EPSON

Epson RC+ 8.0 Option
Part Feeding 8.0
IF-80

Original instructions

© Seiko Epson Corporation 2020-2025

Rev.3
ENM25ZS8295F

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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 safety 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

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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/

2. Hardware (IF-80)

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

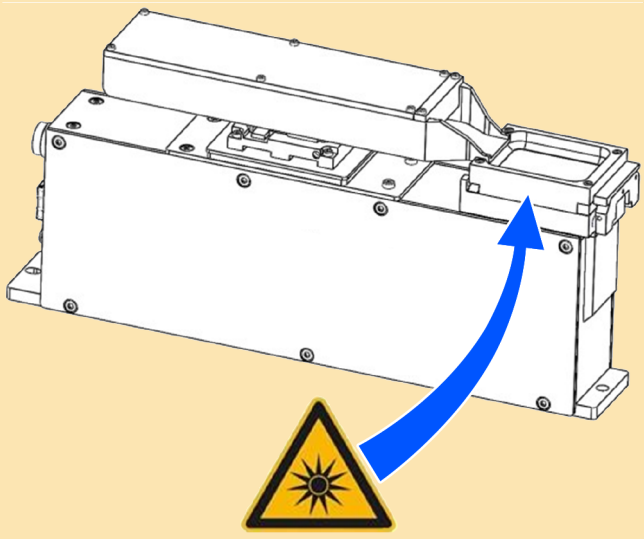
⚠ WARNING

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. This Backlight is not constructed to be used permanently. Please switch off the illumination after image acquisition. (Autoswitch OFF after a 30 second timeout).

Specific warnings



⚠ 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 (series: IF-80)

2. When the implementation of the foregoing is not possible, provide workers with goggles or face shield suitable for blocking radiation beyond 700nm.
3. Prohibit or limit as possible direct access to the source. (exposure in 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).

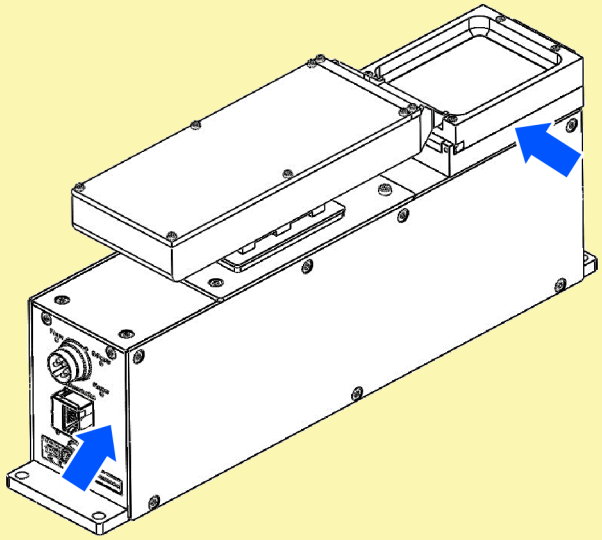
⚠ CAUTION

High Temperatures

The areas indicated by arrows in the figure below reach a temperature of 45°C during normal use. This temperature can nevertheless rise to 55°C depending on the conditions of use.

It is the responsibility of customers to document their own application and employ measures to prevent employees from touching heated surfaces.

Specific warnings



⚠ CAUTION

The parts feeder actuator does not support continuous vibration. A typical vibration sequence lasts from less than 1 second to about 5 seconds, spreading out parts to make them easier for the robot to pick up. If the parts feeder vibrates continuously for 30 seconds or more, or if it vibrates at a duty of 50% or more for 30 seconds or more, the parts feeder will automatically stop vibrating. In this case, allow 30 seconds for it to cool down before starting the next vibration. Failure to observe these precautions may result in damage to the actuator.

2.2 Specification

2.2.1 Characteristics of IF-80

The IF-80 sets new standards in miniature part feeding. Its 3D vibratory platform allows fast and flexible feeding of small parts (3 mm - 15 mm) to a robot equipped with a vision system.

2.2.2 Model

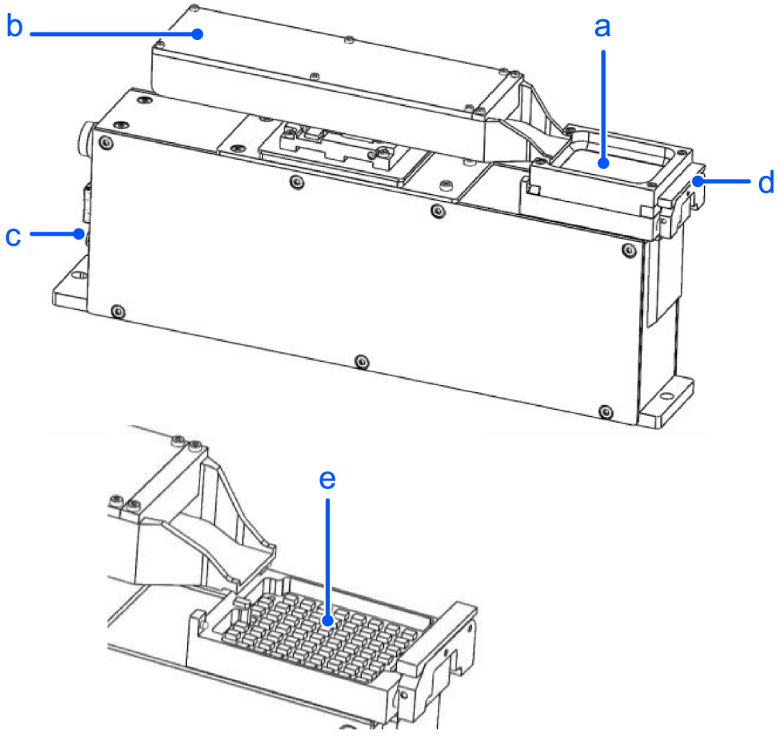
Model numbers of IF-80

Product name	Specification	Model number
IF80 no Light	IF80 (No backlight)	R12NZ9015B
IF80 RED	IF80+backlight: red	R12NZ9015C
IF80 WHITE	IF80+backlight: white	R12NZ9015D
IF80 GREEN	IF80+backlight: green	R12NZ9015E
IF80 BLUE	IF80+backlight: blue	R12NZ9015F
IF80 INFRARED	IF80+backlight: Infrared	R12NZ9015G

2.2.3 Part Names and External Dimensions

2.2.3.1 Part Names

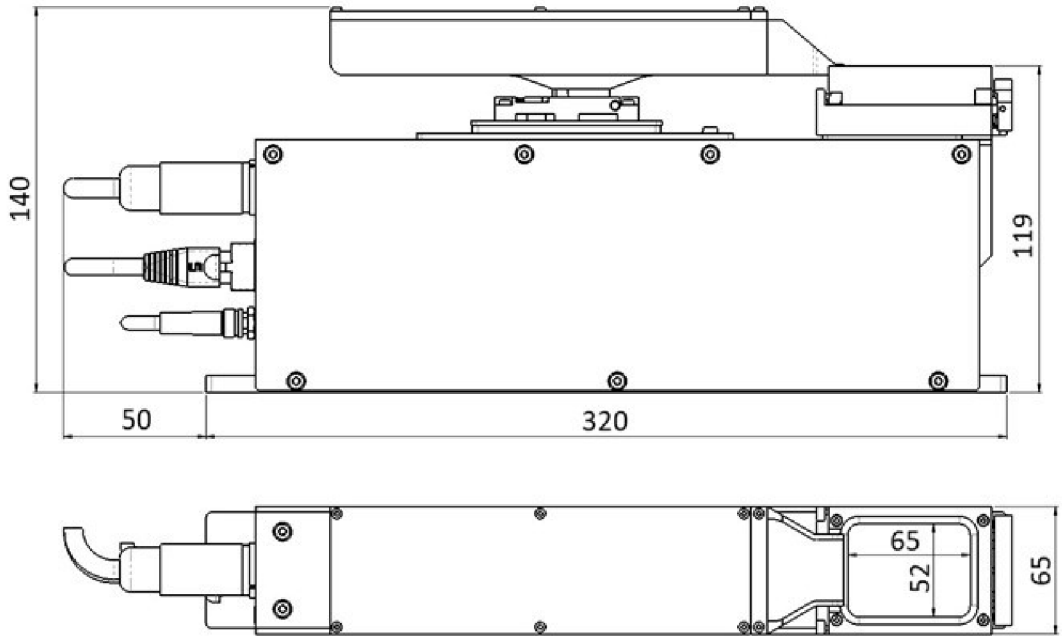
IF-80 overview



Symbols	Meaning
a	3D vibrating platform
b	A removable hopper where the components are stored.
c	Electrical interfaces (communication, power supply, I/O, etc) For more information, refer to the following. **Cable Connections**
d	A lever-operated mechanism allows easy removal of the platform without additional tooling. For more information on removing or replacing the platform, refer to the following. **Removing the Platform**
e	An integrated backlight (optional) that allows an easy recognition of the parts from a camera placed above. For more information on the backlight color and the procedure to exchange the backlight, please refer to the following. **Replacing the Backlight**

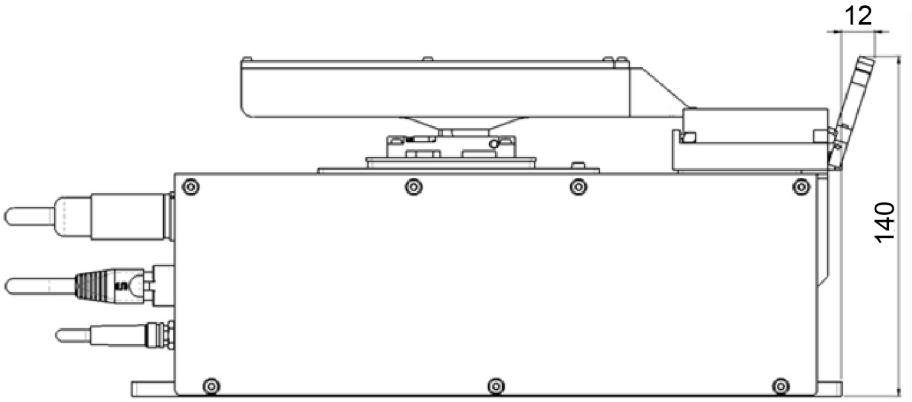
2.2.3.2 Outer Dimensions

Overall dimensions of the IF-80



Additional space is needed around the part feeder in order to remove the platform module with the platform removal lever.

Overall dimensions with "lever"



- For details on removing the platform, refer to the following.

  Removing the Platform

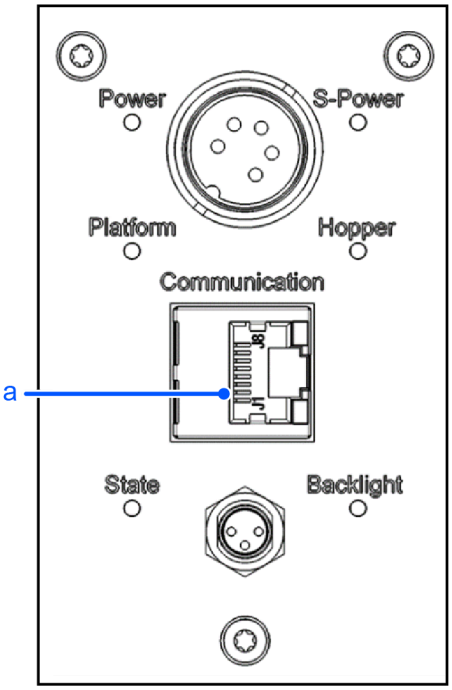
- For details on mounting dimensions, refer to the following.

