Elektronik – Handbuch

POSmill C 860 / POSmill C 105

Maschinentypen	POSmill C860 HSCI POSmill C1050 HSCI POSmill C800 kompakt POSmill C1050 Highspeed
Versionsstand	Februar 2013-02-25
Verfasser	BHo

Technische Änderungen vorbehalten

MODIFY LIST

NUMBER	DATE	EDITOR	PAGE / CONTENT SUMMARY
02	2011/12/10	JEFFERY	4.23,8.5,9.2 /EXCHANGE THE INPUT,I284 => I251
02	2011/12/10	JEFFERY	9.5 /ADD THE MG POCKET INPOSITION INPUT.
02	2011/12/10	JEFFERY	7.1 /REMOVE THE XT25 TERMINAL

2 :MODIFIED FROM VERSION 2

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: MODIFY LIST

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/1

Page NO.: A1

IDENTIFICATION	DESCRIPTION
= 0.0-0.4	TABLE OF CONTENTS
= 1.1-1.2	SYMBOL DESCRIPTION
= 2.1-2.9	ELECTRIC BOX FIGURATION
= 3.1-3.2	CONTROL CIRCUIT DIAGRAM
= 3.3-3.4	GROUNDING SYSTEM
= 3.5	PCB CONTROL BOARD-S/A
= 3.6	SAFETY RELAY BOARD
= 4.1	ITNC-530 HSCI CONNECTION OVERVIEW
= 4.2	MC 6222 CONTROL SYSTEM
= 4.3	TE 630_KEYBOARD UNIT
= 4.4~4.5	MB 620_OPERATING PANEL
= 4.6	CC 6106_NC CONTROL UNIT
= 4.7~4.9	UE 21xD/24xD COMPACT INVERTER UNIT
= 4.10	UVR 130D_POWER SUPPLY MODULE
= 4.11	UVR 140D/150D_POWER SUPPLY UNIT
= 4.12	UM 112D/122D_AXIS/SPINDLE MODULE
= 4.13	UM 113D/114D_AXIS/SPINDLE MODULE
= 4.14	UM 115D_AXIS/SPINDLE MODULE
= 4.15	UM xxxD MOTOR CONNECTION
= 4.16	ZKF 120/UP 110 MODULE

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: TABLE OF CONTENTS

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/4

Page NO.: 0.0

IDENTIFICATION	DESCRIPTION
= 4.17	PSL 130_DC POWER SUPPLY MODULE
= 4.18	PW 210_BRAKE RESISTOR
= 4.19	PL 6204_I/O INTERFACE UNIT
= 4.20	PLD/PLA CONNECTION OVERVIEW
= 4.21	HR 130_HANDWHEEL
= 4.22	HR 130_HANDWHEEL CONNECTION
= 4.23	HR 410_HANDWHEEL
= 4.24	RS 232C DATA INTERFACE CABLE
= 5.1~5.2	POWER INCOME
= 6.1~6.3	MOTOR CONTROL CIRCUIT
= 6.4	SPINDLE WYE_DELTA CONNECT
= 7.1	TERMINAL XT26
= 8.1	INVERTERS CONNECTION
= 8.2	PSL 130 & NC READY SIGNAL CONNECTION
= 8.3	DRIVER SAFETY RELAY CONNECT
= 8.4	ENG SAFETY RELAY CIRCUIT
= 8.5	FRONT DOOR SAFETY CIRCUIT
= 8.6	MAGAZINE DOOR SAFETY CIRCUIT

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: TABLE OF CONTENTS

Drawing NO.: EPD-0000059-02

Sheet NO.: 2/4

Page NO.: 0.1

IDENTIFICATION	DESCRIPTION
= 9.1	MB 620_X6 INPUT MODULE
= 9.1.1	MB 620_X31 NC START/STOP INPUT MODULE
= 9.2	PLB 6204_X9 INPUT MODULE
= 9.3	PLB 6204_X9 INPUT MODULE
= 9.4	PLD-H 16-08-00 #1 INPUT MODULE (X11)
= 9.5	PLD-H 16-08-00 #1 INPUT MODULE (X12)
= 9.6	PLD-H 16-08-00 #2 INPUT MODULE (X11)
= 9.7	PLD-H 16-08-00 #2 INPUT MODULE (X12)
= 9.8	PLD-H 16-08-00 #2 INPUT MODULE (X12)
= 9.9	PLD-H 08-16-00 #3 INPUT MODULE (X11)
= 10.1	MB 620_X7 OUTPUT MODULE
= 10.2	MB 620_X9 OUTPUT MODULE
= 10.3	MB 620_X9 OUTPUT MODULE
= 10.4	PLD-H 16-08-00 #1 OUTPUT MODULE (X21)
= 10.5	PLD-H 16-08-00 #1 OUTPUT MODULE (X21)
= 10.6	PLD-H 16-08-00 #2 OUTPUT MODULE (X21)
= 10.7	PLD-H 16-08-00 #2 OUTPUT MODULE (X21)
= 10.8	PLD-H 16-08-00 #3 OUTPUT MODULE (X21)
= 10.9	PLD-H 16-08-00 #3 OUTPUT MODULE (X22)

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: TABLE OF CONTENTS

Drawing NO.: EPD-0000059-02

Sheet NO.: 3/4

Page NO.: 0.2

IDENTIFICATION	DESCRIPTION
= 11.1	LUBRICATING CONTROL SYSTEM
= 11.2	CTS CONTROL SYSTEM
= 11.3	-XT42 -XT50 TERMINAL BLOCK
= 11.4	ATC CONTROL TERMINAL BLOCK(#50)
= 11.5~11.6	ATC CONTROL TERMINAL BLOCK(#40)(VMC)
= 11.7	ATC CONTROL TERMINAL BLOCK(ARM TYPE)(HB)
= 11.8	ATC CONTROL TERMINAL BLOCK(CHAIN TYPE)(HB)
= 11.9	ATC CONTROL TERMINAL BLOCK(ARMLESS TYPE)(HB)
= 11.10	4TH 5TH AXIS CONNECTION
= 11.11	MAGAZINE PANEL CIRCUIT
= 11.12	DOOR CONTROL SYSTEM
= 12.1	X113 RENISHAW TS27R CIRCUIT
= 12.2	X113 RENISHAW NC4 CIRCUIT
= 12.3	X112 RENISHAW OMP40 xMP60 CIRCUIT

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: TABLE OF CONTENTS

Drawing NO.: EPD-0000059-02

Sheet NO.: 4/4

Page NO.: 0.3

Block	Comment	Block	Comment	Block	Comment	Block	Comment	Block	Comment	Block	Comment
	Make contacts		Pressure switch with Make contacts		Manually switch with Make contacts		Buzzer	A1 A2	DC relay		Bridge diode
	Break contacts		Pressure switch with Break contacts		Manually switch with Break contacts		LED		Photo switch		Diode
	Foot switch with Make contacts		Limit switch with Make contacts		Float switch with Make contacts		LED		Timer		Light EMITTING Diode
	Foot switch with Break contacts		Limit switch with Break contacts		Float switch with Break contacts		Transformers	1 2 3 4	Terminal strip		Brake
	Push button with Make contacts		Proximity switch with Break contacts		On delay timer contact Break contacts				Spark kill		Fuse
	Push button with Break contacts		Proximity switch with Make contacts		Lamp		Contactor		Spark kill (3 Phase)		Resistor
	Key switch with Make contacts		Emergency switch with Break contacts		Flash lamp		Solenoid		Wire NO.		Capacitor

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: SYMBOL DESCRIPTION

Drawing NO.: EPD-0000059-02

Sheet NO.:

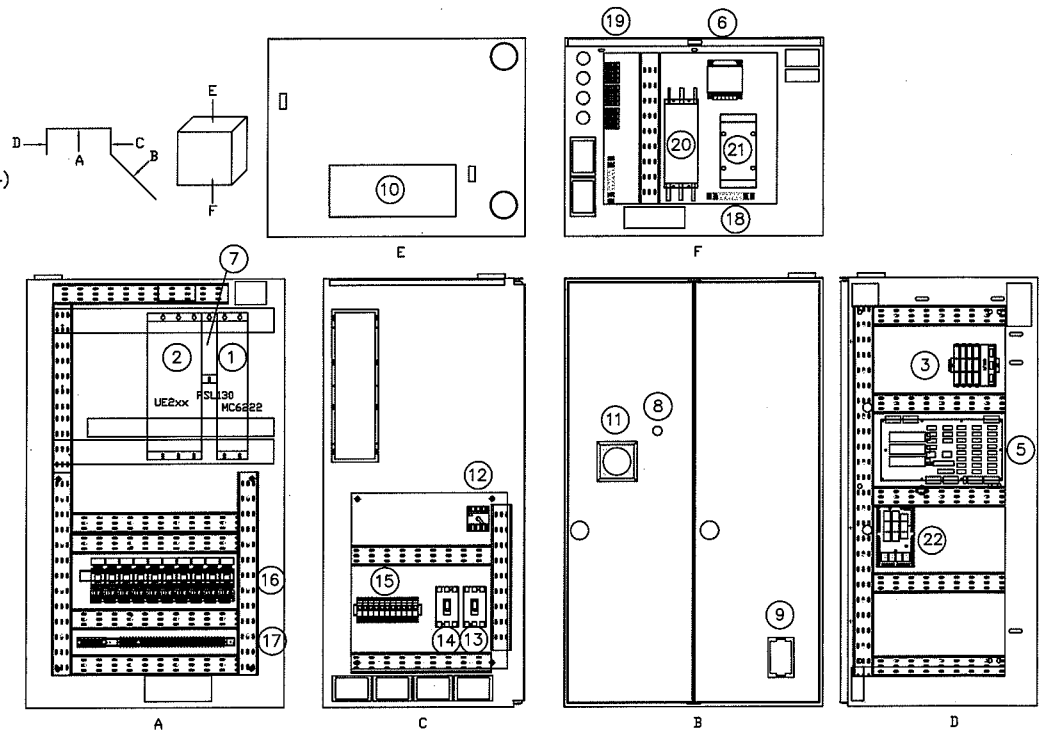
Page NO.: 1.1

Block	Comment	Block	Comment	Block	Comment	Block	Comment	Block	Comment
○	Terminal		Line comment		Turning switch		NFB (3 phase)	1U2 1U1 1V2 1V1 1W2 1W1	AC REACTOR
	Connector of couductors		Line comment		Ground				
	Isolation point		Thermal switch		Protective ground		Three-pole circuit-breaker with overcurrent releases		
	Conductor		Motor (3 phase)		Noiseless ground				
	Grounding circuit		Motor (1 phase)		Chassis	LOAD LINE L1 L1 L2 L2 L3 L3	LINE FILTER (3 phase)		
	Unit		Disconnector		NFB (1 phase)				
	Connector NO. & Pin NO.		Thermal relay		NFB (2 phase)				

POS

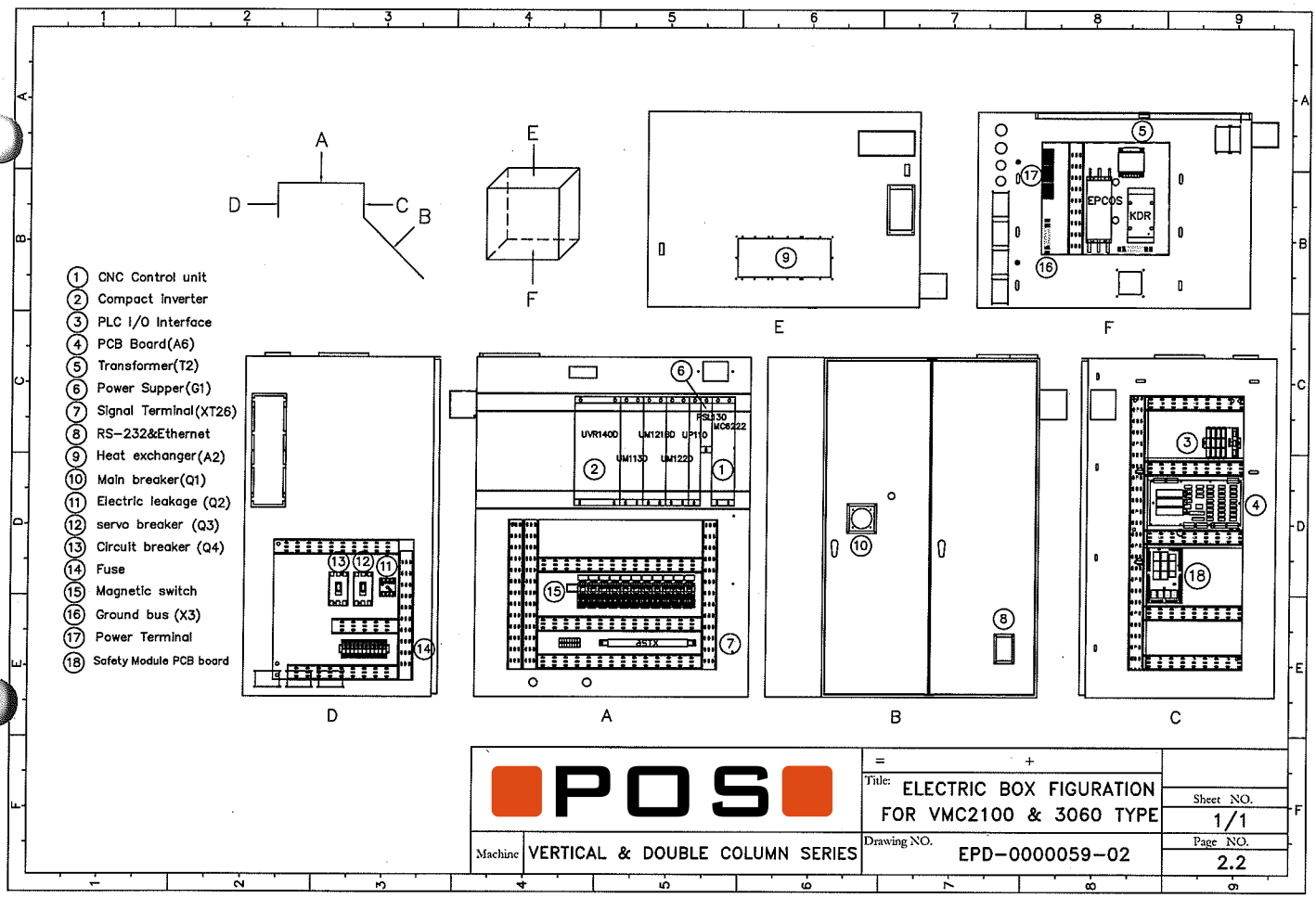
Machine	VERTICAL & DOUBLE COLUMN SERIES	Title: SYMBOL DESCRIPTION	Sheet NO.
		Drawing NO. EPD-0000059-02	Page NO. 1.2

1. CNC Control unit
2. Compact inverter
3. PLC I/O Interface (PL6204)
4. Braking Resister (PW210)
5. PCB Board (A6)
6. Transformer(T2)
7. Power Supper (G1)
8. Power On Lamp
9. RS-232&Ethernet
10. Heat exchanger(A2)
11. Main breaker(Q1)
12. Electric leakage (Q2)
13. Servo Breaker (Q3)
14. Circuit Breaker(Q4)
15. Fuse (QXX)
16. Magnetic switch (KMXX)
17. Terminal (XT25)
18. Ground bus(XT14)
19. Power Terminal
20. Line filter
21. Commutating reactor
22. Safety Module PCB board

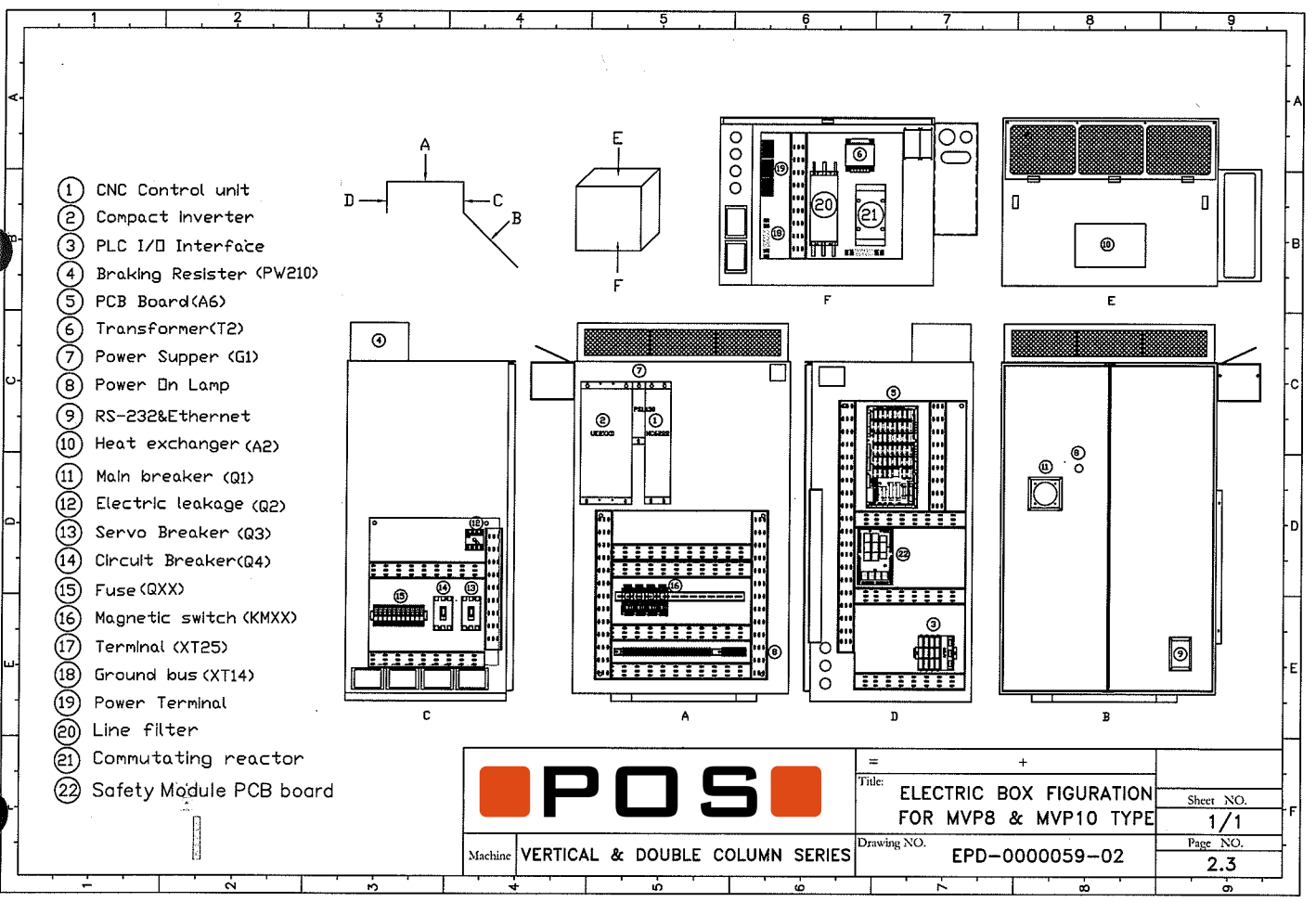


POS

Machine	VERTICAL & DOUBLE COLUMN SERIES	Title: ELECTRIC BOX FIGURATION FOR VMC1100 ~ 1270 TYPE	Sheet NO. 1/1
		Drawing NO. EPD-0000059-02	Page NO. 2.1

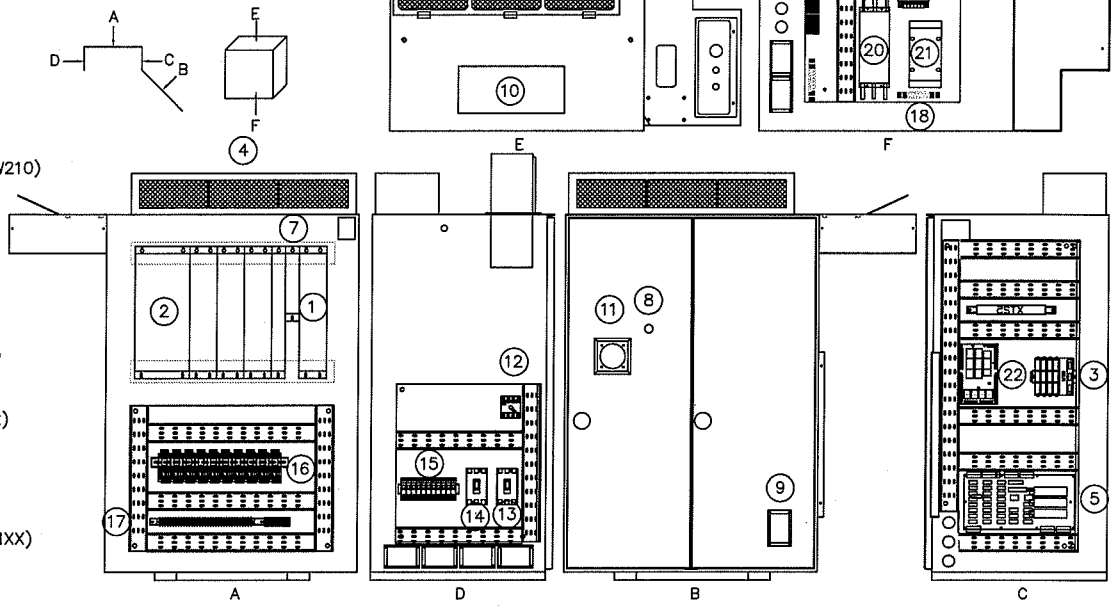


POS	Title: ELECTRIC BOX FIGURATION FOR VMC2100 & 3060 TYPE	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Page NO. 2.2



POS	Title: ELECTRIC BOX FIGURATION FOR MVP8 & MVP10 TYPE	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Page NO. 2.3

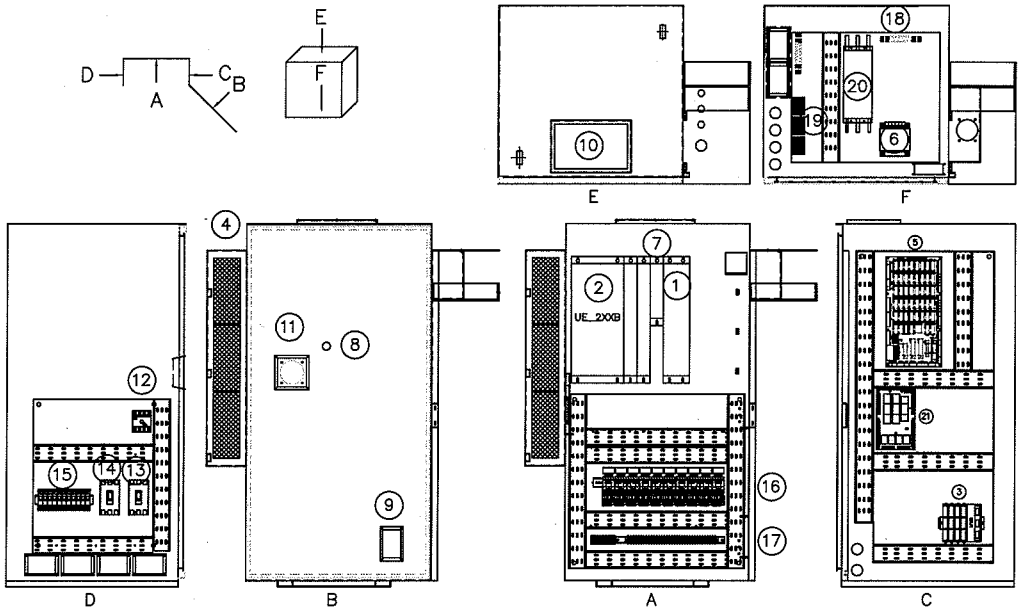
1. CNC Control unit
2. Modular Inverter
3. PLC I/O Interface
4. Braking Resister (PW210)
5. PCB Board (A6)
6. Transformer(T2)
7. Power Supper(G1)
8. Power On Lamp
9. RS-232&Ethernet
10. Heat exchanger(A2)
11. Main breaker(Q1)
12. Electric leakage (Q2)
13. Servo Breaker (Q3)
14. Circuit Breaker(Q4)
15. Fuse (QXX)
16. Magnetic switch (KMXX)
17. Terminal (XT25)
18. Ground bus(XT14)
19. Power Terminal
20. Line filter
21. Commutating reactor
22. Safety Module PCB board



POS

Machine	VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Sheet NO. 1/1
		Title: ELECTRIC BOX FIGURATION FOR MVP13 TYPE	Page NO. 2.4

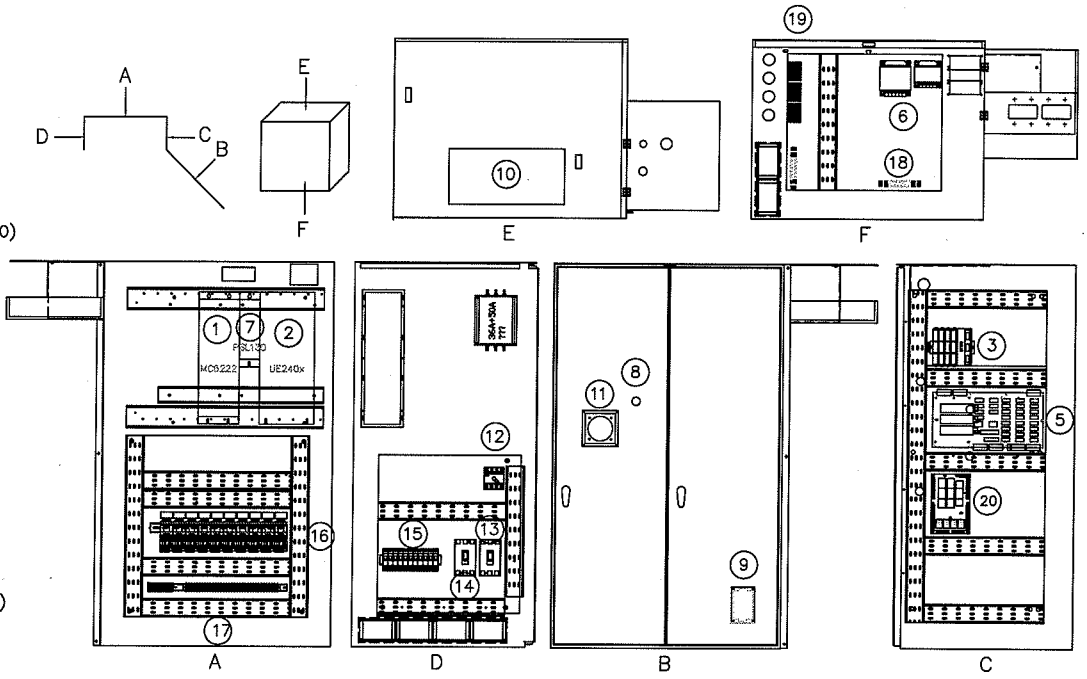
1. CNC Control unit
2. Compact inverter
3. PLC I/O Interface
4. Braking Resister (PW210)
5. PCB Board (A6)
6. Transformer(T2)
7. Power Supper (G1)
8. Power On Lamp
9. RS-232&Ethernet
10. Heat exchanger(A2)
11. Main breaker(Q1)
12. Electric leakage (Q2)
13. Servo Breaker (Q3)
14. Circuit Breaker(Q4)
15. Fuse (QXX)
16. Magnetic switch (KMXX)
17. Terminal (XT25)
18. Ground bus (XT14)
19. Power Terminal
20. Line filter
21. Safety Module PCB board



POS

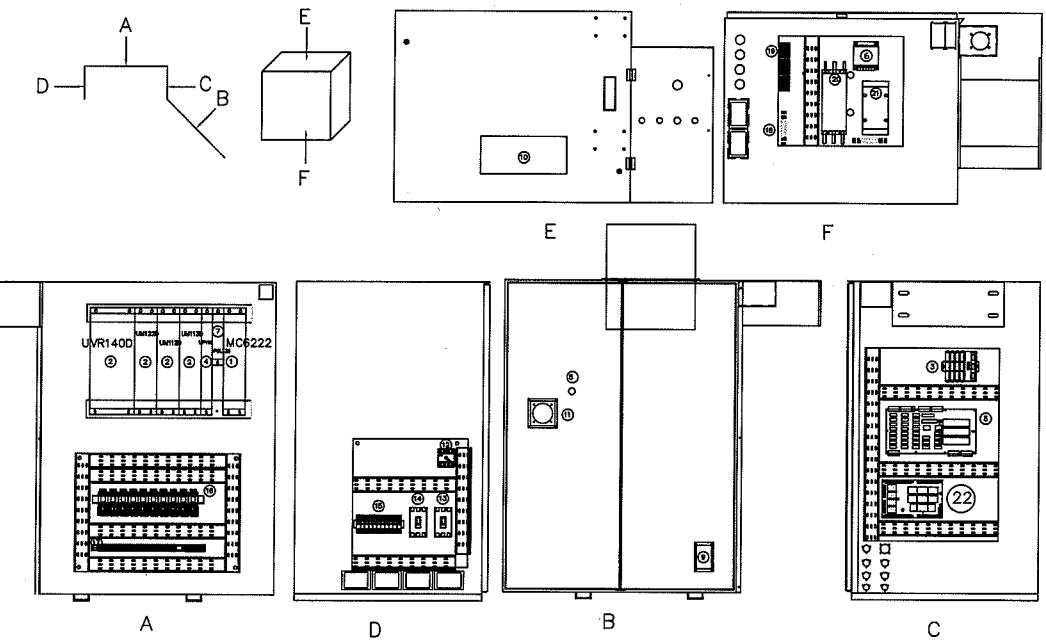
Machine	VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Sheet NO. 1/1
		Title: ELECTRIC BOX FIGURATION FOR PRO800 TYPE	Page NO. 2.5

1. CNC Control unit
2. Compact inverter
3. PLC I/O Interface
4. Braking Resister (PW210)
5. PCB Board (A6)
6. Transformer(T2)
7. Power Supper (G1)
8. Power On Lamp
9. RS-232&Ethernet
10. Heat exchanger(A2)
11. Main breaker(Q1)
12. Electric leakage (Q2)
13. Servo Breaker (Q3)
14. Circuit Breaker(Q4)
15. Fuse (QXX)
16. Magnetic switch (KMXX)
17. Terminal (XT25)
18. Ground bus (XT14)
19. Power Terminal
20. Safety Module PCB board

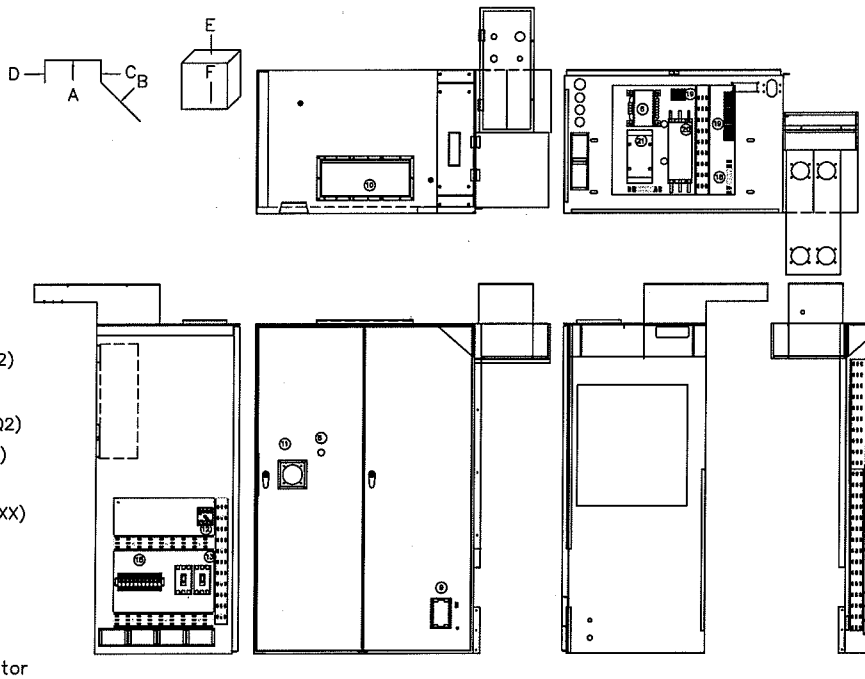


POS	Title: ELECTRIC BOX FIGURATION FOR PRO1000		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES		Drawing NO. EPD-0000059-02	Page NO. 2.6

1. CNC Control unit
2. Modular Inverter
3. PLC I/O Interface
5. PCB Board (A6)
6. Transformer(T2)
7. Power Supper (G1)
8. Power On Lamp
9. RS-232&Ethernet
10. Heat exchanger(A2)
11. Main breaker(Q1)
12. Electric leakage (Q2)
13. Servo Breaker (Q3)
14. Circuit Breaker(Q4)
15. Fuse (QXX)
16. Magnetic switch (KMXX)
17. Terminal (XT25)
18. Ground bus (XT14)
19. Power Terminal
20. Line filter
21. Commutating reactor
22. Safety Module PCB board



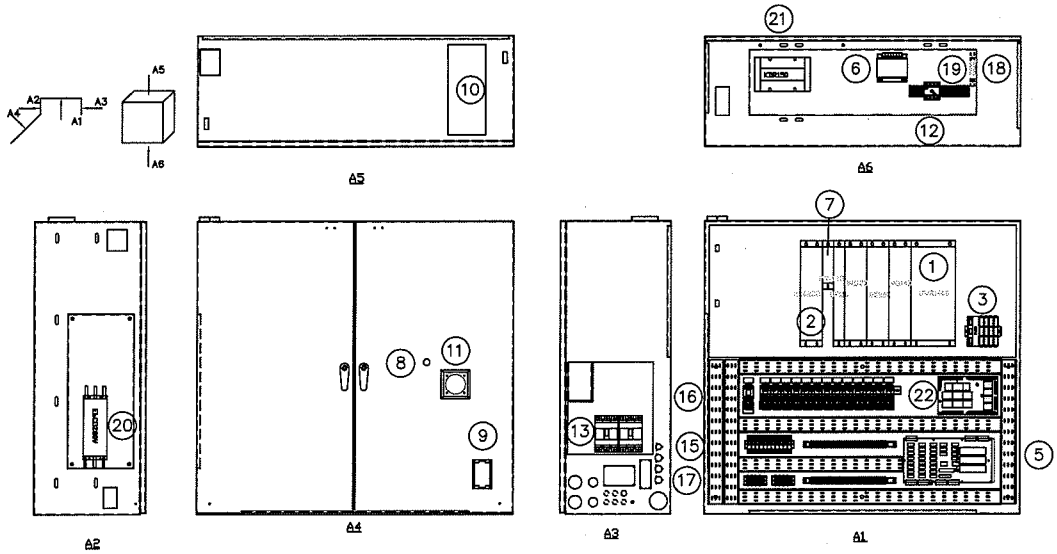
POS	Title: ELECTRIC BOX FIGURATION FOR HCMC15 TYPE		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES		Drawing NO. EPD-0000059-02	Page NO. 2.7



1. CNC Control unit
2. Modular Inverter
3. PLC I/O Interface
5. PCB Board (A6)
6. Transformer(T2)
7. Power Supper (G1)
8. Power On Lamp
9. RS-232&Ethernet
10. Heat exchanger (A2)
11. Main breaker (Q1)
12. Electric leakage (Q2)
13. servo breaker (Q3)
15. Fuse (QXX)
16. Magnetic switch (KMXX)
17. Terminal (XT25)
18. Ground bus (XT14)
19. Power Terminal
20. Line filter
21. Commutating reactor
22. Safety Module PCB board

