Fadal ENGINEERING

For Machinists. By Machinists.

Phone.
Fax
E-mail

| | |
|---|---|
| Customer | |
| Street | |
| ZIP code / City | |
| Phone | |
| Fax | |
| E-mail | |

| | |
|---|---|
| End customer | |
| Street | |
| ZIP code / City | |
| Phone | |
| Fax | |
| E-mail | |

| | |
|---|---|
| Project name | Fadal 64MP VMC- |
| Job number | |
| Project description | |
| Commission | |
| Responsible for project | |
| Created on | |
| Project end | |
| Edit date | 2019-07-09 |
| by (short name) | |
| Number of pages | 66 |

| | |
|---|---|
| Place of installation | |
| Manufacturer (company) | Fadal |
| Make | |
| Part feature | |
| Input lead | |
| power supply | |
| Control voltage | DC 24 V |
| Type | |
| Environmental consideration | None |
| Regulation | Werksnorm 07-3B |
| Degree of protection | IP 4x |
| Enclosures | |

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| D4 | MACHINE INPUT CIRCUIT (I152-I159) | | 2018-07-18 | USER | |
| D5 | MACHINE INPUT CIRCUIT (I160-I167) | | 2018-07-18 | USER | |
| D6 | MACHINE INPUT CIRCUIT (I168-I175) | | 2018-07-18 | USER | |
| E1 | MACHINE OUTPUT CIRCUIT (O128-O135) | | 2018-07-18 | USER | |
| E2 | MACHINE OUTPUT CIRCUIT (O136-O143) | | 2018-07-18 | USER | |
| E3 | MACHINE OUTPUT CIRCUIT (O144-O151) | | 2019-07-09 | USER | |
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| F1 | HK CONNECTOR OPERATION PANEL INPUT CIRCUIT (I64-I99) | | 2018-07-18 | USER | |
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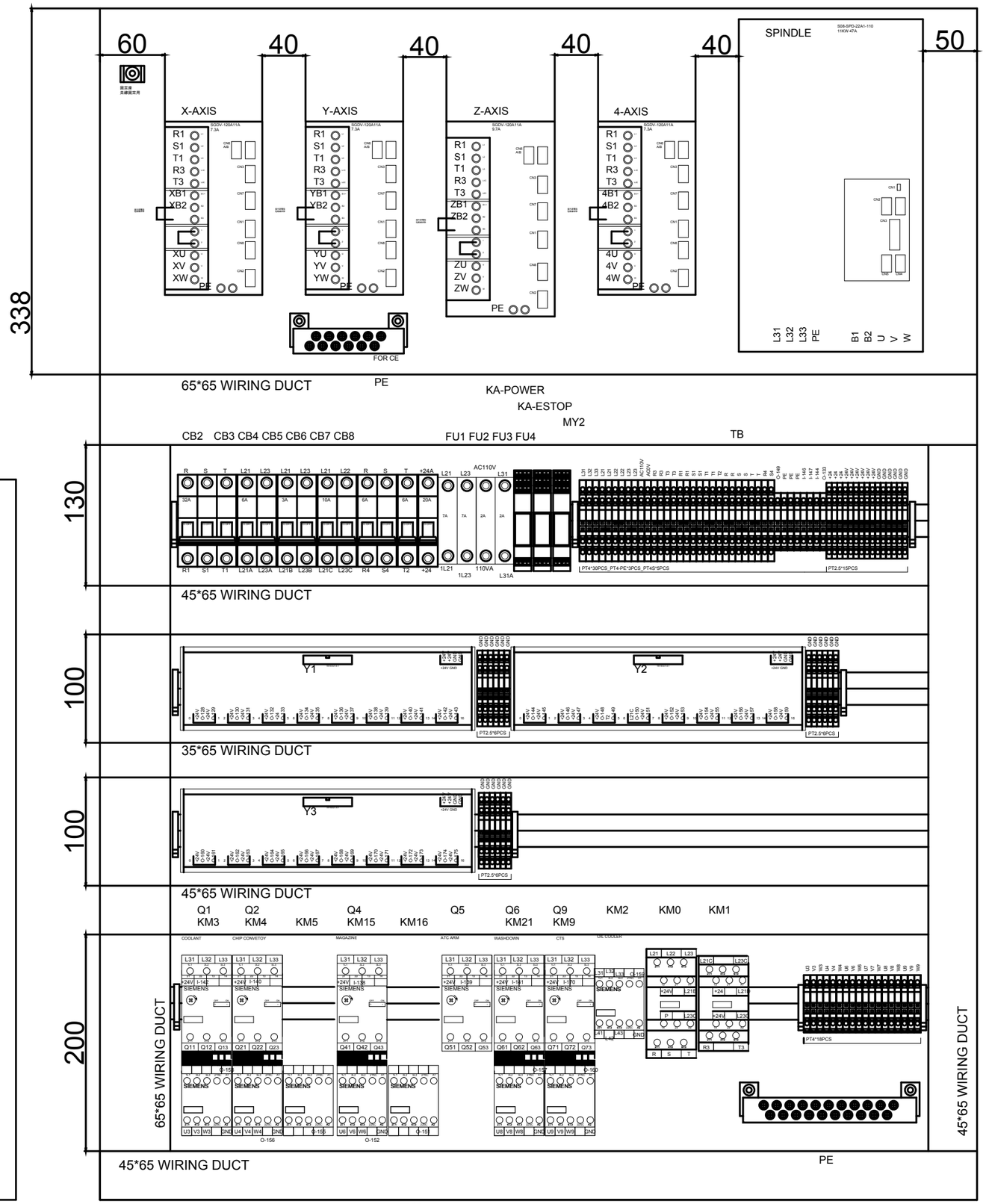
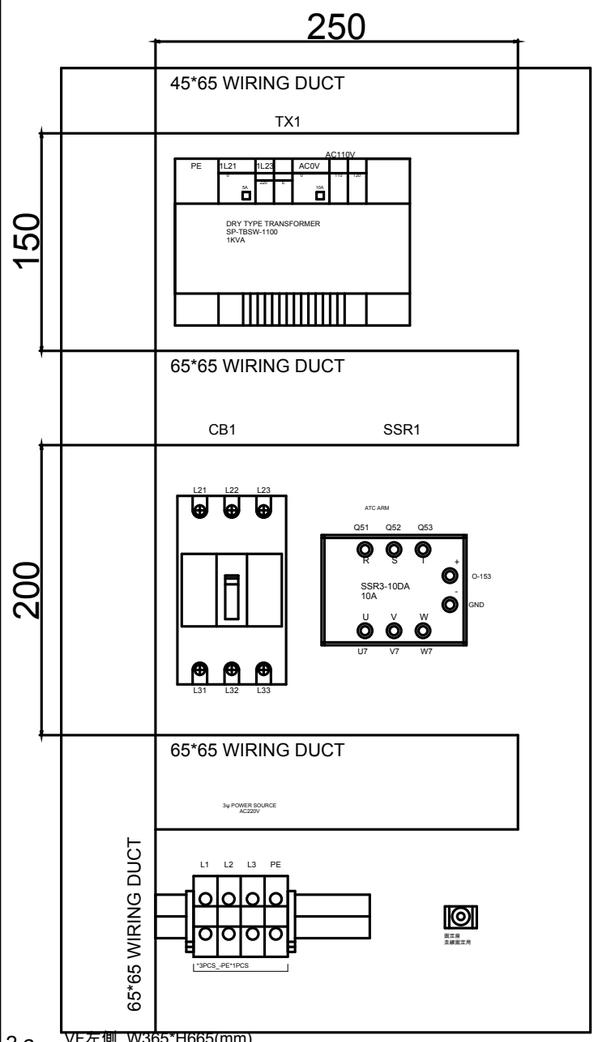
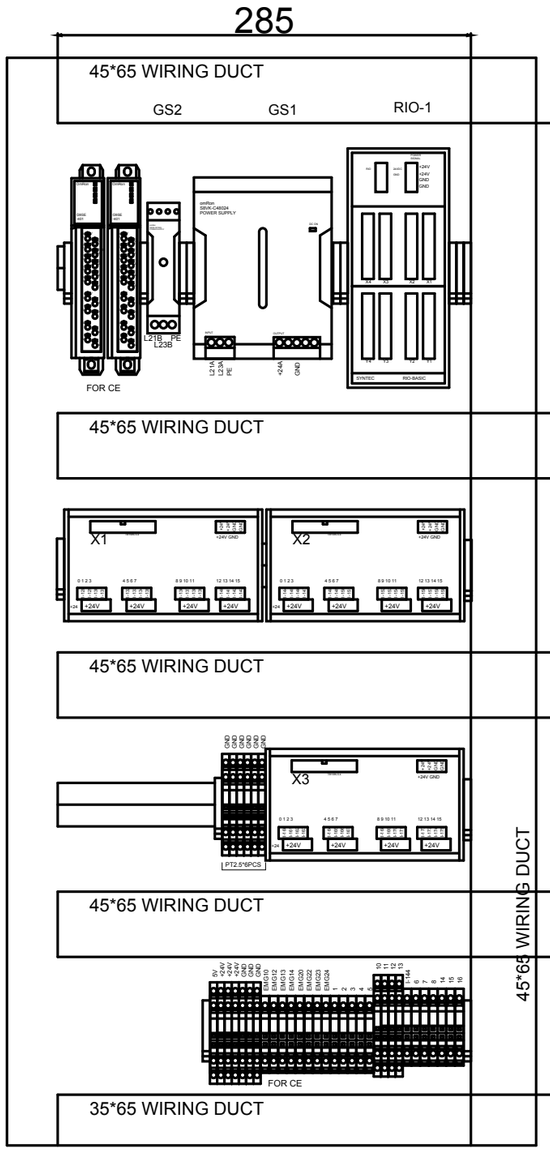
| I9 | APC MACHINE OUTPUT CIRCUIT (O184-O191) | | 2018-08-02 | USER | |

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|

# VMC2015




2.a VF左側_W365*H665(mm)

VF電盤_W810*H1100(mm)

VF右側_W365*H665(MM)

A0b

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-07-09 | | | VMC2015 CONFIGURATION | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page A0a |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 4 / 66 |

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|

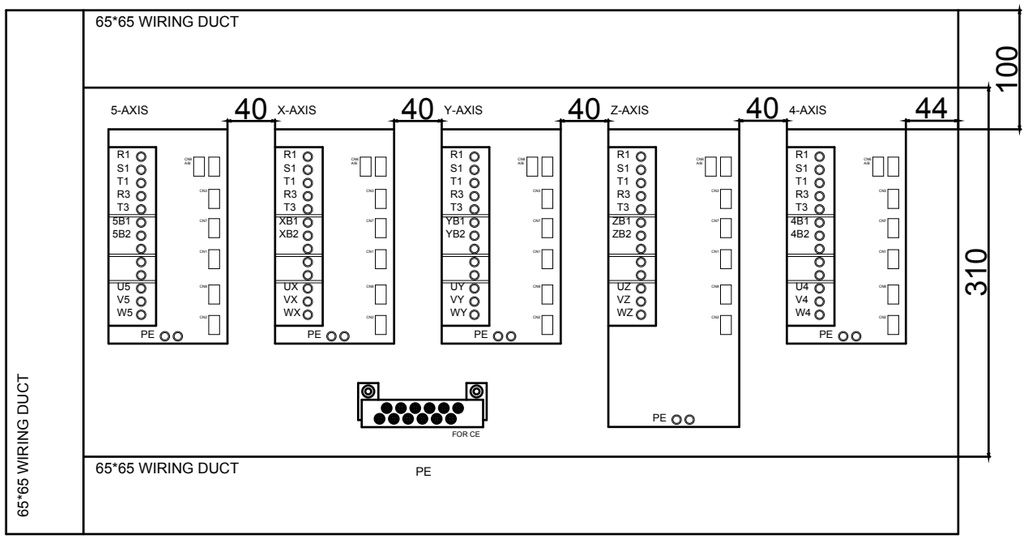
VMC4020

VMC3220

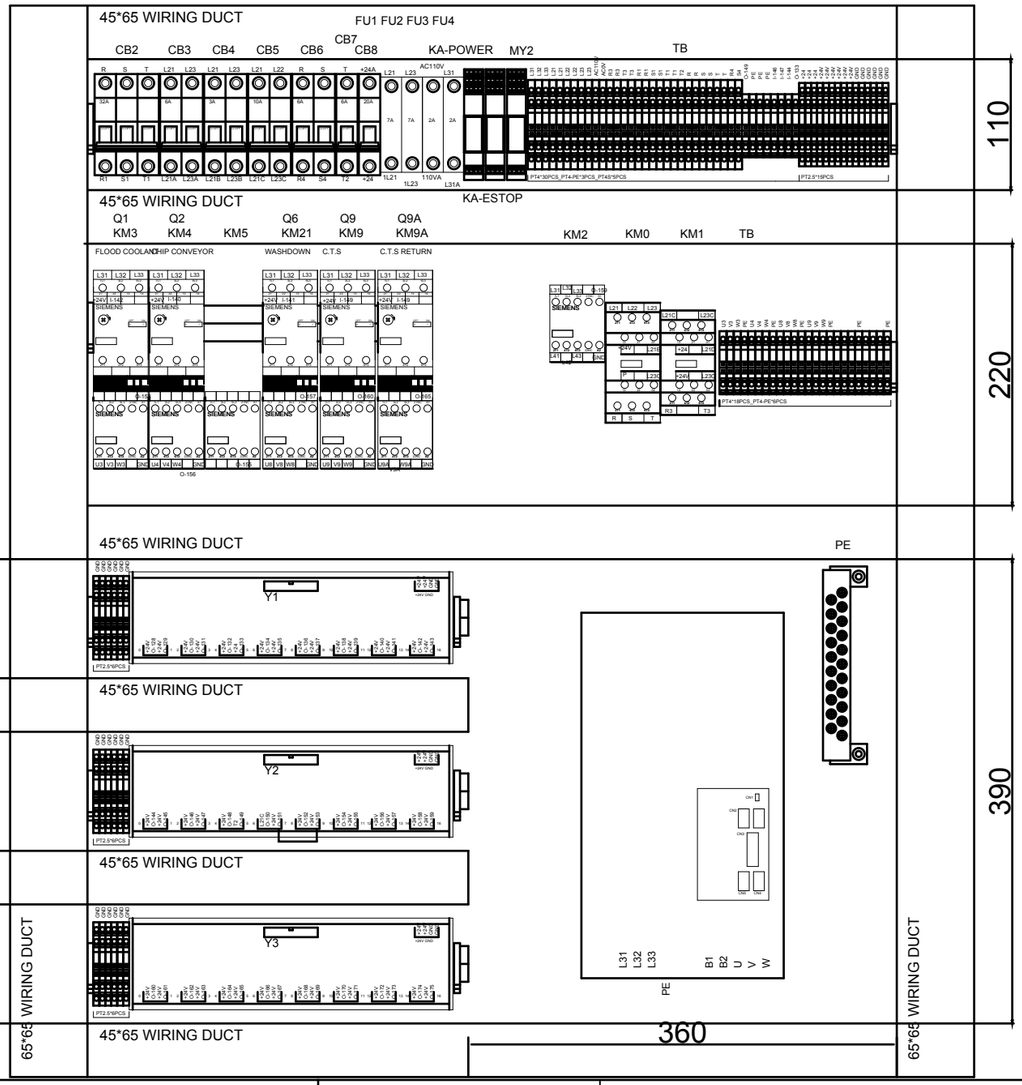
VMC2520

440mm*600mm

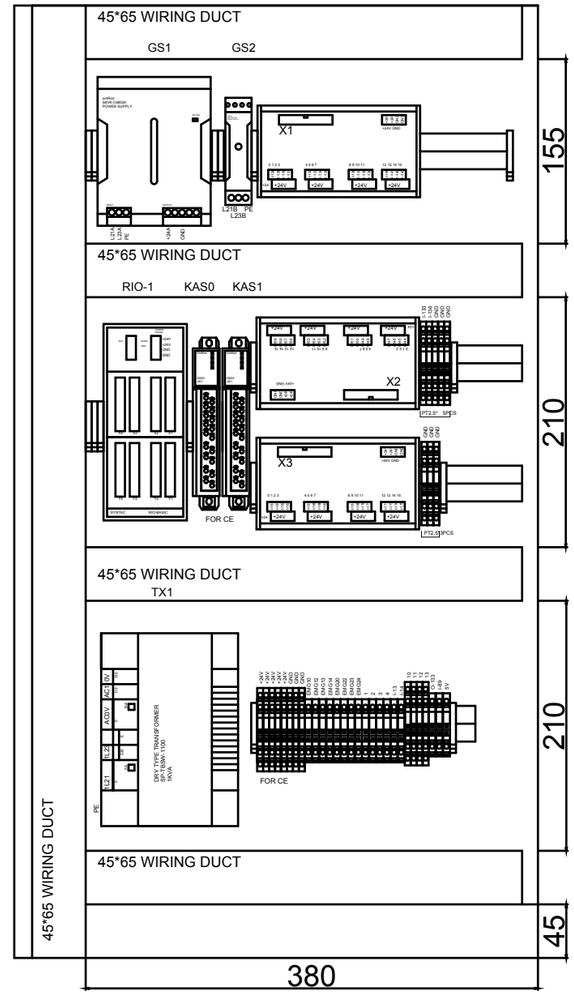
800mm*440mm




810mm*900mm




440mm*800mm




A0a

A0c

| | | | | | | | |
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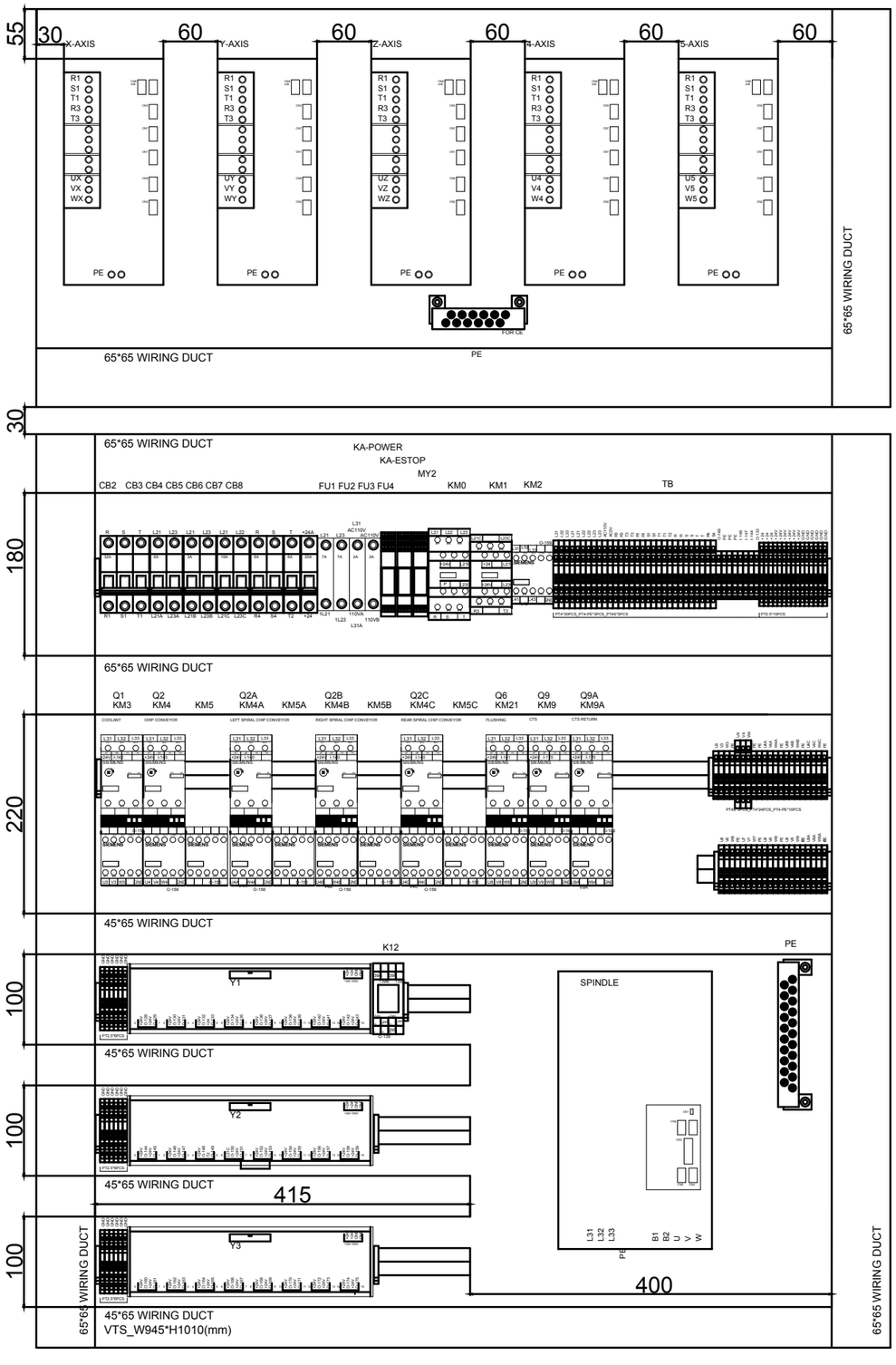
| | | | Date | 2018-01-11 | | VMC4020&3220&2520 CONFIGURATION | = |
| | | | Ed. | USER | | | + |
| | | | Appr | | | | Page A0b |
| Modification | Date | Name | Original | | Replacement of | Replaced by | Page 5 / 66 |

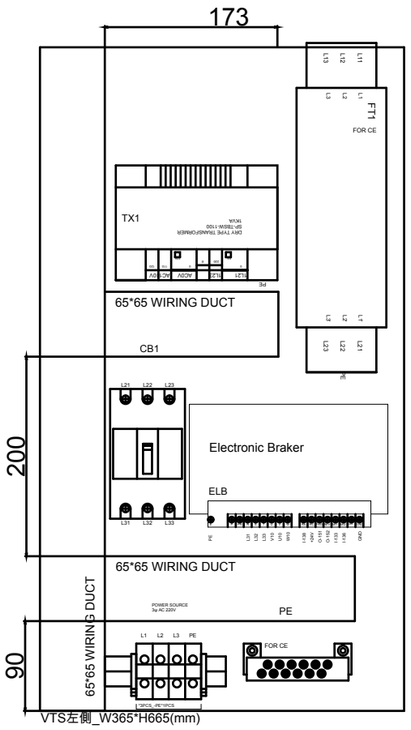
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|

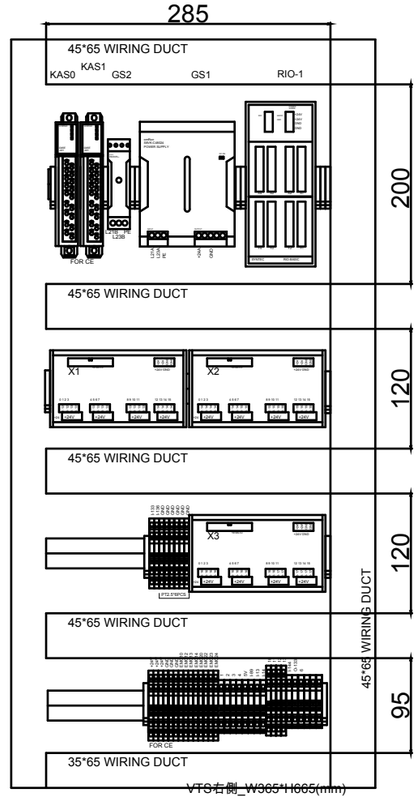
# VTS8030

2018.01.11_電氣箱擺放型式變更
apm擺放位置走線變更




# VTS6030




A0b

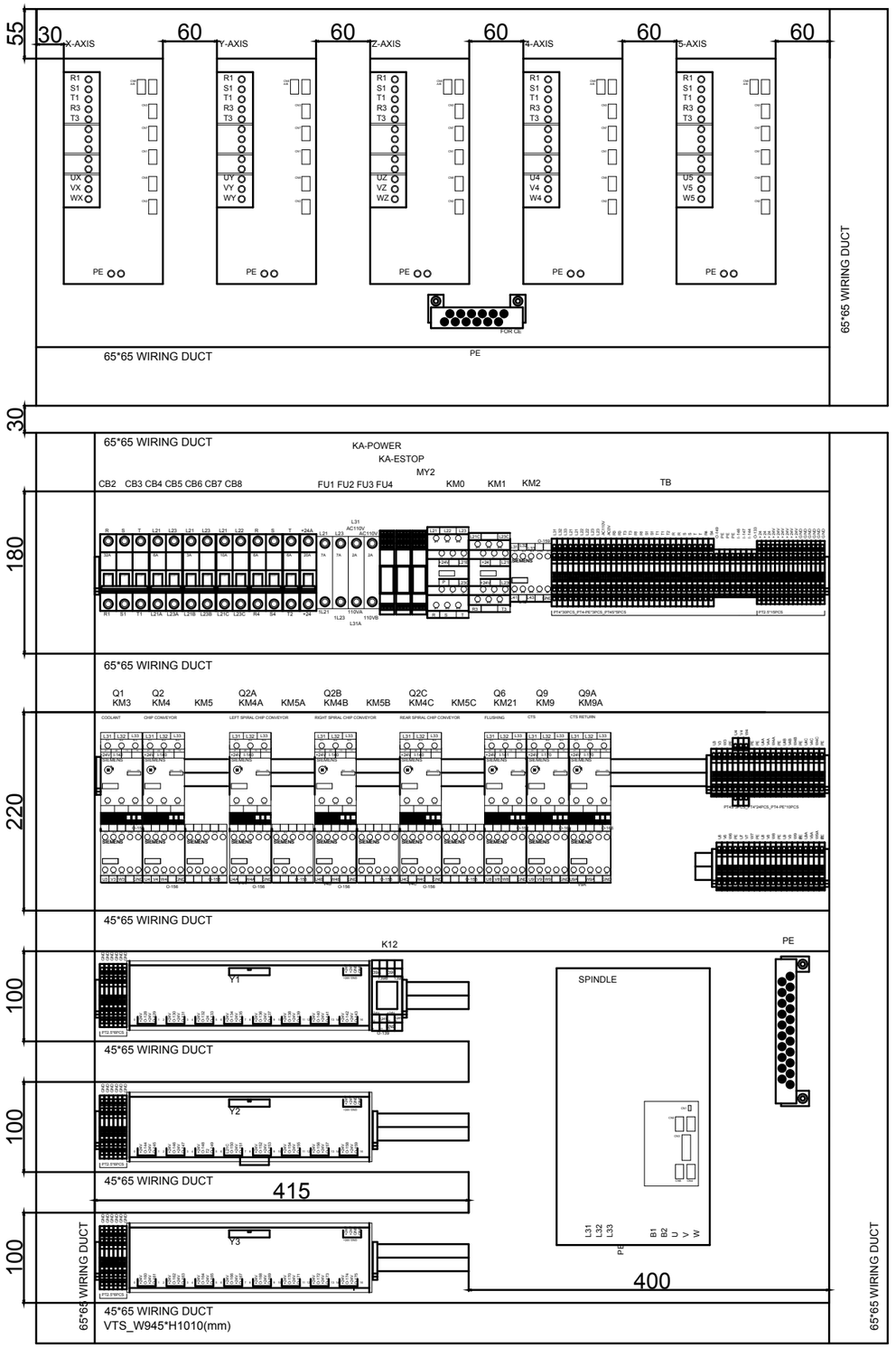
A0d

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-01-11 | | | VTS6030&8030 CONFIGURATION | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page A0c |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 6 / 66 |

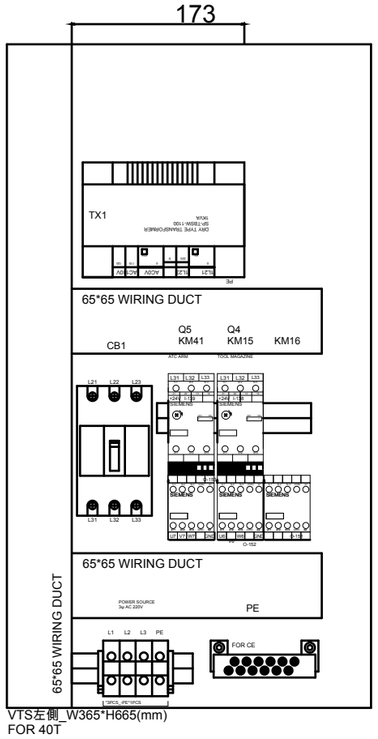
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|

