

PROFEEDER X, X-XL, COMPACT & COMPACT-XL USER MANUAL



EasyRobotics®
- we move your parts

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1. Introduction/intended use

ProFeeder is designed for easy feeding of CNC machines and other workplaces and machines. Should be mounted with a fully installed cobot.



2. Safety notice

1.1 Introduction

The intension of this manual is to give a guideline of mounting a cobot at the ProFeeder and this is not valid as a CE marking of the robot cell.

A risk assessment must be full filled after the full installation is concluded. Including the robot, gripper and other equipment and installations at the workspace.

ProFeeder must be bolted to the floor when performing working operation. The local governmental safety rules and legislation must be followed when installing and operating with a robot on the ProFeeder.

1.2 Legend



This symbol means danger to life or risk of personal injury or damage to the equipment. Read carefully. Caution is required!

1.3 Potential hazards

When the robot drags the trays or takes part from the trays there is a danger of pinching.

The system must not be operating if any doors are open or removed.

3. Ordering key

P	F		-					-		

Base Setup _____

X ProFeeder X Base

C ProFeeder Compact Base

Version _____

1 Standard

2 XL version

3 For mounting robot (PFC only)

Drawer setup _____

01 60kg drawer (max 6x drawers)

10 120kg drawer (max 10x drawers)

Airlock Setup _____

0 No airlock

1 Airlock included

Number of drawers _____

00 0 drawers

01 1 drawer

02 2 drawers

03 3 drawers

04 4 drawers

05 5 drawers

06 6 drawers (max if 60kg drawer)

07 7 drawers

08 8 drawers

09 9 drawers

10 10 drawers

Examples:

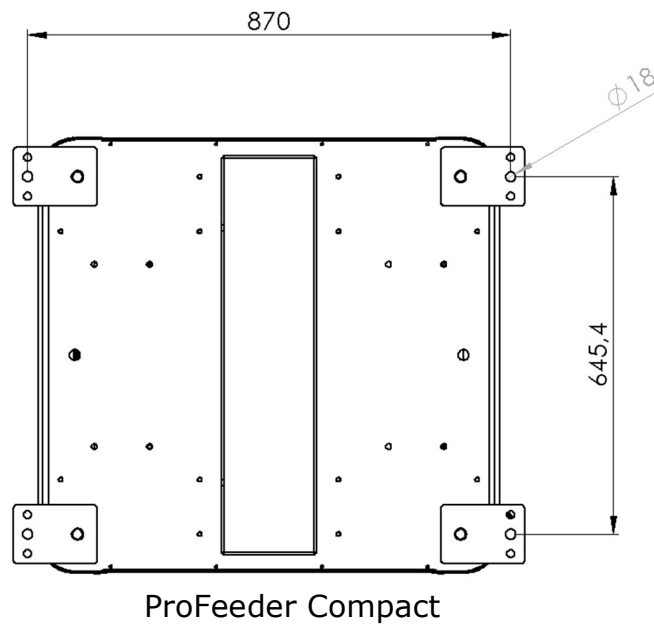
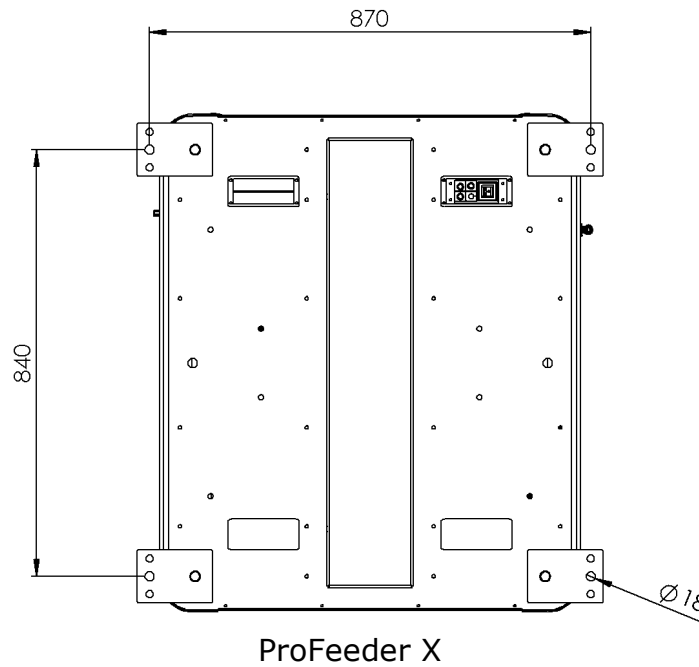
ProFeeder X with 3x 60kg drawer without airlock	=	PFX-1010-03
ProFeeder X with 10x 120kg drawer with airlock	=	PFX-1101-10
ProFeeder C with 5x 60kg drawers with airlock	=	PFC-1011-05

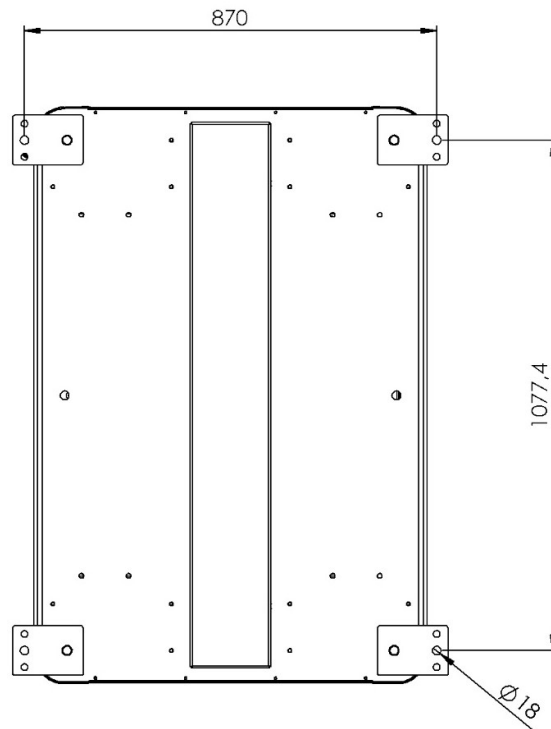
4. Installation

! The installation of the ProFeeder must be carried out only by trained, skilled personnel with the relevant profession. It is crucial to the safety and function of the machine, that it is properly aligned and securely anchored.

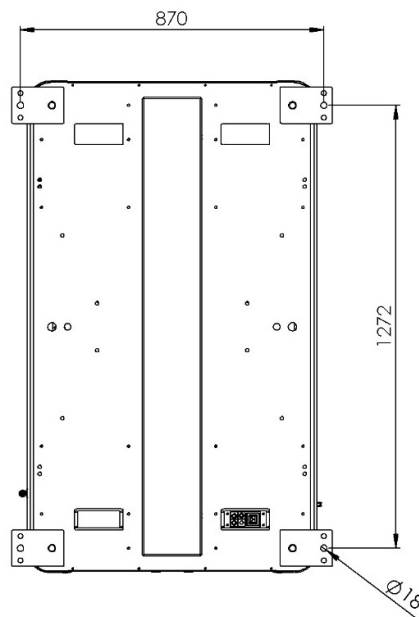
1.4 Fix to floor

! Securely anchor the ProFeeder X/Compact to the floor with floor-suitable anchor bolts.





ProFeeder Compact-XL



ProFeeder X-XL

1.5 Relocate bracket for the teach pendant on the ProFeeder X platform

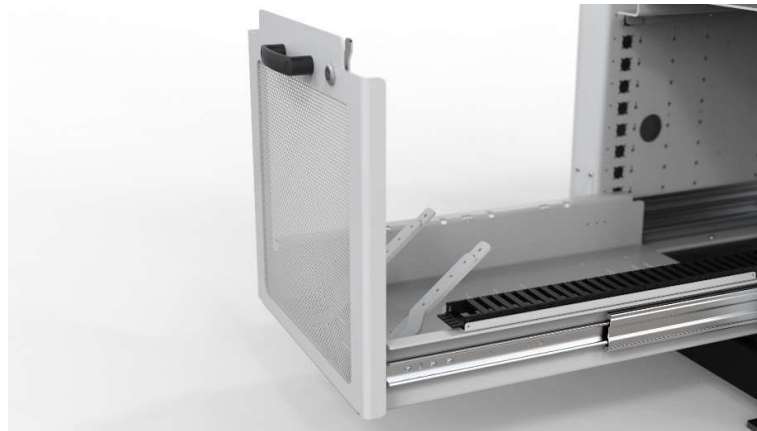
Relocate the T-Pad bracket so it fits the used brand.



