


[illegible]

DO20	SHT 1	4	SYSTEM ONE LINE 600V
DO20	SHT. 2	3	SYSTEM ONE LINE 600V
DO22		4	GEN POWER & CONTROL CONSOLE
DO23			DC POWER INTERCONNECTIONS
DO24			POWER CABLES - ARMATURE & SCR INTERCONNECTIONS
DO25		1	CONTROL CABLE INSTALLATION
DO26			ARMATURE CABLE INSTALLATION
DO27			MOTOR PLUG CONNECTIONS
DO33		2	AC & DC PLUG PANEL CONNECTIONS
DO39		2	ELMAGCO BRAKE CONTROL

[illegible][illegible][illegible][illegible]

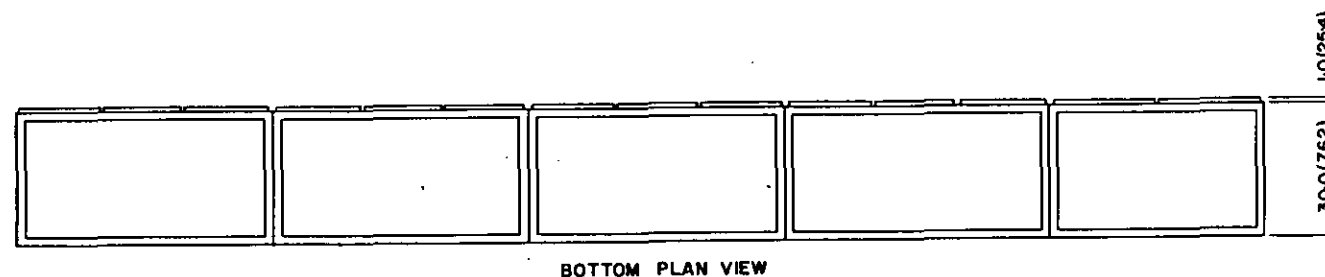
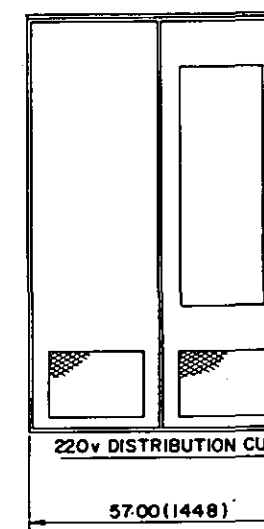
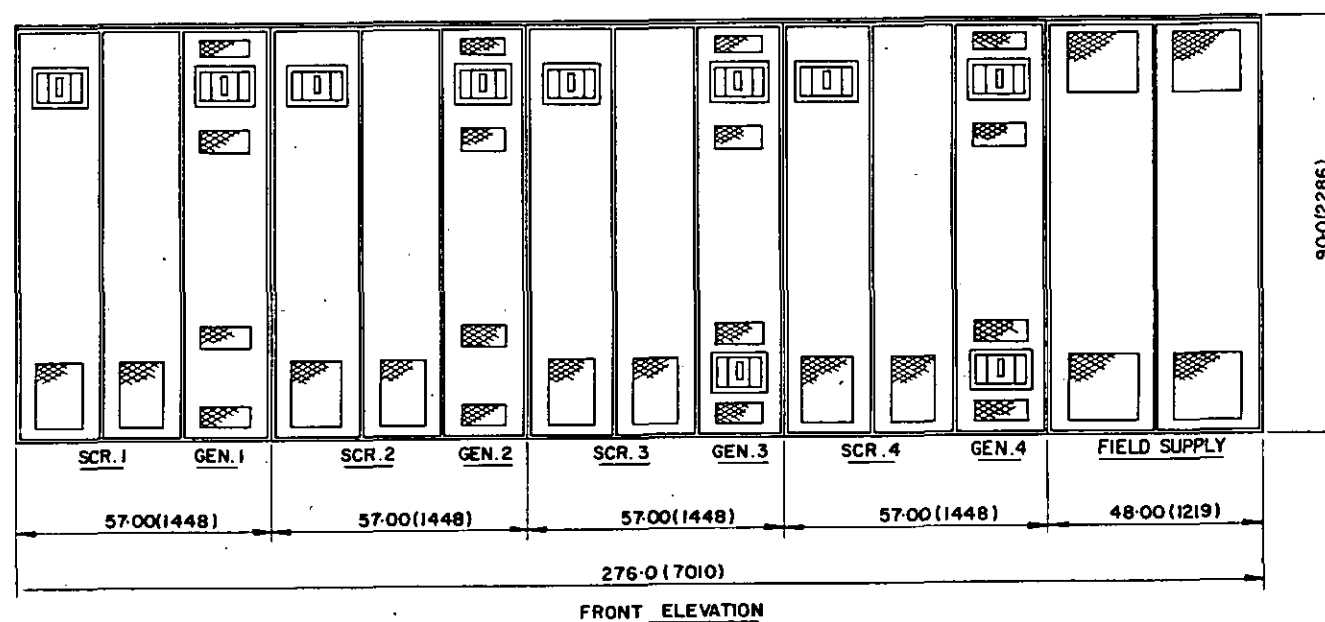
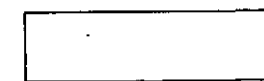
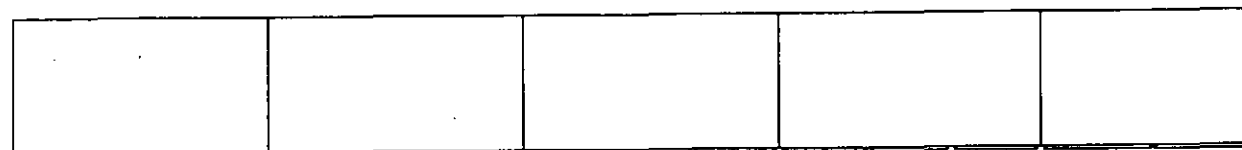
				ORIGIN	DATE	<p>THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS UNPERMISSIBLE ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.</p> <p>ASSOCIATED DRAWINGS</p> <p>WIRE LIST</p> <p>SCHEMATIC</p>	 <p><b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, BUCKS. ENGLAND. TEL. (0494) 40121.</p>	TITLE		
				CHECKED				PROJECT DRAWING INDEX		
				APP'D				REV. No.		
				USED ON				ORG. No.		
No.	DESCRIPTION	DATE	BY				REV.			
REVISED						CUSTOMER				

FORASOL  
NIIO-9  
6070

60700001

ITEM No.	DESCRIPTION	No. OFF

TOP PLAN VIEW



## NOTES:

- ALL mm DIMENSIONS IN BRACKETS.
- MIN. CLEARANCE REQUIRED AT FRONT OF CUBICLES IS 30-0(762).

REV.	DESCRIPTION	DATE	BY
3	GENERATOR 4 ADDED.	9-8-83	MG
2	CUBICLE CONFIGURATION CHG	16-12-80	MG
1	MAJOR MODS TO LINE-UP	13-12-80	MG

DESIGN	MG.	DATE	21-11-80	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMITTED ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.
CHECKED				
APP. 1				
SCALE	1:20			



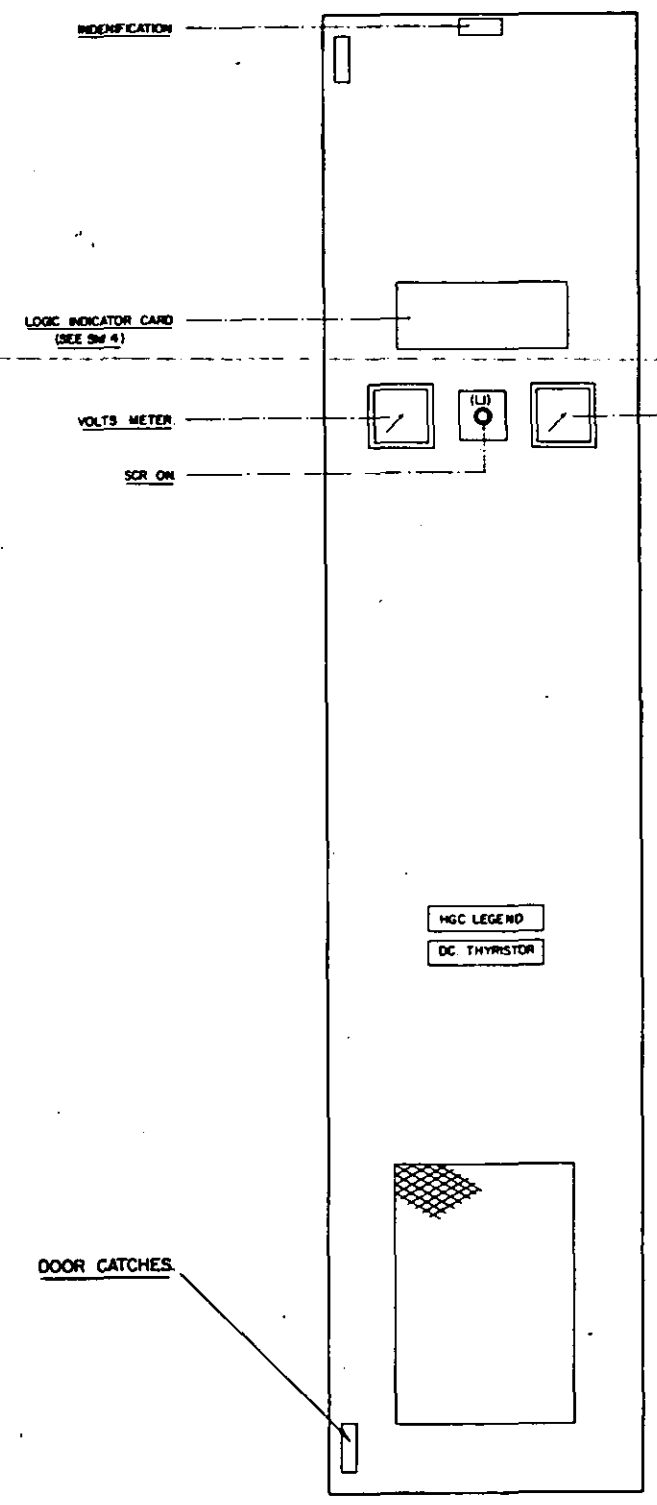
**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE			
CUBICLE ELEVATION LINE-UP			
NO. 60700001	LAND RIG	REV.	3.
CUSTOMER	FORASOL		

60700002  
SHT 1 OF 3

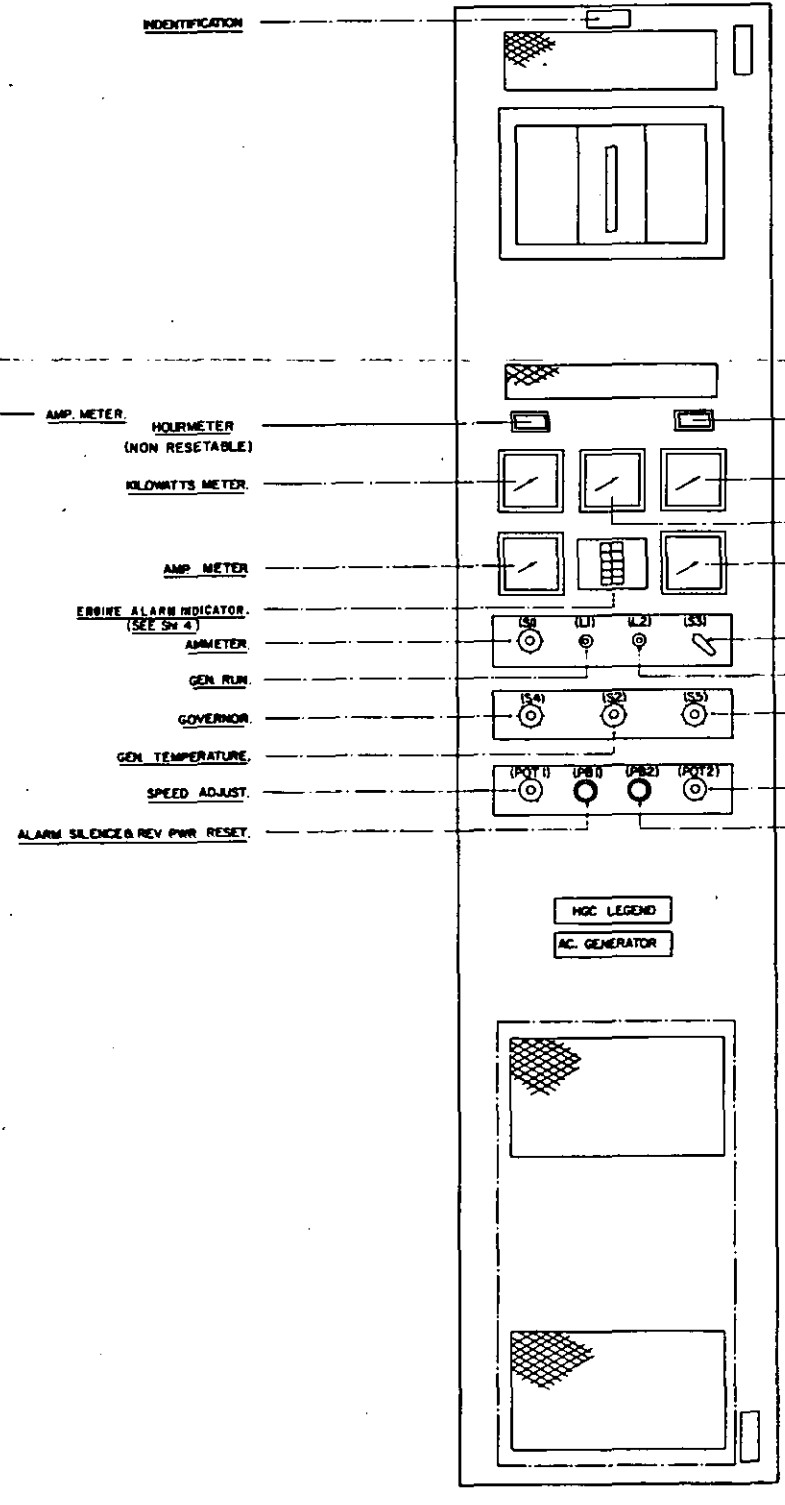
1853 (470)  
(TYP)

88.00 (2235)  
(TYP)

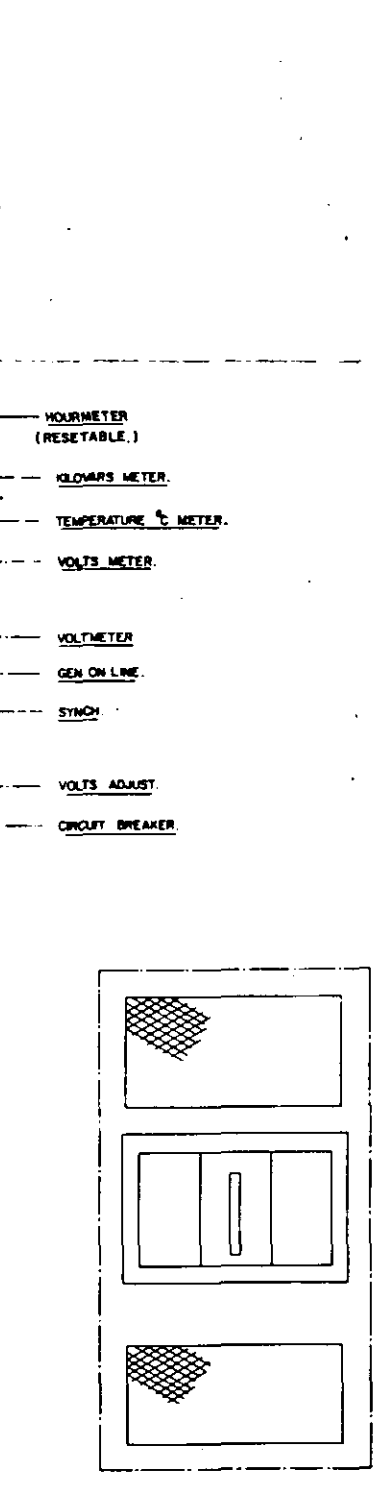


USED ON ALL SCRS.

USED ON ALL SCRS.



USED ON GENS. 1 & 2.

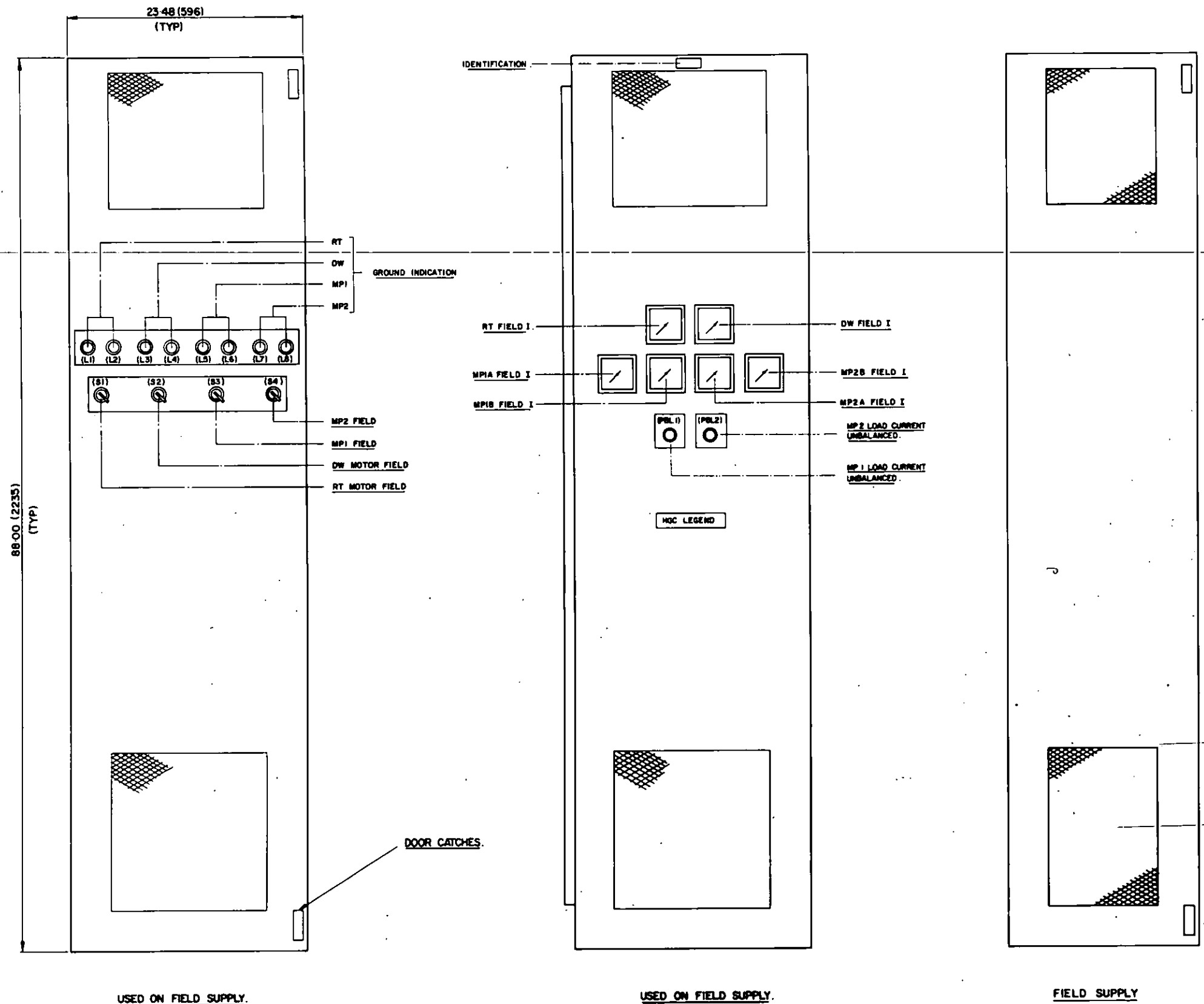


USED ON GEN. 3 & 4

NOTE:  
1. HILL GRAHAM CONTROLS LTD, SWITCH NUMBERS IN BRACKETS.

DRN	MG	DATE	24-11-80	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED UNLESS EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.	SCALE	3:16	TOLERANCES: FRACTIONAL: ± 0.01 DEC. PLACES: ± 0.05 DEC. PLACES: ± 0.05	USED ON	HILL GRAHAM CONTROLS LTD HIGH WYCOMBE, BEDS. ENGLAND. TEL. (0494) 40121.	TITLE	SCRS & GENS DOORS DETAIL	REV.	3
REV.	1	DESCRIPTION	GENERATOR 4, ADDED	DATE	9-8-83	BY	MG						
REV.	2	DESCRIPTION	AS COMMISSIONED	DATE	23-7-80	BY	WBN						
REV.	3	DESCRIPTION	HOURLMETERS ADDED	DATE	25-12-80	BY	MG						
REV.	4	DESCRIPTION		DATE		BY							

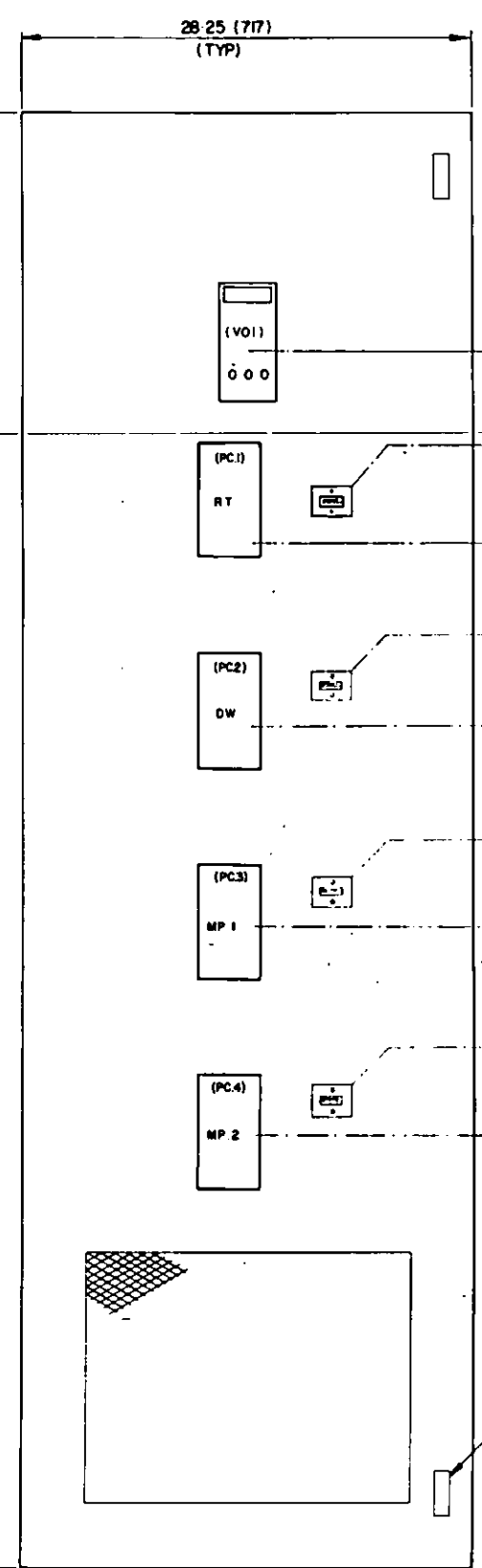
ITEM No.	DESCRIPTION	No. OFF.



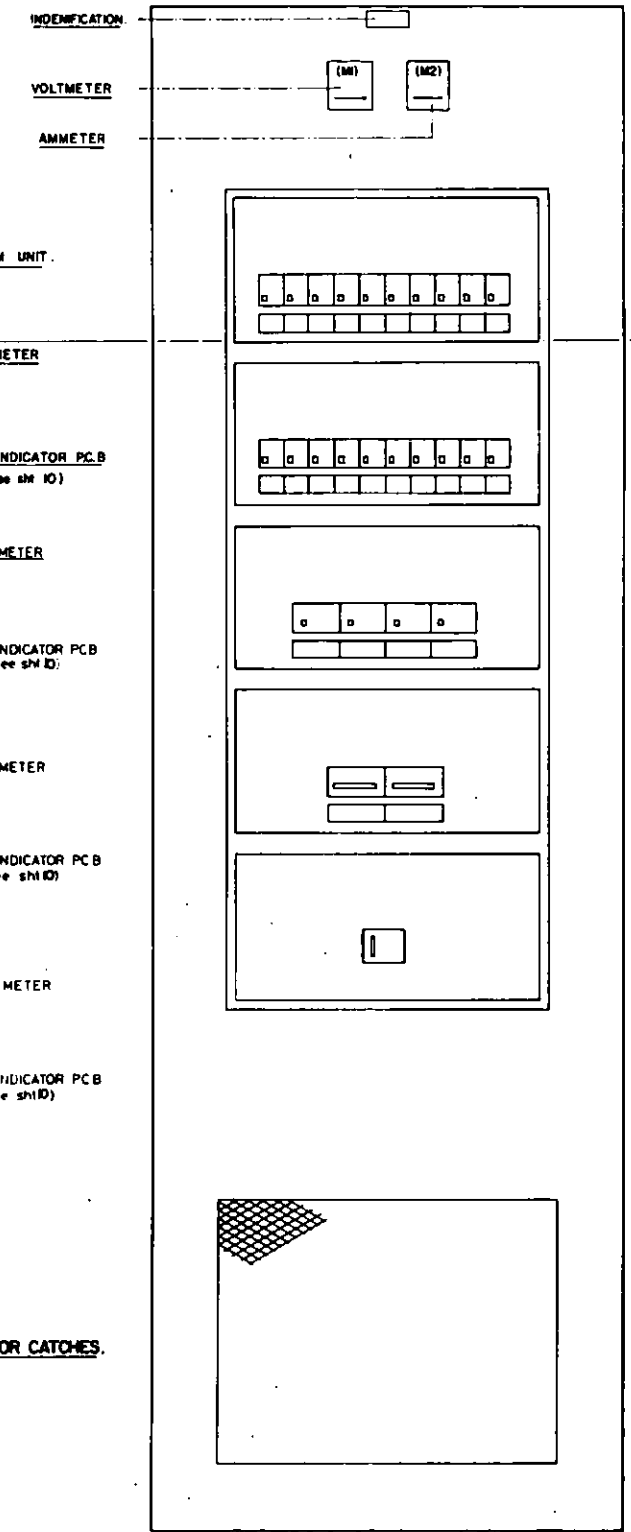
NOTE:  
1. HILL GRAHAM CONTROLS LTD, SWITCH NUMBERS IN BRACKETS.

DRAWN MG CHD APP SCALE 3:16	DATE 24.11.80	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.	TOLERANCES FRACTIONAL : 0.01 2 DEC. PLACES : 0.05 3 DEC. PLACES : 0.005	USED ON		<b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, BUCKS. ENGLAND. TEL. (0494) 4 0121.	TITLE <b>DOOR DETAILS</b> <b>FIELD SUPPLY</b>	REV 6070D002 SMT 2 OF 3
--	------------------	---	--	---------	--	--	---	-------------------------------

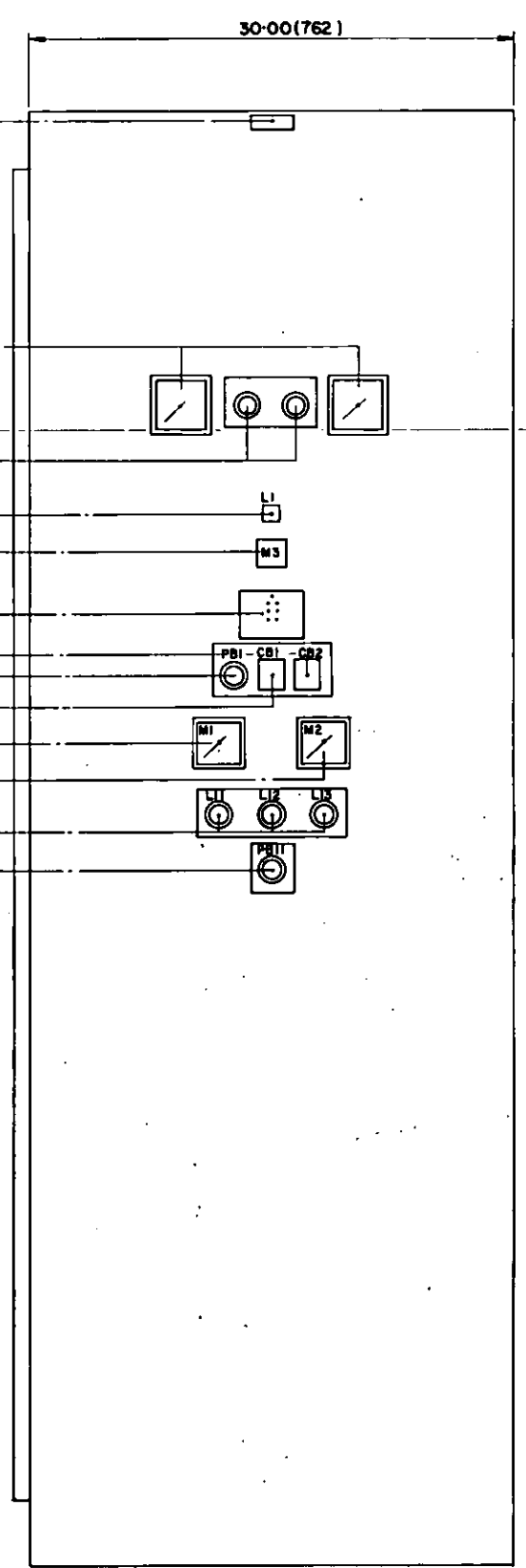
90.75 (2305)  
(TYP)



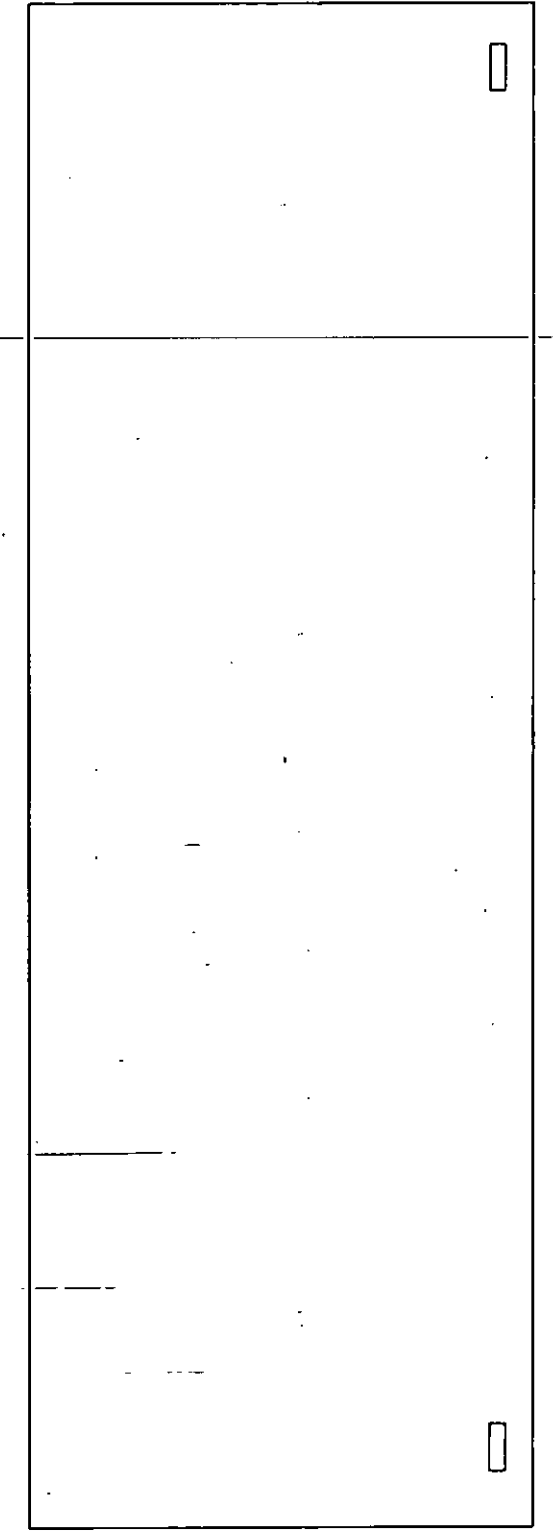
USED ON 220v TRANSFORMER.



USED ON 220v TRANSFORMER.



USED ON 600v GROUND FAULT DOOR.  
(Synchronizing Lights & Meters  
Included In Door).



PLUG PANEL DOOR

NOTE:  
1. HILL GRAHAM CONTROLS LTD. SWITCH NUMBERS IN BRACKETS.

DATE	24-11-80
CHD	MG
APP	
SCALE	3:16

THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMITTED ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.

TOLERANCES:  
FRACTIONAL : 0.01  
2 DEC. PLACES : 0.01  
3 DEC. PLACES : 0.001

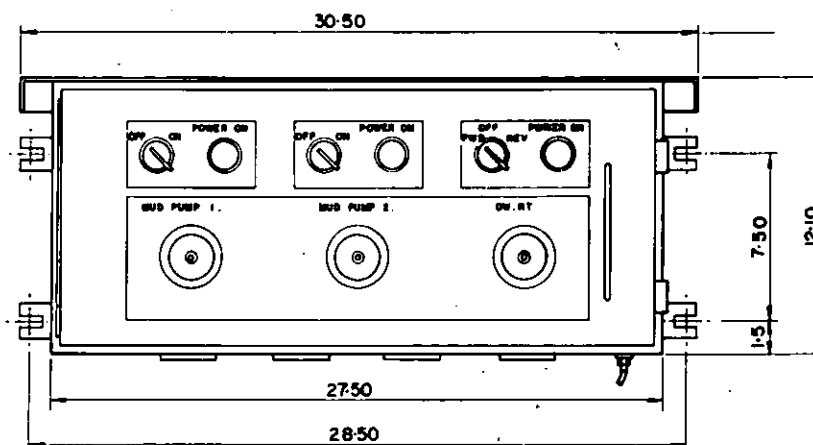
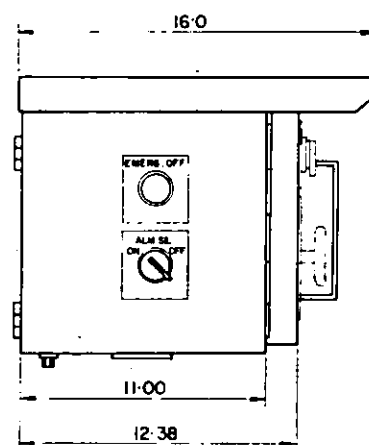
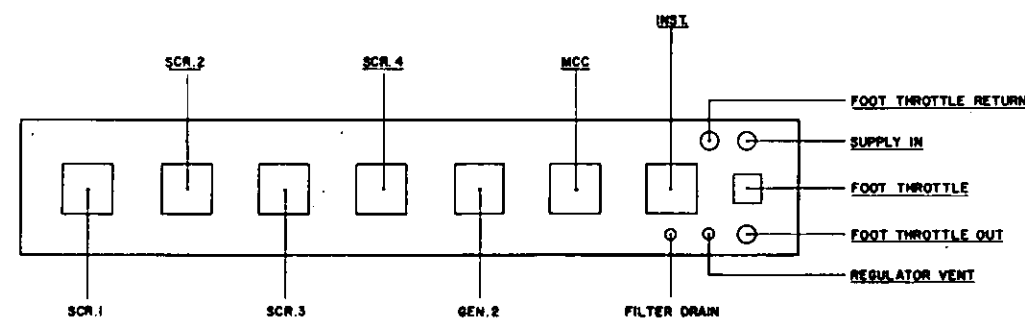
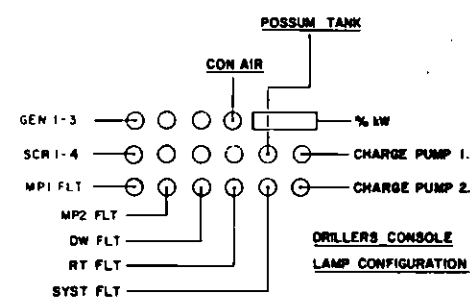
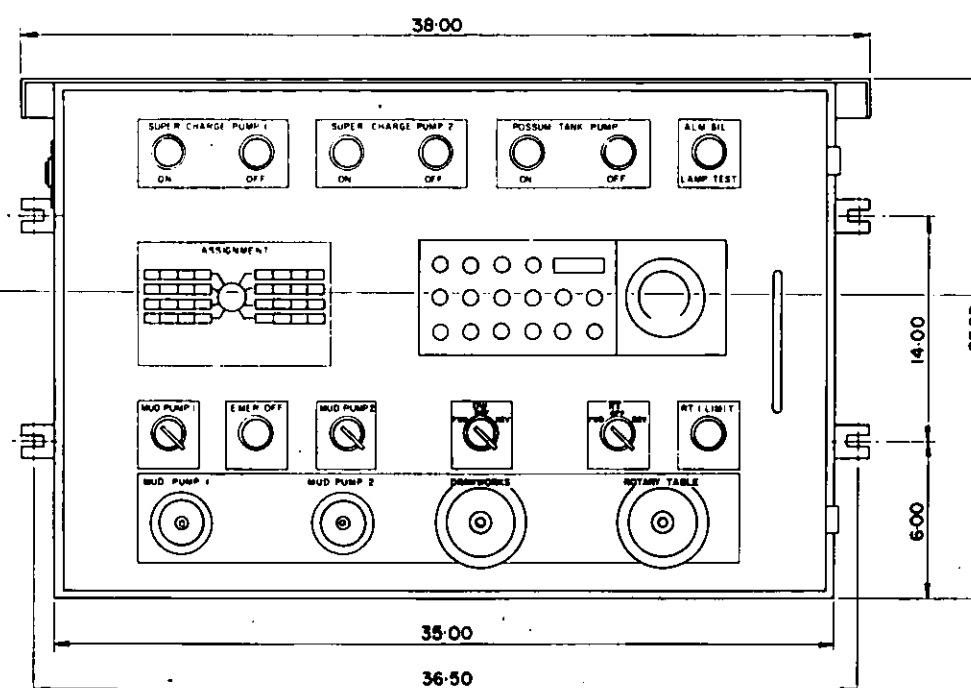
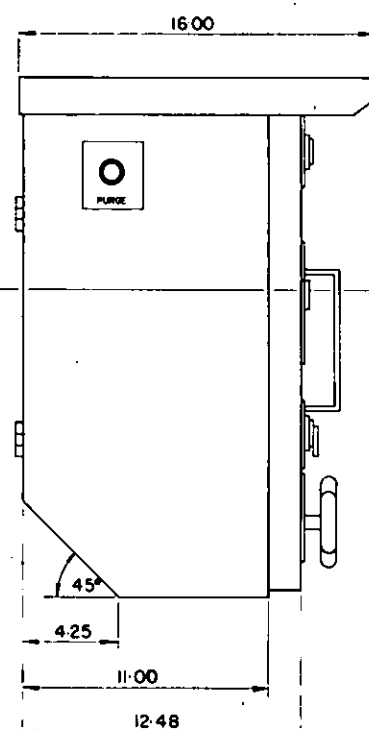
USED ON

**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE		DOOR DETAILS.	
220v TRANSFORMER & 600v GROUND FAULT.			
RIG No	6070D002	REV	2
CUSTOMER	FORASOL		

60700003

## DRILLERS CONSOLE

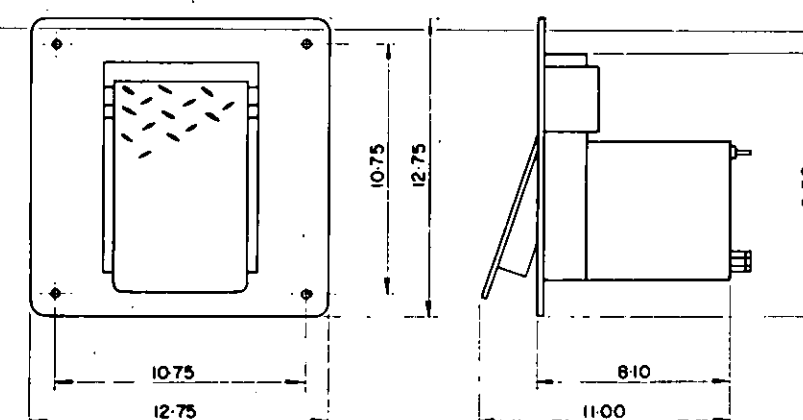


## EMERGENCY CONTROL CONSOLE

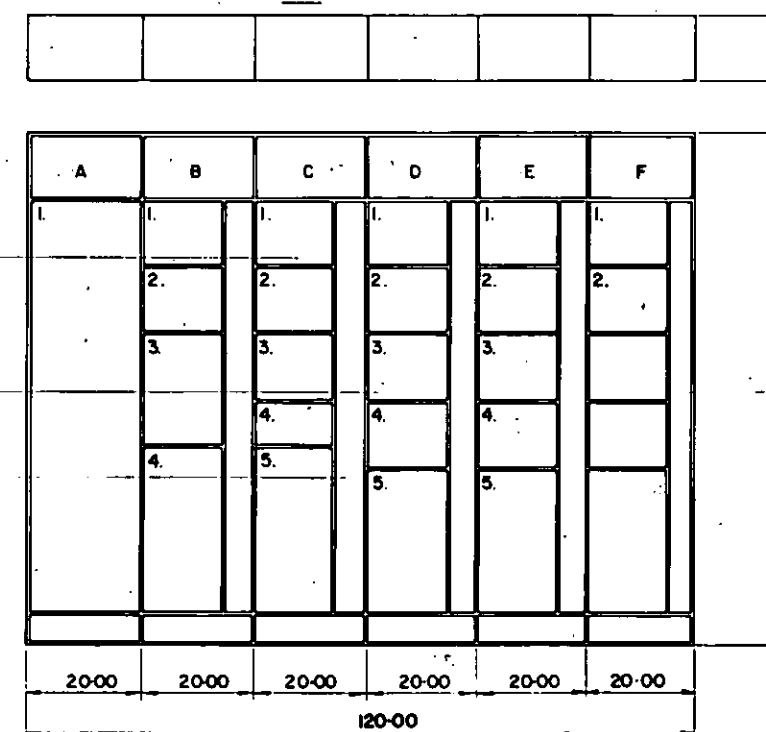
## NOTE:

1. RECOMMENDED CUTOUT FOR FLUSH MOUNTING  
9.75 (248) SQUARE
2. THROTTLE TO BE FITTED ON TOP OF FLOOR  
PLATES TO FACILITATE SUBSEQUENT REMOVAL  
FOR MAINTENANCE.

## FOOT THROTTLE



## MCC



NO.	REVISION	DATE	BY	USED ON
3	MCC ADDED	3-3-81	MS	MG
2	MUD PUMP ADDED	5-1-81	MJD	MG
1	AIR PRESS. SWITCHES ADDED	6-12-80	MG	MG

THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED WITHOUT THE EXPRESSLY AUTHORIZED WRITING BY HILL GRAHAM CONTROLS LTD.

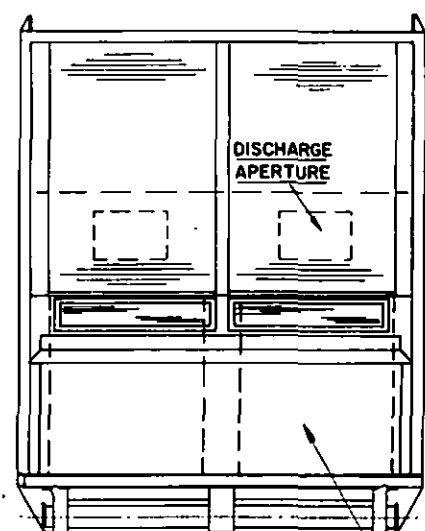
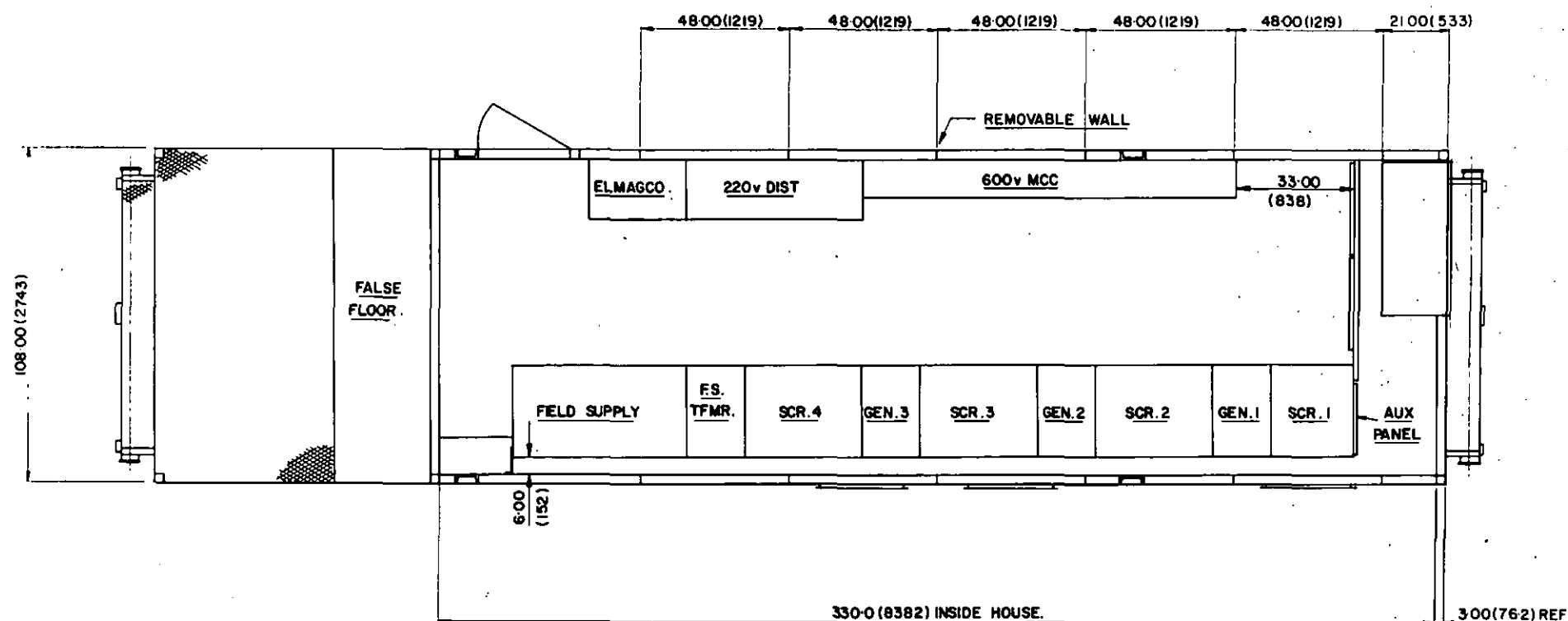


**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 40121

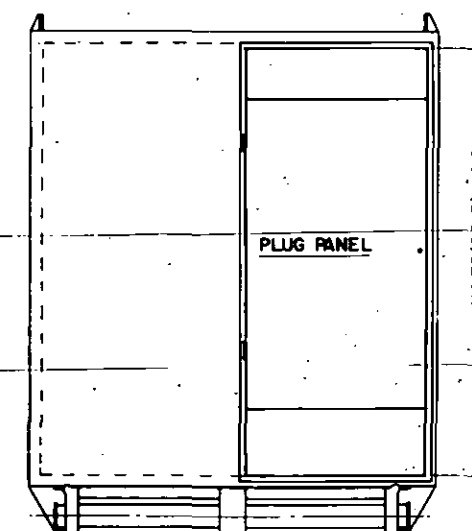
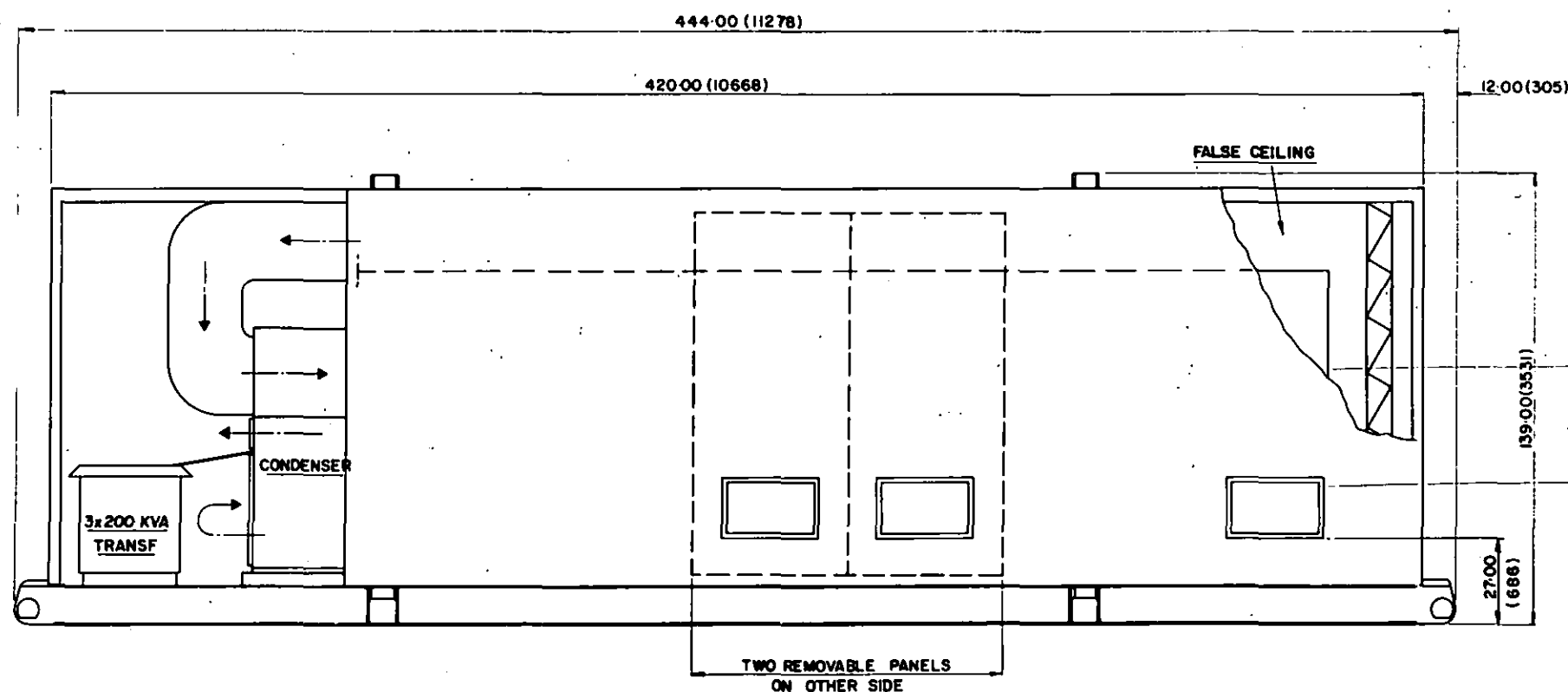
TITLE		DRILLERS CONSOLE, MUD PUMP, MCC B EMERGENCY CONTROL CONSOLE	
REV. No.	60700003	REV. No.	3
CUSTOMER	FORASOL		

6070D009

ITEM No.	DESCRIPTION	No. OFF



COMPRESSOR ACCESS APERTURE



**NOTE**  
ALL mm DIMENSIONS SHOWN IN BRACKETS

DATE	28-11-80	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED. ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.
BY	MG	
APP.		
SCALE	1:24	

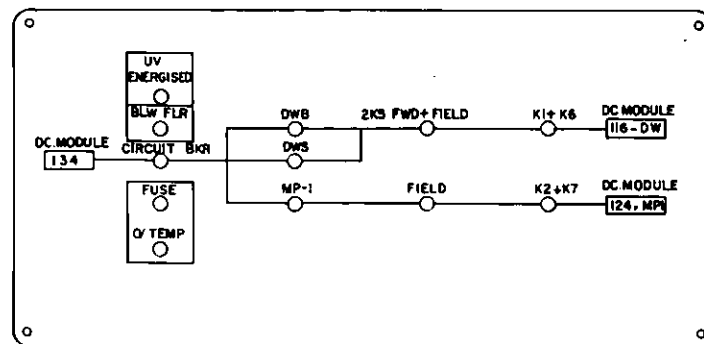


**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

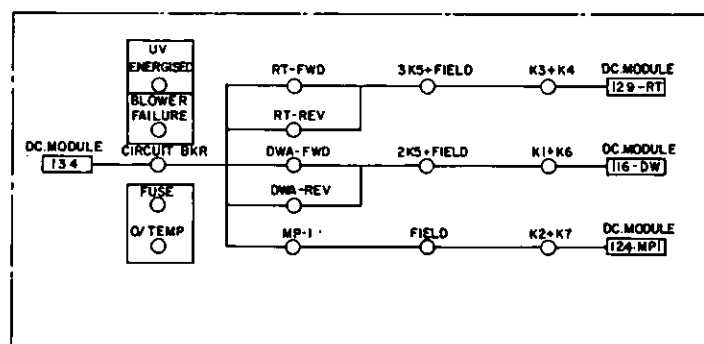
REV.	DESCRIPTION	DATE	BY
2	MINOR MODS	28-3-81	TPU
1	CUBICLE LAYOUT CHANGED	16-12-80	MG
REVISION			
TITLE			
TYPE A3 HOUSE FALSE CEILING VENTILATION			
NO. NO.	LAND RIG.	6070D009	REV.
CUSTOMER	FORASOL		2

ITEM No	DESCRIPTION	No. OFF

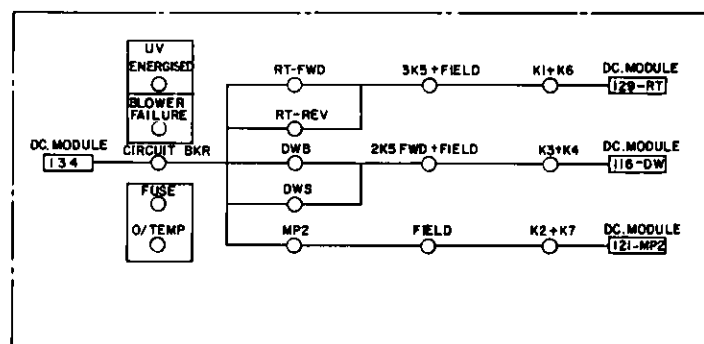
6070D010



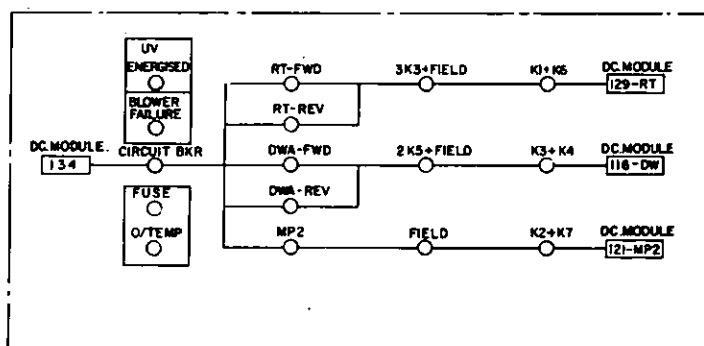
FAULT FINDING LABEL USED ON SCR 1



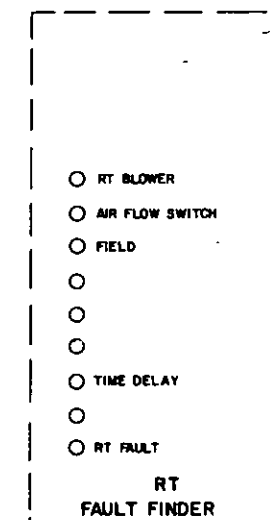
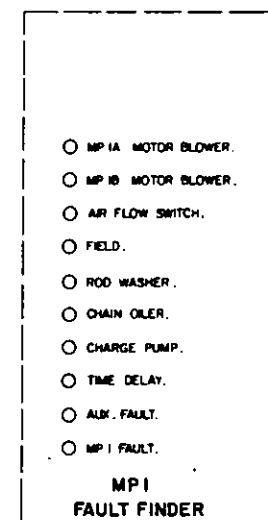
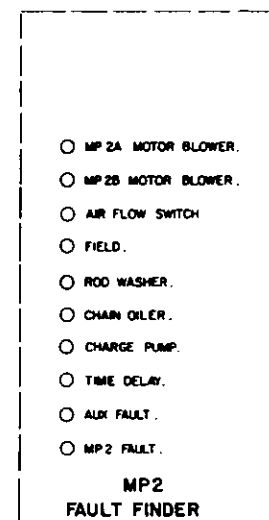
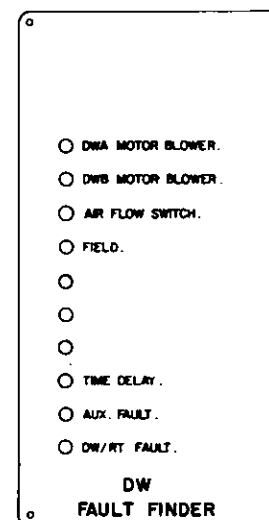
FAULT FINDING LABEL USED ON SCR 2



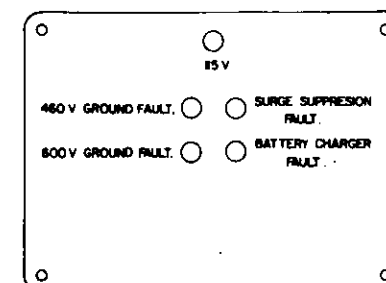
FAULT FINDING LABEL USED ON SCR 3



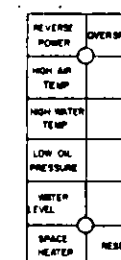
FAULT FINDING LABEL USED ON SCR 4



ALL FOUR FAULT FINDER, S CARDS, USED ON 220V TRANSFORMER.