POS

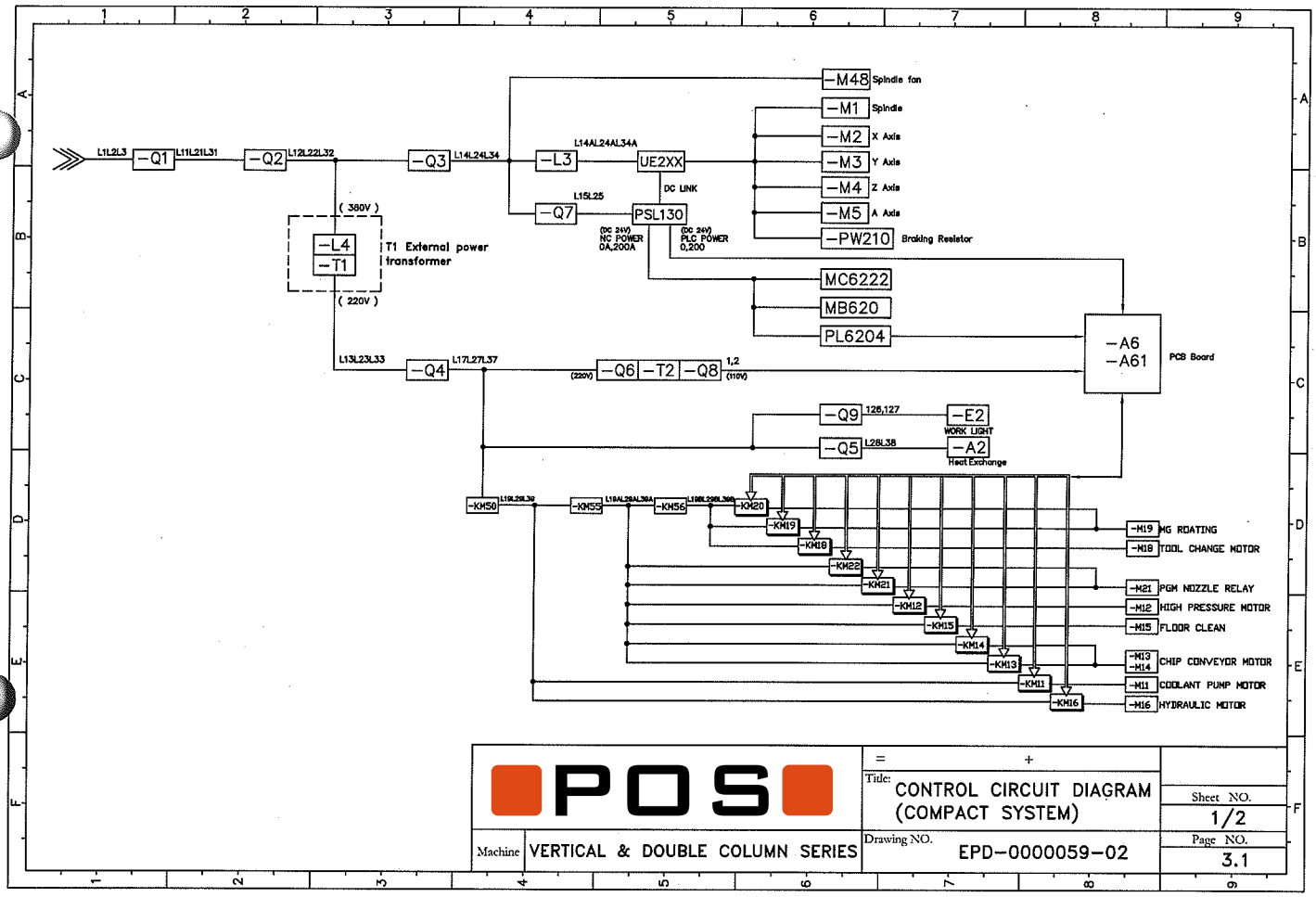
Title:	ELECTRIC BOX FIGURATION FOR HCMC18 TYPE
Machine	VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.	EPD-0000059-02
Sheet NO.	1/1
Page NO.	2.8

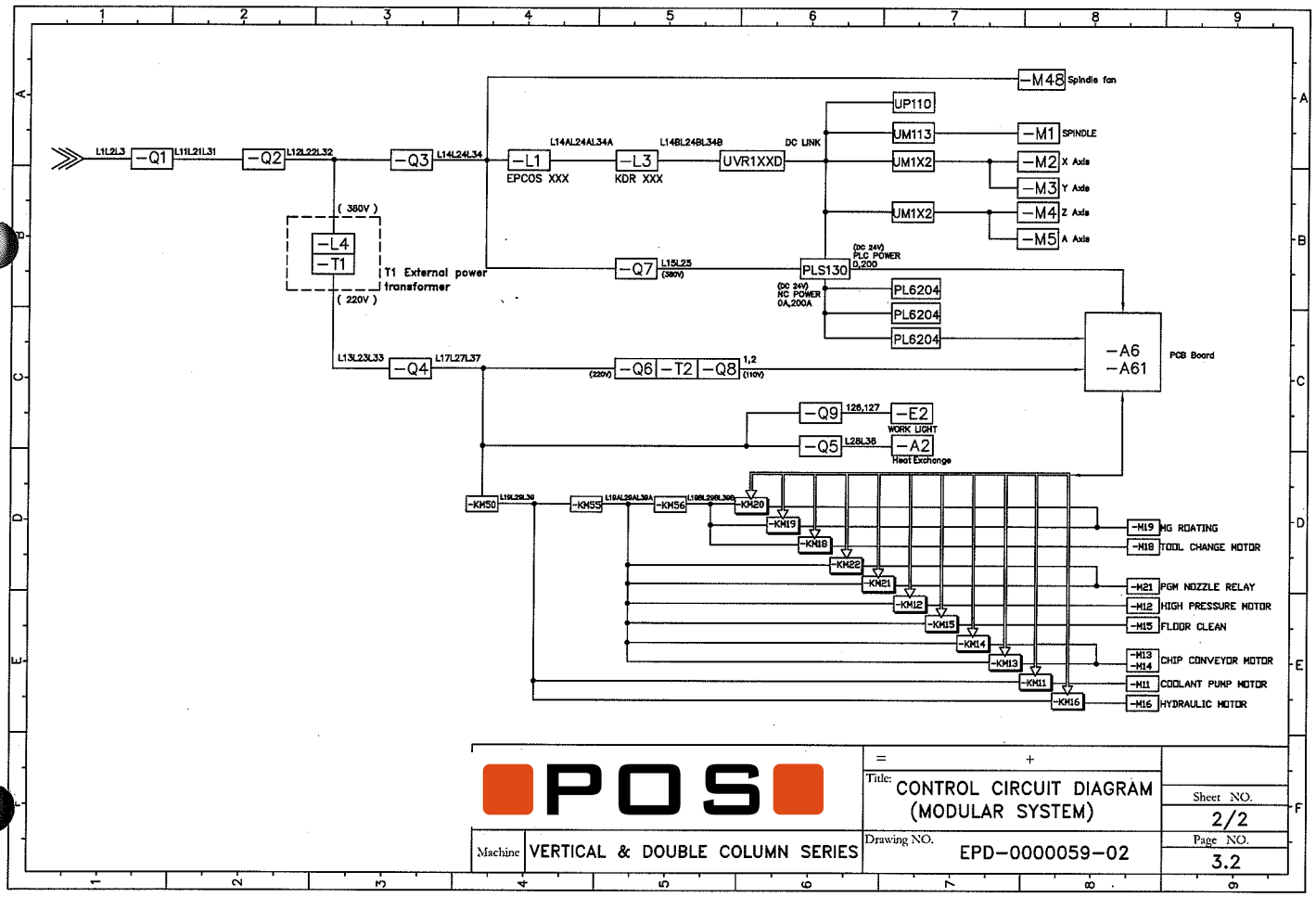


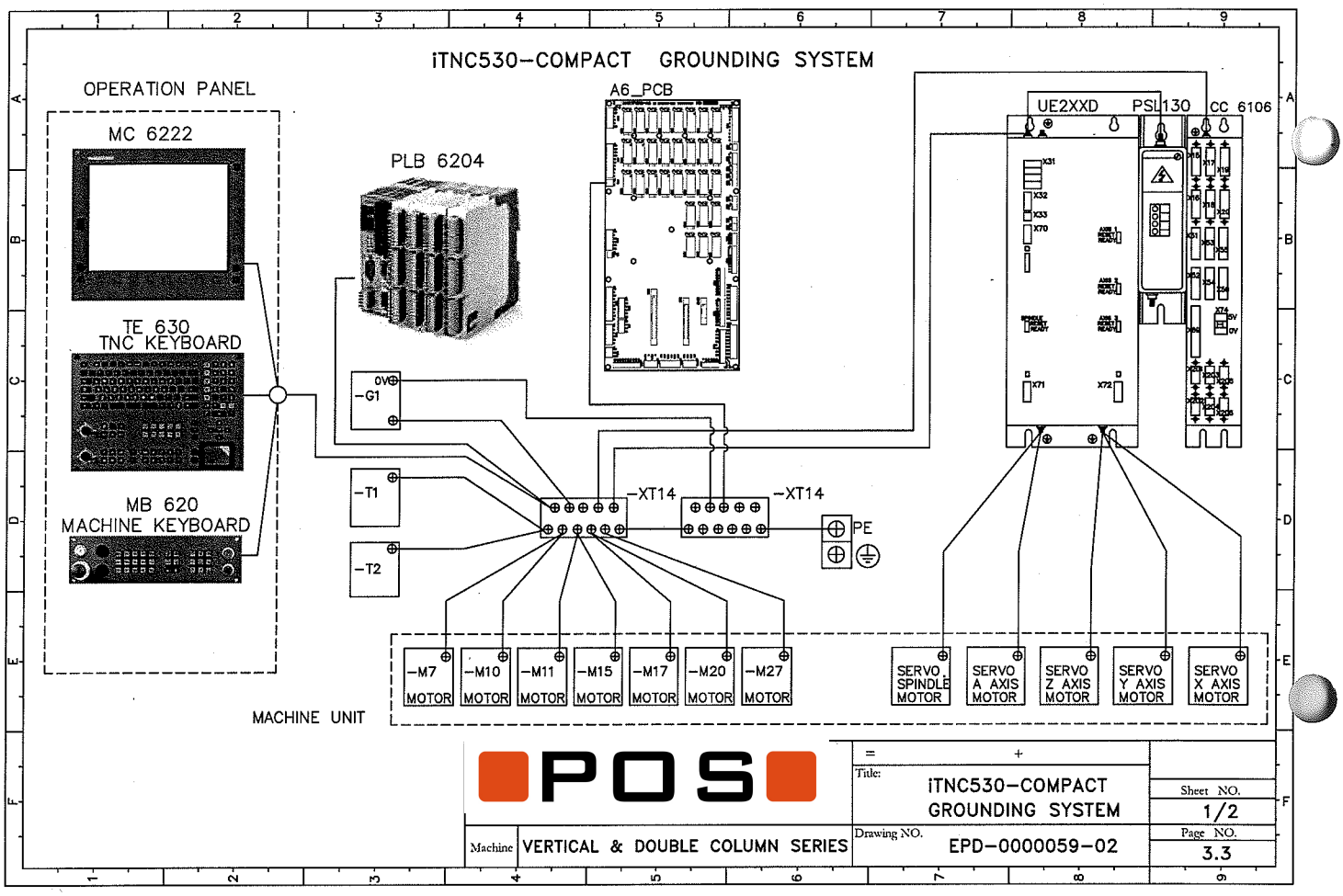
1. CNC Control unit
2. Modular Inverter
3. PLC I/O Interface
5. PCB Board (A6)
6. Transformer(T2)
7. Power Supper (G1)
8. Power On Lamp
9. RS-232&Ethernet
10. Heat exchanger (A2)
11. Main breaker (Q1)
12. Electric leakage (Q2)
13. servo breaker (Q3)
15. Fuse (QXX)
16. Magnetic switch (KMXX)
17. Terminal (XT25)
18. Ground bus (XT14)
19. Power Terminal
20. Line filter
21. Commutating reactor
22. Safety Module PCB board

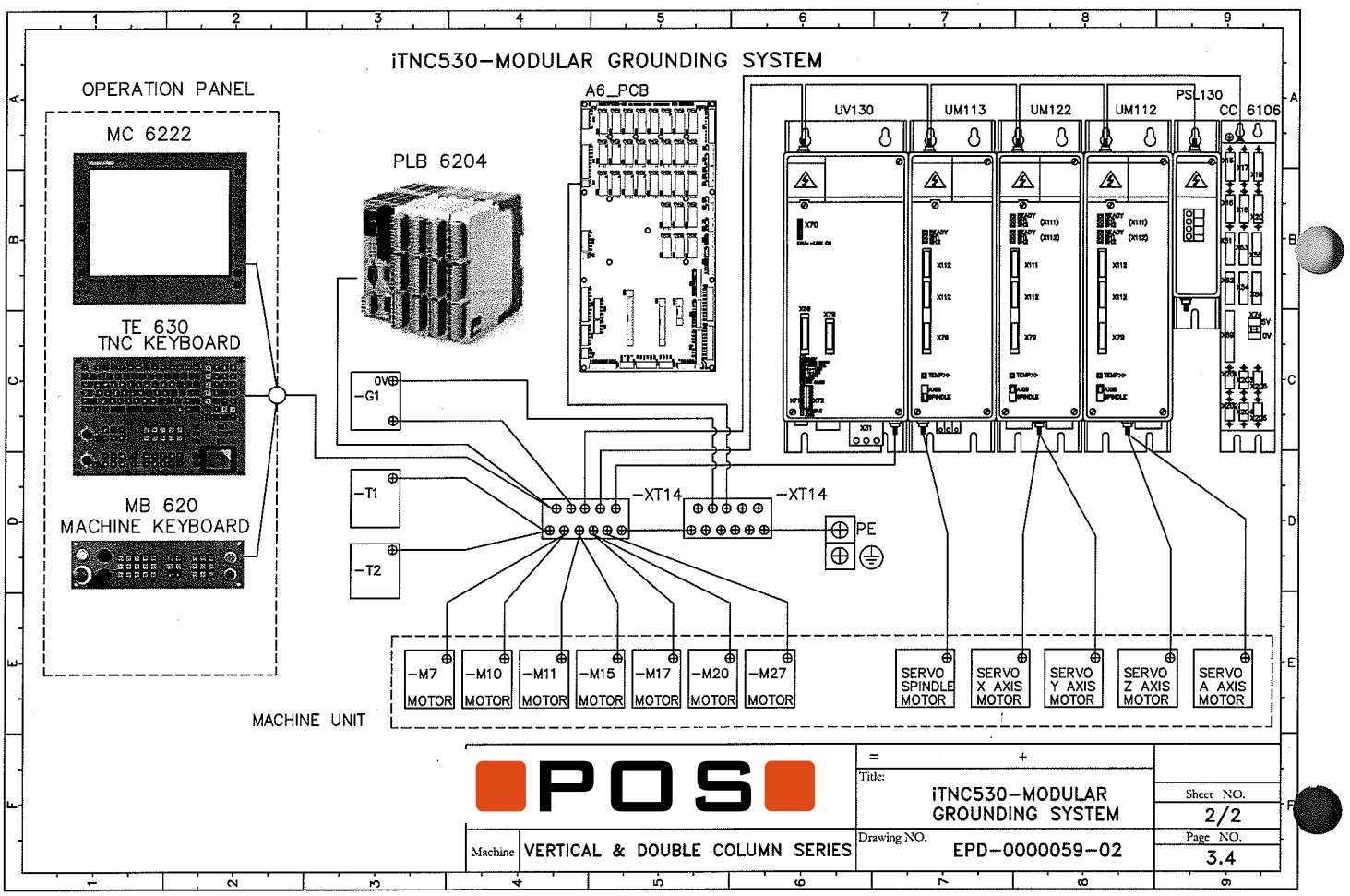
POS

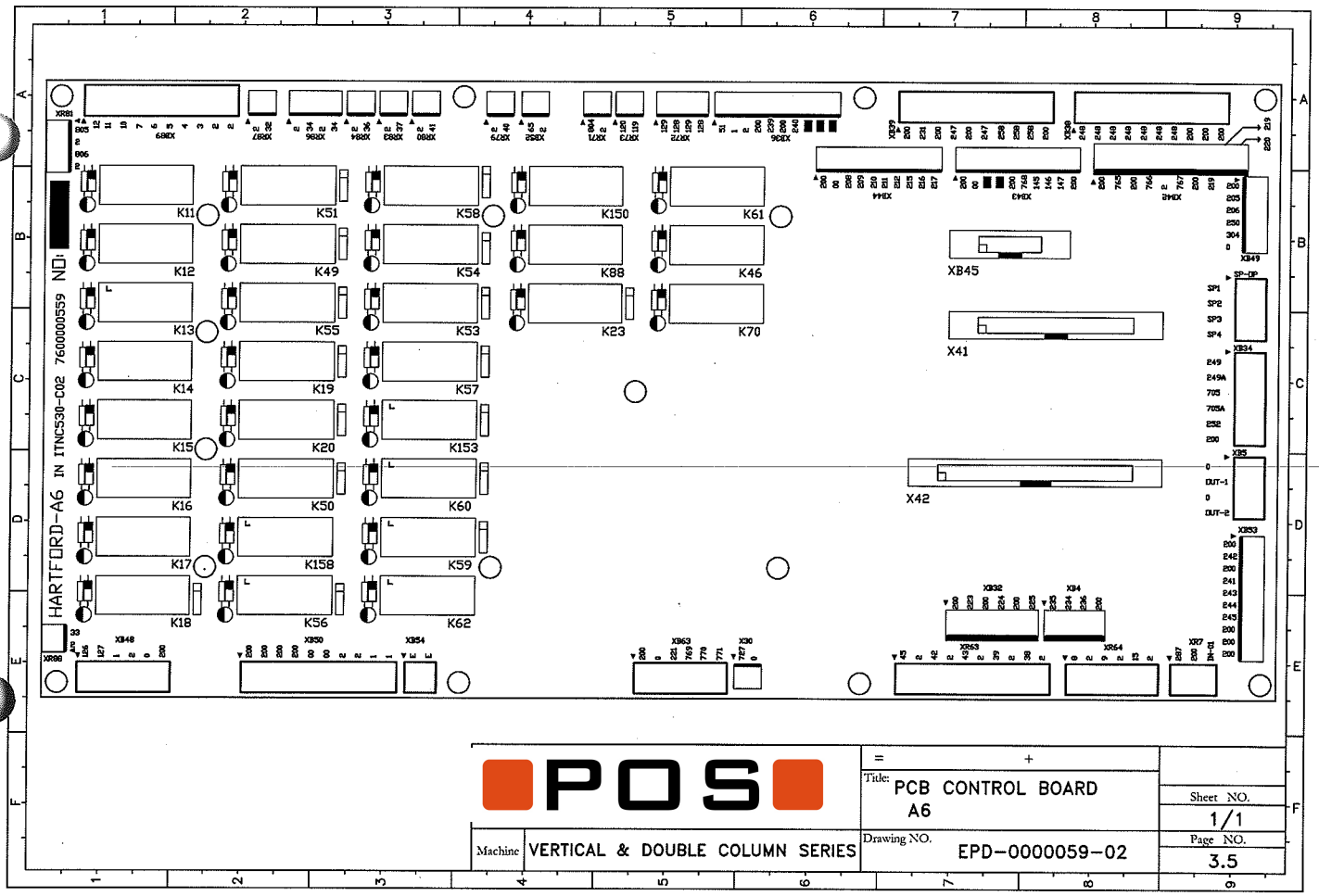
Title:	ELECTRIC BOX FIGURATION DOUBLE COLUMN SERIES
Machine	VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.	EPD-0000059-02
Sheet NO.	1/1
Page NO.	2.9


-M48 Spindle fan
-M1 Spindle
-M2 X Axis
-M3 Y Axis
-M4 Z Axis
-M5 A Axis
-PW210 Braking Resistor
-Q1
-Q2
-Q3
-L3
UE2XX
DC LINK
-Q7
PSL130
(DC 24V) NC POWER 0A,200A
(DC 24V) PLC POWER 0,200
(380V)
-L4
-T1
T1 External power transformer
(220V)
MC6222
MB620
PL6204
-A6
-A61
PCB Board
-Q4
-Q6
-T2
-Q8
-Q9
-E2
WORK LIGHT
-Q5
-A2
Heat Exchange
-KM50
-KM55
-KM56
-KM20
-KM19
-KM18
-KM22
-KM21
-KM12
-KM15
-KM14
-KM13
-KM11
-KM16
-M19 NG ROATING
-M18 TOOL CHANGE MOTOR
-M21 PGM NOZZLE RELAY
-M12 HIGH PRESSURE MOTOR
-M15 FLOOR CLEAN
-M13 -M14 CHIP CONVEYOR MOTOR
-M11 COOLANT PUMP MOTOR
-M16 HYDRAULIC MOTOR
POS
Machine VERTICAL & DOUBLE COLUMN SERIES
Title: CONTROL CIRCUIT DIAGRAM (COMPACT SYSTEM)
Drawing NO. EPD-0000059-02
Sheet NO. 1/2
Page NO. 3.1

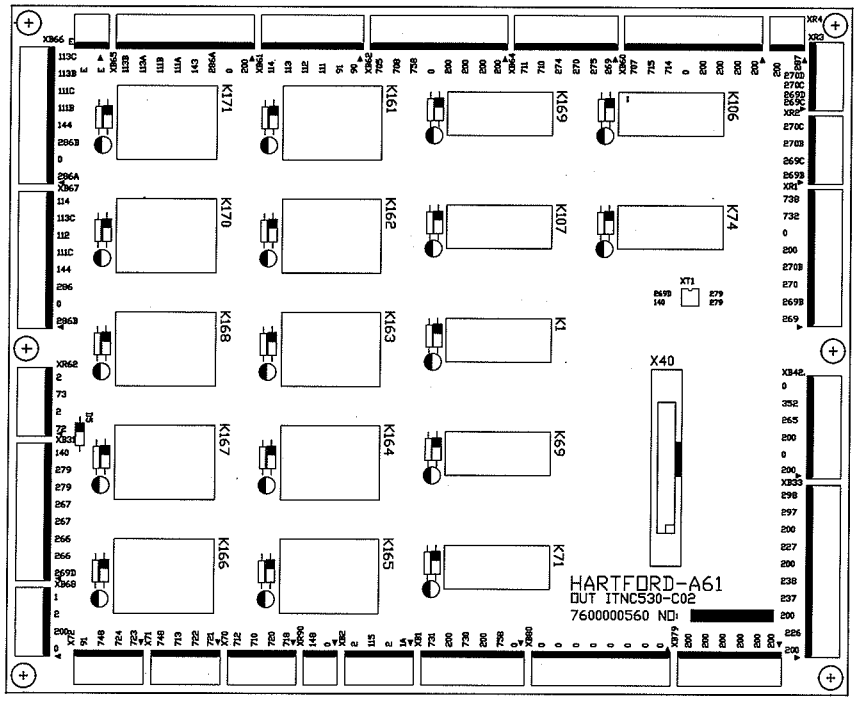

-M48 Spindle fan
UP110
UM113
UM1X2
UM1X2
-M1 SPINDLE
-M2 X Axis
-M3 Y Axis
-M4 Z Axis
-M5 A Axis
-Q1
-Q2
-Q3
-L1
EPCOS XXX
-L3
KDR XXX
UVR1XXD
DC LINK
(380V)
-L4
-T1
T1 External power transformer
(220V)
-Q7
PLS130
(DC 24V) PLC POWER 0,200
(DC 24V) NC POWER 0A,200A
PL6204
PL6204
PL6204
-A6
-A61
PCB Board
-Q4
-Q6
-T2
-Q8
-Q9
-E2
WORK LIGHT
-Q5
-A2
Heat Exchange
-KM50
-KM55
-KM56
-KM20
-KM19
-KM18
-KM22
-KM21
-KM12
-KM15
-KM14
-KM13
-KM11
-KM16
-M19 NG ROATING
-M18 TOOL CHANGE MOTOR
-M21 PGM NOZZLE RELAY
-M12 HIGH PRESSURE MOTOR
-M15 FLOOR CLEAN
-M13 -M14 CHIP CONVEYOR MOTOR
-M11 COOLANT PUMP MOTOR
-M16 HYDRAULIC MOTOR
POS
Machine VERTICAL & DOUBLE COLUMN SERIES
Title: CONTROL CIRCUIT DIAGRAM (MODULAR SYSTEM)
Drawing NO. EPD-0000059-02
Sheet NO. 2/2
Page NO. 3.2


iTNC530–COMPACT GROUNDING SYSTEM
OPERATION PANEL
MC 6222
TE 630
TNC KEYBOARD
MB 620
MACHINE KEYBOARD
PLB 6204
A6_PCB
UE2XXD
PSL130
CC 6106
0V
-G1
-T1
-T2
-XT14
-XT14
PE
-M7 MOTOR
-M10 MOTOR
-M11 MOTOR
-M15 MOTOR
-M17 MOTOR
-M20 MOTOR
-M27 MOTOR
SERVO SPINDLE MOTOR
SERVO A AXIS MOTOR
SERVO Z AXIS MOTOR
SERVO Y AXIS MOTOR
SERVO X AXIS MOTOR
MACHINE UNIT
POS
Title:
iTNC530–COMPACT GROUNDING SYSTEM
Sheet NO.
1/2
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD–0000059–02
Page NO.
3.3


iTNC530–MODULAR GROUNDING SYSTEM
OPERATION PANEL
MC 6222
TE 630
TNC KEYBOARD
MB 620
MACHINE KEYBOARD
PLB 6204
A6_PCB
UV130
UM113
UM122
UM112
PSL130
CC 6106
0V
-G1
-T1
-T2
-XT14
-XT14
PE
-M7 MOTOR
-M10 MOTOR
-M11 MOTOR
-M15 MOTOR
-M17 MOTOR
-M20 MOTOR
-M27 MOTOR
SERVO SPINDLE MOTOR
SERVO X AXIS MOTOR
SERVO Y AXIS MOTOR
SERVO Z AXIS MOTOR
SERVO A AXIS MOTOR
MACHINE UNIT
POS
Title:
iTNC530–MODULAR GROUNDING SYSTEM
Sheet NO.
2/2
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD–0000059–02
Page NO.
3.4

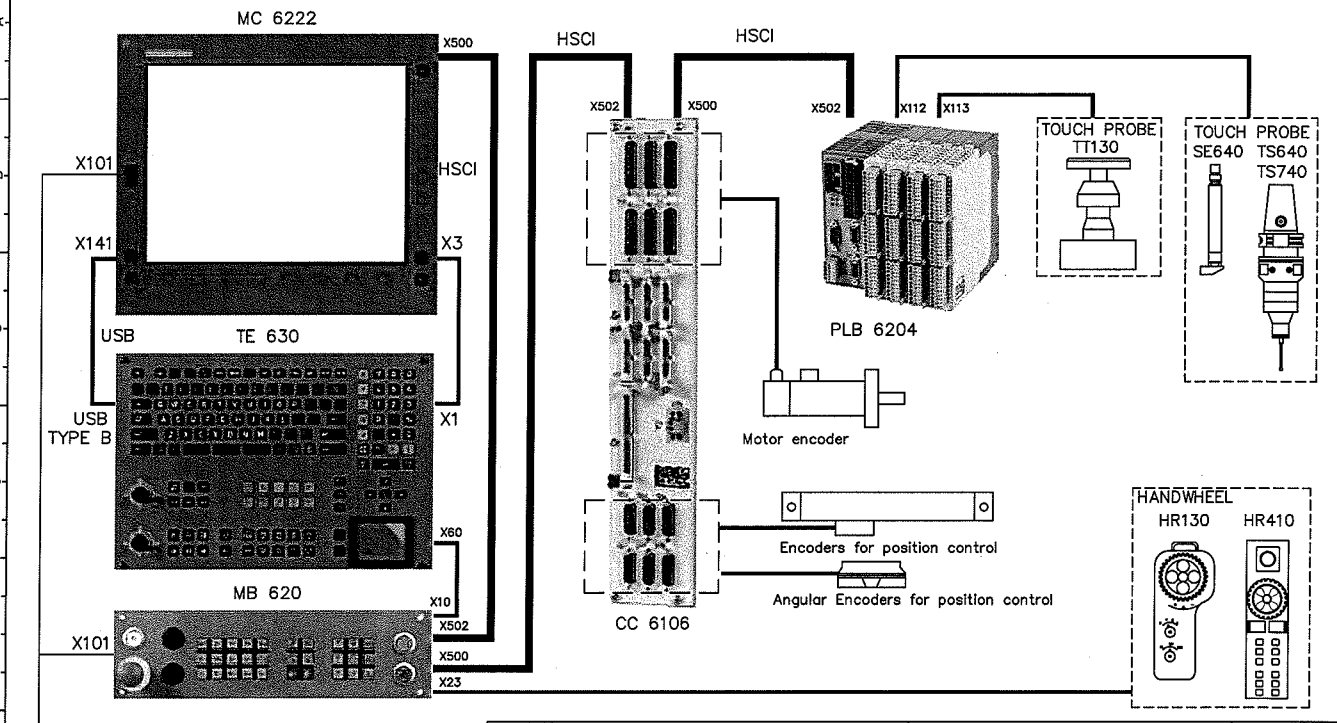


POS	Title: PCB CONTROL BOARD A6		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 3.5



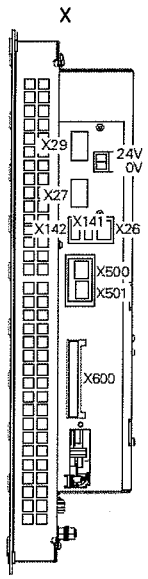
POS	Title: SAFETY RELAY BOARD A61		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 3.6

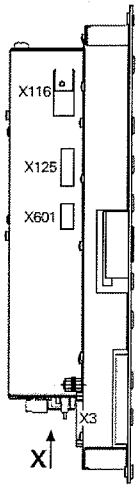
iTNC530–HSCI CONNECTION OVERVIEW

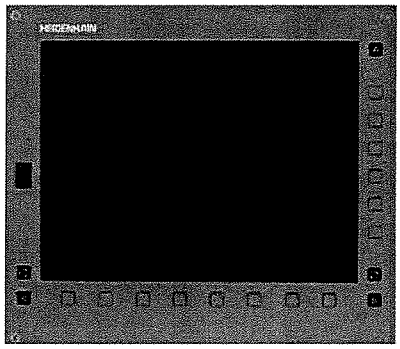


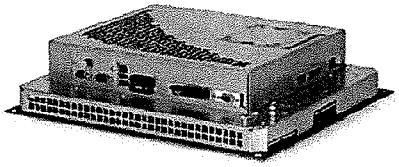
POS	Title: iTNC530 HSCI CONNECTION OVERVIEW		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD–0000059–02		Page NO. 4.1

iTNC530–HSCI Main Computer And Display Unit (MC 6222)









X29	Reserved
X26,X116	Ethernet interface
X27	RS–232–C/V.24 data interface
X141,X142	USB 2.0 interface (Type A)
X101	+24V NC power supply
X500	HSCI output 1 to CC,PL,MB
X501	HSCI output 2, only to MB or PLB 6001
X600	Reserved
X601	Reserved
X121	MC 6222: Profibus (option)
X125	SIK(System identification key)
X3	Connection for screen soft keys.

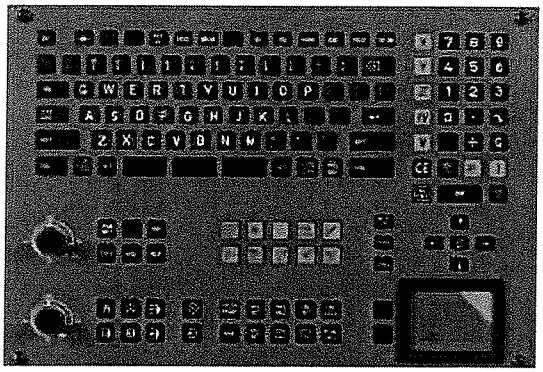
⏚ Equipment ground (YL/GN)

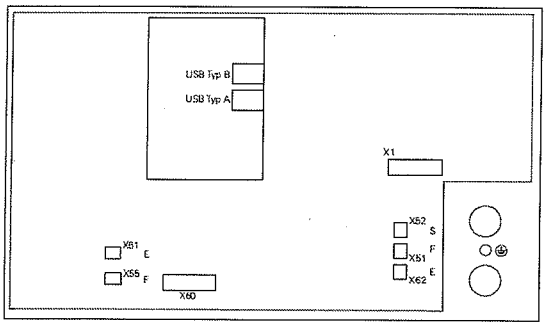


SIK

POS	Title: MC 6222 CONTROL SYSTEM		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD–0000059–02		Page NO. 4.2

iTNC530–HSCI Keyboard Unit (TE 630)





USB Type B	USB connection to BF2XX The TE6XX is connected to the USB hub of the BF2XX. (USB1.1)
USB Type A	Freely available USB connection (USB1.1)
X1	Screen soft keys of BF2XX X3 via ribbon cable to keyboard unit X1.
X51(F)	Connection for feed–rate override potentiometer.
X52(S)	Connection for spindle override potentiometer.
X55	Connection for feed–rate override potentiometer,alternative to X51.
X60	Potentiometer of keyboard unit via ribbon cable to machine operation panel X1.
X61	Connection for rapid–traverse override potentiometer.
X62(E)	Connection for rapid–traverse override potentiometer,alternative to X61.

⏚ Equipment ground (YL/GN)

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

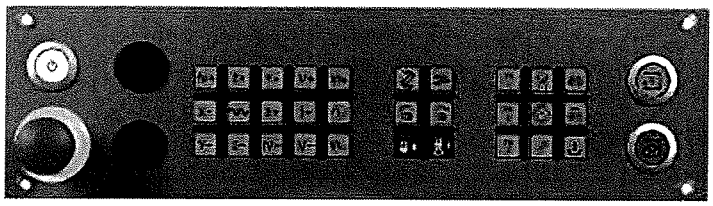
Title: KEYBOARD UNIT_TE 630

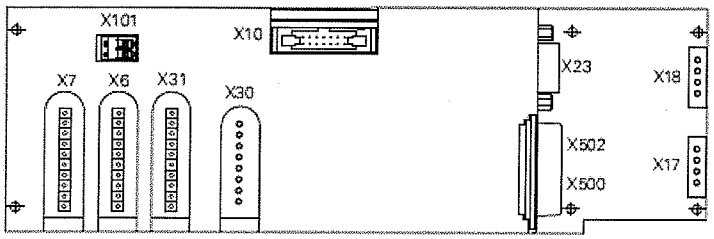
Drawing NO.: EPD–0000059–02

Sheet NO.: 1/1

Page NO.: 4.3

iTNC530–HSCI Machine Operating panel (MB 620)

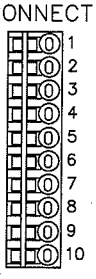




X6	PLC input.
X7	PLC output.
X10	Interface to keyboard and potentiometers.
X17	Emergency stop (MB for FS)
X18	Emergency stop (MB for FS)
X23	Handwheel connection
X30	Connection for handwheel adapter
X31	Permissive button,NC start NC stop.
X101	24–V NC power supply.
X500	HSCI output.
X502	HSCI input.