  Installing IF-80

2.2.3.3 LED Display

The LEDs mounted on the unit give important information on the state of the IF-80:

IF-80 Operation Indicator LEDs

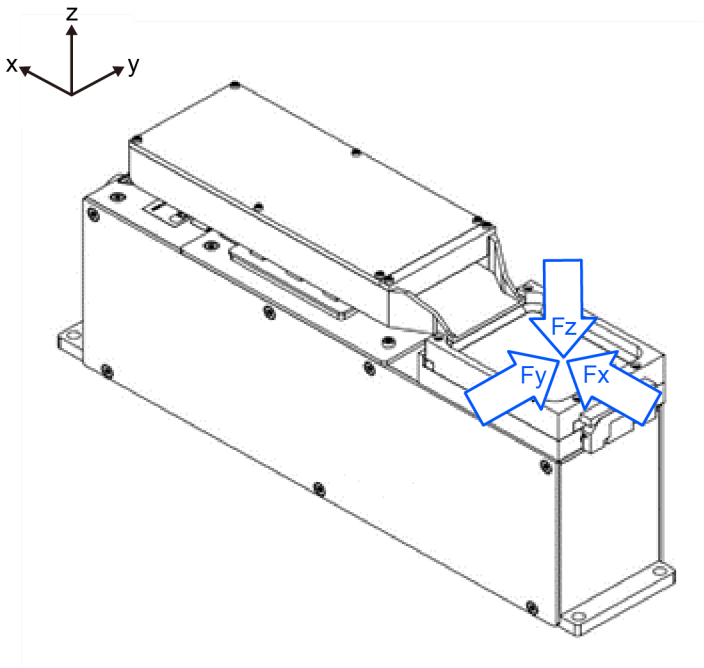


LED	State	Meaning
Power	On	24V on Power input
S-power	On	24V on S-power input For more information, refer to the following. **Power Connection**
Platform	On	Platform vibrating

LED	State	Meaning
Hopper	On	Hopper vibrating
State	Blinking (100ms On/900ms Off)	System in standby
	Blinking (900ms On/100ms Off)	System in service
Backlight	On	24V on backlight sync input
		Synchronization input
a	On	Communication

2.2.3.4 Maximum Permissible External Force on the Platform

The maximum permissible external force from robot hand to a point of the platform (for example, with the gripper) is:



- Fx = 3 N
- Fy = 3 N
- Fz = 5 N

⚠ CAUTION

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

2.2.3.5 Permissible Platform Weight

	IF-80
Maximum weight of the platform (without components)	150 g
Maximum component weight (including the maximum platform weight)	50 g

2.2.3.6 Permissible Hopper Weight

	IF-80
Maximum weight of the hopper (without components)	400 g
Maximum weight of components (in addition to the maximum weight of the hopper)	400 g

2.2.3.7 Maximum Plate Displacement

	IF-80
Maximum displacement x	±0.5 mm
Maximum displacement in the Y direction	±0.5 mm
Maximum displacement in the Z direction	±0.5 mm

2.2.3.8 Plate Z repeatability

	IF-80
Plate Z repeatability	±20 µm

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-80

	IF-80
Typical part size *	Length of the side 3 - 15 mm
Integrated LED backlight	Select with/without backlight. For more information, refer to the following. **Model**
Interchangeable backlight color	(green, red, blue, white, Infrared) For more information, refer to the following. **Backlight**
Independent vibrations in three orthogonal directions	✓
Interchangeable vibration platform	For more information, refer to the following. **Removing the Platform**
Easily removable hopper	✓

	IF-80
RoHS	✔
Maximum weight on the platform (components)	50 g
Maximum weight on the hopper (components)	400 g
Weight (Includes platform, backlight)	3.7 kg
Protection class	IP20
Operating temperature	+5°C to +40°C
Humidity	30% to 80% maximum, non-condensing
Environment	Cleanroom class: expected ISO7
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.

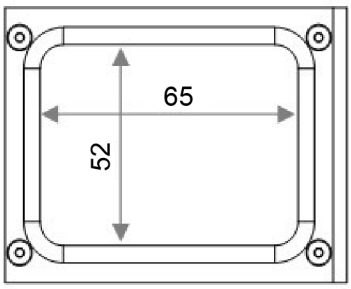
- The parts disperse.
- The parts move.
- Overlapping parts are not getting hung on each other.

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

2.2.4.2 Picking Area

The maximum picking area dimensions corresponds to the IF-80 platform size:

Picking area



2.3 Environment and Installation

2.3.1 Environment

2.3.1.1 Installation Environment

The IF-80 can be used under the following conditions:

- The IF-80 protection class is IP20 compliant
- Working temperature: +5°C to +40°C
- Humidity: 30% to 80% max. 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.
- For clean room applications, we assume use within an ISO 7-class clean room.

> ⚠ 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-80 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

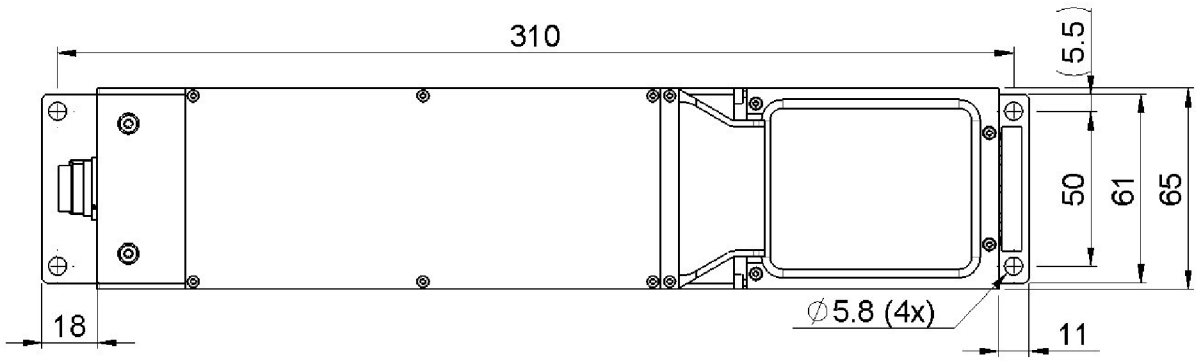
2.3.3 Installing IF-80

> ⚠ CAUTION
>
> The IF-80 must be mounted on a smooth, flat and solid surface.
>
> Ensure that the IF-80 is not submitted to mounting flexure.
>
> Failure to do so will degrade feeder performance.

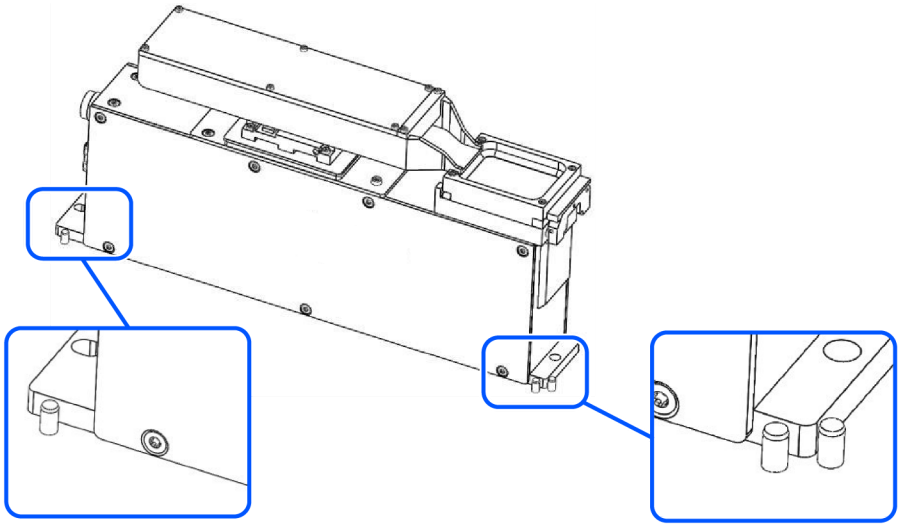
To guarantee a proper behavior of the IF-80 a tight fastening to a solid underground is necessary.

The following holes in the base plate of different IF-80 feeders can be used to mount it mechanically.

Installing dimension of IF-80



Precise positioning of the IF-80



2.3.4 Unpacking and Transportation

2.3.4.1 Unpacking

⚠ CAUTION

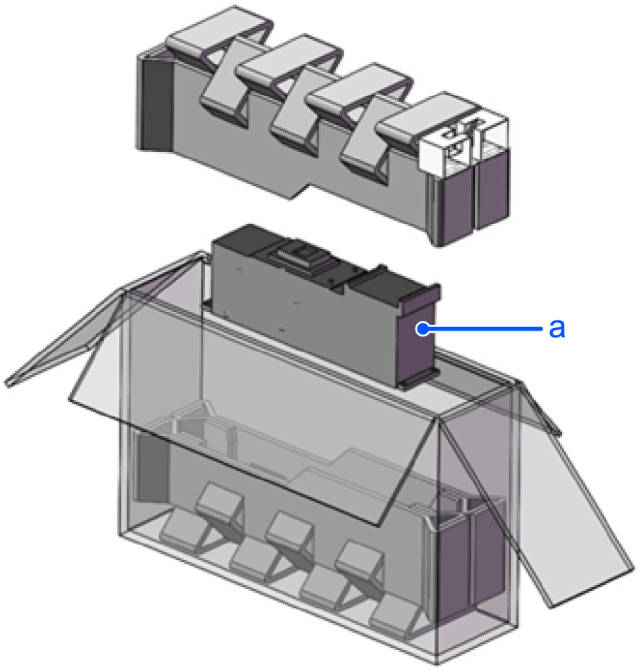
Keep the packaging material and the shipment box in case of need for return.

KEY POINTS

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

1. Carefully open the shipping box by using a cutter.

> **⚠ CAUTION**
>
> Take care not to cut too deep or else you will damage the IF-80.



Symbols	Meaning
a	Product

2. Verify that there is no visible damage

> **KEY POINTS**
>
> If the product received does not match your order, or is damaged, contact your Sales Representative.

