EPSON

Epson RC+ 8.0 Option
Part Feeding 8.0
Hopper (Gen.2)

Original instructions

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1. FOREWORD

1.1 FOREWORD

Thank you for purchasing our robot system.

This manual contains the information necessary for the correct use of the Epson RC+ Part Feeding 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, and refer to it if something is unclear.

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

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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.

1.4 Manufacturer

SEIKO EPSON CORPORATION

1.5 Contact Information

Contact information details are listed in the "Supplier" section in the following manual.
Note that the contact information may vary depending on your region.
"Safety Manual - Contact Information"

The Safety Manual is also available at the following site.
URL: https://download.epson.biz/robots/

1.6 Disposal

When disposing of the product, make sure to observe the laws and regulations of your country.

1.7 The Manuals of this Product

The following are typical manual types for this product and an outline of the descriptions.

- Safety Manual (Part Feeding)
- Epson RC+ 8.0 Option Part Feeding 8.0 IF-240
- Epson RC+ 8.0 Option Part Feeding 8.0 IF-380 & IF-530

  These manuals contain information on using each feeder.
- Epson RC+ User's Guide

  This manual describes general information about program development software.
- Epson RC+ SPEL+ Language Reference

  This manual describes the robot programming language "SPEL+".
- Other Manuals

  Manuals for each option are available.

2. Overview of Hopper (Gen.2)

2.1 Safety

Read this manual and related manuals before using the product, and use the product correctly. After reading this manual, keep it handy for easy access at all times and refer to it when something is unclear.

The purpose of this product is to convey and assemble parts in a safely isolated area.

2.1.1 Symbols Used in this Manual

Safety precautions are indicated using the marks below. Make sure that you read such warnings.

⚠ 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.

2.1.2 Safety-related Compliance Matters

In order to achieve a safe working environment, specific allowable values, conditions of use, and so on are described in your Manipulator, Controller, and Feeder manuals. Read all of these as well.

When installing and operating the robot system, be sure to observe the laws and safety standards of your country.

⚠ WARNING

- Do not modify the product. Unauthorized modification may cause the product to malfunction, and could result in injury, fire, or electric shock.
- Before performing a maintenance inspection, check to make sure the power source and all other cables are disconnected.

2.1.3 Roles of the Machine's Users

The table below defines the roles of those involved with the machine from the time of its installation until its operation.

Group	Condition	Permitted Work
Operator	Has read the hopper user manual provided by the system integrator	Loading the container; adjusting the vibration settings
System Integrator	Has read the hopper user manual	Mounting the product and its peripheral devices onto the completed machine and operating it
Technician	Has read the hopper user manual's maintenance chapter	Performing basic maintenance and repairs.

2.2 Transportation, Unpacking, and Environment

Unpacking and transportation of Manipulators and associated robotic equipment shall be performed by personnel who have taken the robot system training offered by Epson and its distributors. Also, make sure to observe the laws, regulations, and statutes of your country.

2.2.1 Handling when Packing and Shipping

When shipping, follow the instructions written on the shipping box. (This Side Up, Handle with Care, etc) Also, observe the following:

- Handle the product with sufficient care.
- Do not sit or stand on top of the shipping box.
- Do not put heavy objects on top of the shipping box.
- Be especially careful not to damage the product during transport.
- When the shipping box is set down, make sure that it sits level.

The table below provides the hoppers' nominal dimensions when packed in their shipping boxes.

Weight and dimensions of base when packed in shipping box:

	Hopper S	Hopper M	Hopper L
Dimensions (mm)	307 × 162 × 231	458 × 198 × 251	523 × 263 × 269
Weight (kg)	4.2	9.8	13

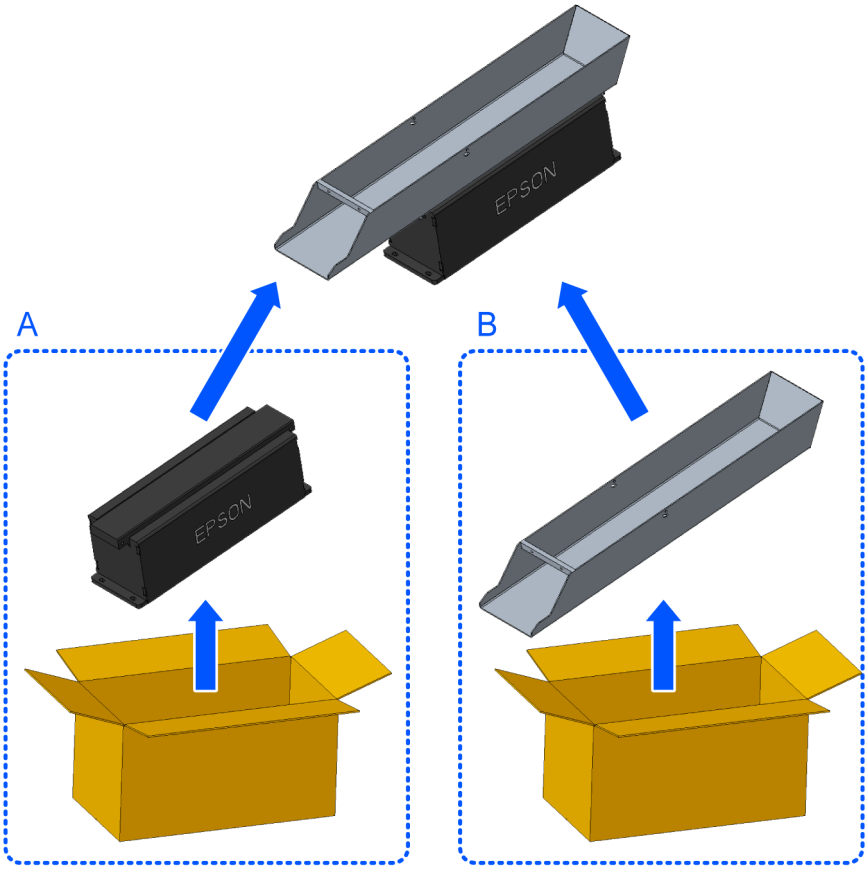
Weight and dimensions of container when packed in shipping box:

	1L/2L container	3L/7L container	14L container
Dimensions (mm)	563 × 196 × 120	796 × 238 × 167	934 × 368 × 212
Weight (kg)	1.7	4.2	10

2.2.2 Unpacking the Base and Container

The hopper's base and container are packed in separate boxes.