⏚ Equipment ground (YL/GN)

CONNECT



X6

PIN NO	I/O ADDRESS
1 *	I241
2 *	I242
3	I243
4	I244
5	I245
6	I246
7	I247
8	I248
9	no used
10	no used

X7

PIN NO	I/O ADDRESS	
1	O0	
2	O1	
3	O2	
4	O3	
5	O4	
6	O5	
7	O6	
8	O7	
9	+24V	200A
10	0V	0A

X31

PIN NO	I/O ADDRESS	
1	no used	
2	no used	
3	no used	
4	no used	
5 *	I239	NC START
6	no used	
7 *	+24V	
8 *	I240	NC STOP
9	no used	
10*	+24V	

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

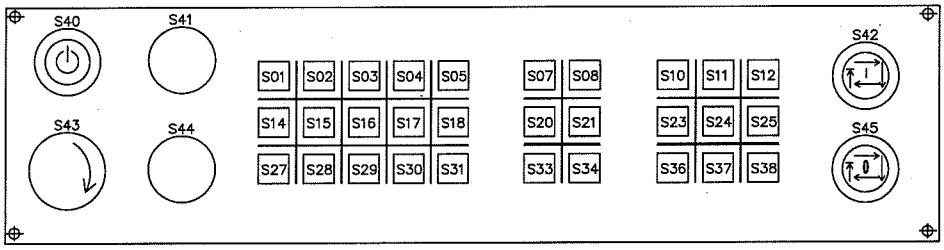
Title: OPERATING PANEL_MB 620

Drawing NO.: EPD–0000059–02

Sheet NO.: 1/2

Page NO.: 4.4

MB620–MACHINE OPERATING PANEL



S01	4 AXIS PLUS	S14	X AXIS PLUS	S27	Y AXIS PLUS	S40	CONTROL VOLTAGE READY BUTTON
S02	Z AXIS PLUS	S15	RAPID TRAVERSE	S28	Z AXIS MINUS		
S03	Y AXIS MINUS	S16	X AXIS MINUS	S29	4 AXIS MINUS	S41	SPARE
S04	5 AXIS PLUS	S17	OT RELEASE KEY	S30	5 AXIS MINUS	S42	NC START
S05	6 AXIS PLUS	S18	DRIVE RELEASE KEY	S31	6 AXIS MINUS	S43	EMERGENCY STOP
S07	MANUAL TOOL CHANGE	S20	SPINDLE JOG CW	S33	SPINDLE STOP	S44	SPARE
S08	TOOL UNCLAMP BUTTON	S21	SPINDLE JOG CCW	S34	SPINDLE START	S45	NC STOP
S10	SPARE	S23	SPARE	S36	BUZZER RESET		
S11	SPARE	S24	COOLANT PUMP	S37	SPARE		
S12	CHIP CONVEYOR CW	S25	CHIP CONVEYOR CCW	S38	DOOR OPEN		

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

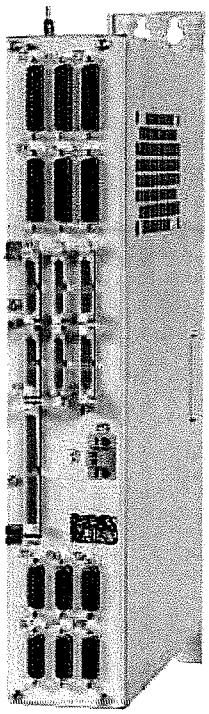
Title: MB 620 MACHINE OPERATING PANEL

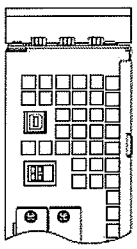
Drawing NO.: EPD-0000059-02

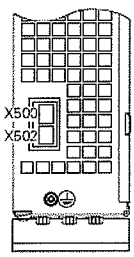
Sheet NO.: 1/1

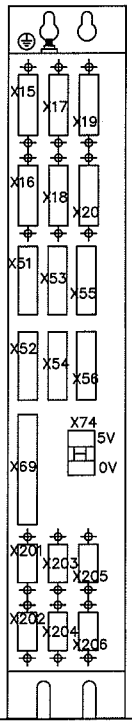
Page NO.: 4.5

iTNC530–HSCI NC CONTROLLER UNIT (CC 6106)









X15 to X20	Speed encoder
X51 to X56	PWM output
X69	Supply bus
X201 to X206	Position encoder
X500	HSCI output
X502	HSCI input
X74	+5V supply
X7	Bridge for signal ground

⏚ Equipment ground (YL/GN)

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

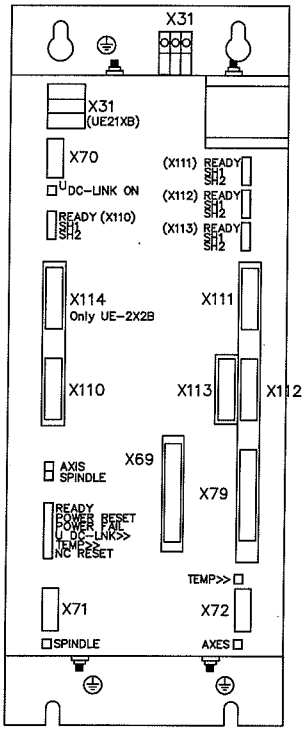
Title: NC CONTROL UNIT_CC6106

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/1

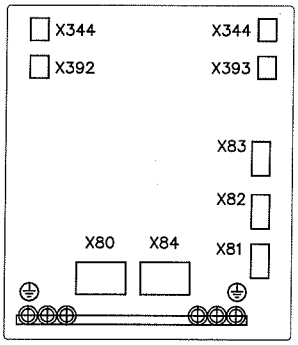
Page NO.: 4.6

UE21XD/24XD COMPACT INVERTER UNIT



X31 Power supply for inverter
X70 Main contactor
X71 Safety relay for spindle
X72 Safety relay for axis
X69 Power supply for LE
X79 Unit bus
X110 to X113
PWM connection for axes/spindle
X114 PWM connection for axes (for UE212/242B)

X80 Motor connection for spindle
X81 Motor connection for axis 1
X82 Motor connection for axis 2
X83 Motor connection for axis 3
X84 Motor connection for axis 4 (for UE212/242B)
X89A External Braking Resistor(PW210)
X89B Resistsnce module
X89 Resistsnce module (for UE240/242B)
⏚ Protective ground



X344 24V supply for motor brake
X392 motor brake(X110,X114)
X393 motor brake(X111,X113)

POS

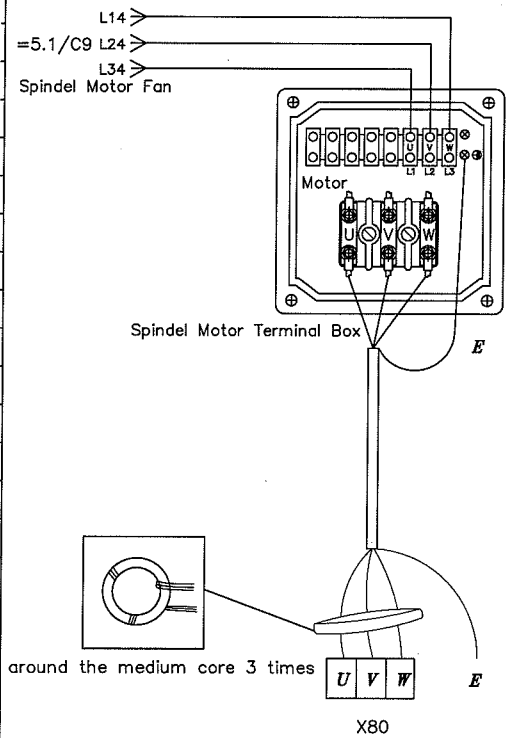
Machine: VERTICAL & DOUBLE COLUMN SERIES

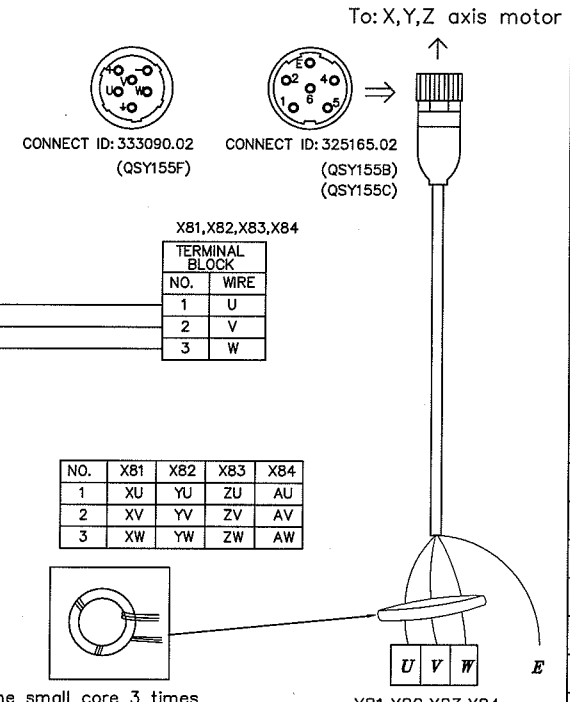
Title: UE21XD/24XD COMPACT INVERTER UNIT

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/3

Page NO.: 4.7





CONNECT		
PIN	PIN	SIGNAL
U	1	U
V	2	V
W	6	W
E	E	PE
+	4	BRAKE+
−	5	BRAKE−

TERMINAL BLOCK	
NO.	WIRE
1	U
2	V
3	W

NO.	X81	X82	X83	X84
1	XU	YU	ZU	AU
2	XV	YV	ZV	AV
3	XW	YW	ZW	AW

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: UE21XD/UE24XD MOTOR CONNECTION

Drawing NO.: EPD-0000059-02

Sheet NO.: 2/3

Page NO.: 4.8

UE21XD/24XD-CONNECTION OVERVIEW

=5.1/B9

L14 L24 L34

X31 POWER SUPPLY

TERMINAL BLOCK	
NO.	WIRE
1	L1
2	L2
3	L3

L14
L24
L34

around the large core 4 times

(FOR UE21XD)
X89A/X89B BRAKE RESISTOR

X89A

TERMINAL BLOCK	
NO.	WIRE
1	NOT
2	NOT

X89B

TERMINAL BLOCK	
NO.	WIRE
1	+
2	-

(FOR UE24XD)
X89 BRAKE RESISTOR

X89

TERMINAL BLOCK	
NO.	WIRE
1	+
2	-

+Uz
-Uz
=4.18/B5

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

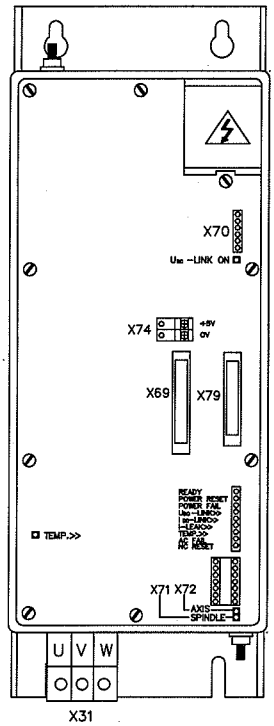
Title: UE21XD/UE24XD CONNECTION OVERVIEW

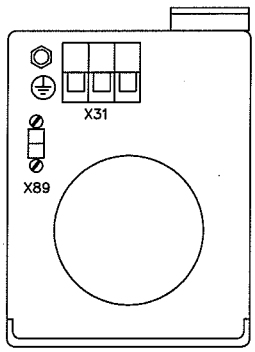
Drawing NO.: EPD-0000059-02

Sheet NO.: 3/3

Page NO.: 4.9

UV 130D-POWER SUPPLY MODULE





X31 Power supply for inverter(3ø*400V+10%) (on underside)
X69 Power supply for the control
X71 Safety relay for spindle (impulse inhibit for spindle)
X72 Safety relay for axis (impulse inhibit for all axes)
X74 5-V power supply
X79 Unit bus
X89 Braking resistor

⏚ Protective ground

X31 SUPPLY VOLTAGE

=5.1/B9

L14 L24 L34

TERMINAL BLOCK	
NO.	WIRE
1	L1
2	L2
3	L3

X89 BRAKE RESISTOR

=4.18/B5

+Uz -Uz

X89

TERMINAL BLOCK	
NO.	WIRE
1	+Uz
2	-Uz

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

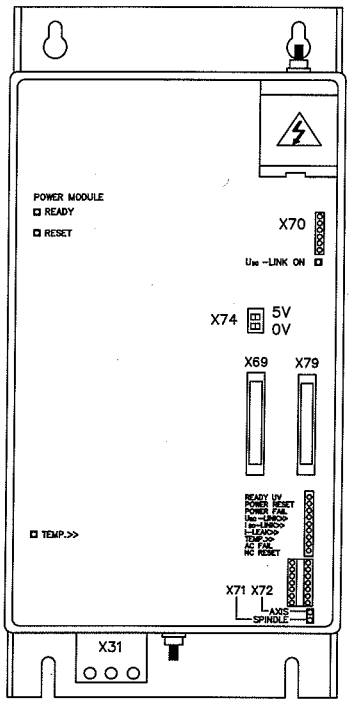
Title: UVR130D-POWER SUPPLY MODULE

Drawing NO.: EPD-0000059-02

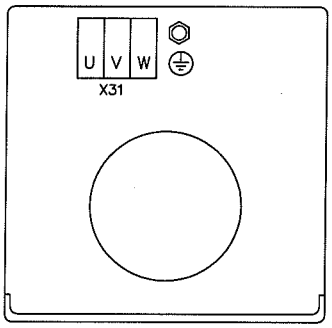
Sheet NO.: 1/6

Page NO.: 4.10

UVR 130D/140D/150D POWER SUPPLY MODULE



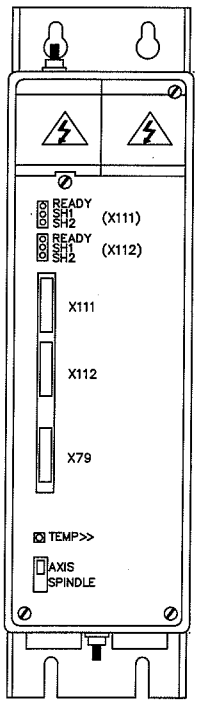
X31 Power supply for inverter(3ø*400V+10%)
(on underside)
X69 Power supply for LE
X70 Main contactor
X71 Safety relay for spindle (pulse disable for the spindle)
X72 Safety relay for axis (pulse disable for all axes)
X74 5V Power supply
X79 Unit bus
⏚ Protective ground

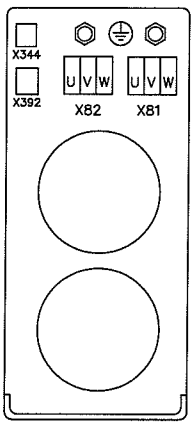


POS

Machine	VERTICAL & DOUBLE COLUMN SERIES
Title:	UVR 130D/140D/150D POWER SUPPLY MODULE
Drawing NO.	EPD-0000059-02
Sheet NO.	2/6
Page NO.	4.11

UM112D/UM122D-AXIS/SPINDLE MODULE





MODULE TYPE:
UM112: One-axis
UM122: Two-axis

CONNECTOR:
X111 PWM,axis/spindle
X112 PWM,axis/spindle

X79 Unit bus

X81 Motor connection for axis 1
(axis23A/Spindle 31A)(on underside)
X82 Motor connection for axis 2
(axis23A/Spindle 31A)(on underside)

X344 24V supply for motor holding brake
(available as of version 325002-02)

X392 Motor holding brake.
(available as of version 325002-02)

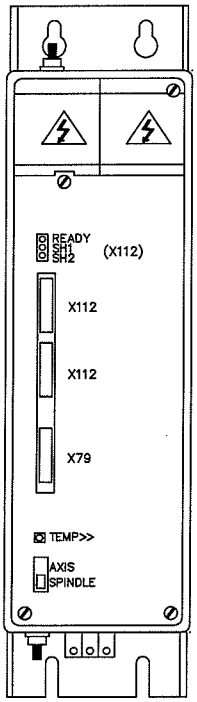
⏚ Protective ground

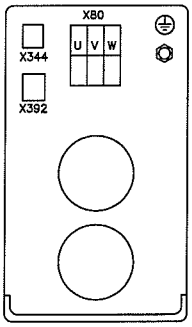
Meaning of the LEDs:
READY Ready for operation
SH1 Pulse release inhibited by control
SH2 Pulse release inhibited by control

POS

Machine	VERTICAL & DOUBLE COLUMN SERIES
Title:	UM112D/UM122D AXIS/SPINDLE MODULE
Drawing NO.	EPD-0000059-02
Sheet NO.	3/6
Page NO.	4.12

UM113D/114D–AXIS/SPINDLE MODULE





MODULE TYPE:
UM113: One–axis

CONNECTOR:

X112 PWM,axis/spindle

X79 Unit bus

X80 Motor connection for axis 1
(axis32A/Spindle 50A)(on underside)

X344 24V supply for motor holding brake
(available as of version 325002–02)

X392 Motor holding brake.
(available as of version 325002–02)

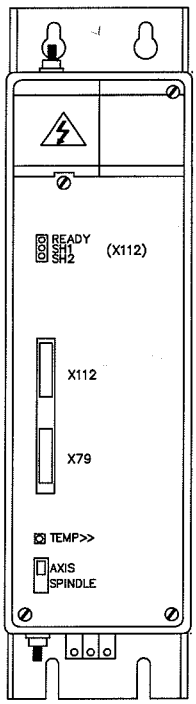
⏚ Protective ground

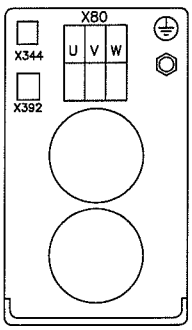
Meaning of the LEDs:
READY Ready for operation
SH1 Pulse release inhibited by control
SH2 Pulse release inhibited by control

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES	Title: UM113D/114D AXIS/SPINDLE MODULE	Drawing NO. EPD–0000059–02	Sheet NO. 4/6
			Page NO. 4.13

UM114D–AXIS/SPINDLE MODULE





MODULE TYPE:
UM114: One–axis

CONNECTOR:

X112 PWM,axis/spindle

X79 Unit bus

X80 Motor connection for axis 1
(axis48A/Spindle 75A)(on underside)

X344 24V supply for motor holding brake
(available as of version 325002–02)

X392 Motor holding brake.
(available as of version 325002–02)

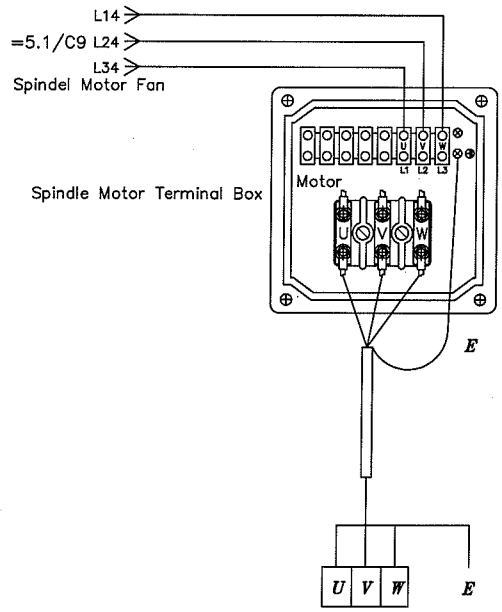
⏚ Protective ground

Meaning of the LEDs:
READY Ready for operation
SH1 Pulse release inhibited by control
SH2 Pulse release inhibited by control

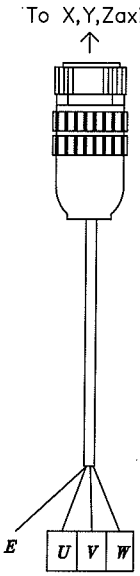
POS

Machine: VERTICAL & DOUBLE COLUMN SERIES	Title: UM114D AXIS/SPINDLE MODULE	Drawing NO. EPD–0000059–02	Sheet NO. 5/6
			Page NO. 4.14

SPINDLE MOTOR



X,Y,Z MOTOR





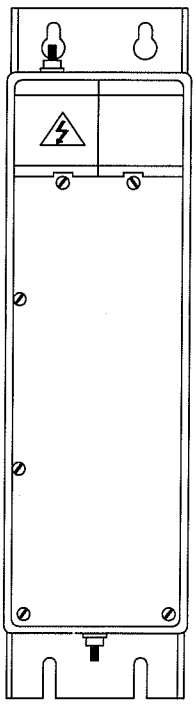
CONNECT ID : 333090-01 & -02 & -03

SIGNAL	X AXIS	Y AXIS	Z AXIS
1	XU	YU	ZU
2	XV	YV	ZV
6	XW	YW	ZW
E	E	E	E
4(BRAKE+)			150
5(BRAKE-)			151

POS

Title: FOR UM1XXD MOTOR CANNECTION		Sheet NO. 6/6
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Page NO. 4.15

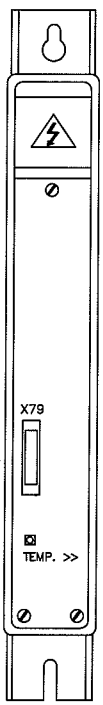
ZKF 120 / UP 110 MOUDLE



MODULE TYPE:
ZKF 120
DC-LINK FILTER
For use with linear motors
or torque motors

COMMENT:
Rated power : 30kw
Maz. power during S6-20% cycle: 67kw
Max. leakage current < 6A
Modular design

⏚ Protective ground



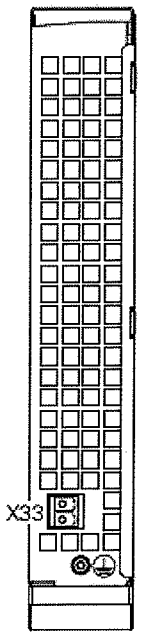
MODULE TYPE:
UP 110
BRAKING RESISTOR MODULE

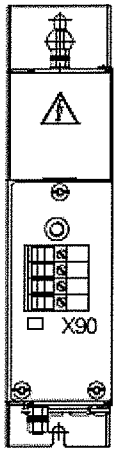
COMMENT:
X79 UNIT BUS
TEMP.>>
Warning signal for excessive
temperature of braking resistor

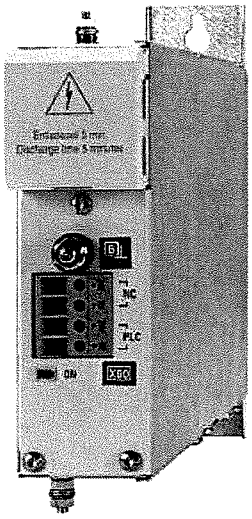
POS

Title: ZKF 120 / UP 110 MODULE		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Page NO. 4.16

PSL 130 MOUDLE







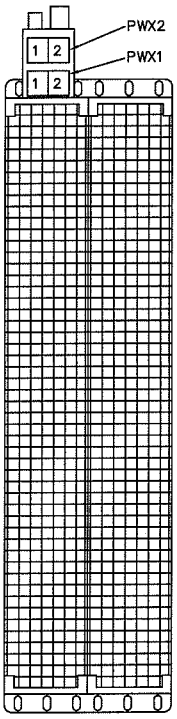
MODULE TYPE:
PSL 130
Low-Voltage Power Supply Unit

COMMENT:
Conductor bar: Connection of DC-link voltage Uz.
X33(L1,L2) 400V +-10% 50HZ
X90 Output control voltage
Terminal 1: +24V NC
Terminal 2: 0V NC
Terminal 3: +24V PLC
Terminal 4: 0V PLC
⏚ Equipment ground (YL/GN)

Power: 1000W
24V NC output: max. 500W (20A)
24V PLC output: max. 500W (20A)

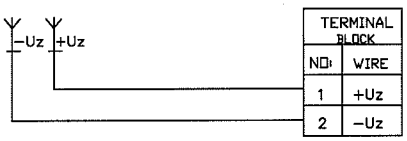
POS	= + Title: PSL 130 MOUDLE		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 4.17

PW210-BRAKE RESISTOR



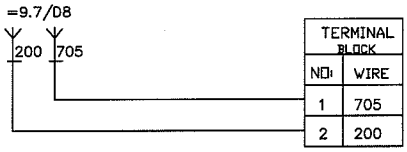
PW-X1 BRAKE RESISTOR

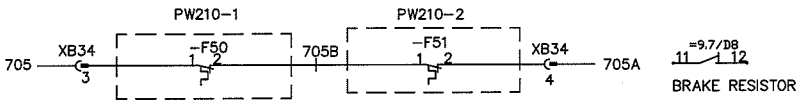
From -X89



PW-X2 BRAKE RESISTOR

=9.7/D8

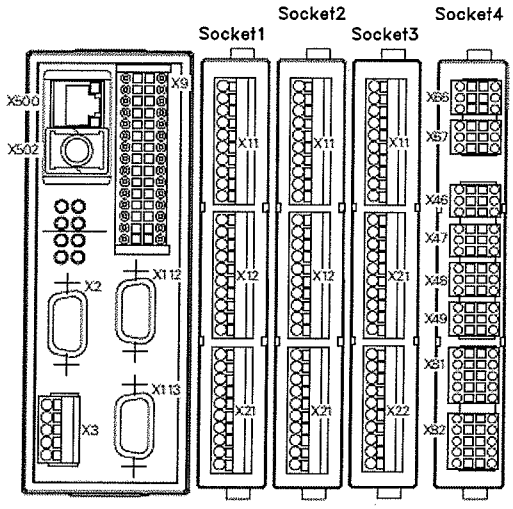


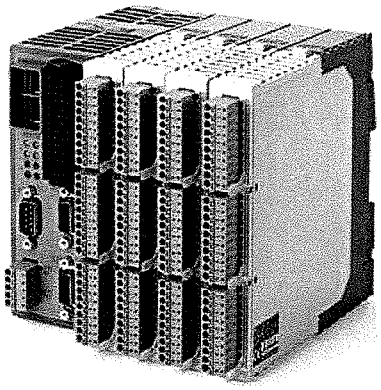


SPINDLE POWER
UP TO 15KW : 1 X PW210
OVER 15KW : 2 X PW210

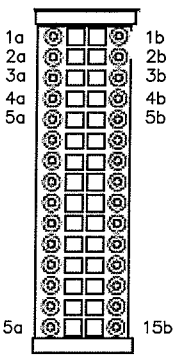
POS	= + Title: PW210 BRAKE RESISTOR		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 4.18

PL6204 I/O UNIT

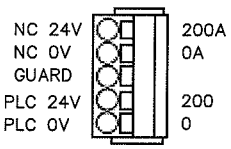




X9



X3

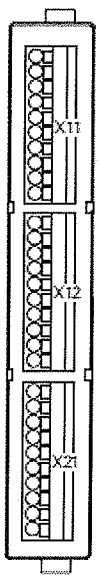


X500	HSCI output
X502	HSCI input
X2	Reserved
X3	+24V NC,+24V PLC power supply
X9	Safety-related PLC input/output
X112	TS or TT touch trigger probe
X113	TS or TT touch trigger probe

POS

Title:	PL6204 I/O UNIT
Machine	VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.	EPD-0000059-02
Sheet NO.	1/2
Page NO.	4.19

PLD/PLA Connection Overviews

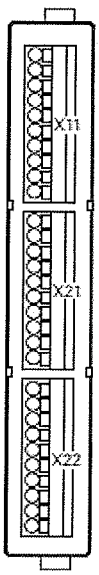


MODULE: PLD-H 16-08-00
X11: PLC inputs
X12: PLC inputs
X21: PLC outputs

Diagnosis (meanings of theLEDs)
Red(X11/pin1)status LED
Flashes: status of I/O module OK.
Permanently on or off: error on I/O module.
Yellow: Status of the output

X11: PLC inputs Terminal									
1	2	3	4	5	6	7	8	9	10
0V	0V	I0	I1	I2	I3	I4	I5	I6	I7

X12: PLC inputs Terminal									
1	2	3	4	5	6	7	8	9	10
0V	0V	I8	I9	I10	I11	I12	I13	I14	I15

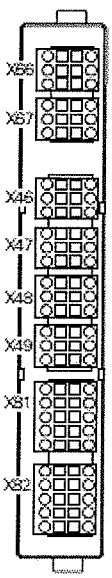


MODULE: PLD-H 08-16-00
X11: PLC inputs
X21: PLC outputs
X22: PLC outputs

Diagnosis (meanings of theLEDs)
Red(X11/pin1)status LED
Flashes: status of I/O module OK.
Permanently on or off: error on I/O module.
Yellow: Status of the output

X21: PLC outputs Terminal									
1	2	3	4	5	6	7	8	9	10
O0	O1	O2	O3	O4	O5	O6	O7	24V O0~O3	24V O4~O7

X22: PLC outputs Terminal									
1	2	3	4	5	6	7	8	9	10
O8	O9	O10	O11	O12	O13	O14	O15	24V O8~O11	24V O12~O15



MODULE: PLA-H 08-04-04
X66 to X67: +-10V analog outputs
X46 to X49: +-10V analog intputs
X81 to X82: PT 100 analog intputs

X66~X67	
Connecting terminals	Pin layout
1a/1b	-10V to +10V output
2a/2b	0V
3a/3b	Shield

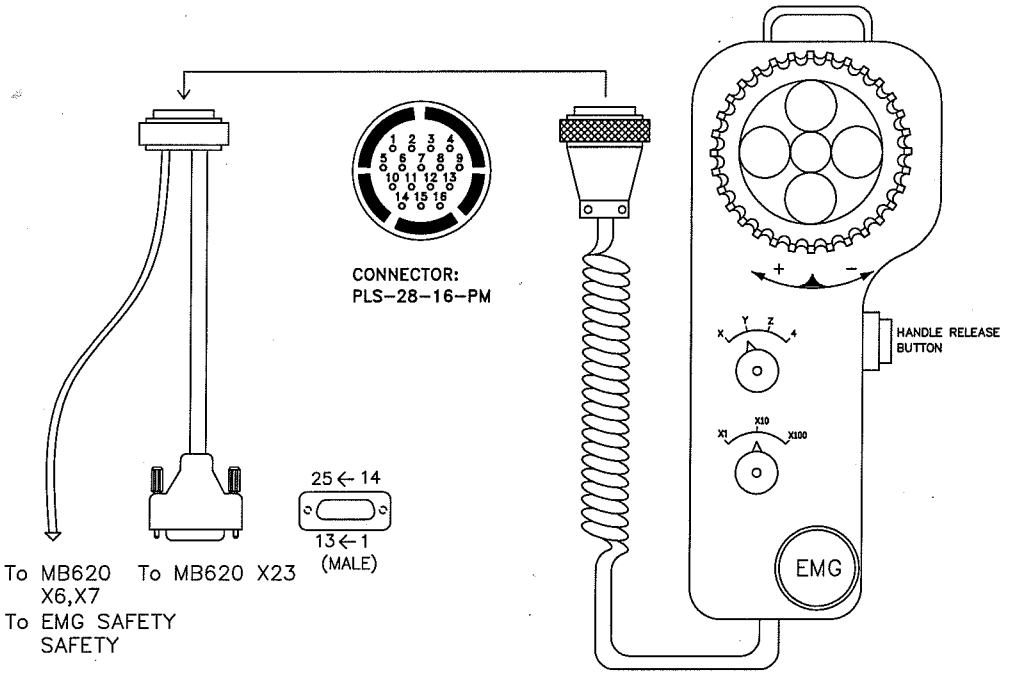
X46~X49	
Connecting terminals	Pin layout
1a/1b	-10V to +10V input
2a/2b	0V
3a/3b	Shield

X66~X67	
Connecting terminals	Pin layout
1a/1b	I+ Constant current PT100
2a/2b	U+ Measuring input PT100
3a/3b	U- Measuring input PT100
4a/4b	I- Constant current PT100
5a/5b	Shield

POS

Title:	PLD/PLA CONNECTION
Machine	VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.	EPD-0000059-02
Sheet NO.	2/2
Page NO.	4.20

HR130-HANDWHEEL



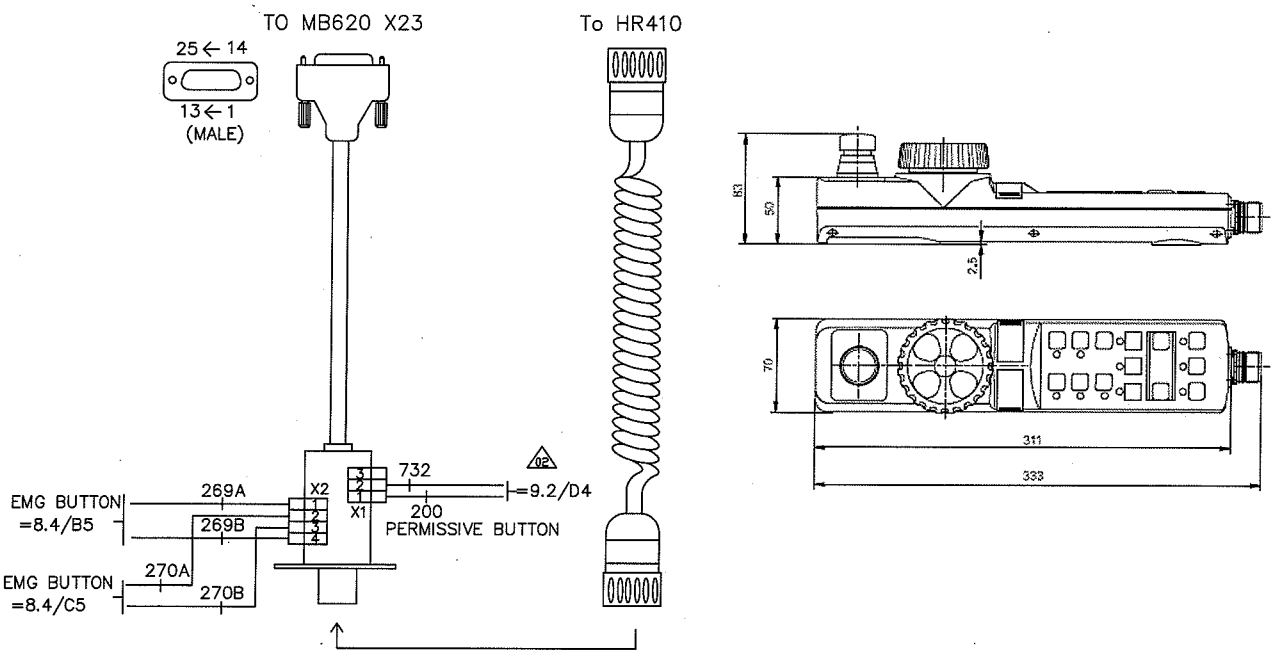
Hartford SHE HONG INDUSTRIAL CO. LTD	= +		
	Title: HR130-HANDWHEEL		Sheet NO. 1/2
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 4.21

HR130-HANDWHEEL CONNECTOR

NO.	WIRE COLOR	SIGNAL	CONNECTOR 16PIN
1	BROWN	MB620_X23_+12V (BN/GN)	1
2	RED	MB620_X23_0V (WH/GN)	2
3	ORANGE	MB620_X23_TXD (Green)	3
4	PINK	MB620_X23_DSR (Yellow)	4
5	LIGHT-GREEN	AXIS SELECT_MB620-X6.4	5
6	BULE	AXIS SELECT_MB620-X6.5	6
7	BROWN/WHITE	RATE SELECT_MB620-X6.6	7
8	RED/WHITE	RATE SELECT_MB620-X6.7	8
9	ORANGE/WHITE	ICOM_MB620_X7.9(200A)	9
10	BULE/WHITE	LAMP COMMON	–
11	YELLOW	HANDLE RELEASE 732	14
12	GREEN/BLACK	200	12
13	YELLOW/BLACK	HANDLE EMG PB1	10
14	GREEN/WHITE	HANDLE EMG PB1	11
15	GRAY/BLACK	HANDLE EMG PB2	13
16	GREEN	HANDLE EMG PB2	15
17			
18			
19			
20			
21			
22			
23			
Housing		GROUND	16

POS	= +		
	Title: HR130-HANDWHEEL CONNECTOR		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 4.22

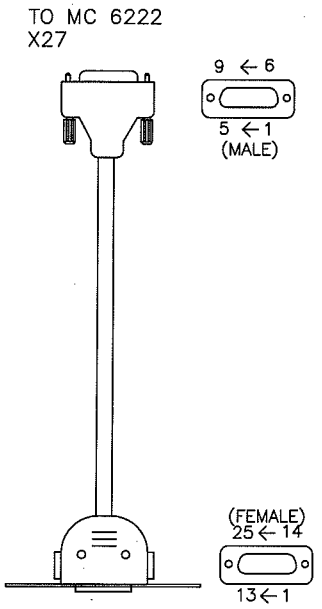
HR 410 HANDLEWHEEL



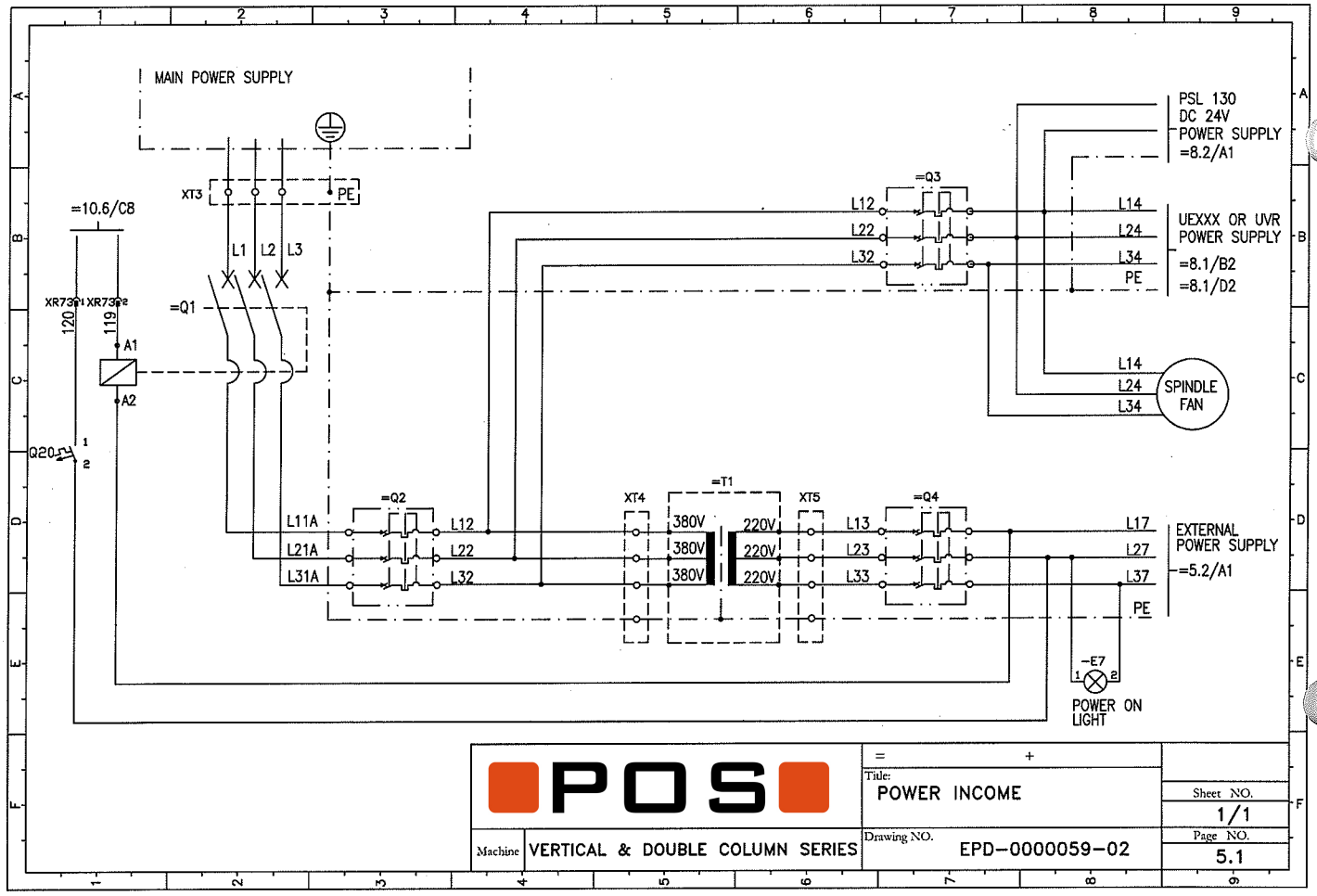
POS	= + Title: HR 410 HANDLEWHEEL		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 4.23