## VTS8030

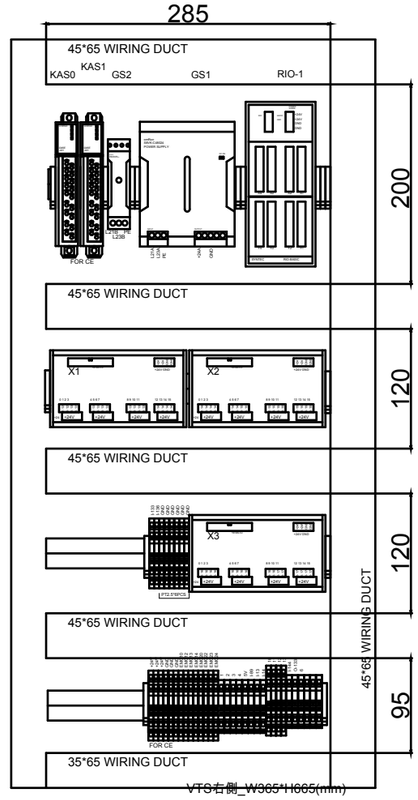
2018.01.11_電氣箱擺放型式變更
apm擺放位置走線變更




## VTS6030




VTS左側_W365*H665(mm)
FOR 40T

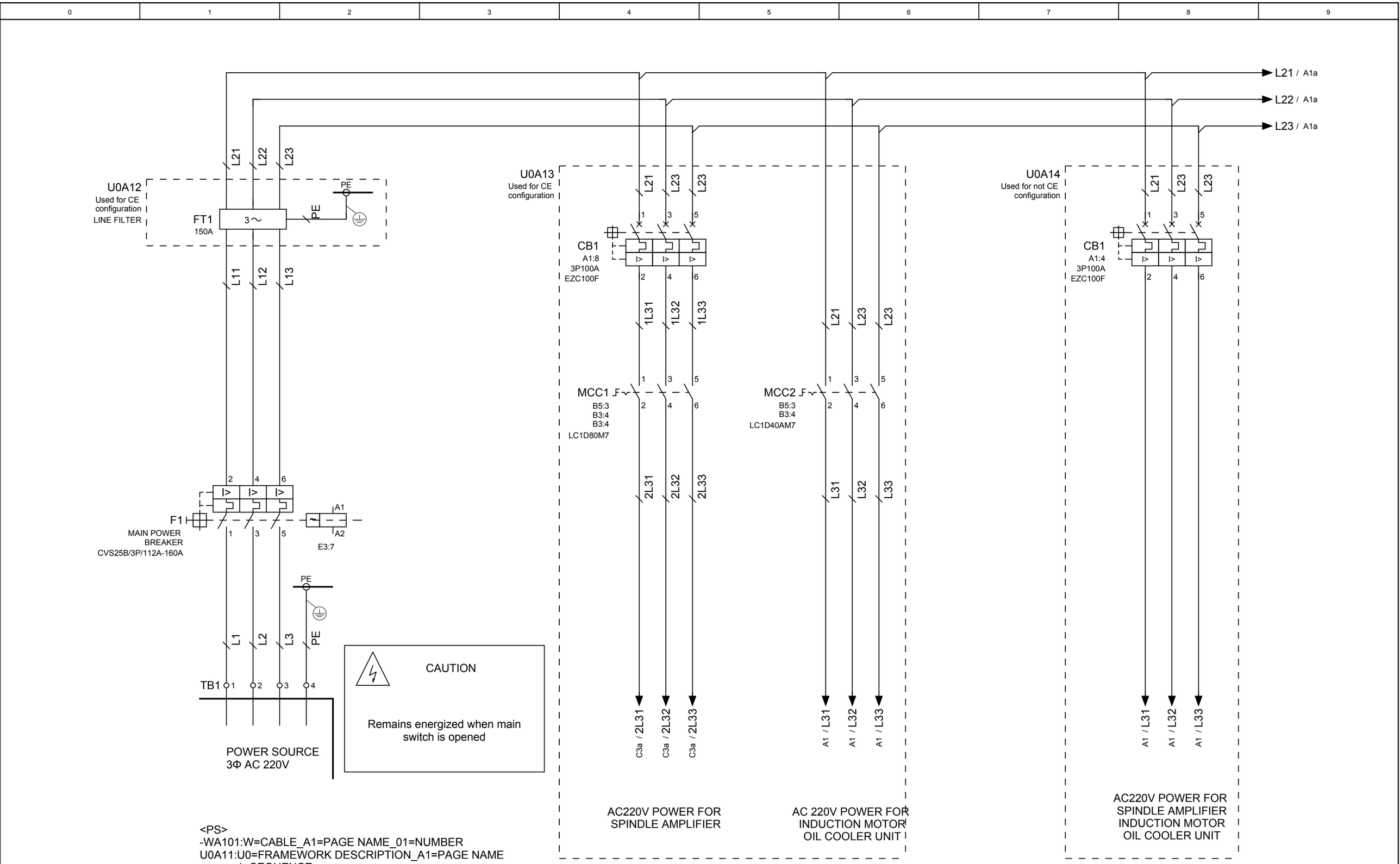



VTS右側_W365*H665(mm)

A0c

A1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-01-11 | | VTS6030&8030 CONFIGURATION-1 | = | |
| | | | Ed. | USER | | | + | |
| | | | Appr | | | | Page | A0d |
| Modification | Date | Name | Original | | Replacement of | Replaced by | Page | 7 / 66 |

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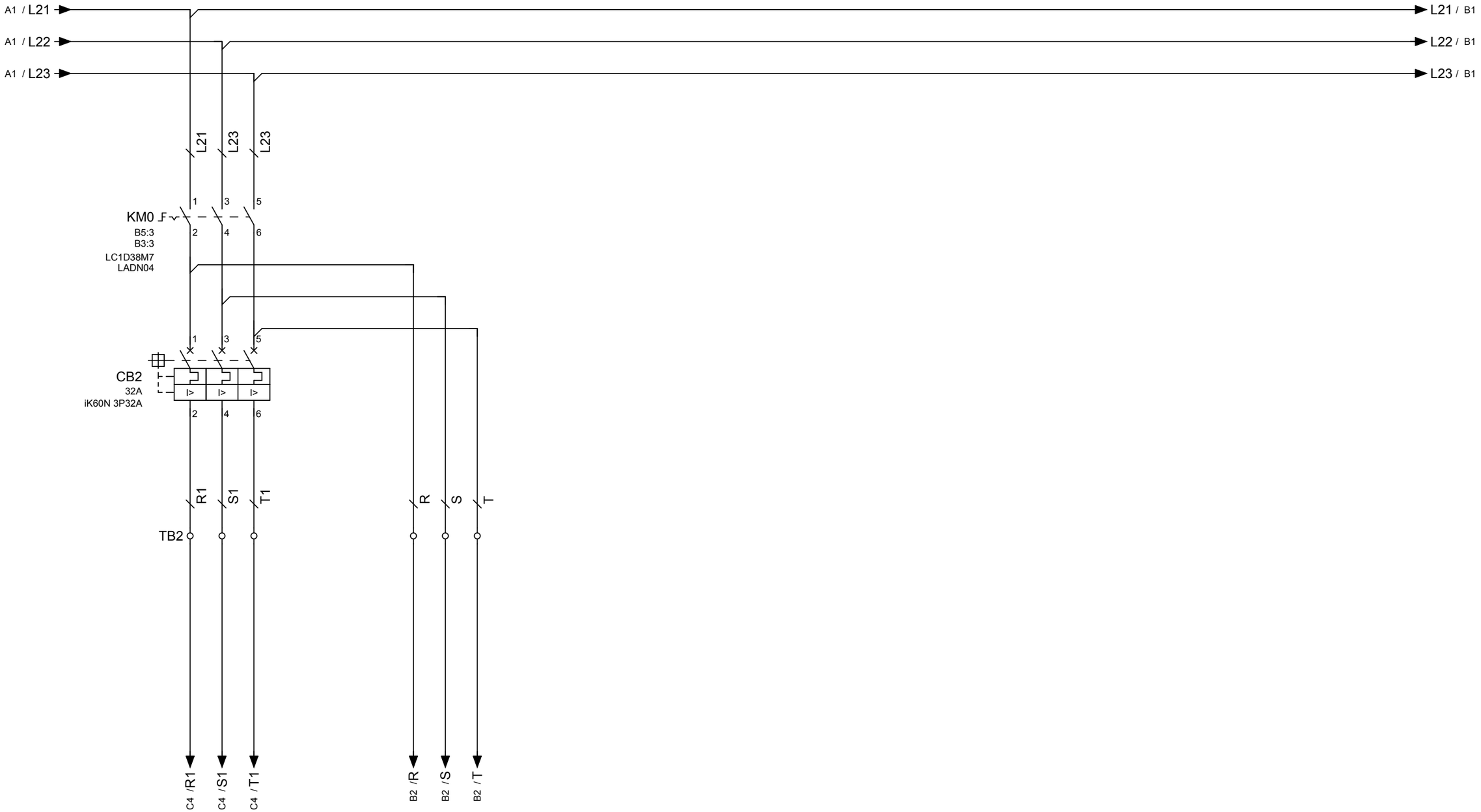
C0A141:C0=CONNECTOR_A1=PAGE NAME_4=NUMBER OF PINS_1=SEQUENCE
S0D11:S0=SENSOR_D1=PAGE NAME_ 1=SEQUENCE

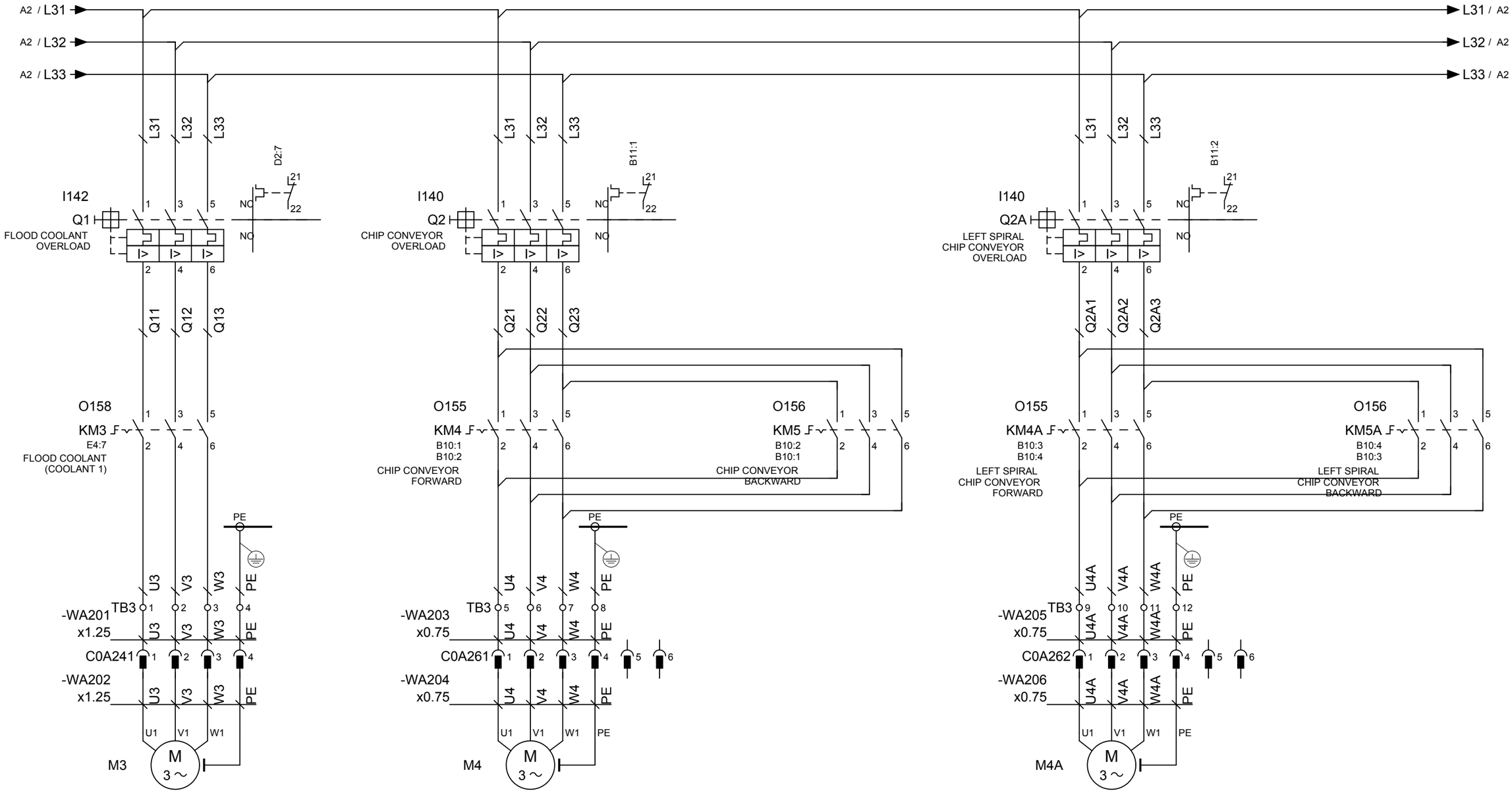
A0d A1a

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-07-09 | | | MOTOR POWER CIRCUIT | | = |
| | | | Ed. | USER | | | | | + |
| | | | Appr | | | | | | Page A1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | | Page 8 / 66 |




A1 A2

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MOTOR POWER CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page A1a |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 9 / 66 |




AC220V 3φ
FLOOD COOLANT
MOTOR
(COOLANT 1)

VTS=1290W 6.5A
VMC=750W 3.7A
VMC2015=750W 3.7A

AC220V 3φ
CHIP CONVEYOR
MOTOR

VTS=200W 1.01A
VMC=200W 1.01A
VMC2015=200W 1.01A

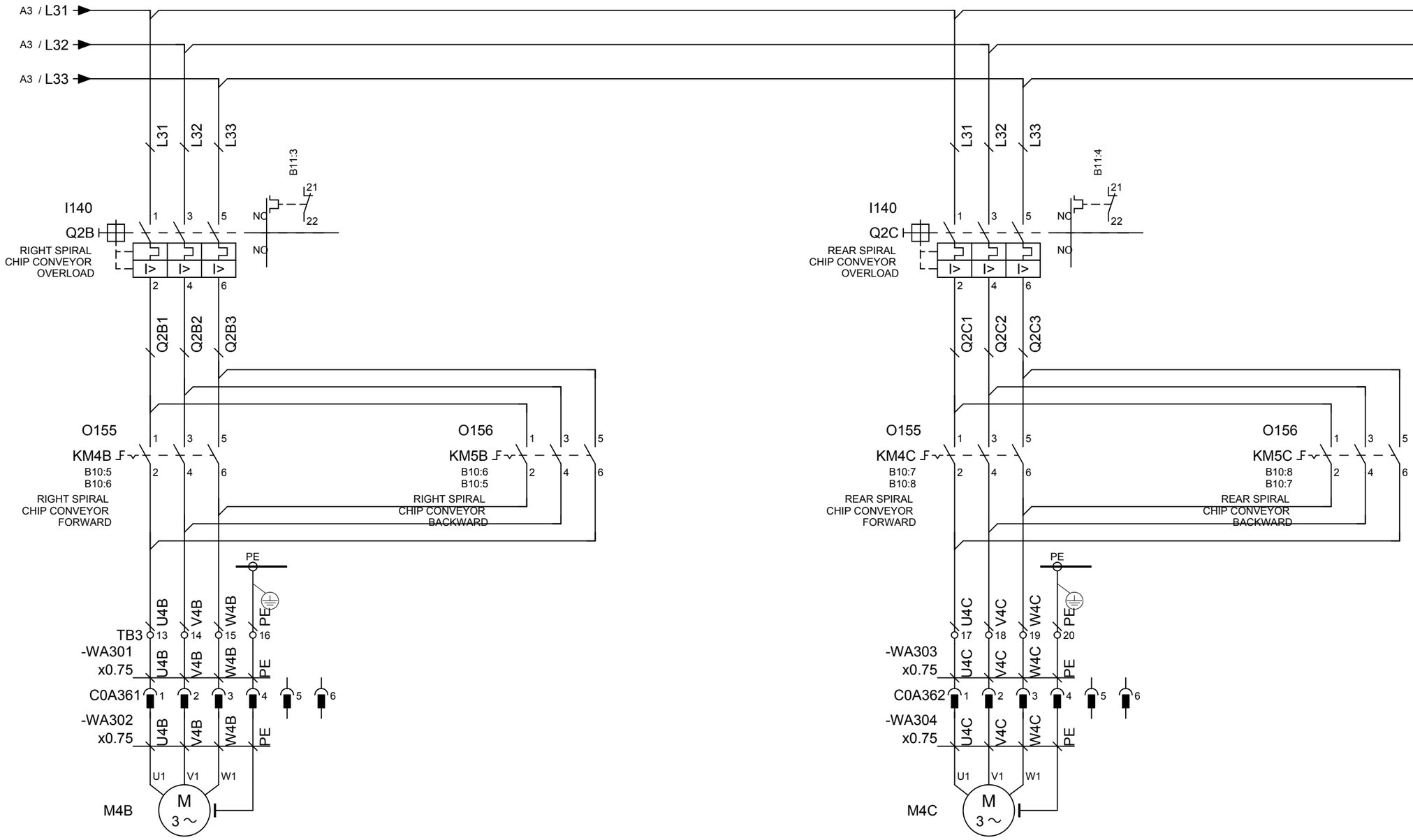
AC220V 3φ
LEFT SPIRAL
CHIP CONVEYOR
MOTOR

VTS=200W 1.01A

A1a

A3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-01-10 | | | MOTOR POWER CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page A2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 10 / 66 |




AC220V 3φ
RIGHT SPIRAL
CHIP CONVEYOR
MOTOR

VTS=200W 1.01A

AC220V 3φ
REAR SPIRAL
CHIP CONVEYOR
MOTOR

VTS=200W 1.01A

A2

A4

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | Date | 2018-01-10 | | |
| | | | Ed. | USER | | |
| | | | Appr | | | |
| Modification | Date | Name | Original | | Replacement of | Replaced by |

MOTOR POWER CIRCUIT

=
+

Page A3
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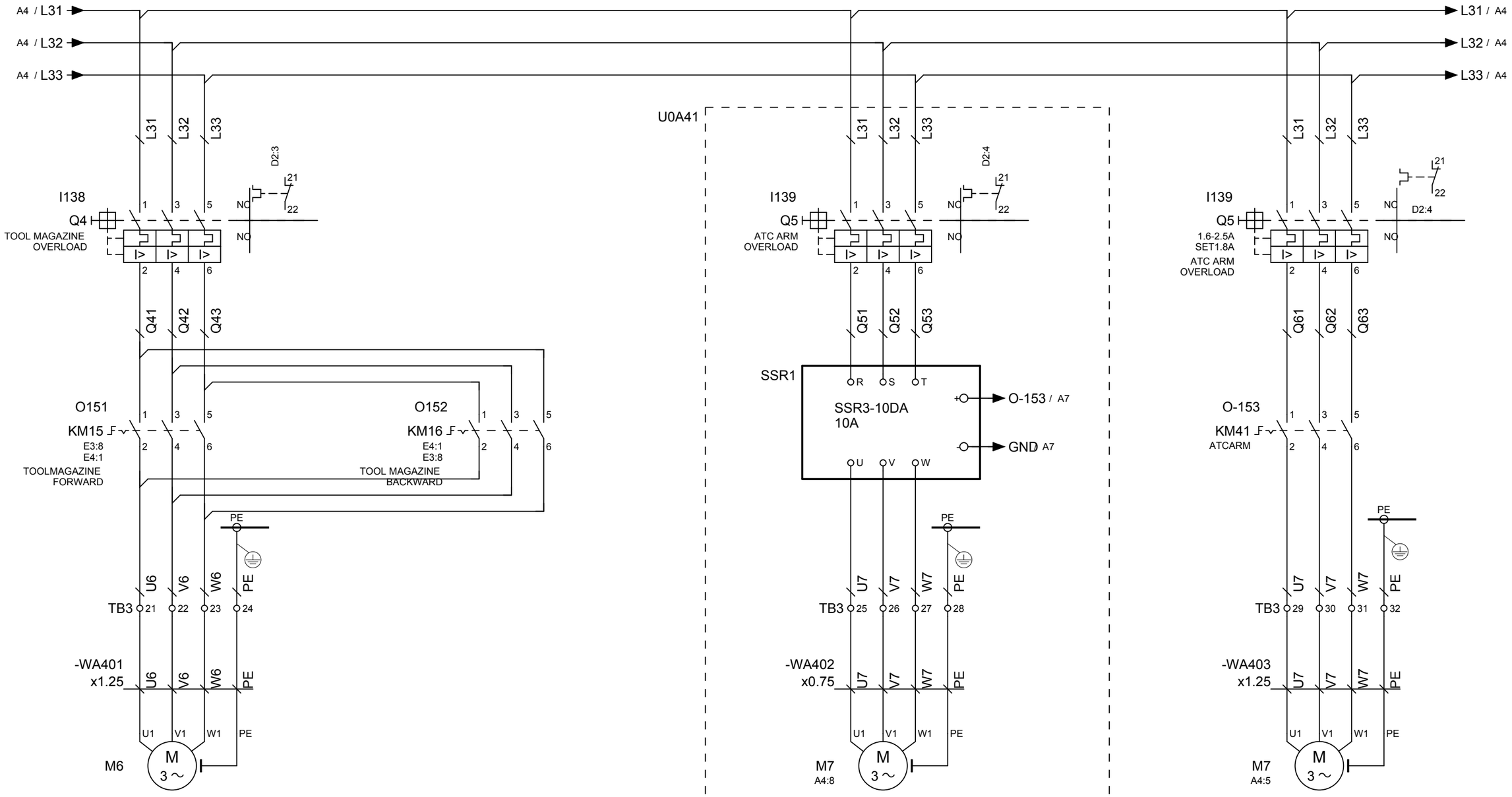



AC220V 3φ
TOOL MAGAZINE
MOTOR

VTS= #BT50
VMC2015=180W 0.909A #BT30

AC220V 3φ
ATC ARM
MOTOR

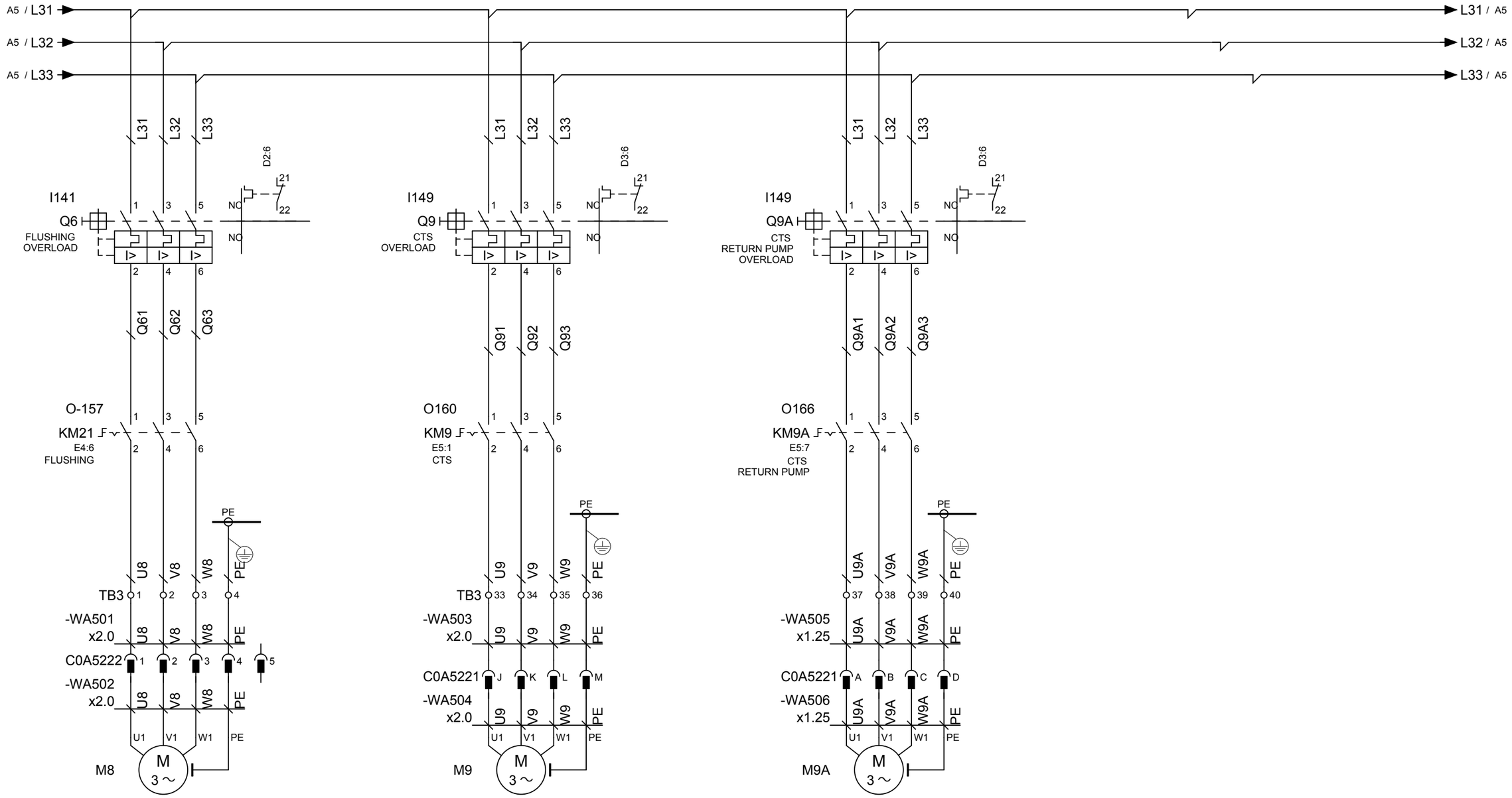
UOA41 FOR VMC2015 VMC2015=300W 1.515A

AC220V 3Φ
ATC ARM
MOTOR

VTS= W A #BT50

A3 A5

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-07-09 | | | MOTOR POWER CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page A4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 12 / 66 |




