

EPSON

EPSON RC+ 7.0 Option

Part Feeding 7.0

IF-380 & IF-530

Rev.8

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Original instructions

EPSON RC+ 7.0 Option Part Feeding 7.0 IF-380 & IF-530 Rev.8

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Part Feeding 7.0 IF-380 & IF-530

Rev.8

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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.

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TRADEMARK NOTATION IN THIS MANUAL

Microsoft® Windows® 8 operating system

Microsoft® Windows® 10 operating system

Microsoft® Windows® 11 operating system

Throughout this manual, Windows 8, Windows 10 and Windows 11 refer to above respective operating systems. In some cases, Windows refers generically to Windows 8, Windows 10 and Windows 11.

NOTICE

No part of this manual may be copied or reproduced without authorization.

The contents of this manual are subject to change without notice.

Please notify us if you should find any errors in this manual or if you have any comments regarding its contents.

MANUFACTURER

SEIKO EPSON CORPORATION

CONTACT INFORMATION

Contact information is described in “SUPPLIERS” in the first pages of the following manual:

Robot System Safety Manual Read this manual first

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Hardware (IF-380 & IF-530)


1. Safety

1.1 Overview

The following document is the property of Epson and may not be copied or circulated without permission. Before operating your product, please read this document 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 “NOTE”; 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.


NOTE 	The “NOTE” sections describe important information to be followed for operating the Robot system.
---	---



REFER TO ...

For more information on a specific subject, the reader should read another manual, or refer to other paragraph.


 CAUTION	<ul style="list-style-type: none"> ■ Epson shall not be liable whatsoever for any loss or damage arising from a failure to observe the items specified in <i>Safety</i> precautions. The customer is responsible for providing the necessary instructions to the persons concerned.
--	--

NOTE 	<ul style="list-style-type: none"> ■ All dimensions in this document are expressed in millimeters.
---	---


1.2 Safety Precautions


1.2.1 General Safety Precaution


1.2.1.1 Transport

 CAUTION	<ul style="list-style-type: none">■ Be aware of the weight and take care when transporting the system. For more information, please refer to 3. <i>Environment and Installation</i>.
--	--

1.2.1.2 General


 WARNING	<ul style="list-style-type: none">■ 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	<ul style="list-style-type: none">■ 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	<ul style="list-style-type: none">■ Build a safety system that shuts off the IF series power (S-Power) when the machine or mechanical system protection enclosure is opened.
--	--

1.2.1.3 Disposal


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

 CAUTION	<ul style="list-style-type: none">■ Observe the valid legal regulations for appropriate disposal protecting environment.
--	--



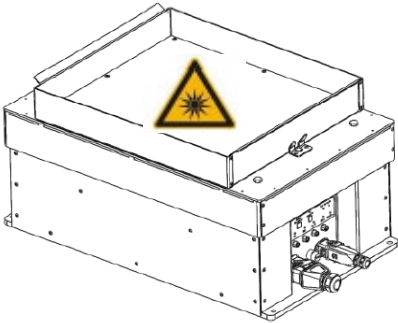
1.2.2 Danger



1.2.2.1 Safety equipment for operators

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

<p>NOTE</p> 	<ul style="list-style-type: none"> It is the customer’s responsibility to install warning signs informing that anyone working around the part feeding must wear safety equipment.
---	--

1.2.2.2 Specific danger

 <p>WARNING</p> 	<ul style="list-style-type: none"> Backlight The part feeding 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. LEDs illumination can create discomfort, cornea, retinal and lens damage. Never look directly into the light source without any personal protection (e.g. protective eyewear). Customers are encouraged to document their unique application and instruct employees on procedures to limit exposure to LED radiation. <div style="text-align: center;">  </div> <p style="text-align: center;">Figure 1-1: Specific warnings</p>
---	--

 <p>WARNING</p> 	<ul style="list-style-type: none"> 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. The following prevention agent can be suggested: <ul style="list-style-type: none"> A Interpose, insofar as the job allows, a high pass filter at x nm depending on the color (see 2.6.5 Backlight) under a fixed or adjustable connection between the source and the employee. B When the implementation of the foregoing is not possible, provide workers with goggles or face shield suitable for blocking radiation beyond 700nm. C Prohibit or limit as much as possible direct access to the source (exposure in the axis of radiation). D Establish a security perimeter to prevent operators from approaching the source at distances beyond the nominal ocular hazard recommended by the manufacturer. E In all cases, ensure that the means used properly mitigate exposure variables (characteristics of screens or goggles to choose based on wavelength which operators are exposed).
--	--



Refer to *Appendix: Condition of Using Backlight* for the complete calculation sheet on minimal distance to respect for each kind of 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. Specification

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 components in the platform.

The vibrations of the Parts Feeder will be configured according to the type of components in order to guarantee an ideal process. The typical size of components that can be distributed in the platform ranges from 15 mm to 60 mm for IF-380 and from 30 mm to 150 mm for IF-530.

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

2.3 Part Names and Overall Dimensions

2.3.1 Part Names

Names of each part:

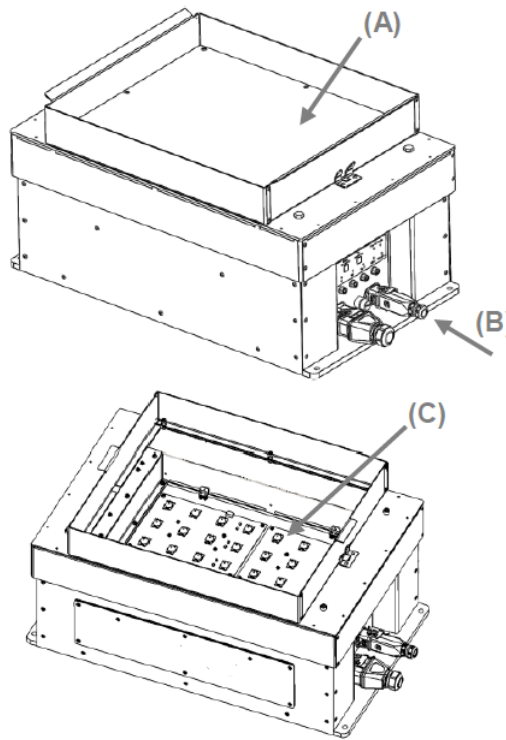


Figure 2-1: IF System overview

- (A) 3D vibrating platform
- (B) Electrical interfaces (communication, power supply, I/Os...)
- (C) An integrated backlight (optional) that allows an easy recognition of the parts from a camera placed above.



(A) For more information on how to remove or change the platform, refer to 5.2.2.
Remove the platform module.



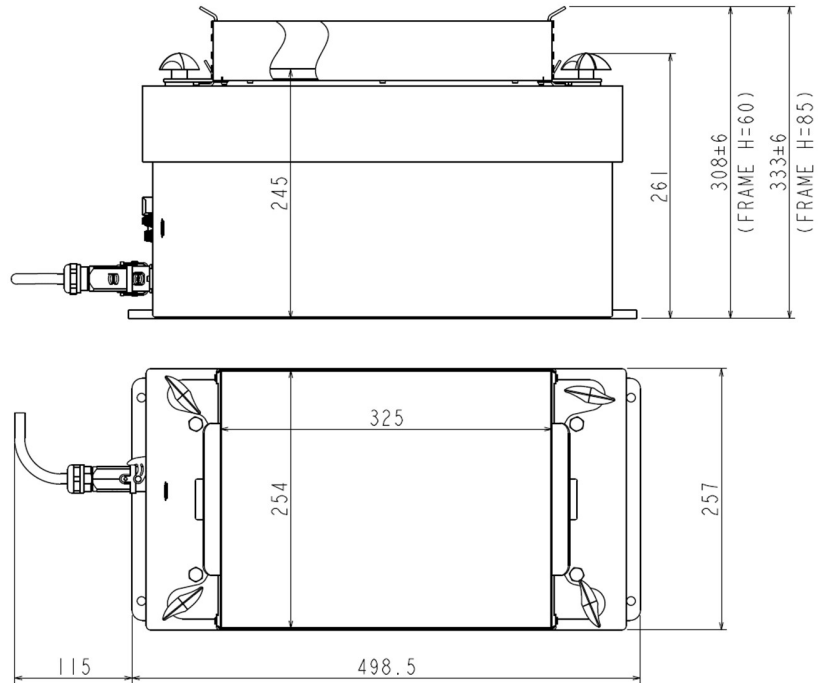
(B) For more information on electrical interfaces, refer to 3.6 *Connecting Cable*.



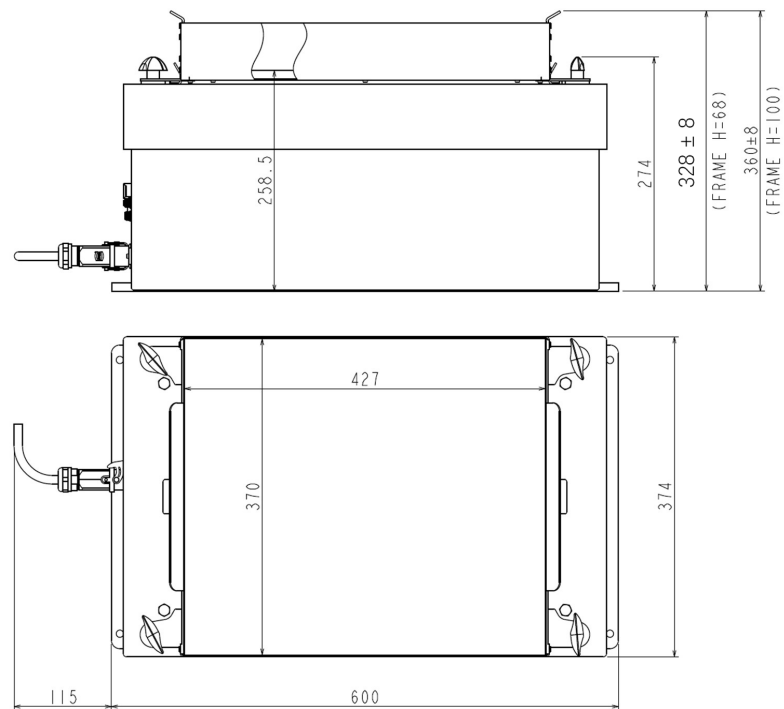
(C) For more information on the backlight color and the procedure to exchange the backlight, refer to 5.3.1 *Exchanging / installing the backlight*.

2.3.2 Overall Dimensions

IF-380



IF-530



For details of installing, refer to 3.3 *Installing IF-380, IF-530.*

2.3.3 Visual Signals

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

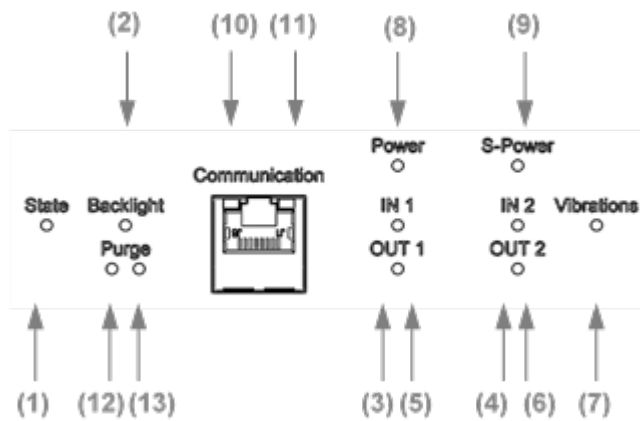



Figure 2-3: Operation Indicator LEDs

LED	State	Color	Meaning
1	Blinking Time on: 100ms	green	System in standby
	Blinking Time on: 900ms	green	System in service
2	On	green	24 V on backlight synchronization
3	On	green	24 V on input 1
4	On	green	24 V on input 2
5	On	yellow	24 V on output 1
6	On	yellow	24 V on output 2
7	On	green	Platform vibrating
8	On	green	24 V on power input
9	On	green	24 V on S-power input
10	On	green	Connection detection
11	Blinking	yellow	Communication in progress
12	On	green	24 V purge input
13	On	yellow	24 V purge output

2.4 Specification Table

 CAUTION	<p>■ Use the parts feeder with the following specifications. Please note that the basic performance of the product will not be exhibited if it is used outside of the specifications.</p>
--	---

2.4.1 Specification of IF-380, IF-530

	IF-380	IF-530
Typical part size *	length of side: 15 to 60 mm	length of side: 30 to 150mm
Backlight	Select with/without backlight. Refer 2.2 Model.	Select with/without backlight. Refer 2.2 Model.
Interchangeable backlight color	(green, red, blue, white, Infrared) Please refer to 4.2 Backlight for more information.	(green, red, blue, white, Infrared) Please refer to 4.2 Backlight for more information.
Vibration frequency configurable	20 to 30 Hz	20 to 28 Hz
Maximum weight on the platform (components)	1.5 kg	2 kg
Digital Output for hoppers	2	2
Digital Input	-	-
Analog Output	-	-
RoHS	✓	✓
Weight (Includes platform, backlight)	21 kg	31 kg
Protection class	IP50	
Working temperature:	+5°C ~ +40°C	
Humidity	30% ~ 80%max. non-condensing	
Environment	no Cleanroom model	
Safety Standard	CE Marking: EMC Directive, Machinery Directive, RoHS Directive	

*: Before using parts, try supplying the parts to the feeder, move the feeder, and check following.

- Part disperses
- Part moves
- Overlapping parts disentangles
- etc.

Parts that do not disperse and do not move and do not disentangle are not suitable for feeders.

2.4.2 Maximum Permissible External Force on the Platform

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

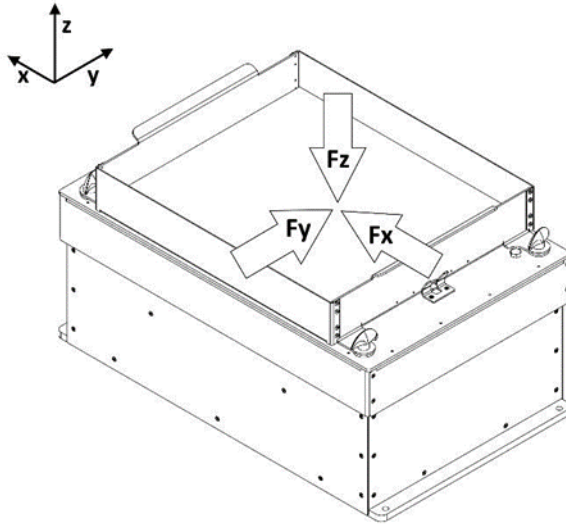


Figure 2-4: Maximum external force

$$F_x = 10 \text{ N}$$

$$F_y = 10 \text{ N}$$

$$F_z = 30 \text{ N}$$



CAUTION

- Note that the shock/impact of the gripper may damage the surface of the platform.