3. Follow this manual for installing the IF-80 and start using it.

> **KEY POINTS**
>
> Potential accessories are supplied separately in a second box

Locate the identification information at the back of the product and ensure that the product you have received is the correct one. (S/N)

Product information

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-80 is shipped in a cardboard box with the following dimensions:

gross weight and dimensions of the product in packaging

	IF-80
Dimensions	500 × 330 × 130 mm
Gross weight	5 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 - 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
⌀D	diameter of the vibration isolator (round buffer) APSOvib
G	screw diameter
H	height of the vibration isolator APSOvib
c_z	spring constant of the vibration isolator APSOvib; compression in Z direction (axial direction)
F_z	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

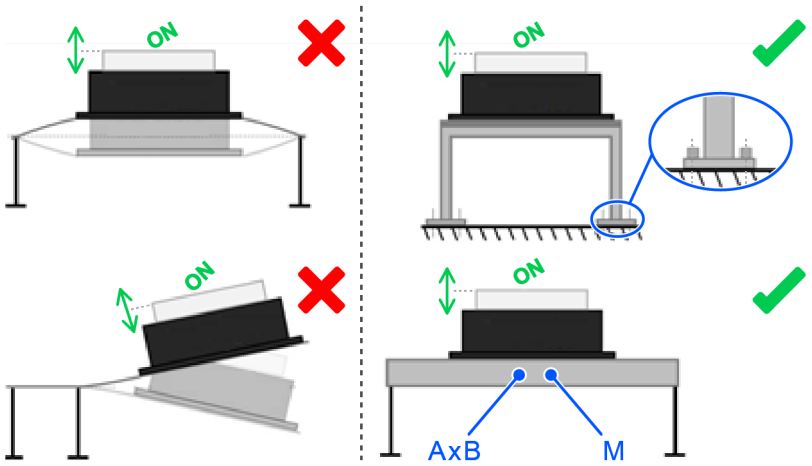
2.3.5.2 Mounting the Part Feeder

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.



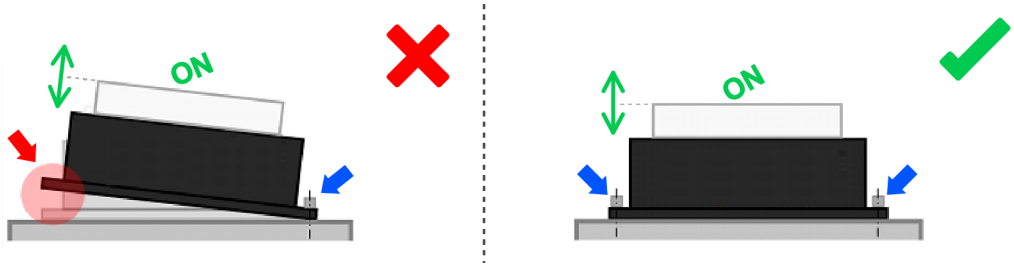
2.3.5.2.2 Installing Part Feeding on the Table

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 the following.

Specification of Screws



2.3.5.3 Vibration Decoupling

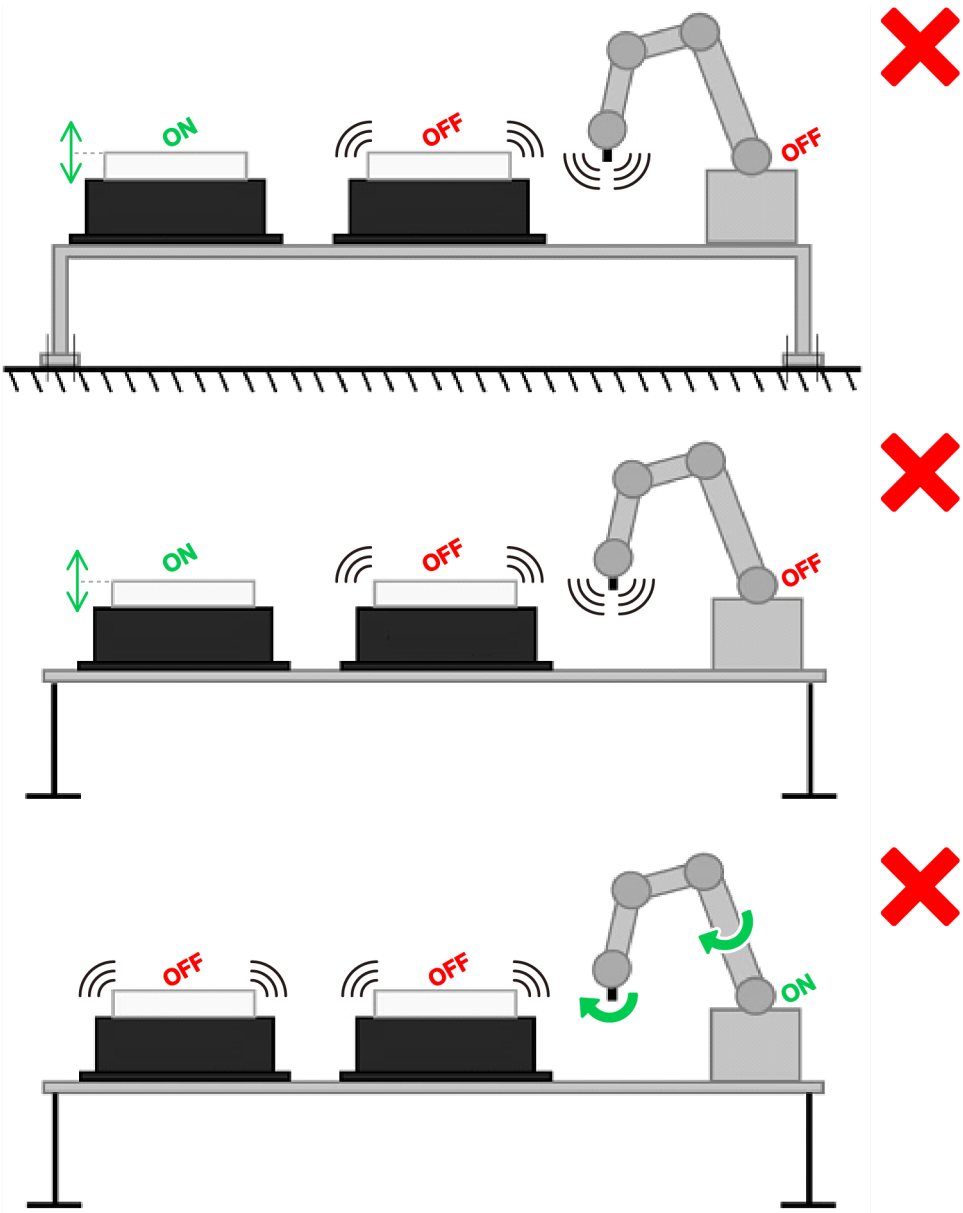
Incorrect mounting of the part feeder, camera, robot, and hopper may compromise final system performance. To ensure the normal behavior of the system, it is necessary to keep the associated devices from interfering with each other.

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

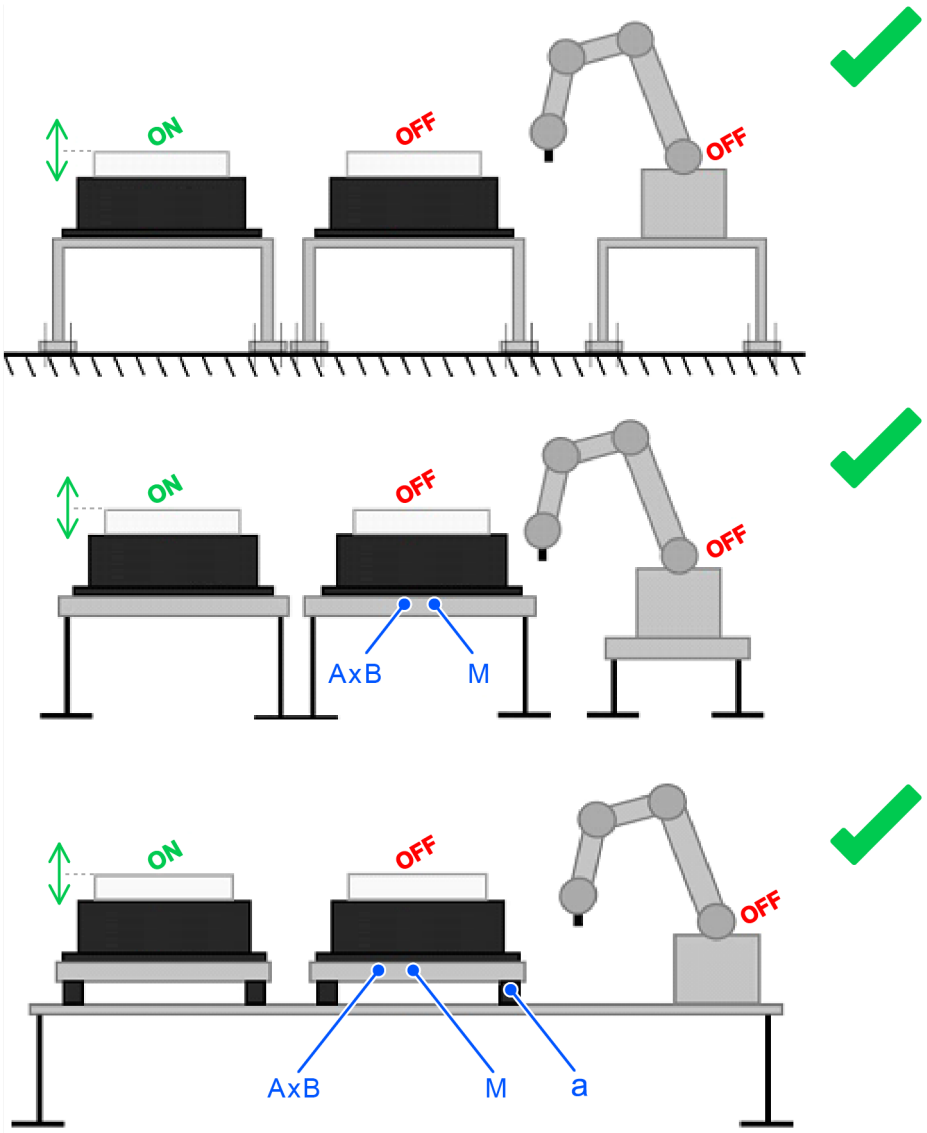
If several moving devices are mounted close to each other in parallel, it is necessary to "decouple the vibrations" to prevent the motion of one device from being affected by the motion of others.



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.

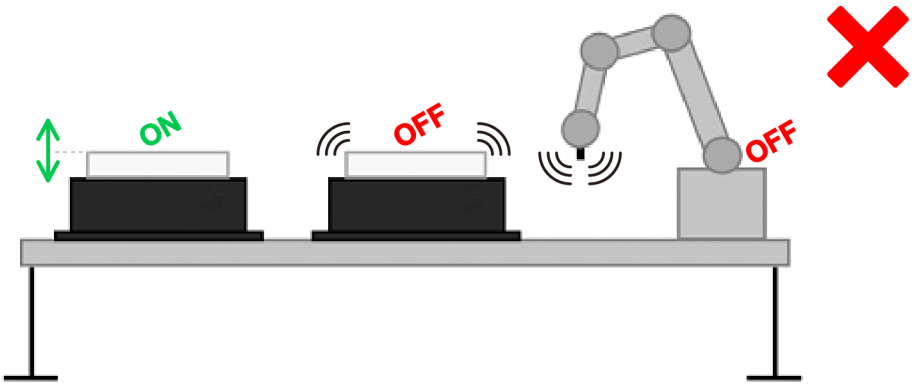
  Specification of Base Table

- For the vibration isolators, refer to the following.

