

# EPSON

## **Epson RC+ 8.0 Option Part Feeding 8.0 IF-380 & IF-530**

Original instructions

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# **1. FOREWORD**

## 1.1 FOREWORD

Thank you for purchasing our robot system.

This manual contains the information necessary for the correct use of the Epson RC+ PartFeeding option.

Please carefully read this manual and other related manuals before installing the robot system.

Keep this manual handy for easy access at all times.

The robot system and its optional parts are shipped to our customers only after being subjected to the strictest quality controls, tests, and inspections to certify its compliance with our high performance standards. Please note that the basic performance of the product will not be exhibited if our robot system is used outside of the usage conditions and product specifications described in the manuals.

This manual describes possible dangers and consequences that we can foresee. Be sure to comply with safety precautions on this manual to use our robot system safely and correctly.

## 1.2 TRADEMARKS

Microsoft, Windows, Windows logo, Visual Basic, and Visual C++ are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Other brand and product names are trademarks or registered trademarks of the respective holders.

## 1.3 Notation

Microsoft® Windows® 10 operating system

Microsoft® Windows® 11 operating system

In this manual, the above operating systems are referred to as Windows 10 and Windows 11, respectively. Windows 10 and Windows 11 are sometimes collectively referred to as Windows.

## 1.4 Terms of Use

No part of this instruction manual may be reproduced or reprinted in any form without express written permission.

The information in this document is subject to change without notice.

Please contact us if you find any errors in this document or if you have any questions about the information in this document.

## 1.5 Manufacturer

**SEIKO EPSON CORPORATION**

## 1.6 Contact Information

Contact information details are listed in the "Supplier" section in the following manual.

Note that the contact information may vary depending on your region.

"Safety Manual - Contact Information"

The Safety Manual is also available at the following site.

URL: <https://download.epson.biz/robots/>



## 1.7 Disposal

When disposing of the product, follow the legal regulations of your country.

## **2. Hardware (IF-380& IF-530)**

## 2.1 Safety

### 2.1.1 Overview

Before operating your product, please read this manual in order to ensure correct use of the product. Nevertheless, if you meet difficulties during operation or maintenance, please, feel free to contact the supplier of your region.

In this manual, the safety precautions that you must follow are classified as: "Warning", "Caution" and "KEY POINTS." The following symbols are used:

#### WARNING

This symbol indicates that a danger of possible serious injury or death exists if the associated instructions are not followed properly.

#### WARNING

This symbol indicates that a danger of possible harm to people caused by electric shock exists if the associated instructions are not followed properly.

#### CAUTION

This symbol indicates that a danger of possible harm to people or physical damage to equipment and facilities exists if the associated instructions are not followed properly.

#### KEY POINTS

The "KEY POINTS" sections describe important information to be followed for operating the Robot system.

#### CAUTION

Epson shall not be liable whatsoever for any loss or damage arising from a failure to observe the items specified in Safety precautions. The customer is responsible for providing the necessary instructions to the persons concerned.

#### KEY POINTS

The unit of scale described in this manual is millimeter (mm).

### 2.1.2 Safety Precautions

#### 2.1.2.1 General Safety Precautions

### 2.1.2.1.1 Transport

#### CAUTION

Be careful of the weight when transporting the system. For more information, refer to the following:

[Environment and Installation](#)

### 2.1.2.1.2 General

#### WARNING

- Be sure that all power sources and other cables to the unit are disconnected before working on the product.
- Only qualified personnel (trained by Epson and with professional experience) are authorized to work on this device.
- Do not plug or unplug cables of the system unless it is switched off.
- Never modify the product. Unauthorized modification may cause the product to malfunction, resulting in injury, electric shock, fire, etc.
- Turn off the power to the product in the event of power failure. Failure to do so may cause the product to suddenly start moving when the power is restored.
- Do not use the product in a place where it may come in contact with water or oil droplets.

#### WARNING

Do not access the housing of the system controls. Serious injury or death could result from electric shock. Only authorized personnel from Epson are allowed to access this part of the system for maintenance or for repair.

#### CAUTION

Build a safety system that shuts off the IF series power (S-Power) when the machine or mechanical system protection enclosure is opened.

### 2.1.2.1.3 Disposal

When the product becomes no longer usable or necessary, dispose of it properly as industrial waste.

#### CAUTION

Observe all laws and regulations when disposing of the product.

### 2.1.2.2 Danger

### 2.1.2.2.1 Safety Considerations for Operators

For safety reasons, operators must wear protective eyewear when using the backlight.

#### KEY POINTS

It is the customer's responsibility to install warning signs informing anyone working around the part feeder that they must wear safety equipment.

### 2.1.2.2.2 Specific Dangers

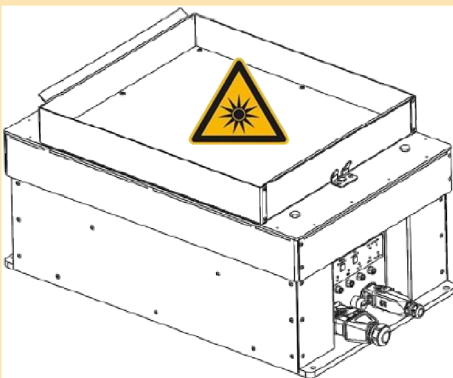
#### WARNING



##### Backlight

The part feeder has an integrated backlight that uses LEDs (Light Emitting Diodes). These LEDs emit visible or non-visible radiation depending on the color of the backlight. LED illumination can create discomfort and also damage the cornea, retina and lens.

Do not look at the light directly without wearing protective glasses. It is the responsibility of customers to document their own application and instruct employees on procedures to limit exposure to LED radiation.



#### WARNING



The LEDs used are risk group 2 according to the norm EN 62471. It is the responsibility of customers to document their own application and instruct employees on procedures to limit exposure to LED radiation.

Consider the following preventative measure:

1. If feasible in your work environment, install a fixed or movable high pass filter between the light source and employees. Use a high pass filter appropriate for the color of your LEDs. For more information, refer to the following:

**Backlight**



2. If protective measure is not possible, provide workers with goggles or face shields suitable for blocking radiation beyond 700nm.
3. Prohibit or limit direct access to the light source as much as possible. (exposure on the axis of radiation)
4. Establish a security perimeter to prevent operators from coming closer to the light source than the approach limit distance recommended by the manufacturer.
5. In all cases, check to make sure the measures you take are properly easing exposure (filters or goggles must be able to block the wavelengths to which operators are exposed).

To calculate the minimum safe distance for each type of backlight, refer to the following:

#### Appendix A: Conditions of Use for the Backlight

##### CAUTION

###### Sound level

The sound level of the part feeding during intensive use without components in the platform is less than 72 dB(A). Depending on the components distributed in the platform, the sound level may be higher.

In this case, it is the customer's or integrator's responsibility to implement the necessary measures to meet the safety requirements for operators.

## 2.2 Specification

### 2.2.1 Characteristics of IF-380, IF-530

The Parts Feeder is composed of a platform capable of vibrating in 3 orthogonal directions in order to optimally distribute the parts on the platform. The vibrations of the Parts Feeder are configured to optimally sort various types of parts. The sizes of the parts that can be distributed on the platform range from 15 mm to 60 mm for IF-380 and from 30 mm to 150 mm for IF-530.

### 2.2.2 Model

#### Model numbers of IF-380

Product name	Specification	Model number
IF380 no Light	IF380 (no Backlight)	R12NZ9018A
IF380 RED	IF380+Backlight: Red	R12NZ9018B
IF380 WHITE	IF380+Backlight: White	R12NZ9018C
IF380 GREEN	IF380+Backlight: Green	R12NZ9018D
IF380 BLUE	IF380+Backlight: Blue	R12NZ9018E
IF380 INFRARED	IF380+Backlight: Infrared light	R12NZ9018F

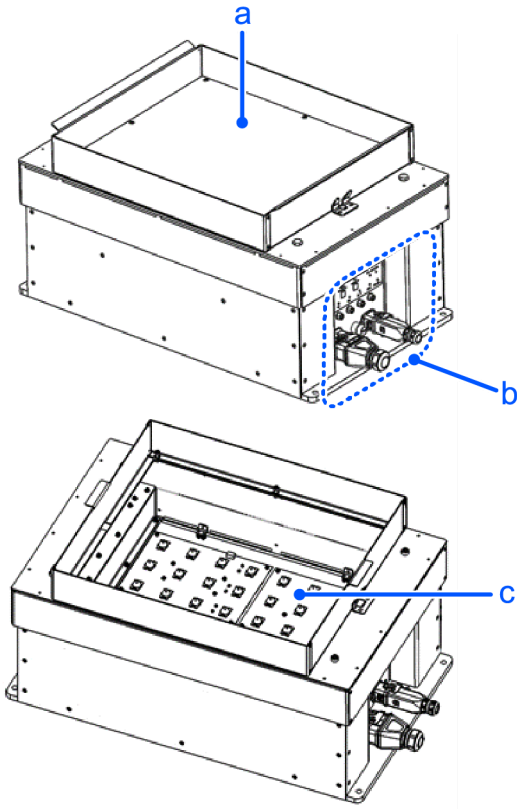
#### Model numbers of IF-530

Product name	Specification	Model number
IF530 no Light	IF530 (no Backlight)	R12NZ90196
IF530 RED	IF530+Backlight: Red	R12NZ90197
IF530 WHITE	IF530+Backlight: White	R12NZ90198
IF530 GREEN	IF530+Backlight: Green	R12NZ90199
IF530 BLUE	IF530+Backlight: Blue	R12NZ9019A
IF530 INFRARED	IF530+Backlight: Infrared light	R12NZ9019B

### 2.2.3 Part Names and External Dimensions

#### 2.2.3.1 Part Names

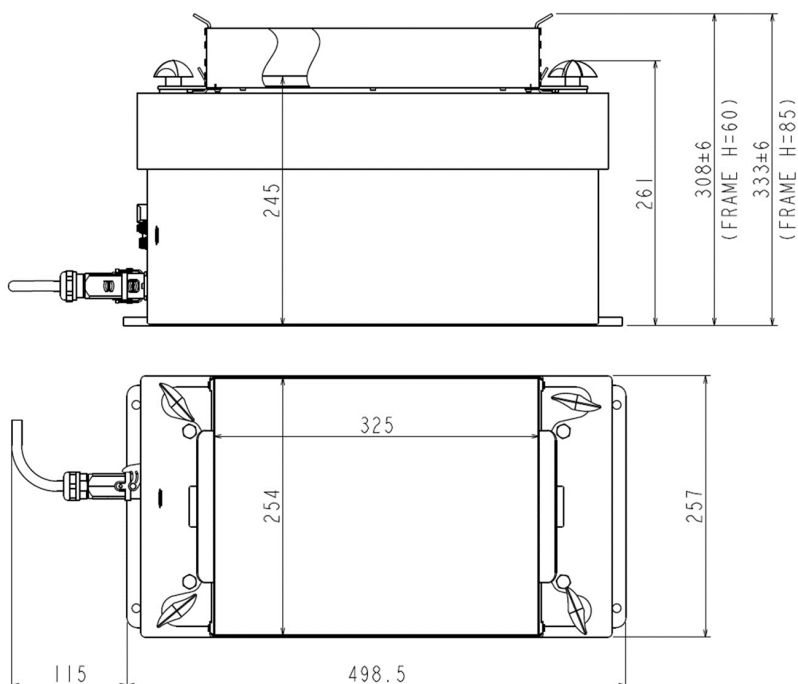
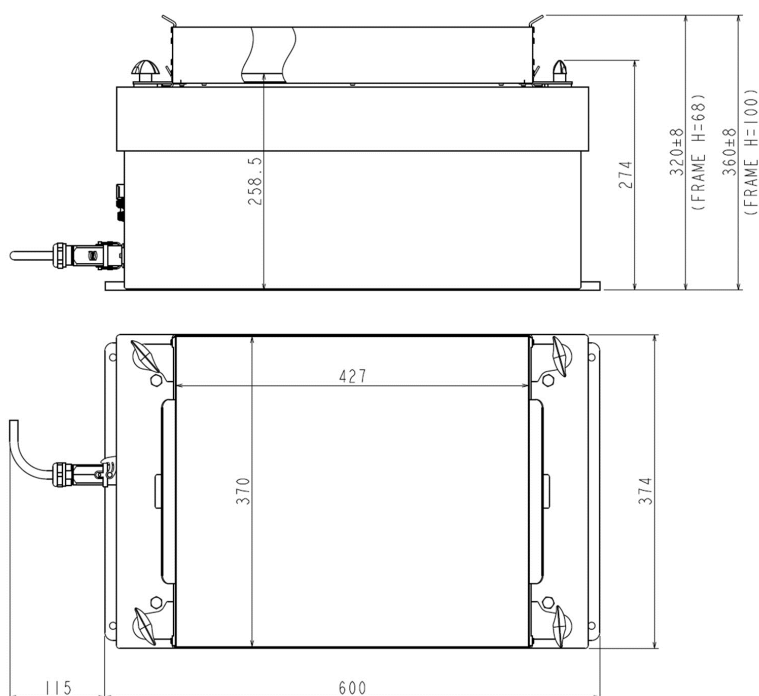
##### Part Names



Symbols	Meaning
a	3D vibrating platform <b>Remove the Platform</b>
b	Electrical interfaces (communication, power supply, I/O, etc) For more information, refer to the following: <b>Cable Connections</b>
c	Integrated backlight An integrated backlight allows a camera installed above the platform to easily identify parts. For information on replacing the backlight, refer to the following: <b>Replacing the Backlight</b>

2.2.3.2 Outer Dimensions

IF-380

**IF-530**

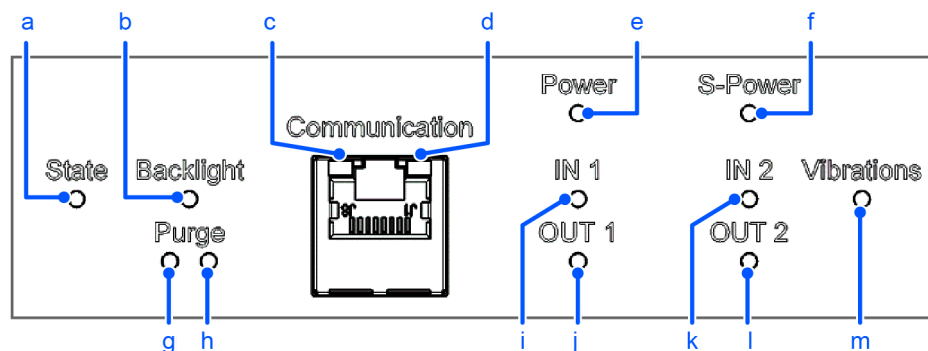
For details on mounting dimensions, refer to the following:

### Installing IF-380, IF-530

#### 2.2.3.3 LED Display

The LEDs mounted on the unit provide important information on the status:

#### Operating Indicator LEDs



LED	State	Color	Meaning
a	Blinking Time on: 100ms	Green	System on standby
	Blinking Time on: 900ms	Green	System in service
b	On	Green	24 V on backlight synchronization
c	On	Green	Connection detected
d	Blinking	Yellow	Communication in progress
e	On	Green	24V on Power input
f	On	Green	24V on S-Power input
g	On	Green	24 V purge input
h	On	Yellow	24 V purge output
i	On	Green	24 V on digital input 1
j	On	Yellow	24V on digital output 1
k	On	Green	24 V on digital input 2
l	On	Yellow	24V on digital output 2
m	On	Green	Platform vibrating



## 2.2.4 Specification Table

### ⚠ CAUTION

Use the parts feeder according to the following specifications. Note that the basic performance of the product will not be exhibited if it is used outside of the specifications.

### 2.2.4.1 Specification of IF-380, IF-530

	IF-380	IF-530
Typical part size *	Length of sides: 15 to 60 mm	Length of sides: 30 to 150 mm
Backlight	Select with/without backlight. For more information, refer to the following: <b>Model</b>	Select with/without backlight. For more information, refer to the following: <b>Model</b>

	IF-380	IF-530
Interchangeable backlight color	(green, red, blue, white, Infrared) For more information, refer to the following: <b>Backlight</b>	(green, red, blue, white, Infrared) For more information, refer to the following: <b>Backlight</b>
Configurable vibration frequency	20 to 30 Hz	20 to 28 Hz
Maximum weight on the platform (parts)	1.5 kg	2 kg
Output for Hoppers	2	2
Digital Input	-	-
Analog Input	-	-
RoHS		
Weight (Includes platform, backlight)	21 kg	31 kg
Protection class	IP50	
Operating temperature:	+5°C to +40°C	
Humidity	30% to 80% maximum, non-condensing	
Environment	No cleanroom standard	
Safety Standards	CE Marking EMC Directive, Machinery Directive, RoHS Directive	

\* Before using parts, supply some parts to the feeder, operate the feeder, and check the following.

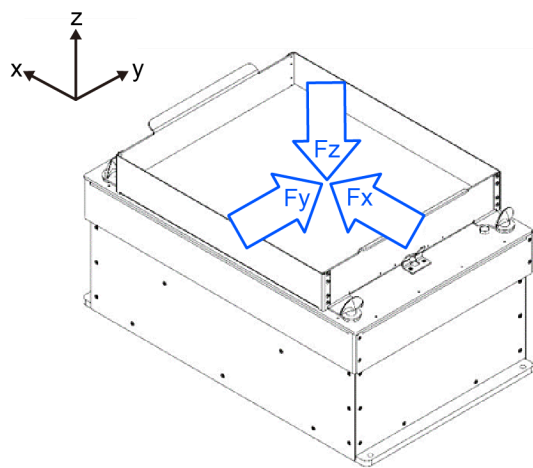
- The parts disperse.
- The parts move.
- Overlapping parts are not getting hung on each other.

Parts that do not disperse, do not move, or get hung on each other are not suitable for feeders.

#### 2.2.4.2 Maximum Permissible External Force on the Platform

The maximum permissible external force on a point of the platform (for example, from the gripper) is:

##### Maximum Permissible External Force



- $F_x = 10 \text{ N}$
- $F_y = 10 \text{ N}$
- $F_z = 30 \text{ N}$

### CAUTION

Note that the collision/impact of the robot gripper may damage the surface of the platform.