LED INDICATOR CARD, USED ON 600V GROUND FAULT CUB.

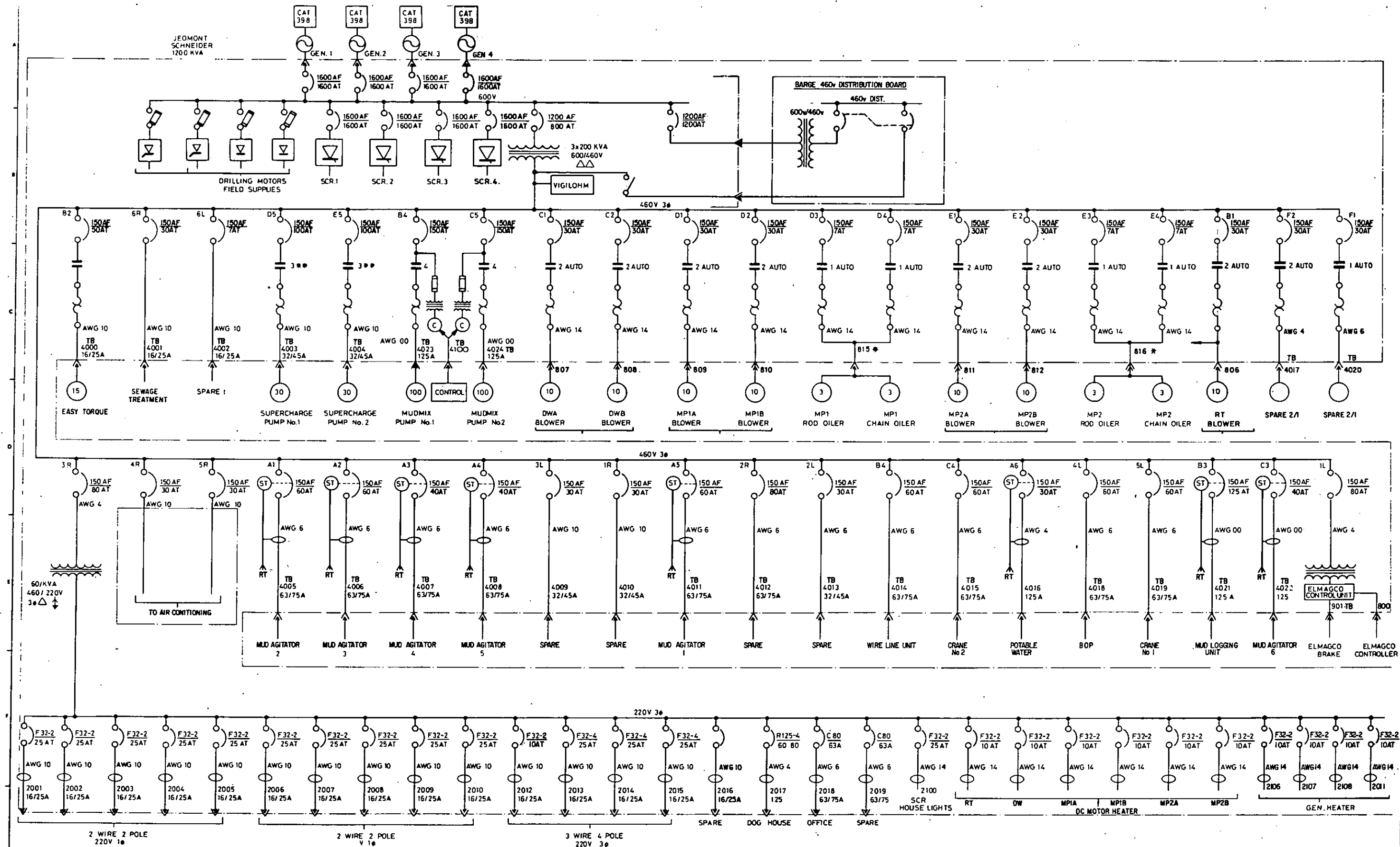


ALARM INDICATOR CARD, USED ON ALL GENS.

No	DESCRIPTION	DATE	BY
1	MAJOR MODS	20-1-81	MG

DRAWN MG CHKD APP SCALE 3:4 1:1	DATE 24-1-80 THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD. TOLERANCES: FRACTIONAL : 0.01 2 DEC PLACES : 0.10 3 DEC PLACES : 0.05	 <b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, BUCKS ENGLAND. TEL. (0494) 40121.	TITLE <b>LOGIC INDICATOR CARDS (PCB)</b> DETAIL REV 1
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- NOTE**
1. \* PB START/STOP FROM DRILLERS CONSOLE.
  2. \* 20EA-AWG 12 PYLE NATIONAL  
Z REP-20-332 SN
  3. EARTH LEAKAGE TRIPS
  4. RT REMOTE TRIP

4 SITE MODS				2-12-83, MPB		THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED & ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.	HILL GRAHAM CONTROLS LTD HIGH WYCOMBE, BEDS ENGLAND. TEL. (0494) 40121.	SYSTEM ONE LINE 600V		REV 4
NO	DESCRIPTION	DATE	BY	DATE	BY			FIG NO	DWG NO	
1	UPDATER	23-7-81	W.B.M.	15-12-80	A.V.M.	APPROVED DRAWINGS SERIES LIST SCHEMATIC	HILL GRAHAM CONTROLS LTD	N10-9	6070D020 SHT. 1 OF 2	4
2	AS COMMISSIONED	23-7-81	W.B.M.					CUSTOMER	FORASOL	



**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BUCKS  
ENGLAND.  
TEL. (0494) 40121.

SYSTEM ONE LINE 600v  
(SHEET 2 of 2)

RSG No. N110-9  
CUSTOMER  
FORASOL

6070D020  
pgt 2 of 2.

**APPENDIX B**

60700022

CONTROL CABLES				POWER CABLES				POWER CABLES			
No.	FROM	TO	SIZE	No.	FROM	TO	LOAD	No.	FROM	TO	LOAD
110	GEN 1 CONTROL TB4	GEN 1 GOVERNOR	2 CORE 2.5mm	610	GENERATOR 1 (A)	GEN CONT SEC 1	1375A	406	CHANGE OVER SWITCH A2	EXTERNAL 460V MCC A#	240mm <sup>2</sup>
111	GEN 1 CONTROL TB4	GEN 1 MAG SENSOR (TACHO)	2 CORE 2.5mm SHIELDED	611	GENERATOR 1 (B)	GEN CONT SEC 1	-	407	CHANGE OVER SWITCH B2	" " " " B#	240mm <sup>2</sup>
112	GEN 1 CONTROL TB6	GEN 1 ENGINE ALM + EXCITER	20 CORE 2.5mm	612	GENERATOR 1 (C)	GEN CONT SEC 1	-	408	CHANGE OVER SWITCH C2	" " " " C#	240mm <sup>2</sup>
113	GEN 1 CONTROL TB8	GEN 1 TEMP SENSORS	20 CORE 2.5mm	620	GENERATOR 2 (A)	GEN CONT SEC 2	-	409	T1-3	460V MCC A#	750A
114	GEN 1 CONTROL TB9	GEN 1 HEATER SUPPLY	INTERNAL	621	GENERATOR 2 (B)	GEN CONT SEC 2	-	410	T2-3	460V MCC B#	750A
120	GEN 2 CONTROL TB4	GEN 2 GOVERNOR	2 CORE 2.5mm	622	GENERATOR 2 (C)	GEN CONT SEC 2	-	411	T2-4	460V MCC C#	750A
121	GEN 2 CONTROL TB4	GEN 2 MAG SENSOR (TACHO)	2 CORE 2.5mm SHIELDED	630	GENERATOR 3 (A)	GEN CONT SEC 3	-	660	FEEDER CIRCUIT BREAKER A#	BARGE DIST. 460V TFR	860A
122	GEN 2 CONTROL TB6	GEN 2 ENGINE ALM + EXCITER	20 CORE 2.5mm	631	GENERATOR 3 (B)	GEN CONT SEC 3	-	661	FEEDER CIRCUIT BREAKER B#	BARGE DIST. 460V TFR	860A
123	GEN 2 CONTROL TB8	GEN 2 TEMP SENSORS	20 CORE 2.5mm	632	GENERATOR 3 (C)	GEN CONT SEC 3	-	662	FEEDER CIRCUIT BREAKER C#	BARGE DIST. 460V TFR	860A
124	GEN 2 CONTROL TB9	GEN 2 HEATER SUPPLY	INTERNAL	640	GENERATOR 4 (A)	GEN CONT SEC 4	-				
130	GEN 3 CONTROL TB4	GEN 3 GOVERNOR	2 CORE 2.5mm	641	GENERATOR 4 (B)	GEN CONT SEC 4	-				
131	GEN 3 CONTROL TB4	GEN 3 MAG SENSOR (TACHO)	2 CORE 2.5mm SHIELDED	642	GENERATOR 4 (C)	GEN CONT SEC 4	-				
132	GEN 3 CONTROL TB6	GEN 3 ENGINE ALM + EXCITER	20 CORE 2.5mm	650	FEEDER CIRCUIT BREAKER A#	TRANSFORMER T1-1	580A				
133	GEN 3 CONTROL TB8	GEN 3 TEMP SENSORS	20 CORE 2.5mm	651	FEEDER CIRCUIT BREAKER B#	TRANSFORMER T2-1	-				
134	GEN 3 CONTROL TB9	GEN 3 HEATER SUPPLY	INTERNAL	652	FEEDER CIRCUIT BREAKER C#	TRANSFORMER T3-1	-				
140	GEN 4 CONTROL TB4	GEN 4 GOVERNOR	2 CORE 2.5mm	653	TRANSFORMER T1-2	TRANSFORMER T2-1	-				
141	GEN 4 CONTROL TB4	GEN 4 MAG SENSOR (TACHO)	2 CORE 2.5mm SHIELDED	654	TRANSFORMER T2-2	TRANSFORMER T3-1	-				
142	GEN 4 CONTROL TB6	GEN 4 ENGINE ALM + EXCITER	20 CORE 2.5mm	655	TRANSFORMER T1-1	TRANSFORMER T3-2	-				
143	GEN 4 CONTROL TB8	GEN 4 TEMP SENSORS	20 CORE 2.5mm	400	TRANSFORMER T1-3	460V CHANGE OVER SWITCH 1	750A				
144	GEN 4 CONTROL TB9	GEN 4 HEATER SUPPLY	INTERNAL	401	TRANSFORMER T2-3	460V CHANGE OVER SWITCH 2	-				
				402	TRANSFORMER T3-3	460V CHANGE OVER SWITCH 3	-				
				403	TRANSFORMER T1-4	TRANSFORMER T2-3	-				
				404	TRANSFORMER T2-4	TRANSFORMER T3-3	-				
				405	TRANSFORMER T3-4	TRANSFORMER T1-3	-				

TB4  
TO GENERATOR

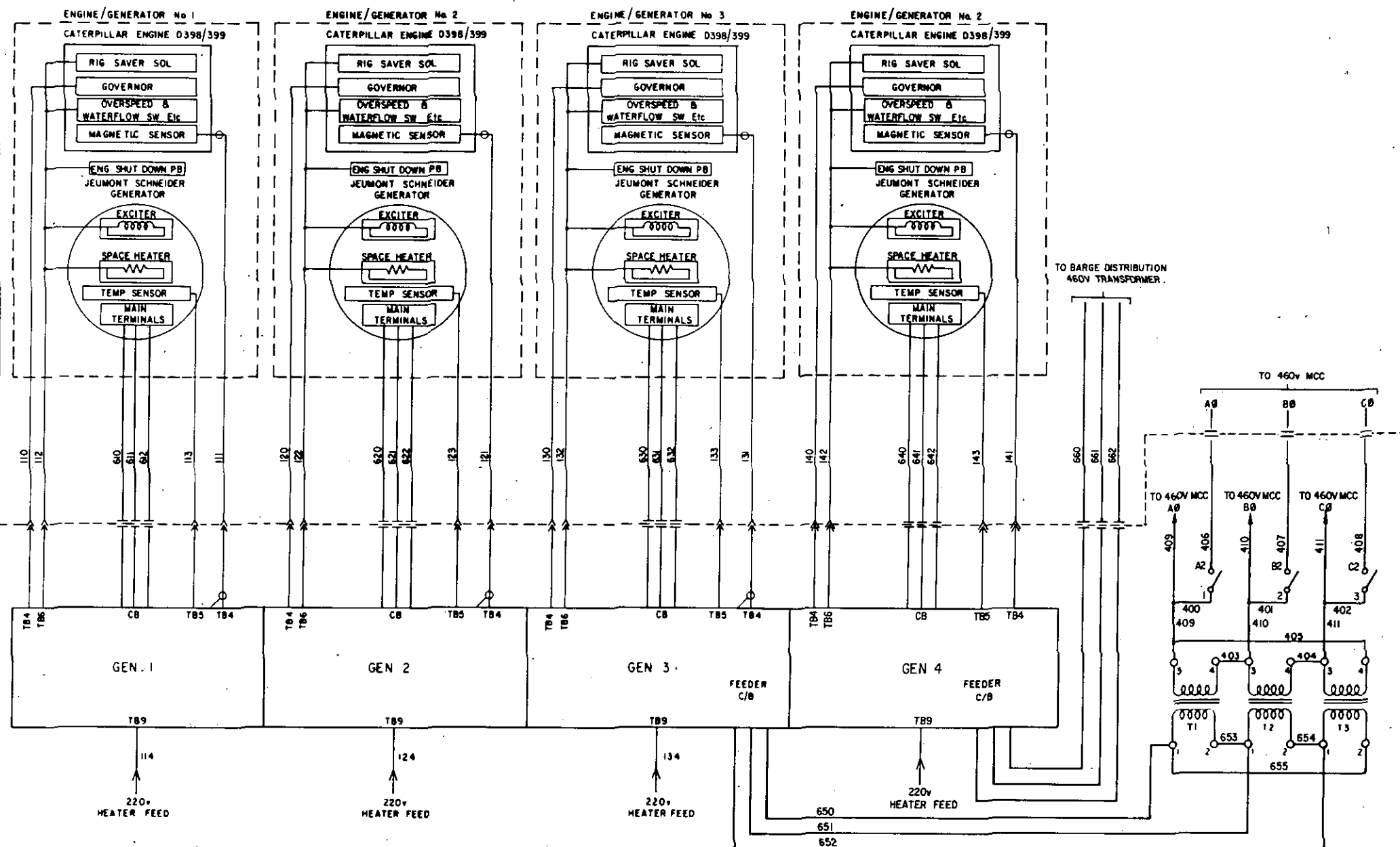
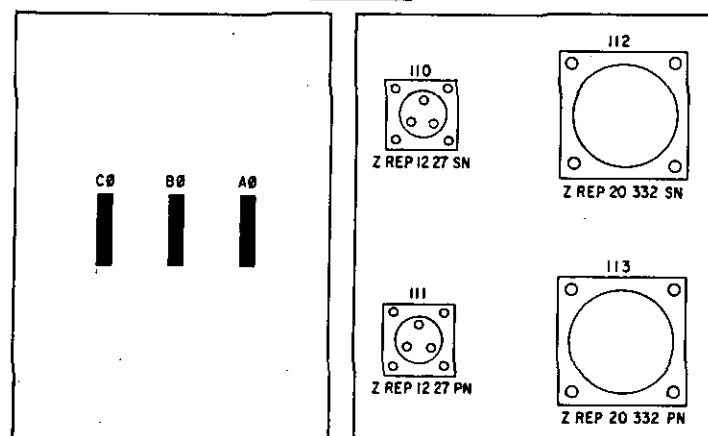
THROTTLE -	1	PLUG 110-3
THROTTLE -	2	PLUG 110-1
TACH -	3	PLUG 110-2
TACH -	4	PLUG 111-1
TACH -	5	PLUG 111-2
SHIELD	5	PLUG 111-3

TB2  
TO PLUG 113

RTD-1	1	TEMP SENSOR
RTD-1 COM	2	
RTD-METER	3	
RTD-2	4	
RTD-2 COM	5	
RTD-METER	6	
RTD-3	7	
RTD-3 COM	8	
RTD-METER	9	
RTD-4	10	
RTD-4 COM	11	
RTD-METER	12	
RTD-5	13	
RTD-5 COM	14	
RTD-METER	15	
RTD-6	16	
RTD-6 COM	17	
RTD-METER	18	
RTD-7	19	
RTD-7 COM	20	

TB6

EXCITER +	1	PLUG 112-1
EXCITER -	2	PLUG 112-2
SP HEATER #	3	PLUG 112-3
SP HEATER #	4	PLUG 112-4
SP HEATER #	5	PLUG 112-5
PB SHUTDOWN	6	PLUG 112-6
HIGH AIR TEMP	7	PLUG 112-7
HIGH WATER TEMP	8	PLUG 112-8
LOW OIL PRES.	9	PLUG 112-9
WATER FLOW	10	PLUG 112-10
OVERSPEED	11	PLUG 112-11
SHUTDOWN	12	PLUG 112-12
SHUTDOWN	13	PLUG 112-13
LOW OIL PRES.	14	PLUG 112-14
LOW OIL PRES.	15	PLUG 112-15
METALIC PART	16	PLUG 112-16
COOL FAN STOP	17	PLUG 112-17
RUN	18	PPTBI-23/30
RUN	19	PPTBI-23/30
GROUND	20	PLUG 112-20

GENERATOR PLUG PANEL (TYPICAL)  
OUTSIDE VIEW

4	SITE MODS	2/2/83 AB
3	CABLE 411 DESTINATION REVISED	16-8-83 MFB
2	MINOR MODS	9-8-83 MG
1	GEN 4 ADDED	5-8-83 MFB
No.	DESCRIPTION	DATE BY
	REVISION	

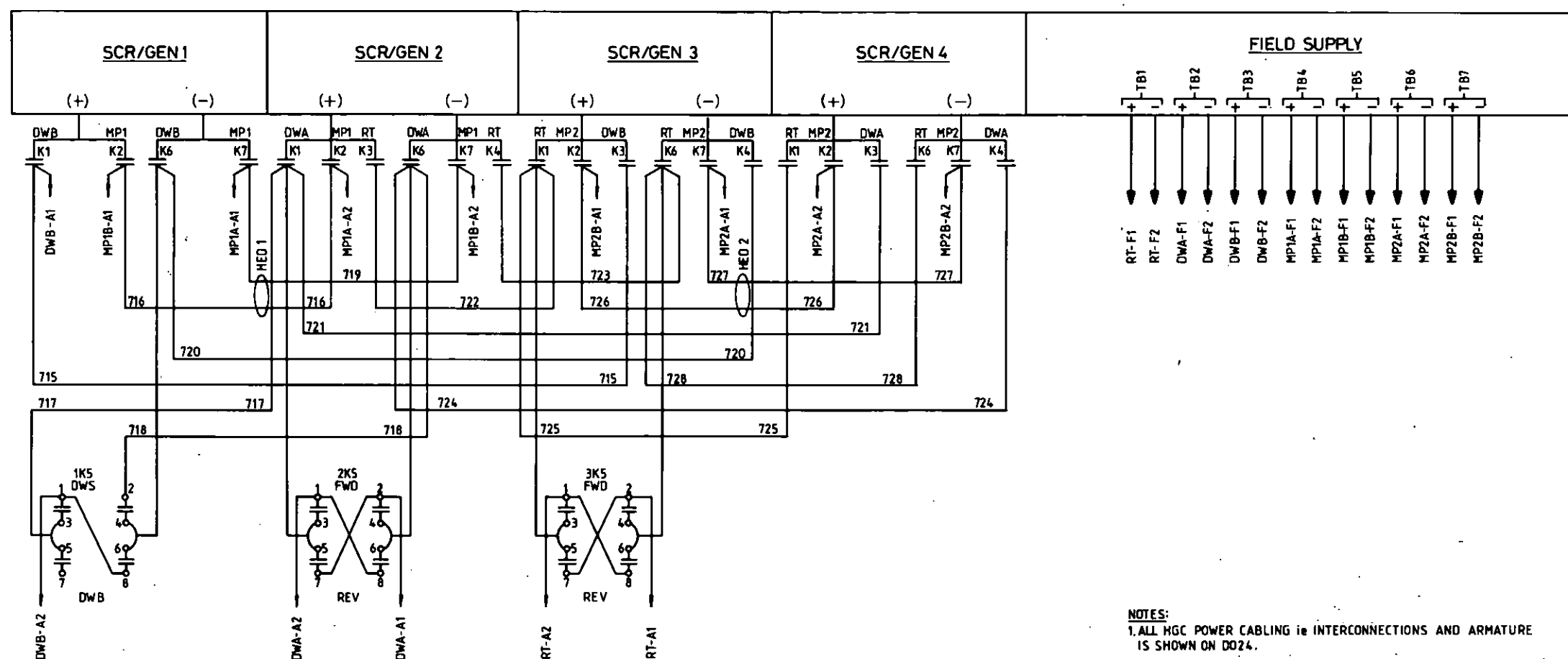
DATE	26-6-80
S.J. M	
CHIEF	
APP.	
SCALE	

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TOLERANCES:	UNLESS OTHERWISE SPECIFIED
FRACTIONAL	2 DEC PLACES
DECIMAL	2 DEC PLACES
PERCENT	2 DEC PLACES

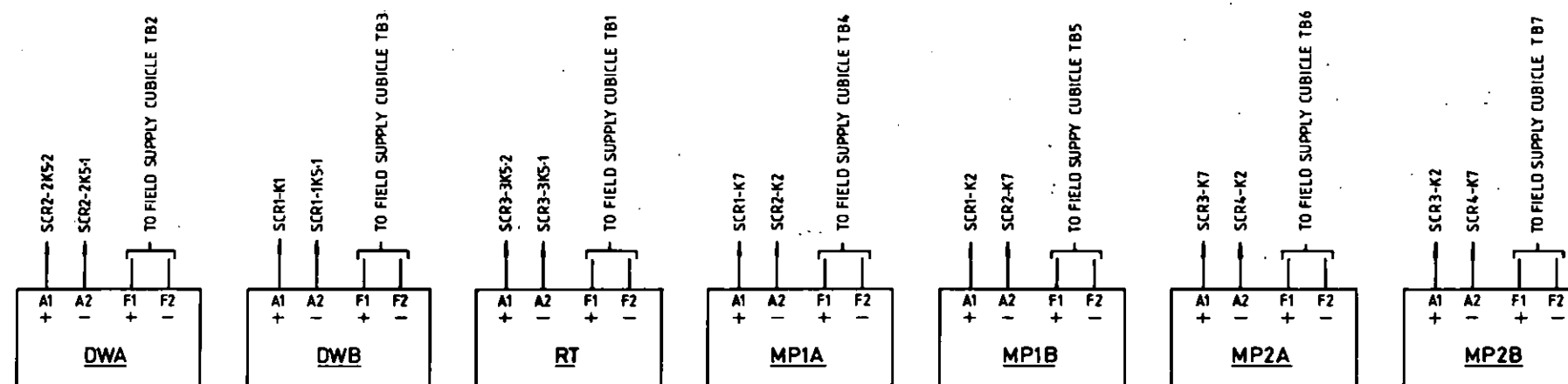
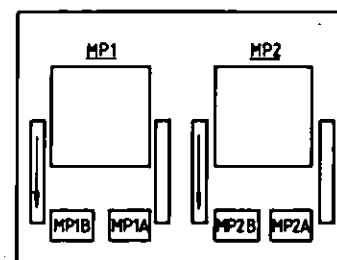
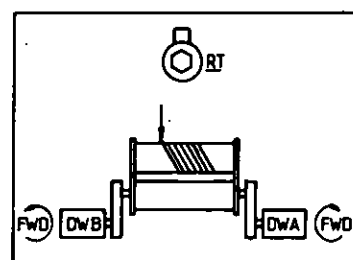
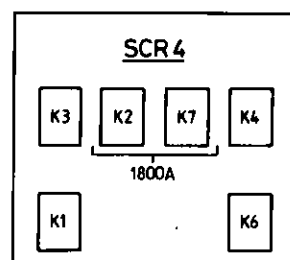
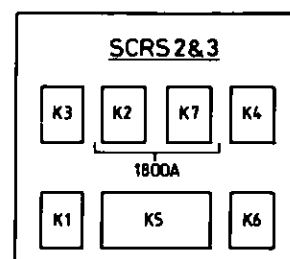
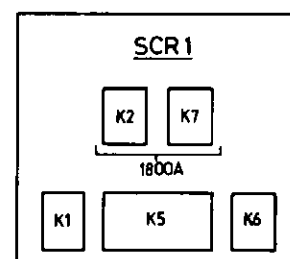


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ENGLAND.  
TEL. (0494) 40121.

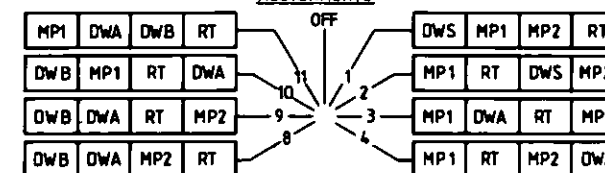
TITLE	GENERATOR POWER & CONTROL CONNECTIONS
REV	U-80-B2
CUSTOMER	FORASOL
DWG No.	60700022
REV	4



- NOTES:
1. ALL HGC POWER CABLING IN INTERCONNECTIONS AND ARMATURE IS SHOWN ON D024.
  2. CUSTOMERS ARMATURE CABLES ARE SHOWN ON D026.



## ASSIGNMENTS



CONTACTORS:  
 WESTINGHOUSE: 1250A K1, K3, K4, K6  
 CUTLER HAMMER: 1800A K2, K7  
 CUTLER HAMMER: 1000A K5 (REVERSER)

NO.	DESCRIPTION	DATE	BY
1	REVISION		

DRN	RJN	DATE	24-2-81
APP.		USED ON	6070

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ASSOCIATED DRAWINGS  
 WIRE LIST  
 SCHEMATICS



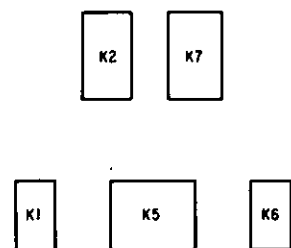
**HILL GRAHAM CONTROLS LTD**  
 HIGH WYCOMBE, BUCKS.  
 ENGLAND.  
 TEL. (0494) 40121.

TITLE	D.C. POWER INTERCONNECTIONS
NO.	6070 D023
REV.	

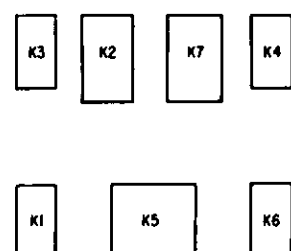
6070D024

FOR CUSTOMERS ARMATURE  
CABLING SEE D026

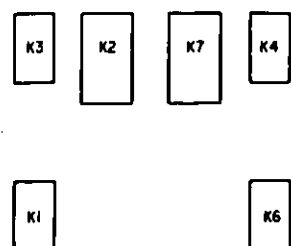
SCR 1



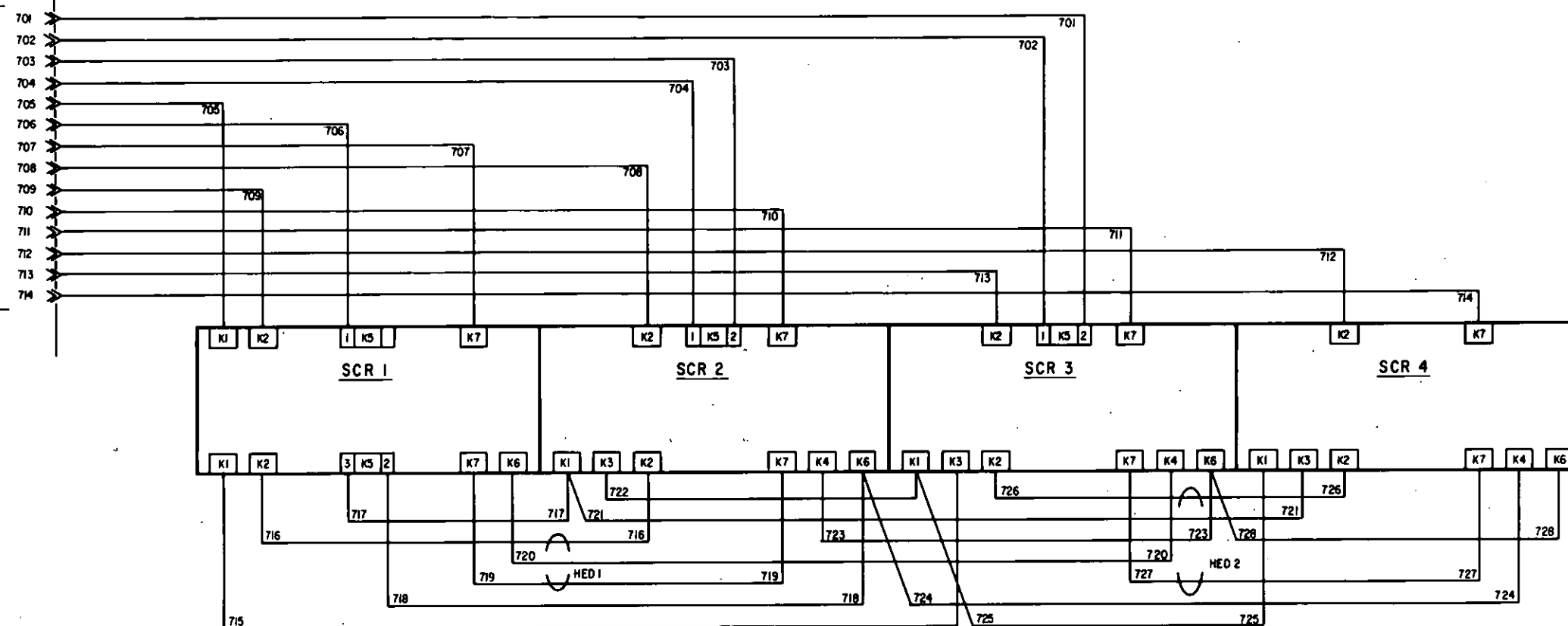
SCR's 2 &amp; 3



SCR 4



(FRONT VIEW OF CUBICLES)

PLUG PANEL (In part)  
(Schedule D033)

NOTE  
HED 1 IS MOUNTED IN SCR 2  
ON CABLES 716 & 719

NOTE  
HED 2 IS MOUNTED IN SCR 3  
ON CABLES 726 & 727

POWER CABLES					
ARMATURE CABLES			SCR INTERCONNECTIONS		
No	FROM	TO	No	FROM	TO
701	SCR 3 K5 2	PLUG PANEL 701	715	SCR 1 K1	SCR 3 K3
702	SCR 3 K5 1	PLUG PANEL 702	716	SCR 1 K2	SCR 2 K2
703	SCR 2 K5 2	PLUG PANEL 703	717	SCR 1 K3 3	SCR 2 K1
704	SCR 2 K5 1	PLUG PANEL 704	718	SCR 1 K5 2	SCR 2 K6
705	SCR 1 K1	PLUG PANEL 705	719	SCR 1 K7	SCR 2 K7
706	SCR 1 K5-1	PLUG PANEL 706	720	SCR 1 K6	SCR 3 K4
707	SCR 1 K7	PLUG PANEL 707	721	SCR 2 K1	SCR 4 K3
708	SCR 2 K2	PLUG PANEL 708	722	SCR 2 K3	SCR 3 K1
709	SCR 1 K2	PLUG PANEL 709	723	SCR 2 K4	SCR 3 K6
710	SCR 2 K7	PLUG PANEL 710	724	SCR 2 K6	SCR 4 K4
711	SCR 3 K7	PLUG PANEL 711	725	SCR 3 K1	SCR 4 K1
712	SCR 4 K2	PLUG PANEL 712	726	SCR 3 K2	SCR 4 K2
713	SCR 3 K2	PLUG PANEL 713	727	SCR 3 K7	SCR 4 K7
714	SCR 4 K7	PLUG PANEL 714	728	SCR 3 K6	SCR 4 K6

NOTE  
1. ALL POWER CABLES SHOWN ARE INSTALLED BY HGC  
2. CABLE LUGS TO BE CRIMP TYPE COPPER  
3. ALL CABLES ARE 535 EXANE.

DRAWN MRB		DATE 18-2-81		THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.	
CHECKED		APP'D		ASSOCIATED DRAWINGS	
BY		USED ON		WIRE LIST	
REVISION		DATE		SCHEMATIC	



**HILL GRAHAM  
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HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 4 0121.

TITLE  
**POWER CABLES  
ARMATURE & SCR INTERCONNECTIONS**

RIG No N110-9  
CUSTOMER FORASOL

DRG. No  
**6070D024**

REV.

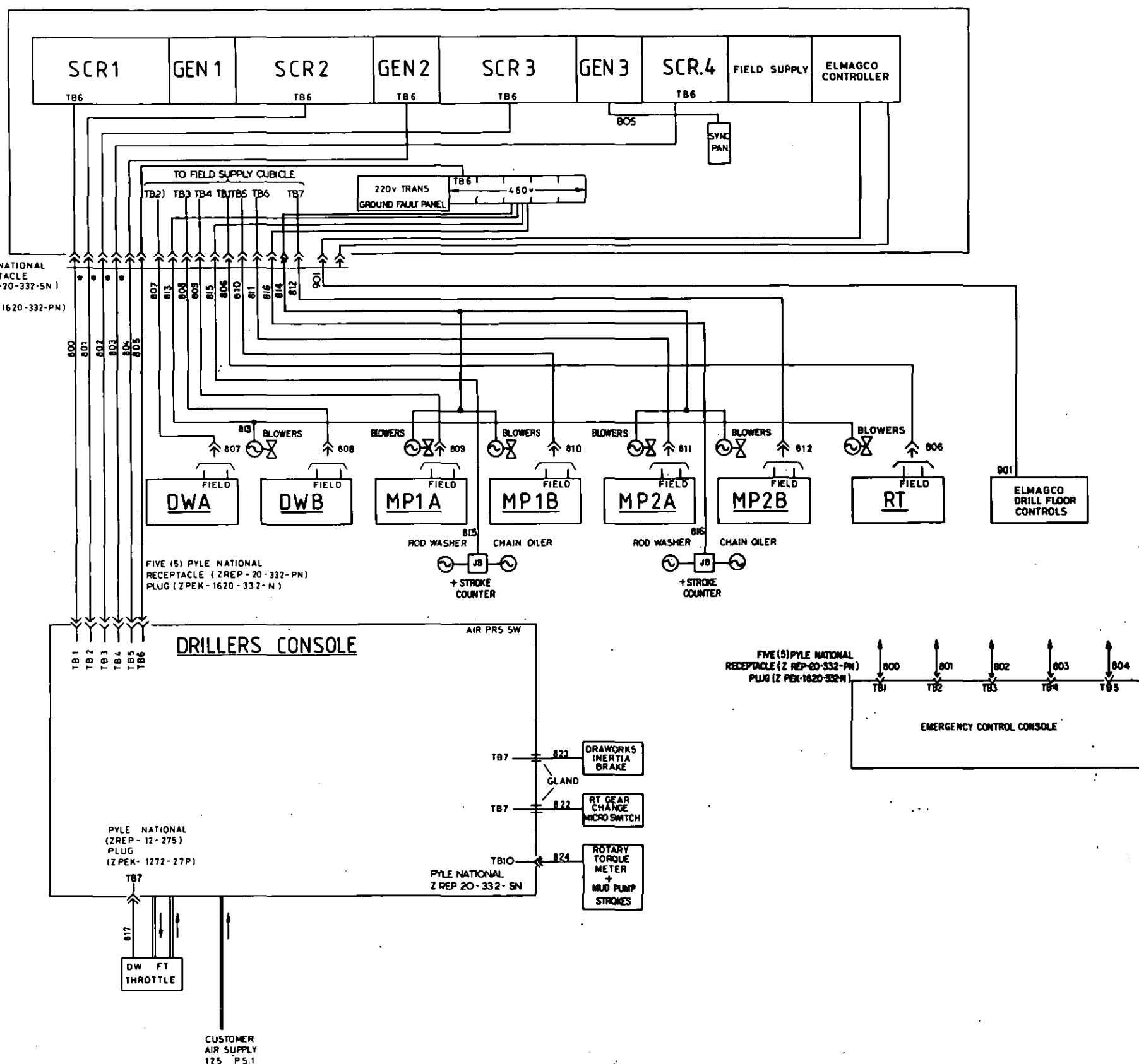
6070D025

PYLE NATIONAL  
RECEPTACLE  
(ZREP-20-332-SN)  
PLUG  
(ZPEK-1620-332-PN)

FIVE (5) PYLE NATIONAL  
RECEPTACLE (ZREP-20-332-PN)  
PLUG (ZPEK-1620-332-N)

PYLE NATIONAL  
(ZREP-12-275)  
PLUG  
(ZPEK-1272-27P)

CUSTOMER  
AIR SUPPLY  
125 P.S.I



## CONTROL CABLE CHART

REF	FROM	TO	SIZE	REMARKS
800	PLUG PANEL	DRILLERS CONSOLE - TB1	20 COND 12AWG	
801	PLUG PANEL	DRILLERS CONSOLE - TB2	20 COND 12AWG	
802	PLUG PANEL	DRILLERS CONSOLE - TB3	20 COND 12AWG	
803	PLUG PANEL	DRILLERS CONSOLE - TB4	20 COND 12AWG	
804	PLUG PANEL	DRILLERS CONSOLE - TB5	20 COND 12AWG	
805	PLUG PANEL	DRILLERS CONSOLE - TB6	20 COND 12AWG	
806	PLUG PANEL	RT FIELD CONNECTOR	20 COND 12AWG	
807	PLUG PANEL	DWA FIELD CONNECTOR	20 COND 12AWG	
808	PLUG PANEL	DWB FIELD CONNECTOR	20 COND 12AWG	
809	PLUG PANEL	MP1A FIELD CONNECTOR	20 COND 12AWG	
810	PLUG PANEL	MP1B FIELD CONNECTOR	20 COND 12AWG	
811	PLUG PANEL	MP2A FIELD CONNECTOR	20 COND 12AWG	
812	PLUG PANEL	MP2B FIELD CONNECTOR	20 COND 12AWG	
813	PLUG PANEL	DW + RT + MP BLOWER	20 COND 12AWG	
814	PLUG PANEL	MP1 & 2 BLOWERS	20 COND 12AWG	
815	PLUG PANEL	CHAIN OILER & ROD WASHER MP1	20 COND 12AWG	
816	PLUG PANEL	CHAIN OILER & ROD WASHER MP2	20 COND 12AWG	
817	DRILLERS CONSOLE 7	FOOT THROTTLE		
822	DRILLERS CONSOLE TB7	RT GEAR CHANGE M/S	2 PAIR 14	
823	DRILLERS CONSOLE TB7	DW INERTIA BRAKE	10 COND 12AWG	
824	DRILLERS CONSOLE TB7	RT & MP INST.	10 COND 12AWG	
901	PLUG PANEL	DRILL FLOOR JUNCTION BOX	4 COND 6AWG	
911	PLUG PANEL	DRILL FLOOR JUNCTION BOX	4 COND 14AWG	
800A	SCR 1 - TB6	PLUG PANEL - 800		HGCL SUPPLIED
801A	SCR 2 - TB6	PLUG PANEL - 801		HGCL SUPPLIED
802A	SCR 4 - TB6	PLUG PANEL - 802		HGCL SUPPLIED
803A	GEN 2 - TB6	PLUG PANEL - 803		HGCL SUPPLIED
804A	MCC - TB6	PLUG PANEL - 804		HGCL SUPPLIED
805	GEN 3 - TB1	SYNC PANEL		HGCL SUPPLIED

EMERG. CONTROL CONSOLE TO PLUG DIRECTLY IN-TO HOUSE ON PLUGS  
800, 801, 802, 803, 804 IN PLACE OF THE DRILLERS CONSOLE CABLES

## NOTES

- THIS DESIGNATED RECEPTACLE IS HARDWIRED TO MULTIPLE DESTINATIONS IN GENERATOR & MCC WITH CONDUCTOR EXANE WIRE SEE DC PLUG PANEL WIRE DWG. No. 6070D027
- WIRE No. OF CONDUCTOR MUST BE WIRED POINT TO POINT IN ACCORDANCE WITH IEEE-45 TABLE 16 & RECEPTACLE WIRING DETAILS DWG No. 6070D096
- BLOWERS ALSO WIRED OUT THROUGH THE FIELD SUPPLY CABLES

REV	DESCRIPTION	DATE	BY	CHKD	DATE
1	AS COMMISSIONED	23-7-81	P.A.M.		
2	DESCRIPTION	DATE	BY	CHKD	DATE
	REVISION				



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ENGLAND.  
TEL. (0494) 40121.

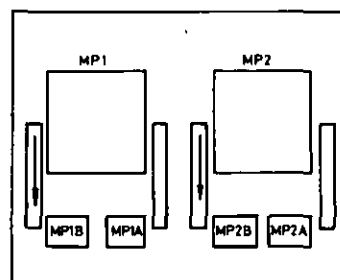
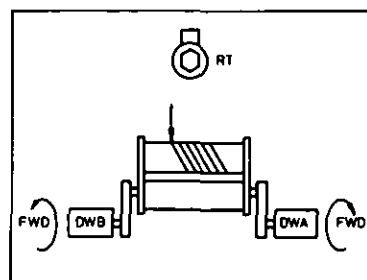
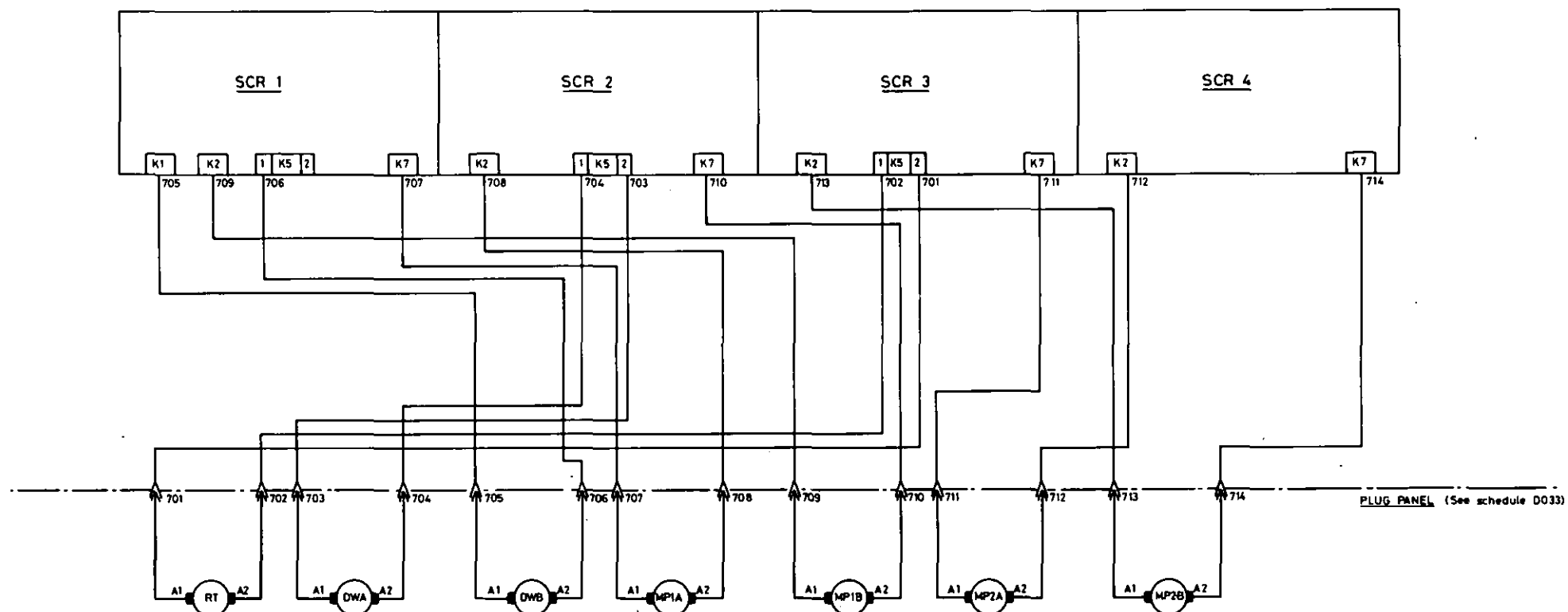
## CONTROL CABLE INSTALLATION

Rev. No.	N110 - 9	DWG. No.	6070D025	REV	1
CUSTOMER	FORASOL				

6070D026

ARMATURE CABLES		
No	FROM	TO
701	PLUG PANEL 701	RT - A1
702	PLUG PANEL 702	RT - A2
703	PLUG PANEL 703	DWA - A1
704	PLUG PANEL 704	DWA - A2
705	PLUG PANEL 705	DWB - A1
706	PLUG PANEL 706	DWB - A2
707	PLUG PANEL 707	MP1A - A1
708	PLUG PANEL 708	MP1A - A2
709	PLUG PANEL 709	MP1B - A1
710	PLUG PANEL 710	MP1B - A2
711	PLUG PANEL 711	MP2A - A1
712	PLUG PANEL 712	MP2A - A2
713	PLUG PANEL 713	MP2B - A1
714	PLUG PANEL 714	MP2B - A2

H.G.C. POWER INTERCONNECTIONS ARE SHOWN ON 0024  
CUSTOMER TO SUPPLY CABLES FROM PLUG PANEL TO MOTORS. (AS TABLE)



REVISION		DATE	BY	USED ON
No.	DESCRIPTION	DATE	BY	USED ON

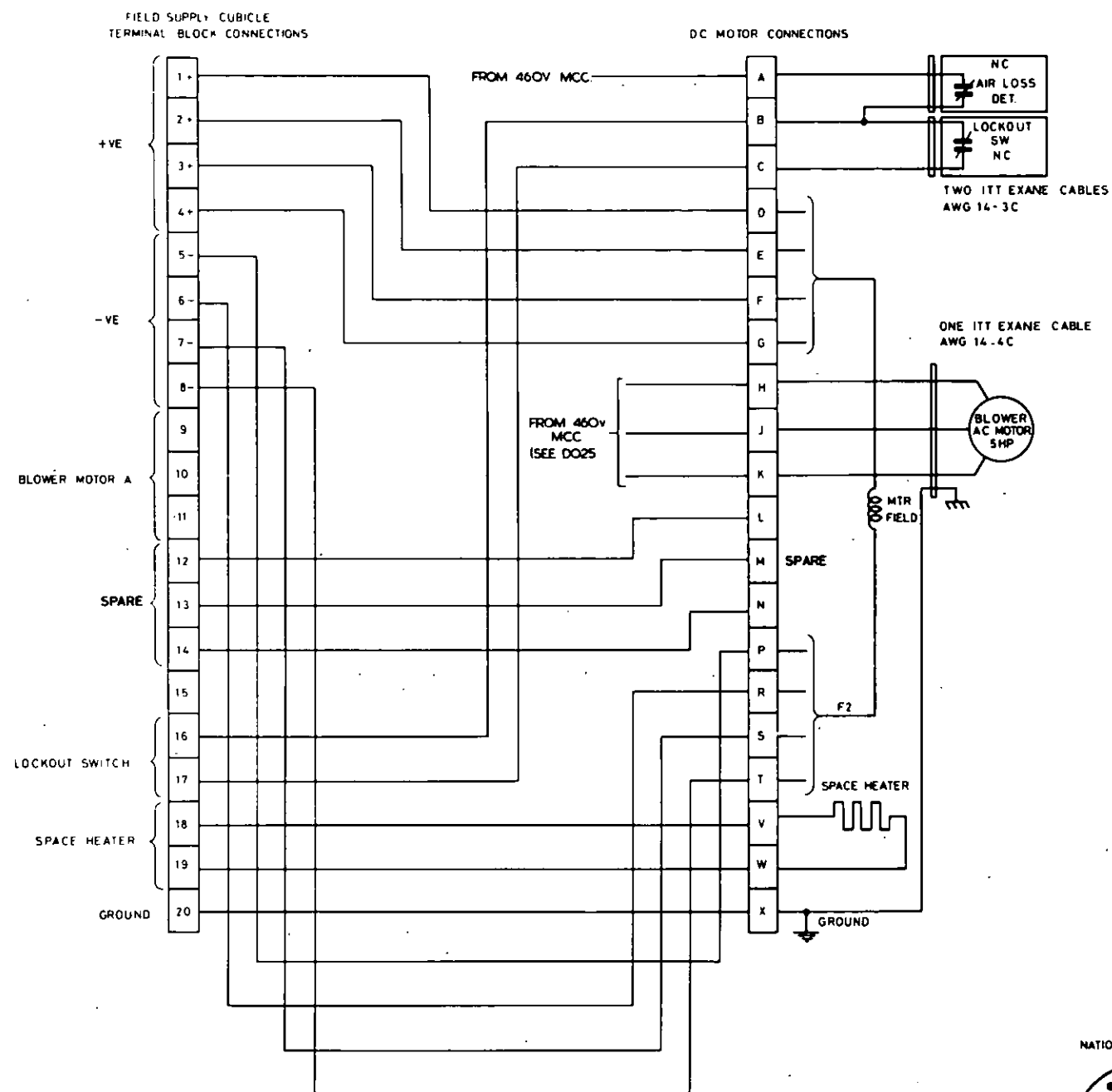
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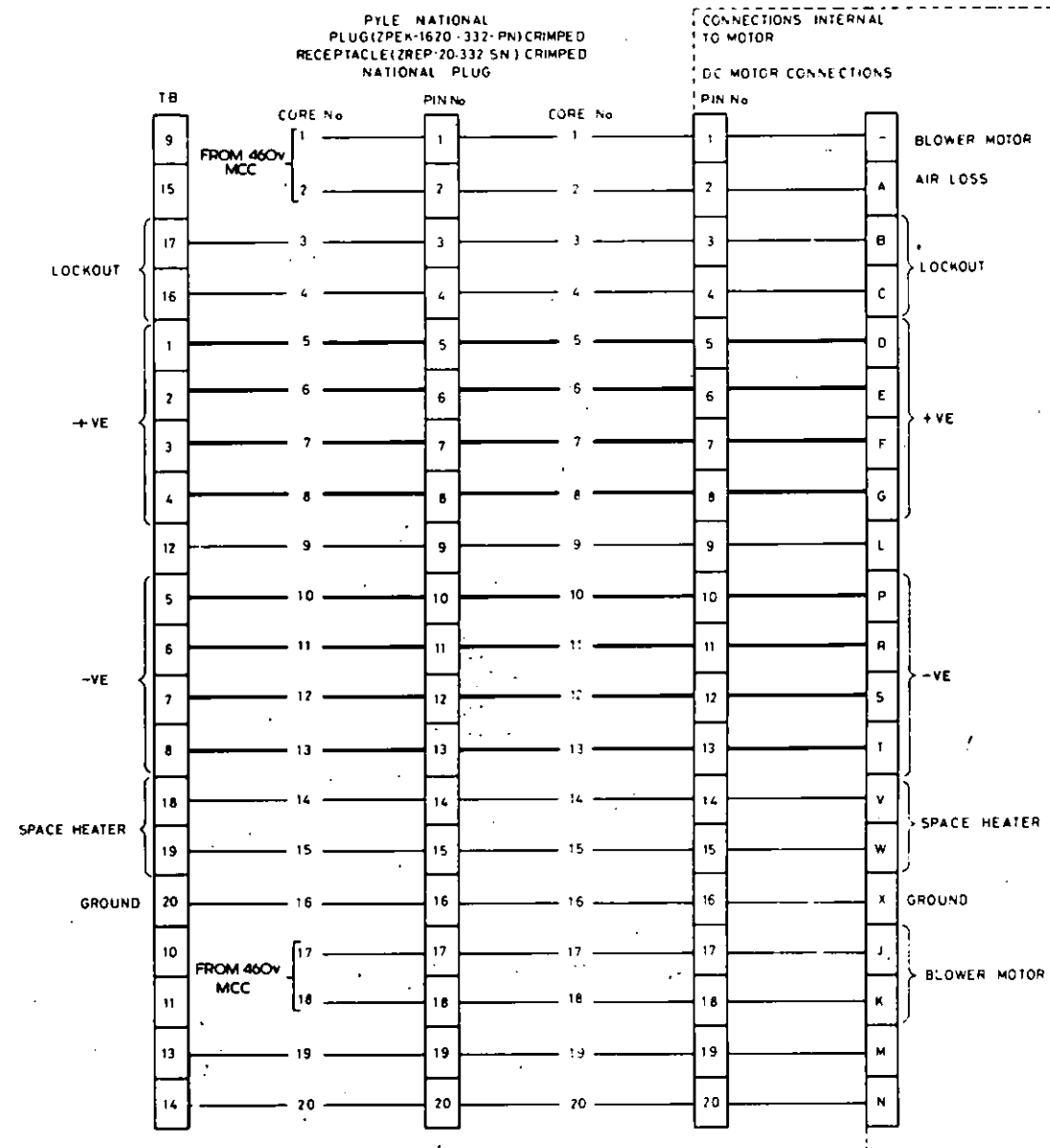
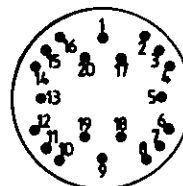
**HILL GRAHAM CONTROLS LTD**  
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TEL. (0494) 40121.