  Specification of vibration isolator

KEY POINTS

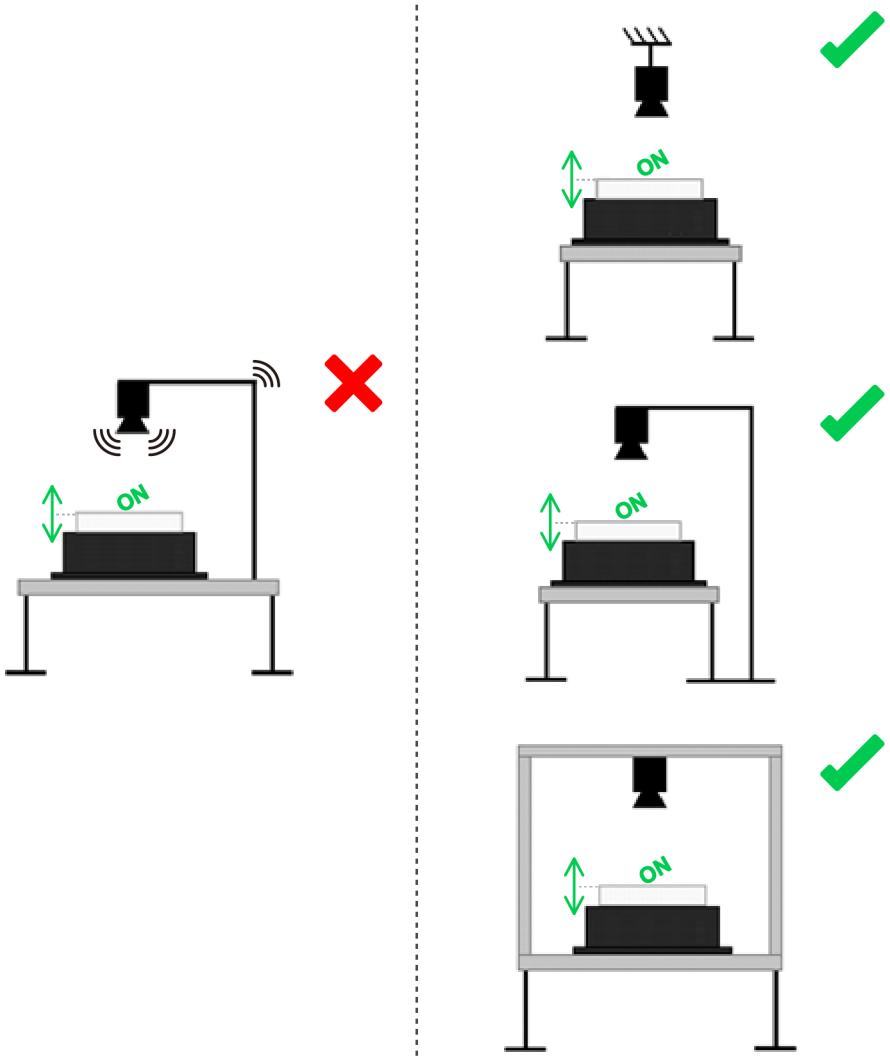
Increasing the mass of the base table to avoid using vibration isolators does not ensure that other devices can completely avoid the effect of vibrations.



2.3.5.3.2 Decoupling the Camera

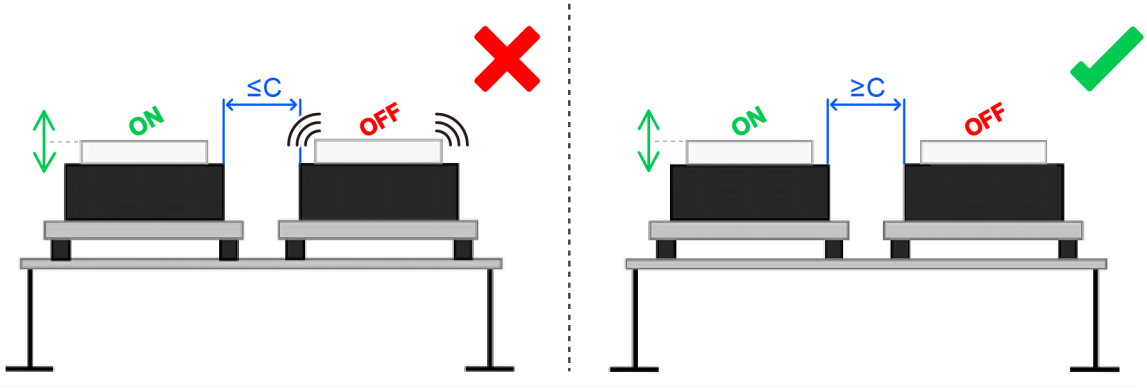
It is important that the camera is not perturbed by the vibration of the feeder or by any other moving device. If the vision system is disturbed by residual vibrations, the coordinates sent to the robot will not be reliable, thus compromising the precision of the whole system.

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.

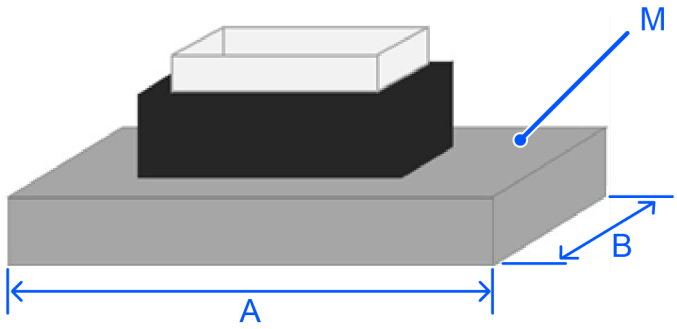
Minimum Distance Between Part Feeders

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 ø	M5	M6	M8	M8

2.3.5.5.3 Specification of vibration isolator

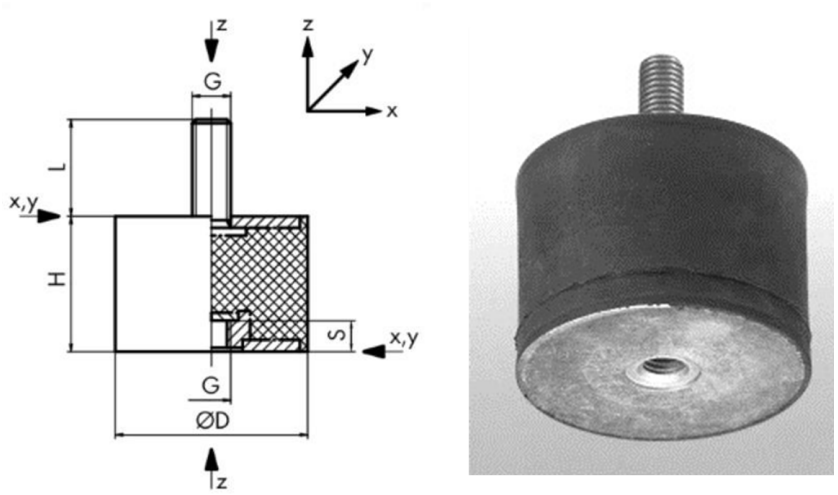
	Vibration isolator (round rubber buffer)		
Object	IF-240	IF-380	IF-530
	IF-240	IF-380	IF-530
APSO *1	12.2034.0103	12.2034.0293	12.2034.0353
øD – [mm]	16	40	50
H – [mm]	20	40	50
cz – [N / mm]	50	180	190
Fz – [N]	120	690	1000
Qty. – [-]	4	4	4

	Vibration isolator (round rubber buffer)	
Object	IF-240	IF-380/IF-530
ELESA *2	411771 DVA.2-15-20-M4-10-55	412021 DVA.2-50-45-M10-28-55
øD – [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

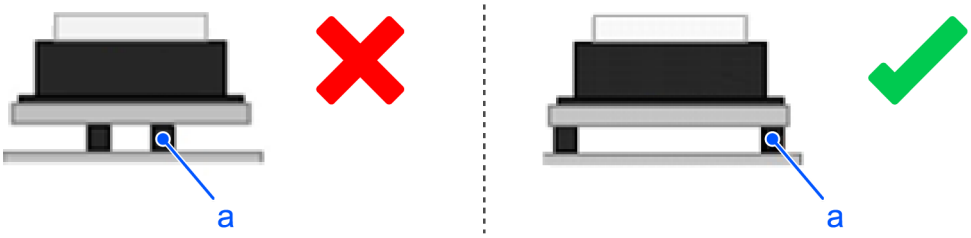
⚠ CAUTION

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



Symbols	Meaning
a	Vibration isolator

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

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

2.3.5.5.4 Minimum Distance Between Part Feeders

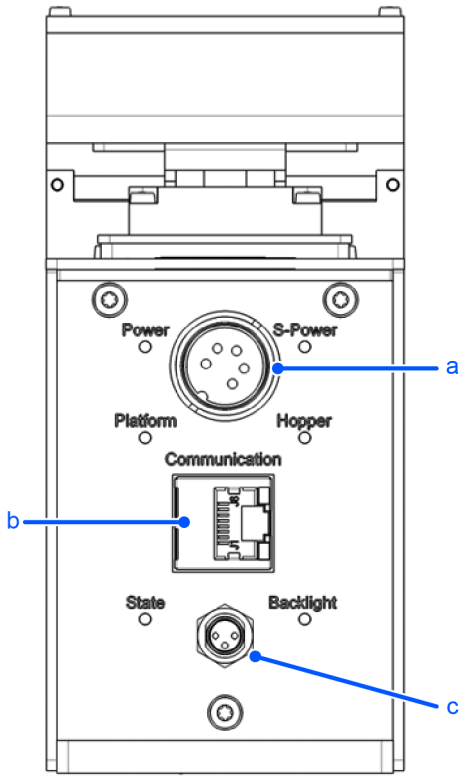
	IF-80	IF-240	IF-380	IF-530
c – [mm]	≥ 10	≥ 10	≥ 30	≥ 30

2.3.6 Cable Connections

2.3.6.1 Overview

The IF-80 is a standalone module with its own controller. The electrical interfaces of the IF-80 are located on the rear panel of the product:

Electrical interfaces of the IF-80



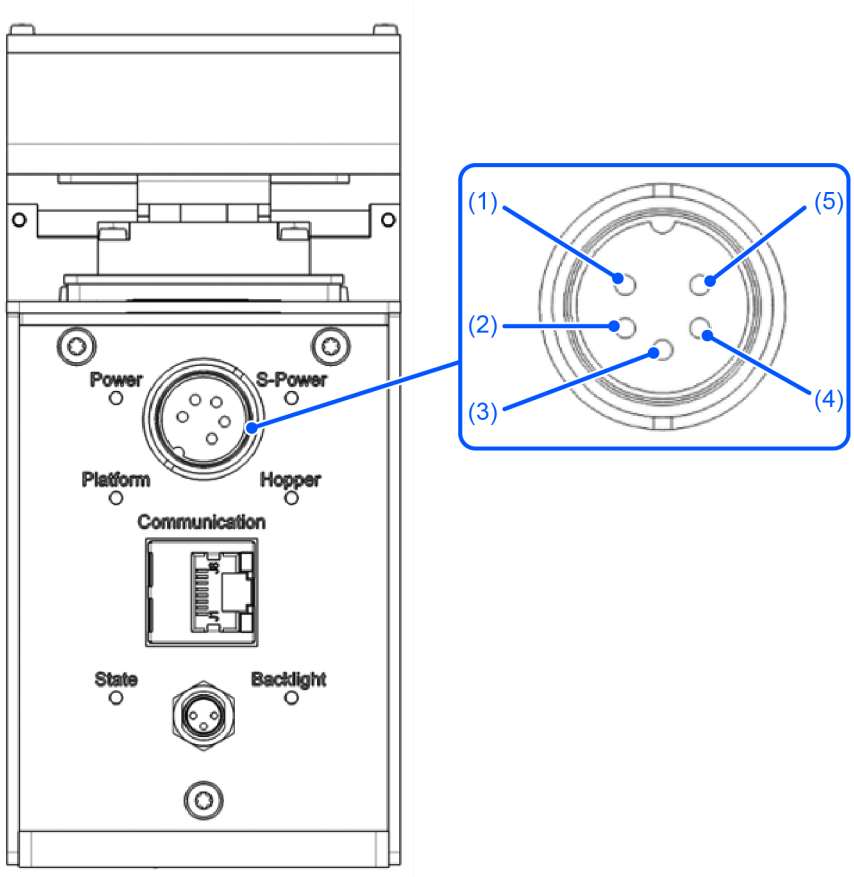
Symbols	Meaning
a	Power connection
b	Ethernet connection (RJ45)
c	Not used

