

# SAMPLE PROJECT WITH SIX MOTOR STARTERS

			Date		Herbert Design	Title page		=	
			Editor	PC2	Sherbert@mweb.co.za			+	
			Tested	28. Mar. 2005					
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.	advert		Pg. 1 38.5 Pg.







# Terminal strip numbers

## MAIN MCC

- X1 Incoming cable
- X2 Earth bar located in bottom of panel
- X3 Distribution 24 VDC
- X4 Recycle pump 1 power out
- X5 Recycle pump 1 controls
- X6 Recycle pump 2 Power out
- X7 Recycle pump 2 controls
- X8 Compressor 1 power out
- X9 Compressor 1 controls
- X10 Compressor 2 power out
- X11 Compressor 2 controls
- X12 DAF drive power out
- X13 DAF Drive controls
- X14 Lights and plugs
- X15 Communications to remote I/O
- X16 Communications to SCADA
- X17 Analog inputs
- X18 Sludge pump power
- X19 Sludge pump controls
- X20 Digital Inputs field devices

## LIME

- X20 Lime panel power in
- X21 Lime feeder 1 Power out
- X22 Lime feeder 1 controls
- X23 Lime Feeder 2 power out
- X24 Lime feeder 2 power out
- X25 Lime feeder 2 controls
- X26 Lime feeder 3 power out
- X27 Lime feeder 3 controls
- X28 Lime dosing pump 1 power out
- X29 Lime dosing pump 1 controls
- X30 Lime dosing pump 2 power out
- X31 Lime dosing pump 2 controls
- X32 Lime Mixer 1 Power
- X33 Lime mixer 1 cotrols
- X40
- X41
- X42
- X43

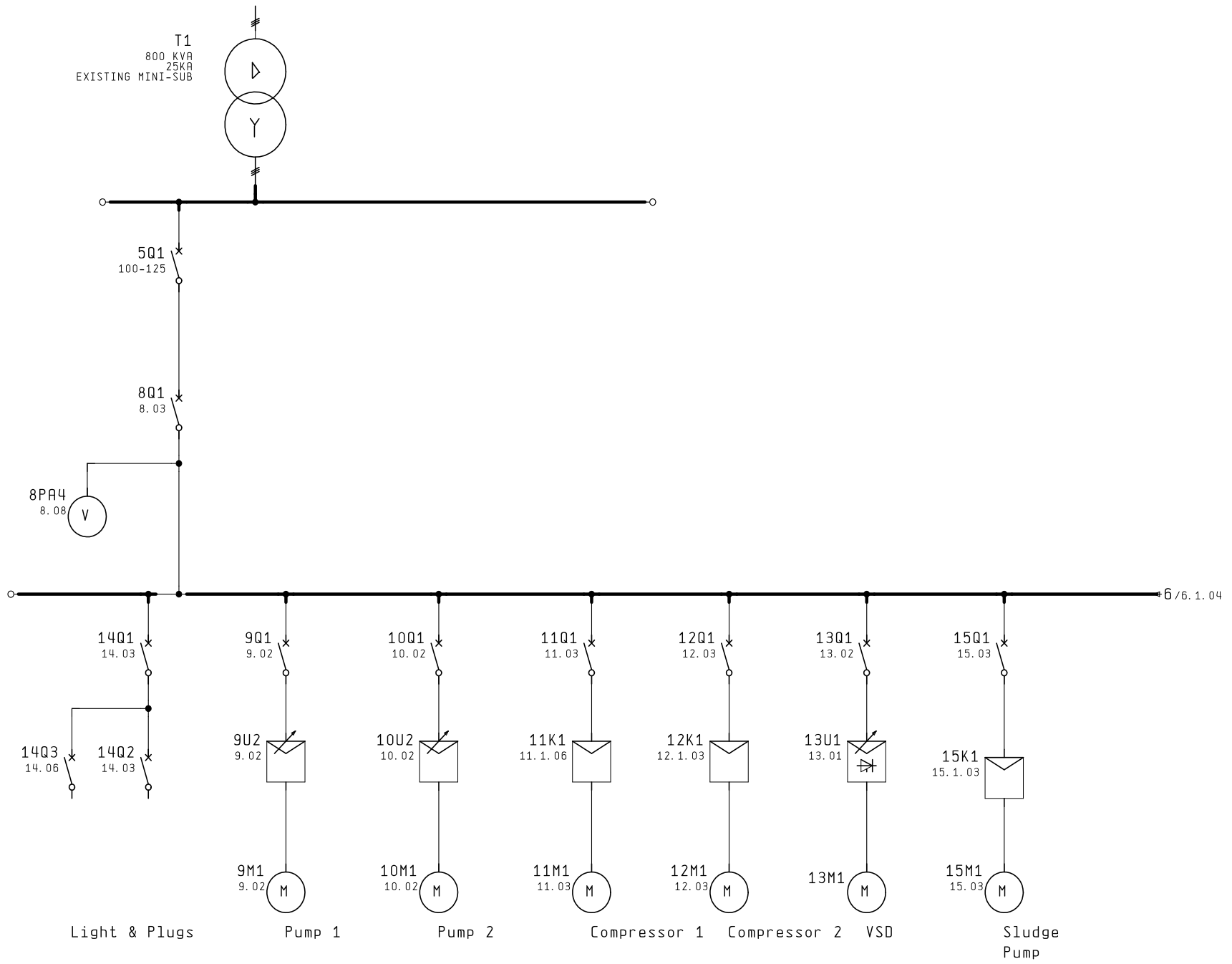
## POLY

- X51 Poly dosing pump 1 power out
- X52 Poly dosing pump 1 controls
- X53 Poly dosing pump 2 power out
- X54 Poly dosing pump 2 controls
- X55 Poly panel PLC communications

## Alum

- X70 Alum panel power in
- X71 Alum dosing pump 1 power out
- X72 Alum dosing pump 1 controls
- X73 Alum dosing pump 2 power out
- X74 Alum dosing pump 2 controls
- X75 Alum panel PLC communications
- X76
- X77

				Date				Herbert Design	Terminal strip info			=
				Editor	HDS			Sherbert@web.co.za				+
				Tested	28. Mar. 2005					advert		Pg. 5
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.						38.5 Pg

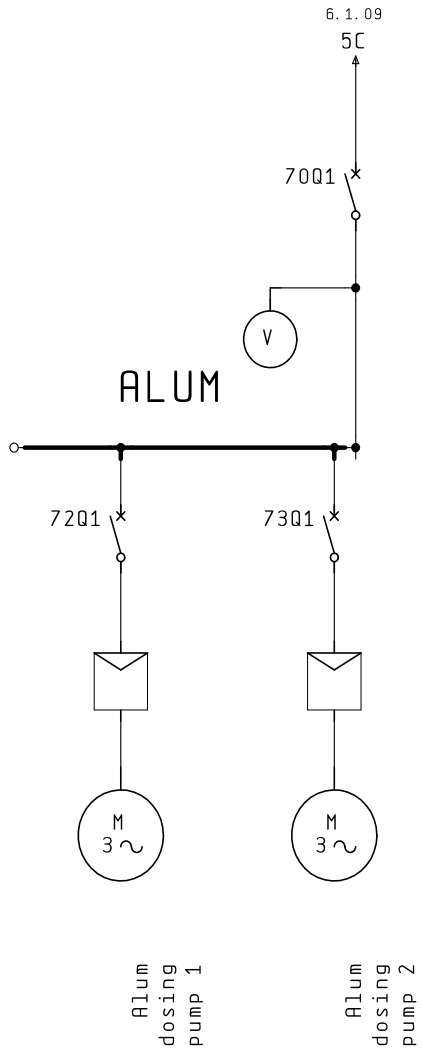
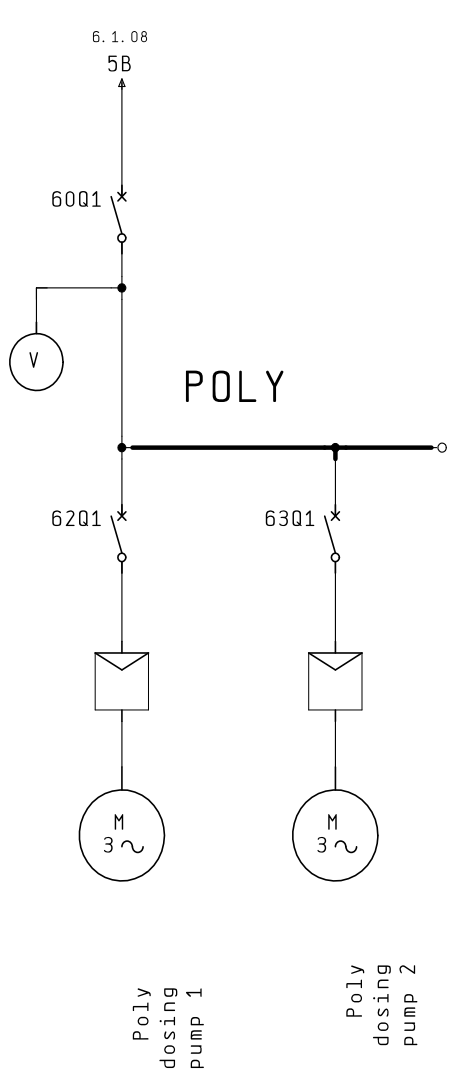


5

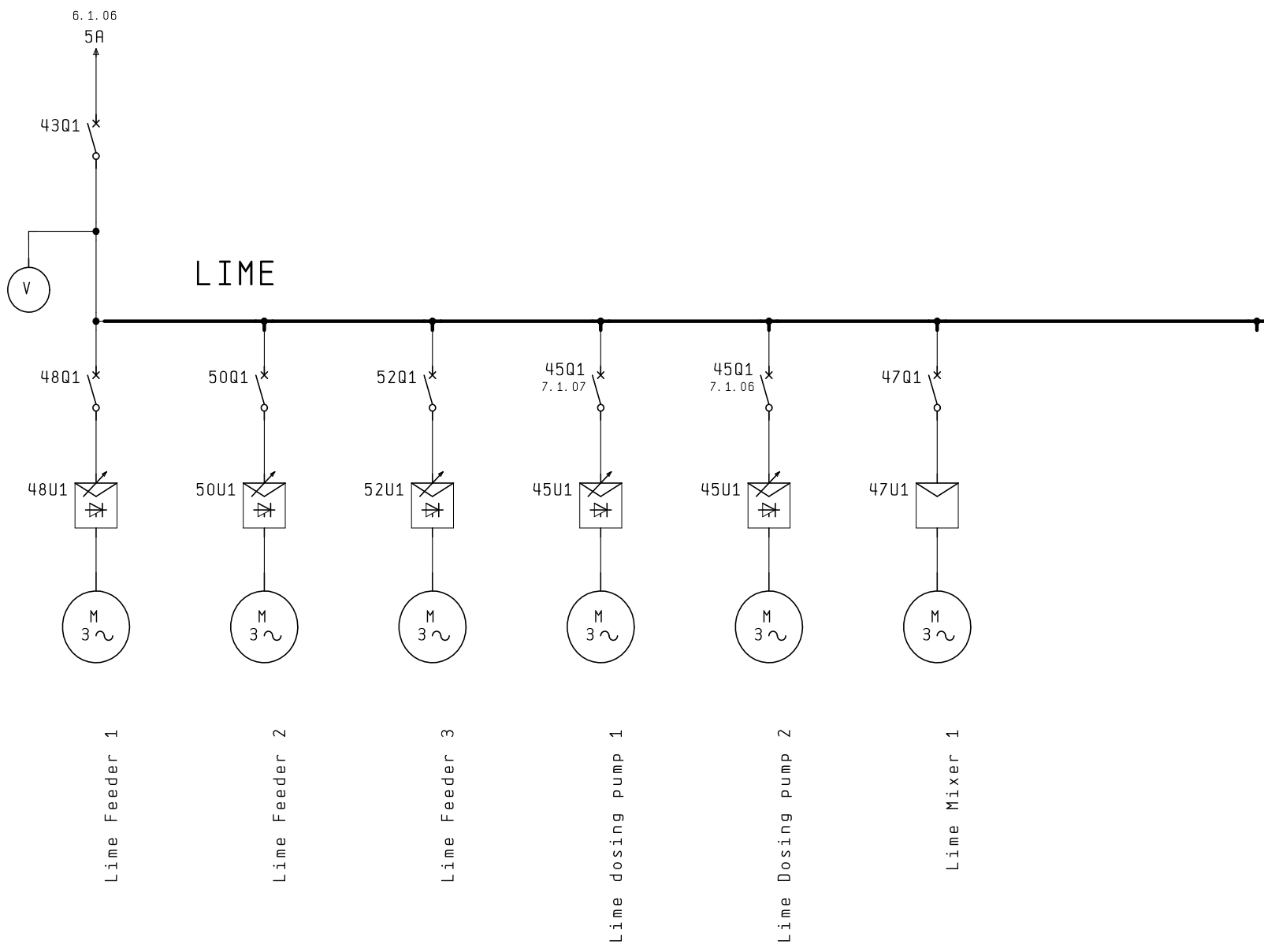
6.1

			Date				Herbert Design		Single line			
			Editor	PC2			Sherbert@mweb.co.za		Main panel			
			Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			advert		Pg. 6	
											38.5 Pg	

