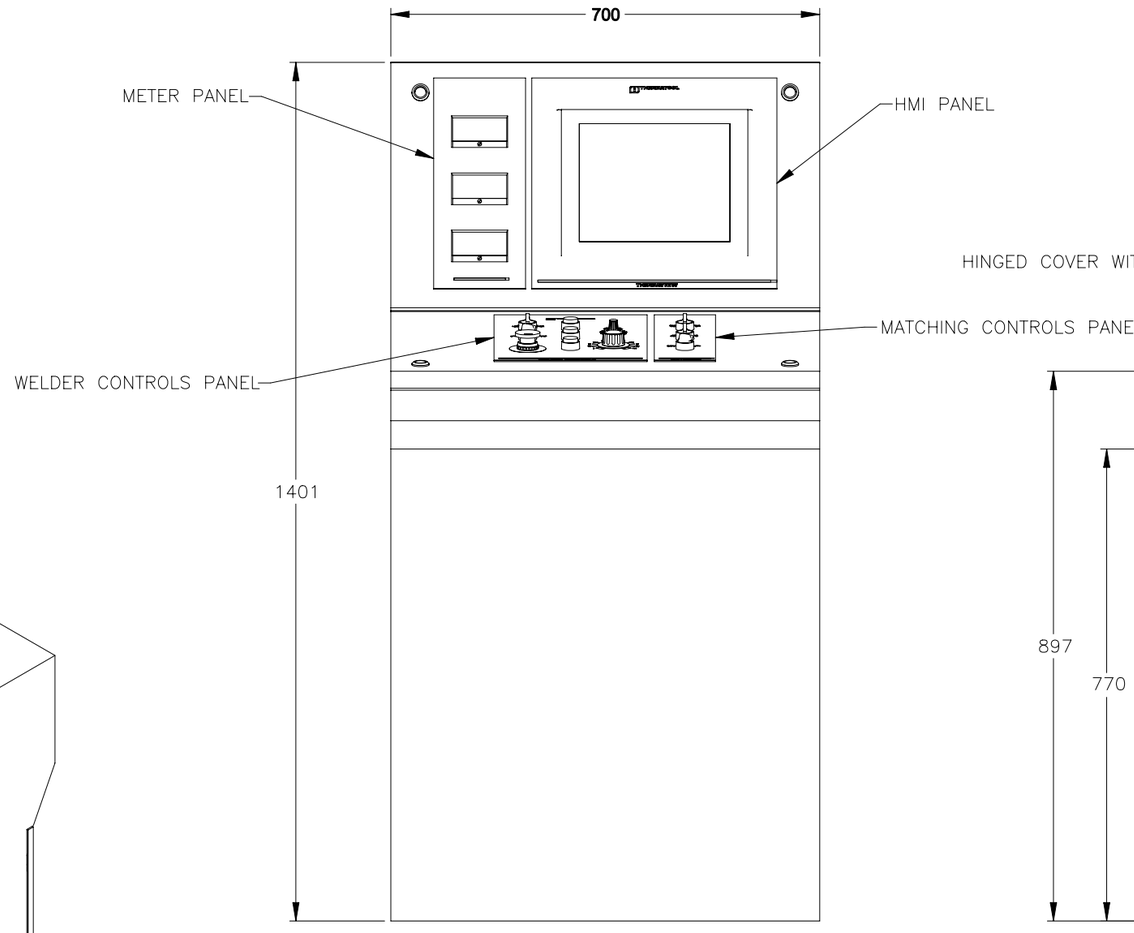
SIZE	DIV NO	DWG NO	REV
A2	3	WD0083	0
SCALE 1:1		DO NOT SCALE DRAWING COPY	SHEET 1 OF 1

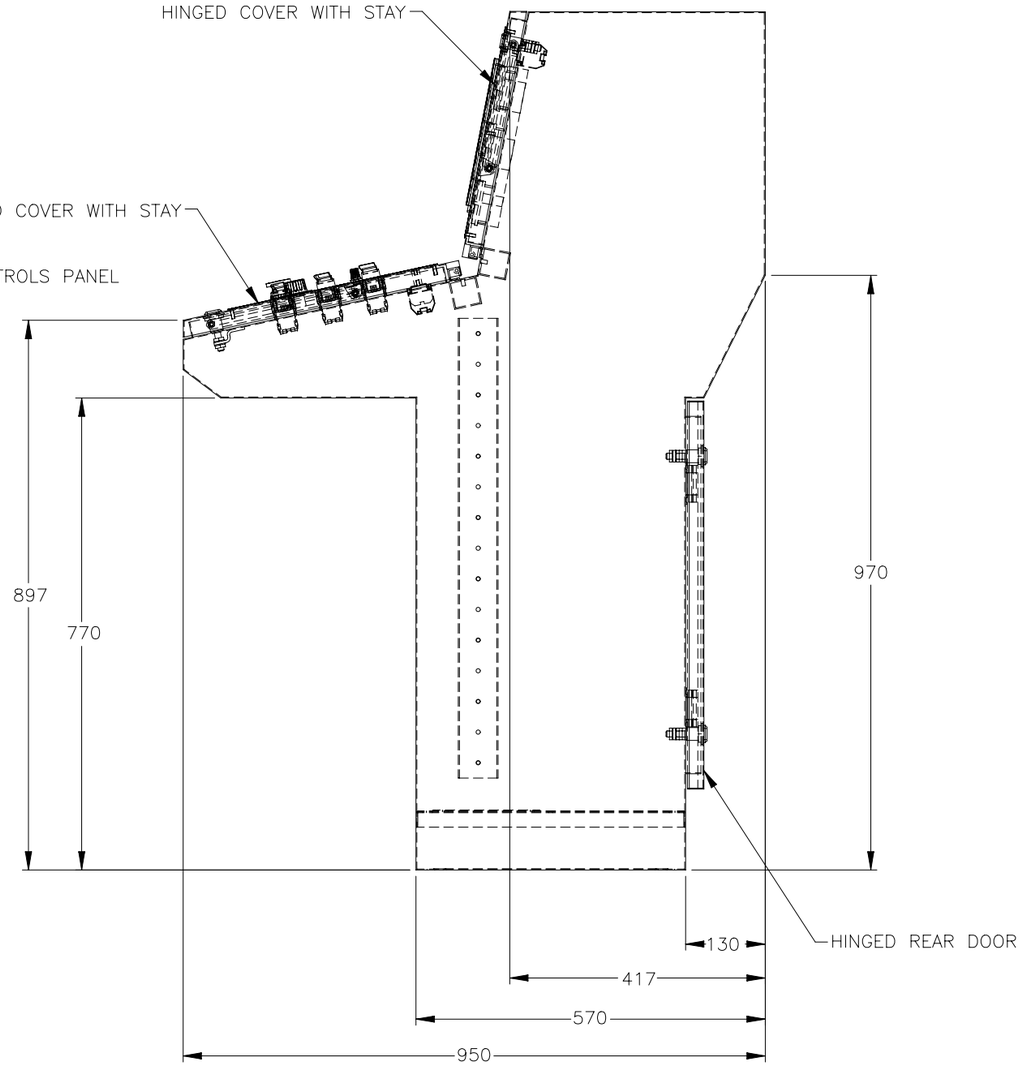
ENG–REF:

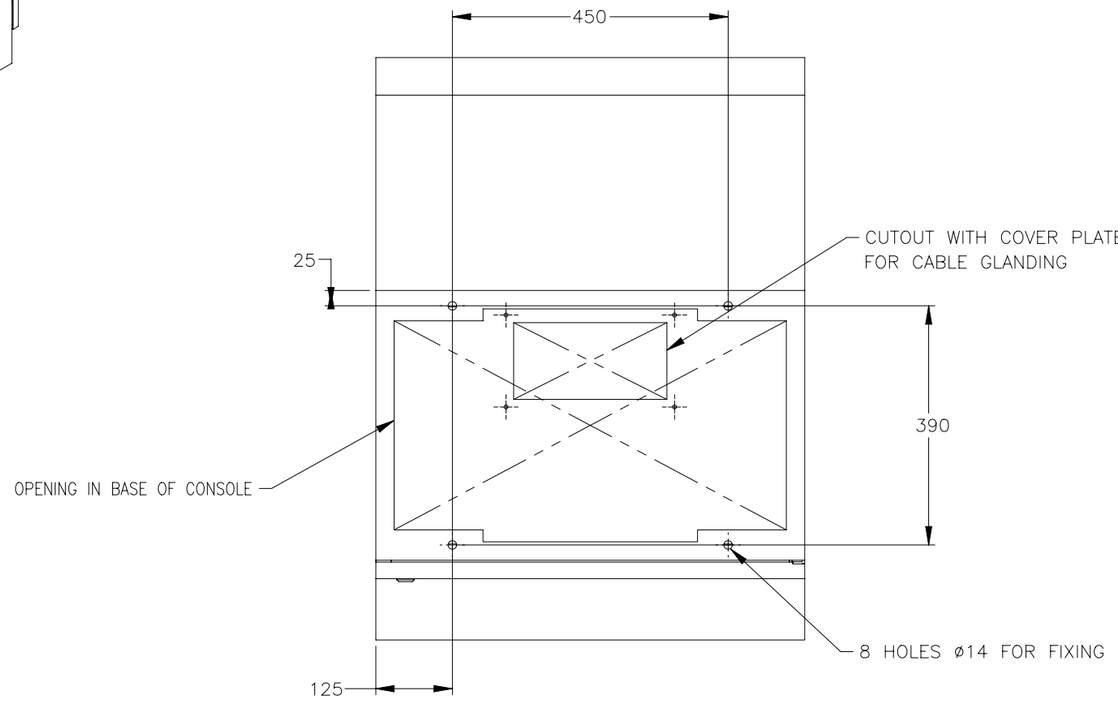
DO NOT SCALE DRAWING COPY

REVISIONS					
REV	ECR	DESCRIPTION	ZONE	DWN BY	MM/DD/YY
0	02308	FIRST ISSUE		MWT	13/12/02









THERMATOOL

TITLE: Basic Console Thermaview Mk 2

Item Master Description: BSC CONSL T-VIEW MK 2

Approximate Weight:

MATERIAL: N.A.

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLACE DX ± 1. ANGLE: ±0.5°
1 PLACE DX.X ± 0.5
2 PLACE DX.XX ± 0.25 SURFACE FINISH: N8
3 PLACE DX.XXX ± 0.100

SI-METRIC

THIRD ANGLE PROJECTION

DRAWN BY: martint MM/DD/YY: 13/12/02

BUYER OR SELLER HEREBY ACKNOWLEDGES THAT THERE MAY BE ERRORS OR OMMISIONS IN THIS DOCUMENT AND THAT THERMATOOL EUROPE LTD SHALL NOT BE LIABLE IN ANY MANNER FOR SUCH ERRORS OR OMISSIONS.