TITLE		
ARMATURE CABLE INSTALLATION		
FIG No	N110-9	REV.
CUSTOMER	FORASOL	6070D026

6070D027



NATIONAL 20PIN PLUG



## NOTES

- 1 IT IS IMPORTANT TO CONNECT CORES IN THE CORRECT SEQUENCE IN ORDER TO CONNECT TO THE CORRECT PIN CONNECTIONS
- 2 BOLD LINES INDICATE 10 AWG

REV	DESCRIPTION	DATE	BY

DATE	18-12-80
BY	AVM
APP	
USED ON	

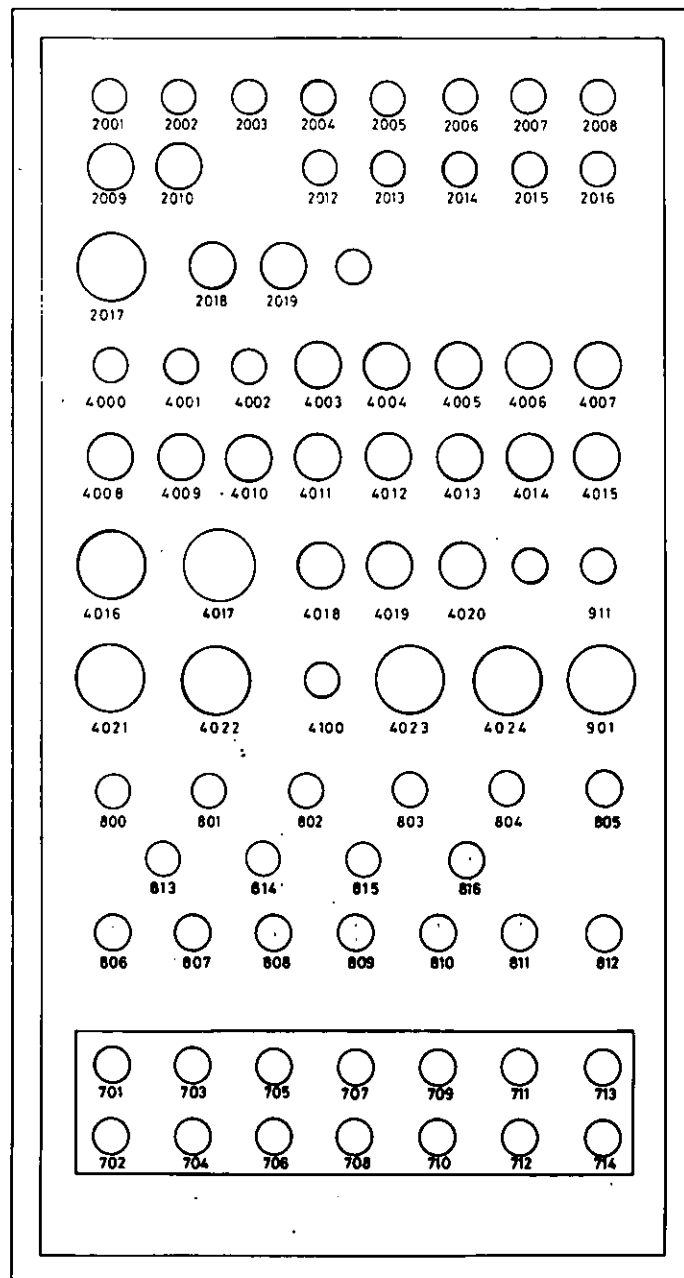
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ASSOCIATED DRAWINGS  
WIRE LIST  
SCHEMATICS

**HILL GRAHAM  
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ENGLAND.  
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MOTOR PLUG CONNECTIONS			
RAC No	N110-9	DATE	6070D027
CUSTOMER	FORASOL	REV	

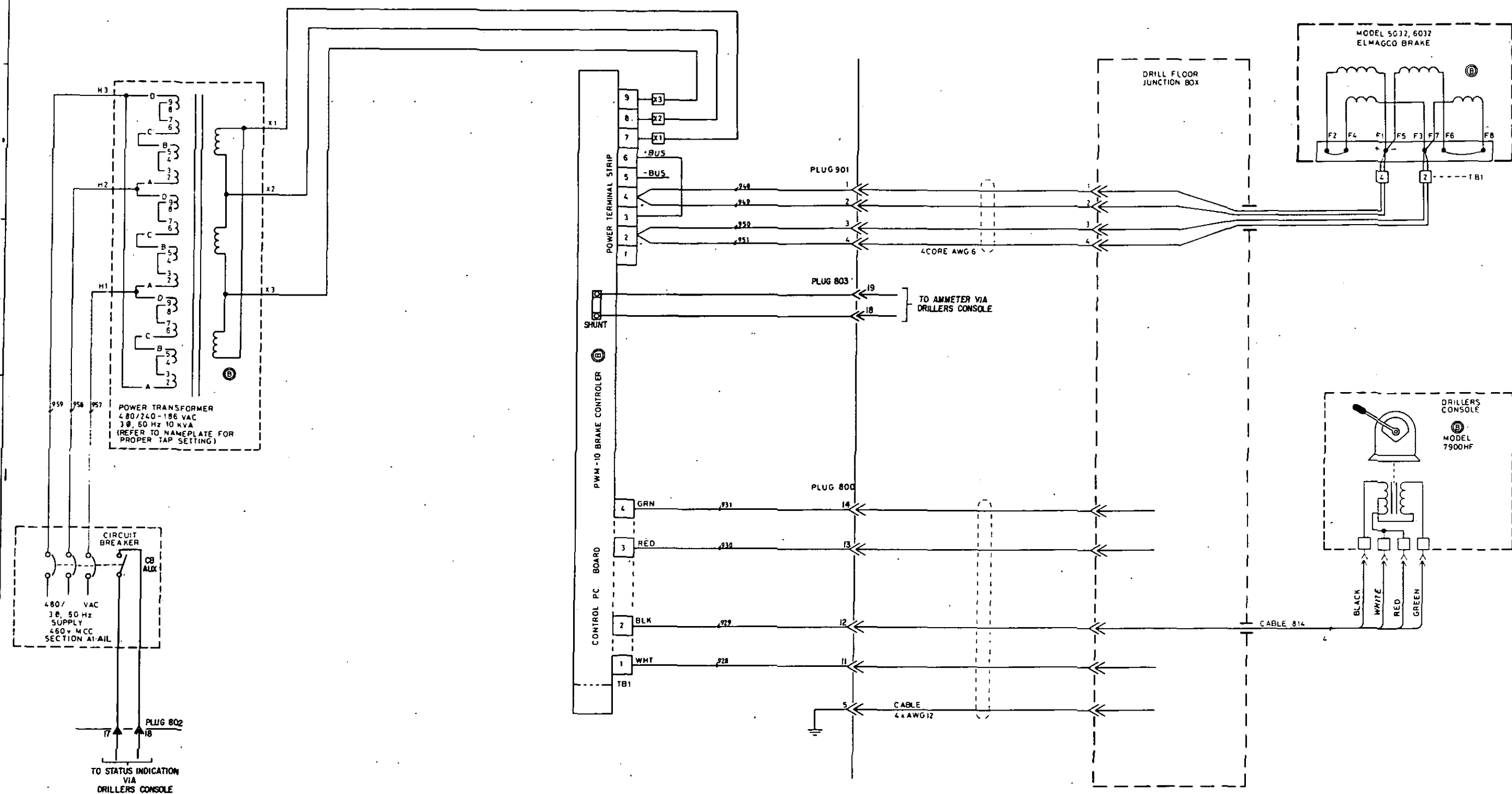




AC & DC PLUG PANEL SCHEDULE						
DESIG	WIRING	SOURCE	DESTINATION (NAMEPLATE)	PLUG & RECEPTACLE TYPE		REMARKS
2001	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2002	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2003	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2004	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2005	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2006	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2007	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2008	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2009	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2010	AC 2# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2156A PLUG156 CD	
2012	AC 4# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2158A PLUG158 CD	
2013	AC 4# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2158A PLUG158 CD	
2014	AC 4# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2158A PLUG158 CD	
2015	AC 4# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2158A PLUG158 CD	
2016	AC 4# AWG 10	220V DIST		MARTIN LUNEL 16/25A	RECP2158A PLUG158 CD	
2017	AC 4# AWG 4	220V DIST	DOG HOUSE	MARTIN LUNEL 1125 A	RECP2908A PLUG908 CD	
2018	AC 4# AWG 6	220V DIST	OFFICE	MARTIN LUNEL 63/75	RECP2608A PLUG608 CD	
2019	AC 4# AWG 6	220V DIST		MARTIN LUNEL 63/75	RECP2608A PLUG608 CD	
2020	AC SPARE	SPARE		MARTIN LUNEL 63/75	RECP2608A PLUG608 CD	BLANK PLATE
4000	AC 4# AWG 10	460V MCC B2	POSSUM TANK PUMP	MARTIN LUNEL 16/25A	RECP2154A PLUG154 CD	
4001	AC 4# AWG 10	460V MCC A1 6L	SPARE 1	MARTIN LUNEL 16/25A	RECP2154A PLUG154 CD	
4002	AC 4# AWG 10	460V MCC A1 6R	SPARE 2	MARTIN LUNEL 16/25A	RECP2154A PLUG154 CD	
4003	AC 4# AWG 6	460V MCC D5	SUPER CHARGE PUMP # 1	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4004	AC 4# AWG 6	460V MCC E5	SUPER CHARGE PUMP # 2	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4005	AC 4# AWG 6	460V MCC A1	MUD TANK 2	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4006	AC 4# AWG 6	460V MCC A2	MUD TANK 3	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4007	AC 4# AWG 6	460V MCC A3	MUD TANK 4	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4008	AC 4# AWG 6	460V MCC A4	MUD TANK 5	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4009	AC 4# AWG 10	460V MCCA1-3L	WATER PUMP	MARTIN LUNEL 32/45A	RECP2304A PLUG304 CD	
4010	AC 4# AWG 10	460V MCCA1-1R	FUEL PUMP	MARTIN LUNEL 32/45A	RECP2304A PLUG304 CD	
4011	AC 4# AWG 6	460V MCCA1-A5	DRILL WATER	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4012	AC 4# AWG 6	460V MCCA1-2R	WELDING MACHINE	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4013	AC 4# AWG 6	460V MCCA1-2L	BOP	MARTIN LUNEL 32/45A	RECP2304A PLUG304 CD	
4014	AC 4# AWG 6	460V MCC B4	AIR COMPRESSOR # 1	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4015	AC 4# AWG 6	460V MCC C4	AIR COMPRESSOR # 2	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4016	AC 4# AWG 4	460V MCC A6	DRILL FLOOR	MARTIN LUNEL 125A	RECP2904A PLUG904 CD	
4017	AC 4# AWG 4	460V MCC F2	SPARE 2/1	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4018	AC 4# AWG 6	460V MCC A1-4L	SPARE 3	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4019	AC 4# AWG 6	460V MCC A1 5L	SPARE 4	MARTIN LUNEL 63/75A	RECP2604A PLUG604 CD	
4020	AC 4# AWG 6	460V MCC F1	SPARE 1/1	MARTIN LUNEL 32/45A	RECP2304A PLUG304 CD	
4021	AC 4# AWG 00	460V MCC B3	MUD TANK 1A	MARTIN LUNEL 125A	RECP2904A PLUG904 CD	
4022	AC 4# AWG 00	460V MCC C3	MUD TANK 1B	MARTIN LUNEL 125A	RECP2904A PLUG904 CD	
4023	AC 4# AWG 00	460V MCC B5	MUD MIX PUMP No.1	MARTIN LUNEL 125A	RECP2904A PLUG904 CD	
4024	AC 4# AWG 00	460V MCC C5	MUD MIX PUMP No.2	MARTIN LUNEL 125A	RECP2904A PLUG904 CD	
4100	AC 20# AWG 14	460V MCCB4/C5	MUD MIX PUMPS CONTROL	P/N Z REP 20-332-SN		
701	DC 1EA-535MCM	SCR3-K5-2	RT-A1	PYLE NATIONAL RECP P 500128 BS PLUG P501		
702	DC 1EA-535MCM	SCR3-K5-1	RT-A2	PYLE NATIONAL RECP P 500128 BS PLUG P501		
703	DC 1EA-535MCM	SCR2-K5-2	DWA-A1	PYLE NATIONAL RECP P 500128 BS PLUG P501		
704	DC 1EA-535MCM	SCR2-K5-1	DWA-A2	PYLE NATIONAL RECP P 500128 BS PLUG P501		
705	DC 1EA-535MCM	SCR1-K1	DWB-A1	PYLE NATIONAL RECP P 500128 BS PLUG P501		
706	DC 1EA-535MCM	SCR1-K5-1	DWB-A2	PYLE NATIONAL RECP P 500128 BS PLUG P501		
707	DC 1EA-535MCM	SCR1-K7	MP1A-A1	PYLE NATIONAL RECP P 500128 BS PLUG P501		
708	DC 1EA-535MCM	SCR3-K2	MP1A-A2	PYLE NATIONAL RECP P 500128 BS PLUG P501		
709	DC 1EA-535MCM	SCR1-K2	MP1B-A1	PYLE NATIONAL RECP P 500128 BS PLUG P501		
710	DC 1EA-535MCM	SCR2-K7	MP1B-A2	PYLE NATIONAL RECP P 500128 BS PLUG P501		
711	DC 1EA-535MCM	SCR3-K7	MP2A-A1	PYLE NATIONAL RECP P 500128 BS PLUG P501		
712	DC 1EA-535MCM	SCR4-K2	MP2A-A2	PYLE NATIONAL RECP P 500128 BS PLUG P501		
713	DC 1EA-535MCM	SCR3-K2	MP2B-A1	PYLE NATIONAL RECP P 500128 BS PLUG P501		
714	DC 1EA-535MCM	SCR4-K7	MP2B-A2	PYLE NATIONAL RECP P 500128 BS PLUG P501		
800	DC 20EA-12AWG	SCR1-TB6	DRILLERS CONSOLE TB1	P/N Z REP 20-332-SN		
801	DC 20EA-12AWG	SCR2-TB6	DRILLERS CONSOLE TB2	P/N Z REP 20-332-SN		
802	DC 20EA-12AWG	SCR3-TB6	DRILLERS CONSOLE TB3	P/N Z REP 20-332-SN		
803	DC 20EA-12AWG	SCR4-TB6	DRILLERS CONSOLE TB4	P/N Z REP 20-332-SN		
804	DC 20EA-12AWG	GEN2-TB2	DRILLERS CONSOLE TB5	P/N Z REP 20-332-SN		
805	DC 20EA-12AWG	MCC-TB6	DRILLERS CONSOLE TB6	P/N Z REP 20-332-SN		
806	20EA-12AWG	MULTIPLE	RT FIELD	P/N Z REP 20-332-SN		
807	20EA-12AWG	MULTIPLE	DWA FIELD	P/N Z REP 20-332-SN		
808	20EA-12AWG	MULTIPLE	DWB FIELD	P/N Z REP 20-332-SN		
809	20EA-12AWG	MULTIPLE	MP1A FIELD	P/N Z REP 20-332-SN		
810	20EA-12AWG	MULTIPLE	MP1B FIELD	P/N Z REP 20-332-SN		
811	20EA-12AWG	MULTIPLE	MP2A FIELD	P/N Z REP 20-332-SN		
812	20EA-12AWG	MULTIPLE	MP2B FIELD	P/N Z REP 20-332-SN		
813	20EA-12AWG	MULTIPLE		P/N Z REP 20-332-SN		
814	20EA-12AWG	MULTIPLE		P/N Z REP 20-332-SN		
815	20EA-12AWG	MULTIPLE	MP1 ROD WASHER & CHAIN OILER	P/N Z REP 20-332-SN		
816	20EA-12AWG	MULTIPLE	MP2 ROD WASHER & CHAIN OILER	P/N Z REP 20-332-SN		
901	4 x 6 AWG	ELMAGCO CONTROL	ELMAGCO BRAKE	MARTIN LUNEL 125A	RECP2904A PLUG904 CD	
911	DC 4 x 14 AWG			MARTIN LUNEL 16/25	RECP2158A PLUG158 CD	

DESIGNED <b>AVM</b> DATE <b>10-12-00</b>		THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMITTED ONLY BY EXPRESSLY AUTHORIZED WRITING BY HILL GRAHAM CONTROLS LTD.		<b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, SUCKS ENGLAND TEL: (0494) 40121		TITLE <b>AC AND DC PLUG PANEL SCHEDULE</b>	
AS COMMISSIONED <b>10-12-00</b>		CHECKED <b>10-12-00</b>		ASSOCIATED DRAWINGS WIRE LIST SCHEMATICS		REV. NO. <b>N110-9</b>	
REVISION <b>1</b>		DATE <b>10-12-00</b>		BY <b>AVM</b>		CUSTOMER <b>FORASUL</b>	
						6070D033	
						2	

60700039



REV	DESCRIPTION	DATE	BY	USED ON
2	SITE MODS	2-12-83	MRS	
1	AS COMMISSIONED	23-7-81	WEM	

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ASSOCIATED DRAWINGS

WIRE LIST

SCHEMATIC



**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

ELMAGCO BRAKE CONTROL

RING No  
N110-9

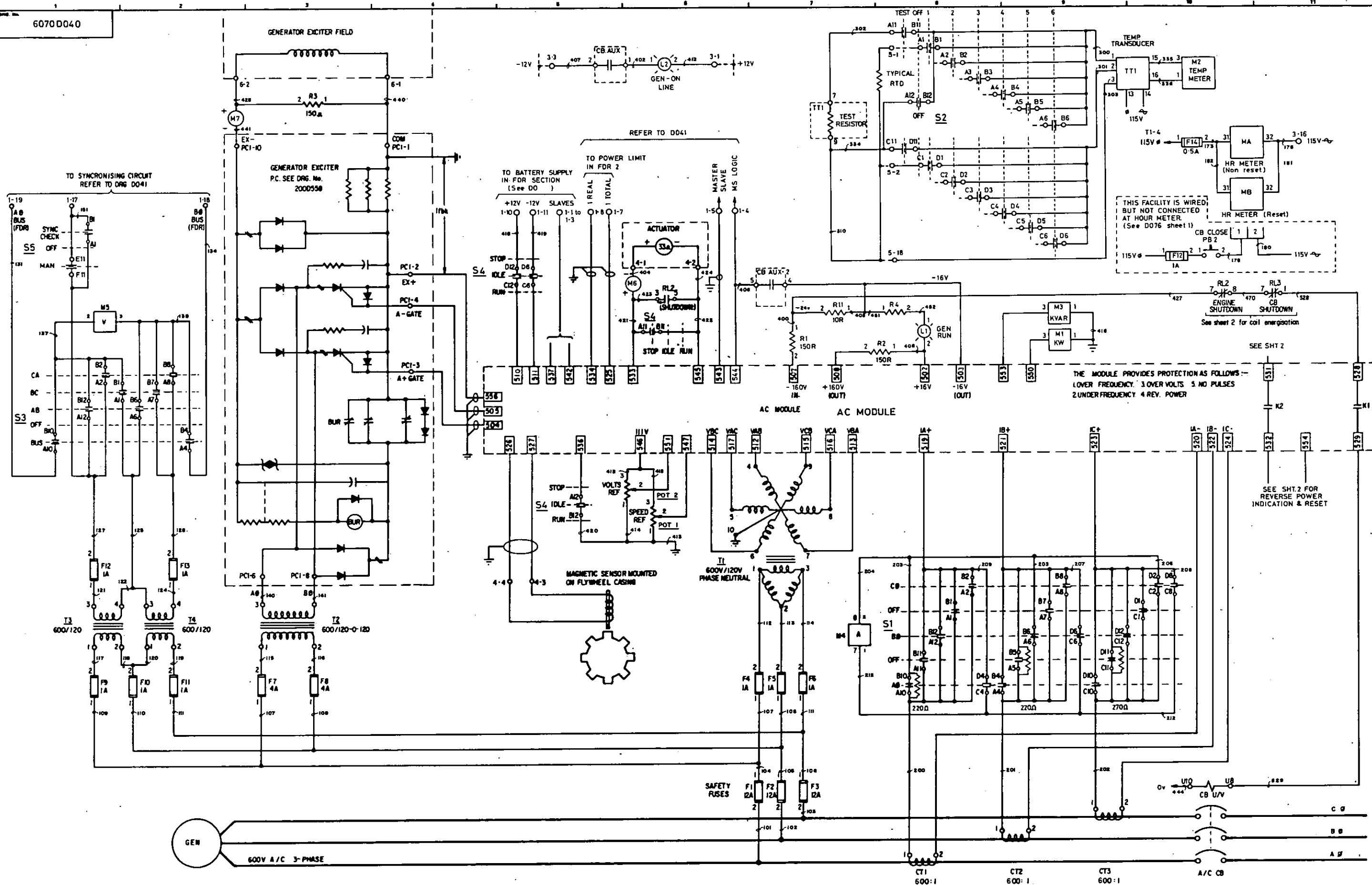
DRG No

60700039

REV

2

6070D040



NO.	DESCRIPTION	DATE	BY
3	SITE MODS.	2/2/81	AB
2	RLS ADDED	5-8-83	SAH
1	AI2-B2 CONTACT ADDED (S2)	2-4-81	RUN

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APPROVED: [Signature]

DATE: [Date]

BY: [Name]

**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

NO.	DESCRIPTION	DATE	BY
1	HILO-9	13-3-81	AB
2	FORASOL	13-3-81	AB

GENERATOR CONTROL SCHEMATIC

NO. 6070D040

3

\* SEE PPTBI DETAILS ON WIRE LIST D081 FOR TERMINAL DETAILS RELATING TO INDIVIDUAL GENERATORS.

\* PLUG PANEL

ENGINE J.B.  
ENGINE MOUNTED SENSORS

These contacts open when the engine is running

MOUNTED INSIDE DOOR R.HAND SIDE  
SHUTDOWN  
-12V 788  
FROM BATTERY  
+12V 785  
600V GROUND FAULT

ENGINE SHUTDOWN SOLENOID  
16-13 6-12

NO.	DESCRIPTION	DATE	BY
3	COMMISSIONING MODS	11-4-85	LAG
2	SIZE MODS	2.12.83	A.B.
1	Number of engine sensors increased	24-10-83	MFB

DATE	BY
15-12-80	LAG
	CHW
	APP.
	DATE
	BY

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ASSOCIATED DRAWINGS  
WIRE LIST  
SCHEMATICS



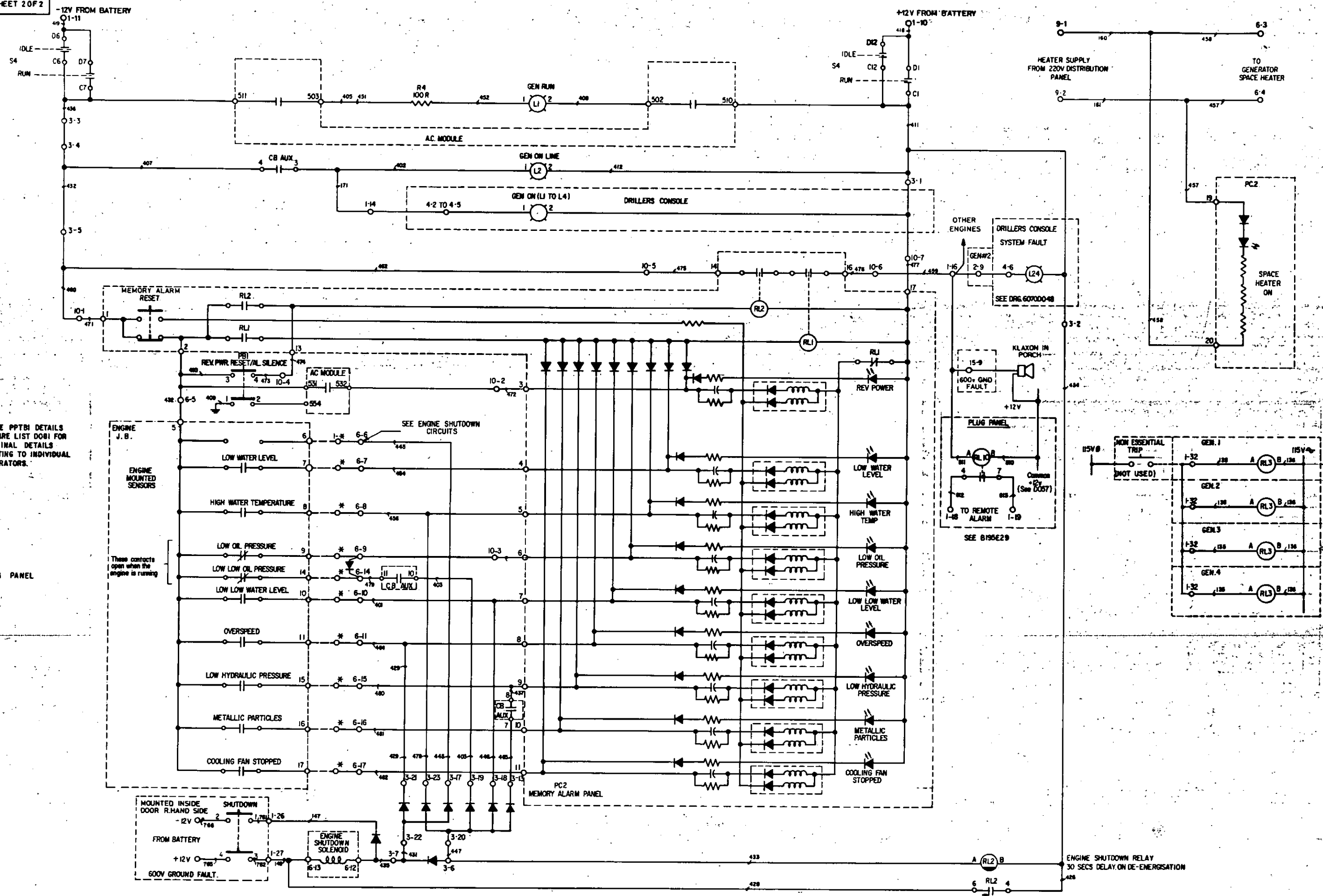
**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND  
TEL. (0494) 40121

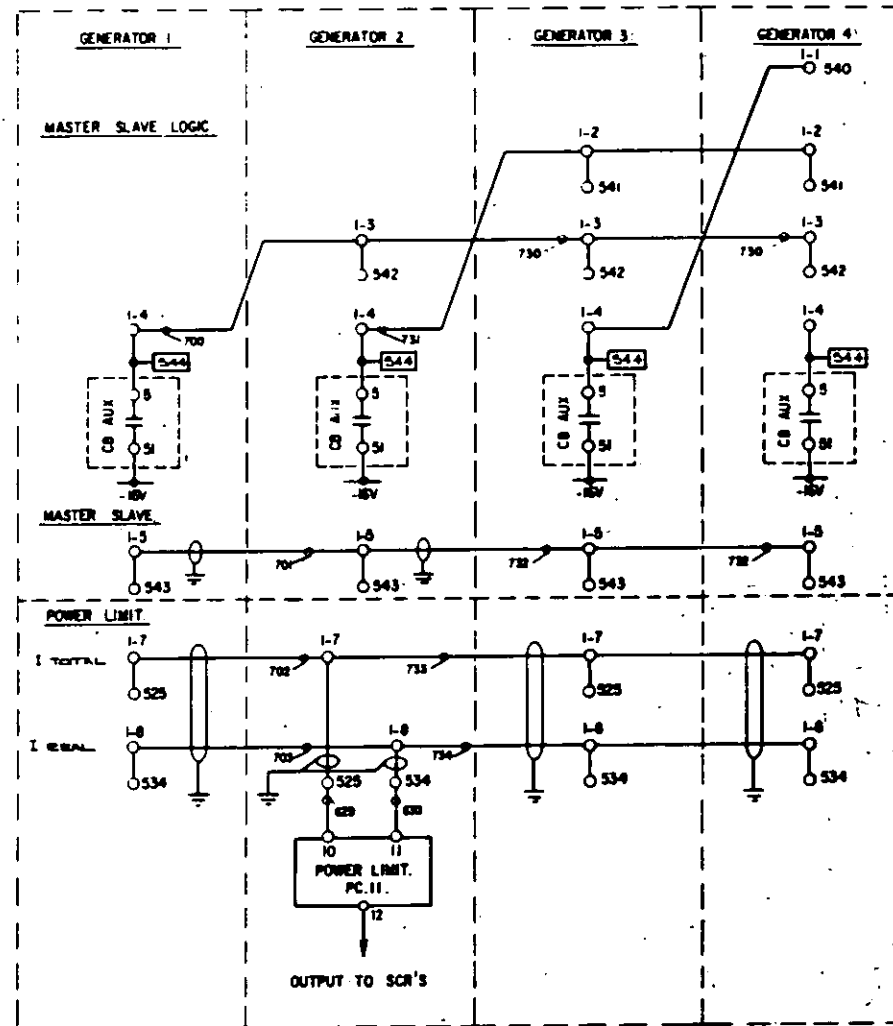
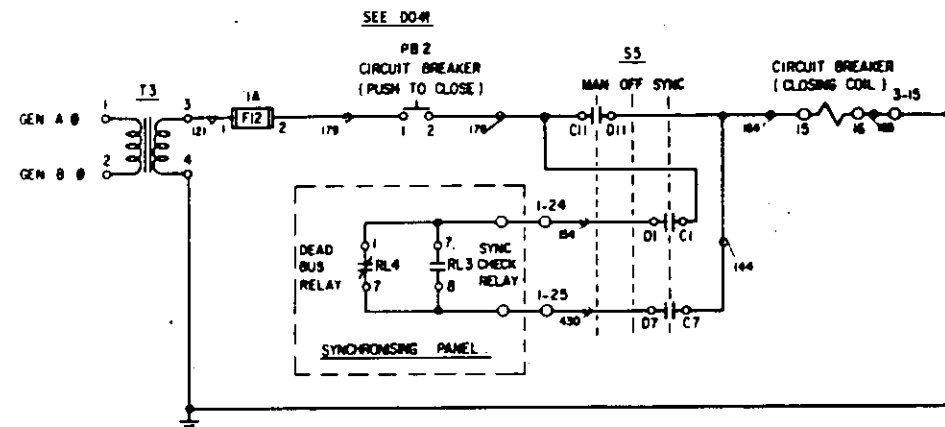
**ENGINE INDICATION & ALARMS**

SWAMP BARGE  
CUSTOMER'S FORASOL

6070D040 SHEET 2 OF 2

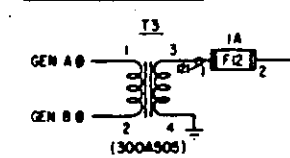
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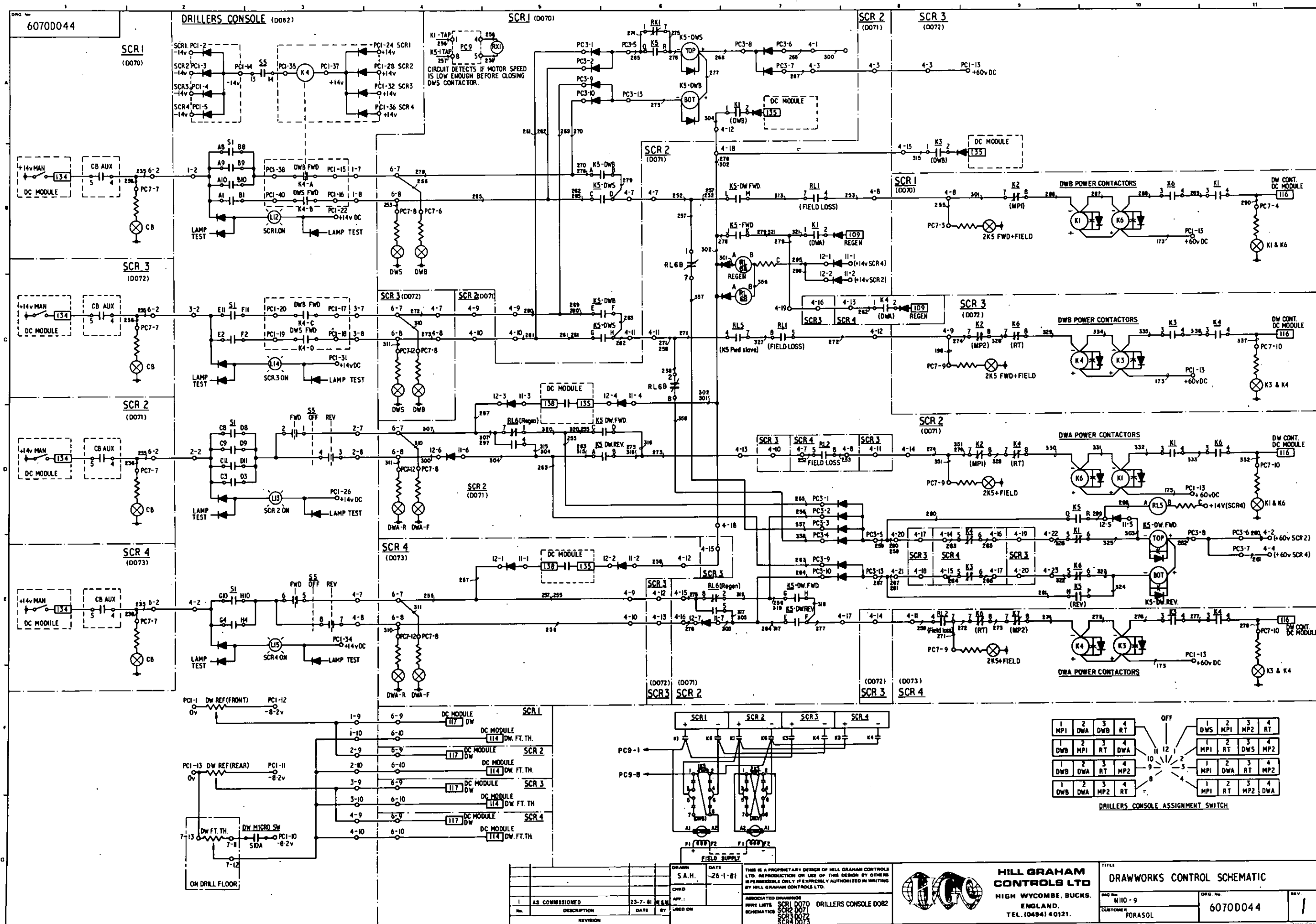


FOR DESCRIPTION OF OPERATION SEE MANUAL

## GENERATOR SECTION 1

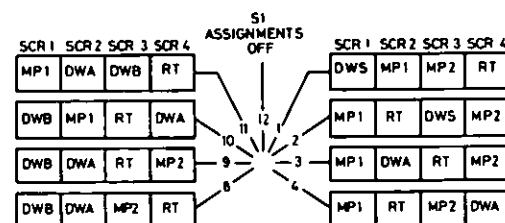
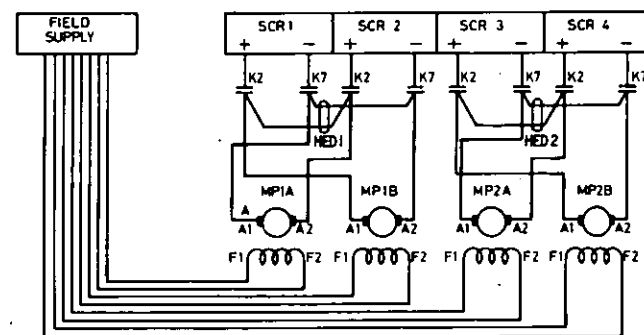
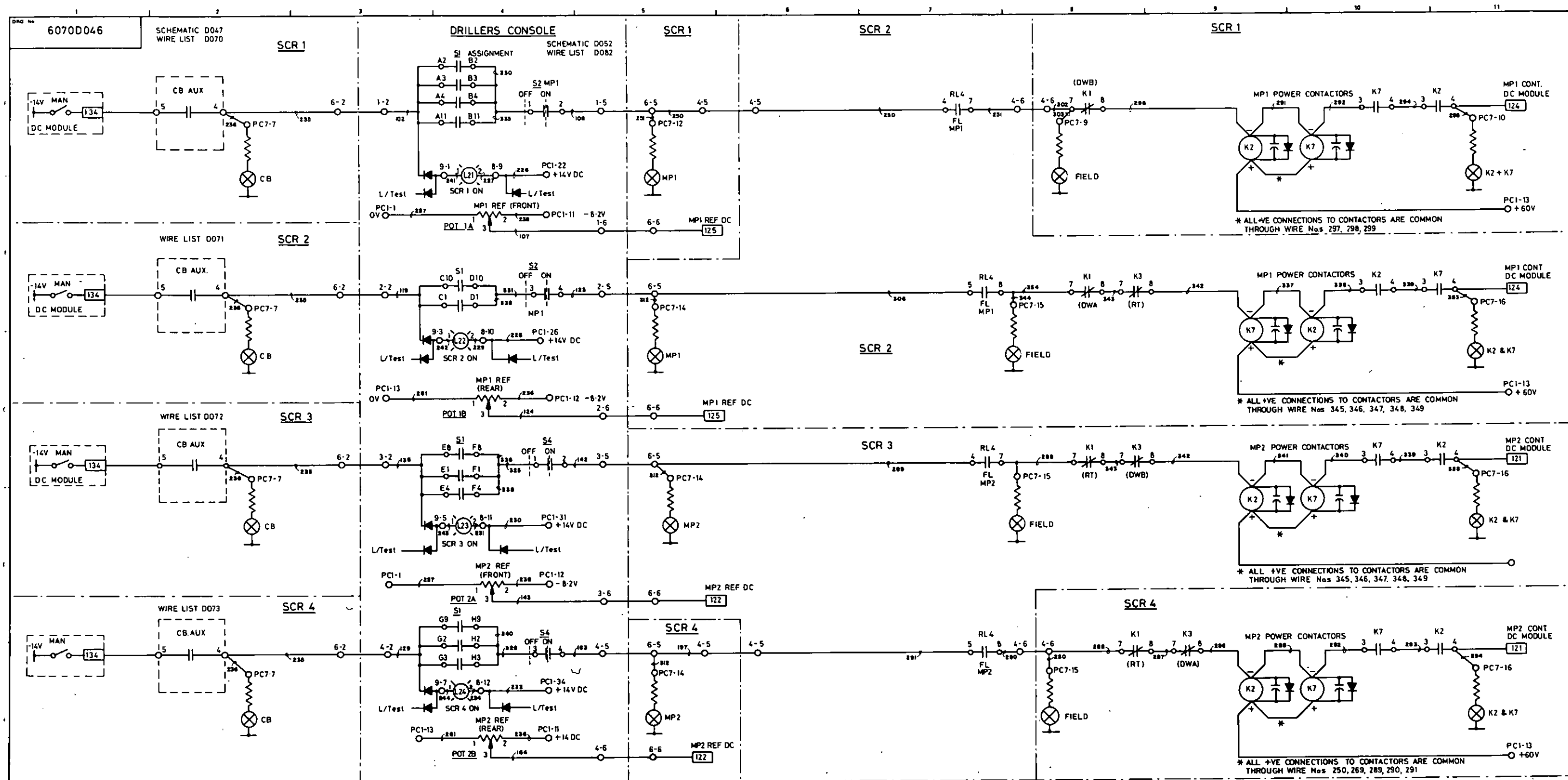












REVISION	DESCRIPTION	DATE	BY
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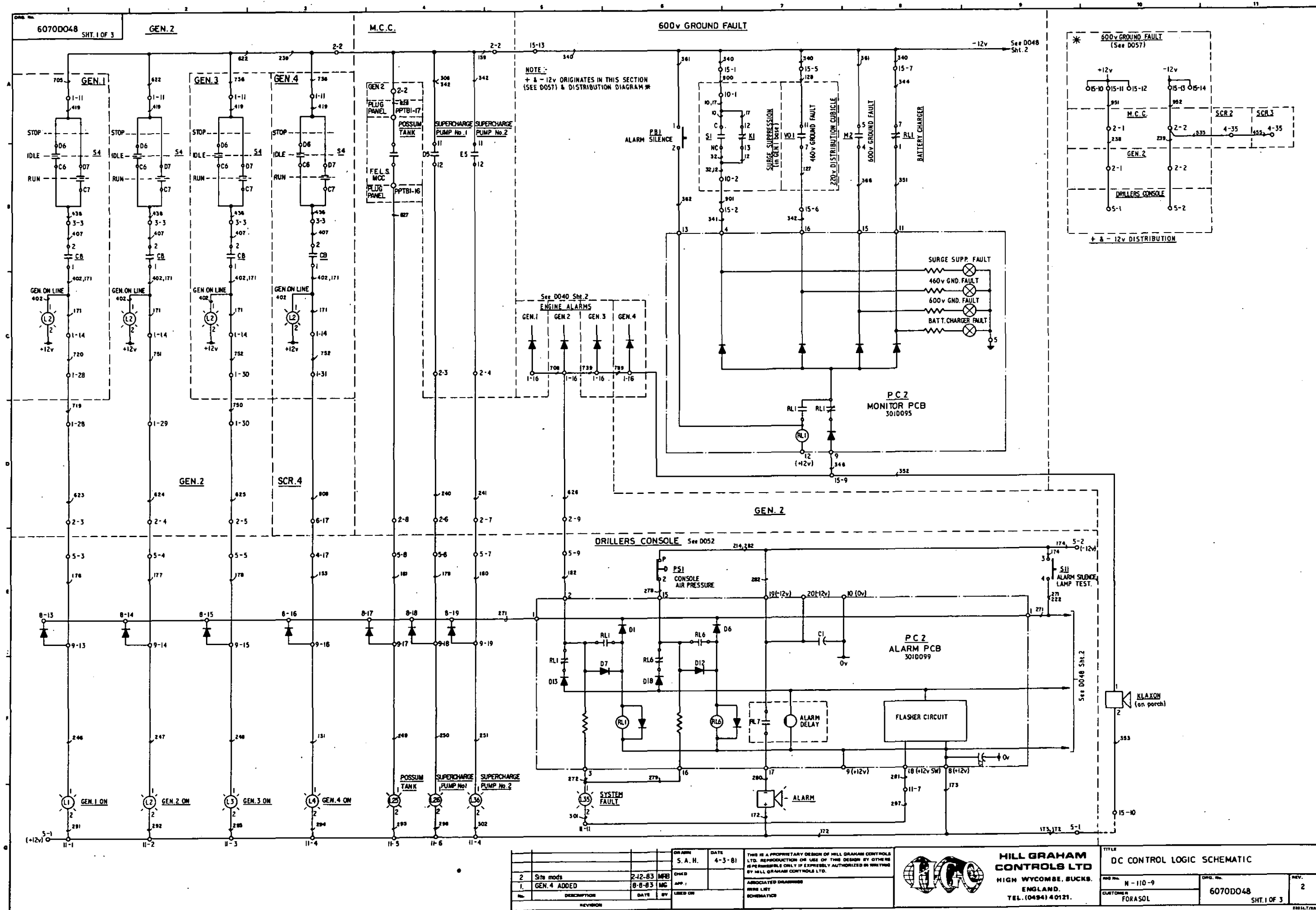
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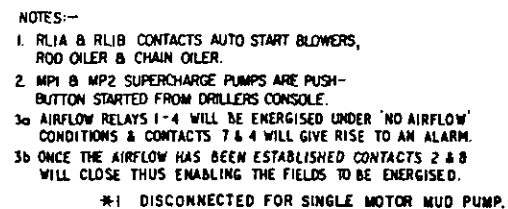
ASSOCIATED DRAWINGS  
WIRE LIST  
SCHEMATICS



**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE MUD PUMPS 1&2 CONTROL - SCHEMATIC		REV.
FIG No N110-9	DRG No 6070D046	
CUSTOMER FORASOL		





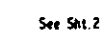
				DR. NO.	DATE	THIS IS A PROPRIETARY ORIGIN OF HILL, GRAMHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS WITHOUT THE WRITTEN PERMISSION OF HILL, GRAMHAM CONTROLS LTD. IS EXPRESSLY AUTHORIZED BY HILL, GRAMHAM CONTROLS LTD.
				S.A.H.	6-3-81	
				CHEK		
2	SITE MOODS	2.12.83	MRB	APP.		ASSOCIATED DRAWINGS WIRE LIST D093, D081, D082. SCHEMATICS
1	AS COMMISSIONED	23-7-81	W.S.M.			
No.	DESCRIPTION	DATE	BY	USED ON		
6070						




**HILL GRAHAM  
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HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE  
DC CONTROL LOGIC & AUXILIARY MOTOR STARTING  
SCHEMATIC

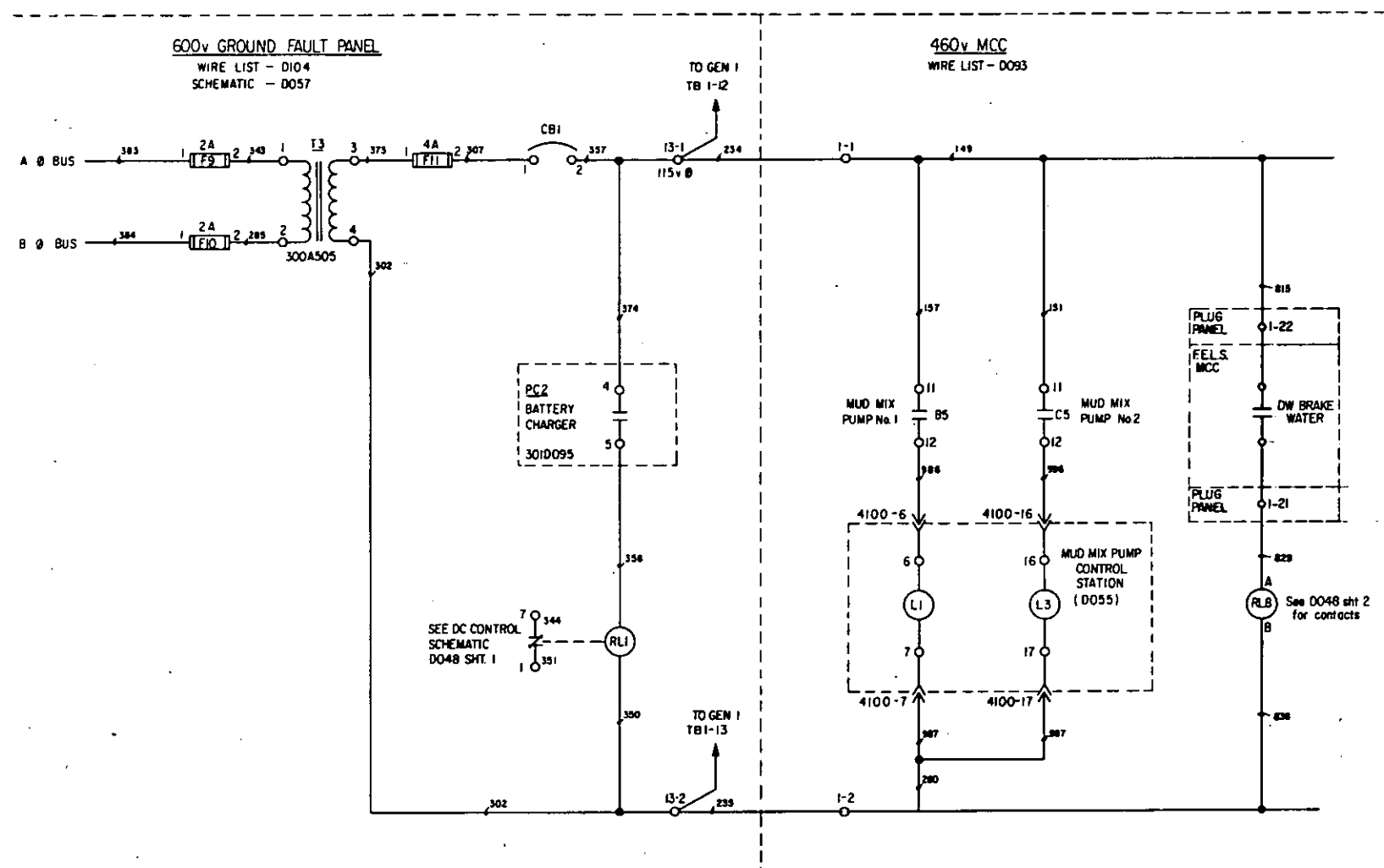
RIG No H110-9	ORC. No 6070D048 SHT. 20F3	REV 2
CUSTOMER FORASOL		



				DRAWN S.A.H.	DATE 9-3-81	 <p>THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD</p> <p>HILL GRAHAM CONTROLS LTD HIGH WYCOMBE, BUCKS. ENGLAND. TEL. (0494) 4 0121.</p>	TITLE DC CONTROL LOGIC & AUXILIARY MOTOR STARTING SCHEMATIC		
				CHECKED			Rev. No. N110 - 9	Ord. No. 60700048	REV.
				APP.:			CUSTOMER'S FORASOL		
							SHT 3 OF 3		
No.	DESCRIPTION	DATE	BY	USED ON	ASSOCIATED DRAWINGS WIRE LIST SCHEMATICS				
REVISION									

7281LT/2318

60700050



REV	DESCRIPTION	DATE	BY	USED ON
1	Site mods - RLB added	2-12-83	MPB	

DESIGN	DATE	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMITTED ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.
CHIEF	12-12-80	
APP. 1		
WIRE LIST		
SCHEMATIC		

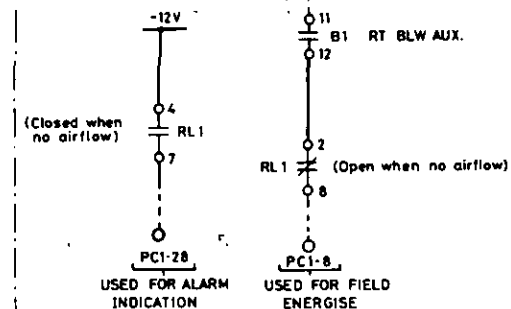


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CONTROLS LTD**  
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ENGLAND.  
TEL. (0494) 40121.

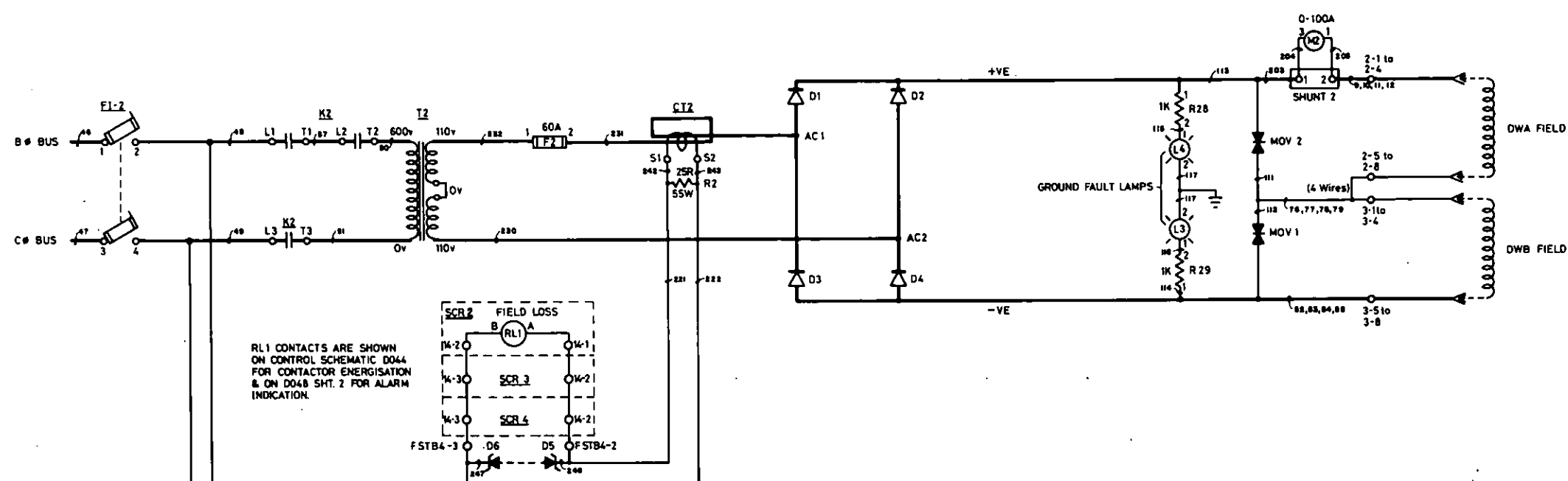
TITLE	AC CONTROL SCHEMATIC	REV.	1
DWG No.	N110-9	DWG No.	60700050
CUSTOMER	FORASOL		

1. DRILLERS CONSOLE - RT SWITCH (S5) TO FORWARD AND REVERSE.
2. RELAY RL1 ON AUXILIARY MOTOR BOARD (PC1) ARE ENERGISED, AUTO STARTING RT BLOWERS (REF 0048 SHT 21)
3. ONCE THE AIRFLOW HAS BEEN ESTABLISHED TR1 ON PC1 IS ENERGISED, 7 SECOND DELAY THUS ENERGISING THE FIELD.

SEE D048 SHEET 2



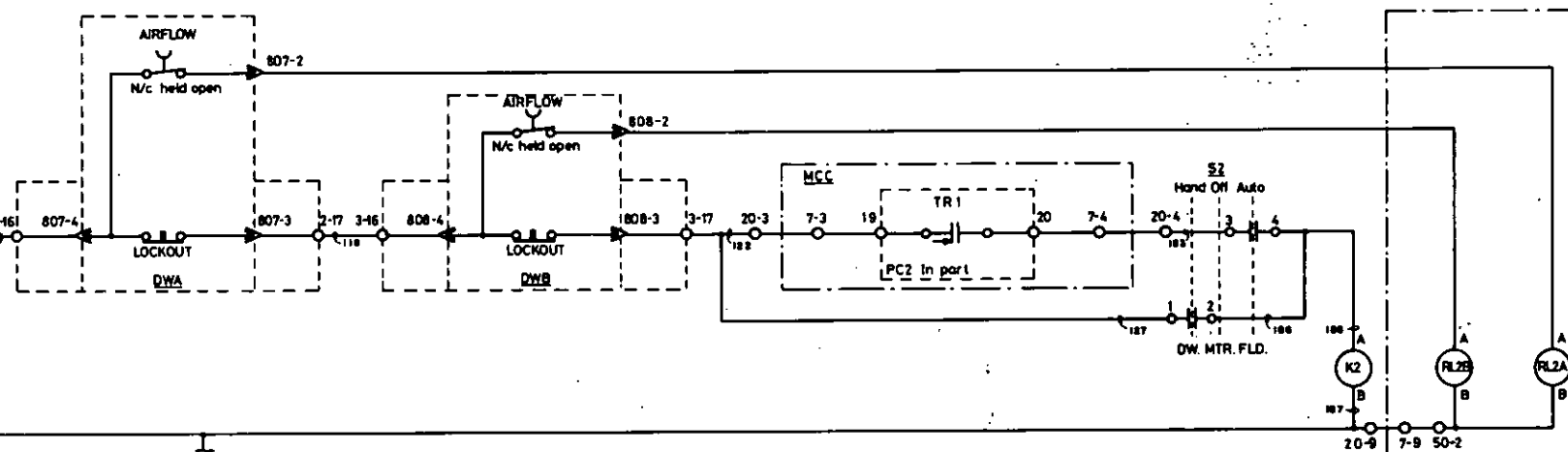
DRAWN		DATE		THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. NO REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORIZED BY WRITING BY HILL GRAHAM CONTROLS LTD.		HILL GRAHAM <b>CONTROLS LTD</b>		TITLE ROTARY TABLE FIELD SUPPLY.	
A.B.		6-3-81				HIGH WYCOMBE, SUCKS.			
CHECKED						ENGLAND.			
APP :				ASSOCIATED DRAWINGS					
				SHEET LIST					
				SCHEMATICS					
REVISION		DATE		BY	USED ON	RIG No. N110-9 CUSTOMER FORASOL		DWG No. 6070D051 SHT 1 of 4	



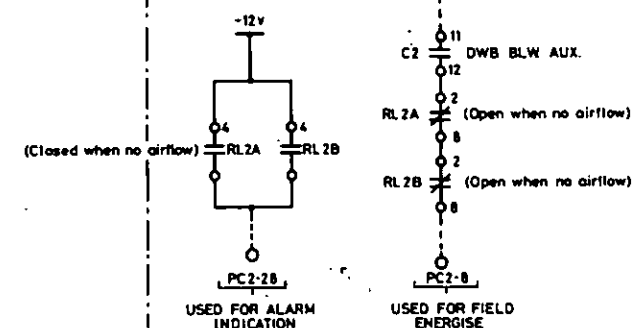
RL1 CONTACTS ARE SHOWN ON CONTROL SCHEMATIC D044 FOR CONTACTOR ENERGISATION & ON D048 SHT. 2 FOR ALARM INDICATION.