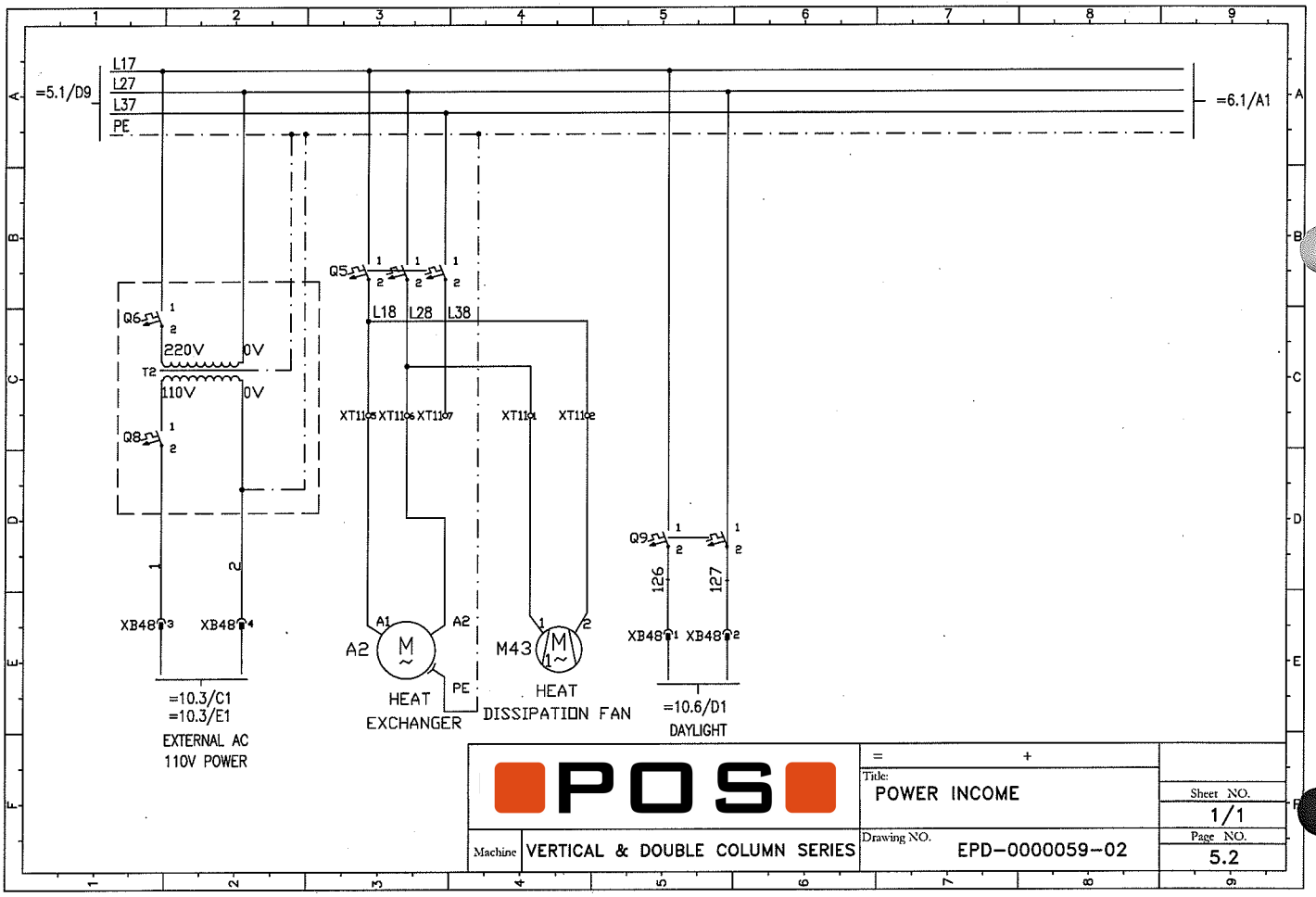
-X27 RS232C DATA INTERFACE CABLE

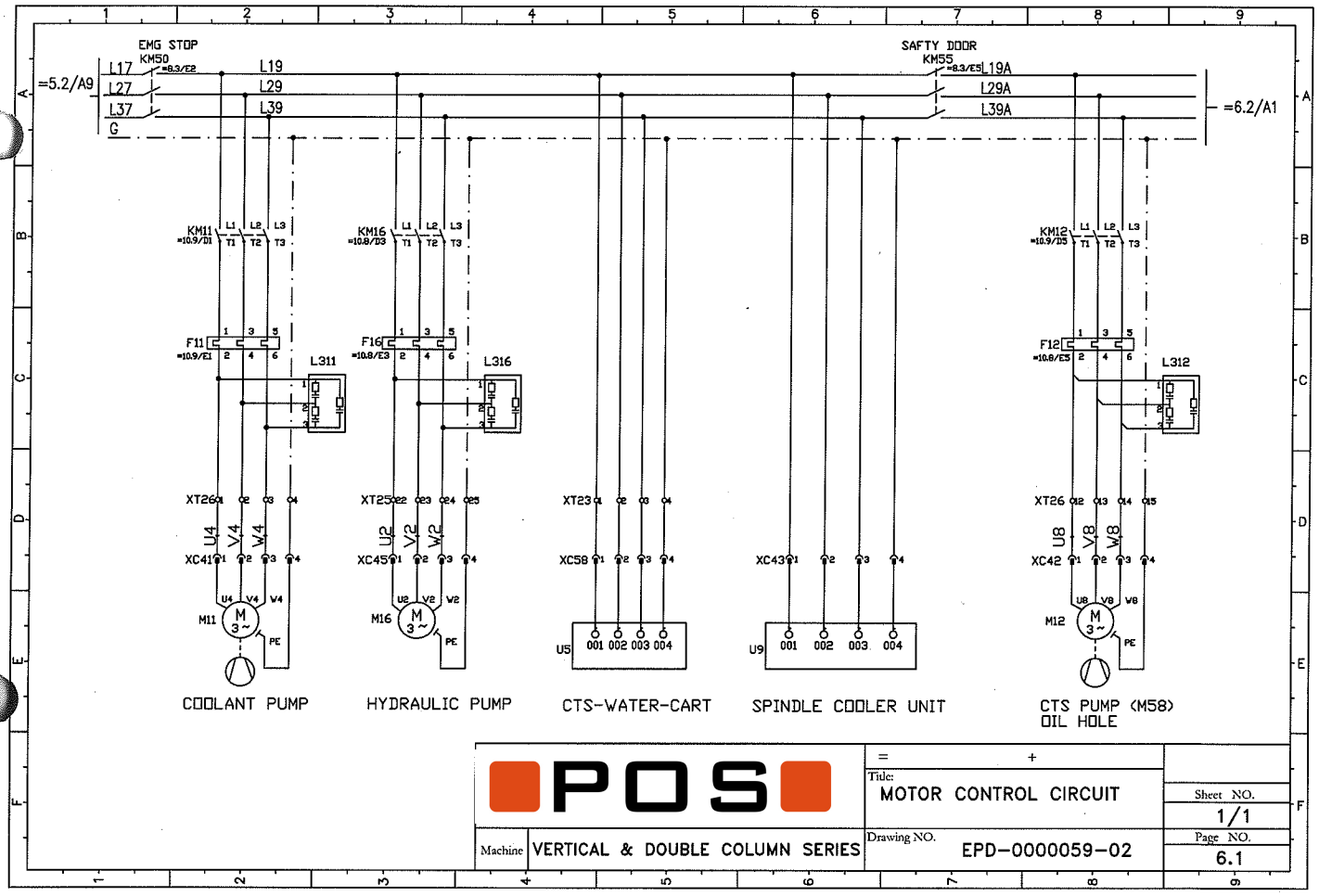
D-sub 9 Pin	SIGNAL	D-sub 25Pin
1	Do not assign	1
2	RXD	3
3	TXD	2
4	DTR	20
5	GND	7
6	DSR	6
7	RTS	4
8	CTS	5
9	Do not assign	
Housing	External shield	Housing

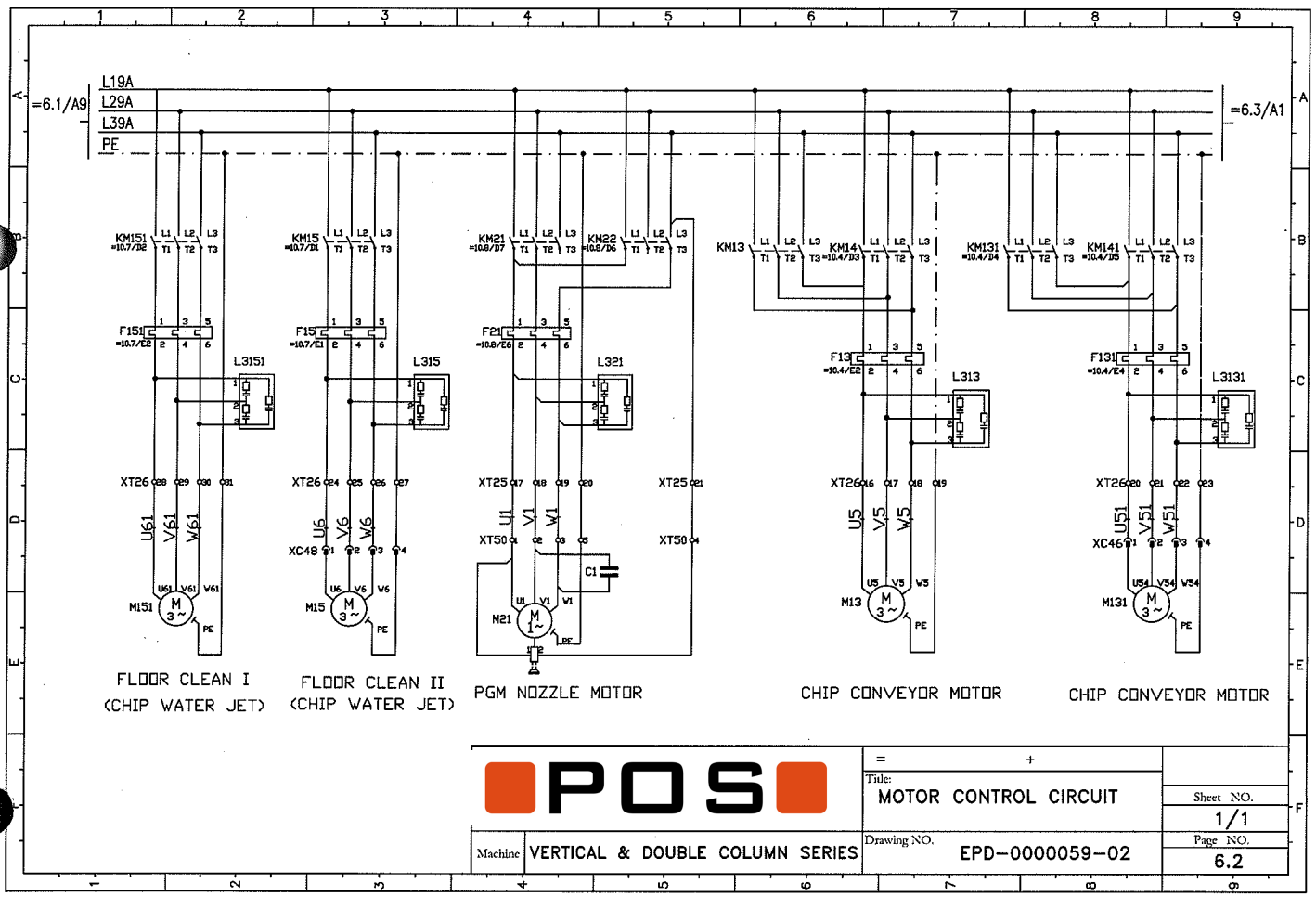


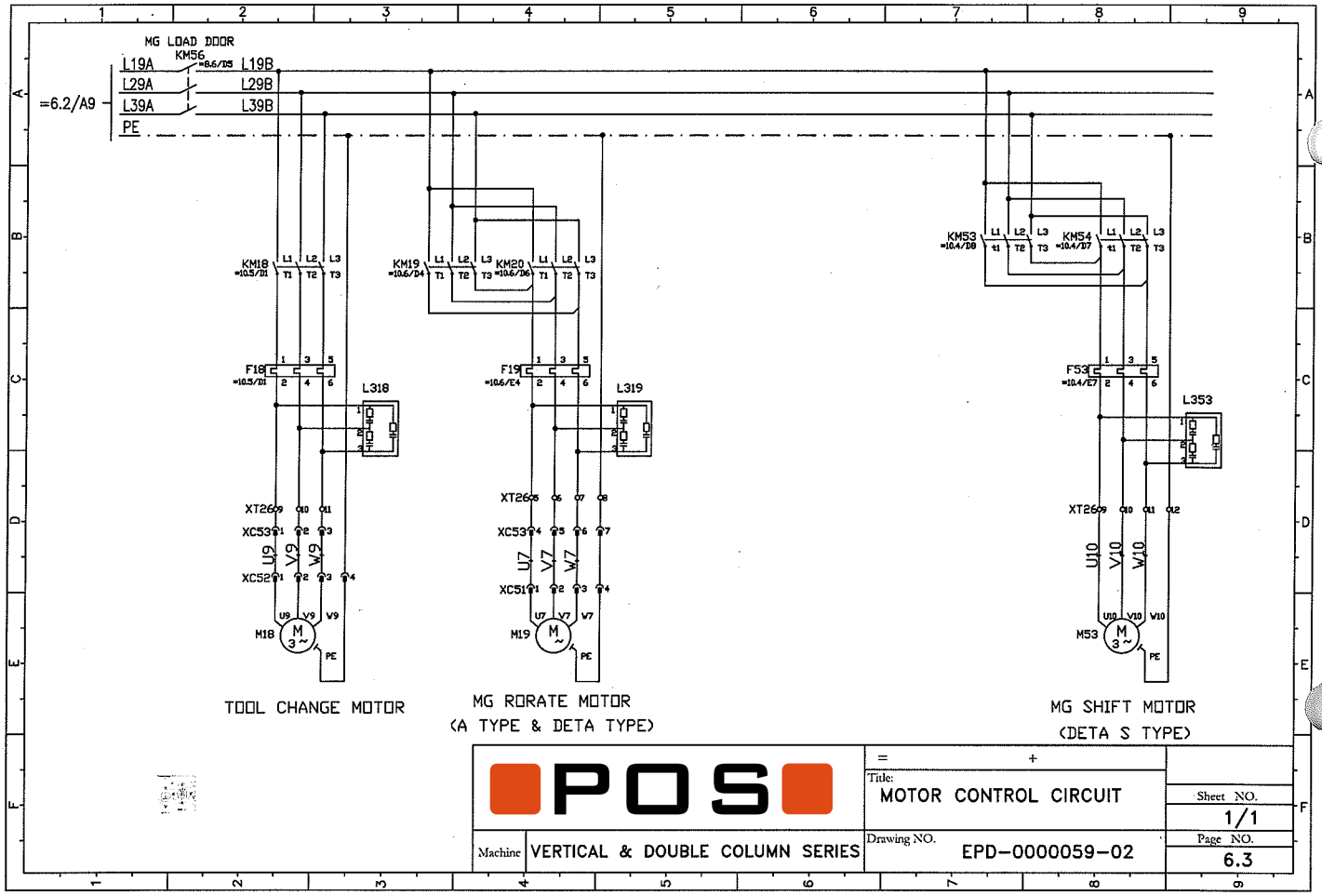
POS	= + Title: X27 RS232 CABLE		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 4.24


MAIN POWER SUPPLY
=10.6/C8
XT3
PE
L1
L2
L3
XR730:1
XR730:2
120
119
=Q1
A1
A2
Q20
=Q3
L12
L22
L32
L14
L24
L34
PE
PSL 130
DC 24V
POWER SUPPLY
=8.2/A1
UEXXX OR UVR
POWER SUPPLY
=8.1/B2
=8.1/D2
SPINDLE
FAN
=Q2
L11A
L21A
L31A
=T1
XT4
XT5
380V
220V
=Q4
L13
L23
L33
L17
L27
L37
EXTERNAL
POWER SUPPLY
=5.2/A1
-E7
POWER ON
LIGHT
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
POWER INCOME
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
5.1

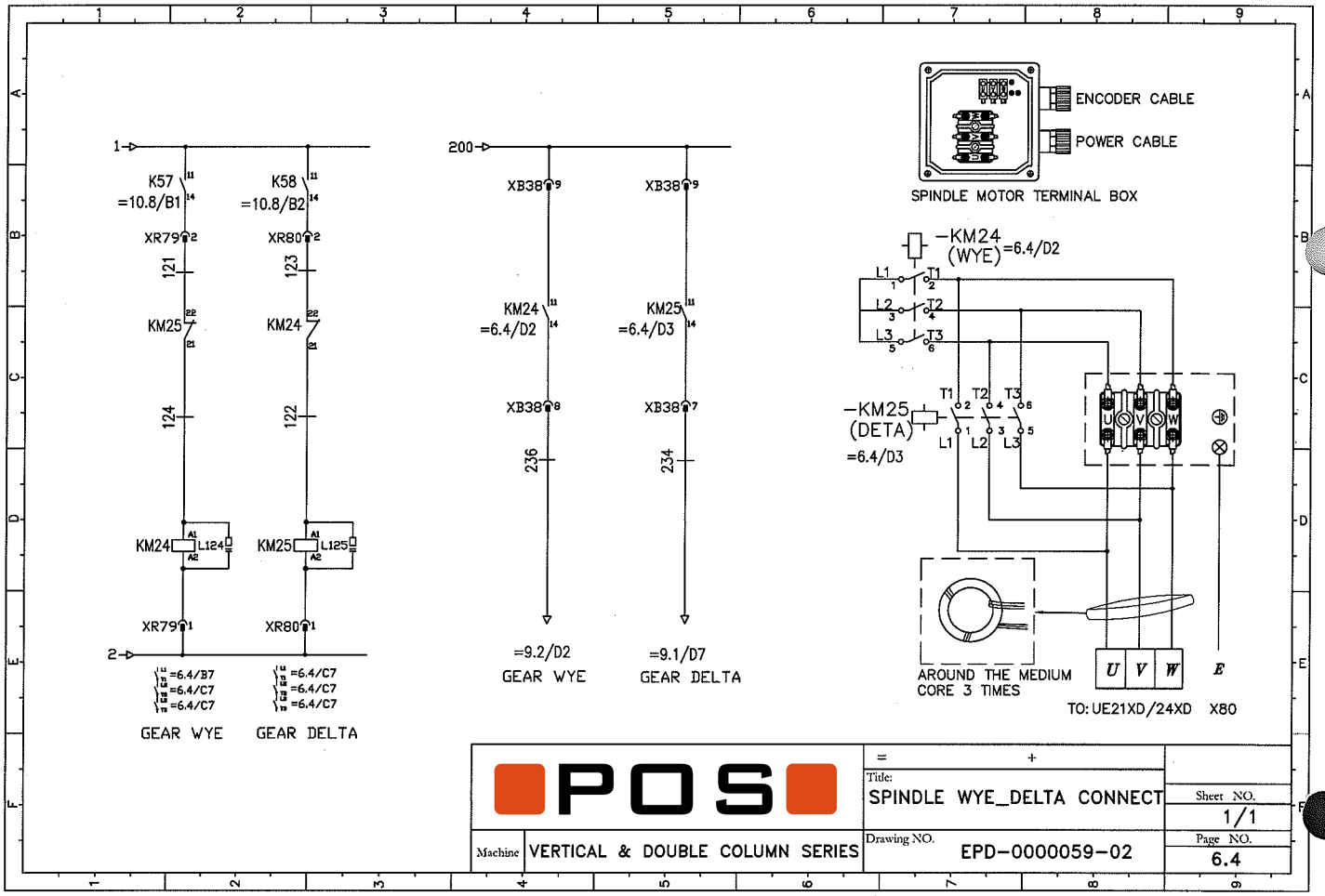

=5.1/D9
L17
L27
L37
PE
=6.1/A1
Q6
220V
0V
T2
110V
0V
Q8
XB48:3
XB48:4
=10.3/C1
=10.3/E1
EXTERNAL AC
110V POWER
Q5
L18
L28
L38
XT1105
XT1106
XT1107
XT1101
XT1102
A1
A2
M
PE
HEAT
EXCHANGER
M43
HEAT
DISSIPATION FAN
Q9
126
127
XB48:1
XB48:2
=10.6/D1
DAYLIGHT
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
POWER INCOME
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
5.2


EMG STOP
KM50
SAFTY DOOR
KM55
=5.2/A9
L17
L27
L37
G
L19
L29
L39
L19A
L29A
L39A
=6.2/A1
KM11
KM16
KM12
F11
F16
F12
L311
L316
L312
XT26
XT25
XT23
XT26
XC41
XC45
XC58
XC43
XC42
U4
V4
W4
U2
V2
W2
U8
V8
W8
M11
M16
M12
PE
U5
U9
001 002 003 004
COOLANT PUMP
HYDRAULIC PUMP
CTS-WATER-CART
SPINDLE COOLER UNIT
CTS PUMP (M58)
OIL HOLE
POS
Title:
MOTOR CONTROL CIRCUIT
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
6.1


=6.1/A9
L19A
L29A
L39A
PE
=6.3/A1
KM151
KM15
KM21
KM22
KM13
KM14
KM131
KM141
F151
F15
F21
F13
F131
L3151
L315
L321
L313
L3131
XT26
XT25
XT50
U61
V61
W61
U6
V6
W6
U1
V1
W1
U5
V5
W5
U51
V51
W51
XC48
XC46
C1
M151
M15
M21
M13
M131
PE
FLOOR CLEAN I
(CHIP WATER JET)
FLOOR CLEAN II
(CHIP WATER JET)
PGM NOZZLE MOTOR
CHIP CONVEYOR MOTOR
CHIP CONVEYOR MOTOR
POS
Title:
MOTOR CONTROL CIRCUIT
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
6.2



POS	Title: MOTOR CONTROL CIRCUIT		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 6.3



POS	Title: SPINDLE WYE_DELTA CONNECT		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 6.4

TERMINAL T

=XT26

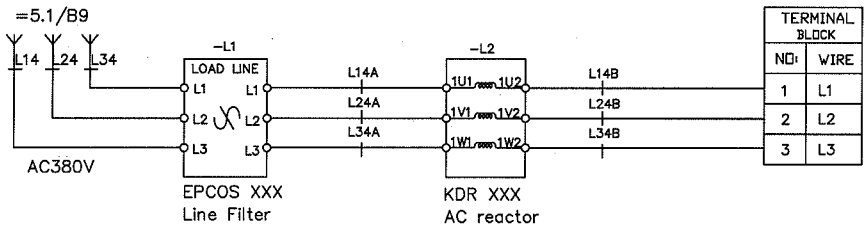
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
U4	V4	W4	E	U5	V5	W5	E	U6	V6	W6	E	U7	V7	W7	E	U8	V8	W8	E	U9	V9	W9	E				200A	0A	200	0	L18	L28	L38	E
COOLANT PUMP				CHIP CONVEYOR				FLOOR CLEAN				MAGAZINE MOTOR				CTS PUMP				ARM MOTOR							NC POWER DC 24V		PLC POWER DC 24V		1. FORM Q5 2. FAN POWER			

2 : REMOVE THE XT25 TERMINAL

POS	= + Title: TERMINAL XT26	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Page NO. 7.1

UVR* REGENERATIVE INVERTERS CONNECTION

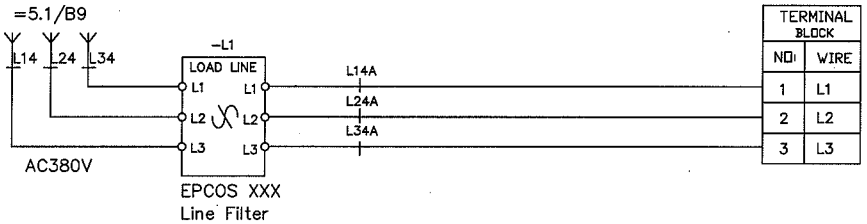
X31 SUPPLY VOLTAGE



TERMINAL BLOCK	
NO.	WIRE
1	L1
2	L2
3	L3

UE2XX COMPACT INVERTERS CONNECTION

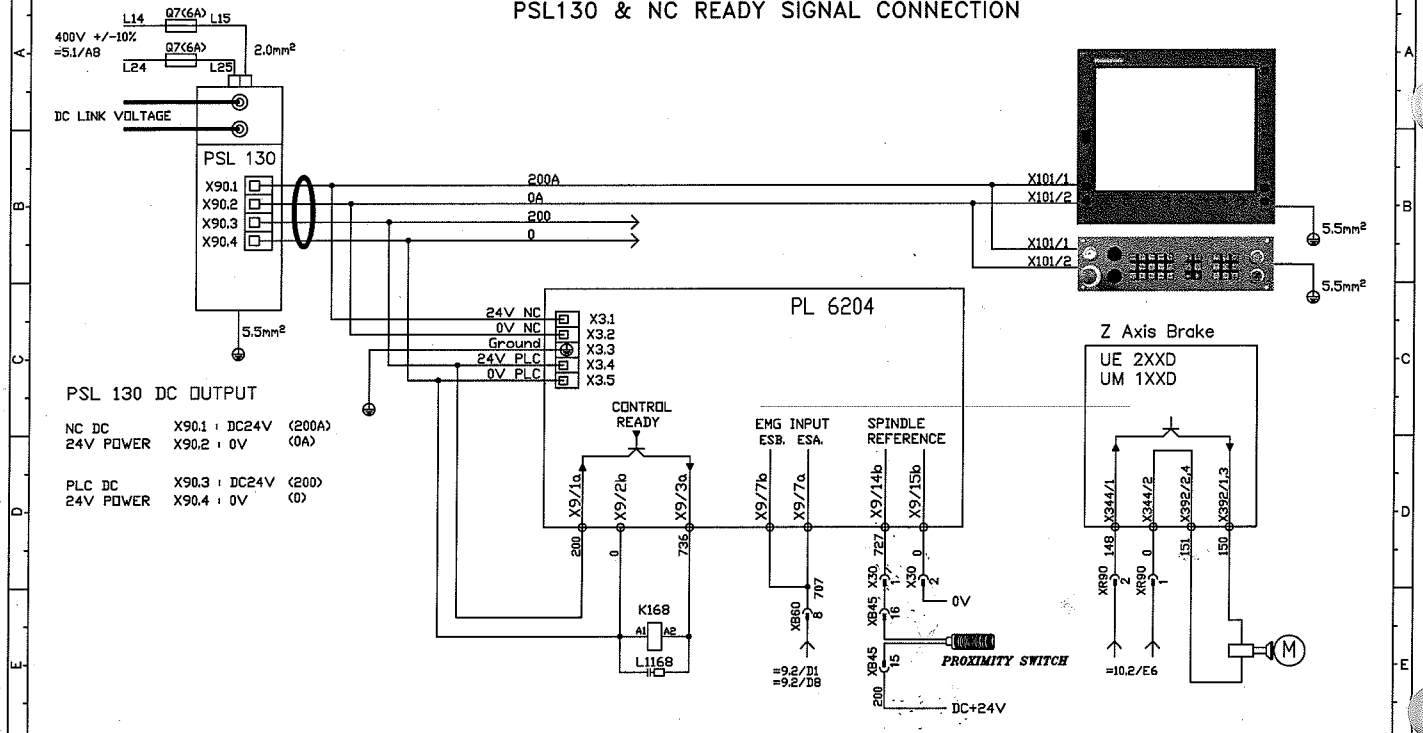
X31 SUPPLY VOLTAGE



TERMINAL BLOCK	
NO.	WIRE
1	L1
2	L2
3	L3

POS	= + Title: INVERTERS CONNECTION	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02	Page NO. 8.1

PSL130 & NC READY SIGNAL CONNECTION



POS	= +	Title: PSL130 & NC READY SIGNAL CONNECTION	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES		Drawing NO. EPD-0000059-02	Page NO. 8.2

DRIVER SAFETY RELAY CONNECTION

X70 MAIN CONTACTOR

TERMINAL BLOCK NO	WIRE
1	+24V OUTPUT
2	0V
3	RELAY COIL
4	NOT
5	NOT
6	NC
7	COM

K165 =8.5/E6
K166 =8.5/E6
718 X70 1 — K162 =8.4/D5 — 719 — K164 =8.4/E5
720 X70 2
710 X70 3
712 X70 4 — =8.4/B2 K10

X71 SAFETY RELAY(SPINDLE)

TERMINAL BLOCK NO	WIRE
1	+24V OUTPUT
2	0V
3	RELAY COIL
4	NOT
5	NOT
6	NC
7	COM

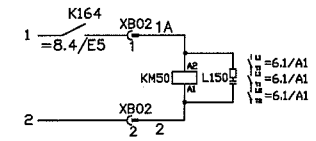
721 X71 1 — K166 =8.5/E6
722 X71 2
713 X71 3
748 X71 4 — =8.5/B2 K11

X72 SAFETY RELAY(AXIS)