#### 2.2.4.3 Permissible Platform Weight

Characteristic	IF-380	IF-530
Maximum weight of the frame platform assembly (without components)	4 kg	5 kg
Maximum component weight (including the maximum weight of the frame platform assembly)	1.5 kg	2 kg

#### 2.2.4.4 Maximum Plate Displacement

Characteristic	IF-380	IF-530
Maximum displacement in the X direction	$\pm 8 \text{ mm}$	$\pm 8 \text{ mm}$
Maximum displacement in the Y direction	$\pm 10 \text{ mm}$	$\pm 10 \text{ mm}$
Maximum displacement in the Z direction	$\pm 6 \text{ mm}$	$\pm 8 \text{ mm}$

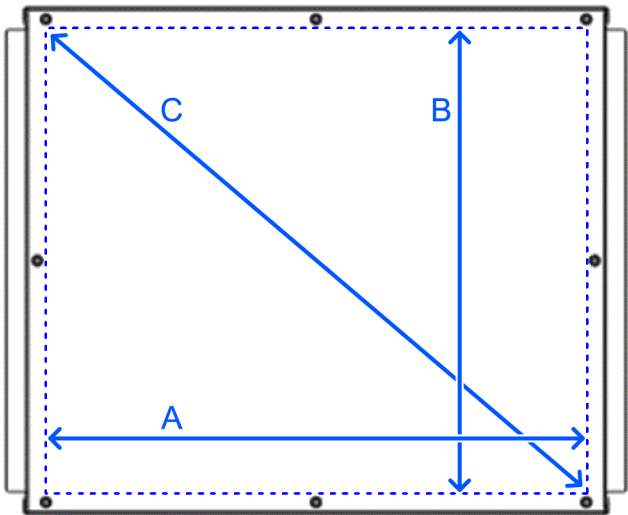
#### 2.2.4.5 Plate Z repeatability

Characteristic	IF-380	IF-530
Plate Z repeatability	$\leq \pm 0.4 \text{ mm}$	$\leq \pm 0.3 \text{ mm}$

#### 2.2.4.6 Picking Area

The maximum picking area corresponds to the size of the platform in the illustration:

Picking Area



	IF-380	IF-530
A	304 mm	403 mm
B	233 mm	347 mm
C	380 mm	530 mm



## 2.3 Environment and Installation

### 2.3.1 Environment

#### 2.3.1.1 Installation Environment

The feeder can be used under the following conditions:

- Protection class is IP50 compliant
- Operating temperature: +5°C to +40°C
- Operating humidity: 30% to 80% maximum, non-condensing

#### CAUTION

Variations in humidity or temperature may affect the global performance of the part feeder.

- Avoid extreme electromagnetic waves, ultraviolet rays and radiation.
- Avoid using the product in a place where the main unit or Controller may be exposed to water or oil droplets.
- IF-380 and IF-530 have no cleanroom standard.

#### CAUTION

Do not use the product in an atmosphere of corrosive gases. Rust may form and reduce the structural strength of the product.

#### 2.3.1.2 Storage Environment

The storage environment should be similar to the operating environment. In addition, you must protect the IF-240 against dust.

### 2.3.2 Base Table

The customer must make a table to secure the feeder to. The shape and size of table will vary depending on purpose of your feeder system. Also, when using multiple feeders or multiple robots, you must be careful of vibrational interference.

For details on designing a base table, refer the following:

#### Installation

### 2.3.3 Installing IF-380, IF-530

#### CAUTION

- The feeder must be mounted on a smooth, flat surface. Ensure that the IF-530 is firmly secured. Failure to do so will degrade feeder performance.
- Be careful not to let the feeder fall; this can cause equipment damage or pin your hands or feet. When working, wear protective equipment, including safety shoes.

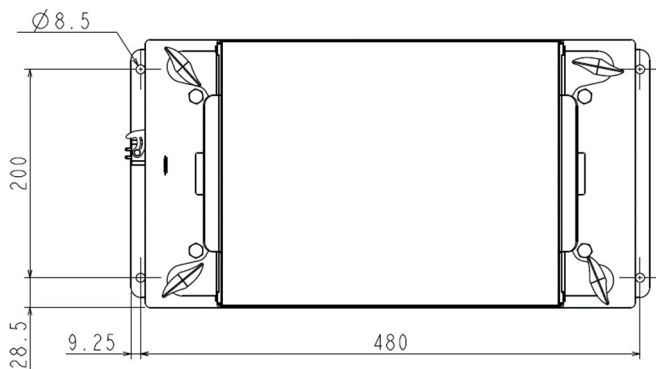
To ensure proper operation, the IF-380 and the IF-530 must be securely mounted (with four M8 screws) on a rigid, horizontal base table. Ideally, the base table should be made by securing a steel plate to a frame.

The total weight of the plate and frame, if they are not attached to the floor, should be at least 200 kg (IF-380) and 250 kg (IF-530) in order to sufficiently dampen vibrations.

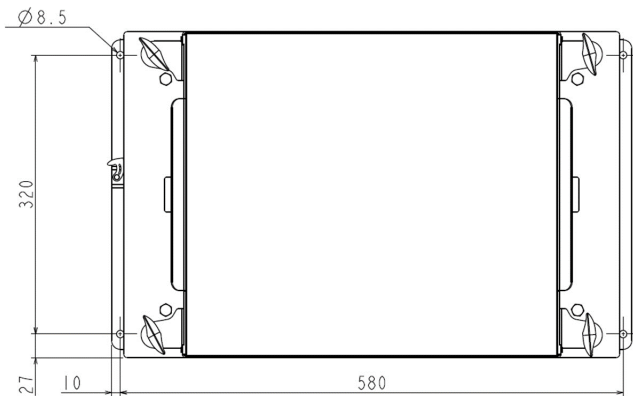
### KEY POINTS

Depending on the weight of the system to which the feeder is secured, the vibrations of the feeder can interfere with sensitive surrounding processes. This interference can be reduced by using a rigid base table or by securing it to the floor.

#### IF-380 Installing dimensions



#### IF-530 Installing dimensions



## 2.3.4 Unpacking and Transportation

### 2.3.4.1 Unpacking

#### CAUTION

Keep the packaging material and the shipment box in case of need for return.

## KEY POINTS

Do not remove the part feeder from its packaging until you are ready to install it.

Look at the identification sticker at the back of the product and ensure that the product you have received is the appropriate one.

Important information is on this sticker, such as the power consumption rating and the type name and serial number that you will need for any kind of correspondence with Epson.

### 2.3.4.2 Packaging of the Product, Transportation and Handling

When transporting the product, follow the instructions written on the shipping box (This Side Up, Fragile, etc). In addition, pay particular attention to the following points:

#### CAUTION

- Be careful of the weight when transporting the system.
- Always hold the system firmly with two hands.
- Workers should not carry heavy shipping boxes by themselves.
- When the shipping box is set down, make sure that it sits level in a horizontal position.
- Do not sit or stand on top of the shipping box.
- Do not place heavy objects on top of the shipping box.

The IF-380 is shipped in a cardboard box. The IF-530 is shipped on a pallet.

The dimensions of the packaging boxes for IF-380 and IF-530 are as follows:

#### Weight and dimensions of the product when packaged:

	IF-380	IF-530
Dimensions	680×400×450 mm	800×500×550 mm
Weight	28 kg	50 kg



### 2.3.5 Installation





This section is common to IF-80, IF-240, IF380 and IF-530. Refer to each table when the values differ depending on the model.

#### 2.3.5.1 Symbols and Acronyms in this Manual

This section describes symbols and acronyms that are used in this manual.

##### 2.3.5.1.1 Symbols

	Wrong implementation
	Correct implementation

	Active / operating feature (moving)
	Movements
	Passive / NOT operating feature (NOT moving)
	Perturbation / undesired vibration

### 2.3.5.1.2 Acronyms

APSO	Angst + Pfister Homepage - <a href="http://www.apsoparts.com">www.apsoparts.com</a> – (see section: Antivibration Technology APSOvib: Initiator of the product name)
ELESA	Elesa Homepage ( <a href="http://www.elesa.com">www.elesa.com</a> ) – (see section: Rubber buffersw)
A	max. base table length
B	max. base table width
c	distance between feeders
øD	diameter of the vibration isolator (round buffer) APSOvib
G	screw diameter
H	height of the vibration isolator APSOvib
c <sub>z</sub>	spring constant of the vibration isolator APSOvib; compression in Z direction (axial direction)
F <sub>z</sub>	max. allowed compressive force of the vibration isolator APSOvib
L	Length of male screws
M	mass
N/A	not applicable
Qty.	quantity
Ref.	Reference
s	Depth of female screws

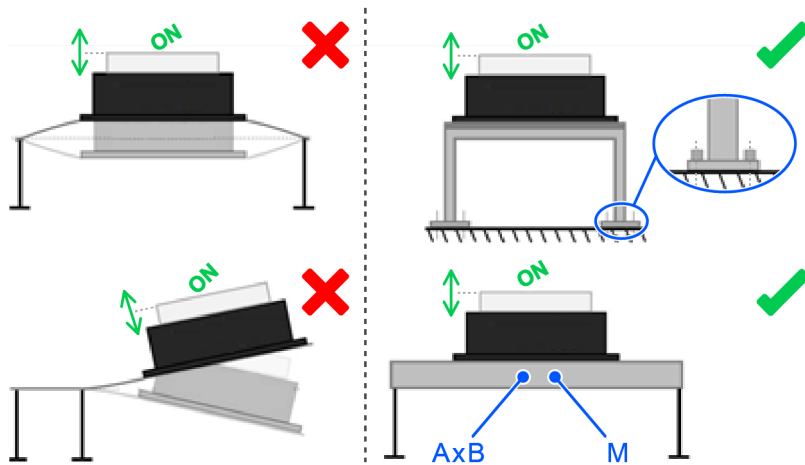
### 2.3.5.2 Mounting the Part Feeder

To ensure normal vibrational behavior, the part feeder must be correctly mounted on a base table specifically designed for the application. An incorrect mounting could compromise the performance of the product.

#### 2.3.5.2.1 Position of Part Feeder and Characteristics of Base Table

The part feeder must be installed either on a rigid base table screwed to the floor or on an unsecured but heavy base table.

For unsecured base tables, the mass [M] and dimensions [A × B] must be large enough to absorb the vibrations generated by the feeder.



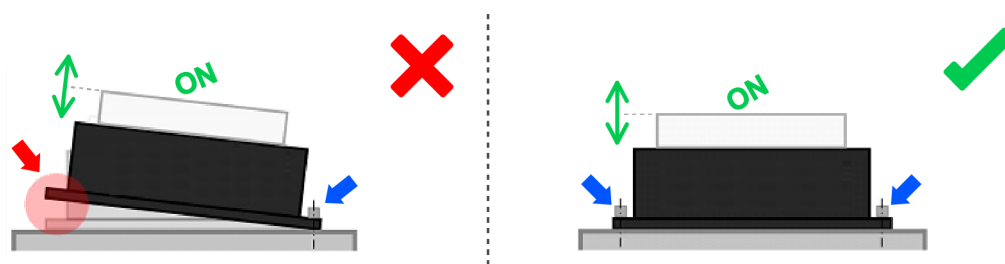
### 2.3.5.2.2 Installing Part Feeding on the Table

The Part Feeding must be properly installed on the base table.

#### KEY POINTS

About number of screws and size of screws when installing on the base table, refer to 3.5.5.2 Specification of Screw.

#### Specification of Screws



### 2.3.5.3 Vibration Decoupling

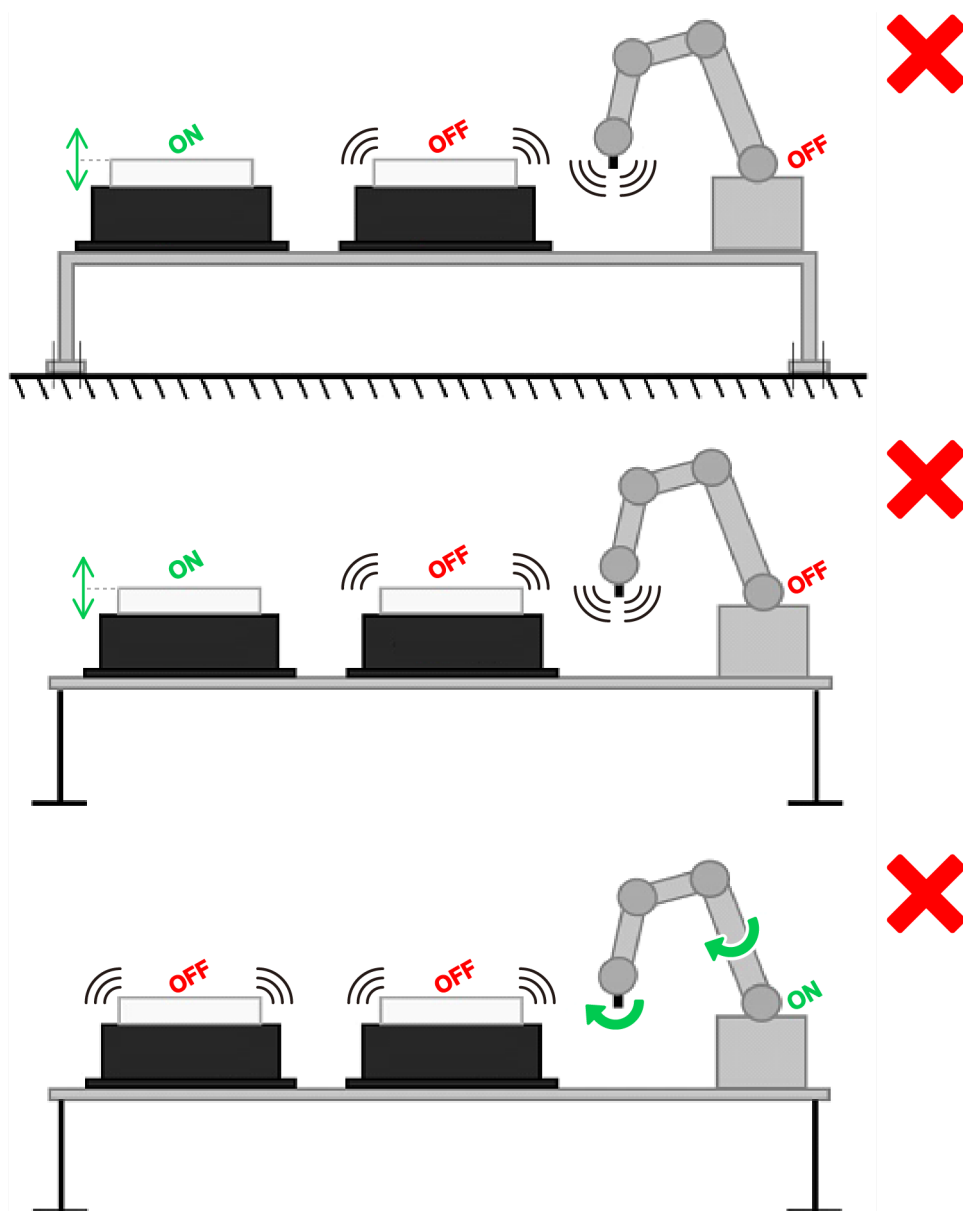
Incorrect mounting of the part feeder, camera, robot, and hopper may compromise final system performance. To ensure the normal behavior of the system, it is necessary to keep the associated devices from interfering with each other.

#### KEY POINTS

Vibration isolators are provided with hoppers so that hopper vibrations are not transmitted to other peripheral devices.

#### 2.3.5.3.1 Decoupling of Moving Devices

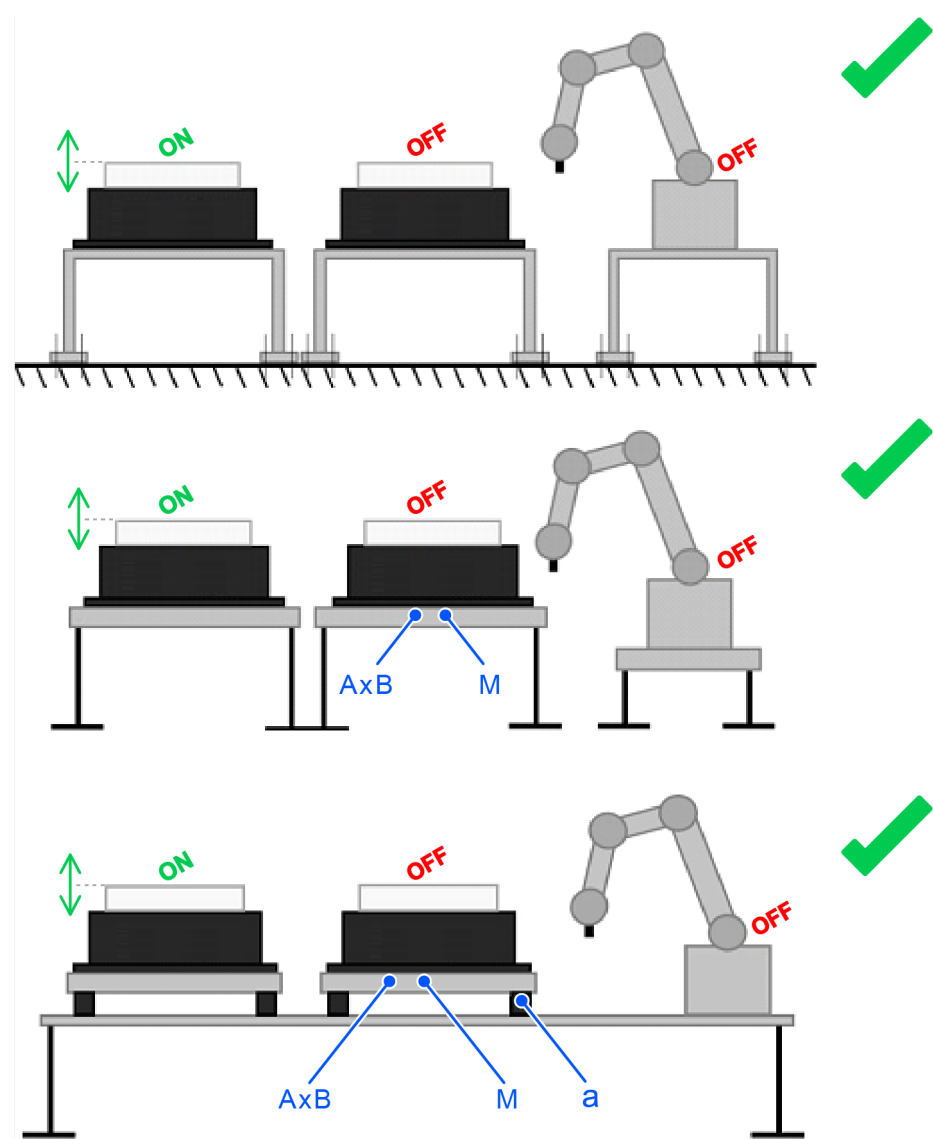
If several moving devices are mounted close to each other in parallel, it is necessary to "decouple the vibrations" to prevent the motion of one device from being affected by the motion of others.