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
(1)	24VDC PELV S-Power
(2)	0V GND S-Power
(3)	24VDC PELV Power
(4)	0V GND Power
(5)	EARTH

Connector type (on IF-80 side): M16, 5 Poles, male

KEY POINTS

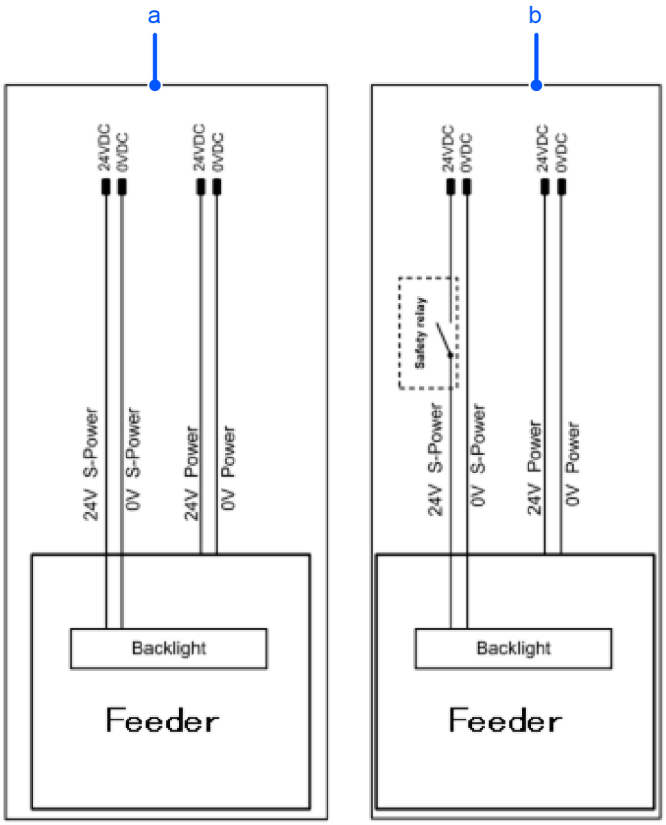
In case of all functions working simultaneously (vibration, backlight, hopper), the current increases to 6A

Characteristic	Value
Voltage	+24VDC +5%/-0%
Current Power	5 A
Current S-Power	1 A

KEY POINTS

- The backlight receives its power supply from S-Power. Cutting this S-Power ensures that the backlight stays off. (e.g. to avoid danger from an infrared backlight)
- When operating the feeder, connect both Power and S-Power to the power supply.

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.



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

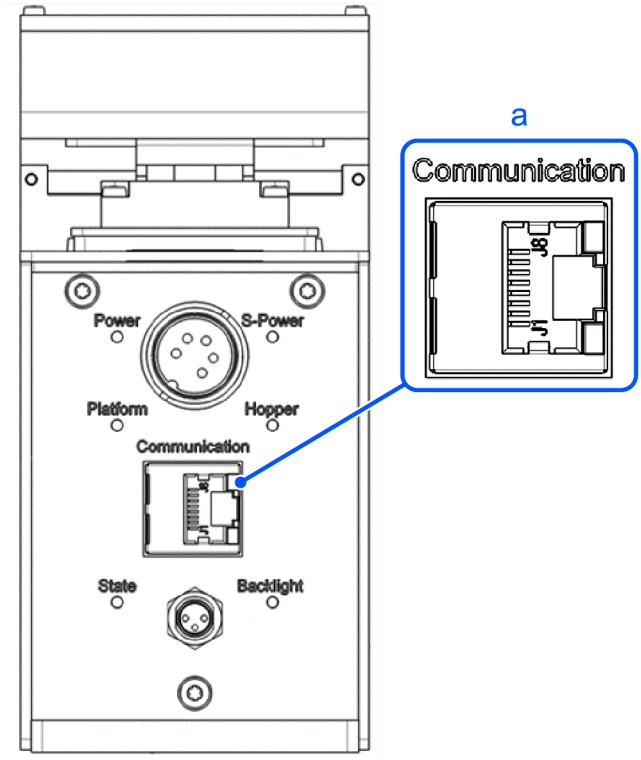
KEY POINTS

- Both Power and S-Power can be connected to a single power supply or to two different power supplies.
- The 0 V power supply and the 0 V S-power supply are internally connected in the feeder.

2.3.6.3 Communication

Communication with the IF-80 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.

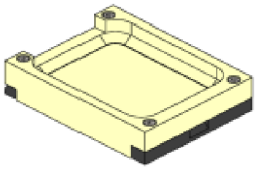
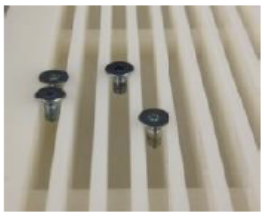
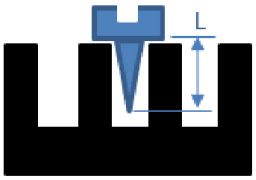
Resetting IP Address

2.4 Option

2.4.1 Platform

2.4.1.1 Platform Type

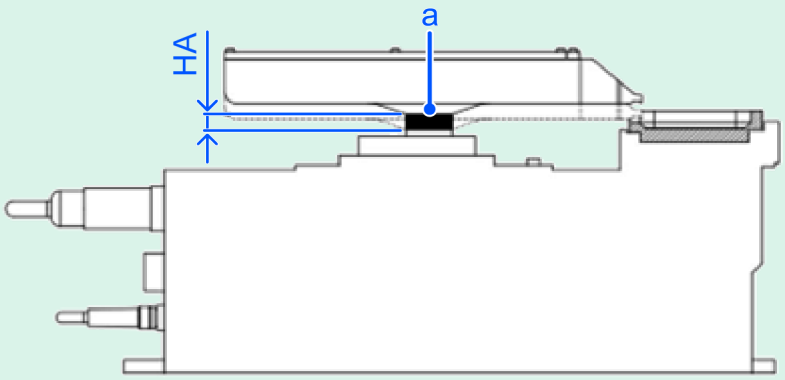
In order to improve the availability of certain components on the surface of the feeder, it is possible to structure the platform surface. Epson offers various types of platforms including Flat, Anti-Stick and Anti-roll. Custom platforms with slots, holes or pockets must be designed and fabricated by the customer.

Platform type	Example-picture	Example-drawing	Advantage
Flat		Example: Bolts	This type of platform can be used for a wide variety of components with flat surfaces that allow a stable resting position.
Slots (deep)		 Example: Screws, rivets	A platform with deep grooves is used to supply screw-type components to be fitted vertically. L max=4mm

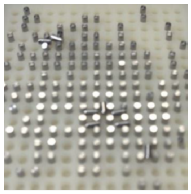
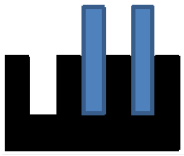
KEY POINTS

L (Groove depth) can be increased by a value HA by using the optional “HOPPER HEIGHT ADAPTER”, and by realizing a special platform for this configuration.

HA max = 7.5mm



Symbols	Meaning
a	HOPPER HEIGHT ADAPTER – 80

Platform type	Example-picture	Example-drawing	Advantage
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 the pick-performance of the robot.
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.

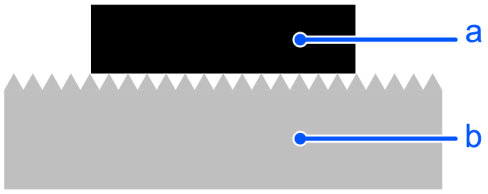
	IF-80
Flatness of the surface [mm]	0.1
Parallelism between surface and reference [mm]	0.1

Anti-Stick

Anti-Stick Platforms have narrow grooves to reduce surface contact for flat and light components. This reduces friction forces and improves the component movement on the platform surface. Parts that do not spread well because of kinetic friction (also called "sliding friction" or "dynamic friction") are good candidates for Anti-Stick Platforms.

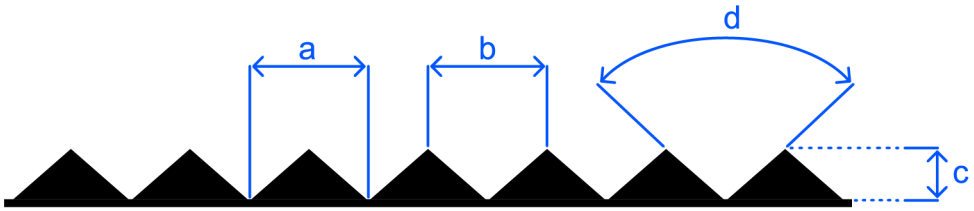
Surface

Cross-sectional view



Symbols	Meaning
a	Parts
b	Platform

Structure of standard Anti-Stick Platform for IF-80

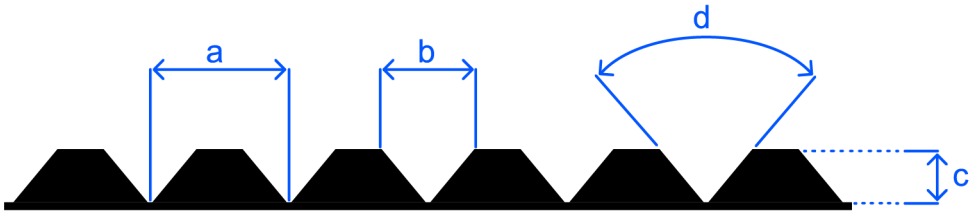


	a	b	c	d
IF-80	0.4 mm	0.4 mm	0.2 mm	90°

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.

Structure of standard Anti-Roll Platform for IF-80



	a	b	c	d	Suitable Parts
IF-80	1.25 mm	1 mm	0.5 mm	90°	⌀ 0.7 mm - ⌀ 1.5 mm
IF-80	2.75 mm	2.5 mm	1.25 mm	90°	⌀ 1.5 mm - ⌀ 3.5 mm

- For more information on custom platforms, refer to the following.

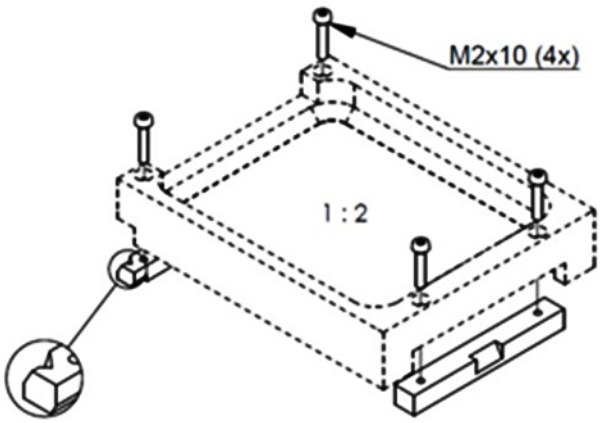
  "Epson RC+ 8.0 Option Part Feeding 8.0 Introduction & Software - Advanced - Custom Platforms"

- For model numbers of the platforms provided by Epson, refer to the following.