PRODUCT MODEL: T-View Mk2 Console

SHEET 1 OF 1

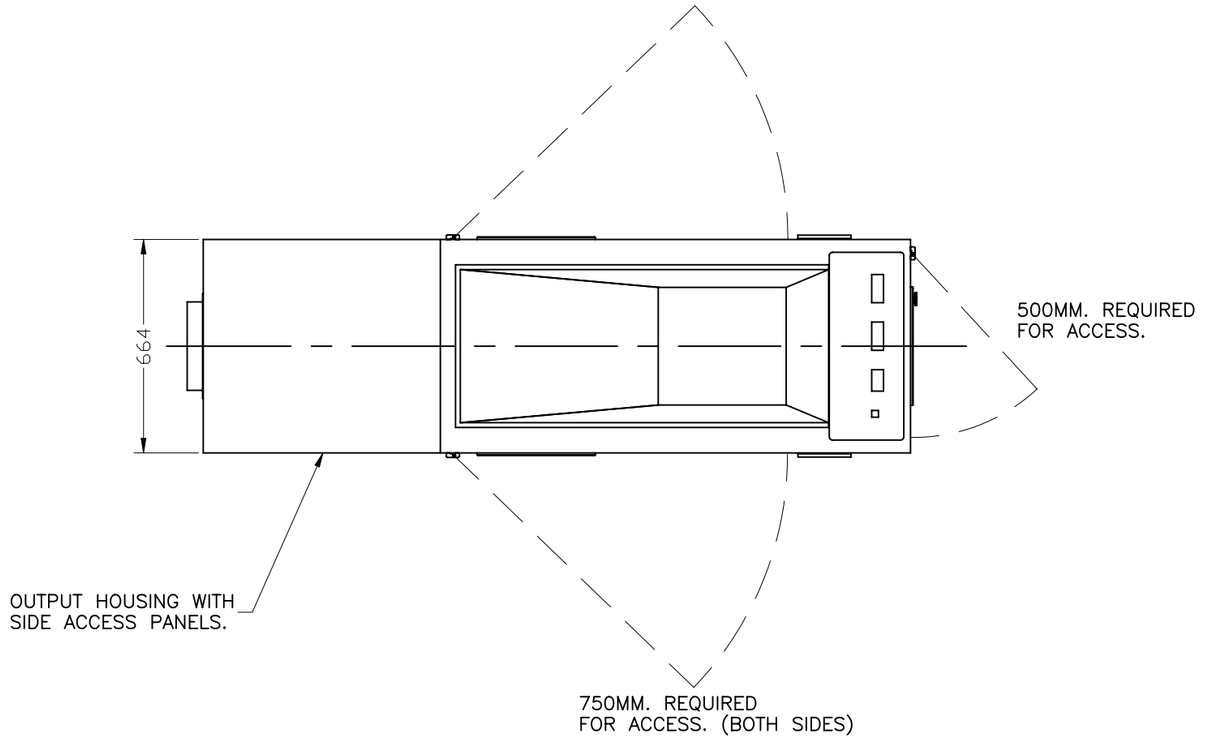
SHEET SIZE: A1 DIVISION NO.: 3

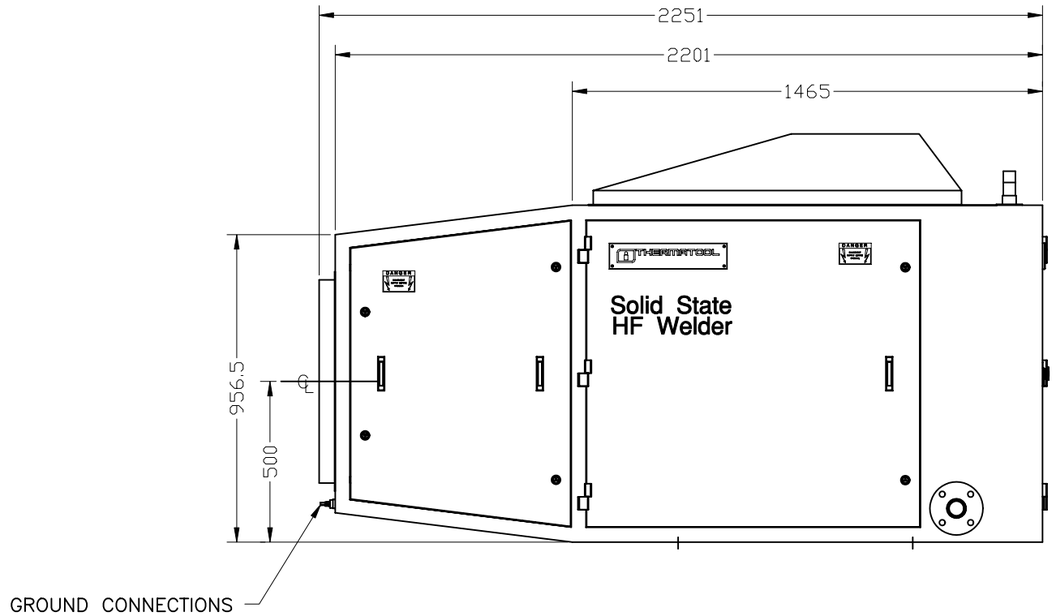
DWG NO: VC0061

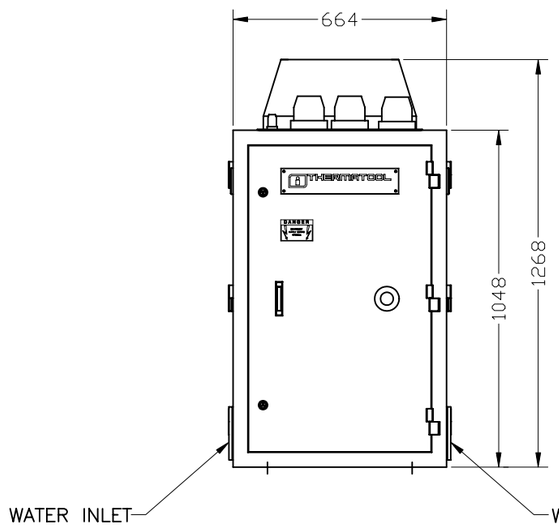
Revision: 0

DO NOT SCALE DRAWING COPY

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
A	05212	REVISED PICTORIALLY		BWH			310CT05







ALL 3 CABINET DOORS MAY BE LIFTED OFF THEIR HINGES IF REQURIED.

NEXT ASSY	JOB NO
FIRST APPLICATION	
UNIT	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ON
0 PLACE (X) ± 0.5 ANGLE ± 0°30'
1 PLACE (X.X) ± 0.3 SURFACE FINISH N8
2 PLACE (X.XX) ± 0.15
BREAK AND DEBURR ALL SHARP EDGES

SI-METRIC

THIRD ANGLE PROJECTION

APPROVALS	DD/MM/YY
DWN JAF	23/1/98
CHK	
ENG/APPD	
MATL	
FINISH/HEAT TREAT	

THERMATOOL®

TITLE

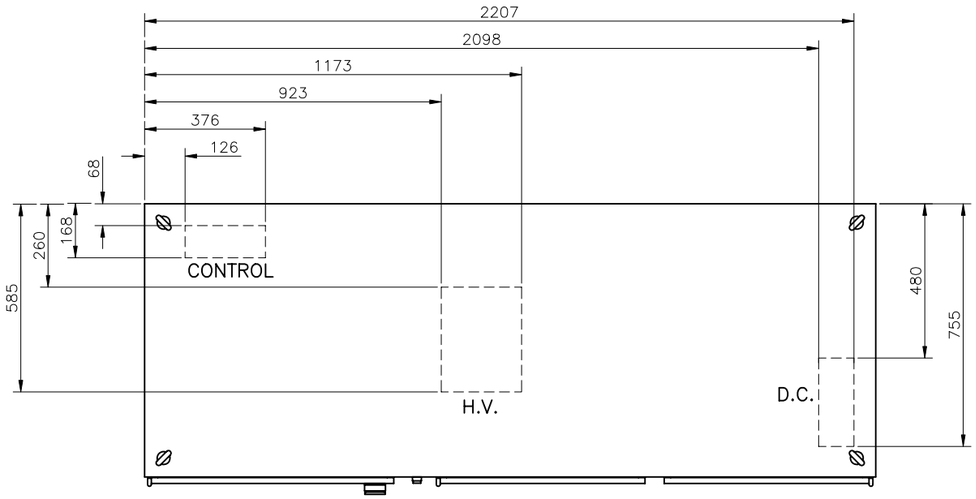
BASIC DIMENSIONS RF12 CABINET

SIZE	DIV NO	DWG NO	REV
A1	3	WD0076	A

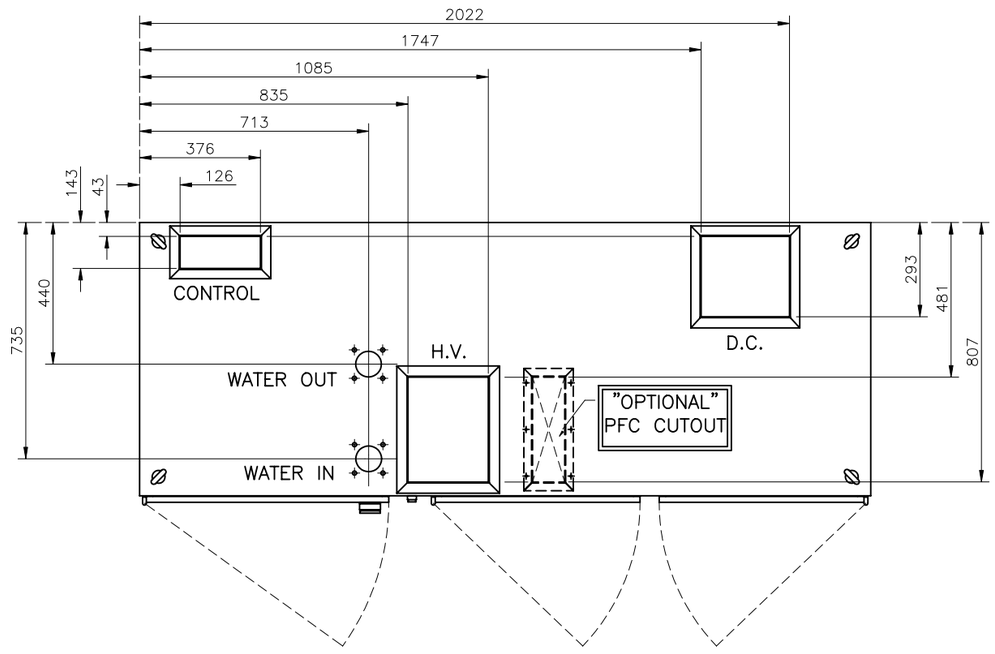
SCALE 1:10 | DO NOT SCALE DRAWING COPY | SHEET 1 OF 1

ENG-REF:

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
A	261	OPTIONAL PFC GLAND PLATE ADDED	9C	TAT	AB	AB	04/20/99
B	05212	CUTOUT DIMS REVISED		BWH			270CT05

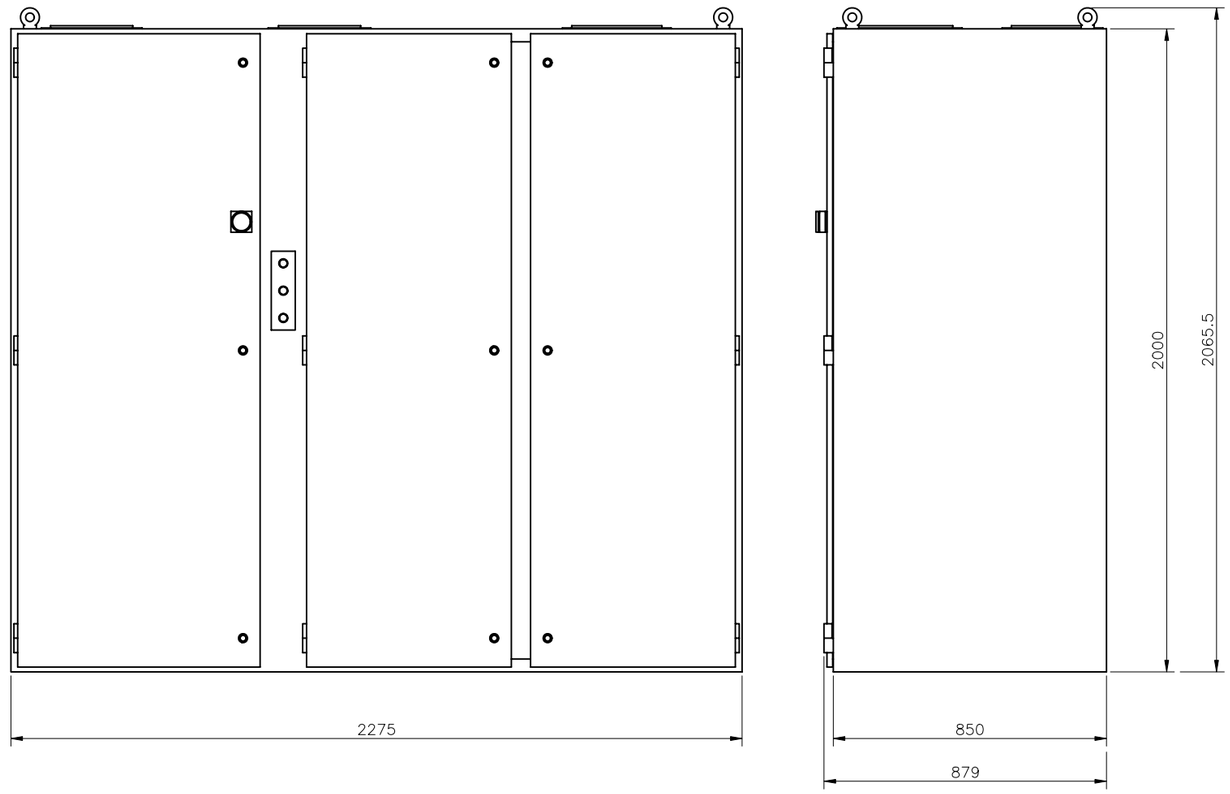


DETAIL OF BASE CUTOUTS.



750MM. REQUIRED
FOR ACCESS.

NOTE:
DOORS MAY BE LIFTED OFF
HINGES IF REQUIRED.



NEXT ASSY	JOB NO
FIRST APPLICATION	
UNIT	200/350KW.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ON
0 PLACE (X) ± 0.5 ANGLE ± 0°30'
1 PLACE (X.X) ± 0.3 SURFACE FINISH N8
2 PLACE (X.XX) ± 0.15
BREAK AND DEBURR ALL SHARP EDGES

SI-METRIC

THIRD ANGLE PROJECTION

APPROVALS	DD/MM/YY
DWN MWT	01/26/95
CHK	
ENG/APPD	
MATL N.A.	
FINISH/HEAT TREAT N.A.	

