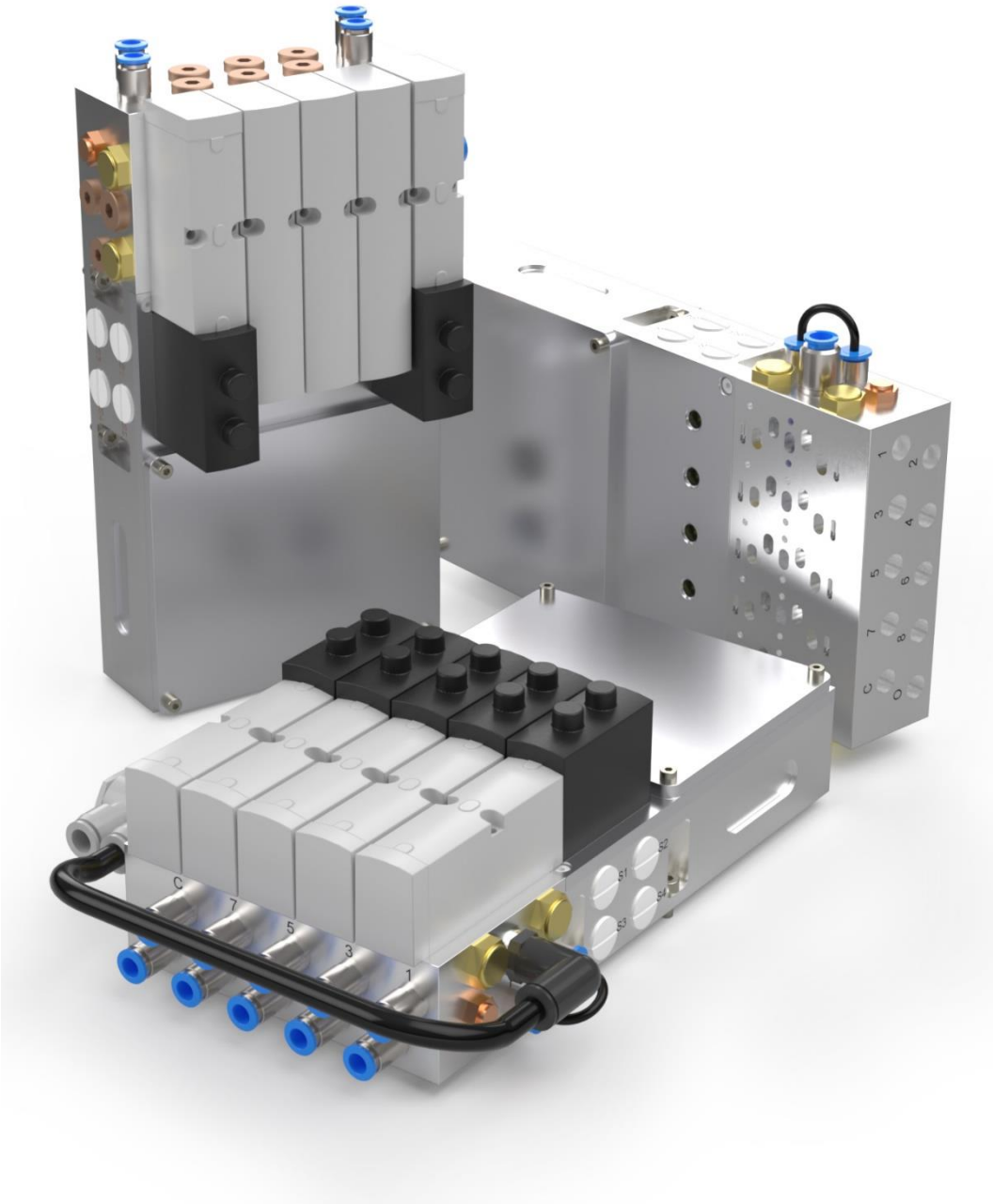
Product Manual

Large valve unit

M0002-1

Tool changers | Swivels | Swivel tool changers | Grippers | Hose packages **| Valve units** | Tool systems



rsp robot system products

Robot Systems Products AB
Isolatorvägen 4
SE-721 37 Västerås
Sweden

CONTENTS

1 INTRODUCTION

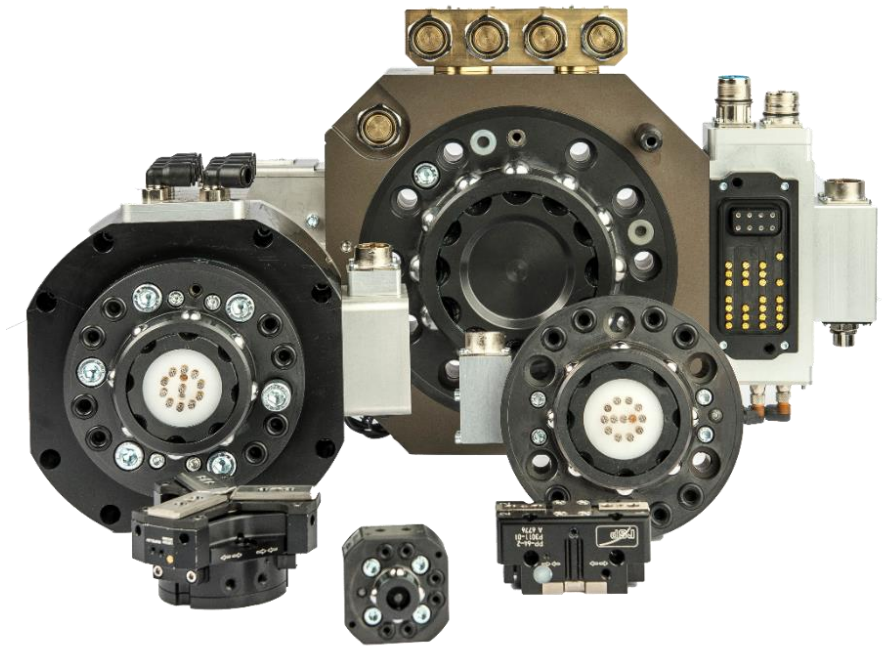
Robot System Products is a front-rank provider of peripheral products for high performance robot applications. We provide complete system solutions for your robot installations, aiming to improve your productivity with the most reliable and cost-effective tooling on the market. Continuously we explore emerging technologies, working with leading edge design.

Robot System Products has a wide range of standard robot peripheral products:

- Tool changers
- Swivels
- Swivel tool changers
- CiRo
- Grippers
- Hose Packages
- Valve units
- Tool systems
- Tool parking systems

Robot System Products' tool changers are constructed to maximize the flexibility and reliability of your robot fleet. Through our patented locking device TrueConnect™ robustness and high safety are combined with low weight and compactness. With our swivels compressed air, water, electrical and data signals as well as weld and servo power are transferred to your tools with robot motion capabilities fully maintained. Our Swivel tool changers unite the TrueConnect™ mechanism with our swivel technology, combining the best out of the two technologies. With RSP's cost-effective CiRo, cables and hoses can be freely selected with high robot flexibility maintained, and space requirements reduced. Our integrated Tool systems are delivered as complete plug-and-play solutions designed for quick and simple installation.

Robot System Products' product lines are available for all major robot brands and come with complete documentation. 3D-models for simulation are available for download at: www.rsp.eu.com.



1.1 Safety

1.1.1 General

The integrator installing the valve unit must follow the safety demands stated in standards and provisions applicable in the country where the valve unit is to be installed.

The user of the Robot System Products valve unit is responsible that law and directives applicable in respective countries, with regards to safety, are followed. The user is also responsible to guarantee that all safety devices are installed correctly.

WARNING!
Never carry out service work on a robot that has not been taken out of operation. See safety information for the robot.

WARNING!
Only perform work on valve units if the air pressure is safely switched off.

WARNING!
Be aware that the valve unit may cause personal injury and equipment damage if dropped.

1.1.2 Explanation of warnings

The warnings in this document are specific to the products in this manual. It is expected that the user also pay attention to certain notifications from the robot manufacturer and/or the manufacturers of other components used in the installation.

WARNING!
The warning sign will make you aware that a situation could result in potential serious injury or damage to equipment.

NOTE!
The note sign will alert you about something important to consider.

2 TECHNICAL SPECIFICATIONS

2.1 General description of RSP Large valve units

This document presents the Robot System Products' Large valve units, ready for installation on the robot, available in different versions depending on required function.

Valve units without tool change functions consists of between one and five electrically controlled directional 5/2 bistable valves. With tool changer function one monostable 2x3/2 (1 NO and 1 NC) valve is dedicated for tool change. When the tool change valve becomes activated, the other valves are deactivated – which means that the air supply is automatically turned off during tool change and no program instructions are required for turning the air supply on or off. Four optional connections for sensor interfaces can be mounted on the valve unit.

2.2 Configuration of Large valve units

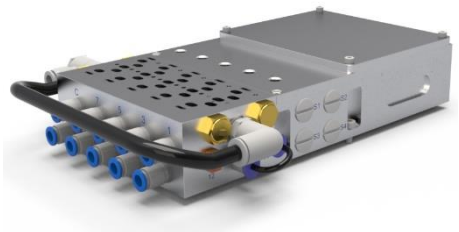
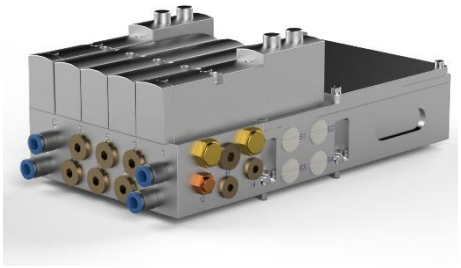
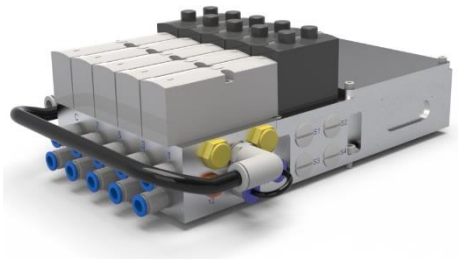
NOTE! "T" stands for installed tool change valve and "D" for installed directional valves, "t" stands for slots inteded for tool change valves and "d" for slots intended for directional valves.

Installed valves

Extended valve unit	Installed valves					Pneumatic diagram
	Valve V1	Valve V2	Valve V3	Valve V4	Valve V5	
P0040A	d	d	d	d	t	Pne0214-051 (section 2.12.1)
P0059	d	d	d	d	d	Pne0214-054 (section 2.12.2)
P0044A	D	–	–	–	T	Pne0214-052 (section 2.12.3)
P0041A	D	D	D	–	T	Pne0214-052 (section 2.12.3)
P0043A	D	D	D	D	T	Pne0214-052 (section 2.12.3)
P0045A	D	D	–	–	–	Pne0214-053 (section 2.12.4)
P0042A	D	D	D	D	–	Pne0214-053 (section 2.12.4)
P0067A	D	D	D	D	D	Pne0214-055 (section 2.12.5)

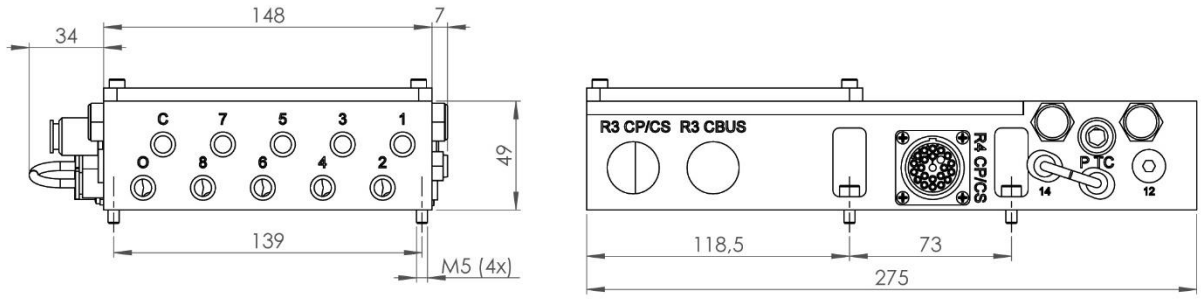
NOTE! Valves are not included in P0040A and P0059. P0040A is intended for installation of between one to four directional valves and has one position dedicated for a tool change valve. P0059 is intended for installation of up to five directional valves.

2.3 Product overview of Large valve units

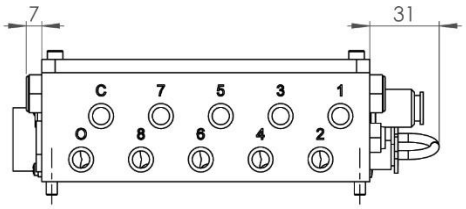
Article number	P0040A (section 2.4)	P0059 (section 2.5)
Description	Base unit for tool changing and 1–4 directional valves.	Base unit for 5 directional valves.
		
Article number	P0044A (section 2.6)	P0041A (section 2.7)
Description	For tool changing and 1 valve	For tool changing and 3 valves
		
Article number	P0043A (section 2.8)	P0045A (section 2.9)
Description	For tool changing and 4 valves	Valve unit with 2 valves
		
Article number	P0042A (section 2.10)	P0067A (section 2.11)
Description	Valve unit with 4 valves	Valve unit with 5 valves
		

2.4 Large valve unit: P0040A

Base unit for tool changing and 1–4 directional valves.



Base unit for 1–4 directional valves.

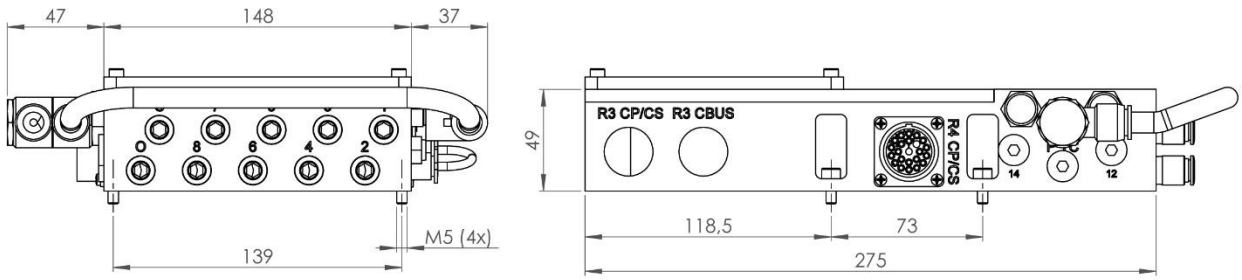


Technical data

Article number		P0040A
Working temperature		+10°C−+50°C
Weight		2.6 kg
Air channels	Pneumatic diagram	Pne0214-051 (section 2.12.1)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	1 / 1−4
	Inlet / Outlet channels	1 x 10 mm hose / 10 x G 1/4”
	Air flow with tool change valve	1100 l/min totally (max 10 bars)
	without tool change valve	1100 l/min for each valve (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 2−10 x valve control, 18 x (24V, 2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

NOTE! P0040A is prepared for one tool change valve and 1–4 directional valves. When 5 directional valves (without tool change) are required P0059 shall be used.