1.6 Relocate bracket for teach pendant on ProFeeder Compact for Robot

The bracket can be fixed in two different spots:

1. Inside the controller drawer



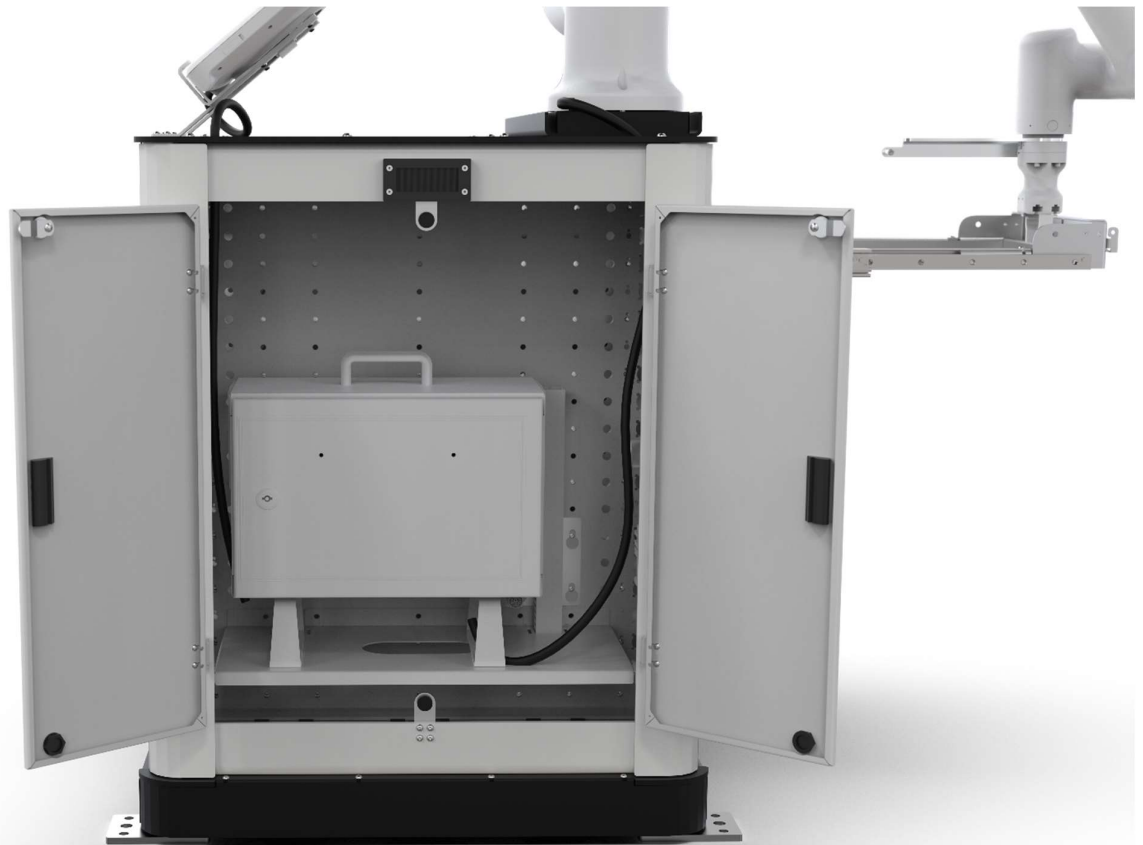
2. On the TableTop



1.7 Mounting the controller inside the ProFeeder X & X-XL



Place the control box inside the biggest console.
Check that none of the cables are squeezed.

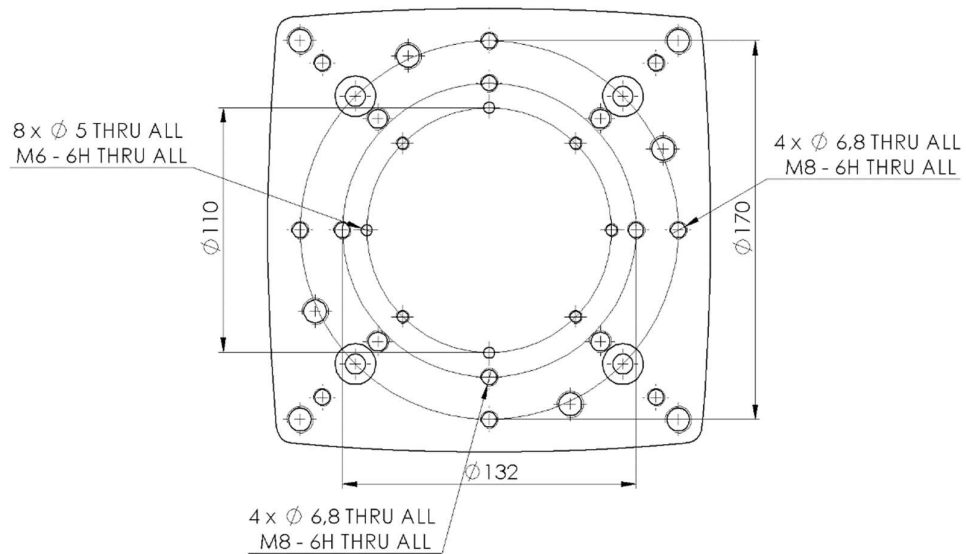
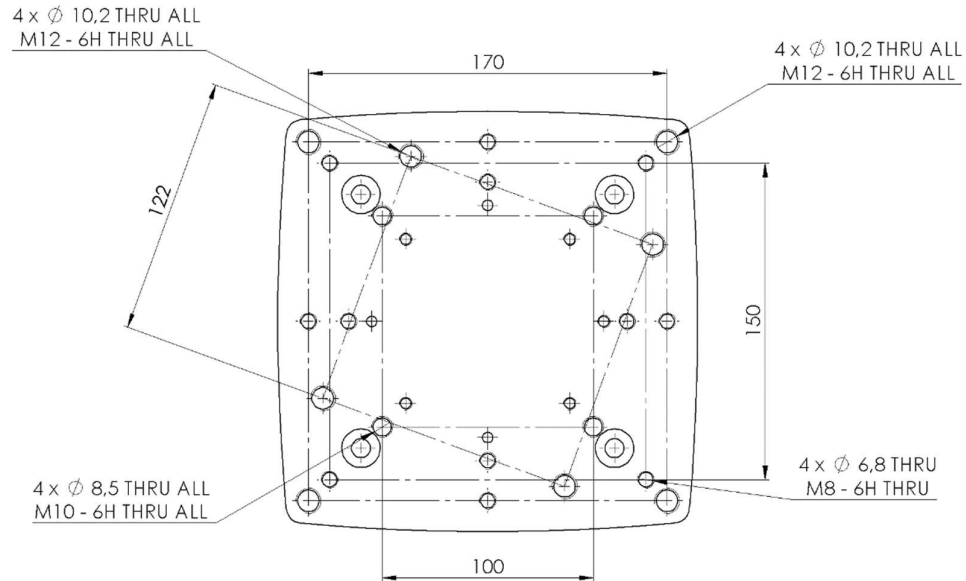


1.8 Mounting the robot



Follow the mounting guidelines of the robot manual.

Mount the robot according to the hole size and pattern.



1.9 Air connection

Connect air to the ProFeeder X/C, use a maximum of 8 bar dry air supply. Pressure can be regulated by using the included air regulator.



5. Adjustments

1.10 Adjusting the feet

Loosen the lock nut, adjust the foot by turning, retighten the lock nut.

The feet should be adjusted so:

- The ProFeeder stands stable without rocking, use a bubble level.



6. Using the ProFeeder

1.11 General

Do not have more than one drawer out on each side at once.

Tilt the lock-plate on the operator-side to release the tray. If the system also has Airlock installed remember to release the cylinder by pushing the respective button.






To release the tray for the robot side, please mount the unlock plate with the included pin on your robot, and program it so the pin enters the black plastic ring and lift/tilt the plate. IF the system has Airlock, remember to change the respective DigOut to high/on. Then drag the drawer 700 mm out for fully extension and reengage the airlock if installed.



1.12 ProFeeder - Airlock

The Airlock-system can be controlled independently from the buttons placed on the operator. To allow the robot to control the valve, the system must be wired and programmed according to 1.22.2.

The lights in the buttons are controlled by the robot-controller and could be programmed as below:

Light	Status
	Blinking Light Status: <i>Tray is currently being worked on.</i> Action needed: <i>No</i>
	Light constantly on Status: <i>Tray is done.</i> Action needed: <i>Reload tray or parts. Press button to reset.</i>
	Light off Status: <i>Tray has not been worked on yet.</i> Action needed: <i>No</i>

1.13 Standard drawer layout (SD)

The height of 1x = 40mm

The height X (Y) of 1x = 40mm

60kg drawer require two empty slots above the drawer

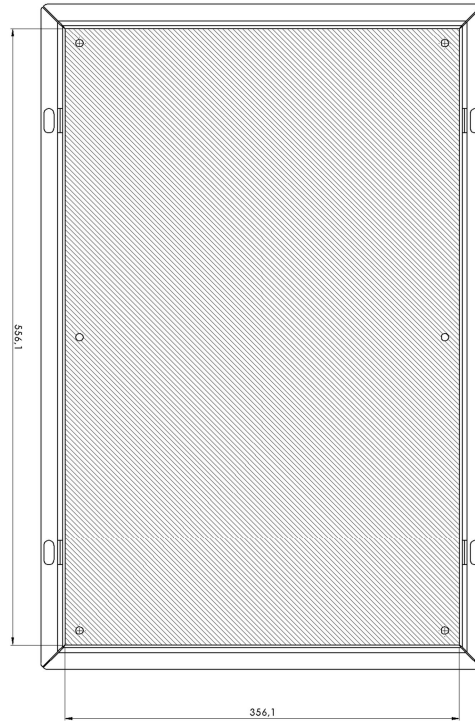
120kg drawer require one empty slot above the drawer.

The positions are from top-to-bottom.

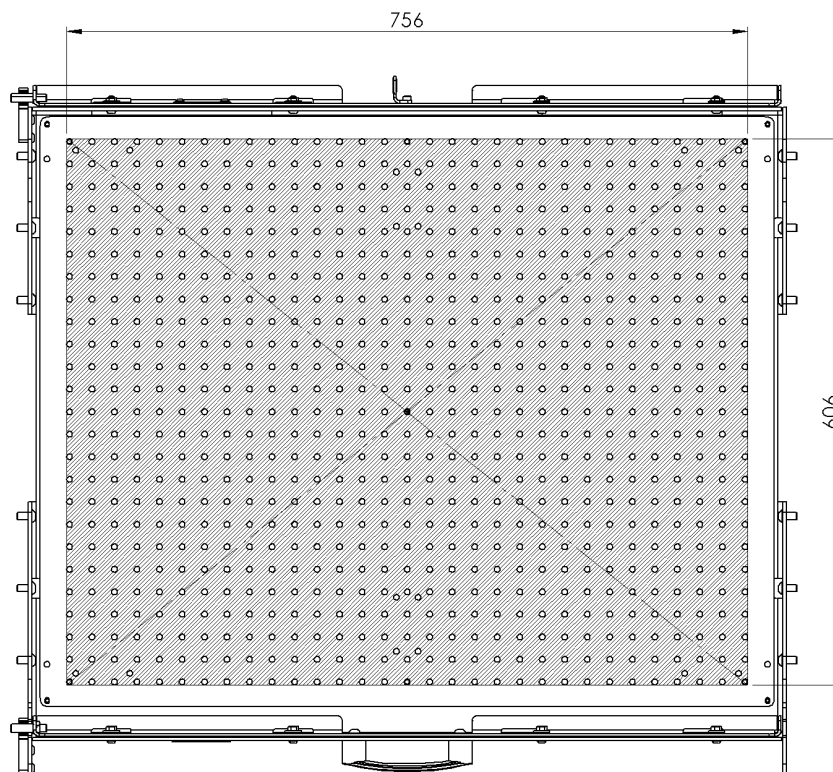
Number of drawer	2	3	5	6	10
					X (1)
			X (3)	X (3)	X (3)
					X (5)
		X (6)		X (6)	
	X (7)		X (7)		X (7)
				X (9)	X (9)
			X (11)		X (11)
		X (12)		X (12)	
					X (13)
	X (15)		X (15)	X (15)	X (15)
					X (17)
		X (18)		X (18)	
			X (19)		X (19)
Max part height	320mm	240mm	160mm	120mm	80mm