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 weight of components (in addition to the maximum weight of the frame + platform assembly)	1.5 kg	2 kg

2.4.4 Maximum Plate Displacement

	IF-380	IF-530
Maximum displacement x	± 8 mm	± 8 mm
Maximum displacement y	± 10 mm	± 10 mm
Maximum displacement z	± 6 mm	± 8 mm

2.4.5 Plate Z Repeatability

	IF-380	IF-530
Plate Z repeatability	≤ ± 0.4mm	≤ ± 0.3mm

2.4.6 Work Surface

The surface corresponds to the size of the illustrated platform:

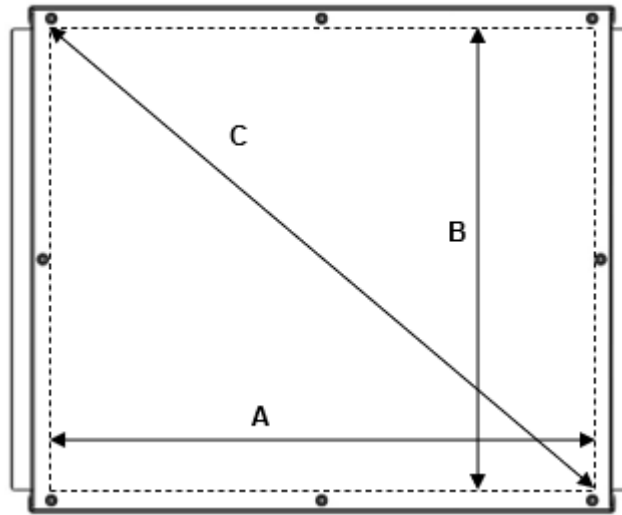


Figure 2-5: Work surface

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


3. Environment and Installation

3.1 Environment


3.1.1 Installation Environment

The feeder can be used under the following conditions:

- Protection class is IP50 compliant
- Working temperature: +5°C to +40°C
- Humidity: 30% to 80% max. non-condensing

 CAUTION	<ul style="list-style-type: none">■ Variations in humidity or temperature may affect the global performance of the part feeding.
--	--

- 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 model.

 CAUTION	<ul style="list-style-type: none">■ Do not use the product in an atmosphere of corrosive gases. Rust may form and reduce the structural strength of the product.
--	--

3.1.2 Storage Environment


The storage environment should be similar to the operating environment. In addition, you should protect the part feeding against dust

3.2 Base Table

A table to secure feeder needs to be made by customers. The shape and size of table depending on purpose of your feeder system. Also, when using multiple feeders or multiple robots, note that vibration can interfere other equipment.


For details of designing of mounting table, refer to *3.5 Installation*.

3.3 Installing IF-380, IF-530

 CAUTION	<ul style="list-style-type: none"> ■ The feeder must be mounted on a smooth, flat and solid surface. Ensure that the IF-530 is not submitted to mounting flexure. Failure to do so will degrade feeder performance. ■ Be careful not to get hands or feet caught and/or have equipment damaged by a fall of the feeder. When working, please wear protective equipment including safety shoes.
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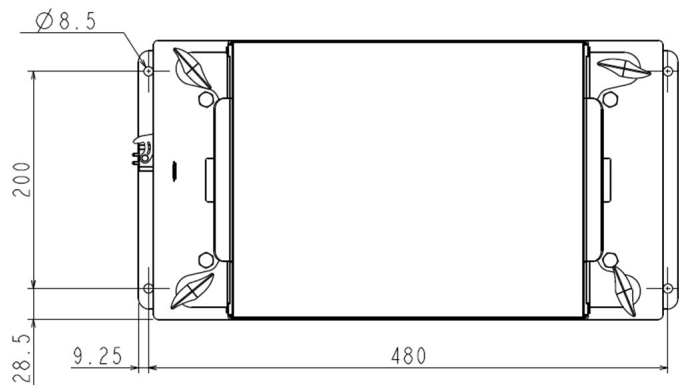
To guarantee correct operation, the IF-380 and the IF-530 must be securely attached (with four M8 screws) to a solid base table, ideally a steel plate secured to a frame.

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 dampen some of the vibrations.

NOTE 	<ul style="list-style-type: none"> ■ Depending on the weight of the system to which the feeder is secured, the vibrations of the feeder can interfere with the sensitive surrounding processes. These interferences can be reduced using a solid base table or by securing it to the floor.
--	--

3. Environment and Installation

IF-380 Installing dimension



IF-530 Installing dimension

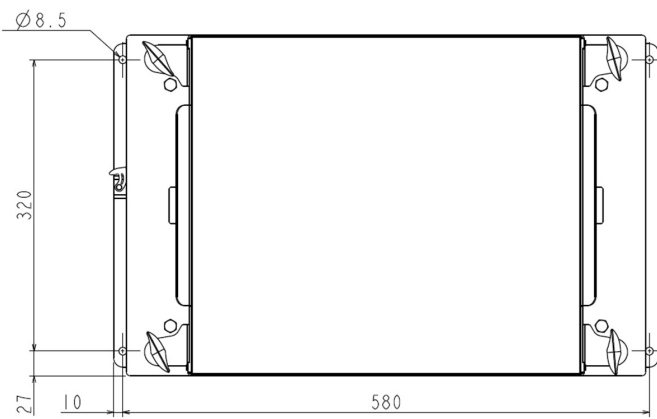




Figure 3-1 Installing

3.4 Unpacking and Transportation

3.4.1 Unpacking

 CAUTION	<ul style="list-style-type: none"> Keep the packaging material and the shipment box in case of need for return.
---	--


NOTE 	<ul style="list-style-type: none"> Do not remove the part feeding from its packaging until you are ready to install.
--	---

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.

3.4.2 Packaging of the Product, Transportation and Handling

The transportation of the product must be made in accordance with the specific terms indicated on the package (top, bottom, fragile, etc.). In addition, pay particular attention to the following points:

 CAUTION	<ul style="list-style-type: none"> Be careful of the weight and take care when transporting the system. Always hold the system firmly with two hands. The operators should not carry heavy shipping boxes by themselves. If the shipping box is to be left standing, it should be in a horizontal position. Do not climb on 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 dimension of packaging box of IF-380 and IF-53 are as follows:

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

Table 3-1: Weight and dimensions of the product when packaged





3.5 Installation

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

3.5.1 Symbols and Acronyms in this Manual

This section describes symbols and acronyms.

3.5.1.1 Symbols

	Wrong implementation
	Correct implementation
ON	Active / operating feature (moving)
	Movements
OFF	Passive / NOT operating feature (NOT moving)
	Perturbation / undesired vibration

3.5.1.2 Acronyms

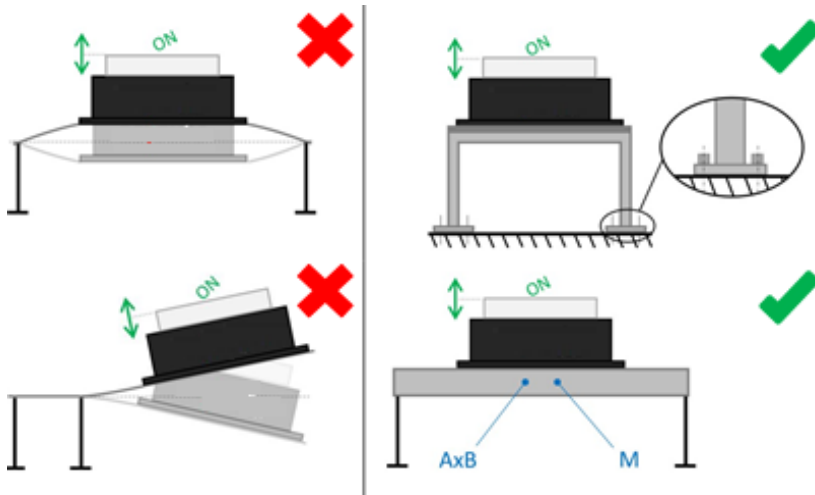
APSO	Angst + Pfister Homepage - www.apsoparts.com – (see section: Antivibration Technology) APSOvib: (Initiator of the product name)
ELESA	Elesa Homepage (www.elesa.com) – (see section: Rubber buffersw)
A	max. base table length
B	max. base table width
c	distance between feeders
ØD	diameter of the round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

3.5.2 Installing Part Feeding

To ensure normal vibration behavior the Part Feeding must be correctly installed on a base table specifically defined for the application. An incorrect installation of the Part Feeding could compromise the performances of the product.


3.5.2.1 Position of Part Feeding to installing on the table and specification of the table

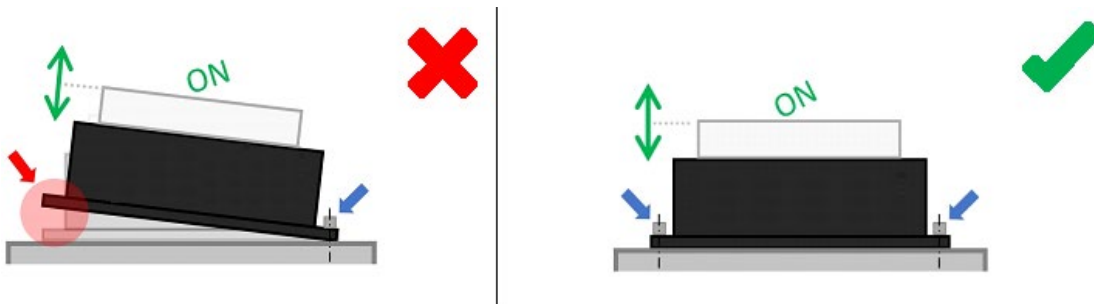
The Part Feeding must be installed either on a rigid base table screwed to the ground or on a not secured but heavy base table. For the second application the mass [M] and the dimensions [A × B] of the base table must be large enough to absorb the vibrations generated by the feeder.



3.5.2.2 Installing Part Feeding on the table

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

<p>NOTE</p> 	<ul style="list-style-type: none"> ■ About number of screws and size of screws when installing on the base table, refer to 3.5.5.2 <i>Specification of Screw</i>.
---	--



3.5.3 Vibration Decoupling

Incorrect assembly of Part Feeding, camera, robot, and hopper may compromise final system performance. To ensure the normal behavior of a system, it is necessary to avoid that all the involved devices can interfere with each other.

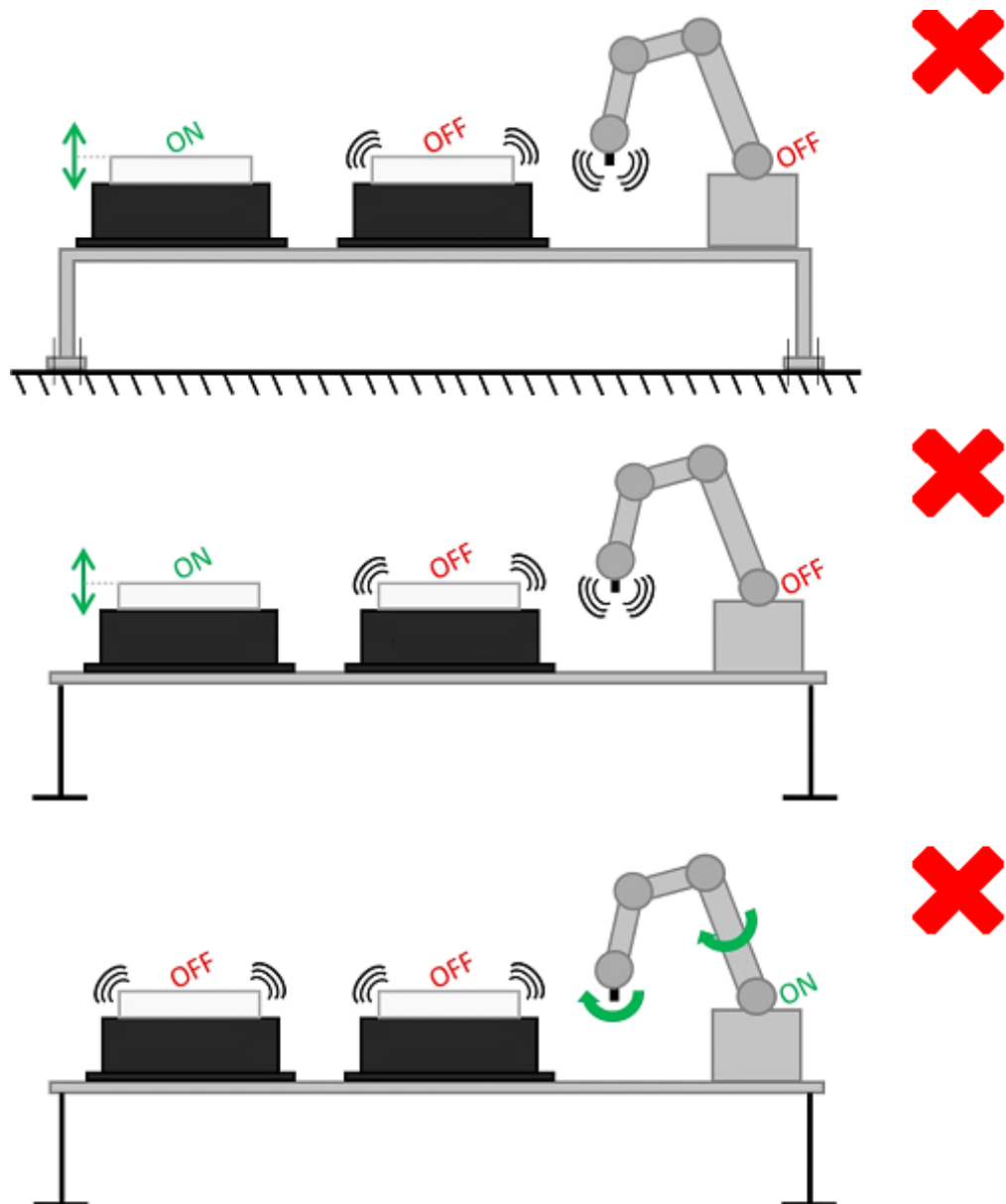
NOTE



- Hoppers are provided with vibration isolators so that hopper vibration is not transmitted to other peripherals.