THERMATOOL®

TITLE
BASIC DIMENSIONS CFI POWER SUPPLY 200 TO 350 KW

SIZE	DIV NO	DWG NO	REV
A1	3	WD0077	B

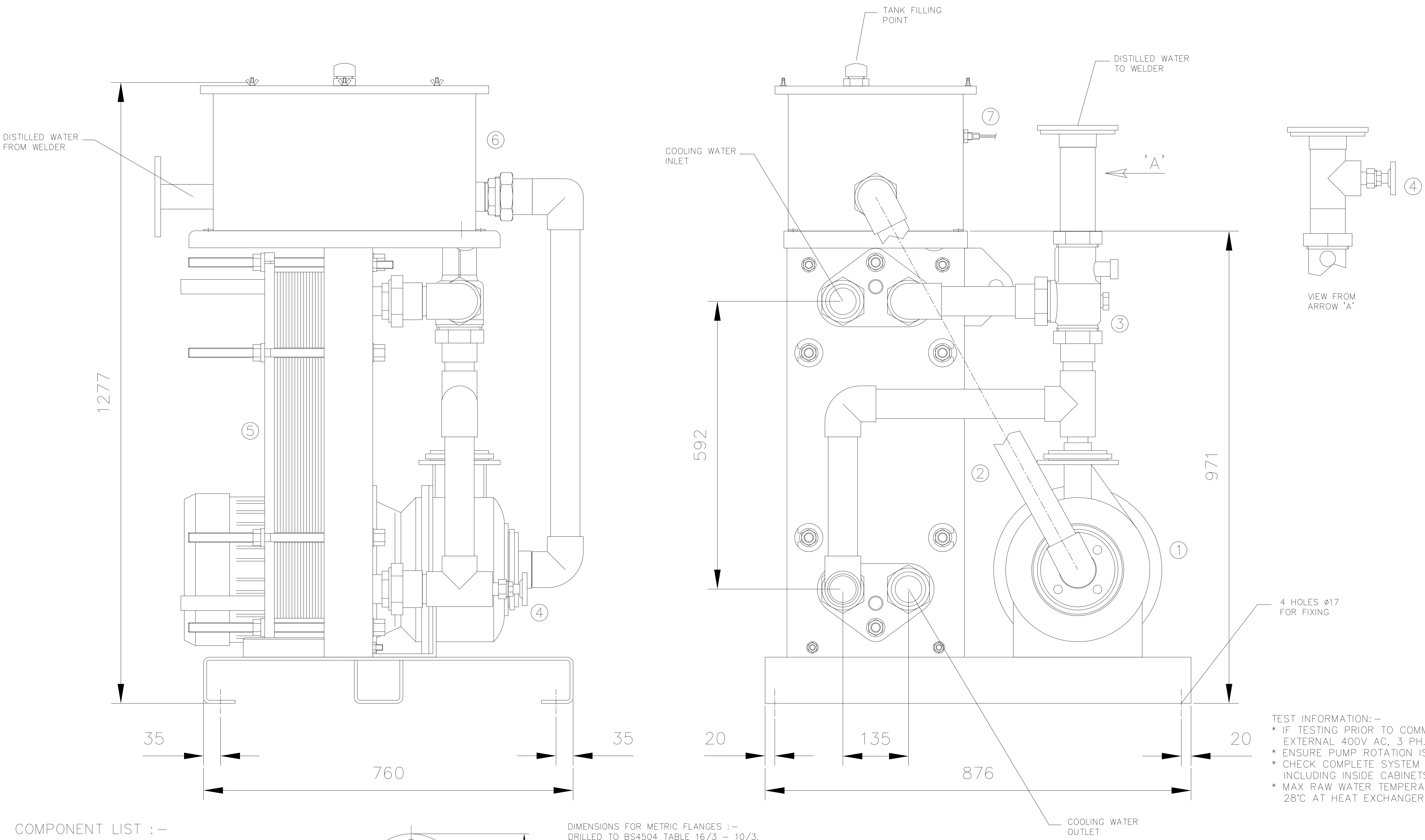
SCALE 1:10 | DO NOT SCALE DRAWING COPY | SHEET 2 OF 2

ENG-REF:

B	REV	REV STATUS
1	SH	

REVISIONS

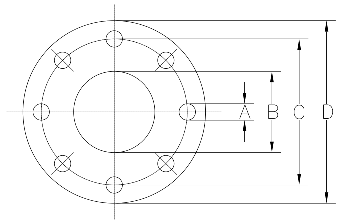
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	01302	FIRST ISSUE		AJH			12/01
A	06115	NOW COVERS 50 > 350KW		MWT			15/05
B	R023	REMOVE PLMA-E90-2 FROM THE PUMP INLET LINE		SB	DRH		26/06/12



TEST INFORMATION:-
* IF TESTING PRIOR TO COMMISSIONING CONNECT EXTERNAL 400V AC, 3 PH. POWER SUPPLY.
* ENSURE PUMP ROTATION IS CORRECT.
* CHECK COMPLETE SYSTEM FOR LEAKS INCLUDING INSIDE CABINETS
* MAX RAW WATER TEMPERATURE SHOULD BE 28°C AT HEAT EXCHANGER.

COMPONENT LIST :-

1. PUMP.
2. HEAT EXCHANGER FRAME.
3. TEMPERATURE CONTROL VALVE.
4. TEMPERATURE GAUGE.
5. HEAT EXCHANGER.
6. HEADER TANK WITH LID.
7. HEADER TANK LEVEL SWITCH.



DIMENSIONS FOR METRIC FLANGES :-
DRILLED TO BS4504 TABLE 16/3 - 10/3.
OR BS10 TABLE D/E.

DIM.	1.25" FLANGE BS 4504	1.5" FLANGE BS 4504
A	14mm.	14mm.
B	42.2mm.	48.3mm.
C	100mm.	110mm.
D	140mm.	150mm.

DIM.	2" FLANGE BS 4504	3" FLANGE BS 10
A	18mm.	18mm.
B	60.3mm.	88.9mm.
C	125mm.	145mm.
D	166mm.	199mm.

NEXT ASSY	JOB NO
FIRST APPLICATION	
UNIT 50 - 350KW CFI	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ON
0 PLACE (X) ± 0.5 ANGLE ± 0°30'
1 PLACE (X.X) ± 0.3 SURFACE FINISH N8
2 PLACE (X.XX) ± 0.15
BREAK AND DEBURR ALL SHARP EDGES

SI-METRIC

THIRD ANGLE PROJECTION

APPROVALS		DD/MM/YY
DWN	AJH	07/06/01
CHK		
ENG/APPD		

MATL N.A.

FINISH/HEAT TREAT N.A.

THERMATOOL®

TITLE
BASIC DIMENSIONS HEAT EXCHANGER ASSEMBLY

SIZE	DIV NO	DWG NO	REV
A1	3	WD0171	B

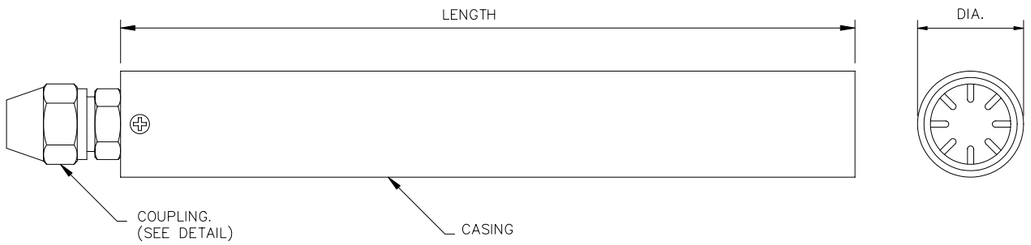
SCALE 1:4 | DO NOT SCALE DRAWING COPY | SHEET 1 OF 1

ENG-REF:

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	C 2	C 1	REV SH	REV STATUS

REVISIONS						
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03203	FIRST ISSUE		BWH			05FEB03
A	07068	PARTS UPDATED AND ADDED AS PER SPARES LISTING		BWH			26MAR07
B	09090	ADAPTOR DIMENSIONS ADDED		TB			18AUG09
C	–	AMEND / CLARIFY ADAPTOR DIMS		TAT			10AUG10

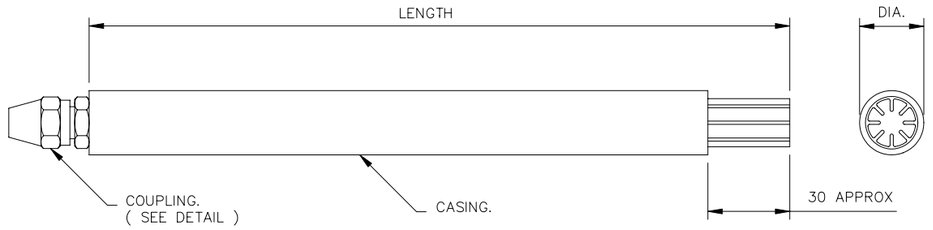
THROUGH FLOW IMPEDORS.
(ENCLOSED FERRITE)
SEE TABLE FOR AVAILABLE SIZES



THROUGH FLOW IMPEDOR PART No.	EXPOSED "TYPE C" IMPEDOR PART No.	TUBE ID. (APPROX)	DIA. (mm)	LENGTH (mm)	COUPLING.	ADAPTOR No.
IM-44-1006		8	6.5	230	1/4-28 TPI	
IM-44-1008	IM-44-0008	9.5	8	230	1/4-28 TPI	
IM-44-1009	IM-44-0009	11	9	230	1/4-28 TPI	
IM-44-1010	IM-44-0010	12	10	230	1/4-28 TPI	
IM-44-1011	IM-44-0011	13	11	230	1/4-28 TPI	
IM-44-1012	IM-44-0012	14.5	12	230	1/4 FLARE	4
IM-44-1013		15.5	13	230	1/4 FLARE	4
IM-44-1014	IM-44-0014	17	14	230	1/4 FLARE	4
IM-44-1015		18	15	230	1/4 FLARE	4
IM-44-1016	IM-44-0016	19	16	230	1/4 FLARE	4
IM-44-1017		20.5	17	230	1/4 FLARE	4
IM-44-1018		21.5	18	230	1/4 FLARE	4
IM-44-1019	IM-44-0019	23	19	230	1/4 FLARE	4
IM-44-1020		24	20	230	1/4 FLARE	4
IM-44-1021		25	21	230	1/4 FLARE	4
IM-44-1022	IM-44-0022	26.5	22	230	1/4 FLARE	4
IM-44-1023		27.5	23	230	1/4 FLARE	4
IM-44-1024		29	24	230	1/4 FLARE	4
IM-44-1025	IM-44-0025	30	25	230	1/4 FLARE	4
IM-44-1028		33.5	28	230	3/8 FLARE	5
IM-44-1031		37	31	230	3/8 FLARE	5
IM-44-1034		41	34	230	1/2 FLARE	6
IM-44-1037		44.5	37	230	1/2 FLARE	6
IM-44-1040		48	40	230	1/2 FLARE	6
IM-44-1343		51.5	43	330	1/2 FLARE	6
IM-44-1350		60	50	330	5/8 FLARE	7
IM-44-1357		68.5	57	330	5/8 FLARE	7
IM-44-1364		77	64	330	5/8 FLARE	7
IM-44-1370		84	70	330	5/8 FLARE	7
IM-44-1376		91	76	330	5/8 FLARE	7
IM-44-1489		107	89	432	1 NPT	
IM-44-1410		122.5	102	432	1 NPT	

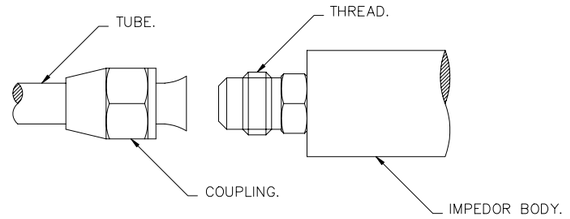
NOTE: –
FOR OPTIMUM WORKING CONDITIONS
IMPEDOR OD. + 20% = TUBE ID.

TYPE "C" IMPEDORS.
(EXPOSED FERRITE)
SEE TABLE FOR AVAILABLE SIZES



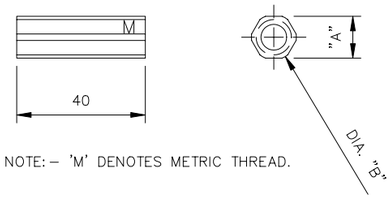
COUPLING	THREAD SIZE. UNF.	TUBE OD.	
1/4 FLARE	7/16in.	1/4in.	6.3mm.
3/8 FLARE	5/8in.	3/8in.	9.5mm.
1/2 FLARE	3/4in.	1/2in.	12.7mm.
5/8 FLARE	7/8in.	5/8in.	15.8mm.

FLARE COUPLING DETAILS.



ADAPTOR No.	UNF. THREAD.	METRIC THREAD.	"A" mm	"B" mm
1	1/4-28	M6.		
2	5/16-24	M6.		
3	3/8-24	M8.		
4	7/16-20	M10.	12.7	14
5	5/8-18	M16.	27	30
6	3/4-16	M20.	27	30
7	7/8-14	M20.	27	30

UNF. TO METRIC ADAPTOR DETAILS.



NOTE: – 'M' DENOTES METRIC THREAD.

NEXT ASSY | JOB NO
FIRST APPLICATION
UNIT: CFI WELDERS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ON
0 PLACE (X) ± 0.5 ANGLE ± 0°30'
1 PLACE (X.X) ± 0.3 SURFACE FINISH N8
2 PLACE (X.XX) ± 0.15
BREAK AND DEBURR ALL SHARP EDGES

SI-METRIC
THIRD ANGLE PROJECTION

APPROVALS	DD/MM/YY
DWN BWH	05FEB04
CHK	
ENG/APPD	
MATL	
FINISH/HEAT TREAT	

THERMATOOL®

TITLE
THROUGH FLOW IMPEDORS
(BASIC DIMENSIONS)

SIZE	DIV NO	DWG NO	REV
A1	3	WD5066	C

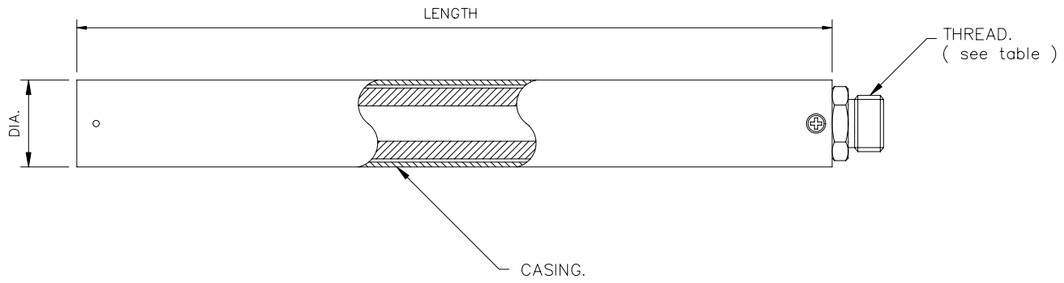
SCALE 1:1 | DO NOT SCALE DRAWING COPY | SHEET 1 OF 2

ENG-REF: Supersedes WD0080 Rev A

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	MM/DD/YY
0	03203	FIRST ISSUE		BWH			05FEB03
A	07068	PARTS UPDATED AND ADDED AS PER SPARES LISTING		BWH			26MAR07

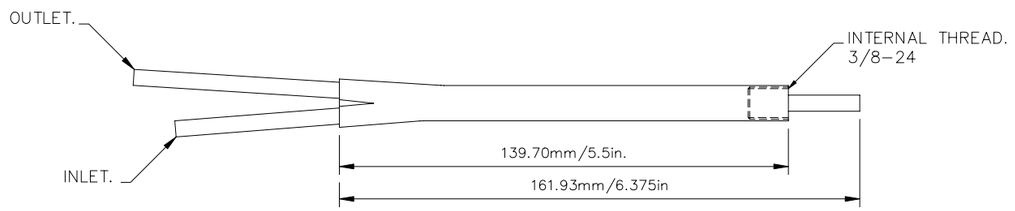
RETURN FLOW IMPEDOR.