The mounting screws necessary to fix the container to the base are included in the box containing the base.



A: Base / B: Container

KEY POINTS

The four bolts that come with the container can be used to secure the base easily. See the following for details.

Mounting the Container on the Base

Follow the steps below to unpack the hopper's base.

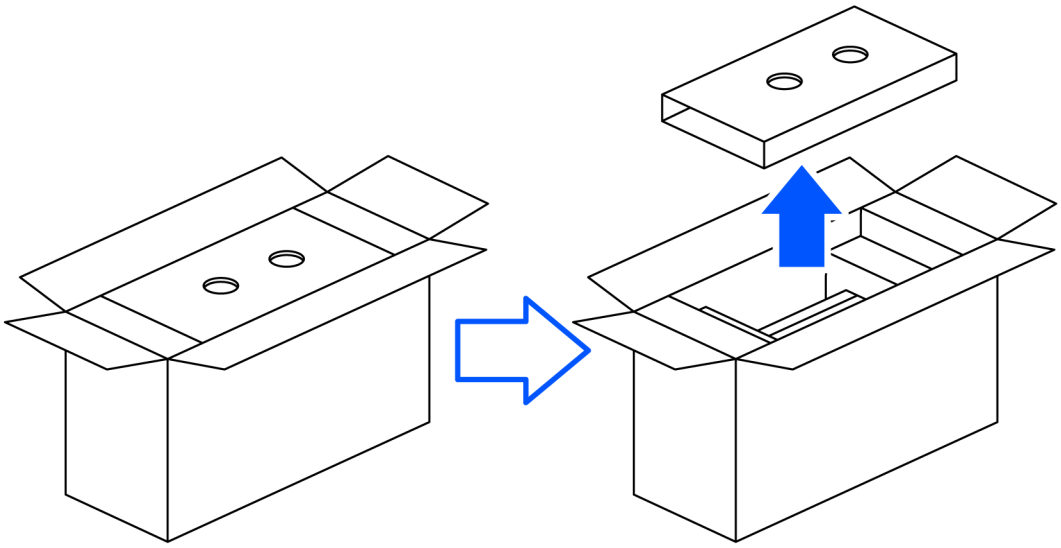
⚠ CAUTION

- Do not take the hopper out of its box until installation preparations are completed to prevent falling or tripping.
- When unpacking the product, take sufficient safety precautions, such as wearing protective equipment.
- A fixing bolt secures Hopper M and Hopper L to prevent the actuator from being damaged by vibrations during transport. If you install the hopper without removing the fixing bolt, it may result in failed calibration and damage. Be sure to remove the fixing bolt. (refer to step 4)

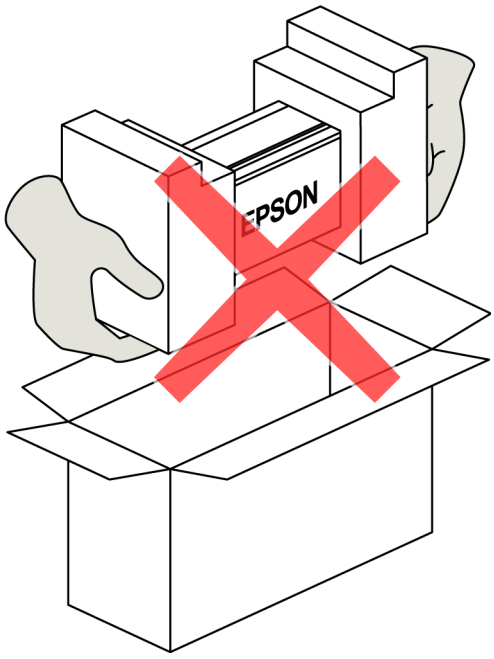
Procedure for unpacking the hopper:

* The illustrations used in these instructions are of Hopper M.

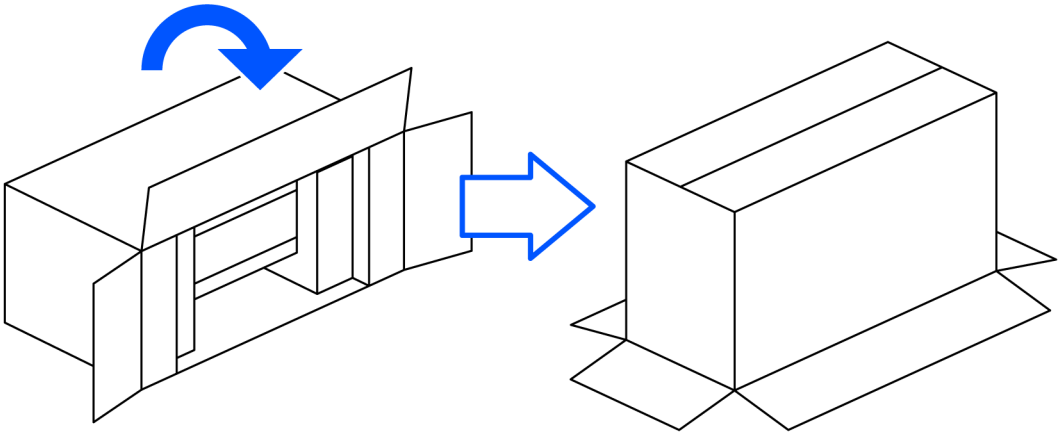
1. Open the shipping box and remove the packing material at the top.