1.14 Work area

ProFeeder X and Compact: 556,1 x 356,1mm



ProFeeder X-XL and Compact-XL

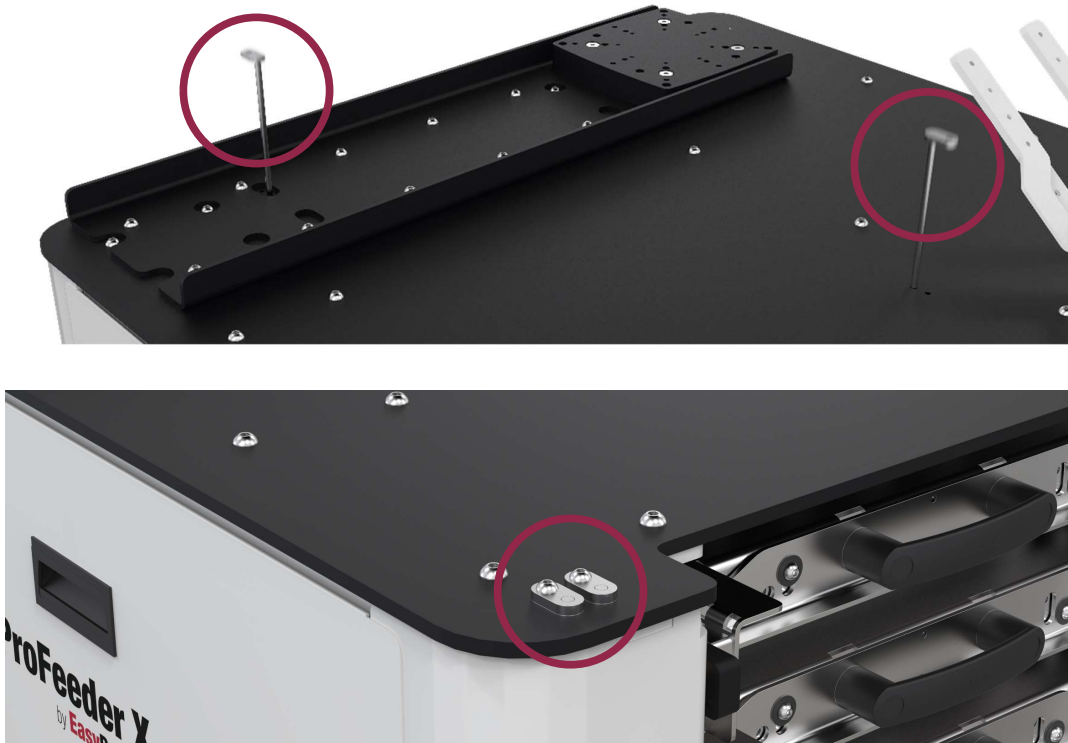


7. Transport

1.15 Fixation for transport

The ProFeeder is delivered in a wooden box if assembled by EasyRobotics ApS. Please reuse this box for any further transport.

Remove the transport lock when the machine is installed.

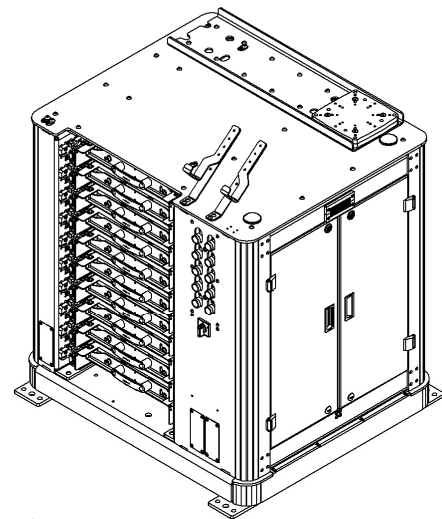
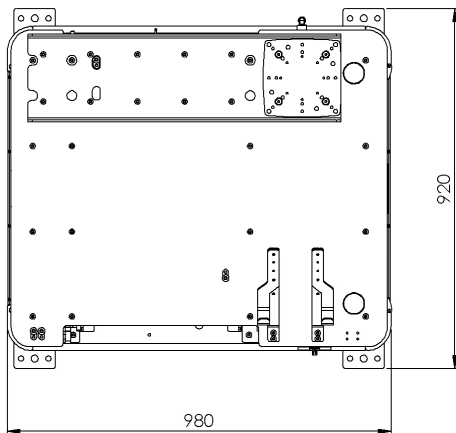
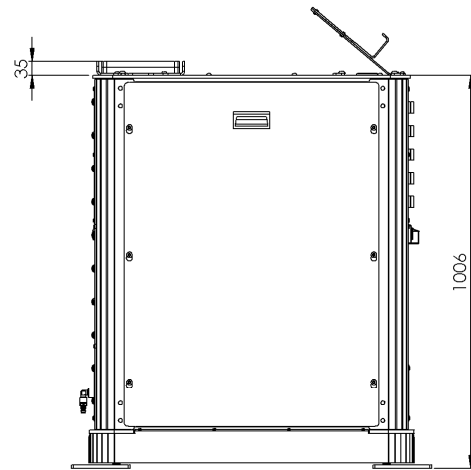
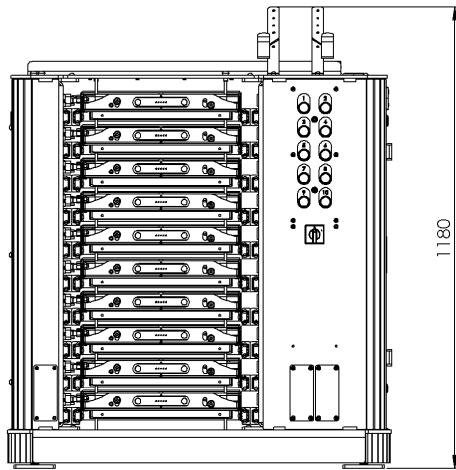


If the ProFeeder should be moved without the wooden box, please remove the two side skirts to lift the machines with a pallet lifter or truck.