It is recommended that each device be equipped with a separate base table to prevent vibrational interference. If this is not possible, you can use parts that have antivibration technology to isolate vibrations (e.g. vibration isolators).

#### KEY POINTS

The vibration isolator solution is only applicable to IF-240, 380 and 530.




Symbols	Meaning
a	vibration isolator

- For the mass [M] and dimensions [A × B] of the base table, refer to the following:

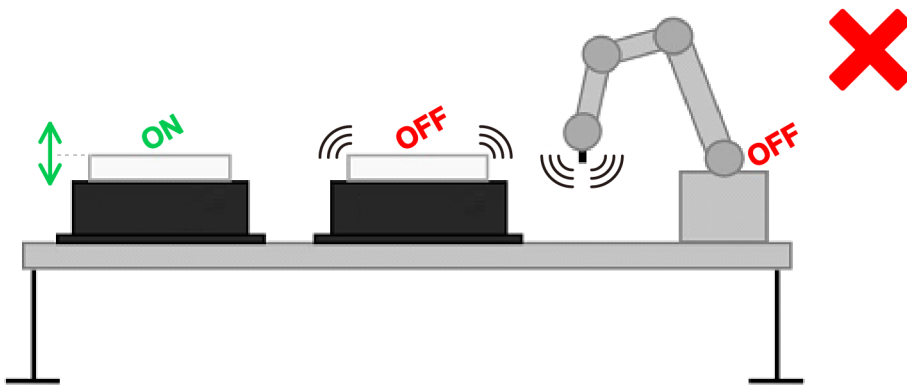
**Specification of Base Table**

- For the vibration isolators, refer to the following:

**Specification of vibration isolator**

 **KEY POINTS**

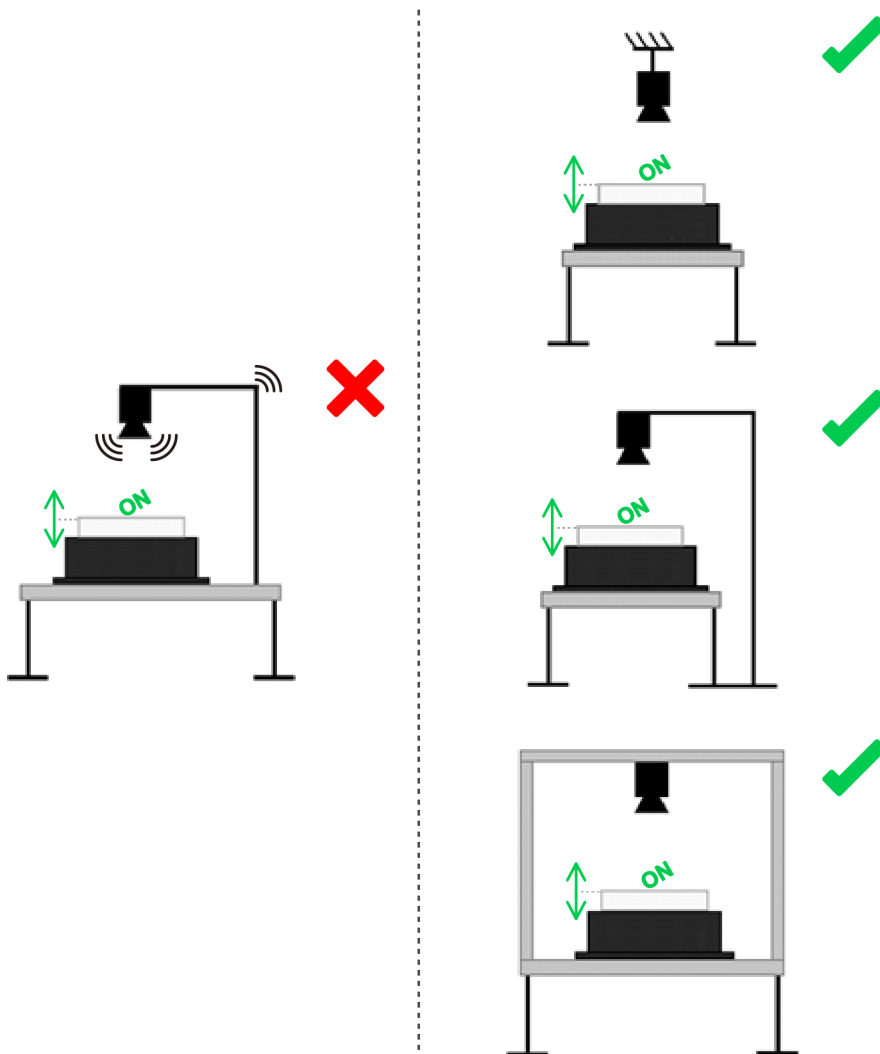
Increasing the mass of the base table to avoid using vibration isolators does not ensure that other devices can completely avoid the effect of vibrations.



### 2.3.5.3.2 Decoupling the Camera

It is important that the camera is not perturbed by the vibration of the feeder or by any other moving device. If the vision system is disturbed by residual vibrations, the coordinates sent to the robot will not be reliable, thus compromising the precision of the whole system.

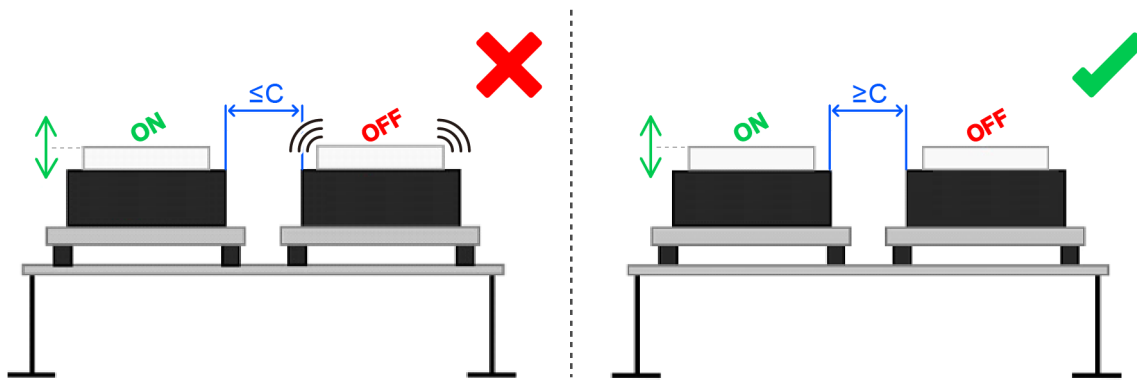
Therefore, it is recommended not to mount feeders and cameras on the same base table. When this solution is not applicable, be sure to mount the camera on a rigid and heavy enough base table to prevent back-feeding of vibrations into surrounding devices.





### 2.3.5.4 Minimum Distance Between Part Feeders

When two or more feeders are installed close to each other, the movement of active devices can affect inactive ones. It is therefore recommended to install the feeders far enough apart to prevent interference between them.



For information on the minimum distance between part feeders, refer the following:

#### Minimum Distance Between Part Feeders

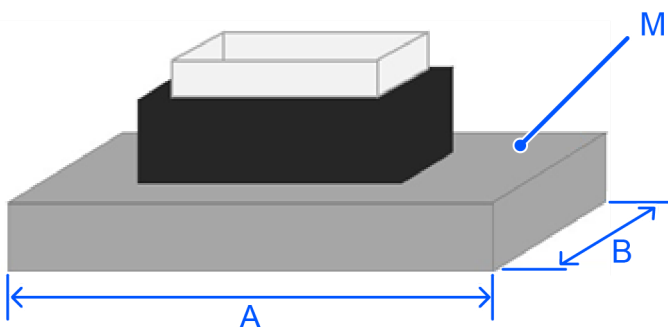
### 2.3.5.5 Technical Data Tables

This chapter contains the technical parameters required to properly install the part feeder.

#### 2.3.5.5.1 Specification of Base Table

##### Specification of Base Table

	IF-80	IF-240	IF-380	IF-530
M – [Kg]	≥ 10	≥ 40	≥ 200	≥ 250
A – [mm]	≤ 600	≤ 600	≤ 1000	≤ 1200
B – [mm]	≤ 150	≤ 350	≤ 500	≤ 750



#### KEY POINTS

- The thickness of the base table must be calculated based with the requirements listed in the base table specification chart.
- Choose the dimensions of your base table so that the minimum mass [M] requirement is met.

### 2.3.5.5.2 Specification of Screws

	IF-80	IF-240	IF-380	IF-530
Quantity of screws	4	4	4	4
Screw $\phi$	M5	M6	M8	M8

### 2.3.5.5.3 Specification of vibration isolator

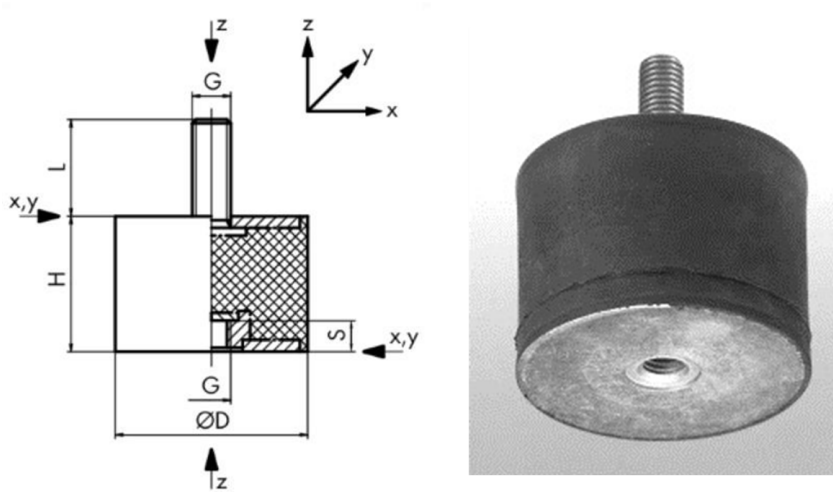
	IF-240	IF-380	IF-530
APSO *1	12.2034.0103	12.2034.0293	12.2034.0353
$\phi D$ – [mm]	16	40	50
H – [mm]	20	40	50
$c_z$ – [N / mm]	50	180	190
Fz – [N]	120	690	1000
Qty. – [-]	4	4	4

ELESA *2	411771 DVA.2-15-20-M4-10-55	412021 DVA.2-50-45-M10-28-55
$\phi D$ – [mm]	15	50
H – [mm]	20	45
G – [mm]	M4	M10
L – [mm]	10	28
S – [mm]	4	10
$c_z$ – [N / mm]	47	182
Fz – [N]	234	2046
Qty. – [-]	4	4

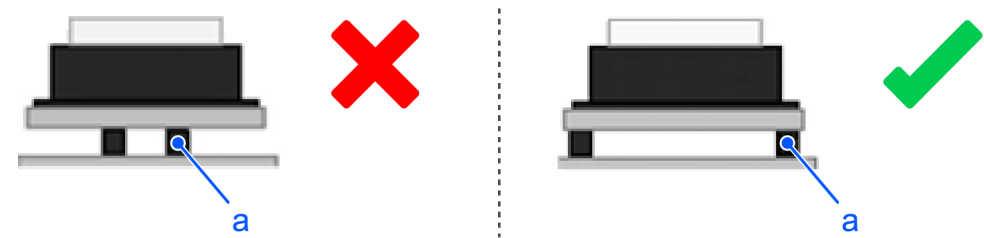
### CAUTION

Make sure that the total mass of the part feeder, base table and components do not exceed the maximum allowed compressive force of the vibration isolator [Fz]. If the total mass exceeds the maximum allowed compressive force, select a new vibration isolator.

### Vibration Isolator



Position of Vibration Isolator



\*1 Angst + Pfister - [www.apsoparts.com](http://www.apsoparts.com) – (section: Antivibration Technology; APSOvib)

\*2 Elessa - [www.elesa.com](http://www.elesa.com) – (section: Rubber buffers)

2.3.5.5.4 Minimum Distance Between Part Feeders

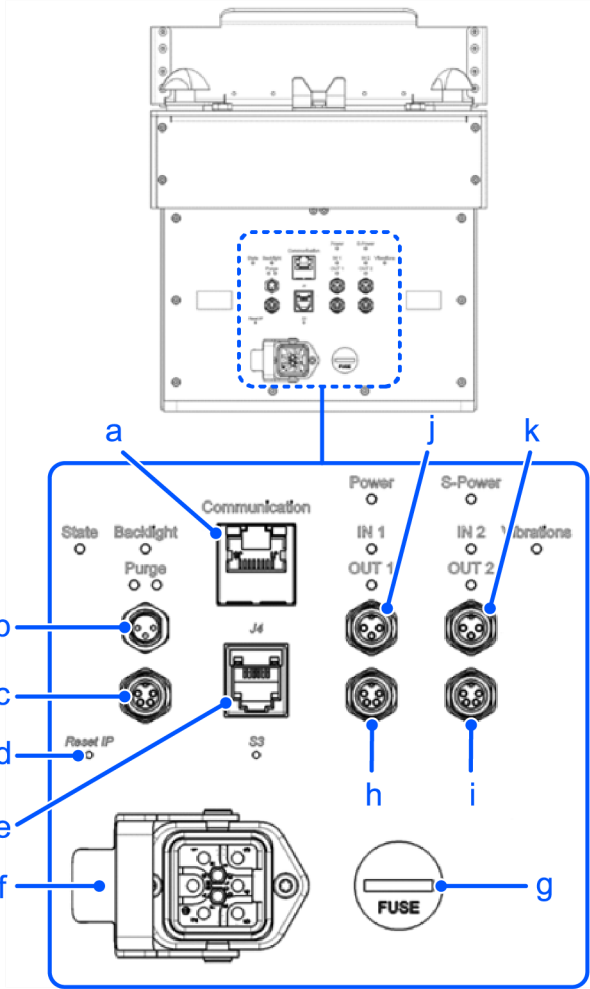
	IF-80	IF-240	IF-380	IF-530
c – [mm]	≥ 10	≥ 10	≥ 30	≥ 30

2.3.6 Cable Connections

2.3.6.1 Overview


The IF-380 and IF-530 are standalone modules with their own Controllers. Their power supply is located on the rear panel of the product.

Electrical interfaces of the IF-240



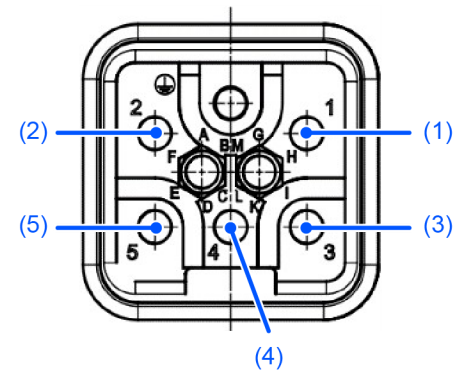
Symbols	Meaning
a	Ethernet connection (RJ45)
b	Backlight synchronization
c	Purge Connector
d	Reset IP address
e	Programming connection (RJ12)
f	Power connection
g	Fuse
h	Output 1 for Hoppers
i	Output 2 for Hoppers
j	Digital Input 1
k	Digital Input 2

2.3.6.2 Power Connection

 CAUTION

- Before supplying power to the part feeder, make sure that the distribution voltage is the same as the nominal voltage.
- Never disconnect the power cable when the unit is on. Always turn the machine off before disconnecting the power cable.
- Use PELV (protected extra-low voltage) nominal voltage.
- Unplug the main power plug when plugging / unplugging cords.


Power Connection



Pin	Signal description	Cable
(1)	24V S-Power	1
(2)	0V GND S	2
(3)	24V Power	3
(4)	0V GNP	4
(5)	EARTH	PE

Connector type (on feeder side): Harting 09 12 005 3004

	IF-380	IF-530
Voltage	+24VDC +5%/-0%	+24VDC +5%/-0%
Power Current	4A	6A
S-Power Current	16A	14A

 KEY POINTS

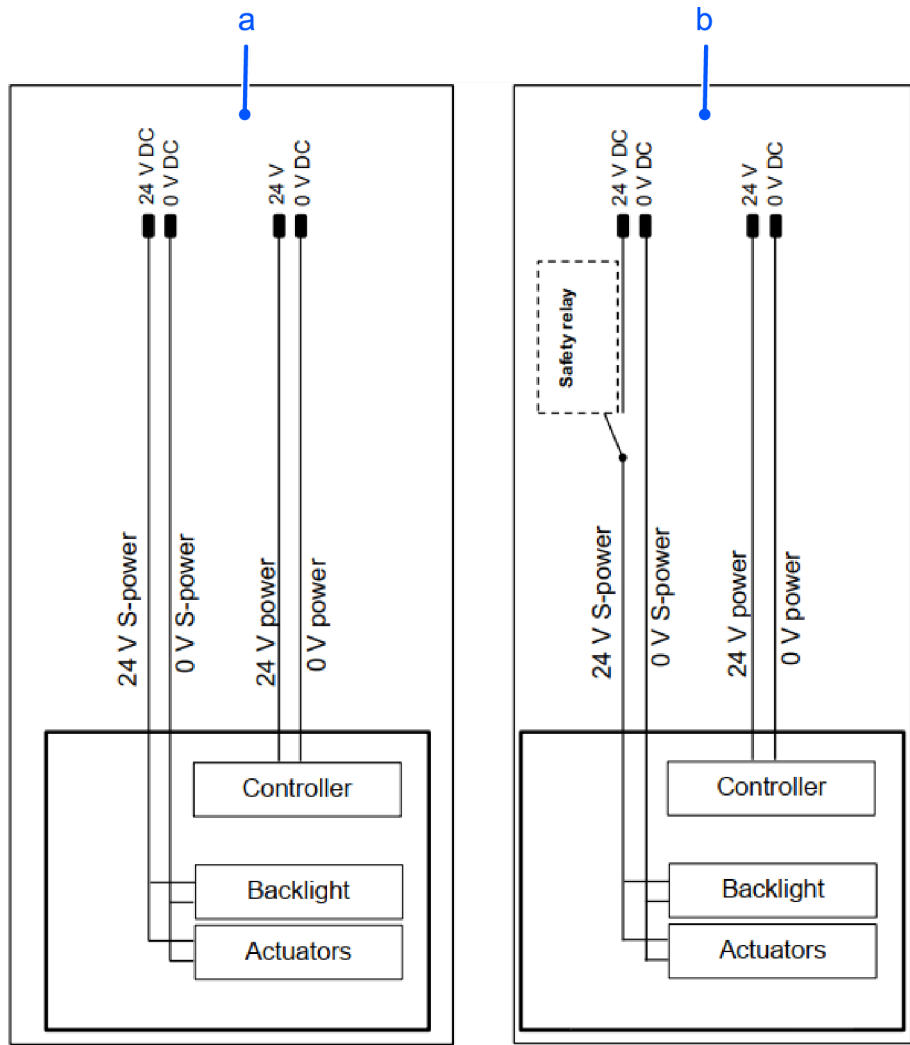
- Use a 20 A supply with a current reserve of 150% for 3 seconds The following power supplies have been tested.
  - PULS QS20.241
  - SIEMENS 6EP1336-3BA10
- The backlight receives its power supply from S-Power.