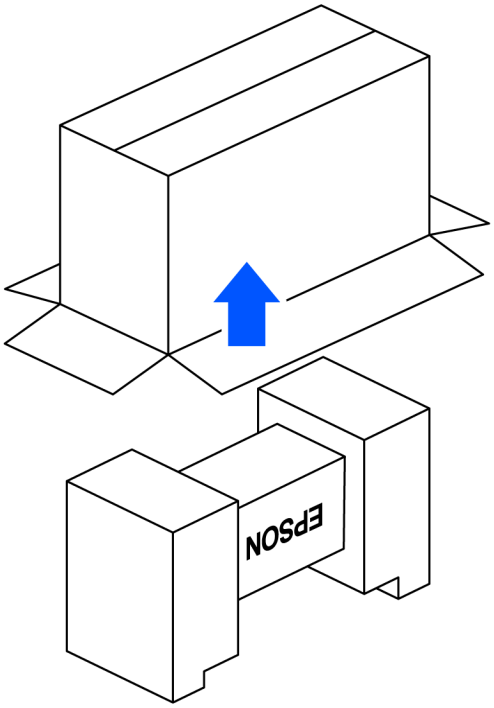
Do not pull the product from the box at this time to avoid the risk of it falling.



2. With the product still inside, turn the box upside-down.

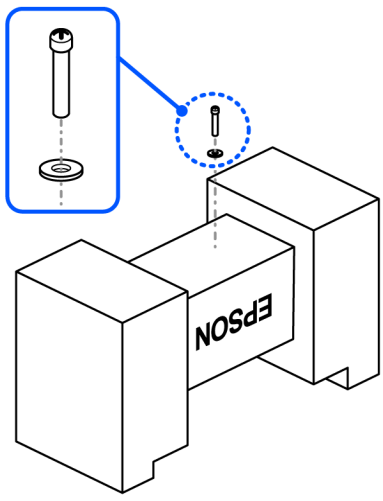


3. Pull the overturned box upward, and remove it from the product.

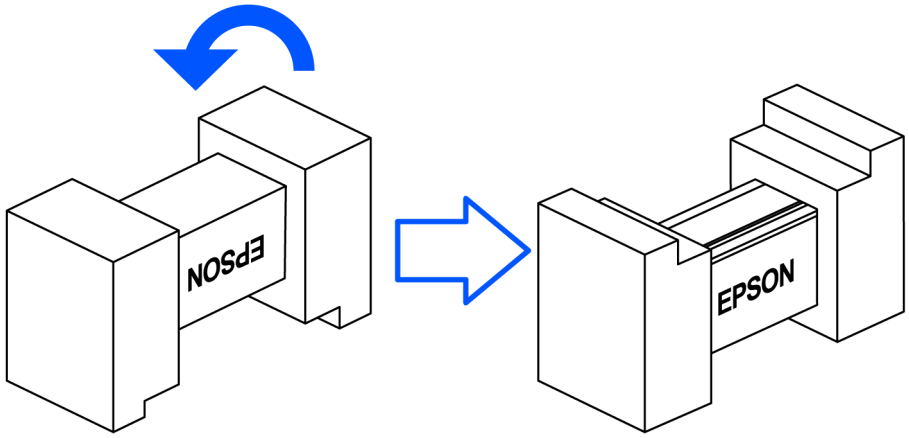


4. Remove the product's fixing bolt.

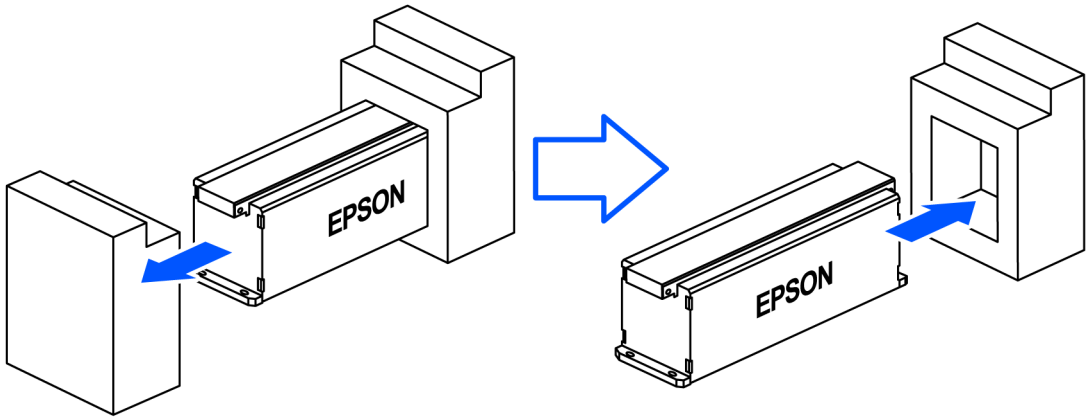
   * Hopper S does not have a fixing bolt.