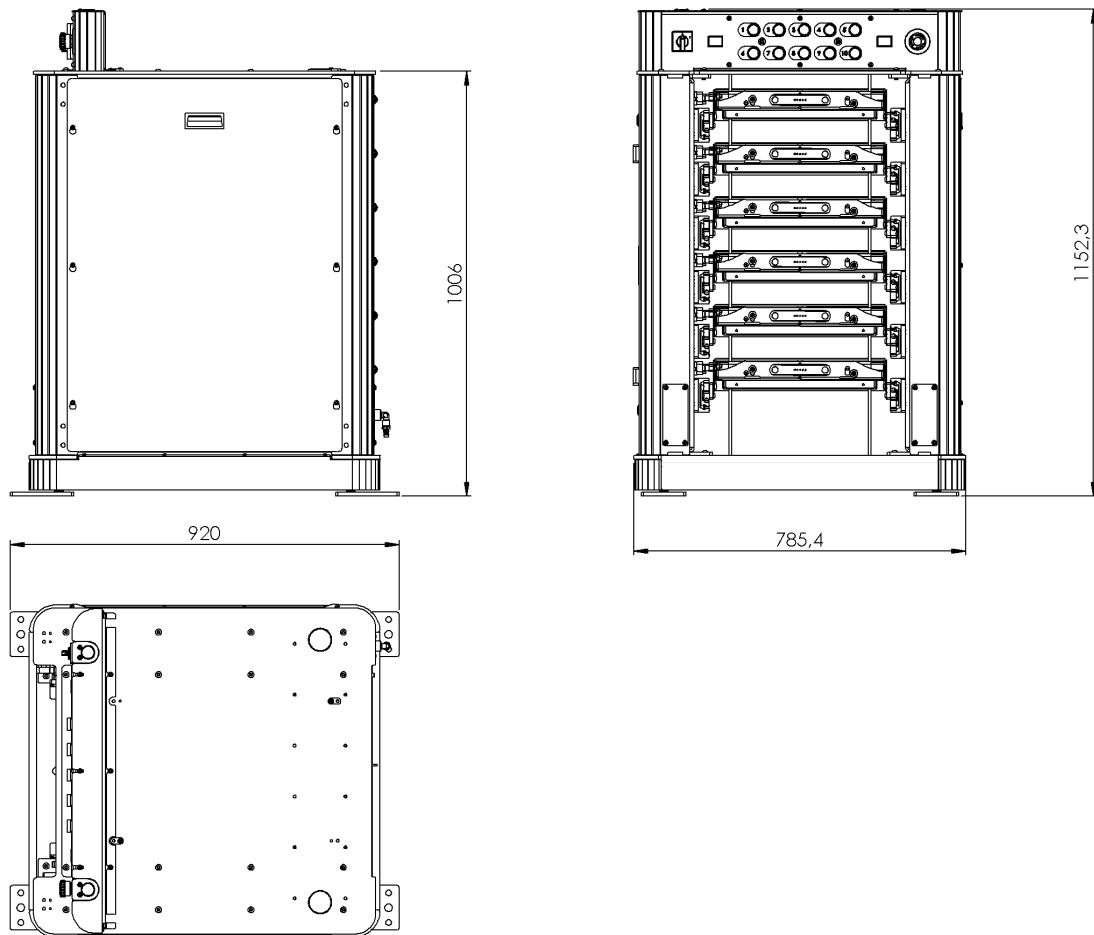


8. Dimensions

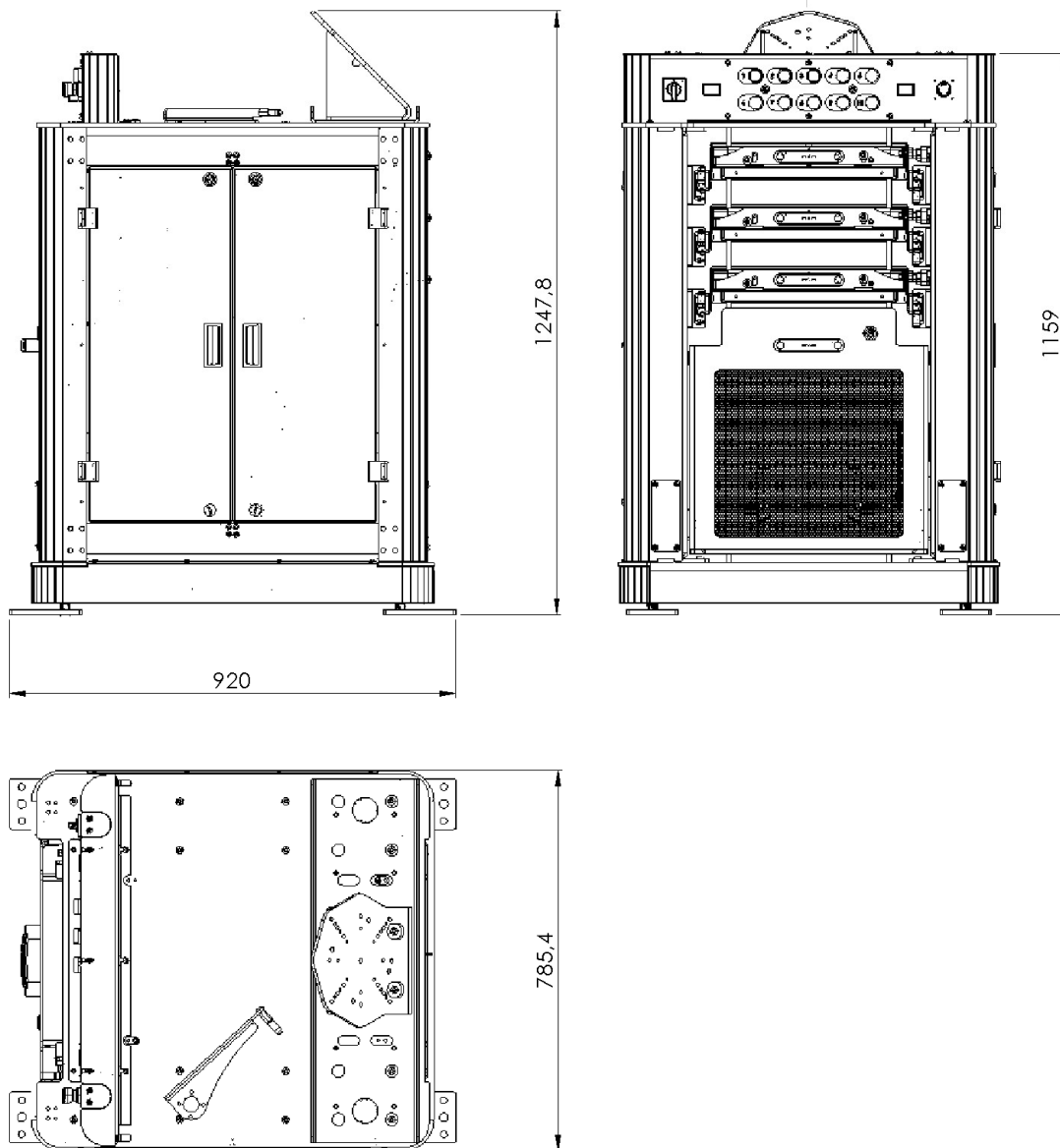
1.16 ProFeeder X



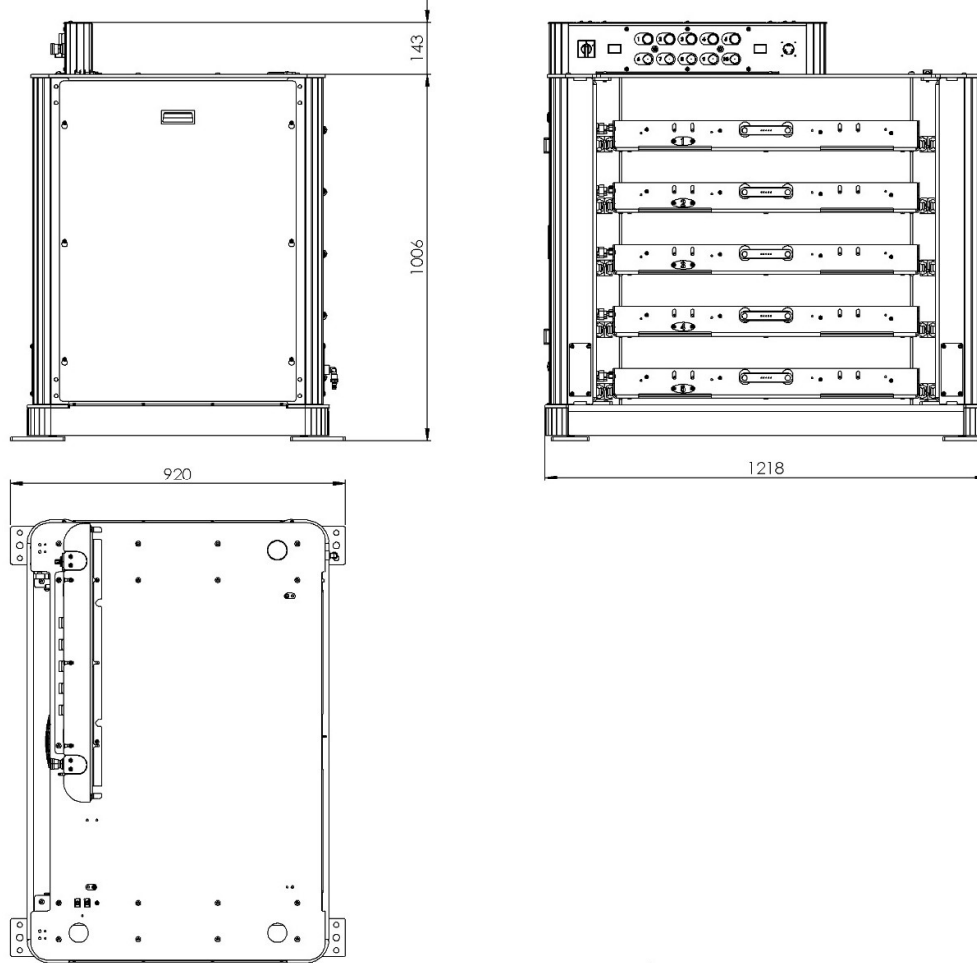
1.17 ProFeeder Compact



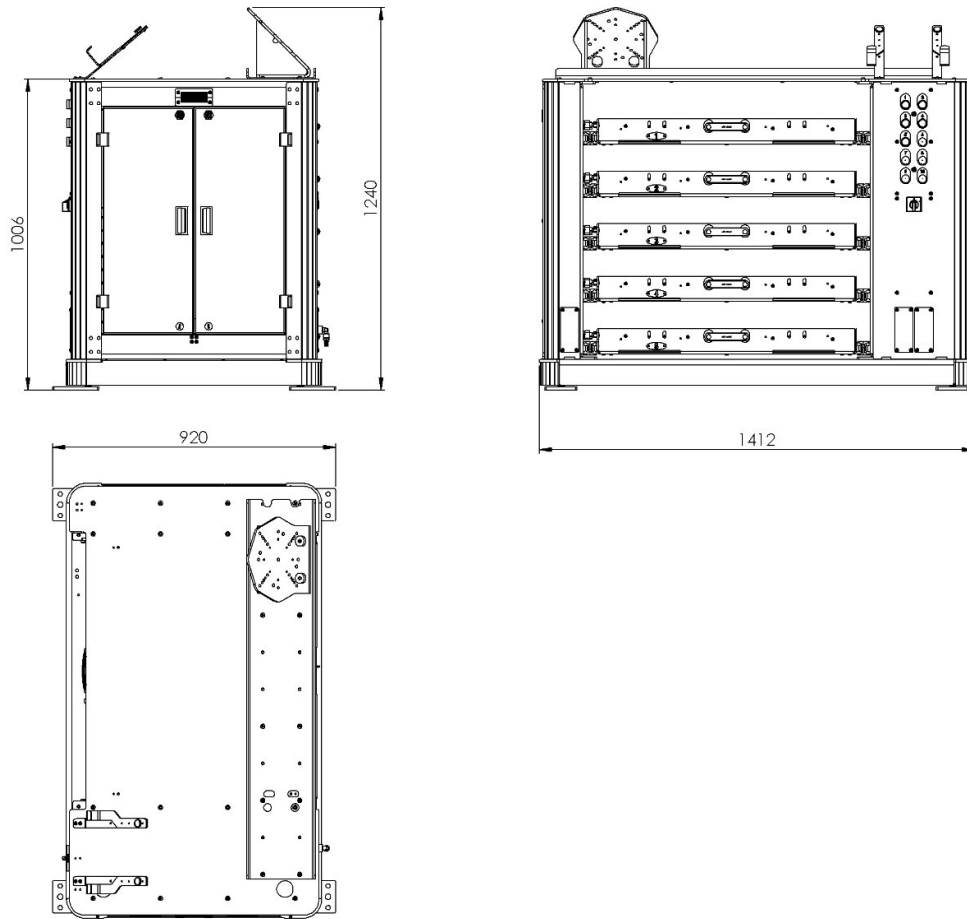
1.18 ProFeeder Compact for Robot



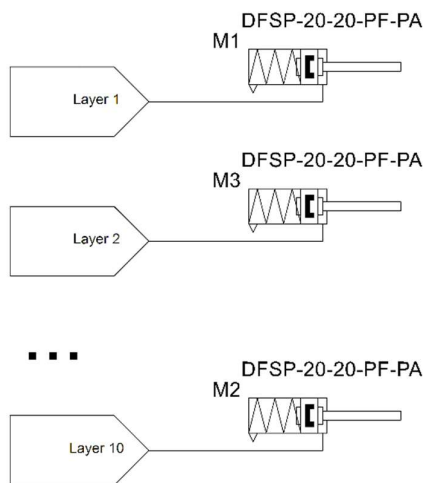
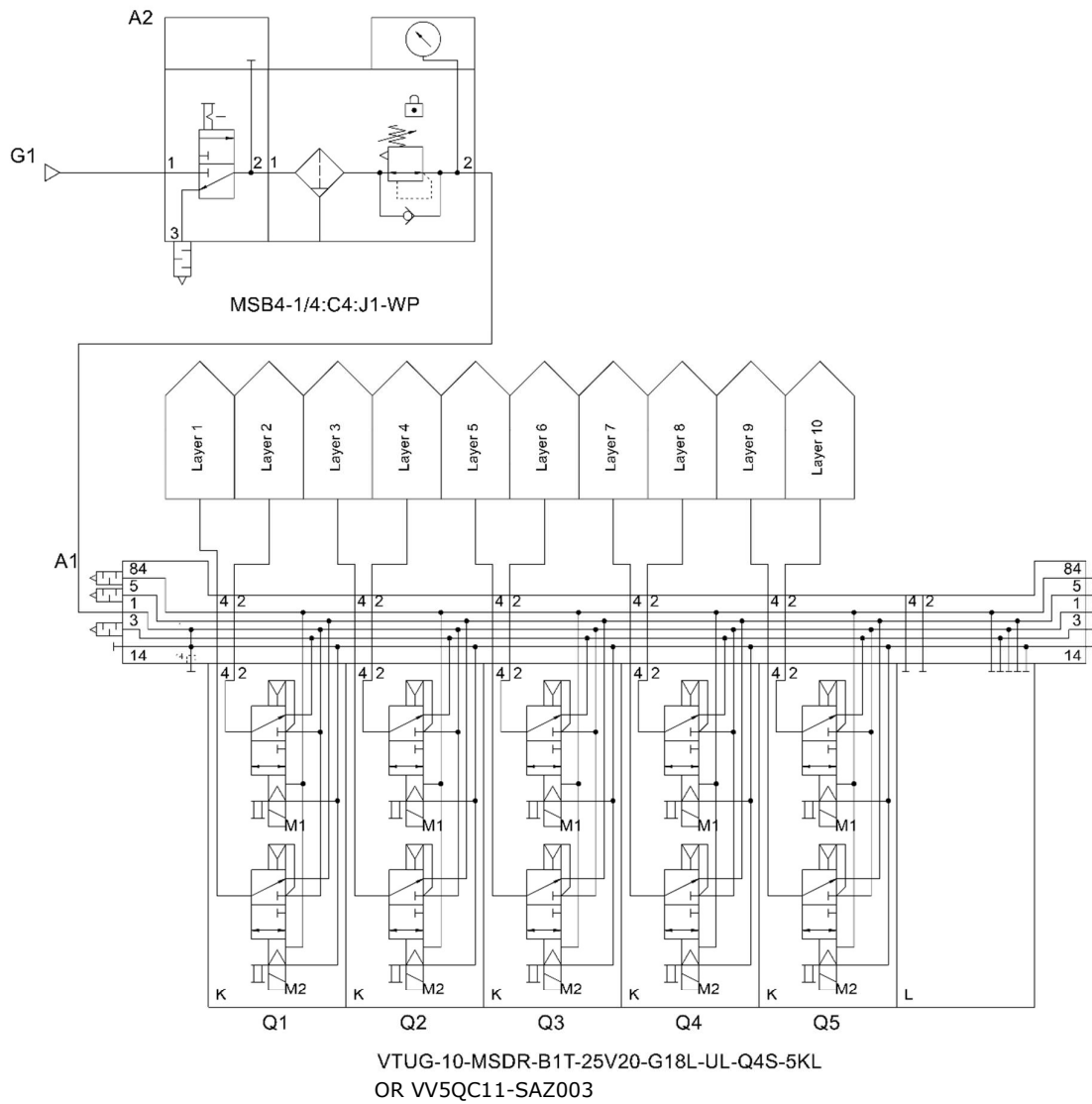
1.19 ProFeeder Compact-XL



1.20 ProFeeder X-XL

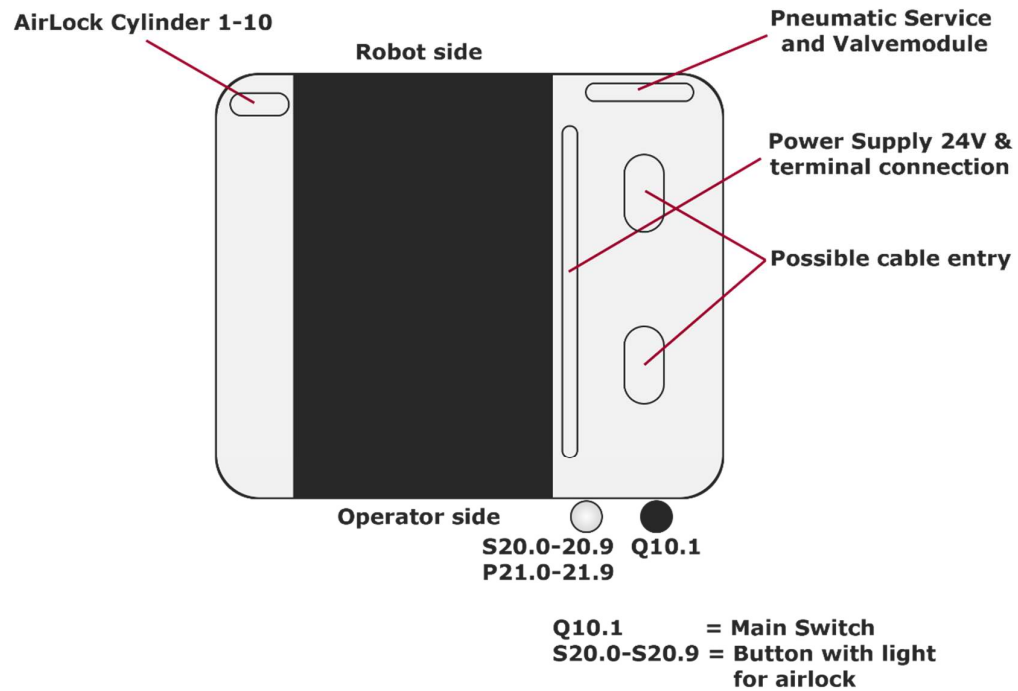


9. Pneumatic Diagram



10. Electric diagrams

1.21 Top View



1.22 Buttons and lights

1.22.1 BUTTONS

1	-X10.4:+	(V+) Constant	White
2	-X40.1:1	← S20.0	Brown
3	-X40.1:5	← S20.1	Green
4	-X40.1:9	← S20.2	Yellow
5	-X40.1:13	← S20.3	Grey
6	-X40.1:17	← S20.4	Pink
7	-X40.1:21	← S20.5	Blue
8	-X40.1:25	← S20.6	Red
9	-X40.1:29	← S20.7	Black
10	-X40.1:33	← S20.8	Violet
11	-X40.1:37	← S20.9	Grey/Pink

Example:

Press on 20.1 → signal (24V) on -X40.1:5.

1.22.2 LIGHTS

12	-X21.1:1	→P21.0	Red/Blue
13	-X21.1:2	→P21.1	White/Green
14	-X21.1:3	→P21.2	Brown/Green