AC220V 3φ
WASHDOWN
MOTOR

VTS=2530W 12.778A
VMC=1290W 6.515A
VMC2015=1290W 6.515A

AC220V 3Φ
COOLANT-THRU-SPINDLE
PUMP

VTS=1500W 7.576A

AC220V 3Φ
COOLANT-THRU-SPINDLE
RETURN PUMP

VTS=750W 3.788A

A4 A6

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MOTOR POWER CIRCUIT | = | |
| | | | Ed. | USER | | | | + | |
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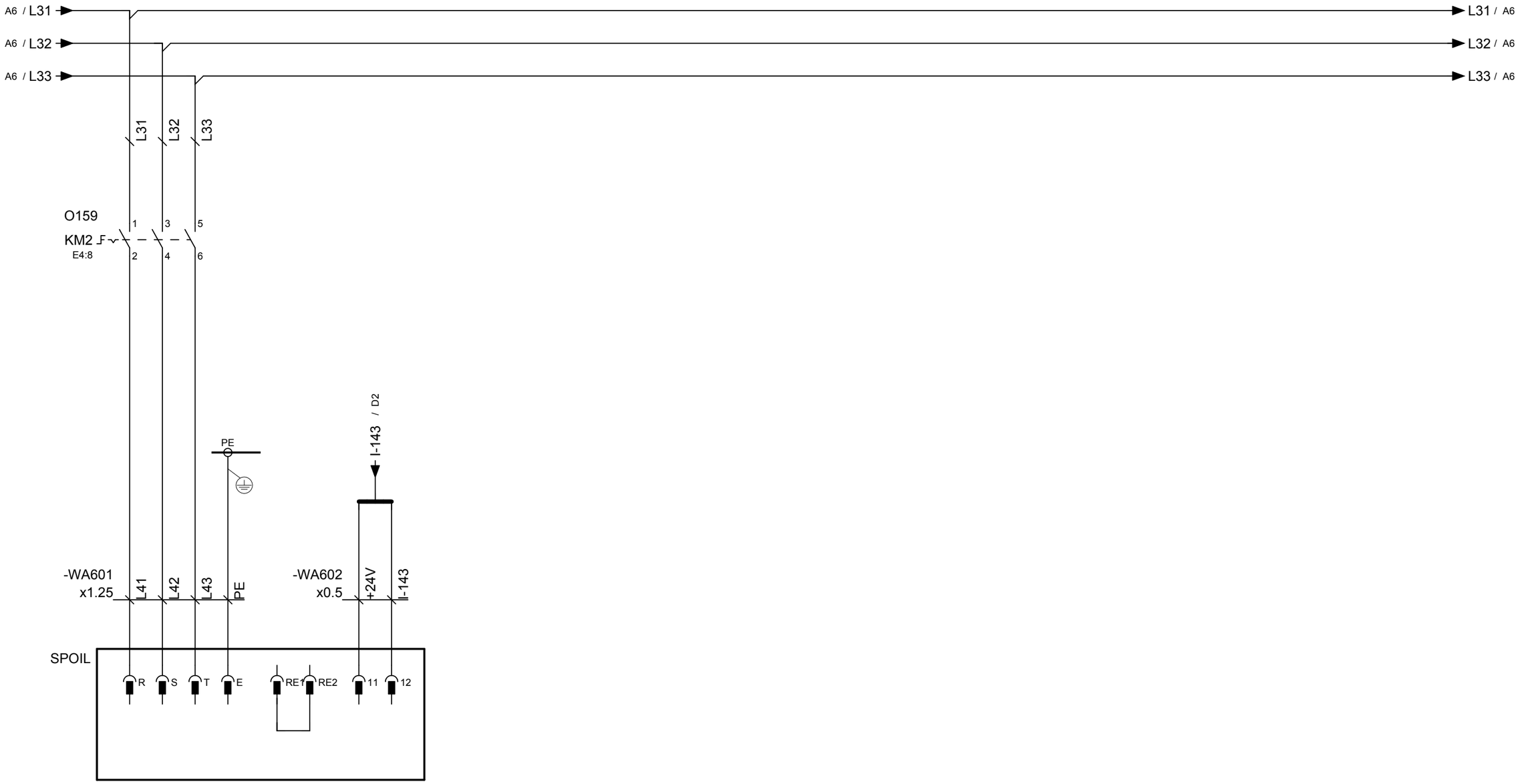
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 13 / 66 |




AC220V 3φ
SPINDLE OIL COOLER UNIT

A5 A7

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MOTOR POWER CIRCUIT | = |
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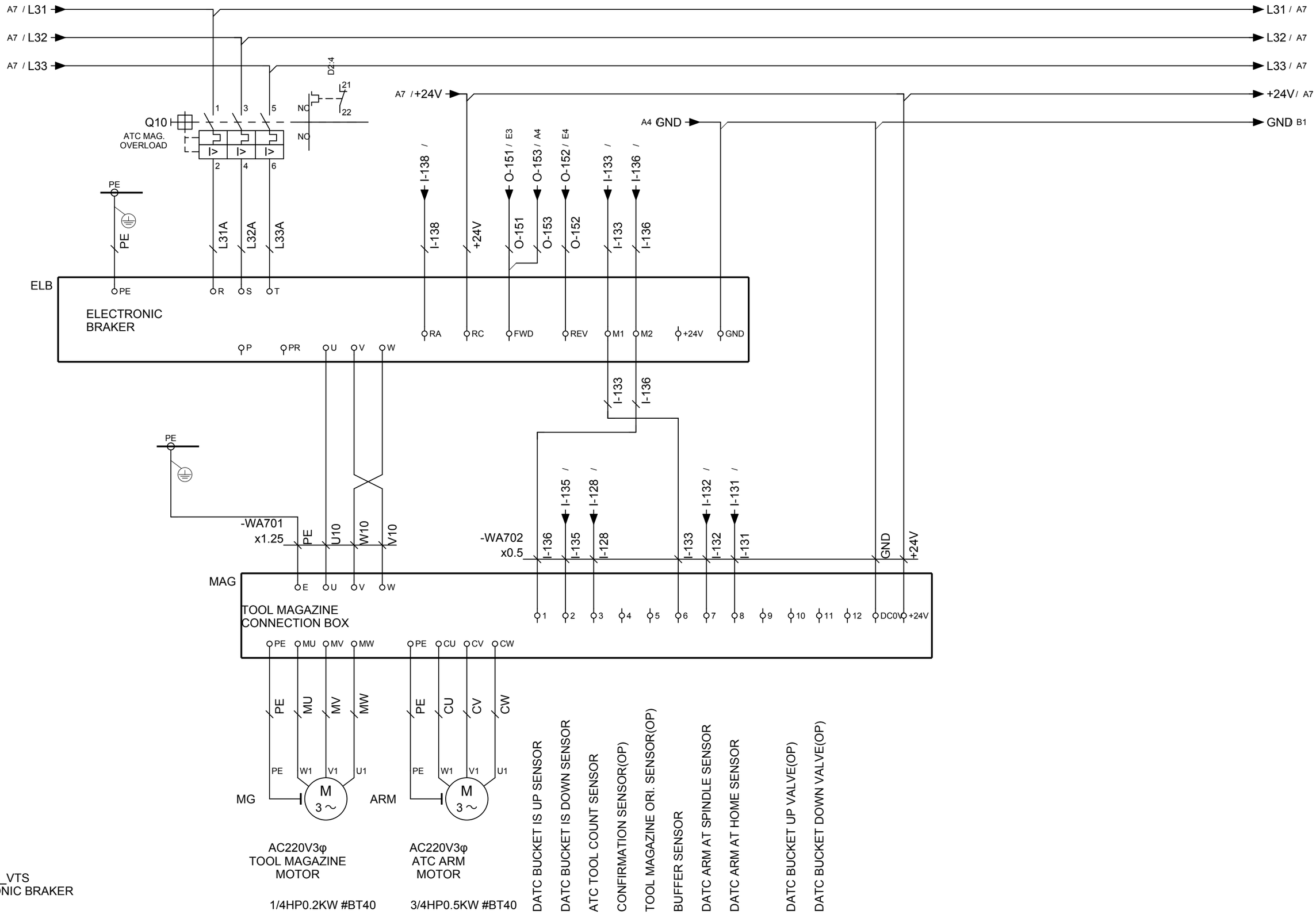
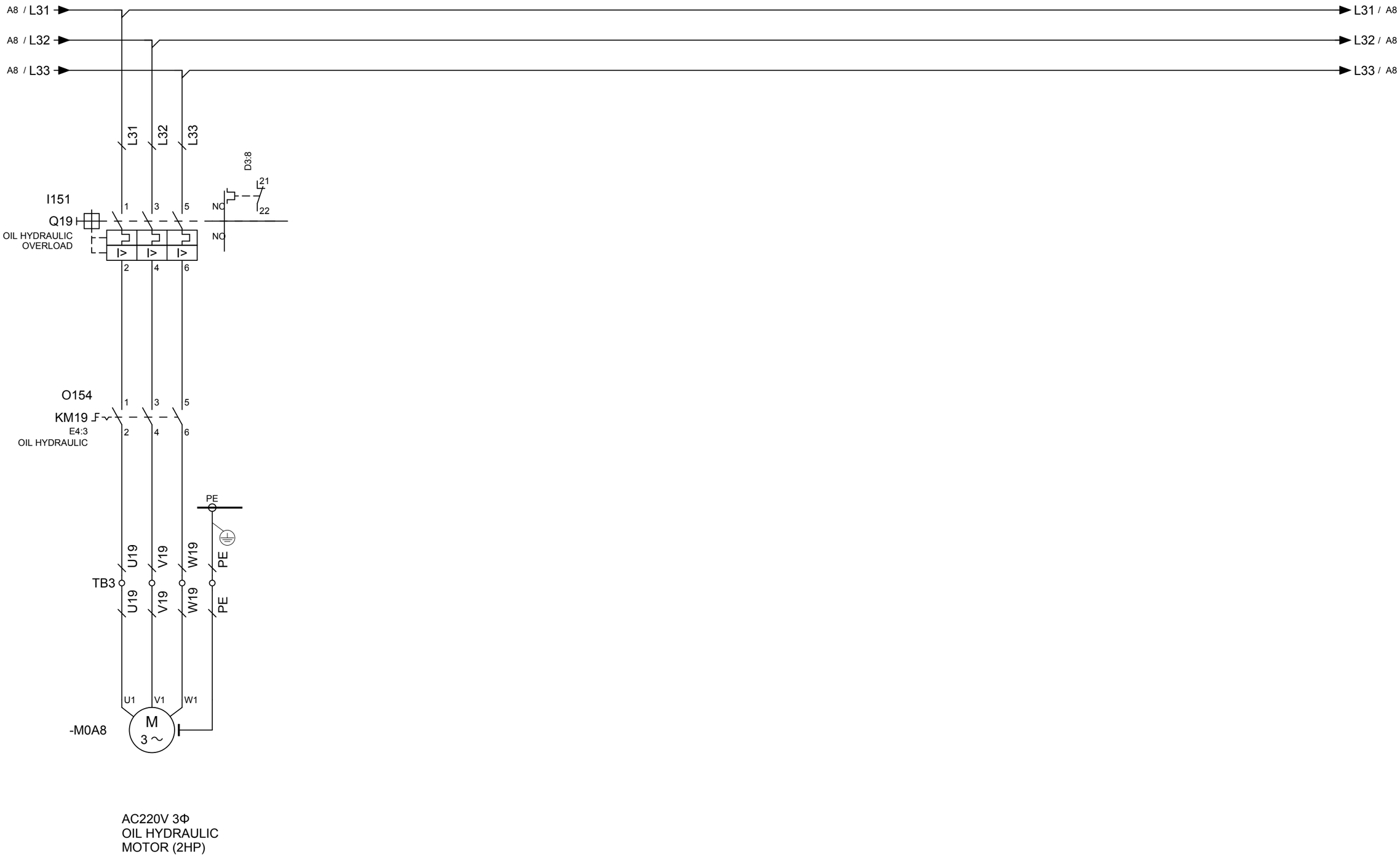
| | | | Appr | | | | | Page A6 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 14 / 66 |




CIRCUIT
FOR VMC_VTS
ELECTRONIC BRAKER

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-07-09 | | | MOTOR POWER CIRCUIT | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | A7 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 15 / 66 |




A7 B0a

| | | | | | | | | | |
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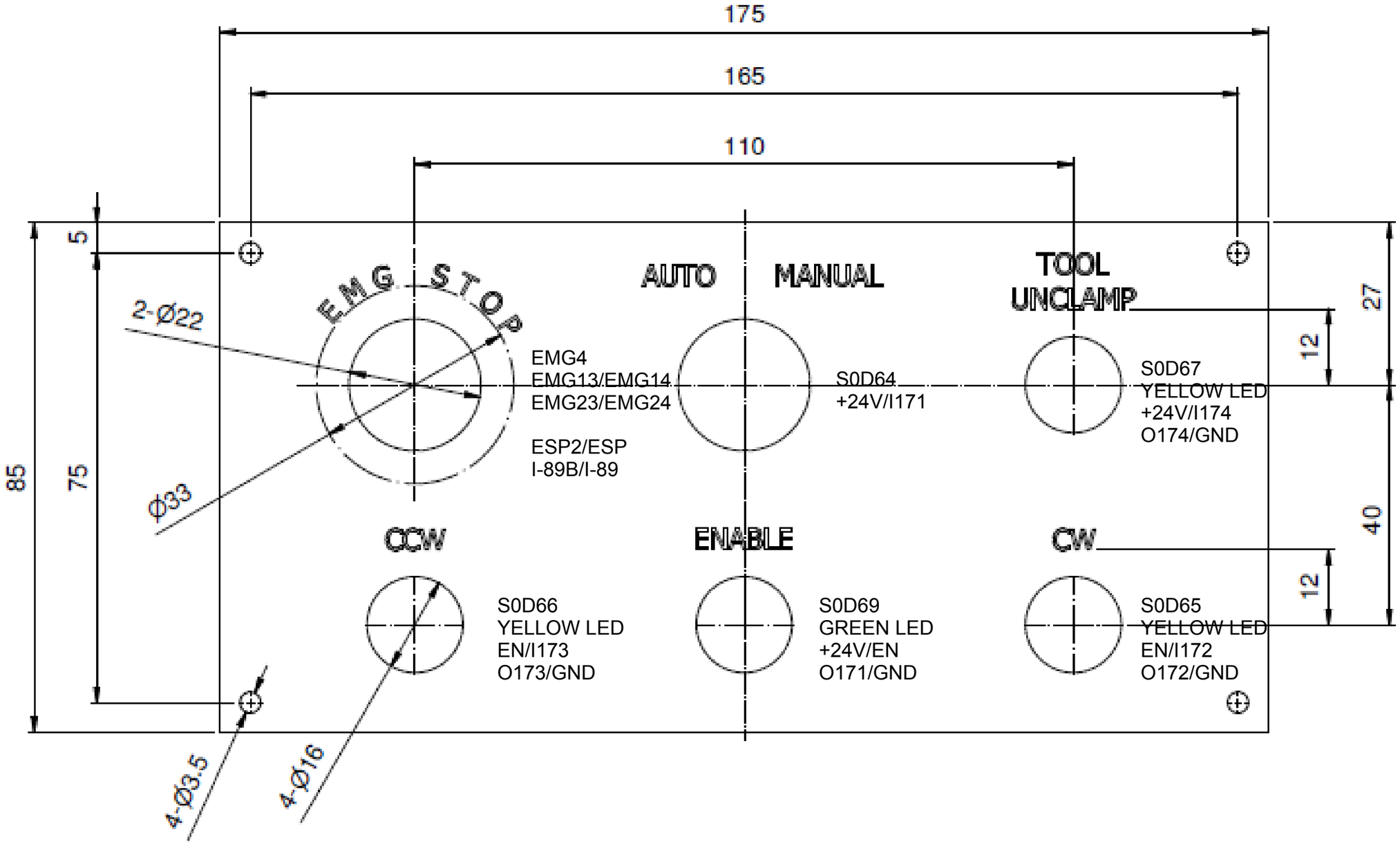
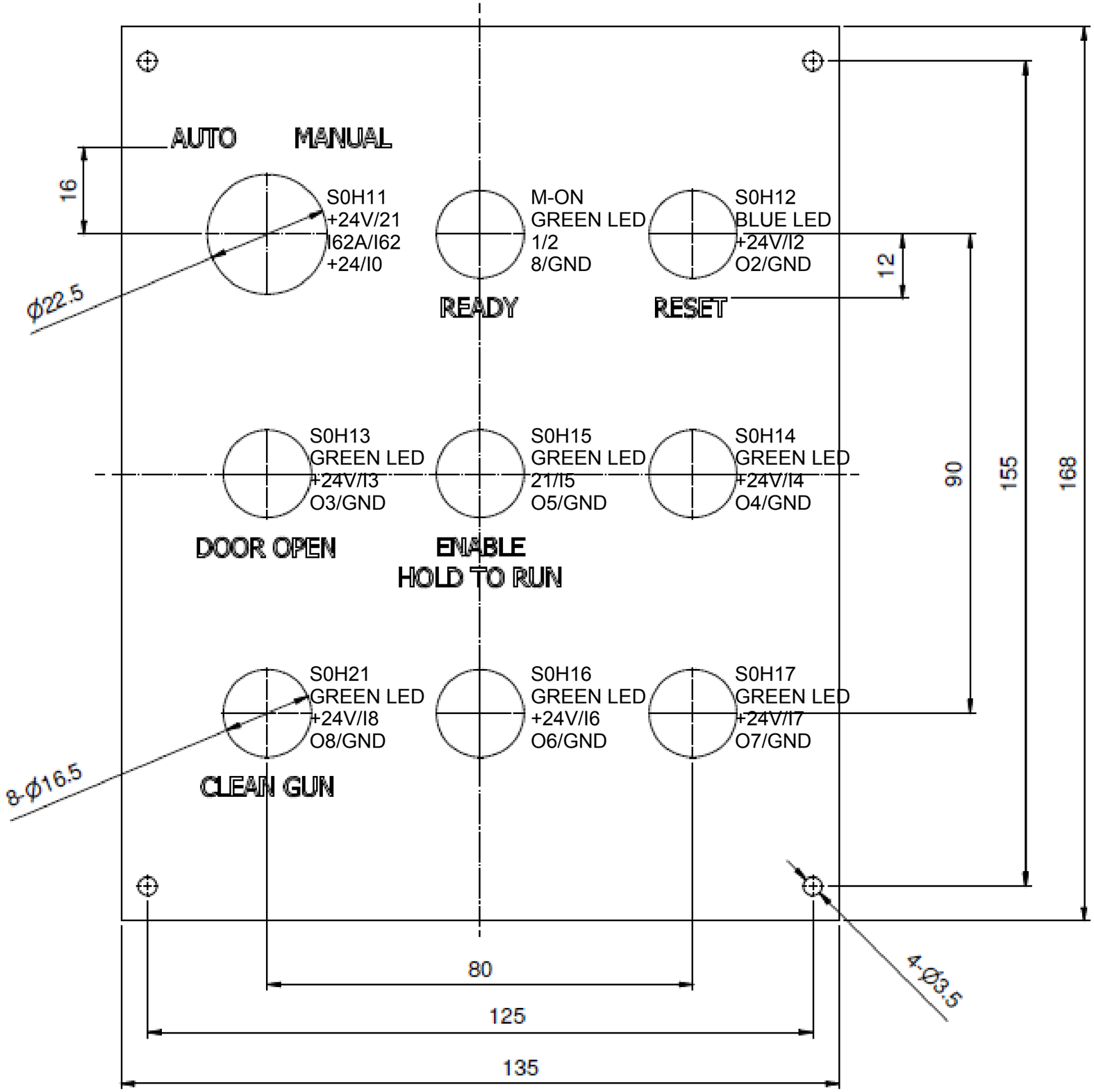
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | A8 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 16 / 66 |



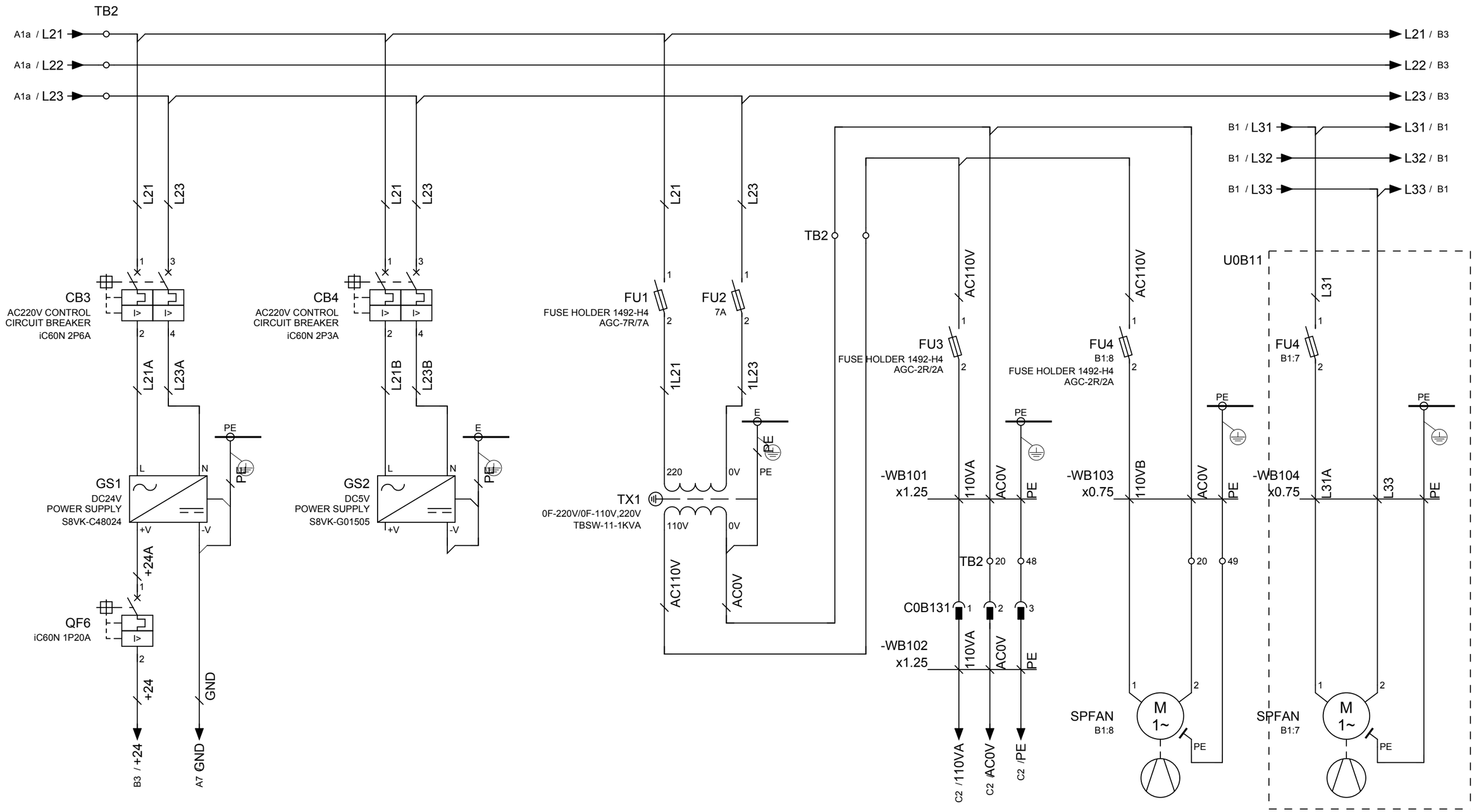

A8 B0b

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-01-10 | | | TOOL MAGAZINE PANEL | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | B0a |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 17 / 66 |




B0a B1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2017-02-15 | | | OPERATION PANEL | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | B0b |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 18 / 66 |




DC24V
POWER FOR
POWER ON/INPUT/OUTPUT
CIRCUIT

DC5V
POWER FOR

AC110V
SOCKET

USB COMMUNICATION BOX

AC110V
SPINDLE FAN

VTS=1Φ110V
VMC=1Φ110V
VMC2015=1Φ220V

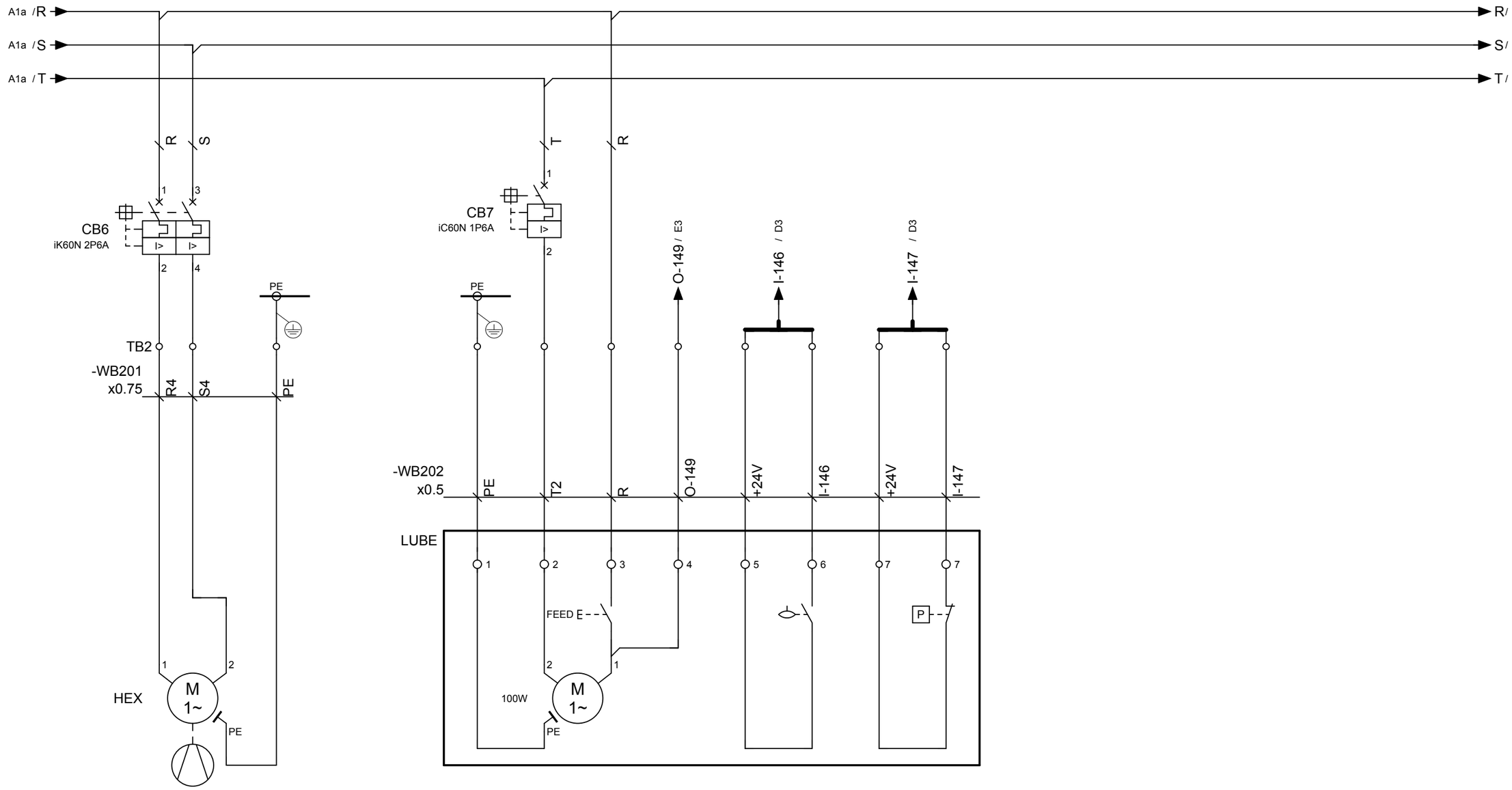
AC220V
SPINDLE FAN

U0B11 FOR
VMC2015
VTS GEAR SP #50

B0b

B2

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | POWER SUPPLY CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page B1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 19 / 66 |