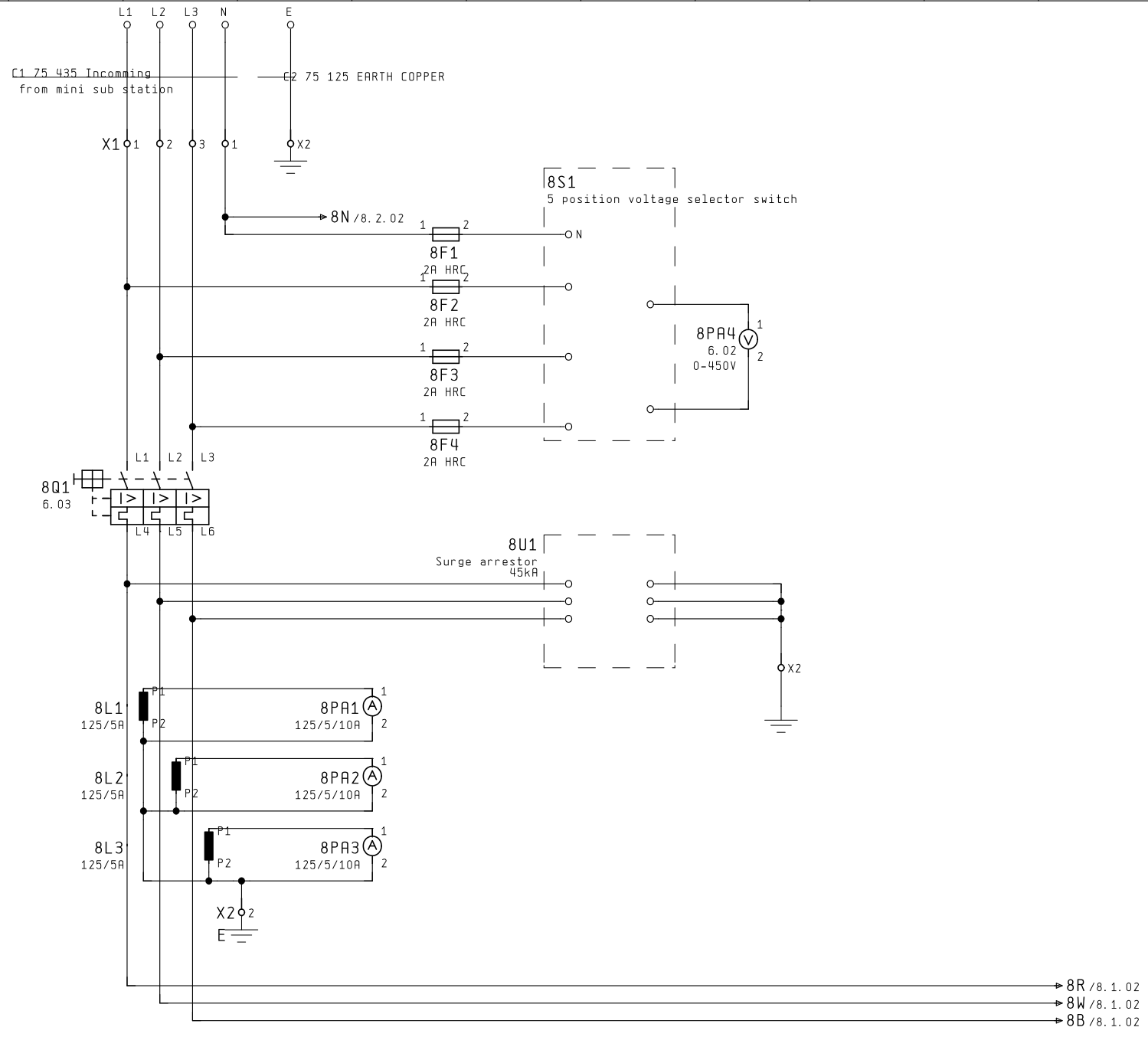




				Date				Herbert Design		Single line			
				Editor	HDS			Sherbert@mweb.co.za		Poly and Alum			
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			advert				
											Pg.	7	
											38.5 Pg.		



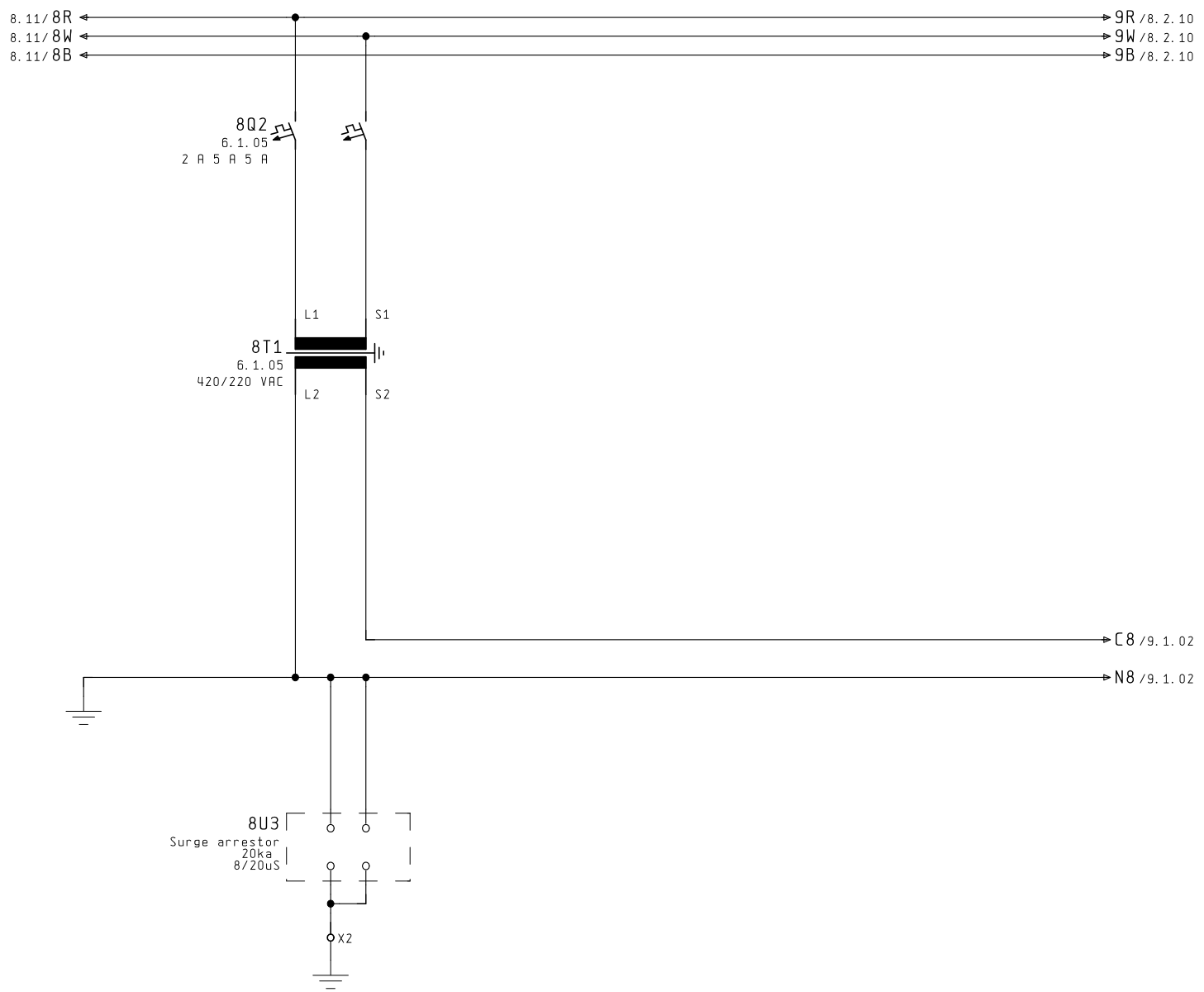
				Date				Herbert Design		Single line			
				Editor	HDS			Sherbert@mweb.co.za		Lime			
				Tested	28. Mar. 2005					advert			
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.						Pg. 7.1 38.5 Pg	