  Plate (series: IF-80)

2.4.1.3 Plate Fixation Kit

When customers make their own platform, a plate fixation kit can be ordered from Epson.

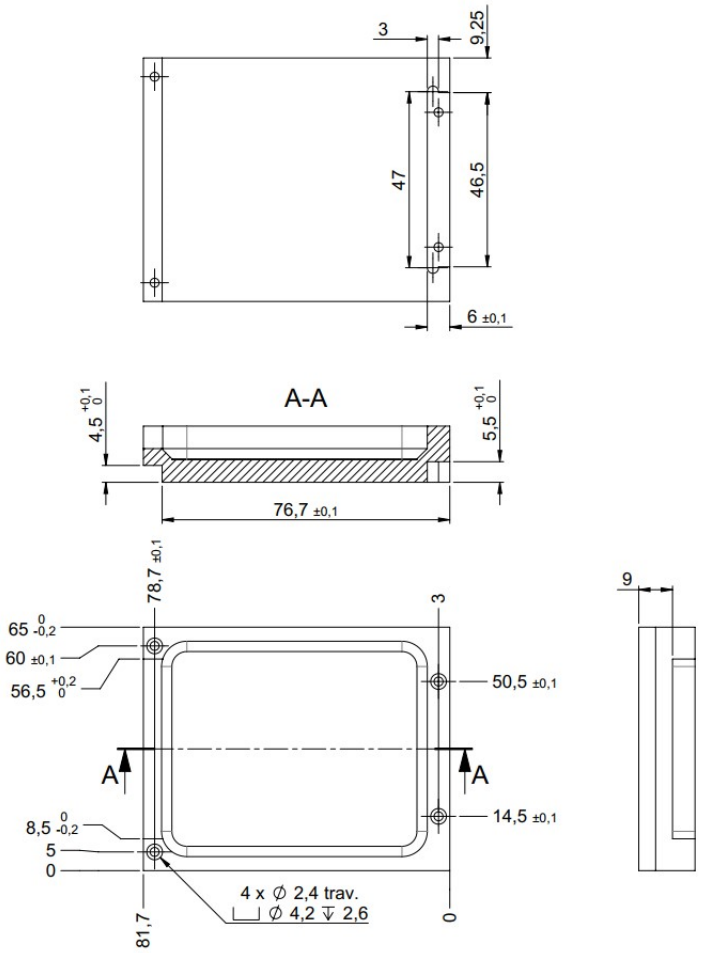


The flat platform can be used for a large variety of components, mainly components with a flat surface allowing a stable resting position.

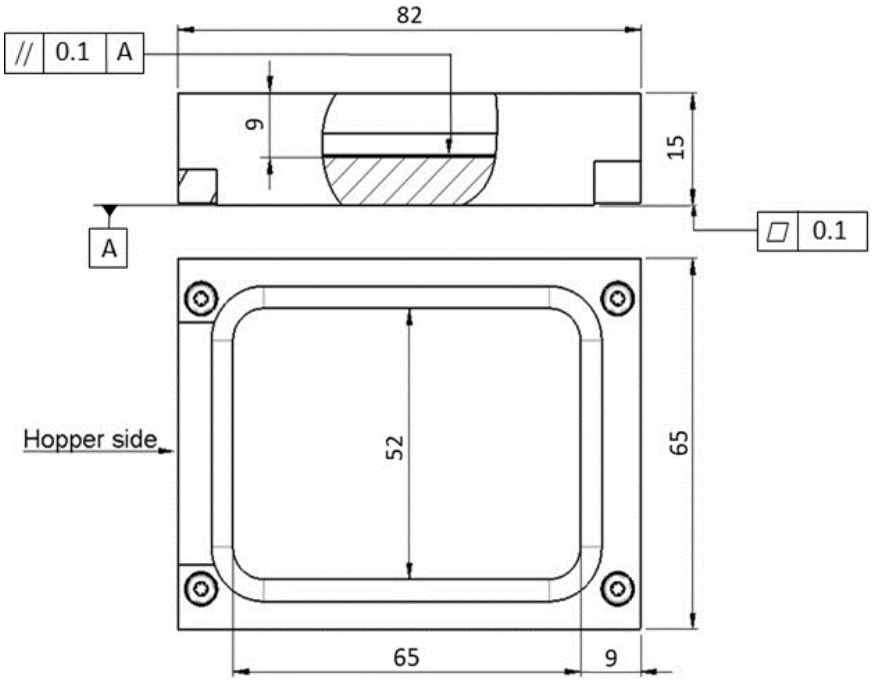
The IF-80 platform is available in option.

Product name	Specification	Model number
PLATE FIXATION KIT - 80	Platform kit	R12NZ9016M

Mechanical interfaces of the platform for IF-80



2.4.1.4 Dimensions of Platform

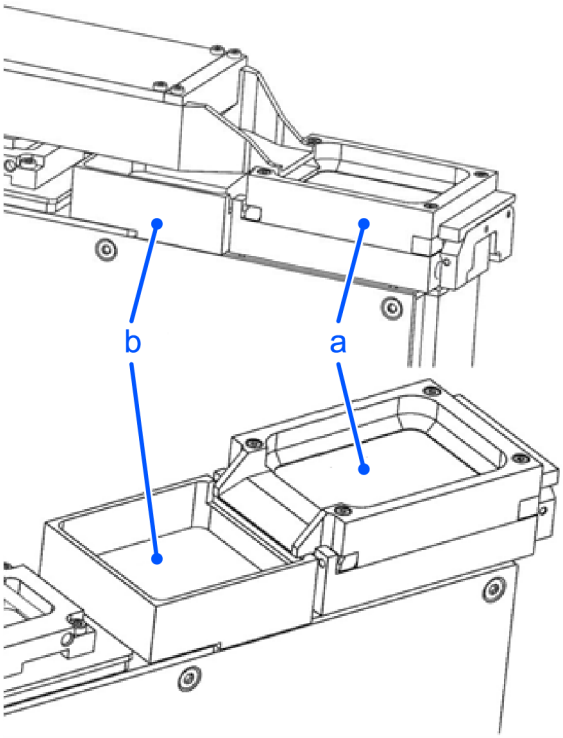


2.4.1.5 Platform with Purge

The purge option consists in a platform with a special geometry, which allows the components to be evacuated in a dedicated box.

The box can be easily removed by the operator without tooling.

Purge option



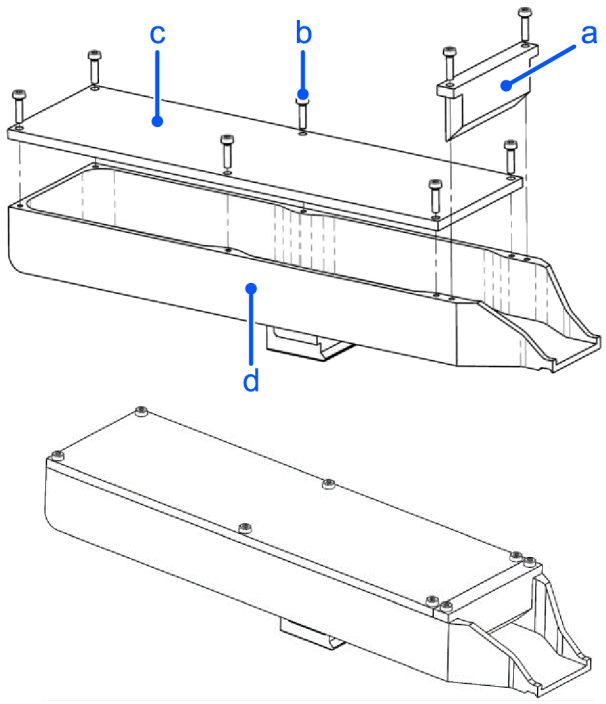
Symbols	Meaning
a	Platform
b	Purging box

2.4.2 Hoppers

A hopper is available in option.

It is delivered with a separate cover, a retaining dam and screws, which can be assembled by customer if needed.

Hopper



Symbols	Meaning
a	Retaining dam
b	M2 x 8 (8x)
c	Cover
d	Hopper

Product name	Specification	Model number
160cm^3 HOPPER - 80	160cm^3 Hopper	R12NZ9016F
160cm^3 HOPPER MEDICAL - 80	160cm^3 Hopper / FDA *	R12NZ9016G

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

2.4.3 Backlight

2.4.3.1 Color Options

The following backlights are available as options.

Color	Wavelength
Blue	465 nm
Green	520 nm
Red	640 nm
Infrared light	880 nm
White	6500 K

If this option is ordered at the same time with the IF-80, it is delivered mounted in the feeder.

- For more information on the backlight color and the procedure to exchange the backlight, refer to the following.

  Replacing the Backlight

- For model numbers of standalone backlights, refer to the following.

  Backlight (series: IF-80)

⚠ 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.

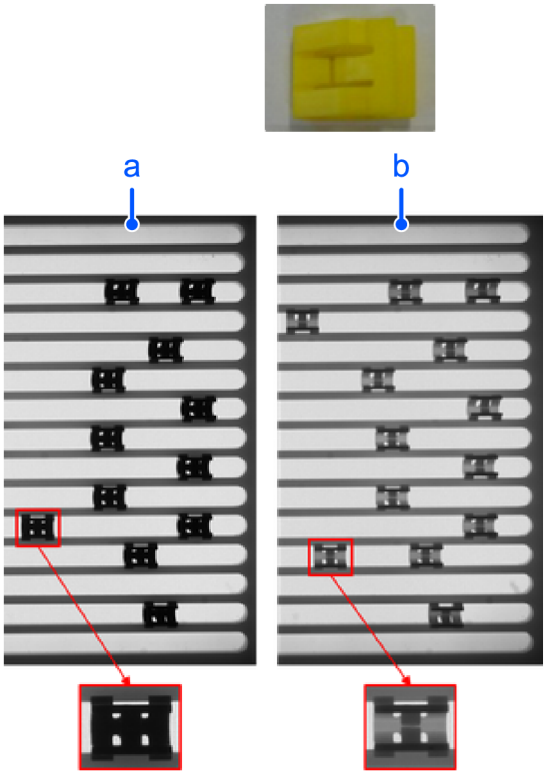
2.4.3.2 Selecting a Backlight Color

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.

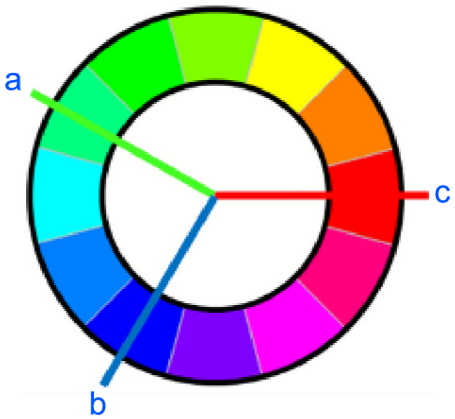
In the example below, when illuminated with a red backlight, the contrast between the yellow clips and the background is compromised (even if the clips look opaque with ambient light).