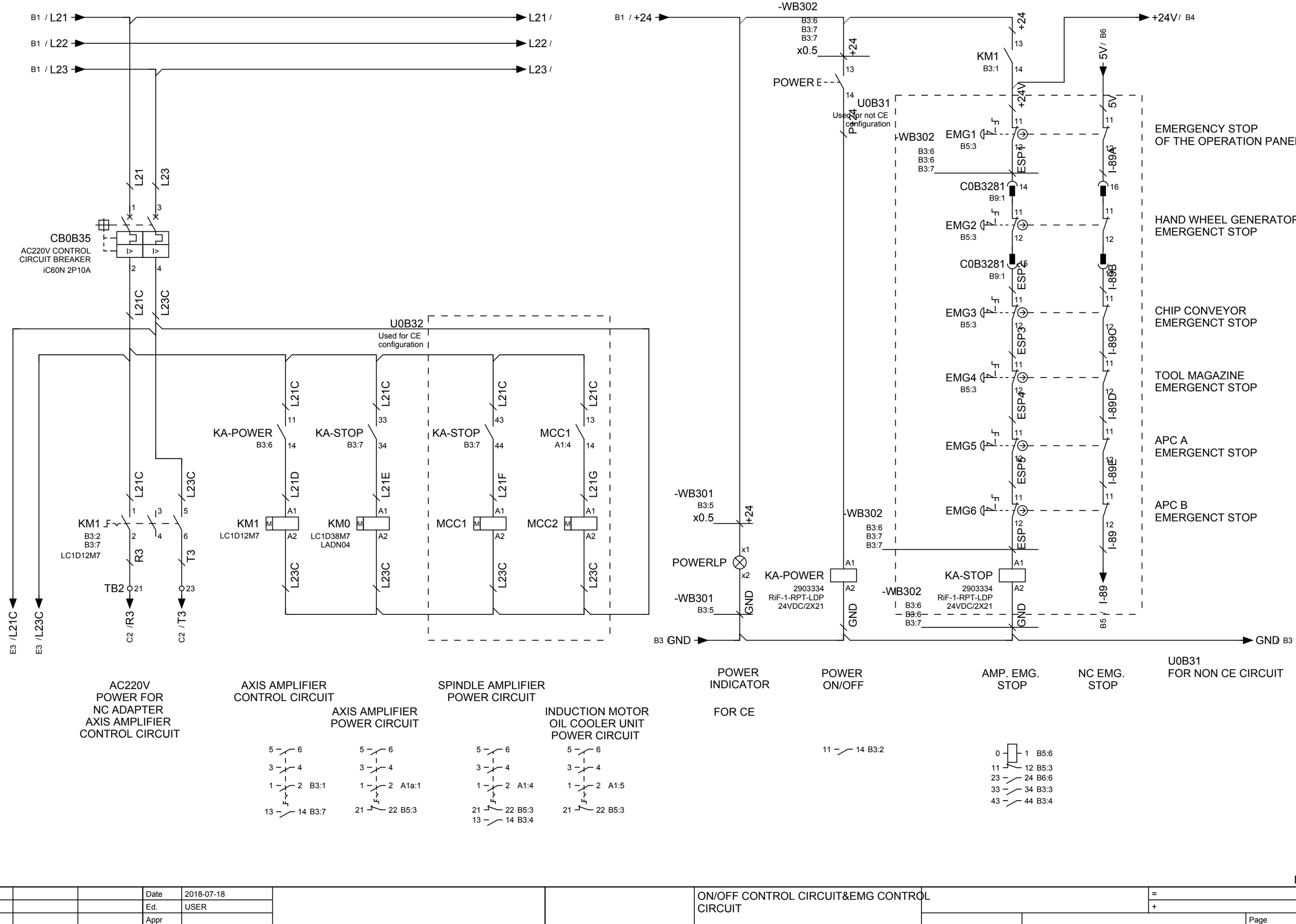



AC220V 1φ
HEAT EXCHANG FAN

AC220V 1φ
AUTOMATIC
LUBRICATOR UNIT

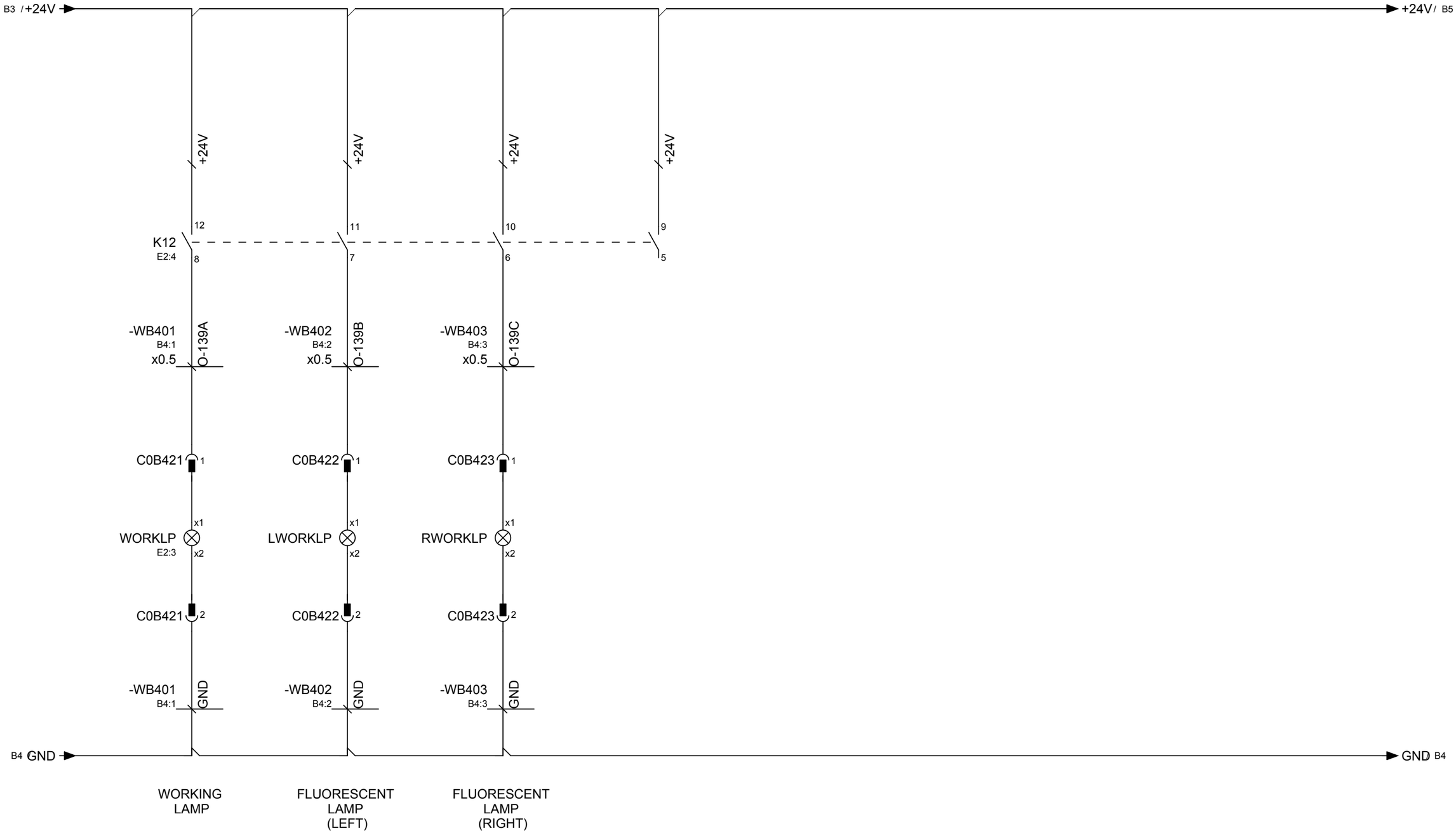
B1 B3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | LUBRICATOR UNIT CIRCUIT & HEAT EXCHANG FAN | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page B2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 20 / 66 |




B2 B4

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | ON/OFF CONTROL CIRCUIT&EMG CONTROL CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page B3 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 21 / 66 |




CIRCUIT
FOR VTS

B3 B5

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | WORK LAMP | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | B4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 22 / 66 |

B4 / +24V

+24V / B6

KM0
A1a:1
B3:3

KA-STOP
B5:6
B6:6
B3:7
B3:3
B3:4

M-ON
B5:5
MASTER ON
BUTTON

MCC1
A1:4
B3:4
B3:4

MCC2
A1:5
B3:4

+24V

I-13 / H2

I-13

I-89C / F3

I-89C

KAS0
EMG MODULE

A1 T31 T32 T33 X1 13 23 33 43

OMRON G9SE-401
SAFETY RELAY UNIT

A2 T11 T12 T21 T22 14 24 34 44

GND EMG10 EMG14 EMG20 EMG24 8 ESP I-89

EMERGENCY STOP
OF THE OPERATION PANEL

EMG1
B3:7

EMG11 EMG21

M-ON
B5:3

KA-STOP

HAND WHEEL GENERATOR
EMERGENCT STOP

C0B3281
B9:1

U0B91
B9:0

EMG2
B3:7

EMG12 EMG22

CHIP CONVEYOR
EMERGENCT STOP

EMG3
B3:7

EMG13 EMG23

TOOL MAGAZINE
EMERGENCT STOP

EMG4
B3:7

GND GND

B3 / I-89

I-89 / F3

B5 GND

GND B5

C0B3281=PLT28-20-RF

MASTER ON
BUTTON LED

EMG STOP
SAFE RELAY

11 12 B5:3
23 24 B6:6
A1 A2 B3:7
33 34 B3:3
43 44 B3:4

EMG STOP
SIGNAL

B4 B6

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | EMG SAFE MODULE CONTROL CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page B5 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 23 / 66 |

B5 /+24V

+24V / B7

I-62 / B9

AUTO/MANU KEY SW

S0H11
H1:1

I-62A

S0H15
H1:6
H3:6

I-5

S0B91

I-5 /

5V

B3 /5V

5V / B9

CR103
A1
A2

GND

B6 GND

CR102
B6:6

I-14 / H2

KAS1
DOOR MODULE

OMRON G9SE-401
SAFETY RELAY UNIT

A1 T31 T32 T33 X1 13 23 33 43

A2 T11 T12 T21 T22 14 24 34 44

FRONT DOOR
INTERLOCK

U0B63
B8:1

CR103
B6:1

KA-STOP
B5:6
B5:3
B3:7
B3:3
B3:4

CR102
A1
A2

GND

GND B6

DOOR INTERLOCK
FEEDBACK

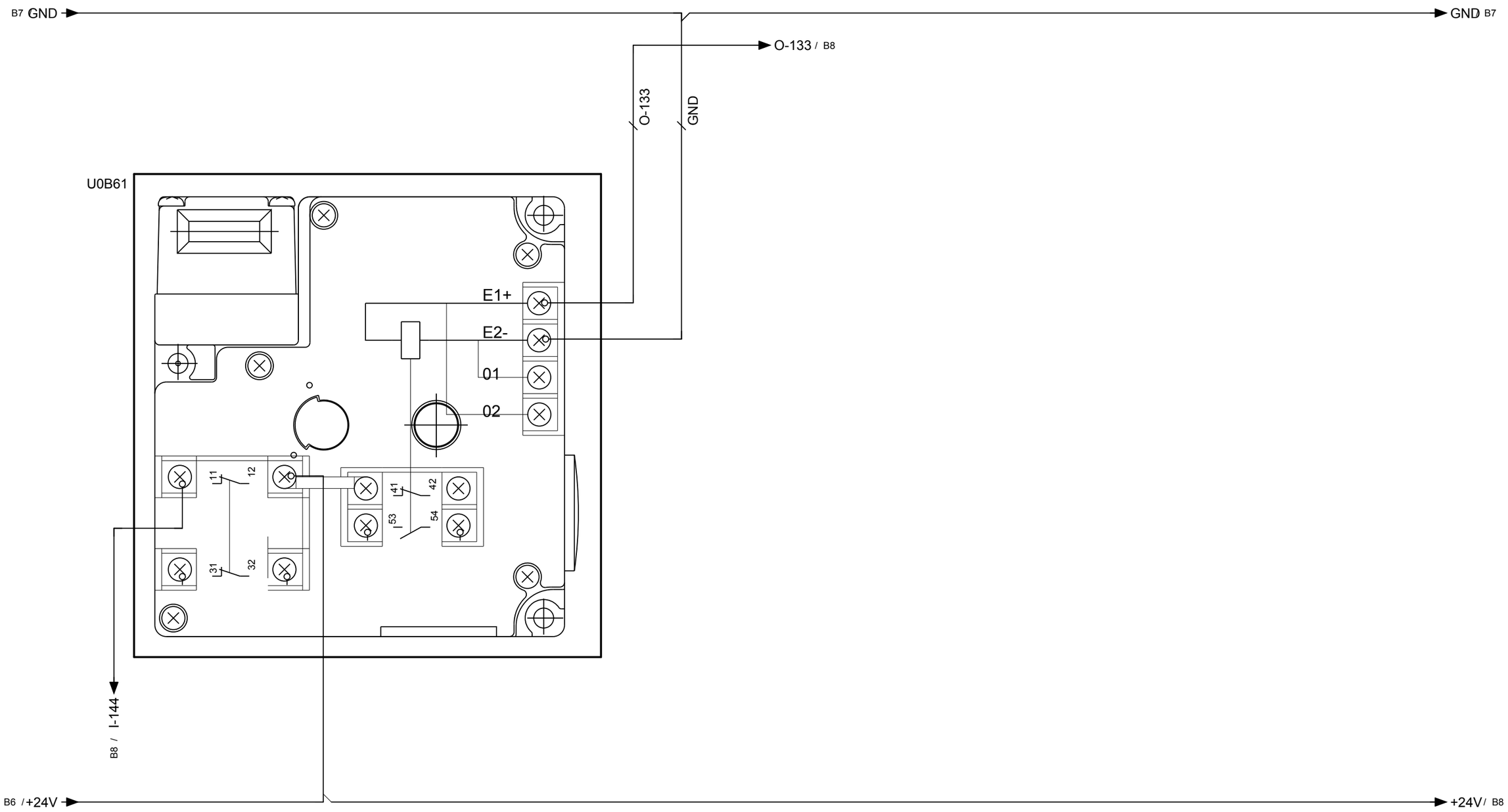
11 — 12 B6:3

13 — 14 B6:3
13 — 14 B6:4

CR103
PLACE IN THE OPERATION BOX

B5 B7

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | DOOR SAFE MODULE CONTROL CIRCUIT | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | B6 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 24 / 66 |

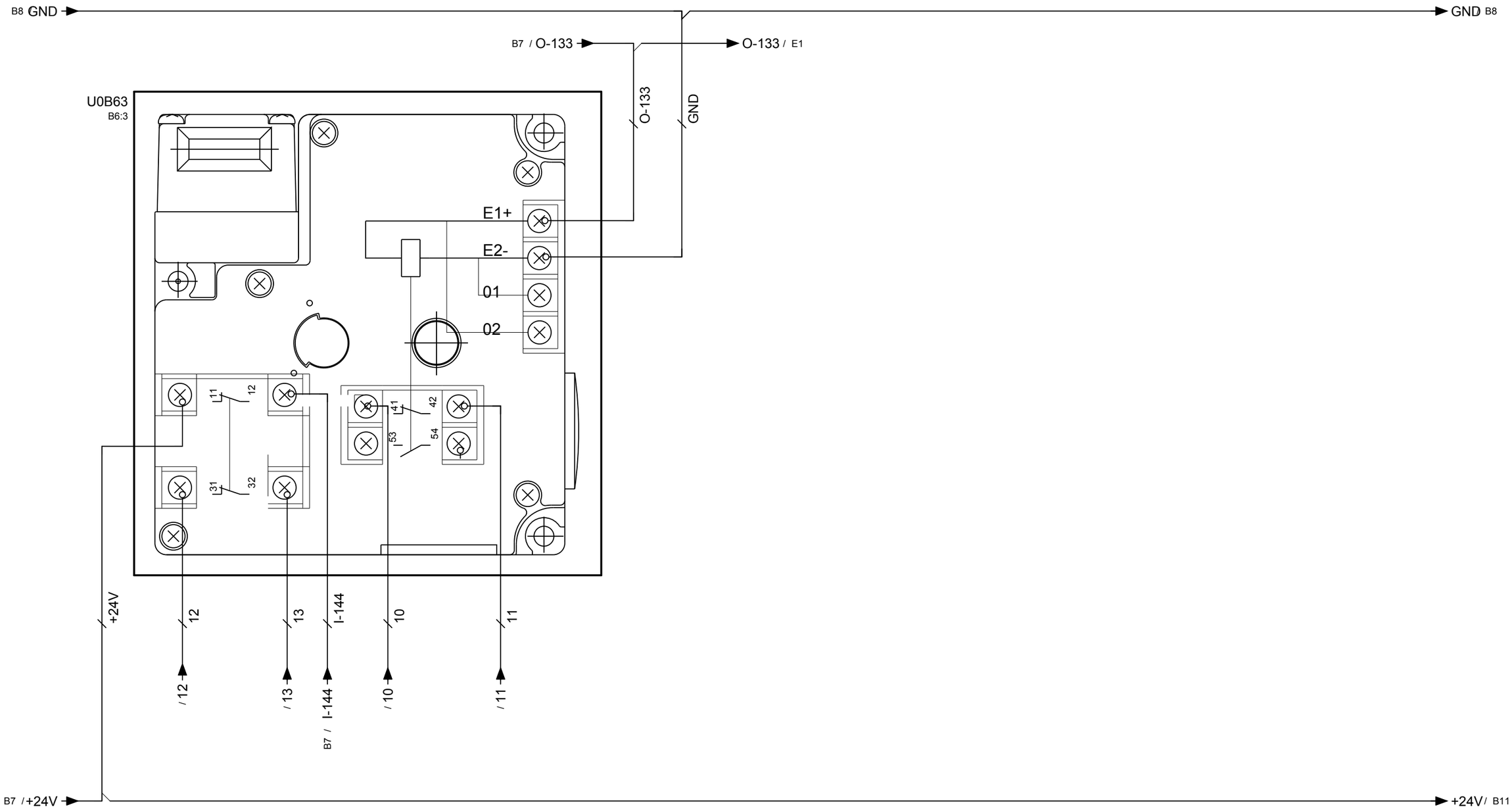



FRONT
DOOR INTERLOCK

CIRCUIT FOR NOT CE

B6 B8

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | DOOR INTERLOCK (FOR NO CE) | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | B7 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 25 / 66 |




FRONT
DOOR INTERLOCK

CIRCUIT FOR CE

B7 B9

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | DOOR INTERLOCK (FOR CE) | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | B8 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 26 / 66 |

U0B91
B5:2
HANDHELD
UNIT

Emergency stop switch
11
12
21
22
Pushbutton ENABLE SW.
13
14
Q0B81
N-position switch AXIS SELECT
N-position switch, 6 positions
D
A
F
B
E
C
G
x1
x2
G
SM
6
1
4
5
3
2

C0B3281
B3:7
B5:3
B3:7
B5:3
B5:4
PLS-2820-PM
14
16
17
15
13
7
8
9
10
11
12
18
19
20
1
2
3
4
5
6

FOR CE NUMBER
EMG11/EMG12
ENG21/EMG2

-WB901
x0.3
X0B91
EMG11
EMG21
EMG22
EMG12
I-62
5V
I-56
I-57
I-58
I-59
I-60
O-131
GND
PE
5V
0V
1A+
1A-
1B+
1B-

FOR NOT CE NUMBER
ESP1/ESP
I-89/I-89A

ESP1
I-89A
I-89
ESP
B6 / I-62
C2 / I-56
C2 / I-57
C2 / I-58
C2 / I-59
C2 / I-60
E1 / O-131
PE
C2 / 1A+
C2 / 1A-
C2 / 1B+
C2 / 1B-

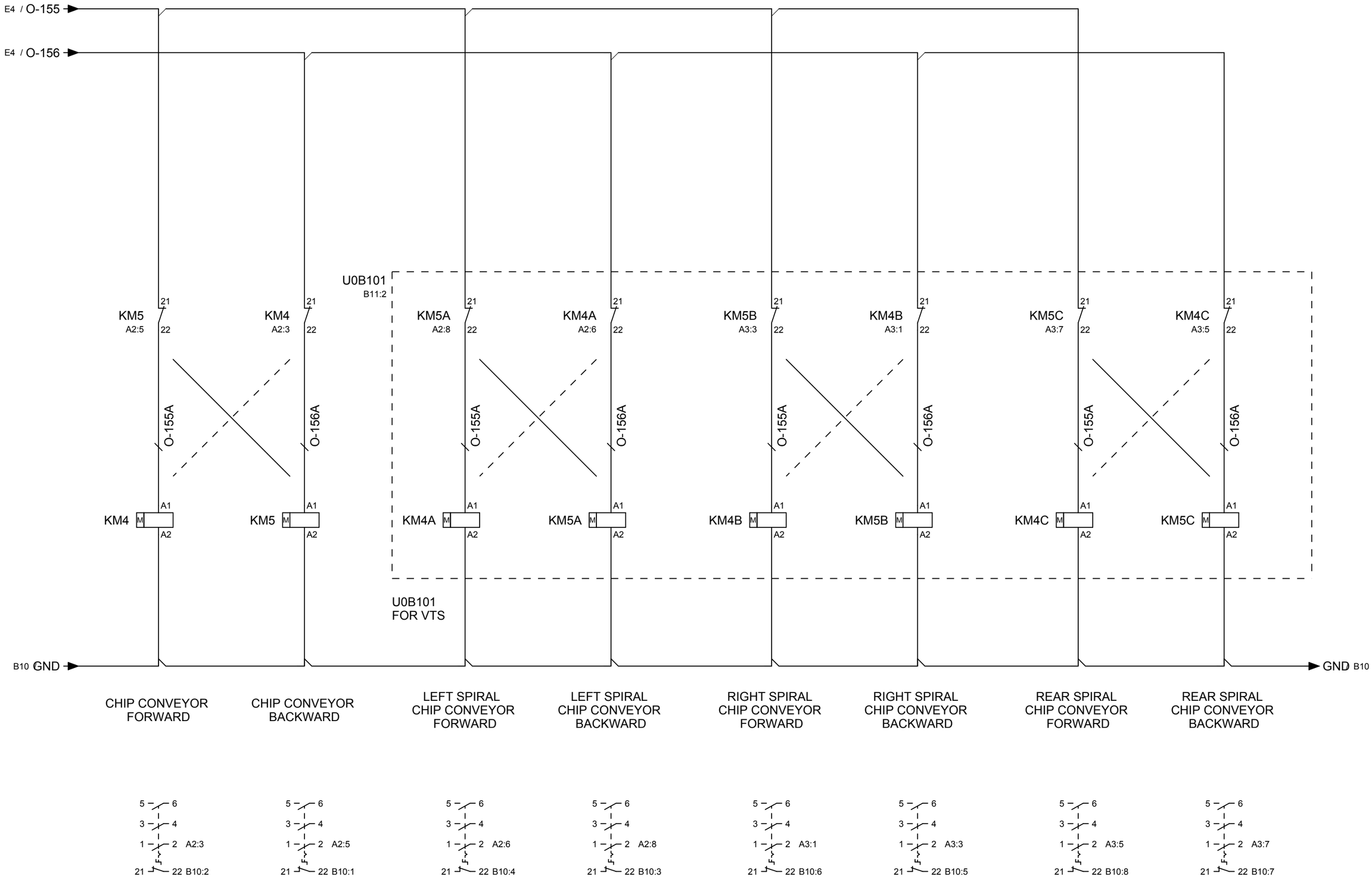
B6 / 5V → 5V / C2
B9 / 0V → 0V / B9
B9 / GND → GND B9

C0B3281

B8

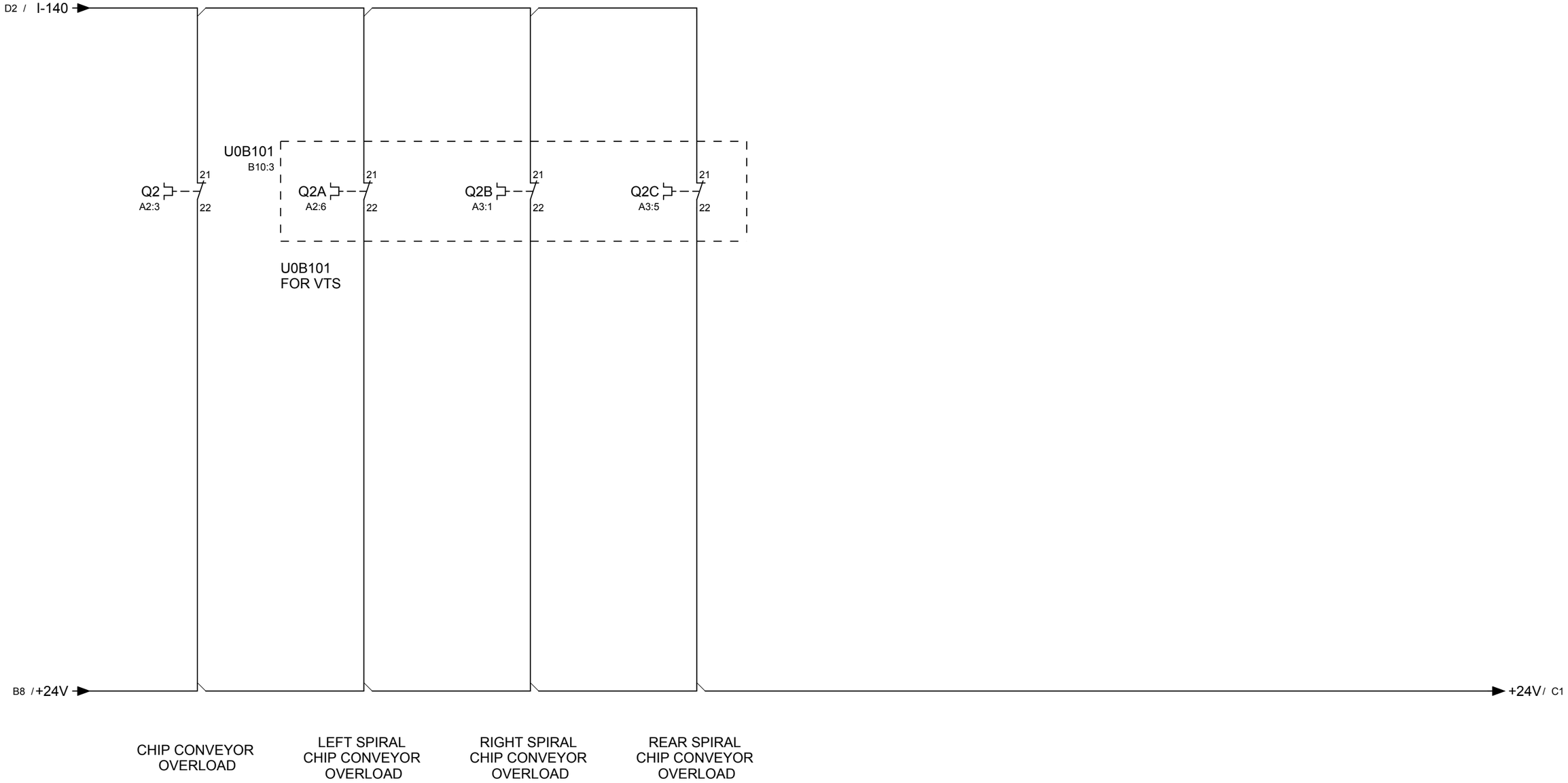
B10

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | HANDHELD PULSE GENERATOR | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page B9 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 27 / 66 |




B9 B11

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | CHIP CONVEYOR COIL | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page B10 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 28 / 66 |




B10 C1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | CHIP CONVEYOR OVERLOAD | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | B11 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 29 / 66 |

B11 /+24V

C1 GND

+24V/ C6

GND C1

C2 /RIO

RIO-1
I3:1
D1:0
D2:0
D3:0
D4:0
D5:0
D6:0
E1:0
E2:0
E3:0
E4:0
E5:0
E6:0
I6:0
I7:0
I8:0
I9:0

+24V
+24V
GND
GND

X1 L0.6M
X2 L0.6M
X3 L0.6M
X4

Y1 L3.5M
Y2 L3.5M
Y3 L3.5M
Y4

X1
D1:0
D2:0

X2
D3:0
D4:0

X3
D5:0
D6:0

Y1
E1:0
E2:0

Y2
E3:0
E4:0

Y3
E5:0
E6:0

+24V
GND

B11 C2

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | I/O CARD CONTROL UNIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page C1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 30 / 66 |

B3 /R3 → R3/ C4

B3 /T3 → T3/ C4

PE

-WC201
x1.25
R3
T3
PE

ADP
AC AC
+ −

PE

+ - PE

CNC
C3a:5
C3a:6
NUMERIC
CONTROLLER

DC INPUT

-WC204
DC5V
DC0V

5V 0V

DC OUTPUT

0V 5V

NC UNIT **FADAL 64MP**

-WC205

HK

RIO

MII

1

-WC202

-WC203

C1 /RIO

C3 /LINK1

pulse generator

5V 0V A A- B B-

5V 0V 2A+ 2A- 2B+ 2B-

110VA/ B1
AC0V/ B1
PE/ B1

USB
L N E
socket
USB1 USB2
1 2 3 4

-WC206
-WC207

USB1 USB2

LAN
RJ45
Ethernet I/F (LAN)
TD+ TD- RD+ RD- CMT+ CMT- CMT+ CMT-
1 2 3 4 5 6 7 8

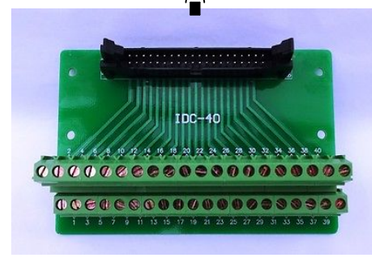
-WC208

LAN

Y2 Y1 X2 X1

-W0C210

U0C21
H1:0
H2:0
H3:0
H4:0




U0C21 FOR CE IO

MPG
A+ A- B+ B- I56 I57 I58 I59 I60 I61 I62 0V 5V
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