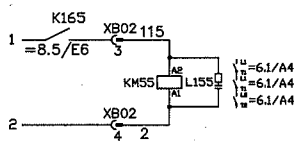
TERMINAL BLOCK NO	WIRE
1	+24V OUTPUT
2	0V
3	RELAY COIL
4	NOT
5	NOT
6	NC
7	COM

723 X72 1 — K165 =8.5/E6
724 X72 2
748 X72 3
91 X72 4 — =8.5/B3 K12

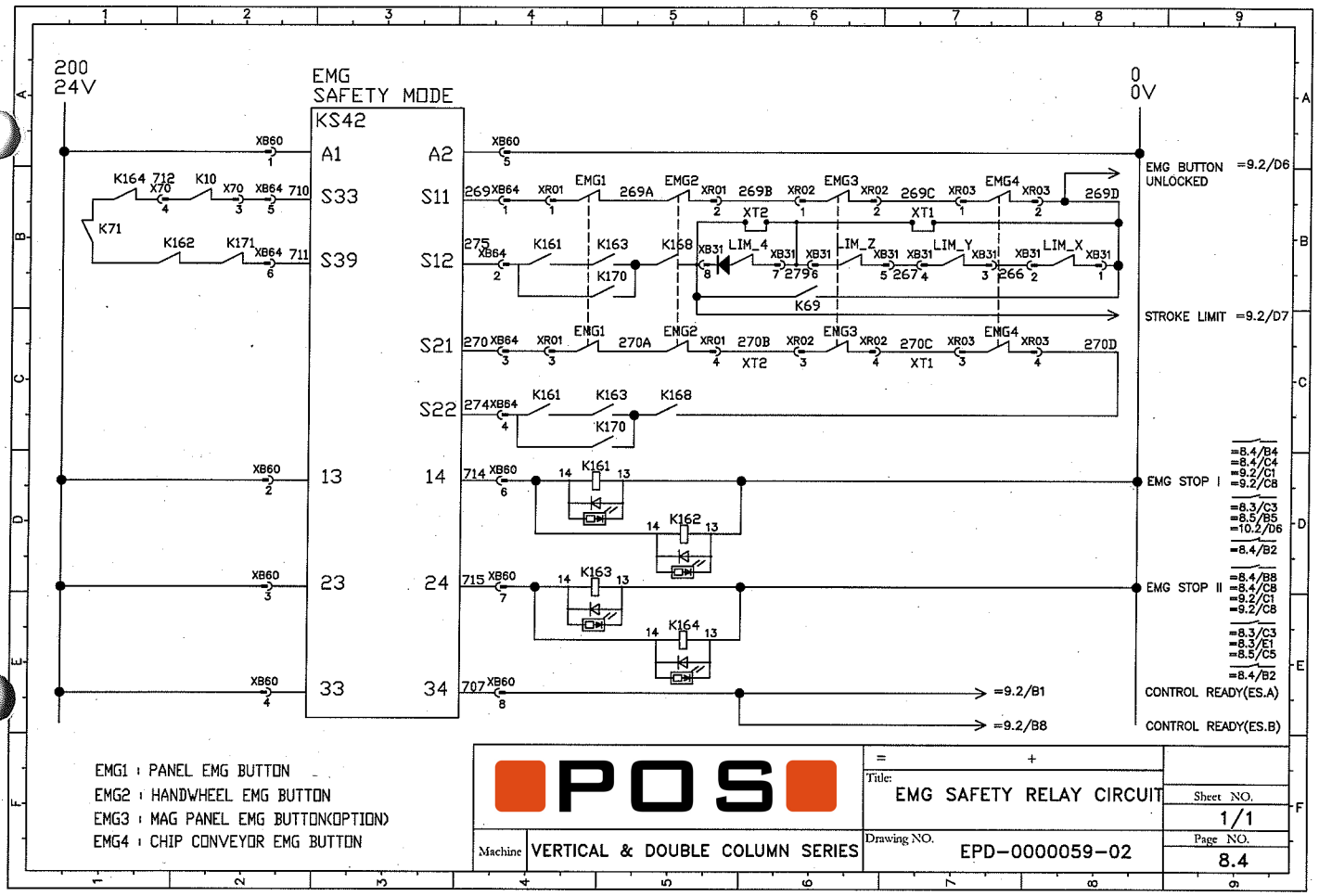
EMG STOP THE MOTORS

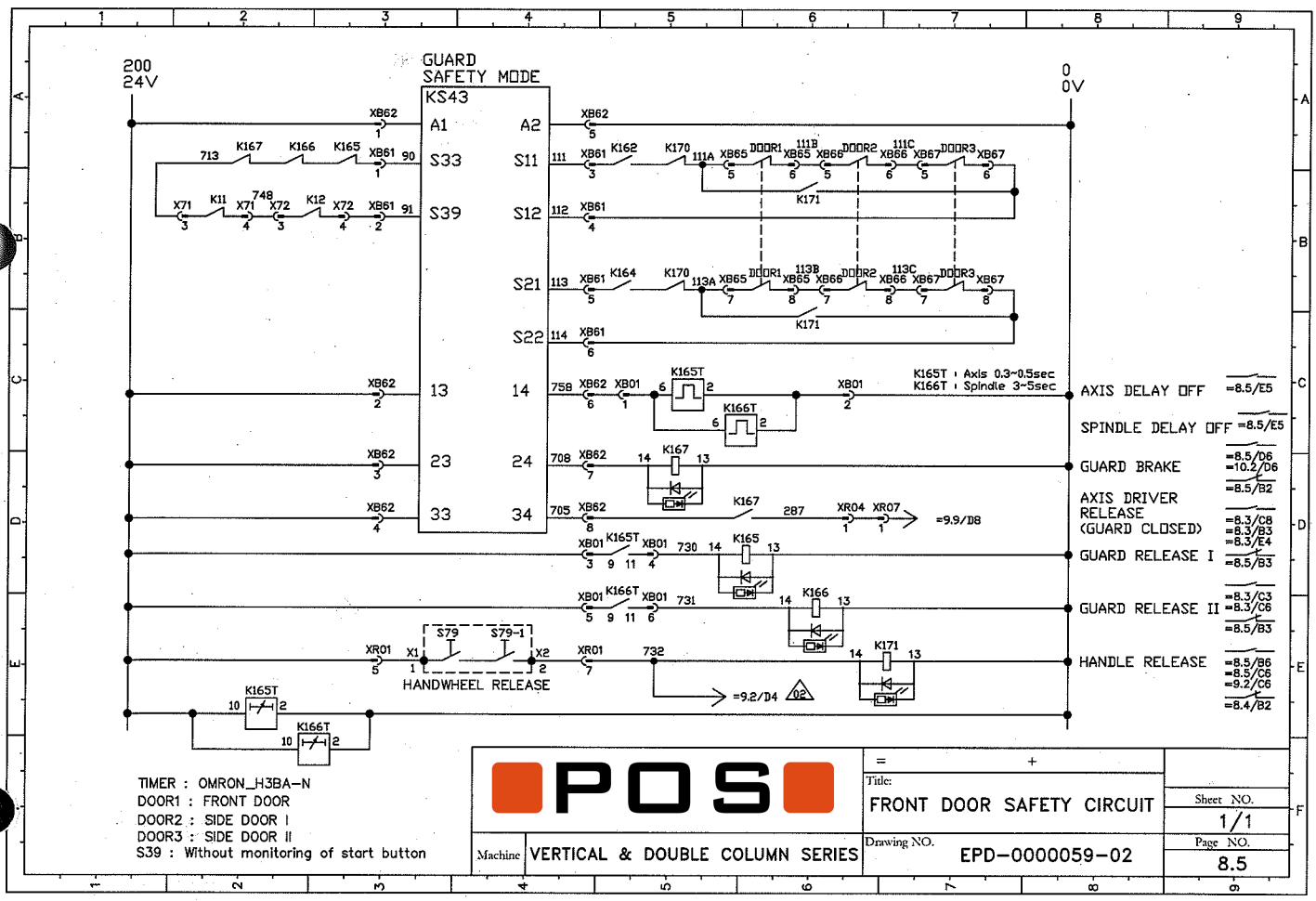


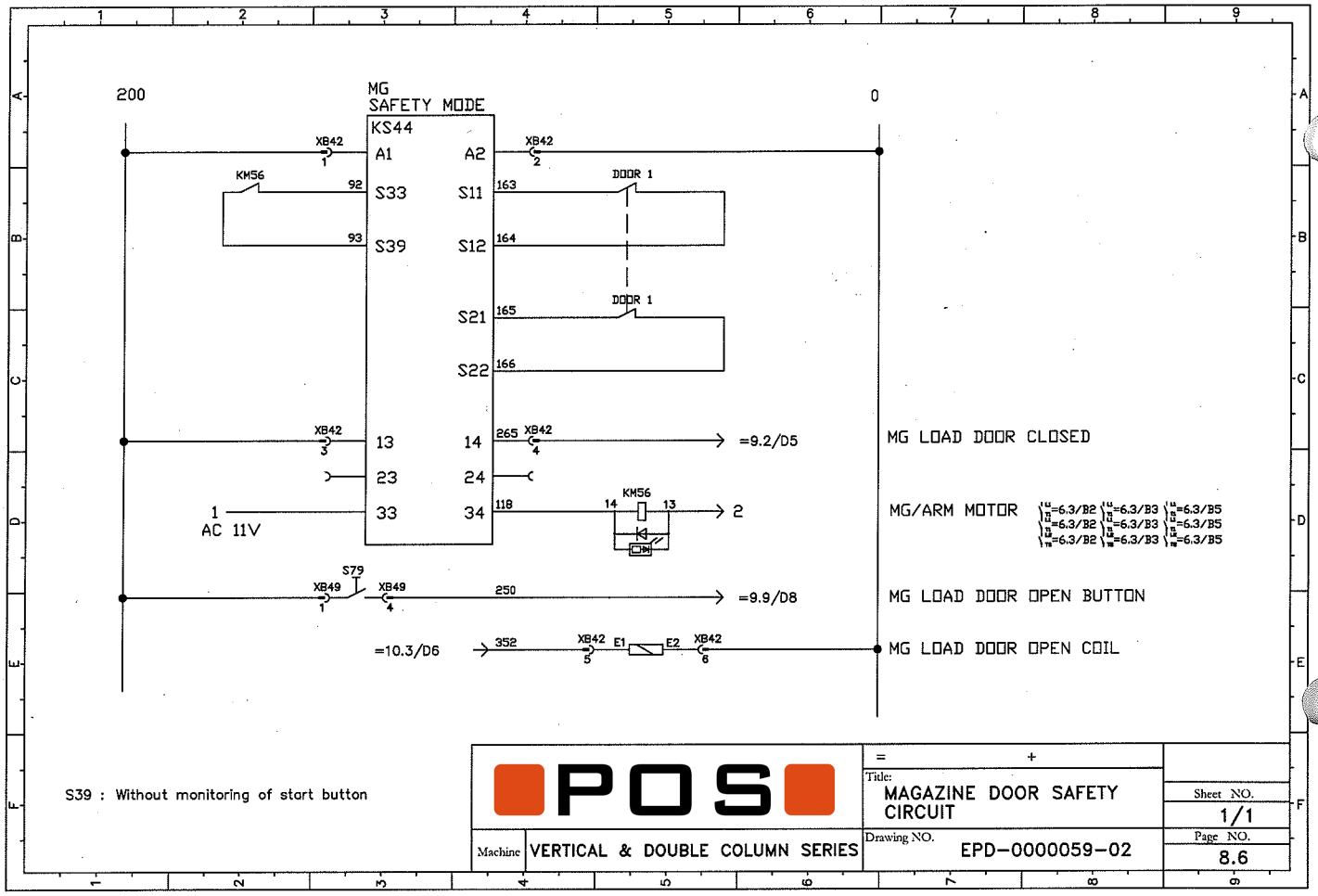
GUARD OPENED STOP THE MOTORS

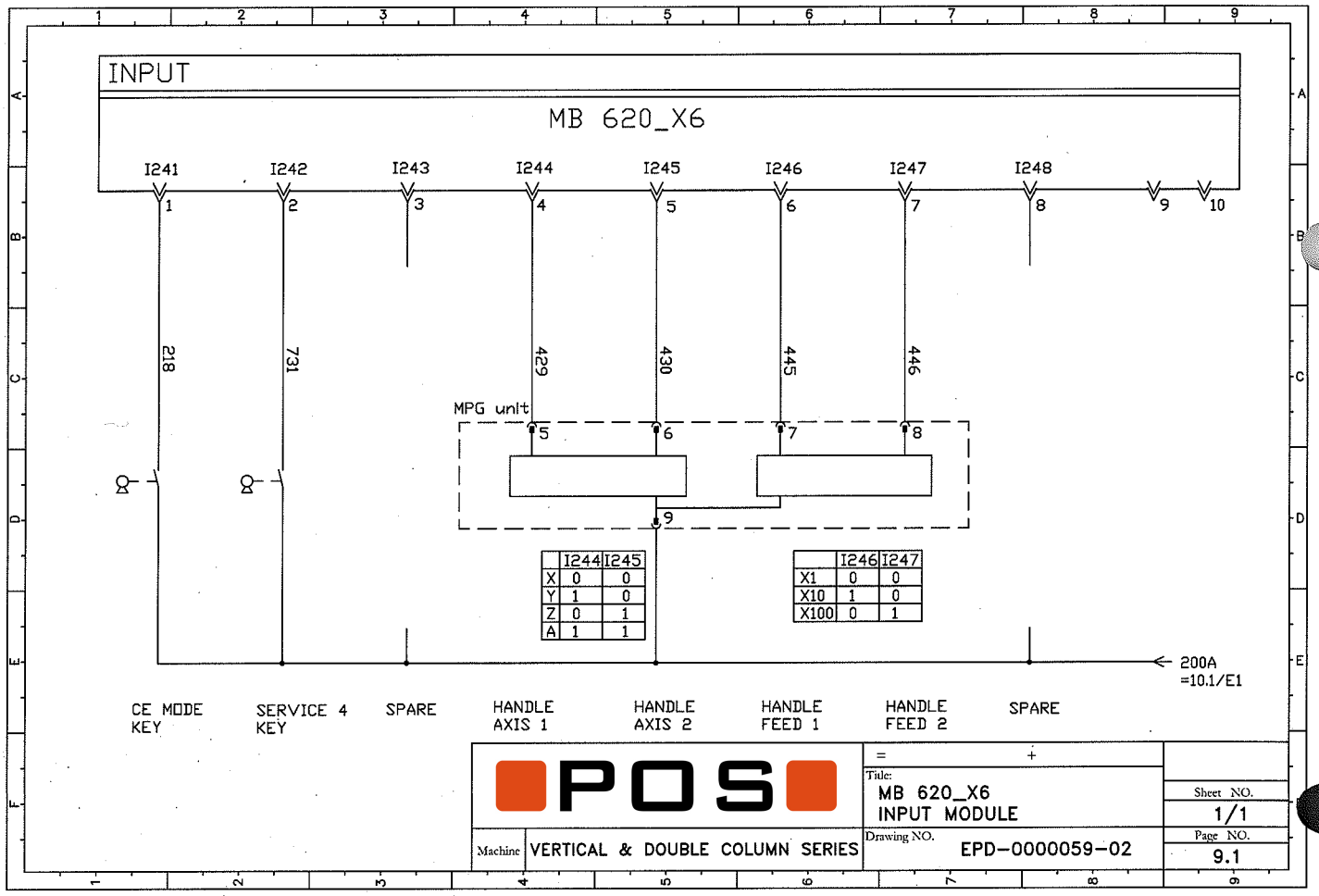


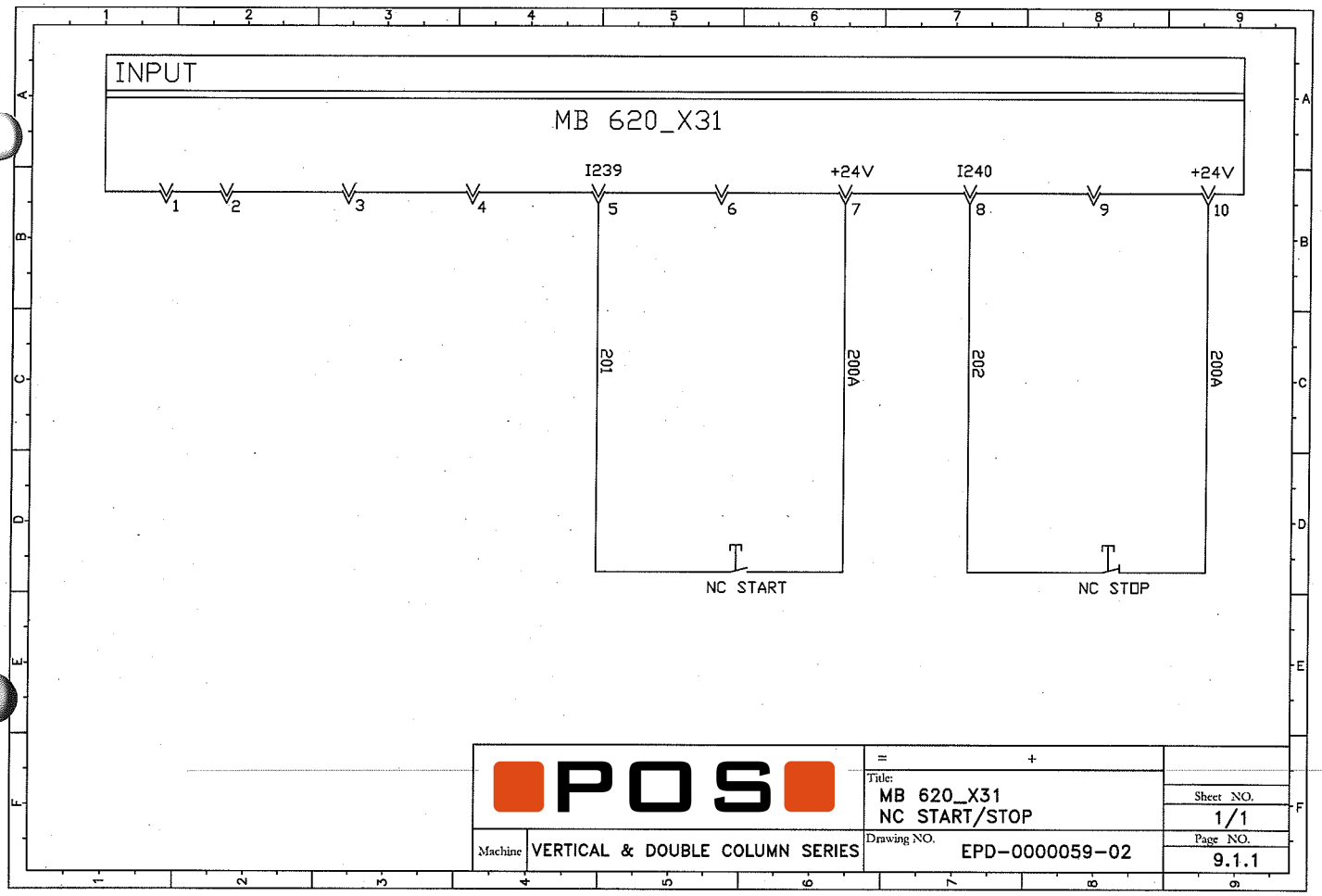
POS	= +	Title: DRIVER SAFETY RELAY CONNECTION	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES		Drawing NO. EPD-0000059-02	Page NO. 8.3

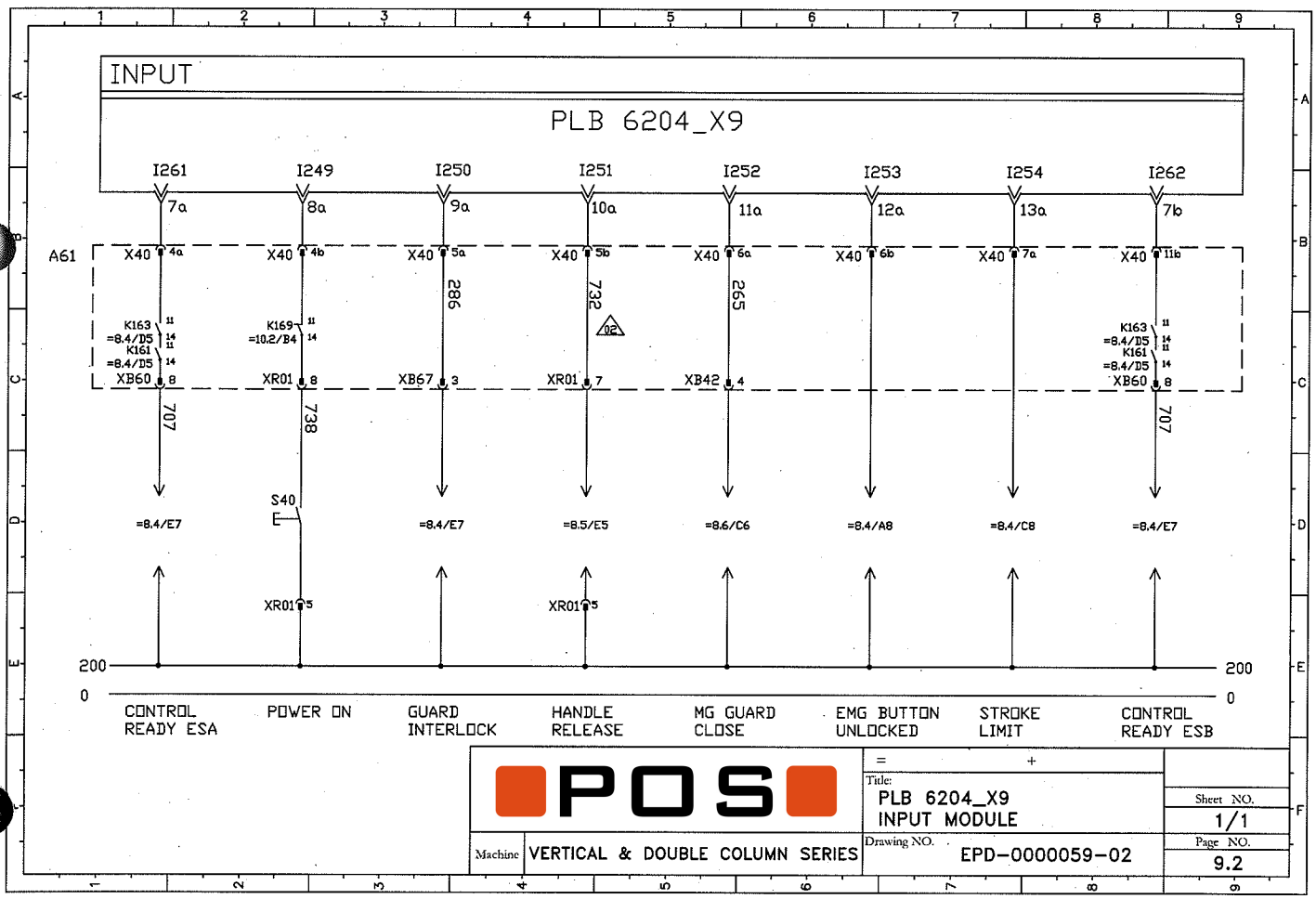

200
24V
EMG
SAFETY MODE
KS42
A1
A2
S33
S11
S39
S12
S21
S22
13
14
23
24
33
34
0
0V
EMG BUTTON UNLOCKED =9.2/D6
STROKE LIMIT =9.2/D7
EMG STOP I
EMG STOP II
CONTROL READY(ES.A)
CONTROL READY(ES.B)
=9.2/B1
=9.2/B8
EMG1 : PANEL EMG BUTTON
EMG2 : HANDWHEEL EMG BUTTON
EMG3 : MAG PANEL EMG BUTTON(OPTION)
EMG4 : CHIP CONVEYOR EMG BUTTON
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
EMG SAFETY RELAY CIRCUIT
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
8.4

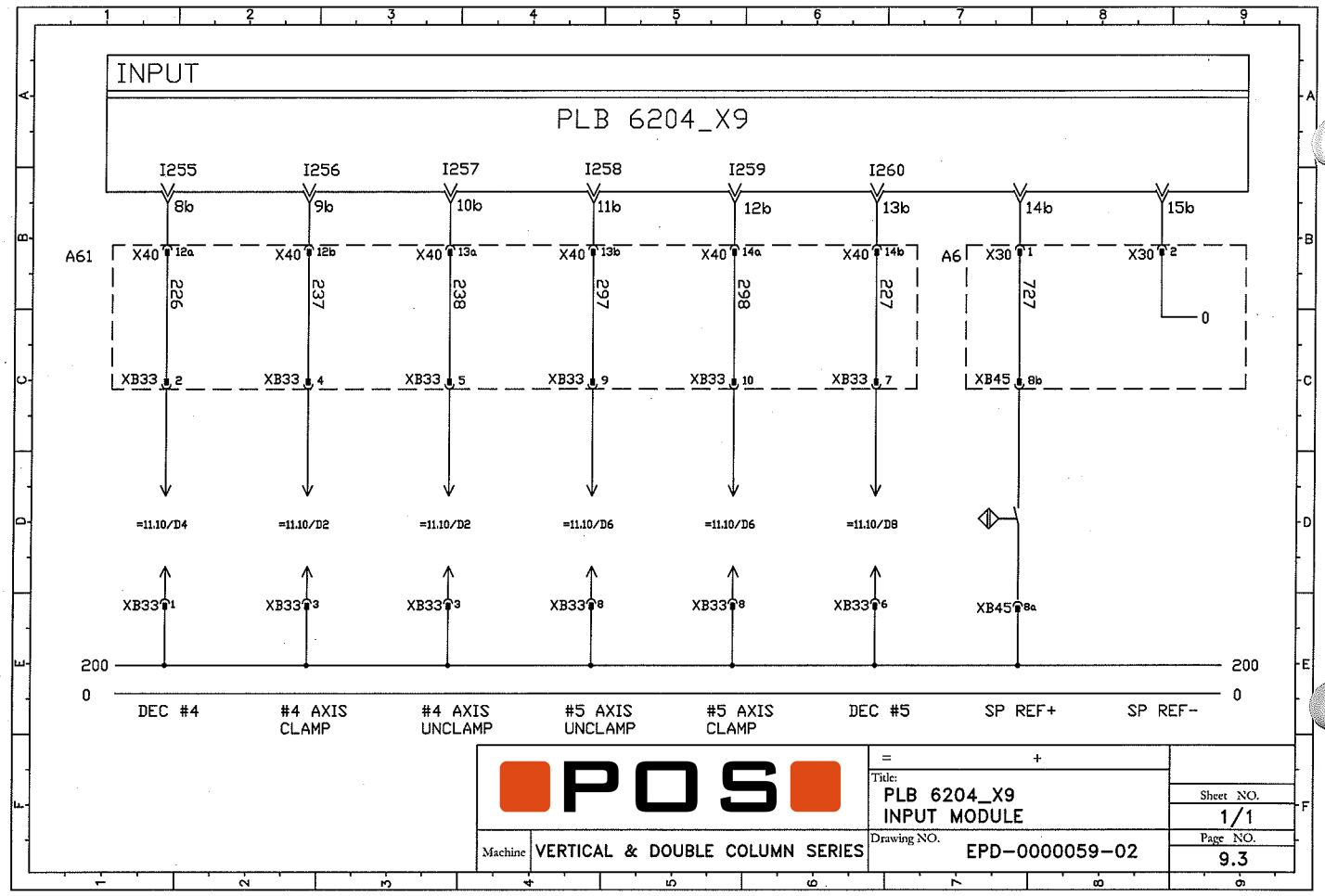

200
24V
GUARD
SAFETY MODE
KS43
A1
A2
S33
S11
S39
S12
S21
S22
13
14
23
24
33
34
0
0V
HANDWHEEL RELEASE
AXIS DELAY OFF
SPINDLE DELAY OFF
GUARD BRAKE
AXIS DRIVER RELEASE (GUARD CLOSED)
GUARD RELEASE I
GUARD RELEASE II
HANDLE RELEASE
K165T : Axis 0.3~0.5sec
K166T : Spindle 3~5sec
TIMER : OMRON_H3BA-N
DOOR1 : FRONT DOOR
DOOR2 : SIDE DOOR I
DOOR3 : SIDE DOOR II
S39 : Without monitoring of start button
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
FRONT DOOR SAFETY CIRCUIT
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
8.5

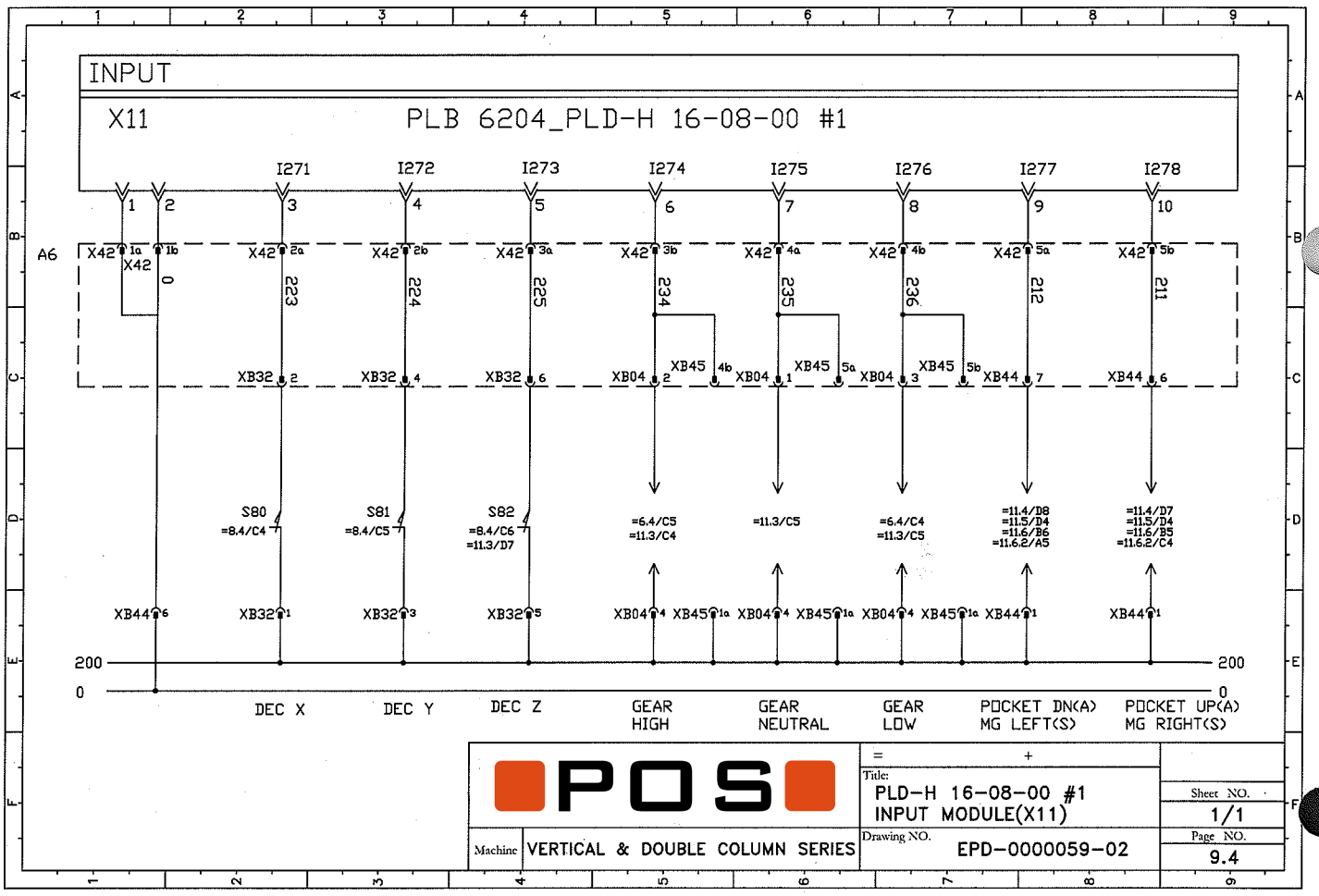

200
MG
SAFETY MODE
KS44
0
XB42
A1
A2
KM56
92
S33
93
S39
S11
163
DOOR 1
S12
164
S21
165
S22
166
13
14
265
=9.2/D5
MG LOAD DOOR CLOSED
23
24
1
AC 11V
33
34
118
KM56
2
MG/ARM MOTOR
S79
XB49
250
=9.9/D8
MG LOAD DOOR OPEN BUTTON
=10.3/D6
352
E1
E2
MG LOAD DOOR OPEN COIL
S39 : Without monitoring of start button
POS
Title:
MAGAZINE DOOR SAFETY CIRCUIT
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
8.6

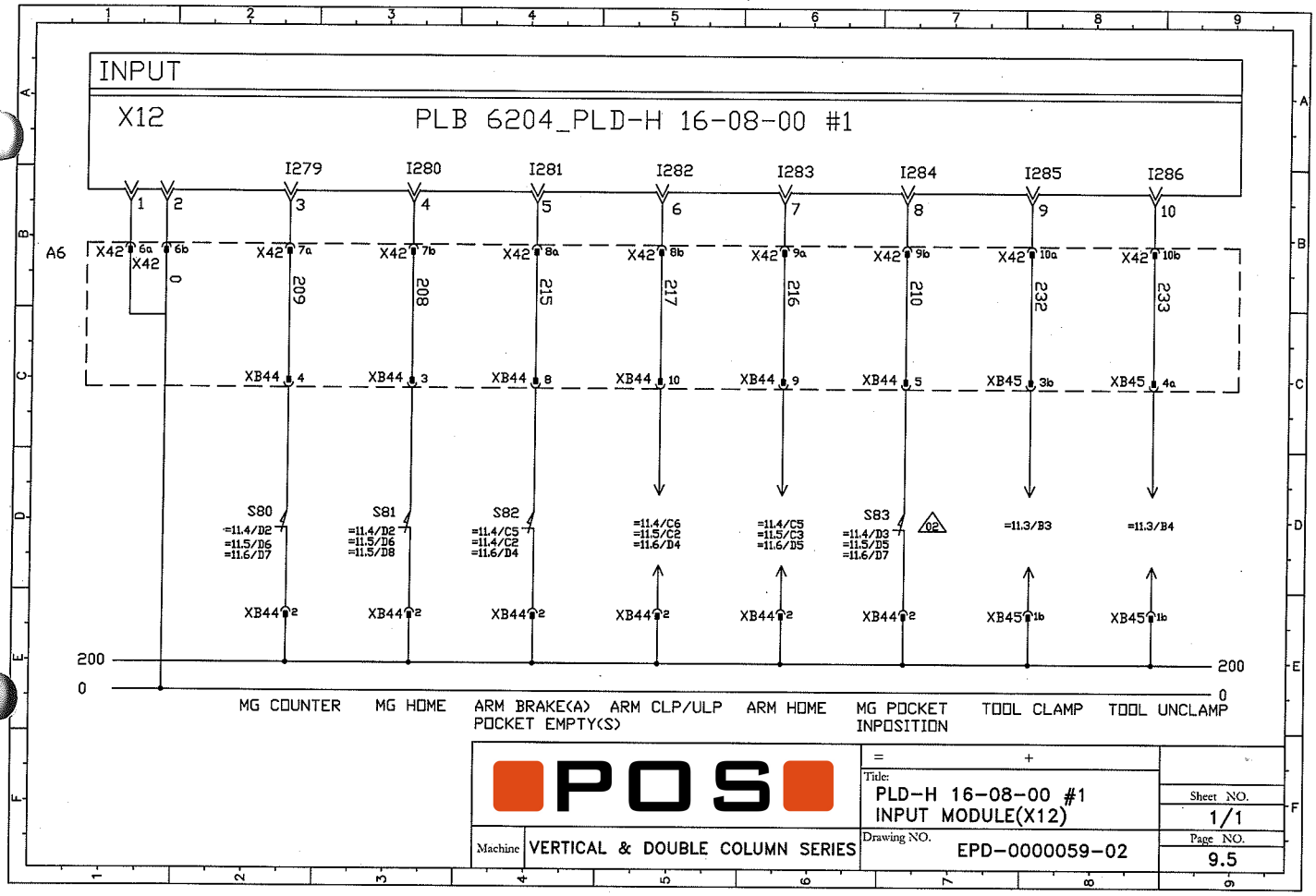

INPUT
MB 620_X6
I241
I242
I243
I244
I245
I246
I247
I248
218
731
429
430
445
446
MPG unit
I244 I245
X 0 0
Y 1 0
Z 0 1
A 1 1
I246 I247
X1 0 0
X10 1 0
X100 0 1
200A
=10.1/E1
CE MODE KEY
SERVICE 4 KEY
SPARE
HANDLE AXIS 1
HANDLE AXIS 2
HANDLE FEED 1
HANDLE FEED 2
SPARE
POS
Title:
MB 620_X6 INPUT MODULE
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
9.1

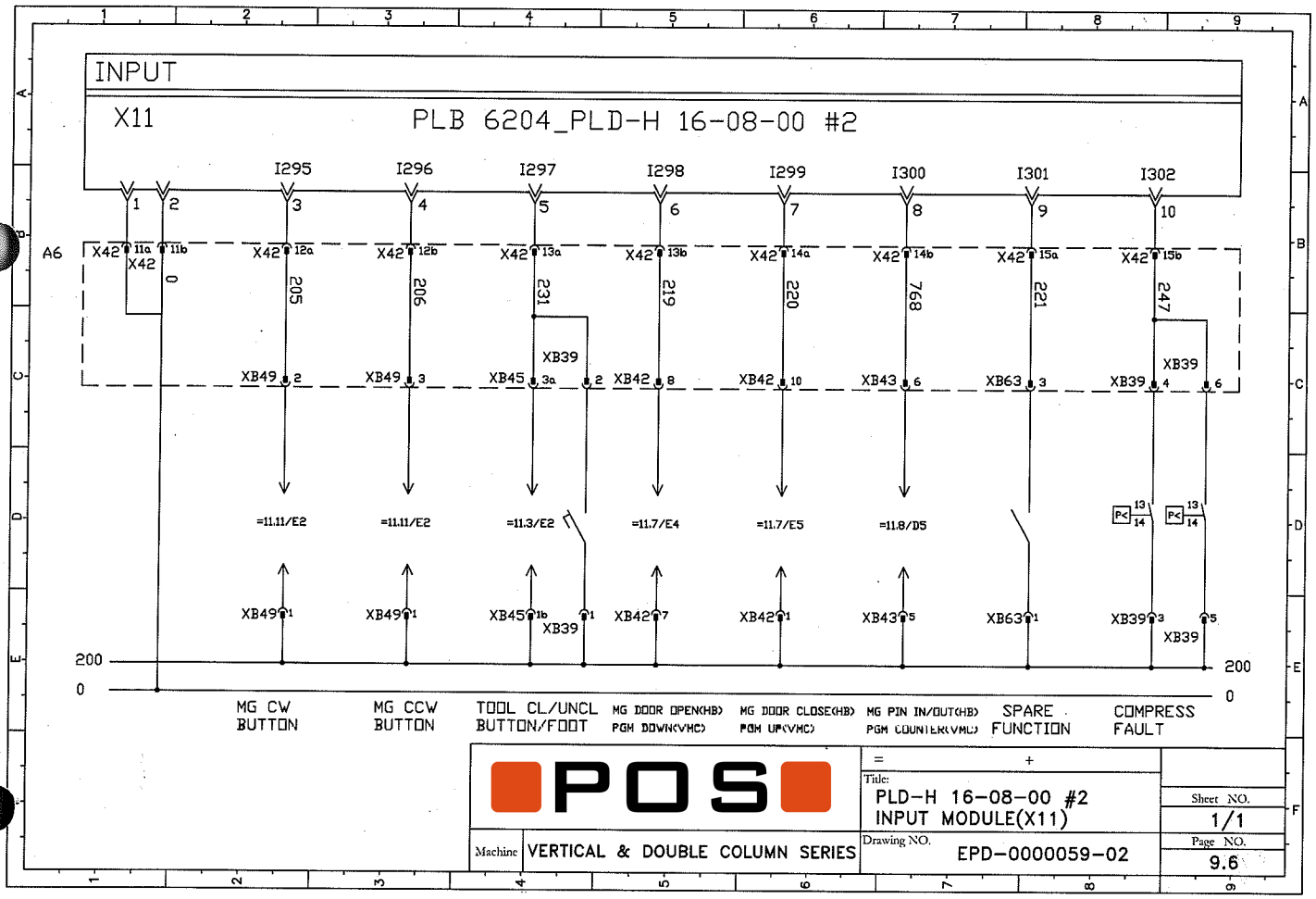

INPUT
MB 620_X31
I239
+24V
I240
+24V
1
2
3
4
5
6
7
8
9
10
201
200A
202
200A
NC START
NC STOP
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
MB 620_X31
NC START/STOP
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
9.1.1