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



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
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.

2.4.3.3 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.

2.4.3.4 Backlight Overheat Prevention

⚠ WARNING

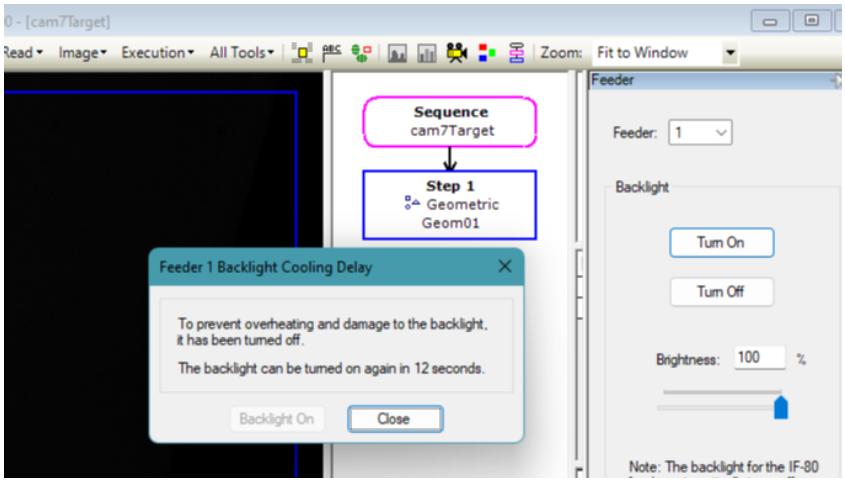
The IF-80 feeder backlight can overheat and become broken if the duty cycle for the backlight is greater than 33%.

The feeder automatically turns off the backlight after a timeout.

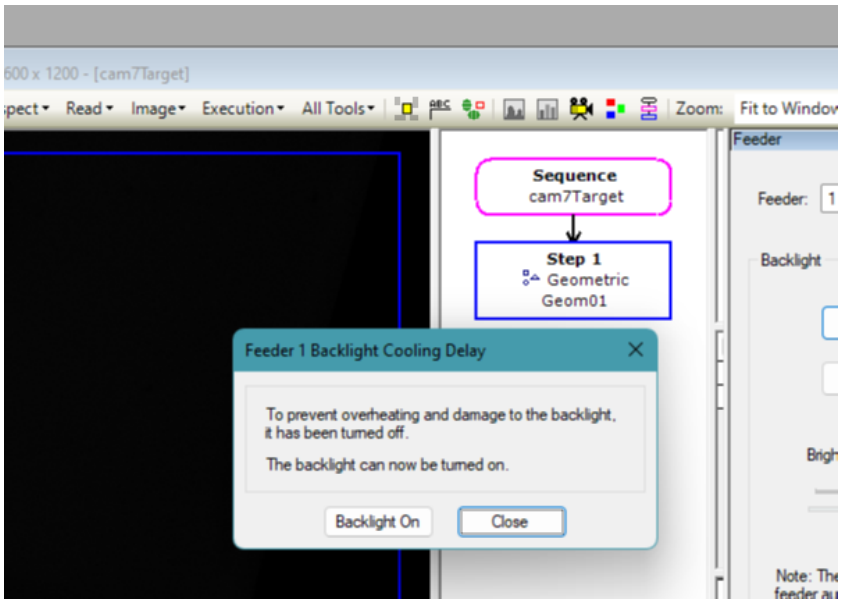
To prevent damage caused by overheating of the backlight, the backlight is controlled not to turn on continuously:

- Epson RC+ enforces a cool off delay if the backlight was turned off due to a timeout after the user had turned on the backlight manually.
- During vision sequence operation, the backlight is turned on, the sequence runs, then the backlight is turned off immediately.

When the user manually turns on a backlight for the IF-80 from Epson RC+, then after a delay, the [Feeder * Backlight Cooling Delay] dialog is displayed. *indicates the feeder number.



It shows a countdown in seconds for when the backlight can be turned on again. After the cool off delay, the [Backlight On] button is enabled, and the user can turn on the backlight again. The user can also click the [Close] button to close the dialog without waiting for the cool off delay. In the screenshot above, you can see that 12 seconds is remaining – it will continue to count down until 0, then the message is changed and the [Backlight On] button is enabled, as shown in the next screenshot.



If the user clicks [Close] button and then tries to turn the backlight on again before the cool off delay is reached, then the [Feeder * Backlight Cooling Delay] dialog is displayed again showing the remaining cool off seconds.

If there are multiple IF-80 feeders in the system and multiple backlights are turned on, then the [Feeder * Backlight Cooling Delay] dialog will open for each backlight that requires it.

When running a vision sequence or object from the Epson RC+ Vision Guide window, the backlight is turned on, the image is grabbed, the backlight is turned off and the video is temporarily frozen. Freezing the image allows the user can see the image even though the backlight has been turned off. The user can click on the video area to switch back to live video.

2.4.4 Cables

The following cables are available as options.

Product
Power Cable (5m)
Ethernet RJ45 cable (5m)

⚠ CAUTION

All these cables are NOT adapted for cable carriers (cable tracks).

Product name	Specification	Model number
POWER CABLE 80/240	Power cable	R12NZ9016K
RJ45 CAT5e -SF/UTP 5m GREY CABLE	Ethernet cable	R12NZ9016L

2.5 Maintenance and Component 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

IF-80 requires very little maintenance. However, it is necessary to carry out simple inspections periodically to ensure that the product is safe and remains in top condition. Perform the following periodic inspections to keep the product functioning properly and safely.

Periodic maintenance schedule

	Item	Period	Reference
General	Cleaning of the machine	Weekly	
	Visual check of electrical harness	Yearly	
	Visual check and cleaning of the platform	Weekly	**Cleaning and Management of the Platform**
Specific processes	It is the customer's responsibility to create and carry out a maintenance plan for specific processes	/	/
Backlight	Visual check	Monthly	

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.

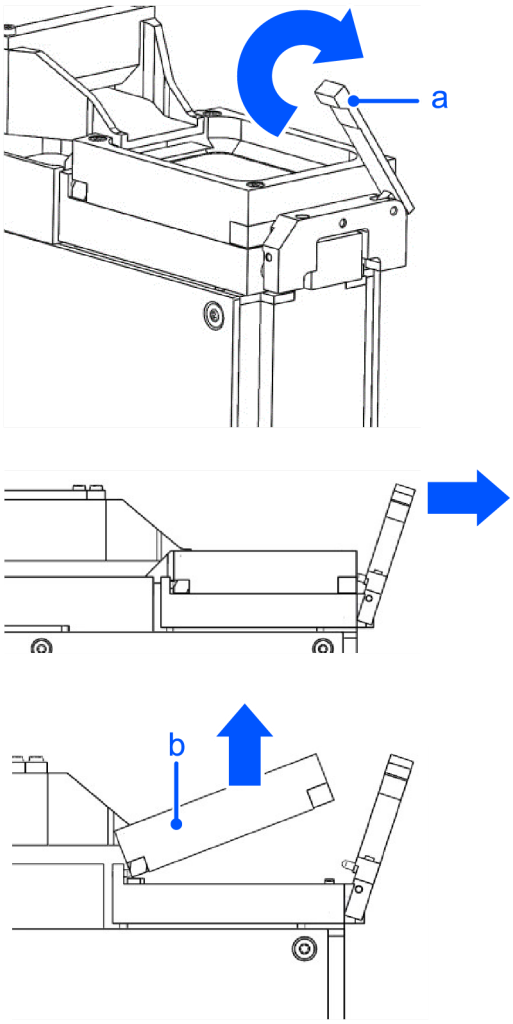
2.5.2.2 Removing the Platform

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.

Removing the Platform



Symbols	Meaning
a	Lever
b	Platform

1. Turn the lever clockwise and pull it forward.
2. Remove the platform.

2.5.2.3 Cleaning and Management of the Platform

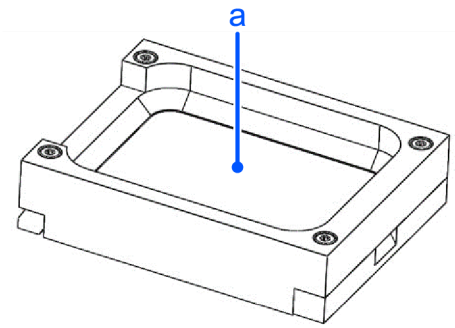
⚠ CAUTION

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



Symbols	Meaning
a	Platform

1. In checking the state of the platform's surface, be particularly careful of the following.
   - Dirt or spots on the surface
   - Oil or grease having adhered to the surface
2. Clean the surface of the platform.

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.

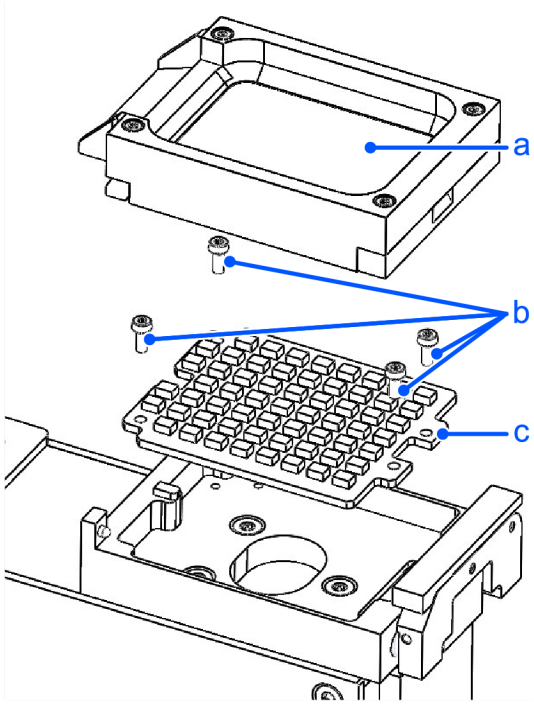
Replaceable parts

Parts name	Model number
GREEN BACKLIGHT - 80	R12NZ9016Q
RED BACKLIGHT - 80	R12NZ9016R
BLUE BACKLIGHT - 80	R12NZ9016T
WHITE BACKLIGHT - 80	R12NZ9016U
INFRARED BACKLIGHT - 80	R12NZ9016V

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.

Replacing the Backlight



Symbols	Meaning
a	Platform module
b	Screws
c	Backlight

1. Remove the platform module.

   For more information on removing the platform, refer to the following.

   Removing the Platform

2. Remove the four screws.
3. Remove the backlight.
4. Place the new backlight.
5. Screw the four screws (0.2 N·m).
6. Remount the platform module.

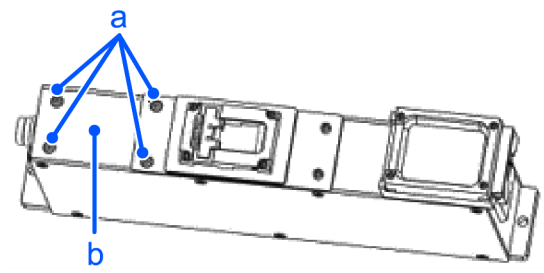
2.5.3.2 Resetting IP Address

The following procedure explains how to reboot the IF-80 so that is 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.
Following this procedure, you are able to connect to the IF-80 with default parameters and then modify parameters as desired.