PE

PE

-WC209
A+ A- B+ B- I56 I57 I58 I59 I60 I61 I62 5V 0V

KA-MPG
E1:4
9 10 11 12
1 5 2 6 3 7 4 8

1A+ 1A- 1B+ 1B-

B9 /1A+ B9 /1A- B9 /1B+ B9 /1B-

I-56 I-57 I-58 I-59 I-60 I-61 I-62
B9 / B9 / B9 / B9 / B9 / / /

B9 /5V → 5V/ F1

C2 /0V → 0V/ C2

C1 C3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | NC UNIT CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page C2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 31 / 66 |

C3 / L31 → L31 / C3
C3 / L32 → L32 / C3
C3 / L33 → L33 / C3

PE

VTS=1500W 10ΩJ*2
VMC=1500W 10ΩJ*2
VMC2015=1000W 10ΩJ*2

R1 x1 x2
R2 x1 x2

LINK1 / C2
LINK2 / C4

-WC301 L31 L32 L33 PE
-WC304
-WC305
-WC306 C4:6

SPINDLE
APMLIFIER

R S T — Main circuit power input terminals
PE — Ground
\- + BR — External regeneration resistor connection terminals
CN6/A — CN6A
CN6/B — CN6B
CN6 MECHATROLINK-II

# SPINDLE
SYNTEC SPINDLE DRIVE

Ground — PE
Motor connection terminal — U V W
CN4 Pulsecoder connector — PG5V (CN4-1) PG0V (CN4-2) A+ (CN4-3) A- (CN4-4) B+ (CN4-5) B- (CN4-6) Z+ (CX4-7) Z- (CX4-8) SHILD
CN3 connector
T1 T2

-WC302 PE U V W
-WC303

SP-AXIS
U V W — M 3~ — PE
G
G

SPINDLE
SERVO MOTOR

C2 C3a

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | SPINDLE AMPLIFIER MODULE INTERFACE | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page C3 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 32 / 66 |

C3a GND → GND C6

2L31 / A1
2L32 / A1
2L33 / A1

PE
VTS=1500W 10ΩJ*2
VMC=1500W 10ΩJ*2

-RC3a1 x1 x2
-RC3a2 x1 x2

CNC
C2:0
C3a:6

DA PORT

| DA | PIN | SIGNAL |
|---|---|---|
| | 1 | 2DA- |
| | 2 | 2DA+ |
| | 3 | 1DA- |
| | 4 | 1DA+ |

1DA+ 1DA- 2DA+ 2DA-

O-161 / E5
O-162 / E5
O-163 / E5
O-164 / E5
O-140 / E2
O-141 / E2

GND
*1

-WCC3a2 2L31 2L32 2L33 PE
-WCC3a4 B1 B2
-WCC3a5 A1 AC

SPINDLE1
APMLIFIER

L1 L2 L3
R S T
PE
- B1 B2
A1 AC
S1 S2 S3 S4 S5 S6 SC SP

Main circuit power input terminals
Ground
External regeneration resistor connection terminals

*1
SC <-> SP
SHORT CIRCUIT WIRE REMOVED

# SPINDLE
YASKAWA AC DRIVE

# YASKAWA A1000

Ground
Motor connection terminal
PG-X3(CN5-C) TB1/TB2
PULSECODER CONNECTOR
TB2
CONTROL TERMINALS

PE U V W FE IP IG A+ A- B+ B- Z+ Z- a+ a- b+ b- z+ z- MA MB MC FE

-WCC3a3 FE IP IG A+ A- B+ B-
-WCC3a1 PE U V W
-WCC3a6 a+ a- b+ b- ALM+ ALM- FE

I-148 GND
D3 / I-148
C3a GND

-XC3a1 隔離線
粗紅 粗黑 藍 藍白 綠 綠白
-XC3a1 2 3 8 7 5 4

-SPC3a1-AXIS
U V W
M 3~
PE
G
G

SPINDLE
SERVO MOTOR

紅 白 黑 黃 綠 棕

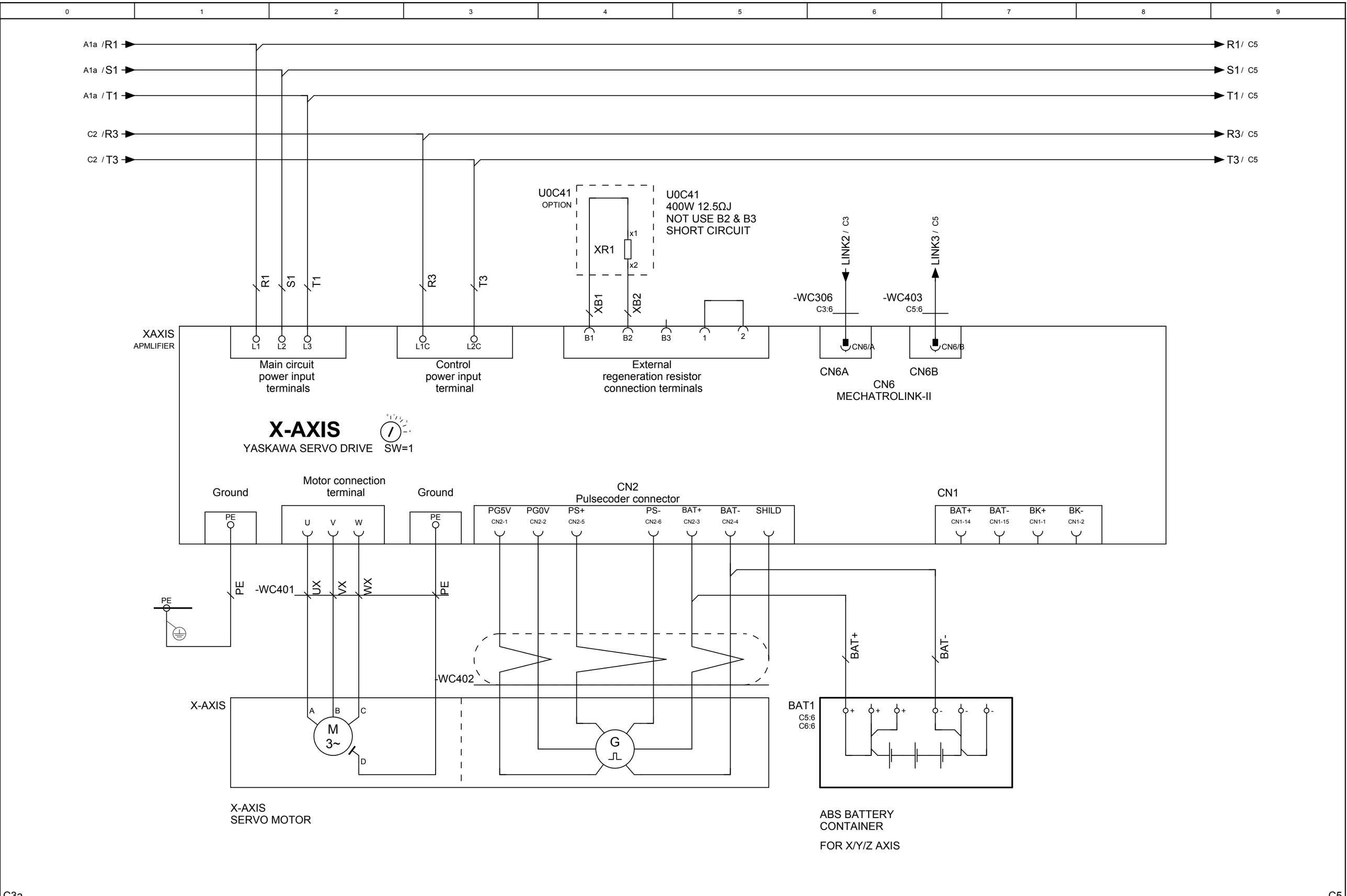
CNC
C2:0
C3a:5

SP PORT

| SP | PIN | SIGNAL | PIN | SIGNAL | PIN | SIGNAL |
|---|---|---|---|---|---|---|
| | 1 | A+ | 6 | Z- | 11 | CW+ |
| | 2 | A- | 7 | ALM+ | 12 | CW- |
| | 3 | B+ | 8 | ALM- | 13 | CCW+ |
| | 4 | B- | 9 | SERVO-ON | 14 | CCW- |
| | 5 | Z+ | 10 | SERVO-CLR | 15 | OUT_COM |

C3 C4

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | SPINDLE AMPLIFIER MODULE (YASKAWA A1000) INTERFACE | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page C3a |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 33 / 66 |




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | X AXIS AMPLIFIER MODULE INTERFACE | | = |
| | | | Ed. | USER | | | | | + |
| | | | Appr | | | | | | Page C4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | | Page 34 / 66 |

C4 /R1 → R1 / C6
C4 /S1 → S1 / C6
C4 /T1 → T1 / C6
C4 /R3 → R3 / C6
C4 /T3 → T3 / C6

U0C51
OPTION

U0C51
400W 12.5ΩJ
NOT USE B2 & B3
SHORT CIRCUIT

YR1 x1 x2

R1 S1 T1 R3 T3 YB1 YB2

-WC403 C4:6 LINK3 / C4
-WC503 C6:6 LINK4 / C6

YAXIS
APMLIFIER

L1 L2 L3 — Main circuit power input terminals
L1C L2C — Control power input terminal
B1 B2 B3 1 2 — External regeneration resistor connection terminals
CN6/A — CN6A
CN6/B — CN6B
CN6 MECHATROLINK-II

# Y-AXIS
YASKAWA SERVO DRIVE SW=2

Ground — PE
Motor connection terminal — U V W
Ground — PE
CN2 Pulsecoder connector — PG5V CN2-1, PG0V CN2-2, PS+ CN2-5, PS- CN2-6, BAT+ CN2-3, BAT- CN2-4, SHILD
CN1 — BAT+ CN1-14, BAT- CN1-15, BK+ CN1-1, BK- CN1-2

PE
PE -WC501 UY VY WY PE
-WC502
BAT+ BAT-

Y-AXIS
A B C D
M 3~
G

BAT1
C4:6
C6:6
+ + + - - -

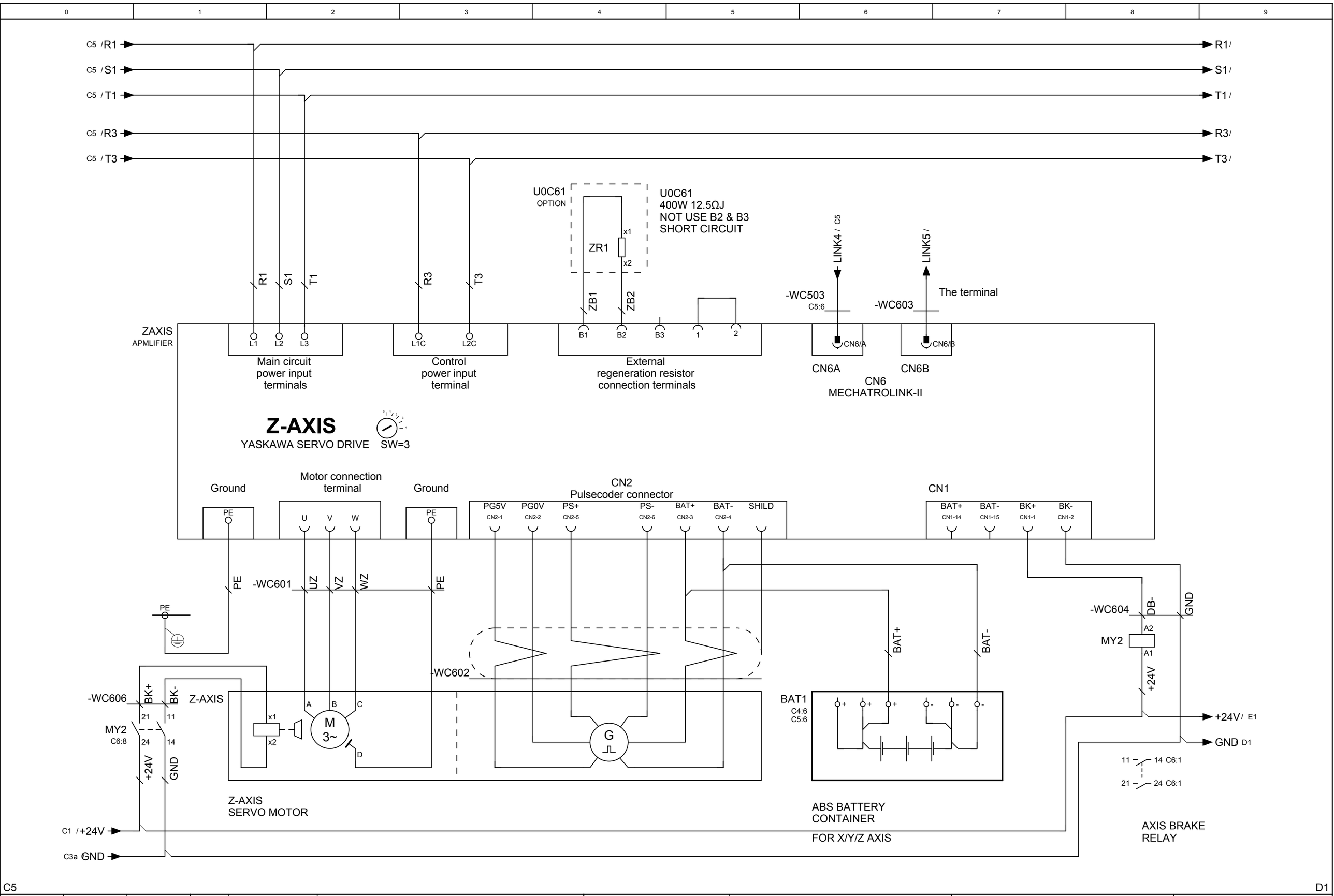
Y-AXIS
SERVO MOTOR

ABS BATTERY
CONTAINER

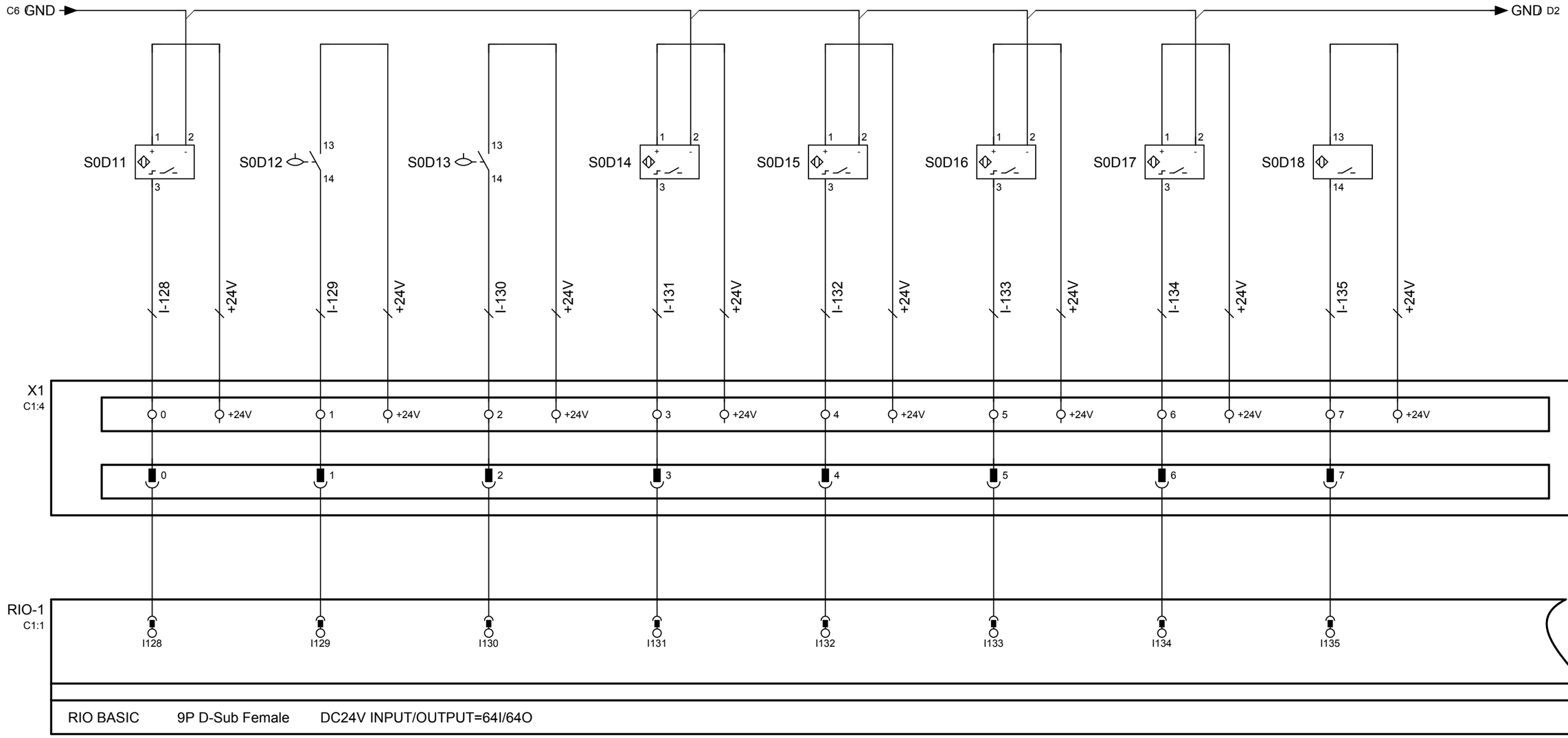
FOR X/Y/Z AXIS

C4 C6

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | Y AXIS AMPLIFIER MODULE INTERFACE | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page C5 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 35 / 66 |




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | Z AXIS AMPLIFIER MODULE INTERFACE | | = |
| | | | Ed. | USER | | | | | + |
| | | | Appr | | | | | | Page C6 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | | Page 36 / 66 |




TOOL MAGAZINE COUNTER

COOLANT-THRU-SPINDLE HIGH LEVEL

COOLANT-THRU-SPINDLE LOW LEVEL

ATC ARM AT HOME

ATC ARM AT SPINDLE

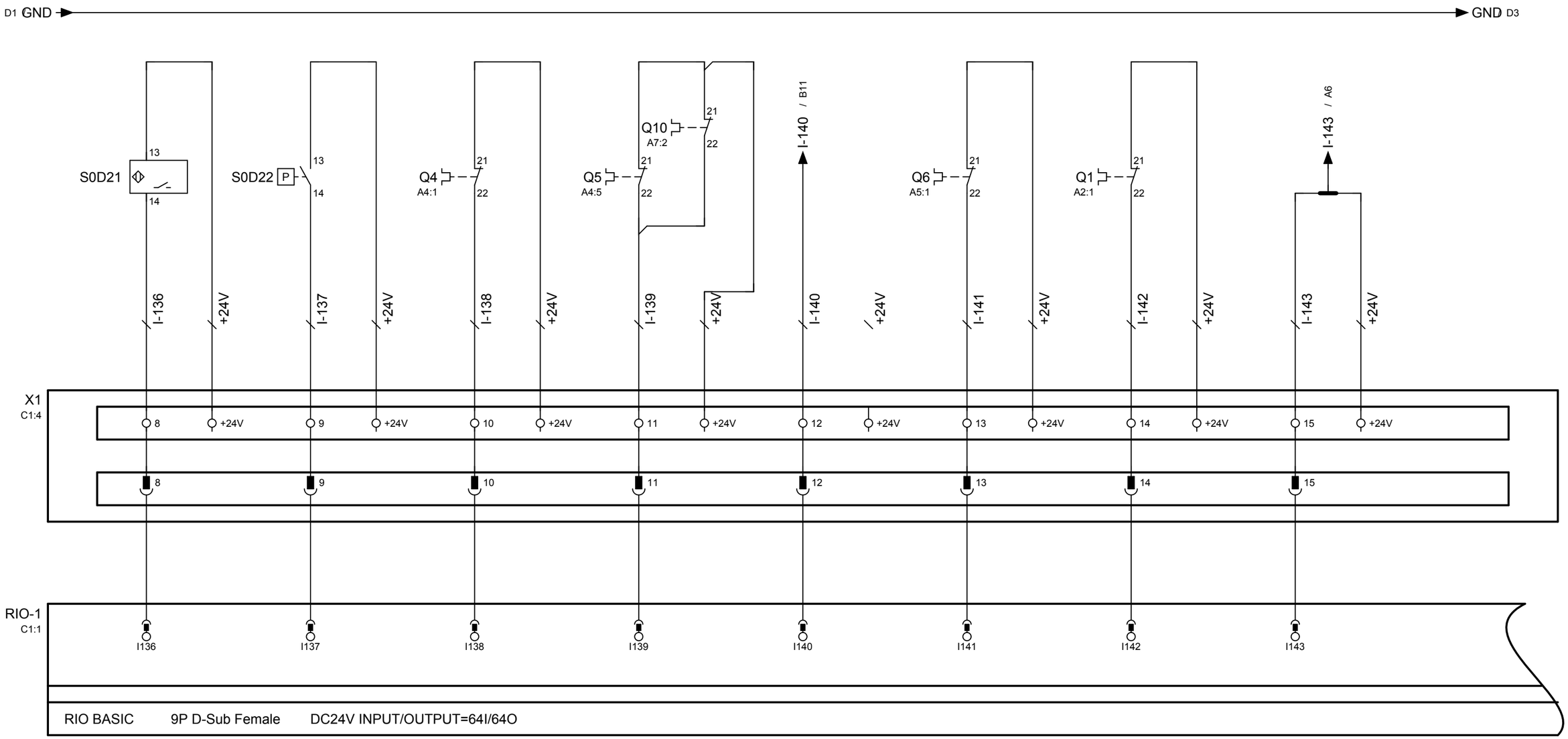
ATC ARM BRAKE

ATC ARM AT SPINDLE DOWN

TOOL MAGAZINE POT DOWN

C6 D2

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE INPUT CIRCUIT (I128-I135) | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | D1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 37 / 66 |




TOOL MAGAZINE POT UP

COOLANT-THRU-SPINDLE FILTER DETE.

TOOL MAGAZINE OVERLOAD

ATC ARM OVERLOAD

CHIP CONVEYOR OVERLOAD

WASHDOWN OVERLOAD

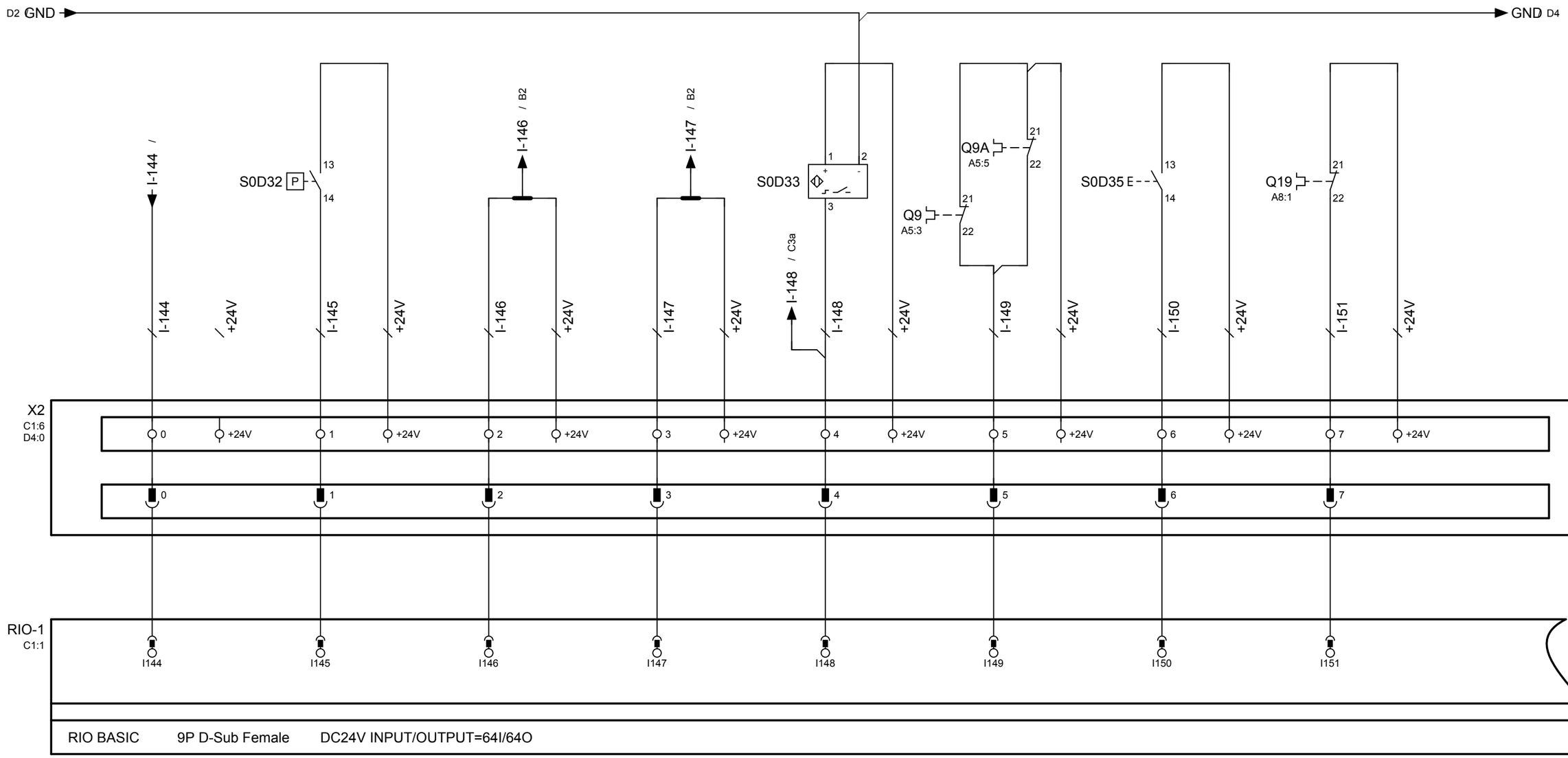
FLOOD COOLANT OVERLOAD

SPINDLE CHILLER ALARM

SDK SYSTEM USE Q10

D1 D3

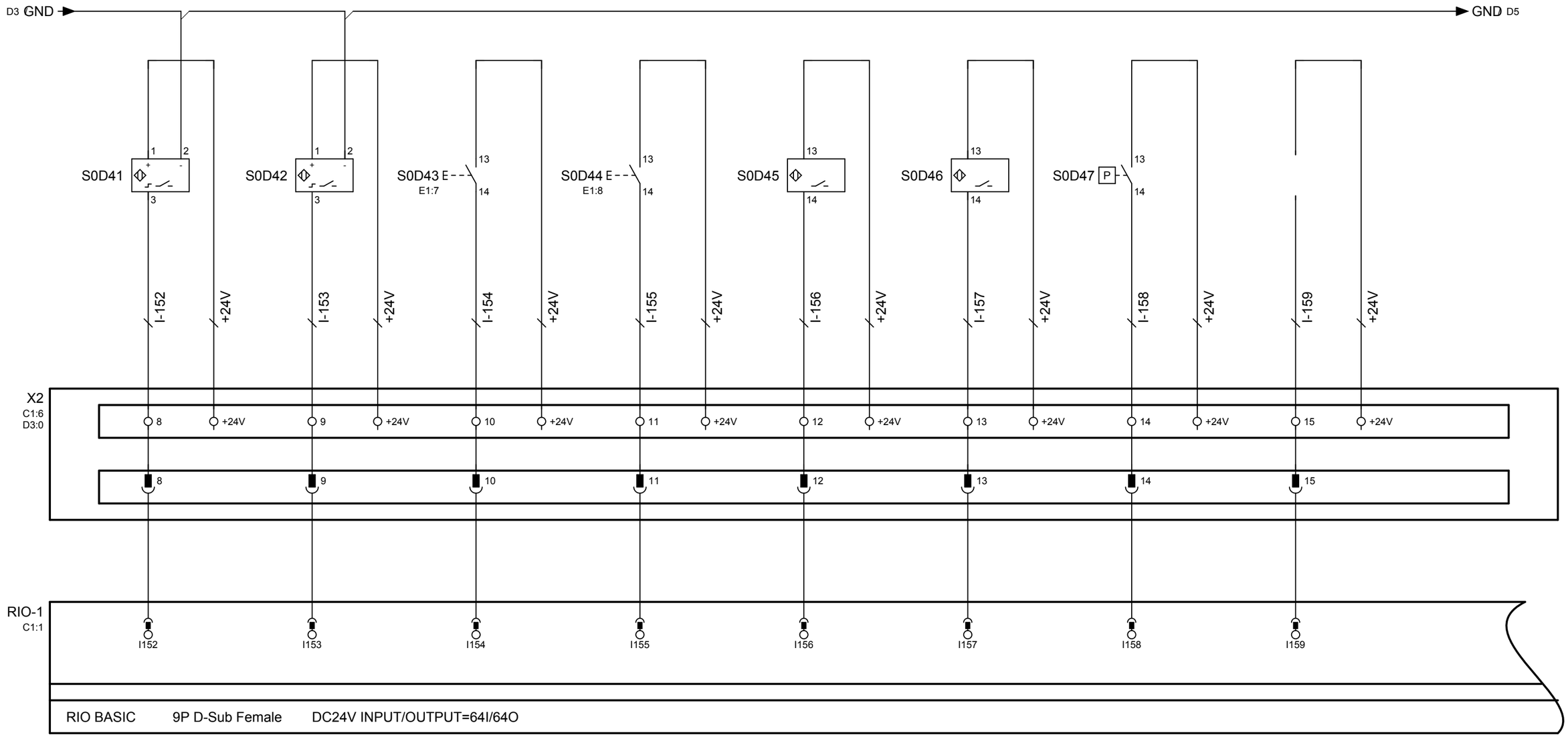
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-07-09 | | | MACHINE INPUT CIRCUIT (I136-I143) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page D2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 38 / 66 |




| FORNT DOOR INTERLOCK | AIR PRESSURE IS LOW | LUBRICATION IS LOW | LUBRICATION PRESSURE | SPINDLE ORIENTATION | COOLANT-THRU-SPINDLE OVERLOAD | SPINDLE TOOL RELEASE BUTTON | OIL HYDRAULIC OVERLOAD |
|---|---|---|---|---|---|---|---|