COOLANT FLOW DETAILS.
COOLANT ENTERS ALONG CENTRAL BORE OF FERRITE ROD AND RETURNS VIA SPACE BETWEEN FERRITE ROD AND IMPEDOR CASING ID.

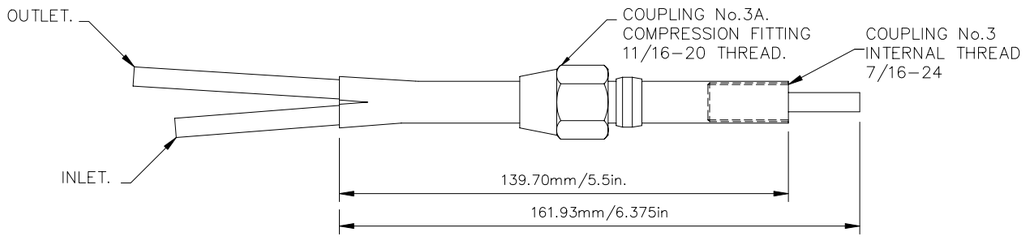


PART No.	TUBE ID. (APPROX) (mm)	DIA. (mm)	LENGTH (mm)	COUPLING No.	THREAD (in)
IM-44-3009	11	9	230	2	3/8-24
IM-44-3010	12	10	230	2	3/8-24
IM-44-3011	13	11	230	2	3/8-24
IM-44-3012	14.5	12	230	2	3/8-24
IM-44-3013	15.5	13	230	3	7/16-24
IM-44-3014	17	14	230	3	7/16-24
IM-44-3015	18	15	230	3	7/16-24
IM-44-3016	19	16	230	3	7/16-24
IM-44-3017	20.5	17	230	3	7/16-24
IM-44-3018	21.5	18	230	3	7/16-24
IM-44-3019	23	19	230	3	7/16-24
IM-44-3020	24	20	230	3	7/16-24
IM-44-3021	25	21	230	3	7/16-24
IM-44-3022	26.5	22	230	3	7/16-24
IM-44-3023	27.5	23	230	3	7/16-24
IM-44-3024	29	24	230	3	7/16-24
IM-44-3025	30	25	230	3	7/16-24
IM-44-3028	33.5	28	230	3	7/16-24
IM-44-3031	37	31	230	3	7/16-24
IM-44-3034	41	34	230	4	13/16-18
IM-44-3037	44.5	37	230	4	13/16-18
IM-44-3040	48	40	230	4	13/16-18
IM-44-3143	51.5	43	330	4	13/16-18
IM-44-3250	60	50	330	5	15/16-18
IM-44-3157	68.5	57	330	5	15/16-18
IM-44-3163	76	63.5	330	5	15/16-18
IM-44-3169	84	69.85	330	5	15/16-18
IM-44-3176	91.5	76.20	330	5	15/16-18

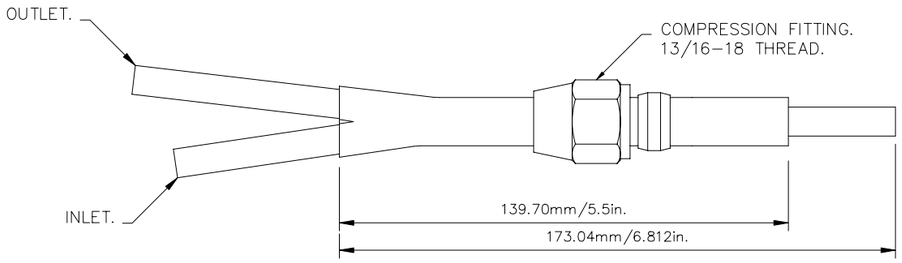
NOTE:-
FOR COUPLING DETAILS SEE VIEWS OPPOSITE.
FOR OPTIMUM WORKING CONDITIONS
IMPEDOR OD. + 20% = TUBE ID.



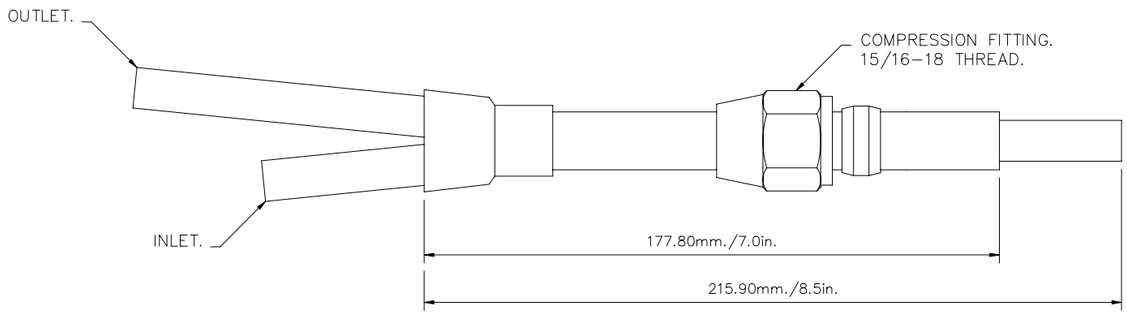
COUPLING No. 2 (IM-44-4002)



COUPLING No. 3,3A (IM-44-4003)



COUPLING No. 4 (IM-44-4004)



COUPLING No. 5 (IM-44-4005)

NEXT ASSY	JOB NO	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ON	APPROVALS	DD/MM/YY
FIRST APPLICATION		0 PLACE (X) ± 0.5 ANGLE ± 0°30'	DWN BWH	05FEB04
UNIT CFI WELDERS		1 PLACE (X.X) ± 0.3 SURFACE FINISH N8	CHK	
BUYER OR SELLER HEREBY ACKNOWLEDGES THAT THERE MAY BE ERRORS OR OMISSIONS IN THIS DOCUMENT AND THAT THERMATOOL EUROPE LTD SHALL NOT BE LIABLE IN ANY MANNER FOR SUCH ERRORS OR OMISSIONS.		2 PLACE (X.XX) ± 0.15 BREAK AND DEBURR ALL SHARP EDGES	ENG/APPD	
		SI-METRIC	MATL	
©Copyright THERMATOOL EUROPE LTD		THIRD ANGLE PROJECTION		
THIS DOCUMENT IS THE PROPERTY OF THERMATOOL EUROPE LTD AND IT IS SUBMITTED FOR USE ONLY WITH WORK PROPOSED OR AUTHORIZED BY THIS COMPANY. IT SHOULD NOT BE USED OR DUPLICATED FOR ANY OTHER PURPOSE AND IS TO BE RETURNED TO THERMATOOL EUROPE LTD ON REQUEST WHEN NO LONGER REQUIRED FOR SUCH PURPOSES.			FINISH/HEAT TREAT	

THERMATOOL®

TITLE
RETURN FLOW IMPEDORS
(BASIC DIMENSIONS)

SIZE	DIV NO	DWG NO	REV
A1	3	WD5067	A

SCALE 1:1 | DO NOT SCALE DRAWING COPY | SHEET 1 OF 2

ENG-REF: Supersedes WD0081 Rev A

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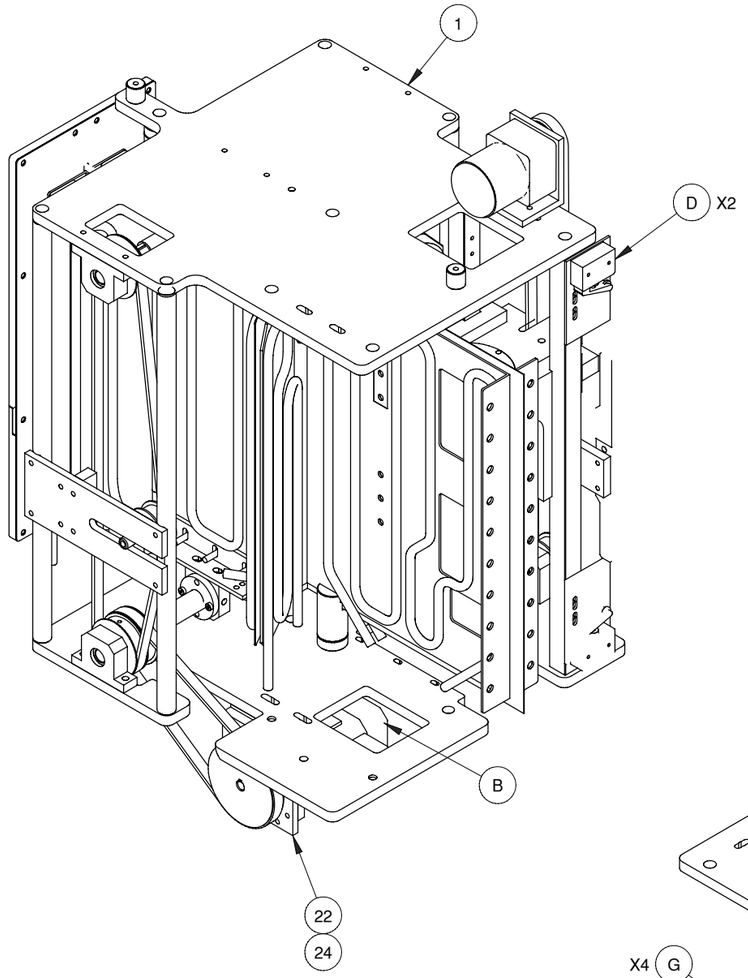
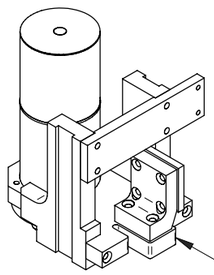
REVISIONS					
REV	ECR	DESCRIPTION	ZONE	DWN BY	MM/DD/YY
0	06155	FIRST ISSUE		MWT	06/29/06
A		CONFIGURATION RELEASE		XXX	MM/DD/YY
B	11440	ON WU5262-002 DELETED ITEM 10 WL5161 QTY.-2 AND ADDED ITEM 29 WL5161 QTY.-2. ON WU5262-004 DELETED ITEM 10 WL5161QTY.-2.	A6 D6	RRR	05/01/08

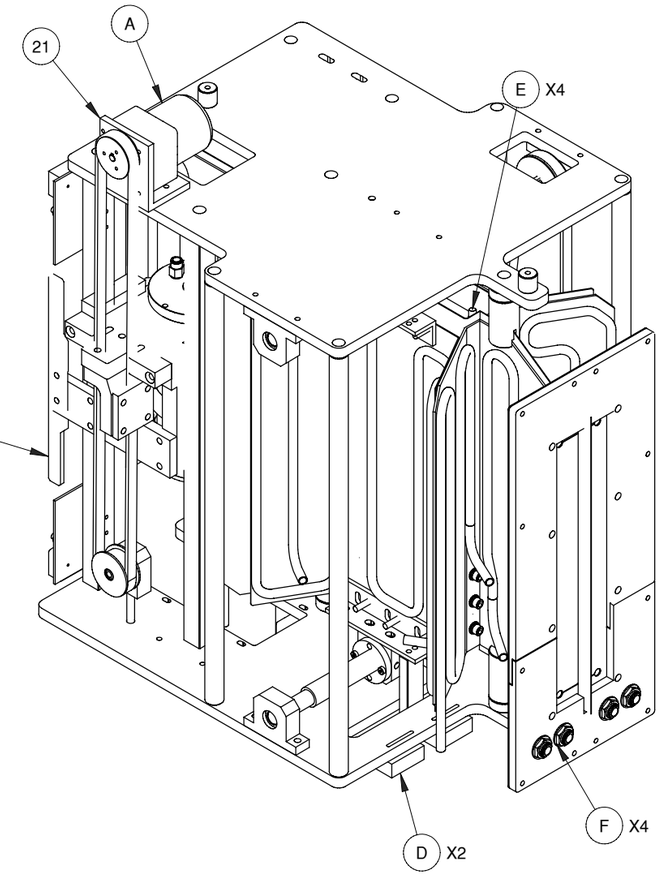
SD

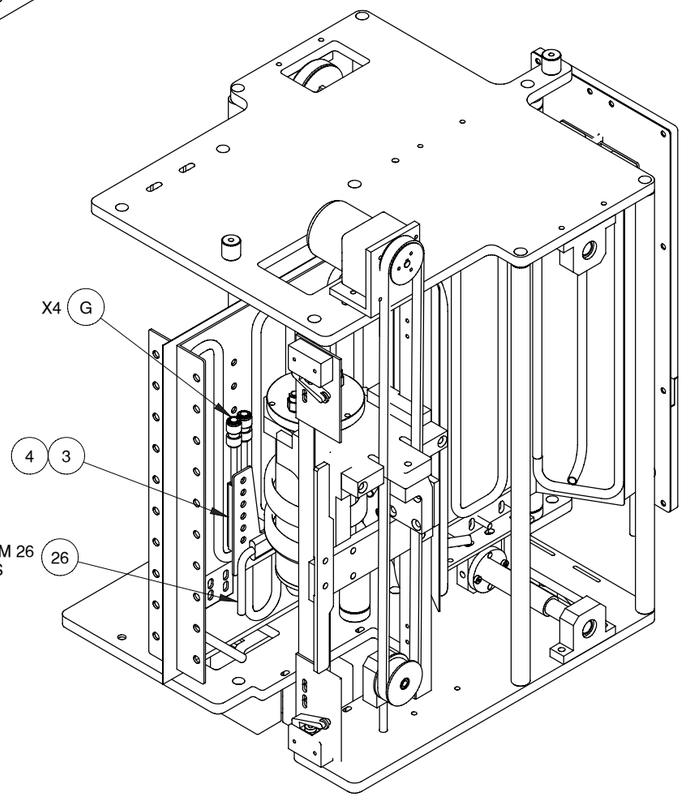




PARALLEL SLUG CARRIAGE ASSY.