3.5.3.1 Decoupling of Moving Devices

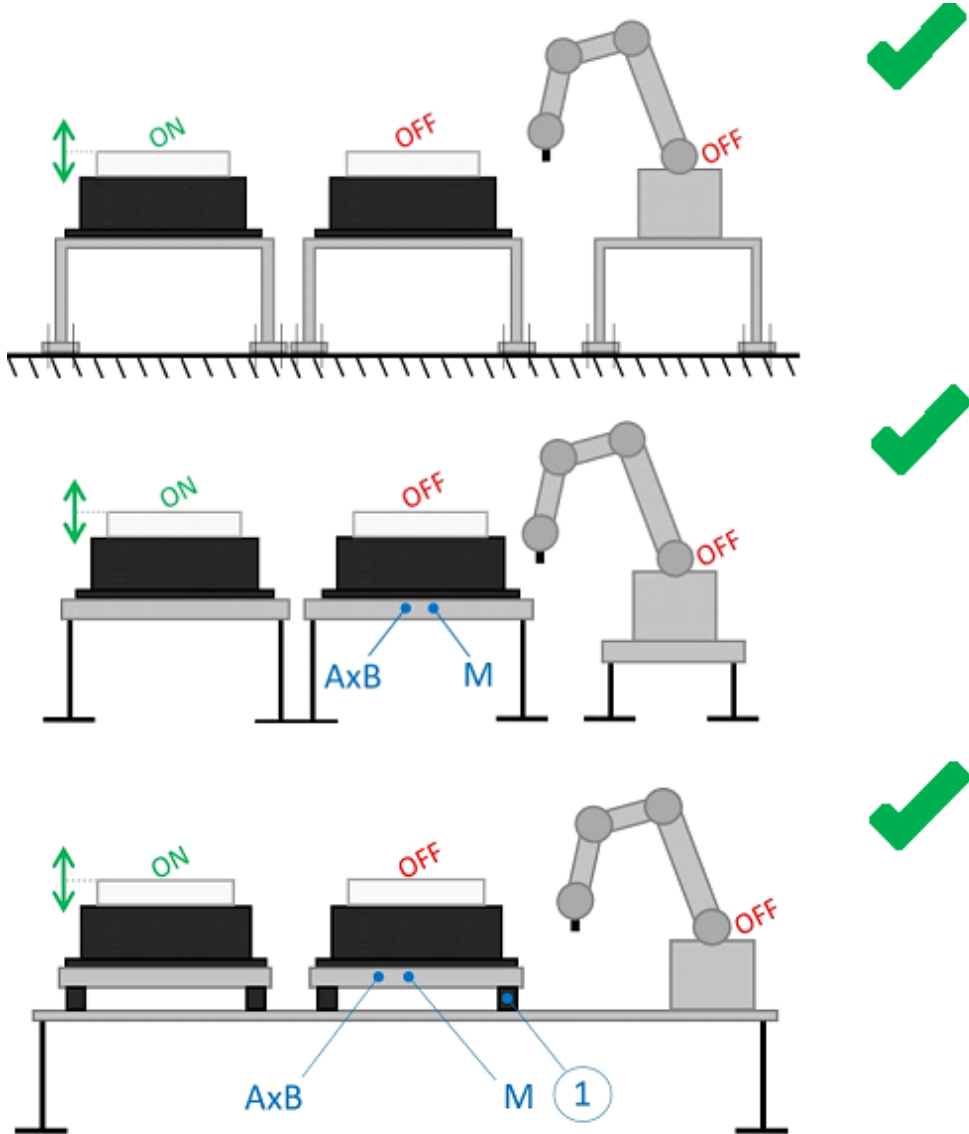
If several moving devices are assembled in parallel, and close to each other, it is necessary to “decouple the vibrations”, to avoid that behavior of any product is disturbed by the movement of others.




3. Environment and Installation

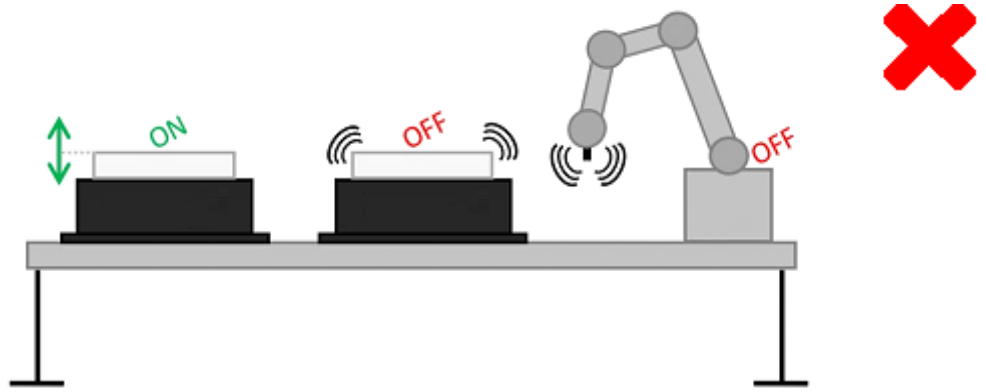
It is recommended that each device be equipped with a separate base table to prevent vibration interference. When you can not place it, you can use a part that has Antivibration Technology to isolate vibration. (e.g. vibration isolators [①])

<p>NOTE</p> 	<p>■ Vibration isolators solution is only applicable to IF 240, 380 and 530.</p>
---	--



For the mass [M] and dimensions [A × B] of the base table, refer to 3.5.5.1 *Specification of Base Table*.
 For the vibration isolators [①], refer to 3.5.5.3 *Specification of Vibration Isolators*.

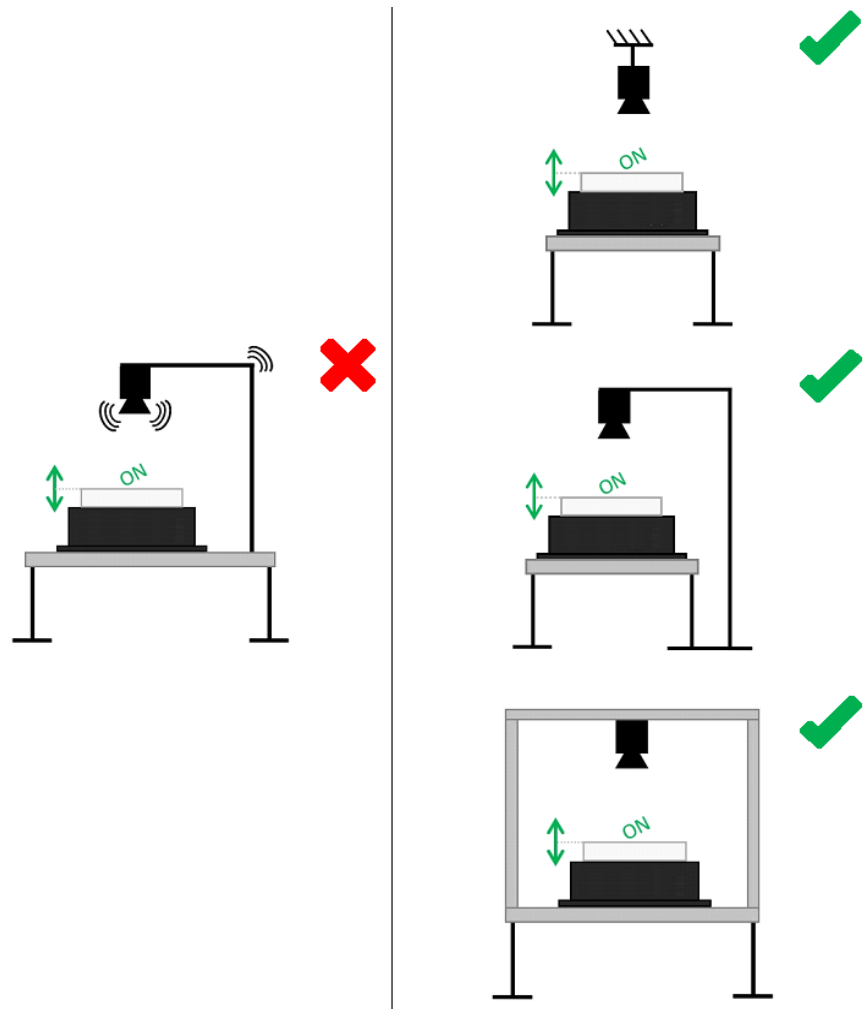
<p>NOTE</p> 	<p>■ Increasing the mass of the base table to avoid the integration of the vibration isolators does not ensure that the spread vibrations will be completely dampen-out.</p>
---	--



3.5.3.2 Decoupling the Camera

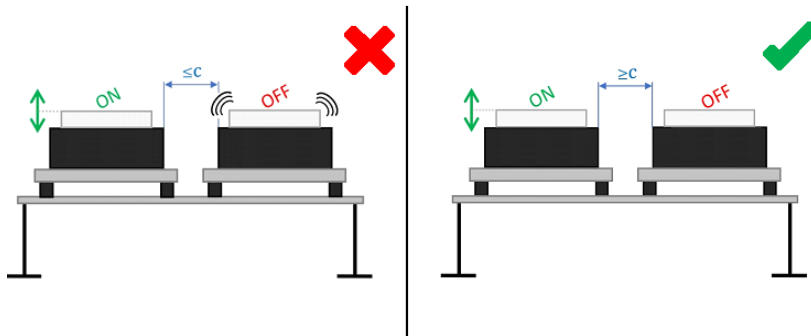
It is important that the camera is not perturbed by the vibration of the feeder or by any other moving device. If the vision system is disturbed by residual vibrations, the coordinates sent to the robot will not be reliable, thus compromising the precision of the whole system.

Therefore, it is recommended not to install feeders and cameras on the same support. 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.



3.5.4 Minimal Distance Between Part Feeding

When two or more feeders are installed close to each other, the movement of the active device can excite the passive one. It is therefore recommended to install the feeders at enough distance to prevent them from disturbing each other.



The minimal distance between Part Feeding, refer to 3.5.5.4. *Minimal Distance Between Part Feeding.*

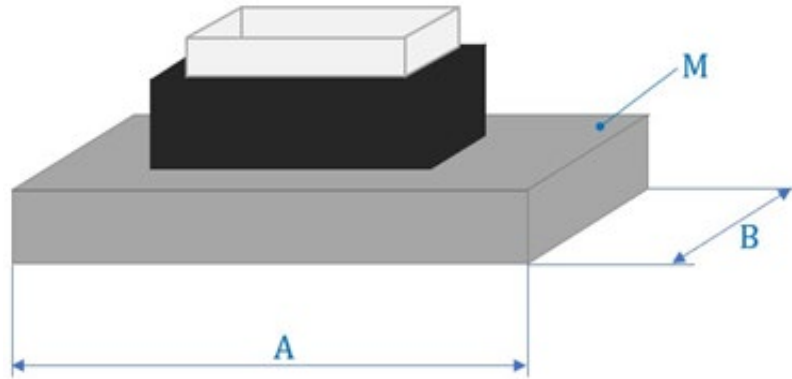
3.5.5 Technical Data Tables

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

3.5.5.1 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

Table 3-2: Specification of Base Table



NOTE


- The thickness of the base table must be calculated basing on requirements resumed in Table 3-2: Specification of Base Table.
- Dimension the base table so that the minimum mass [M] requirement is met.

3.5.5.2 Specification of Screw

	IF-80	IF-240	IF-380	IF-530
Quantity of screws	4	4	4	4
Screw ø	M5	M6	M8	M8


Table 3-3: Specification of Screw

3.5.5.3 Specification of vibration isolators

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

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

Table 3-4: Specification of vibration isolators

 CAUTION	<ul style="list-style-type: none"> Make sure that total mass of the Part Feeding, base table and components are not exceeding the max. allowed compressive force of the round buffers [Fz]. If the total mass exceeds the max. allowed compressive force, select new round buffer.
---	---

Vibration isolator (round buffer)

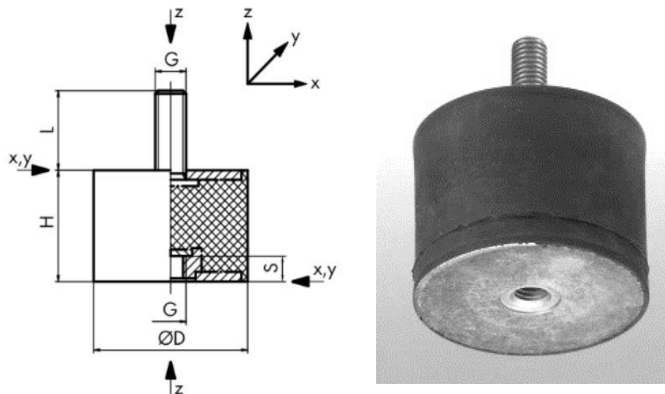
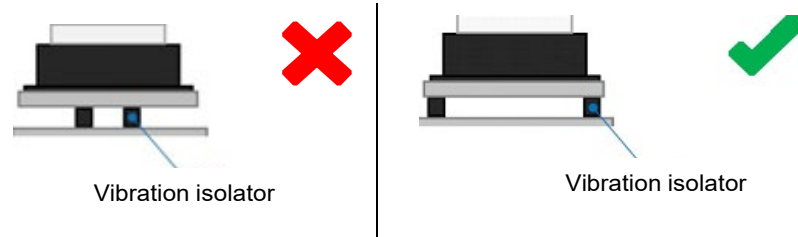


Figure 3-4: Vibration isolator (round buffer)

Position of Vibration isolator



*¹ Angst + Pfister - www.apsoparts.com – (section: Antivibration Technology; APSOvib)

*² Elessa - www.elesa.com – (section: Rubber buffers)

3.5.5.4 Minimal Distance Between Part Feeding

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

Table 3-5: Minimal Distance Between Part Feeding

3.6 Conneting Cable

3.6.1 Overview

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

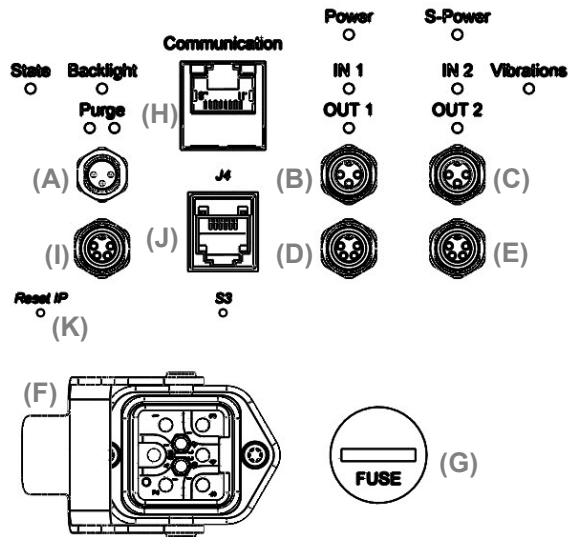



Figure: 3-5 Location of power supply

- (A) Backlight synchronization
- (B) Digital input 1
- (C) Digital input 2
- (D) Digital and analog output 1 for hopper
- (E) Digital and analog output 2 for hopper
- (F) Power connection
- (G) Fuse
- (H) Ethernet connection (RJ45)
- (I) Purge connector
- (J) Programming connection (RJ12)
- (K) Reset IP address

3.6.2 Power Connection



CAUTION

- Before supplying power to the part feeding, check that the distribution voltage is the same as the nominal voltage.
- Never disconnect the power cables when the unit is on. Always turn the machine off and then cut the power.
- Use PELV (protected extra-low voltage) nominal voltage.
- Unplug the main power plug when plugging / unplugging the cord.