D2 D4

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE INPUT CIRCUIT (I144-I151) | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | D3 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 39 / 66 |




DRAEBAR CYLINDER IS DOWN

DRAEBAR CYLINDER IS UP

CYCLE START BUTTON ( GREEN )

FEED HOLD BUTTON ( RED )

SPINDLE LOW RANGE

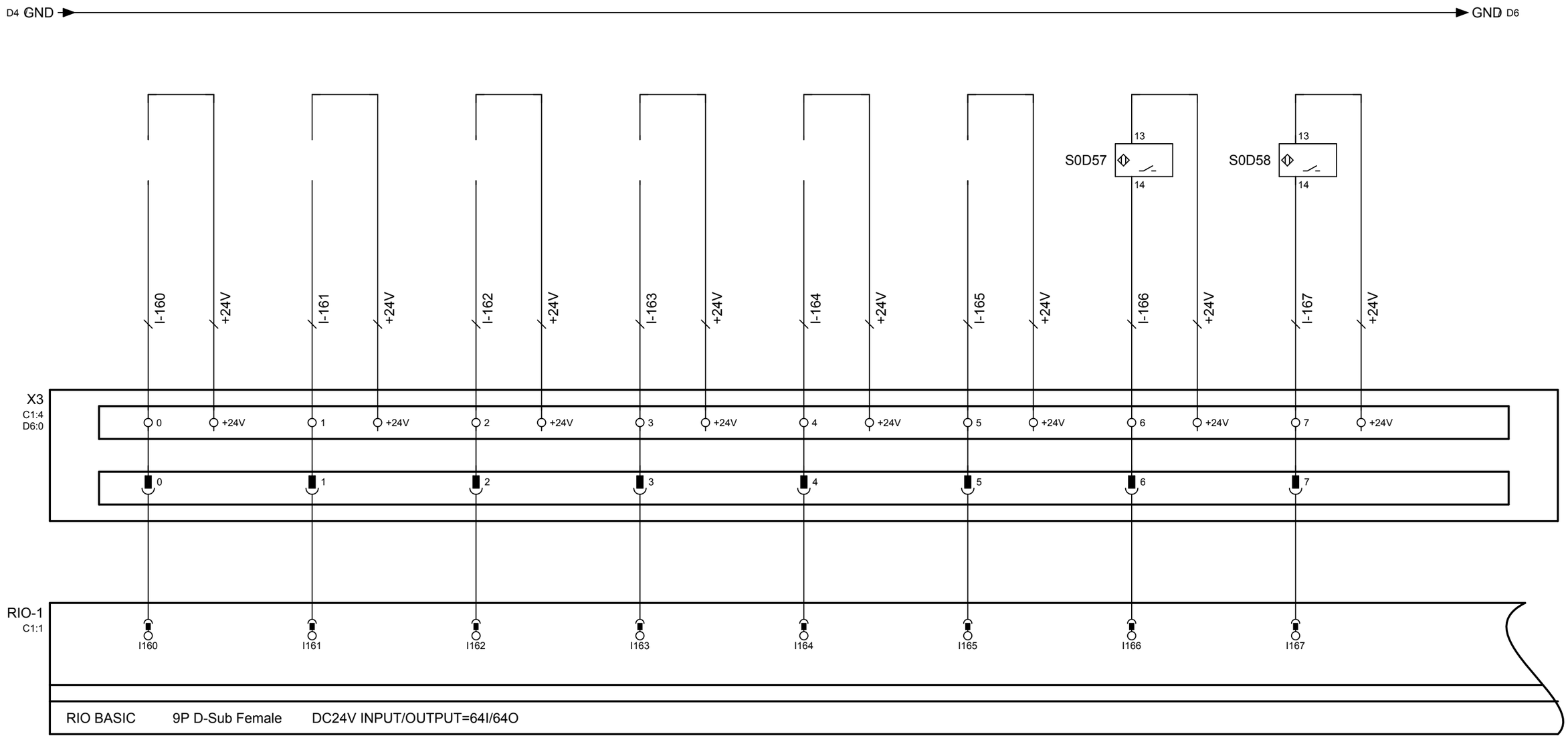
SPINDLE HIGH RANGE

COOLANT-THRU-SPINDLE PRESSURE

TOOL PROBE ALARM

D3 D5

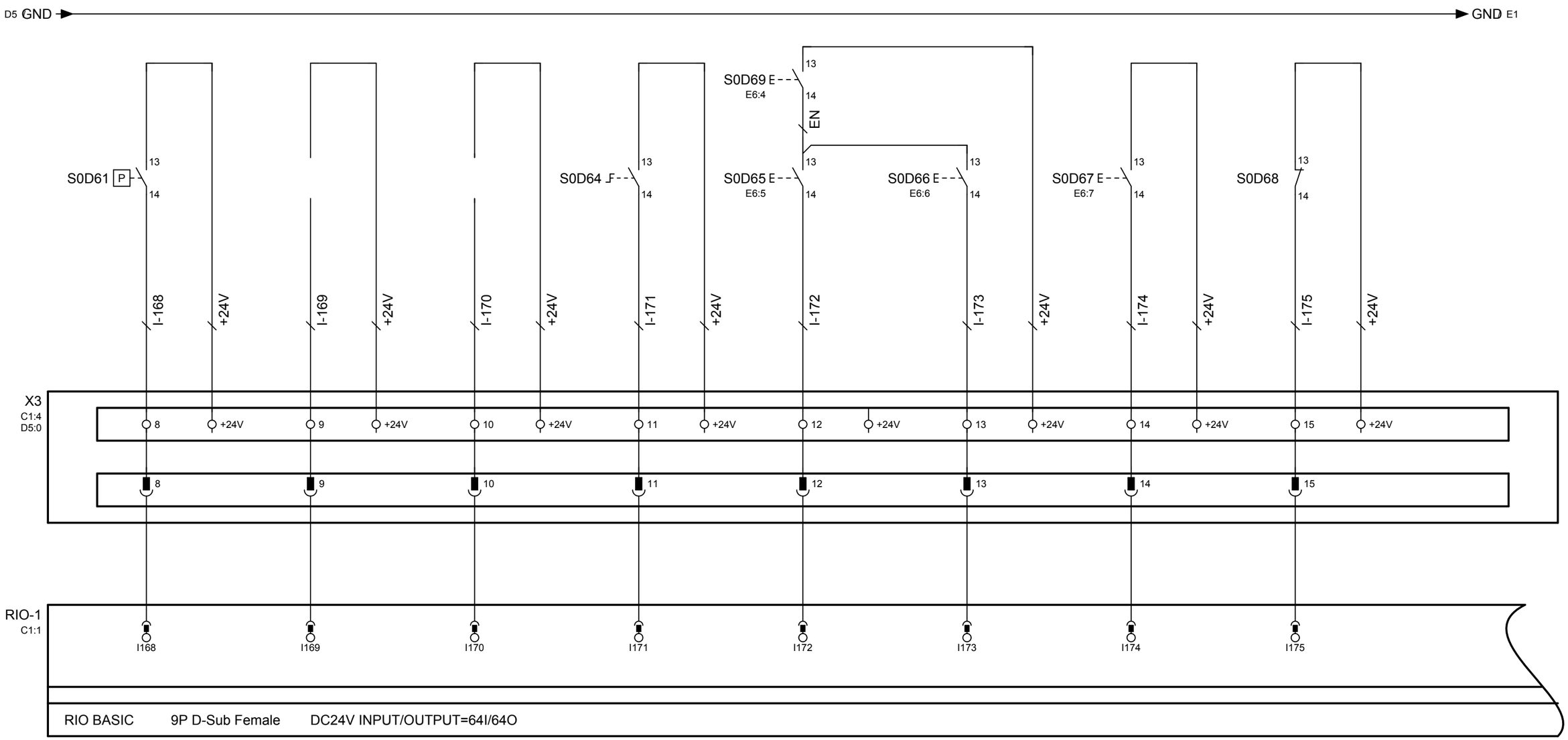
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE INPUT CIRCUIT (I152-I159) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page D4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 40 / 66 |




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TOOL PROBE BATTERY IS LOW | SKIP TOOL PROBE SIGNAL | AIR/OIL SPINDLE OIL PRESSURE | AIR/OIL SPINDLE UPER AIR PRESSURE | AIR/OIL SPINDLE LOWER AIR PRESSURE | AIR/OIL SPINDLE OIL LEVEL IS LOW | TOOL MAGAZINE PIN LOCK | TOOL MAGAZINE PIN UNLOCK | | | |

D4 D6

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE INPUT CIRCUIT (I160-I167) | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | D5 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 41 / 66 |




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TOOL MAGAZINE REMOVE TOOL SENSOR | M72 | M73 | TOOL MAGAZINE PANEL AUTO/MAN SEL SW | TOOL MAGAZINE PANEL MAG CW BUTTON + ENABLE BUTTON | TOOL MAGAZINE PANEL MAG CCW BUTTON + ENABLE BUTTON | TOOL MAGAZINE PANEL TOOL UNCLAMP BUTTON | TOOL MAGAZINE DOOR INTERLOCK SW | |

D5 E1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE INPUT CIRCUIT (I168-I175) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page D6 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 42 / 66 |

RIO-1
C1:1

RIO BASIC 9P D-Sub Female DC24V INPUT/OUTPUT=64I/64O

O128 O129 O130 O131 O132 O133 O134 O135

Y1
C1:3
E2:0

0 1 2 3 4 5 6 7

Y1K1 Y1K2 Y1K3 Y1K4 Y1K5 Y1K6 Y1K7 Y1K8

A1 A2 13 14

0 COM 1 COM 2 COM 3 CON 4 COM 5 COM 6 COM 7 COM

O-128 +24V O-129 +24V O-130 +24V O-131 +24V O-132 +24V O-133 +24V O-134 +24V O-135 +24V

SV0E13 x1 x2

KA-MPG 13 14

B9 / O-131

B8 / O-133

S0D43 D4:3 x1 x2

S0D44 D4:4 x1 x2

C6 / +24V

D6 GND

+24V / E2

GND E2

| 5TH AXIS BRAKE | TOOL PROBE SELECT | TOOL PROBE IS ON AIR BLOW SOL | MPG SELECT PENDANT OR REMOTE | AIR/OIL SPINDLE LUBE PUMP | FORNT DOOR INTERLOCK COIL | CYCLE START BUTTON GREEN LED | FEED HOLD BUTTON RED LED |
|---|---|---|---|---|---|---|---|
| E1:1 | E1:2 | E1:3 | E1:4 | E1:5 | E1:6 | E1:7 | E1:8 |

E1:4 contacts:
5 — C2:5
1 — 9 C2:5
6
2 — 10 C2:5
7
3 — 11 C2:6
8
4 — 12 C2:6

D6 E2

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE OUTPUT CIRCUIT (O128-O135) | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | E1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 43 / 66 |

RIO-1
C1:1

RIO BASIC 9P D-Sub Female DC24V INPUT/OUTPUT=64I/64O

O136 O137 O138 O139 O140 O141 O142 O143

Y1
C1:3
E1:0

8 9 10 11 12 13 14 15

Y1K9 Y1K10 Y1K11 Y1K12 Y1K13 Y1K14 Y1K15 Y1K16
A1 13 A2 14

8 COM 9 COM 10 COM 11 COM 12 COM 13 COM 14 COM 15 COM

O-136 O-137 O-138 O-139 O-140 O-141 O-142 O-143
+24V

C0E241 1 2 3 4

AL-LAMP
RL YL GL
x1 x2

K12 A1 A2
WORKLP x1 x2
B4:1

SV0E25 SV0E26 SV0E27 SV0E28
x1 x2

C3a / O-140
C3a / O-141

E1 /+24V
E1 GND

+24V/ E3
GND E3

BEACON RED LED
BEACON YELLOW LED
BEACON GREEN LED
WORK LIGHT
SPINDLE LOW RANGE SOL
SPINDLE HIGH RANGE SOL
SPINDLE TOOL UNCLMAP AIR BLAST SOL
SPINDLE AIR SEAL SOL

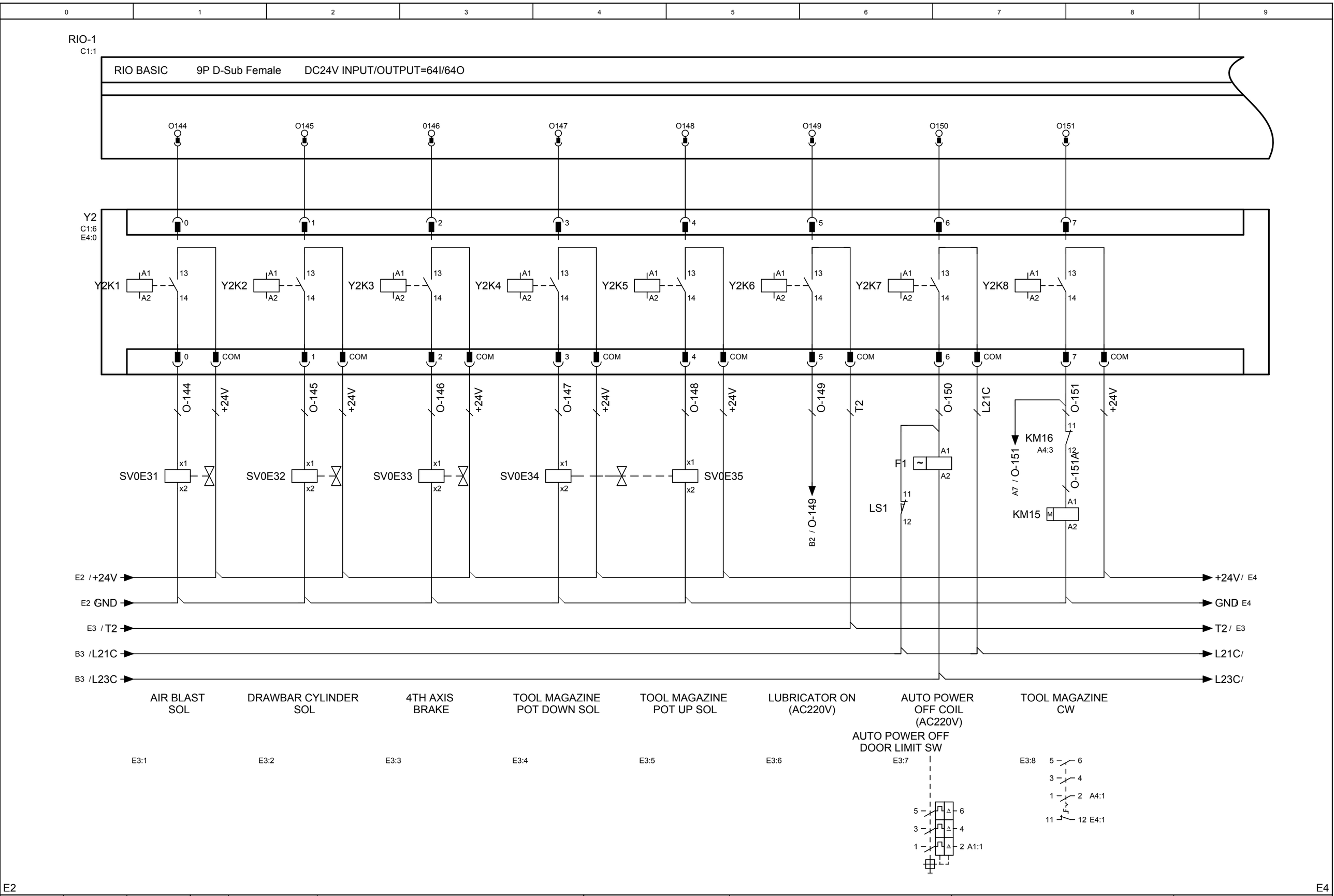
E2:1 E2:2 E2:3 E2:4 E2:5 E2:6 E2:7 E2:8

12 — 8 B4:1
9 — 5 B4:4
10 — 6 B4:3
11 — 7 B4:2

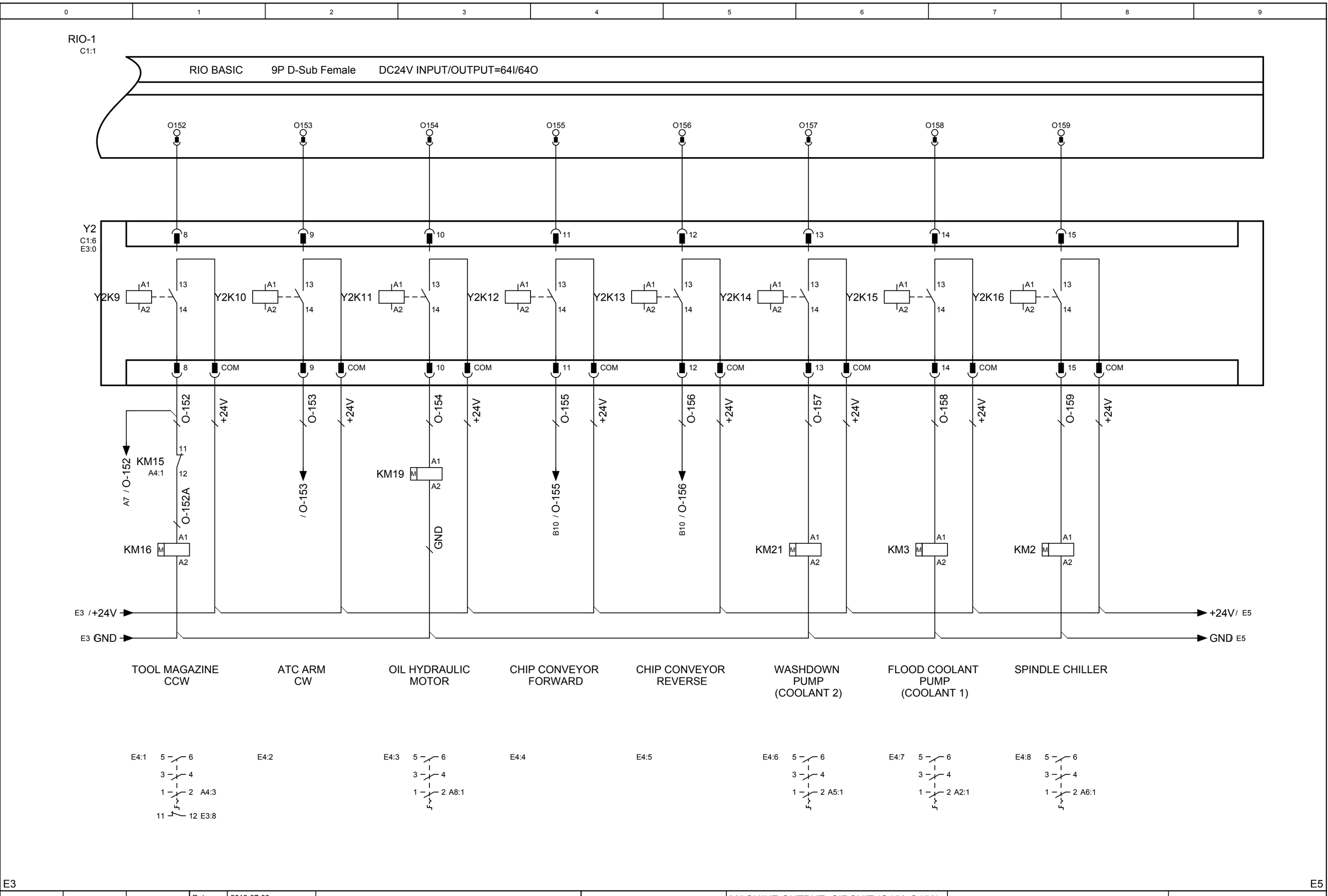
K12 RELAY
FOR VTS

E1 E3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE OUTPUT CIRCUIT (O136-O143) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page E2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 44 / 66 |




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-07-09 | | | MACHINE OUTPUT CIRCUIT (O144-O151) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page E3 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 45 / 66 |




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-07-09 | | | MACHINE OUTPUT CIRCUIT (O152-O159) | | = |
| | | | Ed. | USER | | | | | + |
| | | | Appr | | | | | | Page E4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | | Page 46 / 66 |

RIO-1
C1:1

RIO BASIC 9P D-Sub Female DC24V INPUT/OUTPUT=64I/64O

O160 O161 O162 O163 O164 O165 O166 O167

Y3
C1:3
E6:0

0 1 2 3 4 5 6 7

Y3K1 Y3K2 Y3K3 Y3K4 Y3K5 Y3K6 Y3K7 Y3K8

A1 A2 13 14

0 COM 1 COM 2 COM 3 COM 4 COM 5 COM 6 COM 7 COM

O-160 +24V O-161 +24V O-162 +24V O-163 +24V O-164 +24V O-165 +24V O-166 +24V O-167 +24V

KM9 M A1 A2

KM9A M A1 A2

GND

C3a / O-161

C3a / O-162

C3a / O-163

C3a / O-164

GND

GND

GND

E4 / +24V

E4 GND

+24V / E6

GND E6

COOLANT-THRU-SPINDLE PUMP (COOLANT 3)

SPINDLE CW (A1000-S1)

SPINDLE CCW (A1000-S2)

SPINDLE ORI. (A1000-S3)

SPINDLE ALARM RESET (A1000-S4)

"

COOLANT-THRU-SPINDLE RETURN PUMP

"

E5:1 5 6 3 4 1 2 A5:3

E5:2

E5:3

E5:4

E5:5

E5:6

E5:7 5 6 3 4 1 2 A5:5

E5:8

E4

E6

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE OUTPUT CIRCUIT (O160-O167) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page E5 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 47 / 66 |

RIO-1
C1:1

RIO BASIC 9P D-Sub Female DC24V INPUT/OUTPUT=64I/64O

O168 O169 O170 O171 O172 O173 O174 O175

Y3
C1:3
E5:0

8 9 10 11 12 13 14 15

Y3K9 Y3K10 Y3K11 Y3K12 Y3K13 Y3K14 Y3K15 Y3K16
A1 13 A2 14

8 COM 9 COM 10 COM 11 COM 12 COM 13 COM 14 COM 15 COM

O-168 +24V O-169 +24V O-170 +24V O-171 +24V O-172 +24V O-173 +24V O-174 +24V O-175 +24V

Y0E61 Y0E62 Y0E63 S0D69 D6:5 S0D65 D6:5 S0D66 D6:6 S0D67 D6:7 Y0E64
x1 x2

GND

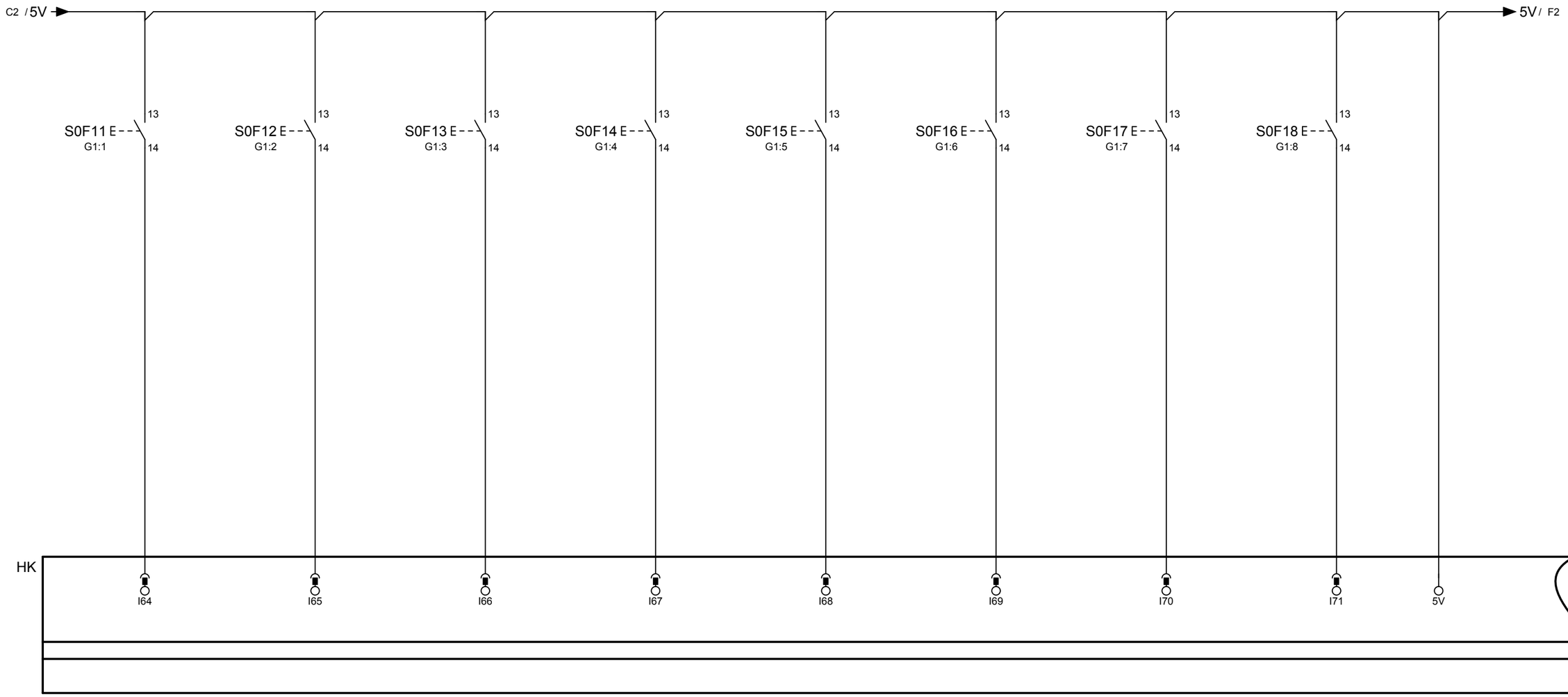
E5 /+24V → +24V/ H1

E5 GND → GND H1

| TOOL MAGAZINE UNLOCK PIN SOL | M72 | M73 | TOOL MAGAZINE PANEL ENABLE BUTTON GREEN LED | TOOL MAGAZINE PANEL MAG. CW BUTTON YELLOW LED | TOOL MAGAZINE PANEL MAG. CCW BUTTON YELLOW LED | TOOL MAGAZINE PANEL TOOL UNCLAMP BUTTON YELLOW LED | TOOL MAGAZINE REMOVE TOOL SOL |
|---|---|---|---|---|---|---|---|
| E6:1 | E6:2 | E6:3 | E6:4 | E6:5 | E6:6 | E6:7 | E6:8 |