FIXINGS FOR ITEM 12 TO BE BRASS





HF12 AUTOMATCH ASSY.
WU5262-001
UK STD. BUILD

NOTE:-
ALL FIXINGS UNLESS OTHERWISE STATED
TO BE NON-MAGNETIC (304) STAINLESS STEEL.

TITLE: HF12 Automatch Assy

Item Master Description: HF12 AMATCH ASSY

Approximate Weight: 41.4 kg

MATERIAL:

Thermatool Material Code: See BOM

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLACE (X) ± 1. ANGLE: ±0.5°
1 PLACE (X.X) ± 0.5
2 PLACE (X.XX) ± 0.25 SURFACE FINISH: N8
3 PLACE (X.XXX) ± 0.125

SI-METRIC

THIRD ANGLE PROJECTION

DRAWN BY: martint

MM/DD/YY: 05/01/08

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PRODUCT MODEL	SHEET	SHEET SIZE	DIVISION NO	DWG NO	Revision
CFI	1 OF 4	A1	3	WU5262	B

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Title	HF12 AUTOMATCH ASSEMBLY	B.O.M. No. WU5262
Machine Type	CFI HF12	Revision E
For Assy. Drg. See WU5262		Date 11/10/13

Item No.	Drawing No.	Warehouse No.	TT Part No.	DESCRIPTION	Supplier Part No.	Circuit Reference	Comm	QUANTITY							
								UK STD		UK V/F		USA STD		USA V/F	
								-001		-002		-003		-004	
1	WU5261	-		HF12 BASIC AUTOMATCH ASSY. (CHINA)	-	-	1	-		-		-		-	
2	WL0833	-		PARALLEL COIL ASSY.	-	-	-	-		1		-		1	
3	WL1994	-	WL1994-001	PARALLEL COIL MTG. BLOCK	-	-	1	-		-		-		-	
4	WL1994	-	WL1994-002	PARALLEL COIL MTG. BLOCK	-	-	-	1		2		1		2	
5	WL0734	-		BELT TENSIONER ASSY.	-	-	-	-		1		-		1	
6	WL5162	-		TENSIONER WHEEL	-	-	-	-		1		-		1	
7	WL2184	-	WL2184-002	PARALLEL TENSIONER PIN	-	-	-	-		1		-		1	
8	WL5138	-		VERTICAL GUIDES	-	-	-	-		2		-		2	
9	WL2221	-		PULLEY, 18T, 10 PITCH, 10 BORE	-	-	-	-		1		-		1	
10					-	-									
11	WL2183	-		TOP PLATE PARALLEL SLUG ASSY	-	-	-	-		1		-		1	
12	WU5120	-		PARALLEL SLUG ASSY.	-	-	-	1		2		-		-	
13	WL0730	-		PARALLEL SLUG ASSY.	-	-	-	-		-		1		2	
14	WM5094	-		PARALLEL LIMIT SWITCH ACTUATOR	-	-	-	-		1		-		1	
15	WL5139	-		SLIDE PLATES BRACE	-	-	-	-		1		-		1	
16	WM5095	-		PARALLEL LIMIT SWITCH ACTUATOR	-	-	1	-		-		-		-	
17	WL0752	-	WL0752-004	PARALLEL SLUG SLIDE PLATE, R/H	-	-	-	-		1		-		1	
18	WL0752	-	WL0752-003	PARALLEL SLUG SLIDE PLATE, L/H	-	-	-	-		1		-		1	
19	WL5165	-	WL5165-001	CLAMP BRACKET	-	-	-	-		1		-		1	
20	WL5165	-	WL5165-002	CLAMP PLATE	-	-	-	-		1		-		1	
21	WL0760	-		PARALLEL MOTOR MTG. BRACKET	-	-	-	1		2		-		-	
22	WM5168	-		SERIES MOTOR MTG BRACKET	-	-	-	1		1		-		-	
23	WL1870	-		PARALLEL COIL ASSY. (SWITCHED)	-	-	-	-		1		-		1	
24	WL1868	-		MOTOR SPACER	-	-	-	1		1		-		-	
25	WU5091	-		FREQUENCY SWITCH ASSY.	-	-	-	-		1		-		1	
26	WL1998	-		PARALLEL COIL ASSY.	-	-	-	1		-		1		-	
27	WU5010	-	WU5010-001	SERIES MOTOR ASSY.	-	-	-	-		-		1		1	
28	WU5010	-	WU5010-002	PARALLEL MOTOR ASSY.	-	-	-	-		-		1		2	
29	WG5007			TRIP SWITCH MTG BRACKET			-	-		2		-		2	
30	WG5231			INSUL PIECE PARALLEL COIL AMATCH	-	-	-	1		2					
31															
32															
33															
34															
35	WG5090	-	WG5090	PCB MOUNTING	-	-	-	-		1		-		-	
36															
37															
38															
39															
40															

Title	HF12 AUTOMATCH ASSEMBLY	B.O.M. No. WU5262
Machine Type	CFI HF12	Revision E
For Assy. Drg. See WU5262		Date 11/10/13
		QUANTITY

Item No.	Drawing No.	Warehouse No.	TT Part No.	DESCRIPTION	Supplier Part No.	Circuit Reference	Comm	UK STD -001		UK V/F -002		USA STD -003		USA V/F -004	
A	-	-	MOTO-GM-800698 OR MOTR008-004 OR MOTR008-015	GEARED MOTOR 20W/25W	-	-	-	1		2		-		-	
B	-	-	MOTO-GM-803578 OR MOTR008-006 OR MOTR008-016	GEARED MOTOR 60W	-	-	-	1		1		-		-	
C	-	-	BELT001-002	TIMING BELT 16-T10/1520-KEVLAR	-	-	-	-		1		-		1	
D	-	-	03CP103	LIMIT SWITCH	-	-	-	4		6		4		6	
E	-	-	13CP302-370	STEM ADAPTOR 1/4" BSP X 10MM PIPE	RM051012N	-	4	-		-		-		-	
F	-	-	13CP302-041	BULKHEAD CONNECTOR 12MM PIPE	RPM1212E	-	4	-		-		-		-	
G	-		13CP302-402	REDUCING CONNECTOR 10MM X 8MM PIPE	RPM201008E	-	-	4		6		4		6	
H															
J															

WU5261

Basic Auto-Match Assembly HF12

(Common Build)

Sheet 1 – *Basic Auto-Match Assembly*

Sheet 2 – *Basic Auto-Match Assembly*

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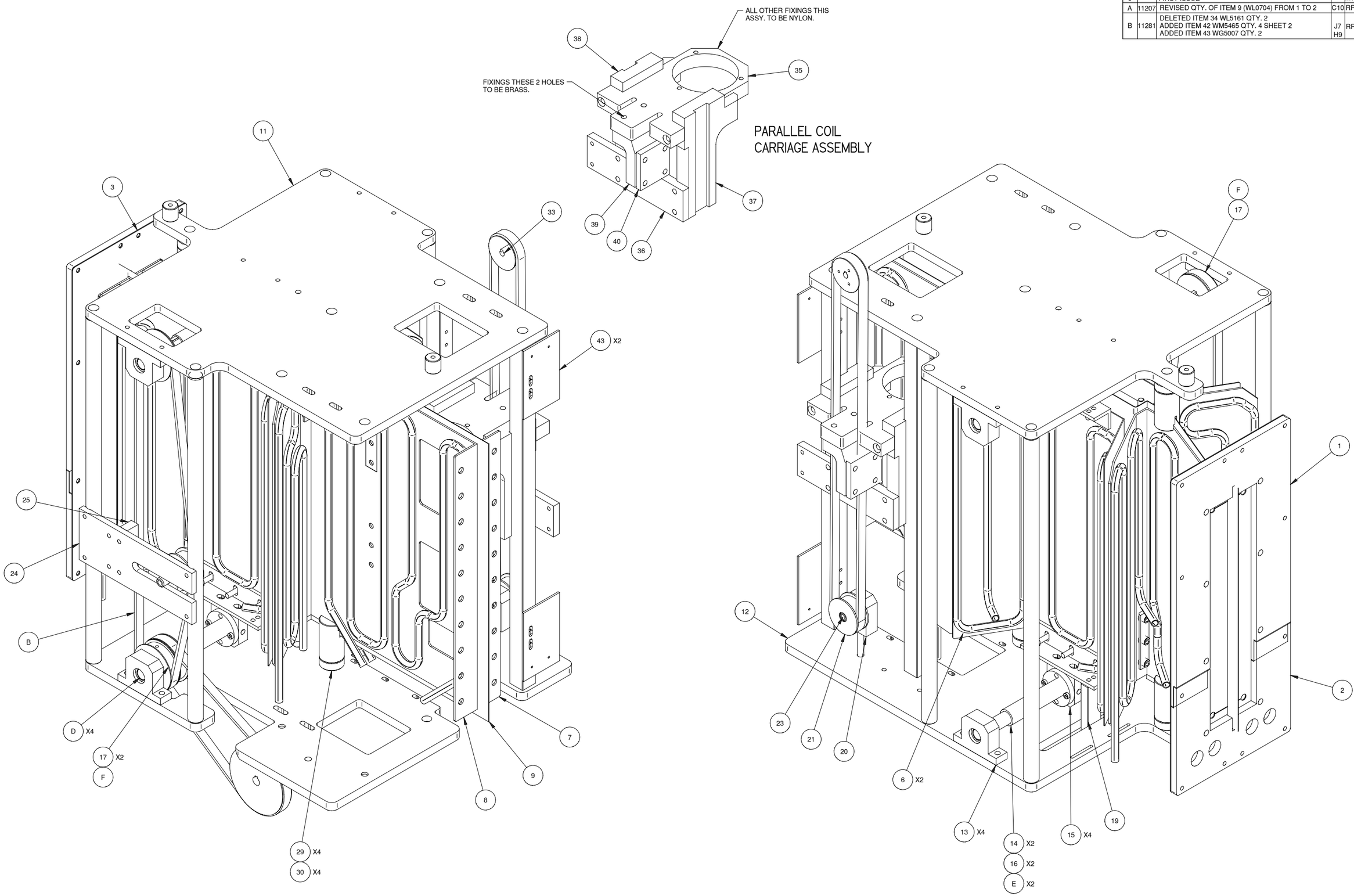
REVISIONS					
REV	ECR	DESCRIPTION	ZONE	DWN BY	MM/DD/YY
0	06155	FIRST ISSUE		MWT	06/27/06
A	11207	REVISED QTY. OF ITEM 9 (WL0704) FROM 1 TO 2	C10	RRR	10/17/07
B	11281	DELETED ITEM 34 WL5161 QTY. 2 ADDED ITEM 42 WM5465 QTY. 4 SHEET 2 ADDED ITEM 43 WG5007 QTY. 2	J7 H9	RRR	01/08/08

SD

PARALLEL COIL CARRIAGE ASSEMBLY



NOTE:-
ALL FIXINGS UNLESS OTHERWISE STATED
TO BE NON-MAGNETIC (304) STAINLESS STEEL.

THERMATOOL®

TITLE: HF12 Basic Automatch Assy

Item Master Description: HF12 BSC AMATCH ASSY
Approximate Weight: 41.4 kg

MATERIAL: SEE PART DETAIL
Thermatool Material Code:

TOLERANCES UNLESS OTHERWISE SPECIFIED
0 PLACE .00 ± .1 ANGLE ±0.5°
1 PLACE .0X0 ± 0.5
2 PLACE .0X00 ± 0.25 SURFACE N8
3 PLACE .0X.0X0 ± 0.125 FINISH

SI-METRIC
THIRD ANGLE PROJECTION

Drawn BY: martint
DATE(YY): 06/27/06

BUYER OR SELLER HEREBY ACKNOWLEDGES THAT THERE MAY BE ERRORS OR OMISSIONS IN THIS DOCUMENT AND THAT THERMATOOL EUROPE LTD. SHALL NOT BE LIABLE IN ANY MANNER FOR SUCH ERRORS OR OMISSIONS.