7. 1

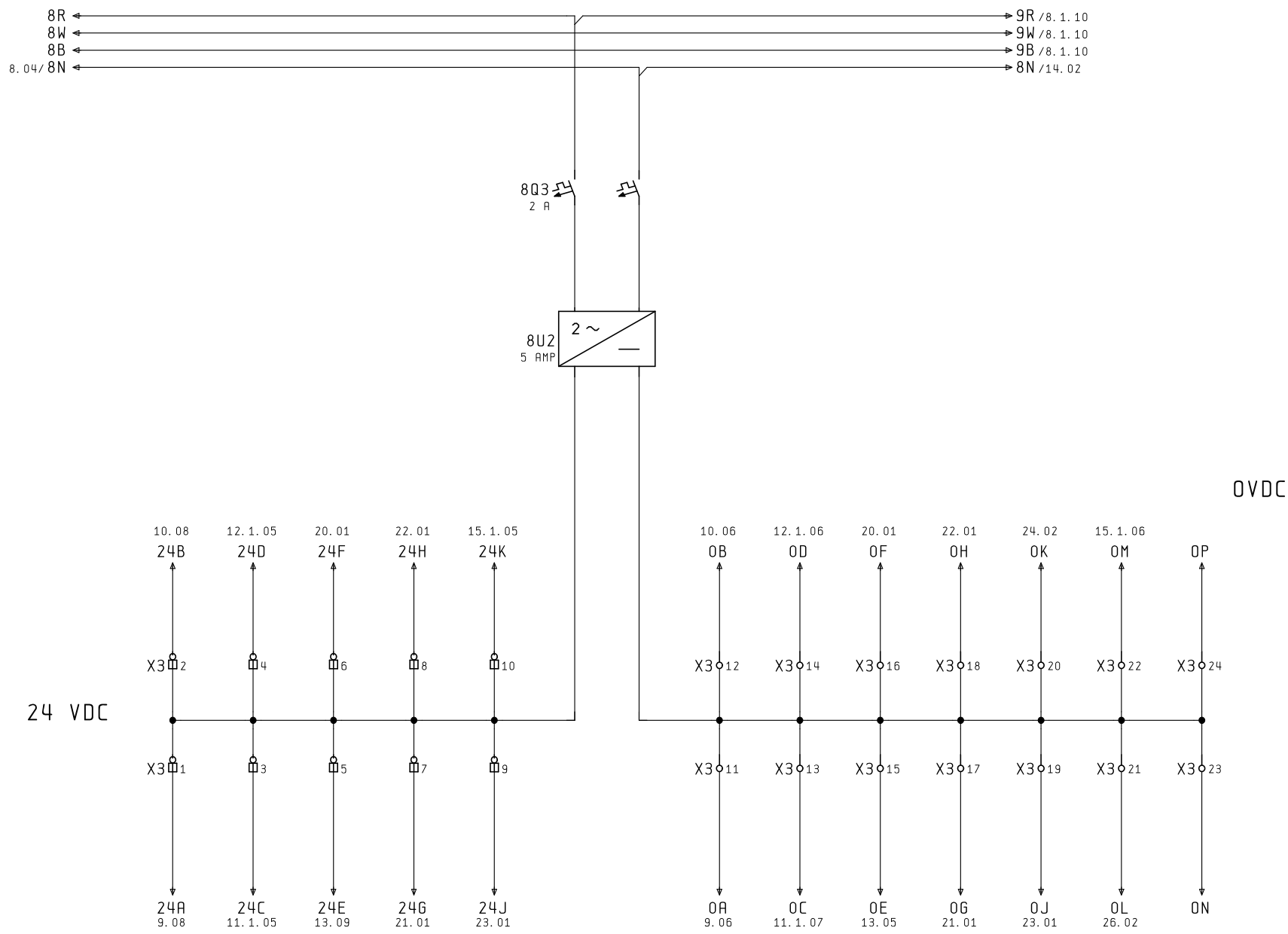
8. 1

				Date				Herbert Design		Incommer			
				Editor	HDS			Sherbert@web.co.za		Main panel			
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							
									A1		Pg. 8 38.5 Pg		

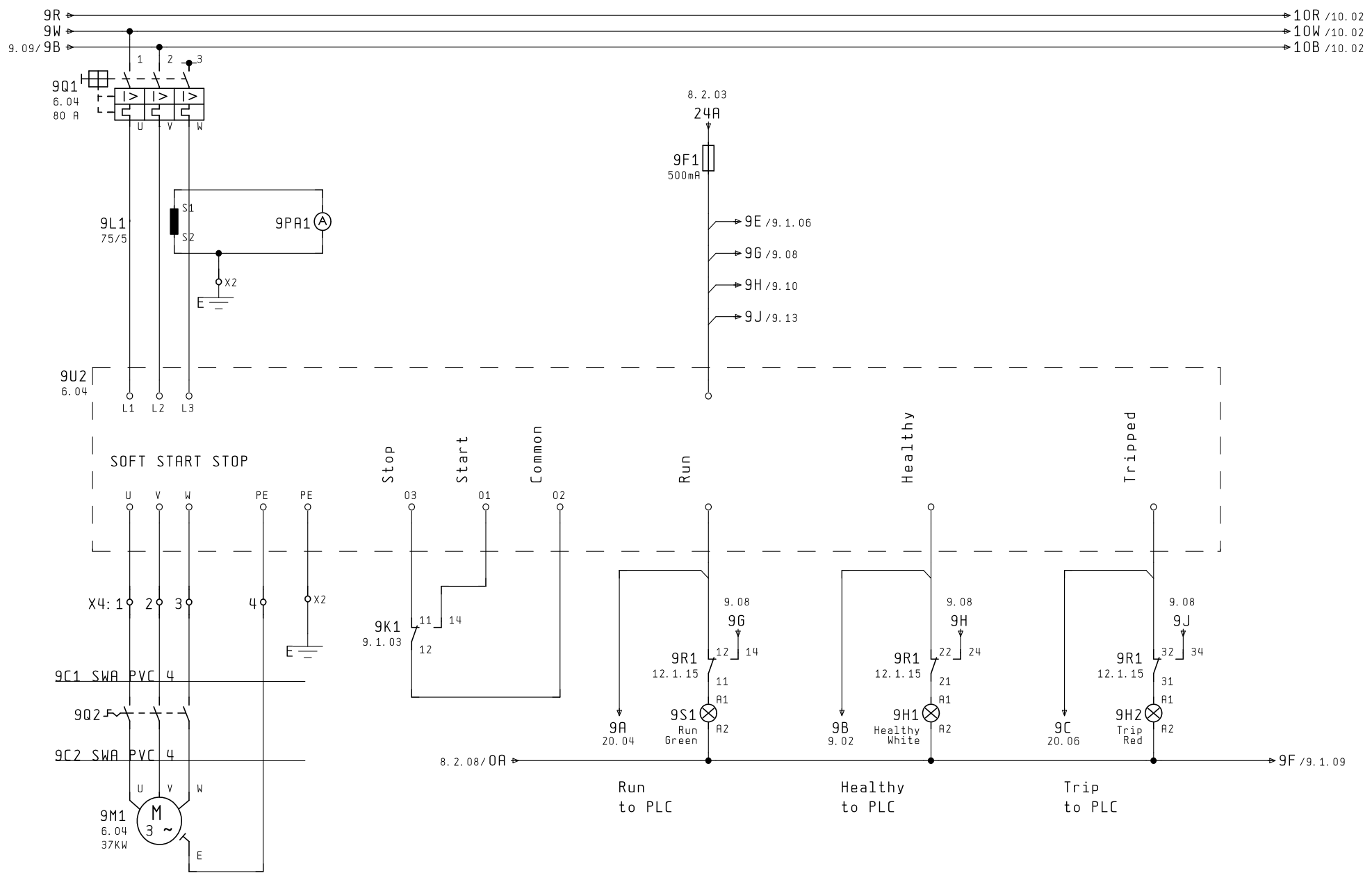


Control voltage  
 110 VAC

				Date				Herbert Design		Control voltage			
				Editor	HDS			Sherbert@web.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			01		Pg. 8.1 38.5 Pg		



				Date			Herbert Design	Control voltage			
				Editor	HDS		Sherbert@mweb.co.za				
				Tested	28. Mar. 2005						
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			01		
										Pg. 8.2	
										38.5 Pg	



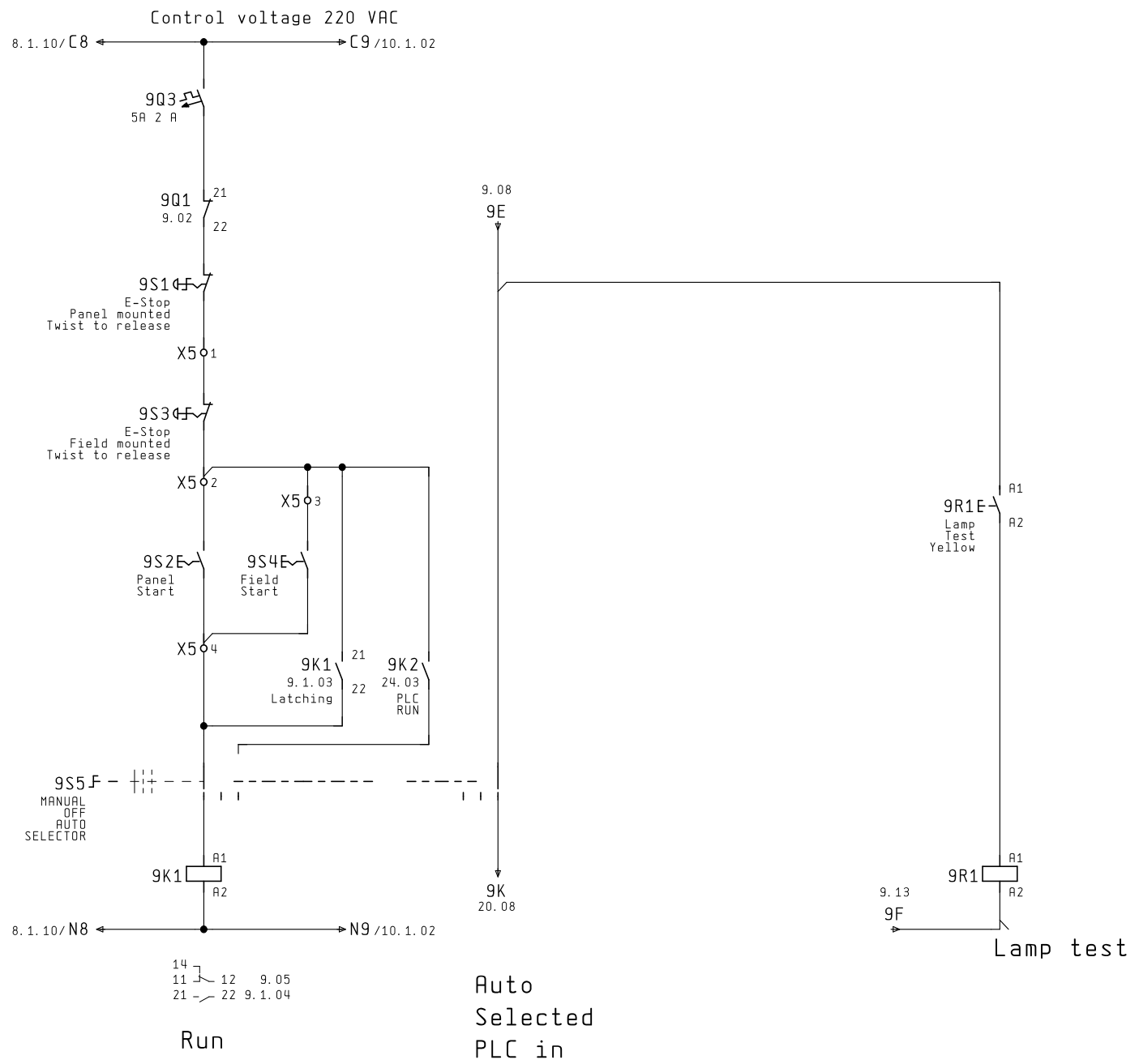
Pump 1

Note Regarding earthing: It is important that the motor earth is brought back right through to the VSD unit  
 Terminal X3:4 is not an earth terminal  
 The soft-start is earthed by a separate earth.