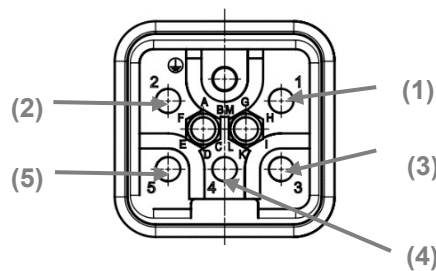



Figure 3-6: Power Connection

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

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

	IF-380	IF-530
Voltage	+24VDC \pm 5%	+24VDC \pm 5%
Consumption	4 A	6 A
S-power consumption	16 A	14 A

NOTE



- Use a 20 A supply with a current reserve of 150% for 3 seconds

Following power supplies have tested.

- PULS QS20.241
- SIEMENS 6EP1336-3BA10

- The backlight receives power supply by S-Power.

Switching off this safety power ensures that the backlight stays OFF (e.g. to prevent against the risk of exposure to IR).

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

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

3. Environment and Installation

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

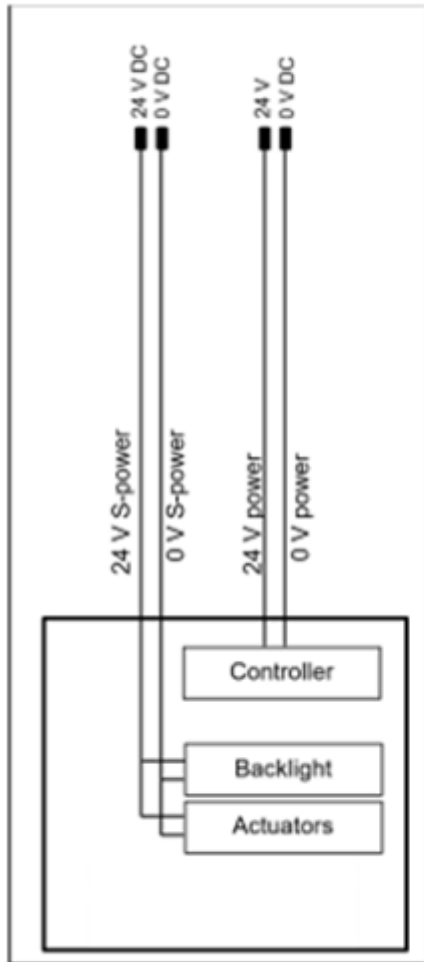


Figure 3-7:
Power connection without safety relay

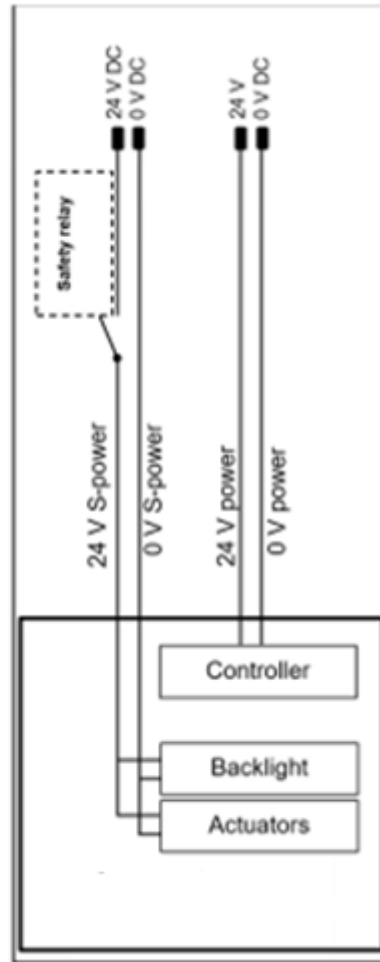


Figure 3-8:
Power connection with safety relay

NOTE


- 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	40 A	40 A
S-Power	40 A	40 A

3.6.3 Fuse



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

Time-delay fuse – 16 A

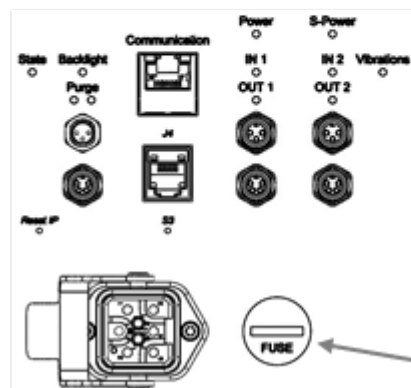
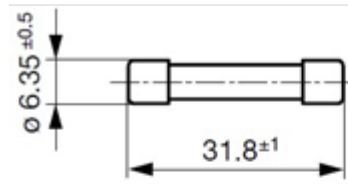


Figure 3-9: Fuse

3.6.4 Communication

The communication with the IF-380 & IF-530 is established by a standard Ethernet communication via RJ45 port.

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



For more information on the procedure to restore the default IP address, please refer to 5.3.2 *Resetting IP address*.

3.6.5 Digital Output for Hopper 1 and 2

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



Figure 3-10: Digital output for hopper

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

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

3.6.6 Purge Connector

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



Figure 3-11: Purge Connector

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





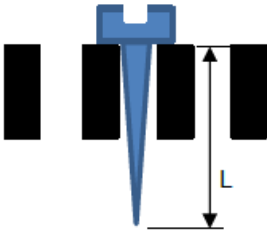
Connector type (on feeder side): M8, 4P, female

4. Option





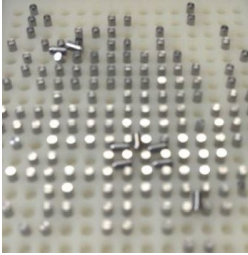
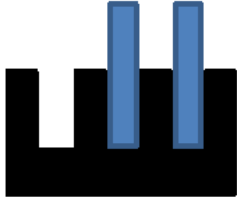
4.1 Platform

4.1.1 Platform Type

In order to improve the availability of certain components on the surface of the feeder, it is possible to structure the platform surface. 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.

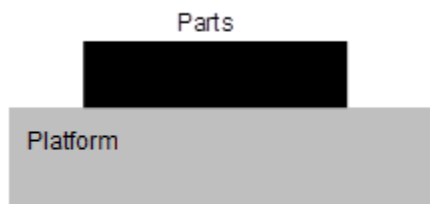
Platform type	Example-picture	Example-drawing	Advantage
Flat		 Ex: Nuts	This type of platform can be used for a large variety of components with a flat surface allowing a stable resting position.
Grooves (deep)		  Ex: Screws, Rivets	A structured platform with deep grooves is used to supply screw-type components to be fitted vertically. A platform with transverse grooves is used to supply components with following maximum length. IF-530: 120mm IF-380: 110mm Note: in case of grooves going through the plate, it is necessary to use the "INTERNAL DIFFUSING PLATE KIT" according product list.

4. Option

Platform type	Example-picture	Example-drawing	Advantage
Grooves (wide) (Anti-roll)		 <p data-bbox="751 600 1002 680">Ex: Cylinders, Needles</p>	<p data-bbox="1051 248 1337 707">Wide grooves are useful when cylindrical components are fed. They reduce the stabilizing time significantly after component displacements on the platform surface. (stop the components from rolling on the surface)</p>
Grooves (narrow) (Anti-stick)		 <p data-bbox="751 1088 967 1122">Ex: Thin washers</p>	<p data-bbox="1051 761 1337 1126">Narrow grooves are necessary to reduce surface contact especially for flat and light components. This reduces adhesion forces and improves the pick-performance of the robot.</p>
Holes		 <p data-bbox="751 1406 855 1440">Ex: Pins</p>	<p data-bbox="1051 1158 1337 1317">Holes are useful when cylindrical components are to be fed and presented upright.</p>

4.1.2 Standard Platforms Usage

Flat: Parts that have a stable orientation when seated on a tabletop can use a Flat Platform. The parts should have a stable equilibrium and fast stabilization time after vibration. For high-mix low-volume production, most applications use a Flat Platform.



Cross-sectional view

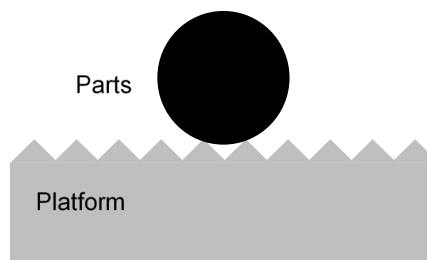
The platforms supplied by Epson meet a flatness and parallelism specification to ensure picking precision as summarized in the table below.

	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.



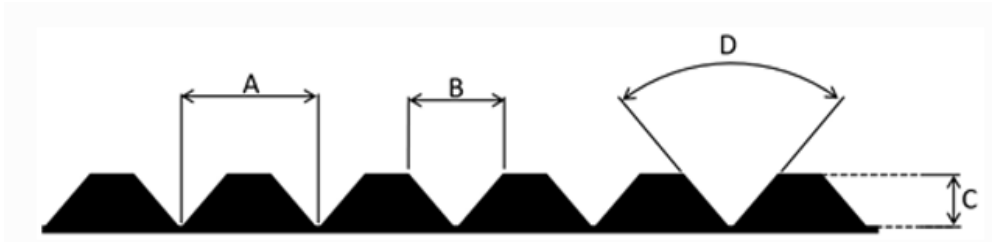
Surface



Cross-sectional view

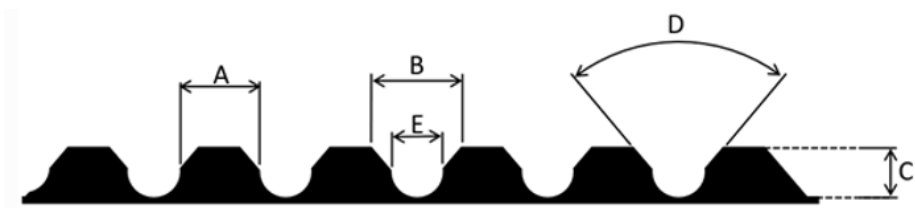
	A	B	C	D	Suitable for Parts
IF-380	3	2.5	0.722	120	ø 3mm – ø 5mm
IF-380	5.5	5	1.443	120	ø 5mm – ø 10mm
IF-530	6.5	6	1.732	120	ø 6mm – ø 12mm

Geometry of standard anti-roll platform structure for small parts



	A	B	C	D	E	Suitable for Parts
IF-380	10.5	12	5.31	120	2	ø 10mm – ø 24mm
IF-530	12.5	14	4.9	120	4	ø 12mm – ø 28mm

Geometry of standard anti-roll platform structure for large parts



For more information on custom platforms, refer to the the Advanced section of the *Part Feeding Introduction Manual* called “2.2 Custom Platforms”



For model number of Plate provided by Epson, refer to 6.1.4 *Plate (series: IF-380)* or 6.2.4 *Plate (series: IF-530)*.



For model number of Frame, refer to 6.1.2 *Frame (series: IF-380)* or 6.2.2 *Frame (series: IF-530)*.

4.1.3 Dimension of Platform

Customers can design their own platform.

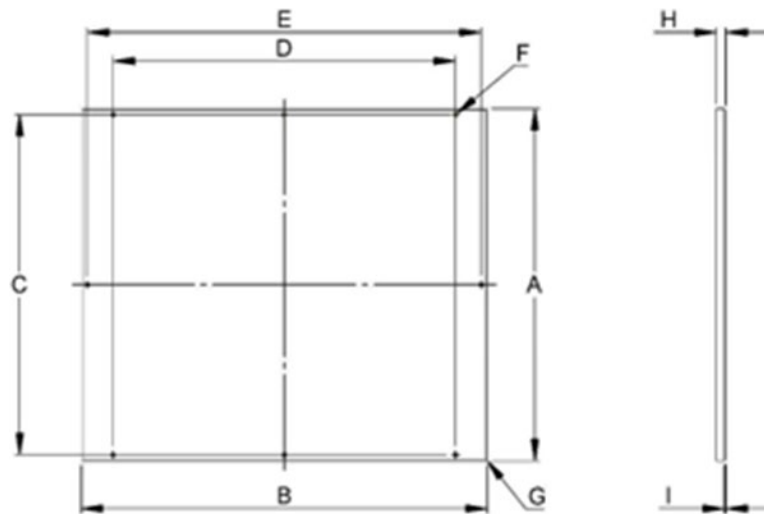


Figure 4-1: Dimension of platform

	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
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	$0.5 \times 45^\circ$ (4×)	$0.5 \times 45^\circ$ (4×)
H	10 mm	10 mm
I	$1.5 \times 45^\circ$ (4×)	$1.5 \times 45^\circ$ (4×)

4.2 Backlight

4.2.1 Color Options

The following backlights are available:

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



For color of backlight and procedure of exchanging backlight, refer to 5.3.1 *Exchanging /Installing the Backlight*.



For model number of backlight, refer to 6.1.6 *Backlight (series: IF-380)* or 6.2.6 *Backlight (series: IF-530)*.