15	-X21.1:4	→P21.3	White/Yellow
16	-X21.1:5	→P21.4	Yellow/Brown
17	-X21.1:6	→P21.5	White/Grey
18	-X21.1:7	→P21.6	Grey/Brown
19	-X21.1:8	→P21.7	White/Pink
20	-X21.1:9	→P21.8	Pink/Brown
21	-X21.1:10	→P21.9	White/Blue
22			Brown/Blue
23			White/Red
24			Brown/Red
25	-X10.4:0	(0V) Constant	White/Black

Example:

+24V on -X21.1:1 → light on P21.0 (button S20.0 *Tray 1*)

Connect Digital-Out port from robot controller to -X21.1.

1.23 Cable -W40.4, Airlock FESTO -Y41.0

25 Pole Sub D

1	-X40.1:2	→ Valve 1	White
2	-X40.1:6	→ Valve 2	Brown
3	-X40.1:10	→ Valve 3	Green
4	-X40.1:14	→ Valve 4	Yellow
5	-X40.1:18	→ Valve 5	Grey
6	-X40.1:22	→ Valve 6	Pink
7	-X40.1:26	→ Valve 7	Blue
8	-X40.1:30	→ Valve 8	Red
9	-X40.1:34	→ Valve 9	Black
10	-X40.1:38	→ Valve 10	Violet
11...24			
25	-X10.4:0	(0V) Constant	White/Yellow

Example:

+24V from Robot DO on -X40.1:4 or active button 1 will through -X40.1:2 active the valve and switch status of the first valve and unlock the AirLock on tray 1.