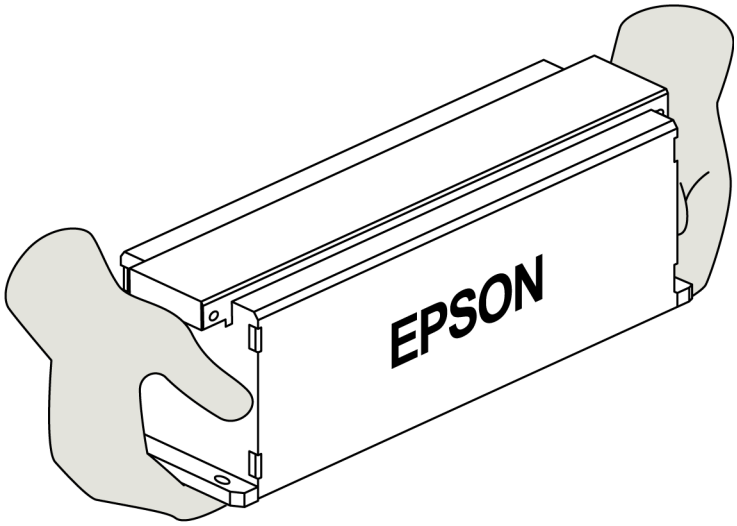
5. With the packing material on both sides still attached, turn the product back to its proper vertical orientation.



6. Remove the packing material from both sides of the product, one side at a time.



When carrying the product, hold it firmly with both hands.



2.2.3 Installation Environment

The hopper can be installed under the following conditions:

Environmental Conditions

Item	Conditions
Storage temperature	+5°C to +40°C

Item	Conditions
Storage humidity	30% to 80%, no condensation
Operating temperature	+5°C to +40°C
Operating humidity	30% to 80%, no condensation
Protection class (IP)	IP20
Environment condition	No cleanroom model

⚠ CAUTION

- Do not use the product in an atmosphere of corrosive gases. Rust may form and reduce the structural strength of the product.
- Do not use the product in a place where it may come in contact with water or oil droplets.
- With no parts on the container, a typical volume level is 79.6 dB(A) when measured at a distance of 1000 mm. The volume level may be higher depending on the parts placed inside the container. In this case, it is the responsibility of the customer or implementer (integrator) to take the necessary measures to protect the operator's hearing.
- The hopper's active components do not emit heat sufficient to require special attention during operation. However, let the system cool for ten minutes prior to taking the container apart for maintenance or repair.

KEY POINTS

- The hopper's overall performance may be affected when there are changes in temperature or humidity.
- Mount the hopper on a strong, smooth surface. If these conditions are not fulfilled, you may be unable to install the hopper, or it may not perform optimally. See the following for details:

  Integration with the Part Feeder

2.2.4 Storage environment

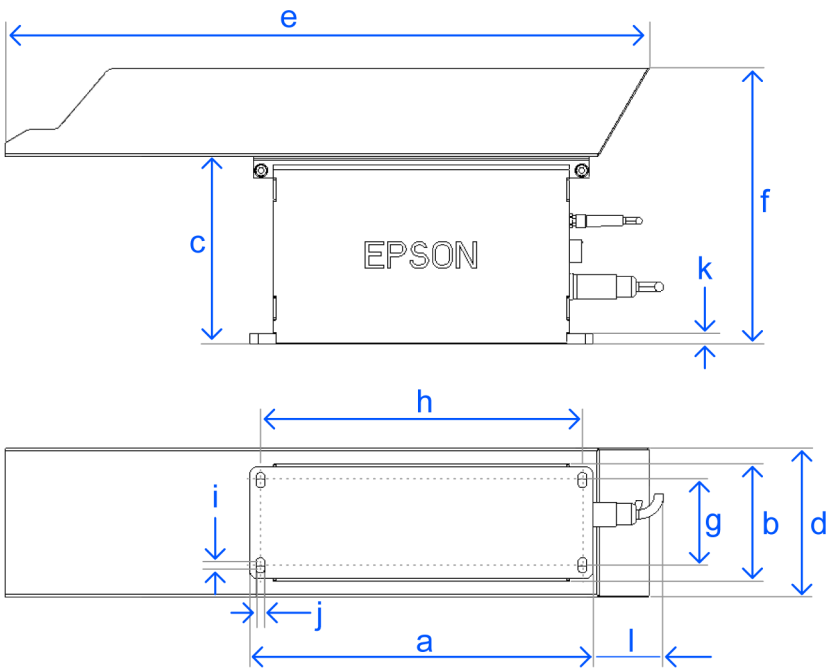
The storage environment should be similar to the operating environment. In addition, you should protect the hopper against dust