 WARNING 	<ul style="list-style-type: none">■ Infrared light (IR) is invisible to human eyes. NEVER use the infrared light without the platform (A) secured. When the platform (A) is attached to the part feeding, the system does not pose a risk for the operator.
-----------------	---

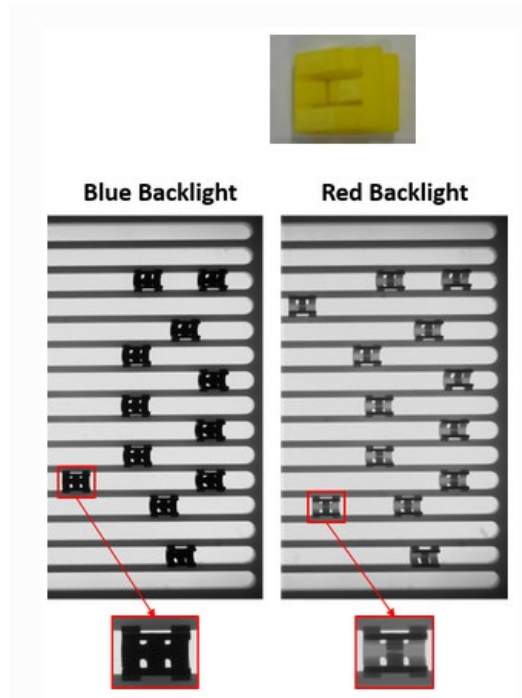
4.2.2 Selecting a Backlight Color

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

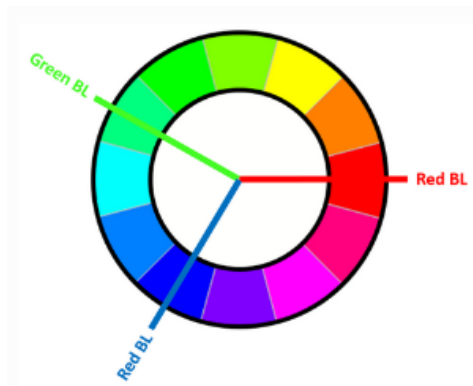
It may be difficult to see translucent parts if their color is close to the color of the backlight. The part may merge a bit with the background. This may be the case even with plastic parts that looks opaque to the eye.

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 the blue color is the complementary color of the yellow and is therefore better absorbed than the red one.



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



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

4.2.3 IR Backlight

IR light can be dangerous for the human sight if no protection (filters) are used on the machine fences. Thus, we advise to use the IR backlight only if it is really required, for example in the following situations:

- Different colored parts that are mixed together may appear similar regardless of their color.
- Translucent parts may appear opaque with a near IR.

4.3 Hopper



For hopper, refer to manual *EPSON RC+ 7.0 Option Part Feeding 7.0 Hopper (IF-240, 380, 530)*.

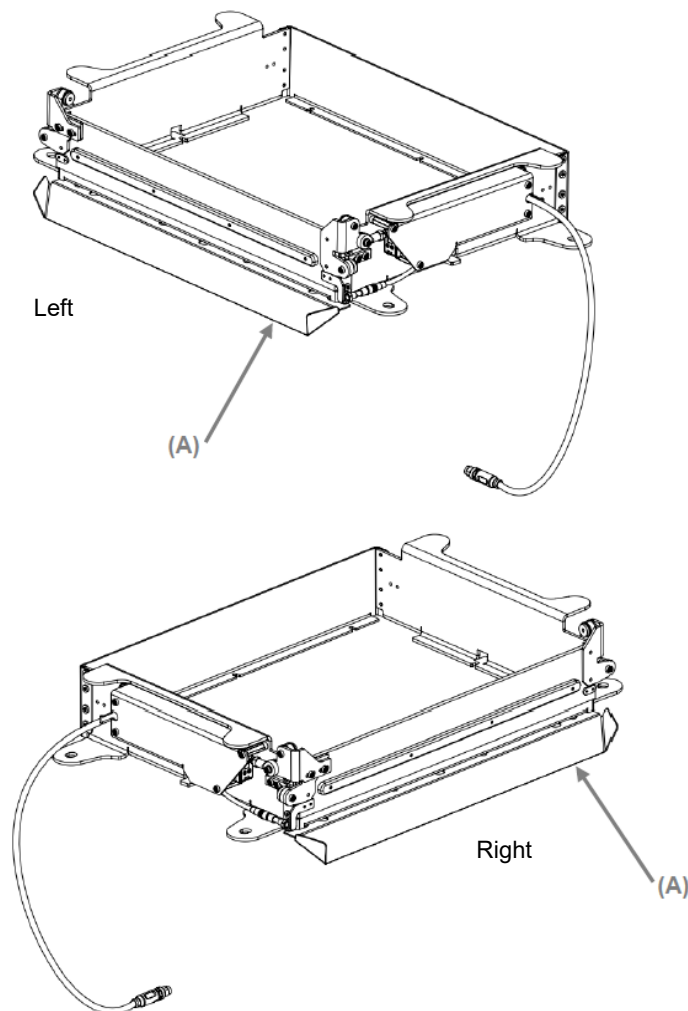


For model number of hopper, refer to *6.1.7 Hopper (series: IF-380)* or *6.2.7 Hopper (series: IF-530)*.

4.4 Purging Frame (Frame Discarding Parts to the Side)

4.4.1 Purging Frame Overview

A purging frame for discarding parts either to the left or right are available for each height of frame of IF-380, 530. These cannot be reconfigured after purchase.



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



CAUTION

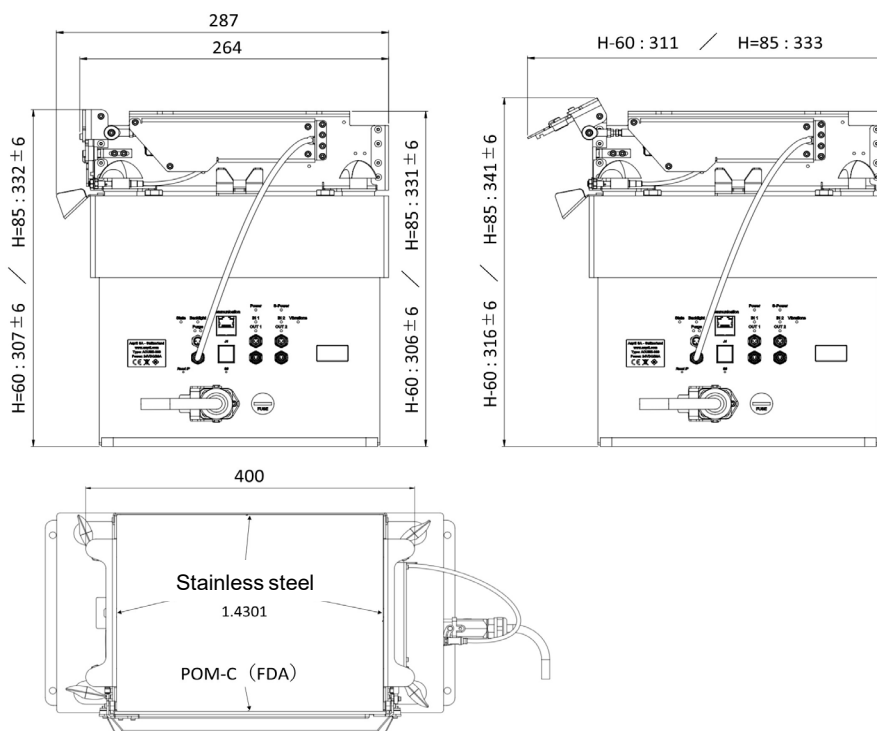
- A purge spout (purging part) (A) is included with the purging frame.
- Cables are included with the purging frame.
- The platform is not included in the purging frame.



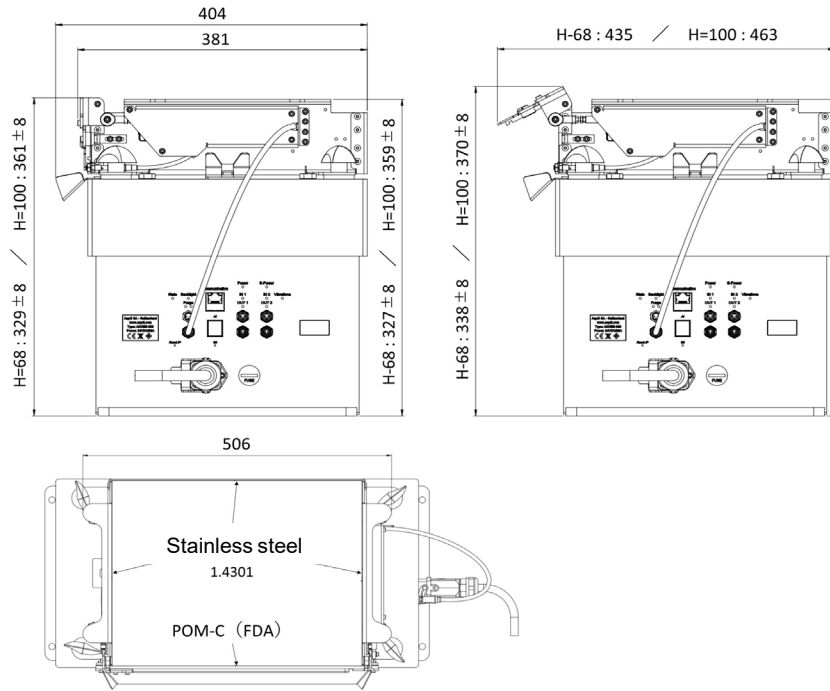
For the model number of purging frame provided by Epson, refer to 6.1.3 *Purging frame (series: IF-380)* or 6.2.3 *Purging frame (series: IF-530)*.

4.4.2 Dimension for Installing Purging Frame


IF-380

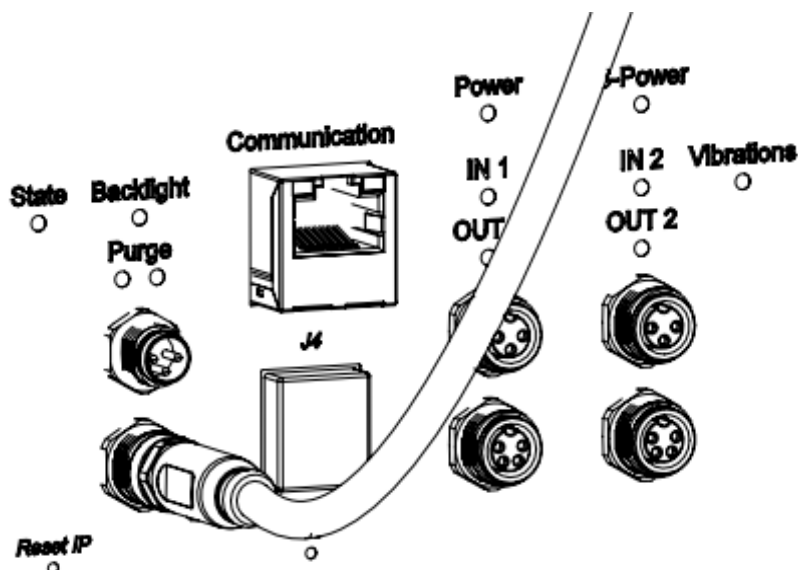



IF-530




4.4.3 Other Precautions for Purging Frame

 CAUTION	<ul style="list-style-type: none"> ■ To use a purging frame, plug the cable in the feeder “Purge” output. Make sure to unplug the cable should you need to remove the frames.
---	--




 CAUTION	<ul style="list-style-type: none"> ■ To prevent the motor from being prematurely damaged, only use it when 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.)
---	---


NOTE 	<ul style="list-style-type: none"> ■ When plugging in the purging frame, the motor will seek its origin position, hence emitting some noise. That noise may be heard while operating too, under certain circumstances.
--	---


5. Maintenance and Component Replacement

5.1 Safety Precautions


5.1.1 General Safety Precautions

 WARNING	<ul style="list-style-type: none">■ There are no user serviceable parts inside the product. Contact the supplier of your region or your local supplier for maintenance. In cases of nonconformity, the product guarantee will expire.
--	---

 CAUTION	<ul style="list-style-type: none">■ Do not operate the system when it is damaged. Please ensure before use that there are no visual defects.
--	--

 WARNING	<ul style="list-style-type: none">■ Failure to observe the 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.
--	--

5.1.2 Specific Warnings

 CAUTION	<ul style="list-style-type: none">■ Be sure that the platform is unloaded before any kind of maintenance.
--	---

5.2 Maintenance



- For any kind of maintenance, use Epson products.

5.2.1 Regular Maintenance Schedule

The IF-380 and IF-530 are virtually maintenance-free. However, simple inspections should be done at regular intervals to ensure optimum performance and safety.

	Item	Period	Reference
General	Cleaning of the machine	Weekly	
	Visual check of electrical harness	Year	
	Visual check and cleaning of the plate	Weekly	Section 5.2.4
	Replacing the ball joints	2 years or 4000 h of vibrations	Section 5.2.5
Specific process	It is the customer's responsibility to schedule the maintenance of his specific process	/	/
Backlight	Visual check	Month	
Purging actuator	Replacing purging actuator	20,000 cycle	Section 5.3.3

Table 5-1: Periodic maintenance schedule



- The information given in "Table 5-1: Periodic maintenance schedule" is only a guideline. Maintenance and times must be modified in accordance with your particular system, its operating environment and the amount of usage.

Parts list for exchange

Name	Code
Ball joints set - 380/530	R12NZ901A6

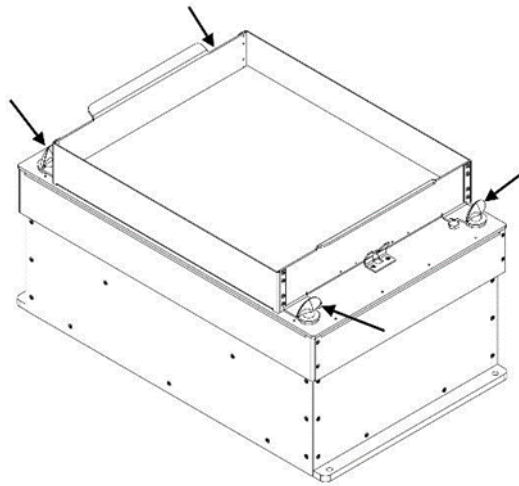
5.2.2 Remove the Platform Module



- Be sure that the backlight is off before removing the platform module.
When it is not followed below procedures, the backlight may be damaged.

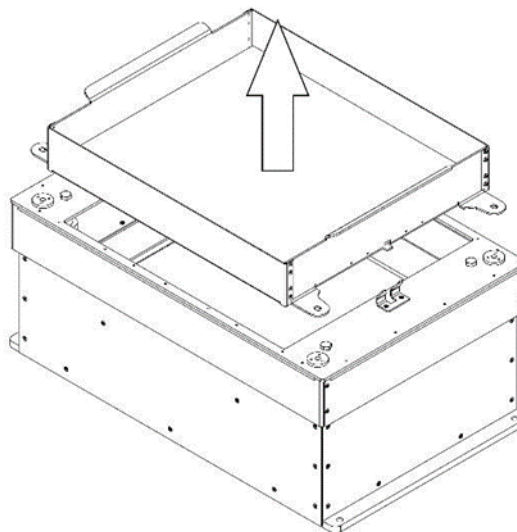
Step 1

Unscrew the 4 handle screws.



Step 2

Remove the platform assembly.



Step 3

Unscrew the 8 screws and take the platform out of the frame.