2.5 Large valve unit: P0059

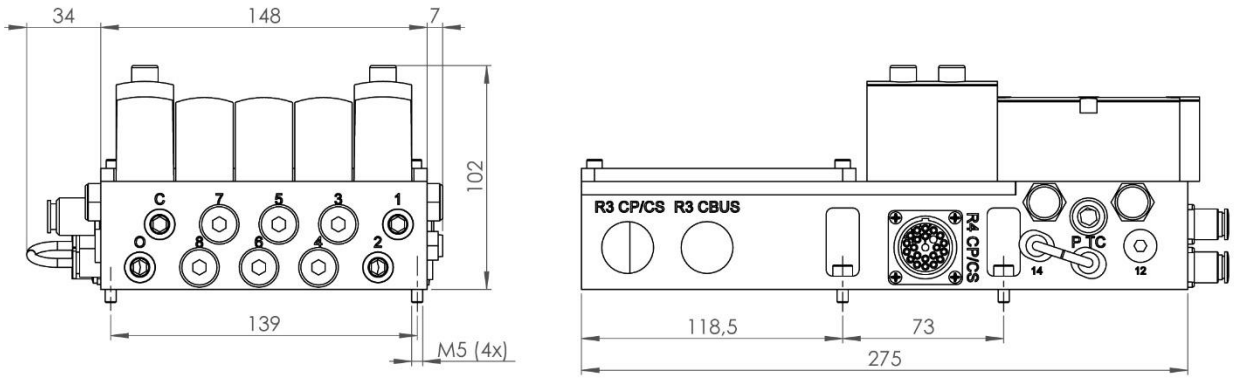


Technical data

Article number		P0059
Working temperature		+10°C−+50°C
Weight		2.8 kg
Air channels	Pneumatic diagram	Pne0214-054 (section 2.12.2)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	0 / 1–5
	Inlet / Outlet channels	1 x 10 mm / 10 x 8 mm hoses
	Air flow	1100 l/min for each valve (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 10 x valve control, 18 x (24V,2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

NOTE! P0059 should primarily be used with 5 directional valves, For 1–4 directional valves P0040A is recommended,

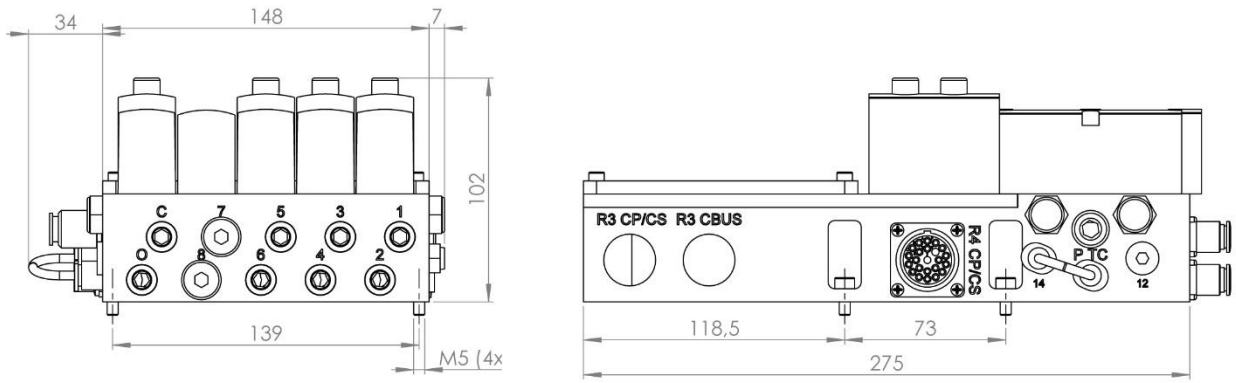
2.6 Large valve unit: P0044A



Technical data

Article number		P0044A
Working temperature		+10°C−+50°C
Weight		3.5 kg
Air channels	Pneumatic diagram	Pne0214-052 (section 2.12.3)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	1 / 1
	Inlet / Outlet channels	1 x 10 mm / 4 x 8 mm hoses
	Air flow	1100 l/min (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 4 x valve control, 18 x (24V,2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

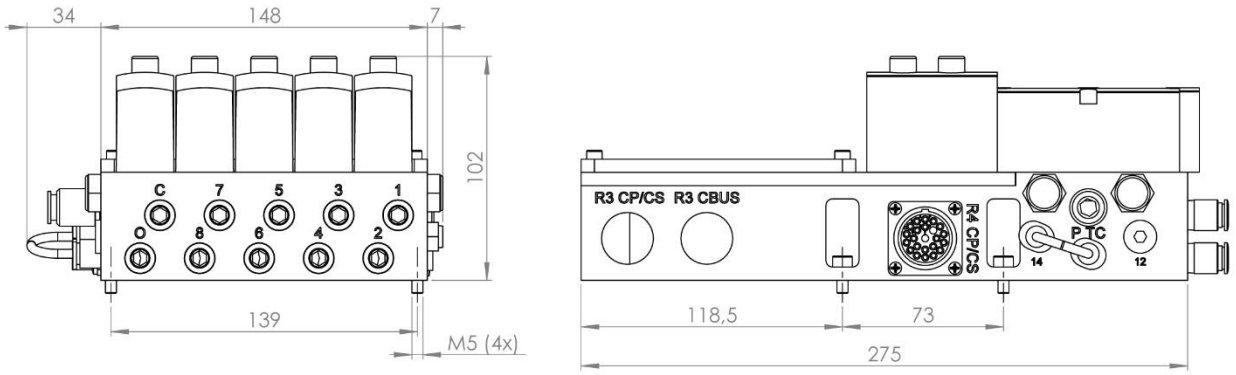
2.7 Large valve unit: P0041A



Technical data

Article number		P0041A
Working temperature		+10°C−+50°C
Weight		3.8 kg
Air channels	Pneumatic diagram	Pne0214-052 (section 2.12.3)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	1 / 3
	Inlet / Outlet channels	1 x 10 mm / 8 x 8 mm hoses
	Air flow	1100 l/min totally (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 8 x valve control, 18 x (24V,2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

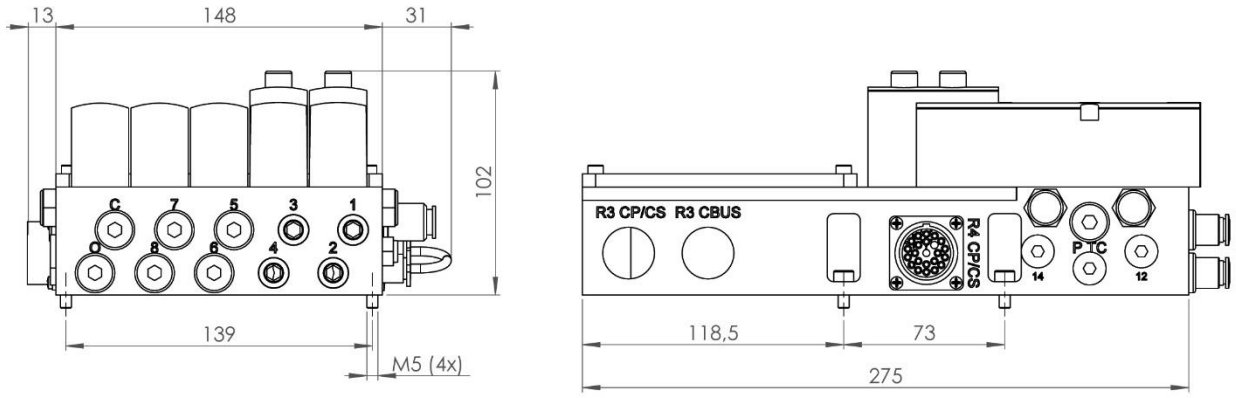
2.8 Large valve unit: P0043A



Technical data

Article number		P0043A
Working temperature		+10°C−+50°C
Weight		3.9 kg
Air channels	Pneumatic diagram	Pne0214-052 (section 2.12.3)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	1 / 4
	Inlet / Outlet channels	1 x 10 mm / 10 x 8 mm hoses
	Air flow	1100 l/min totally (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 10 x valve control, 18 x (24V,2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

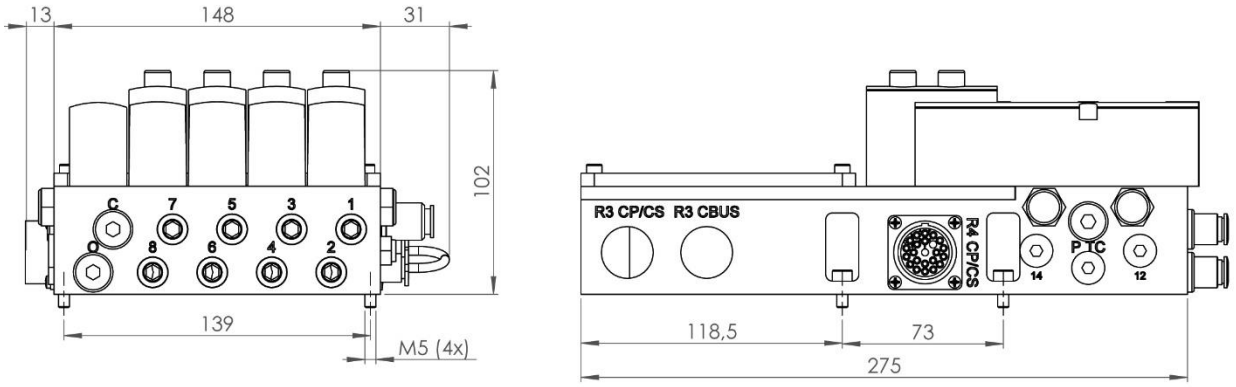
2.9 Large valve unit: P0045A



Technical data

Article number		P0045A
Working temperature		+10°C−+50°C
Weight		3.5 kg
Air channels	Pneumatic diagram	Pne0214-053 (section 2.12.4)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	0 / 2
	Inlet / Outlet channels	1 x 10 mm / 4 x 8 mm hoses
	Air flow	1100 l/min for each valve (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 4 x valve control, 18 x (24V,2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

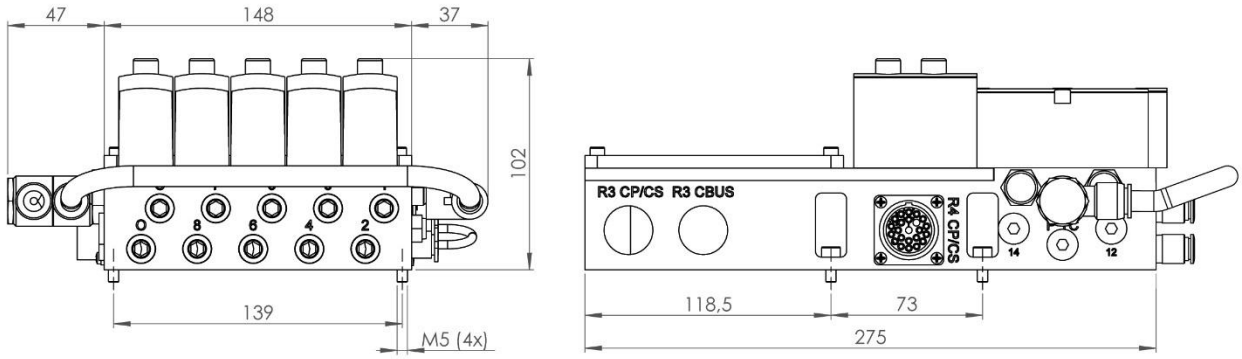
2.10 Large valve unit: P0042A



Technical data

Article number		P0042A
Working temperature		+10°C−+50°C
Weight		3.8 kg
Air channels	Pneumatic diagram	Pne0214-053 (section 2.12.4)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	0 / 4
	Inlet / Outlet channels	1 x 10 mm / 8 x 8 mm hoses
	Air flow	1100 l/min for each valve (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 8 x valve control, 18 x (24V,2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