3. Specification

3.1 Mechanical Specification

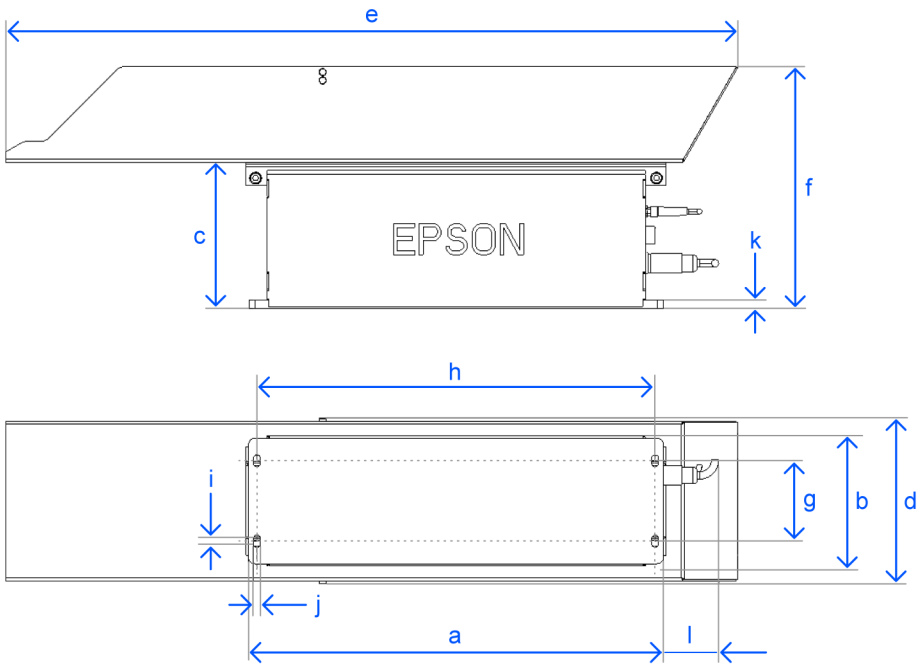
3.1.1 Dimensions

Hopper S 1L/2L Dimensions



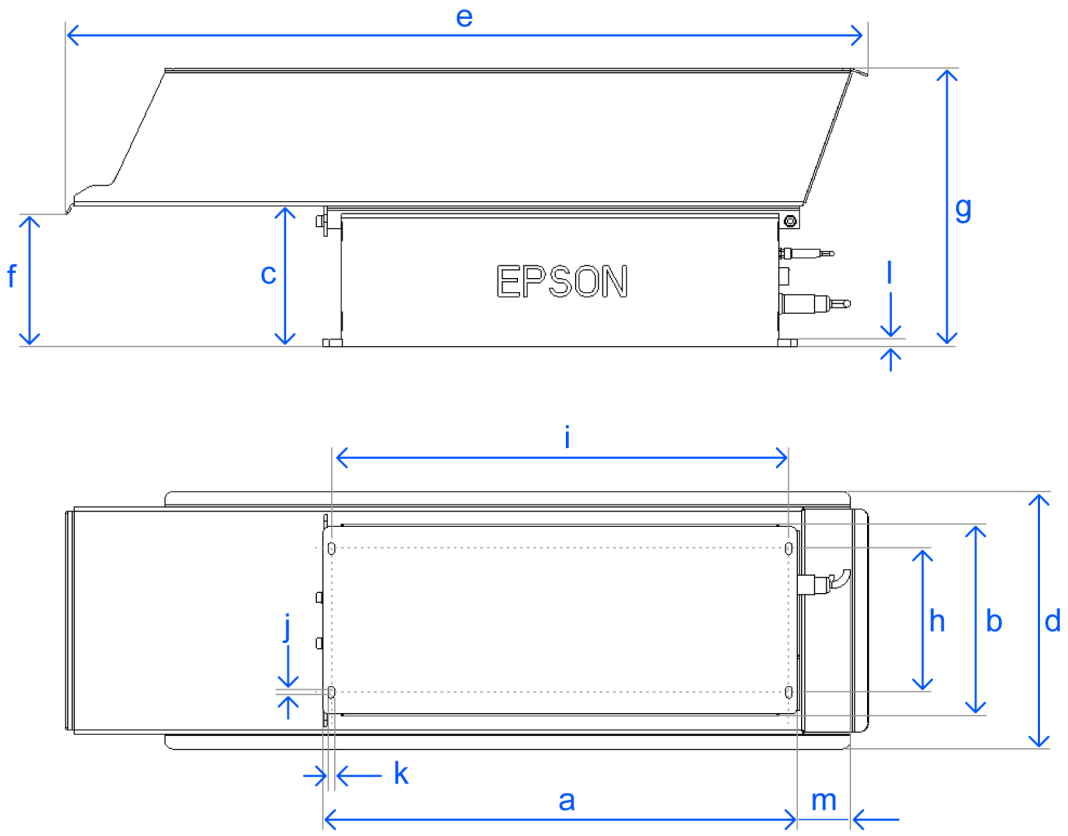
Properties	Symbols in chart	Hopper S 1L	Hopper S 2L
Base (mm)	a	258	
	b	88	
	c	141	
Container (mm)	d	88	112
	e	433	484
Full height (mm)	f	193	207
Interface unit (mm)	g	64	
	h	242	
	i	5	
	j	6.6	
	k	8	
Minimum cable space (mm)	l	≧60	
Weight (kg)		4.2	

Hopper M 3L/7L Dimensions



Properties	Symbols in chart	Hopper M 3L	Hopper M 7L
Base (mm)	a	399	
	b	124	
	c	139	
Container (mm)	d	124	159
	e	653	704
Full height (mm)	f	211	231
Interface unit (mm)	g	77	
	h	383	
	i	5	
	j	6.6	
	k	8	
Minimum cable space (mm)	l	≧60	
Weight (kg)		11.9	

Hopper L 14L Dimensions



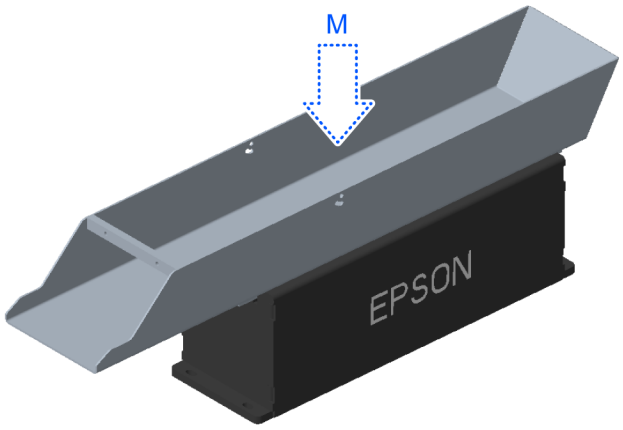
Properties	Symbols in chart	Hopper L 14L
Base (mm)	a	469
	b	189
	c	139
Container (mm)	d	254
	e	794
	f	131
Full height (mm)	g	275
Interface unit (mm)	h	142
	i	453
	j	5
	k	6.6
	l	8
Minimum cable space (mm)	m	≧60
Weight (kg)		19.2

KEY POINTS

- The table above describes the nominal dimensions for the hoppers. In the manufacturing process, slight errors may occur in the dimensions of the actual parts.
- Make room for the wiring behind the hopper's back face.