Switching off this safety power ensures that the backlight stays off. (e.g. to avoid the risk of exposure to infrared rays)

Switching off the safety power deactivates the hopper outputs and the purge output.

- When operating the feeder, connect both Power and S-Power to the power supply.

The following connection schematic shows how to connect to the feeder depending on whether your application requires an external relay to ensure that the backlight is safely switched off or not.



Symbols	Meaning
a	Power connection without safety relay
b	Power connection with safety relay


**KEY POINTS**

- Both Power and S-Power can be connected to a single power supply or to two different power supplies.
- The 0 V-GND and Earth signals of the two supplies are connected inside the feeder.

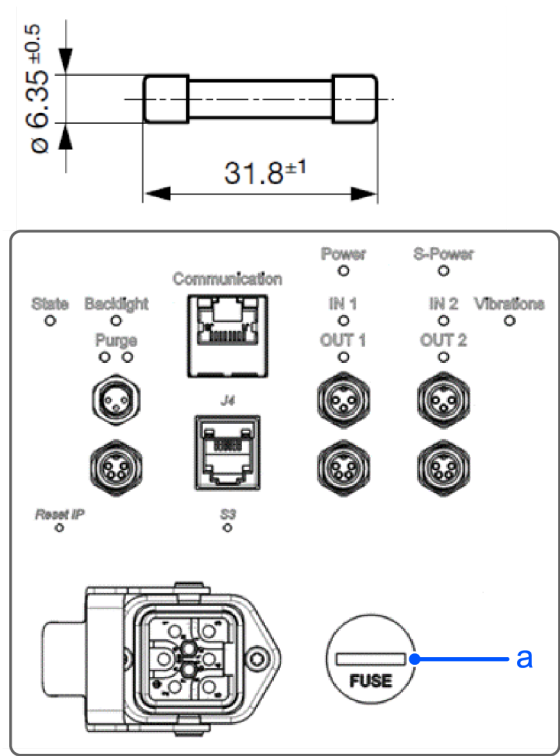
**Short-circuit current rating:**

	IF-380 SCCR	IF-530 SCCR
Power	40A	40A
S-Power	40A	40A

2.3.6.3 Fuse

 **WARNING**

Turn off the system and disconnect the power supply before opening the fuse holder.



Symbols	Meaning
a	Time-delay fuse_16A

2.3.6.4 Communication

Communication with the IF-380 and the IF-530 is carried out by standard Ethernet communication via the RJ45 port.

Characteristic	Value
Default IP address	192.168.0.64
Default subnet mask	255.255.255.0
Port	4001
MAC address	Can be acquired by ARP request

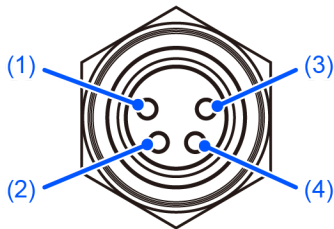
For information on restoring the default IP address, refer to the following:

Restoring the Default IP Address

2.3.6.5 Output for Hoppers 1 and 2

A standard M8 four-pin male cable enables transmission of the output signal to the hopper. It must be connected as follows:

Output for Hoppers



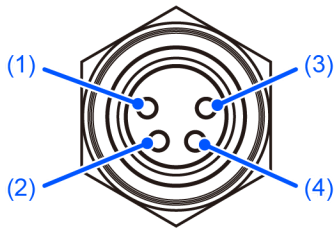
Pin	Signal description	Hopper
(1)	0V GND	Analog Output 1
(2)	0 to 10VDC	
(3)	0V GND	Digital Output 1
(4)	+24VDC	

Connector type (on feeder side): M8, 4P, female

2.3.6.6 Purge Connector

A standard M8 four-pin male cable is used to transmit signals to the purge system.

Purge Connector



Pin	Signal description
(1)	24 VDC
(2)	Digital input 24 VDC
(3)	0V GND
(4)	Digital output +24 VDC 500 mA

Connector type (on feeder side): M8, 4P, female




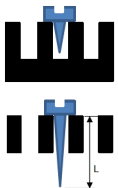


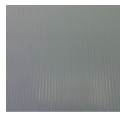

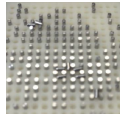



## 2.4 Options

### 2.4.1 Platform

#### 2.4.1.1 Platform Type

The surface of the feeder can be structured to improve the availability of certain components. Epson offers various types of platforms including Flat, Anti-Stick and Anti-roll. Custom platforms with slots, holes, or pockets must be designed and fabricated by the customer.

Platform Type	Example-picture	Example-drawing	Advantage
Flat		 Example: Bolts	This type of platform can be used for a wide variety of components with flat surfaces that allow a stable resting position.
Grooves (deep)		 Example: Screws, rivets	A platform with deep grooves is used to supply screw-type components to be fitted vertically. A platform with transverse grooves is used to supply components with a maximum length of 60 mm. Note: in case of grooves going through the plate, it is necessary to use the "INTERNAL DIFFUSING PLATE KIT" described in the product list.
Grooves (wide) (anti-roll)		 Example: Cylinders, Needles	Wide grooves are useful when cylindrical components are fed. They reduce the stabilizing time significantly after components are displaced on the platform surface. (They stop the components from rolling on the surface)
Grooves (narrow) (anti-stick)		 Example: Thin washers	Narrow grooves are necessary to reduce surface contact especially for flat and light components. This reduces adhesion forces and improves displacement of parts on the feeder's surface. It also improves the robot's performance in picking parts.
Holes:		 Example: Pins	Holes are useful when cylindrical components are to be fed and presented upright.

#### 2.4.1.2 Standard Platform Usage

##### Flat

Parts that have a stable orientation when placed on a tabletop can use a Flat Platform. They must be parts that stabilize quickly after vibration. For high-mix low-volume production, most applications use a Flat Platform.

Cross-sectional view



Symbols	Meaning
a	Parts
b	Platform

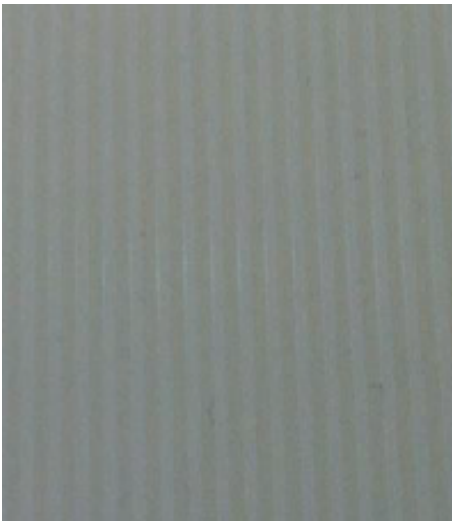
The platforms supplied by Epson meet a flatness and parallelism specification to ensure picking precision as summarized in the table below.

	IF-380 / IF-530
Flatness of the surface [mm]	0.6
Parallelism between surface and reference [mm]	0.6

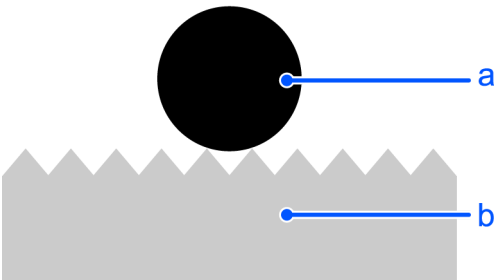
Anti-Roll

Anti-Roll Platforms have a machined, structured surface that can stabilize parts that tend to roll on the platform. The Anti-Roll Platform is particularly useful when cylindrical components are being fed. The Anti-Roll Platform reduces the stabilization time by preventing the parts from rolling.

Surface

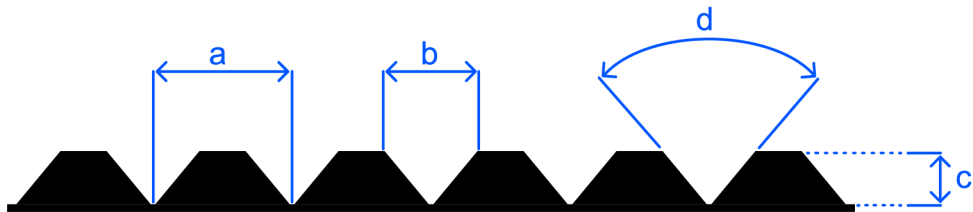


Cross-sectional view



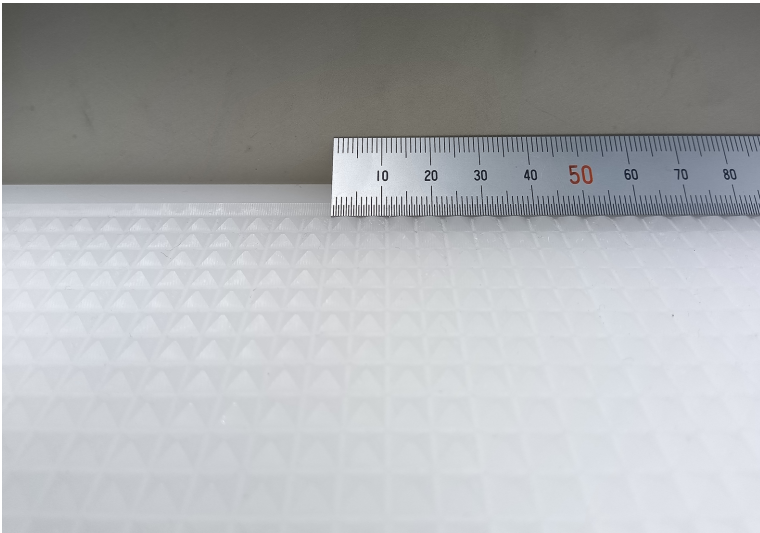
Symbols	Meaning
a	Parts
b	Platform

Geometry of standard Anti-Roll platform structure for small parts

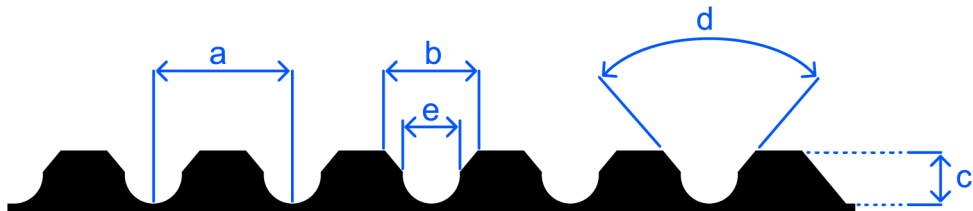


	a	b	c	d	Suitable Parts
IF-380	5.5 mm	5 mm	1.443 mm	120°	∅ 5mm – ∅ 10mm
IF-530	6.5 mm	6 mm	1.732 mm	120°	∅ 6mm – ∅ 12mm

Enlarged image

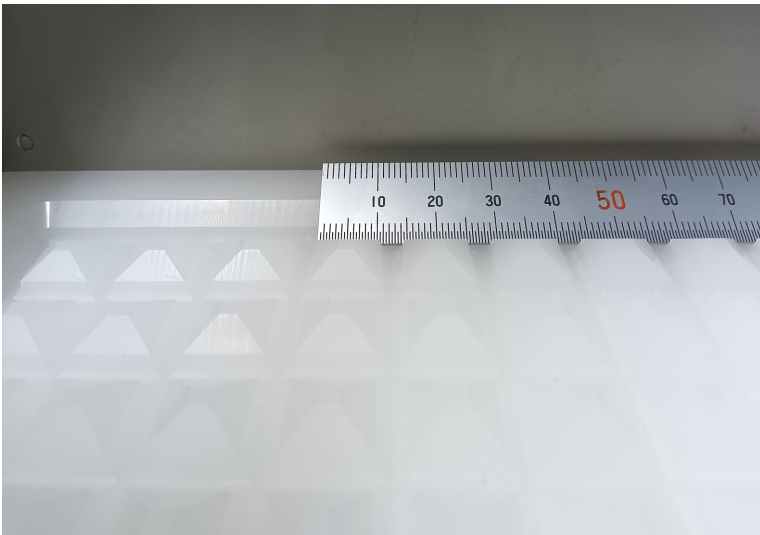


Geometry of standard Anti-Roll platform structure for large parts



	a	b	c	d	e	Suitable Parts
IF-380	10.5 mm	12 mm	5.31 mm	120°	2 mm	∅ 10mm – ∅ 24mm
IF-530	12.5 mm	14 mm	4.9 mm	120°	4 mm	∅ 12mm – ∅ 28mm

Enlarged image

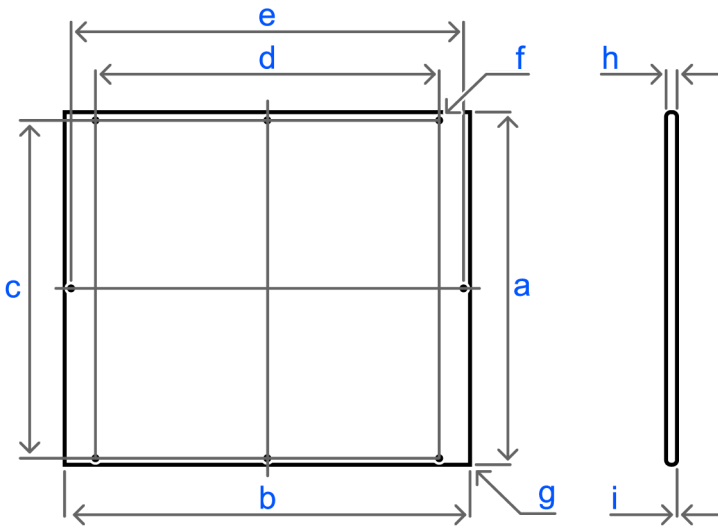


- For more details on Custom Platforms, refer to the following:  
"Epson RC+ 8.0 Option Part Feeding 8.0 Introduction & Software - Advanced - Custom Platforms"
- For model numbers of plates provided by Epson, refer to the following:
  - [Plate \(series: IF-380\)](#)
  - [Plate \(series: IF-530\)](#)
- For the frame's model number, refer to the following:
  - [Frame \(series: IF-380\)](#)
  - [Frame \(series: IF-530\)](#)

**2.4.1.3 Dimensions of Platform**

Customers can design their own platform.

**Figure 4-1: Dimensions of platform**



	IF-380	IF-530
a	252.8 ± 0.5 mm	369.8 ± 0.5 mm
b	323.8 ± 0.5 mm	426.8 ± 0.5 mm

	IF-380	IF-530
c	240 ± 0.15 mm	357 ± 0.15 mm
d	260 ± 0.15 mm	360 ± 0.15 mm
e	311 ± 0.15 mm	412 ± 0.2 mm
f	M3×6 mm Threaded inserts Ensat® BN902	
g	0.5×45° (4×)	0.5×45° (4×)
h	10 mm	10 mm
i	1.5×45° (4×)	1.5×45° (4×)

## 2.4.2 Backlight

### 2.4.2.1 Color Options

The following backlights are available:

Color	Wavelength
Blue	465 nm
Green	550 nm
Red	645 nm
Infrared	850 nm
White	6500 K

- For details about the backlight's color and instructions for exchanging the backlight, refer to the following:

#### Replacing the Backlight

- For model numbers of standalone backlights, refer to the following:
  - [Backlight \(series:IF-380\)](#)
  - [Backlight \(series:IF-530\)](#)

#### WARNING



Infrared light (IR) is invisible to human eyes. NEVER use the infrared light without the platform secured. When the platform is attached to the part feeder, the system does not pose a risk for the operator.

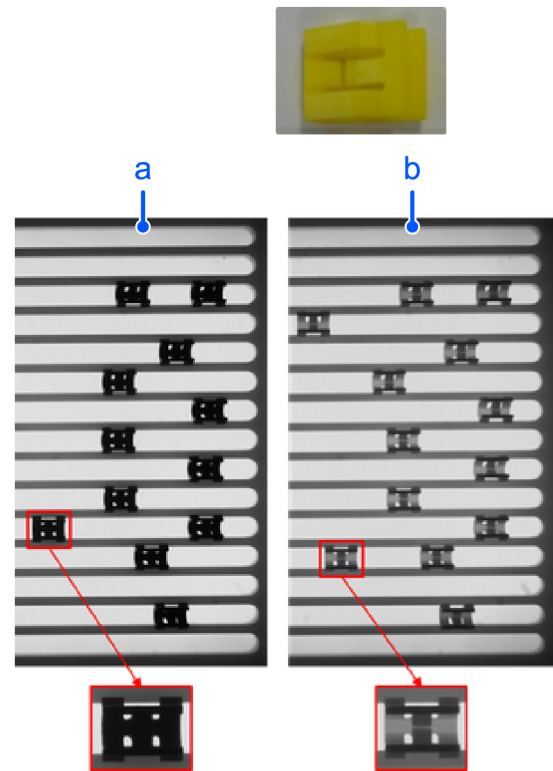
### 2.4.2.2 Selecting a Backlight Color

For most applications, the color of the lighting does not matter, especially for opaque parts. For this reason, we advise the standard red color.

It may be difficult to see translucent parts if their color is close to the color of the backlight. The parts may appear to blend into the background. This may be the case even with plastic parts that look opaque to the eye.

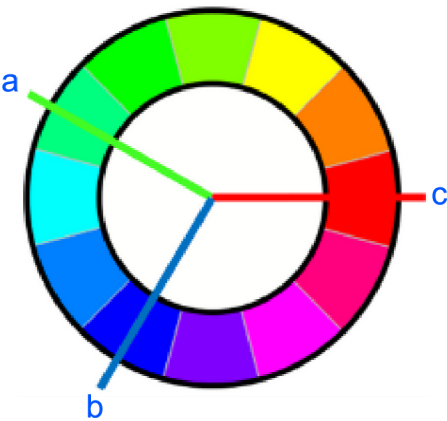
In the example below, when illuminated with a red backlight, the contrast between the yellow clips and the background is compromised (even if the clips look opaque with ambient light).

When illuminated with a blue backlight, the same part will have a much higher contrast against the background. This is because blue is the complementary color of yellow and is therefore better absorbed than red.



Symbols	Meaning
a	Blue backlight
b	Red backlight

This is because yellow is closer to red than to blue in the chromatic circle.