2.11 Large valve unit: P0067A

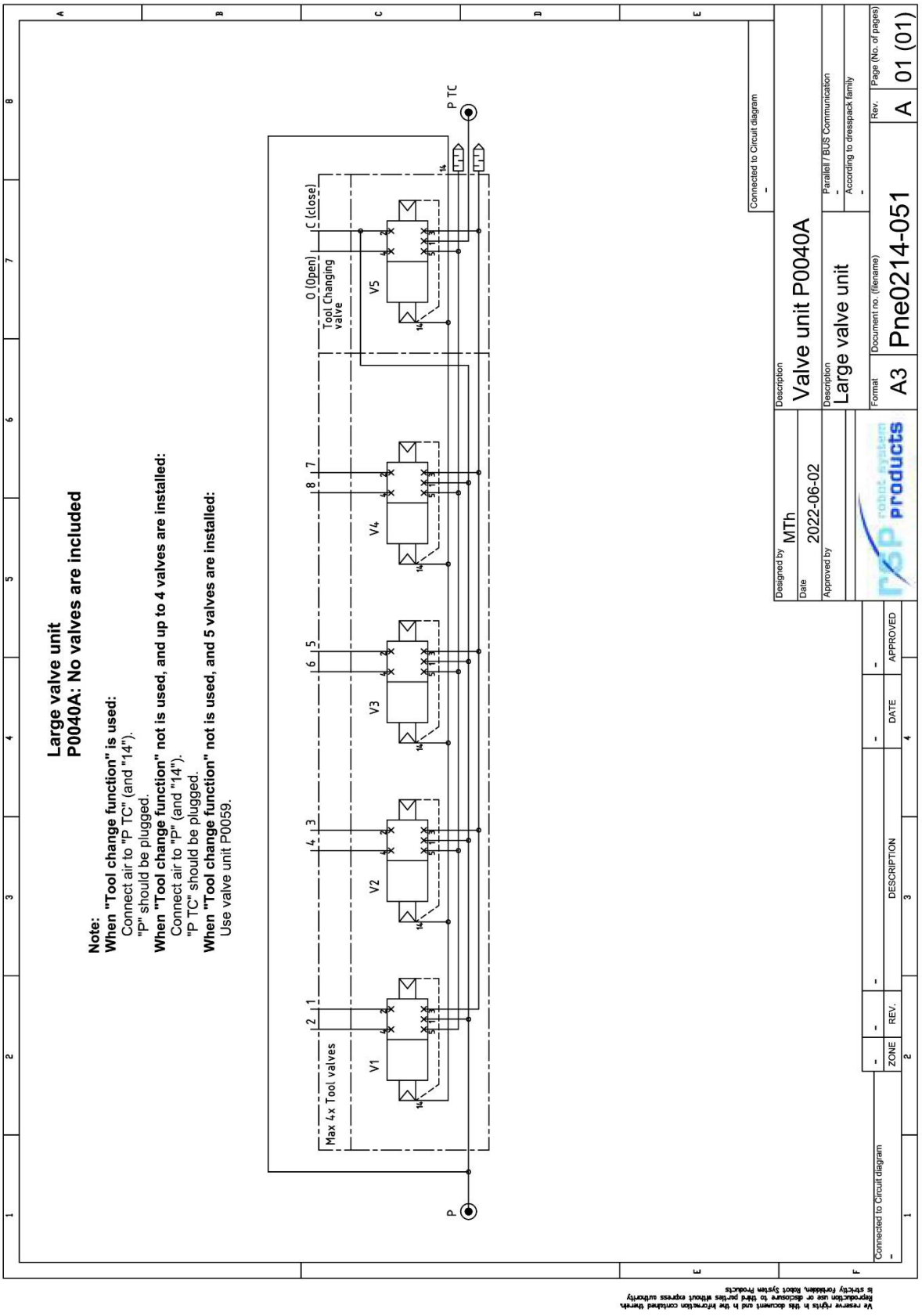


Technical data

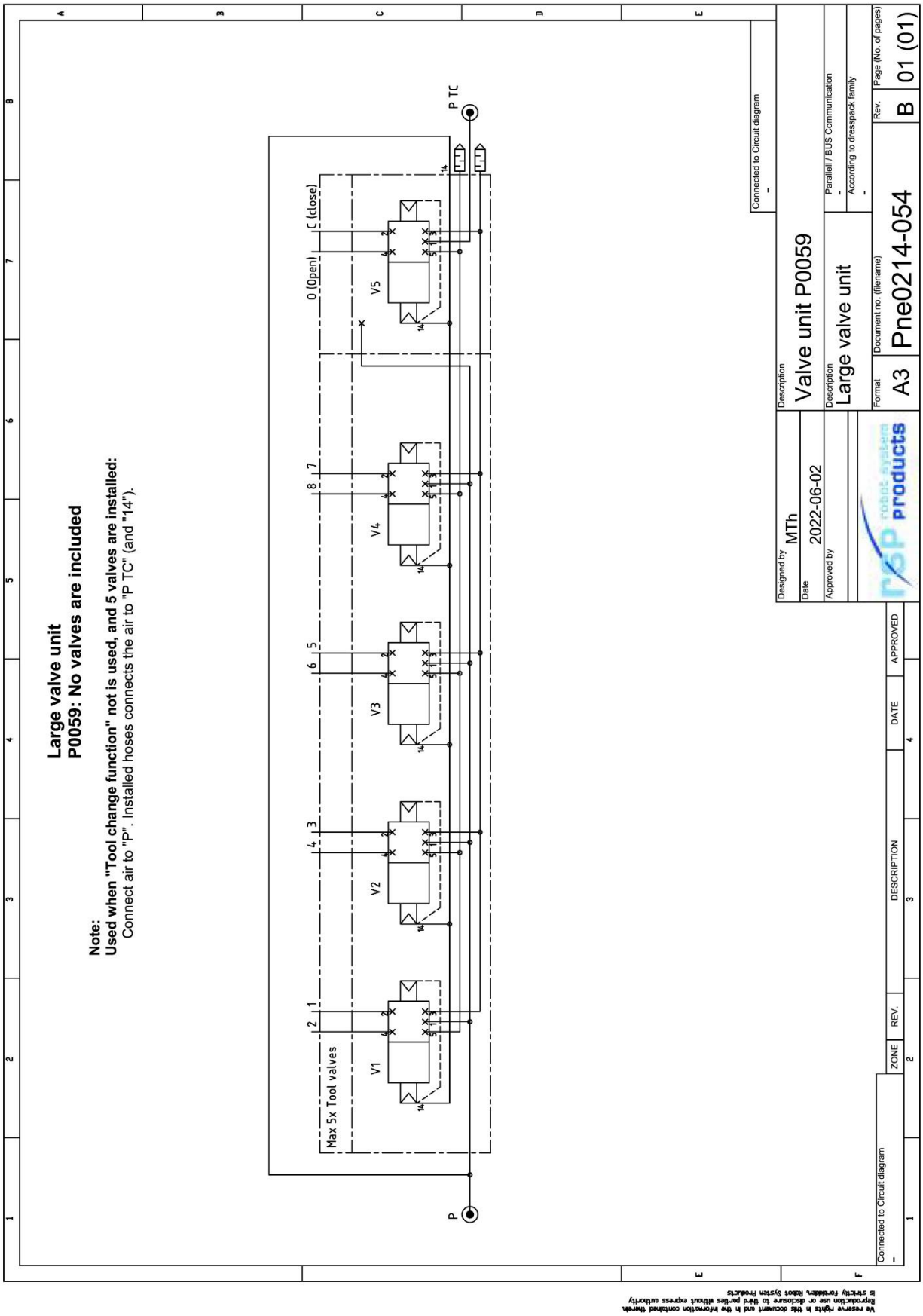
Article number		P0067A
Working temperature		+10°C−+50°C
Weight		4.0 kg
Air channels	Pneumatic diagram	Pne0214-055 (section 2.12.5)
	Valve size	26 mm, ISO15407-2
	Tool change / Directional valves	0 / 5
	Inlet / Outlet channels	1 x 10 mm / 10 x 8 mm hoses
	Air flow	1100 l/min for each valve (max 10 bars)
	Air quality	Oil-clean and waterless filtered air, with max 25µm particle content.
Electrical signals	Circuit diagram	E0214-101 (section 2.13)
	Signals, robot side	24V, 0V, 10 x valve control, 18 x (24V,2A) + PE
	Signals, tool side	24V, 0V, 18 x (24V, 2A) + PE
	Connection, robot side	Two M25x1,5 hole for cable gland
	Connection, tool side	Souriau UT001823SH

2.12 Pneumatic diagrams

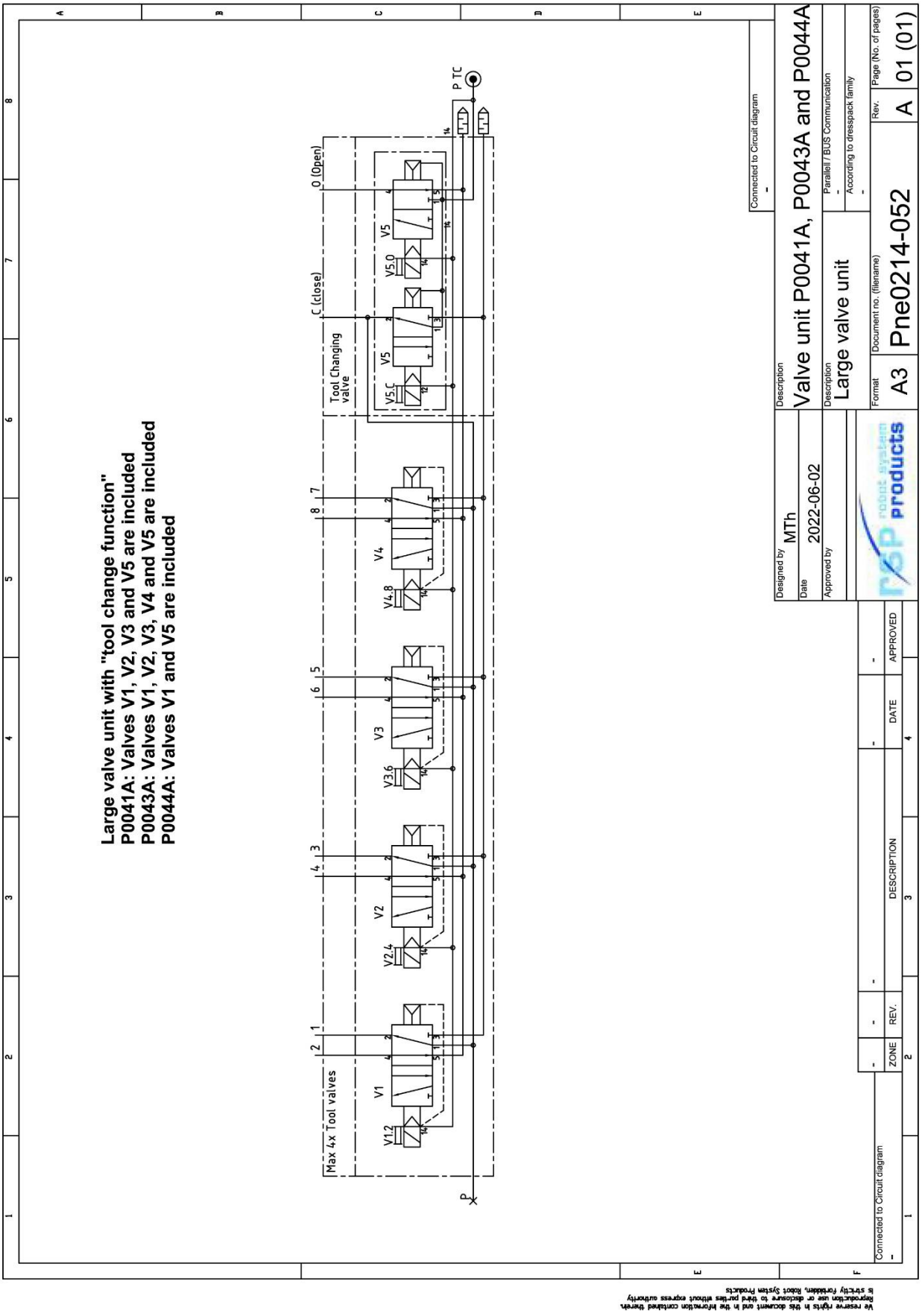
2.12.1 Pne0214-051 for large valve unit base, 1–4 valves



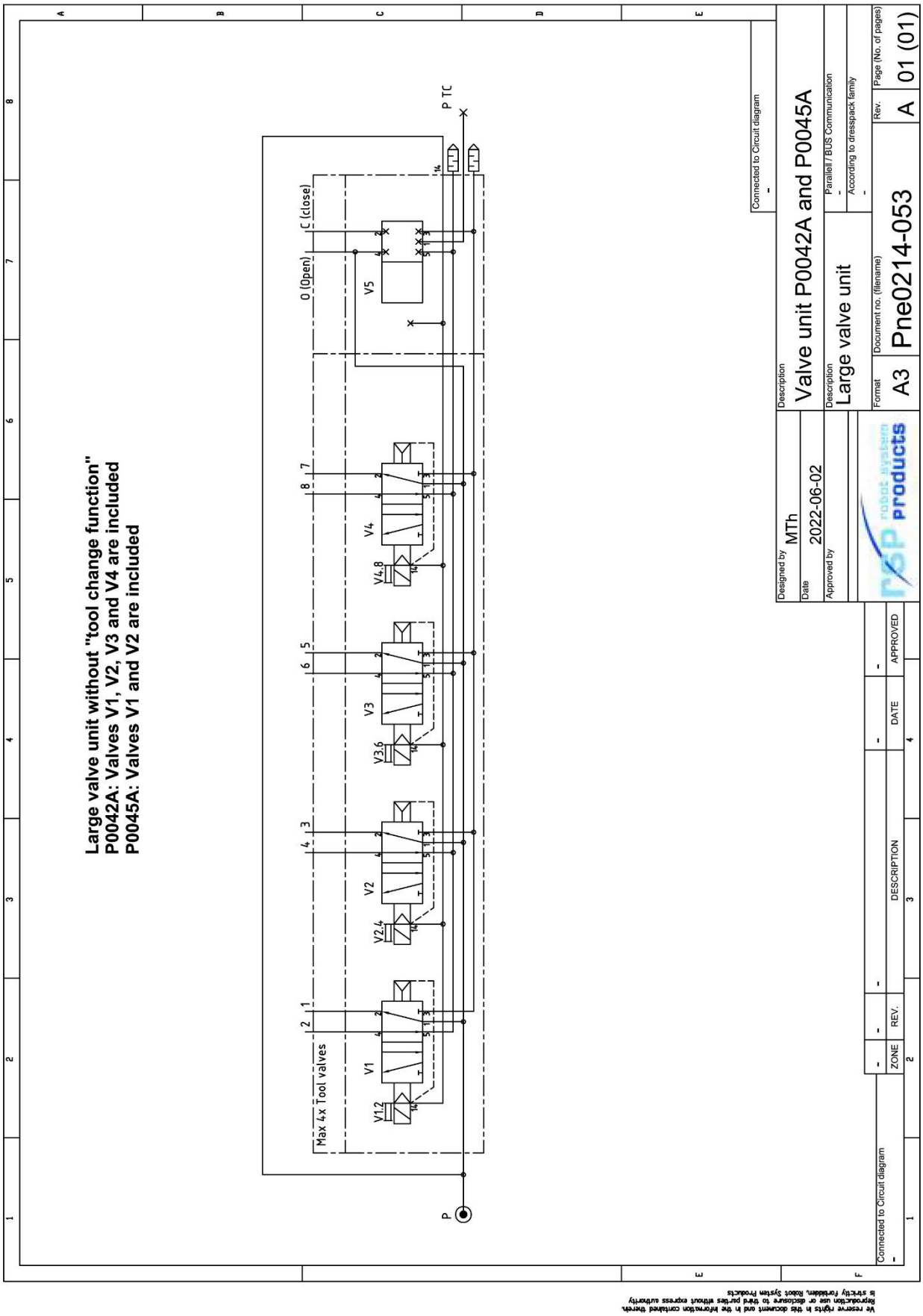
2.12.2 Pne0214-054 for large valve unit base, 5 valves



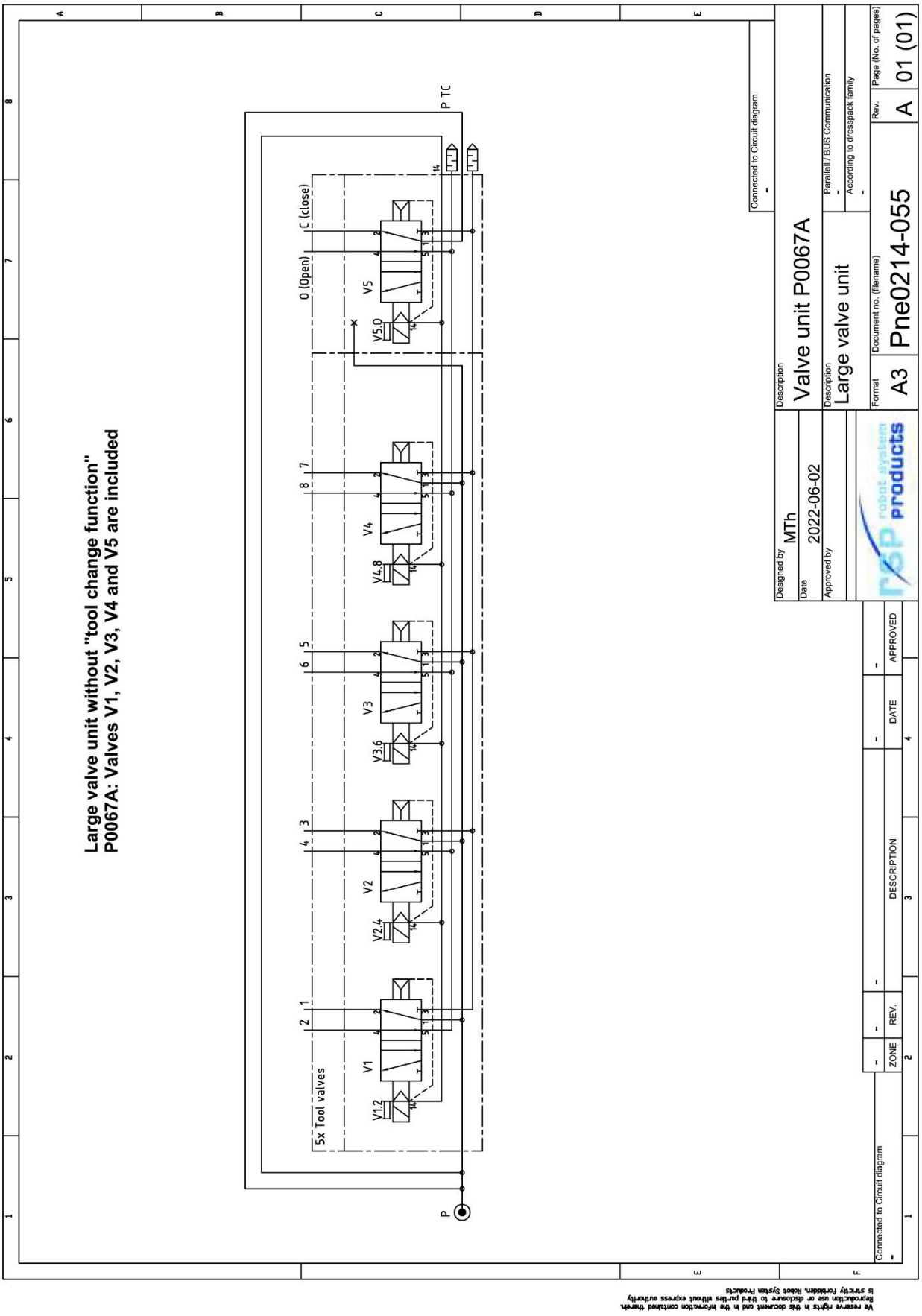
2.12.3 Pne0214-052 with tool changing and 1, 3 or 4 valves