3.1.2 Maximum Allowable Load

The maximum allowable loads inside containers are shown below.



Type	M: Maximum allowable load (kg)
Hopper S 1L/2L	2
Hopper M 3L/7L	12
Hopper L 14L	20

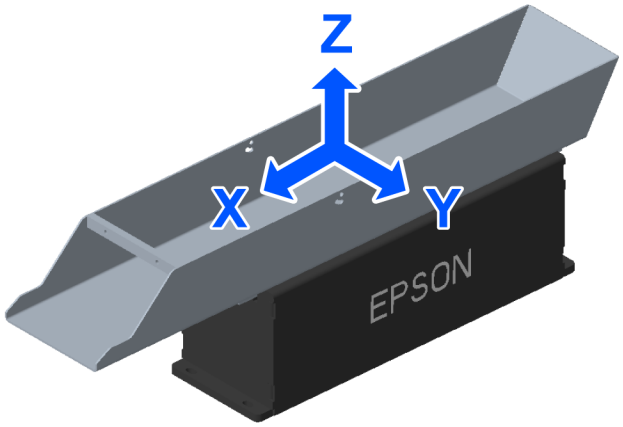
KEY POINTS

The load has an effect on the vibrational amplitude. For information on conditions needed to achieve a constant rate of feeding, see the following:

Constraints when adjusting vibrational amplitude

3.1.3 Container Displacement

While vibrating, the amplitude of the vibration does not exceed ±1 mm in the X and Z directions. However, when you integrate a hopper, create a margin of at least 10 mm in all directions (X/Y/Z).



⚠ CAUTION

There is a danger of fingers getting caught between heavy objects. Do not put your fingers between the container and the base.

Also, do not touch the machine while it is vibrating.

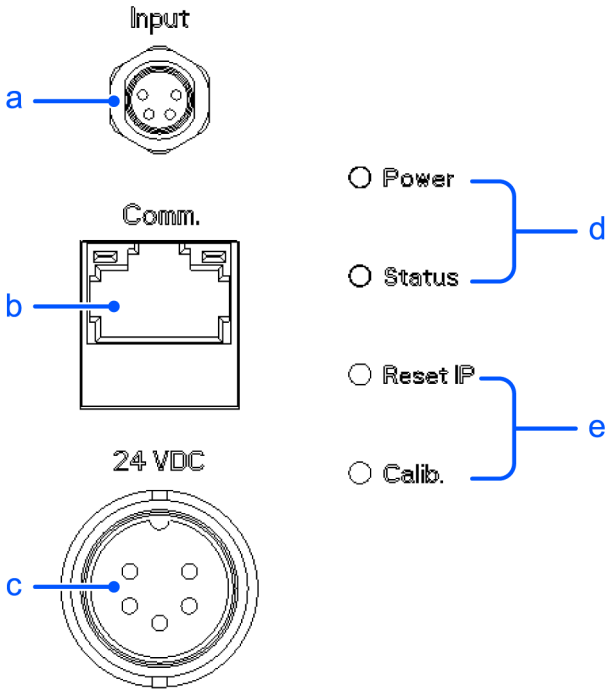
3.2 Electrical Specification

⚠ CAUTION

Only authorized or certified personnel should be allowed to perform wiring. Wiring by unauthorized or uncertified personnel may result in bodily injury and/or malfunction of the robot system. Also, install the wiring so that no one can trip on it and fall.

3.2.1 Interface

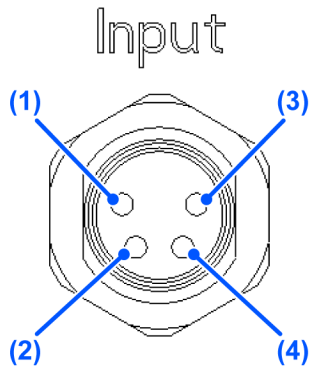
The electrical interface is on the back side of the hopper.



Symbol	Meaning
a	Part feeder connection (Input)
b	Communication connection (Comm.)
c	Power connection (24 VDC)
d	LED Display
e	Push Buttons

3.2.2 Part Feeder Connections (Input)

By connecting with a standard M8 4-pole plug cable (female), you can control the vibrations using an analog signal of 0 to 10 VDC.

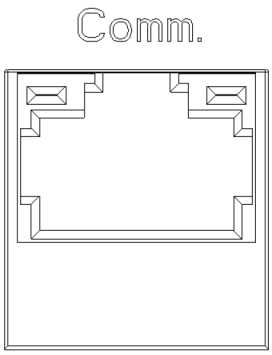


Pin	Signal
(1)	GND (ground)
(2)	Digital 24 VDC
(3)	GND (ground)

Pin	Signal
(4)	Analog 0 to 10 VDC

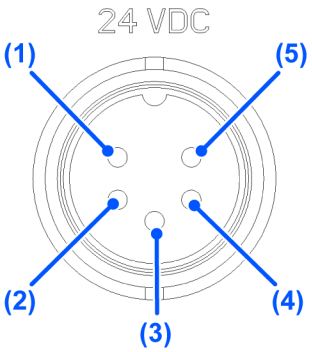
3.2.3 Communication Connection (Comm.)

The communication connection is not used. (It is for maintenance purposes only)



3.2.4 Power Connection (24 VDC)

Use a standard M16 5-pole plug cable (female) to supply 24 VDC of power.