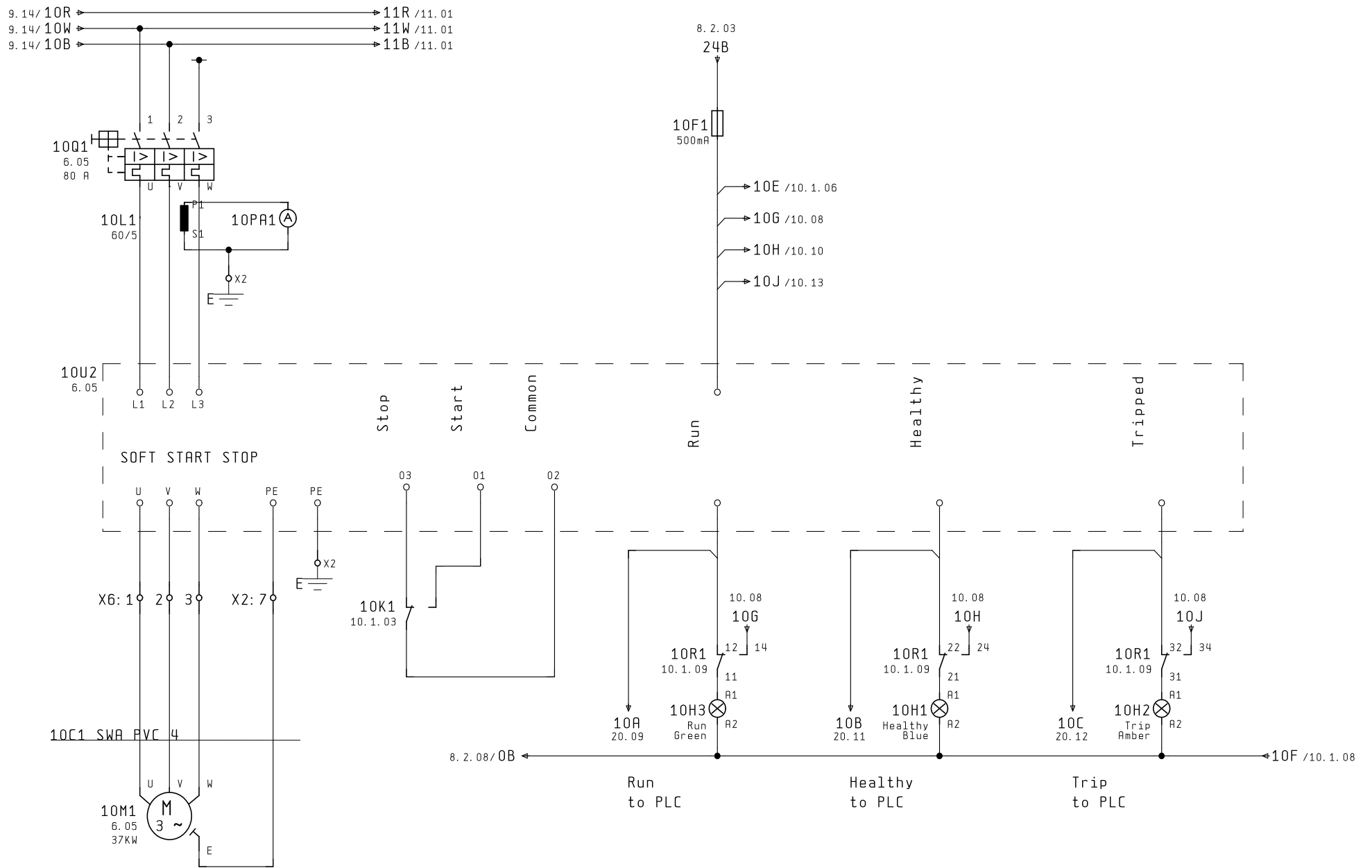
8.2

9.1

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				Editor	PC2		Sherbert@web.co.za					
				Tested	28. Mar. 2005							
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			B1		Pg. 9 38.5 Pg	



				Date				Herbert Design		Recycle Pump 1			
				Editor	HDS			Sherbert@web.co.za		Controls			
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							
										B1		Pg. 9.1 38.5 Pg.	



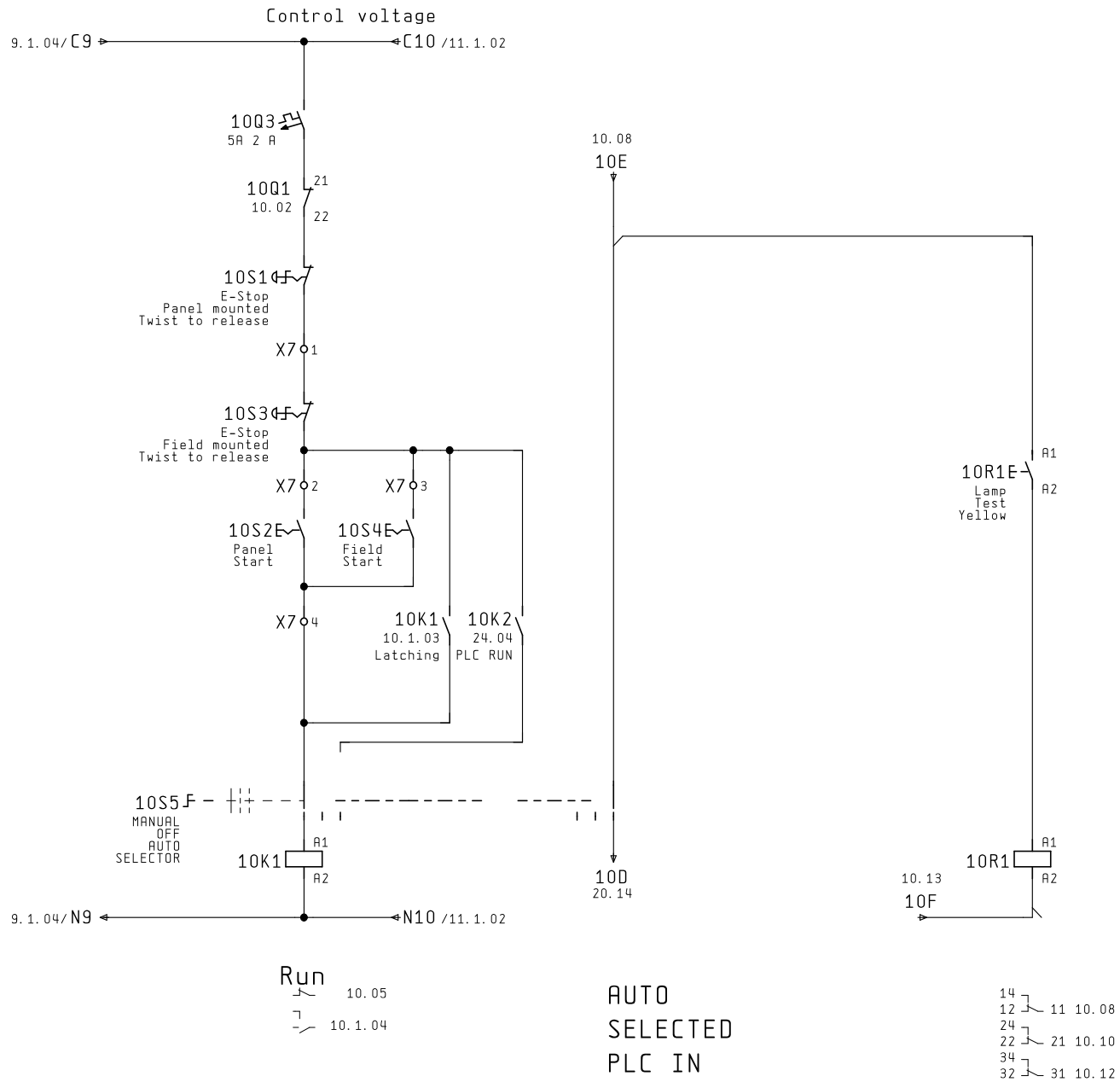
Pump 2

Note Regarding earthing: It is important that the motor earth is brought back right through to the VSD unit  
 Terminal X3:4 is not an earth terminal  
 The soft-start is earthed by a separate earth.

9.1

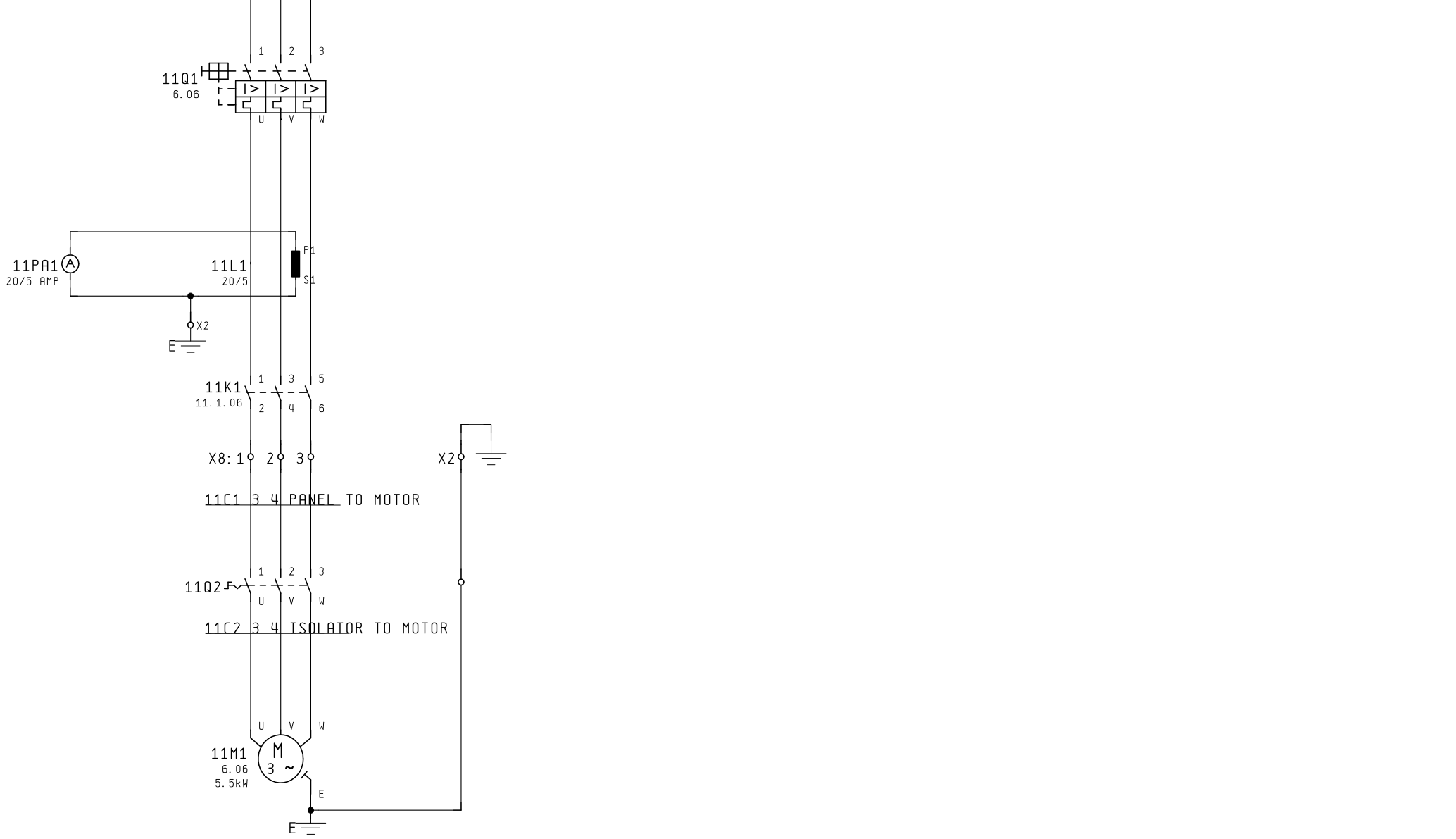
10.1

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			Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			B2		Pg. 10 38.5 Pg	



				Date				Herbert Design		Recycle pump 2			
				Editor	HDS			Sherbert@mweb.co.za		Controls			
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							
												B2	Pg. 10.1 38.5 Pg