# FIELD ENERGISING SEQUENCE

1. DRILLERS CONSOLE - DW SWITCH (SS) TO FORWARD OR REVERSE
2. RELAYS RL1A & RL1B ON AUXILIARY MOTOR BOARD (PC2) ARE ENERGISED, AUTO STARTING DWA & DWB BLOWERS (REF D048 SHT. 2)
3. ONCE THE AIRFLOW HAS BEEN ESTABLISHED TR1 ON PC2 IS ENERGISED, 7 SECOND DELAY THUS ENERGISING THE FIELD.



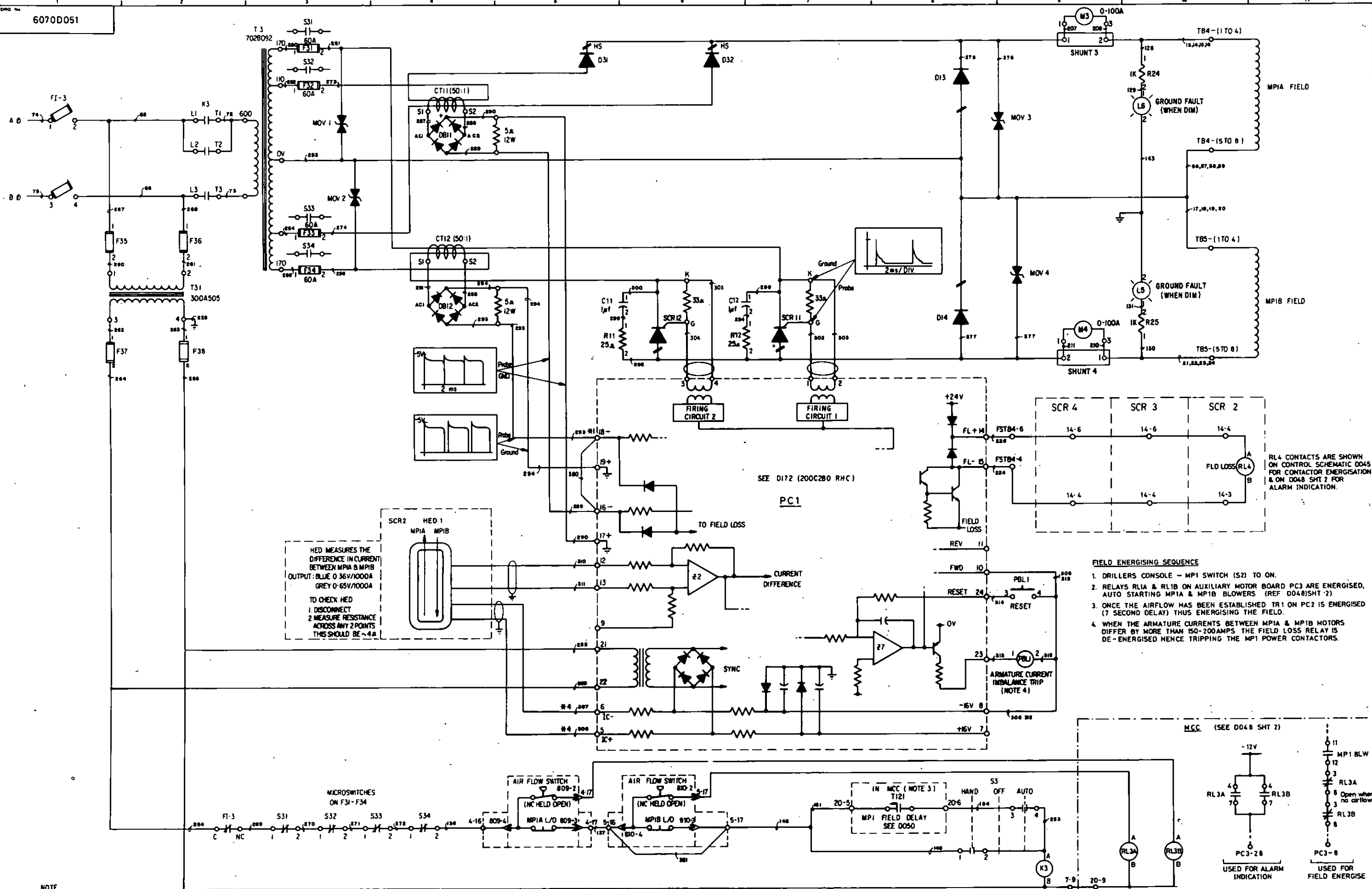
SEE D048 SHEET 2



REVISION		DATE	BY	USED ON
1	AS COMMISSIONED	24-7-81	W.B.M.	
DESCRIPTION		DATE	BY	USED ON

<b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, BUCKS. ENGLAND. TEL. (0494) 4 0121.		<b>TITLE</b> DRAWWORKS FIELD SUPPLY
<b>DRG. No.</b> N 110-9	<b>REV.</b> 1	<b>6070D051</b> SHT 2 of 4

6070D051



## NOTE

- NB FOR SINGLE MOTOR MUD PUMPS  
 1) DISCONNECT WIRE No 293 FROM PCI-18.  
 2) ADD LINK No 380 BETWEEN PCI-18 & 16.  
 3) ADD LINK No 381 BETWEEN TB5-16 & 17.  
 4) DISCONNECT WIRES 307 & 306 FROM PCI-6 & 5.

NO.	REVISION	DATE	BY	USED ON
2	AS COMMISSIONED	24-7-81	W.S.M.	CHD
1	GROUND FAULT LAMPS ADDED	2-4-81	R.J.N.	APP.

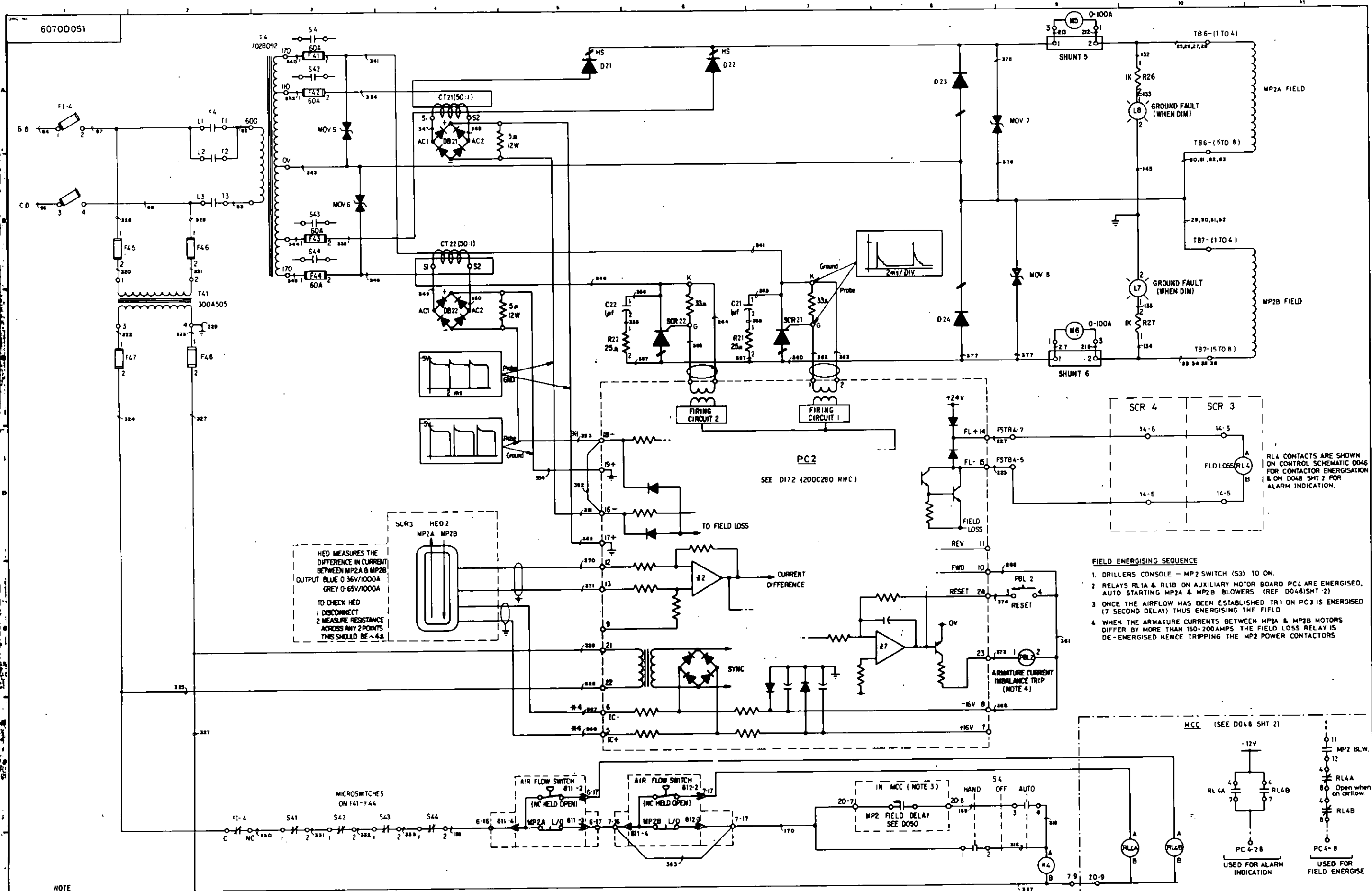


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CONTROLS LTD**  
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 ENGLAND.  
 TEL. (0494) 4 0121.

MUD PUMP 1  
FIELD SUPPLY SCHEMATIC

REV. No	N110-9	REV.	2
CUSTOMER	FORASOL	6070D051	SHEET 3 OF 4





NOTE  
NB FOR SINGLE MOTOR MUD PUMPS  
1) DISCONNECT WIRE No. 353 FROM PC2-18.  
2) ADD LINK No. 382 BETWEEN PC2-18 & 16.  
3) ADD LINK No. 383 BETWEEN TB7-16 & 17.  
4) DISCONNECT WIRE No. 366 & 367 FROM PC2-5 & 6.

REVISION	DESCRIPTION	DATE	BY	USED ON
2	AS COMMISSIONED	24-7-81	MSM	
1	GROUND FAULT LAMPS ADDED	2-4-81	RJN	

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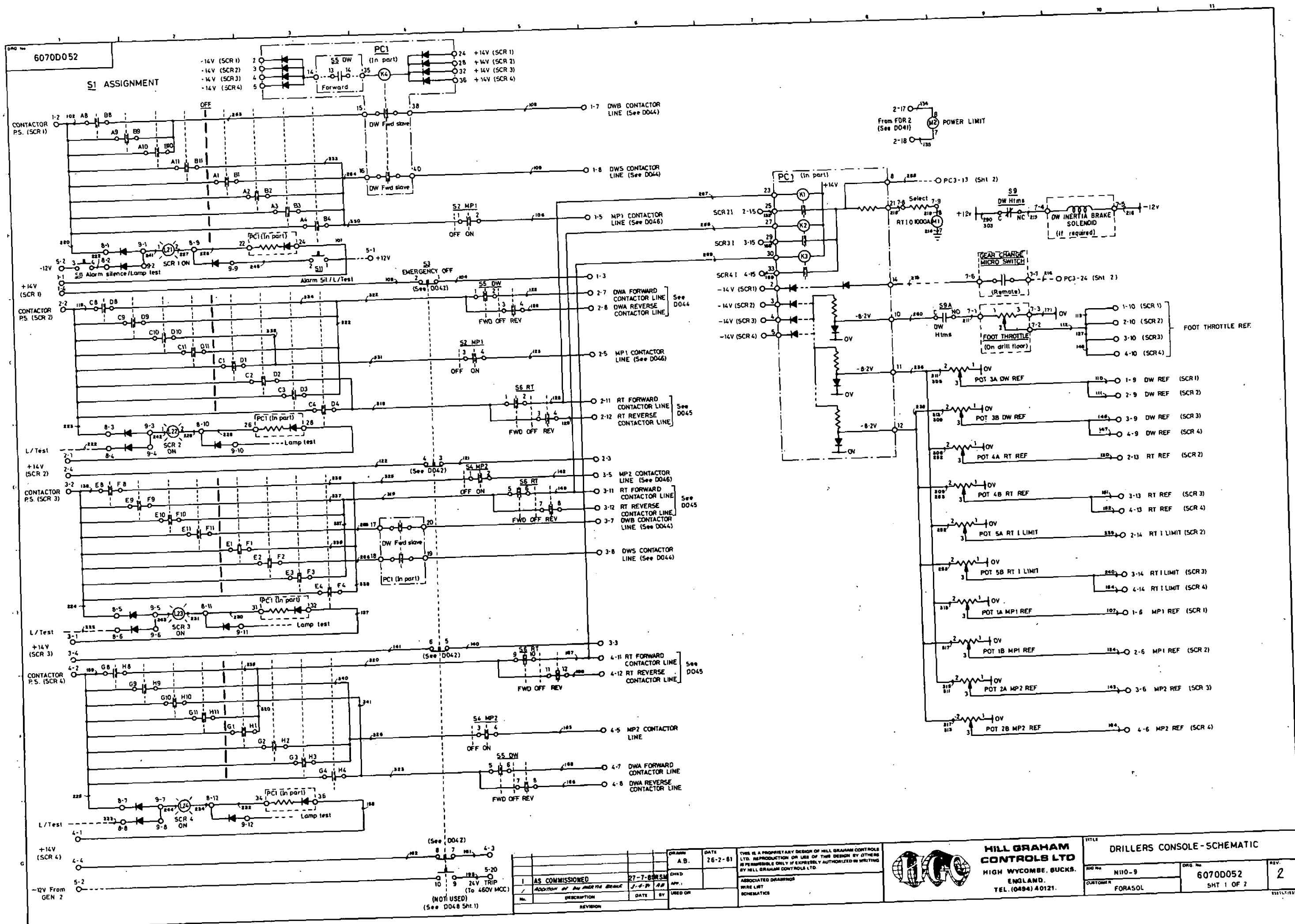
ASSOCIATED DRAWINGS  
WIRE LIST D086  
SCHEMATIC

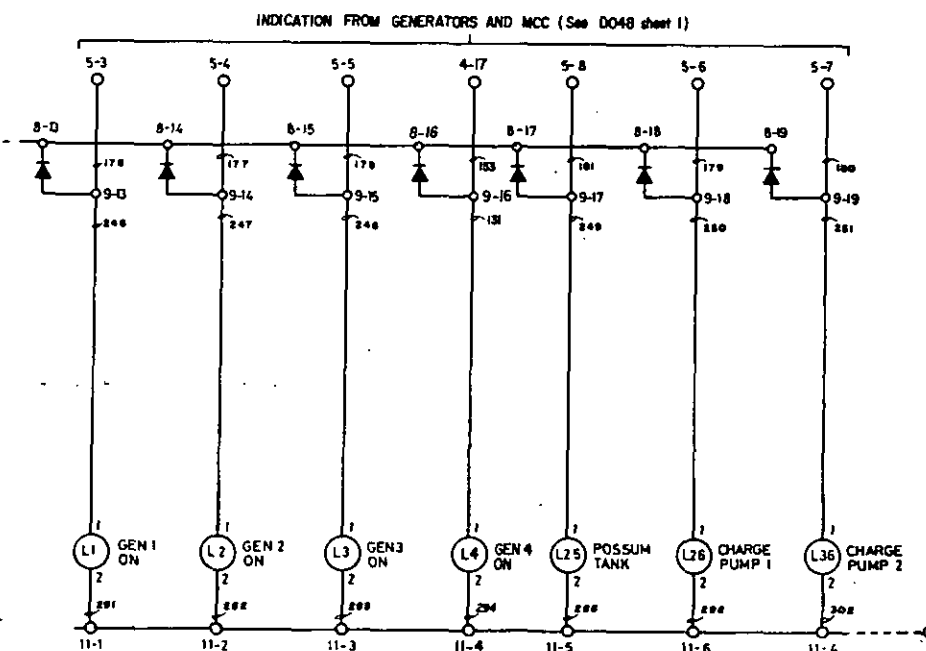
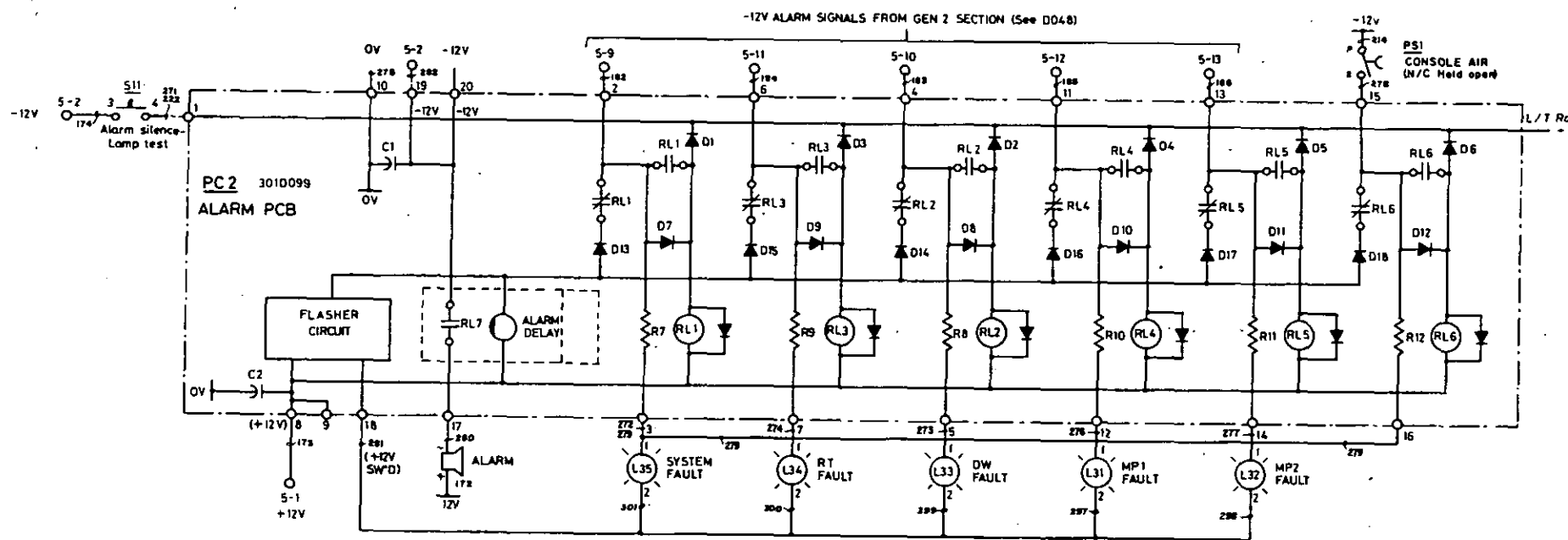
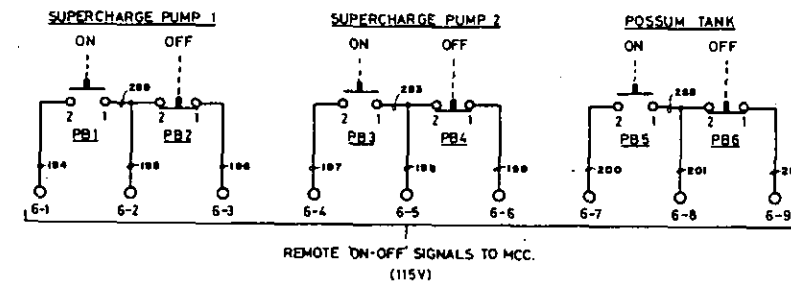
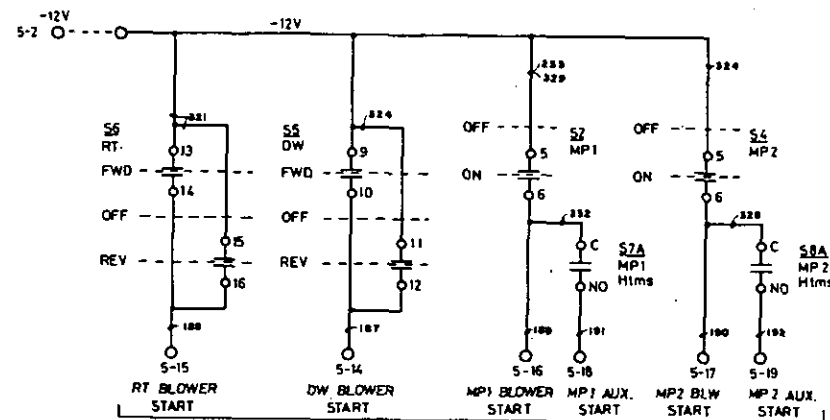
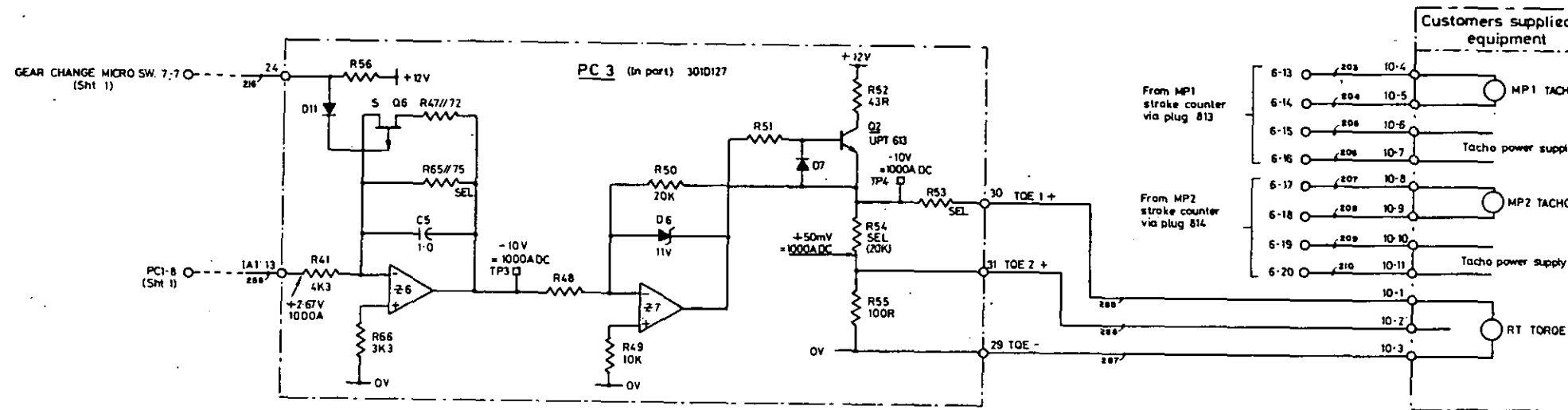


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**MUD PUMP 2 FIELD SUPPLY SCHEMATIC**

REV: N110-9  
CUSTOMER: FORASOL  
DRAWING NO: 6070D051  
SHEET 4 OF 4





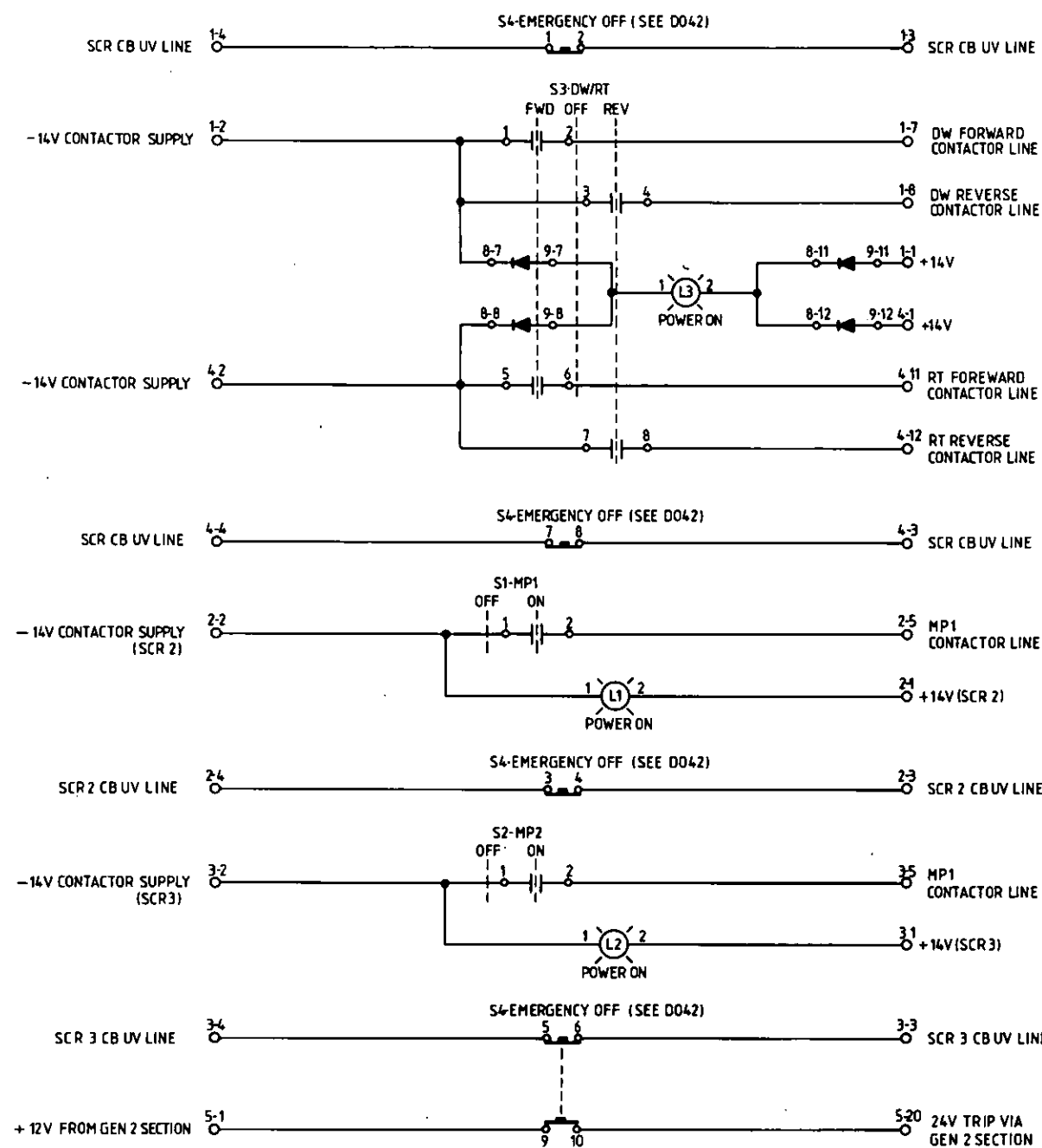
REV	DESCRIPTION	DATE	BY	USED ON
1	GEN 4 ON INDICATION ADDED	10-8-83	MRB	

DATE	26-2-81
APP.	
USED ON	

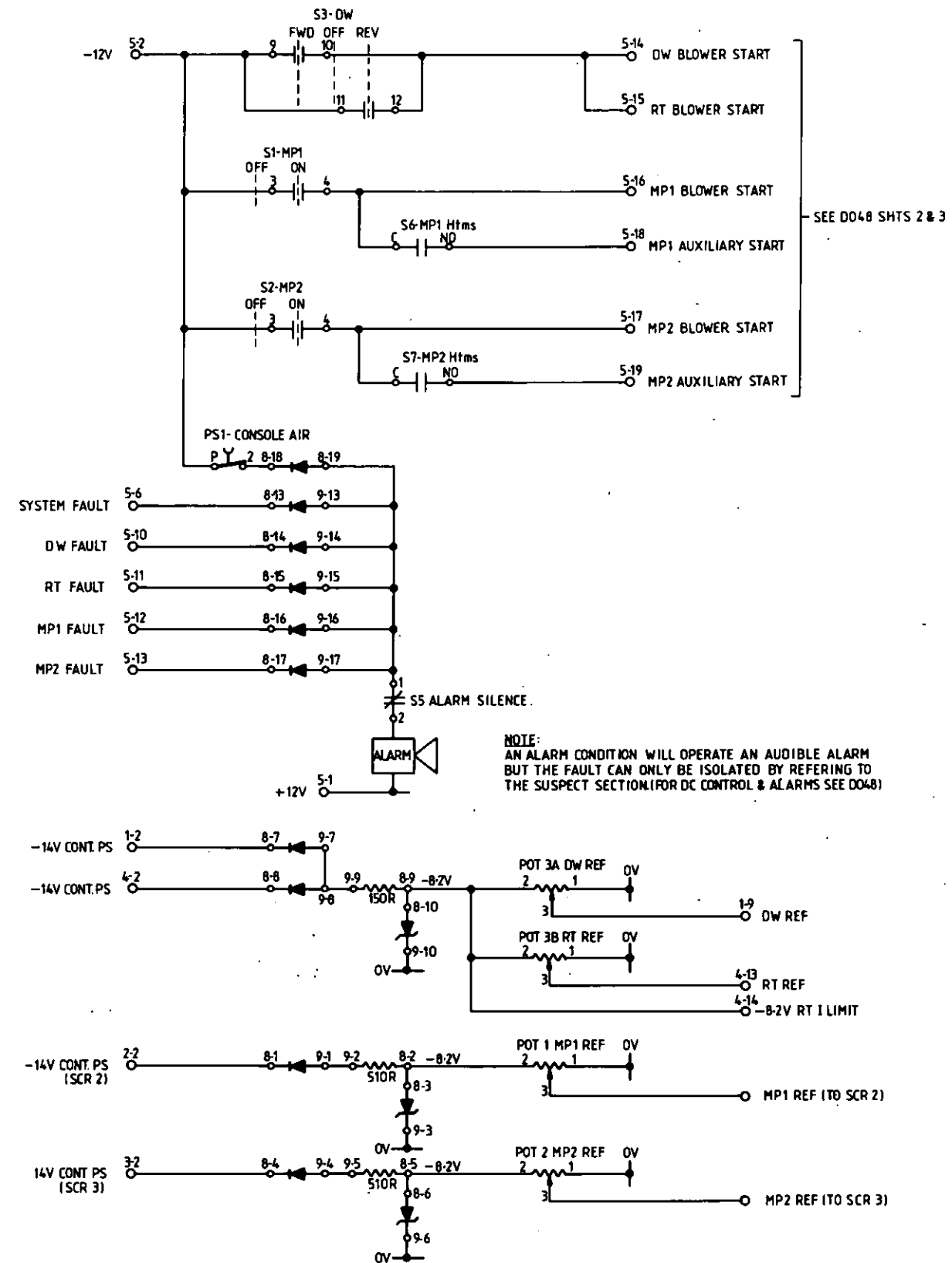
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ASSOCIATED DRAWINGS
WIRE LIST
SCHEMATIC

HILL GRAHAM CONTROLS LTD. HIGH WYCOMBE, BUCKS. ENGLAND. TEL. (0494) 40121.	TITLE DRILLERS CONSOLE - SCHEMATIC	REV. 1
NO. 110-9	60700052 SHEET 2 OF 2	

6070D053



NOTE:  
THIS CONSOLE MAY BE USED AS A TEMPORARY REPLACEMENT FOR THE DRILLERS CONSOLE, BUT HAS ONLY A VERY LIMITED ASSIGNMENT CAPABILITY.  
eg CABLES 801 802 & 804 SHOULD BE CONNECTED AT THE PLUG PANEL.  
THIS ASSIGNS MP1 TO SCR2, MP2 TO SCR3 & ENABLES THE AUXILIARY START & ALARM SYSTEMS.  
CABLE 800 OR 803 SHOULD THEN BE CONNECTED AT THE PLUG PANEL AS BELOW. THEY SHOULD NOT BOTH BE CONNECTED.  
CABLE 800 IN RECEPTACLE 800 WILL ASSIGN SCR1 TO DWB FWD OR DWS.  
CABLE 800 IN RECEPTACLE 803 WILL ASSIGN SCR4 TO DWA FWD OR REV.  
CABLE 803 IN RECEPTACLE 803 WILL ASSIGN SCR4 TO RT FWD OR REV.



NO.	DESCRIPTION	DATE	BY
1	REVISION		

DRN	RJN	DATE	7-3-81
CHKD			
APP.			
USED ON	6070		

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ASSOCIATED DRAWINGS

WIRING LIST

SCHEMATIC

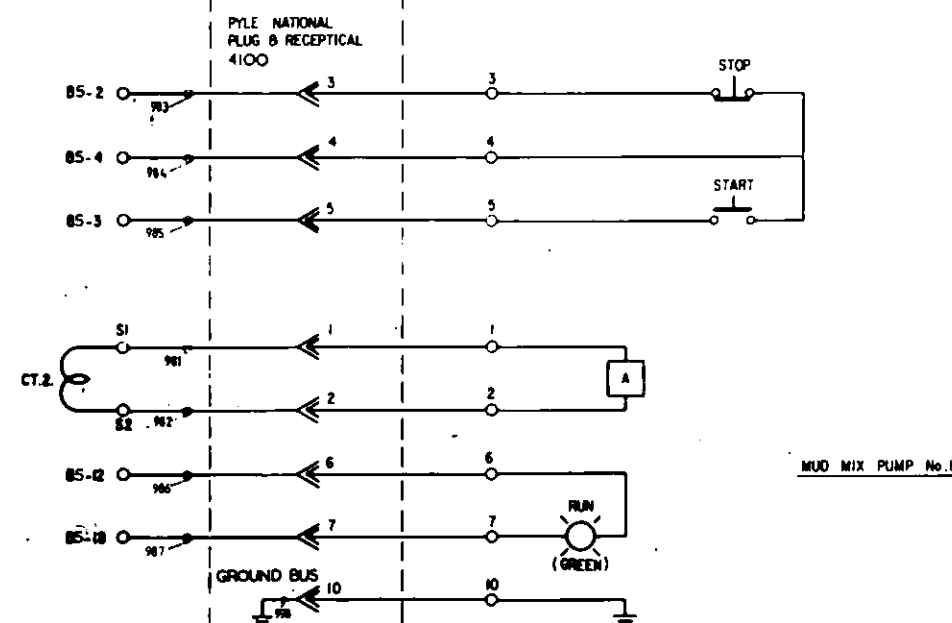


**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 40121.

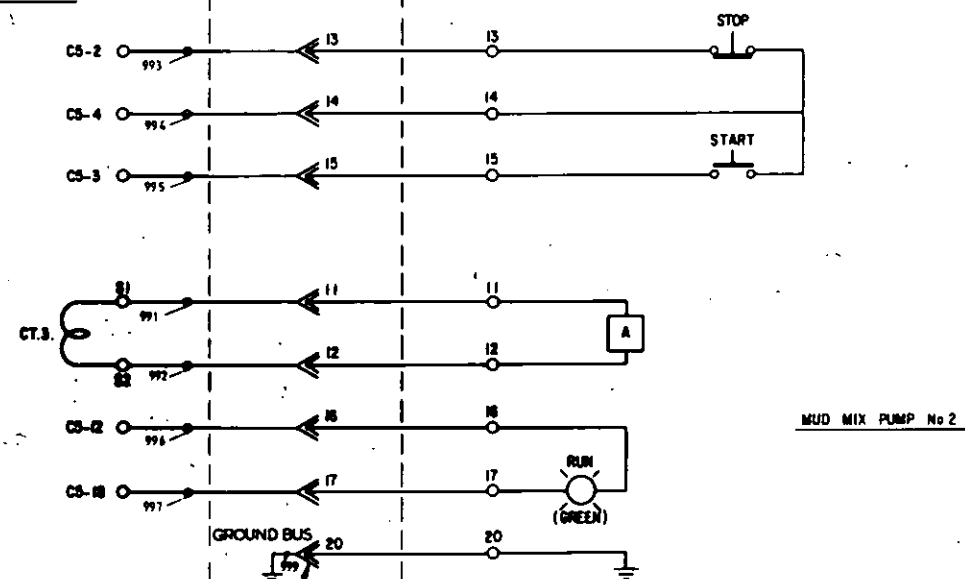
EMERGENCY CONTROL CONSOLE			
REV. NO.	N110-9	DRG. NO.	6070D053
CUSTOMER	FORASOL		

## 460V M.C.C. SECTION B4

## PLUG PANEL



## 460V M.C.C. SECTION C5

SEE SCHEMATIC D069  
WIRE LIST D093

PYLE NATIONAL  
RECEPTICAL (2HEP-20-33P-SH)  
PLUG (2PEP-1620-33P-PA)

A.B. 10-3-61

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REVISIONS:  
1. 10-3-61  
2. 10-3-61  
3. 10-3-61



**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, SUCKS  
ENGLAND.  
TEL. (0494) 40121.

TITLE

MUD MIXING PUMP Nos 1 &amp; 2. REMOTE CONTROL SCHEMATIC.

REV. NO.

N110-9

CUSTOMER

FORASOL

REV. NO.

6070D055

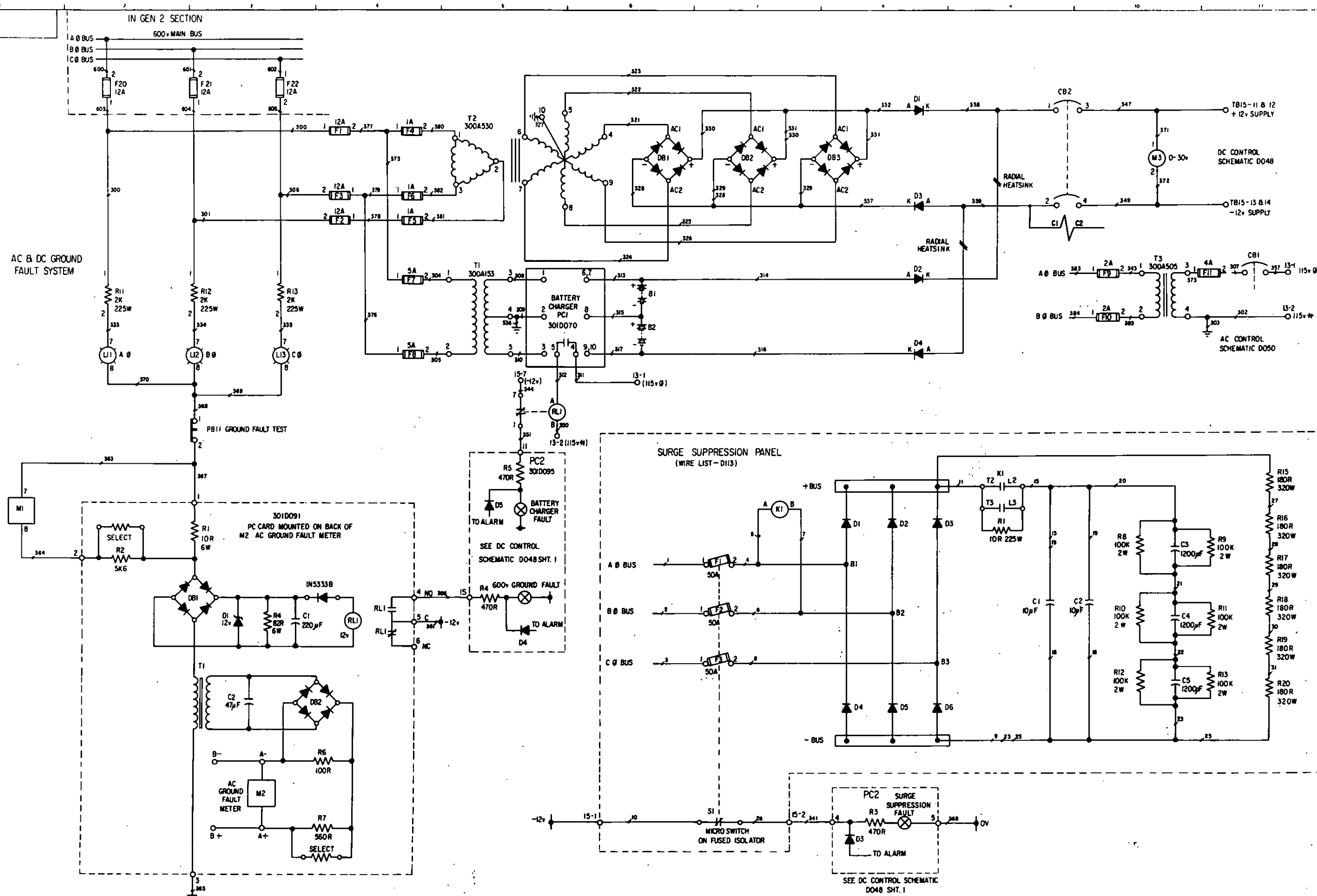
DATE

BY

REVISION

6070D057

IN GEN 2 SECTION

AC & DC GROUND  
FAULT SYSTEMDC GROUND  
FAULT METER

REV	DESCRIPTION	DATE	BY
1	AS COMMISSIONED	27-7-81	NISW
2	DESCRIPTION	DATE	BY
3	REVISION	DATE	BY

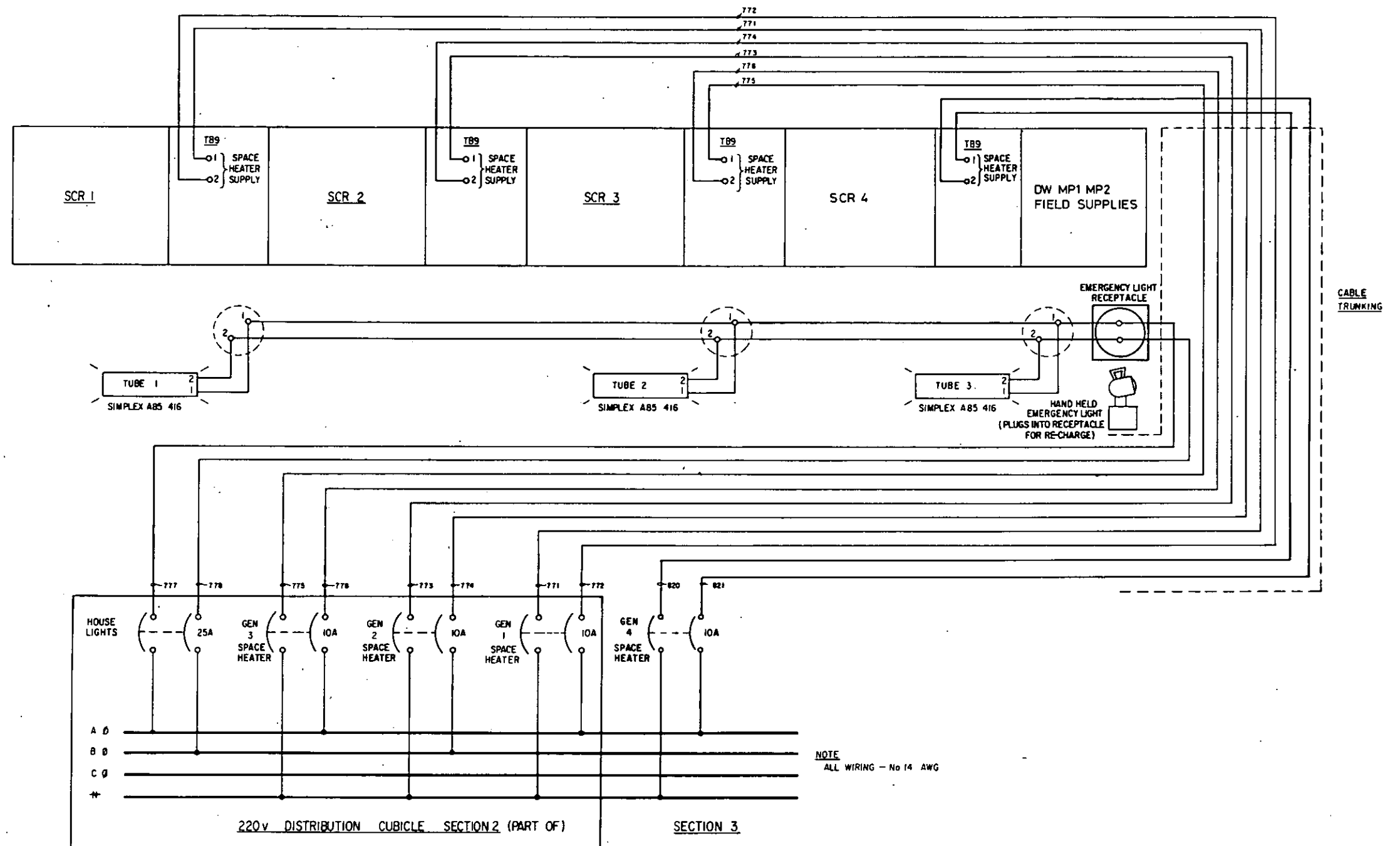
DATE	15-12-80
CHIEF	
APP. 1	
USED ON	


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ASSOCIATED DRAWINGS
WIRE LIST
SCHEMATICS

HILL GRAHAM CONTROLS LTD
HIGH WYCOMBE, BEDS.
ENGLAND.
TEL. (0494) 40121.

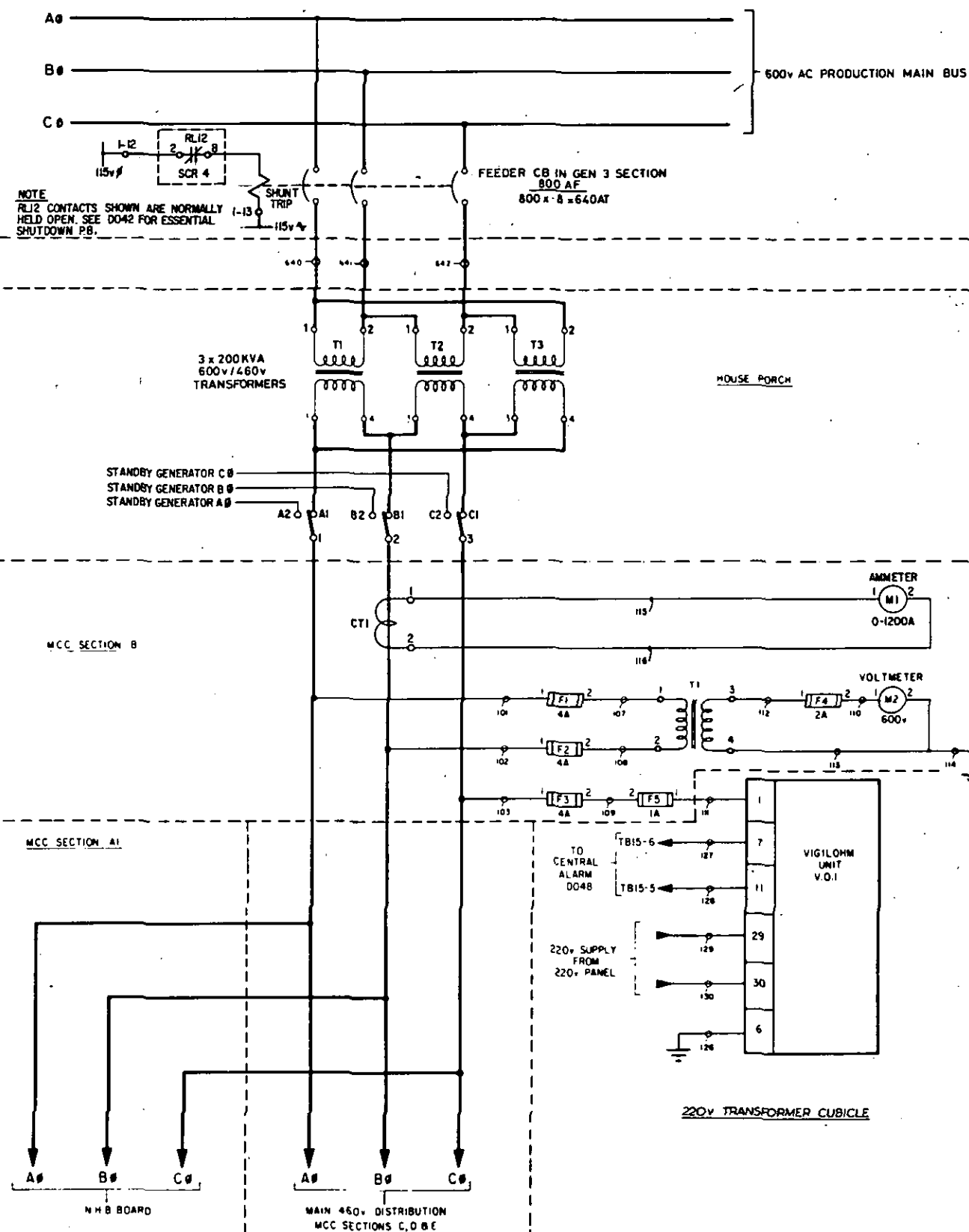
TITLE	SURGE SUPPRESSION & 600V GROUND FAULT SCHEMATIC
REV. NO.	N10 - 9
CUSTOMER	FORASOL
DWG. NO.	6070D057
REV.	1

6070D061

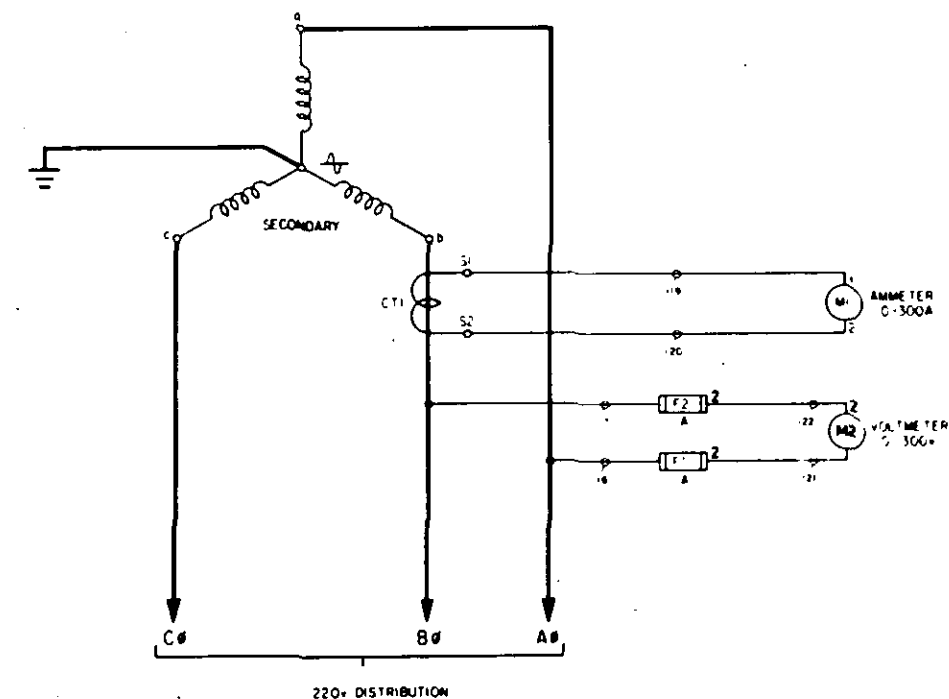
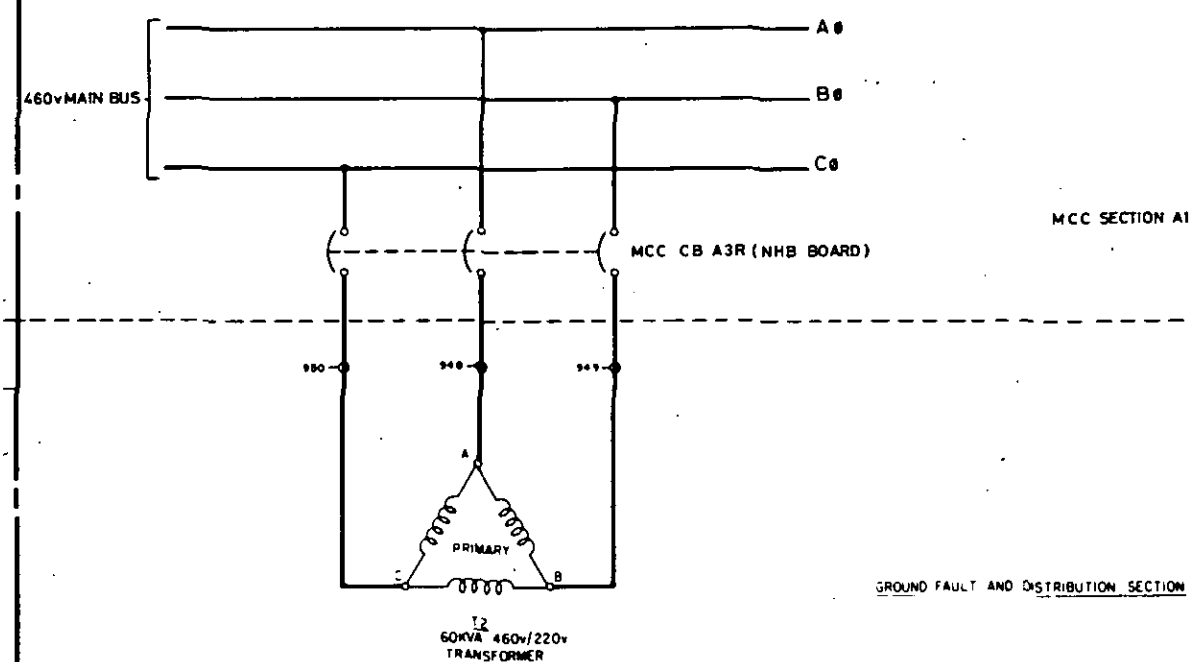
NOTE:— THESE WIRES ARE TIE-WRAPPED ALONG  
TOP REAR OF CUBICLE.