Symbols	Meaning
a	Green backlight

Symbols	Meaning
b	Blue backlight
c	Red backlight

To maximize the contrast, the color of the backlight should be the opposite of the color of the part.

### 2.4.2.3 IR Backlights

Infrared light can be dangerous to human sight if there is no protection (filters) on the machine's enclosure. Thus, we advise using an IR backlight only if it is really required, as in the following situations:

- Different colored parts that are mixed together may appear similar regardless of their color.
- Translucent parts may appear opaque in near-infrared light.

## 2.4.3 Hoppers

- For information on hoppers, refer to the following:

"Epson RC+ 8.0 Option Part Feeding 8.0 Hopper"

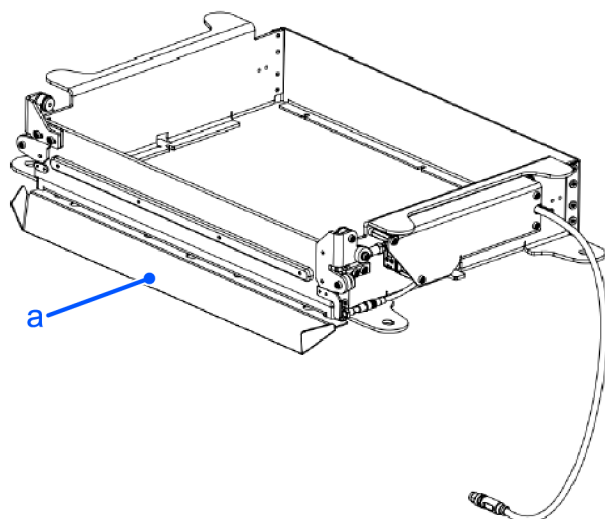
- For model numbers of hoppers, refer to the following:
  - [Hopper \(Gen.1, series: IF-380\)](#)
  - [Hopper \(Gen.2, series: IF-380\)](#)
  - [Hopper \(Gen.1, series: IF-530\)](#)
  - [Hopper \(Gen.2, series: IF-530\)](#)

## 2.4.4 Purging Frame (Frame Discarding Parts to the Side)

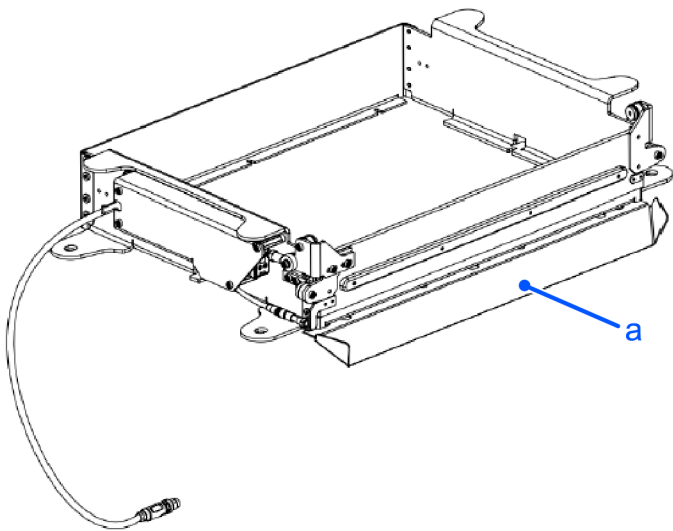
### 2.4.4.1 Purging Frame Overview

Purging frames for discarding parts either to the left or right are available for the frame height of each kind of frame for IF-380 and IF-530. These cannot be reconfigured after purchase.

#### Left Purging Frame




Right Purging Frame



Symbols	Meaning
a	Purge spout (exit for purged parts)

The movement of the flap (the part that opens and closes) is controlled by an electric motor and a sensor checks whether the flap is properly closed. The mechanism is controlled directly by the feeder.

 **CAUTION**

- A purge spout (exit for purged parts) is included with the purging frame.
- Cables are included with the purging frame.
- The platform is not included in the purging frame.

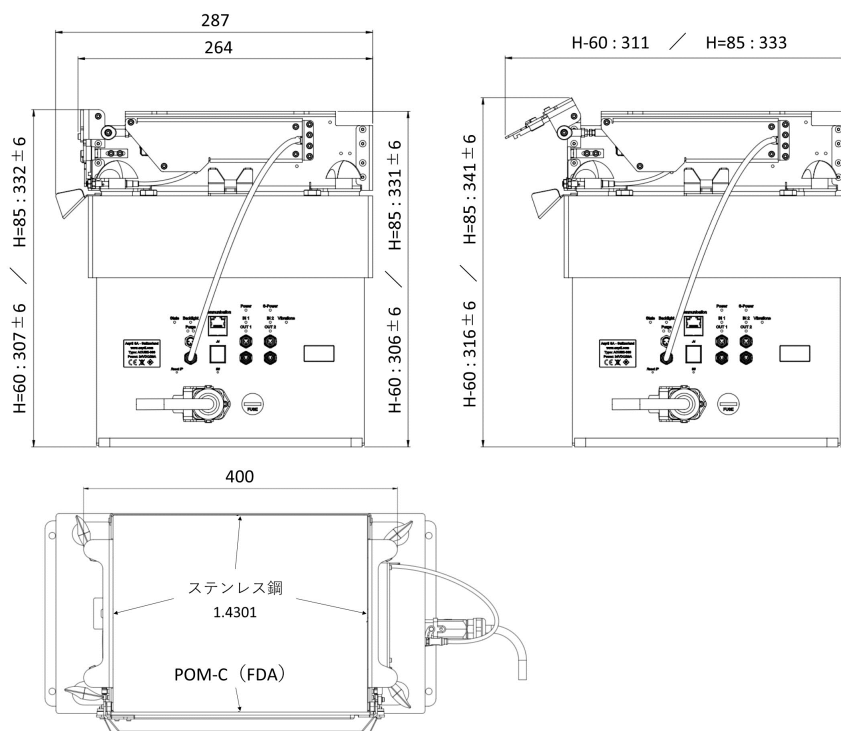
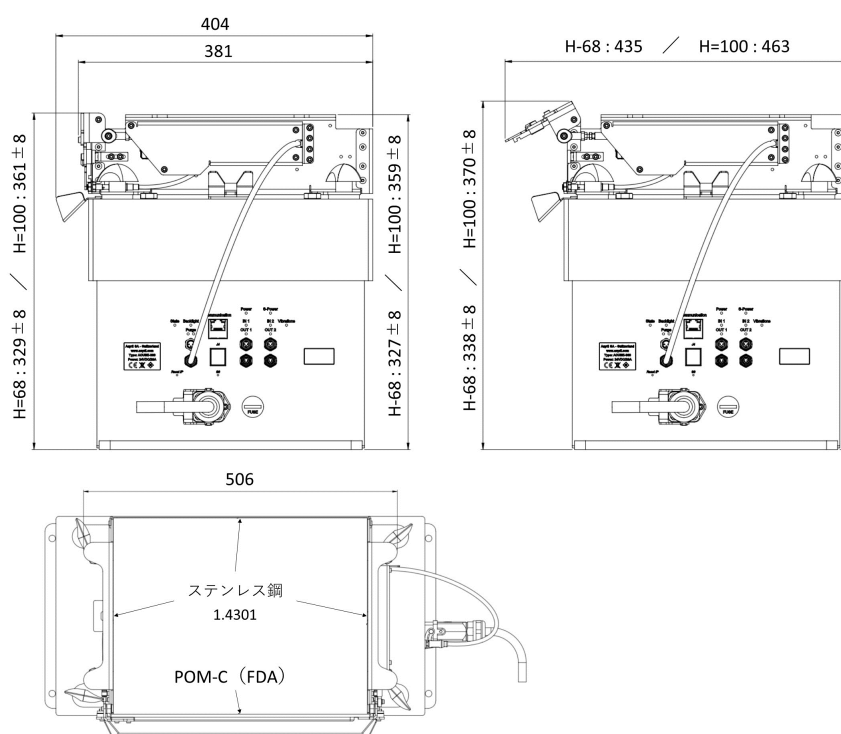
For the model numbers of purging frames provided by Epson, refer to the following:

- **Purging Frame (series: IF-380)**
- **Purging Frame (series: IF-530)**

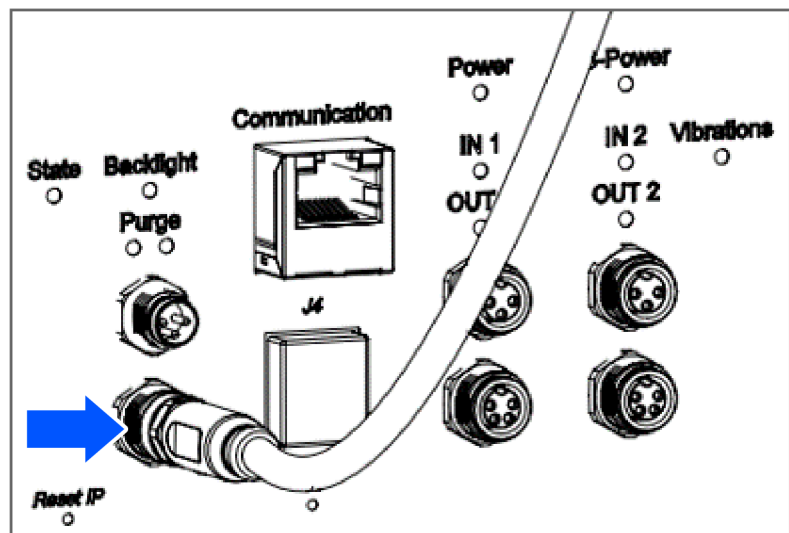
2.4.4.2 Dimensions for Installing Purging Frame

IF-380



**IF-530****2.4.4.3 Other Precautions for Purging Frame****⚠ CAUTION**

To use a purging frame, plug the cable into the feeder's "Purge" output. Be sure to unplug the cable should you need to remove the frame.



### ⚠ CAUTION

To prevent the motor from being prematurely damaged, only use it for emptying the platform.

(e.g., consider a purging frame with the flap on the left. Only the “Left” vibration may be used. Similarly, with a purging frame whose flap is on the right, only the “Right” vibration may be used.)

### ✎ KEY POINTS

When plugging in the purging frame, the motor will seek its origin position, emitting some noise.

That noise may be heard while operating too, under certain circumstances.

## 2.5 Maintenance and Part Replacement

### 2.5.1 Safety Precautions

#### 2.5.1.1 General Safety Precautions

##### WARNING

There are no user-serviceable parts inside the product. Contact the supplier of your region or your local supplier for repairs. If the customer carries out repairs, the product's warranty will expire.

##### CAUTION

Do not operate the system when it is suspected of being damaged. Before use, make visual confirmation that there are no irregularities.

##### WARNING

- Failure to observe these instructions may result in electrocution or serious injury due to electric shock.
- Power down the system and unplug it from the mains before any kind of maintenance.
- Do not pour water or any other liquids onto the product. Spraying water over the product, washing it with water or using it in water may cause the product to malfunction, resulting in injury, electric shock, fire, etc.

#### 2.5.1.2 Specific warnings

##### CAUTION

Be sure that the platform is removed before any kind of maintenance.

### 2.5.2 Maintenance

##### CAUTION

For any kind of maintenance, use Epson products.

#### 2.5.2.1 Regular Maintenance Schedule

Perform the following periodic inspections to keep the product functioning properly and safely.

##### **Maintenance schedule**

	Item	Period	Reference
General	Cleaning of the machine	Weekly	
	Visual check of electrical harness	Year	
	Visual check and cleaning of the platform	Weekly	<b>Cleaning and Management of the Platform</b>
	Replacing the ball joints	2 years or 4000 h of vibrations	<b>Replacing the Ball Joints</b>
Specific processes	It is the customer's responsibility to create and carry out a maintenance plan for specific processes	/	/
Backlight	Visual check	Monthly	
Purging actuator	Replacing purging actuator	20,000 cycles	<b>Replacing the Purging Actuator</b>

### KEY POINTS

The information given in the Maintenance schedule table is only informative. The type of maintenance done and the cycle on which it is carried out will vary according to your particular system, its operating environment and the amount of usage.

### Parts list for exchange

Product name	Code
Ball joints set - 380/530	R12NZ901A6

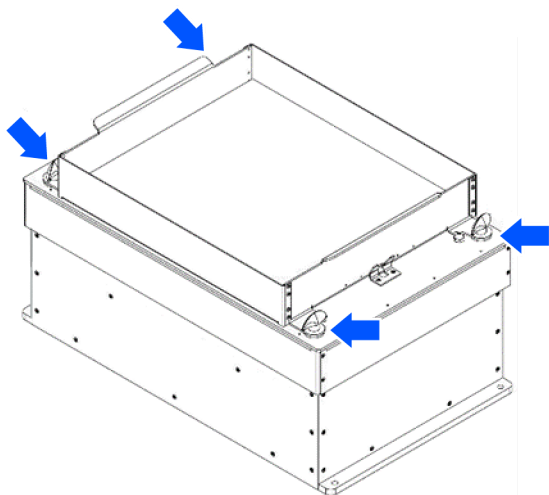
## 2.5.2.2 Remove the Platform

### CAUTION

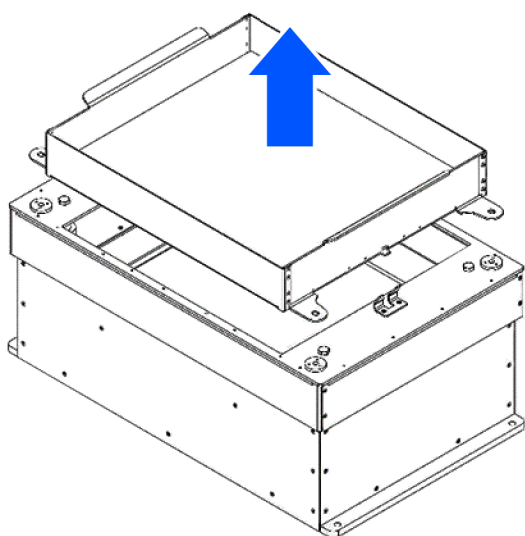


Be sure that the backlight is off before removing the platform module. Failure to follow the instructions below may result in damage to the backlight.

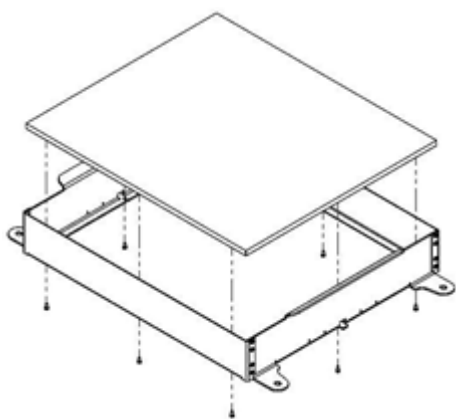
1. Unscrew the four handle screws.



2. Remove the platform assembly.



3. Unscrew the eight screws and take the platform out of the frame.



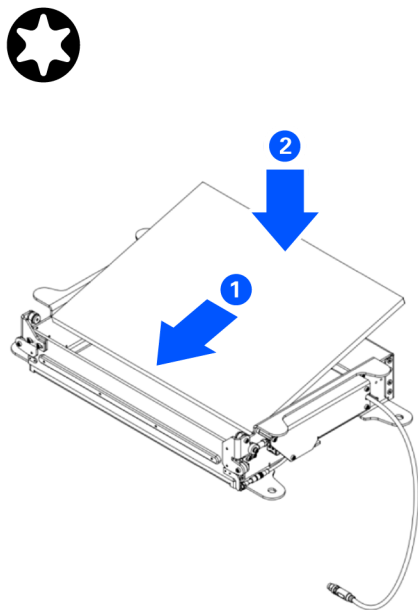
#### Assembly:

1. Position the platform in the frame. (8 screws 0.8N·m)
2. Position the assembly on the part feeder.
3. Tighten the four handle screws securely by hand.

**2.5.2.3 Purging Frame Platform**

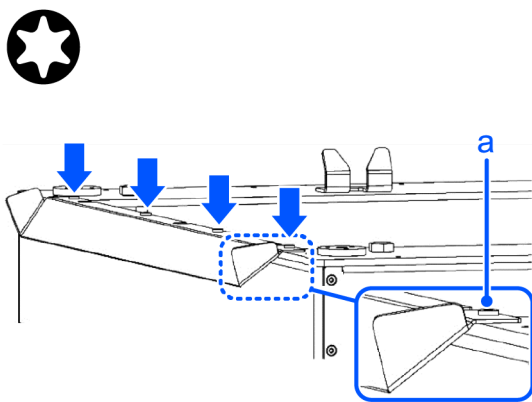
1. Screw the platform into the purging frame.

8 screws Tx10 - 0.8 N·m.



2. Screw the purge spout onto the base of the feeder. (Optional)

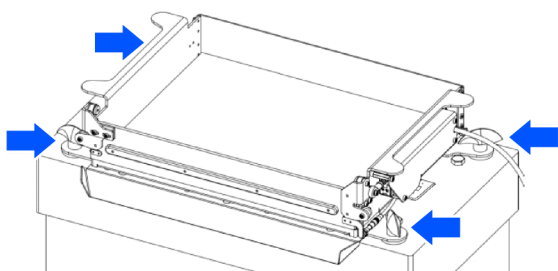
4 screws Tx8 - 0.6 N·m.



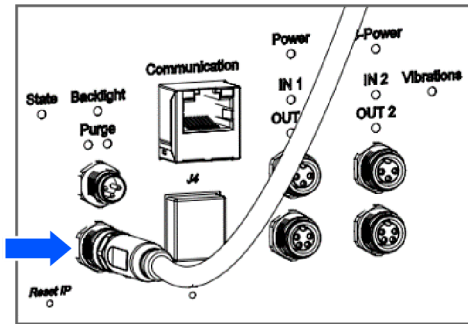
Symbols	Meaning
a	0.6 N·m screws

3. Position the assembly on the feeder.

Screw in the four handle screws.