10.05/11R → 12R /12.01  
 10.05/11W → 12W /12.01  
 10.05/11B → 12B /12.01

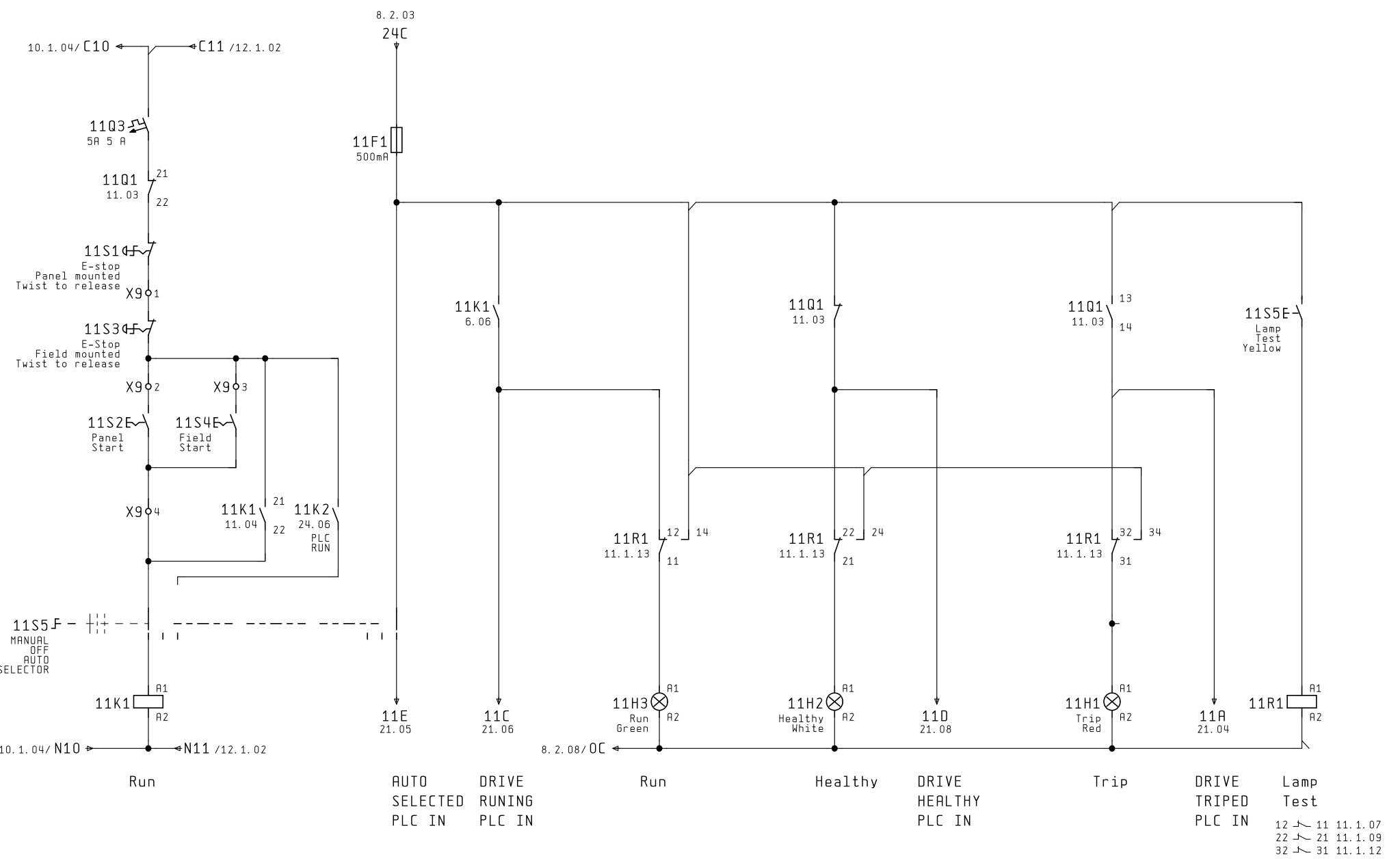


COMPRESSOR 1

10.1

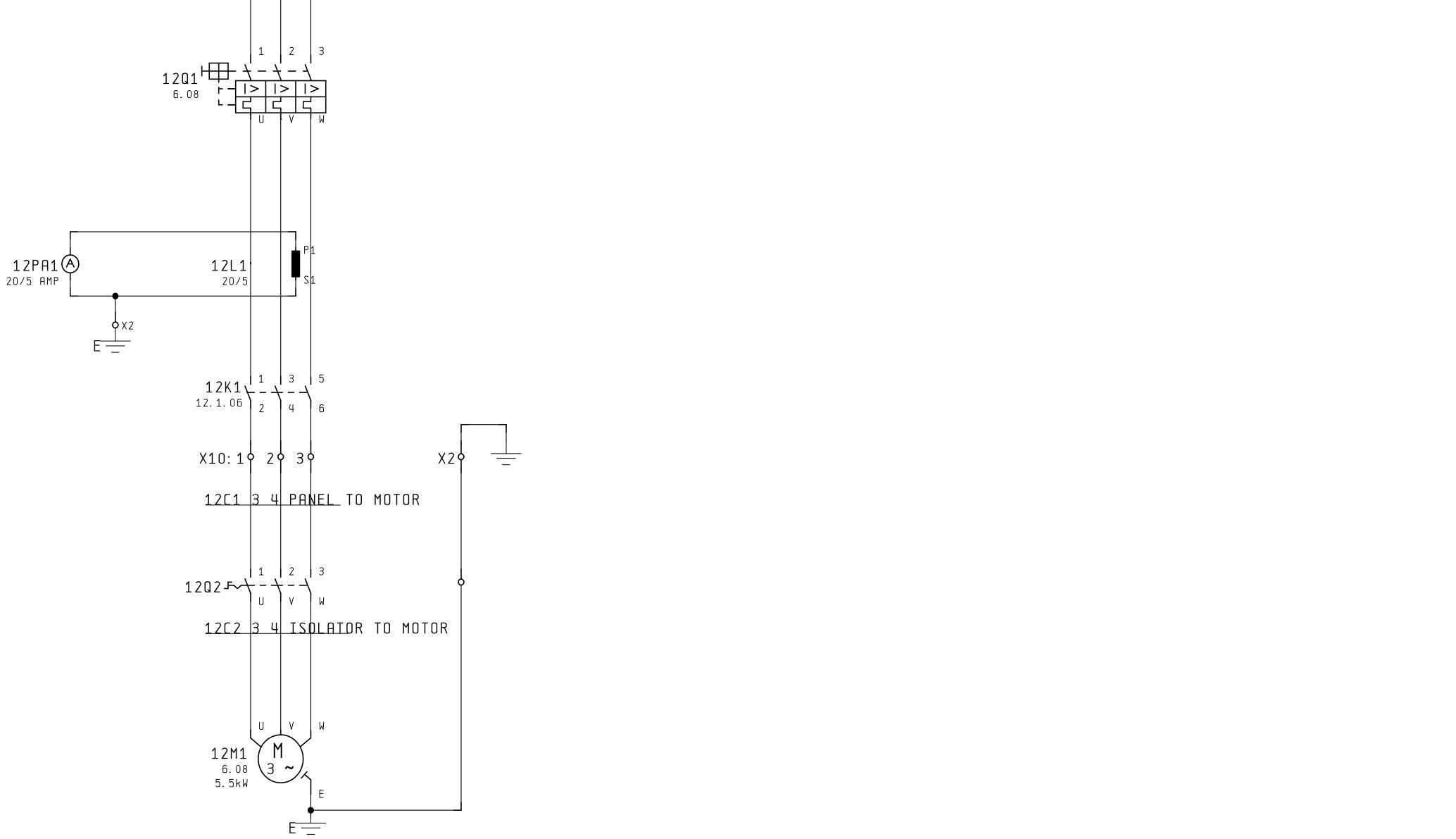
11.1

				Date				Herbert Design		Compressor 1			
				Editor	HDS			Sherbert@mweb.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							



				Date				Herbert Design		Compressor 1 controls			
				Editor	HDS			Sherbert@web.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							
										Pg. 11.1		38.5 Pg. 1	

11.14/12R → 13R /13.01  
 11.14/12W → 13W /13.01  
 11.14/12B → 13B /13.01

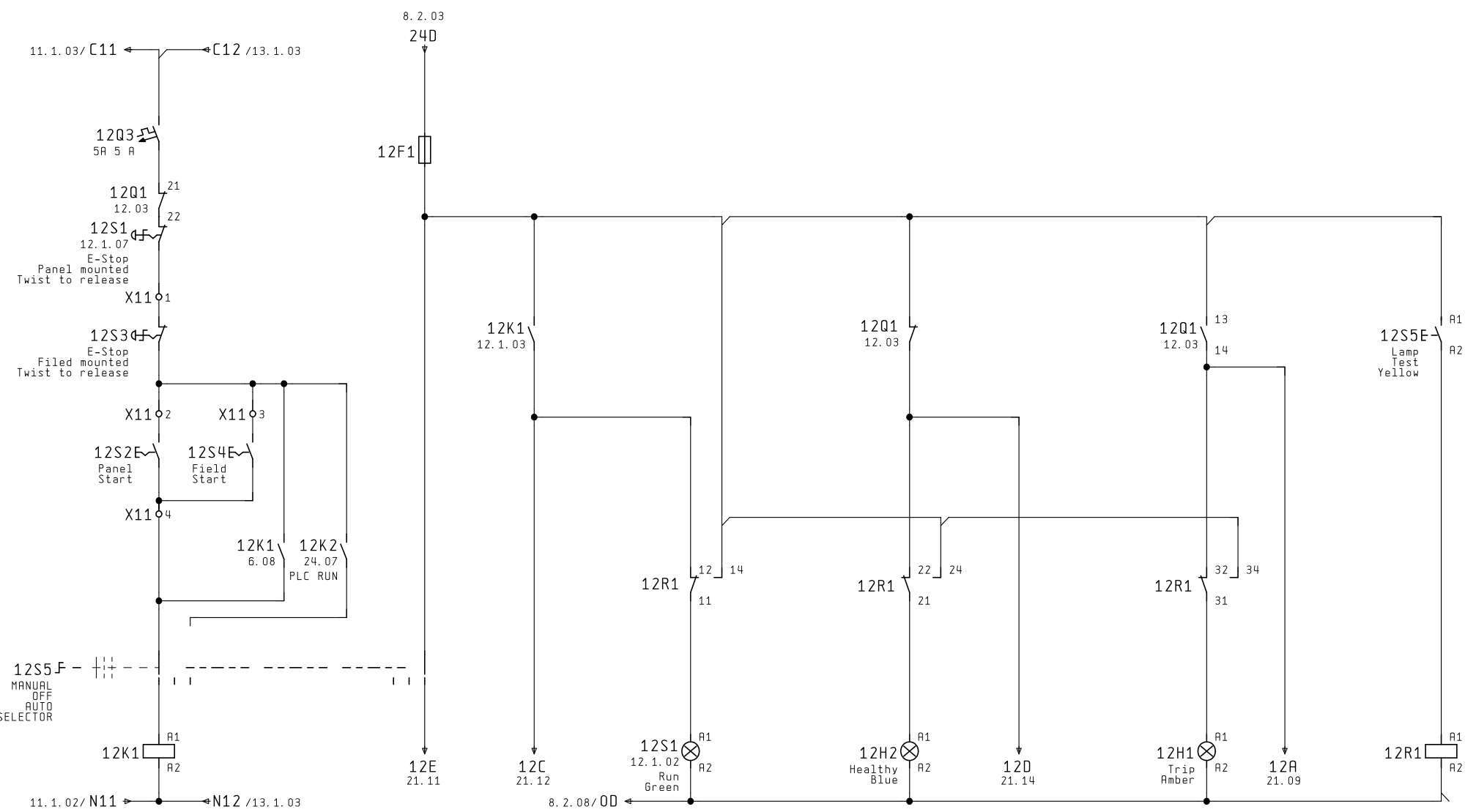


COMPRESSOR 2

11.1

12.1

				Date				Herbert Design		Compressor 2			
				Editor	HDS			Sherbert@mweb.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			Pg. 12		38.5 Pg.		