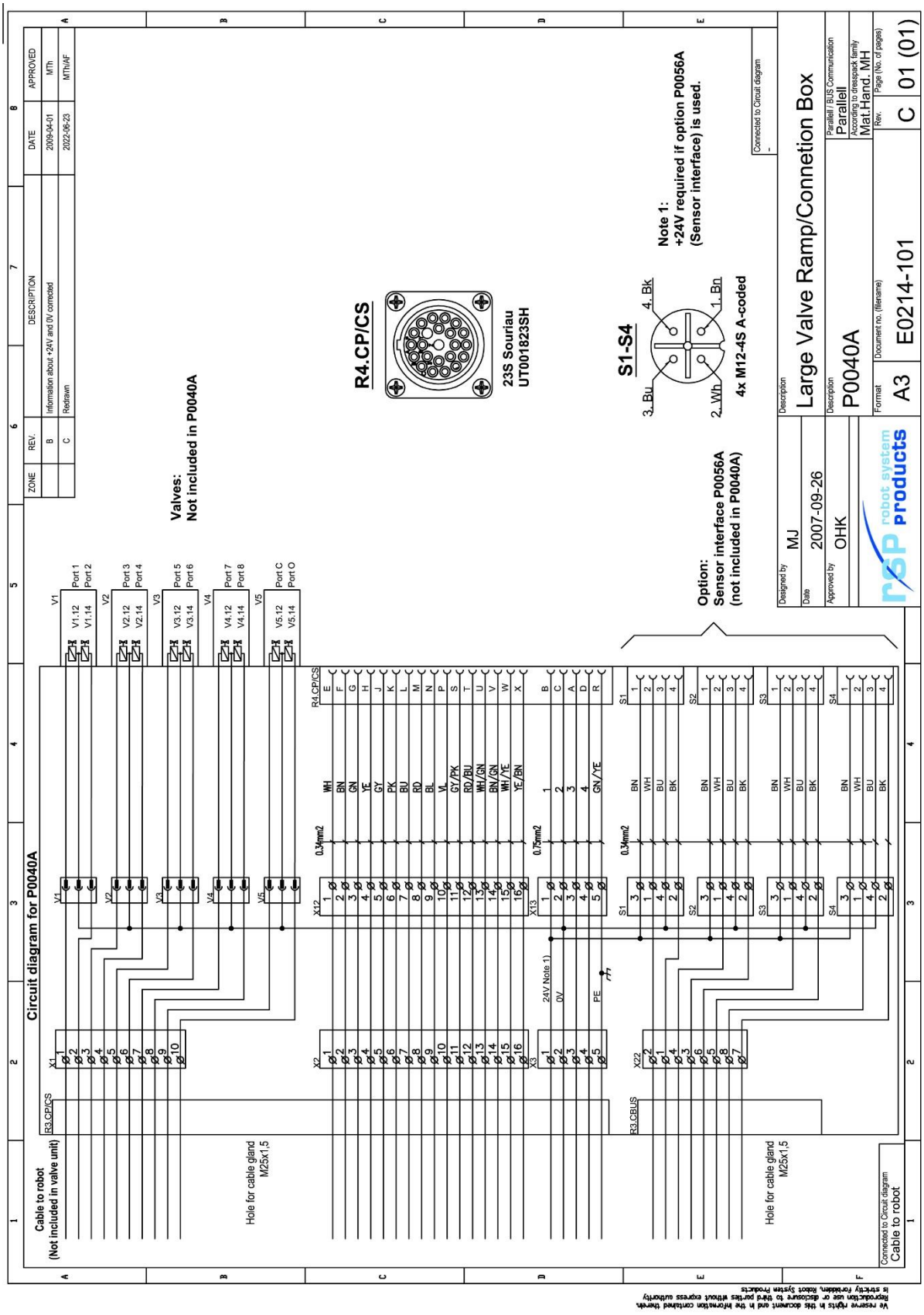
2.12.4 Pne0214-053 with 2 or 4 valves (without tool changing)



2.12.5 Pne0214-055 with 5 valves (without tool changing)

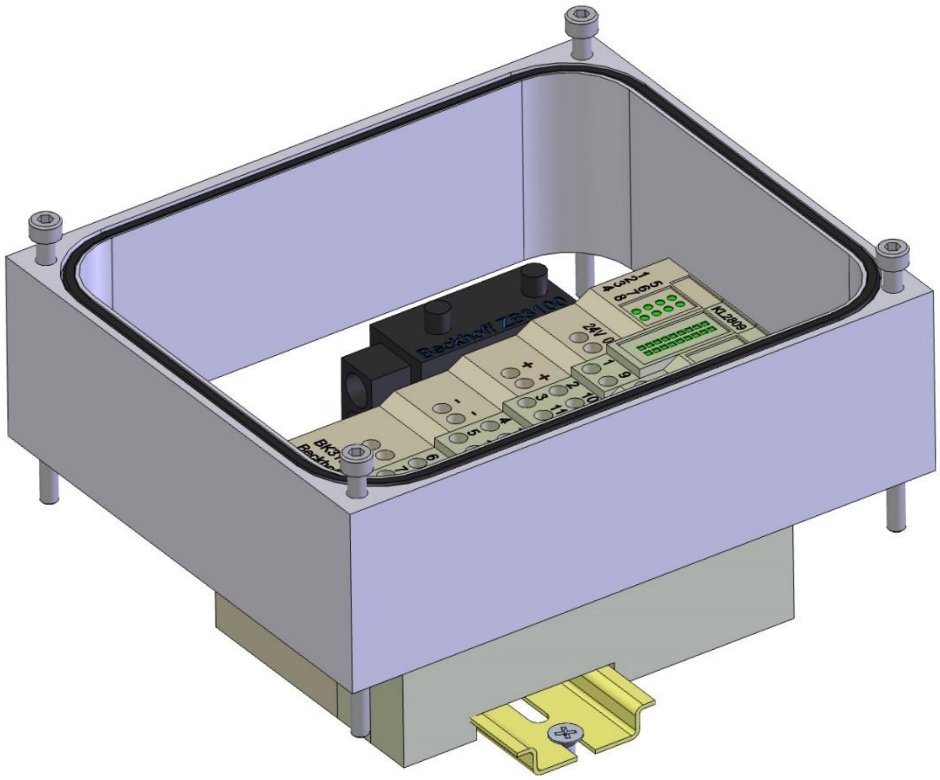


2.13 Generalised circuit diagram E0214-101 for large valve units



3 OPTIONS

3.1 Bus communication units



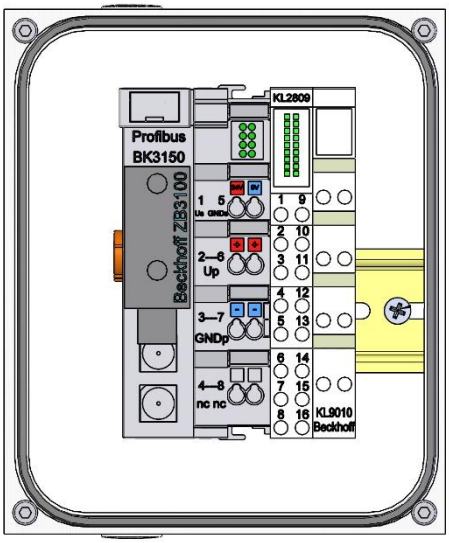
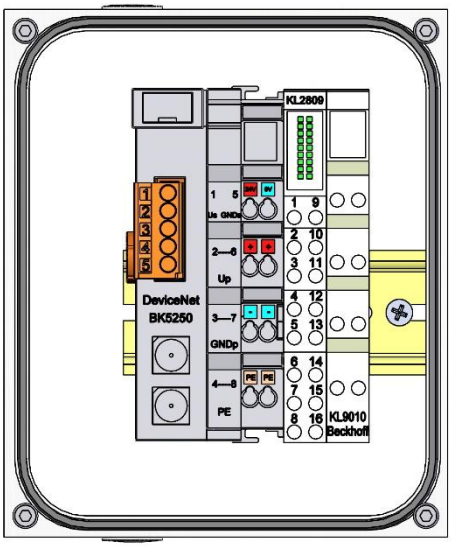
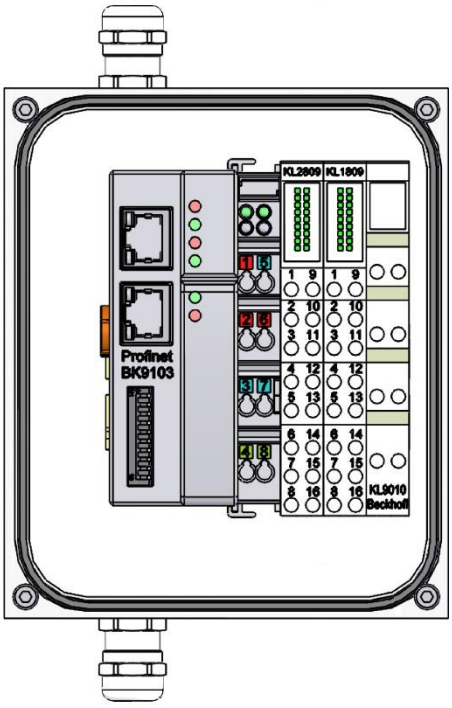
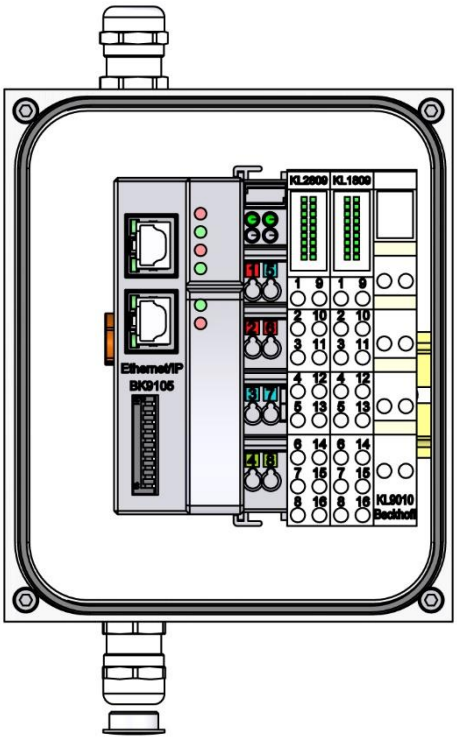
A bus coupler is installed inside the valve unit at delivery. The bus coupler is covered by a 44mm high frame mounted at the rear of the valve unit. In options P0046 (dedicated for Profibus) and P0047 (dedicated for DeviceNet) totally 16 digital output signals are available. Totally 16 input bus signals are made available by the module P0057 for digital input signals.

In options P1031 (dedicated for Profinet) and P1037 (dedicated for Ethernet/IP Bus) totally 16 digital input signals and 16 output signals are included.