4. Connect the purging frame to the feeder.



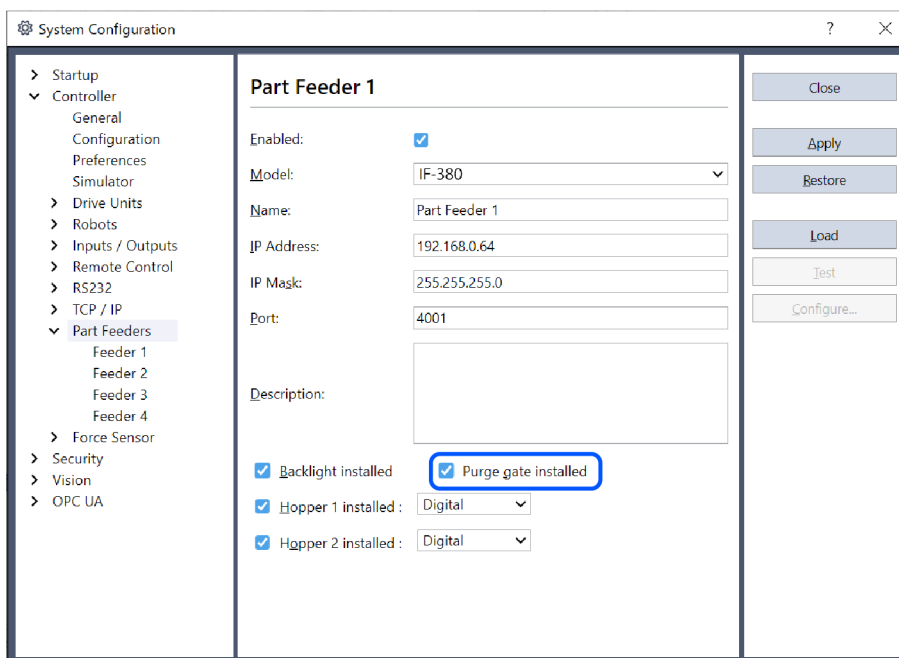
5. Turn on the feeder and Controller. Open Epson RC+ and connect to the Controller.

If you have not already done so, configure the settings to connect the feeder to the Controller in the Epson RC+ 8.0-Menu-[Setup]-[System Configuration].

For more details, refer to following:

"Epson RC+ 8.0 Option Part Feeding 8.0 Introduction & Software - System Configuration"

Check the [Purge gate installed] checkbox and click [Apply].




New parts now can be added from Epson RC+ 8.0 - Menu - [Tools] - [Part Feeding].

## **⚠ CAUTION**

The [Purge gate installed] setting influences vibration parameters. It is critical that you check the [Purge gate installed] checkbox prior to adding new parts in the Part Feeding dialog. If the checkbox is checked after adding new parts, the default vibration parameters will be incorrect. Also, the feeder will not perform properly.

2.5.2.4 Cleaning and Management of the Platform

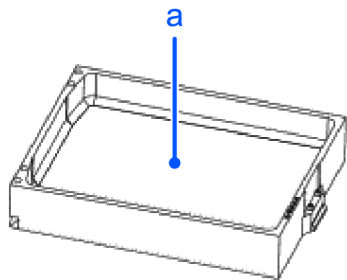
 CAUTION

Platforms are consumables.

If the surface becomes damaged or worn to the point of impeding the vision system or flow of parts, it must be replaced. For information on obtaining replacement parts, please contact the supplier of your region.

Items needed:

- Lint-free cloth
  - Isopropanol alcohol
1. In checking the state of the platform's surface, be particularly careful of the following:
- Scratches
  - Dirt or spots on the surface
  - Oil or grease having adhered to the surface

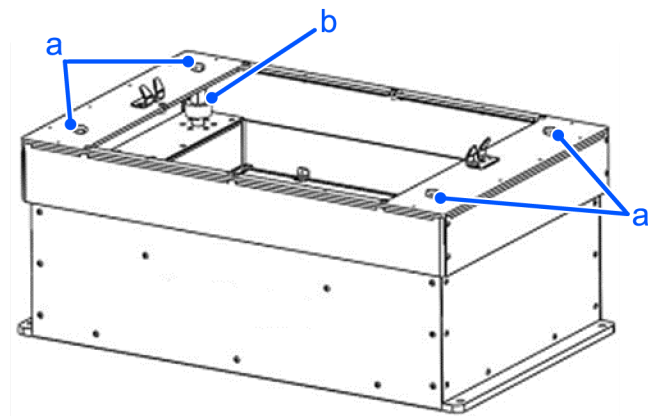


Symbols	Meaning
a	Platform

2. Clean the surface of the platform.

2.5.2.5 Replacing the Ball Joints

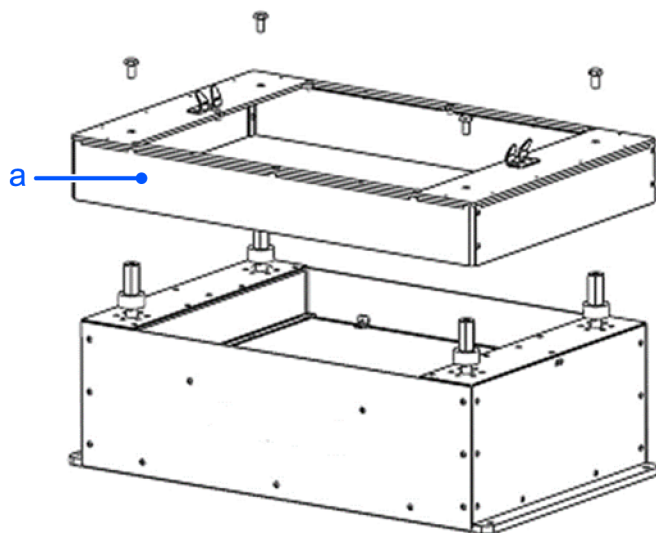
1. Remove the platform and completely unscrew the four nuts while holding the hexagonal extension.
- Use size 13 and 17 open-end wrenches.





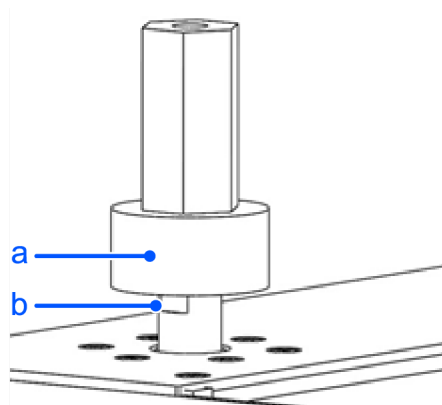
Symbols	Meaning
a	Nut
b	Hexagonal extension

2. Remove the upper assembly.



Symbols	Meaning
a	Upper assembly

3. Hold the axis with a size 10 open-end wrench while loosening the ball joint.

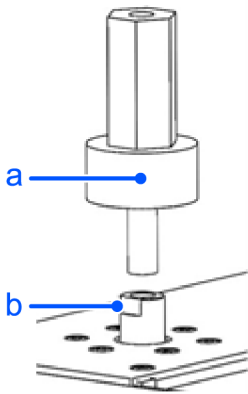


Symbols	Meaning
a	Ball joints
b	Axis

4. Apply a drop of adhesive (type: Loctite 243 or similar) to the outer thread of the new ball joint.

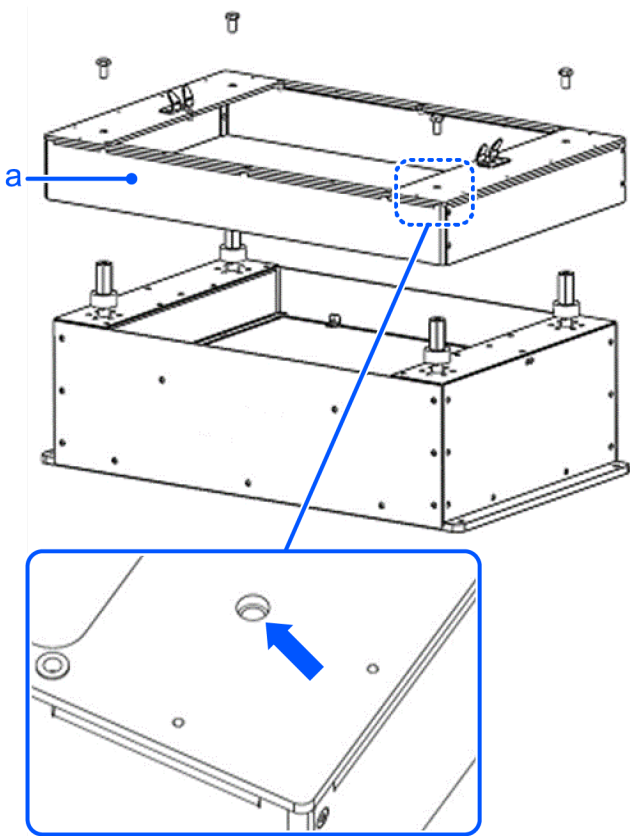
Securely tighten the new ball joint by hand only (mounting bush + extension), while holding the axis with a size 10 open-end wrench.

(Do not use a tool)



Symbols	Meaning
a	New ball joint
b	Axis

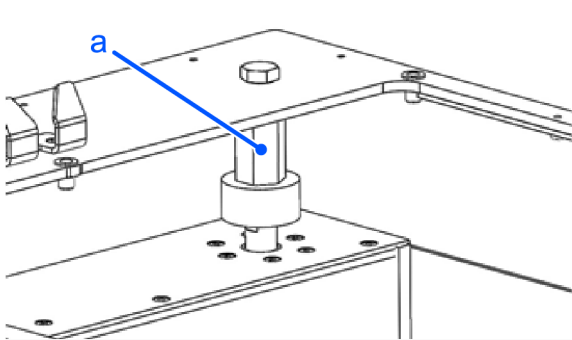
5. Place the upper assembly on the 4 ball joints and carefully align the holes opposite the threads.



Symbols	Meaning
a	Upper assembly

6. Apply a drop of adhesive (type: Loctite 243 or similar) to the nuts.


Tighten the four nuts while holding the hexagonal extension with a size 17 open-end wrench. (4.4 N·m)



Symbols	Meaning
a	Hexagonal extension

### 2.5.3 Component Replacement

For a list of the components which can be replaced directly by the customer, please contact the supplier of your region. For any other repair, the product must be returned to the manufacturer.


 **CAUTION**

For any kind of replacement, always use Epson products.

**Replaceable parts**

Product name	Model number
GREEN BACKLIGHT - 380	R12NZ90191
RED BACKLIGHT - 380	R12NZ90192
BLUE BACKLIGHT - 380	R12NZ90193
WHITE BACKLIGHT - 380	R12NZ90194
INFRARED BACKLIGHT - 380	R12NZ90195
GREEN BACKLIGHT - 530	R12NZ9019T
RED BACKLIGHT - 530	R12NZ9019U
BLUE BACKLIGHT - 530	R12NZ9019V
WHITE BACKLIGHT - 530	R12NZ9019W
INFRARED BACKLIGHT - 530	R12NZ9019X
PURGE ACTUATOR ASSEMBLY - 380/530	1869599

#### 2.5.3.1 Replacing the Backlight

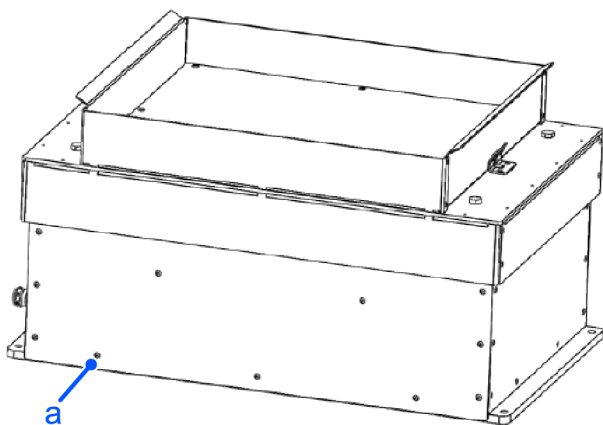
 **WARNING**

Be sure that all power sources and other cable connectors to the unit are disconnected before changing the backlight.

Items needed:

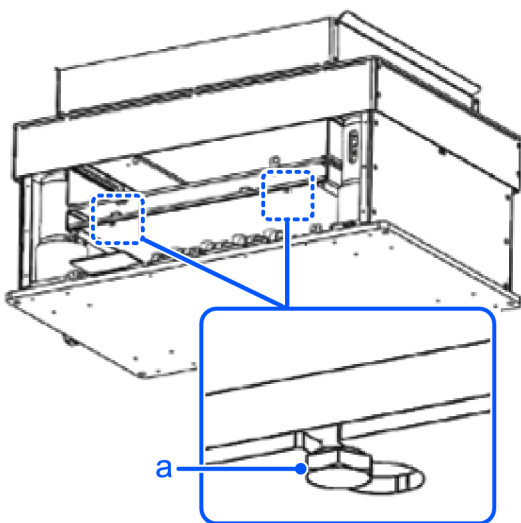
- New backlight assembly ordered from the supplier of your region. (Ask for the part code from the supplier.)
- Flat wrench, size 5.5
- Torx key, size 10

1. Unscrew the 11 screws on both sides and remove the two side covers. Use a Torx key, size 10.



Symbols	Meaning
a	screw

2. On both sides, unscrew the four bolts. Use a flat wrench, size 5.5.

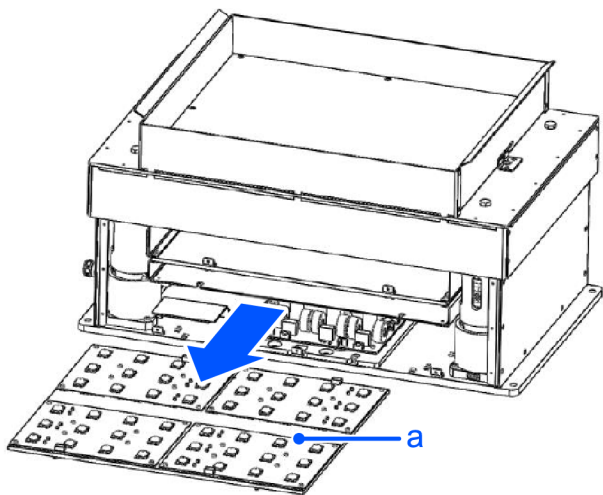


Symbols	Meaning
a	Bolts

3. Carefully disconnect the connectors from the electronics.

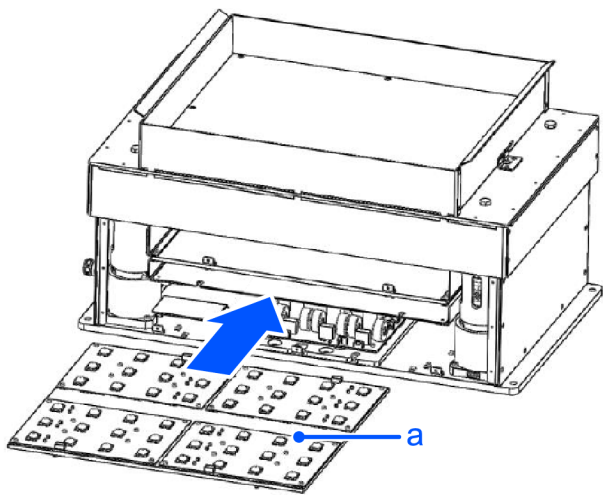
Remove the old backlight.

The example in the figure is IF-530.



Symbols	Meaning
a	Old backlight

4. Insert the backlight unit so that it can be positioned horizontally.

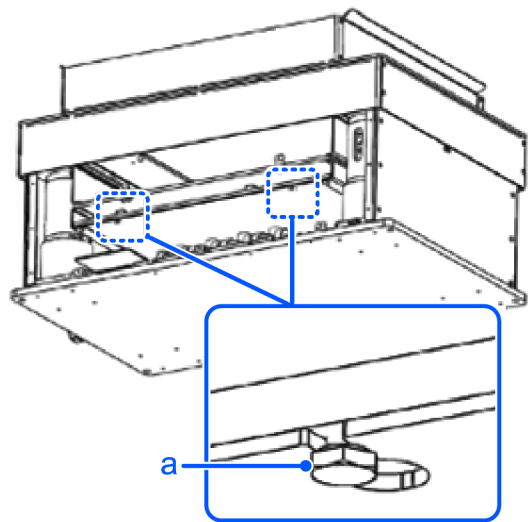


Symbols	Meaning
a	Backlight

5. Tighten the four bolts.

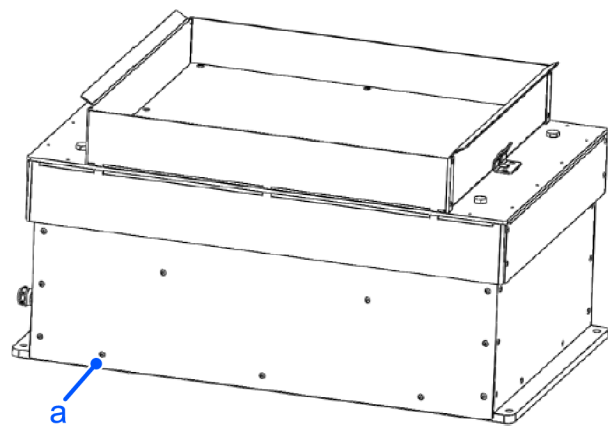
Use a flat wrench, size 5.5





Symbols	Meaning
a	Bolts

- 6. Connect the connectors to the electronics
  - 7. Remount the covers on both sides and tighten (1.3 N·m) the screws on both sides
- Use a Torx key, size 10 (0.8 N·m)

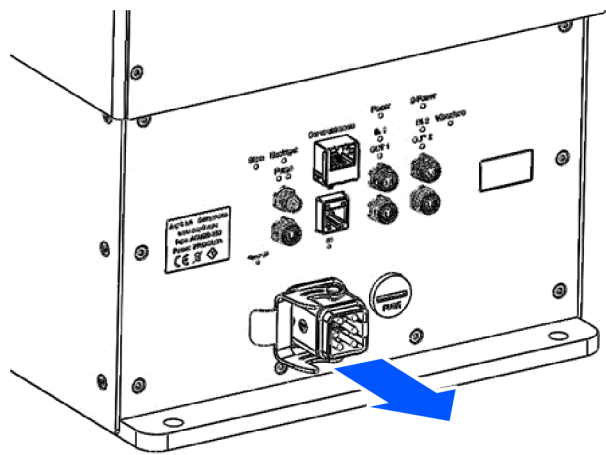


Symbols	Meaning
a	Cover

**2.5.3.2 Restoring the Default IP Address**

The following procedure explains how to reboot the feeder so that it uses the default IP address, subnet mask and TCP port number. Perform this operation when the IP address, subnet mask and TCP port number are unknown and you cannot connect to the part feeder.