PRODUCT MODEL: CFI
SHEET 1 OF 2
SHEET SIZE: A0
DIVISION NO: 3
DRG NO: WU5261
Revision: B

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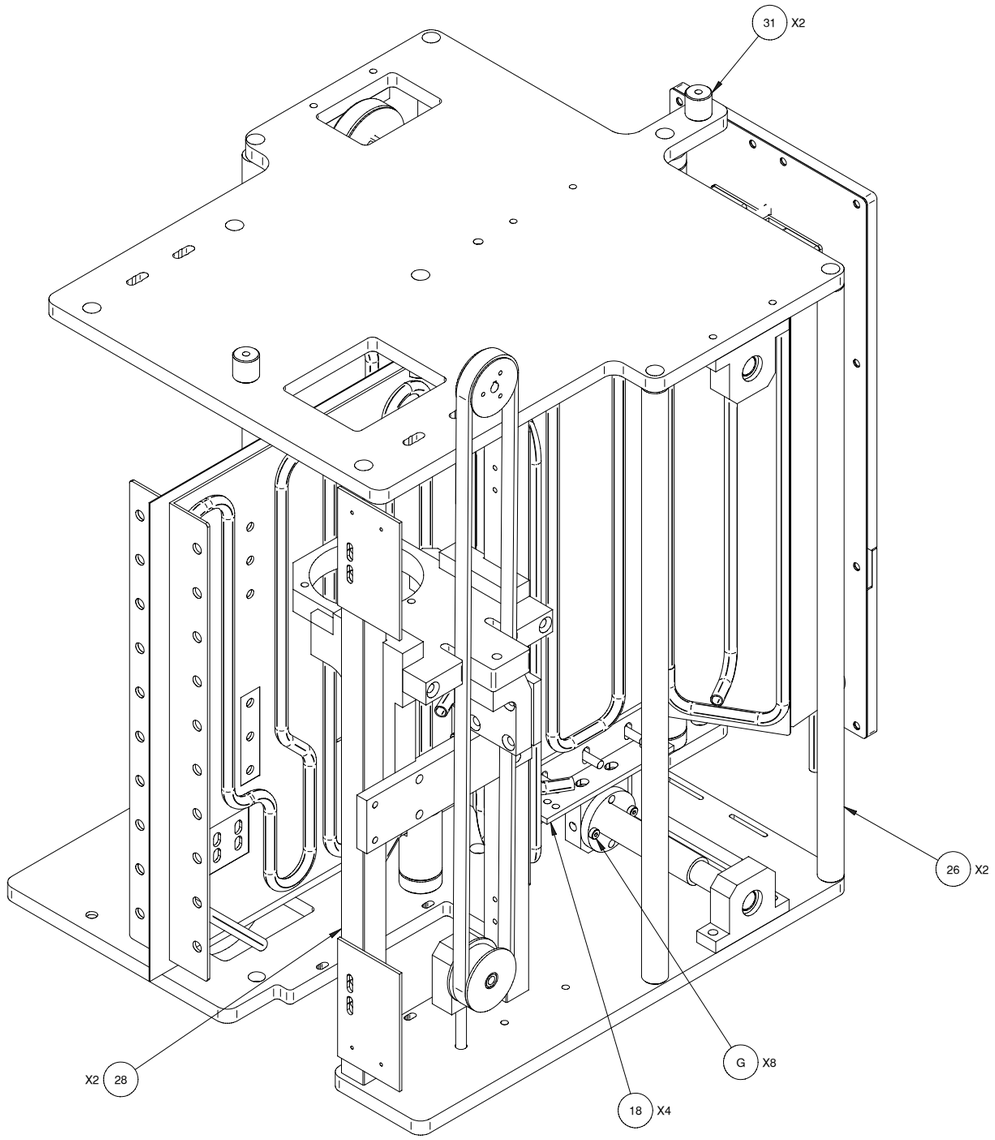

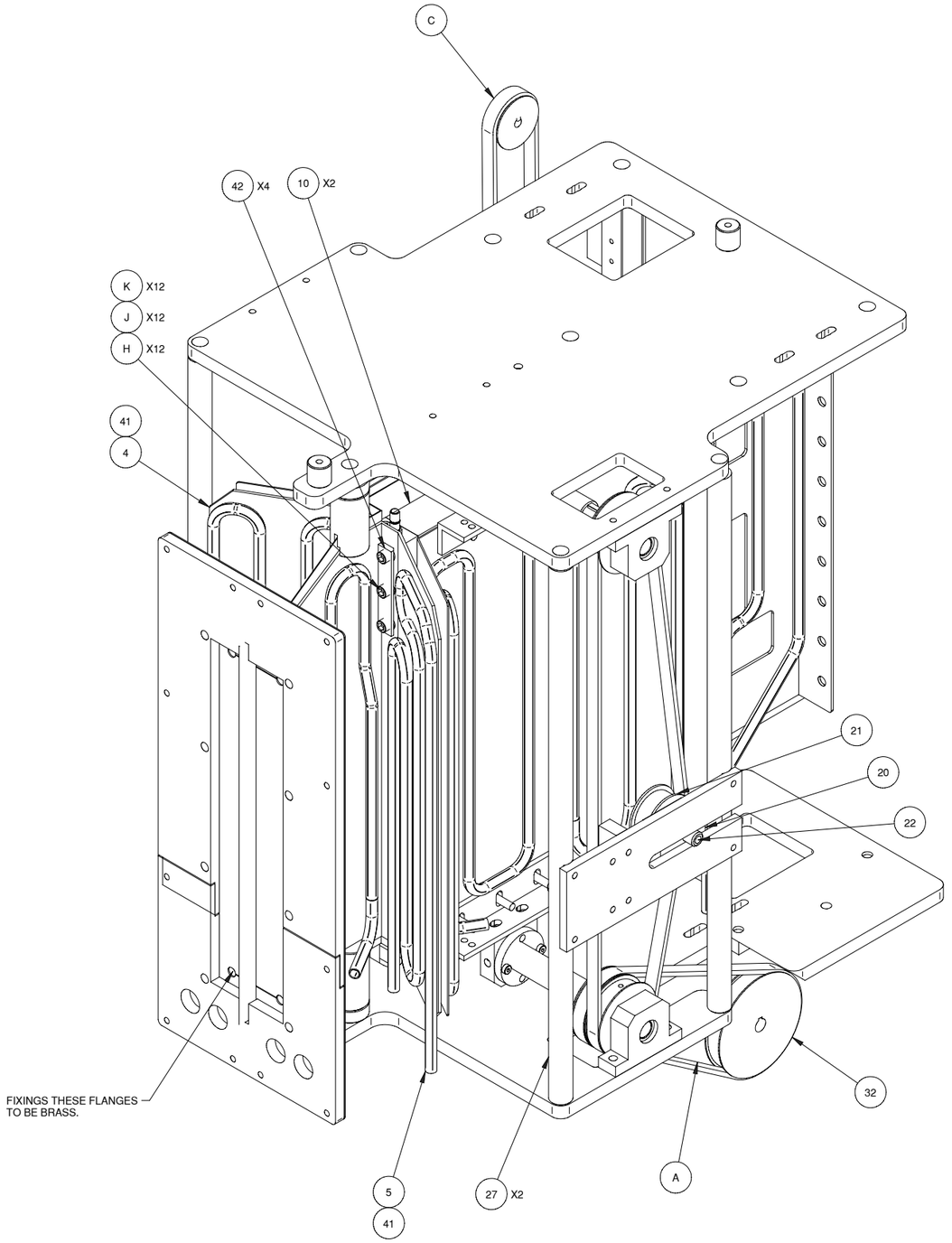

SHEET 2 OF 2
DRAWING SIZE A0 | SCALE 3 | DRG.NO WU5261 | REV B

WU5261

Basic Auto-Match Assembly HF12

(Common Build)

BOM (Bill Of Material)

Sheet 1 – *Auto-Match - BOM*

Sheet 2 – *Auto-Match – BOM*

Title	HF12 BASIC AUTOMATCH ASSEMBLY (COMMON BUILD)	B.O.M. No. WU5261
Machine Type	CFI HF12	Revision B
For Assy. Drg. See WU5261		Date 21SEPT10

Item No.	Drawing No.	Warehouse No.	TT Part No.	DESCRIPTION	Supplier Part No.	Circuit Reference	Comm	QUANTITY
1	WL5170	-	WL5170-001	ENVIRONMENTAL SHIELD, TOP	-	-	1	
2	WL5170	-	WL5170-002	ENVIRONMENTAL SHIELD, BOTTOM	-	-	1	
3	WL5169	-	WL5169	GASKET	-	-	1	
4	WL5530	-	WL5530	THIRD BUS. NEGATIVE	-	-	1	
5	WL5531	-	WL5531	THIRD BUS. POSITIVE	-	-	1	
6	WL5140	-	WL5140	SECOND BUS.	-	-	2	
7	WL5526	-	WL5526	FIRST BUS. NEGATIVE	-	-	1	
8	WL5527	-	WL5527	FIRST BUS. POSITIVE	-	-	1	
9	WL0704	-	WL0704	BUS INSULATION	-	-	1	
10	WL0742	-	WL0742	BUS BRIDGE ASSEMBLY	-	-	2	
11	WL1864	-	WL1864	UPPER PLATE	-	-	1	
12	WG5075	-	WG5075	LOWER PLATE	-	-	1	
13	WL5168	-	WL5168	LEAD SCREW OUTER BUSHING MTG	-	-	4	
14	WL5167	-	WL5167-001	LEAD SCREW - NUT ASSY	-	-	2	
15	WL0938	-	WL0938	ACME NUT MTG PLATE	-	-	4	
16	WL5164	-	WL5164	LEAD SCREW INNER BUSHING MTG	-	-	2	
17	WL2219	-	WL2219	PULLEY, 24T, 10 PITCH, 22 BORE	-	-	3	
18	WL2182	-	WL2182-002	BEARING SUPPORT MOUNT, LOWER	-	-	4	
19	WL2186	-		SERIES LIMIT SWITCH ACTUATOR	-	-	1	
20	WL0734	-		BELT TENSIONER ASSY	-	-	2	
21	WL5162	-		TENSIONER WHEEL	-	-	2	
22	WL2184	-	WL2184-001	SERIES TENSIONER PIN	-	-	1	
23	WL2184	-	WL2184-002	PARALLEL TENSIONER PIN	-	-	1	
24	WL5133	-	WL5133-001	SERIES TENSIONER MTG PLATE	-	-	1	
25	WL5133	-	WL5133-002	SERIES TENSIONER TAKE-UP PLATE	-	-	1	
26	WL5136	-	WL5136-001	VERTICAL SUPPORT ROD, NEG	-	-	2	
27	WL5136	-	WL5136-002	VERTICAL SUPPORT ROD, POS	-	-	2	
28	WL5138	-		VERTICAL GUIDES	-	-	2	
29	WL0709	-	WL0709-003	BUS-BAR SUPPORT	-	-	4	
30	WL0901	-		BUS-BAR SUPPORT SPACER	-	-	4	
31	WL5163	-		TOP PLATE GUIDE	-	-	2	
32	WM5047	-		PULLEY, 36T, 10 PITCH	-	-	1	
33	WL2221	-		PULLEY, 18T, 10 PITCH, 10 BORE	-	-	1	
34								
35	WL2183	-		TOP PLATE PARALLEL SLUG ASSY	-	-	1	
36	WL5139	-		SLIDE PLATES BRACE	-	-	1	
37	WL0752	-	WL0752-004	PARALLEL SLUG SLIDE PLATE, R/H	-	-	1	

Title	HF12 BASIC AUTOMATCH ASSEMBLY (COMMON BUILD)	B.O.M. No. WU5261
Machine Type	CFI HF12	Revision B
For Assy. Drg. See WU5261		Date 21SEPT10

Item No.	Drawing No.	Warehouse No.	TT Part No.	DESCRIPTION	Supplier Part No.	Circuit Reference	Comm	QUANTITY
38	WL0752	-	WL0752-003	PARALLEL SLUG SLIDE PLATE, L/H	-	-	1	
39	WL5165	-	WL5165-001	CLAMP BRACKET	-	-	1	
40	WL5165	-	WL5165-002	CLAMP PLATE	-	-	1	
41	WL5160	-		TAPPED BACK-UP BAR	-	-	2	
42	WM5465	-		CLAMP BAR, 3rd BUS TO BRIDGE	-	-	2	
43	WL5161	-		TRIP SWITCH MTG BRACKET	-	-	2	
A	-	-	BELT001-010	TIMING BELT 16-T10/810-KEVLAR	-	-	1	
B	-	-	BELT001-001	TIMING BELT 16-T10/1460-KEVLAR	-	-	1	
C	-	-	BELT001-002	TIMING BELT 16-T10/1520-KEVLAR	-	-	1	
D	-	-	42CP132-051	IGLIDE BUSH M250	-	-	4	
E	-	-	42CP131-093	IGLIDE BUSH MSM-3240-20	-	-	2	
F	-	-	HARD-KEY-6X6X50	KEY STAINLESS STEEL	-	-	2	
G	-	-	M5XM6X10MMSKTSHLDR S/STL	SHSS DIA 6 X M5-0.8 X 10MM LG. 304 S/STL	-	-	8	
H	-	-	-	SHCS M8-1.25 X 20MM LG. 304 S/STL	-	-	12	
J	-	-	-	M8 SPRING WASHER. 304 S/STL	-	-	12	
K	-	-	-	M8 PLAIN WASHER. 304 S/STL	-	-	12	