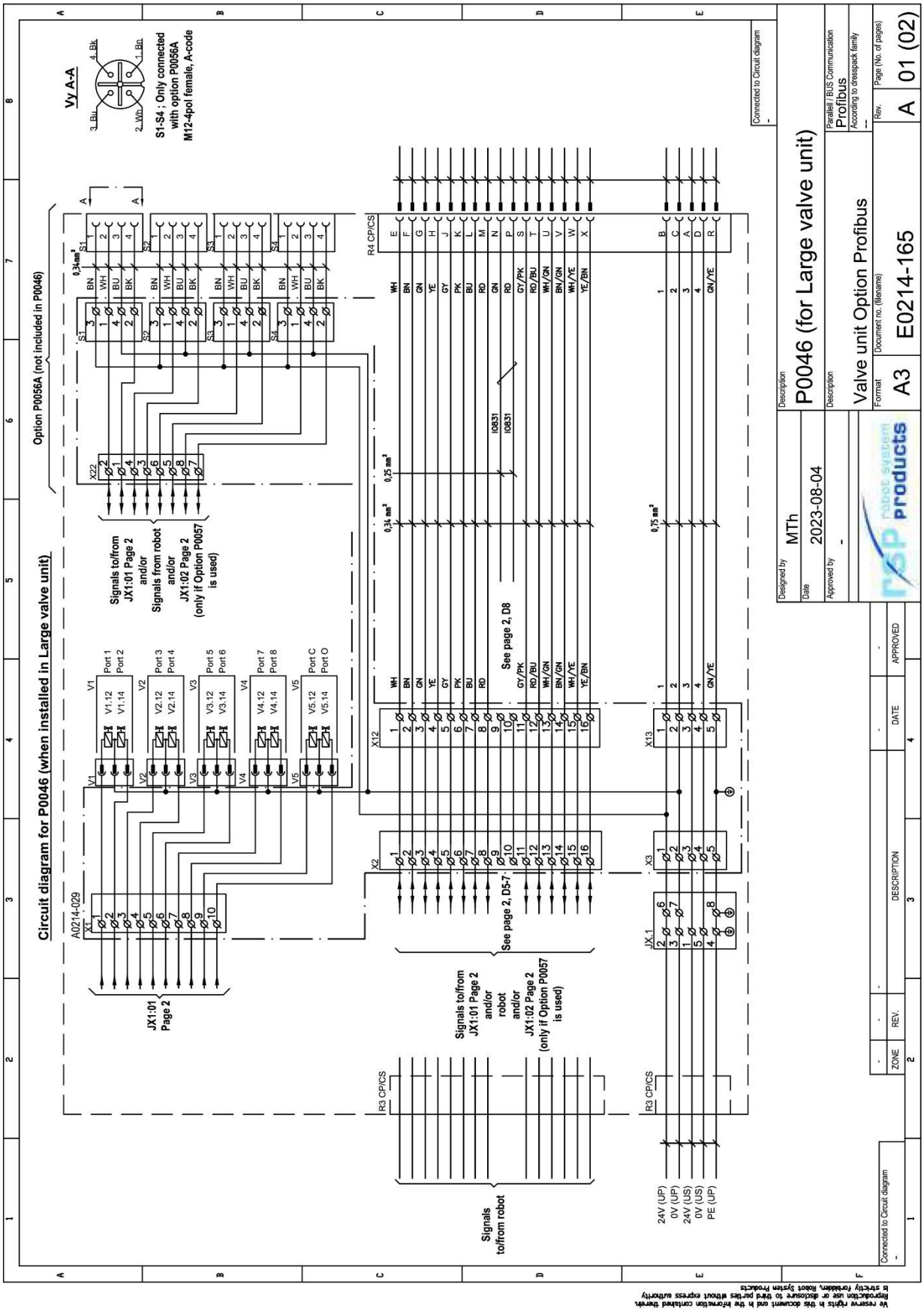
Technical data

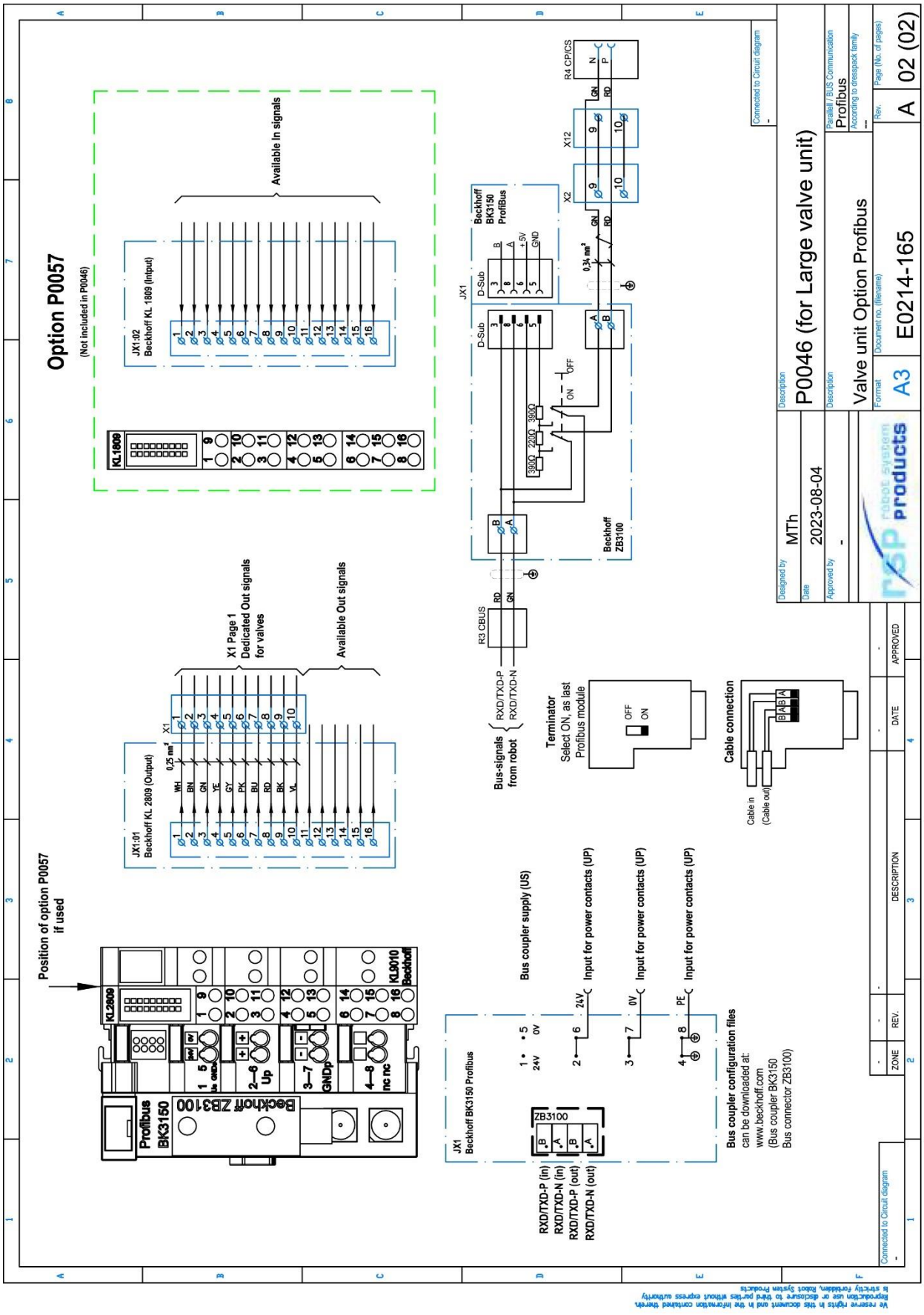
Article number	P0046	P0047	P1031	P1037
Working temperature	+10°C−+50°C			
Weight	0.8 kg	0.8 kg	0.8 kg	0.8 kg
Bus type	Profibus	DeviceNet	Profinet	Ethernet/IP
Nunber of input signals	−	−	16	16
Nunber of output signals	16	16	16	16

Product overview and circuit diagrams

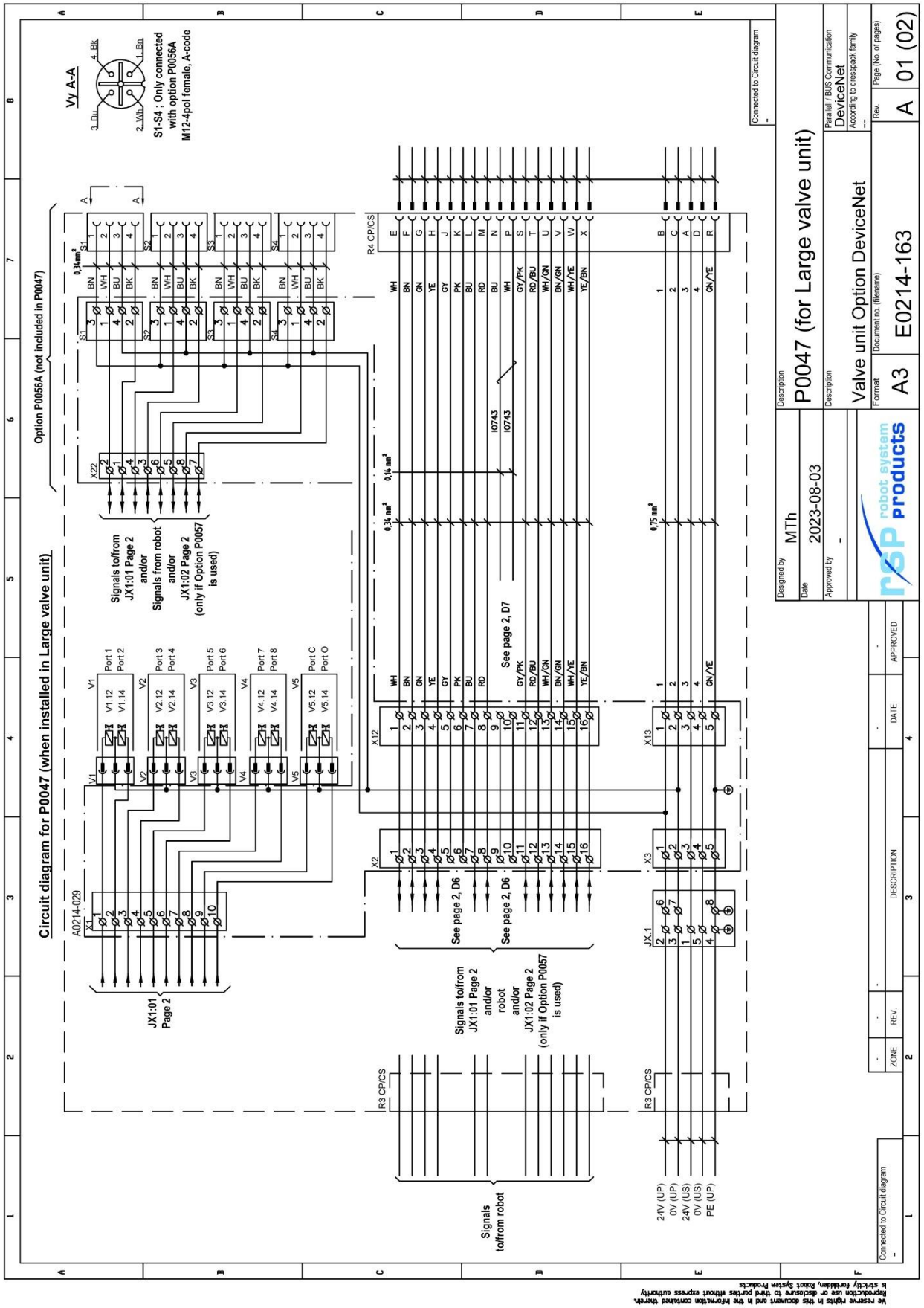
Article	P0046	P0047
Description	Profibus control	DeviceNet control
Circuit diagram	E0214-165 (section 3.1.1)	E0214-163 (section 3.1.2)
		
Article	P1031	P1037
Description	Profinet control	Ethernet/IP Bus control
Circuit diagram	E0214-295 (section 3.1.3)	E0214-314 (section 3.1.4)
		

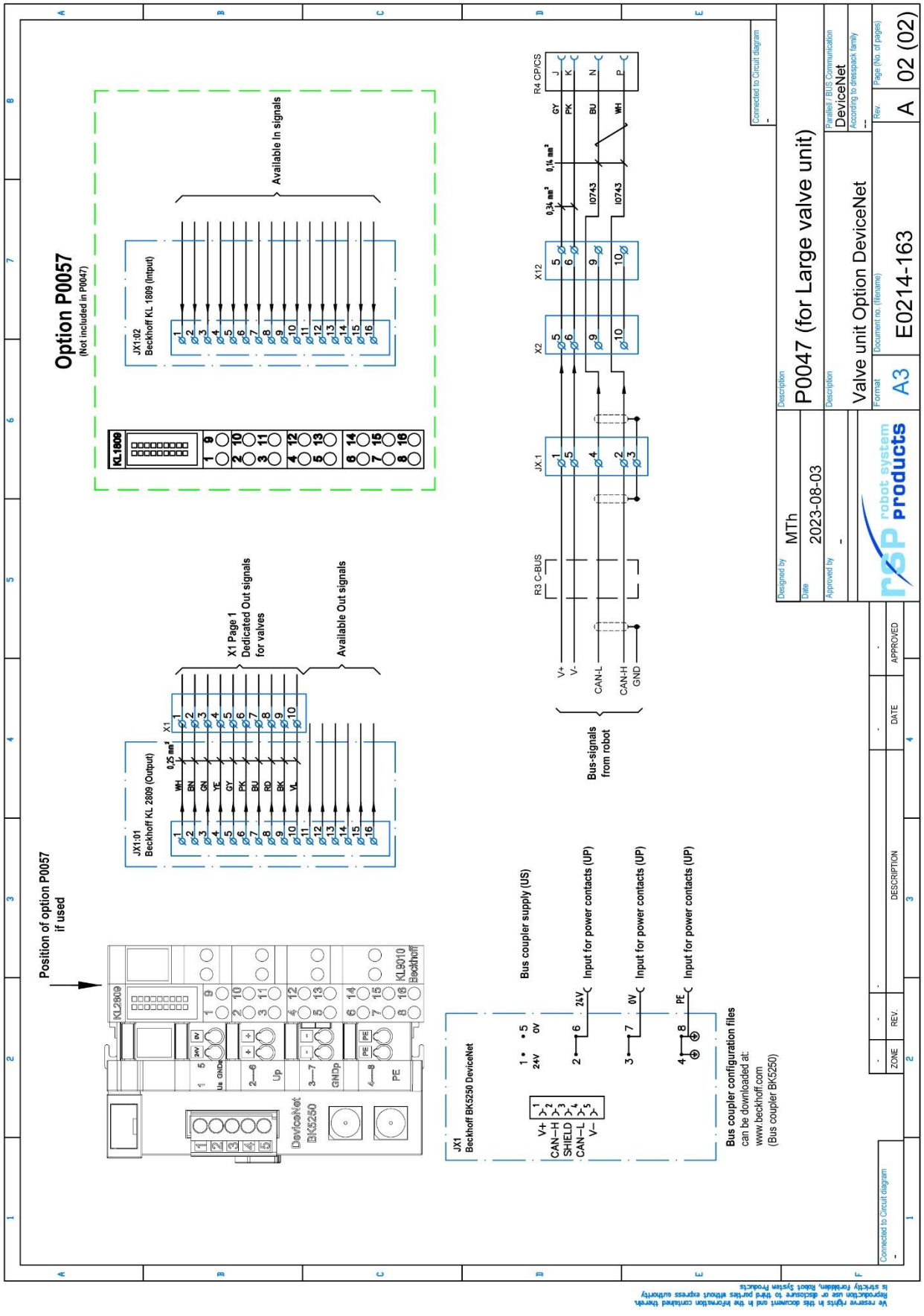
3.1.1 Circuit diagram E0214-165 for Profibus control, P0046