Pin	Signal	Cable Number (Option)
(1), (3)	24 VDC	1, 3
(2), (4)	GND (Ground)	2, 4
(5)	EARTH	PE

Power Supply

Demand on Power Supply	Hopper S	Hopper M	Hopper L
Supply Voltage (VDC)	24+5%/-0%	24+5%/-0%	24+5%/-0%
Supply Current Capacity (A)	5 *1	10 *2	10 *2

*1 Hopper S properties
RMS current (amplitude 100%, maximum load): 2 A
Peak current (amplitude 100%, vibration start time): 4 A (10 ms)
*2 Hopper M and Hopper L properties
RMS current (amplitude 100%, maximum load): 4 A

Peak current (amplitude 100%, vibration start time): 9 A (10 ms)

⚠ CAUTION

Make sure of the following before turning on power to the hopper:

- The distribution voltage and the specified supply voltage are the same.
- PELV (Protected Extra Low Voltage) circuitry is used for the supply voltage.
- The polarity is correct on the plug that connects to the 24 VDC interface.

KEY POINTS

It is recommended that each hopper have its own dedicated power source.

3.2.5 LED Display

The LEDs indicate the status of the hopper. The statuses indicated by the LEDs are described in the table below.

LED	State	Color	Meaning
Status	200/800 ms on/off	Green	System preparation is complete
	On	Blue	System will vibrate
	200/800 ms on/off	Red	System error
	200/800 ms on/off	Blue	Calibrating
	On for five seconds	Green	Calibration complete; new settings will be applied
	On for five seconds	Red	Calibration failed; old settings will be maintained
Power	On	Green	Connected to power source

3.2.6 Push Buttons

The table below describes the functions of the two push buttons.

Push Button Name	Operation	Function
Calib.	Press and hold for five seconds	Begins calibration
Reset IP	Turn on power while holding down	Resets the calibration

* Push the push button with the included wire or similar.

KEY POINTS

For calibration instructions, see the following:

Calibration

4. Installation

4.1 Container

4.1.1 Mounting the Container on the Base

⚠ WARNING

Do not turn on the the power source before mounting the container. When you mount the container, make sure to disconnect all cables.

⚠ CAUTION

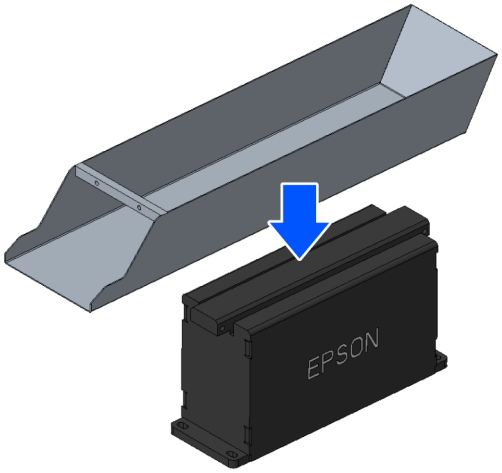
- When mounting the container, take sufficient safety precautions, such as wearing protective equipment.
- There is a danger of fingers getting caught between heavy objects. Do not put your fingers between the container and the base.
- In the case of Hopper L, first tighten the screws on the front side. If you do not follow this instruction, the Hopper L may malfunction, causing damage to the system.

Mounting a Hopper S container

Use the following to mount the container.

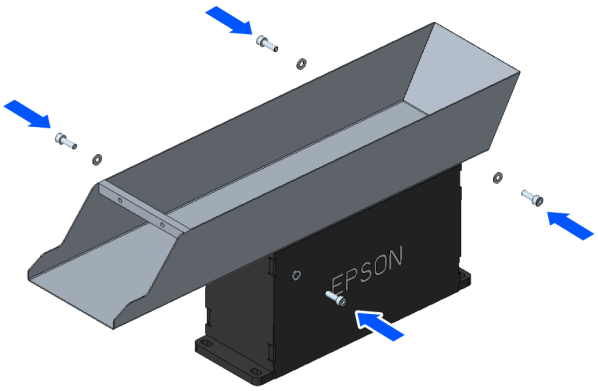
- Screws: M5
- Tool: Hex key wrench 4
- Fixing torque: 5.5 N·m

1. Remove the screws from the container.
2. Place the container on top of the base and line up the fixing holes for fastening it into place.



3. Loosely screw the four screws and washers into the fixing holes.

   When all four screws are in their given holes, tighten them using the specified torque.

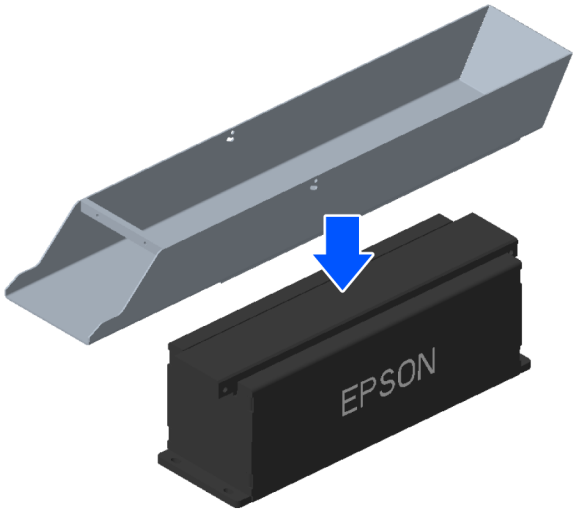


Mounting a hopper M container

Use the following to mount the container.

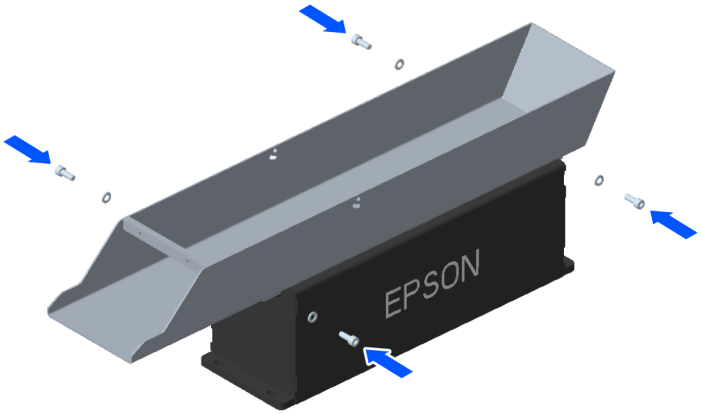
- Screws: M6
- Tool: Hex key wrench 5
- Fixing torque: 9 N·m

1. Place the container on top of the base and line up the fixing holes for fastening it into place.



2. Loosely screw the four screws and washers into the fixing holes.

   When all four screws are in their given holes, tighten them using the specified torque.