				DRWING	DATE	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORIZED BY WRITING BY HILL GRAHAM CONTROLS LTD.		HILL GRAHAM CONTROLS LTD	HIGH WYCOMBE, BUCKS ENGLAND. TEL. (0494) 40121.	TITLE	GENERATOR SPACE HEATERS & HOUSE LIGHTING				
2	SITE MODS	2/2/83	AB	CHD	15-12-80					RIG No	N110-9	DWG No	6070D061	REV	2
1	AS COMMISSIONED	27-7-81	R.S.M.	APP.1						ASSOCIATED DRAWINGS WIRE LIST SCHEMATICS	CUSTOMER FORASOL				
No.	DESCRIPTION	DATE	BY	USED ON											
REVISIONS															

6070D067



460v DISTRIBUTION &amp; GROUND FAULT



220v DISTRIBUTION

DATE	15-12-80
DESIGNED	
APP (1.1)	
SCALE	

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TOLERANCES  
FRACTIONAL: 0.01  
2 DEC. PLACES: 0.01  
1 DEC. PLACES: 0.05

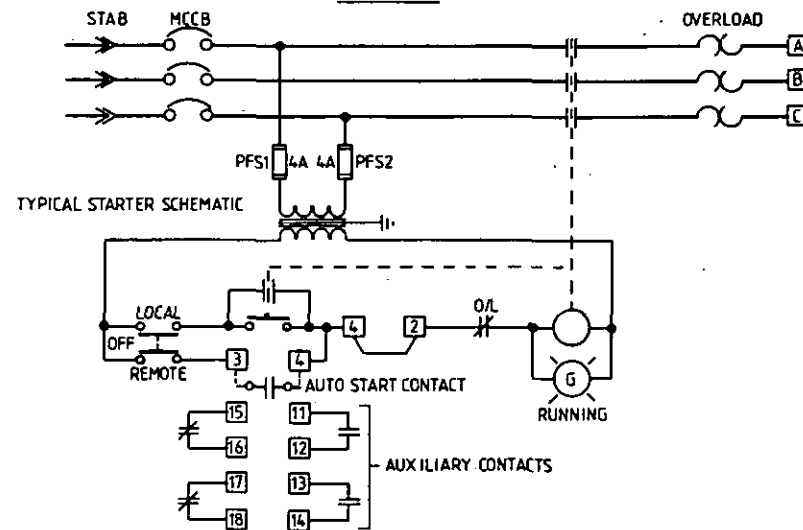


**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BEDS  
ENGLAND  
TEL: (0494) 40121

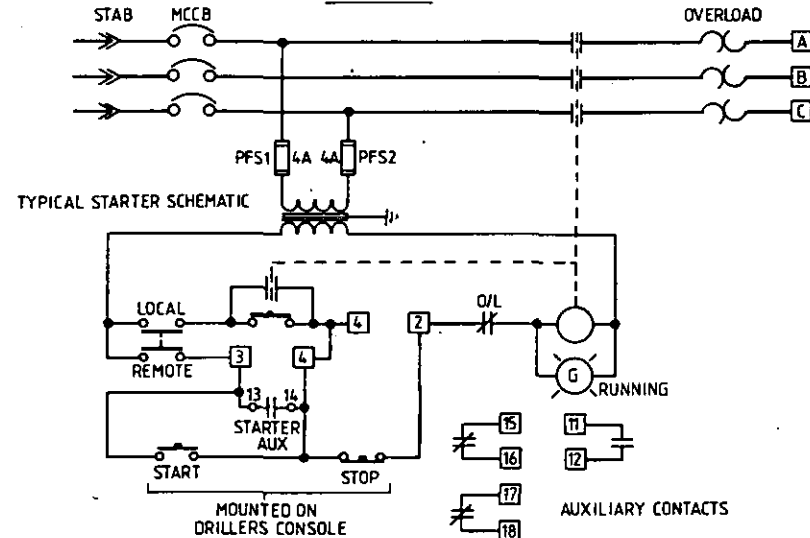
TITLE	460v & 220v DISTRIBUTION
REV	1
DATE	2-12-83
BY	MRB
DESCRIPTION	Shunt trip added - TFMR For (Em3)
CUSTOMER	FORASOL
DWG No	N110-9
REV	



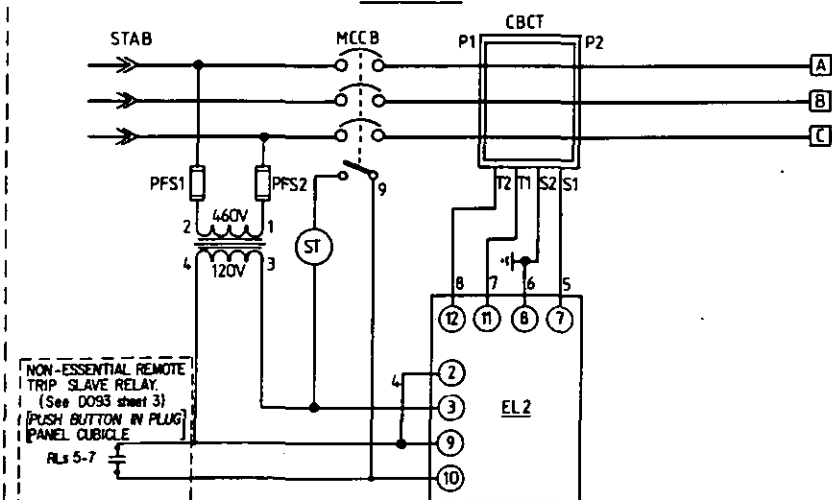
SCHEMATIC 1



SCHEMATIC 2

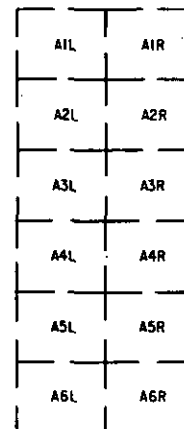
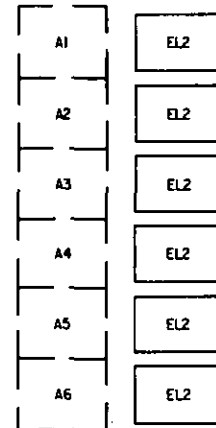


SCHEMATIC 3



## SECTION A

## A1 NHB BOARD



MOUNTED BEHIND PANEL

## SECTION B

## B1 RT BLOWER

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
15 HP

## B2 EASY TORQUE

DOL STARTER (SEE SCHEMATIC 2)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C27.3B  
15 HP

## B3 MUD LOGGING UNIT

FEEDER TB (SEE SCHEMATIC 3)  
MCCB BTHED 136-125  
EARTH LEAKAGE TRIP 40/ELR 2  
125 AT

## B4 WIRE LINE UNIT

MCCB BTHED 136-060  
60AT

## B5 MUD MIX PUMP No 1

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-150  
TRIP SET 6  
CONTACTOR SIZE 4  
O/L BCR123-F419C  
100 HP

## SECTION C

## C1 DWA BLOWER

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 6  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
10 HP

## C2 DWB BLOWER

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
10 HP

## C3 MUD AGITATOR 6

FEEDER TB (SEE SCHEMATIC 3)  
MCCB BTHED 136-40  
EARTH LEAKAGE TRIP 40/ELR 2  
125 AT

## C4 CRANE No 2

MCCB BTHED 136-060  
60AT

## C5 MUD MIX PUMP No 2

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-150  
TRIP SET 6  
CONTACTOR SIZE 4  
O/L BCR123-F419C  
100 HP

## SECTION D

## D1 MUD PUMP No 1A BL

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
10 HP

## D2 MUD PUMP No 1B BL

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
10 HP

## D3 MUD PUMP No 1 R.O.

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-007  
TRIP SET 6  
CONTACTOR SIZE 1  
O/L BCR123-C5.26A  
3 HP

## D4 MUD PUMP No 1 C.O.

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-007  
TRIP SET 6  
CONTACTOR SIZE 1  
O/L BCR123-C5.26A  
3 HP

## D5 SUP/CHARGE PUMP No 1

DOL STARTER (SEE SCHEMATIC 2)  
MCCB BTEC 136-100  
TRIP SET 2  
CONTACTOR SIZE 3  
O/L BCR123-F43.0B  
30 HP

## SECTION E

## E1 MUD PUMP No 2A BL

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
10 HP

## E2 MUD PUMP No 2B BL

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
10 HP

## E3 MUD PUMP No 2 R.O.

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-007  
TRIP SET 6  
CONTACTOR SIZE 1  
O/L BCR123-C5.26A  
3 HP

## E4 MUD PUMP No 2 C.O.

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-007  
TRIP SET 6  
CONTACTOR SIZE 1  
O/L BCR123-C5.26A  
3 HP

## E5 SUP/CHARGE PUMP No 2

DOL STARTER (SEE SCHEMATIC 2)  
MCCB BTEC 136-100  
TRIP SET 2  
CONTACTOR SIZE 3  
O/L BCR123-F43.0B  
30 HP

## SECTION F

## F1 SPARE

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-007  
TRIP SET 6  
CONTACTOR SIZE 1  
O/L BCR123-C5.26A  
3 HP

## F2 SPARE

DOL STARTER (SEE SCHEMATIC 1)  
MCCB BTEC 136-030  
TRIP SET 4  
CONTACTOR SIZE 2  
O/L BCR123-C15.1B  
10 HP

## SPARE SPACE

## SPARE SPACE

## SPARE SPACE

BL- BLOWER  
RO- ROD OILER  
CO- CHAIN OILER

REV	DESCRIPTION	DATE	BY	USED ON
2	Site mods	2-12-83	MRB	
1	Remote trip relay added to schem 3	9-8-83	MRB	
0				

DRWN	RJN	DATE	25-2-81
CHKD			
APP.			
6070			

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ASSOCIATED DRAWINGS
WIRE LIST
SCHEMATICS



**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE			
460V MCC & DOL STARTER SCHEMATIC			
R/D No.	N110-9	DRG. No.	6070D069
CUSTOMER	FORASOL	REV.	2



CIRCUIT BREAKER (C300)

UV TRIP	BLUE	VB	PC1-20	180		
UV TRIP	BLUE	U10	PC7-11	234	TS1-1	246
AUX.1 NO	RED	1	PC1-18	178		
AUX.1 COM	WHITE	2	OL-13	230	L1-1	228
AUX.1 NC	BROWN/WHITE	3	#6-2	229		
AUX.2 NO	RED	4				
AUX.2 COM	WHITE	5	T88-2	236	PC7-7	236
AUX.2 NC	BROWN/WHITE	6	134	134		
AUX.3 NO	RED	7				
AUX.3 COM	WHITE	8				
AUX.3 NC	BROWN/WHITE	9				
AUX.4 NO	RED	10				
AUX.4 COM	WHITE	11				
AUX.4 NC	BROWN/WHITE	12				

[illegible]

**PC 3**  
**AUCTIONEERING CARD**

K5-C	255	1	↔	9	K5-A	21
K5-D	256	2	↔	10	K5-E	22
RL6B-7	357	3	↔	11		
RL6B-8	358	4	↔	12		
T84-10	259	5	↔	13	T84-21	28
T84-2	260	6	↔	14		
T84-4	261	7	↔	15		
K5+ (TOP)	262	8	↔	16		

3010063  
(P)627

Figure 1 is a schematic diagram of the control system for the 1000W power supply. It shows a central 1000W power supply unit with pins 7, 8, 9, and 4. Pin 7 is connected to a 100k resistor and a 100V source. Pin 8 is connected to a 100k resistor and a 100V source. Pin 9 is connected to a 100k resistor and a 100V source. Pin 4 is connected to a 100k resistor and a 100V source. The control system includes a 1000W power supply unit, a 100V source, and a 100k resistor. The control system is connected to the 1000W power supply unit via a 100k resistor and a 100V source.

MED1 PCI IN FIELD SUPPLY (T145)

IC + (3)	1	PCI - 3	306
MED + (5)	2	PCI - 12	310
IC - (3)	3	PCI - 6	307
MED - (3)	4	PCI - 13	311

MED1 IS CONNECTED DIRECTLY TO PCI IN FIELD SUPPLY CUBICLE.

**PCE VOLTAGE FEEDBACK**  
30:0042 (P3027)

Bus	Value
1	157
2	
3	
4	
5	
6	
7	
8	181
9	102
10	101
11	183
12	159

T3 (T100)

T2-1	160
PC1-3	163

1 CT  
2 750:1  
300A15A

PC2=7	1B1
PC2=11	1B2

**M1 (M27)**

MOVQ - 1(A)

VOLTS

SCALE = 0-1000

QUAD

DC MODULE (MZOIT)  
NOTE:- SHIELDS TO BE INDIVIDUALLY  
RUN TO RC1

VBR -	101	PC2-10	101
VBR +	102	PC2-8	102
VCA	103	T4-8	103
VCS	104	T4-9	104
VAS	105	T4-4	105
VSA	106	T4-7	106
VBC	107	T4-6	107
VAC	108	T4-5	108
DW REG	109	K1-2	109
	110		110
	111		111
CP LOW	112		112
CP REF	113		113
DW PT TH	114	T8B-10	114
QC PWRLIN	115	T8A-31	115
DW COM	116	X6-4	116
DW REF	117	T8B-9	117
	118		118

FUSE	1	TD26-1	236
SWITCH	2	FE2-1	239

TB 21-1	244	1	FUSE
FS 8-1	245	2	SWITCH

A + SCR

A - BCR

A +	1	140	140
	2		

142	142	1	CATH A-
		2	

GATE	3	139	139
------	---	-----	-----

141	141	3	GATE
-----	-----	---	------

FUSE	1	F51-2	23
SWITCH	2	F53-1	24

FS4-2	245	1	FUSE
FS6-1	246	2	SWITCH

**B + SCR**

B - BCR

8+	1	144	144
CATH	2		

140	140	are	1	CATH 8-
			2	

GATE	3	143	143
------	---	-----	-----

145	145	3	GATE
-----	-----	---	------

FUSB	1	F52-2	240
SWITCH	2	TS2b-2	241

FS5-2	246	1	FUSE
TS21-2	247	2	SWITCH

C + SCR

C- SCR

C+	1		140	140
CATH	2			

GATE	3	147	147
------	---	-----	-----

149	149	U	3	GATE
-----	-----	---	---	------

T5 BLOWER CONTACTOR SUPPLY		
1	F4-2	214
2	F5-2	215
3	F6-1	216
4	C1-B	224
	T4-10	187

136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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3	SITE MODS	2/28/83
2	AS COMMISSIONED	27-7-81
1	INTERCONNS. ADDED	12-2-81
NO.	DESCRIPTION	DATE

ON ARMS	DATE	THIS IS A PROPRIETARY DESIGN OF HILL GRAMAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS IMPOSSIBLE ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAMAM CONTROLS LTD.
S.A.N.	13-1-84	
CHECK		
APP :		
USED ON		ASSOCIATED CHAIRMAN WIRE LIST SCHEMATICS



**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BUCKS  
ENGLAND.  
TEL. (0494) 40121.

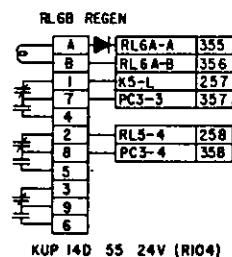
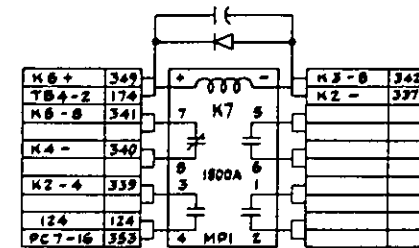
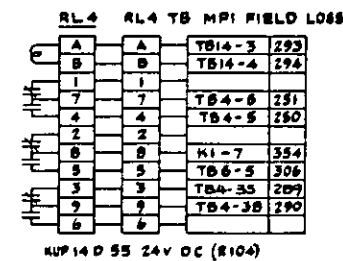
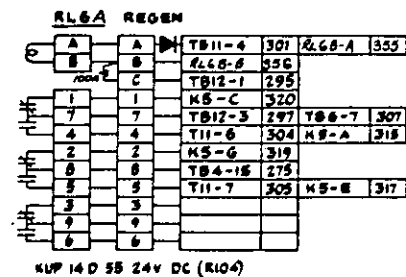
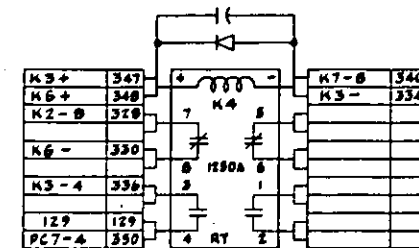
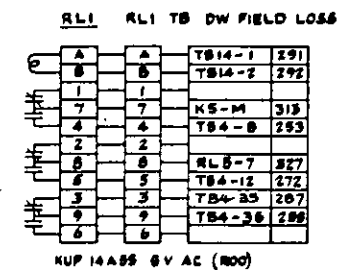
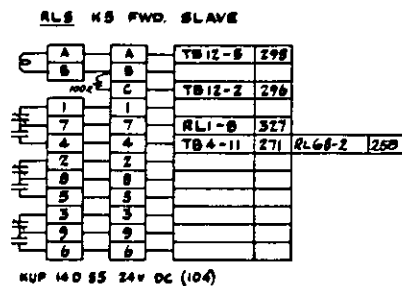
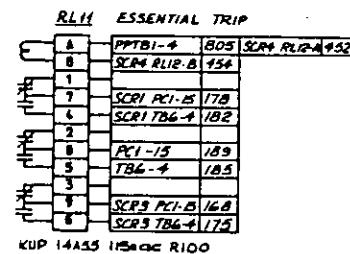
SCR2 SECTION - WIRE LIS

AND No	DRG No
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N 110-9 6070

CUSTOMER  
5084501

FEB 16 7 423



LAST WIRE NO. USED - 358  
WIRE NOS. NOT USED - 188, 169, 178, 185, 189, 190, 195, 197, 198, 200, 265, 266, 268-270, 329.

60700072

SHT. 1 OF 2 SHTS.

## TB4 SCR INTERCONNECTION

1TB4-1	421	4TB4-1	461	+60V (1)	1	PC3-6	260		
2TB4-2	422	4TB4-2	462	+60V (2)	2	PC3-7	261	K7+	174
3TB4-3	423	4TB4-3	463	+60V (3)	3	PC3-14	268		
4TB4-4	424	4TB4-4	464	+60V (4)	4	PC3-15	269		
5TB4-5	425	4TB4-5	465	MPF C/L IN	5	RL4-8	291		
6TB4-6	426	4TB4-6	466	MPF C/L OUT	6	RL4-9	290		
7TB4-7	427	4TB4-7	467	DWB C/L IN	7	TC6-7	272		
8TB4-8	428	4TB4-8	468	DWB C/L OUT	8	TC6-8	273		
9TB4-9	429	4TB4-9	469	DWB C/L IN	9	K2-7	274	PC7-9	198
10TB4-10	430	4TB4-10	470	DWA C/L	10				
11TB4-11	431	4TB4-11	471	DWA C/L	11				
12TB4-12	432	4TB4-12	472	DWA C/L	12				
13TB4-13	433	4TB4-13	473	DWA C/L	13				
14TB4-14	434	4TB4-14	474	DWA C/L	14				
15TB4-15	435	4TB4-15	475	DWA C/L	15				
16TB4-16	436	4TB4-16	476	DWA C/L	16				
17TB4-17	437	4TB4-17	477	DWA C/L	17				
18TB4-18	438	4TB4-18	478	DWA C/L	18				
19TB4-19	439	4TB4-19	479	DWA C/L	19				
20TB4-20	440	4TB4-20	480	DWA C/L	20				
21TB4-21	441	4TB4-21	481	DWA C/L	21				
22TB4-22	442	4TB4-22	482	DWA C/L	22				
23TB4-23	443	4TB4-23	483	DWA C/L	23				
24TB4-24	444	4TB4-24	484	DWA C/L	24				
25TB4-25	445	4TB4-25	485	DWA C/L	25				
26TB4-26	446	4TB4-26	486	DWA C/L	26				
27TB4-27	447	4TB4-27	487	DWA C/L	27				
28TB4-28	448	4TB4-28	488	DWA C/L	28				
29TB4-29	449	4TB4-29	489	DWA C/L	29				
30TB4-30	450	4TB4-30	490	DWA C/L	30				
31TB4-31	451	4TB4-31	491	DWA C/L	31				
32TB4-32	452	4TB4-32	492	DWA C/L	32				
33TB4-33	453	4TB4-33	493	DWA C/L	33				
34TB4-34	454	4TB4-34	494	DWA C/L	34				
35TB4-35	455	4TB4-35	495	DWA C/L	35				
36TB4-36	456	4TB4-36	496	DWA C/L	36				
37TB4-37	457	4TB4-37	497	DWA C/L	37				
38TB4-38	458	4TB4-38	498	DWA C/L	38				
39TB4-39	459	4TB4-39	499	DWA C/L	39				
40TB4-40	460	4TB4-40	500	DWA C/L	40				

## TB4 FIELD LOSS

2TB4-1	521	4TB4-1	511	RT FIELD LOSS	1	RL3A-A	250
2TB4-2	522	4TB4-2	512	DW FIELD LOSS	2	RL3A-B	251
2TB4-3	523	4TB4-3	513	DW RT COM	3		
2TB4-4	524	4TB4-4	514	MPF FIELD LOSS	4	RL4-A	252
2TB4-5	525	4TB4-5	515	MPF FIELD LOSS	5	RL4-B	253
2TB4-6	526	4TB4-6	516	MPF FIELD LOSS	6		

## TB6 TO DRILLERS CONSOLE

1	PC1-32	192
2	CB-4	235
3	TC21-3	249
4	SC22-RL1-6	175
5	RL4-4	209
6	PC7-14	312
7	PC7-8	310
8	PC7-12	311
9	PC7-2	308
10	PC7-6	309
11	PC7-10	313
12	PC7-14	312
13	PC7-18	313
14	PC7-22	314
15	PC7-26	315
16	PC7-30	316
17	PC7-34	317
18	PC7-38	318
19	PC7-42	319
20	PC7-46	320
21	PC7-50	321
22	PC7-54	322
23	PC7-58	323
24	PC7-62	324
25	PC7-66	325
26	PC7-70	326
27	PC7-74	327
28	PC7-78	328
29	PC7-82	329
30	PC7-86	330
31	PC7-90	331
32	PC7-94	332
33	PC7-98	333
34	PC7-102	334
35	PC7-106	335
36	PC7-110	336
37	PC7-114	337
38	PC7-118	338
39	PC7-122	339
40	PC7-126	340
41	PC7-130	341
42	PC7-134	342
43	PC7-138	343
44	PC7-142	344
45	PC7-146	345
46	PC7-150	346
47	PC7-154	347
48	PC7-158	348
49	PC7-162	349
50	PC7-166	350
51	PC7-170	351
52	PC7-174	352
53	PC7-178	353
54	PC7-182	354
55	PC7-186	355
56	PC7-190	356
57	PC7-194	357
58	PC7-198	358
59	PC7-202	359
60	PC7-206	360
61	PC7-210	361
62	PC7-214	362
63	PC7-218	363
64	PC7-222	364
65	PC7-226	365
66	PC7-230	366
67	PC7-234	367
68	PC7-238	368
69	PC7-242	369
70	PC7-246	370
71	PC7-250	371
72	PC7-254	372
73	PC7-258	373
74	PC7-262	374
75	PC7-266	375
76	PC7-270	376
77	PC7-274	377
78	PC7-278	378
79	PC7-282	379
80	PC7-286	380
81	PC7-290	381
82	PC7-294	382
83	PC7-298	383
84	PC7-302	384
85	PC7-306	385
86	PC7-310	386
87	PC7-314	387
88	PC7-318	388
89	PC7-322	389
90	PC7-326	390
91	PC7-330	391
92	PC7-334	392
93	PC7-338	393
94	PC7-342	394
95	PC7-346	395
96	PC7-350	396
97	PC7-354	397
98	PC7-358	398
99	PC7-362	399
100	PC7-366	400

## T4 DC REGULATOR (T135)

1	F1-2	211
2	F2-2	212
3	F3-2	213
4	F4-2	214
5	F5-2	215
6	F6-2	216
7	F7-2	217
8	F8-2	218
9	F9-2	219
10	F10-2	220
11	F11-2	221
12	F12-2	222
13	F13-2	223
14	F14-2	224
15	F15-2	225
16	F16-2	226
17	F17-2	227
18	F18-2	228
19	F19-2	229
20	F20-2	230
21	F21-2	231
22	F22-2	232
23	F23-2	233
24	F24-2	234
25	F25-2	235
26	F26-2	236
27	F27-2	237
28	F28-2	238
29	F29-2	239
30	F30-2	240
31	F31-2	241
32	F32-2	242
33	F33-2	243
34	F34-2	244
35	F35-2	245
36	F36-2	246
37	F37-2	247
38	F38-2	248
39	F39-2	249
40	F40-2	250
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42	F42-2	252
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44	F44-2	254
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84	F84-2	294
85	F85-2	295
86	F86-2	296
87	F87-2	297
88	F88-2	298
89	F89-2	299
90	F90-2	300
91	F91-2	301
92	F92-2	302
93	F93-2	303
94	F94-2	304
95	F95-2	305
96	F96-2	306
97	F97-2	307
98	F98-2	308
99	F99-2	309
100	F100-2	310

## T5 BLOWER CONTACTOR

1	F4-2	214
2	F5-2	215
3	F6-2	216
4	F7-2	217
5	F8-2	218
6	F9-2	219
7	F10-2	220
8	F11-2	221
9	F12-2	222
10	F13-2	223
11	F14-2	224
12	F15-2	225
13	F16-2	226
14	F17-2	227
15	F18-2	228
16	F19-2	229
17	F20-2	230
18	F21-2	231
19	F22-2	232
20	F23-2	233
21	F24-2	234
22	F25-2	235
23	F26-2	236
24	F27-2	237
25	F28-2	238
26	F29-2	239
27	F30-2	240
28	F31-2	241
29	F32-2	242
30	F33-2	243
31	F34-2	244
32	F35-2	245
33	F36-2	246
34	F37-2	247
35	F38-2	248
36	F39-2	249
37	F40-2	250
38	F41-2	251
39	F42-2	252
40	F43-2	253
41	F44-2	254
42	F45-2	255
43	F46-2	256
44	F47-2	257
45	F48-2	258
46	F49-2	259
47	F50-2	260
48	F51-2	261
49	F52-2	262
50	F53-2	263
51	F54-2	264
52	F55-2	265
53	F56-2	266
54	F57-2	267
55	F58-2	268
56	F59-2	269
57	F60-2	270
58	F61-2	271
59	F62-2	272
60	F63-2	273
61	F64-2	274
62	F65-2	275
63	F66-2	276
64	F67-2	277
65	F68-2	278
66	F69-2	279
67	F70-2	280
68	F71-2	281
69	F72-2	282
70	F73-2	283
71	F74-2	284
72	F75-2	285
73	F76-2	286
74	F77-2	287
75	F78-2	288
76	F79-2	289



TB4 SCR INTERCONNECTION

3TB4-1	461	+60V (1)	1		
3TB4-2	462	+60V (2)	2		
3TB4-3	463	+60V (3)	3		
3TB4-4	464	+60V (4)	4		
3TB4-5	465	HPE C/L IN	5		
3TB4-6	466	HPE C/L IN	6		
3TB4-7	467	DWA C/L IN	7		
3TB4-8	468	DWA C/L IN	8		
3TB4-9	469	DWA C/L IN	9		
3TB4-10	470	DWA C/L IN	10		
3TB4-11	471	DWA C/L IN	11		
3TB4-12	472	DWA C/L IN	12		
3TB4-13	473	DWA C/L IN	13		
3TB4-14	474	DWA C/L IN	14		
3TB4-15	475	DWA C/L IN	15		
3TB4-16	476	DWA C/L IN	16		
3TB4-17	477	DWA C/L IN	17		
3TB4-18	478	DWA C/L IN	18		
3TB4-19	479	DWA C/L IN	19		
3TB4-20	480	DWA C/L IN	20		
3TB4-21	481	DWA C/L IN	21		
3TB4-22	482	DWA C/L IN	22		
3TB4-23	483	DWA C/L IN	23		
3TB4-24	484	DWA C/L IN	24		
3TB4-25	485	DWA C/L IN	25		
3TB4-26	486	DWA C/L IN	26		
3TB4-27	487	DWA C/L IN	27		
3TB4-28	488	DWA C/L IN	28		
3TB4-29	489	DWA C/L IN	29		
3TB4-30	490	DWA C/L IN	30		
3TB4-31	491	DWA C/L IN	31		
3TB4-32	492	DWA C/L IN	32		
3TB4-33	493	DWA C/L IN	33		
3TB4-34	494	DWA C/L IN	34		
3TB4-35	495	DWA C/L IN	35		
3TB4-36	496	DWA C/L IN	36		
3TB4-37	497	DWA C/L IN	37		
3TB4-38	498	DWA C/L IN	38		
3TB4-39	499	DWA C/L IN	39		
3TB4-40	500	DWA C/L IN	40		

TB14 (FIELD LOSS)

3TB4-1	501	3TB14-1	511	RT FIELD LOSS	1
3TB4-2	502	3TB14-2	512	OW FIELD LOSS	2
3TB4-3	503	3TB14-3	513	OW FIELD LOSS	3
3TB4-4	504	3TB14-4	514	OW FIELD LOSS	4
3TB4-5	505	3TB14-5	515	OW FIELD LOSS	5
3TB4-6	506	3TB14-6	516	OW FIELD LOSS	6

TB11

TB12

138	139	1	2	3	4
138	139	1	2	3	4
138	139	1	2	3	4
138	139	1	2	3	4

TB6 TO DRILLERS CONSOLE

+14V (4)	1	PC1-32	192		
CONV PS (4)	2	CB-4	235		
EMERG OFF	3	TB21-3	249		
EMERG OFF	4	RL2-4	175		
HPE C/L IN	5	TB4-5	197	PC7-14	312
HPE REF	6	122	122		
DWA FWD C/L	7	TB4-9	255	PC7-15	311
DWA REV C/L	8	TB4-10	256	PC7-12	310
OW REF	9	117	117		
OW PT TH	10	114	114		
RT FWD C/L	11	TB4-18	267	PC7-2	308
RT REV C/L	12	TB4-19	268	PC7-6	309
RT LIM	13	130	130		
RT I LIM	14	128	128		
SCR I	15	PC1-7	167		
GROUND	16	PC1-26	186		
GEN 4 ON	17	4TB1-31	808		
BLANG AMP	18	BLANG LIMIT	262		
COMMON	20	PC1-24	184	PC7-20	254

TO GENERATOR +  
INTERCONNECTIONS  
(SEE DOB)

TB DC REGULATOR (T135)

1	F1-2	211
2	F2-2	212
3	F3-2	213
4	108	108
5	108	108
6	107	107
7	108	108
8	108	108
9	104	104
10	TB-4	187
11	PC1-10	170
12	PC1-11	171
13	PC1-12	172

300A518

TB BLOWER CONTACTOR

1	TB-2	214
2	F8-2	215
3	F8-2	216
4	C1-8	226
5	T4-10	187

300A517 (T150)

CIRCUIT BREAKER (C300)

UV TRIP	BLUE	UB	PC1-20	180
UV TRIP	BLUE	UB	PC1-11	224
AUX 1 NO	RED	1	PC1-18	178
AUX 1 NO	WHITE	2	OL1-12	220
AUX 1 NC	RED	3	F6-2	229
AUX 1 NO	RED	4	TB6-2	258
AUX 1 NO	WHITE	5	124	134
AUX 1 NC	RED	6	TB6-8	259
AUX 1 NO	WHITE	7	TB6-11	257
AUX 1 NC	RED	8	TB6-12	258
AUX 1 NO	WHITE	9	TB6-13	259
AUX 1 NC	RED	10	TB6-14	260
AUX 1 NO	WHITE	11	TB6-15	261
AUX 1 NC	RED	12	TB6-16	262

PC1 AUX PCB (396V)

T1-2	161	1	1A	165	155
T2-2	162	2	1B	166	156
T3-2	163	3	1C	167	157
T4-2	164	4	1D	168	158
T5-2	165	5	1E	169	159
T6-2	166	6	1F	170	160
T7-2	167	7	1G	171	161
T8-2	168	8	1H	172	162
T9-2	169	9	1I	173	163
T10-2	170	10	1J	174	164
T11-2	171	11	1K	175	165
T12-2	172	12	1L	176	166
T13-2	173	13	1M	177	167
T14-2	174	14	1N	178	168
T15-2	175	15	1O	179	169
T16-2	176	16	1P	180	170
T17-2	177	17	1Q	181	171
T18-2	178	18	1R	182	172
T19-2	179	19	1S	183	173
T20-2	180	20	1T	184	174

PC2 VOLTAGE FEEDBACK

1	1A	165	155
2	1B	166	156
3	1C	167	157
4	1D	168	158
5	1E	169	159
6	1F	170	160
7	1G	171	161
8	1H	172	162
9	1I	173	163
10	1J	174	164
11	1K	175	165
12	1L	176	166
13	1M	177	167
14	1N	178	168
15	1O	179	169
16	1P	180	170
17	1Q	181	171
18	1R	182	172
19	1S	183	173
20	1T	184	174

DC MODULE (H201)

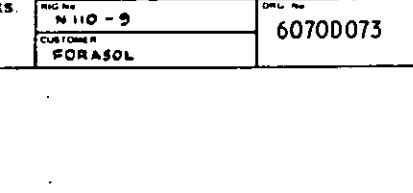
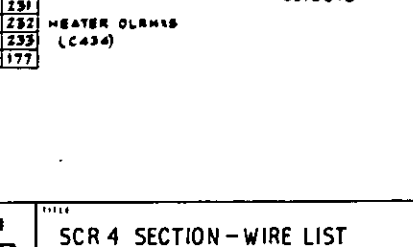
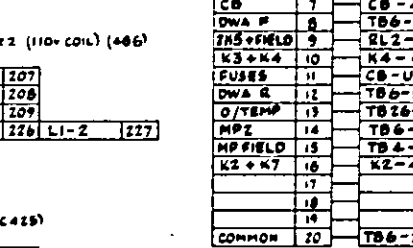
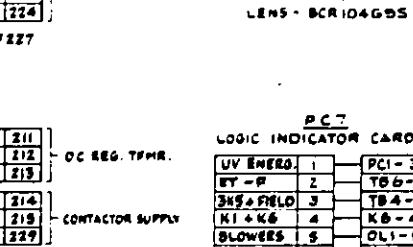
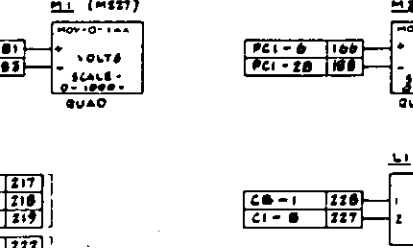
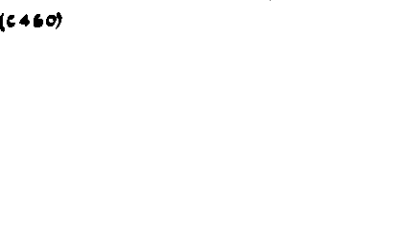
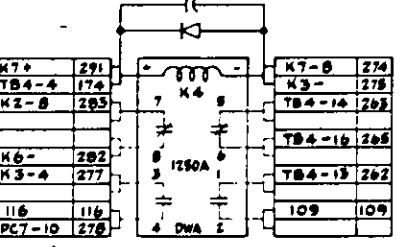
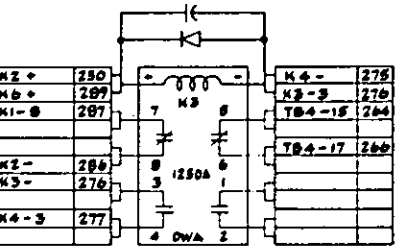
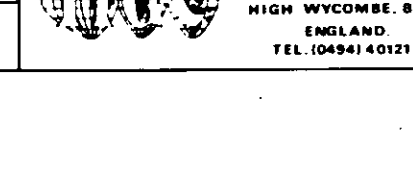
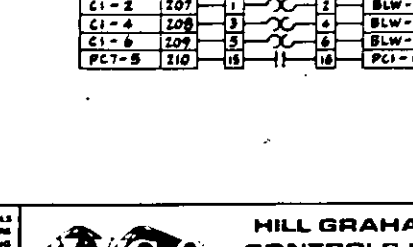
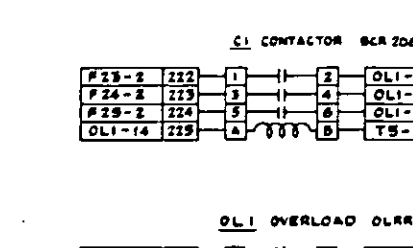
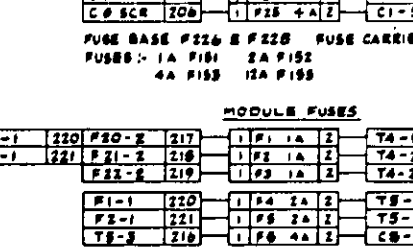
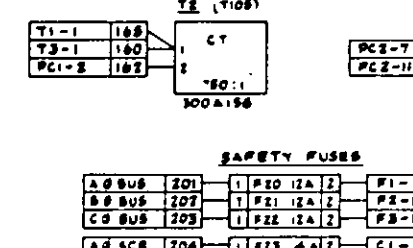
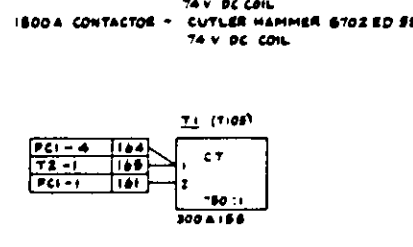
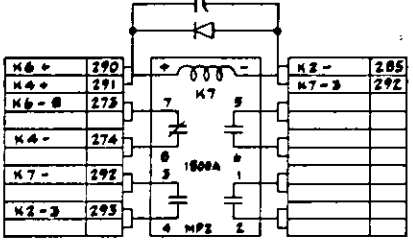
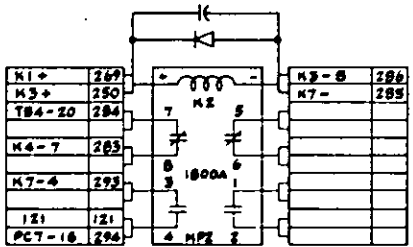
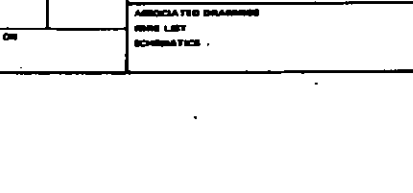
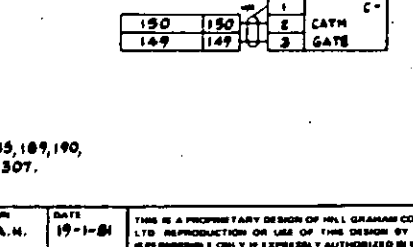
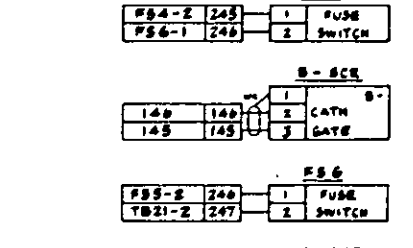
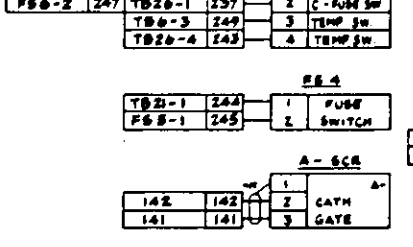
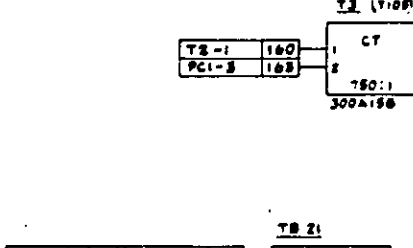
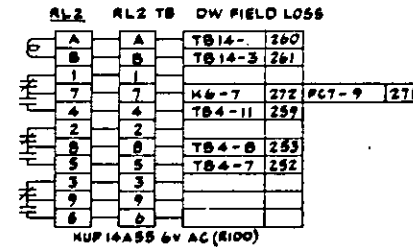
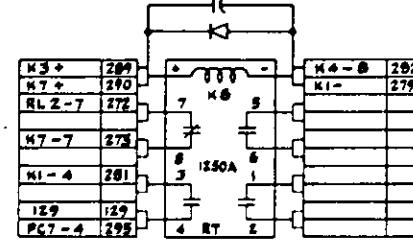
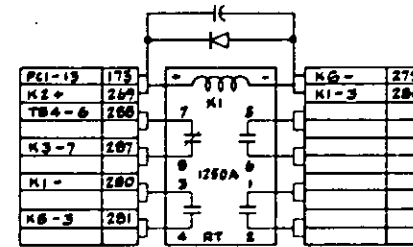
NOTE: SHIELDS TO BE INDIVIDUALLY  
RUN TO PC1

VBR -	101	PC2-10	101
VBR +	102	PC2-8	102
VCA	103	T4-8	103
VCB	104	T4-9	104
VAB	105	T4-4	105
VBA	106	T4-7	106
VBC	107	T4-6	107
VAC	108	T4-5	108
DW REF	109	T4-2	109
CP CONT	110	T4-1	110
CP REF	111	T4-3	111
OW PT TH	112	T4-10	112
DC FWD C/L	113	T4-11	113
OW REF	114	T4-12	114
OW LIM	115	T4-13	115
OW CONT	116	T4-14	116
DW REF	117	T4-15	117
OW REF	118	T4-16	118

LAST WIRE NO USED - 312

WIRE NOS. NOT USED - 168, 169, 178, 182, 185, 189, 190, 193, 195, 198, 200, 296 - 307.

1	DATE	22-05	MD	DATE	19-01
2	BY	27-08	MD	DATE	19-01
3	INTERCOMMS	13-08	MD	DATE	19-01
4	DESCRIPTION	DATE	BY	USED ON	

HILL GRAHAM  
CONTROLS LTD

HIGH WYCOMBE, BEDS.

ENGLAND.

TEL. (0494) 40121.

SCR 4 SECTION - WIRE LIST

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ITEM NO.	DESCRIPTION	NO. OF

# TBI A/C GENERATOR INTERCONNECTION

SLAVE	1	540	540
SLAVE	2	541	541
SLAVE	3	542	542
M.S. LOCK	4	544	544
MASTER KEY	5	545	545
SHIELD	6	546	546
1 TOTAL	7	548	548
1 REAR	8	549	549
SHIELD	9	550	550
+12V	10	54-DK2	418
-12V	11	54-DK2	418
115	12	54-DK2	418
115	13	54-DK2	418
COMMON	14	54-DK2	418
POWER LINE	15	54-DK2	418
ENGINE FAULT	16	54-DK2	418
A/C ON	17	54-DK2	418
B/C ON	18	54-DK2	418
A/C OFF	19	54-DK2	418
B/C OFF	20	54-DK2	418
FMI	21	54-DK2	418
FMI	22	54-DK2	418
SWITCH ON	23	54-DK2	418
SWITCH OFF	24	54-DK2	418
SHUT DOWN	25	54-DK2	418
SHUT DOWN	26	54-DK2	418
COMMON	27	54-DK2	418
COMMON	28	54-DK2	418
COMMON	29	54-DK2	418
COMMON	30	54-DK2	418
GEN 4 ON	31	54-DK2	418
CB SHUT DOWN	32	54-DK2	418

# TBI TO GENERATOR

THROTTLES	1	540	540
THROTTLES	2	541	541
TACH +	3	542	542
TACH -	4	544	544
SHIELD	5	545	545

# TBI

EXCITER	1	PC1-1	435	25-1	442
EXCITER	2	PC1-2	448	M7	425
SP HEATER	3	PC1-3	450	PC2-19	457
SP HEATER	4	PC1-4	451	PC2-20	458
-12V (ON)	5	PC2-2	432	PC1-3	440
PC SHUT DOWN	6	PC2-3	433	PC1-4	441
HIGH AIR TEMP	7	PC2-4	434	PC2-5	435
LOW WATER LEVEL	8	PC2-5	436	PC2-6	437
LOW OIL PRESS	9	PC2-6	437	PC2-7	438
WATER FLOW	10	PC2-7	439	PC2-8	440
OVERSPEED	11	PC2-8	441	PC2-9	442
SHUT DOWN	12	PC2-9	443	PC2-10	444
SHUT DOWN	13	PC2-10	445	PC2-11	446
LOW OIL PRESS	14	PC2-11	447	PC2-12	448
LOW OIL PRESS	15	PC2-12	449	PC2-13	450
METALLIC PARTICLES	16	PC2-13	451	PC2-14	452
COOLANT STOPPED	17	PC2-14	453	PC2-15	454
SHUT DOWN	18	PC2-15	455	PC2-16	456
SHUT DOWN	19	PC2-16	457	PC2-17	458
SHUT DOWN	20	PC2-17	459	PC2-18	460

# TBI

+12V	1	PC1-1	435	25-1	442
REV. PWR	2	PC1-2	448	M7	425
LOW OIL PRESS	3	PC1-3	450	PC2-19	457
ALARM SH	4	PC1-4	451	PC2-20	458
ALARM OUT	5	PC2-2	432	PC1-3	440
ALARM LINE	6	PC2-3	433	PC1-4	441
+12V	7	PC2-4	434	PC2-5	435
GROUND	8	PC2-5	436	PC2-6	437
GROUND	9	PC2-6	437	PC2-7	438
GROUND	10	PC2-7	439	PC2-8	440

# TBI TO GENERATOR

RTD-1	1	52-A	304
RTD-1 COM	2	52-C1	341
RTD METER	3	52-B	318
RTD-2	4	52-A2	305
RTD-2 COM	5	52-C2	342
RTD METER	6	52-B	318
RTD-3	7	52-A3	306
RTD-3 COM	8	52-C3	343
RTD METER	9	52-B	318
RTD-4	10	52-A4	307
RTD-4 COM	11	52-C4	344
RTD METER	12	52-B	318
RTD-5	13	52-A5	308
RTD-5 COM	14	52-C5	345
RTD METER	15	52-B	318
RTD-6	16	52-A6	309
RTD-6 COM	17	52-C6	346
RTD METER	18	52-B	318
SPARE	19	52-C7	347
SPARE	20	52-C8	348

# TBI

HEATER SUPPLY 220V DISTRIBUTION PANEL	1	52-A	304
HEATER SUPPLY 220V DISTRIBUTION PANEL	2	52-C1	341
HEATER SUPPLY 220V DISTRIBUTION PANEL	3	52-B	318
HEATER SUPPLY 220V DISTRIBUTION PANEL	4	52-A2	305
HEATER SUPPLY 220V DISTRIBUTION PANEL	5	52-C2	342
HEATER SUPPLY 220V DISTRIBUTION PANEL	6	52-B	318
HEATER SUPPLY 220V DISTRIBUTION PANEL	7	52-A3	306
HEATER SUPPLY 220V DISTRIBUTION PANEL	8	52-C3	343
HEATER SUPPLY 220V DISTRIBUTION PANEL	9	52-B	318
HEATER SUPPLY 220V DISTRIBUTION PANEL	10	52-A4	307
HEATER SUPPLY 220V DISTRIBUTION PANEL	11	52-C4	344
HEATER SUPPLY 220V DISTRIBUTION PANEL	12	52-B	318
HEATER SUPPLY 220V DISTRIBUTION PANEL	13	52-A5	308
HEATER SUPPLY 220V DISTRIBUTION PANEL	14	52-C5	345
HEATER SUPPLY 220V DISTRIBUTION PANEL	15	52-B	318
HEATER SUPPLY 220V DISTRIBUTION PANEL	16	52-A6	309
HEATER SUPPLY 220V DISTRIBUTION PANEL	17	52-C6	346
HEATER SUPPLY 220V DISTRIBUTION PANEL	18	52-B	318
HEATER SUPPLY 220V DISTRIBUTION PANEL	19	52-C7	347
HEATER SUPPLY 220V DISTRIBUTION PANEL	20	52-C8	348

# SAFETY FUSES

A GEN BUS NO1	1	F1	12A	2	F4-1	104
B GEN BUS NO2	1	F2	12A	2	F5-1	105
C GEN BUS NO3	1	F3	12A	2	F6-1	106

# RL3

A	781-52	135
B	781-13	136
1	RL2-8	470
2	52B	528
3		
4		
5		
6		

OP MASS 175 AC (106)

8 US - UNSWITCHED  
5 - SWITCHED

NOTE - ADD 1 SPARE WIRE FROM RL1 TO TBI (TBI)  
ADD 1 SPARE WIRE FROM TBI TO PC2

# C1.1 A (300A502) T120

1	51-A10	200
2	520	520

# C1.2 B (300A502) T120

1	51-A4	201
2	522	522

# C1.3 C (300A502) T120

1	51-C10	202
2	524	524

LAST WIRE No - 462  
WIRE No's NOT USED -

156-159, 162, 163, 166, 168-170, 174, 177,  
183-189, 205, 210, 211, 213-239, 319, 324, 325, 328-335,  
337-355, 402.

WIRE No's

400 - DC  
100 - A.C. 110  
200 - C.T.'S  
300 - TEMP. METER

REV.	15-12-80
DATE	
BY	
APPROVED	



HILL GRAHAM  
CONTROLS LTD  
HISWYCONGE BACKS  
ENGLAND  
TEL. (0800) 600000

REVISION	1	15-12-80
REVISION	2	15-12-80
REVISION	3	15-12-80
REVISION	4	15-12-80

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STRICTLY PROHIBITED.

4	COMMISSIONING MODE	11-4-83	LAC
3	DATE MODIFIED	2-12-83	NOB
2	GEN 4 COMMISSIONING MODE	11-4-83	NOB
1	RL3 + GEN 4 ADDED	5-8-83	SAH
0	DESCRIPTION	DATE	BY

GENERATOR WIRE LIST GEN. 1-4.

REV.

REV.