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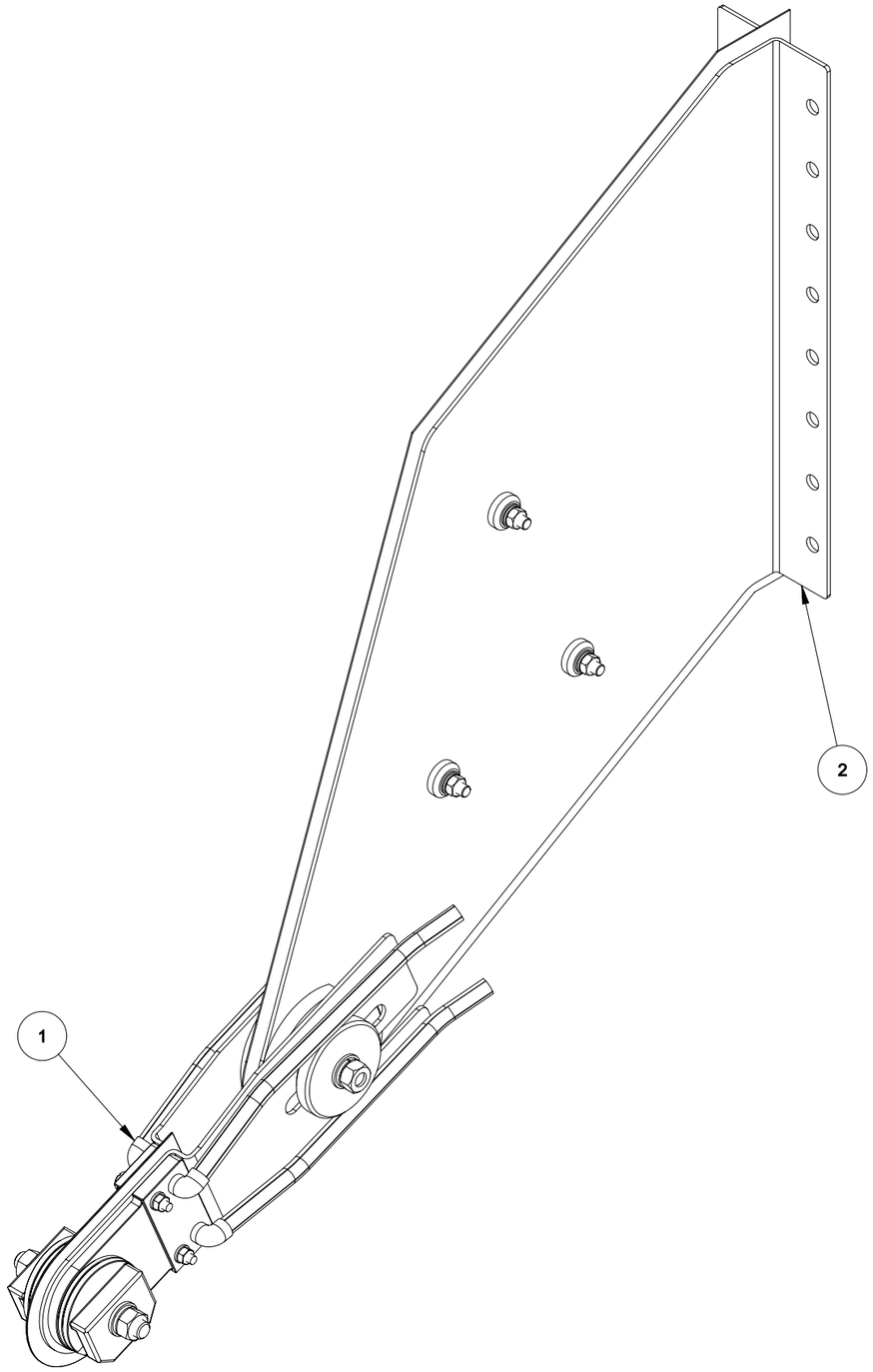
REVISION					
REV	ECR	DESCRIPTION	ZONE	DWN BY	DD/MM/YY
0	02299	FIRST ISSUE		MWT	23/08/04

SD



TITLE
HF12 Output Assembly

Item Master Description:
HF12 OUTPT ASSY

Approximate Weight:
17.4kg

MATERIAL
SEE PART DETAIL

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLACE (X) ±1. ANGLE: ±0.5'
1 PLACE (X.X) ±0.5
2 PLACE (X.XX) ±0.25 SURFACE
3 PLACE (X.XXX)±0.100 FINISH: N8

SI-METRIC
THIRD ANGLE PROJECTION

DRAWN BY martint
DD/MM/YY 23/08/06

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PRODUCT MODEL		SHEET SIZE	DIVISION NO.	DWG NO	Revision:
CFI HF12	1 OF 1	A1	3	WU5032	0

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Title	HF12 OUTPUT ASSEMBLY (NON-ENCAPSULATED)	B.O.M. No. WU5032
Machine Type	CFI HF12	Revision 0
For Assy. Drg. See WU5032		Date 19/12/02

Item No.	Drawing No.	Warehouse No.	TT Part No.	DESCRIPTION	Supplier Part No.	Circuit Reference	Comm	QUANTITY
1	WL1988	-	WL1988	NON ENCAPSULATED COIL HOLDER ASSY	-	-	1	
2	WU5034	-	WU5034	HF12 NOSE PIECE ASSY	-	-	1	
3								
4								
5								

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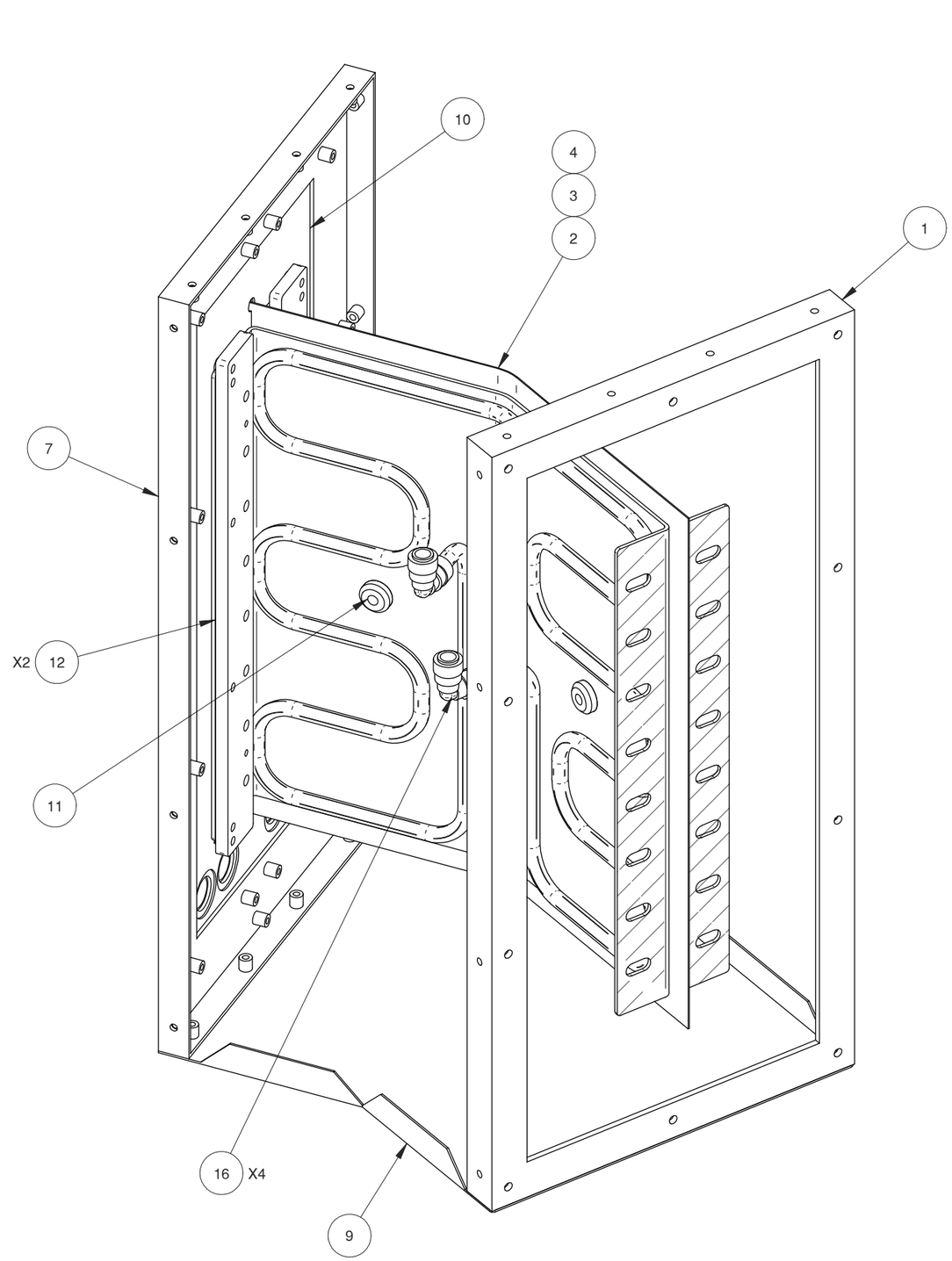
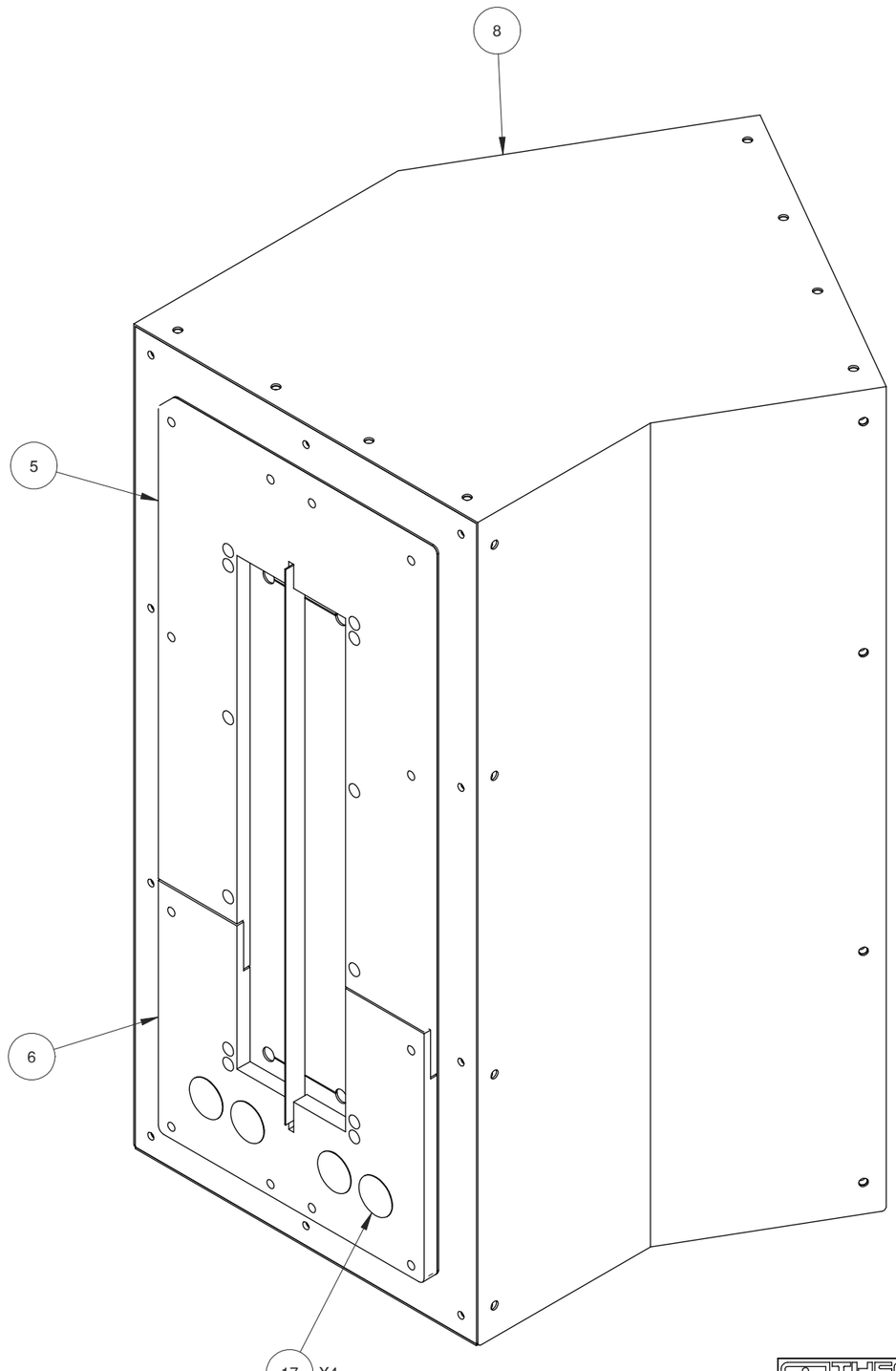
REVISIONS					
REV	ECR	DESCRIPTION	ZONE	DWN BY	MM/DD/YY
0	06260	FIRST ISSUE		MWT	11/03/06





NOTE:-
SECURED TO ITEM 8 TOP COVER USING SELF TAPPING SCREWS. MARK AND DRILL AT ASSEMBLY.

THERMATOOL®

TITLE: 30 Deg Output Housing Assembly

Item Master Description: 30 DEG OP HSNG ASSY

Approximate Weight: 27.6 kg

MATERIAL: SEE PART DETAIL.