E5 F1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | MACHINE OUTPUT CIRCUIT (O168-O175) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page E6 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 48 / 66 |




BLOCK SKIP BUTTON

OPTIONAL STOP BUTTON

WORK LIGHT BUTTON

AUX BUTTON (M30 APOFF)

CHIP FORWARD BUTTON

CHIP REVERSE BUTTON

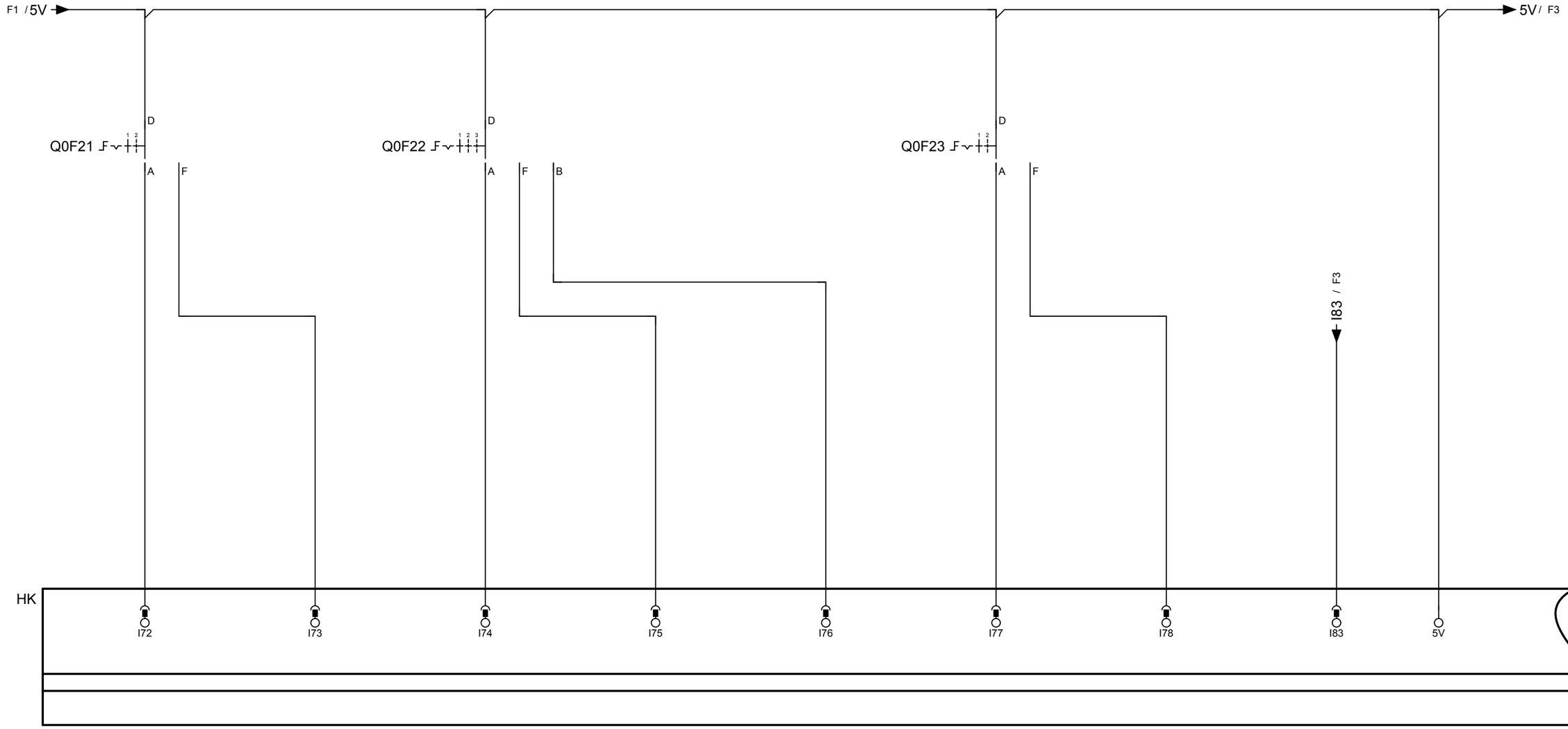
CTS BUTTON

WASHDOWN BUTTON

E6

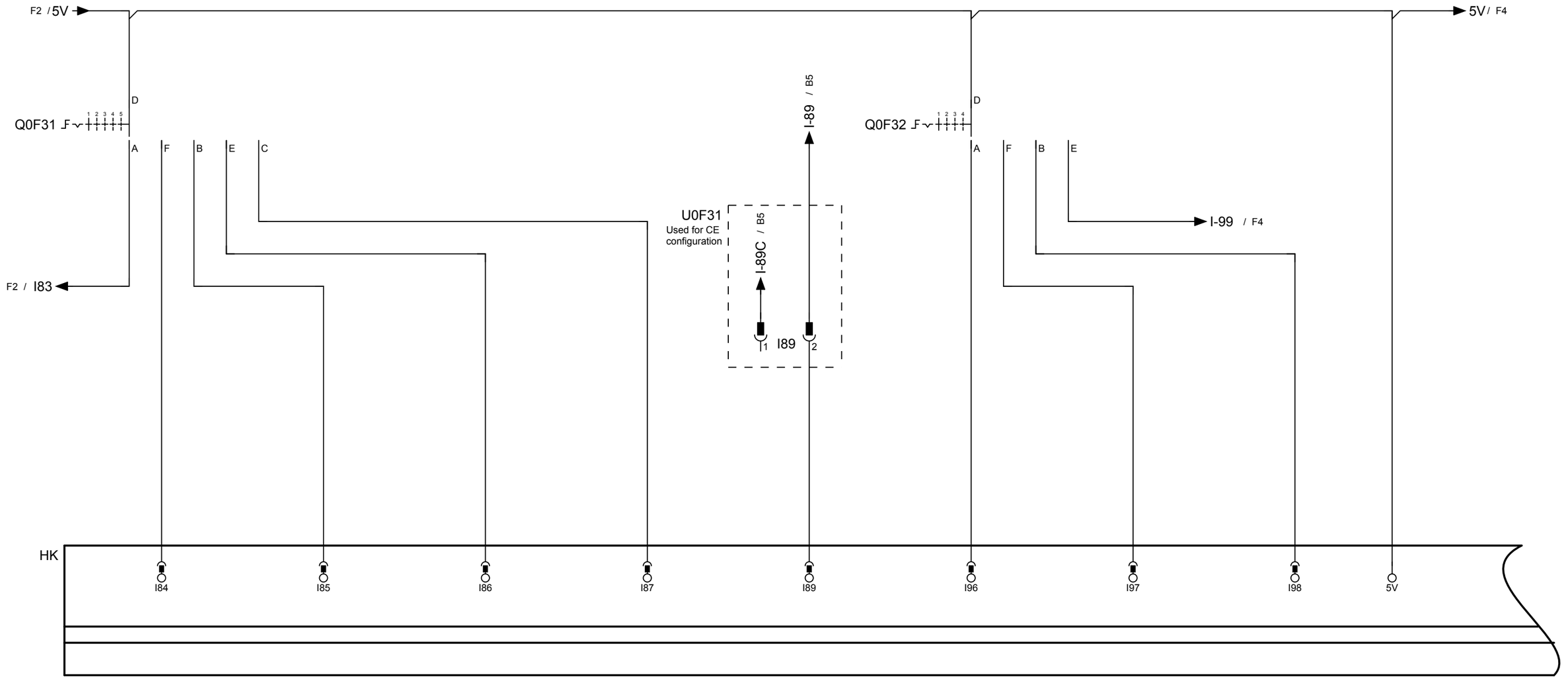
F2

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | HK CONNECTOR<br>OPERATION PANEL INPUT CIRCUIT<br>(I64-I99) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page F1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 49 / 66 |



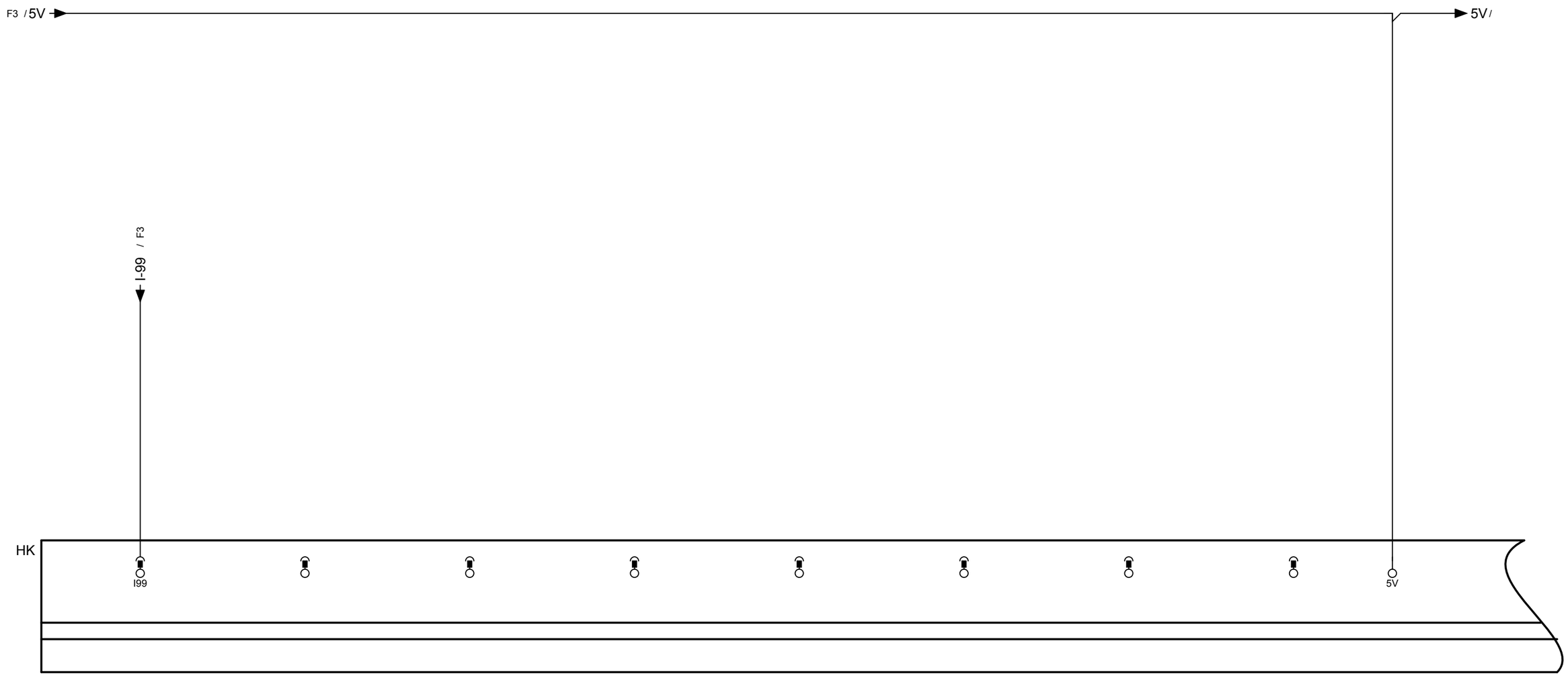

F1 F3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | HK CONNECTOR OPERATION PANEL INPUT CIRCUIT (I64-I99) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page F2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 50 / 66 |




F2 F4

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | HK CONNECTOR OPERATION PANEL INPUT CIRCUIT (I64-I99) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page F3 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 51 / 66 |

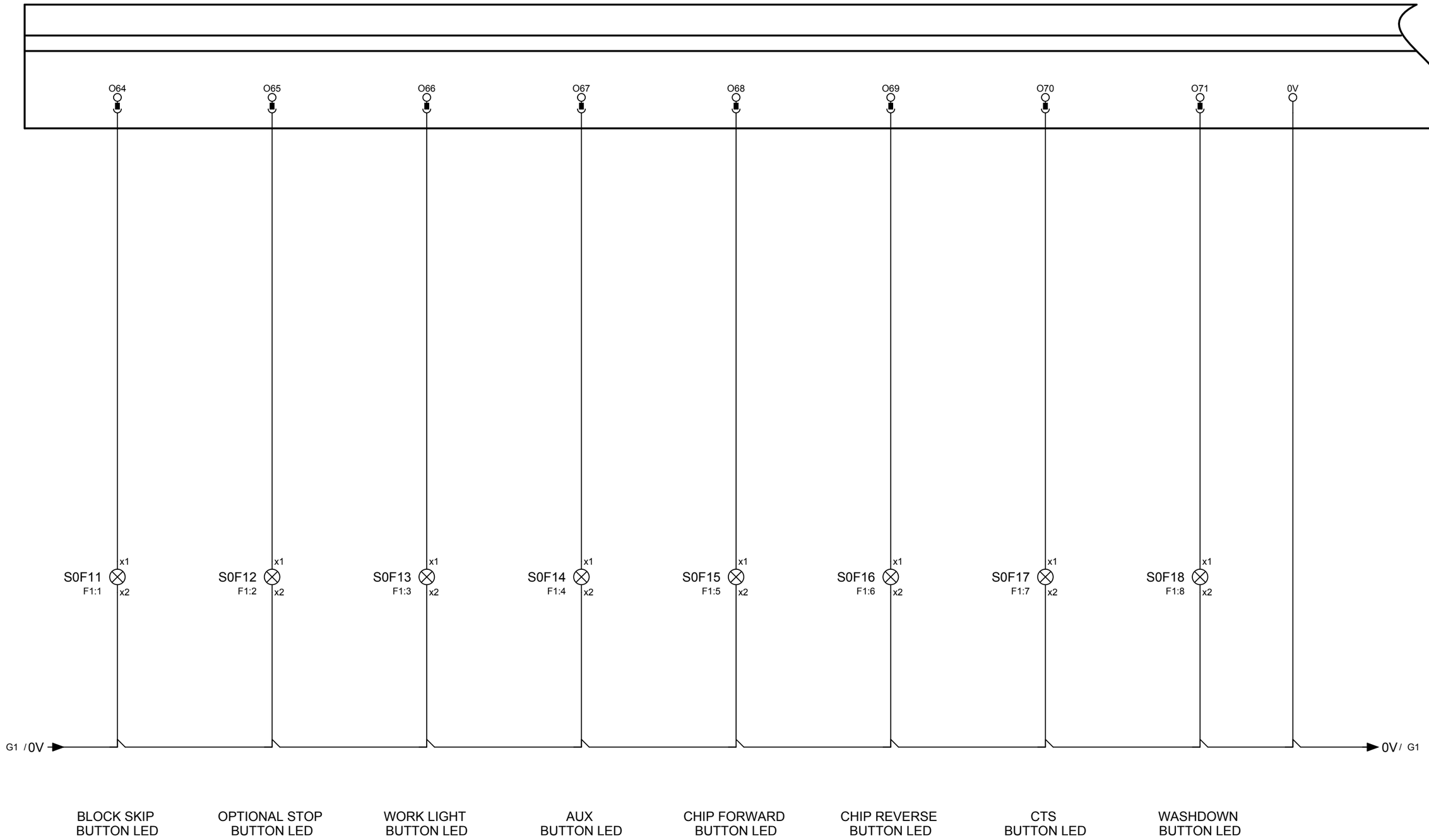



JOG TRAVERSE
OVERRID BIT8

F3 G1

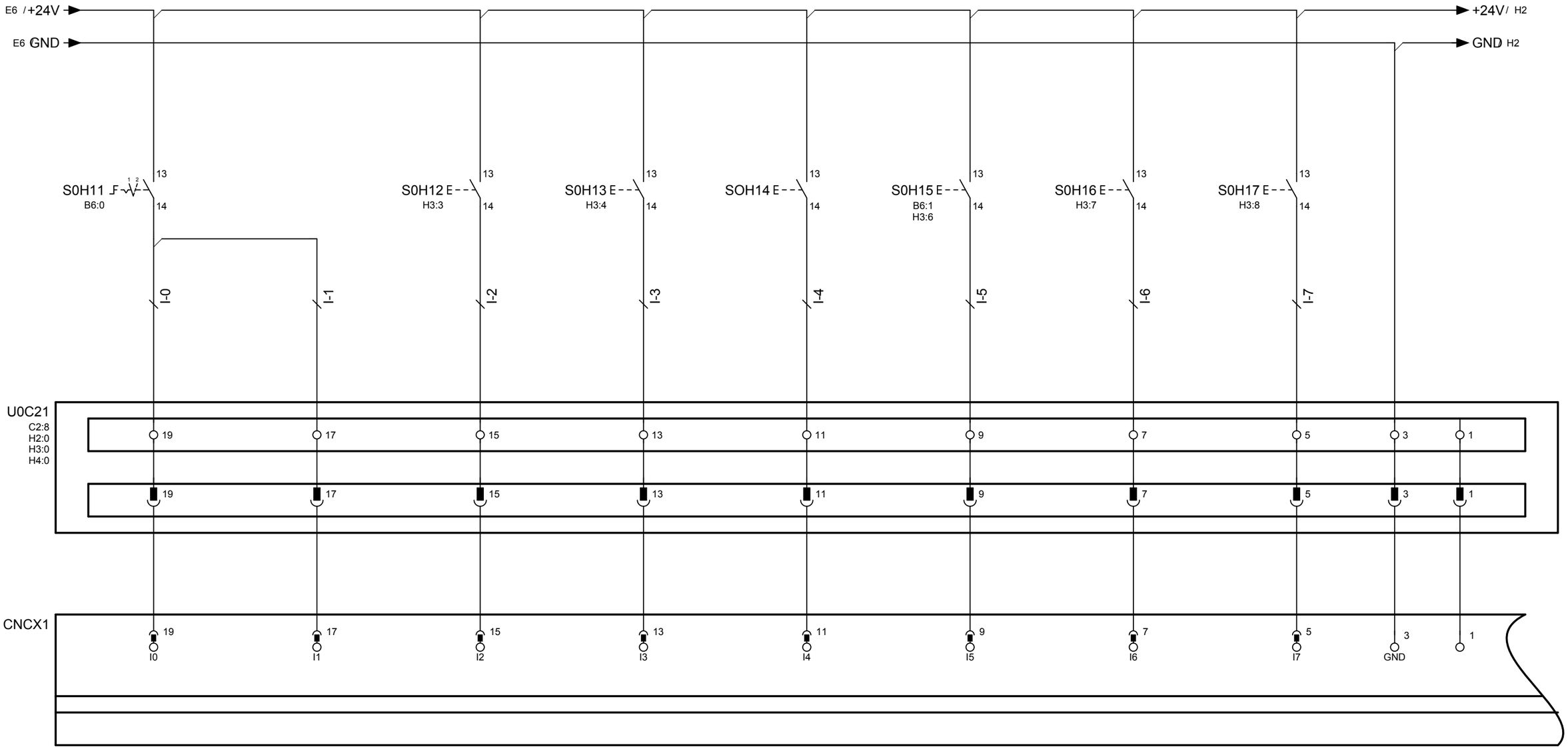
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | HK CONNECTOR<br>OPERATION PANEL INPUT CIRCUIT<br>(I64-I99) | | = |
| | | | Ed. | USER | | | | | + |
| | | | Appr | | | | | | Page F4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | | Page 52 / 66 |

HK




F4 H1

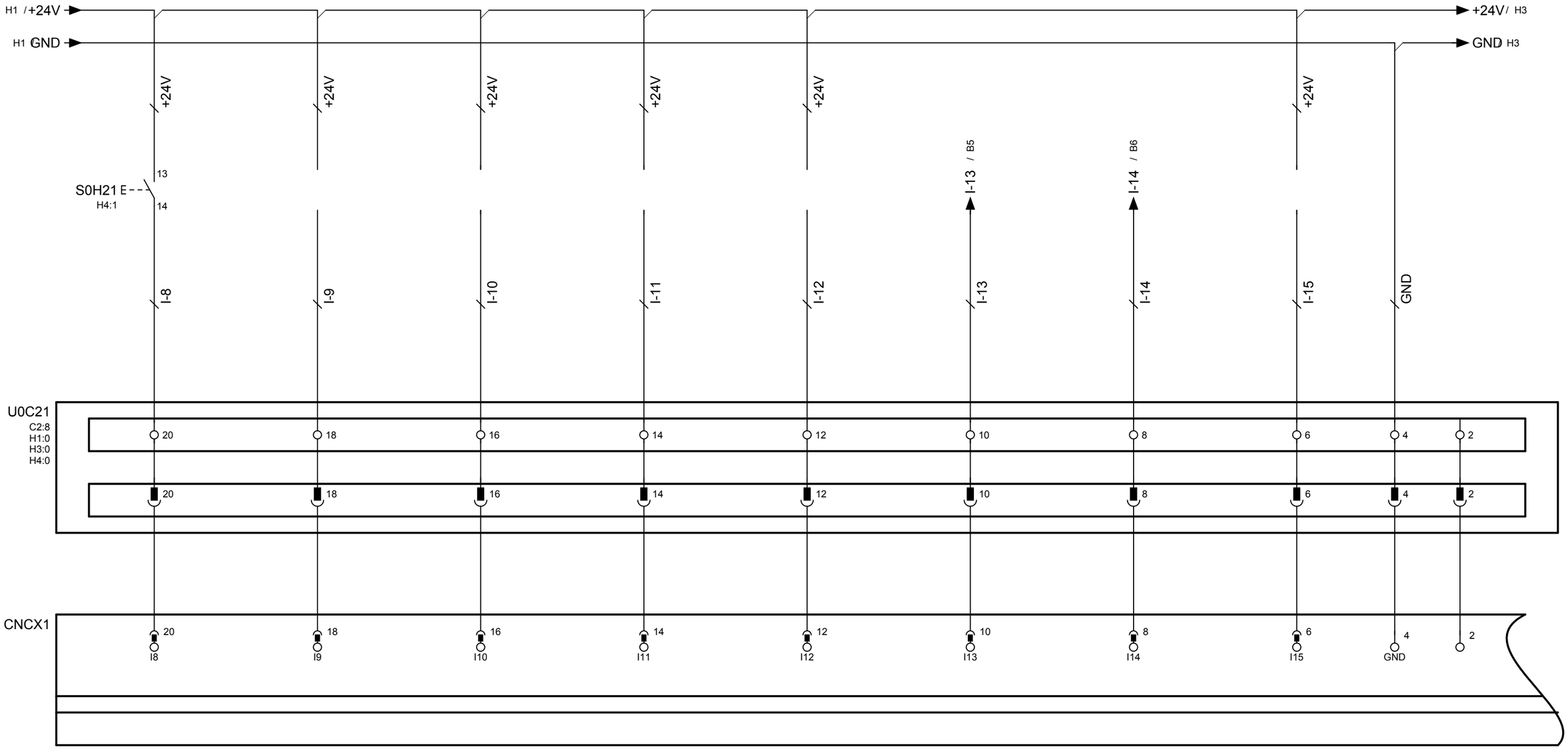
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | HK CONNECTOR<br>OPERATION PANEL OUTPUT CIRCUIT<br>(O64-O71) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page G1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 53 / 66 |




KEY SW AUTO MODE | KEY SW MANU MODE | RESET BUTTON | DOOR OPEN BUTTON | BUTTON | ENABLE & HOLD TO RUN BUTTON | BUTTON | BUTTON

G1 H2

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | X1 CONNECTOR OPERATION PANEL INPUT CIRCUIT (I0-I7) | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | H1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 54 / 66 |

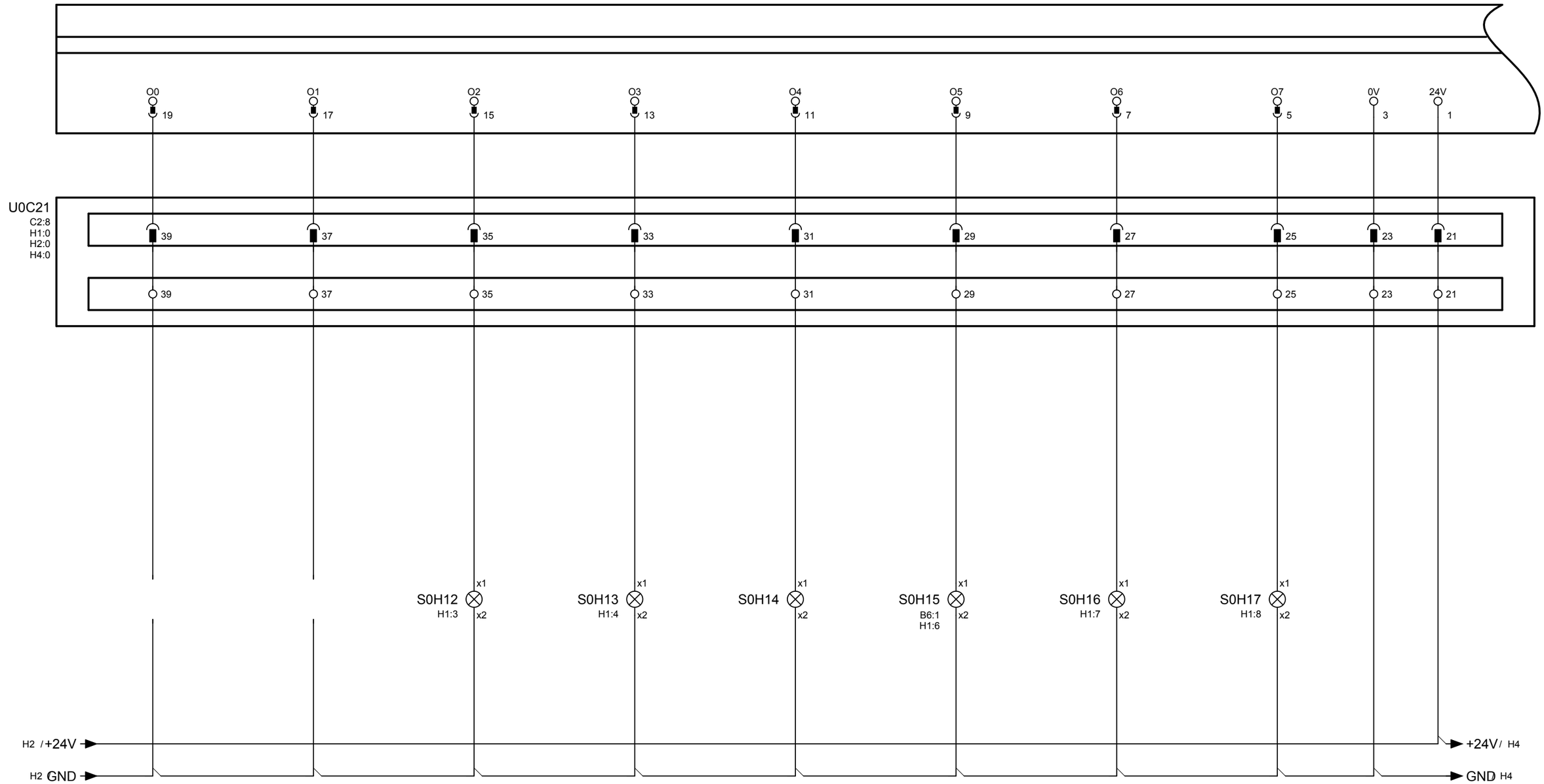



| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CLEANING GUN BUTTON | " | " | " | " | EMG MODULE X1 SIGNAL | DOOR MODULE X1 SIGNAL | " | | | |

H1 H3

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | X1 CONNECTOR OPERATION PANEL INPUT CIRCUIT (I8-I15) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page H2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 55 / 66 |

CNCY1




H2 H4

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | Y1 CONNECTOR OPERATION PANEL OUTPUT CIRCUIT (O0-O7) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page H3 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 56 / 66 |