6070D076  
SHT 2 of 2

97B: AC GENERATOR INTERCONNECTIONS

47B-2	781	27B1 - 4	791	SLAVE	1	340	340	
47B-3	780	27B1 - 3	790	SLAVE	2	341	341	
47B-1	800			SLAVE	3	343	343	
47B-5	782	27B1 - 5	792	M'S LOGIC	4	344	344	CB - 7 408
				MASTER SLAVE	5	349	349	
				SHIELD	6			
47B1-7	785	27B1 - 7	793	I TOTAL	7	329	329	
47B1-8	784	27B1 - 8	794	I REAL	8	334	334	
				SHIELD	9			
47B1-10	785	27B1 - 10	795	112V	10	54-D12	440	
47B1-11	786	27B1 - 11	796	-12V	11	54-D8	419	
47D1-12	787	27B1 - 12	797	112V	12			
47D1-13	788	27B1 - 13	798	115V AC	13	7B3-14	129	RL3-B 136
				GEN ON	14	CB-3	171	37B1-80 752
				POWER LIMIT	15			
47B1-16	789	27B1 - 16	799	ENG/CAUT	16	7B10-C	409	
47B1-17	790	27B1 - 17	790	A# GEN	17	55-B	151	
47B1-18	791	27B1 - 18	791	B# GEN	18	53-A4	134	
47B1-19	792	27B1 - 19	792	A1# BUS 1/8	19	58-A10	131	
47B1-20	793	27B1 - 20	793	A1# BUS 5	20	55-B1	149	
47B1-21	794	27B1 - 21	794	A# FM	21	35-B5	153	
				FML	22	55-A6	146	
47B1-22	795	27B1 - 22	795	FML2	23	55-B6	155	
47B1-24	796	27B1 - 24	796	SINC ODY	24	53-D1	154	
47B1-25	797	27B1 - 25	797	SINC ODY	25	55-D7	430	
47B1-26	798	27B1 - 26	798	SHUT DOWN -HY	26	7B6-1P	147	
47B1-27	799	27B1 - 27	799	SHUT DOWN HY2	27	7B6-13	143	RL2-5 428
				GEN 1 ON	28			
				GEN 2 ON	29			
				GEN 3 ON	30	37B1-14	752	
				GEN 4 ON	31			
				CB SHUTDOWN	32	RL3-A	735	
47B1-32	802	27B1 - 32	803					

T82 TO DEILLERS CONSOLE T83  
VIA CABLE 804

TB15		
FDR SHUNT TRIP	1	SCR4 RL12-2 189
	2	SCR4 RL12-8 190
	3	TB1-12 191
FDR SHUNT TRIP	4	TB1-13 192

**GENERATOR 4**

## 4TB1 AC GENERATOR INTERCONNECTIONS

3781 - 4	800	SLAVE	1	540	520	
3781 - 2	781	SLAVE	2	541	521	
3781 - 3	780	SLAVE	3	542	522	
		MS LOGIC	4	544	524	
3781 - 5	782	MASTER SLAVE	5	543	523	CB - 7 408
		SHIELD	6			
3781 - 7	783	I TOTAL	7	525	525	
3781 - 8	784	I REAL	8	524	524	
		SHIELD	9			
3781 - 10	785	I 12V	10	54 - D12	448	
3781 - 11	786	-12V	11	54 - D8	419	
3781 - 12	787	11.5V	12	TBI - 1	804	} TO PLUS PANEL (SEE LEFT)
3781 - 13	788	11.5V	13	783 - 14	129	
		GEN ON	14	CB - 9	171	
		POWER LIMIT	15			
3781 - 16	789	ENG SAKT	16	TBIO - 6	409	CL 10 - A (B11) (PLUS PANEL)
3781 - 17	790	A GEN	17	55 - B1	161	
3781 - 18	791	A GEN	18	53 - A4	134	
3781 - 19	792	A1 BUS	19	53 - A2	131	
3781 - 20	793	A1 BUS	20	55 - B1	149	
3781 - 21	794	A FM	21	55 - B2	153	
3781 - 23	795	FM 1	22	55 - A6	146	
		FM 2	23	55 - A6	166	
3781 - 24	796	SINCH OXID	24	55 - D1	154	
3781 - 25	797	SINCH OXID	25	55 - D7	480	
3781 - 26	798	SHUT DOWN - 1	26	786 - 12	147	
3781 - 27	799	SHUT DOWN - 2	27	786 - 13	148	RL 2 - 6 428
		GEN 1 ON	28			
		GEN 2 ON	29			
		GEN 3 ON	30			
		GEN 4 ON	31	4781 - 14	752	
		CB SHUTDOWN	32	RL 3 - A	135	
TO SCR 4		3CR4 TBL-17	808			
(SEE DOTS)		3781 - 32	802			

SAFETY FUSES									
F1 - 1	400	70 800V 600 250T 4H	600	1	580	12A	2	A#BUS	600
F2 - 1	60T	70 800V 600 250T 4H	600	1	121	12A	2	B#BUS	600
		70 800V 600 250T 4H	600	1	122	12A	2	C#BUS	600

### SAFETY FUSES

[illegible]**RAPES**

F <sub>1</sub> - 1	600	F <sub>10</sub> - 1	600	1	F <sub>1</sub> 1A 2	76 - 1	611
F <sub>9</sub> - 1	600	F <sub>21</sub> - 1	600	1	F <sub>2</sub> 1A 2	76 - 2	612
		781-79	600	1	F <sub>3</sub> 2A 2	76 - 3	613
		F <sub>1</sub> - 1	600	1	F <sub>4</sub> 08A 2	73 - 1	604
		F <sub>2</sub> - 1	600	1	F <sub>5</sub> 08A 2	73 - 2	605

**T5 POWER UNIT SUPPLY.**

1	FA-2	64		
2	FB-2	65		
3	AC11-1	66		
4	AC11-9	67	GAID BUS	500
5	AC11-3	68		

(300A169) (T102)

PC11 POWER LIMIT (P3B3T)

REV AC	1		75 - 3	606
-REV	2			
REV AC	3		75 - 5	608
REV	4			
K1 +	5		600Y GROUND FAULT TB15-7	632
K1 -	6		600Y GROUND FAULT TB15-B	634
K2 +	7			
METER OUT	8		SC22 TB6-17	627
OY	9		75 - 4	677
1. OUT	10		27B1 - 7	620
K1	11		27B1 - 8	630
OUT	12		30U TB4-7	681

## T6 BUS PT.

1	F1 - 2	611
2	F2 - 2	612
3	F3 - 2	613
4	2781-18	619
	GND BUS	620

300506 (T125)

CLASS M2B	DATE 5-2-61	THIS IS A PROPRIETARY DESIGN OF HILL GRAMMAR CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED. 25417 OF 17 MAY 1960 12530 BY OTHERS IS PROHIBITED.
CHRG		
APP. 1		
DEALS		TOL-BALANCE- PRACTICABLE 1,000 2 ONE PLACE 1,000 3 ONE PLACE 1,000 4 ONE PLACE 1,000
		5 ONE PLACE 1,000 6 ONE PLACE 1,000 7 ONE PLACE 1,000 8 ONE PLACE 1,000 9 ONE PLACE 1,000

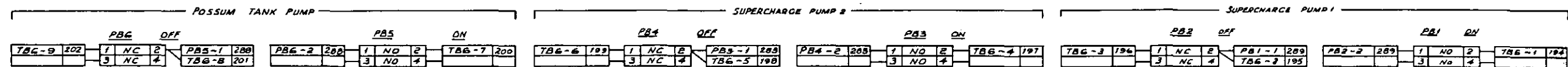


**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, Bucks.  
ENGLAND.  
TEL (0494) 40121.

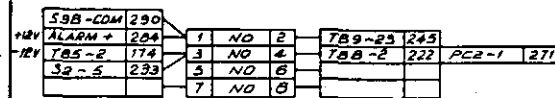
GENERATOR INTERCONNECTION - WIRE LIST

DOC No.	DOC No.	REV.
W10-2	607000B1	.6
CUSTOMER		
FORASOL		



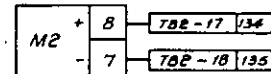


## S11 ALARM SILENCE/LAMP TEST

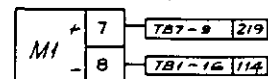


BOOT66PA (L151)  
BOOTNG (L155)

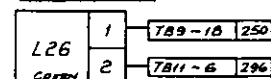
## POWER LIMIT (M150)



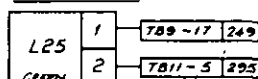
## ROTARY TABLE 1 (M109)



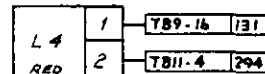
## CHARGE PUMP 1



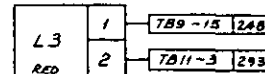
## POSSUM TANK



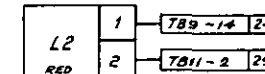
## GEN 4



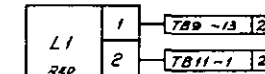
## GEN 3



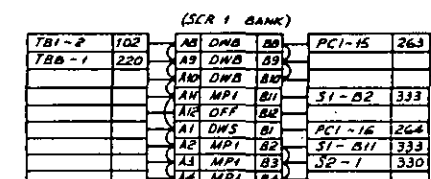
## GEN 2



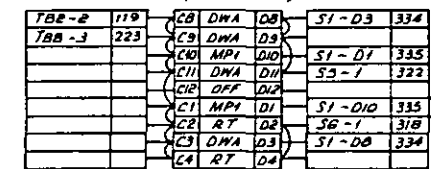
## GEN 1



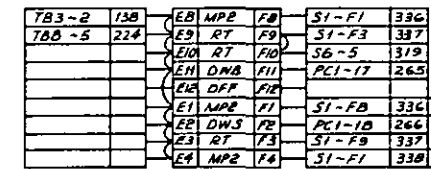
## S1 ASSIGNMENT SWITCH (S339)



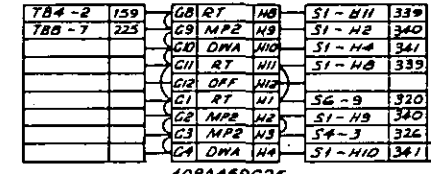
## (SCR 1 BANK)



## (SCR 3 BANK)

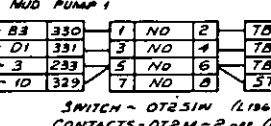


## (SCR 4 BANK)

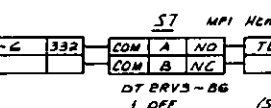


## 408459G25

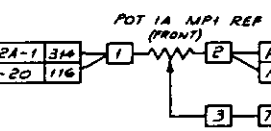
## S2 MUD PUMP 1



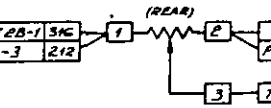
## SWITCH - DT251M (L196)



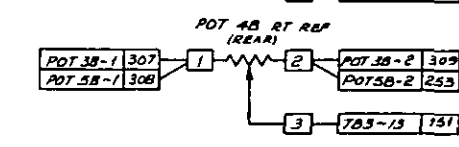
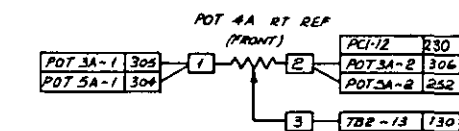
## DT251M-B6 (S302)



## POT 1B MPI REF (REAR)

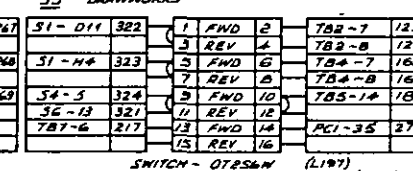


## 1K DUAL POT R995

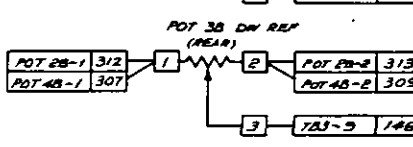
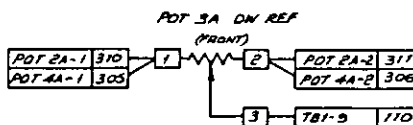
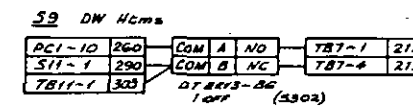


## 1K DUAL POT R995

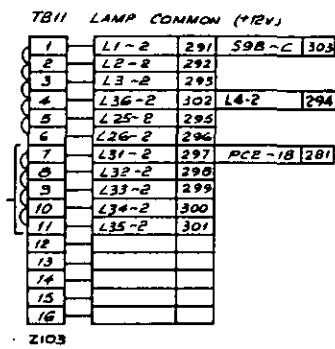
## S5 DRAWWORKS



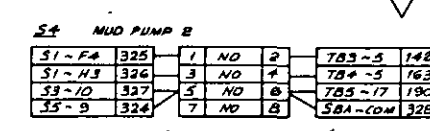
## SWITCH - DT251M (L197)



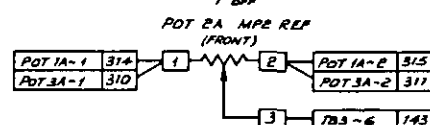
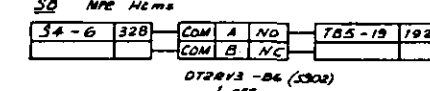
## 1K DUAL POT R995



## S4 MUD PUMP 2

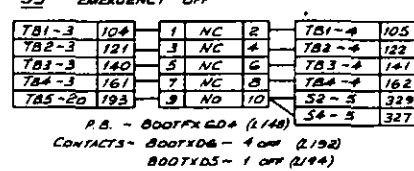


## SWITCH - DT251M (L198)



## 1K DUAL POT R995

## S3 EMERGENCY OFF



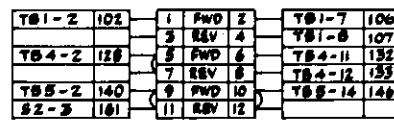
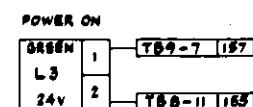
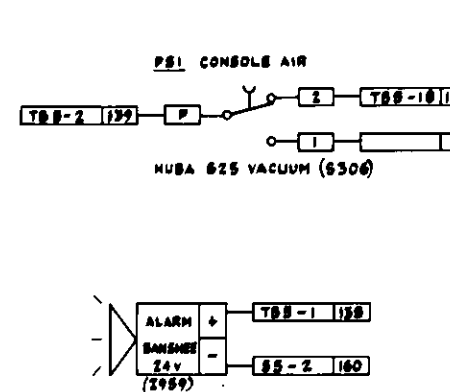
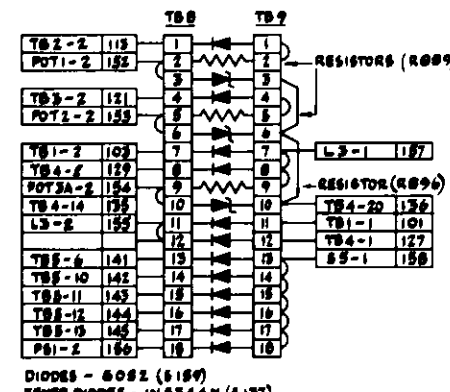
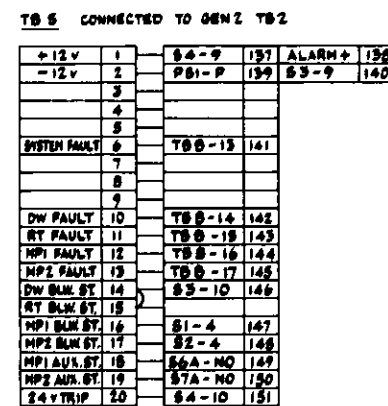
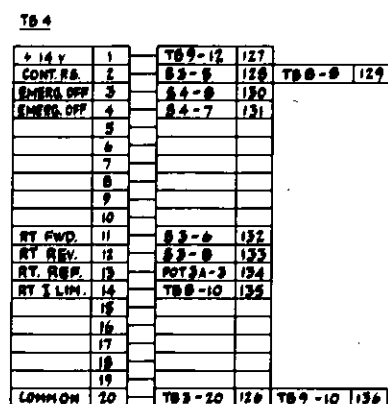
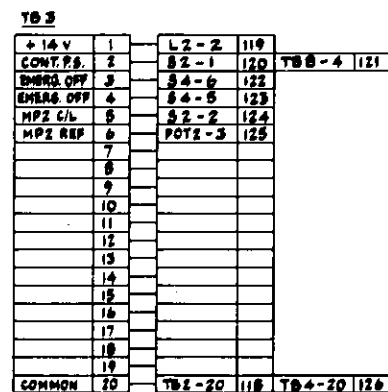
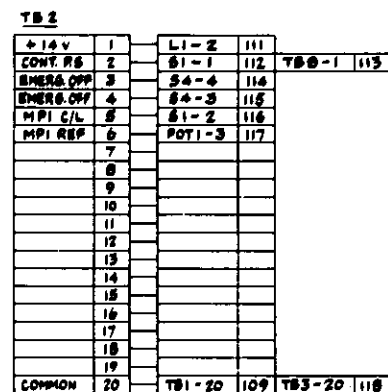
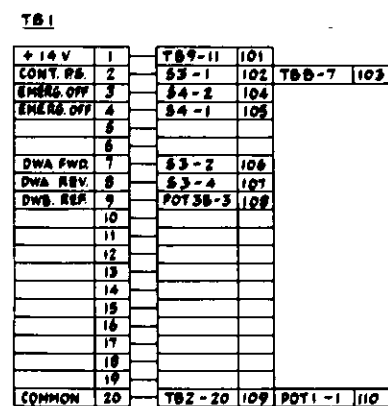
## P.B. - BOOT66PA (L148)



## 1K DUAL POT R995

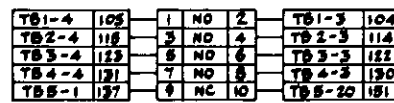
HILL GRAHAM  
CONTROLS LTD  
HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE  
DRILLERS CONSOLE - WIRE LIST  
REV. NO. N110-9  
CUSTOMER FORASOL  
REV. 4  
6070D082  
Sht 2 of 2



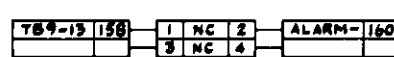
SWITCH - WESTINGHOUSE OT25SW (L197)  
CONTACTS - OT2M-3 OFF (L198)

**S4 EMERGENCY OFF**



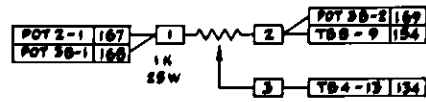
OPERATOR - AB NO. FX8-D4 (L148)  
CONTACTS - S OFF 800TKD6 (L192)

**S5 ALARM SILENCE**

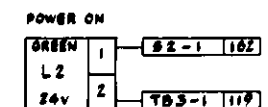
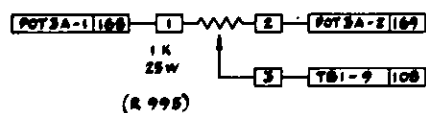


SWITCH - WESTINGHOUSE OT25SW (L196)  
CONTACTS - OT2M (L198)

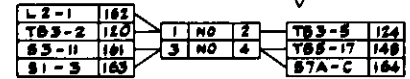
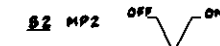
**POT3A - DW/RT**



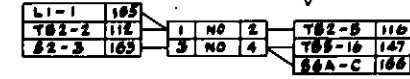
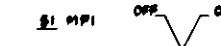
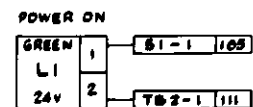
**POT3B - DW**



LAMPS - BCR 2940U212A1 (L128)  
LENS - BCR 2940U200J (L176)  
BULBS - GE 686 24V (L104)

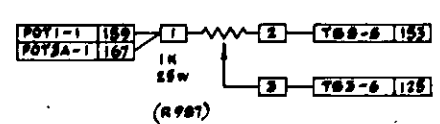


SWITCH - WESTINGHOUSE OT25SW (L196)  
CONTACTS - OT2M (L198)

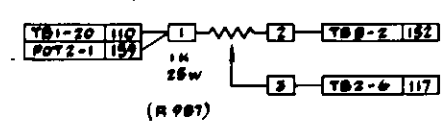


SWITCH - WESTINGHOUSE OT25SW (L196)  
CONTACTS - OT2M (L198)

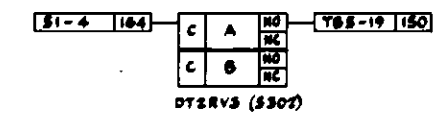
**POT1 MPZ**



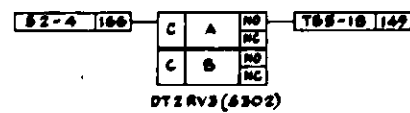
**POT1 MPI**



**S7 MPZ MEMS**



**S6 MPI MEMS**

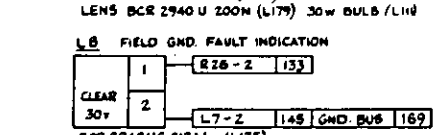
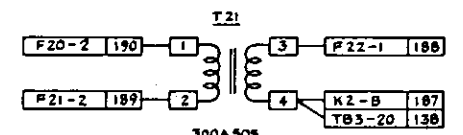
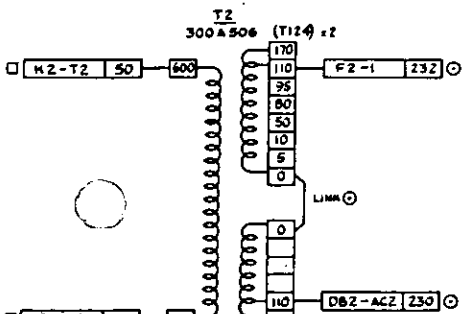
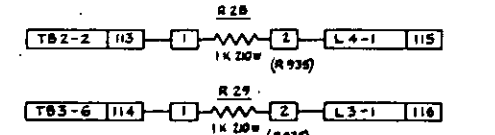


WIRE NOS. START AT 101  
LAST WIRE NO. USED 169

DRAWN S.A.M.		DATE 27-2-81	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.	HILL GRAHAM CONTROLS LTD HIGH WYCOMBE, BUCKS. ENGLAND. TEL. (0494) 40121.	TITLE EMERGENCY CONTROL CONSOLE	NO. N 110-9	CUSTOMER FORASOL	REV.
CHD APP.		USED ON						
NO.	DESCRIPTION	DATE	BY					
REVISION								



F5TB4		TO SCR4	
RT FIELD	1	CT1-91	220
DW FIELD	2	CT2-91	221
BT/DW COM	3	CT2-92	222
MP1 FIELD	4	PC1-15	224
MP2 FIELD	5	PC2-15	225
MP COM	6	PC1-14	226
		PC2-14	227



Ord. No.	DRG. No.
M 110 - 9	607000
CUSTOMER	

FORASOL	SW
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SECTION C

C1 DNA BLOWER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC2-26 307	
AUX 1 - NC 15	EL28-4 308	CR-15 309
AUX 2 - NO 14		
AUX 2 - NO 13		
AUX 1 - NO 12	C2-11 310	
AUX 1 - NO 11	PC2-7 311	
REMOTE STOP 4		
AUTO START 4	PC2-12 312	
AUTO START 3	PC2-11 313	
REMOTE STOP 2		
MOTOR C C	807-20 506	807-18 638
MOTOR B B	807-19 505	807-17 637
MOTOR A A	807-7 504	807-1 631

C2 DNB BLOWER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC2-27 314	
AUX 1 - NC 15	C1-15 308	
AUX 2 - NO 14		
AUX 2 - NO 13	EL2A-2 315	
AUX 1 - NO 12	C1-12 310	
AUX 1 - NO 11		
REMOTE STOP 4	PC2-14 316	
AUTO START 4	PC2-13 317	
REMOTE STOP 2		
MOTOR C C	808-20 509	808-18 658
MOTOR B B	808-19 508	808-17 657
MOTOR A A	808-19 507	808-1 641

C3 MUD AGITATOR 6.

Diagram of Mud Agitator 6 showing three agitators (A, B, C) and a central shaft with a stirrer (ST). Each agitator is connected to a motor (A, B, C) and a control unit (4022-1, 4022-2, 4022-3). The stirrer is connected to a control unit (RL7-8, RL7-5).

C4 CRANE N°2

Diagram of Crane N°2 showing three cranes (A, B, C) and a central shaft. Each crane is connected to a motor (A, B, C) and a control unit (4015-1, 4015-2, 4015-3).

C5 MUD MIX PUMP N°2

AUX 2 - NC 18	4100-17 997	TB1-2 910
AUX 2 - NC 17		
AUX 1 - NC 16		
AUX 1 - NC 15		
AUX 2 - NO 14		
AUX 2 - NO 13		
AUX 1 - NO 12	4100-16 996	
AUX 1 - NO 11	TB1-1 915	
REMOTE STOP 4		
AUTO START 4	4100-14 994	
AUTO START 3	4100-15 995	
REMOTE STOP 2	4100-13 993	
MOTOR C C	4024-3 946	Δ
MOTOR B B	4024-2 945	Δ
MOTOR A A	4024-1 944	Δ

SECTION D

D1 MUD PUMP N°1 A BLOWER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC3-28 320	
AUX 1 - NC 15	EL38-4 321	D2-15 322
AUX 2 - NO 14		
AUX 2 - NO 13		
AUX 1 - NO 12	D2-11 323	
AUX 1 - NO 11	PC3-7 324	
REMOTE STOP 4		
AUTO START 4	PC3-12 325	
AUTO START 3	PC3-11 326	
REMOTE STOP 2		
MOTOR C C	803-20 523	803-18 678
MOTOR B B	803-19 522	803-17 677
MOTOR A A	803-9 521	803-1 661

D2 MUD PUMP N°1 B BLOWER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC3-27 327	#1
AUX 1 - NC 15	D1-15 322	D2-15 322
AUX 2 - NO 14		
AUX 2 - NO 13	EL3A-2 325	#3
AUX 1 - NO 12	D1-12 323	
AUX 1 - NO 11		
REMOTE STOP 4	PC3-14 330	
AUTO START 4	PC3-13 331	
REMOTE STOP 2		
MOTOR C C	810-20 525	810-18 698
MOTOR B B	810-19 524	810-17 697
MOTOR A A	810-9 524	810-1 681

D3 MUD PUMP N°1 ROD OILER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	B15-11 771	#2
AUX 1 - NC 15	PC3-30 332	D4-15 333
AUX 1 - NC 15	D2-15 328	
AUX 2 - NO 14	B15-12 772	
AUX 2 - NO 13		
AUX 1 - NO 12		
AUX 1 - NO 11		
REMOTE STOP 4	PC3-16 334	
AUTO START 4	PC3-15 335	
REMOTE STOP 2		
MOTOR C C	B15-3 763	
MOTOR B B	B15-2 762	
MOTOR A A	B15-1 761	

D4 MUD PUMP N°1 CHAIN OILER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	B15-9 769	#2
AUX 1 - NC 15	PC3-31 336	D5-15 337
AUX 1 - NC 15	D3-15 333	
AUX 2 - NO 14	B15-10 770	
AUX 2 - NO 13		
AUX 1 - NO 12		
AUX 1 - NO 11		
REMOTE STOP 4	PC3-18 338	
AUTO START 4	PC3-17 339	
REMOTE STOP 2		
MOTOR C C	B15-7 767	
MOTOR B B	B15-6 766	
MOTOR A A	B15-5 765	

D5 SUPER CHARGE PUMP N°1

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC5-32 340	
AUX 1 - NC 15	D4-15 337	
AUX 2 - NO 14		
AUX 2 - NO 13	TB2-3 341	
AUX 1 - NO 12	B2-11 306	E5-11 342
AUX 1 - NO 11		
REMOTE STOP 4	TB6-2 343	
AUTO START 4	TB6-1 344	
REMOTE STOP 2	TB6-3 345	
MOTOR C C	4003-3 866	○
MOTOR B B	4003-2 865	○
MOTOR A A	4003-1 864	○

SECTION E

E1 MUD PUMP N°2 A BLOWER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC4-28 346	
AUX 1 - NC 15	EL48-4 347	E2-15 348
AUX 2 - NO 14		
AUX 2 - NO 13		
AUX 1 - NO 12	E2-11 349	
AUX 1 - NO 11	PC4-7 350	
REMOTE STOP 4		
AUTO START 4	PC4-12 351	
AUTO START 3	PC4-11 352	
REMOTE STOP 2		
MOTOR C C	811-20 523	811-18 718
MOTOR B B	811-19 522	811-17 717
MOTOR A A	811-9 521	811-1 701

E2 MUD PUMP N°2 B BLOWER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC4-27 353	#1
AUX 1 - NC 15	E1-15 348	E2-15 348
AUX 2 - NO 14		
AUX 2 - NO 13	EL4A-2 355	#3
AUX 1 - NO 12	E1-12 349	
AUX 1 - NO 11		
REMOTE STOP 4	PC4-14 356	
AUTO START 4	PC4-13 357	
REMOTE STOP 2		
MOTOR C C	812-20 532	812-18 758
MOTOR B B	812-19 531	812-17 757
MOTOR A A	812-9 530	812-1 741

E3 MUD PUMP N°2 ROD OILER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	B16-11 791	#2
AUX 1 - NC 15	PC4-30 358	D4-15 333
AUX 1 - NC 15	E2-15 354	E4-15 359
AUX 2 - NO 14	B16-12 792	
AUX 2 - NO 13		
AUX 1 - NO 12		
AUX 1 - NO 11		
REMOTE STOP 4	PC4-16 360	
AUTO START 4	PC4-15 361	
REMOTE STOP 2		
MOTOR C C	B16-3 783	
MOTOR B B	B16-2 782	
MOTOR A A	B16-1 781	

E4 MUD PUMP N°2 CHAIN OILER

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	B16-9 789	#2
AUX 1 - NC 15	PC4-31 362	D5-15 337
AUX 1 - NC 15	E3-15 359	E5-15 363
AUX 2 - NO 14	B16-10 790	
AUX 2 - NO 13		
AUX 1 - NO 12		
AUX 1 - NO 11		
REMOTE STOP 4	PC4-18 364	
AUTO START 4	PC4-17 365	
REMOTE STOP 2		
MOTOR C C	B16-7 787	
MOTOR B B	B16-6 786	
MOTOR A A	B16-5 785	

E5 SUPER CHARGE PUMP N°2

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16	PC4-32 366	
AUX 1 - NC 15	E4-15 363	
AUX 2 - NO 14		
AUX 2 - NO 13	TB2-4 367	
AUX 1 - NO 12	D5-11 342	PC1-1 368
AUX 1 - NO 11		
REMOTE STOP 4	TB6-5 369	
AUTO START 4	TB6-4 370	
REMOTE STOP 2	TB6-6 371	
MOTOR C C	4004-3 870	○
MOTOR B B	4004-2 869	○
MOTOR A A	4004-1 868	○

SECTION F

F1 SPACE

AUX 2 NC 18		
AUX 2 NC 17		
AUX 1 NC 16		
AUX 1 NC 15		
AUX 2 NO 14		
AUX 2 NO 13		
AUX 1 NO 12		
AUX 1 NO 11		
REMOTE STOP 4		
AUTO START 4		
AUTO START 3		
REMOTE STOP 2		
MOTOR C C	4020-3 567	
MOTOR B B	4020-2 566	
MOTOR A A	4020-1 565	

F2 SPACE

AUX 2 NC 18		
AUX 2 NC 17		
AUX 1 NC 16		
AUX 1 NC 15		
AUX 2 NO 14		
AUX 2 NO 13		
AUX 1 NO 12		
AUX 1 NO 11		
REMOTE STOP 4		
AUTO START 4		
AUTO START 3		
REMOTE STOP 2		
MOTOR C C	4017-3 563	
MOTOR B B	4017-2 562	
MOTOR A A	4017-1 561	

SPACE

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16		
AUX 1 - NC 15		
AUX 2 - NO 14		
AUX 2 - NO 13		
AUX 1 - NO 12		
AUX 1 - NO 11		
REMOTE STOP 4		
AUTO START 4		
AUTO START 3		
REMOTE STOP 2		
MOTOR C C		
MOTOR B B		
MOTOR A A		

SPACE

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16		
AUX 1 - NC 15		
AUX 2 - NO 14		
AUX 2 - NO 13		
AUX 1 - NO 12		
AUX 1 - NO 11		
REMOTE STOP 4		
AUTO START 4		
AUTO START 3		
REMOTE STOP 2		
MOTOR C C		
MOTOR B B		
MOTOR A A		

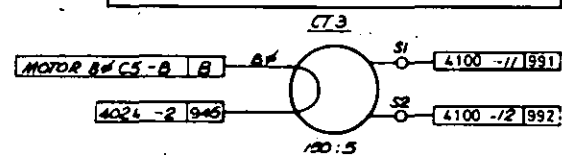
SPACE

AUX 2 - NC 18		
AUX 2 - NC 17		
AUX 1 - NC 16		
AUX 1 - NC 15		
AUX 2 - NO 14		
AUX 2 - NO 13		
AUX 1 - NO 12		
AUX 1 - NO 11		
REMOTE STOP 4		
AUTO START 4		
AUTO START 3		
REMOTE STOP 2		
MOTOR C C		
MOTOR B B		
MOTOR A A		

CT3. SEE BELOW.

## NOTE

- \*1 DISCONNECTED FOR SINGLE MOTOR MUD PUMP.  
\*2 DISCONNECTED IF ELECTRIC CHAIN B ROD OILERS NOT REQUIRED.  
\*3 LINK FOR SINGLE MOTOR MUD PUMP.  
\*4 FOR FURTHER DETAILS SEE D069.



LAST WIRE UP }  
N/A NOT USED } SEE DMT 3

DATE	29.2.81
SCALE	
APP. 1	
APP. 2	
APP. 3	

THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED UNLESS BY EXPRESSLY AUTHORIZED BY HILL GRAHAM CONTROLS LTD.

TOLERANCES:  
FRACTIONS: 1/16"  
DECIMALS: 0.001"  
ANGLES: 1/2°



**HILL GRAHAM CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE	MOTOR CONTROL CENTRE - WIRE LIST.
REV. NO.	0110-2
REV. DATE	28-11-83
REV. BY	MG
REV. NO.	0110-3
REV. DATE	9-8-83
REV. BY	MG
REV. NO.	0110-4
REV. DATE	27-7-81
REV. BY	WSM
REV. NO.	0110-5
REV. DATE	27-7-81
REV. BY	WSM

REV. NO.	0110-2	REV. DATE	28-11-83	REV. BY	MG
REV. NO.	0110-3	REV. DATE	9-8-83	REV. BY	MG
REV. NO.	0110-4	REV. DATE	27-7-81	REV. BY	WSM

T86 VIA RECEPTACLE BOX

CH PUMP 1 ON	1	D5-3	344
CH PUMP 1 COM	2	D5-4	343
CH PUMP 1 OFF	3	D5-2	342
CH PUMP 2 ON	4	E5-3	370
CH PUMP 2 COM	5	E5-4	369
CH PUMP 2 OFF	6	E5-2	371
POSS TALK ON	7	B2-3	272
POSS TALK COM	8	B2-4	273
POSS TALK OFF	9	B2-2	274
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		

RL8. DW BRAKE COOLING PUMP

A	1	99781-21	829
B	1	T87-9	838
1	1	PC2-30	143
2	1	T87-10	144
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL1 RT AIRFLOW SLAVE

A	1	B06-2	602
B	1	RL2A-B	398
1	1	RL1-B	279
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL2B DWA AIRFLOW SLAVE

A	1	B06-2	642
B	1	RL2A-B	402
1	1	RL3A-B	438
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL2A DWA AIRFLOW SLAVE

A	1	B07-2	622
B	1	RL1-B	399
1	1	RL2B-B	402
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL3B MP1B AIRFLOW SLAVE

A	1	B10-2	682
B	1	RL3A-B	405
1	1	RL4A-B	440
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL3A MP1B AIRFLOW SLAVE

A	1	B08-2	662
B	1	RL2B-B	439
1	1	RL3B-B	402
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL5. NON ESSENTIAL SHUTDOWN SLAVE

A	1	RL6-A	275
B	1	RL6-B	277
1	1	RL1-B	279
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL6. NON ESSENTIAL SHUTDOWN SLAVE

A	1	RL5-A	275
B	1	RL5-B	277
1	1	RL7-A	276
2	1	RL7-B	278
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL4B MP2B AIRFLOW SLAVE

A	1	B12-2	542
B	1	RL4A-B	408
1	1	T87-9	441
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

RL4A MP2A AIRFLOW SLAVE

A	1	B11-2	702
B	1	RL3B-B	440
1	1	RL4B-B	402
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

TB7 CONNECTED TO FIELD SUPPLY

ESTB20-1	971	GT FIELD EU	1	PC1-19	372
ESTB20-2	972	GT FIELD EU	2	PC1-20	373
ESTB20-3	973	DW FIELD EU	3	PC2-19	374
ESTB20-4	974	DW FIELD EU	4	PC2-20	375
ESTB20-5	975	MP1 FIELD EU	5	PC3-19	376
ESTB20-6	976	MP1 FIELD EU	6	PC3-20	377
ESTB20-7	977	MP2 FIELD EU	7	PC4-19	378
ESTB20-8	978	MP2 FIELD EU	8	PC4-20	379
ESTB20-9	979	115V	9	RL4B-B	441
				RL8-B	838

TB1 CONNECTED TO 600V GROUND FAULT

GF TB1-1	990	115V	1	B5-11	157
GF TB1-2	991	115V	2	C5-11	319
				C5-12	318
				C5-13	257

TB2 CONNECTED TO GEN2/SC22 SECTION

GEN2 TB2-1	236	+12V	1	PC1-21	380
GEN2 TB2-2	237	-12V	2	B2-11	158
GEN2 TB2-3	238	CH PUMP 1 ON	3	D5-12	341
GEN2 TB2-4	239	CH PUMP 2 ON	4	E5-12	367
GEN2 TB2-5	240	POSS TALK ON	5	B2-12	163
GEN2 TB2-6	241	DW FAULT	6	PC2-35	381
GEN2 TB2-7	242	RT FAULT	7	PC1-35	382
GEN2 TB2-8	243	MP1 FAULT	8	PC3-35	383
GEN2 TB2-9	244	MP2 FAULT	9	PC4-35	384
GEN2 TB2-10	245	DN BLW ST	10	PC2-5	385
GEN2 TB2-11	246	RT BLW ST	11	PC1-5	386
GEN2 TB2-12	247	MP1 BLW ST	12	PC3-5	387
GEN2 TB2-13	248	MP2 BLW ST	13	PC4-5	388
GEN2 TB2-14	249	MP1 ALX ST	14	PC3-6	389
GEN2 TB2-15	250	MP2 ALX ST	15	PC4-6	390
GEN2 TB2-16	251	24V TRIP	16	600V GND FLT	C52-C2
GEN2 TB2-17	252	DW FIELD FLT	17	PC2-37	391
GEN2 TB2-18	253	GT FIELD FLT	18	PC1-37	392
GEN2 TB2-19	254	MP1 FIELD FLT	19	PC3-37	393
GEN2 TB2-20	255	MP2 FIELD FLT	20	PC4-37	394

RL7. NON ESSENTIAL SHUTDOWN SLAVE

A	1	RL6-A	276
B	1	RL6-B	278
1	1		
2	1		
3	1		
4	1		
5	1		
6	1		
7	1		
8	1		
9	1		
10	1		
11	1		
12	1		
13	1		
14	1		
15	1		
16	1		
17	1		
18	1		
19	1		
20	1		

KUPI4A55 115V AC (R106)

## NOTES

ALL ITEMS ON THIS SHEET ARE SITUATED IN THE L.H. SIDE OF THE 220V DISTRIBUTION CUBICLE.

LAST WIRE NO. 997

WIRE NOT USED - 1-100, 104-106, 117-126, 135-139, 143-144, 149-156, 159, 160-162, 164-206, 208-271, 274-280, ... - 503, 510-520, 533-540, 543-556, 559, 560, 564-600, 602-616, 619, 620, 623-636, 639, 640, 643-666, 669, 670, 673-676, 679, 680, 683-696, 699, 700, 703-716, 719-760, 764, 766-780, 784, 786-843, 847-851, 854, 855, 862, 864, 871, 873, 876, 883, 887, 891, 895, 899, 903, 907, 911, 915, 919, 923, 927-931, 935, 939, 943, 947, 953-966, 969-984, 986, 987-990, 993, 996, 999, 1001, 1002, 1005, 1008.

DOOR 6032 PCI ROTARY TABLE

ES-11	348	1 -12V/14V	21	PC1-22	420
PC2-1	416	2 -12V/14V	22	PC2-21	420
PC2-3	415	3 ON	23	FAULT 1	23
		4 LAMP TEST	24	FAULT 2	24
TB2-11	387	5 BLW ST	25	FAULT 3	25
		6 AUX ST	26	BLW FAULT	26
B1-11	305	7 BLW ON	27	BLW FAULT	27
RL1-B	401	8 BLW ON	28	FIELD	28
		9 AUX ON	29	AUX 1	30
B1-2	305	10 AUX ON	30	AUX 2	31
B1-4	304	11 BLW A ST	31	AUX 3	32
		12 BLW B ST	32	SCR FAULT	33
		13 BLW B ST	33	COM	34
		14 BLW B ST	34	NO	35
		15 AUX 1 ST	35	NC	36
		16 AUX 1 ST	36	FIELD LOSS	37
		17 AUX 2 ST	37	FIELD LOSS	38
TB7-1	372	18 AUX 2 ST	38	FIELD LOSS	39
TB7-2	373	19 FIELD ST	39	FIELD LOSS	40
		20 FIELD ST	40	FIELD LOSS	41

* 2008	* 2007	* 2006	* 2005	* 2004	* 2003	* 2002	* 2001																																																																																																																																
<table><tr><td>C#</td><td>1</td><td>220V DIST C# 814</td><td>□</td></tr><tr><td>N#</td><td>2</td><td>220V DIST N# 815</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 8</td><td>□</td></tr></table>	C#	1	220V DIST C# 814	□	N#	2	220V DIST N# 815	□	GND	3	GND BUS 8	□	<table><tr><td>B#</td><td>1</td><td>220V DIST B# 812</td><td>□</td></tr><tr><td>N#</td><td>2</td><td>220V DIST N# 813</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 7</td><td>□</td></tr></table>	B#	1	220V DIST B# 812	□	N#	2	220V DIST N# 813	□	GND	3	GND BUS 7	□	<table><tr><td>A#</td><td>1</td><td>220V DIST A# 810</td><td>□</td></tr><tr><td>N#</td><td>2</td><td>220V DIST N# 811</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 6</td><td>□</td></tr></table>	A#	1	220V DIST A# 810	□	N#	2	220V DIST N# 811	□	GND	3	GND BUS 6	□	<table><tr><td>A#</td><td>1</td><td>220V DIST A# 808</td><td>□</td></tr><tr><td>C#</td><td>2</td><td>220V DIST C# 809</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 5</td><td>□</td></tr></table>	A#	1	220V DIST A# 808	□	C#	2	220V DIST C# 809	□	GND	3	GND BUS 5	□	<table><tr><td>B#</td><td>1</td><td>220V DIST B# 806</td><td>□</td></tr><tr><td>C#</td><td>2</td><td>220V DIST C# 807</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 4</td><td>□</td></tr></table>	B#	1	220V DIST B# 806	□	C#	2	220V DIST C# 807	□	GND	3	GND BUS 4	□	<table><tr><td>A#</td><td>1</td><td>220V DIST A# 804</td><td>□</td></tr><tr><td>B#</td><td>2</td><td>220V DIST B# 805</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 3</td><td>□</td></tr></table>	A#	1	220V DIST A# 804	□	B#	2	220V DIST B# 805	□	GND	3	GND BUS 3	□	<table><tr><td>B#</td><td>1</td><td>220V DIST B# 802</td><td>□</td></tr><tr><td>C#</td><td>2</td><td>220V DIST C# 803</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 2</td><td>□</td></tr></table>	B#	1	220V DIST B# 802	□	C#	2	220V DIST C# 803	□	GND	3	GND BUS 2	□	<table><tr><td>A#</td><td>1</td><td>220V DIST A# 800</td><td>□</td></tr><tr><td>B#</td><td>2</td><td>220V DIST B# 801</td><td>□</td></tr><tr><td>GND</td><td>3</td><td>GND BUS 1</td><td>□</td></tr></table>	A#	1	220V DIST A# 800	□	B#	2	220V DIST B# 801	□	GND	3	GND BUS 1	□																																
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CRANE # 2	WIRE LINE UNIT	SPARE	SPARE	MUD AGITATOR 1	SPARE	SPARE	MUD AGITATOR 5																																																																																																																																
<table><tr><td>A#</td><td>1</td><td>MCC C4 A# 912</td><td>⊙</td></tr><tr><td>B#</td><td>2</td><td>MCC C4 B# 913</td><td>⊙</td></tr><tr><td>C#</td><td>3</td><td>MCC C4 C# 914</td><td>⊙</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 915</td><td>⊙</td></tr></table>	A#	1	MCC C4 A# 912	⊙	B#	2	MCC C4 B# 913	⊙	C#	3	MCC C4 C# 914	⊙	GND	4	GND BUS 915	⊙	<table><tr><td>A#</td><td>1</td><td>MCC B4 A# 908</td><td>⊙</td></tr><tr><td>B#</td><td>2</td><td>MCC B4 B# 909</td><td>⊙</td></tr><tr><td>C#</td><td>3</td><td>MCC B4 C# 910</td><td>⊙</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 911</td><td>⊙</td></tr></table>	A#	1	MCC B4 A# 908	⊙	B#	2	MCC B4 B# 909	⊙	C#	3	MCC B4 C# 910	⊙	GND	4	GND BUS 911	⊙	<table><tr><td>A#</td><td>1</td><td>MCCA A2A# 904</td><td>⊙</td></tr><tr><td>B#</td><td>2</td><td>MCCA A2B# 905</td><td>⊙</td></tr><tr><td>C#</td><td>3</td><td>MCCA A2C# 906</td><td>⊙</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 907</td><td>⊙</td></tr></table>	A#	1	MCCA A2A# 904	⊙	B#	2	MCCA A2B# 905	⊙	C#	3	MCCA A2C# 906	⊙	GND	4	GND BUS 907	⊙	<table><tr><td>A#</td><td>1</td><td>MCCA A2A# 900</td><td>⊙</td></tr><tr><td>B#</td><td>2</td><td>MCCA A2B# 901</td><td>⊙</td></tr><tr><td>C#</td><td>3</td><td>MCCA A2C# 902</td><td>⊙</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 903</td><td>⊙</td></tr></table>	A#	1	MCCA A2A# 900	⊙	B#	2	MCCA A2B# 901	⊙	C#	3	MCCA A2C# 902	⊙	GND	4	GND BUS 903	⊙	<table><tr><td>A#</td><td>1</td><td>MCCA A5A# 896</td><td>⊙</td></tr><tr><td>B#</td><td>2</td><td>MCCA A5B# 897</td><td>⊙</td></tr><tr><td>C#</td><td>3</td><td>MCCA A5C# 898</td><td>⊙</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 899</td><td>⊙</td></tr></table>	A#	1	MCCA A5A# 896	⊙	B#	2	MCCA A5B# 897	⊙	C#	3	MCCA A5C# 898	⊙	GND	4	GND BUS 899	⊙	<table><tr><td>A#</td><td>1</td><td>MCCA A4A# 892</td><td>□</td></tr><tr><td>B#</td><td>2</td><td>MCCA A4B# 893</td><td>□</td></tr><tr><td>C#</td><td>3</td><td>MCCA A4C# 894</td><td>□</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 895</td><td>□</td></tr></table>	A#	1	MCCA A4A# 892	□	B#	2	MCCA A4B# 893	□	C#	3	MCCA A4C# 894	□	GND	4	GND BUS 895	□	<table><tr><td>A#</td><td>1</td><td>MCCA A3A# 888</td><td>□</td></tr><tr><td>B#</td><td>2</td><td>MCCA A3B# 889</td><td>□</td></tr><tr><td>C#</td><td>3</td><td>MCCA A3C# 890</td><td>□</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 891</td><td>□</td></tr></table>	A#	1	MCCA A3A# 888	□	B#	2	MCCA A3B# 889	□	C#	3	MCCA A3C# 890	□	GND	4	GND BUS 891	□	<table><tr><td>A#</td><td>1</td><td>MCCA A4A# 884</td><td>⊙</td></tr><tr><td>B#</td><td>2</td><td>MCCA A4B# 885</td><td>⊙</td></tr><tr><td>C#</td><td>3</td><td>MCCA A4C# 886</td><td>⊙</td></tr><tr><td>GND</td><td>4</td><td>GND BUS 887</td><td>⊙</td></tr></table>	A#	1	MCCA A4A# 884	⊙	B#	2	MCCA A4B# 885	⊙	C#	3	MCCA A4C# 886	⊙	GND	4	GND BUS 887	⊙
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GND	4	GND BUS 919	⊙																																																																																																																																				

CABLE LEGEND

□ — 10 AWG

⊙ — 6 AWG

⊗ — 4 AWG

△ — 00 AWG

REMAINDER 14 AWG

WIREMAN PLEASE NOTE  
PLUG POSITIONS AS SEEN  
FROM WIRING SIDE

NOTE -  
WHERE \* IS SHOWN RECEPTACLE HAS BEEN  
REPLACED WITH A TERMINAL BLOCK (TB).

805  
TO 460V MCC TB6

CHPUMP 1 ON	1	TB6-1	
CHPUMP 1 OFF	2	TB6-2	
CHPUMP 2 ON	3	TB6-3	
CHPUMP 2 OFF	4	TB6-4	
CHPUMP 3 ON	5	TB6-5	
CHPUMP 3 OFF	6	TB6-6	
POSS TANK ON	7	PPTBI-13	824
POSS TANK OFF	8	PPTBI-14	825
POSS TANK OFF	9	PPTBI-15	826
	10		
	11		
	12		
MP1 TACHO	13	815-17	777
MP1 TACHO	14	816-18	778
MP1 TACHO PS	15	816-19	779
MP1 TACHO PS	16	816-20	780
MP2 TACHO	17	815-17	797
MP2 TACHO	18	815-18	798
MP2 TACHO PS	19	815-19	799
MP2 TACHO PS	20	815-20	800

RUN 4 SPARE WIRES ONLY TO MCC.

804  
TO GEN 2 TB2

+12V	1	TB2-1	
-12V	2	TB2-2	
GEN 1 ON	3	TB2-3	
GEN 1 OFF	4	TB2-4	
GEN 2 ON	5	TB2-5	
GEN 2 OFF	6	TB2-6	
CHPUMP 1 ON	7	TB2-7	
CHPUMP 1 OFF	8	TB2-8	
CHPUMP 2 ON	9	TB2-9	
CHPUMP 2 OFF	10	TB2-10	
RT FAULT	11	TB2-11	
MP1 FAULT	12	TB2-12	
MP2 FAULT	13	TB2-13	
DW BLW STT	14	TB2-14	
RT BLW STT	15	TB2-15	
MP1 BLW STT	16	TB2-16	
MP2 BLW STT	17	TB2-17	
MP1 AUX START	18	TB2-18	
MP2 AUX START	19	TB2-19	
14V TRIP	20	TB2-20	

803  
TO SCR 4 TB6

+14V	1	TB6-1	
CONT. PS.	2	TB6-2	
EMERG. OFF	3	TB6-3	
EMERG. OFF	4	TB6-4	
MP2 C/L OUT	5	TB6-5	
MP2 REF	6	TB6-6	
DWA FWS C/L OUT	7	TB6-7	
DWA FWS C/L OUT	8	TB6-8	
DW REF	9	TB6-9	
DW FT TH	10	TB6-10	
RT FWS C/L OUT	11	TB6-11	
RT REV C/L OUT	12	TB6-12	
RT REF	13	TB6-13	
RT I LIM	14	TB6-14	
SCR 1	15	TB6-15	
GROUND	16	TB6-16	
GEN 4 ON	17	TB6-17	
ELMAGCO ALARM	18	TB6-18	
ELMAGCO ALARM	19	TB6-19	
COMMON	20	TB6-20	

802  
TO SCR 3 TB6

+14V	1	TB6-1	
CONT. PS.	2	TB6-2	
EMERG. OFF	3	TB6-3	
EMERG. OFF	4	TB6-4	
MP2 C/L OUT	5	TB6-5	
MP2 REF	6	TB6-6	
DWA FWS C/L OUT	7	TB6-7	
DWA FWS C/L OUT	8	TB6-8	
DW REF	9	TB6-9	
DW FT TH	10	TB6-10	
RT FWS C/L OUT	11	TB6-11	
RT REV C/L OUT	12	TB6-12	
RT REF	13	TB6-13	
RT I LIM	14	TB6-14	
SCR 1	15	TB6-15	
GROUND	16	TB6-16	
ELMAGCO ALARM	17	TB6-17	
ELMAGCO ALARM	18	TB6-18	
COMMON	19	TB6-19	
COMMON	20	TB6-20	

801  
TO SCR 2 TB6

+14V	1	TB6-1	
CONT. PS.	2	TB6-2	
EMERG. OFF	3	TB6-3	
EMERG. OFF	4	TB6-4	
MP1 C/L OUT	5	TB6-5	
MP1 REF	6	TB6-6	
DWA FWS C/L OUT	7	TB6-7	
DWA FWS C/L OUT	8	TB6-8	
DW REF	9	TB6-9	
DW FT TH	10	TB6-10	
RT FWS C/L OUT	11	TB6-11	
RT REV C/L OUT	12	TB6-12	
RT REF	13	TB6-13	
RT I LIM	14	TB6-14	
SCR 1	15	TB6-15	
GROUND	16	TB6-16	
PWR LIM MTR	17	TB6-17	
PWR LIM MTR	18	TB6-18	
COMMON	19	TB6-19	
COMMON	20	TB6-20	

800  
TO SCR 1 TB6

+14V	1	TB6-1	
CONT. PS.	2	TB6-2	
EMERG. OFF	3	TB6-3	
EMERG. OFF	4	TB6-4	
MP1 C/L OUT	5	TB6-5	
MP1 REF	6	TB6-6	
DWA FWS C/L OUT	7	TB6-7	
DWA FWS C/L OUT	8	TB6-8	
DW REF	9	TB6-9	
DW FT TH	10	TB6-10	
RT FWS C/L OUT	11	TB6-11	928
RT REV C/L OUT	12	TB6-12	929
RT REF	13	TB6-13	930
RT I LIM	14	TB6-14	931
SCR 1	15	TB6-15	
GROUND	16	TB6-16	
GROUND	17	TB6-17	
GROUND	18	TB6-18	
COMMON	19	TB6-19	
COMMON	20	TB6-20	

WIREMAN PLEASE NOTE!  
PLUG POSITIONS AS SEEN  
FROM WIRING SIDE

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## 816

MP2 ROD OILERS &amp; CHAIN OILERS

MP2 ROD OIL A	1	460V MCC E1-A 781
MP2 ROD OIL B	2	460V MCC E1-B 782
MP2 ROD OIL C	3	460V MCC E1-C 783
GROUND	4	GND BUS 784
MP2 CHAIN OIL A	5	460V MCC E1-A 785
MP2 CHAIN OIL B	6	460V MCC E1-B 786
MP2 CHAIN OIL C	7	460V MCC E1-C 787
GROUND	8	GND BUS 788
CO PRESS SW	9	460V MCC E1-A 789
CO PRESS SW	10	460V MCC E1-B 790
CO PRESS SW	11	460V MCC E1-C 791
CO PRESS SW	12	460V MCC E1-D 792
	13	
	14	
	15	
	16	
TACHO	17	805-17 797
TACHO	18	805-18 798
PWR SUPPLY	19	805-19 799
PWR SUPPLY	20	805-20 800

## 815

MP1 ROD OILERS &amp; CHAIN OILERS

MP1 ROD OIL A	1	460V MCC E1-A 761
MP1 ROD OIL B	2	460V MCC E1-B 762
MP1 ROD OIL C	3	460V MCC E1-C 763
GROUND	4	GND BUS 764
MP1 CHAIN OIL A	5	460V MCC E1-A 765
MP1 CHAIN OIL B	6	460V MCC E1-B 766
MP1 CHAIN OIL C	7	460V MCC E1-C 767
GROUND	8	GND BUS 768
CO PRESS SW	9	460V MCC E1-A 769
CO PRESS SW	10	460V MCC E1-B 770
CO PRESS SW	11	460V MCC E1-C 771
CO PRESS SW	12	460V MCC E1-D 772
	13	
	14	
	15	
	16	
TACHO	17	805-13 777
TACHO	18	805-14 778
PWR SUPPLY	19	805-15 779
PWR SUPPLY	20	805-16 780

## 814

MP1 &amp; MP2 BLOWERS

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## 813

ROTARY TABLE &amp; DRAWWORKS BLOWERS

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## 812

MP2B FIELD SUPPLY

BLOWER A#	1	460V MCC E1-A 541
AIR LOSS	2	460V MCC E1-B 542
LOCKOUT	3	TB7-17 543
LOCKOUT	4	TB7-16 544
F+	5	TB7-1 545
F+	6	TB7-2 546
F+	7	TB7-3 547
F+	8	TB7-4 548
BLOWER A#	9	460V MCC E1-A 530
F-	10	TB7-5 550
F-	11	TB7-6 551
F-	12	TB7-7 552
F-	13	TB7-8 553
SPACE HTR	14	220V DIST A# 554
SPACE HTR	15	220V DIST B# 555
GROUND	16	TB7-20 556
BLOWER B#	17	460V MCC E1-B 557
BLOWER C#	18	460V MCC E1-C 558
BLOWER B#	19	460V MCC E1-B 531
BLOWER C#	20	460V MCC E1-C 532

## 811

MP2A FIELD &amp; AUX.

BLOWER A#	1	460V MCC E1-A 701
AIR LOSS	2	460V MCC E1-B 702
LOCKOUT	3	TB6-17 703
LOCKOUT	4	TB6-16 704
F+	5	TB6-1 705
F+	6	TB6-2 706
F+	7	TB6-3 707
F+	8	TB6-4 708
BLOWER A#	9	460V MCC E1-A 527
F-	10	TB6-5 710
F-	11	TB6-6 711
F-	12	TB6-7 712
F-	13	TB6-8 713
SPACE HTR	14	220V DIST B# 714
SPACE HTR	15	220V DIST C# 715
GROUND	16	TB6-20 716
BLOWER B#	17	460V MCC E1-B 717
BLOWER C#	18	460V MCC E1-C 718
BLOWER B#	19	460V MCC E1-B 528
BLOWER C#	20	460V MCC E1-C 529

## 810

MP1B FIELD &amp; AUX.

BLOWER A#	1	460V MCC D1-A 681
AIR LOSS	2	460V MCC D1-B 682
LOCKOUT	3	TB5-17 683
LOCKOUT	4	TB5-16 684
F+	5	TB5-1 685
F+	6	TB5-2 686
F+	7	TB5-3 687
F+	8	TB5-4 688
BLOWER A#	9	460V MCC D1-A 524
F-	10	TB5-5 690
F-	11	TB5-6 691
F-	12	TB5-7 692
F-	13	TB5-8 693
SPACE HTR	14	220V DIST C# 694
SPACE HTR	15	220V DIST A# 695
GROUND	16	TB5-20 696
BLOWER B#	17	460V MCC D1-B 697
BLOWER C#	18	460V MCC D1-C 698
BLOWER B#	19	460V MCC D1-B 525
BLOWER C#	20	460V MCC D1-C 526

## 809

MP1A FIELD &amp; AUX.

BLOWER A#	1	460V MCC D1-A 661
AIR LOSS	2	460V MCC D1-B 662
LOCKOUT	3	TB4-17 663
LOCKOUT	4	TB4-16 664
F+	5	TB4-1 665
F+	6	TB4-2 666
F+	7	TB4-3 667
F+	8	TB4-4 668
BLOWER A#	9	460V MCC D1-A 521
F-	10	TB4-5 670
F-	11	TB4-6 671
F-	12	TB4-7 672
F-	13	TB4-8 673
SPACE HTR	14	220V DIST A# 674
SPACE HTR	15	220V DIST B# 675
GROUND	16	TB4-20 676
BLOWER B#	17	460V MCC D1-B 677
BLOWER C#	18	460V MCC D1-C 678
BLOWER B#	19	460V MCC D1-B 522
BLOWER C#	20	460V MCC D1-C 523

## 808

DWB FIELD &amp; AUX.

BLOWER A#	1	460V MCC C1-A 641
AIR LOSS	2	460V MCC C1-B 642
LOCKOUT	3	TB3-17 643
LOCKOUT	4	TB3-16 644
F+	5	TB3-1 645
F+	6	TB3-2 646
F+	7	TB3-3 647
F+	8	TB3-4 648
BLOWER A#	9	460V MCC C1-A 507
F-	10	TB3-5 650
F-	11	TB3-6 651
F-	12	TB3-7 652
F-	13	TB3-8 653
SPACE HTR	14	220V DIST B# 654
SPACE HTR	15	220V DIST C# 655
GROUND	16	TB3-20 656
BLOWER B#	17	460V MCC C1-B 657
BLOWER C#	18	460V MCC C1-C 658
BLOWER B#	19	460V MCC C1-B 508
BLOWER C#	20	460V MCC C1-C 509

## 807

DWA FIELD &amp; AUX.