Run

AUTO  
SELECTED  
PLC IN

DRIVE  
RUNING  
PLC IN

Run

Healthy

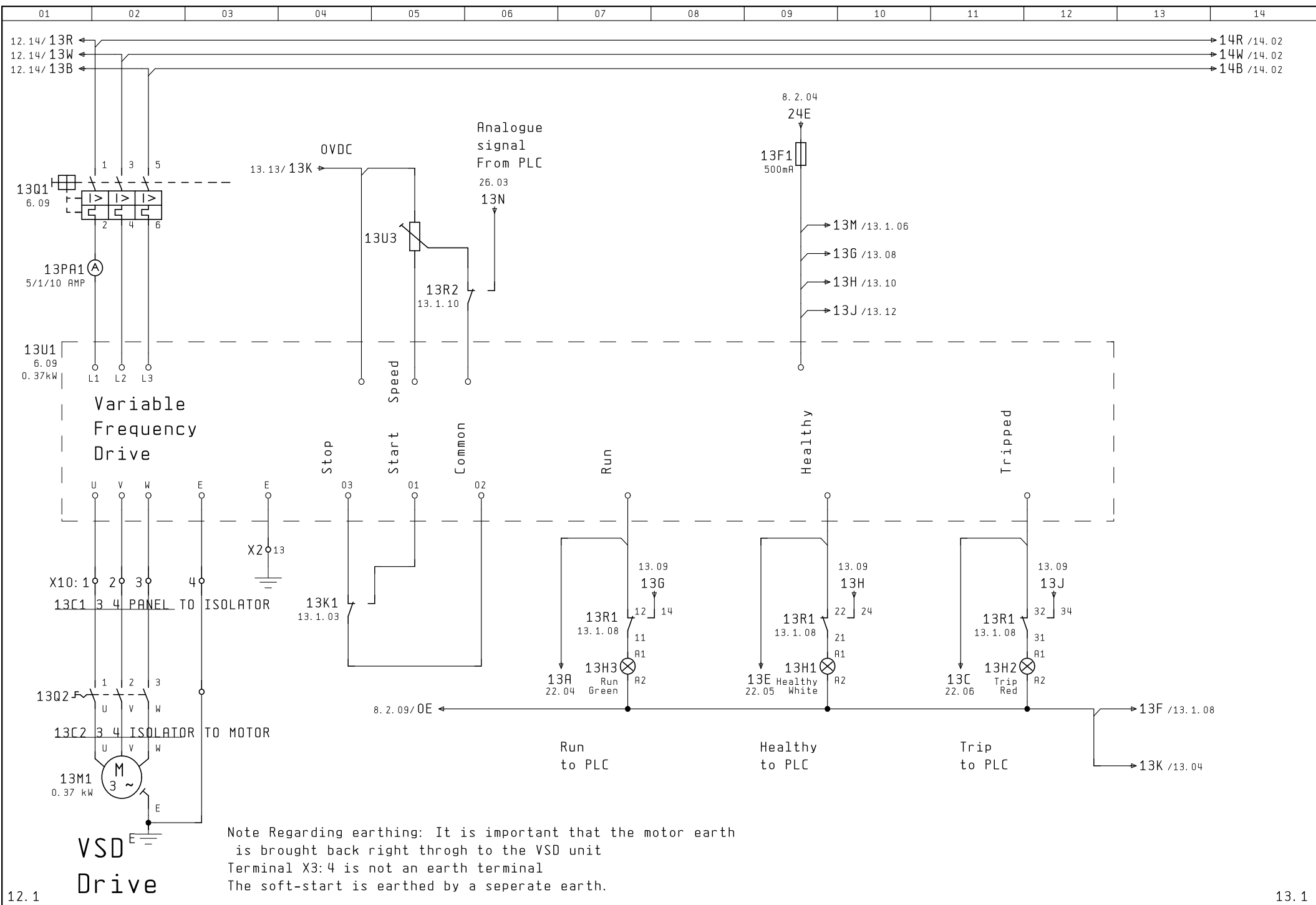
DRIVE  
HEALTHY  
PLC IN

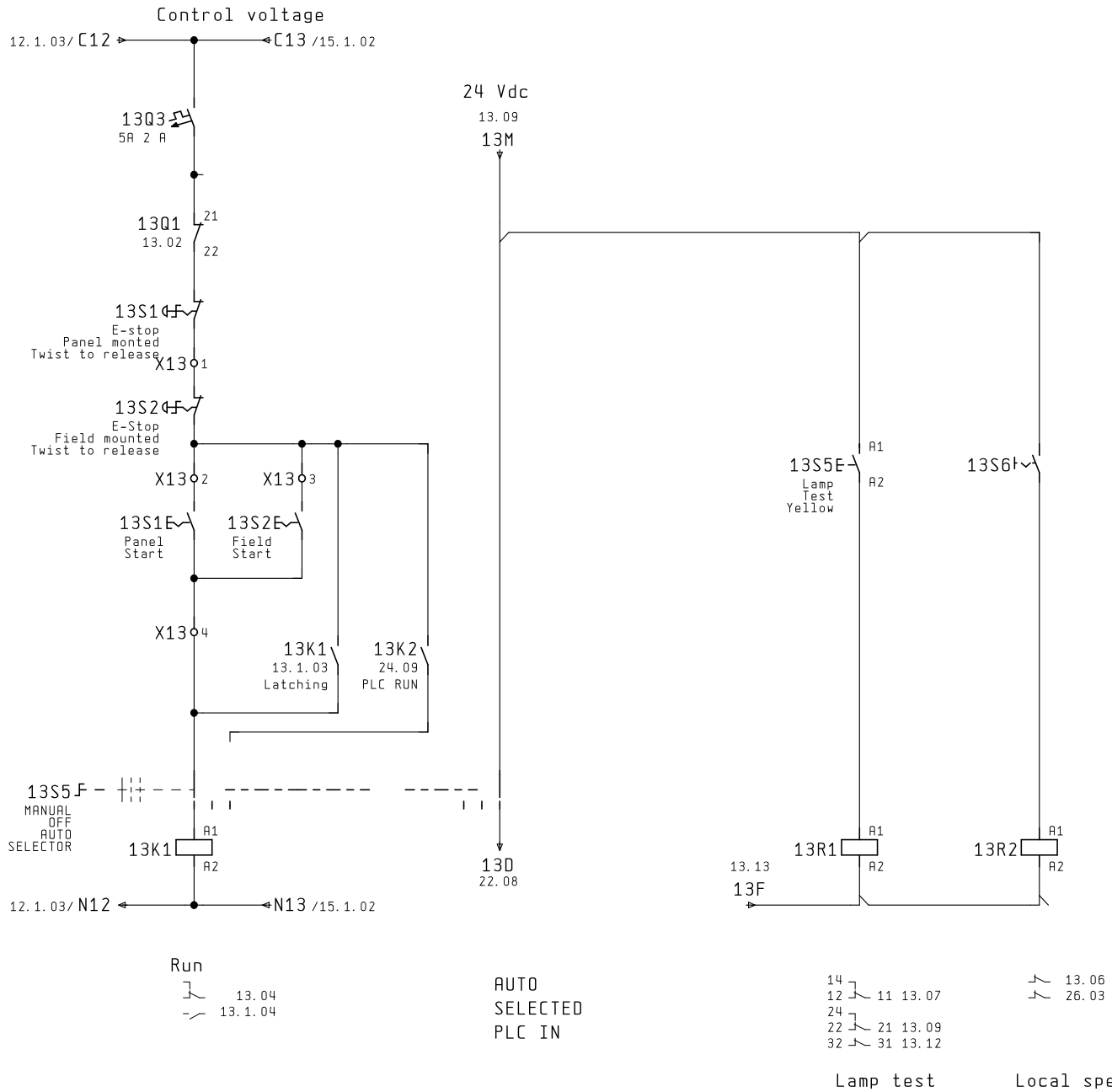
Trip

DRIVE  
TRIPED  
PLC IN

1  
1  
1  
2  
2  
2  
3  
3  
3

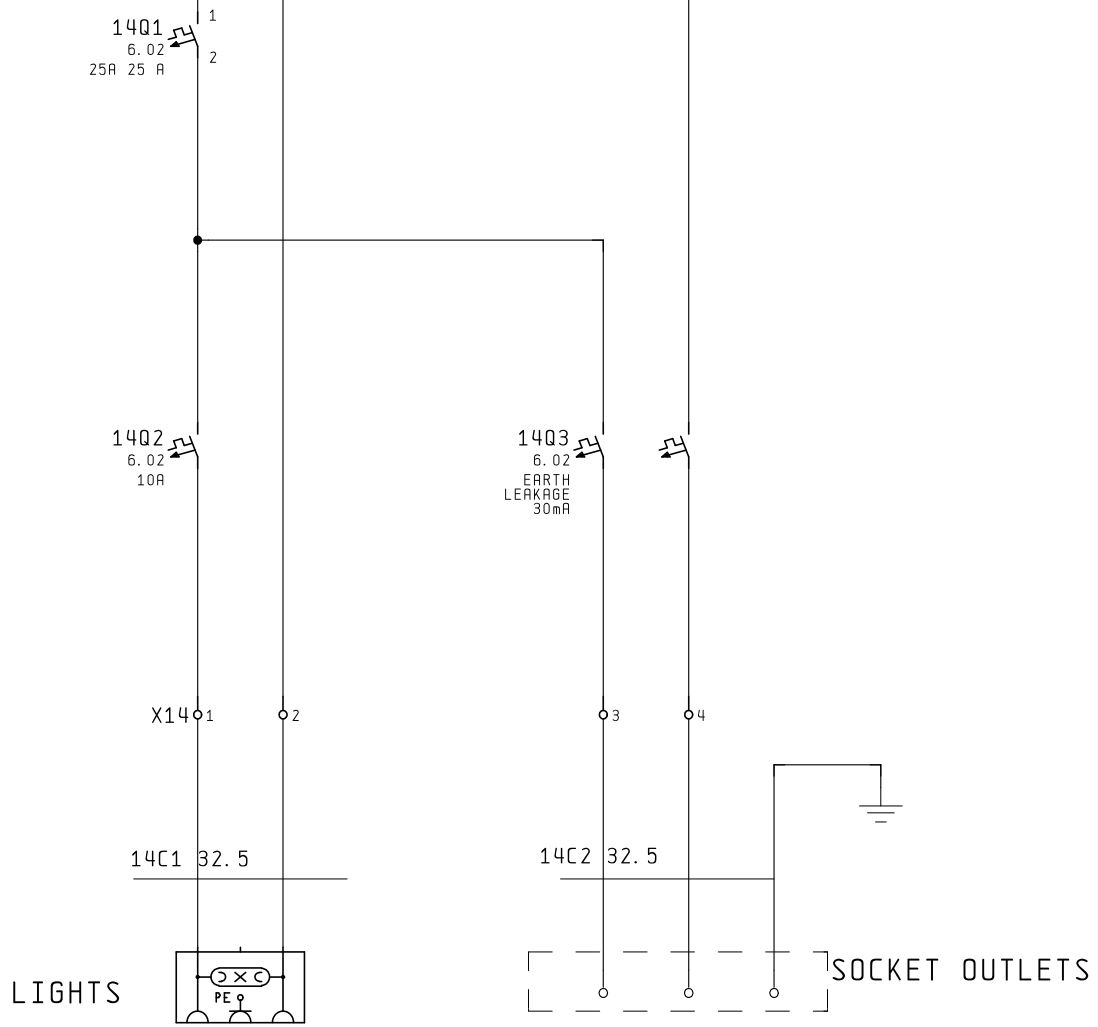
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				Editor	HDS			Sherbert@web.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			Pg. 12.1		38.5 Pg. 3		