1.24 Cable -W40.4, Airlock SMC -Y42.0

25 Pole Sub D

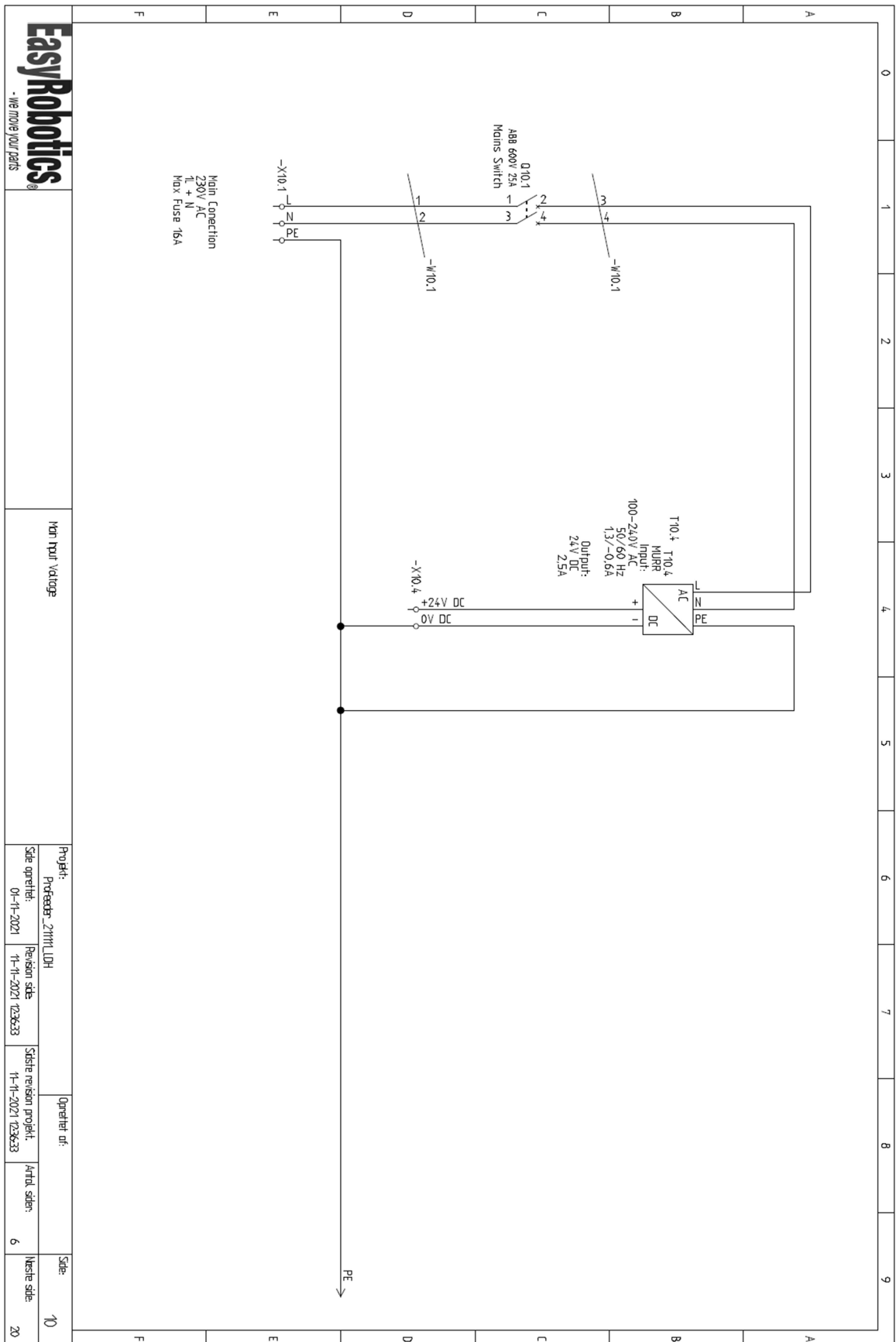
1	-X40.1:2	→ Valve 1	White
2	-X40.1:6	→ Valve 2	Brown
3	-X40.1:10	→ Valve 3	Green
4	-X40.1:14	→ Valve 4	Yellow
5	-X40.1:18	→ Valve 5	Grey
6	-X40.1:22	→ Valve 6	Pink
7	-X40.1:26	→ Valve 7	Blue
8	-X40.1:30	→ Valve 8	Red
9	-X40.1:34	→ Valve 9	Black
10	-X40.1:38	→ Valve 10	Violet
11...24			
25	-X10.4:0	(0V) Constant	White/Yellow

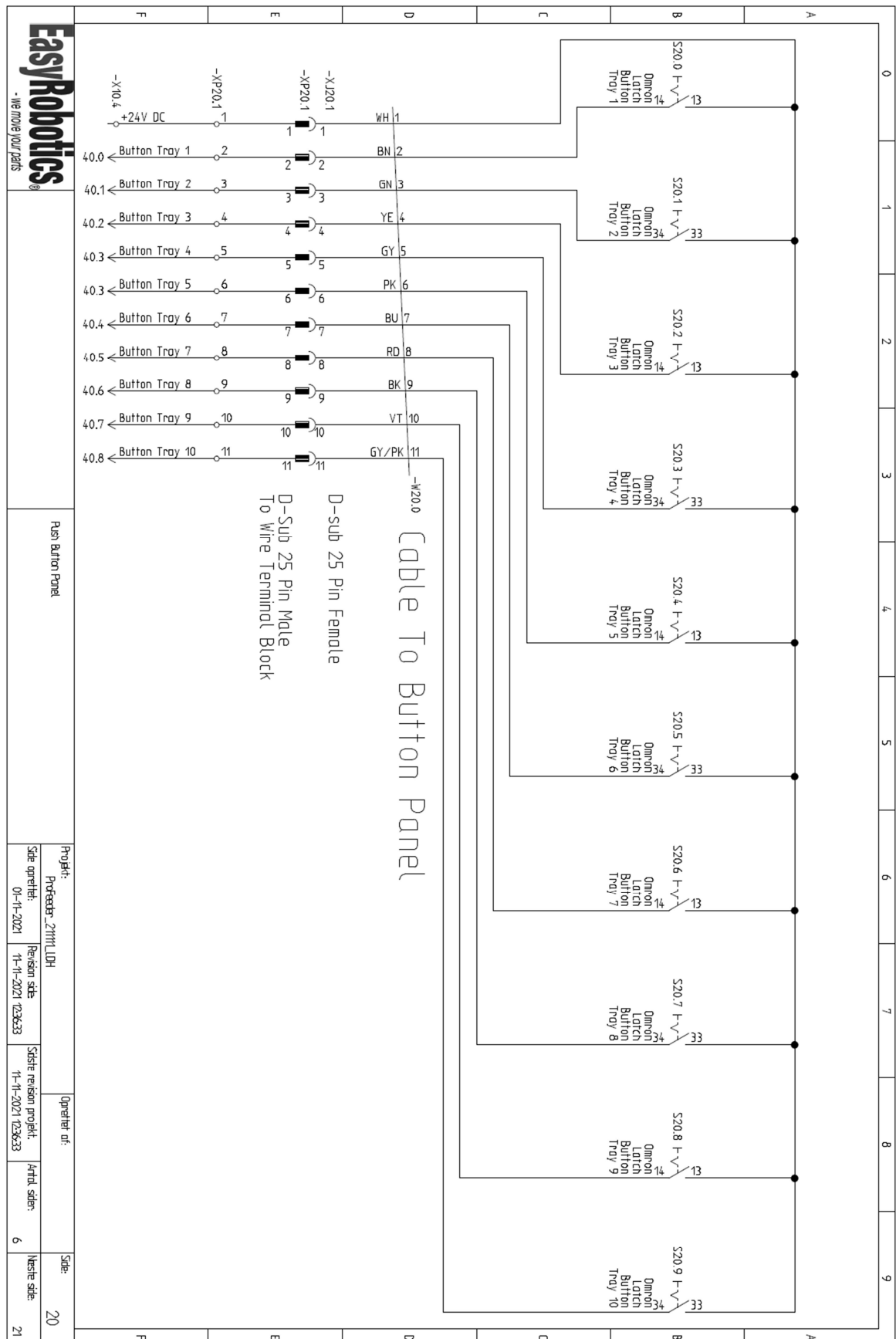
Example:

