

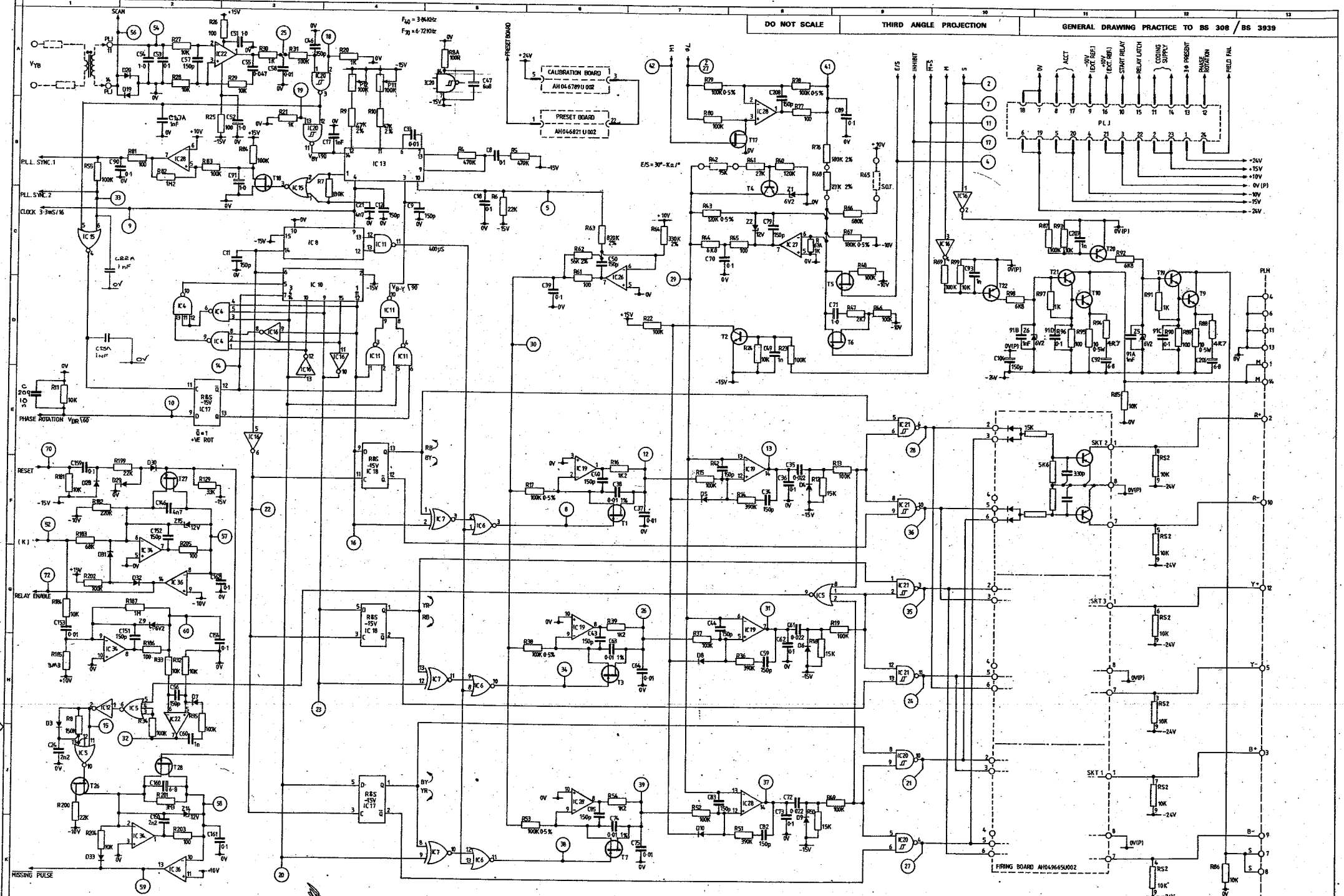
- NOTES:-
1. PT-P10 ASSEMBLED ON PRESET BOARD (A1046R210002). TACHO CALIBRATION RESISTORS R99 & R201 (IC12), CURRENT CALIBRATION RESISTORS R123 A-E (IC6) ASSEMBLED ON CALIBRATION BOARD (A1046R910002).
  2. OPTION SWITCH POSITIONS:  
 S1. 3 JL, (IL) METER INSTRUMENTATION.  
 S2. STANDSTILL LOCK ENABLE.  
 S3. SETPOINT RAMP INPUT ENABLE.  
 S4. SETPOINT RAMP RATE CHANGE.
  3. LED 1 1 PHASE (AUX.1) ON/OFF.  
 LED2 45-65 HZ ENABLE / INHIBIT.  
 LED3 3 PHASE (MAINS) ON / OFF.  
 LED4 NORMAL / TRIGGER FAULT.  
 LED5 NORMAL / OVERCURRENT FAULT.  
 LED6 RUN / INHIBIT.  
 LED7 ROTATING / STANDSTILL.  
 LED8 NORMAL / ALARM.
- ALL LED'S ILLUMINATED WHEN OPERATING.
- DIAGNOSTIC SOCKET.  
 ○ DIAGNOSTIC POSITIONS.
4. FIT R1 FOR 2 QUAD OPERATION