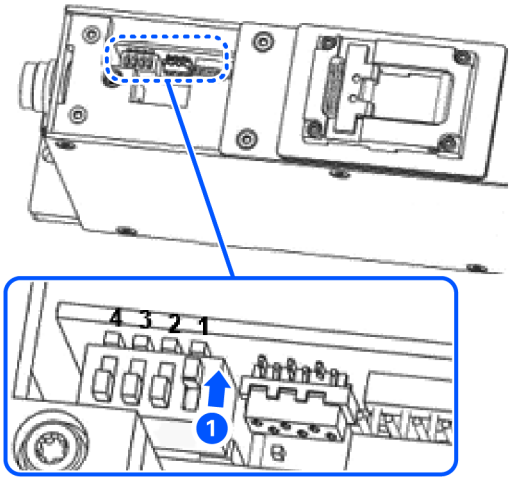
1. Remove the hopper.

   Unscrew the 4 screws and remove the cover. Use a torx key size 10.



Symbols	Meaning
a	Screws
b	Cover

2. Place selector 1 in Position (1).



3. Disconnect and reconnect the power cable. (or switch off and switch on the power on the IF-80.)

   The IF-80 will take the default parameters by the new startup:

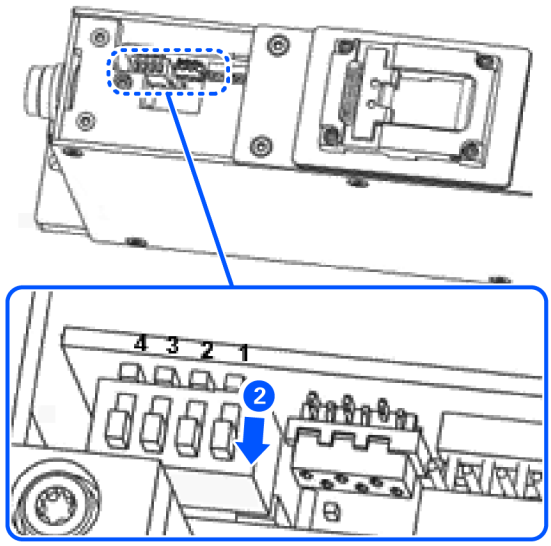
   - IP: 192.168.0.64
   - SubnetMask: 255.255.255.0
   - TCP Port: 4001

4. Parameters in memory can now be modified from the Epson RC, go to the [Setup]-[System Configuration]-[Controller]-[Part Feeding] page.

   For more details, refer to following manual.

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

5. When parameters are defined as desired, set DIP switch in position (2).

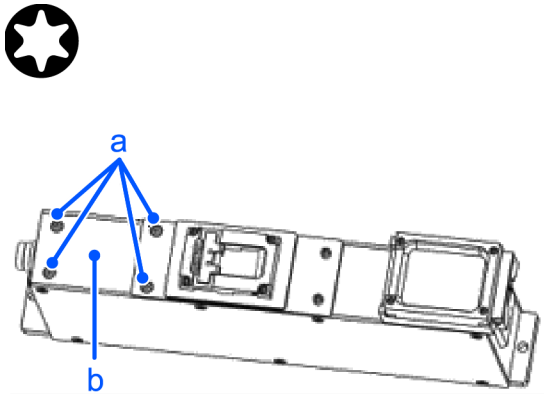


6. Disconnect and reconnect the power cable. (or switch off and switch on the power on the IF-80.)

   The IF-80 will take the parameters defined by the new startup.

7. Replace the cover and screw the 4 screws. Use a torx key size 10.

   Tightening torque: 0.9 N·m



Symbols	Meaning
a	Screws
b	Cover

2.6 Option Part List

2.6.1 Feeder (series: IF-80)

Product name	Specification	Model number
IF80 no Light	IF80 (No backlight)	R12NZ9015B
IF80 RED	IF80+backlight: red	R12NZ9015C
IF80 WHITE	IF80+backlight: white	R12NZ9015D
IF80 GREEN	IF80+backlight: green	R12NZ9015E
IF80 BLUE	IF80+backlight: blue	R12NZ9015F
IF80 INFRARED	IF80+backlight: Infrared	R12NZ9015G

2.6.2 Plate (series: IF-80)

2.6.2.1 Plate (Anti-static)

Product name	Specification	Model number
FLAT PLATE-80	Flat (Ocher) Material: POM-C-ED (Anti-static)	R12NZ9015H
ANTI-ROLL PLATE-80dia.0.7-1.5	Anti-roll (Ocher) Supported work piece: ⌀ 0.7-1.5 Material: POM-C ED (Anti-static)	R12NZ9015J
ANTI-ROLL PLATE-80dia.1.5-3.5	Anti-roll (Ocher) Supported work piece: ⌀ 1.5-3.5 Material: POM-C ED (Anti-static)	R12NZ9015K
ANTI-STICK PLATE-80	Anti-stick (Ocher) Material: POM-C ED (Anti-static)	R12NZ9015L
FLAT PLATE (BLACK)-80	Flat (Black) Material: POM-C EC (Anti-static)	R12NZ9015R
ANTI-ROLL PLATE (BLACK)-80dia.0.7-1.5	Anti-roll (Black) Supported work piece: ⌀ 0.7-1.5 Material: POM-C EC (Anti-static)	R12NZ9015T
ANTI-ROLL PLATE (BLACK)-80dia.1.5-3.5	Anti-roll (Black) Supported work piece: ⌀ 1.5-3.5 Material: POM-C EC (Anti-static)	R12NZ9015U
ANTI-STICK PLATE (BLACK)-80	Anti-stick (Black) Material: POM-C EC (Anti-static)	R12NZ9015V

2.6.2.2 Plate (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 MED-80	Flat (White) / FDA * Material: POM-C (white) (FDA)	R12NZ90161
ANTI-ROLL PLATE MED-80dia.0.7-1.5	Anti-roll (White) / FDA * Supported work piece: ⌀ 0.7-1.5 Material: POM-C (white) (FDA)	R12NZ90162
ANTI-ROLL PLATE MED-80dia.1.5-3.5	Anti-roll (White) / FDA * Supported work piece: ⌀ 1.5-3.5 Material: POM-C (white) (FDA)	R12NZ90163
ANTI-STIC PLATE MED-80	Anti-stick (White) / FDA * Material: POM-C (white) (FDA)	R12NZ90164
ANTI-ROLL PLATE MED(BK)-80dia.0.7-1.5	Anti-roll (Black) / FDA * Supported work piece: ⌀ 0.7-1.5 Material: POM-C (black) (FDA)	R12NZ90169
ANTI-ROLL PLATE MED(BK)-80dia.1.5-3.5	Anti-roll (Black) / FDA * Supported work piece: ⌀ 1.5-3.5 Material: POM-C (black) (FDA)	R12NZ9016A
ANTI-STICK PLATE MED(BK)-80	Anti-stick (Black) / FDA * Material: POM-C (black) (FDA)	R12NZ9016B

2.6.2.3 Plate for Purging Option (Anti-static)

Product name	Specification	Model number
FLAT PLATE PURGE-80	Flat (Ocher) Material: POM-C ED (Anti-static)	R12NZ9015M
ANTI-ROLL PLATE PURGE-80dia.0.7-1.5	Anti-roll (Ocher) Supported work piece: ⌀ 0.7-1.5 Material: POM-C ED (Anti-static)	R12NZ9015N
ANTI-ROLL PLATE PURGE-80dia.1.5-3.5	Anti-roll (Ocher) Supported work piece: ⌀ 1.5-3.5 Material: POM-C ED (Anti-static)	R12NZ9015P
ANTI-STICK PLATE PURGE-80	Anti-stick (Ocher) Material: POM-C ED (Anti-static)	R12NZ9015Q
FLAT PLATE PURGE(BLACK)-80	Flat (Black) Material: POM-C EC (Anti-static)	R12NZ9015W

Product name	Specification	Model number
ANTI-ROLL PLATE PURGE(BK)-80dia.0.7-1.5	Anti-roll (Black) Supported work piece: ⌀ 0.7-1.5 Material: POM-C EC (Anti-static)	R12NZ9015X
ANTI-ROLL PLATE PURGE(BK)-80dia.1.5-3.5	Anti-roll (Black) Supported work piece: ⌀ 1.5-3.5 Material: POM-C EC (Anti-static)	R12NZ9015Y
ANTI-STIC PLATE PURGE(BK)-80	Anti-stick (Black) Material: POM-C EC (Anti-static)	R12NZ9015Z

2.6.2.4 Plate for Purging Option (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 PURGE MED-80	Flat (White) / FDA * Material: POM-C (white) (FDA)	R12NZ90165
ANTI-ROLL PLATE PURGE MED-80dia.0.7-1.5	Anti-roll (White) / FDA * Supported work piece: ⌀ 0.7-1.5 Material: POM-C (white) (FDA)	R12NZ90166
ANTI-ROLL PLATE PURGE MED-80dia.1.5-3.5	Anti-roll (White) / FDA * Supported work piece: ⌀ 1.5-3.5 Material: POM-C (white) (FDA)	R12NZ90167
ANTI-STICK PLATE PURGE MED-80	Anti-stick (White) / FDA * Material: POM-C (white) (FDA)	R12NZ90168
ANTI-ROLL PLATE PURGE MED(BK)-80dia0.7-	Anti-roll (Black) / FDA * Supported work piece: ⌀ 0.7-1.5 Material: POM-C (black) (FDA)	R12NZ9016C
ANTI-ROLL PLATE PURGE MED(BK)-80dia1.5-	Anti-roll (Black) / FDA * Supported work piece: ⌀ 1.5-3.5 Material: POM-C (black) (FDA)	R12NZ9016D
ANTI-STICK PLATE PUR MED(BK)-80	Anti-stick (Black) / FDA * Material: POM-C (black) (FDA)	R12NZ9016E

2.6.3 Hopper (series: IF-80)

Product name	Specification	Model number
160cm3 HOPPER - 80	160cm3 Hopper	R12NZ9016F
160cm3 HOPPER MEDICAL - 80	160cm3 Hopper / FDA *	R12NZ9016G

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

2.6.4 Others, Accessories (series: IF-80)

Product name	Specification	Model number
PLATE FIXATION KIT - 80	Platform kit	R12NZ9016M
PURGE BOX - 80	Purging box	R12NZ9016N
PURGE BOX MED - 80	Purging box / FDA *	R12NZ9016P
HOPPER FIXATION KIT - 80	Hopper fixation kit	R12NZ9016H
HOPPER HEIGHT ADAPTER - 80	Hopper height adjustment adapter	R12NZ9016J
POWER CABLE 80/240	Power cable	R12NZ9016K
RJ45 CAT5e -SF/UTP 5m GREY CABLE	Ethernet cable	R12NZ9016L

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

2.6.5 Backlight (series: IF-80)

Product name	Specification	Model number
GREEN BACKLIGHT - 80	Backlight (Green)	R12NZ9016Q
RED BACKLIGHT - 80	Backlight (Red)	R12NZ9016R
BLUE BACKLIGHT - 80	Backlight (Blue)	R12NZ9016T
WHITE BACKLIGHT - 80	Backlight (White)	R12NZ9016U
INFRARED BACKLIGHT - 80	Backlight (Infrared light)	R12NZ9016V

2.6.6 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 manual.

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