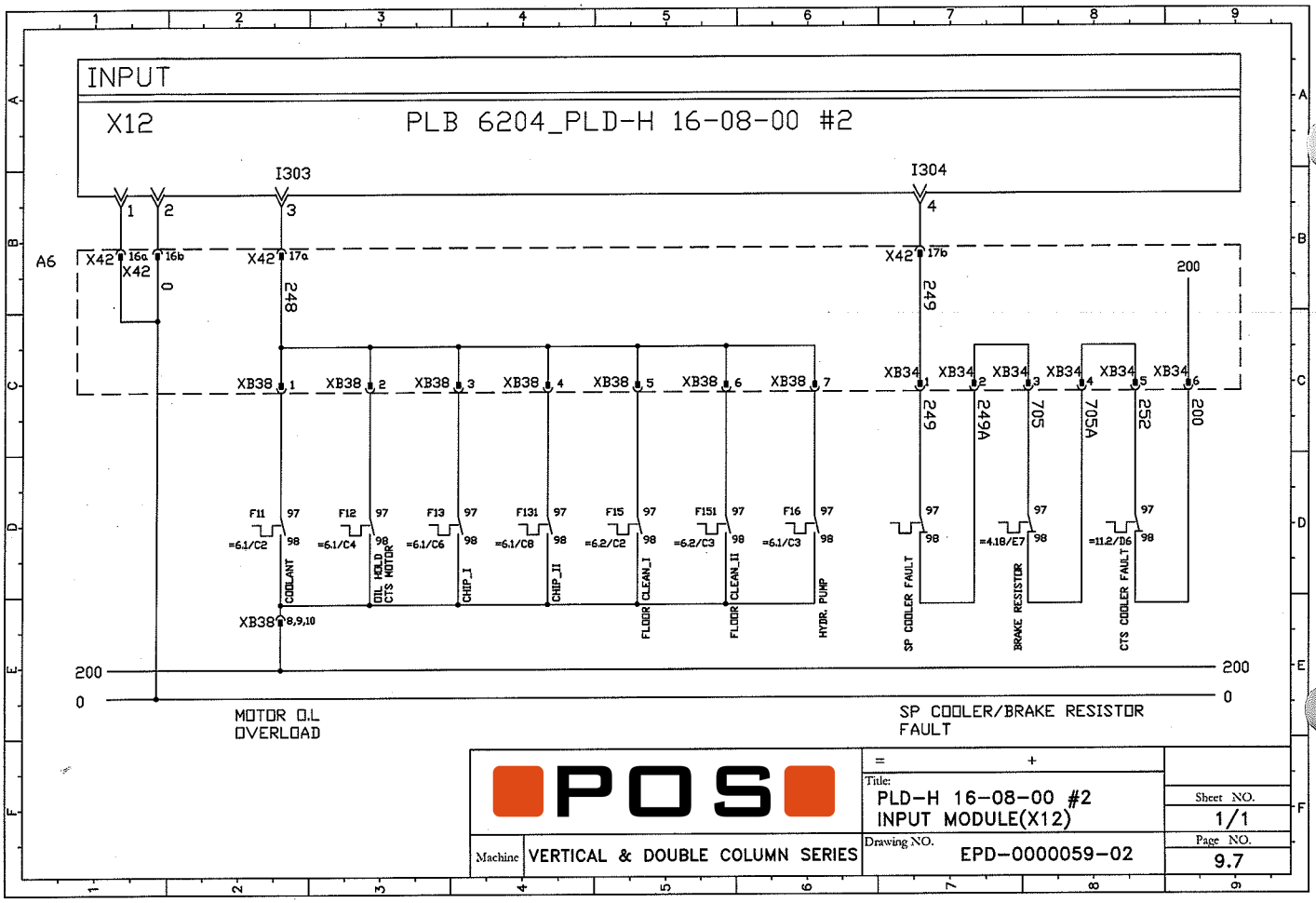

INPUT
PLB 6204_X9
I261
I249
I250
I251
I252
I253
I254
I262
7a
8a
9a
10a
11a
12a
13a
7b
A61
X40 4a
X40 4b
X40 5a
X40 5b
X40 6a
X40 6b
X40 7a
X40 11a
286
732
265
K163 =8.4/D5
K161 =8.4/D5
XB60 8
K169 =10.2/B4
XR01 8
XB67 3
XR01 7
XB42 4
707
738
707
S40
=8.4/E7
=8.4/E7
=8.5/E5
=8.6/C6
=8.4/A8
=8.4/C8
=8.4/E7
XR01 5
XR01 5
200
0
CONTROL READY ESA
POWER ON
GUARD INTERLOCK
HANDLE RELEASE
MG GUARD CLOSE
EMG BUTTON UNLOCKED
STROKE LIMIT
CONTROL READY ESB
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
PLB 6204_X9
INPUT MODULE
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
9.2

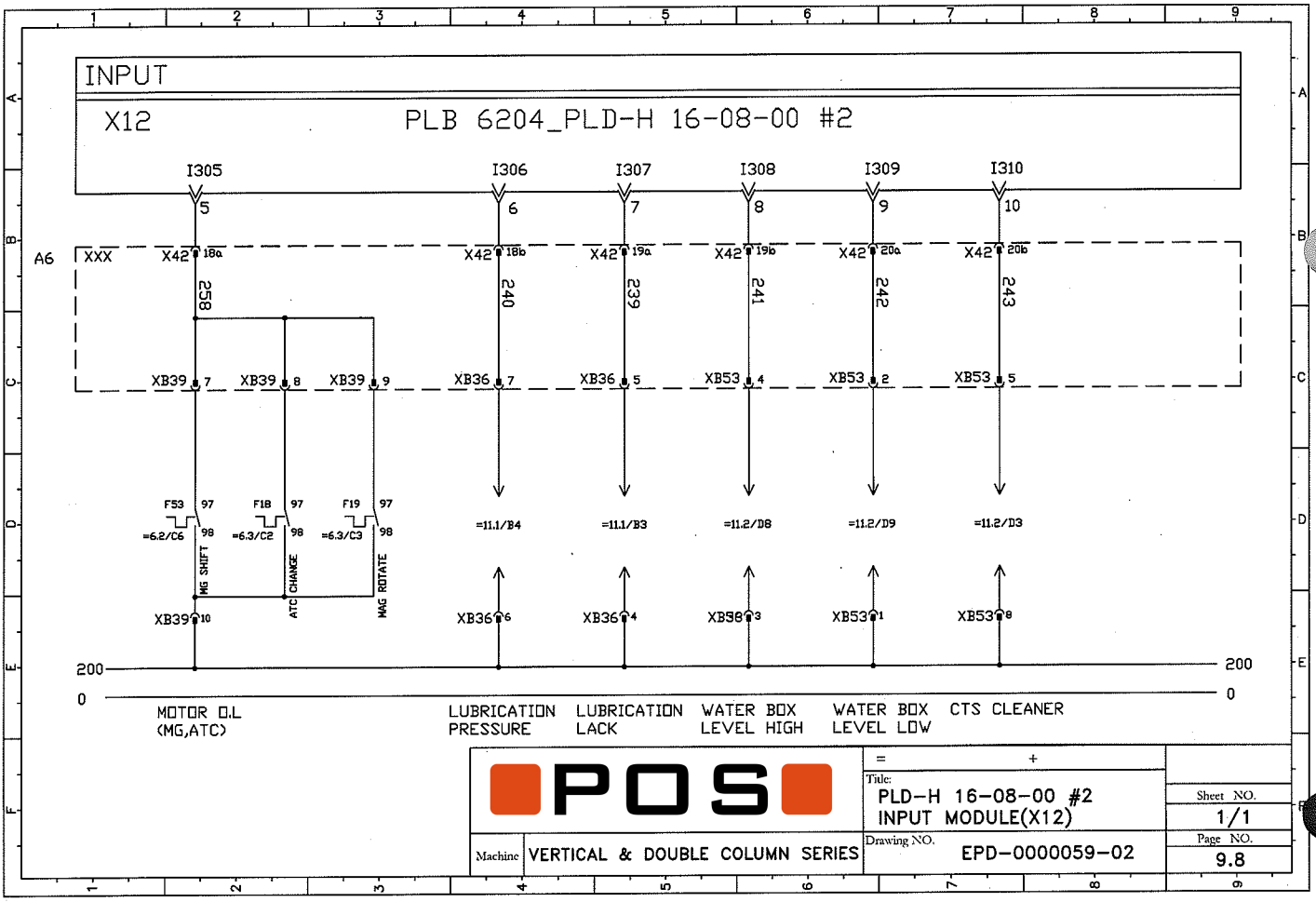

INPUT
PLB 6204_X9
I255
I256
I257
I258
I259
I260
8b
9b
10b
11b
12b
13b
14b
15b
A61
X40 12a
X40 12b
X40 13a
X40 13b
X40 14a
X40 14b
A6
X30 1
X30 2
226
237
238
297
298
227
727
0
XB33 2
XB33 4
XB33 5
XB33 9
XB33 10
XB33 7
XB45 8b
=11.10/D4
=11.10/D2
=11.10/D2
=11.10/D6
=11.10/D6
=11.10/D8
XB33 1
XB33 3
XB33 3
XB33 8
XB33 8
XB33 6
XB45 8a
200
0
DEC #4
#4 AXIS CLAMP
#4 AXIS UNCLAMP
#5 AXIS UNCLAMP
#5 AXIS CLAMP
DEC #5
SP REF+
SP REF-
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
PLB 6204_X9
INPUT MODULE
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
9.3

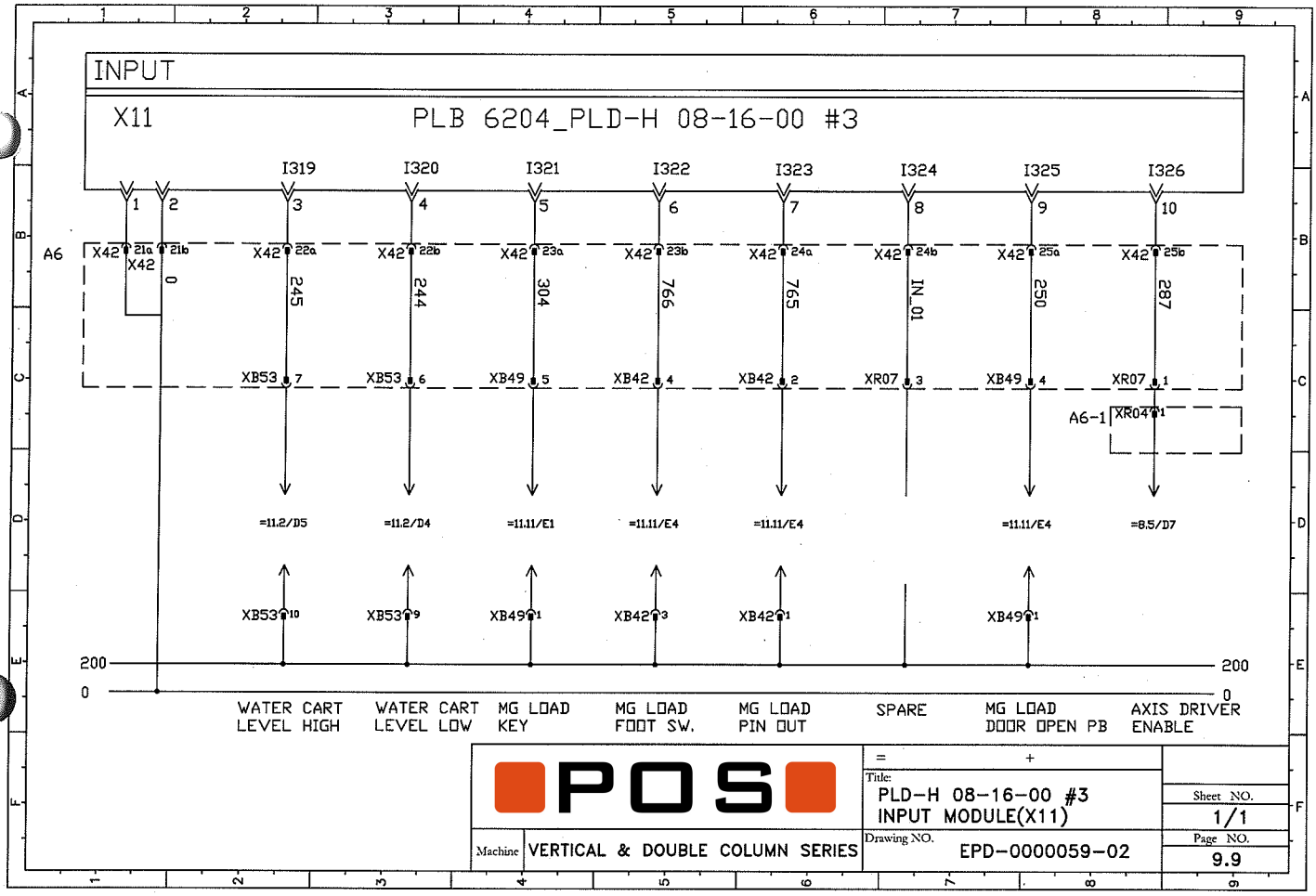

INPUT
X11
PLB 6204_PLD-H 16-08-00 #1
I271
I272
I273
I274
I275
I276
I277
I278
1
2
3
4
5
6
7
8
9
10
A6
X42 1a
X42 1b
X42 2a
X42 2b
X42 3a
X42 3b
X42 4a
X42 4b
X42 5a
X42 5b
X42
0
223
224
225
234
235
236
212
211
XB32 2
XB32 4
XB32 6
XB04 2
XB45 4b
XB04 1
XB45 5a
XB04 3
XB45 5b
XB44 7
XB44 6
S80
=8.4/C4
S81
=8.4/C5
S82
=8.4/C6
=11.3/D7
=6.4/C5
=11.3/C4
=11.3/C5
=6.4/C4
=11.3/C5
=11.4/D8
=11.5/D4
=11.6/B6
=11.6.2/A5
=11.4/D7
=11.5/D4
=11.6/B5
=11.6.2/C4
XB44 6
XB32 1
XB32 3
XB32 5
XB04 4
XB45 1a
XB04 4
XB45 1a
XB04 4
XB45 1a
XB44 1
XB44 1
200
0
DEC X
DEC Y
DEC Z
GEAR HIGH
GEAR NEUTRAL
GEAR LOW
POCKET DN(A) MG LEFT(S)
POCKET UP(A) MG RIGHT(S)
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
PLD-H 16-08-00 #1
INPUT MODULE(X11)
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
9.4

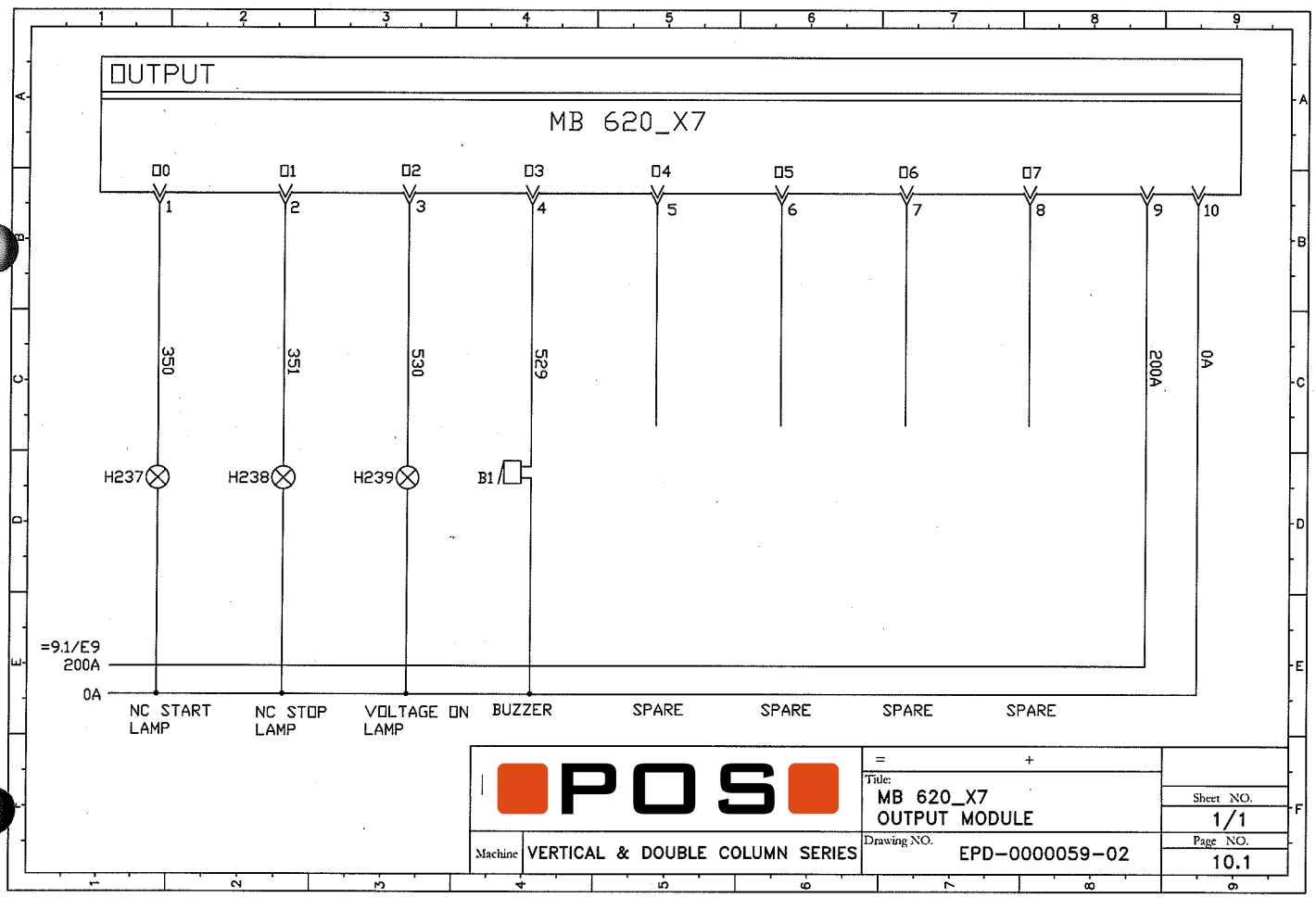

INPUT
X12
PLB 6204_PLD-H 16-08-00 #1
I279
I280
I281
I282
I283
I284
I285
I286
A6
X42
209
208
215
217
216
210
232
233
XB44
XB45
S80
S81
S82
S83
=11.4/D2
=11.5/D6
=11.6/D7
=11.5/D8
=11.4/C5
=11.4/C2
=11.6/D4
=11.4/C6
=11.5/C2
=11.6/D4
=11.4/C5
=11.5/C3
=11.6/D5
=11.4/D3
=11.5/D5
=11.6/D7
=11.3/B3
=11.3/B4
200
0
MG COUNTER
MG HOME
ARM BRAKE(A)
POCKET EMPTY(S)
ARM CLP/ULP
ARM HOME
MG POCKET
INPOSITION
TOOL CLAMP
TOOL UNCLAMP
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
PLD-H 16-08-00 #1
INPUT MODULE(X12)
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
9.5

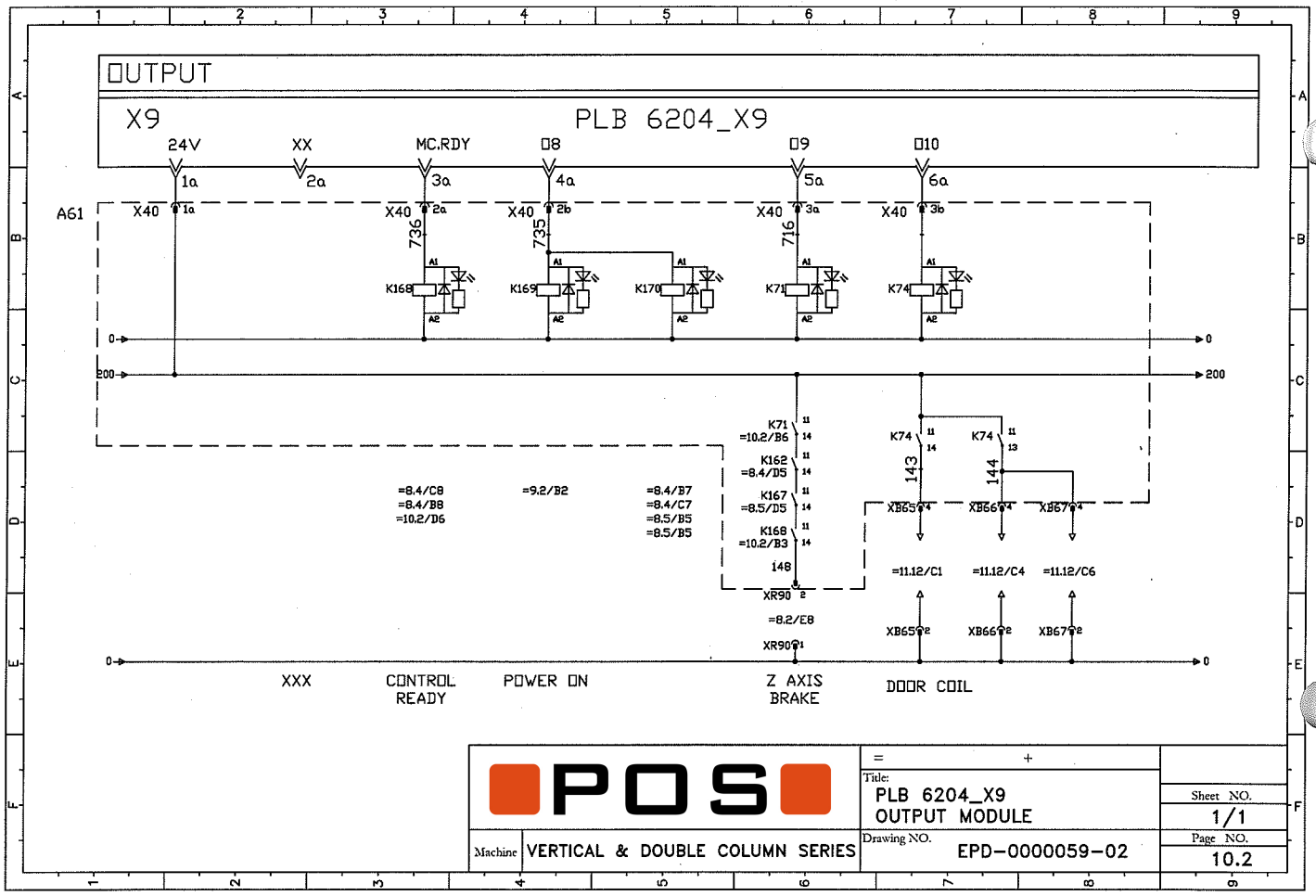

INPUT
X11
PLB 6204_PLD-H 16-08-00 #2
I295
I296
I297
I298
I299
I300
I301
I302
A6
X42
205
206
231
219
220
768
221
247
XB39
XB49
XB45
XB42
XB43
XB63
=11.11/E2
=11.3/E2
=11.7/E4
=11.7/E5
=11.8/D5
200
0
MG CW
BUTTON
MG CCW
BUTTON
TOOL CL/UNCL
BUTTON,/FOOT
MG DOOR OPEN(HB)
PGM DOWN(VMC)
MG DOOR CLOSE(HB)
PGM UP(VMC)
MG PIN IN/OUT(HB)
PGM COUNTER(VMC)
SPARE
FUNCTION
COMPRESS
FAULT
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
PLD-H 16-08-00 #2
INPUT MODULE(X11)
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
9.6


INPUT
X12
PLB 6204_PLD-H 16-08-00 #2
I303
I304
A6
XB38
XB34
F11 =6.1/C2 COOLANT
F12 =6.1/C4 OIL HOLD CTS MOTOR
F13 =6.1/C6 CHIP_I
F131 =6.1/C8 CHIP_II
F15 =6.2/C2 FLOOR CLEAN_I
F151 =6.2/C3 FLOOR CLEAN_II
F16 =6.1/C3 HYDR. PUMP
=4.18/E7 BRAKE RESISTOR
=11.2/D6 CTS COOLER FAULT
SP COOLER FAULT
MOTOR O.L OVERLOAD
SP COOLER/BRAKE RESISTOR FAULT
POS
Machine VERTICAL & DOUBLE COLUMN SERIES
Title: PLD-H 16-08-00 #2 INPUT MODULE(X12)
Drawing NO. EPD-0000059-02
Sheet NO. 1/1
Page NO. 9.7


INPUT
X12
PLB 6204_PLD-H 16-08-00 #2
I305
I306
I307
I308
I309
I310
A6
XB39
XB36
XB53
F53 =6.2/C6 MG SHIFT
F18 =6.3/C2 ATC CHANGE
F19 =6.3/C3 MAG ROTATE
=11.1/B4
=11.1/B3
=11.2/D8
=11.2/D9
=11.2/D3
MOTOR O.L (MG,ATC)
LUBRICATION PRESSURE
LUBRICATION LACK
WATER BOX LEVEL HIGH
WATER BOX LEVEL LOW
CTS CLEANER
POS
Machine VERTICAL & DOUBLE COLUMN SERIES
Title: PLD-H 16-08-00 #2 INPUT MODULE(X12)
Drawing NO. EPD-0000059-02
Sheet NO. 1/1
Page NO. 9.8


INPUT
X11
PLB 6204_PLD-H 08-16-00 #3
I319
I320
I321
I322
I323
I324
I325
I326
A6
X42
245
244
304
766
765
IN_01
250
287
XB53
XB49
XB42
XR07
XR04
A6-1
=11.2/D5
=11.2/D4
=11.11/E1
=11.11/E4
=11.11/E4
=11.11/E4
=8.5/D7
200
0
WATER CART LEVEL HIGH
WATER CART LEVEL LOW
MG LOAD KEY
MG LOAD FOOT SW.
MG LOAD PIN OUT
SPARE
MG LOAD DOOR OPEN PB
AXIS DRIVER ENABLE
POS
Title:
PLD-H 08-16-00 #3
INPUT MODULE(X11)
Sheet NO.
1/1
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Page NO.
9.9


OUTPUT
MB 620_X7
O0
O1
O2
O3
O4
O5
O6
O7
350
351
530
529
200A
0A
H237
H238
H239
B1
=9.1/E9
200A
0A
NC START LAMP
NC STOP LAMP
VOLTAGE ON LAMP
BUZZER
SPARE
SPARE
SPARE
SPARE
POS
Title:
MB 620_X7
OUTPUT MODULE
Sheet NO.
1/1
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Page NO.
10.1



POS

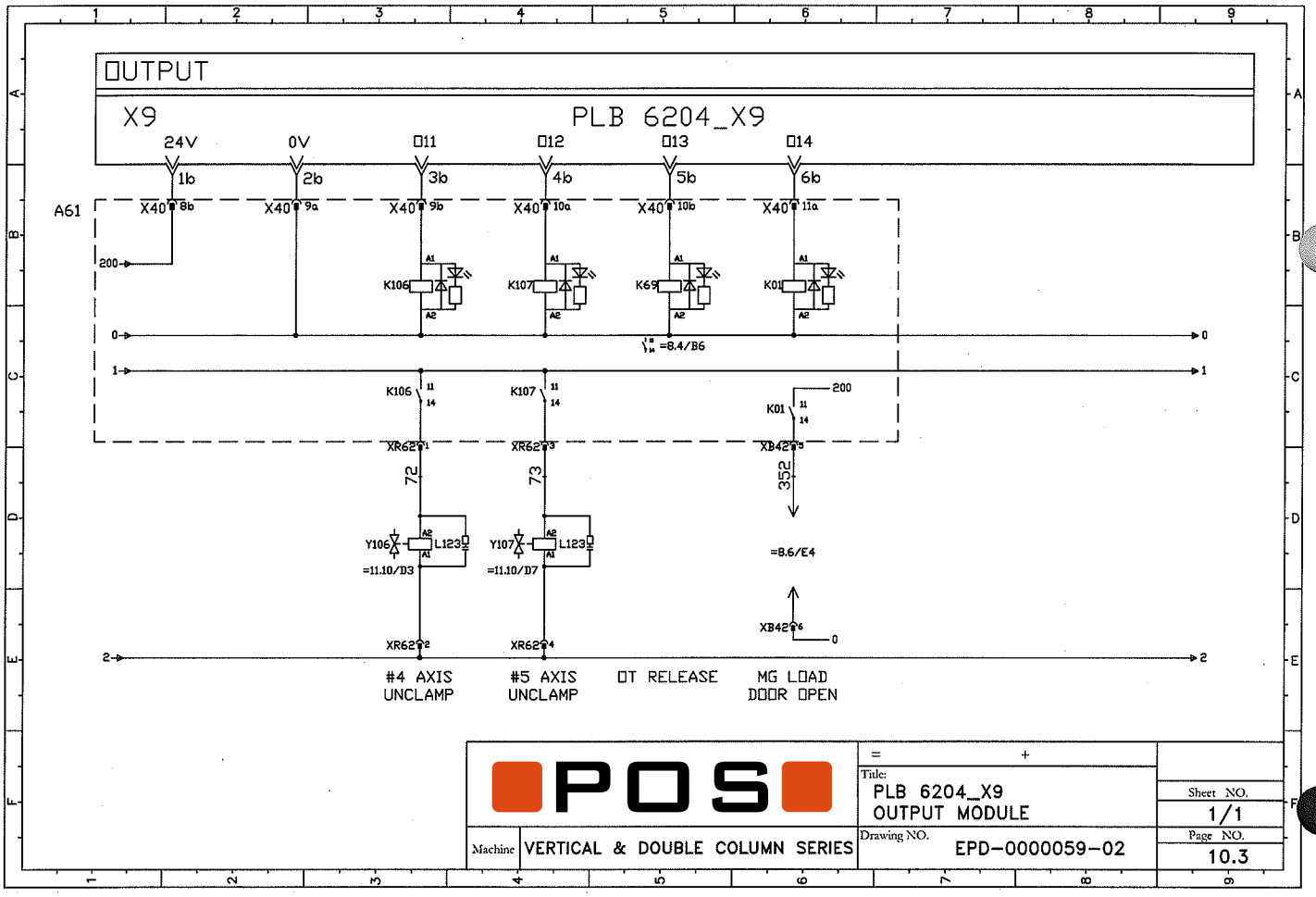
Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: PLB 6204_X9 OUTPUT MODULE

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/1

Page NO.: 10.2



POS

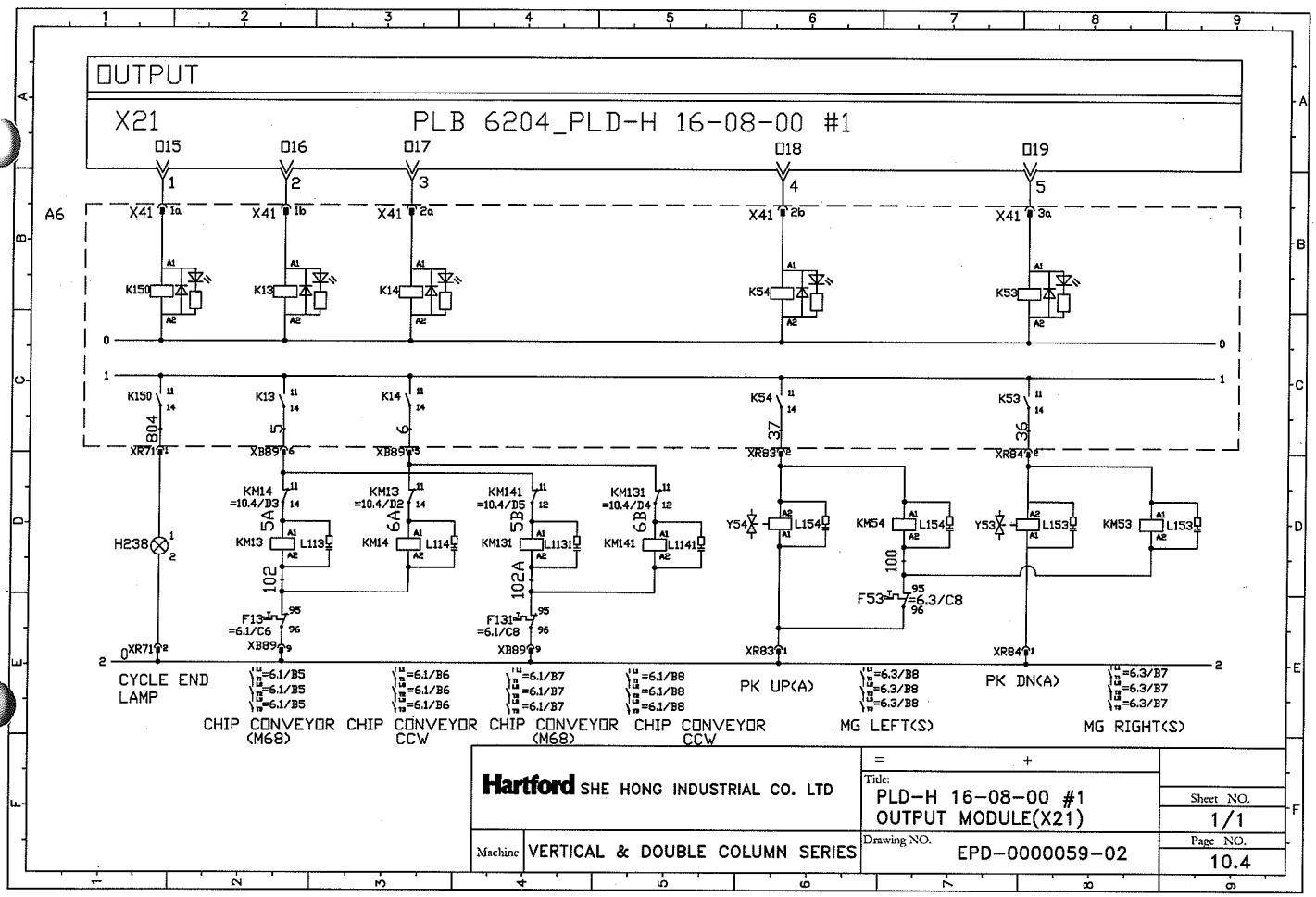
Machine: VERTICAL & DOUBLE COLUMN SERIES