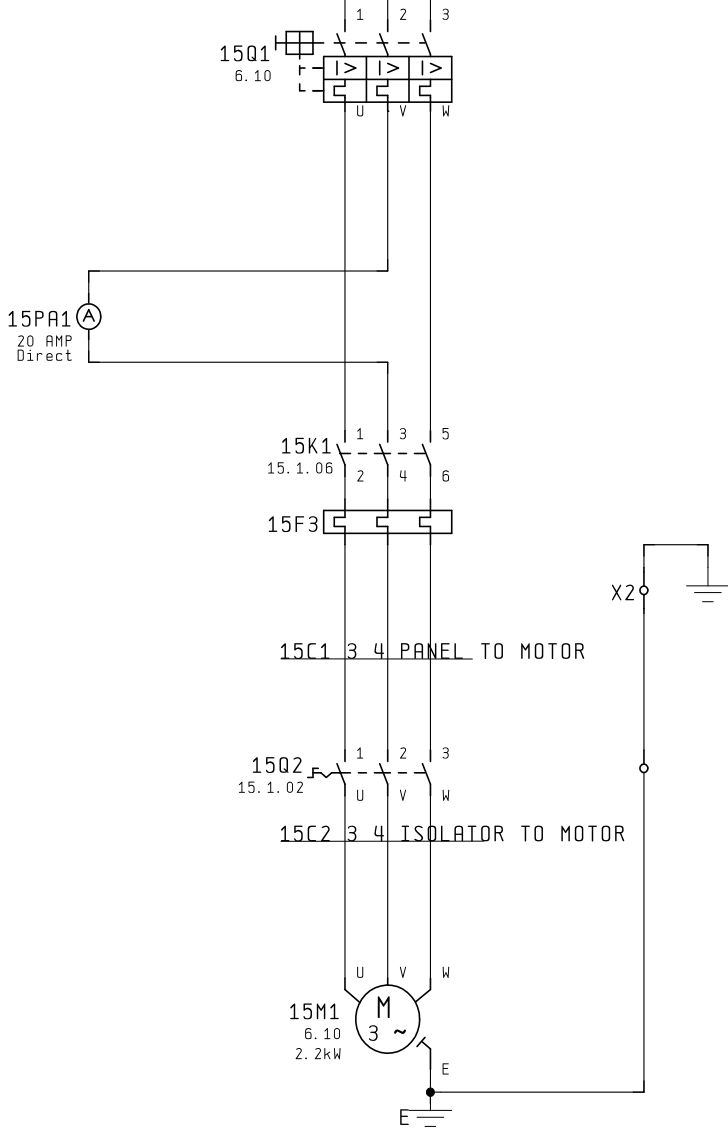
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				Editor	HDS			Sherbert@mweb.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							

13.14/14R ← 16R /16.01  
 13.14/14W ← 16W /16.01  
 13.14/14B ← 16B /16.01  
 8.2.10/8N ←



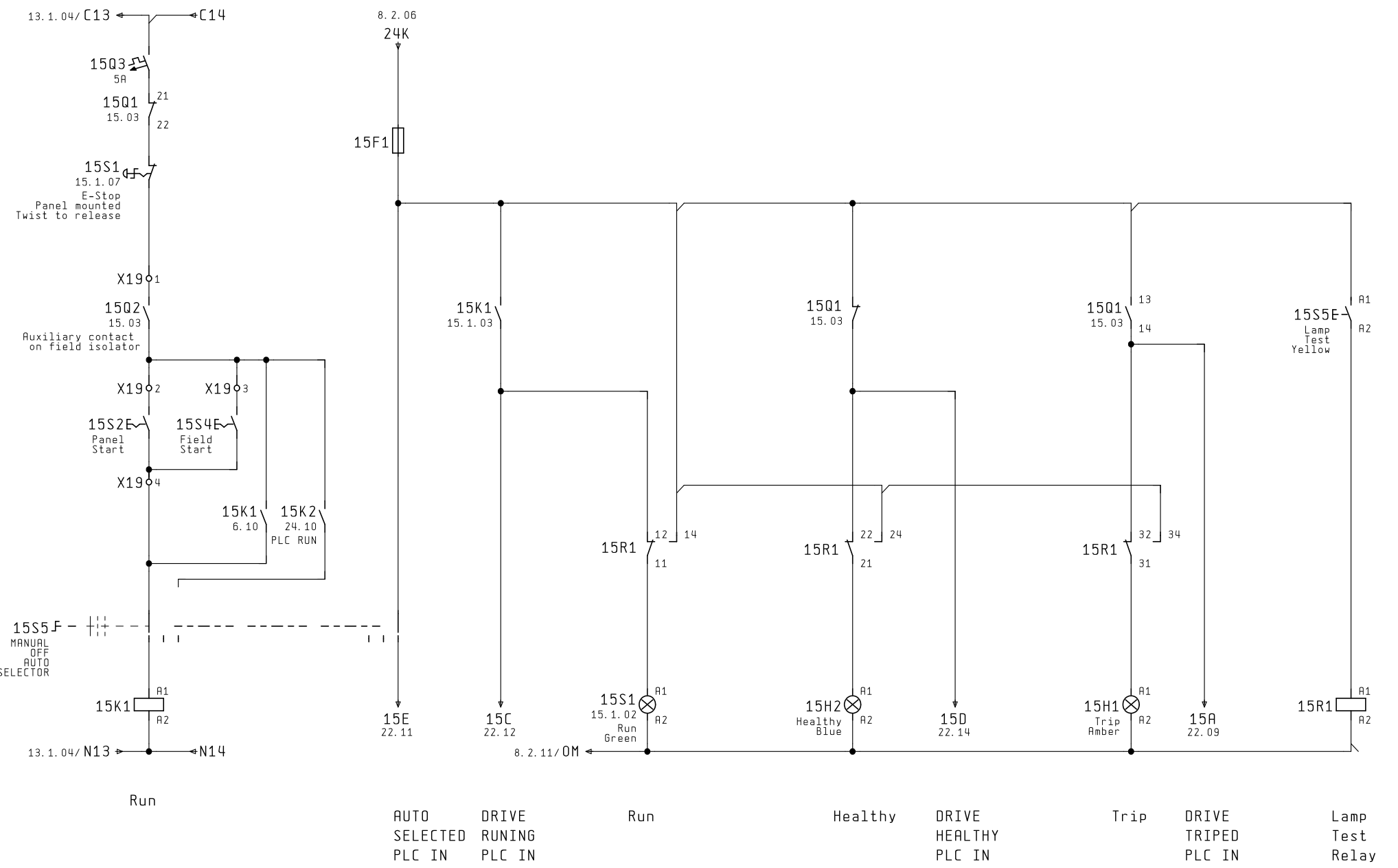
				Date			Herbert Design	Feeder Small power			=
				Editor	HDS		Sherbert@web.co.za	and lighting			+
				Tested	28. Mar. 2005						Pg. 14
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			A2		38.5 Pg.

17R → 18R  
 17W → 18W  
 17B → 18B



Sludge pump

				Date				Herbert Design		Sludge pump			
				Editor	HDS			Sherbert@web.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			02				Pg. 15
											38.5 Pg.		



Run

AUTO  
SELECTED  
PLC IN

DRIVE  
RUNING  
PLC IN

Run

Healthy

DRIVE  
HEALTHY  
PLC IN

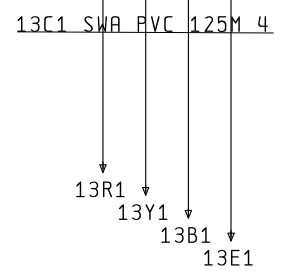
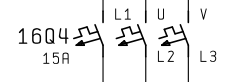
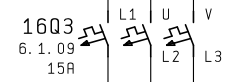
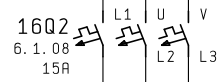
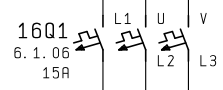
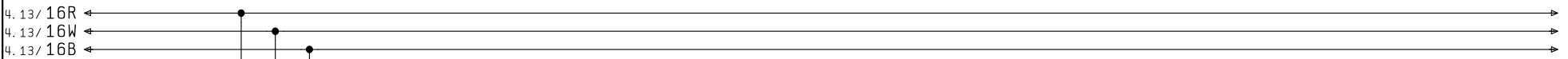
Trip

DRIVE  
TRIPED  
PLC IN

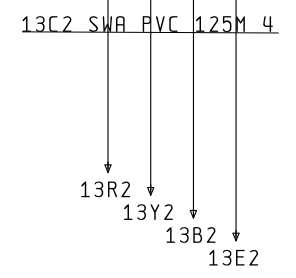
Lamp  
Test  
Relay

1  
1  
1  
2  
2  
2  
3  
3  
3  
3

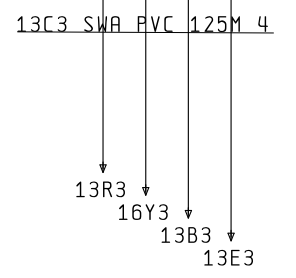
				Date				Herbert Design		Sludge pump controls			
				Editor	HDS			Sherbert@mweb.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.					Pg. 15.1		
							02				38.5 Pg		



Feed to 1



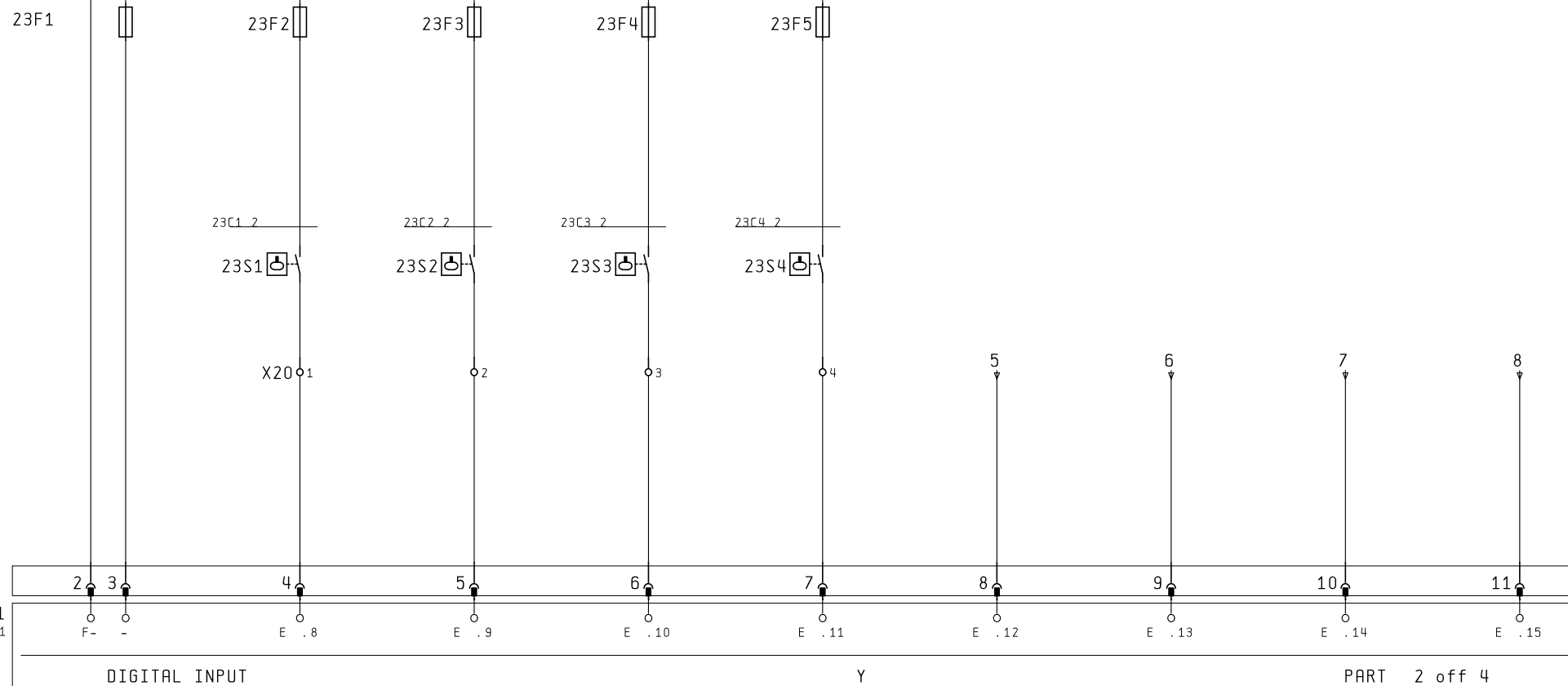
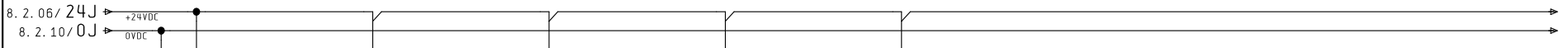
Feed to 2