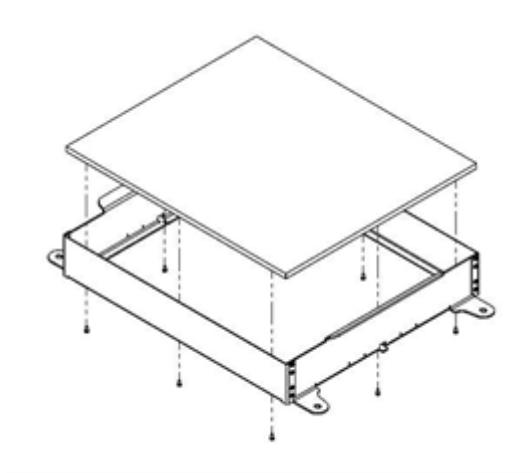


Figure 5-1: Remove the platform

Step 4

Assembly: Position the platform in the frame (8 screws 0.8N·m).

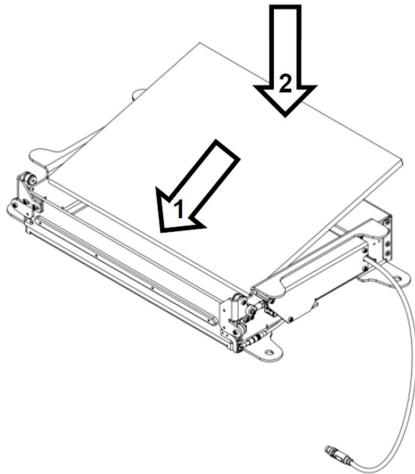
Position the assembly on the part feeding. Tighten the 4 handle screws securely by hand.

5.2.3 Purging Frame Platform

Step 1

Screw the platform in the purging frame with screws.

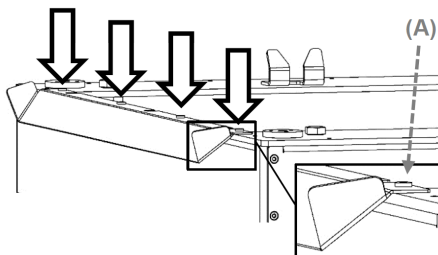
8 screws Tx10 - 0.8Nm.



Step 2 (Optional)

Screw the purge spout on the base of the feeder.

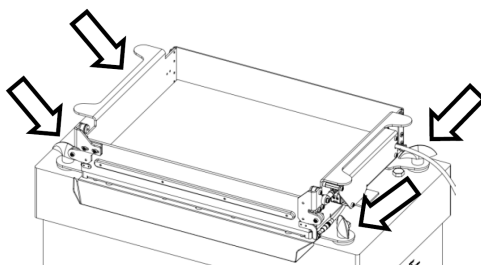
4 screws (A) Tx8 - 0.6Nm.



Step 3

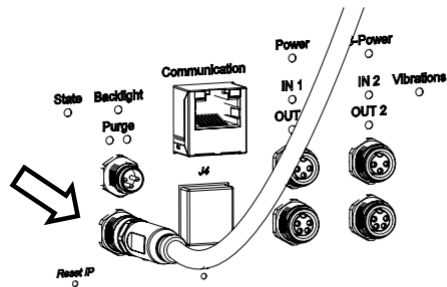
Position the assembly on the feeder.

Screw the 4 handle screws.



Step 4

Connect the purging frame to the feeder.

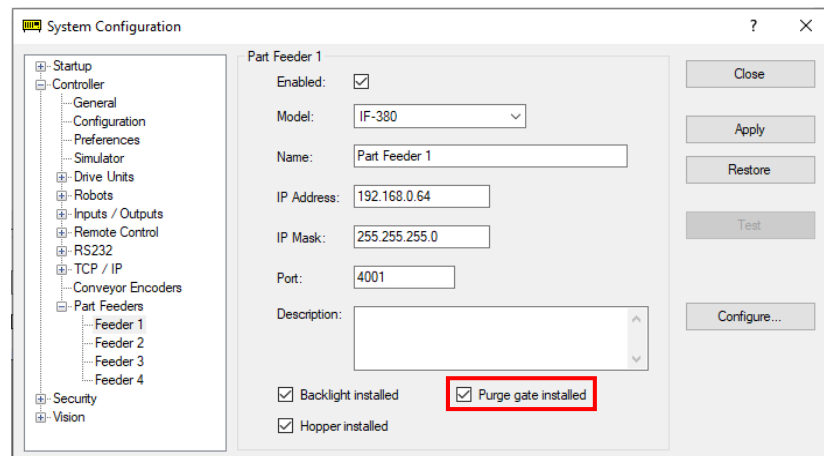


Step 5

Power 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+ 7.0 – Menu - [Setup] - [System Configuration]. Refer to section “2.1 System Configuration” in the “Part Feeding 7.0 Introduction & Software” manual for further details.

Check the “Purge gate installed” checkbox and click <Apply>.



New parts now can be added from EPSON RC+ 7.0 - 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 feeder will not perform properly.

5.2.4 Checking and Cleaning the Platform



- Platform is consumable.

Replace the surface if it is damaged or worn down to the extent that it obstructs the vision operation or behavior of the parts, contact the supplier of your region.

Material needed:

- Lint-free cloth
- Isopropanol alcohol

Step 1

Control the surface state of the platform (A) and be particularly careful of the following points:

- Dirt or spotted surface
- Oily or greasy surface

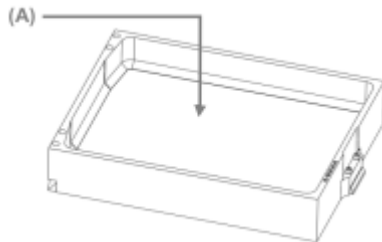


Figure 5-2: Platform

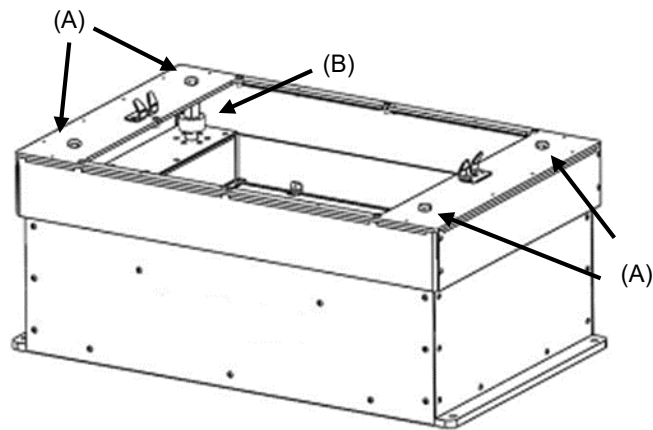
Step 2

Clean the surface of the platform.

5.2.5 Replacing the Ball Joints

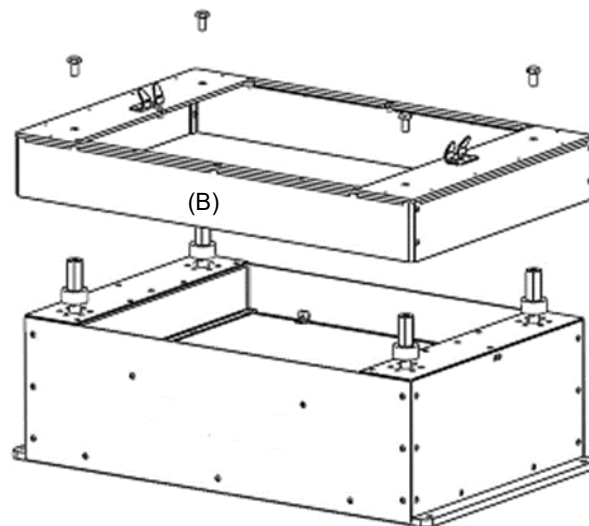
Step 1

Remove the platform and completely unscrew the 4 nuts (A) whilst holding the hexagonal extension (B). Use size 13 and 17 open-end wrenches.



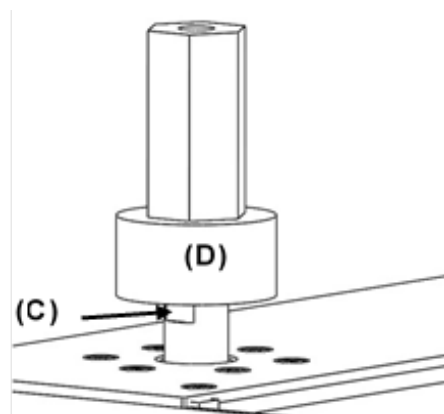
Step 2

Remove the upper assembly (B).



Step 3

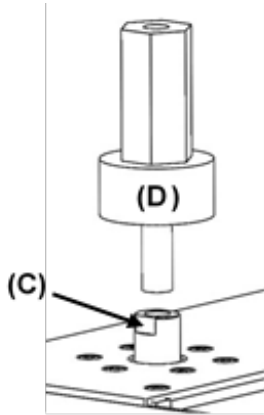
Hold the axis (C) with a size 10 open-end wrench whilst you loosen the ball joint (D).



Step 4

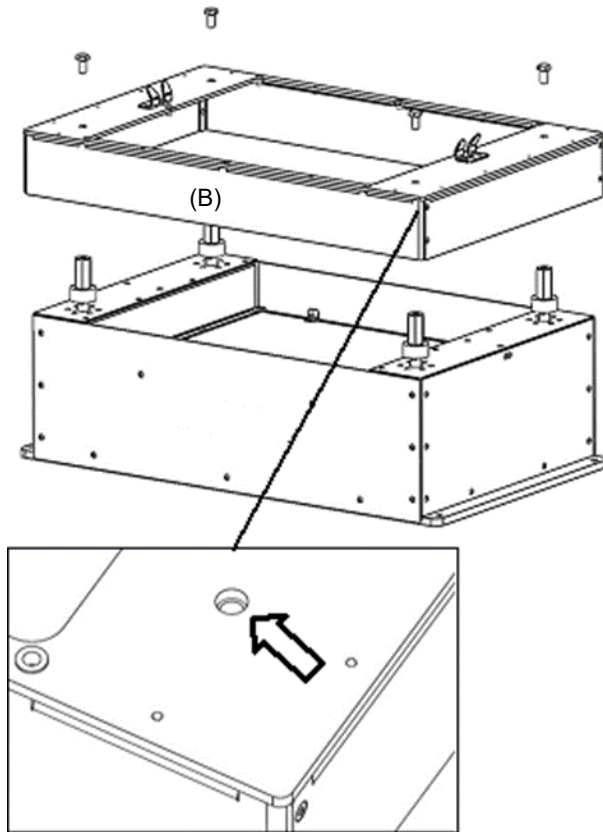
Apply a drop of adhesive (type: Loctite 243 or similar) to the outer thread of the new ball joint.

Securely tighten the new ball joint (D) BY HAND (do not use a tool) (mounting bush + extension), while maintaining the axis (C) with a size 10 open-end wrench.



Step 5

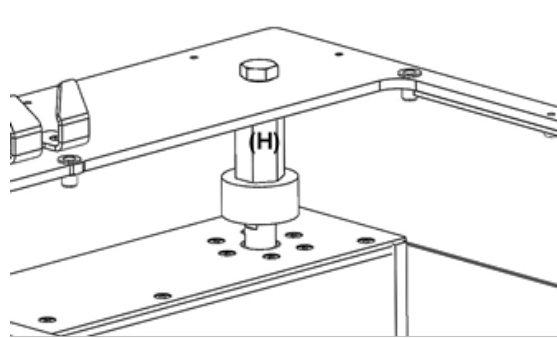
Place the upper assembly (B) on the 4 ball joints and carefully align the holes opposite the threads.



Step 6


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

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



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	<ul style="list-style-type: none"> ■ For any kind of replacement, use Epson products.
---	--

Parts list for exchange

Name	Code
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

5.3.1 Exchanging / Installing the backlight

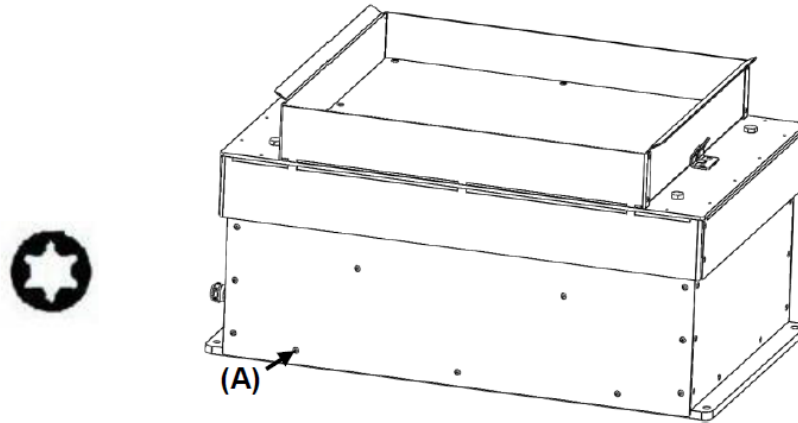
 WARNING	<p>Be sure that all power sources and other cables to the unit are disconnected before changing the backlight.</p>
---	--

Material 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

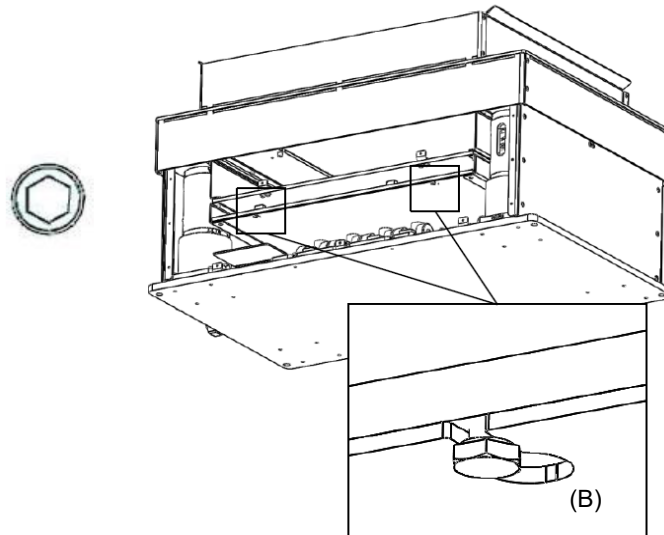
Step 1

Unscrew the 11 screws on both sides (A) and remove the two side covers. Use a Torx key size 10.



Step 2

On both sides, unscrew the 4 bolts (B). Use a flat wrench size 5.5.