5. FIT RS6A, 470R, IN PARALLEL WITH RS6 FOR > 110A BUILDS

DATE	BY	CHKD	APP'D	REV
22-02-82	...	...	...	1
27-04-82	...	...	...	2
05-07-82	...	...	...	3
15-08-82	...	...	...	4
20-09-82	...	...	...	5
20-10-82	...	...	...	6
20-11-82	...	...	...	7
20-12-82	...	...	...	8
21-01-83	...	...	...	9
21-02-83	...	...	...	10
21-03-83	...	...	...	11
21-04-83	...	...	...	12
21-05-83	...	...	...	13
21-06-83	...	...	...	14
21-07-83	...	...	...	15
21-08-83	...	...	...	16
21-09-83	...	...	...	17
21-10-83	...	...	...	18
21-11-83	...	...	...	19
21-12-83	...	...	...	20
22-01-84	...	...	...	21
22-02-84	...	...	...	22
22-03-84	...	...	...	23
22-04-84	...	...	...	24
22-05-84	...	...	...	25
22-06-84	...	...	...	26
22-07-84	...	...	...	27
22-08-84	...	...	...	28
22-09-84	...	...	...	29
22-10-84	...	...	...	30
22-11-84	...	...	...	31
22-12-84	...	...	...	32

DRAWN: D.H. CHECKED: J.H. DESIGNED: D.S. APPROVAL:	MATERIAL: FINISH:	DIMS. IN M.M. APPLY OVER FINISH EXCEPT FOR PAINT AND LACQUER GENERAL TOLERANCES: X = ±0.4, XX = ±0.2, XXX = ±0.1 HOLES: Ø1-2mm = +0.02, Ø3-6 = +0.07	ASSEMBLED ON: 545 SCALE:	TITLE: P.C.B. CIRCUIT DIAGRAM 3-PHASE CONTROL BOARD DRAWING NUMBER: AI 047423 F001 SHEET: 1 OF 3 PAGES
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DATE	DESCRIPTION
22-2-82	REV. 1
7-4-82	REV. 2
15-5-82	REV. 3
29-5-82	REV. 4
12-7-82	REV. 5
30-7-82	REV. 6
6-8-82	REV. 7
10-8-82	REV. 8
18-8-82	REV. 9
24-8-82	REV. 10
31-8-82	REV. 11
7-9-82	REV. 12
14-9-82	REV. 13
21-9-82	REV. 14
28-9-82	REV. 15
5-10-82	REV. 16
12-10-82	REV. 17
19-10-82	REV. 18
26-10-82	REV. 19
2-11-82	REV. 20
9-11-82	REV. 21
16-11-82	REV. 22
23-11-82	REV. 23
30-11-82	REV. 24
7-12-82	REV. 25
14-12-82	REV. 26
21-12-82	REV. 27
28-12-82	REV. 28
4-1-83	REV. 29
11-1-83	REV. 30
18-1-83	REV. 31
25-1-83	REV. 32
1-2-83	REV. 33
8-2-83	REV. 34
15-2-83	REV. 35
22-2-83	REV. 36
1-3-83	REV. 37
8-3-83	REV. 38
15-3-83	REV. 39
22-3-83	REV. 40
29-3-83	REV. 41
5-4-83	REV. 42
12-4-83	REV. 43
19-4-83	REV. 44
26-4-83	REV. 45
3-5-83	REV. 46
10-5-83	REV. 47
17-5-83	REV. 48
24-5-83	REV. 49
31-5-83	REV. 50

DESIGNED BY	D.J.H.
CHECKED BY	[Signature]
DESIGN APPROVAL	[Signature]
APPROVAL	[Signature]