CNCY1

O8 20 | O9 18 | O10 16 | O11 14 | O12 12 | O13 10 | O14 8 | O15 6 | 0V 4 | 24V 2

U0C21
C2:8
H1:0
H2:0
H3:0

20 29 28 27 26 25 24 23 22 21

20 18 16 14 12 10 8 6 4 2

S0H21 x1 x2
H2:1

H3 /+24V → +24V /

H3 GND → GND I3

CLEAN GUN BUTTON GREENLED

" " " " " " '

H3 I1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | Y1 CONNECTOR OPERATION PANEL OUTPUT CIRCUIT (O8-O15) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page H4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 57 / 66 |

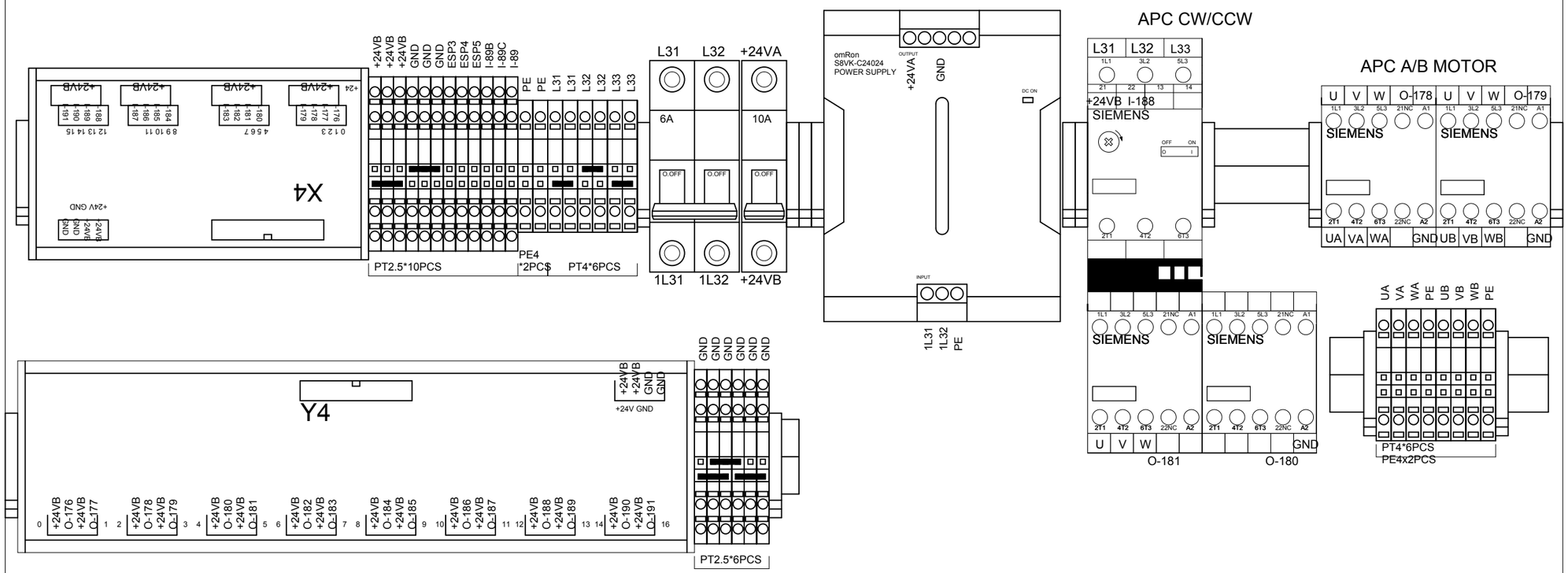
U0I79

1--L31
2--L32
3--L33
4--PE
5--ESP3
6--ESP5
7--I-89B
8--I-89
9--+24VB
10--+24VB
11--GND
12--GND

13--I-182
14--I-183
15--I-186
16--I-187
17--I-189
18--I-191
19--O-182
20--O-183
21--O-184
22--O-186
23--O-187
24--O-185

# 32X65 WIRING DUCT

+APC-TB2 | CB9 | CB10 | GS3 | QAB | KMABF | KMABR | KMA | KMB



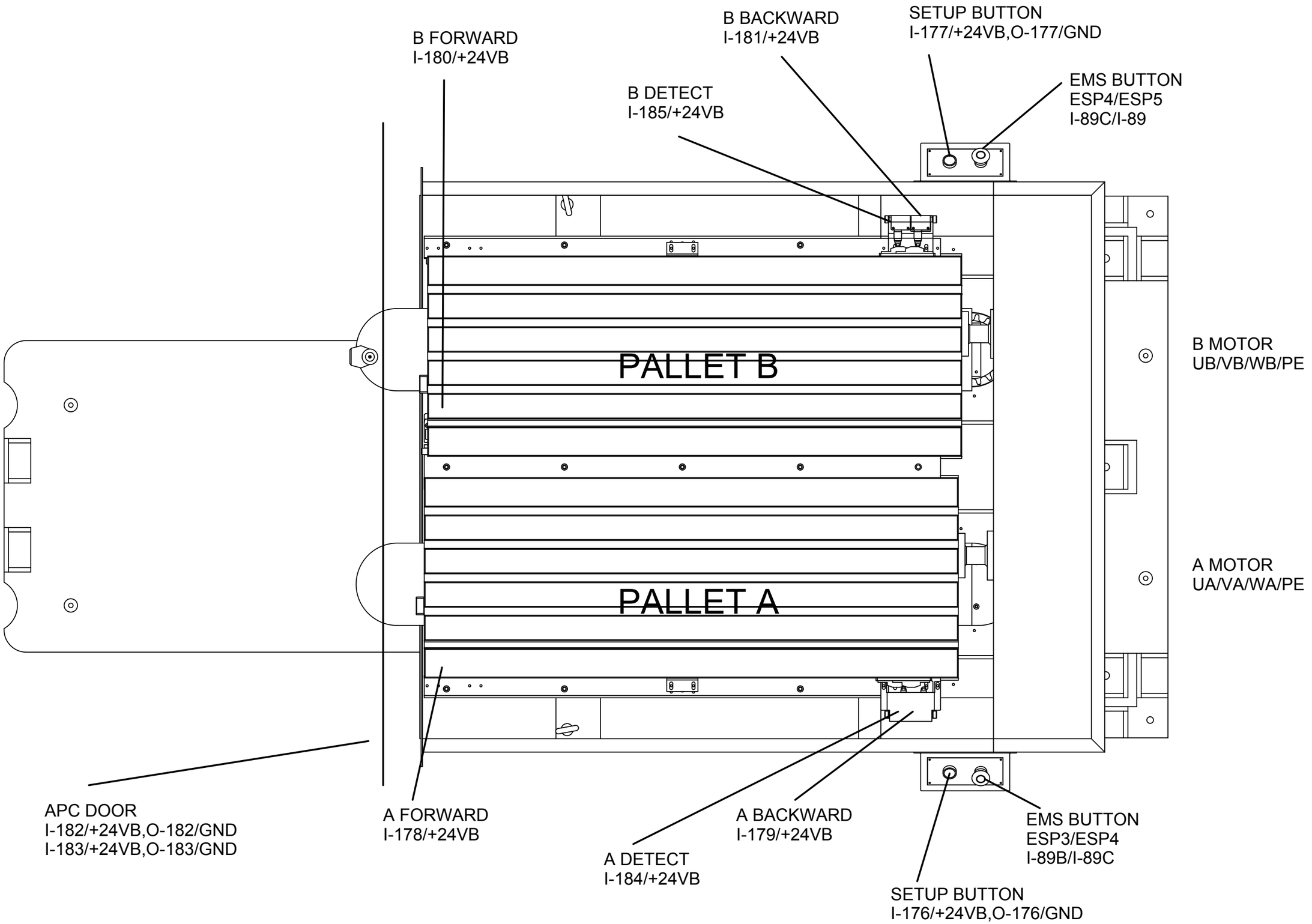

+APC-TB3 | +APC-TB1

32X65 WIRING DUCT

APC:690X310 I/O=X4/Y4

H4 I2

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-08-03 | | | APC CONFIGURATION | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page I1 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 58 / 66 |




I1 I3

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-08-02 | | | APC CONFIGURATION | | = |
| | | | Ed. | USER | | | | | + |
| | | | Appr | | | | | | Page I2 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | | Page 59 / 66 |

I3 /+24VB

H4 GND

+24VB/ I3

GND/ I5

+APC-TB2

+24VB

GND

RIO-1

C1:1
D1:0
D2:0
D3:0
D4:0
D5:0
D6:0
E1:0
E2:0
E3:0
E4:0
E5:0
E6:0
I6:0
I7:0
I8:0
I9:0

+24V
+24V
GND
GND

X1
X2
X3
X4 L8M

Y1
Y2
Y3
Y4 L8M

X4
I6:0
I7:0

+24VB
GND

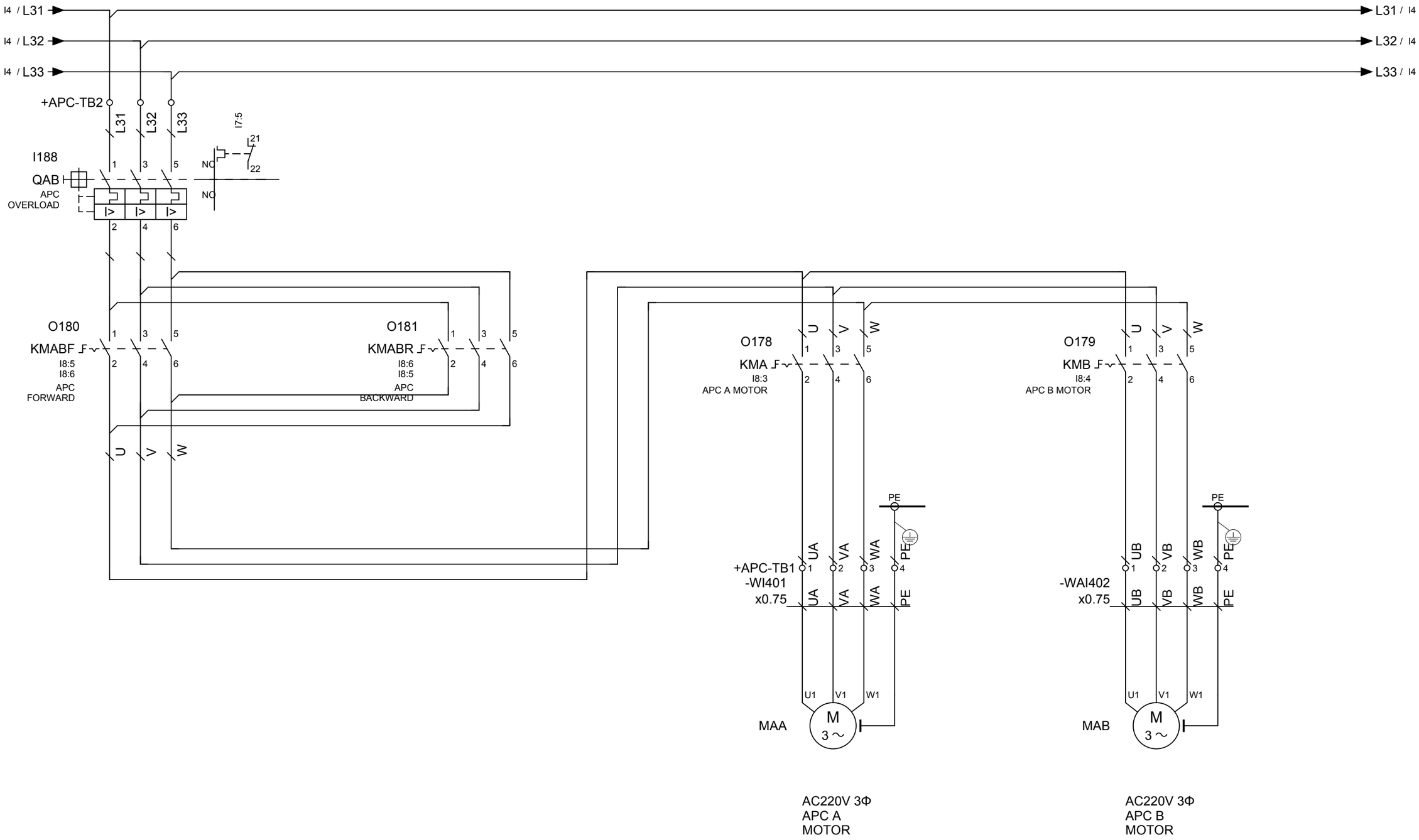
Y4
I8:0
I9:0

+24VB
GND

I2

I4

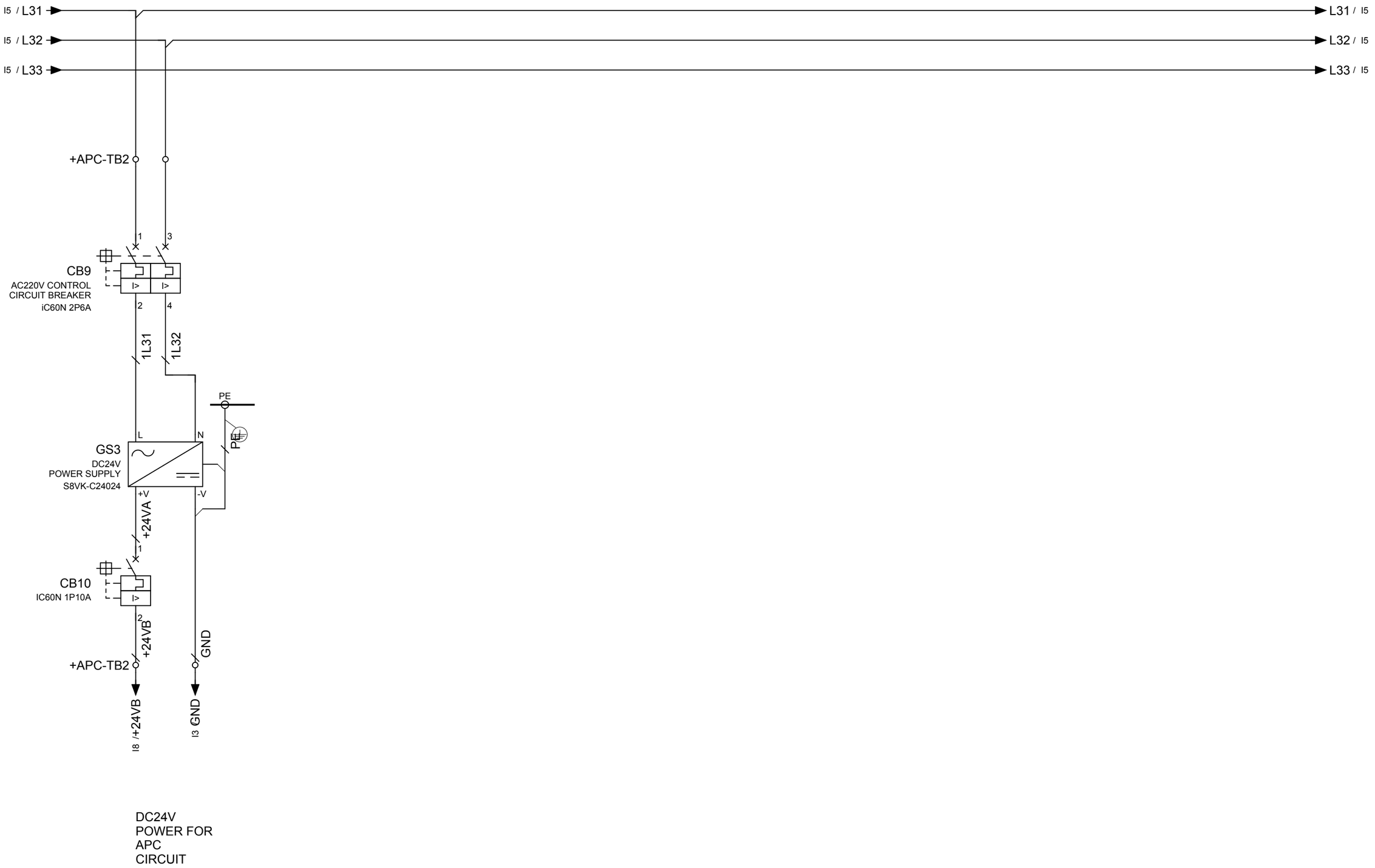
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-08-02 | | | APC I/O CARD CONTROL UNIT | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | I3 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 60 / 66 |




I3

I5

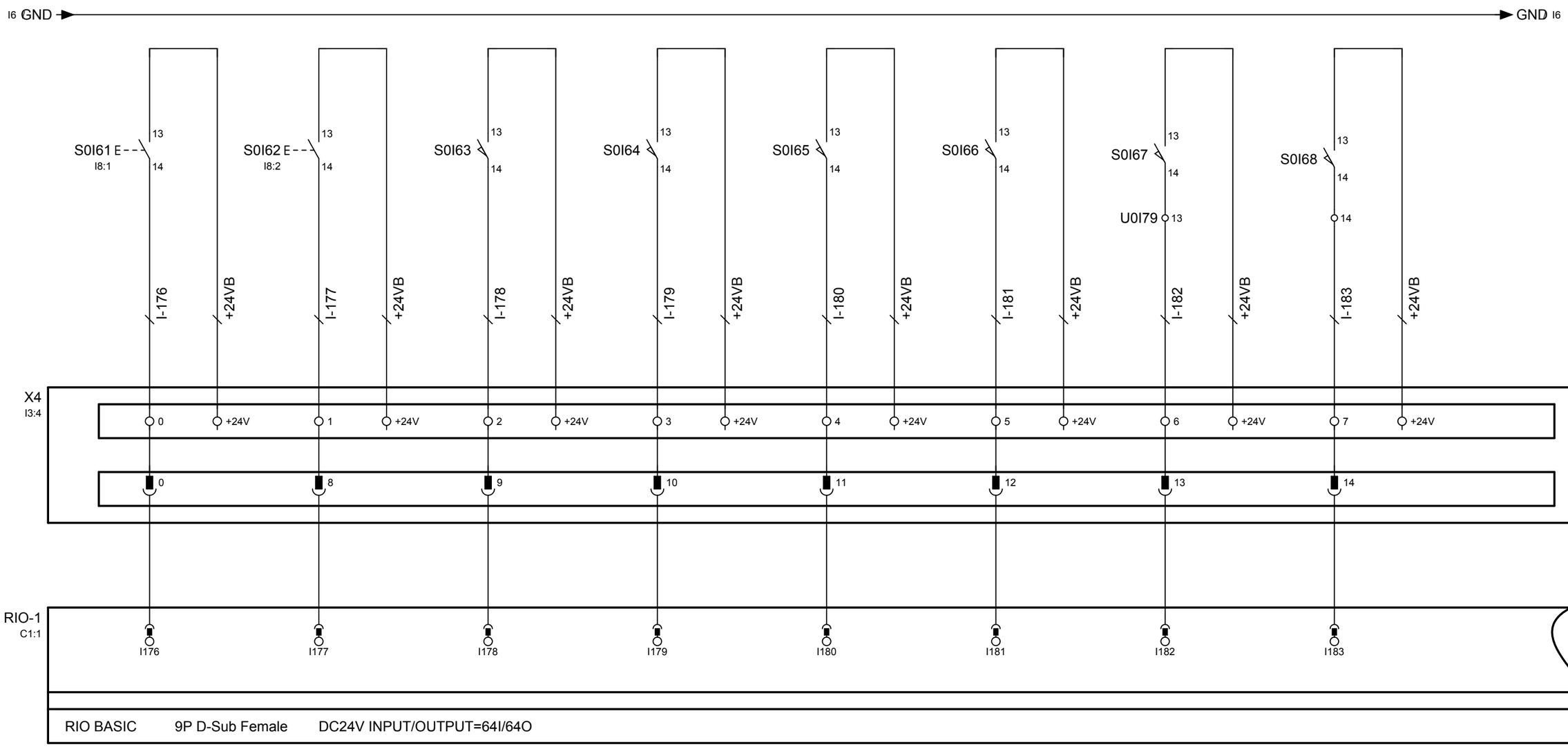
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | APC MOTOR POWER CIRCUIT | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page I4 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 61 / 66 |




DC24V
POWER FOR
APC
CIRCUIT



| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | APC POWER SUPPLY CIRCUIT | = | |
| | | | Ed. | USER | | | | + | |
| | | | Appr | | | | | Page | I5 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page | 62 / 66 |




APC PANEL A SET UP BUTTON

APC PANEL B SET UP BUTTON

A PALLET FORWARD LIMIT SW

A PALLET BACKWARD LIMIT SW

B PALLET FORWARD LIMIT SW

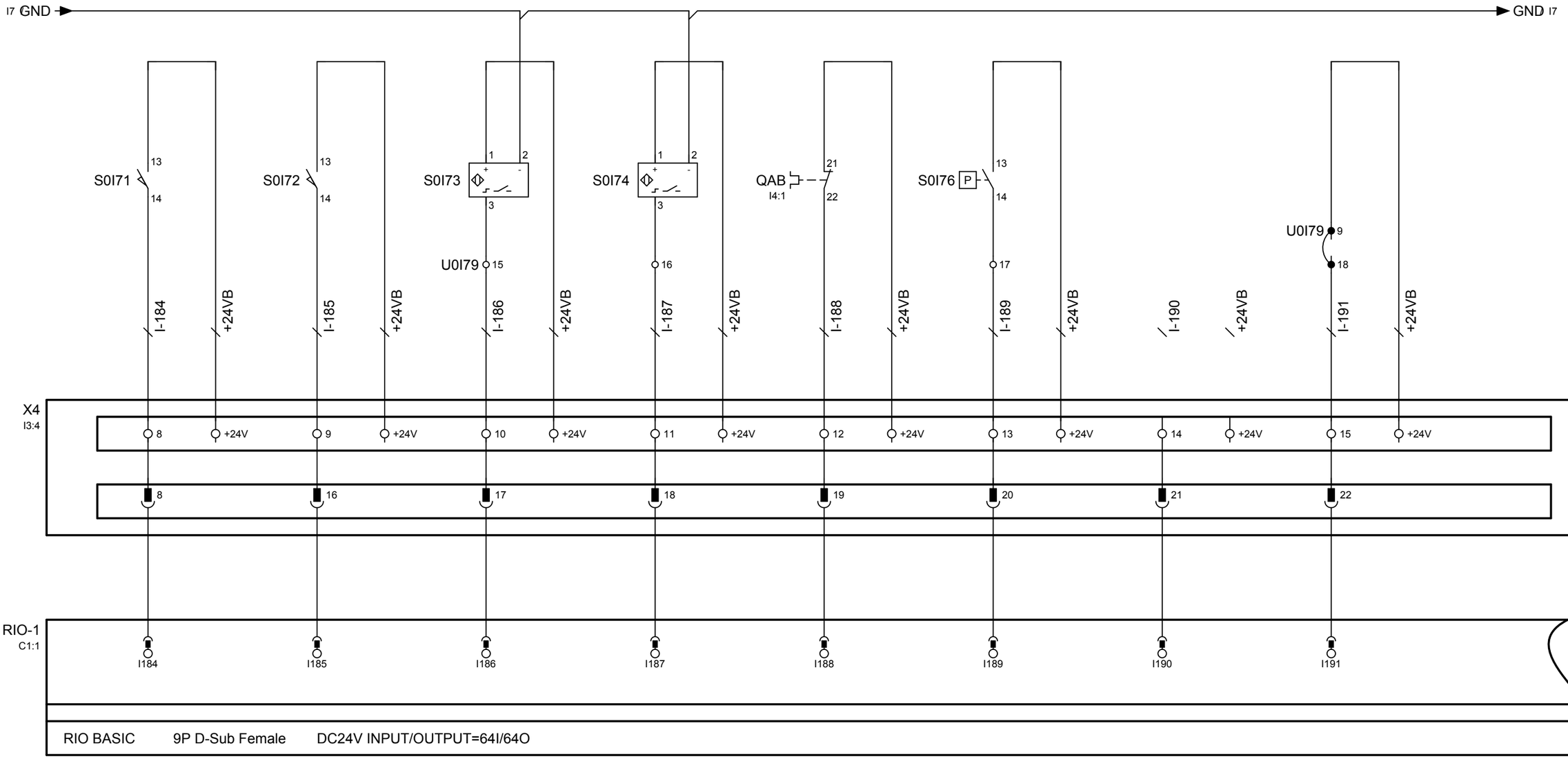
B PALLET BACKWARD LIMIT SW

APC DOOR OPEN LIMIT SW

APC DOOR CLOSE LIMIT SW

I5 I7

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-08-03 | | | APC MACHINE INPUT CIRCUIT (I176-I183) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page I6 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 63 / 66 |




A PALLET DETE LIMIT SW

B PALLET DETE LIMIT SW

PALLET UP SENSOR

PALLET DOWN SENSOR

APC MOTOR OVERLOAD

APC PRESSURE SW

,

APC CONNECT CHECK SIGNAL

I6 I8

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2019-06-17 | | | APC MACHINE INPUT CIRCUIT (I184-I191) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page I7 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 64 / 66 |

RIO-1
C1:1

RIO BASIC 9P D-Sub Female DC24V INPUT/OUTPUT=64I/64O

O176 O177 O178 O179 O180 O181 O182 O183

Y4
I3:5
I9:0

0 1 2 3 4 5 6 7

Y4K1 Y4K2 Y4K3 Y4K4 Y4K5 Y4K6 Y4K7 Y4K8
A1 13 A2 14

0 COM 1 COM 2 COM 3 COM 4 COM 5 COM 6 COM 7 COM

O-176 +24VB O-177 +24VB O-178 +24VB O-179 +24VB O-180 +24VB O-181 +24VB O-182 +24VB O-183 +24VB

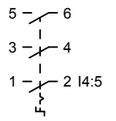
S0I61 I6:1 x1 x2 GND
S0I62 I6:2 x1 x2 GND
KMA A1 M A2 GND
KMB A1 M A2 GND
KMABR I4:3 11 12
KMABF A1 M A2 GND
KMABF I4:1 11 12
KMABR A1 M A2 GND
Y0I87 GND GND

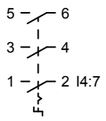
I5 /+24VB
I8 GND

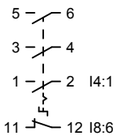
+24VB/ I9
GND I8

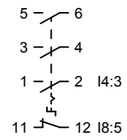
APC PANEL A SET UP BUTTON LED (GL)
APC PANEL B SET UP BUTTON LED (GL)
A PALLET MOTOR
B PALLET MOTOR
PALLET FORWARD
PALLET BACKWARD
APC DOOR OPEN SOL (AIR)
APC DOOR OPEN SOL (AIR)

I8:1 I8:2

I8:3



I8:4



I8:5



I8:6



I8:7 I8:8

I7 I9

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-07-18 | | | APC MACHINE OUTPUT CIRCUIT (O176-O183) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page I8 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 65 / 66 |

RIO-1
C1:1

RIO BASIC 9P D-Sub Female DC24V INPUT/OUTPUT=64I/64O

O184 O185 O186 O187 O188 O189 O190 O191

Y4
I3:5
I8:0

8 9 10 11 12 13 14 15

Y4K9 Y4K10 Y4K11 Y4K12 Y4K13 Y4K14 Y4K15 Y4K16
A1 A2 13 14

8 COM 9 COM 10 COM 11 COM 12 COM 13 COM 14 COM 15 COM

O-184 +24VB O-185 +24VB O-186 +24VB O-187 +24VB O-188 +24VB O-189 +24VB O-190 +24VB O-191 +24VB

x1 x2
Y0I91 Y0I92 Y0I93

GND GND GND GND GND GND GND GND

I8 /+24VB → +24VB/
I9 GND → GND I9

PALLET
AIR BLOW SOL 1
(AIR)

PALLET
AIR BLOW SOL 2
(AIR)

PALLET
UP SOL
(OIL)

PALLET
DOWN SOL
(OIL)

,

,

,

,

I9:1 I9:2 I9:3 I9:4 I9:5 I9:6 I9:7 I9:8

I8

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Date | 2018-08-02 | | | APC MACHINE OUTPUT CIRCUIT (O184-O191) | = |
| | | | Ed. | USER | | | | + |
| | | | Appr | | | | | Page I9 |
| Modification | Date | Name | Original | | Replacement of | Replaced by | | Page 66 / 66 |