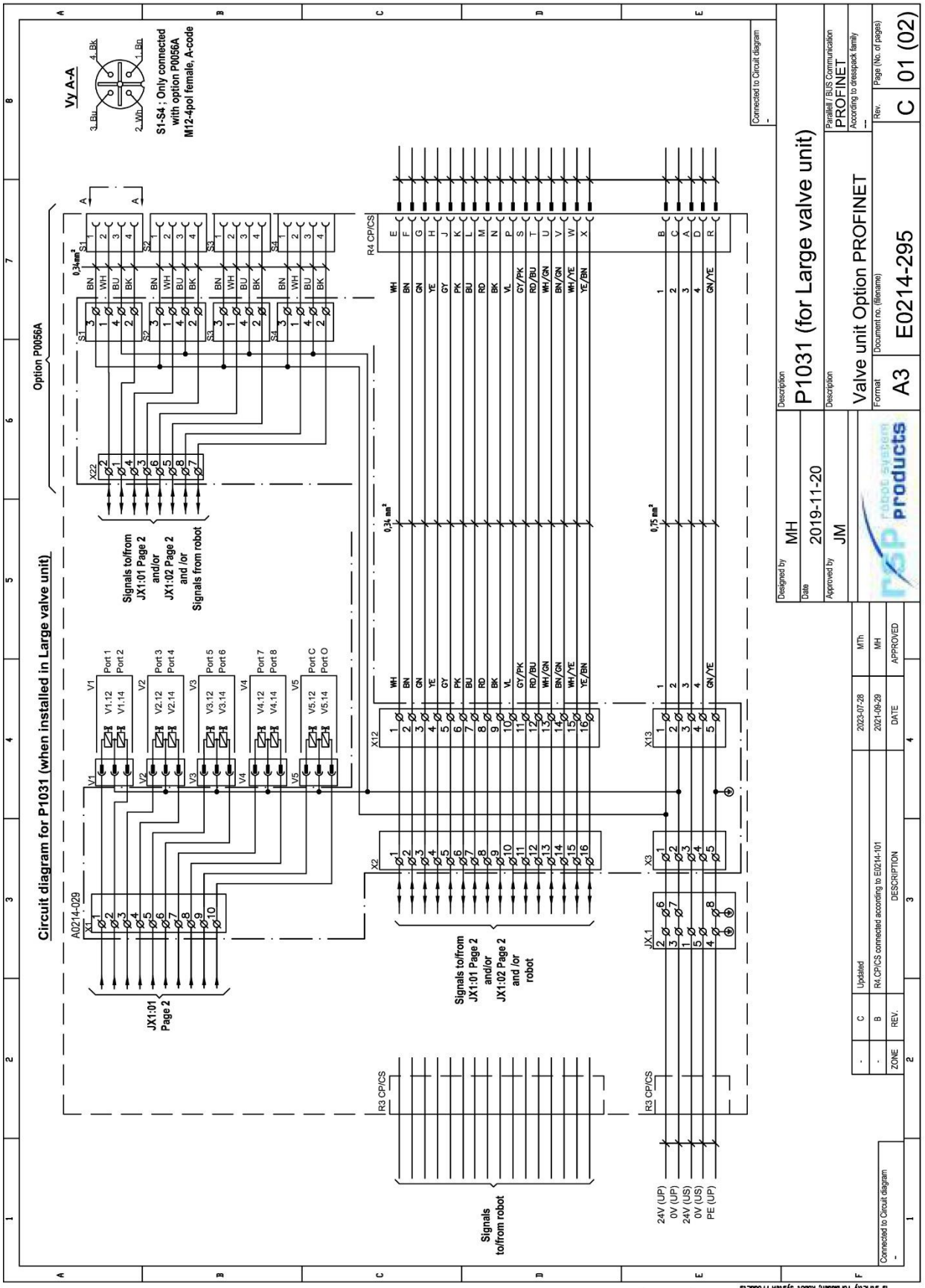


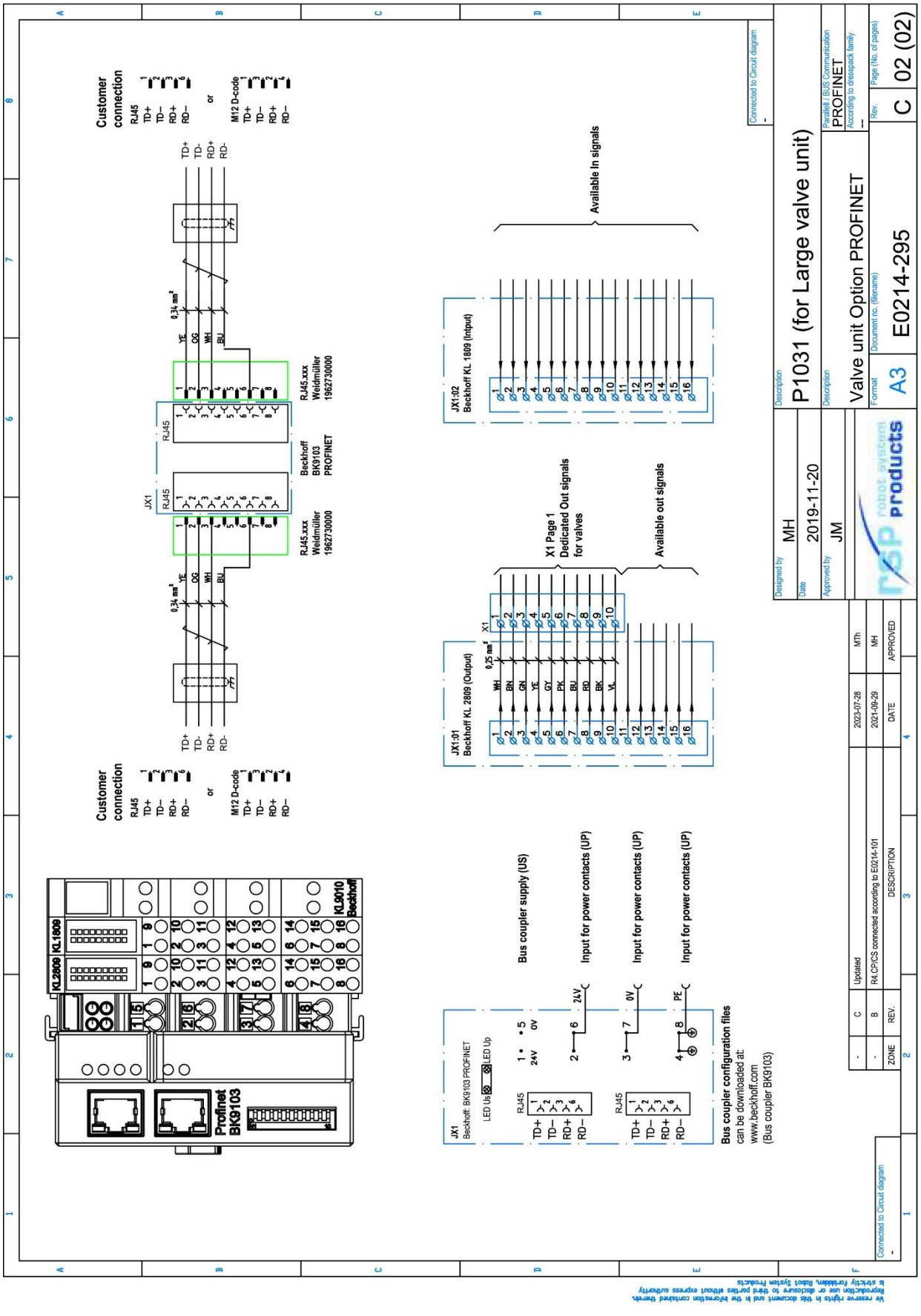
3.1.2 Circuit diagram E0214-163 for DeviceNet control, P0047



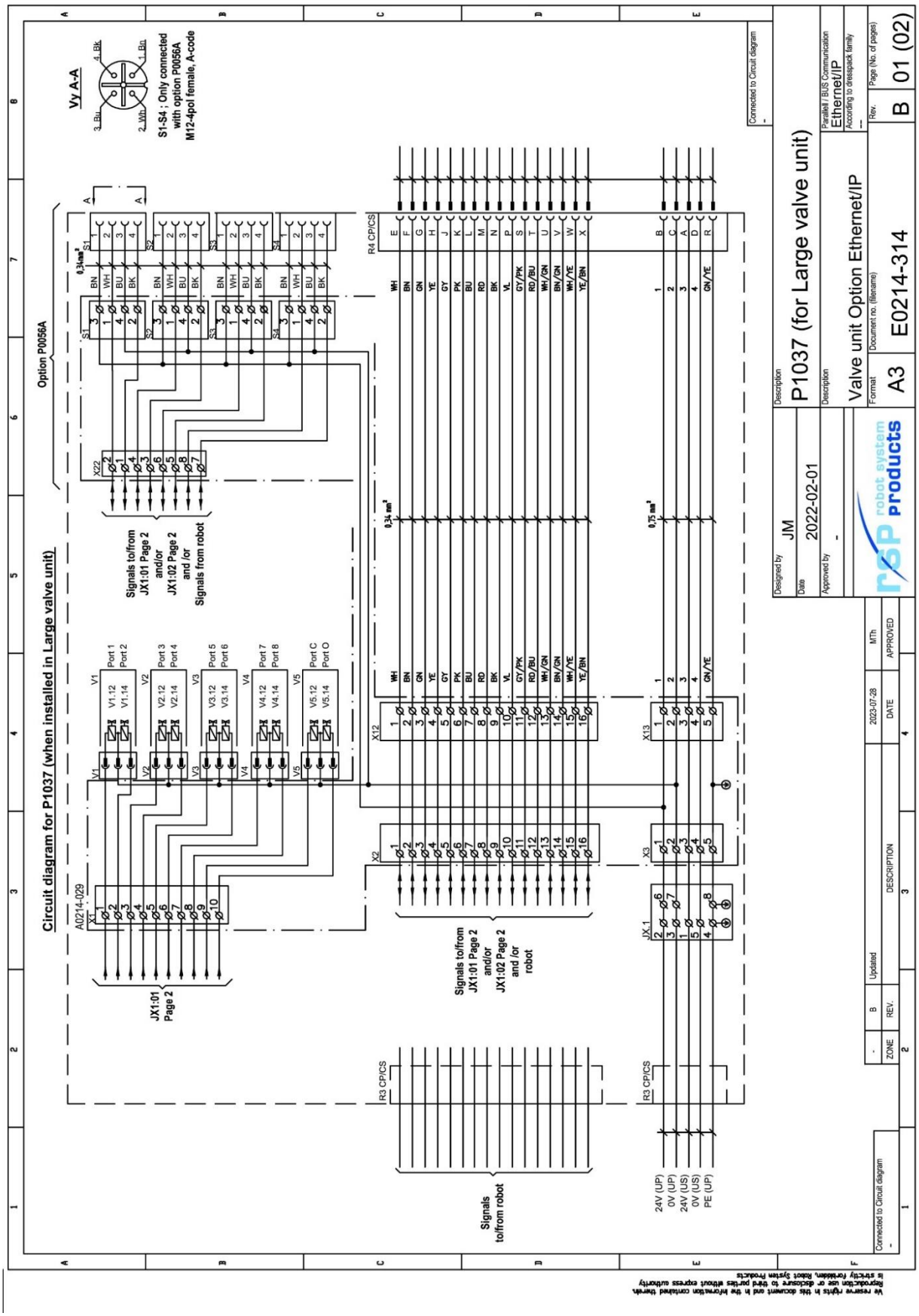


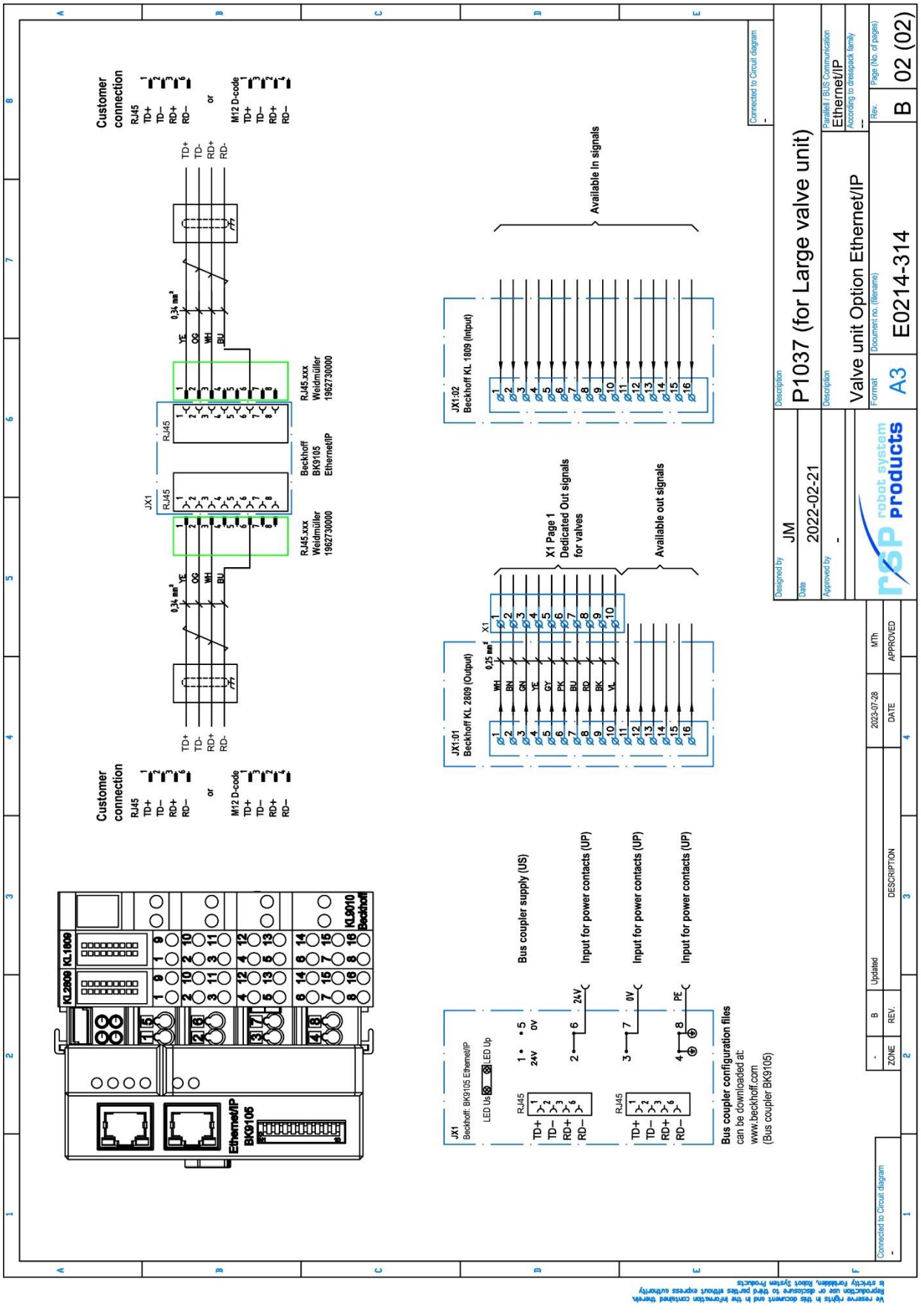
3.1.3 Circuit diagram E0214-295 for Profinet control, P1031



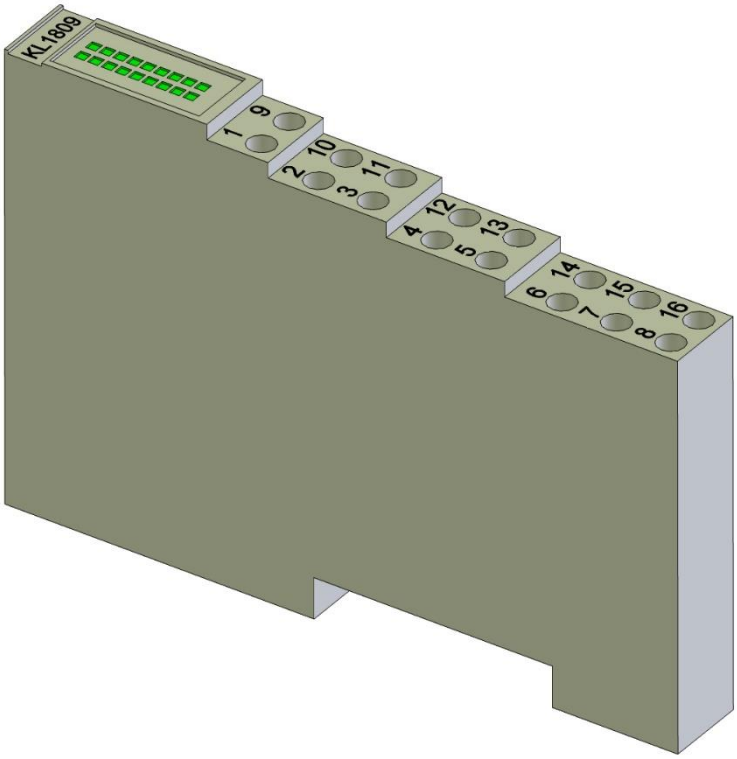

Customer connection
RJ45
TD+
TD–
RD+
RD–
or
M12 D-code
TD+
TD–
RD+
RD–
JX1
RJ45
0,34 mm²
YE
OG
WH
BU
RJ45.xxx
Weidmüller
1962730000
Beckhoff
BK9103
PROFINET
RJ45.xxx
Weidmüller
1962730000
JX1:01
Beckhoff KL 2809 (Output)
X1
0,25 mm²
WH
BN
GN
YE
GY
PK
BU
RD
BK
VT
X1 Page 1
Dedicated Out signals
for valves
Available out signals
JX1:02
Beckhoff KL 1809 (Intput)
Available In signals
JX1
Beckhoff: BK9103 PROFINET
LED Us
LED Up
RJ45
TD+
TD–
RD+
RD–
1
2
3
6
24V
0V
Bus coupler supply (US)
Input for power contacts (UP)
Input for power contacts (UP)
Input for power contacts (UP)
7
8
PE
Bus coupler configuration files
can be downloaded at:
www.beckhoff.com
(Bus coupler BK9103)
KL2809
KL1809
KL9010
Beckhoff
Profinet
BK9103
Connected to Circuit diagram
-
Designed by
MH
Date
2019-11-20
Approved by
JM
Description
P1031 (for Large valve unit)
Description
Valve unit Option PROFINET
Format
A3
Document no. (filename)
E0214-295
Parallel / BUS Communication
PROFINET
According to dresspack family
--
Rev.
C
Page (No. of pages)
02 (02)
Updated
2023-07-28
MTh
R4.CP/CS connected according to E0214-101
2021-09-29
MH
DESCRIPTION
DATE
APPROVED
ZONE
REV.
Connected to Circuit diagram
-
We reserve rights in this document and in the information contained therein.
Reproduction use or disclosure to third parties without express authority
is strictly forbidden. Robot System Products