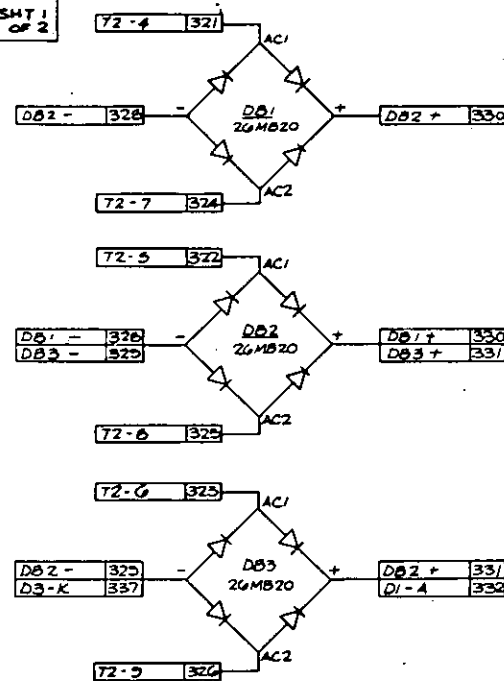
BLOWER A#	1	460V MCC C1-A 621
AIR LOSS	2	460V MCC C1-B 622
LOCKOUT	3	TB2-17 623
LOCKOUT	4	TB2-16 624
F+	5	TB2-1 625
F+	6	TB2-2 626
F+	7	TB2-3 627
F+	8	TB2-4 628
BLOWER A#	9	460V MCC C1-A 504
F-	10	TB2-5 630
F-	11	TB2-6 631
F-	12	TB2-7 632
F-	13	TB2-8 633
SPACE HTR	14	220V DIST B# 634
SPACE HTR	15	220V DIST A# 635
GROUND	16	TB2-20 636
BLOWER B#	17	460V MCC C1-B 637
BLOWER C#	18	460V MCC C1-C 638
BLOWER B#	19	460V MCC C1-B 505
BLOWER C#	20	460V MCC C1-C 506

## 806

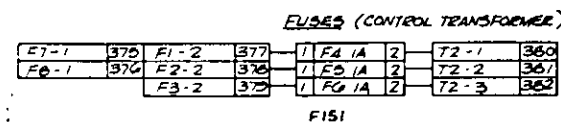
RT FIELD

BLOWER A#	1	460V MCC B1-A 601
AIR LOSS	2	460V MCC B1-B 602
LOCKOUT	3	TB1-17 603
LOCKOUT	4	TB1-16 604
F+	5	TB1-1 605
F+	6	TB1-2 606

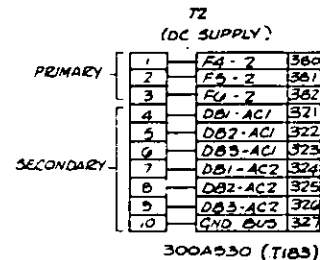
G070D104 SMT 1 OF 2



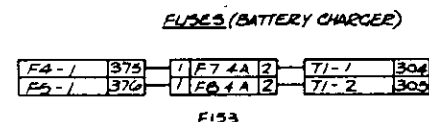
DIODE BRIDGE - 3170



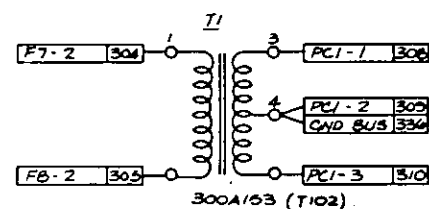
F151



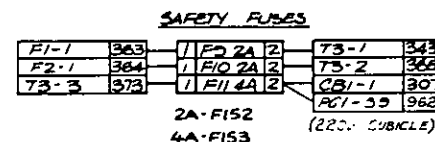
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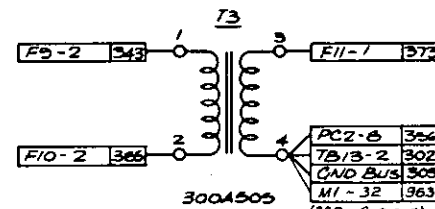
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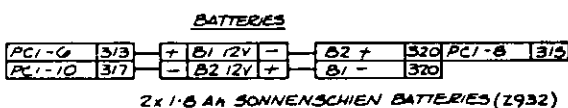
300A533 (T102)



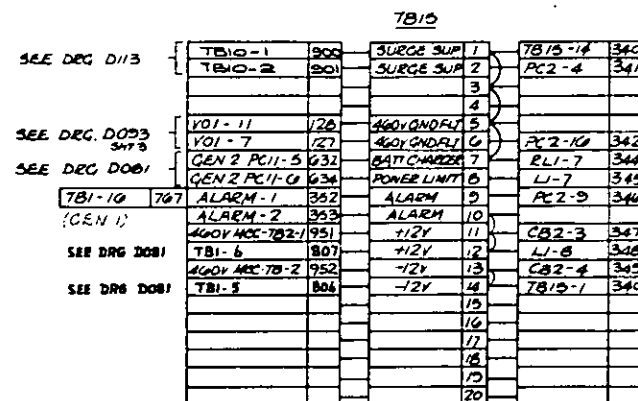
F155



300A5305 (T123)



2x1.6 AH SONNENSCHEN BATTERIES (2932)



SEE DRG D113

SEE DRG D093

SEE DRG D081

SEE DRG D081

## STB1

CONNECTED TO GEN. 1 - 17B1

A# GEN	1	MS-1	100	R2-1	101
B# BUS	2	RL4-B	102	M4-B	103
	3				
A# BUS	4	R1-1	104	MS-8	105
A# FM	5	M4-7	106		
	6				
	7				
SYNCH CHECK	8	RL3-7	107		
SYNCH CHECK	9	RL3-8	108		
GROUND	10	TO PAN	109		

## L2 SYNCHRONISING LIGHT

CLEAR	1	MS-6	129
115V	2	LS-1	130

LEVINGTON

## L3 SYNCHRONISING LIGHT

CLEAR	1	L2-2	130
115V	2	MS-4	131

LEVINGTON

## M4 FREQUENCY METER

120V	7	TB1-3	108
54/64Hz	8	TB1-2	109
		MS-9	132

## M5 SYNCHROSCOPE

120V	9	MS-8	133	M4-8	134
60Hz	8	MS-5	135	C1-8	118
	6	TB1-4	105	L2-1	129
	4	TB1-1	100	L3-2	131

WIRE Nos. 100-133  
WIRE Nos NOT USED - 112, 116, 119, 123

## R1

TB1-4	104	1	RL3-4	114
RL4-A	128	2	C1-1	111

47  $\Omega$  100W

## R2

TB1-1	101	1	RL3-1	110
		2	C1-1	113

47  $\Omega$  100W

## C1

R1-2	111	1	MS-8	118
T1-1	113	2	T1-2	120

18  $\mu$ F 100W

## T1 (HG11)

1	C1-1	113
2	C1-8	120
	RL3-2	127

## C

R2-2	115	1	RL4-B	122
T2-1	117	2	T2-2	124

18  $\mu$ F 100W

## T2 (HG11)

1	C3-1	117
2	C3-8	124
	RL3-5	125

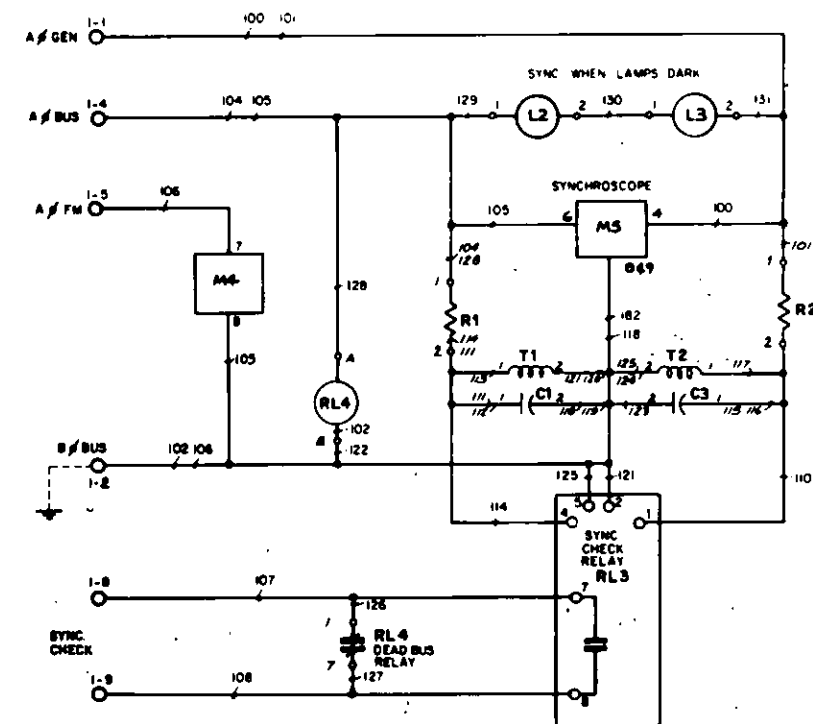
## RL3 VERI-SYNC

1	R2-2	110
2	T1-2	121
3		
4	R1-2	114
5	T2-2	125
6		
7	TB1-8	107
8	TB1-9	108
	RL4-1	126
	RL4-7	127

## RL4 DBR DEAD BUS RELAY (KUP14A35 115V)

A	R1-1	128
B	TB1-2	102
1	RL3-7	126
2	RL3-8	127
3		
4		
5		
6		
7		
8		
9		
10		

LAST WIRE N° 385  
N°S NOT USED : 112, 116, 119, 123, 124, 299,  
318, 319, 354, 355, 358.



1	TERMINALS ON THE ALARM	16-3-71	AD
No	DESCRIPTION	DATE	BY
	REVISION		

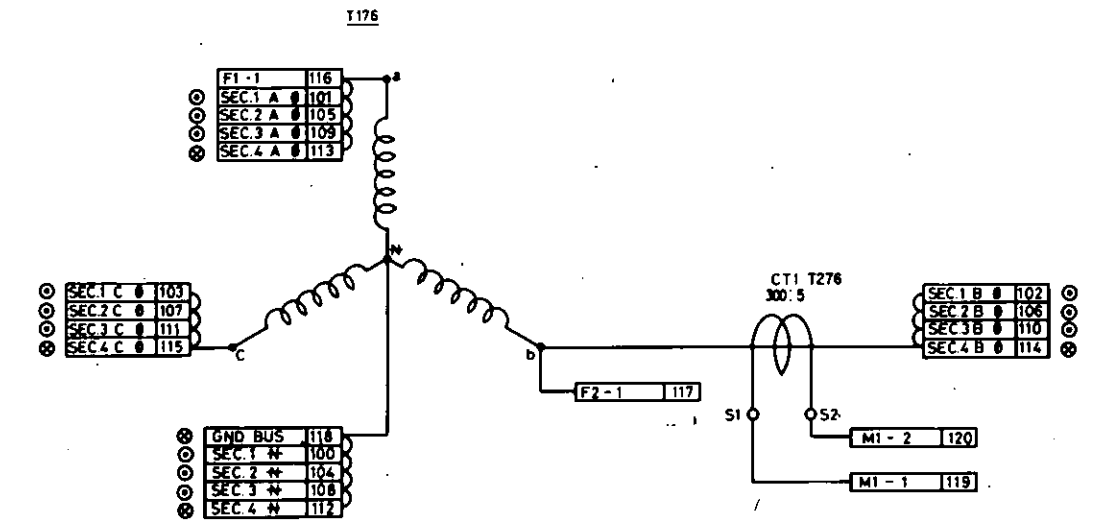
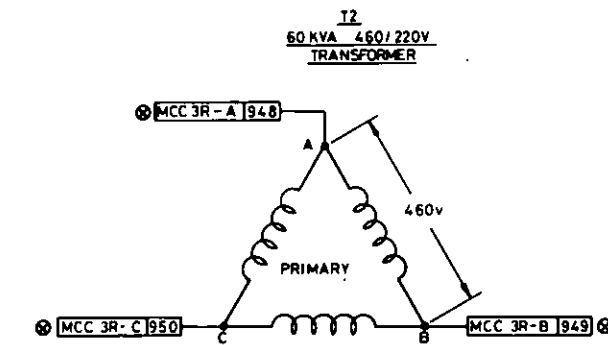
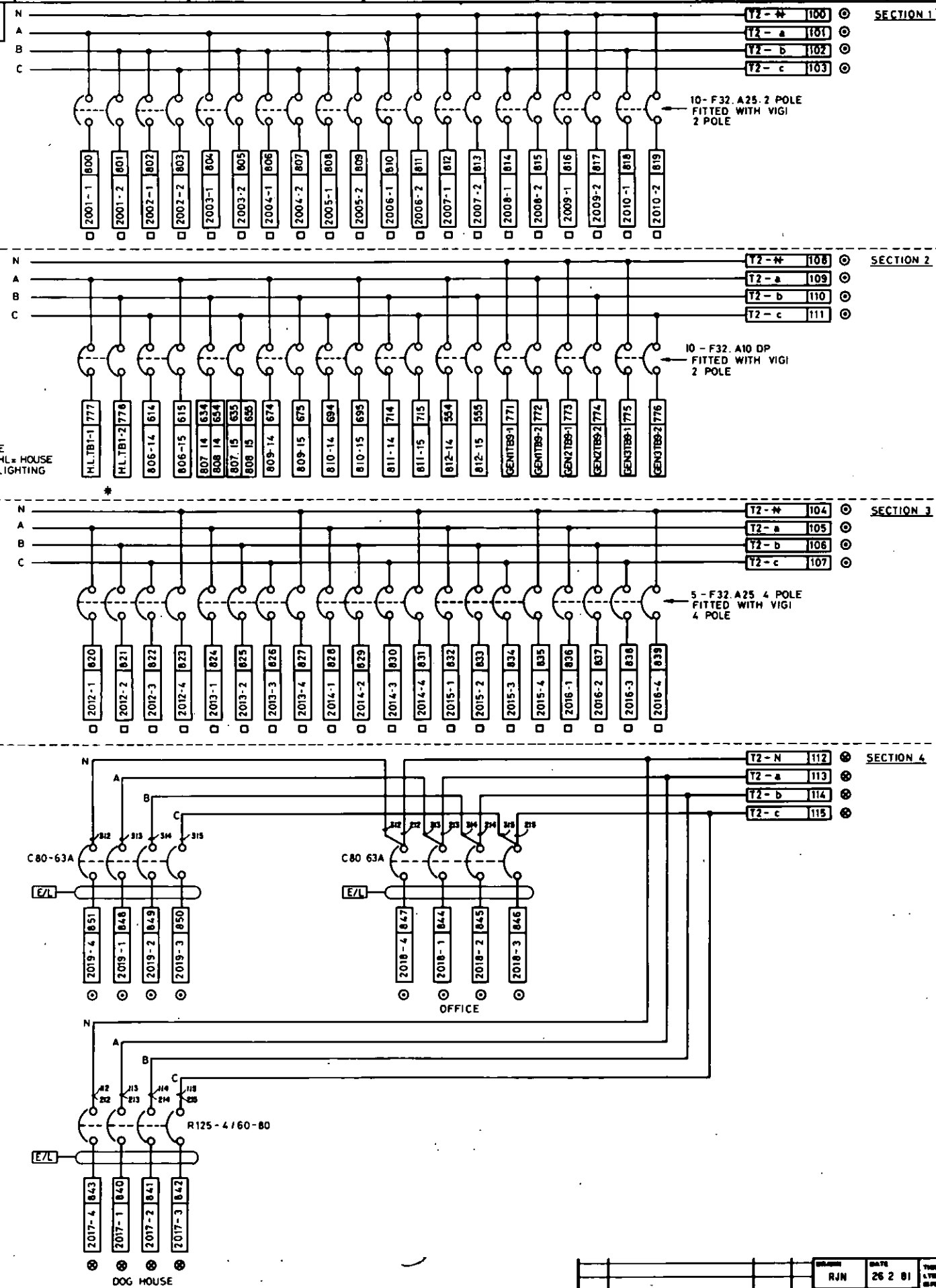
DATE	8-3-81	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED UNLESS BY EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.
DESIGN		
APP.:		
SCALE		



**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BEDS  
ENGLAND.  
TEL. (0494) 40121.

TITLE	600V GROUND FAULT SECTION SYNCHRONISING EQUIPMENT	REV	1
NO. N110-9	6070 DIO4 SHT 2 OF 2		
CUSTOMER	FORASOL		

6070D105



1A F151 X 2	6A F154 X 2
BASE F226 X4	
CARRIERS F227 X4	
FIXOCAPS F228 X4	
F3-1 126	T2 - a 116
F4-1 133	T2 - b 117
F1-1 126	F1 1A 12
F2-1 133	F2 1A 12
	F3 6A 2
	F4 6A 2
	M2-1 121
	M2-2 122
	480V MCC SEC.1A F11-1 131
	480V MCC SEC.1A F12-1 132

M1 AMMETER	
0-300A	1 CT1-S1 119
1A	2 CT1-S2 120

M2 VOLTMETER 302A044 (M164)	
0-300V	1 F1-2 121
	V01-29 129
	V01-30 130
	F2-2 122

NOTE:- BOTH METERS ARE CROMPTON-PARKINSON QUADRATIC  
72 X 72 WITH 90° MOV  
302A053 (M197)

## LEGEND

- - 10 AWG
- - 6 AWG
- ⊗ - 4 AWG
- △ - 00 AWG
- REMAINDER - 14 AWG

DRN	RJN	DATE	26 2 81
CHKD	PRJ	DATE	
APP.	PRJ	DATE	
USED ON			
REVISION			

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ASSOCIATED DRAWINGS  
WIND LIST  
GENERATOR



**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

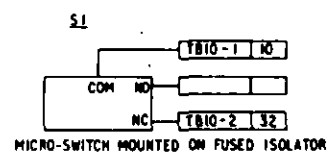
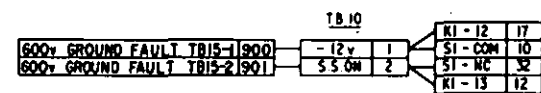
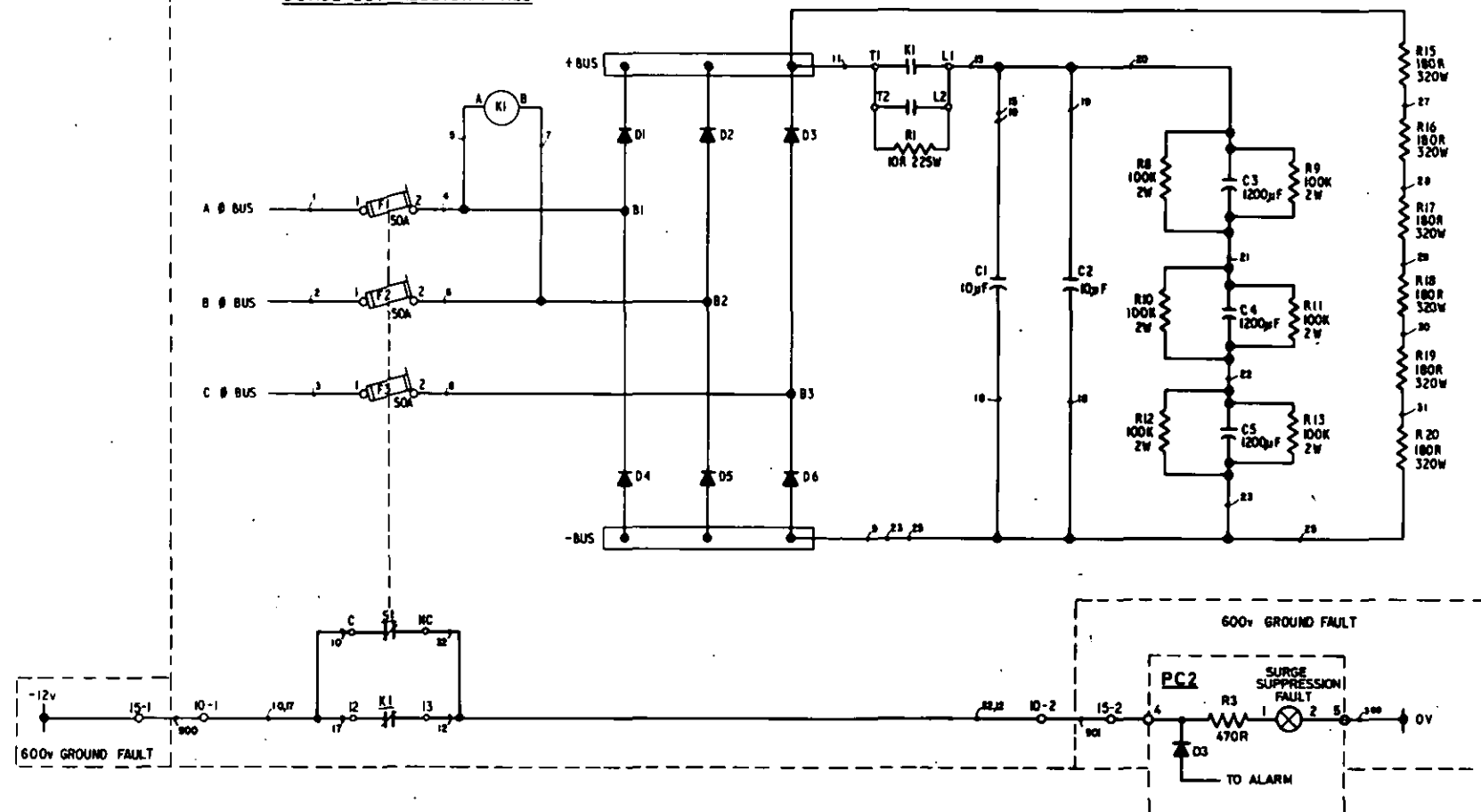
TITLE  
220V GND FAULT & DISTRIBUTION

REV. No.  
N110-9  
CUSTOMER  
FORASOL

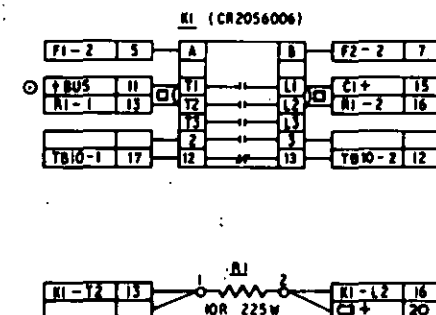
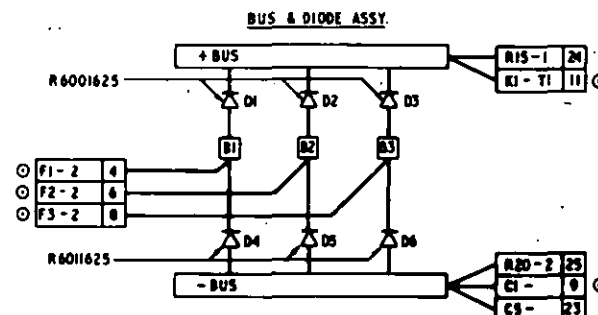
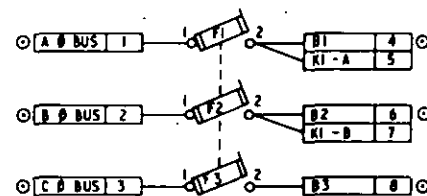
DRG. No.  
6070D105

6070DI13

## SURGE SUPPRESSION PANEL



## FUSED ISOLATOR - FERREZ



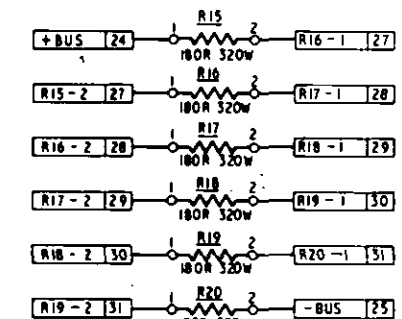
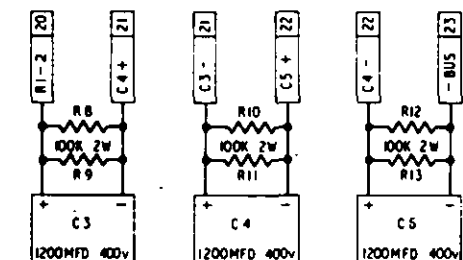
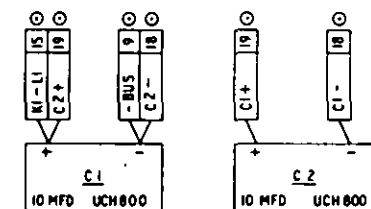
## NOTE

Surge suppression panel is located in base of Gen 1 section

LEGEND  
 ○ - AWG 6  
 □ - AWG 10  
 ALL OTHER WIRING AWG14  
 WIRE NOS. START AT 1.  
 LAST WIRE NO. USED 32  
 WIRE NOS. NOT USED 14, 26.

## PARTS LIST

NO	ITEM	MANUFACTURER CATALOGUE NO	DESCRIPTION	QTY
1	DRWC C34 1B3.		3 FUSED ISOLATOR FERREZ	1
2	PART OF ITEM 1		BLOWN FUSE MICRO SWITCH	1
3	R1		RESISTOR 10A 225W	1
4	STOCK		BUS BAR 9" x 2" x 1/4"	2
5			1 1/8" INSULATOR SPOOL	10
6	STOCK		INSULATOR 11" x 2" x 1/4" GLASTIC	1
7	D4-D6	R6011625XXYA 1600V 250A.	WESTINGHOUSE DIODE (REVERSE)	3
8	D1-D3	R6001625XXYA 160V 250A	WESTINGHOUSE DIODE.	3
9	K1	CR2056006W/15021610	GE CONTACTOR W/ 600V COIL	1
10	C1-C2	B25838 AB106 K0004.	10 MFD 1500V PEAK CAPACITOR	2
11	R8-R13	B6F-247.	RESISTOR 100K 1/2W CARBON TYPE	6
12	STOCK		INSULATOR 12" x 3" x 1/8" GLASTIC	1
13	C3-C5	36D 76521	1200 MFD 450VDC MAX. SURGE 500V CAPACITOR	3
14	F1-F3	CC1051 CPRC 20127.	CARBON FERREZ FUSE 50A 1000V DC	3
15	R15-R20	OF 42	RESISTOR 180A 320W	6
16	PART OF K1	BCR 205 X 100	AUX. CONTACT BLOCK 1 NO 1 NC.	1



NO	DESCRIPTION	DATE	BY
1	DESIGNED	19-12-80	...
2	CHECKED		...
3	APPROVED		...



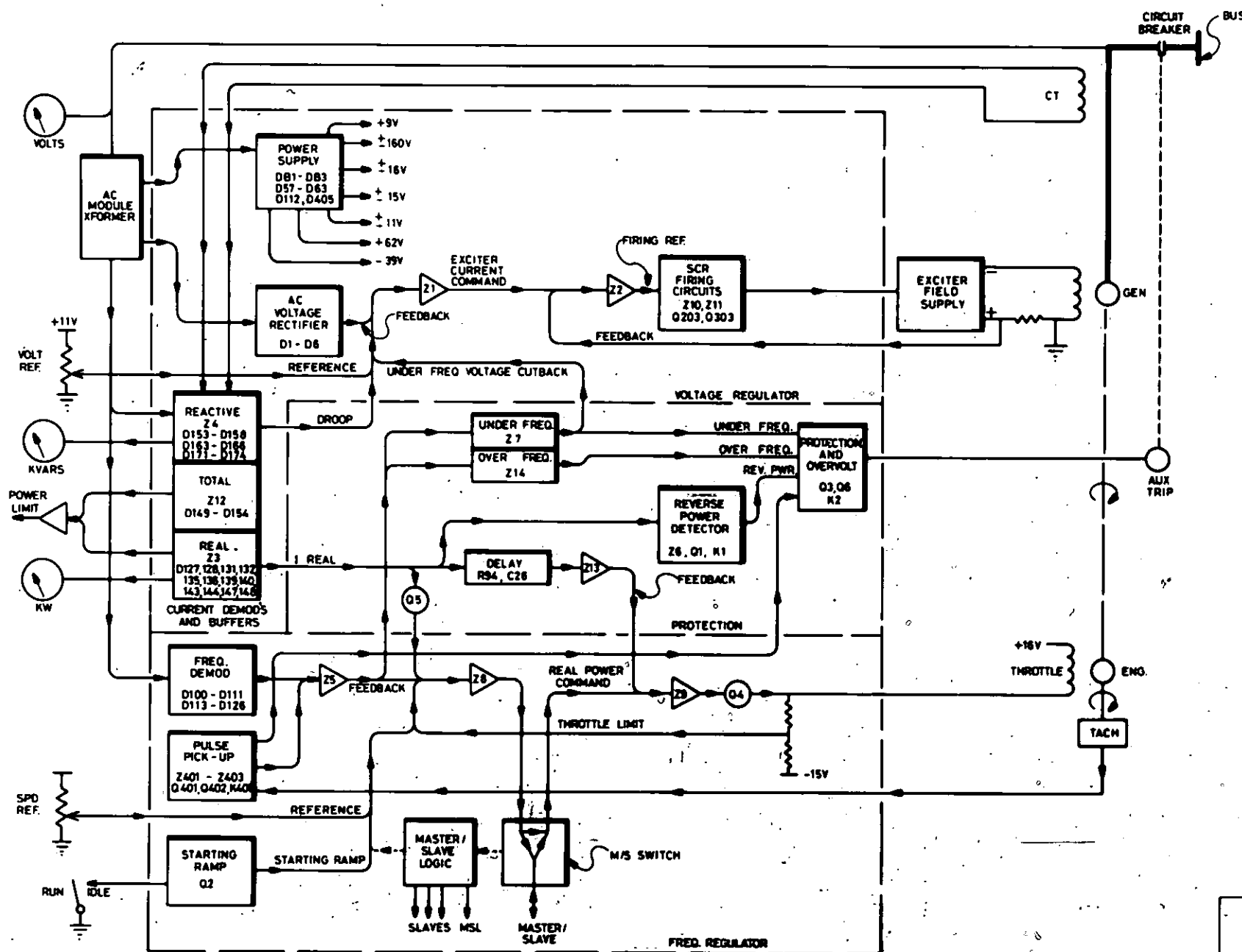
**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BUCKS.  
ENGLAND.  
TEL. (0494) 40121.

SURGE SUPPRESSION PANEL  
SCHEMATIC & WIRE LIST

NO	DESCRIPTION	DATE	BY
1	DESIGNED	19-12-80	...
2	CHECKED		...
3	APPROVED		...

6070DI13





556	I EX +
555	I EX -
554	REV PWR RS
553	KVAR MTR
552	
551	VOLT REF
550	KW MTR
549	-
548	
547	SPD REF
546	+11V
545	THROTTLE
544	M/S LOGIC
543	MSTR SLV
542	SLAVE
541	SLAVE
540	SLAVE
539	SLAVE

PIN DESIGNATIONS  
FOR  
A.C. REGULATOR  
CIRCUIT BOARD

COM	50
+16V	50
-16V	50
GATE A+	50
GATE A-	50
	50
-160V	50
+160V	50
	50
+12V	51
-12V	51
VAB	51
VBA	51
VBC	51
VCB	51
VCA	51
VAC	51
	51

530	SLAVE
531	SLAVE
536	RUN IDLE
535	
534	PERIODIT
533	THROTTLE+
532	REV/PWR
531	REV/PWR
530	CB TRIP
529	CB TRIP
528	CB TRIP
527	OV
526	TACH
525	I TOTAL
524	IC -
523	IC +
522	IB -
521	IB +
520	IA -
519	IA +

1	1	
2	2	IC 0
3	3	IA -
4	4	IB -
5	5	I REAL
6	6	I REACT
7	7	V BA
8	8	V BC
9	9	V AC
10	10	V AS
11	11	V CS
12	12	V CA
13	13	-30V 0
14	14	DEMO OUT
15	15	GOV FDBK
16	16	
17	17	NO PULSE
18	18	TACH IN
19	19	-12V BATT
20	20	+12V BATT
21	21	+16V
22	22	-16V
23	23	
24	24	-11V
25	25	+11V
26	26	OV
27	27	OV
28	28	+160V
29	29	-160V

30	TRIP VOLT
31	THR VOLT
32	LED ANOD
33	EX1 FDBK
34	VOLT REF

PIN DESIGNATIONS  
FOR  
AC REGULATOR  
CIRCUIT BOARD

2. REF. THE FOLLOWING:  
AC CIRCUIT BOARD ASSY 2000468  
AC AUX CIRCUIT BOARD ASSY 2000464  
AC MODULE ASSY 2000471
1. OP AMP CONNECTION DIAGRAM -  
Z401 Z402 Z10 Z11 = 15V  
ALL OTHERS = 215V



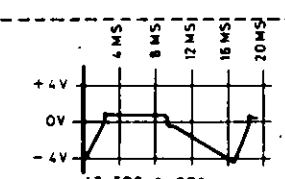
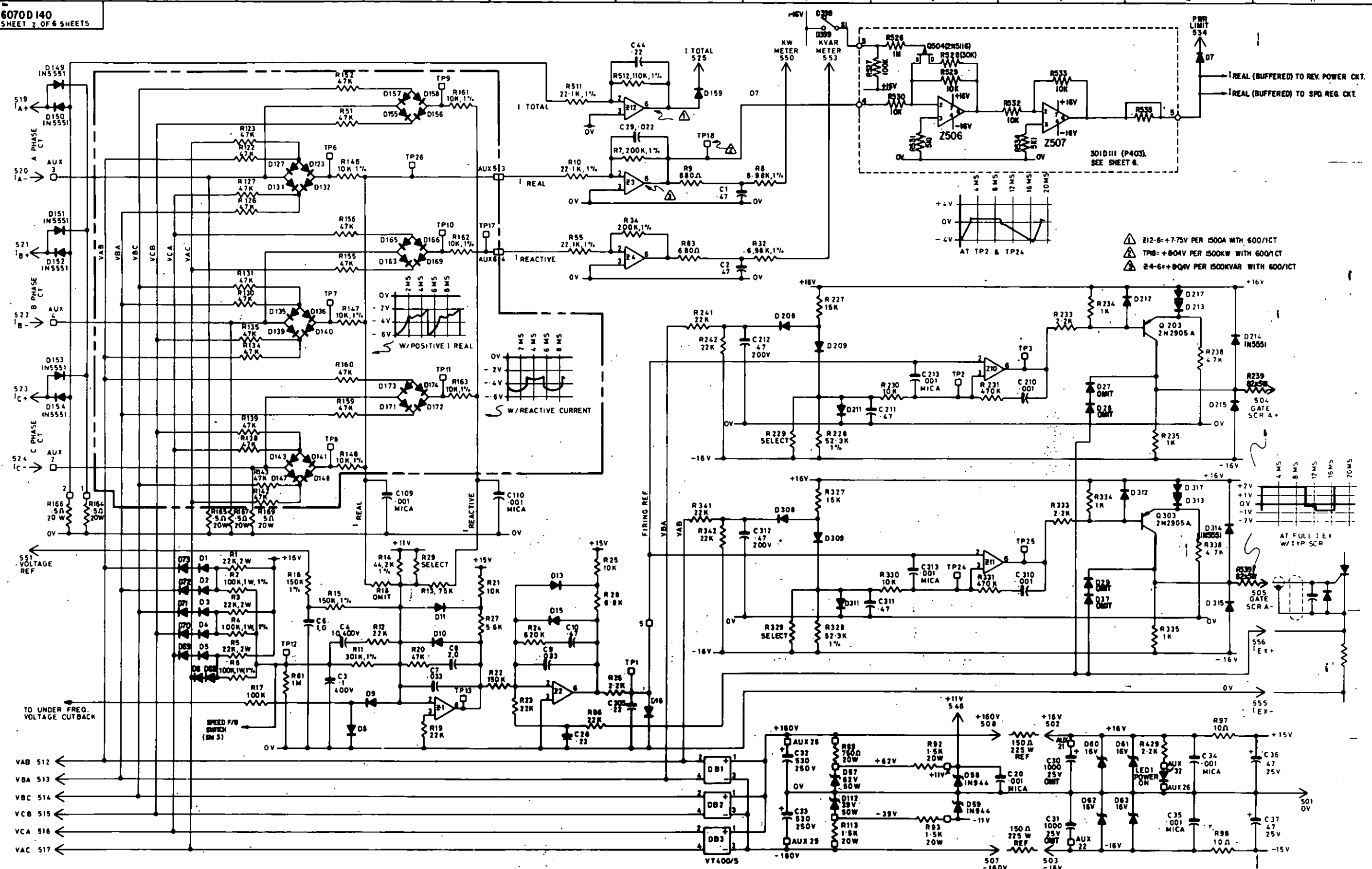
NOTES UNLESS OTHERWISE SPECIFIED


<b>W.S.M.</b>	<b>DATE</b> <b>307-8</b>
<b>NAME</b>	
<b>ADDRESS</b>	
<b>CITY</b>	
<b>STATE</b>	
<b>ZIP</b>	

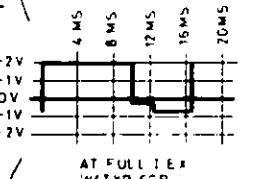
[illegible]

**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BEDS  
ENGLAND.  
TEL. (0494) 40121.

TITLE		AC. REGULATOR MODULE SCHEMATIC	
Issd. No.		Issd. No.	REV.
CUSTOMER'S		60700140	
FORASOI		SHT. 1 of 6 SHTS	




212-6-7.75V PER 1500A WITH 600/1CT  
 TP18=+804V PER 1500KW WITH 600/1CT  
 24-6-804V PER 1500KVAR WITH 600/1CT



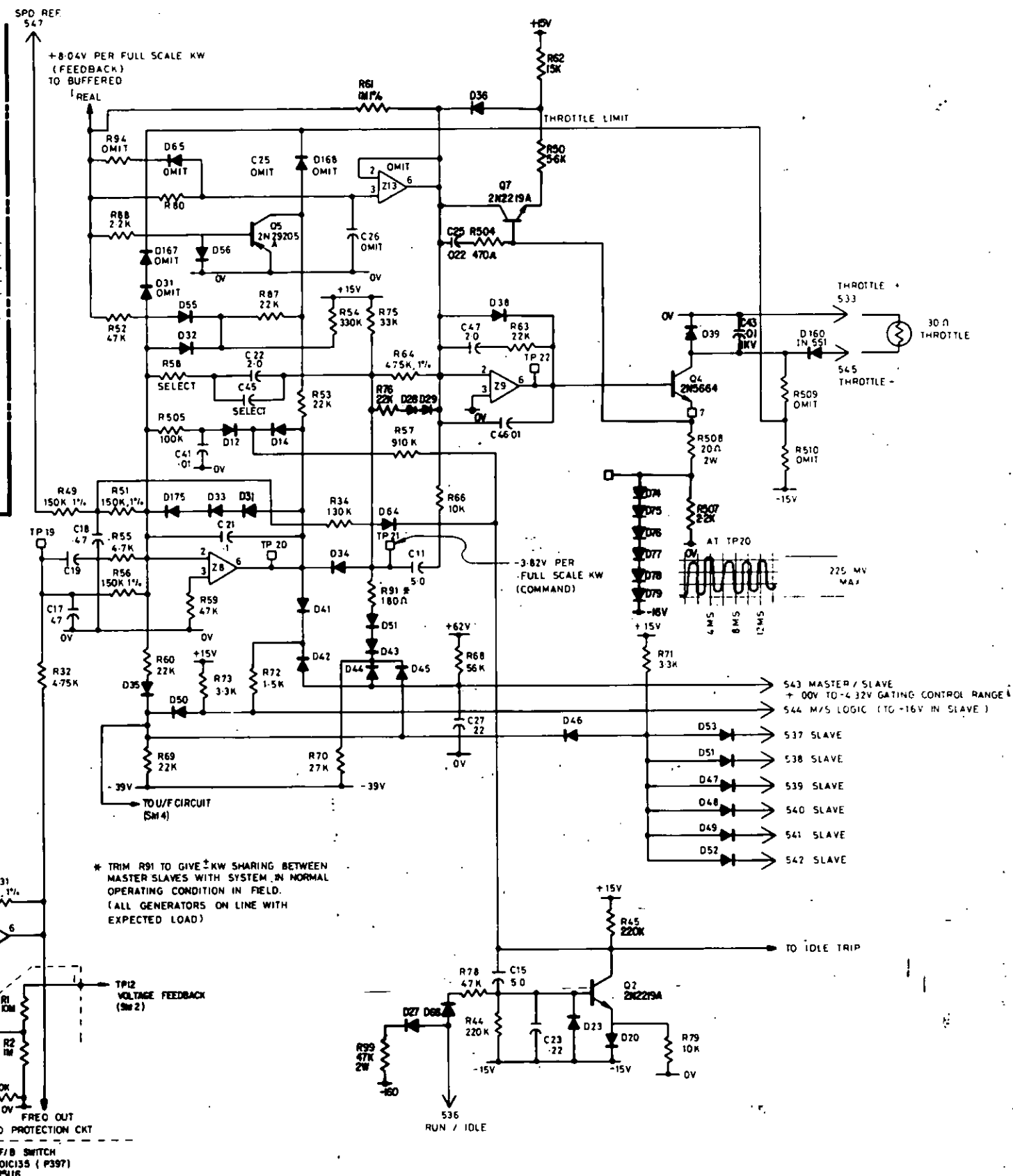
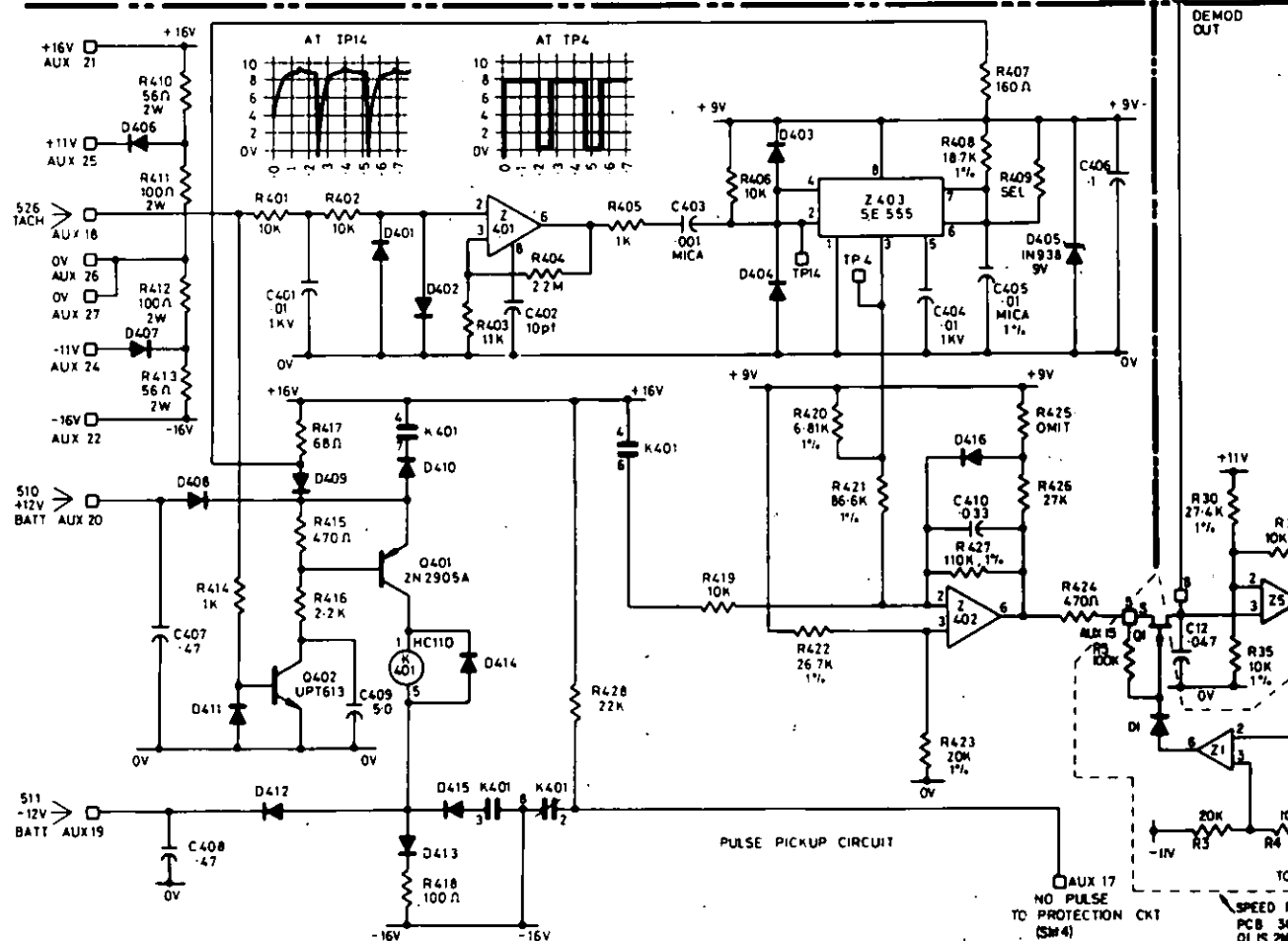
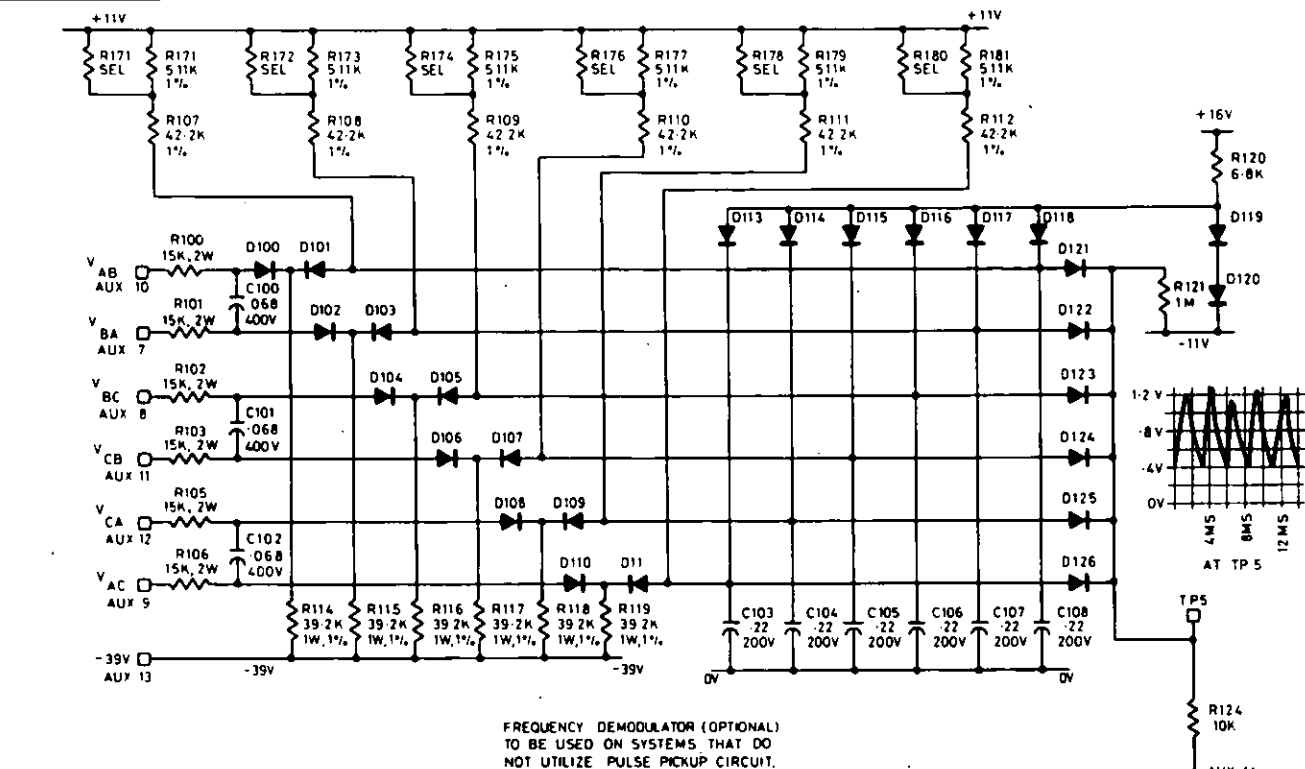
CURRENT DEMODULATORS  
 BUFFERS  
 FIRING CIRCUITS  
 VOLTAGE REGULATORS  
 POWER SUPPLIES

ORIGINAL Dwg - HSC 200028 REV A-6

DESIGNED W.S.M. DATE 3-7-81 CHECKED BY DATE BY	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN OR OTHER INFORMATION CONTAINED HEREIN IS EXPRESSLY PROHIBITED BY HILL GRAHAM CONTROLS LTD. ASSOCIATED DRAWINGS SEE LIST REVISIONS	 <b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, BUCKS ENGLAND TEL. (0494) 40121	TITLE <b>AC REGULATOR MODULE SCHEMATIC</b> Dwg No. <b>6070D140</b> SHEET 2 OF 6 SHEETS
---	---	--	--

# 6070 D140

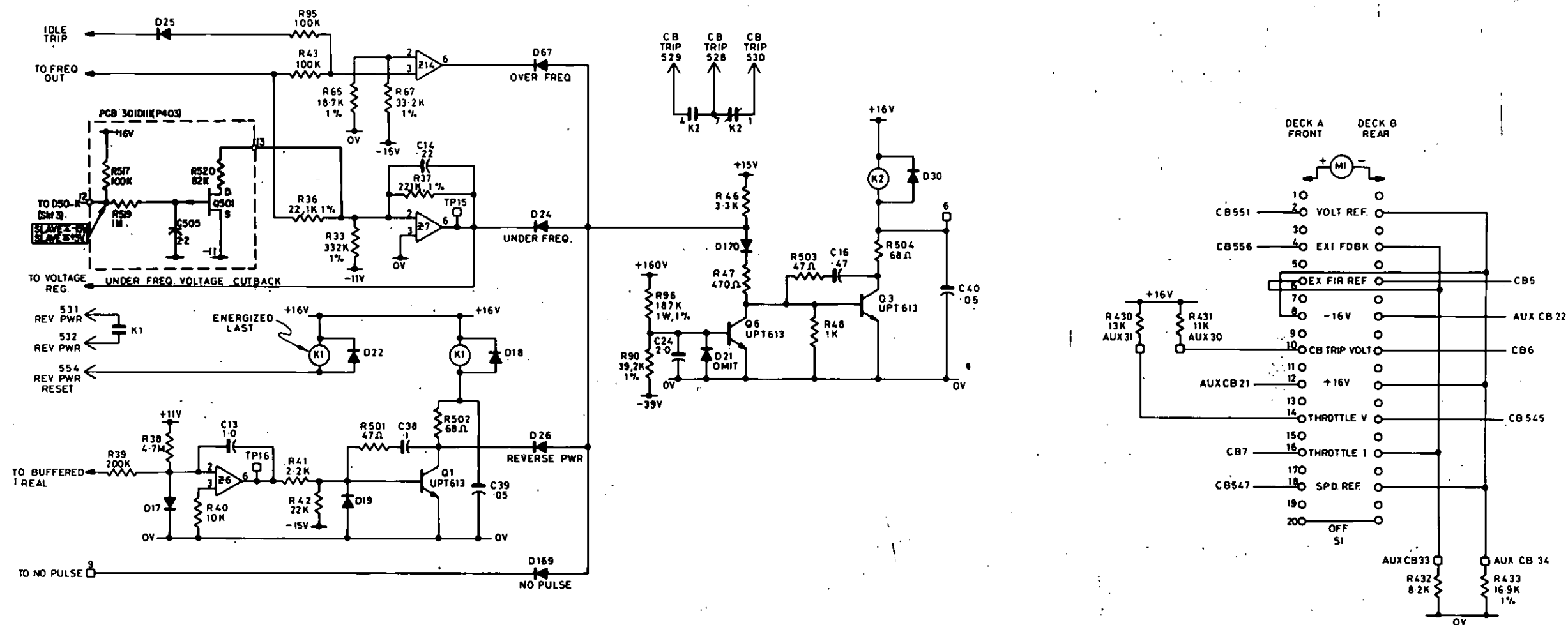
SMT 3 of 6 SMTS



\* TRIM R91 TO GIVE ±KW SHARING BETWEEN  
MASTER SLAVES WITH SYSTEM IN NORMAL  
OPERATING CONDITION IN FIELD.  
(ALL GENERATORS ON LINE WITH  
EXPECTED LOAD)

ORIGINAL DRG - HGC 2000128 REV A-6

<p>W.S.M.</p> <p>30-7-81</p> <p>THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS WITHOUT THE WRITTEN AUTHORIZATION OF HILL GRAHAM CONTROLS LTD. IS PROHIBITED.</p>	<p>HILL GRAHAM CONTROLS LTD</p> <p>HIGH WYCOMBE, BEDS</p> <p>ENGLAND</p> <p>TEL (0494) 40121</p>	<p>AC REGULATOR MODULE SCHEMATIC</p> <p>6070 D140</p> <p>SMT 3 of 6 SMTS</p>	<p>FORASOL</p>
--	--	--	----------------



OVER FREQ  
UNDER FREQ  
REVERSE POWER  
OVER VOLTAGE

AC CIRCUIT  
BOARD ASSY  
200D127

WIRE TYPE	DESTINATION
16-BLK-1	AUX CB-27
16-RED-1	AUX CB-21
16-WHT-1	AUX CB-22
16-BLU-1	AUX CB-29
16-ORN-1	AUX CB-28
20-BRN-1	AUX CB-20
20-PUR-1	AUX CB-19
16-YEL-1	AUX CB-10
16-BRN-1	AUX CB-7
16-GRY-1	AUX CB-8
16-PUR-1	AUX CB-11
16-GRN-1	AUX CB-12
16-BLU-5	AUX CB-9

16-BLU-4	R165-1
16-ORN-3	R167-1
16-GRN-3	R169-1
16-PUR-3	R164-1
16-YEL-3	R166-1
20-GRY-1	AUX CB-18
24-BRN-1	S1-F-14
20-GRN-1	AUX CB-25
24-PUR-1	S1-R-18
24-YEL-1	S1-R-2
24-BLU-1	S1-R-4