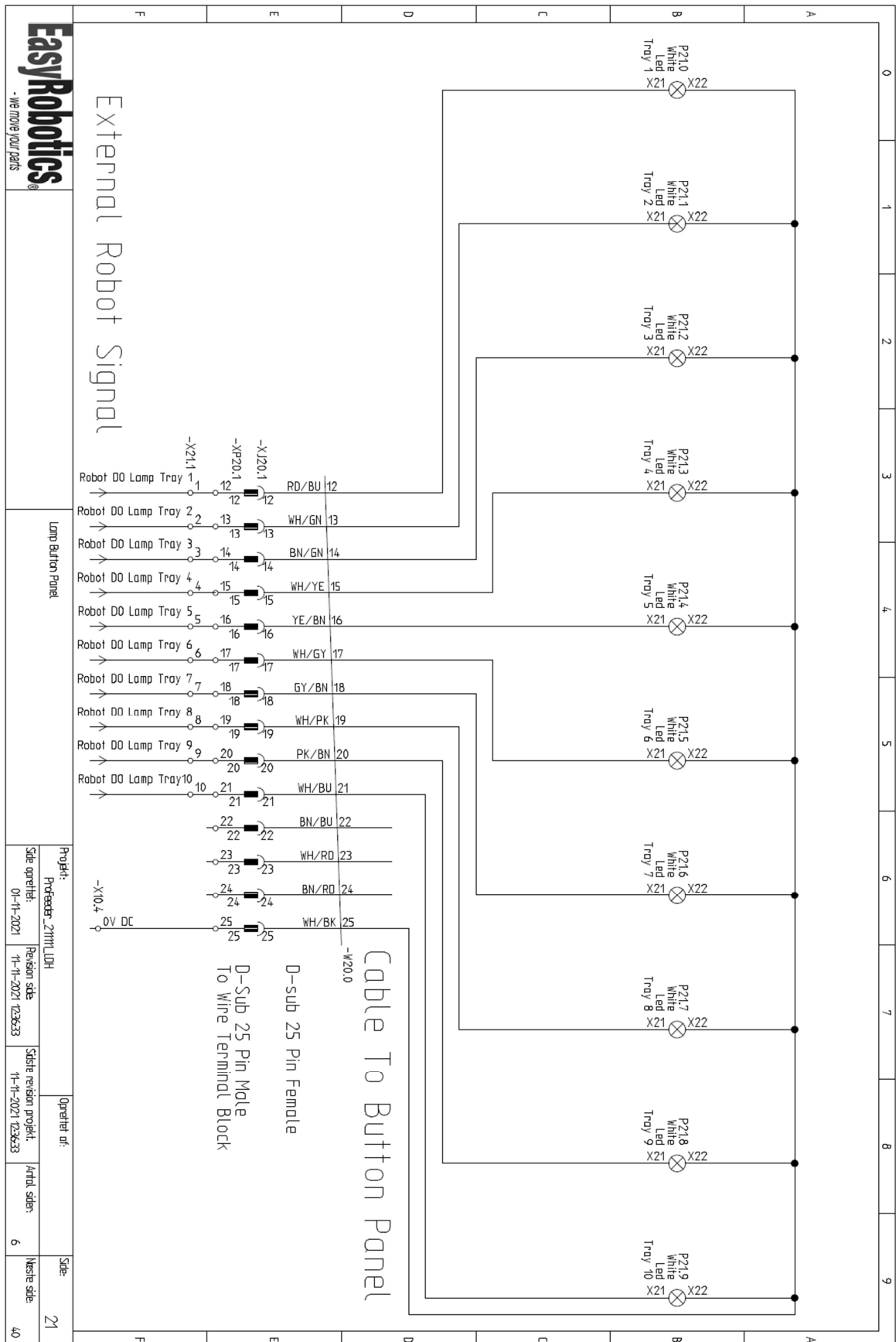
+24V from Robot DO on -X40.1:4 or active button 1 will through -X40.1:2 active the valve and switch status of the first valve and unlock the AirLock on tray 1.