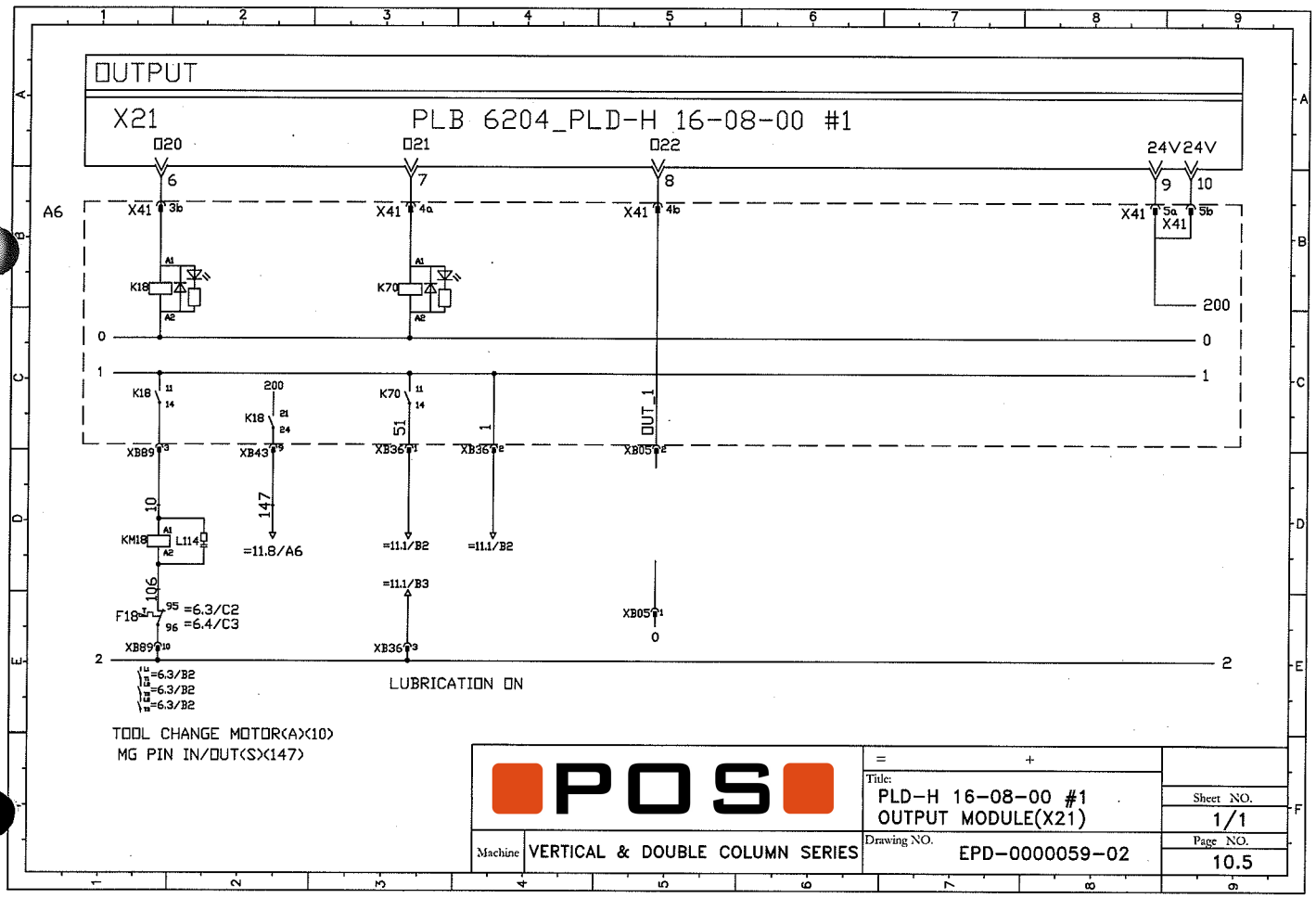
Title: PLB 6204_X9 OUTPUT MODULE

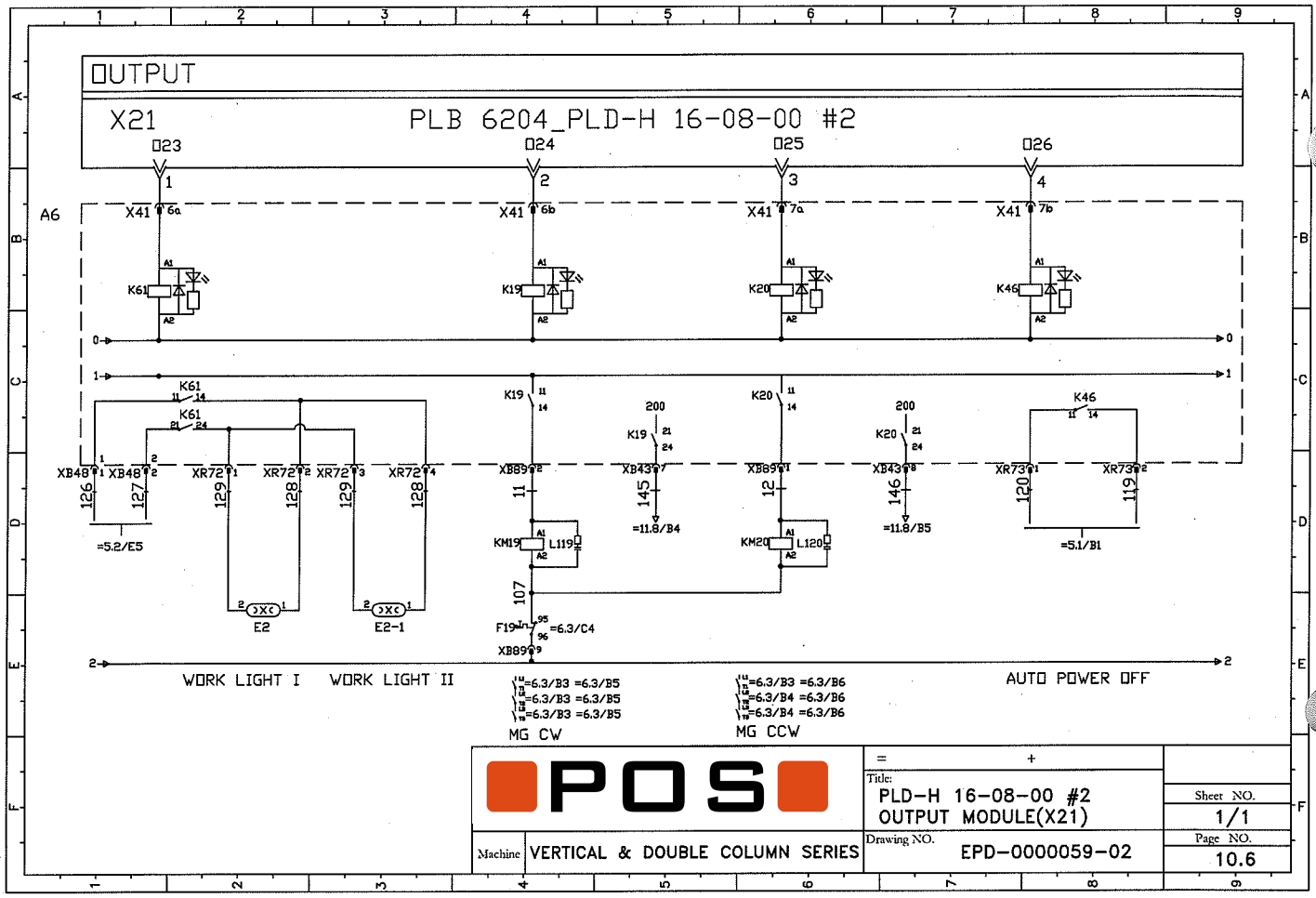
Drawing NO.: EPD-0000059-02

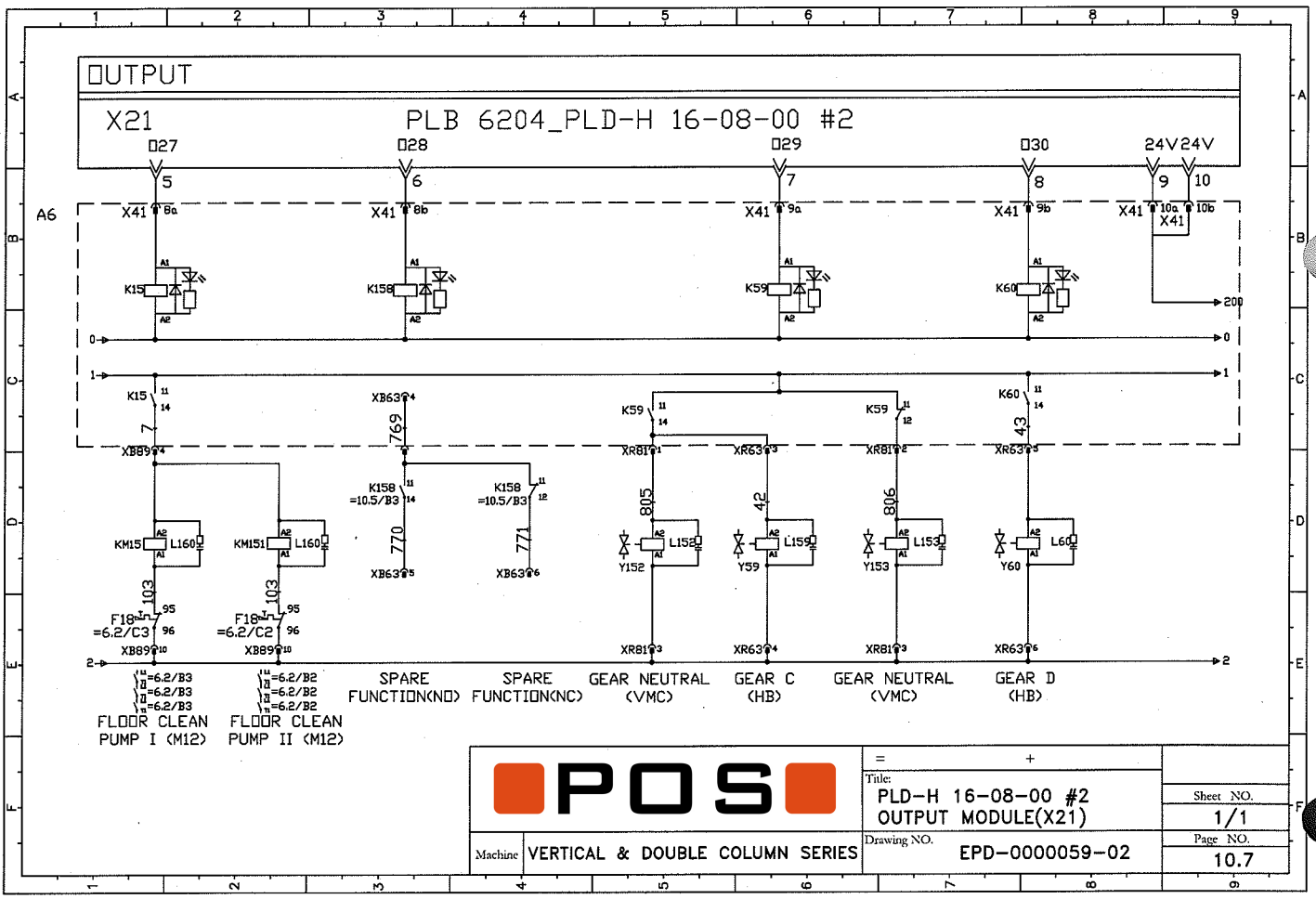
Sheet NO.: 1/1

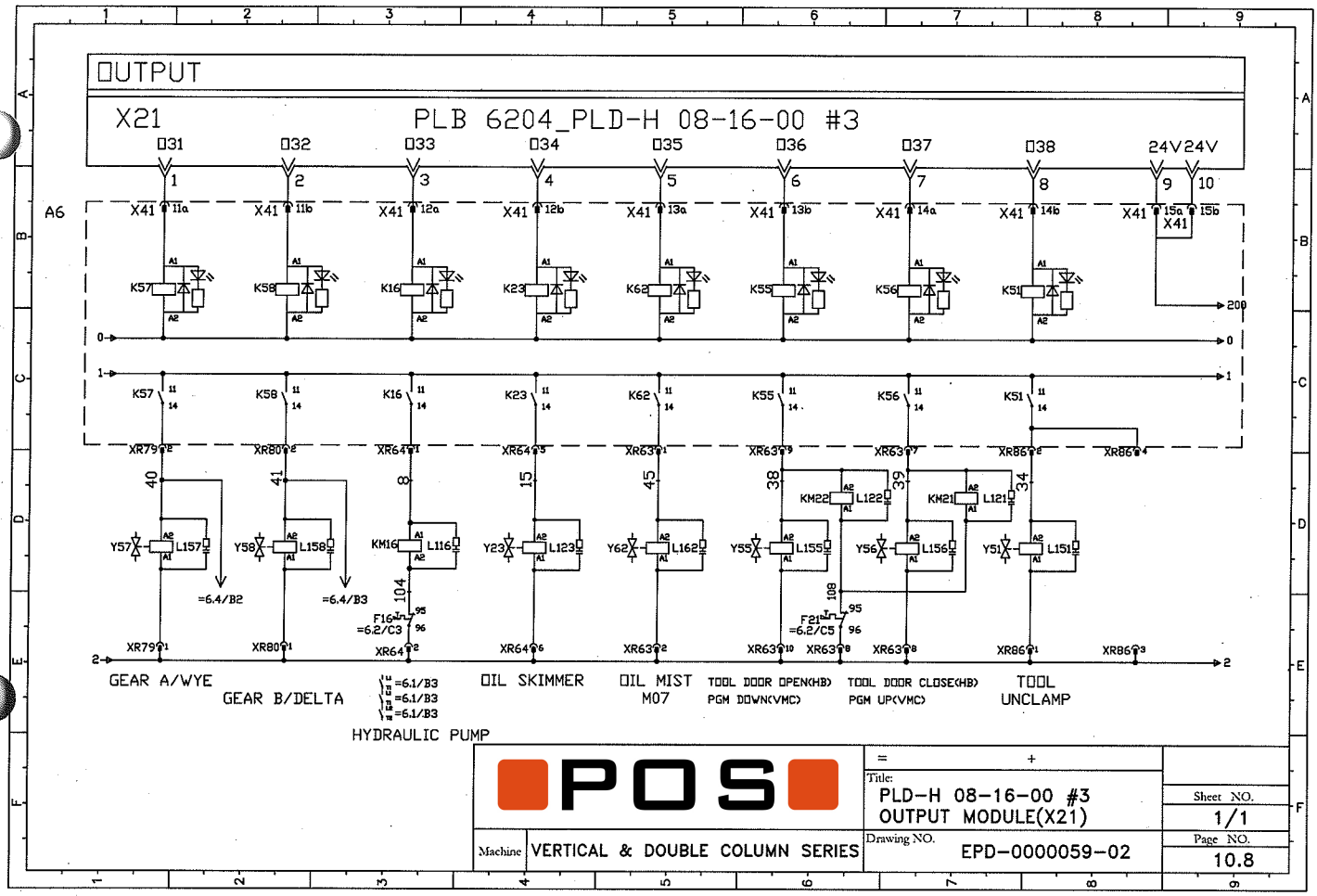
Page NO.: 10.3

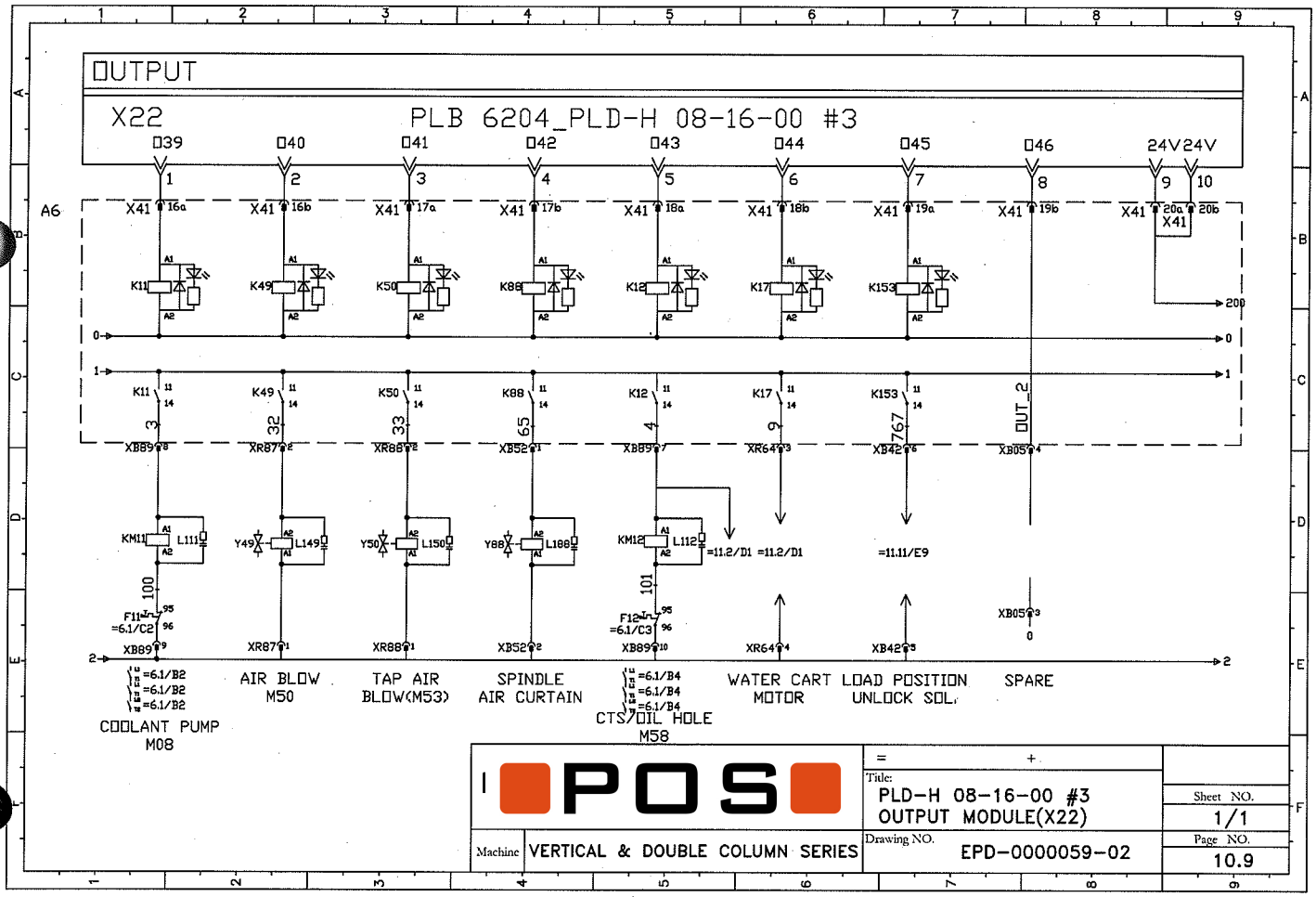

OUTPUT
X21
PLB 6204_PLD-H 16-08-00 #1
O15
O16
O17
O18
O19
A6
K150
K13
K14
K54
K53
H238
CYCLE END LAMP
CHIP CONVEYOR (M68)
CHIP CONVEYOR CCW
CHIP CONVEYOR (M68)
CHIP CONVEYOR CCW
PK UP(A)
MG LEFT(S)
PK DN(A)
MG RIGHT(S)
Hartford SHE HONG INDUSTRIAL CO. LTD
Title: PLD-H 16-08-00 #1 OUTPUT MODULE(X21)
Machine VERTICAL & DOUBLE COLUMN SERIES
Drawing NO. EPD-0000059-02
Sheet NO. 1/1
Page NO. 10.4

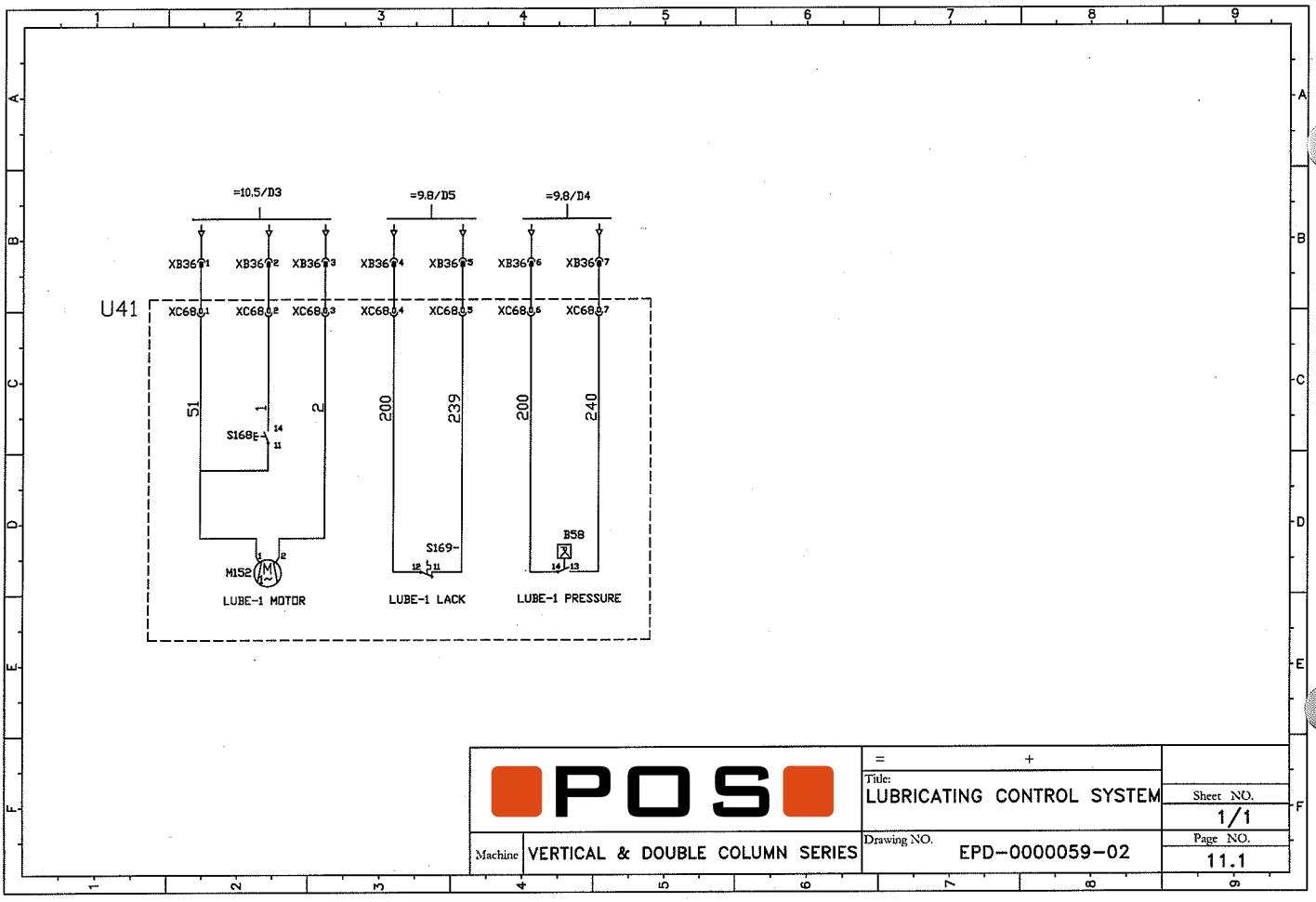

OUTPUT
X21
PLB 6204_PLD-H 16-08-00 #1
O20
O21
O22
24V24V
A6
K18
K70
TOOL CHANGE MOTOR(A)(10)
MG PIN IN/OUT(S)(147)
LUBRICATION ON
POS
Title: PLD-H 16-08-00 #1 OUTPUT MODULE(X21)
Machine VERTICAL & DOUBLE COLUMN SERIES
Drawing NO. EPD-0000059-02
Sheet NO. 1/1
Page NO. 10.5


OUTPUT
X21
PLB 6204_PLD-H 16-08-00 #2
D23
D24
D25
D26
A6
K61
K19
K20
K46
WORK LIGHT I
WORK LIGHT II
AUTO POWER OFF
MG CW
MG CCW
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
PLD-H 16-08-00 #2
OUTPUT MODULE(X21)
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
10.6

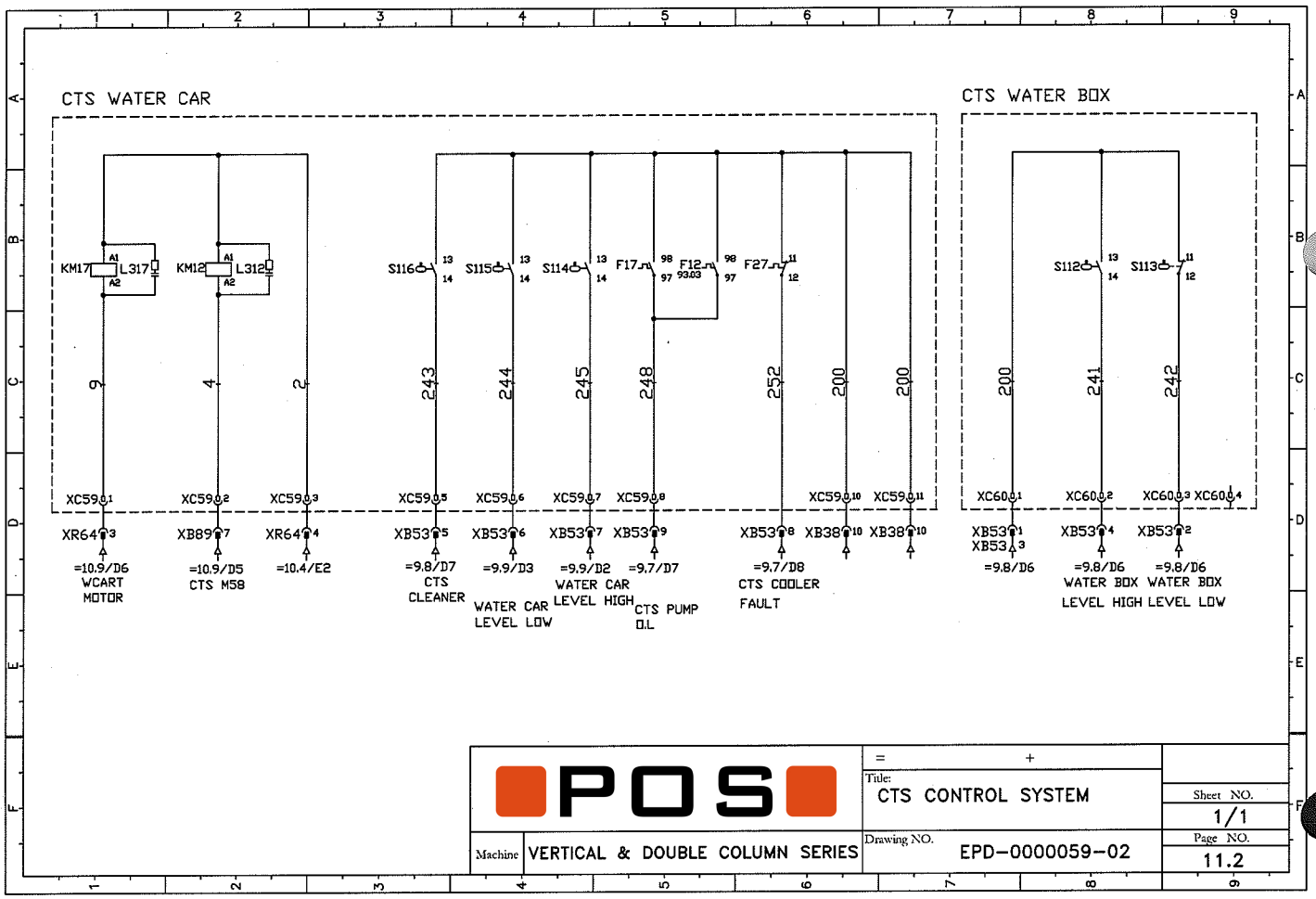

OUTPUT
X21
PLB 6204_PLD-H 16-08-00 #2
D27
D28
D29
D30
24V24V
A6
K15
K158
K59
K60
FLOOR CLEAN
PUMP I (M12)
FLOOR CLEAN
PUMP II (M12)
SPARE
FUNCTION(NO)
SPARE
FUNCTION(NC)
GEAR NEUTRAL
(VMC)
GEAR C
(HB)
GEAR NEUTRAL
(VMC)
GEAR D
(HB)
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
PLD-H 16-08-00 #2
OUTPUT MODULE(X21)
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
10.7


OUTPUT
X21
PLB 6204_PLD-H 08-16-00 #3
A6
GEAR A/WYE
GEAR B/DELTA
HYDRAULIC PUMP
OIL SKIMMER
OIL MIST
M07
TOOL DOOR OPEN(HB)
PGM DOWN(VMC)
TOOL DOOR CLOSE(HB)
PGM UP(VMC)
TOOL
UNCLAMP
POS
Title:
PLD-H 08-16-00 #3
OUTPUT MODULE(X21)
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
10.8

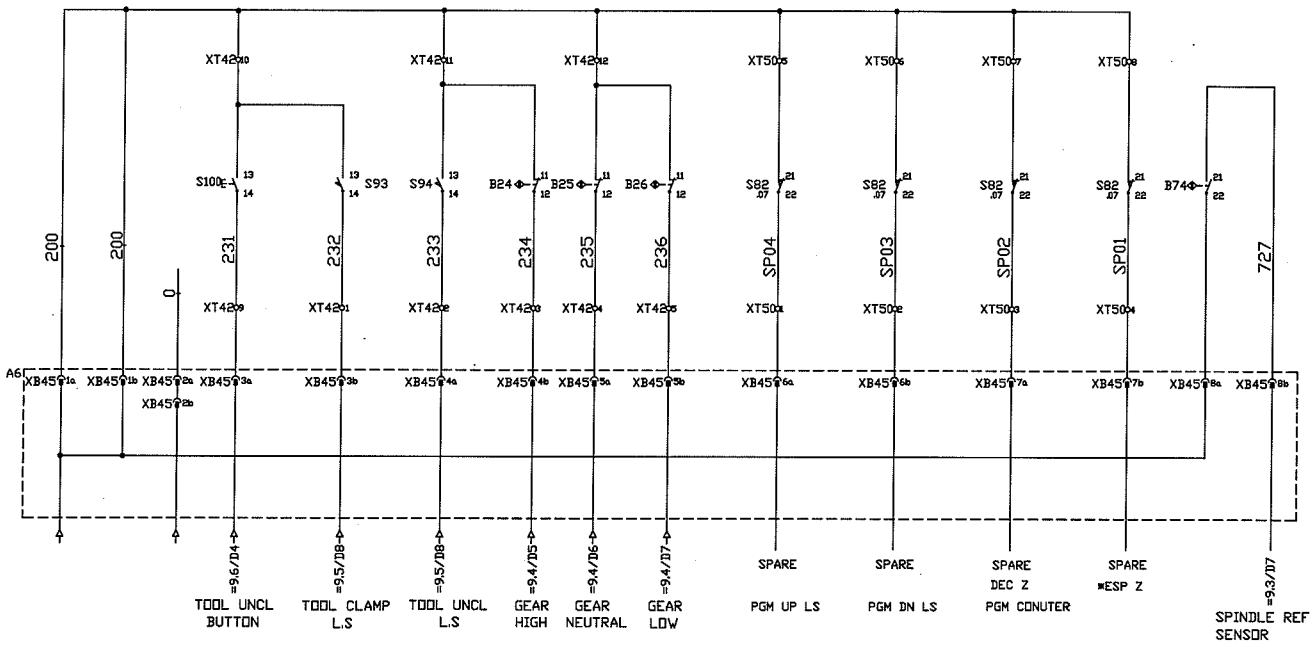

OUTPUT
X22
PLB 6204_PLD-H 08-16-00 #3
A6
COOLANT PUMP
M08
AIR BLOW
M50
TAP AIR
BLOW(M53)
SPINDLE
AIR CURTAIN
CTS/OIL HOLE
M58
WATER CART
MOTOR
LOAD POSITION
UNLOCK SOL.
SPARE
POS
Title:
PLD-H 08-16-00 #3
OUTPUT MODULE(X22)
Machine
VERTICAL & DOUBLE COLUMN SERIES
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
10.9



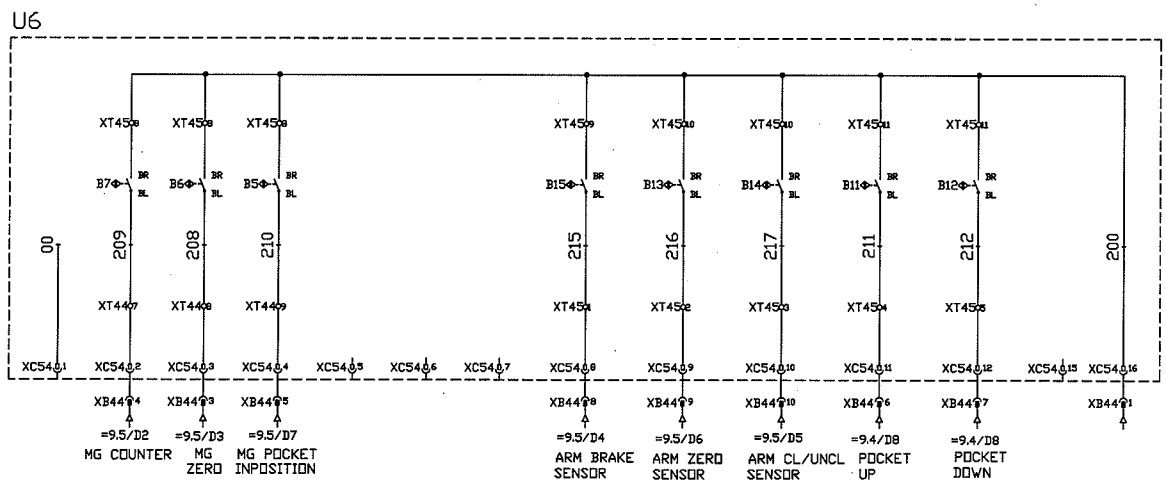
POS	= + Title: LUBRICATING CONTROL SYSTEM		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 11.1



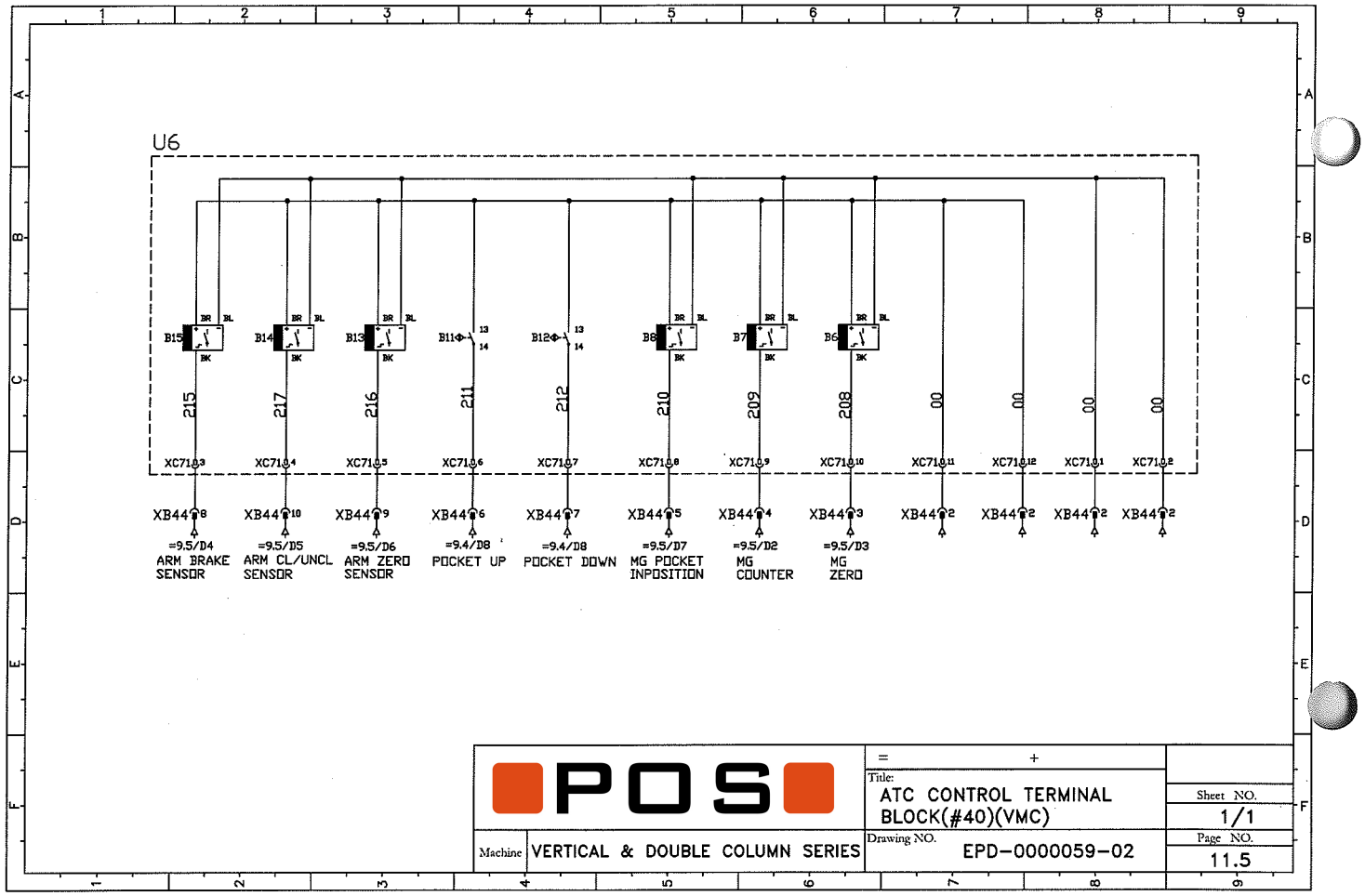
POS	= + Title: CTS CONTROL SYSTEM		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 11.2