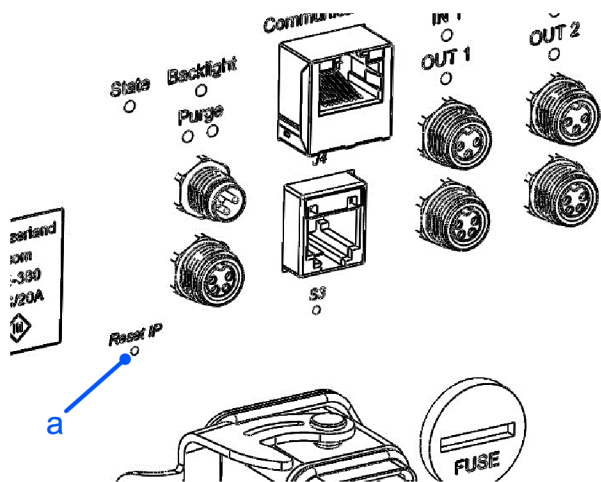
- 1. Switch off the power. Or disconnect the power cable.



2. Insert a tip in the [Reset IP] hole, then either turn the power back on, or reconnect the part feeder to the power source.

The part feeder will now use the following default parameters at startup:

- IP Address: 192.168.0.64
- SubnetMask: 255.255.255.0
- TCP Port: 4001




Symbols	Meaning
a	[Reset IP] hole

1. You can use Epson RC+ to modify these parameters as you wish.

For more details, refer to following:

"Epson RC+ 8.0 Option Part Feeding 8.0 Introduction & Software - System Configuration"

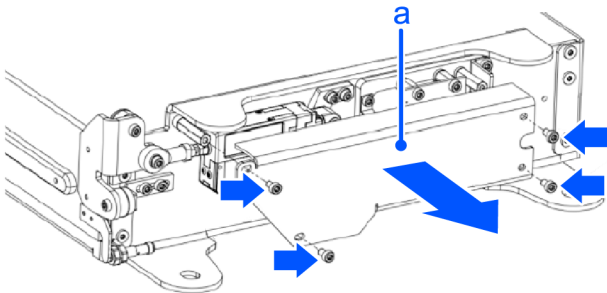
### 2.5.3.3 Replacing the Purging Actuator

 **CAUTION**

Before replacing the actuator, unplug the purging frame from the feeder and remove it. (Four hand-tightened screws)

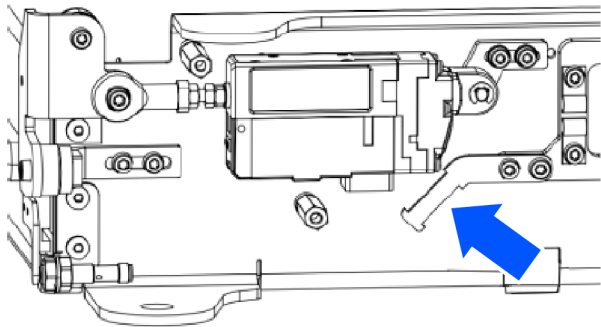
1. Remove the protective cover.

4 screws Tx10



Symbols	Meaning
a	Protective cover

2. Cut the zip-tie, taking care not to damage the cables.

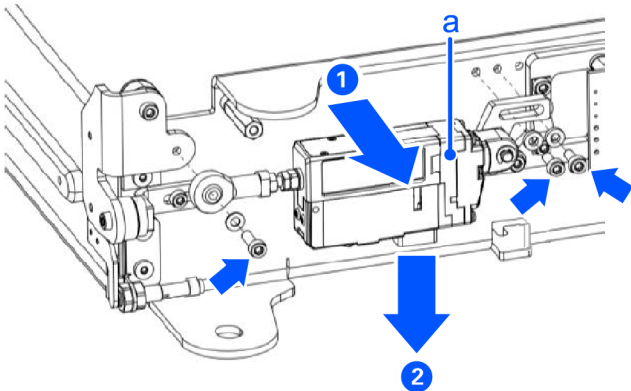


3. Unscrew the actuator block.

3 screws Tx10



Remove the actuator and disconnect it by pulling on the connector, not on the cable itself.



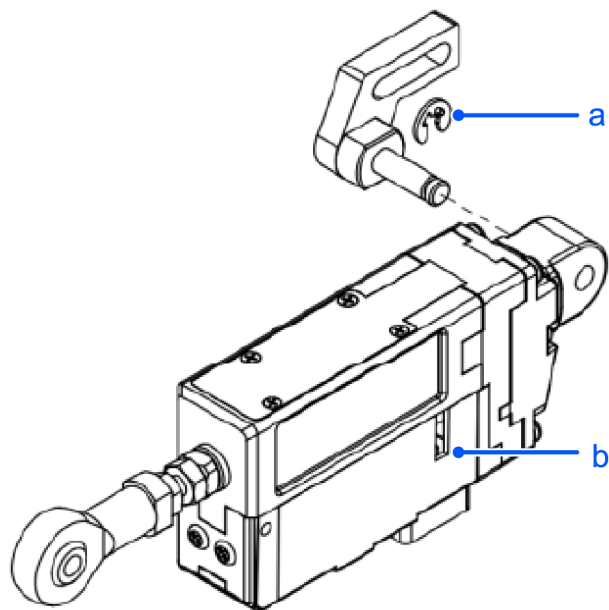
Symbols	Meaning
a	Actuator



4. Remove the retaining ring.

Swap out the actuator block.

Reattach the retaining ring.



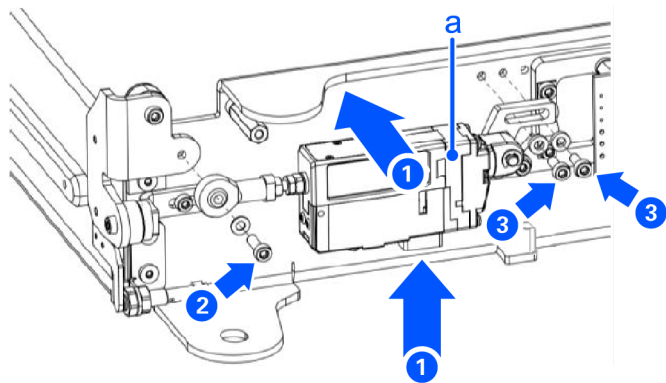
Symbols	Meaning
a	Retaining ring
b	Actuator

5. Plug in the actuator block (1).

Tighten the flap screw (2). (hold the flap in the closed position while screwing in)

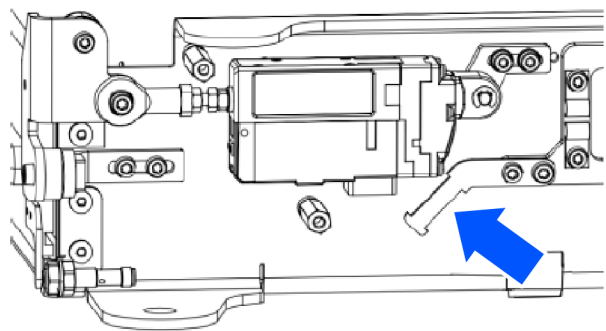
Screw in the bracket (3) with the flap still in held in the closed position.

3 screws Tx 10, 1.2Nm



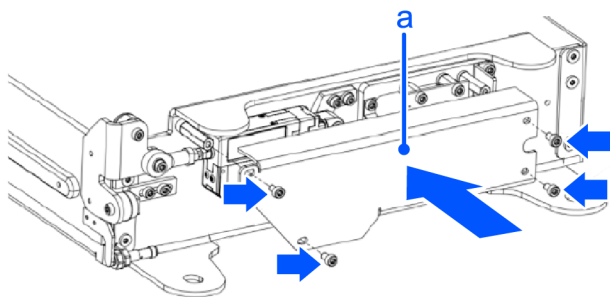
Symbols	Meaning
a	Actuator

6. Tie the cables together with a zip-tie.



7. Screw the protective cover back into position.

4 screws Tx 10, 0.6 Nm



Symbols	Meaning
a	Protective cover

## 2.6 Option Part List

### 2.6.1 IF-380 Series Option Part List

#### 2.6.1.1 Feeder (series: IF-380)

Product name	Specification	Model number
IF380 no Light	IF380 (no Backlight)	R12NZ9018A
IF380 RED	IF380+Backlight: Red	R12NZ9018B
IF380 WHITE	IF380+Backlight: White	R12NZ9018C
IF380 GREEN	IF380+Backlight: Green	R12NZ9018D
IF380 BLUE	IF380+Backlight: Blue	R12NZ9018E
IF380 INFRARED	IF380+Backlight: Infrared light	R12NZ9018F

#### 2.6.1.2 Frame (series: IF-380)

Product name	Specification	Model number
PLATFORM FRAME H=60mm-380	Platform frame H=60mm	R12NZ9018P
PLATFORM FRAME H=85mm-380	Platform frame H=85mm	R12NZ9018Q

#### 2.6.1.3 Purging Frame (series: IF-380)

Product name	Specification	Model number
PLATFORM FRAME LEFT PURGE H=60mm - 380	Platform frame Left purging H=60mm	R12NZ901AJ
PLATFORM FRAME RIGHT PURGE H=60mm - 380	Platform frame Right purging H=60mm	R12NZ901AK
PLATFORM FRAME LEFT PURGE H=85mm - 380	Platform frame Left purging H=85mm	R12NZ901AL
PLATFORM FRAME RIGHT PURGE H=85mm - 380	Platform frame Right purging H=85mm	R12NZ901AM

#### 2.6.1.4 Plate (series: IF-380)

\* FDA: We use materials which conform to FDA (Food and Drug Administration) standards in the United States. (FDA 21CFR177.2470 & 21CFR178.3297)

Product name	Specification	Model number
FLAT PLATE-380	Flat (White) Material: POM-C	R12NZ9018G

Product name	Specification	Model number
ANTI-ROLL PLATE-380dia.5-10	Anti-roll (White) Supported work piece: ø 5-10 Material: PMMA	R12NZ9018H
ANTI-ROLL PLATE-380dia.10-24	Anti-roll (White) Supported work piece: ø 10-24 Material: PMMA	R12NZ9018J
FLAT PLATE(BK)-380	Flat (Black) Material: PMMA	R12NZ9018K
ANTI-ROLL PLATE(BK)-380dia.5-10	Anti-roll (Black) Supported work piece: ø 5-10 Material: PMMA	R12NZ9018L
ANTI-ROLL PLATE(BK)-380dia.10-24	Anti-roll (Black) Supported work piece: ø 10-24 Material: PMMA	R12NZ9018M
FLAT PLATE MED-380	Flat (White)/ *FDA Material: POM-C (white) (FDA)	R12NZ9018N

### 2.6.1.5 Other: Accessories (series: IF-380)

Product name	Specification	Model number
INTERNAL DIFFUSING PLATE - 380	Internal diffusing plate kit	R12NZ9018Z
PURGE ACTUATOR ASSEMBLY - 380 / 530	Purging actuator	1869599
Ball joints set - 380/530	Ball joint set	R12NZ901A6
RJ45 CAT5e -SF/UTP 5m GREY CABLE	Ethernet cable	R12NZ9016L
POWER CABLE 380/530	Power cable	R12NZ9018Y

### 2.6.1.6 Backlight (series:IF-380)

Product name	Specification	Model number
GREEN BACKLIGHT - 380	Backlight (Green)	R12NZ90191
RED BACKLIGHT - 380	Backlight (Red)	R12NZ90192
BLUE BACKLIGHT - 380	Backlight (Blue)	R12NZ90193
WHITE BACKLIGHT - 380	Backlight (White)	R12NZ90194
INFRARED BACKLIGHT - 380	Backlight (Infrared light)	R12NZ90195

### 2.6.1.7 Hopper (Gen.1, series: IF-380)

Product name	Specification	Model number
10L HOPPER 230VAC 50Hz - 380	10L/230VAC/50Hz	R12NZ9018T

Product name	Specification	Model number
10L HOPPER 230VAC 60Hz - 380	10L/230VAC/60Hz	R12NZ9018U
10L HOPPER 115VAC 50Hz - 380	10L/115VAC/50Hz	R12NZ9018V
10L HOPPER 115VAC 60Hz - 380	10L/115VAC/60Hz	R12NZ9018W
HOPPER FIXATION KIT - 380	Hopper fixing kit	R12NZ9018X

- NOTE: Model number will vary depending on the voltage and frequency used. Also, you cannot change the voltage and frequency.

### 2.6.1.8 Hopper (Gen.2, series: IF-380)

Product name	Model number
HOPPER BASE S	R12NZ901MA
HOPPER BASE M	R12NZ901MB
HOPPER BASE L	R12NZ901MC
1 LITER CONTAINER	R12NZ901MD
2 LITER CONTAINER	R12NZ901ME
3 LITER CONTAINER	R12NZ901MF
7 LITER CONTAINER	R12NZ901MG
14 LITER CONTAINER	R12NZ901MH
HOPPER FIXATION KIT FOR L/M	R12NZ901MJ
MALE/FEMALE M8 4P 1m CABLE	R12NZ901ML
MALE/FEMALE M8 4P 2m CABLE	R12NZ901MM
POWER CABLE 80/240	R12NZ9016K

### 2.6.1.9 License (series: common)

Product name	Specification	Model number
Part Feeding 8.0 License	Part Feeding 8.0 License	R19NZ901JU
Part Feeding 8.0 License for USB Key	Part Feeding 8.0 License for USB Key	R19NZ901K9

## 2.6.2 IF-530 Series Option Part List

### 2.6.2.1 Feeder (series: IF-530)

Product name	Specification	Model number
IF530 no Light	IF530 (no Backlight)	R12NZ90196
IF530 RED	IF530+Backlight: Red	R12NZ90197
IF530 WHITE	IF530+Backlight: White	R12NZ90198

Product name	Specification	Model number
IF530 GREEN	IF530+Backlight: Green	R12NZ90199
IF530 BLUE	IF530+Backlight: Blue	R12NZ9019A
IF530 INFRARED	IF530+Backlight: Infrared light	R12NZ9019B

### 2.6.2.2 Frame (series: IF-530)

Product name	Specification	Model number
PLATFORM FRAME H=68mm-530	Platform frame H=68mm	R12NZ9019J
PLATFORM FRAME H=100mm-530	Platform frame H=100mm	R12NZ9019K

### 2.6.2.3 Purging Frame (series: IF-530)

Product name	Specification	Model number
PLATFORM FRAME LEFT PURGE H=68mm - 530	Platform frame Left purging H=68mm	R12NZ901AE
PLATFORM FRAME RIGHT PURGE H=68mm - 530	Platform frame Right purging H=68mm	R12NZ901AF
PLATFORM FRAME LEFT PURGE H=100mm - 530	Platform frame Left purging H=100mm	R12NZ901AG
PLATFORM FRAME RIGHT PURGE H=100mm - 530	Platform frame Right purging H=100mm	R12NZ901AH

### 2.6.2.4 Plate (series: IF-530)

Product name	Specification	Model number
FLAT PLATE -530	Flat (White) Material: POM-C	R12NZ9019C
ANTI-ROLL PLATE -530dia.6-12	Anti-roll (White) Supported work piece: ø 6-12 Material: PMMA	R12NZ9019D
ANTI-ROLL PLATE-530dia.12-28	Anti-roll (White) Supported work piece: ø 12-28 Material: PMMA	R12NZ9019E
FLAT PLATE(BK)-530	Flat (Black) Material: PMMA	R12NZ9019F
ANTI-ROLL PLATE(BK)-530dia.6-12	Anti-roll (Black) Supported work piece: ø 6-12 Material: PMMA	R12NZ9019G

Product name	Specification	Model number
ANTI-ROLL PLATE(BK)-530dia.12-28	Anti-roll (Black) Supported work piece: ø 12-28 Material: PMMA	R12NZ9019H

### 2.6.2.5 Accessories (series: IF-530)

Product name	Specification	Model number
INTERNAL DIFFUSING PLATE - 530	Internal diffusing plate kit	R12NZ9019R
PURGE ACTUATOR ASSEMBLY - 380/530	Purging actuator	1869599
Ball joints set - 380/530	Ball joint set	R12NZ901A6
RJ45 CAT5e -SF/UTP 5m GREY CABLE	Ethernet cable	R12NZ9016L
POWER CABLE 380/530	Power cable	R12NZ9018Y

### 2.6.2.6 Backlight (series:IF-530)

Product name	Specification	Model number
GREEN BACKLIGHT - 530	Backlight (Green)	R12NZ9019T
RED BACKLIGHT - 530	Backlight (Red)	R12NZ9019U
BLUE BACKLIGHT - 530	Backlight (Blue)	R12NZ9019V
WHITE BACKLIGHT - 530	Backlight (White)	R12NZ9019W
INFRARED BACKLIGHT - 530	Backlight (Infrared light)	R12NZ9019X

### 2.6.2.7 Hopper (Gen.1, series: IF-530)

Product name	Specification	Model number
15l HOPPER 230VAC 50Hz - 530	15L/230VAC/50Hz	R12NZ9019M
15l HOPPER 230VAC 60Hz - 530	15L/230VAC/60Hz	R12NZ9019N
15l HOPPER 115VAC 50Hz - 530	15L/115VAC/50Hz	R12NZ9019P
15l HOPPER 115VAC 60Hz - 530	15L/115VAC/60Hz	R12NZ9019Q
HOPPER FIXATION KIT - 530	Hopper fixing kit	R12NZ901BX

\* NOTE: Model number will vary depending on the voltage and frequency used. Also, you cannot change the voltage and frequency.

### 2.6.2.8 Hopper (Gen.2, series: IF-530)

Product name	Model number
HOPPER BASE S	R12NZ901MA

Product name	Model number
HOPPER BASE M	R12NZ901MB
HOPPER BASE L	R12NZ901MC
1 LITER CONTAINER	R12NZ901MD
2 LITER CONTAINER	R12NZ901ME
3 LITER CONTAINER	R12NZ901MF
7 LITER CONTAINER	R12NZ901MG
14 LITER CONTAINER	R12NZ901MH
HOPPER FIXATION KIT FOR L/M	R12NZ901MJ
MALE/FEMALE M8 4P 1m CABLE	R12NZ901ML
MALE/FEMALE M8 4P 2m CABLE	R12NZ901MM
POWER CABLE 80/240	R12NZ9016K

### 2.6.2.9 License (series: common)

Product name	Specification	Model number
Part Feeding 8.0 License	Part Feeding 8.0 License	R19NZ901JU
Part Feeding 8.0 License for USB Key	Part Feeding 8.0 License for USB Key	R19NZ901K9



## 2.7 Troubleshooting

For information on troubleshooting, refer to the following:



"Epson RC+ 8.0 Option Part Feeding 8.0 Introduction & Software - Troubleshooting"

2.8 Appendix A: Conditions of Use for the Backlight

The following number of backlight boards are used in IF-380 and IF530.

	Backlight board
IF-380	2
IF-530	4

The conditions for each backlight board are shown from the next page.