24-ORN-1	S1-F-6
24-GRN-1	S1-F-10
24-GRY-1	S1-R-16

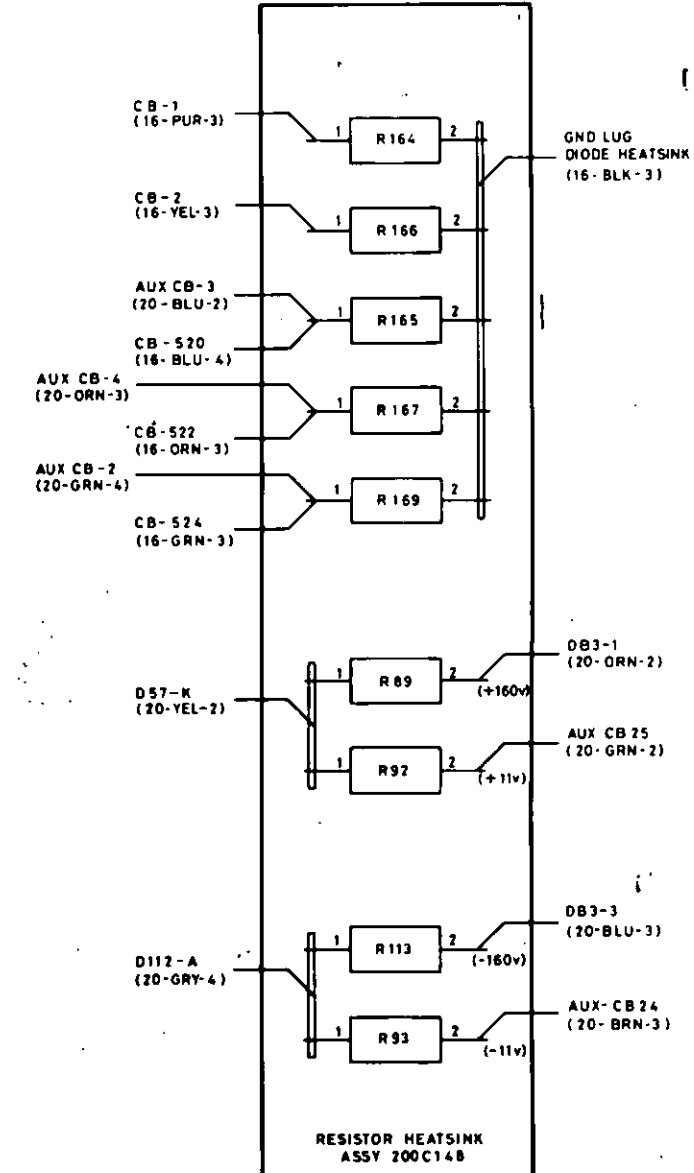
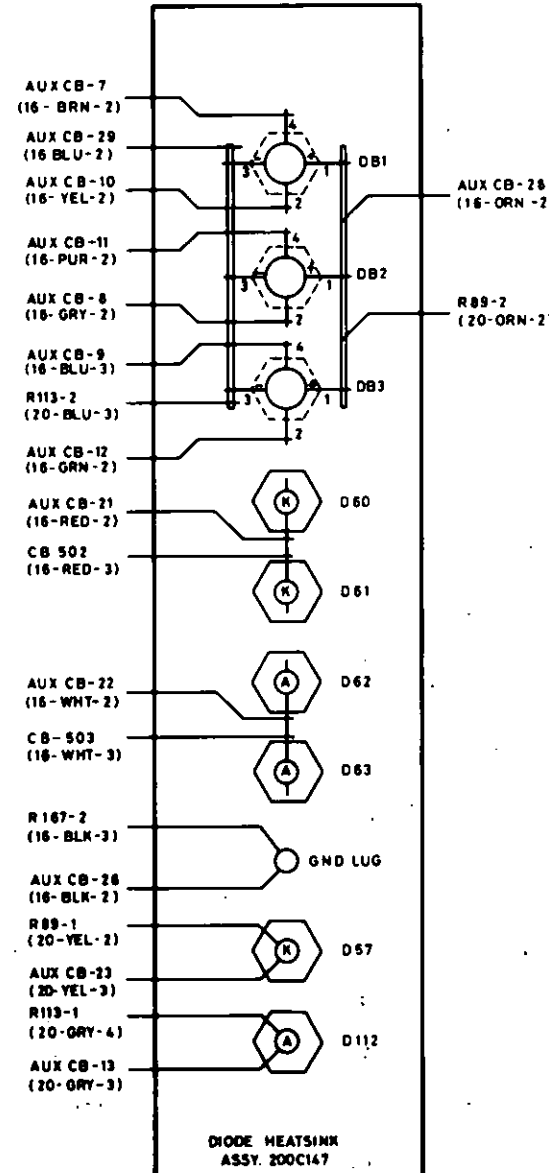
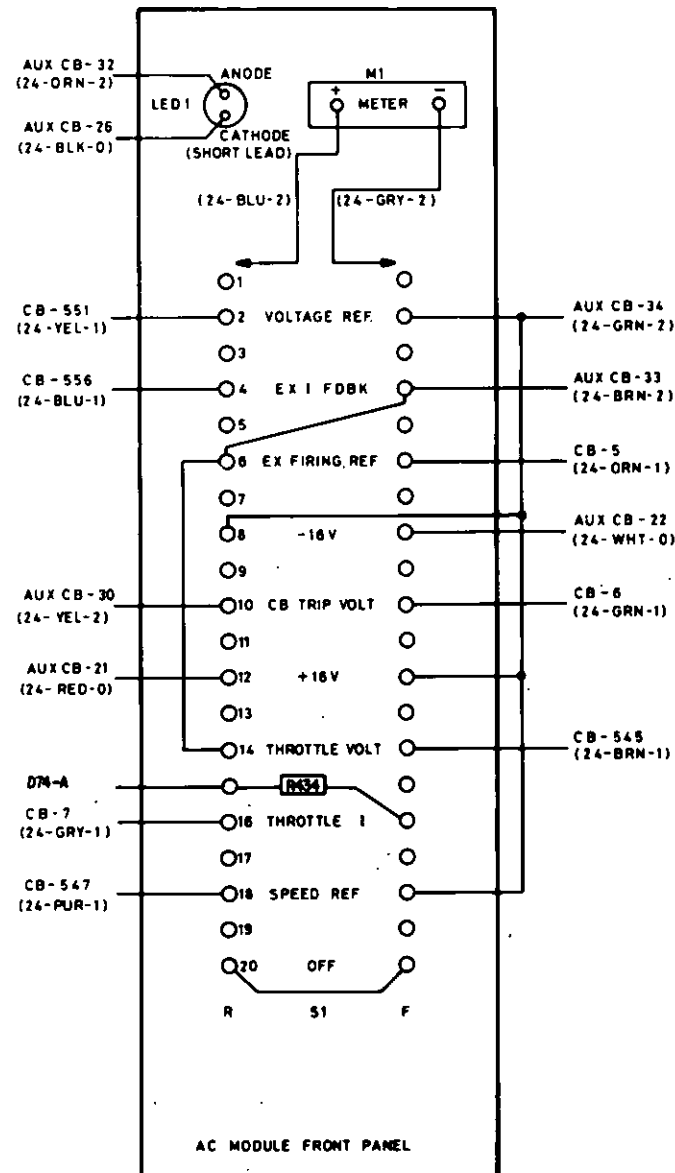
20-YEL-1	AUX CB-23
20-GRY-2	AUX CB-13
20-BRN-2	AUX CB-24

20-PUR-2	AUX CB-5
20-ORN-3	AUX CB-6

20-BLU-1	AUX CB15OR14
20-ORN-1	AUX CB17OR16
16-RED-3	D60/D61-K
16-WHT-3	D62/D63-A

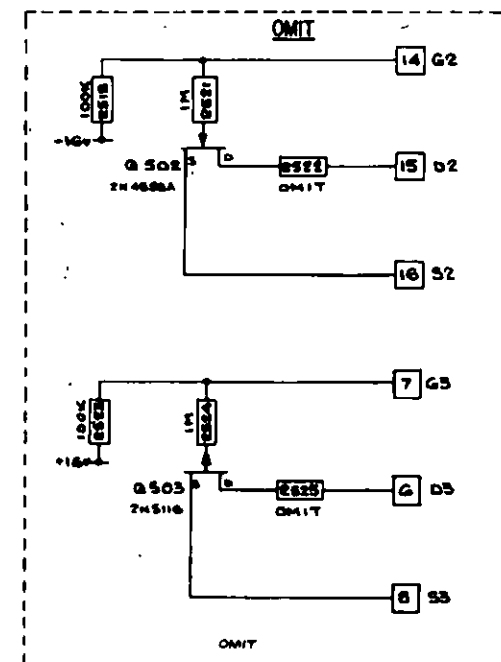
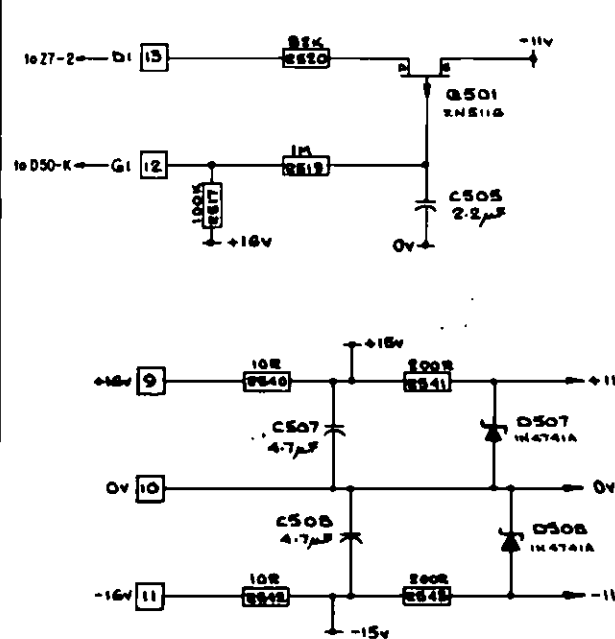
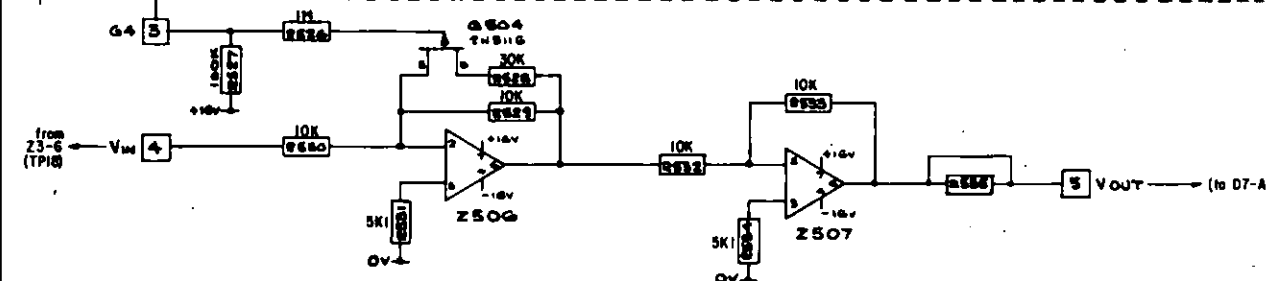
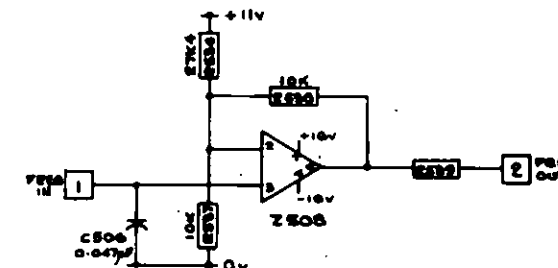
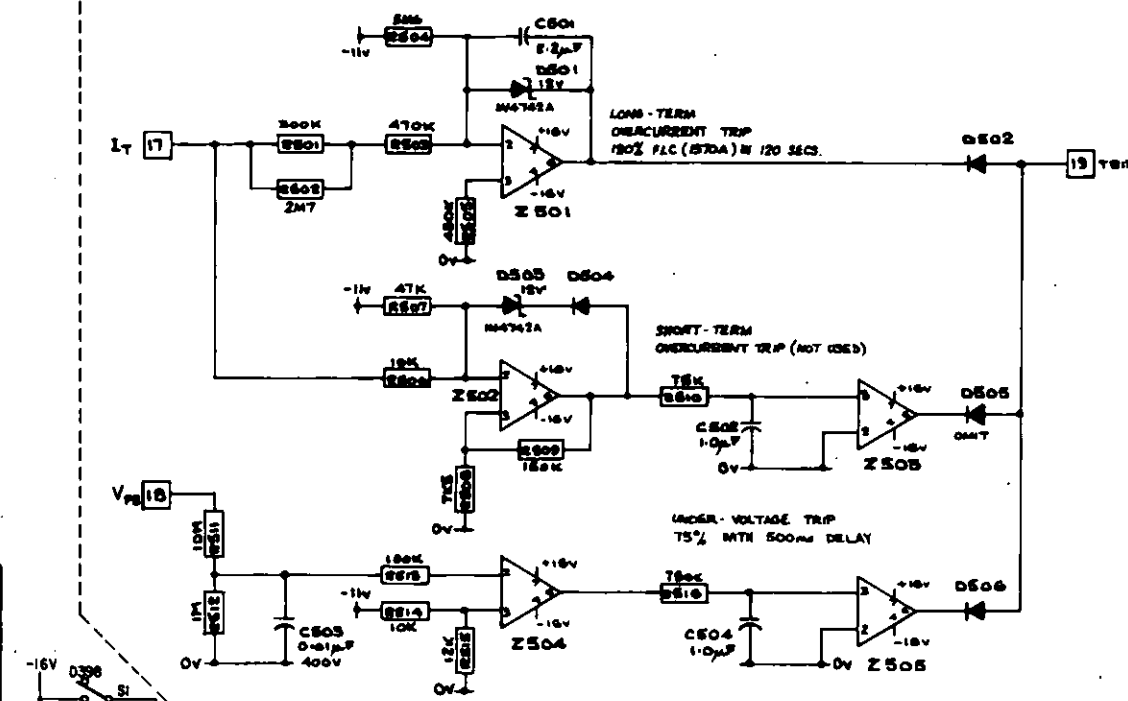
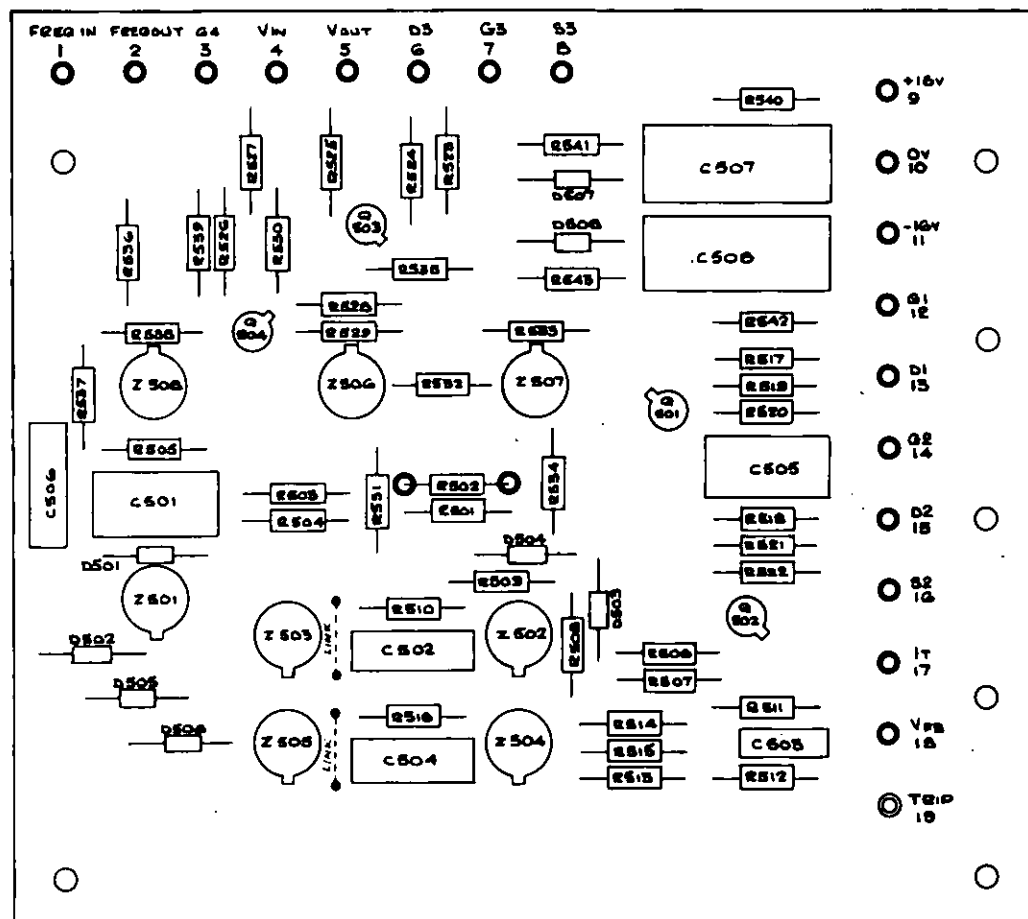
AC AUXILIARY  
BOARD ASSY  
200D464

WIRE TYPE	DESTINATION
20-GRN-4	R169-1
20-BLU-2	R165-1
20-ORN-3	R167-1
20-PUR-2	CB-3
20-GRN-3	CB-4
16-BRN-1	CB-513
16-BRN-2	DB1-4
16-GRY-1	CB-514
16-GRY-2	DB2-2
16-BLU-5	CB-517
16-BLU-3	DB3-4
16-YEL-1	CB-512
16-YEL-2	DB1-2
16-PUR-1	CB-515
16-PUR-2	DB2-4
16-GRN-1	CB-516
16-GRN-2	DB3-2
20-GRY-2	CB-39V
20-GRY-3	D112-A
20-BLU-1	CB-8
20-ORN-1	CB-9
20-GRY-1	CB-526
20-PUR-1	CB-511
20-BRN-1	CB-510
16-RED-1	CB-502
24-RED-0	S1-R-12
16-RED-2	D60/D61-K
16-WHT-1	CB-503
16-WHT-2	D62/D63-A
24-WHT-0	S1-F-8
20-YEL-3	D57-K
20-BRN-2	CB-11V
20-BRN-3	R93-2
20-GRN-1	CB-11V
20-GRN-2	R92-2
16-BLK-2	DIODE HS. GND
24-BLK-0	LED1 CATH.
16-BLK-1	CB-501
16-ORN-1	CB-508
16-ORN-2	DB1-1
16-BLU-1	CB-507
16-BLU-2	DB1-3
24-YEL-2	S1-R-10
24-PUR-2	S1-R-14
24-ORN-2	LED1 ANODE
24-BRN-2	S1-F-4
24-GRN-2	S1-F-2
20-YEL-1	CB-62V



- NOTES:-
- FOR PULSE PICKUP OPERATION, CB-8 IS CONNECTED TO AUX CB-15 AND CB-9 IS CONNECTED TO AUX CB-17. FOR FREQ DEMODULATOR OPERATION, CB-8 IS CONNECTED TO AUX CB-14 AND CB-9 IS CONNECTED TO AUX CB-16.
  - THE GROUND SHIELD ENCASES THESE FIVE WIRES.

ORIGINAL Dwg - HGC 200D128 REV A-6



THIS PCB IS FITTED INTERNALLY  
TO THE AC MODULE.  
ORIGINAL DRAWING 301011 (P403)  
SEE SHEET 2 FOR APPLICATION WITHIN MODULE.

DATE	29-7-81
BY	W.S.M.
APP	
SCALE	2:1

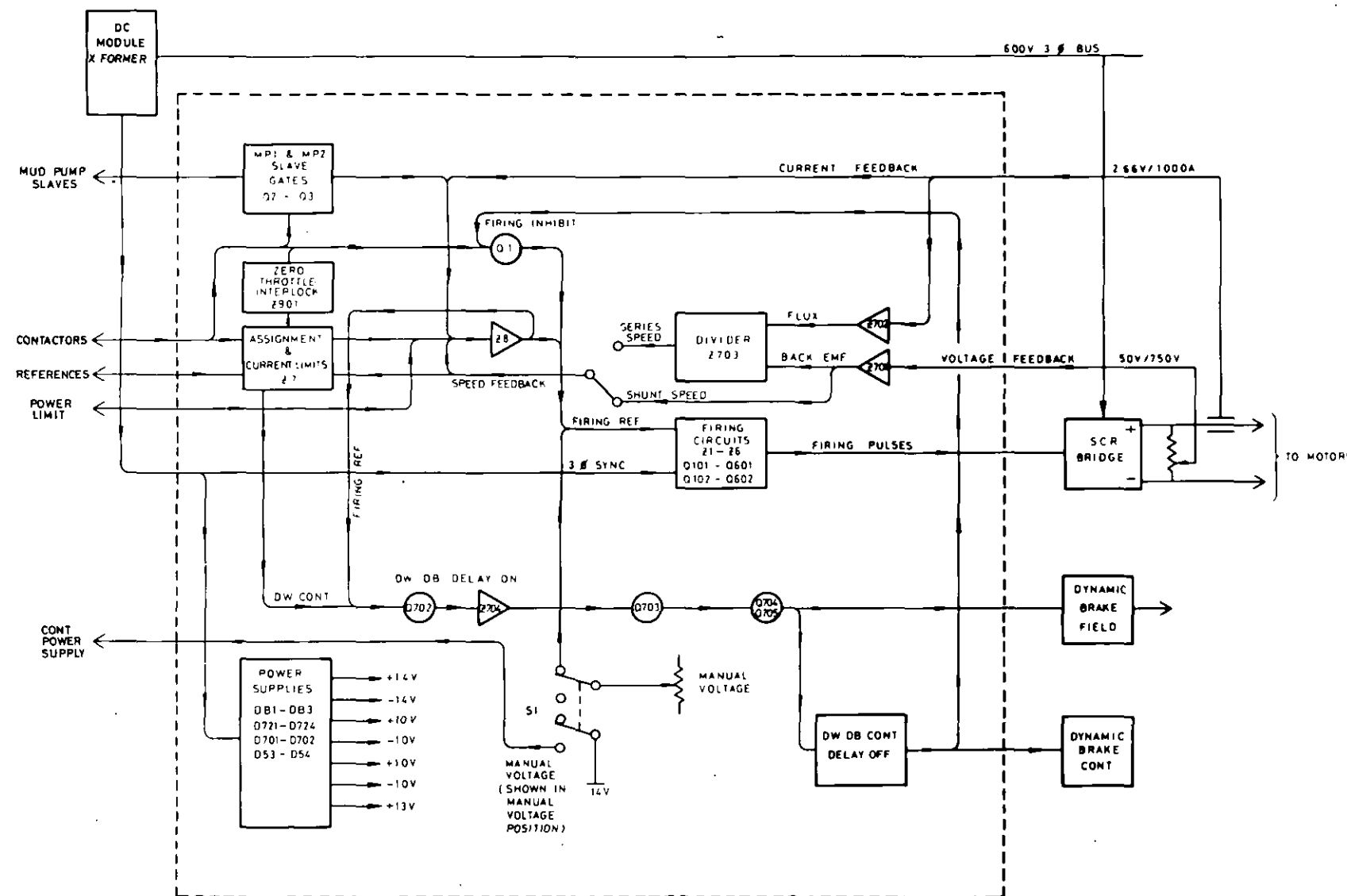


**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND.  
TEL. (0494) 40121.

TITLE	CIRCUIT DIAGRAM & ASSY. GENERATOR PROTECTION P.C.B.
REV	
CUSTOMER	FORASOL
DATE	6070D140 Sht 6 of 6

6070D141

DESCRIPTION	Q



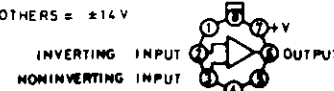
156	DO NOT USE
155	GND
154	-14V
153	+14V
152	AUX REF 2
151	AUX REF 1
150	C - CATH
149	C - GATE
148	C + CATH
147	C + GATE
146	B - CATH
145	B - GATE
144	B + CATH
143	B + GATE
142	A - CATH
141	A - GATE
140	A + CATH
139	A + GATE

PIN DESIGNATIONS  
FOR  
DC REGULATOR  
CIRCUIT BOARD

FOR SERIES MOTORS	VBR	101	FOR SHUNT MOTORS
	VFB	102	
	VCA	103	
	VCB	104	
	VAB	105	
	VBA	106	
	VBC	107	
	VAC	108	
	DWRB	109	
	CP REF 2	110	
	PROP DB	111	
	CP CONT	112	
	CP REF 1	113	
	DW REF 1	114	
	PWR LMT	115	
	DA CONT	116	
	DW SPDREF	117	
	P REF EPC	118	

138	DB CONT	DWA END CONT
137	DO NOT USE	
136	MP2 SLV	DW SLAVE
135	DB CONT	
134	CNT - 14	
133	MP1 SLV	
132	RT REF 2	
131	SCR AMPS	
130	RT REF 1	
129	RT CONT	
128	RT CL	
127	DB FIELD	
126	MP1 REF MPC	
125	MP1 REF DC	
124	MP1 CONT	
123	MP2 REF MPC	
122	MP2 REF DC	
121	MP2 CONT	
120	PROP CONT	
119	P REF WMC	

REF THE FOLLOWING:  
DC CIRCUIT BOARD ASSY 200D117  
DC AUX CIRCUIT BOARD ASSY 200D120  
DC MODULE ASSY 200D207  
OP AMP CONNECTION DIAGRAM -  
21-26 = +13V & -14V  
ALL OTHERS = ±14V



NOTES: UNLESS OTHERWISE SPECIFIED

ORIGINAL DRG 200D116 REV 2

**HILL GRAHAM  
CONTROLS LTD**  
HIGH WYCOMBE, BEDS.  
ENGLAND  
TEL. 0908 40121

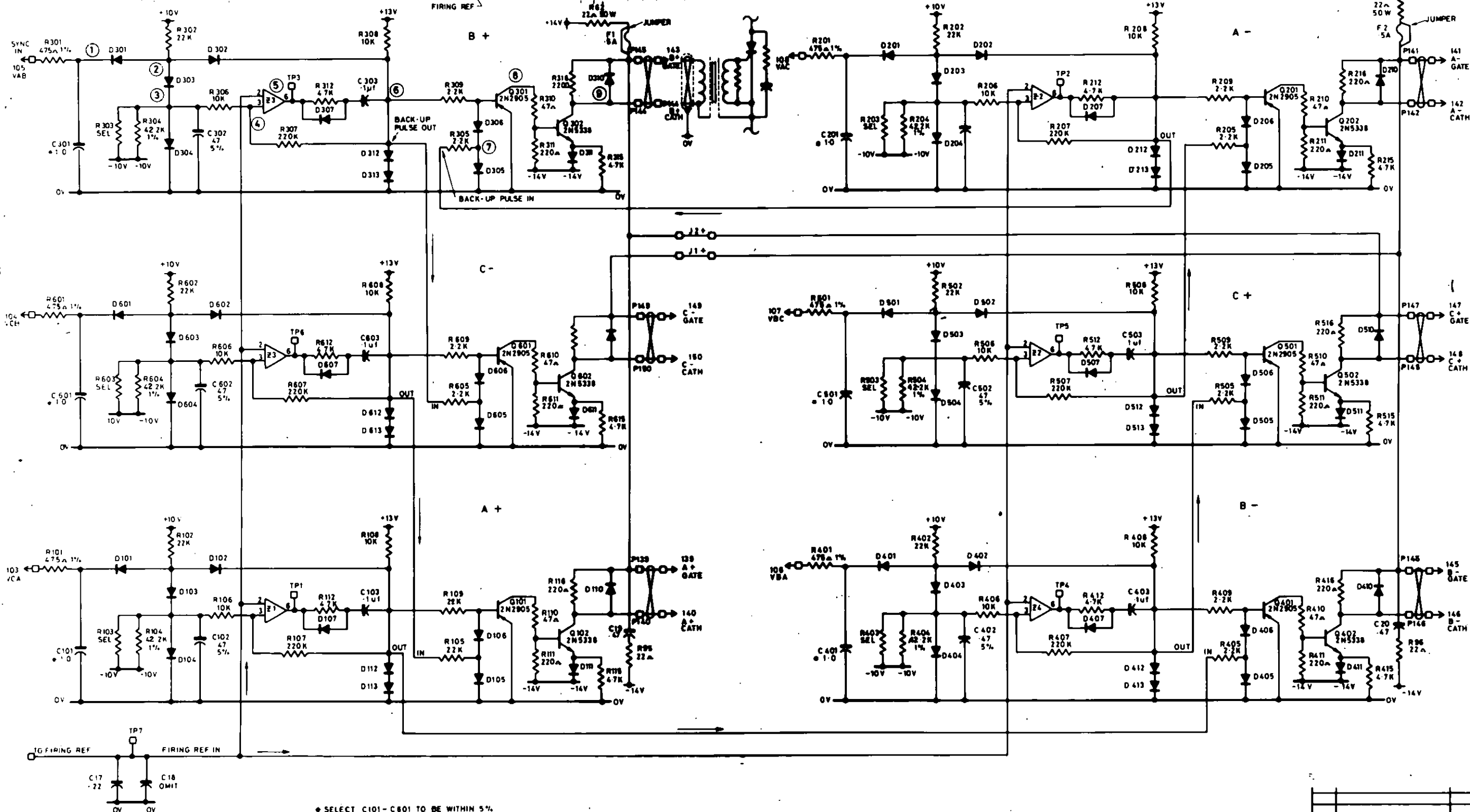
TITLE: DC REGULATOR  
MODULE SCHEMATIC SHT. 1 OF 6

DATE: 10/1/74  
BY: JWA/SOL

6070D141





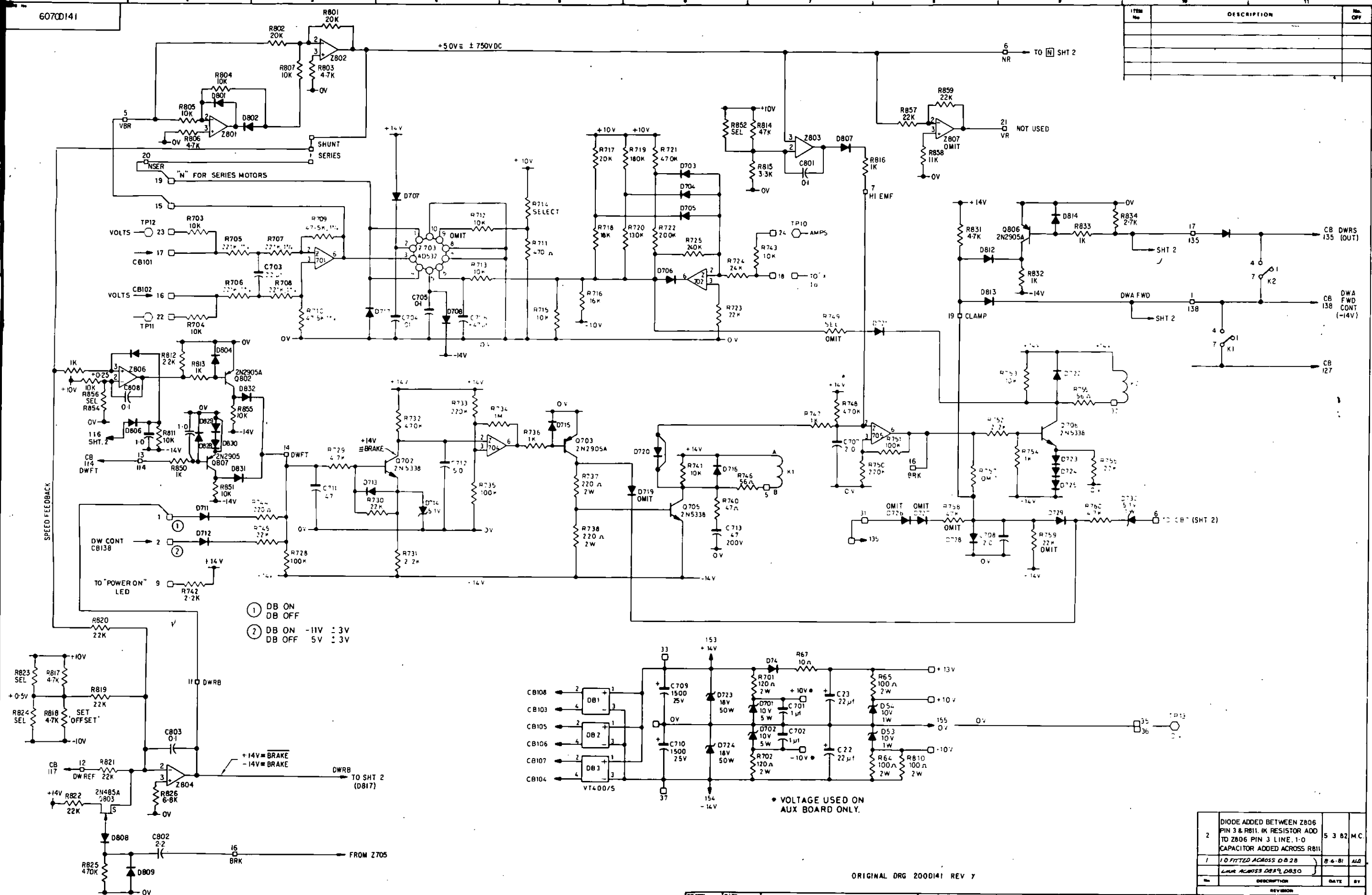


### FIRING CIRCUITS



### DC REGULATOR MODULE SCHEMATIC

TITLE		DC REGULATOR MODULE SCHEMATIC
REV. NO.		REV. NO.
DATE	FOR ASSEMBLY	6070D141



NOTE:  
ALL COMPONENTS WITH '800 SERIES' NUMBERS ARE ON  
'DW REGEN BRAKE' PCB 3010143 (SEE SHT 6)

ORIGINAL DRG 2000141 REV 7

CLASS Berkeley		DATE 11-4-79		THIS IS A PREPARED BY BOOKS OF HILL GRAHAM CONTROLS LTD. REPRESENTING ON BEH OF THE DESIGN BY OTHERS. SUPPLEMENTARY TO THE AUTHORIZED BY HILL GRAHAM CONTROLS LTD.				<b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, BEDS ENGLAND. TEL. (0494) 4 0121.		TITLE D.C. REGULATOR MODULE SCHEMATIC SHT. 4 OF 6.		REVISION 	
Cust APP :				TELEPHONE: 1 EXT: 1 JND 2 EXT: 1 PLAND JND 3 EXT: 1 PLAND JND		USED ON 		HSE No. 		HSE No. 6070D141		REV 1	
SOLA								CUSTOMER FORASOL					

60700141

DC CIRCUIT BOARD  
200D117

CB101	20-VIO-3	AUX CB 17
CB102	20-ORG-9	AUX CB 16
CB103	16-BRN-1	DB1-4
CB104	16-BLU-1	DB3-4
CB105	16-GRN-1	DB2-2
CB106	16-YEL-1	DB2-4
CB107	16-VIO-1	DB3-2
CB108	16-ORG-1	DB1-2
CB110	24-BLU-1	S2-5-REAR
CB112	24-YEL-1	S2-3-REAR
CB113	24-GRN-1	S2-4-REAR
CB114	24-ORG-2	S2-6-REAR
CB116	24-VIO-1	AUX CB 2
CB116	16-GRY-1	
CB118	24-GRN-2	S2-13-REAR
CB119	24-YEL-2	S2-12-REAR
CB120	24-BLU-2	S2-14-REAR
CB121	24-BRN-1	S2-1-REAR
CB121	20-GRY-2	CB D27-K
CB122	24-ORG-1	S2-2-REAR
CB124	24-GRN-3	S2-19-REAR
CB125	24-YEL-3	S2-18-REAR
CB127	16-BRN-2	K1-7
CB128	24-VIO-2	S2-15-REAR
CB129	24-ORG-3	S2-17-REAR
CB130	24-BRN-3	S2-16-REAR
CB134	16-ORG-2	S1-4
CB135	16-YEL-3	K2-2
CB153	15-RED-1	DB1-1
CB154	16-WHT-1	DB1-3
CB155	15-BLK-1	AUX CB 34
CB51-W	20-GRY-4	S1-2
CBCCW	20-GRN-4	R44-CCW
CBN	20-BRN-2	AUX CB19
CB153	20-VIO-4	CB-14V
CB154	20-BLU-9	CB-14V
CBX	20-YEL-5	AUX-CB-18
CBY	20-GRN-5	AUX-CB-1
CB8	20-BRN-1	LED 2-A
CB7	20-ORG-1	CB7
CB6	20-YEL-1	CB6
CB5	20-GRN-1	CB5
CB4	20-BLU-1	CB4
CB3	20-VIO-1	CB3
CB2	20-GRY-1	CB2
CB1	20-ORG-2	CB1
CB11	20-GRN-2	CB11
CB12	20-YEL-2	CB12
CB12	20-GRN-3	CB12
CB139	20-YEL-3	CB12
CB140	20-ORG-3	CB P139
CB141	20-BLU-2	CB P140
CB142	20-ORG-4	CB P141
CB143	20-BLU-3	CB P142
CB143	20-ORG-5	CB P143
CB144	20-BLU-4	CB P144
CB145	20-ORG-6	CB P145
CB146	20-BLU-5	CB P146
CB147	20-ORG-7	CB P147
CB148	20-BLU-6	CB P148
CB149	20-ORG-8	CB P149
CB150	20-BLU-7	CB P150
CB7	20-GRY-5	AUX CB6

2 WIRES  
2 WIRES  
2 WIRES

TWISTED PAIR

TWISTED PAIR

DC AUX CIRCUIT BOARD  
200120

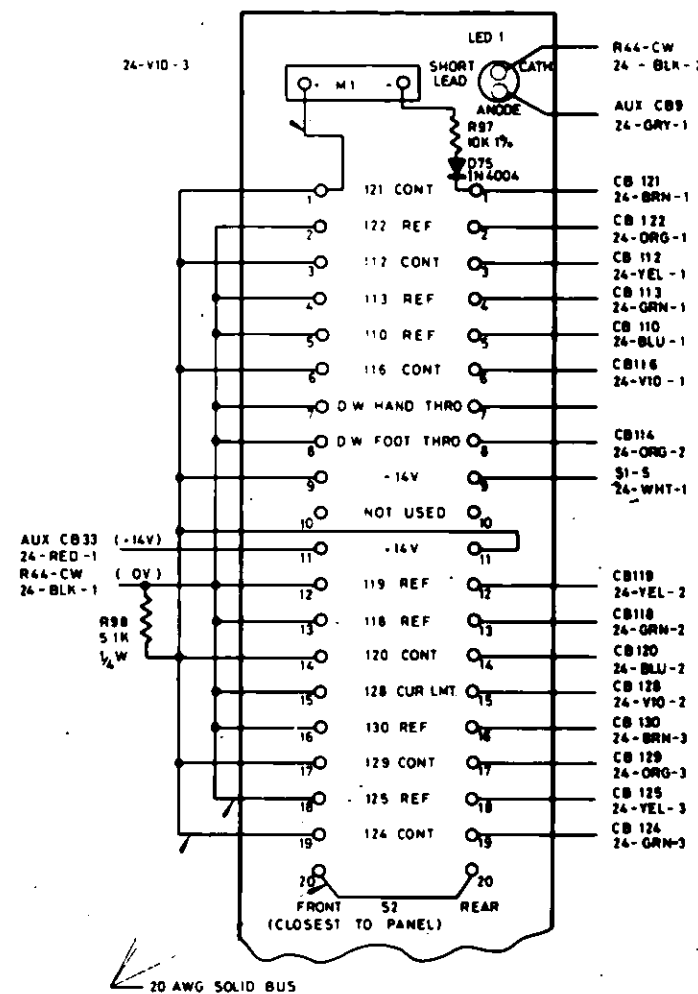
AUX CB 5	16-ORG-3	K1-B
37	16-WHT-5	C710-
37	16-WHT-2	DB1-3
34	16-BLK-1	CB155
34	16-BLK-5	C710-
35	16-BLK-2	H5 OV
36	16-BLK-3	TP13
36	16-BLK-6	C709-
33	16-RED-2	DB1-1
33	16-RED-4	C709-
33	24-RED-1	S2-11-FRONT
1	20-GRN-5	CB Y
2	16-GRY-1	CB116
6	20-GRY-5	CB7
32	20-BLU-8	K2-B
19	20-BRN-2	CB N
9	24-GRY-1	LED 1 ANODE
15	20-	
16	20-ORG-9	CB 102
17	20-VIO-3	CB 101
22	20-GRY-3	TP11
23	20-BRN-3	TP12
18	20-YEL-5	CBX
AUX CB 24	20-GRN-6	TP10
AUX CB 31	20-VIO-5	K2-2

## 200D117 CONT

CB11	20-GRN-9	CB11
CBR62-1	16-ORG-4	R62-1
CBR62-2	16-YEL-2	R62-2
CBR63-1	16-ORG-5	R63-1
CBR63-2	16-YEL-3	R63-2
CB138	16-GRN-2	K1-4

TWISTED PAIR

TWISTED PAIR



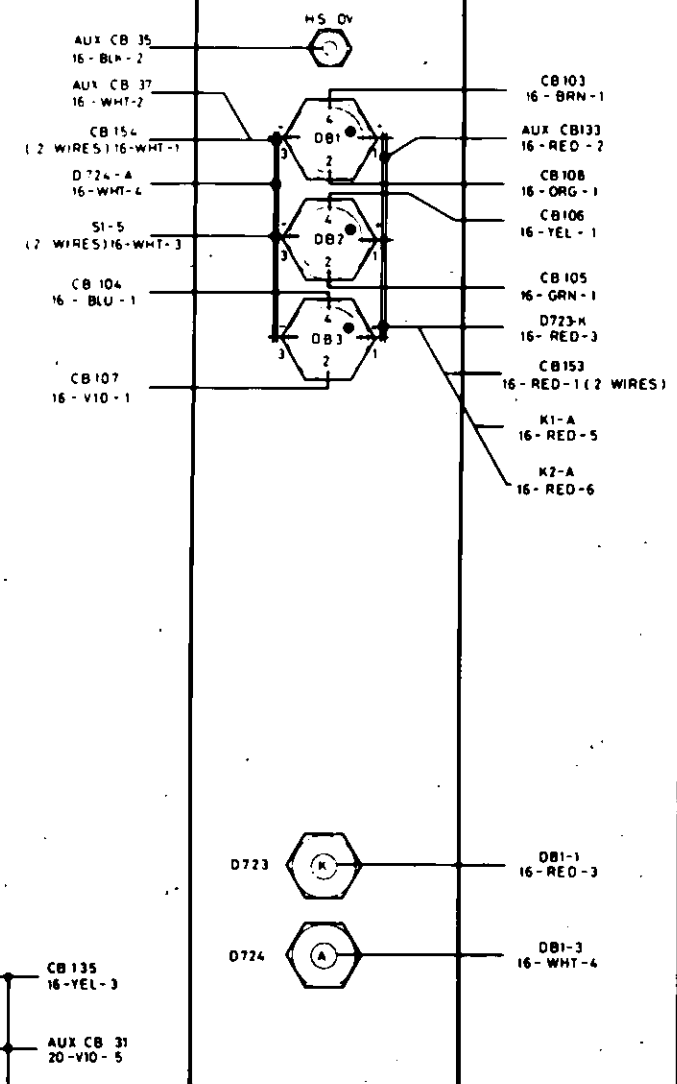
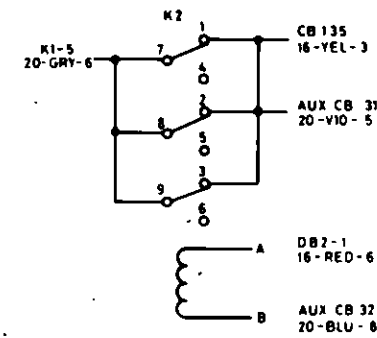
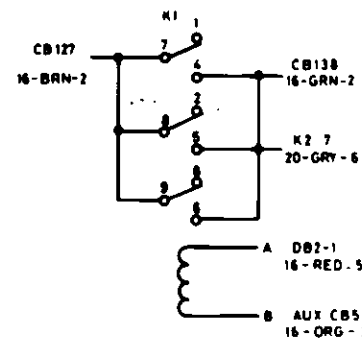
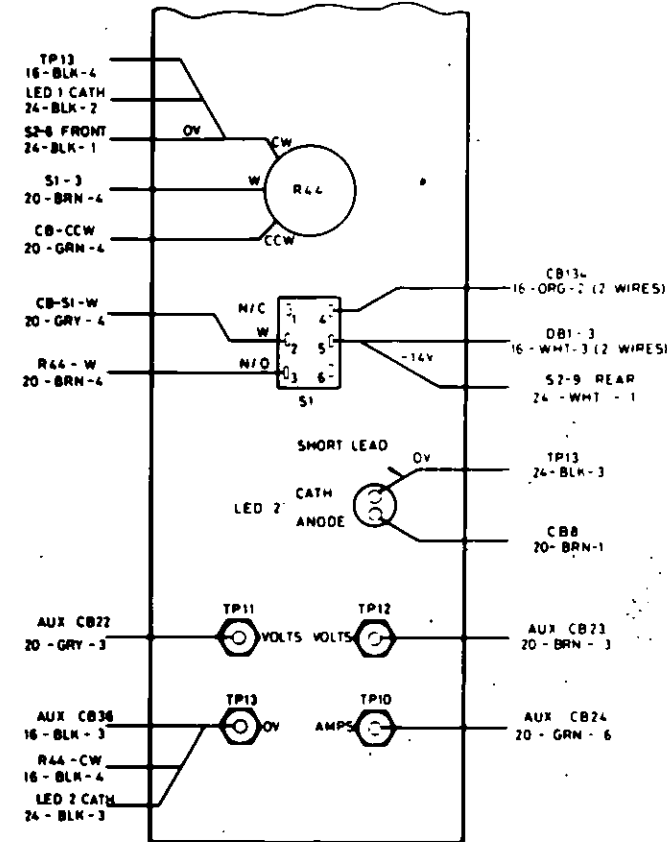
20 AWG SOLID BUS

3 RUN SPARE 20 AWG, GRN &amp; YEL FROM MAIN BOARD TO AUX BOARD AREA

UNITS ARE WIRED FOR SERIES MOTORS FOR SHUNT MOTOR MOVE WIRE FROM AUX CB19 TO AUX CB15

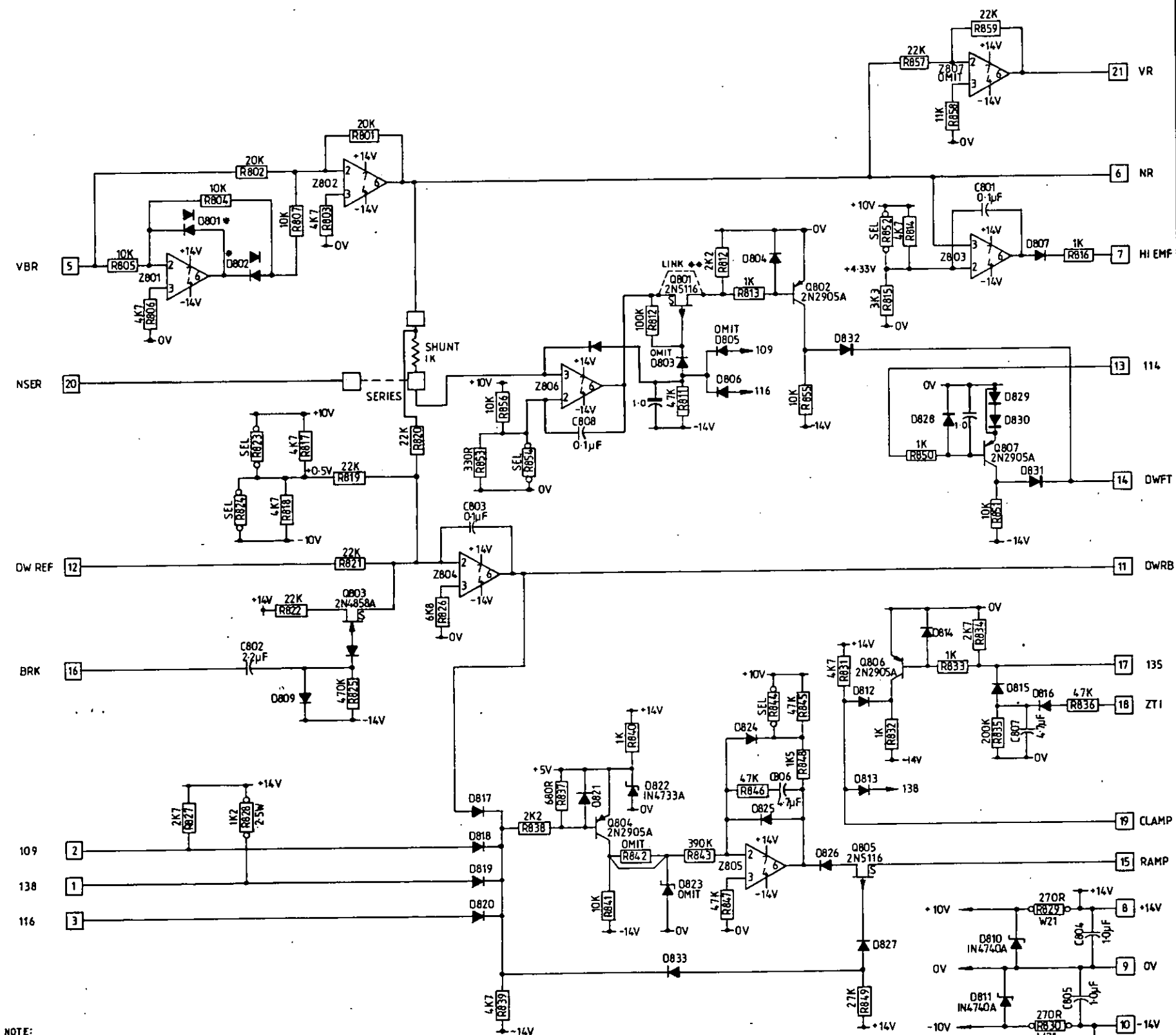
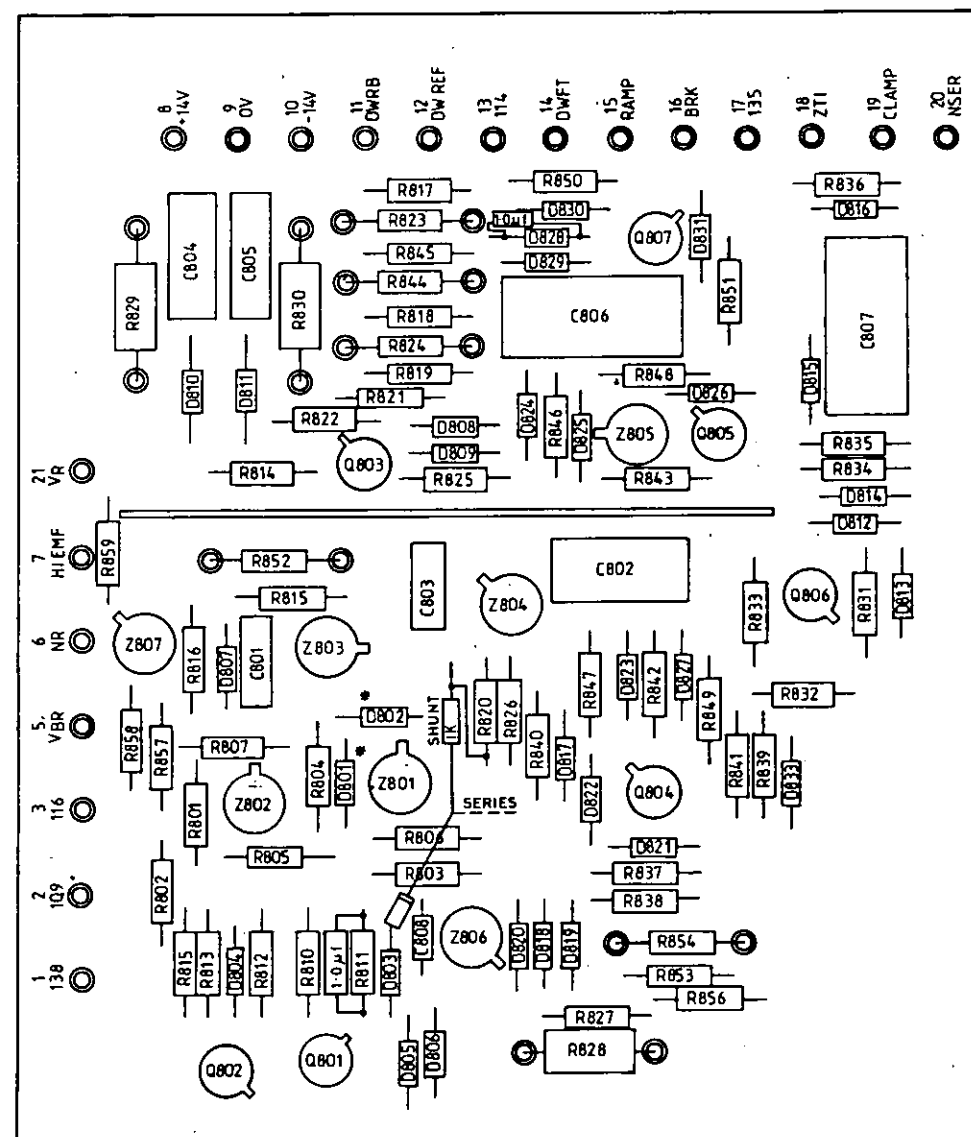
INDICATES JUMPER ON MAIN BOARD WIRES DO NOT GO IN HARNESS

## NOTES:



ORIGINAL DRG 200D116 REV Y

DATE	7th June 70	THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. UNLESS OTHERWISE STATED BY OTHERS, IT IS THE PROPERTY OF HILL GRAHAM CONTROLS LTD. AND IS NOT TO BE REPRODUCED OR USED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF HILL GRAHAM CONTROLS LTD.		<b>HILL GRAHAM CONTROLS LTD</b> HIGH WYCOMBE, BUCKS. ENGLAND. TEL. (0494) 40121.	TITLE <b>DC REGULATOR MODULE SCHEMATIC</b> SHT. 5 OF 6	CUSTOMER <b>FORASOL</b>	60700141
DESIGNED BY		RELEASED 1. 1st PLACE 2. 2nd 3. 3rd PLACE 4. 4th					



NOTE:  
 1 \* D801 & 802 POLARITY REVERSED FOR SERIES MOTORS (AS SHOWN FOR SHUNT MOTORS)  
 2 \*\* WITH D803 OMITTED D801 MAY BE RETAINED OR REPLACED BY LINK AS SHOWN.

3	Q801 REPLACED WITH LINK - SEE NOTE D803 OMITTED. 1K & DIODE ADDED TO Z806-3. 1.0μF ADDED ACROSS R811	5-3-82	M.C.
2	LINK FITTED ACROSS D801 & D802. 1K & DIODE ADDED TO Z806-3. 1.0μF ADDED ACROSS R811	8-6-81	ALD
1	R845 WAS 33K, 1.0 ADDED ACROSS R851	28-4-81	ALL
REV.	DESCRIPTION	DATE	BY
1	DC MODULE		

DESIGNED BY  
 DATE 25-4-81  
 CHECKED BY  
 APPROVED BY  
 DRAWN BY  
 DC MODULE

THIS IS A PROPRIETARY DESIGN OF HILL GRAHAM CONTROLS LTD. REPRODUCTION OR USE OF THIS DESIGN BY OTHERS IS PROHIBITED UNLESS EXPRESSLY AUTHORIZED IN WRITING BY HILL GRAHAM CONTROLS LTD.  
 ASSOCIATED DRAWINGS  
 NAME LIST  
 SCHEMATIC



**HILL GRAHAM CONTROLS LTD**  
 HIGH WYCOMBE, SUCKS, ENGLAND.  
 TEL. (0494) 40121.

TITLE  
 CIRCUIT DIAGRAM & ASSY DW REGEN BRAKE  
 REV. NO.  
 CUSTOMER  
 6070DI41 SHt 6 of 6  
 REV. 3