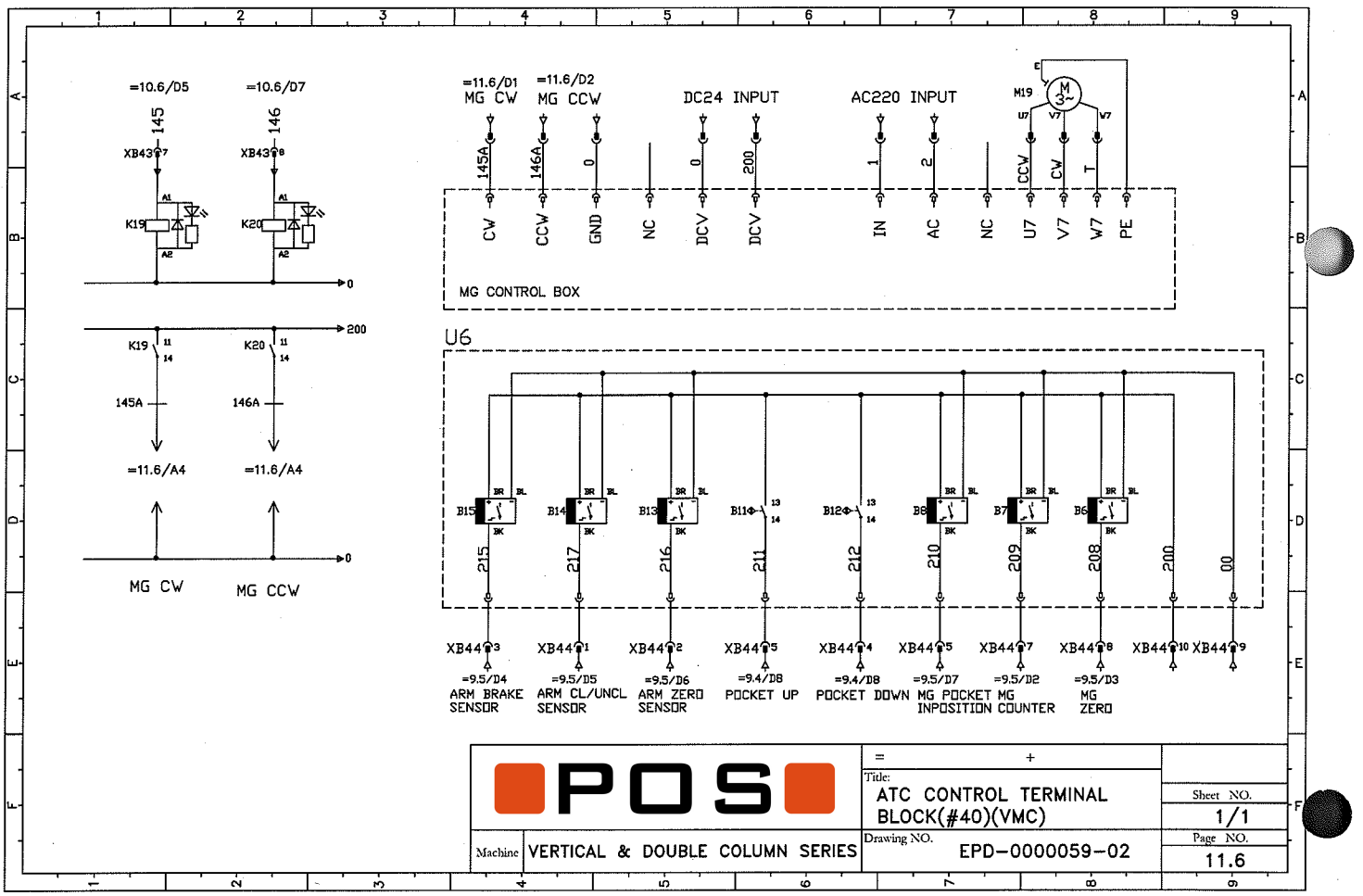


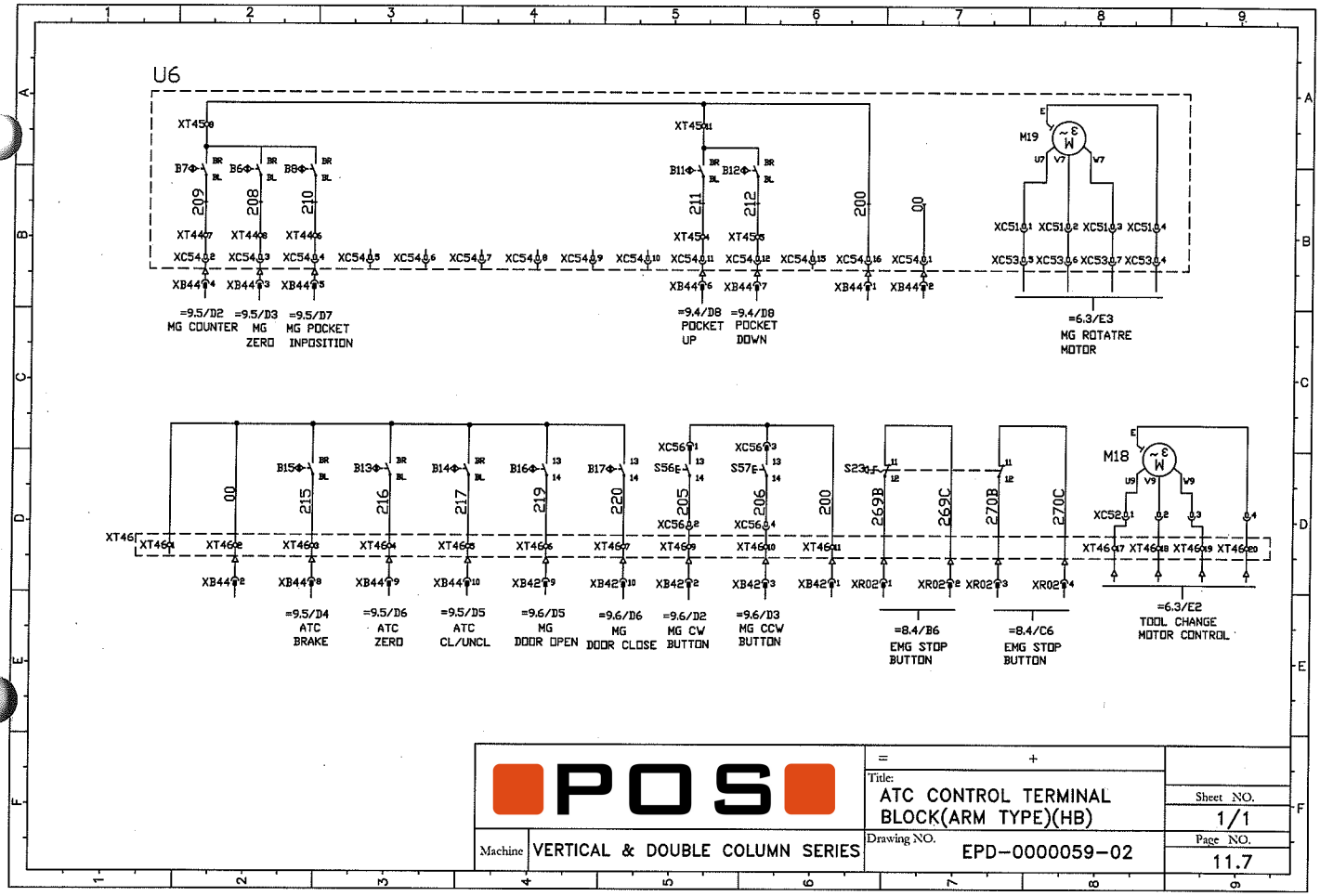
POS	=	+	
	Title: -XT42 -XT50 (SPINDLE SIDE) TERMINAL BLOCK		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO.: EPD-0000059-02		Page NO. 11.3

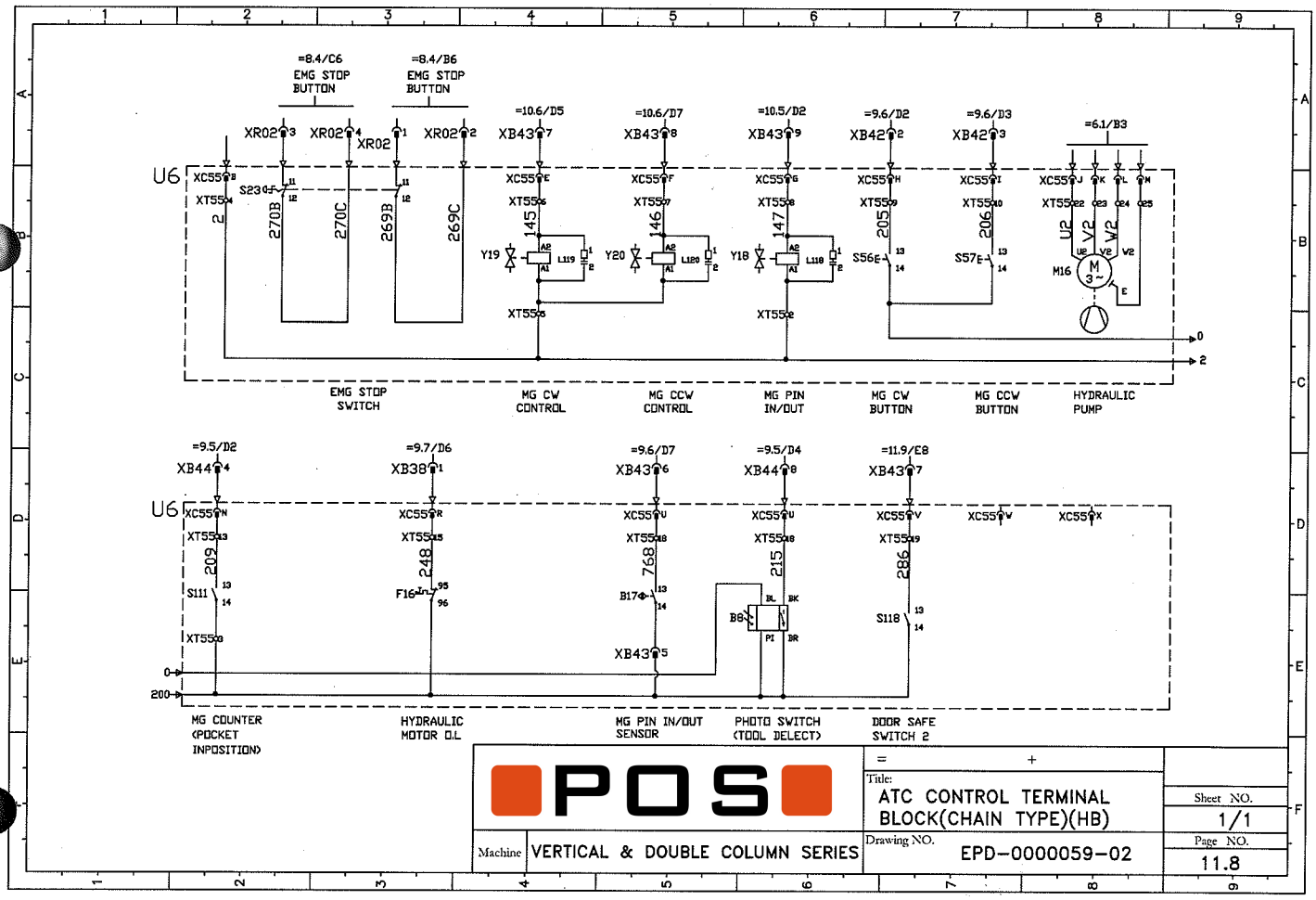


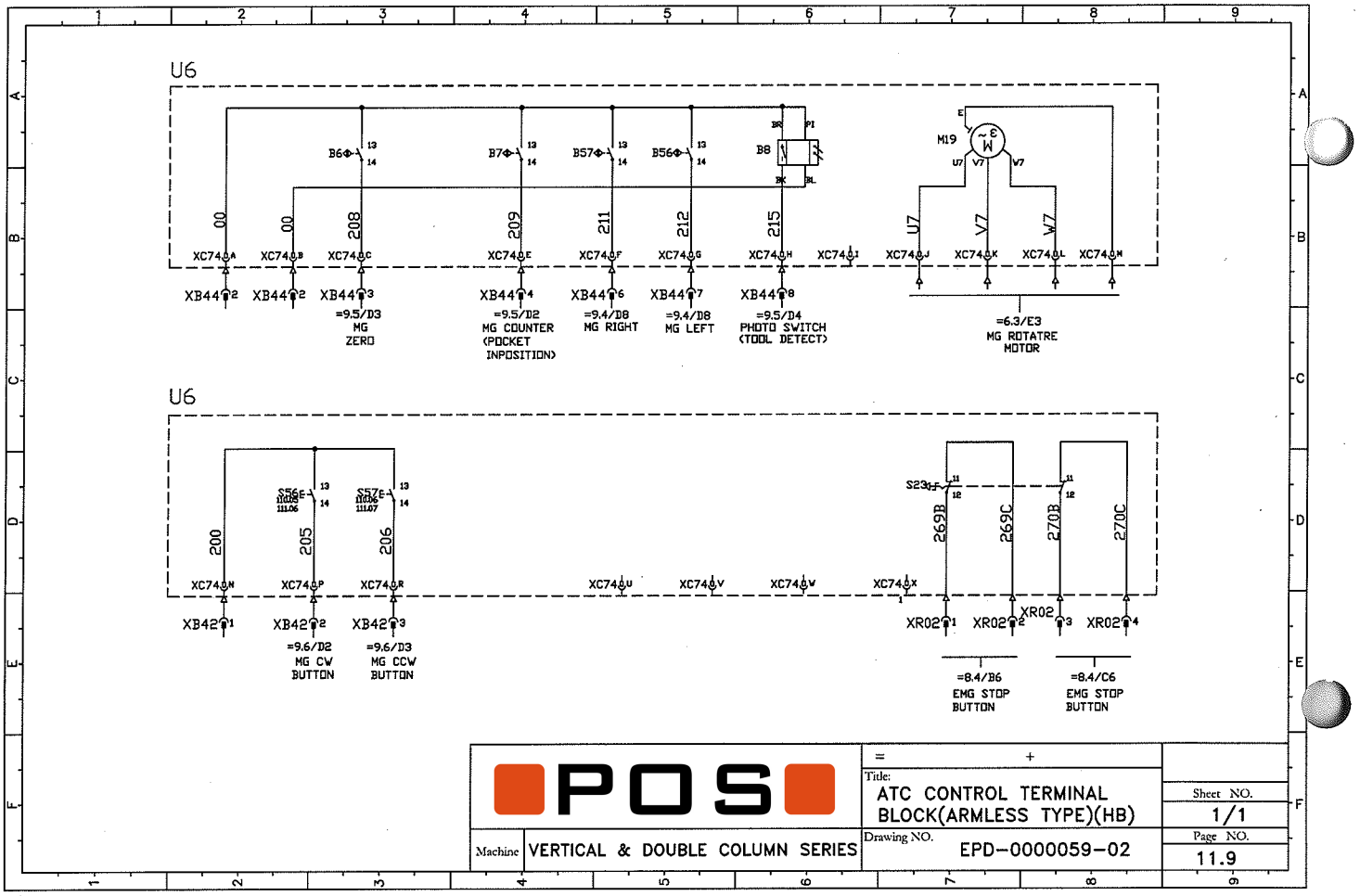
POS	=	+	
	Title: ATC CONTROL TERMINAL BLOCK(#50)		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO.: EPD-0000059-02		Page NO. 11.4


U6
B15
B14
B13
B11
B12
B8
B7
B6
215
217
216
211
212
210
209
208
00
XC7103
XC7104
XC7105
XC7106
XC7107
XC7108
XC7109
XC7110
XC7111
XC7112
XC7101
XC7102
XB4418
XB4410
XB4419
XB4416
XB4417
XB4415
XB4414
XB4413
XB4412
XB4412
XB4412
XB4412
=9.5/D4
ARM BRAKE SENSOR
=9.5/D5
ARM CL/UNCL SENSOR
=9.5/D6
ARM ZERO SENSOR
=9.4/D8
POCKET UP
=9.4/D8
POCKET DOWN
=9.5/D7
MG POCKET INPOSITION
=9.5/D2
MG COUNTER
=9.5/D3
MG ZERO
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
ATC CONTROL TERMINAL BLOCK(#40)(VMC)
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
11.5


=10.6/D5
=10.6/D7
145
146
XB4317
XB4318
K19
K20
0
200
145A
146A
=11.6/A4
=11.6/A4
MG CW
MG CCW
=11.6/D1
MG CW
=11.6/D2
MG CCW
DC24 INPUT
AC220 INPUT
CW
CCW
GND
NC
DCV
DCV
IN
AC
NC
U7
V7
W7
PE
M19
MG CONTROL BOX
U6
XB4413
XB4411
XB4412
XB4415
XB4414
XB4415
XB4417
XB4418
XB4410
XB4419
=9.5/D4
ARM BRAKE SENSOR
=9.5/D5
ARM CL/UNCL SENSOR
=9.5/D6
ARM ZERO SENSOR
=9.4/D8
POCKET UP
=9.4/D8
POCKET DOWN
=9.5/D7
MG POCKET INPOSITION
=9.5/D2
MG COUNTER
=9.5/D3
MG ZERO
POS
Machine
VERTICAL & DOUBLE COLUMN SERIES
Title:
ATC CONTROL TERMINAL BLOCK(#40)(VMC)
Drawing NO.
EPD-0000059-02
Sheet NO.
1/1
Page NO.
11.6


U6
=9.5/D2 MG COUNTER
=9.5/D3 MG ZERO
=9.5/D7 MG POCKET INPOSITION
=9.4/D8 POCKET UP
=9.4/D8 POCKET DOWN
=6.3/E3 MG ROTATRE MOTOR
=9.5/D4 ATC BRAKE
=9.5/D6 ATC ZERO
=9.5/D5 ATC CL/UNCL
=9.6/D5 MG DOOR OPEN
=9.6/D6 MG DOOR CLOSE
=9.6/D2 MG CW BUTTON
=9.6/D3 MG CCW BUTTON
=8.4/B6 EMG STOP BUTTON
=8.4/C6 EMG STOP BUTTON
=6.3/E2 TOOL CHANGE MOTOR CONTROL
POS
Title: ATC CONTROL TERMINAL BLOCK(ARM TYPE)(HB)
Machine VERTICAL & DOUBLE COLUMN SERIES
Drawing NO. EPD-0000059-02
Sheet NO. 1/1
Page NO. 11.7


=8.4/C6 EMG STOP BUTTON
=8.4/B6 EMG STOP BUTTON
=10.6/D5
=10.6/D7
=10.5/D2
=9.6/D2
=9.6/D3
=6.1/B3
U6
EMG STOP SWITCH
MG CW CONTROL
MG CCW CONTROL
MG PIN IN/OUT
MG CW BUTTON
MG CCW BUTTON
HYDRAULIC PUMP
=9.5/D2
=9.7/D6
=9.6/D7
=9.5/D4
=11.9/E8
MG COUNTER (POCKET INPOSITION)
HYDRAULIC MOTOR O.L
MG PIN IN/OUT SENSOR
PHOTO SWITCH (TOOL DELECT)
DOOR SAFE SWITCH 2
POS
Title: ATC CONTROL TERMINAL BLOCK(CHAIN TYPE)(HB)
Machine VERTICAL & DOUBLE COLUMN SERIES
Drawing NO. EPD-0000059-02
Sheet NO. 1/1
Page NO. 11.8



POS

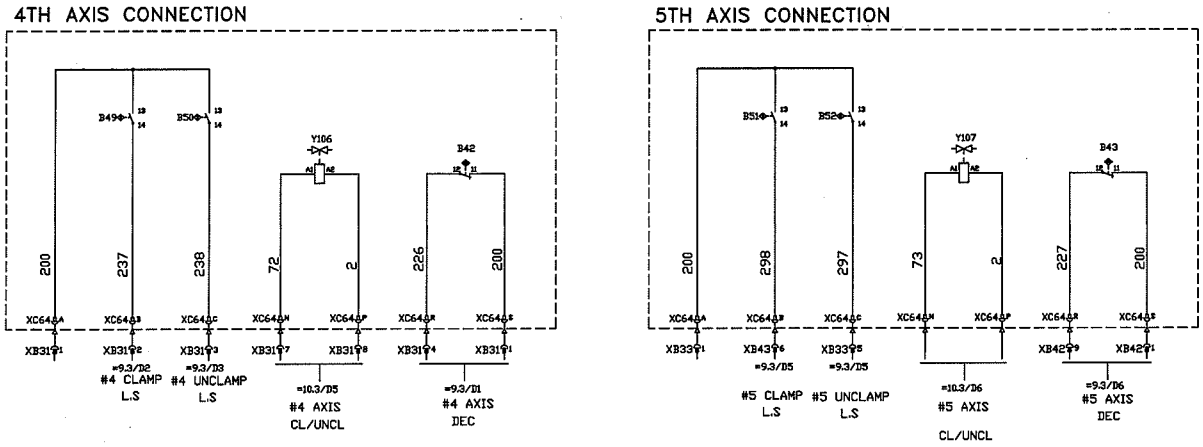
Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: ATC CONTROL TERMINAL BLOCK(ARMLESS TYPE)(HB)

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/1

Page NO.: 11.9



POS

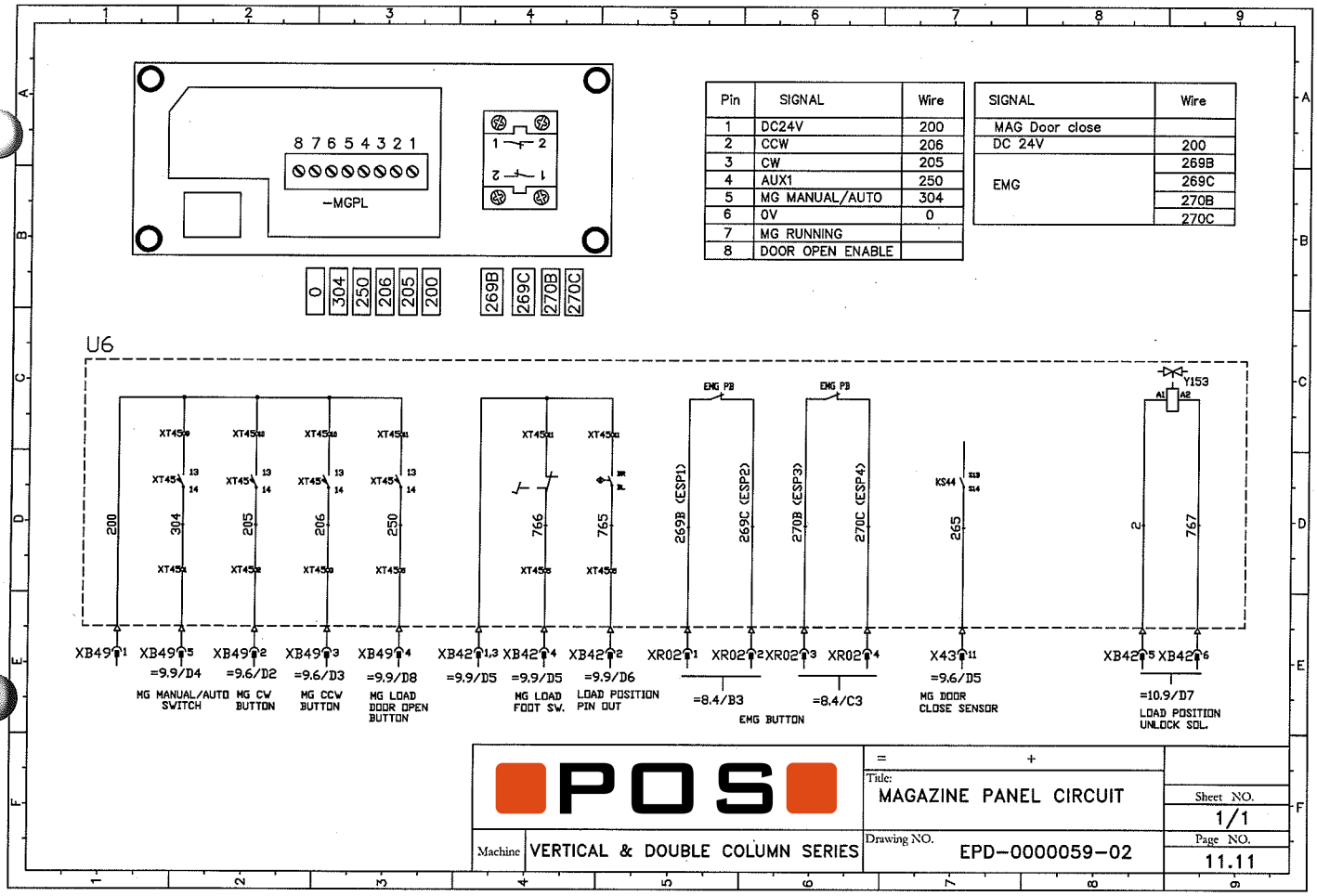
Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: 4TH 5TH AXIS CONNECTION

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/1

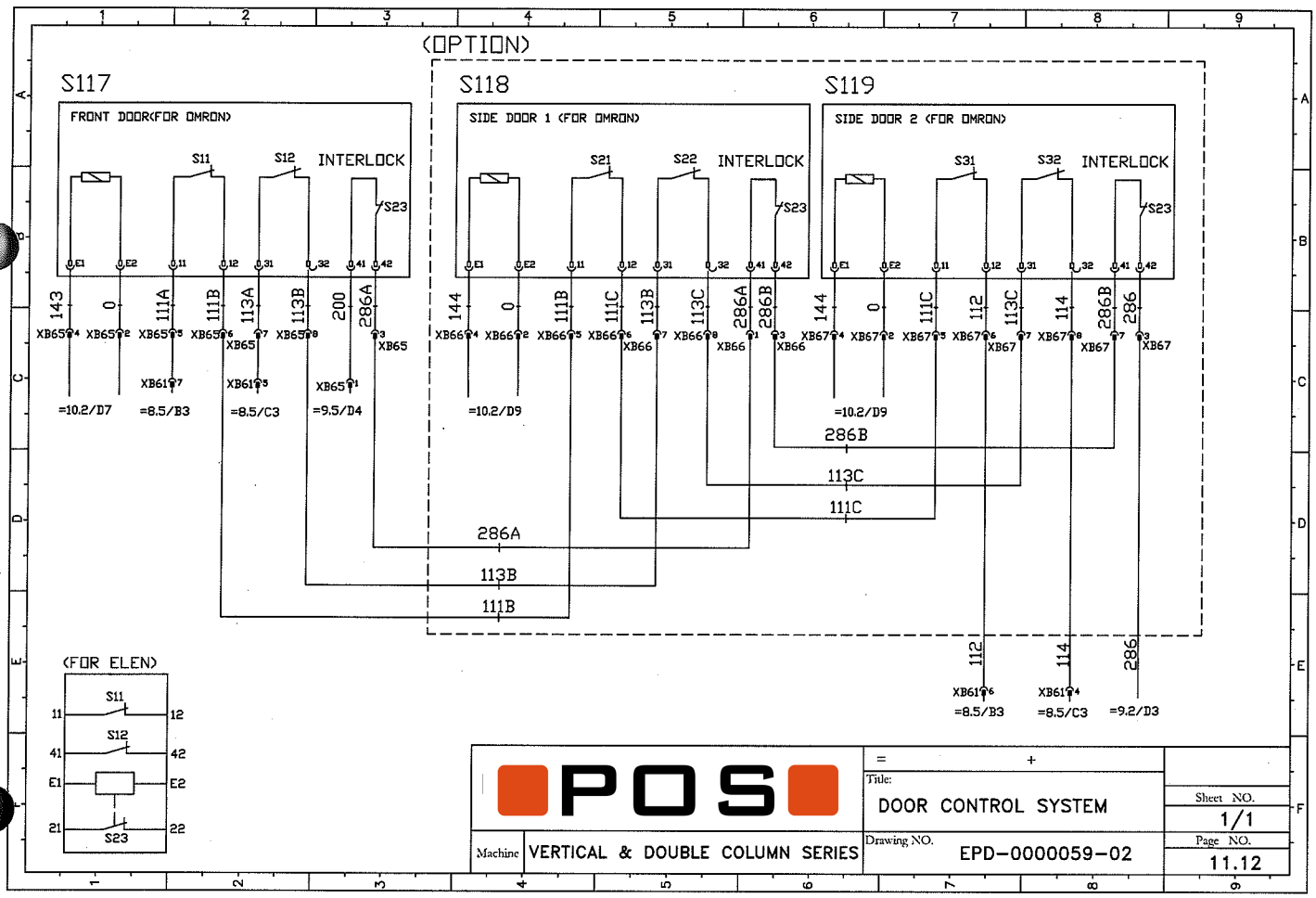
Page NO.: 11.10



Pin	SIGNAL	Wire
1	DC24V	200
2	CCW	206
3	CW	205
4	AUX1	250
5	MG MANUAL/AUTO	304
6	0V	0
7	MG RUNNING	
8	DOOR OPEN ENABLE	

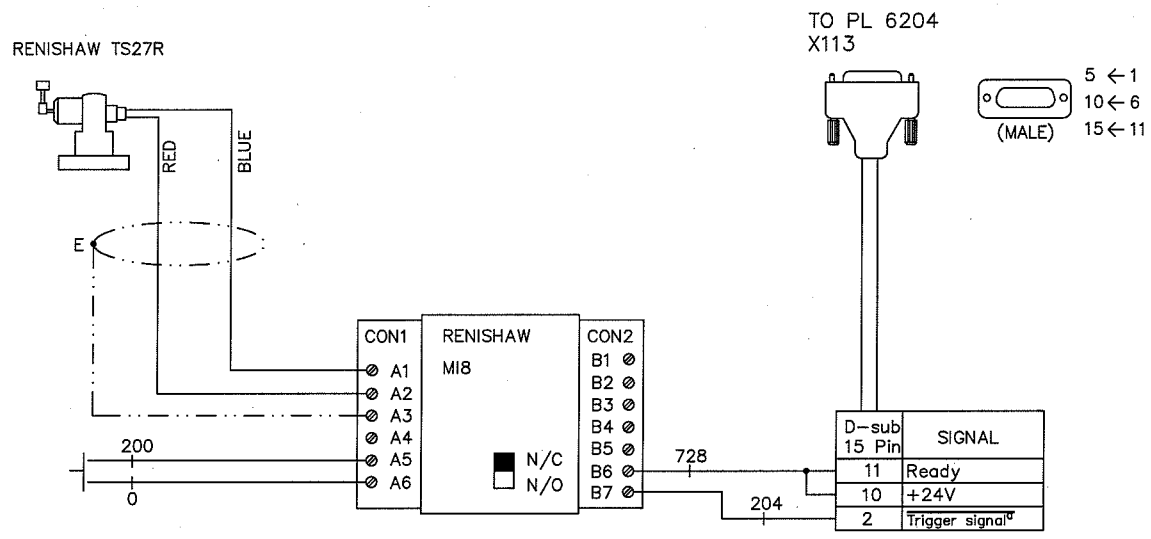
SIGNAL	Wire
MAG Door close	
DC 24V	200
EMG	269B
	269C
	270B
	270C

POS	= +	Title: MAGAZINE PANEL CIRCUIT	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES		Drawing NO. EPD-0000059-02	Page NO. 11.11



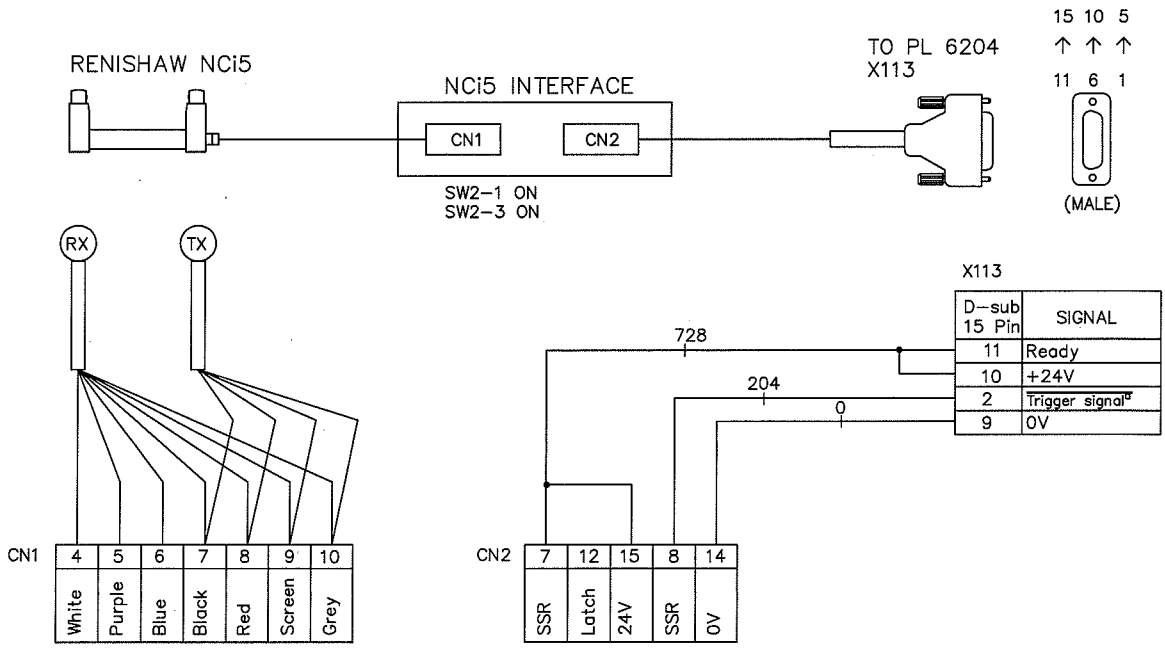
POS	= +	Title: DOOR CONTROL SYSTEM	Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES		Drawing NO. EPD-0000059-02	Page NO. 11.12

X113 RENISHAW TS27R CIRCUIT



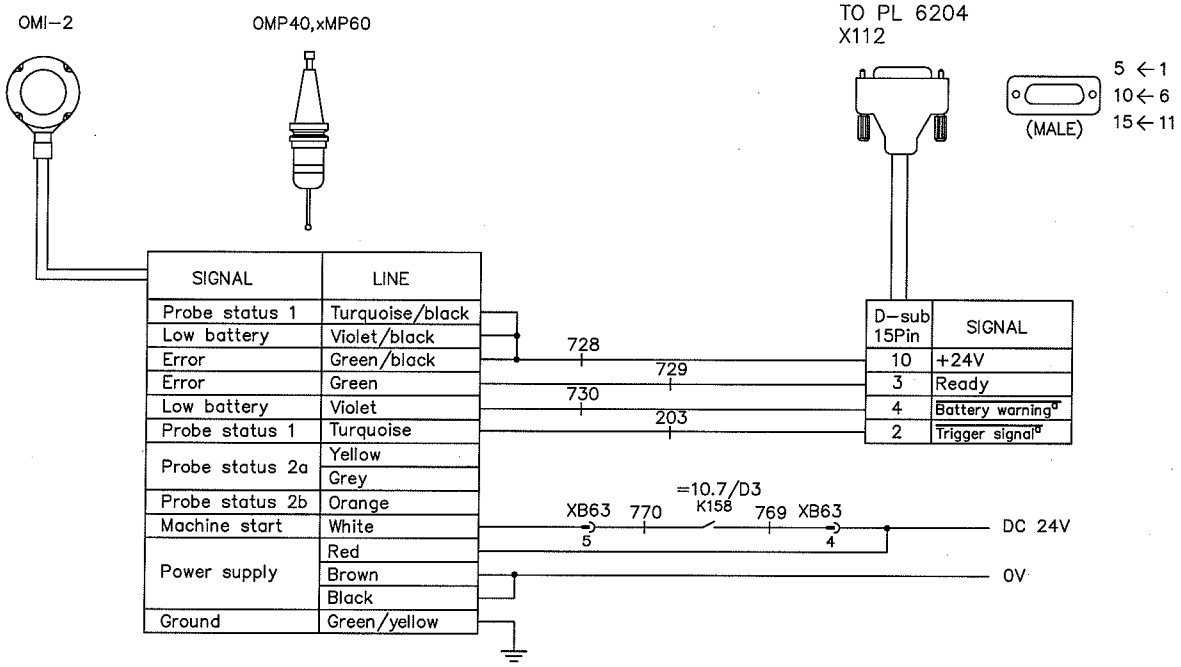
POS	= + Title: X113 RENISHAW TS27R CIRCUIT		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 12.1

X113 RENISHAW NCi5 CIRCUIT



POS	= + Title: X113 RENISHAW NCi5 CIRCUIT		Sheet NO. 1/1
Machine: VERTICAL & DOUBLE COLUMN SERIES	Drawing NO. EPD-0000059-02		Page NO. 12.2

X112 RENISHAW OMP40,xMP60 CIRCUIT



SIGNAL	LINE
Probe status 1	Turquoise/black
Low battery	Violet/black
Error	Green/black
Error	Green
Low battery	Violet
Probe status 1	Turquoise
Probe status 2a	Yellow
	Grey
Probe status 2b	Orange
Machine start	White
Power supply	Red
	Brown
	Black
Ground	Green/yellow

D-sub 15Pin	SIGNAL
10	+24V
3	Ready
4	Battery warning
2	Trigger signal

POS

Machine: VERTICAL & DOUBLE COLUMN SERIES

Title: X112 RENISHAW OMP40 xMP60 CIRCUIT

Drawing NO.: EPD-0000059-02

Sheet NO.: 1/1

Page NO.: 12.3