Feed to 3

			Date			Herbert Design	DOSING CONTROL FEEDERS		
			Editor	PC2		Sherbert@mweb.co.za			
			Tested	28. Mar. 2005					
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			

4



22U1  
22.01

Saturator Level 1	Saturator Level 2	Saturator Level 3		Spare	Spare	Spare
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			Date			Herbert Design	PLC INPUTS						
			Editor	HDS		Sherbert@web.co.za							
			Tested	28. Mar. 2005									
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							

E1

22U1  
22.01

DIGITAL OUTPUT CARD

PART 3 off 4

A 0.0      A 0.1      A 0.2      A 0.3      A 0.4      A 0.5      A 0.6      A 0.7

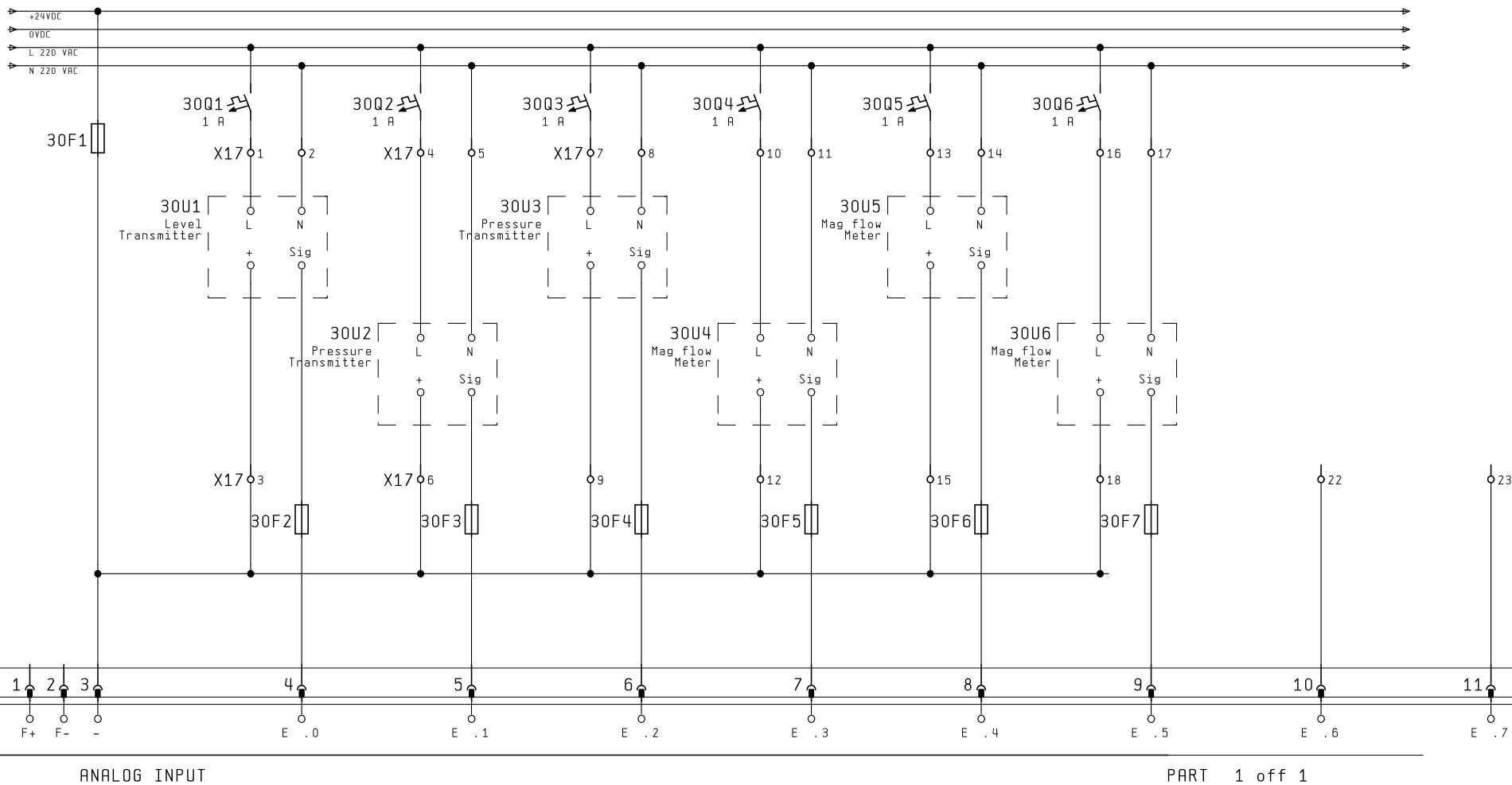


8. 2. 10/OK →      → OK2

Recycle Pump 1 Run Command      Recycle Pump 2 Run Command      Compressor 1 Run Command      Compressor 2 Run Command      DAF Run Command      Sludge Pump Run      SPARE      SPARE

9. 1. 05      10. 1. 05      11. 1. 04      12. 1. 04      13. 1. 05      15. 1. 04

				Date				Herbert Design		OUTPUT CARD			
				Editor	HDS			Sherbert@web.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			E1		Pg. 24		
											38.5 Pg.		



30U1

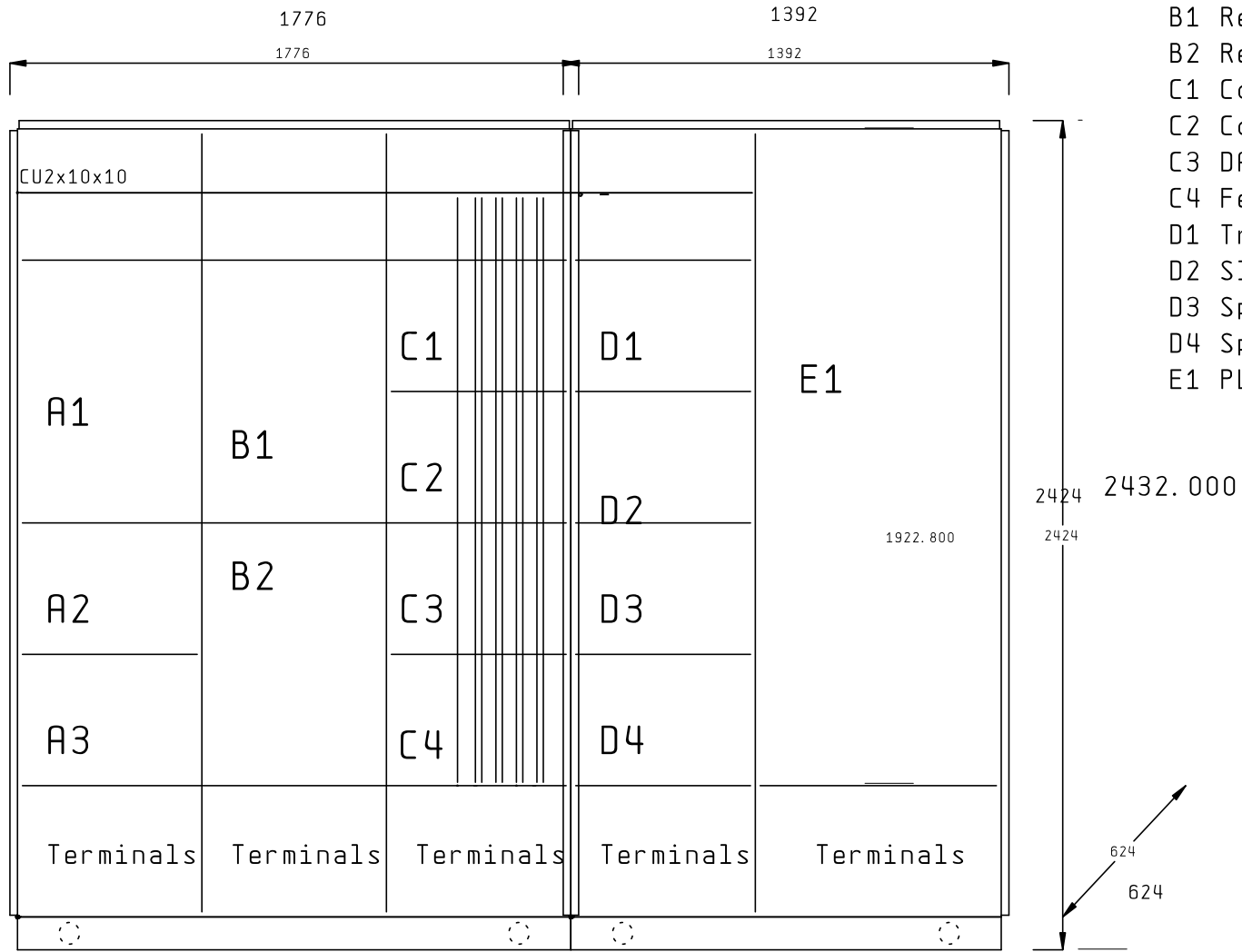
1	2	3	4	5	6	7	8	9	10	11
F+	F-	-	E .0	E .1	E .2	E .3	E .4	E .5	E .6	E .7

ANALOG INPUT

PART 1 off 1

Level Transmitter DAF surface	Pressure Transmitter Saturator ( 700 Kpa )	Level Transmitter Saturator	Mag Flow Meter Recycle delivery line ( New )	Mag Flow Meter Raw Water Meter ( Existing )	Mag Flow Meter Dilution water line	Spare	Spare
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				Date				Herbert Design		PLC INPUTS				
				Editor	HDS			Sherbert@mweb.co.za		FIELD INSTRUMENTS				
				Tested	28. Mar. 2005									
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.							Pg. 30	
											advert		38.5 Pg	



- A1 Incommer
- A2 Feeders light & plugs
- A3 Spare
- B1 Recycle pump1
- B2 Recycle pump 2
- C1 Compressor 1
- C2 Compressor 2
- C3 DAF drive
- C4 Feeders dosing panels
- D1 Transformer
- D2 Sludge pump
- D3 Spare
- D4 Spare
- E1 PLC

FRONT REAR

				Date				Herbert Design		General arrangement			
				Editor	HDS			Sherbert@web.co.za					
				Tested	28. Mar. 2005								
Changes	Date	Name	Norm	Original	Sub. f.	Sub. b.			advert		Pg. 31		
											38.5 Pg.		