	<p><b>CONDITIONS OF USE FOR TPL VISION PRODUCTS</b></p> <p><b>TABLE OF CALCULATION</b></p> <p>THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD NF EN62471.</p> <p>THIS DOCUMENT IS NOT A CERTIFICATE AND CAN BE USED ONLY AS A DECLARATION TO USERS.</p>	
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## Board Specifications

### 1 brick 8 LEDs 200x150 Green

Information for Reference			
Exposure time to the source		0.25	Seconds
1	Wavelength	525	nm
	Color temperature		K
2	Total angle	150	°
3	<b>For visible light:</b>		
	Output intensity		Cd
	Output power	150	Lm
	<b>For non-visible light:</b>		
	Power density	0.000	W/m <sup>2</sup>
4	Number of LEDs	8	LED
5	Efficiency in candelas per lumen when lens is used	2.5	Cd/Lm

Information About the Light Source		
Maximum Permissible Exposure (MPE):	25.456	W/m <sup>2</sup>
	13665.66445	Lm/m <sup>2</sup>
<b>Power density for a visible source:</b>		
Surface area illuminated by the source:	0.437567409	m <sup>2</sup>
Power of one LED:	150	Lm
Power density for one LED:	342.804324	Lm/m <sup>2</sup>
<b>Power density for a non-visible source:</b>		
Surface area illuminated by the source:	0.4376	m <sup>2</sup>
Power density for one LED:	0.000	W/m <sup>2</sup>
<b>Danger to Human Body</b>		
<b>Hazardous light source:</b>		
Power density for a visible source:	2742.434592	Lm/m <sup>2</sup>



Information About the Light Source		
Power density for a non-visible source:	0.000	W/m <sup>2</sup>

	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconds): 0.25	
<b>Minimum safe distance in this case *</b>	<b>128</b>	<b>mm</b>

\* Consider all positions within the envelope of the remote DNRO and within areas where the irradiance or radiant exposure exceeds the Maximum Permissible Exposure (MPE) to be optically hazardous areas (NRA).

#### [Basics]

- Exposure time is fixed to 0.25 s for this calculation table, which is the latency blink of the eye duration.
- Output power: The maximum output power for the type of LED used in the product is 150 Lm under 350mA.
- Number of LEDs: These numbers assume that the worker sees all of the LED light sources.

	<p><b>CONDITIONS OF USE FOR TPL VISION PRODUCTS</b></p> <p><b>TABLE OF CALCULATION</b></p> <p>THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD NF EN62471.</p> <p>THIS DOCUMENT IS NOT A CERTIFICATE AND CAN BE USED ONLY AS A DECLARATION TO USERS.</p>	
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## Board Specifications

### 1 brick 8 leds 200x150 red

Reference Information			
Exposure time to the source		0.25	Seconds
1	Wavelength	630	nm
	Color temperature		K
2	Total angle	150	°
3	<b>For visible light:</b>		
	Output intensity		Cd
	Output power	80	Lm
	<b>For non-visible light:</b>		
	Power density	0.000	W/m <sup>2</sup>
4	Number of LEDs	8	LED
5	Efficiency in candelas per lumen when lens is used	2.5	Cd/Lm

Information About the Light Source		
Maximum Permissible Exposure (MPE):	25.456	W/m <sup>2</sup>
	4607.380507	Lm/m <sup>2</sup>
<b>Power density for a visible source:</b>		
Surface area illuminated by the source:	0.437567409	m <sup>2</sup>
Power of one LED:	80	Lm
Power density for one LED:	182.8289728	Lm/m <sup>2</sup>
<b>Power density for a non-visible source:</b>		
Surface area illuminated by the source:	0.4376	m <sup>2</sup>
Power density for one LED:	0.000	W/m <sup>2</sup>
<b>Danger to Human Body</b>		
<b>Hazardous light source:</b>		
Power density for a visible source:	1462.631782	Lm/m <sup>2</sup>



Information About the Light Source		
Power density for a non-visible source:	0.000	W/m <sup>2</sup>

	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconds): 0.25	
<b>Minimum safe distance in this case *</b>	<b>161</b>	<b>mm</b>

\* Consider all positions within the envelope of the remote DNRO and within areas where the irradiance or radiant exposure exceeds the Maximum Permissible Exposure (MPE) to be optically hazardous areas (NRA).

#### [Basics]

- Exposure time is fixed to 0.25 s for this calculation table, which is the latency blink of the eye duration.
- Output power: The maximum output power for the type of LED used in the product is 80 Lm under 350mA.
- Number of LEDs: These numbers assume that the worker sees all of the LED light sources.

	<p><b>CONDITIONS OF USE FOR TPL VISION PRODUCTS</b></p> <p><b>TABLE OF CALCULATION</b></p> <p>THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD NF EN62471.</p> <p>THIS DOCUMENT IS NOT A CERTIFICATE AND CAN BE USED ONLY AS A DECLARATION TO USERS.</p>	
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## Board Specifications

### 1 brick 8 leds 200x150 Blue

Information for Reference			
Exposure time to the source		0.25	Seconds
1	Wavelength	470	nm
	Color temperature		K
2	Total angle	150	°
3	<b>For visible light:</b>		
	Output intensity		Cd
	Output power	39	Lm
	<b>For non-visible light:</b>		
	Power density	0.000	W/m <sup>2</sup>
4	Number of LEDs	8	LED
5	Efficiency in candelas per lumen when lens is used	2.5	Cd/Lm

Information About the Light Source		
Maximum Permissible Exposure (MPE):	25.456	W/m <sup>2</sup>
	1582.15708	Lm/m <sup>2</sup>
<b>Power density for a visible source:</b>		
Surface area illuminated by the source:	0.437567409	m <sup>2</sup>
Power of one LED:	39	Lm
Power density for one LED:	89.12912424	Lm/m <sup>2</sup>
<b>Power density for a non-visible source:</b>		
Surface area illuminated by the source:	0.4376	m <sup>2</sup>
Power density for one LED:	0.000	W/m <sup>2</sup>
<b>Danger to Human Body</b>		
<b>Hazardous light source:</b>		
Power density for a visible source:	713.0329939	Lm/m <sup>2</sup>

Information About the Light Source		
Power density for a non-visible source:	0.000	W/m <sup>2</sup>



	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconds): 0.25	
<b>Minimum safe distance in this case *</b>	<b>191</b>	<b>mm</b>

\* Consider all positions within the envelope of the remote DNRO and within areas where the irradiance or radiant exposure exceeds the Maximum Permissible Exposure (MPE) to be optically hazardous areas (NRA).

#### [Basics]

- Exposure time is fixed to 0.25 s for this calculation table, which is the latency blink of the eye duration.
- Output power: The maximum output power for the type of LED used in the product is 39 Lm under 350mA.
- Number of LEDs: These numbers assume that the worker sees all of the LED light sources.



	<p><b>CONDITIONS OF USE FOR TPL VISION PRODUCTS</b></p> <p><b>TABLE OF CALCULATION</b></p> <p>THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD NF EN62471.</p> <p>THIS DOCUMENT IS NOT A CERTIFICATE AND CAN BE USED ONLY AS A DECLARATION TO USERS.</p>	
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## Board Specifications

### 1 brick 8 leds 200x150 infrared

Information for Reference			
Exposure time to the source		10	Seconds
1	Wavelength	850	nm
	Color temperature		K
2	Total angle	150	°
3	<b>For visible light:</b>		
	Output intensity		Cd
	Output power		Lm
	<b>For non-visible light:</b>		
	Power density	1.028	W/m <sup>2</sup>
4	Number of LEDs	8	LED
5	Efficiency in candelas per lumen when lens is used	2.5	Cd/Lm

Information About the Light Source		
Maximum Permissible Exposure (MPE):	19.953	W/m <sup>2</sup>
	Non-visible source	Lm/m <sup>2</sup>
<b>Power density for a visible source:</b>		
Surface area illuminated by the source:	Non-visible source	m <sup>2</sup>
Power of one LED:	Non-visible source	Lm
Power density for one LED:	Non-visible source	Lm/m <sup>2</sup>
<b>Power density for a non-visible source:</b>		
Surface area illuminated by the source:	0.4376	m <sup>2</sup>
Power density for one LED:	8.227	W/m <sup>2</sup>
<b>Danger to Human Body</b>		
<b>Hazardous light source:</b>		
Power density for a visible source:	Non-visible source	Lm/m <sup>2</sup>

Information About the Light Source		
Power density for a non-visible source:	8.227	W/m <sup>2</sup>

	NOMINAL DISTANCE TO AVOID OCULAR HAZARD (DNRO) FOR AN EXPOSURE TIME OF (Seconds): 10	
<b>Minimum safe distance in this case *</b>	<b>183</b>	<b>mm</b>

\* Consider all positions within the envelope of the remote DNRO and within areas where the irradiance or radiant exposure exceeds the Maximum Permissible Exposure (MPE) to be optically hazardous areas (NRA).

#### [Basics]

- Exposure time is fixed to 10s for this calculation table, which is the max duration according to the standard compliance.
- Output power: The maximum output power for the type of LED used in the product is 450mW under 350mA.
- Number of LEDs: These numbers assume that the worker sees all of the LED light sources.

2.9 Appendix B: Cable Connections for Old Model (V1) of IF-530

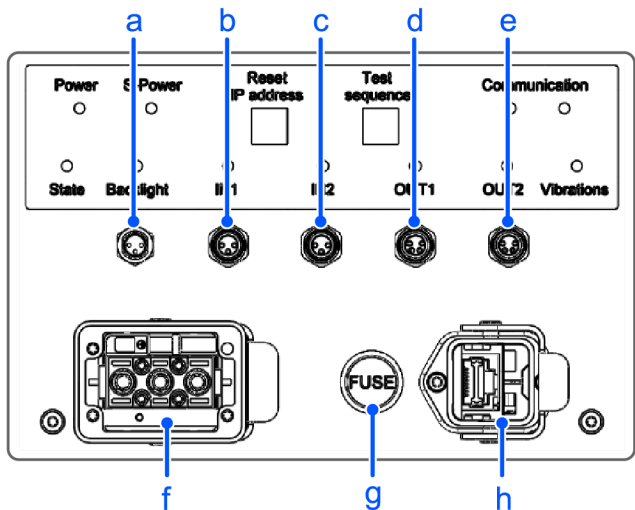
For customers using the old model (V1) of IF-530, see below for cable connections.

2.9.1 Cable Connections

2.9.1.1 Overview

The IF-530 is a standalone module with its own controller. Its power supply is located on the rear panel of the product.

Electrical interfaces of the IF-240



Symbols	Meaning
a	Backlight synchronization
b	Digital Input 1
c	Digital Input 2
d	Digital Output for Hopper 1
e	Digital Output for Hopper 2
f	Power connection
g	Fuse
h	Ethernet connection (RJ45)

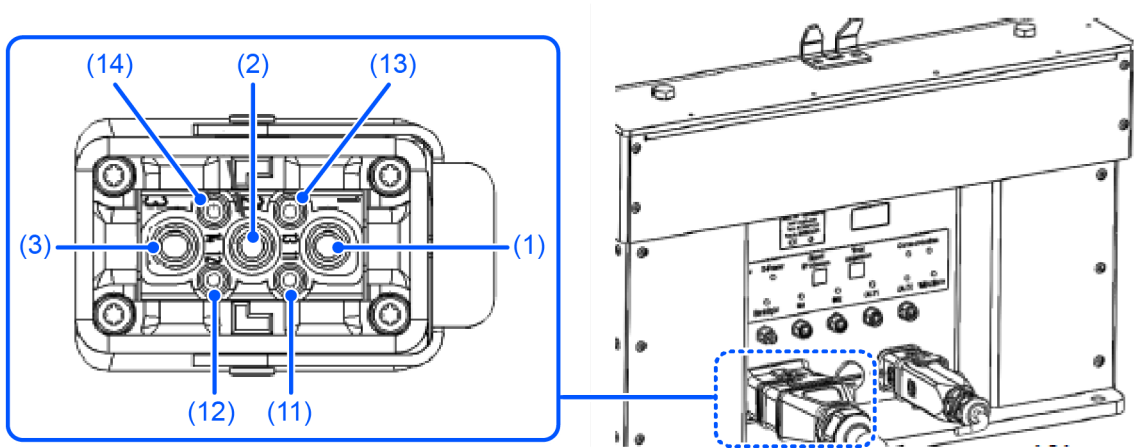
2.9.1.2 Power Connection

⚠ CAUTION

- Before supplying power to the part feeder, make sure that the distribution voltage is the same as the nominal voltage.
- Never disconnect the power cable when the unit is on. Always turn the machine off before disconnecting the power cable.
- Use PELV (protected extra-low voltage) nominal voltage.

- Unplug the main power plug when plugging / unplugging cords.


Power Connection



Pin	Signal description	Cable
(1)	24VDC PELV S-Power	L+
(2)	0V GND S-Power	L-
(3)	EARTH	PE
(11)	24VDC PELV Power	Black
(12)	0V GND Power	White
(13) – (14)	Not used	

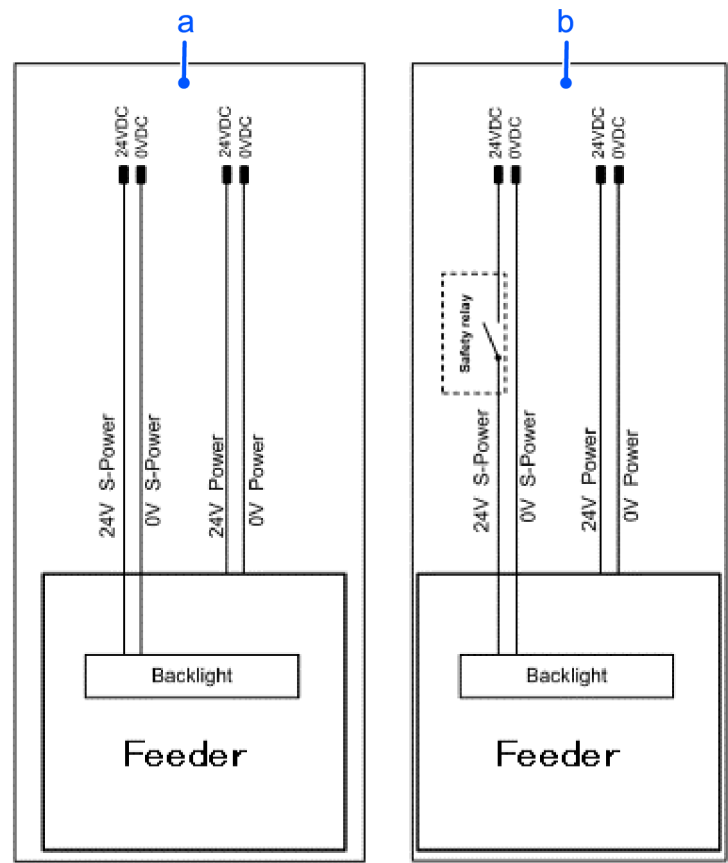
Connector type of IF-530 side: M16, 5 poles, male

Characteristic	Value
Voltage	+24VDC ±5%
Power Current	6A
S-Power Current	14A


 **KEY POINTS**

S-Power is the safety power for the backlight. Cutting this S-Power ensures that the backlight stays off. (e.g. to avoid danger from an infrared backlight)

The following connection schematics show how to connect the IF-240 depending on whether your application uses an external relay to ensure that the backlight is safely switched off. In either case, both “Power” and “S-Power” must be supplied when using the backlight.



Symbols	Meaning
a	Power connection without safety relay
b	Power connection with safety relay

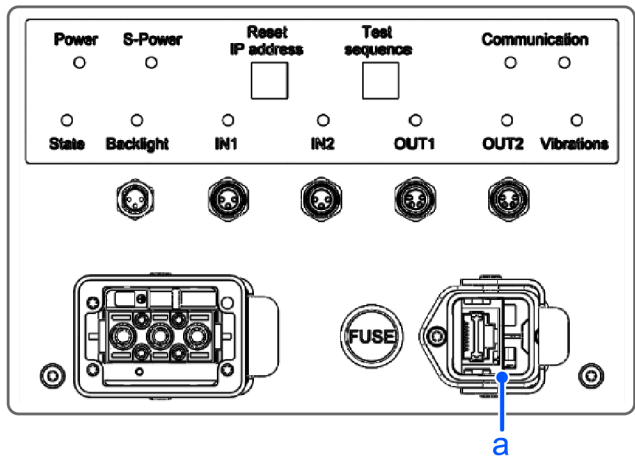
 **KEY POINTS**

Both Power and S-Power can be connected to a single power supply or to two different power supplies.

### 2.9.1.3 Communication

Communication with the IF-530 is carried out by standard Ethernet communication via the RJ45 port.

**Ethernet connection (RJ45)**



Symbols	Meaning
a	RJ45 Port

Characteristic	Value
Default IP address	192.168.0.64
Default subnet mask	255.255.255.0
Port	4001
MAC address	Can be acquired by ARP request

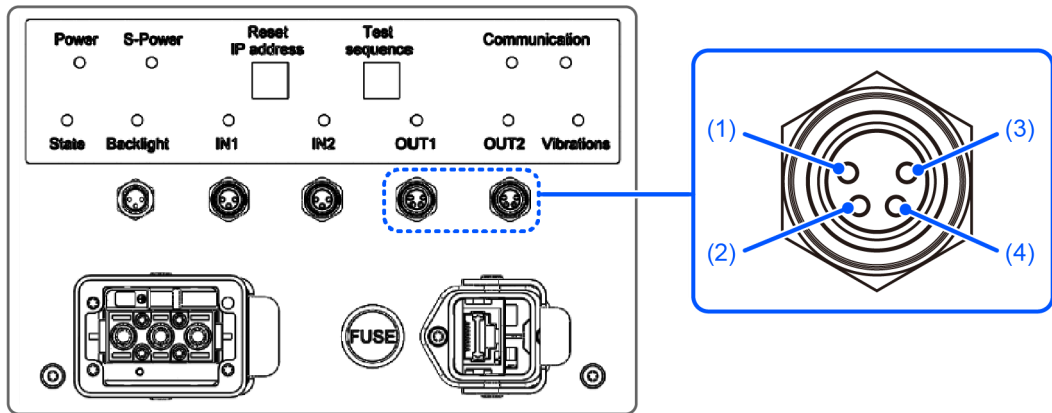
For information on restoring the default IP address, refer to the following:

Restoring the Default IP Address

2.9.1.4 Digital Output for Hoppers

A standard M8 four-pin male cable enables transmission of the digital output signal to the hopper. It must be connected as follows:

Digital Output for Hoppers



Pin	Signal description	Hopper
(1)	-	-
(2)	-	

Pin	Signal description	Hopper
(3)	0V GND	Digital Output 1
(4)	+24VDC	

Connector type IF-530 side: M8, 4P, male