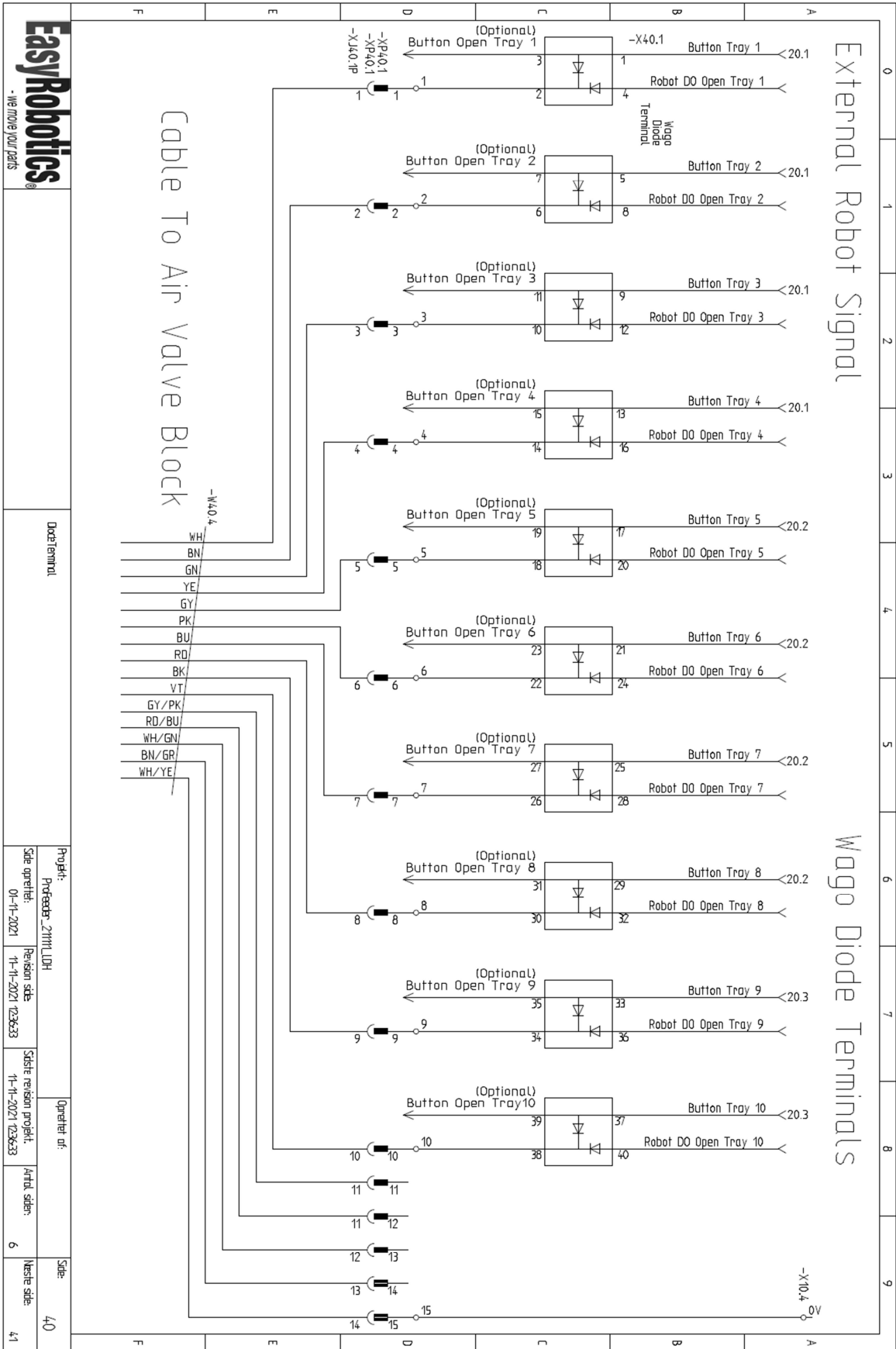
1.25 Power Supply -X10.1

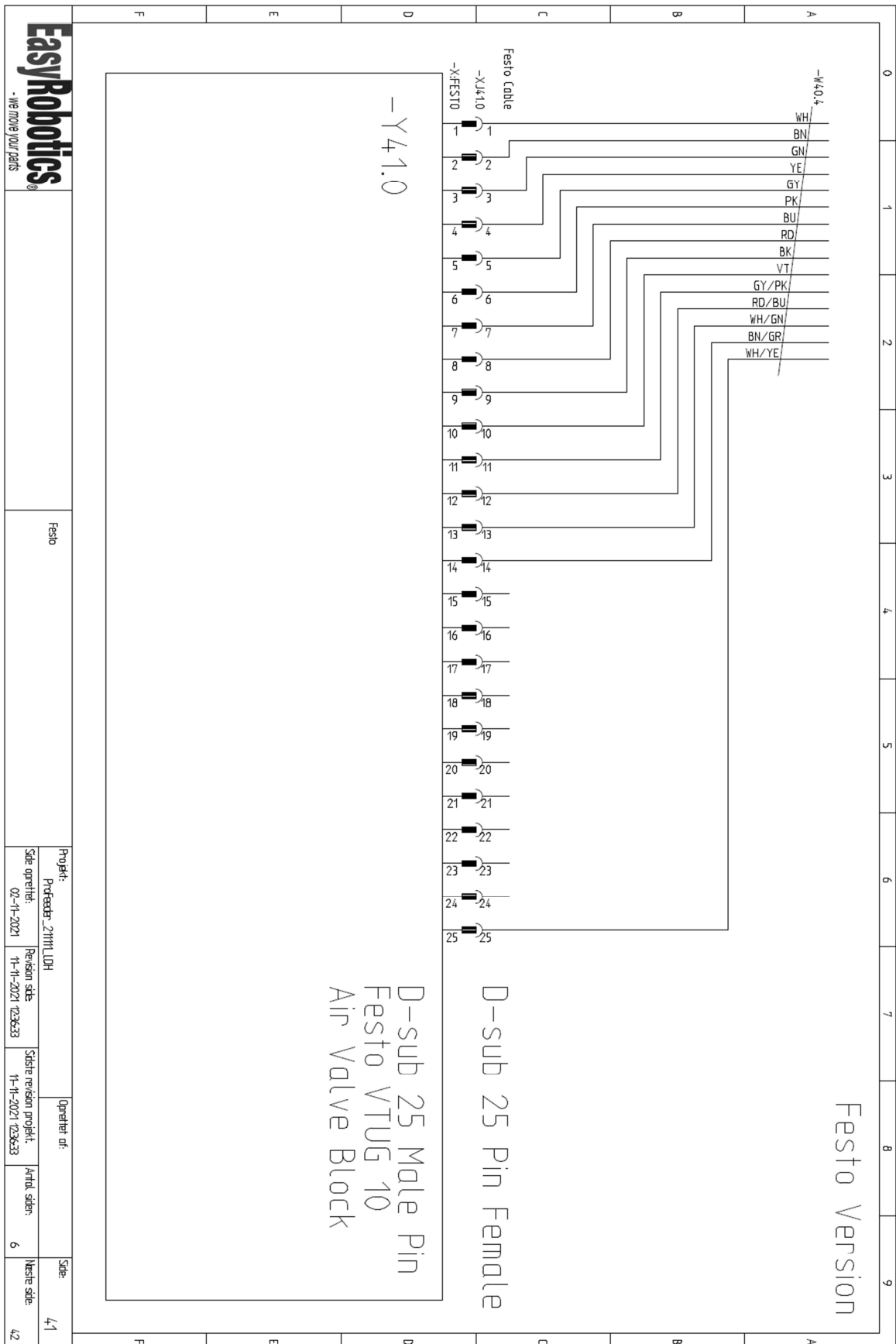
1	L	
2	N	
3	Pe	Yellow/Green

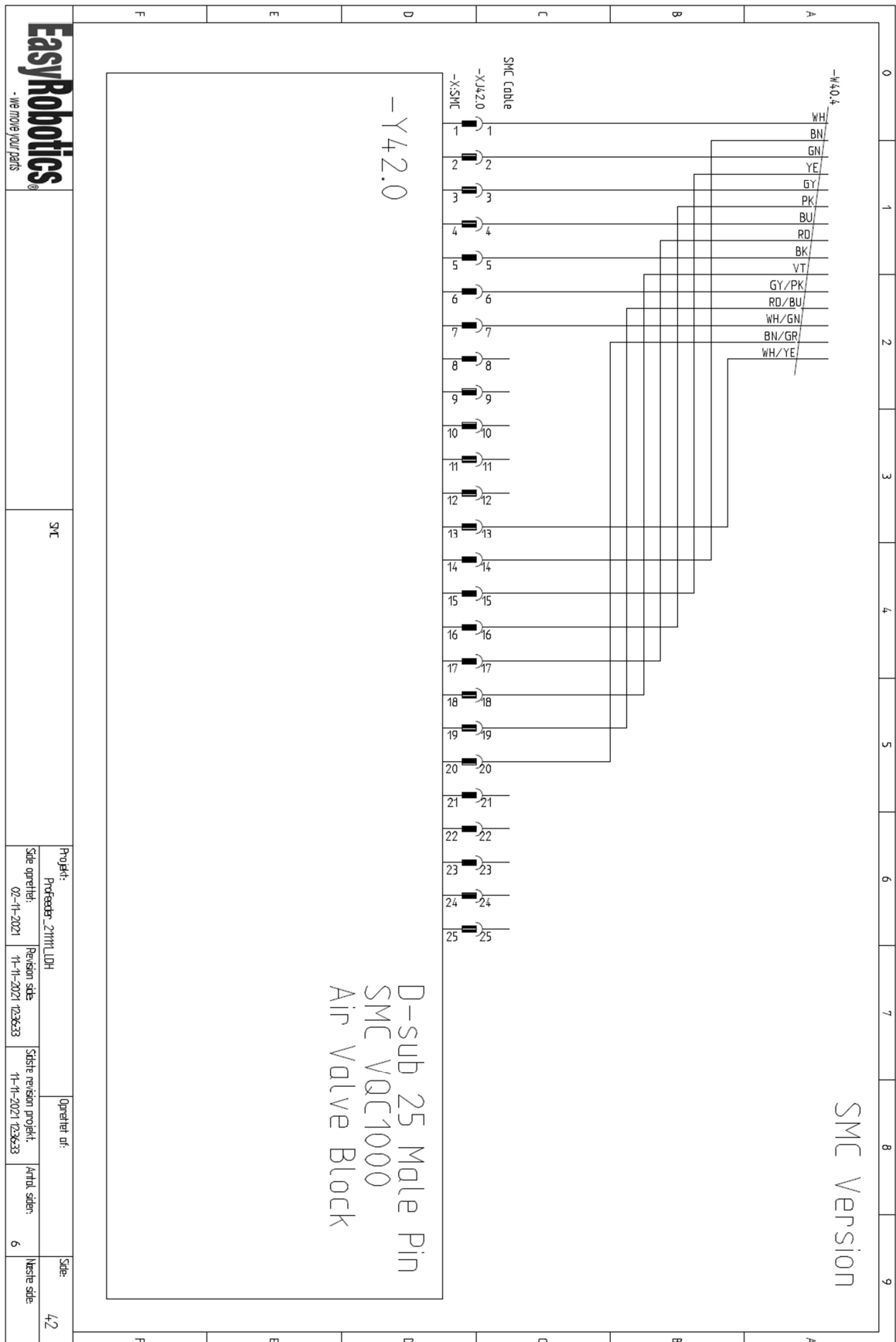












11. Service

1.26 High Friction in drawers

Issue: Some drawers can build up high friction on the last couple of centimeters of travel. The friction is so high that it can feel like mechanical blocking.

Cause: The balls in the rails can get out of synchronization with the telescopic parts of the rail. This can happen during transport or if the drawers are pulled out many times to the same side.

Solution: To reset the affected drawers, pull hard towards the inflicted part of the travel. Do so until the drawer travels normal and freely again.

Prevention: In most cases the balls and telescopic parts will stay synchronized if the drawers are pulled out to their full extension alternately to one side and the other. If needed combine this with a reset operation on a regular basis.

Attention: Running for example an automated test by letting a robot operate the drawers many times from the same side, can gradually bring the balls out of synchronization, causing the problem to reoccur.

12. Declaration of incorporation of partly completed machinery (for CE-marking)

According to the EU Machinery Directive 2006/42/EC, Annex II 1. B for partly completed machinery

Manufacturer:

EasyRobotics ApS
Mommarmvej 5
DK - 6400 Sønderborg

Person established in the Community authorized to compile the relevant technical documentation:

Per Lachenmeier
EasyRobotics ApS
Mommarmvej 5
DK - 6400 Sønderborg

Description and identification of the partly completed machinery

Product / Article	ProFeeder X
Type	PFX-1XXX-XX
Project number	0063-X
Commercial name	ProFeeder X
Function	The ProFeeder X (when robot is installed) is to be used for automated feeding for CNC machines and other machines/workplaces. The ProFeeder X provides a framework for the robot's location, and it contains both the processed and unprocessed parts.

It is declared that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled:

1.2.4.3, 1.3.1, 1.3.2, 1.3.7, 1.5.3, 1.6.3, 1.7.3, 1.7.4

It is also declared that the relevant technical documentation has been compiled in accordance with part B of Annex VII.

Reference to the harmonized standards used, as referred to in Article 7 (2):

EN ISO 12100:2010-11	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
EN ISO 4414:2010	Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)
DS/EN ISO 14118:2018	Safety of machinery - Prevention of unexpected start-up

The manufacturer or his authorized representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place

This does not affect the intellectual property rights!

Important note! The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.

Sønderborg, 14/10/2020
Place, Date

Signature
Per Lachenmeier
CEO



According to the EU Machinery Directive 2006/42/EC, Annex II 1. B for partly completed machinery

Manufacturer:

EasyRobotics ApS
Mommarmvej 5
DK - 6400 Sønderborg

Person established in the Community authorized to compile the relevant technical documentation:

Per Lachenmeier
EasyRobotics ApS
Mommarmvej 5
DK - 6400 Sønderborg

Description and identification of the partly completed machinery

Product / Article	ProFeeder Compact
Type	PFC-1XXX-XX
Project number	0084-X
Commercial name	ProFeeder Compact
Function	The ProFeeder Compact (when robot is installed) is to be used for automated feeding for CNC machines and other machines/workplaces. The ProFeeder Compact contains both the processed and unprocessed parts.

It is declared that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled:

1.2.4.3, 1.3.1, 1.3.2, 1.3.7, 1.5.3, 1.6.3, 1.7.3, 1.7.4

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Place, Date

Signature
Per Lachenmeier
CEO



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Manufacturer:

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Mommarmvej 5
DK - 6400 Sønderborg

Person established in the Community authorized to compile the relevant technical documentation:

Per Lachenmeier
EasyRobotics ApS
Mommarmvej 5
DK - 6400 Sønderborg

Description and identification of the partly completed machinery

Product / Article	ProFeeder X-XL
Type	PFX-2XXX-XX
Project number	0088-X
Commercial name	ProFeeder X-XL
Function	The ProFeeder X-XL (when robot is installed) is to be used for automated feeding for CNC machines and other machines/workplaces. The ProFeeder X-XL provides a framework for the robot's location, and it contains both the processed and unprocessed parts.

It is declared that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled:

1.2.4.3, 1.3.1, 1.3.2, 1.3.7, 1.5.3, 1.6.3, 1.7.3, 1.7.4

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DK - 6400 Sønderborg

Person established in the Community authorized to compile the relevant technical documentation:

Per Lachenmeier
EasyRobotics ApS
Mommarmvej 5
DK - 6400 Sønderborg

Description and identification of the partly completed machinery

Product / Article	ProFeeder Compact-XL
Type	PFC-2XXX-XX
Project number	0091-X
Commercial name	ProFeeder Compact XL
Function	The ProFeeder Compact-XL (when robot is installed) is to be used for automated feeding for CNC machines and other machines/workplaces. The ProFeeder Compact-XL contains both the processed and unprocessed parts.

It is declared that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled:

1.2.4.3, 1.3.1, 1.3.2, 1.3.7, 1.5.3, 1.6.3, 1.7.3, 1.7.4

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Sønderborg, 14/10/2020
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Signature
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Manufacturer:

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Mommarmvej 5
DK - 6400 Sønderborg

Revision: 2021-11

EasyRobotics ApS

ProFeeder X, X-XL, Compact & Compact-XL User-Manual

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Person established in the Community authorized to compile the relevant technical documentation:

Per Lachenmeier
EasyRobotics ApS
Mommarmvej 5
DK - 6400 Sønderborg

Description and identification of the partly completed machinery

Product / Article	ProFeeder Compact for Robot
Type	PFC-3XXX-XX
Project number	0089-X
Commercial name	ProFeeder Compact
Function	The ProFeeder Compact (when robot is installed) is to be used for automated feeding for CNC machines and other machines/workplaces. The ProFeeder Compact provides a framework for the robot's location, and it contains both the processed and unprocessed parts.

It is declared that the following essential requirements of the Machinery Directive 2006/42/EC have been fulfilled:

1.2.4.3, 1.3.1, 1.3.2, 1.3.7, 1.5.3, 1.6.3, 1.7.3, 1.7.4

It is also declared that the relevant technical documentation has been compiled in accordance with part B of Annex VII.

Reference to the harmonized standards used, as referred to in Article 7 (2):

EN ISO 12100:2010-11	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
EN ISO 4414:2010	Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)
DS/EN ISO 14118:2018	Safety of machinery - Prevention of unexpected start-up

The manufacturer or his authorized representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place

This does not affect the intellectual property rights!

Important note! The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive, where appropriate.

Sønderborg, 14/10/2020
Place, Date

Signature
Per Lachenmeier
CEO