3.1.4 Circuit diagram E0214-314 for Ethernet/IP Bus control, P1037




Customer connection
RJ45
TD+
TD–
RD+
RD–
or
M12 D-code
TD+
TD–
RD+
RD–
JX1
RJ45
0,34 mm²
YE
OG
WH
BU
RJ45.xxx
Weidmüller
1962730000
Beckhoff
BK9105
EtherNet/IP
RJ45.xxx
Weidmüller
1962730000
JX1:01
Beckhoff KL 2809 (Output)
X1
0,25 mm²
WH
BN
GN
YE
GY
PK
BU
RD
BK
VT
X1 Page 1
Dedicated Out signals
for valves
Available out signals
JX1:02
Beckhoff KL 1809 (Intput)
Available In signals
JX1
Beckhoff: BK9105 EtherNet/IP
LED Us
LED Up
RJ45
TD+
TD–
RD+
RD–
1 • • 5
24V
0V
2
6
24V
Bus coupler supply (US)
Input for power contacts (UP)
3
7
0V
Input for power contacts (UP)
4
8
PE
Input for power contacts (UP)
Bus coupler configuration files
can be downloaded at:
www.beckhoff.com
(Bus coupler BK9105)
KL2809
KL1809
KL9010
Beckhoff
EtherNet/IP
BK9105
Connected to Circuit diagram
-
ZONE
REV.
B
Updated
DESCRIPTION
2023-07-28
DATE
MTh
APPROVED
Connected to Circuit diagram
-
Designed by
JM
Date
2022-02-21
Approved by
-
Description
P1037 (for Large valve unit)
Description
Valve unit Option EtherNet/IP
Format
A3
Document no. (filename)
E0214-314
Parallel / BUS Communication
EtherNet/IP
According to dressepack family
--
Rev.
B
Page (No. of pages)
02 (02)
robot system
products
We reserve rights in this document and in the information contained therein.
Reproduction use or disclosure to third parties without express authority
is strictly forbidden. Robot System Products

3.2 Digital input signals for bus, P0057



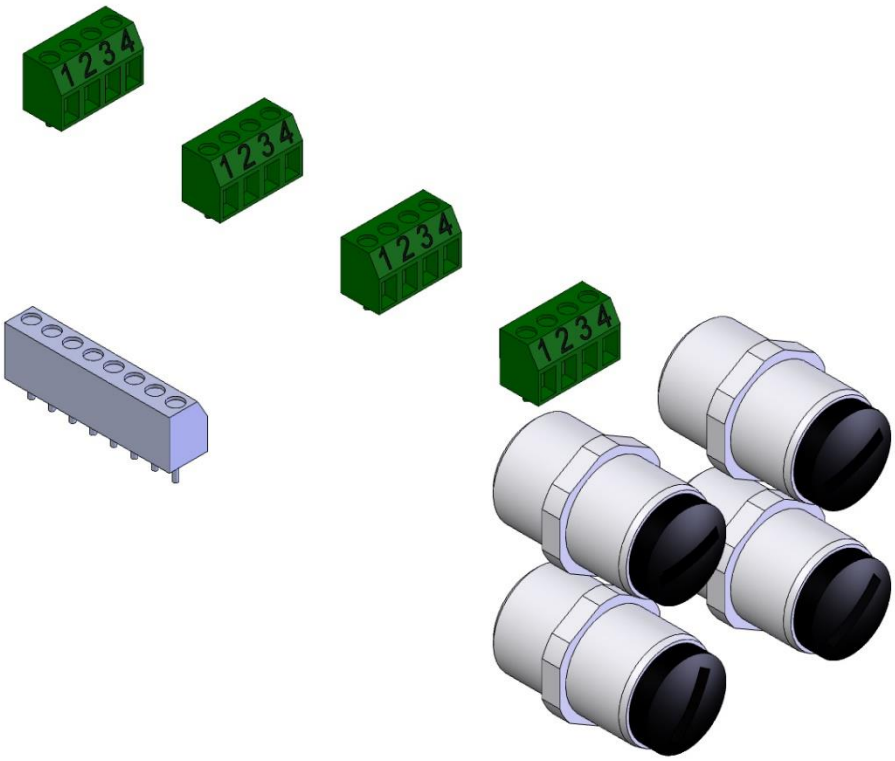
Module for input of 16 digital signals for bus communication. Can be installed at delivery inside the valve unit as a part of the bus communication unit. Dedicated for use together with option P0046 (Profibus control) or P0047 (DeviceNet control).

Technical data

Working temperature		10°C−+50°C
Sensor signals	Circuit diagram (P0046)	E0214-165 (section 3.1.1)
P0057	(P0047)	E0214-163 (section 3.1.2)

NOTE! P0057 is included in bus communication modules P1031 (Profinet control) and P1037 (Ethernet/IP Bus control).

3.3 Sensor interface, P0056A



Sensor interface P0056A can be installed at a valve unit at delivery. Four M12 4S contacts are added at the side of the valve unit.

Technical data

Working temperature		10°C−+50°C
Sensor signals	Circuit diagram (General)	E0214-101 (section 2.13)
P0056A	(P0046)	E0214-165 (section 3.1.1)
	(P0047)	E0214-163 (section 3.1.2)
	(P1031)	E0214-295 (section 3.1.3)
	(P1037)	E0214-314 (section 3.1.4)
	4 x M12 4S, A-coded	4 x (24V, 0V, 2 signals)

4 INSTALLATION

4.1 Tightening torques

Tightening torques for mounting (screw class 8.8)

Dimension	Torque
M4	3 Nm
M5	6 Nm
M6	10 Nm
M8	24 Nm
M10	47 Nm
M12	82 Nm
M16	200 Nm

4.2 Recommended tools for installation and replacement of valve units

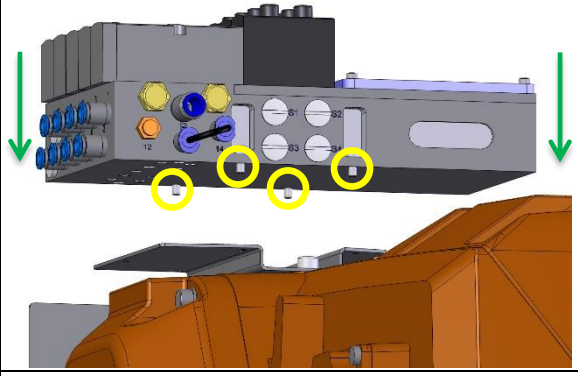
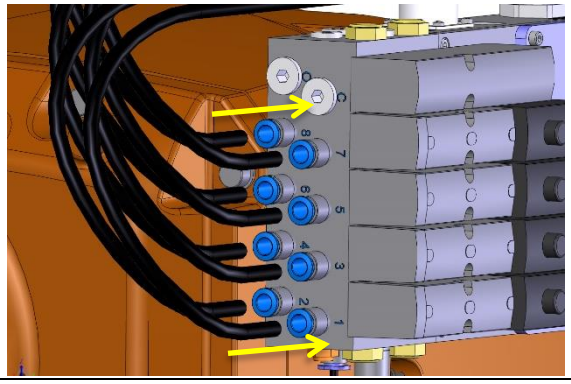
Tools	Applications
Complete set of Allen keys	For all socket head cap screws
Torque wrench	For dismounting and mounting

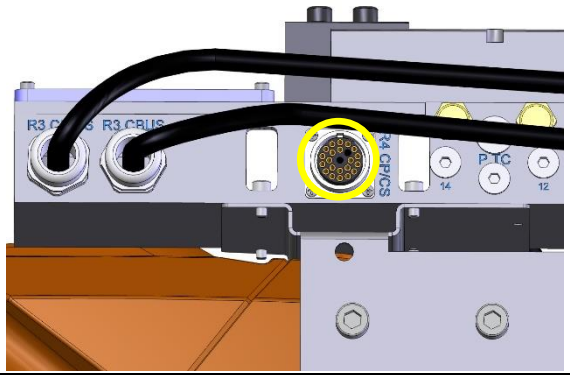
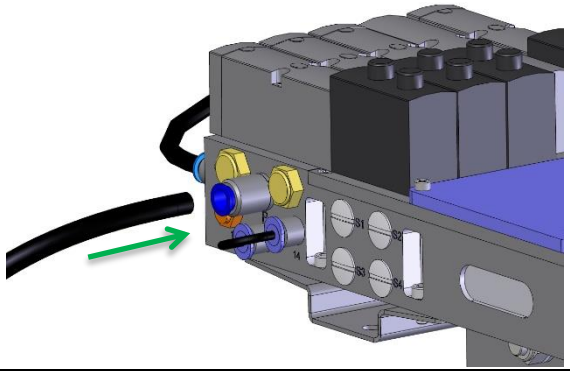
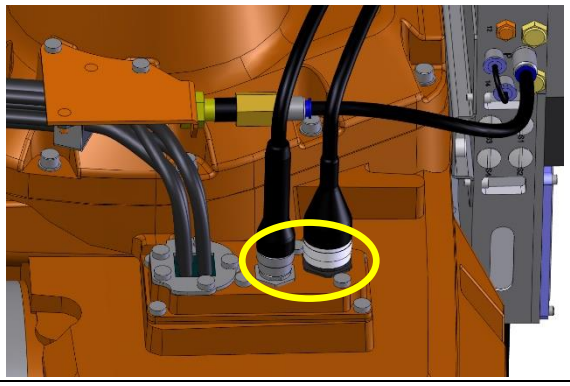
4.3 Arm load parameters

The valve unit is adding load to the robot. If the load is not stated correctly during programming it may affect the behaviour and wear of the robot and robot peripherals.

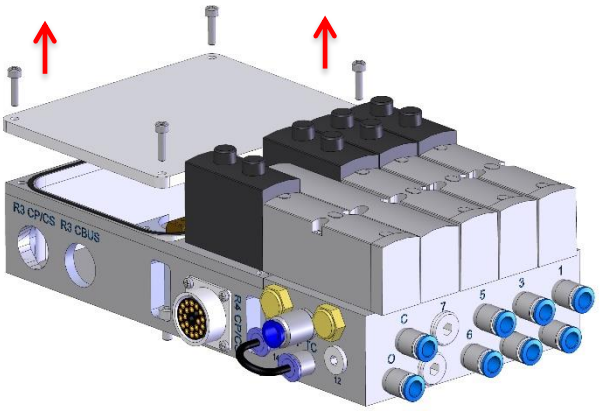
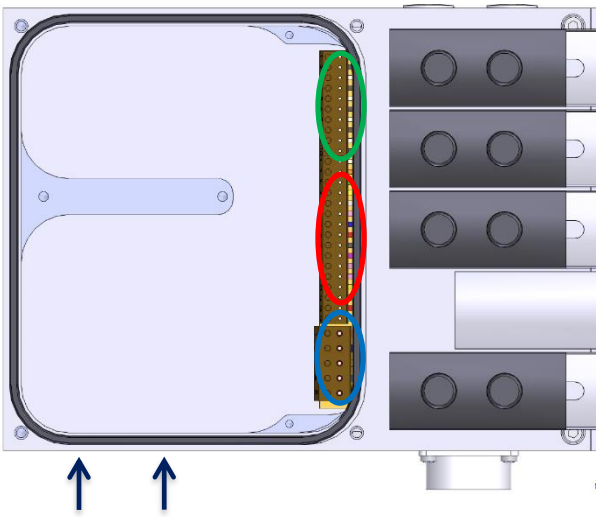
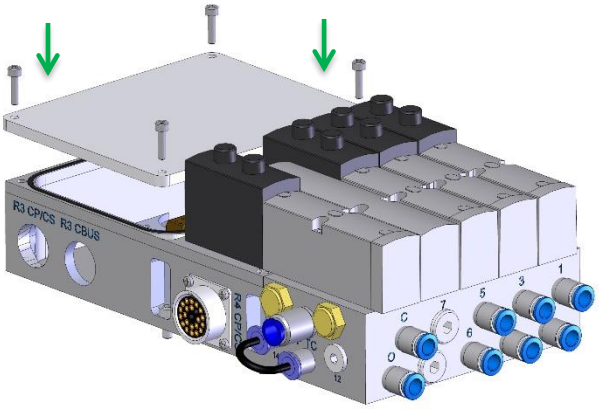
NOTE!
The extra weight of the valve unit will affect the arm load data and the performance of the robot.

4.4 Installation of valve unit on robot

	Action	Note
1	**Safety**	Read the safety section 1.1.
2	**Service position**	Place the robot in service position.
3	**Power off**	Switch the power off and lock the circuit breaker. **NOTE!** Read the safety chapter for the robot.
4	**Pneumatic air off**	Switch the pneumatic air off. **NOTE!** The pressure in the pneumatic system must be released before mounting begins.
5	**Connect robot cable to valve unit**	If the cable, connecting the valve unit and the robot, is not supplied and preinstalled by RSP see section 4.5 Connect customer cable below. **NOTE!** If the cable is supplied by RSP it is already preinstalled on the valve unit.
6	**Mount valve unit on mounting plate** 	Mount the valve unit on the mounting plate, installed on the robot, with the four enclosed M5-screws.
7	**Connect air hoses** 	Connect the air hoses between the valve unit and the tool according to pneumatic diagram (section 2.12). Use 8 mm hoses. **NOTE!** Ensure that hoses are connected at the correct positions. Mark hoses in both ends.

8	**Connect cables on tool side** 	Connect the electrical cable between the valve unit and the tool. **NOTE!** If complete cable and hose packages are supplied by RSP the electrical cable on the tool side is preinstalled by RSP on the valve unit.
9	**Connect air supply hose** 	Connect the air supply hose according to pneumatic diagram (section 2.12). Use a 10 mm hose.
10	**Connect robot cables to robot** 	Connect the cable between the valve unit and the robot.
11	**Strap cables and hoses**	**NOTE!** Ensure that cables and hoses are not strapped tight at sharp corners.
12	**Pneumatic air on**	Switch on the pneumatic air.
13	**Power on**	Unlock circuit breaker and switch power on.

4.5 Connect customer cable

	Action	Note
1	**Remove cover** 	Unscrew the four M4x16 screws holding the cover and remove it. Terminals X1. X2 and X3 are now available for connection.
2	**Connect cables** 	Connect cables to the valve unit according circuit diagram. Use cable glands to the cable/cables. The valve unit has two threaded M25x1.5 holes for cable glands. **NOTE!** X1 connections are marked in green, X2 in red and X3 in blue.
3	**Mount cover** 	Remount the cover with the four M4x16 screws. Check that the O-ring is in right position before tightening the screws.

5 MAINTENANCE AND SERVICE

5.1 Maintenance chart

The valve units must be maintained regularly to ensure proper function. The specified intervals are approximate and valid under normal conditions. Under extreme conditions, such as dirty environments or extreme robot movements, the intervals should be shortened. Consider the table as a guide and update as the production experience of each system increases.

NOTE!
Valve units must only be dismantled and repaired by Robot System Products during the warranty period. Otherwise, the warranty will not be valid.