MATERIAL	
FINISH	

DIMS. IN M.M. APPLY OVER FINISH	
GENERAL TOLERANCES	X - ±0.4 XX - ±0.25 XXX - ±0.15
HOLE SIZES	1.0 - 1.5 1.5 - 2.5 2.5 - 5.0

ASSEMBLED ON	545
SCALE	

TITLE	PCB CIRCUIT DIAGRAM
	3 PHASE CONTROL BOARD
DRAWING NUMBER	AI 04723 F 001
REV. 2	OF 3 SHEETS



NOTES:-OPERATIONAL AMPLIFIERS

ALL LM 324 (14 PIN) : PIN 4 TO +15V ; PIN 11 TO -15V.  
 LM 353 (8 PIN) : PIN 8 TO +15V (VIA R26) ; PIN 4 TO -15V (VIA R25).  
 LM 356 (8 PIN) IC 26: PIN 8 TO +15V; PIN 4 TO -15V. } ALSO PIN 1 TO 2 & PIN 3 TO 0V (2 SPARE GRAMPS).  
 LM 358 (8 PIN) IC 27: PIN 8 TO +15V; PIN 4 TO 0V. }  
 ±15V SUPPLIES TO ALL OPERATIONAL AMPLIFIERS DECOUPLED BY 0.1µF CAPACITORS TO 0V  
 (C 41, 45, 68, 69, 80, 81, 84, 100, 101, 110, 115, 116, 117, 140, 141, 147, 148, 166, 171, 179, 184).

COMPARATORS

BOTH LM 339 (IC 32 & 36): PIN 3 TO +15V ; PIN 12 TO -15V ; SUPPLIES DECOUPLED BY 0.1µF CAPACITORS TO 0V  
 (C 126, 125, 174, 176).

DIGITAL INTEGRATED CIRCUITS

IC NUMBER	DEVICE	Nº OF PINS	0V	-15V
1, 6, 9, 15	4001	14	14	7
3, 11	4011	14	14	7
17, 18	4013	14	14	4, 6, 7, 8, 10
4, 14	4023	14	14	7
5	4025	14	14	7
10	4035	16	16	2, 8
13	4046	16	16	5, 8
38	4068	14	14	7
2, 12, 16	4069	14	14	7
7	4077	14	14	7
20, 21	4093	14	14	7
8	4520	16	2, 10, 16	8, 15

-15V SUPPLY TO ALL DIGITAL INTEGRATED CIRCUITS DECOUPLED BY 2n2 CAPACITORS TO 0V  
 (C 1, 2, 3, 4, 5, 6, 7, 10, 13, 14, 15, 16, 19, 20, 22, 23, 25, 26, 47, 48, 190) 8-8µF 35V

IC1; PINS 1, 2, 5, 6 TO 0V (2 SPARE 2 I/P NOR GATES)

IC14; PINS 3, 4, 5 TO 0V (1 SPARE 3 I/P NAND GATES)

BUILD OPTIONS

002 AS PER CIRCUIT DIAGRAM.

003 FIT R1=10R.

FOR SPECIAL BUILD OPTIONS SEE HP049229 C00.

DATE

1 27-2-82  
 2 7-4-82  
 3 15-4-82  
 4 12-5-82  
 5 16-7-82  
 6 30-7-82  
 7 30-7-82  
 8 1-8-82  
 9 3-2-83  
 10 5-5-83  
 11 5-7-83  
 12 5-9-83  
 13 8-11-84  
 14 1-3-84  
 15 1-3-84  
 16 24/1/85  
 17 24/1/85  
 18 24/1/86  
 19 25/11/86  
 20 17/07/88  
 21 17/06/89  
 22 15/12/89  
 23 17-5-90  
 24 17 10 91  
 25 10 97  
 26 12 7 00

DRAWN  
 CHECKED  
 DESIGN APPROVAL  
 DRAWN APPROVAL

D.J.H.  
 N  
 D.S.  
 N

MATERIAL

FINISH

DIMS. IN M.M. APPLY OVER FINISH  
 (EXCEPT FOR PAINT AND LACQUER)

GENERAL X.X - ± 0.4 HOLES 1.0mm  
 TOLERANCES X.XX - ± 0.1 -0.02 + 0.07

ASSEMBLED ON 545

SCALE

Shackleton  
 system  
 drives

EI

TITLE

PCB CIRCUIT DIAGRAM  
 3 PHASE CONTROL BOARD

DRAWING NUMBER  
 AI 04 7423 F 001

REV. 3  
 OF 3 SHEETS

00174/7028