Thermatool Material Code:

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLACE (X) ± 1. ANGLE ±0.5°
1 PLACE (X.X) ± 0.5
2 PLACE (X.XX) ± 0.25 SURFACE FINISH N8
3 PLACE (X.XXX) ± 0.125

SI-METRIC

THIRD ANGLE PROJECTION

DRAWN BY: martint

MM/DD/YY: 11/03/06

PRODUCT MODEL: CFI

SHEET 1 OF 1

SHEET SIZE: A1

DIVISION NO: 1

ORG NO: WU5311

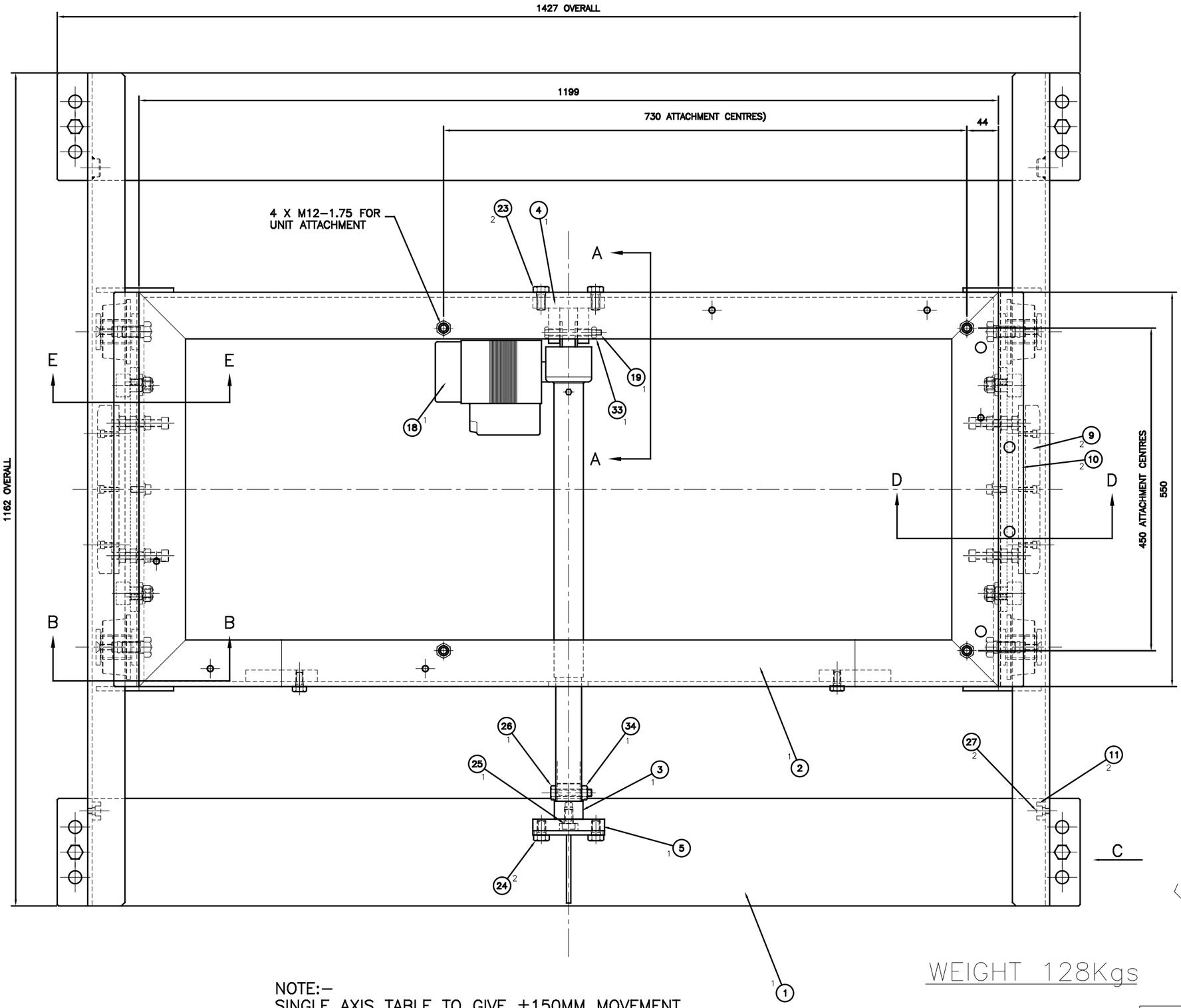
Revision: 0

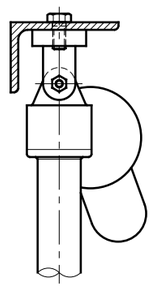
DO NOT SCALE DRAWING COPY

Title	30 DEG OUTPUT HOUSING ASSEMBLY	B.O.M. No. WU5311
Machine Type	HF12 CFI	Revision 0
For Assy. Drg. See WU5311		Date 03/1/06

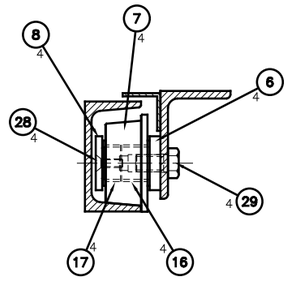
Item No.	Drawing No.	Warehouse No.	TT Part No.	DESCRIPTION	Supplier Part No.	Circuit Reference	Comm	QUANTITY							
1	WF5291	-	WF5291	HOUSING MOUNTING FRAME	-	-	1								
2	WL5597	-	WL5597-001	30 DEG ADAPTOR BUS, R/H SECTION	-	-	1								
3	WL5597	-	WL5597-002	30 DEG ADAPTOR BUS, L/H SECTION	-	-	1								
4	WL5598	-	WL5598	ADAPTOR BUS INSULATION	-	-	1								
5	WK5400	-	WK5400-001	ENVIRONMENTAL SHIELD, TOP	-	-	1								
6	WK5400	-	WK5400-002	ENVIRONMENTAL SHIELD, BOTTOM	-	-	1								
7	WF5352	-	WF5352	HOUSING BULKHEAD	-	-	1								
8	WF5471	-	WF5471	TOP COVER	-	-	1								
9	WF5472	-	WF5472	BOTTOM COVER	-	-	1								
10	WL5169	-	WL5169	GASKET	-	-	1								
11	WL1039	-	WL1039	INSULATION CLAMP	-	-	4								
12	WK5461	-	WK5461	TAPPED BACK-UP BAR	-	-	2								
13															
14															
15	-	-	PLM-BULK-RPM1212E	BULKHEAD CONNECTOR	RPM1212E	REF.	4								
16	-	-	PLM-ADT-RM0312E	12MM ELBOW	RM0312E	-	4								
17	-	-	-	27MM BLANKING PLUG	-	-	4								
18															
19															
20															

REVISIONS							
REV	ECR	DESCRIPTION	ZONE	DWN	CHK	APPD	DD/MM/YY
0	08203	FIRST ISSUE		BWH			24NOV08





SECTION ON 'A–A'



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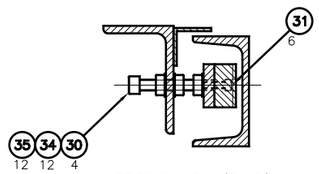

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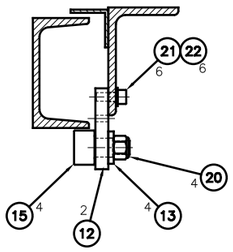


SECTION ON 'E–E'

VIEW FROM 'C'

WEIGHT 128Kgs

NOTE:–
SINGLE AXIS TABLE TO GIVE ±150MM MOVEMENT.

BASED ON WG0529

NEXT ASSY	JOB NO	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS TOLERANCES ON	APPROVALS	DD/MM/YY
FIRST APPLICATION		0 PLACE (X) ± 0.5 ANGLE ± 0°30'	DWN BWH	24NOV08
UNIT HF12/24 INVERTER		1 PLACE (X.X) ± 0.3 SURFACE FINISH N8	CHK	
BUYER OR SELLER HEREBY ACKNOWLEDGES THAT THERE MAY BE ERRORS OR OMISSIONS IN THIS DOCUMENT AND THAT THERMATOOL EUROPE LTD SHALL NOT BE LIABLE IN ANY MANNER FOR SUCH ERRORS OR OMISSIONS.		2 PLACE (X.XX) ± 0.15 BREAK AND DEBURR ALL SHARP EDGES	ENG/APPD	
©Copyright THERMATOOL EUROPE LTD		SI–METRIC	MATL N.A.	
THIS DOCUMENT IS THE PROPERTY OF THERMATOOL EUROPE LTD AND IS LIMITED FOR USE ONLY WITH TOOLING SUPPLIED OR AUTHORIZED BY THIS COMPANY. IT SHOULD NOT BE USED OR DUPLICATED FOR ANY OTHER PURPOSE AND IS TO BE RETURNED TO THERMATOOL EUROPE LTD ON REQUEST WHEN NO LONGER REQUIRED FOR SUCH PURPOSES.		THIRD ANGLE PROJECTION	FINISH/HEAT TREAT N.A.	

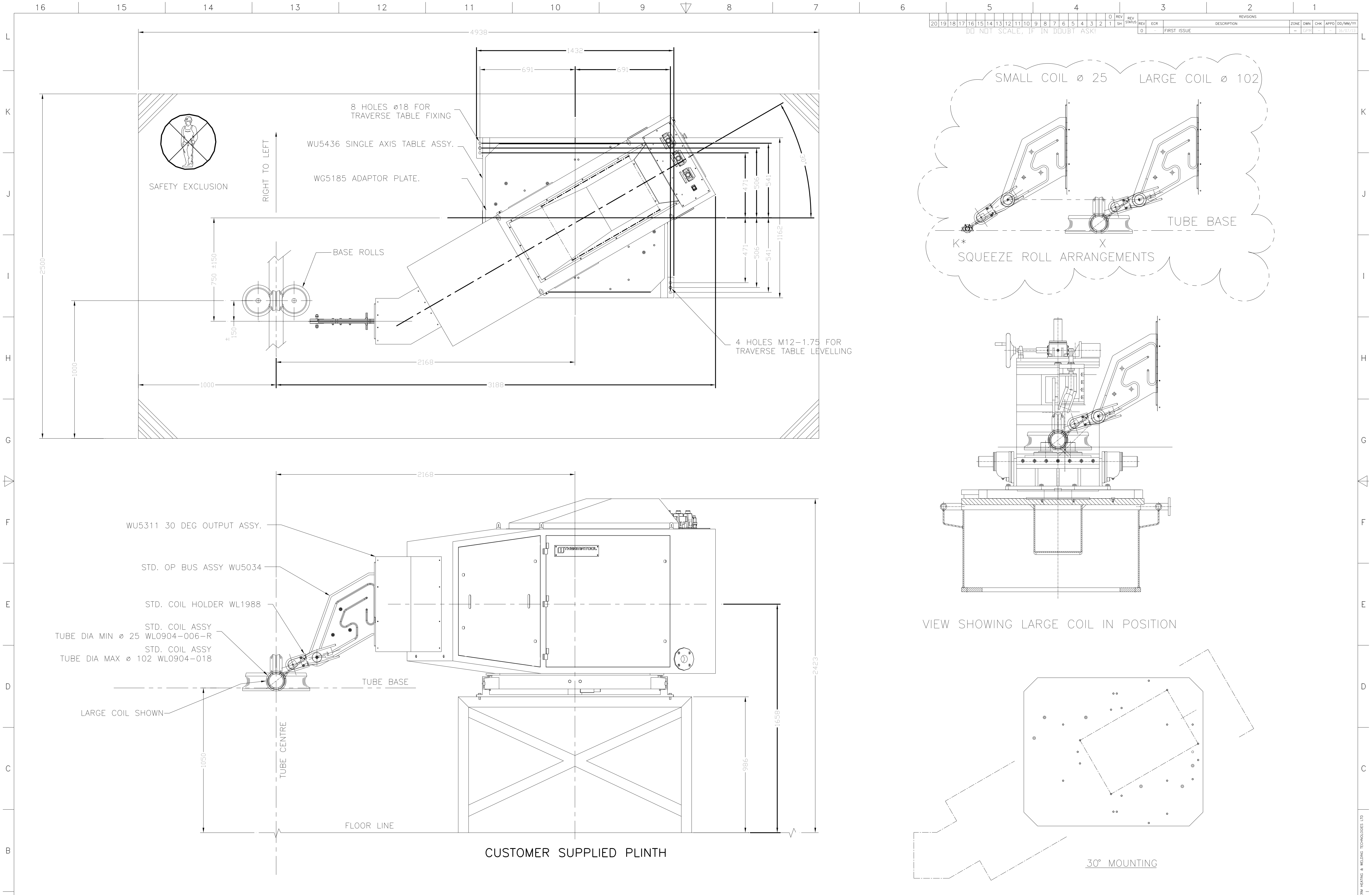
THERMATOOL®

TITLE: FINAL ASSEMBLY CFI SINGLE AXIS TRAVERSE TABLE

SIZE	DIV NO	DWG NO	REV
A0	3	WU5436	0

SCALE 1:2 — DO NOT SCALE DRAWING COPY — SHEET 1 OF 1

ENG–REF:



CUSTOMER PLINTH REQUIREMENTS
HF12 INVERTER R-L BASELINE

UNLESS STATED DIMENSIONS IN MM. TOLERANCES AS BELOW.
0 PLACE (X) ± 0.5
1 PLACE (X.X) ± 0.25
2 PLACE (X.XX) ± 0.125
ANGLE ± 0°30'
SURFACE FINISH N8
BREAK AND DEBURR ALL SHARP EDGES

W/O	SCALE	SHEET	SIZE	DWG NO
T2400	1:7	1 OF 1	A0	WG2210-T2400

UNITS: SI - MM

THERMATOOL

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