5.1.1 Recommended tools for maintenance

Tools	Applications
Complete set of Allen keys	For all socket head cap screws
Torque wrench	For dismounting and mounting

5.1.2 Activities and intervals

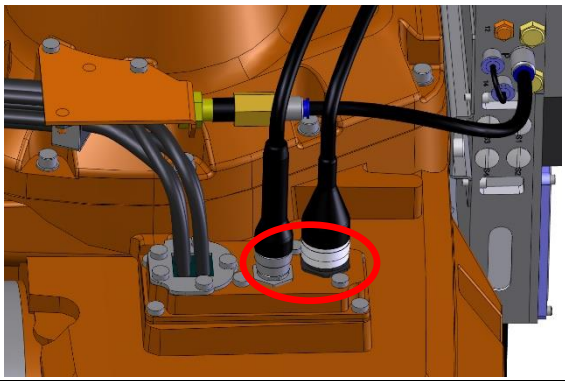
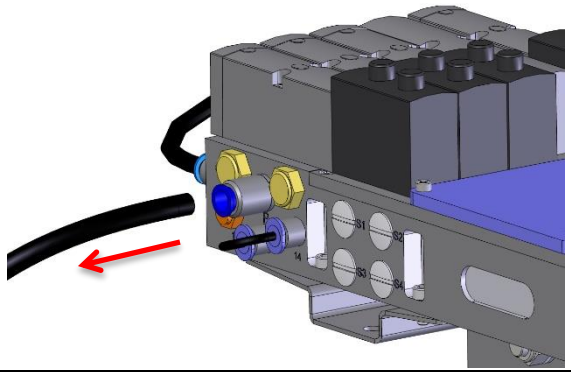
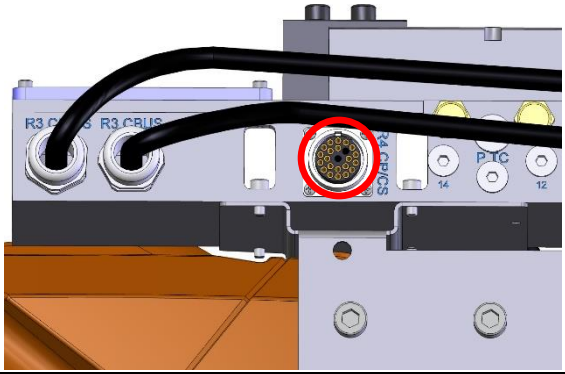
Maintenance activity	Equipment	Interval	Description
Inspection	Valve unit	3 months	Visual inspection of Valve unit.

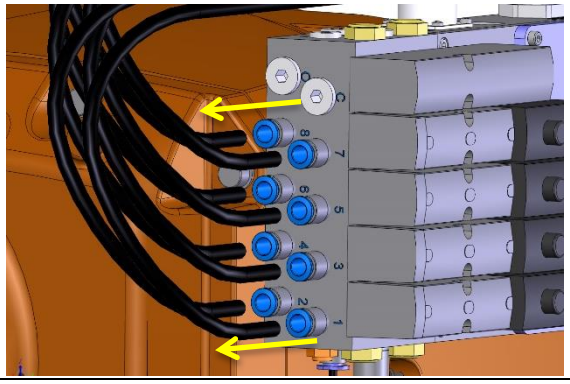
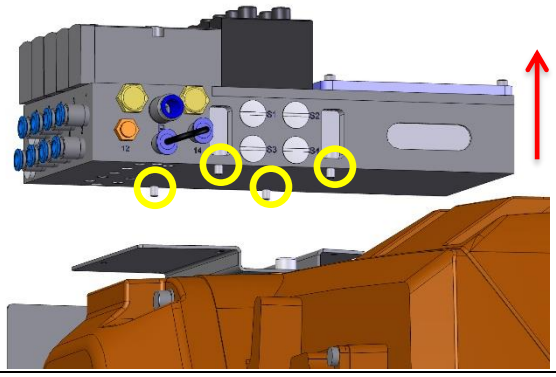
5.2 Visual inspection of valve unit

Visually check the following:

Check	Note
Cables to Valve unit	Not damaged or dirty
Hose to Valve unit	Not damaged or dirty
Hoses from Valve unit	Not damaged or dirty
All parts	No wear, not damaged or dirty

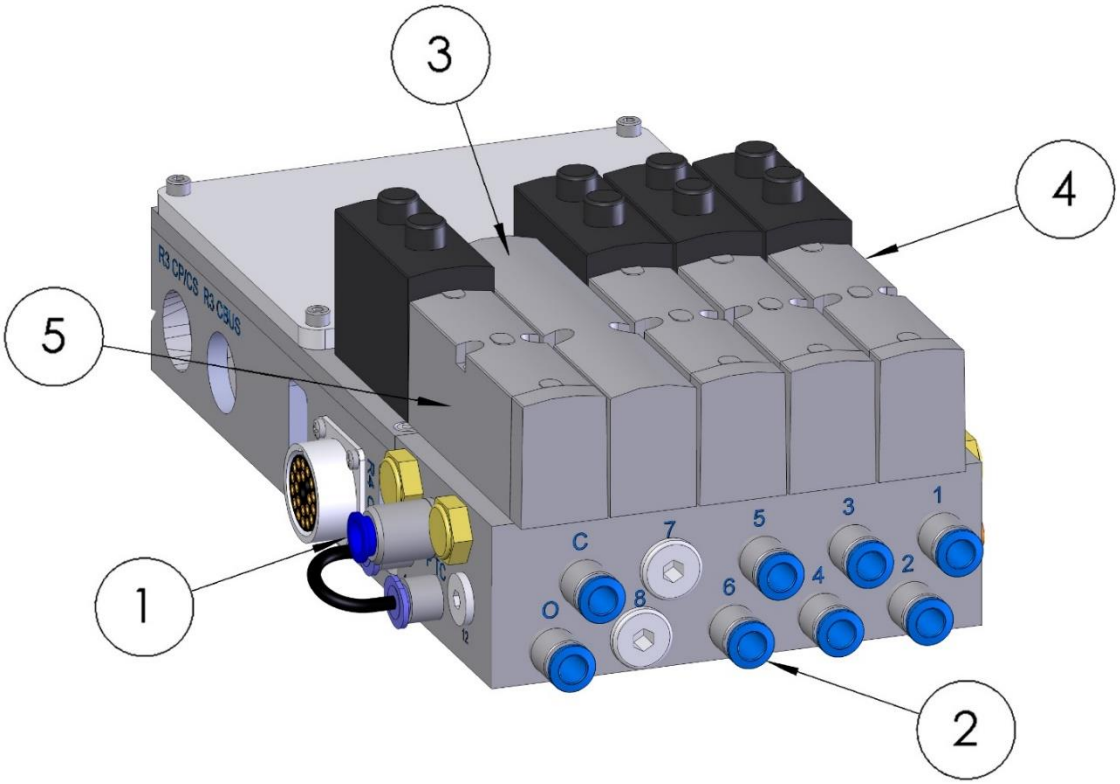
5.3 Replacement of valve unit

	Action	Note
1	**Safety**	Read the safety section 1.1.
2	**Service position**	Place the robot in service position.
3	**Power off**	Switch the power off and lock the circuit breaker. **NOTE!** Read the safety chapter for the robot.
4	**Pneumatic air off**	Switch the pneumatic air off. **NOTE!** The pressure in the pneumatic system must be released before mounting begins.
5	**Disconnect robot cable** 	Disconnect the cable between the valve unit and the robot.
6	**Disconnect air supply hose** 	Disconnect the air supply hose at the valve unit. Ensure that no dirt enters the hose or hose connections.
7	**Disconnect cables on tool side** 	Disconnect the electrical cable between the valve unit and the tool. **NOTE!** Handle contacts with care, they are sensitive to mechanical damage. Make sure that no dirt enters the contacts.

8	**Disconnect air hoses at tool side** 	Disconnect the air hoses between the valve unit and the tool. **NOTE!** Check that hoses are marked according to connections at the valve unit in both ends. **NOTE!** Ensure that no dirt enters the hoses or connectors.
9	**Dismount the valve unit** 	Unscrew the four M5-screws fully and remove the valve unit from the mounting plate.
10	**Mount replacement valve unit**	Follow instructions in section 4.4.

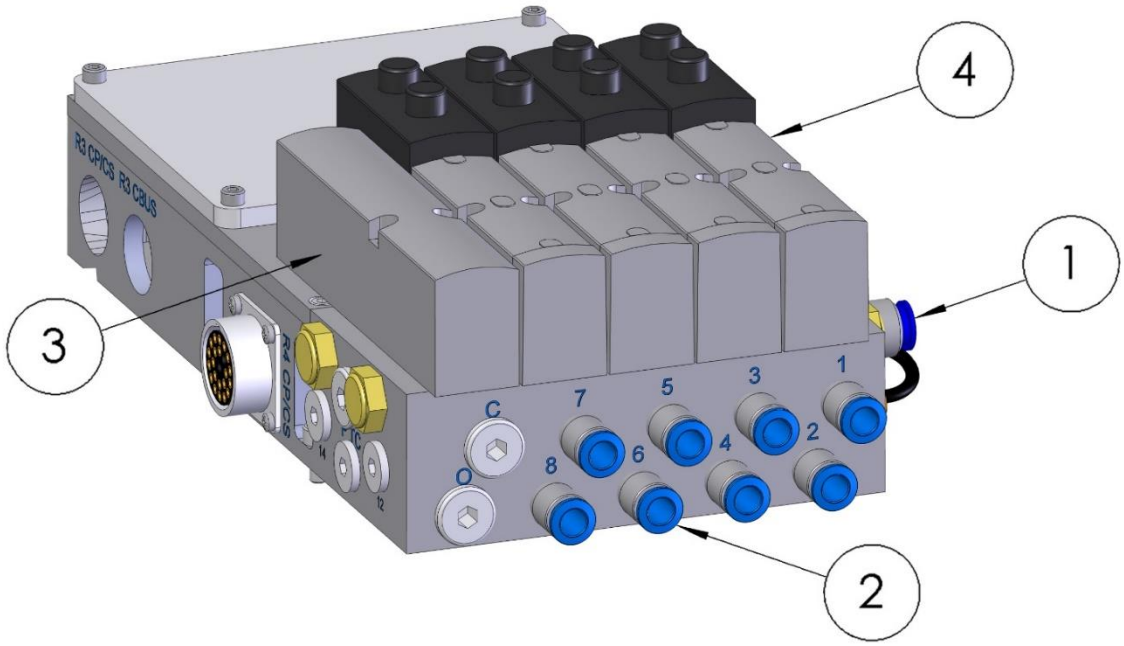
6 SPARE PARTS

6.1 Valve units with tool change, P0044A, P0041A and P0043A



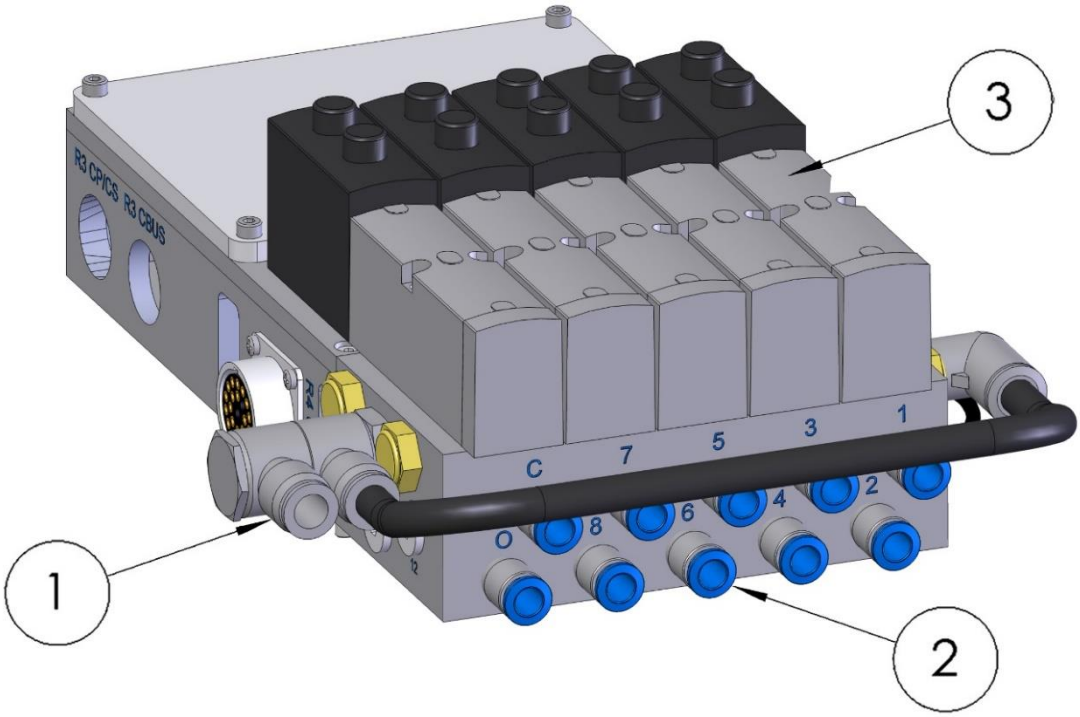
Item	Description	Part number	Pcs
1	Hose connection 10 mm, straight	I0170	1
2	Hose connection 8 mm, straight (P0044A)	I0196	4
2	Hose connection 8 mm, straight (P0041A)	I0196	8
2	Hose connection 8 mm, straight (P0043A)	I0196	10
3	Cover plate (P0044A)	I0589	3
3	Cover plate (P0041A)	I0589	1
4	Valve 5/2 bistable (P0044A)	I0587	1
4	Valve 5/2 bistable (P0041A)	I0587	3
4	Valve 5/2 bistable (P0043A)	I0587	4
5	Valve 2x 3/2 NO/NC (tool change)	I0588	1

6.2 Valve units without tool change, P0045A and P0042A



Item	Description	Part number	Pcs
1	Hose connection 10 mm, straight	I0170	1
2	Hose connection 8 mm, straight (P0045A)	I0196	4
2	Hose connection 8 mm, straight (P0042A)	I0196	8
3	Cover plate (P0045A)	I0589	3
3	Cover plate (P0042A)	I0589	1
4	Valve 5/2 bistable (P0045A)	I0587	2
4	Valve 5/2 bistable (P0042A)	I0587	4

6.3 Valve unit, 5 valves without tool change, P0067A



Item	Description	Part number	Pcs
1	Multiple distributor 2-fold	I0675	1
2	Hose connection 8 mm, straight	I0196	10
3	Valve 5/2 bistable	I0587	5

7 DISPOSAL AND RECYCLING

Taking care of spent equipment

Used equipment must be taken care of in an environmentally-friendly way.

When disposed of, a major share of the material, or its energy content, can be recycled. The quantities possible to recycle vary depending on technical resources and practises in respective country. Non-recyclable components shall be handed over to an authorized environmental waste treatment facility for destruction or disposal.

Electronics

Electronic equipment shall be sent to an authorized recycling company or sorted into different component materials and treated as such.

Metals

Metals can, in general, be melted down, recycled and used in new products. They shall be sorted according to type and surface coating and handed over to an authorized recycling facility.

Metal components of steel and aluminium are substantial in size and easy to identify. Copper and brass are primarily used in transmission of electric power and in water/air modules. Brass may include small alloy of lead. Silver or gold plating of contact surfaces may occur.

Plastics

Thermoplastics can, in general, be re-heated and recycled without any major loss of quality. They shall be handed over to an authorized recycling facility. POM occurs in swivel housings, etc. PTFE in some sealings.

Rubber

Rubber shall be handed over to an authorized environmental waste treatment facility either for recycling, disposal or destruction. Rubber occurs in O-rings.

Other material

All other material shall be sorted and handed to an authorized environmental waste treatment facility in accordance with national legislation.