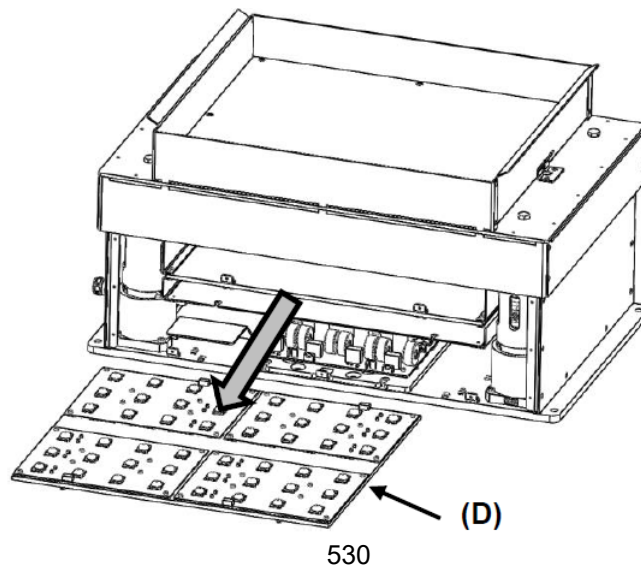


Step 3

Carefully disconnect the connectors from the electronics.

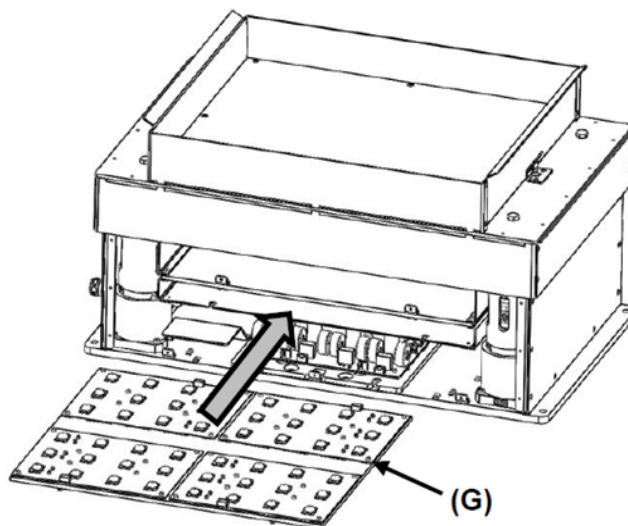
Remove the old backlight assembly (D)

The example in the figure is IF-530.



Step 4

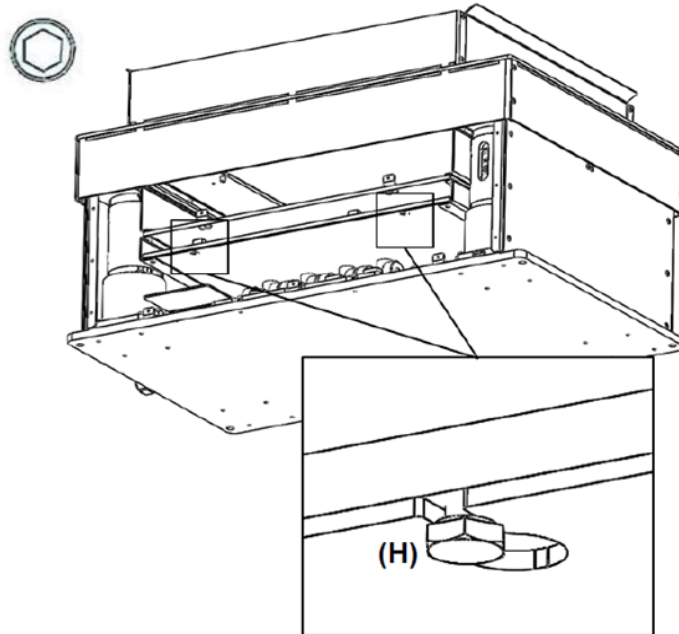
Insert the backlight assembly (G) and align it flush with the support.



Step 5

Tighten the four bolts (H).

Use a flat wrench size 5.5



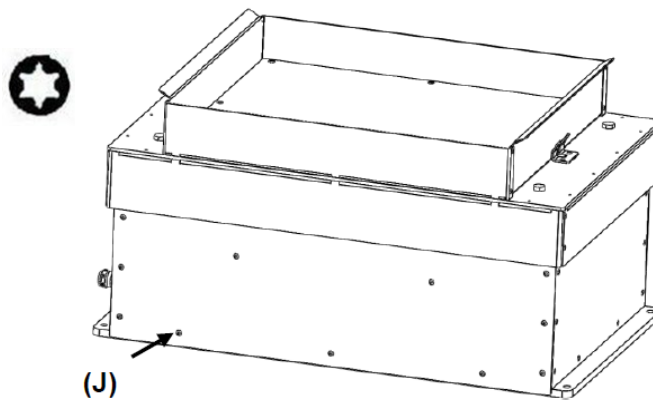
Step 6

Connect the connectors to the electronics

Step 7

Refit the covers (J) on both sides and tighten (1.3 N·m) the screws on both sides

Use a Torx key size 10 (0.8 N·m)

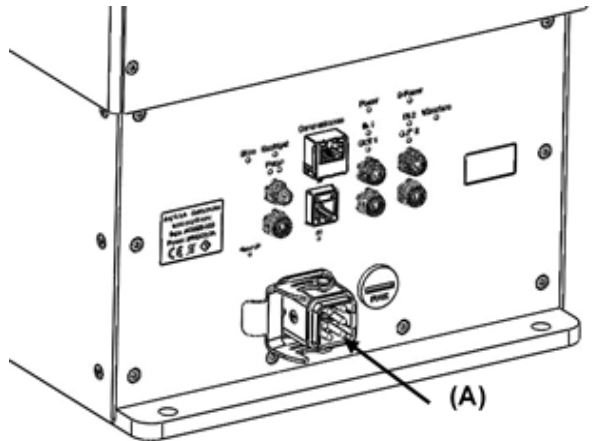


5.3.2 Resetting IP Address

The following procedure explains how to reboot the feeder so that it uses the default IP address, subnet mask and TCP port number to be able to modify the IP address, subnet mask and TCP port number when they are unknown and cannot be found.

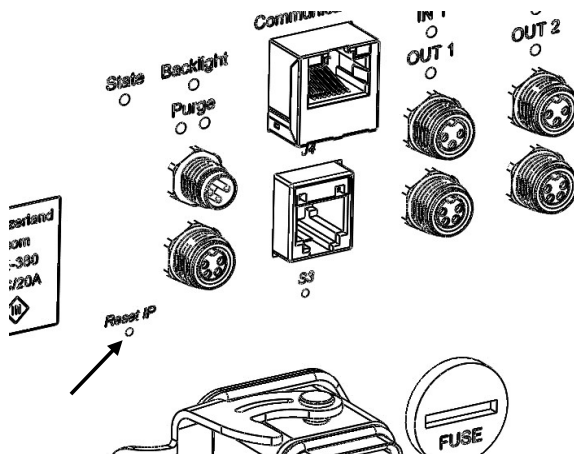
Step 1

Switch off the power or disconnect the power cable (A).



Step 2

Insert a tip in the "Reset IP" hole (B) and reconnect the power cable or switch on the part feeding.



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

IP: 192.168.0.64

SubnetMask: 255.255.255.0

TCP Port: 4001

Step 3

Parameters in memory can now be modified by EPSON RC+

For more details, refer to *EPSON RC+ 7.0 Option Part Feeding 7.0 Introduction & Software 2.1 System Configuration*.

5.3.3 Replacing the Purging Actuator

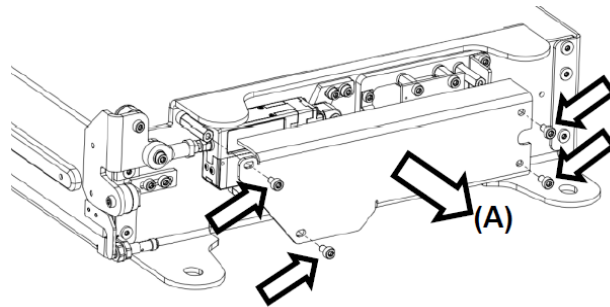


- Before replacing the actuator, unplug the purging frame from the feeder and remove it. (4 hand tighten screws)

Step 1

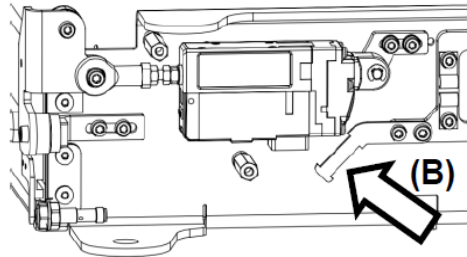
Remove the protective cover (A).

Tx10 4 screws



Step 2

Cut the zip-tie without damaging the cables.



5. Maintenance and Component Replacement

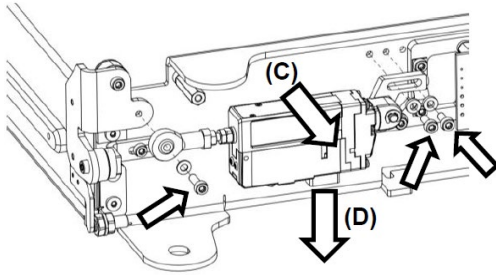
Step 3

Unscrew the actuator block.

Tx10 3 screws



Remove the actuator (C) and disconnect it by pulling on the connector, and not on the cable itself (D).

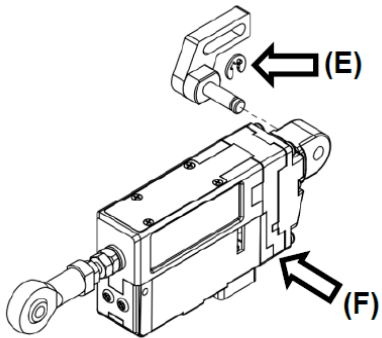


Step 4

Remove the retaining-ring (E).

Swap out the actuator block (F).

Reposition the retaining-ring (E).



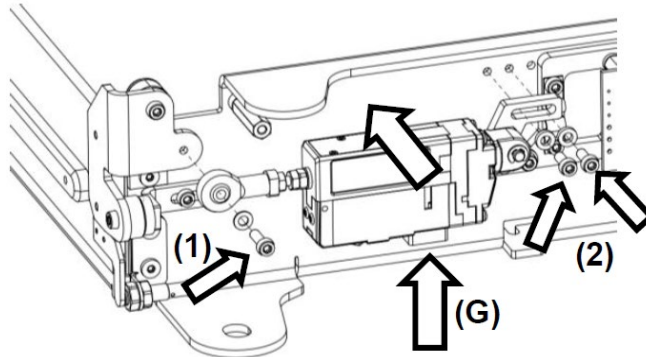
Step 5

Plug in the actuator block (G).

Tighten the flap screw (1) (hold the flap in the closed position while screwing in).

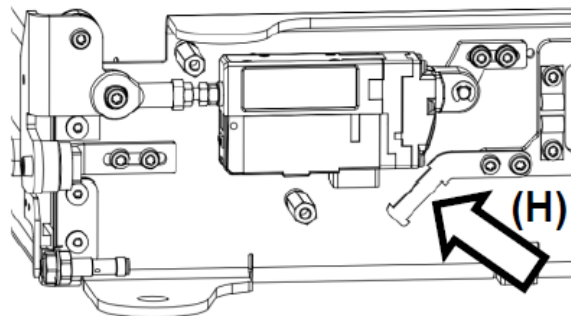
Screw in the bracket (2) with the flap still in held in the closed position.

Tx 10 - 1.2Nm 3 screws



Step 6

Tie the cables together with a zip-tie (H).

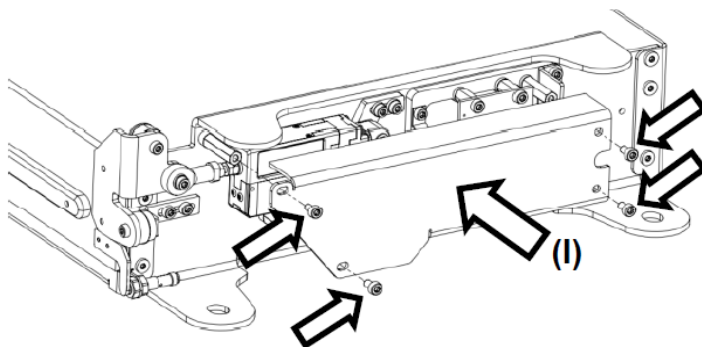


5. Maintenance and Component Replacement

Step 7

Screw the protective cover back into position (I).

Tx 10 - 0.6Nm 4 screws



6. Option Part List

6.1 IF-380 series Option Part List

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

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

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

6. Option Part List

6.1.4 Plate (series: IF-380)

* We use materials which conformed FDA (Food and Drug Administration).
(FDA 21CFR177.2470 & 21CFR178.3297)

Product name	Specification	Model number
FLAT PLATE-380	Flat (White) Material: POM-C	R12NZ9018G
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: ø10-24 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

6.1.5 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

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

6.1.7 Hopper (series: IF-380)

Product name	Specification	Model number
10I HOPPER 230VAC 50Hz - 380	10L/230VAC/50Hz	R12NZ9018T
10I HOPPER 230VAC 60Hz - 380	10L/230VAC/60Hz	R12NZ9018U
10I HOPPER 115VAC 50Hz - 380	10L/115VAC/50Hz	R12NZ9018V
10I HOPPER 115VAC 60Hz - 380	10L/115VAC/60Hz	R12NZ9018W
HOPPER FIXATION KIT - 380	Hopper fixing kit	R12NZ9018X

* NOTE: Model number will defer depending on the voltage and frequency used.

Also, you can not change the voltage and frequency.

6.1.8 License (series: Common)

Product name	Specification	Model number
Part Feeding License	Part Feeding License	R12NZ90106
Part Feeding License for USB Key	Part Feeding License for USB Key	R12NZ90107

6.2 IF-530 series Option Part List

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
IF530 GREEN	IF530+backlight: Green	R12NZ90199
IF530 BLUE	IF530+backlight: Blue	R12NZ9019A
IF530 INFRARED	IF530+backlight: Infrared light	R12NZ9019B

6.2.2 Frame (series: IF-530)

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

6.2.3 Purging Frame (series :IF-530)

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

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: ϕ 6-12 Material: PMMA	R12NZ9019D
ANTI-ROLL PLATE-530dia.12-28	Anti-roll (White) Supported work piece: ϕ 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: ϕ 6-12 Material: PMMA	R12NZ9019G
ANTI-ROLL PLATE(BK)-530dia.12-28	Anti-roll (Black) Supported work piece: ϕ 12-28 Material: PMMA	R12NZ9019H

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

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

6.2.7 Hopper (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 defer depending on the voltage and frequency used.

Also, you can not change the voltage and frequency.

6.2.8 License (series: Common)

Product name	Specification	Model number
Part Feeding License	Part Feeding License	R12NZ90106
Part Feeding License for USB Key	Part Feeding License for USB Key	R12NZ90107

7. Troubleshooting

For trouble, refer to following manual.



EPSON RC+ 7.0 Option Part Feeding 7.0 Introduction & Software
" Trouble Shooting"

Appendix A: Condition of Using Backlight

Following number of backlight boards are used to IF-380/IF530.

	Back light board
IF-380	2
IF-530	4

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

	<p>CONDITIONS OF USE OF PRODUCTS TPL VISION</p> <p>TABLE OF CALCULATION</p> <p>THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD</p> <p>NF EN62471 "LAMPS PHOTOBIOLOGICAL SAFETY"</p> <p><small>THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS</small></p>	
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Board specifications
1 brick 8 leds 200x150 green

Info Source to LEARN			
	Exposure time to the source	0.25	Seconds
1	Wavelength	525	nm
	Color temperature		K
2	Total Angle	150	°
3	<i>For the visible:</i>		
	Output Intensity		Cd
	Output Power	150	Lm
3	<i>For the Non-Visible:</i>		
	Power density	0.000	W/m ²
4	Number of LED	8	LED
5	If you use a lens, Efficiency in candela per lumen	2.5	Cd/Lm

CALCULATION from information about the Source			
	Calculation of maximum permissible exposure (MPE):	25.456	W/m ²
		13665.66445	Lm/m ²
<i>Calculation of power density for visible source:</i>			
	Surface illuminated by the source:	0.437567409	m ²
	Power of one LED:	150	Lm
	Power density for one LED:	342.804324	Lm/m ²
<i>Calculation of power density for a non-visible source:</i>			
	Surface illuminated by the source:	0.4376	m ²
	Power density for one LED:	0.000	W/m ²
CALCULATION for the safety of persons			
<i>Source Hazardous:</i>			
	Power density for a visible source:	2742.434592	Lm/m ²
	Power density for a non-visible source:	0.000	W/m ²

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

* Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.

Information:

Exposure time is fixed to 0.25s 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 Led: In the worst case, we can imagine that the person can see entirely the light.

CONDITIONS OF USE OF PRODUCTS TPL VISION	
TABLE OF CALCULATION	
THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE	
STANDARD	
NF EN62471 "LAMPS PHOTOBIOLOGICAL SAFETY"	
<small>THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS</small>	

Board specifications
1 brick 8 leds 200x150 red

Info Source to LEARN			
	Exposure time to the source	0.25	Seconds
1	Wavelength	630	nm
	Color temperature		K
2	Total Angle	150	°
3	<i>For the visible:</i>		
	Output Intensity		Cd
	Output Power	80	Lm
4	<i>For the Non-Visible:</i>		
	Power density	0.000	W/m ²
5	Number of LED	8	LED
5	If you use a lens, Efficiency in candela per lumen	2.5	Cd/Lm

CALCULATION from information about the Source			
	Calculation of maximum permissible exposure (MPE):	25.456	W/m ²
		4607.380507	Lm/m ²
	<i>Calculation of power density for visible source:</i>		
	Surface illuminated by the source:	0.437567409	m ²
	Power of one LED:	80	Lm
	Power density for one LED:	182.8289728	Lm/m ²
	<i>Calculation of power density for a non-visible source:</i>		
	Surface illuminated by the source:	0.4376	m ²
	Power density for one LED:	0.000	W/m ²
	CALCULATION for the safety of persons		
	<i>Source Hazardous:</i>		
	Power density for a visible source:	1462.631782	Lm/m ²
	Power density for a non-visible source:	0.000	W/m ²

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



* Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.

Information:

Exposure time is fixed to 0.25s 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 Led: In the worst case, we can imagine that the person can see entirely the light.

	<p>CONDITIONS OF USE OF PRODUCTS TPL VISION</p> <p>TABLE OF CALCULATION</p> <p>THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD</p> <p>NF EN62471 "LAMPS PHOTOBIOLOGICAL SAFETY"</p> <p><small>THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS</small></p>	
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Board specifications
1 brick 8 leds 200x150 Blue

Info Source to LEARN

	Exposure time to the source	0.25	Seconds
1	Wavelength	470	nm
	Color temperature		K
2	Total Angle	150	°
3	<i>For the visible:</i>		
	Output Intensity		Cd
	Output Power	39	Lm
	<i>For the Non-Visible:</i>		
	Power density	0.000	W/m ²
4	Number of LED	8	LED
5	If you use a lens, Efficiency in candela per lumen	2.5	Cd/Lm

CALCULATION from information about the Source

	Calculation of maximum permissible exposure (MPE):	25.456	W/m ²
		1582.15708	Lm/m ²
	<i>Calculation of power density for visible source:</i>		
	Surface illuminated by the source:	0.437567409	m ²
	Power of one LED:	39	Lm
	Power density for one LED:	89.12912424	Lm/m ²
	<i>Calculation of power density for a non-visible source:</i>		
	Surface illuminated by the source:	0.4376	m ²
	Power density for one LED:	0.000	W/m ²

CALCULATION for the safety of persons



	<i>Source Hazardous:</i>		
	Power density for a visible source:	713.0329939	Lm/m ²
	Power density for a non-visible source:	0.000	W/m ²

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

* Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.

Information:

Exposure time is fixed to 0.25s 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 Led: In the worst case, we can imagine that the person can see entirely the light.

	<p>CONDITIONS OF USE OF PRODUCTS TPL VISION</p> <p>TABLE OF CALCULATION</p> <p>THE REQUIREMENTS BELOW ARE IN STRICT COMPLIANCE WITH THE STANDARD</p> <p>NF EN62471 "LAMPS PHOTOBIOLOGICAL SAFETY"</p> <p><small>THIS DOCUMENT ISN'T A CERTIFICATE AND CAN'T BE USED AS WELL BUT ONLY AS PRECONISATIONS FOR USERS</small></p>	
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Board specifications
1 brick 8 leds 200x150 infrared

Info Source to LEARN			
	Exposure time to the source	10	Seconds
1	Wavelength	850	nm
	Color temperature		K
2	Total Angle	150	°
3	<i>For the visible:</i>		
	Output Intensity		Cd
	Output Power		Lm
3	<i>For the Non-Visible:</i>		
	Power density	1.028	W/m ²
4	Number of LED	8	LED
5	If you use a lens, Efficiency in candela per lumen	2.5	Cd/Lm

CALCULATION from information about the Source			
	Calculation of maximum permissible exposure (MPE):	19.953	W/m ²
	Source Non-Visible		Lm/m ²
<i>Calculation of power density for visible source:</i>			
	Surface illuminated by the source:	Source Non-Visible	m ²
	Power of one LED:	Source Non-Visible	Lm
	Power density for one LED:	Source Non-Visible	Lm/m ²
<i>Calculation of power density for a non-visible source:</i>			
	Surface illuminated by the source:	0.4376	m ²
	Power density for one LED:	8.227	W/m ²
CALCULATION for the safety of persons			
<i>Source Hazardous:</i>			
	Power density for a visible source:	Source Non-Visible	Lm/m ²
	Power density for a non-visible source:	8.227	W/m ²

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

* Consider as Hazard Zone Optics (NRA), or area within which the irradiance or radiant exposure exceeds the maximum permissible exposure (MPE), all positions within an envelope of the remote DNRO.

Information:

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 Led: In the worst case, we can imagine that the person can see entirely the light.

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

For customers using old model (V1) of IF-530, refer below for cable connecting.

Connecting Cable

Overview

The IF-530 is standalone module with their own controllers. The electrical interfaces are located on the rear panel of the product.

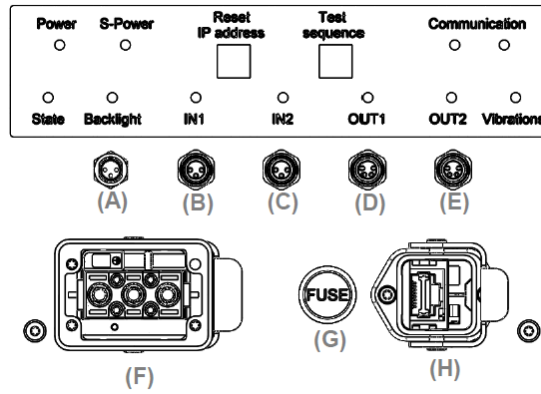



Figure 8-1: Electrical Interfaces

- (A) Backlight synchronization
- (B) Digital input 1
- (C) Digital input 22
- (D) Digital output 1 for hopper
- (E) Digital output 2 for hopper
- (F) Power connection
- (G) Fuse
- (H) Ethernet connection (RJ45)

Power Connection

 CAUTION	<ul style="list-style-type: none"> ■ Before supplying power to the part feeder, check that the distribution voltage is the same as the nominal voltage. ■ Never disconnect the power cables when the unit is on. Always turn the machine off and then cut the power. ■ Use PELV (protected extra-low voltage) nominal voltage. ■ Unplug the main power plug when plugging / unplugging the cord.
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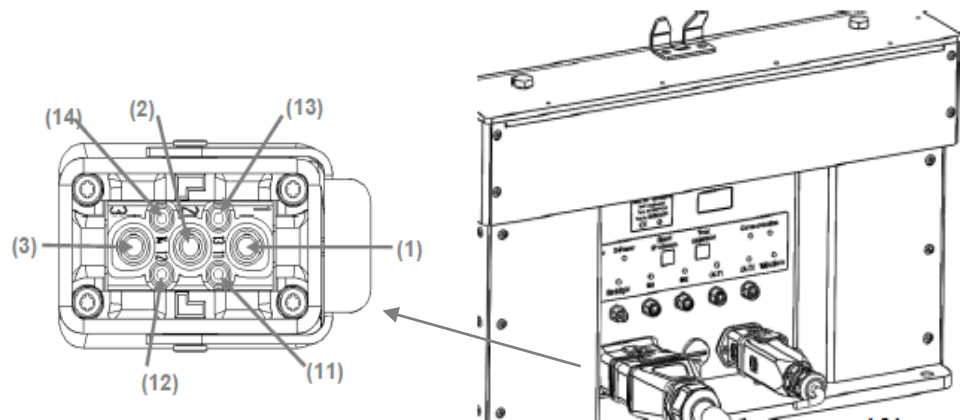



Figure 8-2: Power connection

Pin	Signal description	Cable
(1)	24VDC PELV S-Power	L+
(2)	0V GND S-Power	L-
(3)	Ground	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%
Current Power	6A
Current S-Power	14A

NOTE 	<ul style="list-style-type: none"> ■ S-Power is the safety power for the backlight. Cutting this S-Power ensures that the backlight stays OFF. (e.g. to secure IR backlight danger).
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The following connection schematic shows the methods to connect to the IF-240 depending if your application requires an external relay to ensure that the backlight is safely switched off or not. In any case, both “Power” and “S-Power” must be supplied for using the backlight.

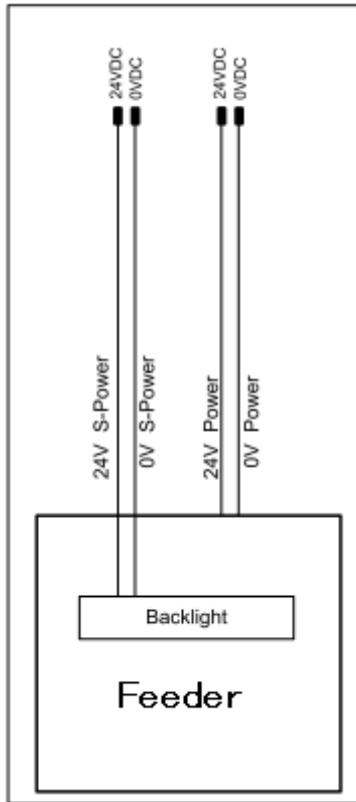


Figure 8-3
Power connection without safety relay

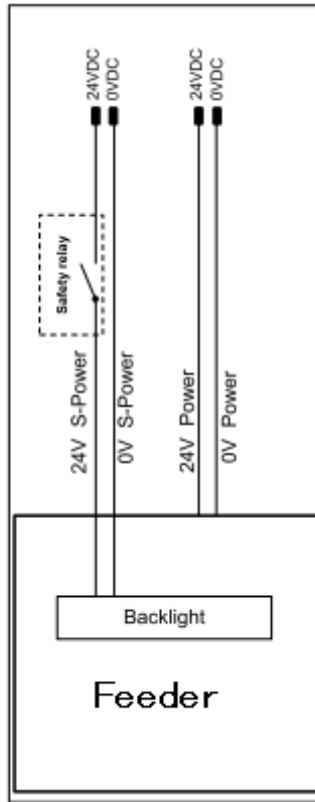


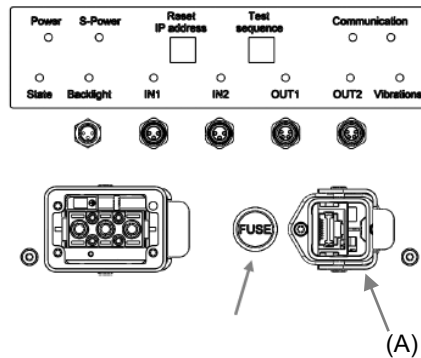
Figure 8-4
Power connection without safety relay

NOTE


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

Communication

The communication with the IF-530 is established by a standard Ethernet communication via RJ45 port (A).



Ethernet connection RJ45 (RJ45)

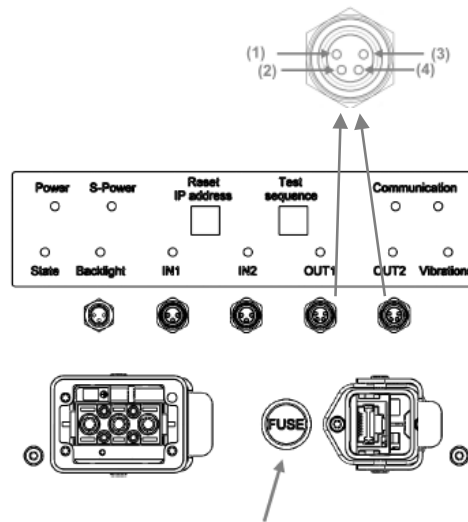
Characteristic	Value
Default IP address	192.168.0.64
Default subnet mask	255.255.255.0
Port	4001
MAC address	Can be acquired by ARP request



For more information on the procedure to restore the default IP address, please refer to 5.3.2 *Resetting IP address*.

Digital Output for Hoppers

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



Digital output for hoppers

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

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