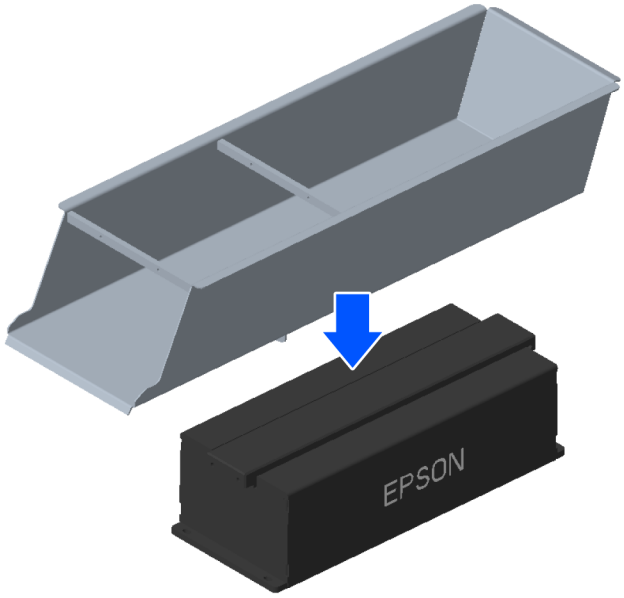


Mounting a hopper L container

Use the following to mount the container.

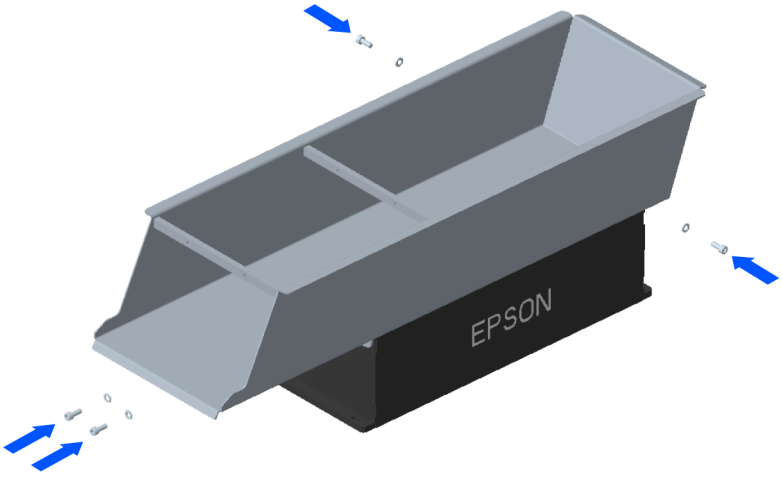
- Screws: M6
- Tool: Hex key wrench 5
- Fixing torque: 9 N·m

1. Place the container on top of the base and line up the fixing holes for fastening it into place.



2. Loosely screw the four screws and washers into the fixing holes.

   When all four screws are in their given holes, tighten them using the specified torque.



⚠ CAUTION

Customers are responsible for any modification to the container.

- Do not remove material from the container by machining or cutting it. Doing so may affect the system's rigidity and proper functioning.

- If you modify the container, make sure to remove it from the base before any drilling. See the following for information on how to remove the container.

  Removing the Container

4.1.2 Removing the Container

⚠ WARNING

Before removing the container, turn off the power to the system and unplug all its cables. Also, allow the system to cool down for ten minutes.

⚠ CAUTION

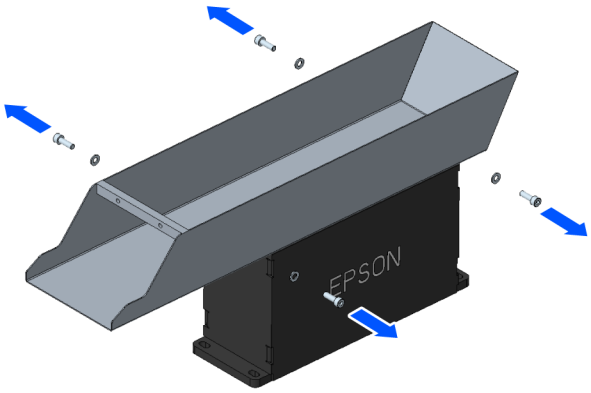
- When removing the container, take sufficient safety precautions, such as wearing protective equipment.
- There is a danger of fingers getting caught between heavy objects. Do not put your fingers between the container and the base.

Removing a Hopper S Container

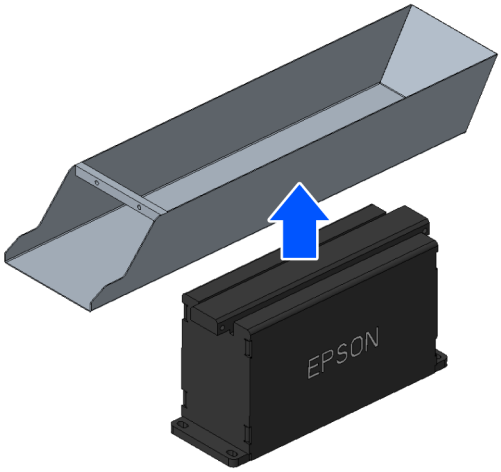
Use the following tools to remove the container.

- Screws: M5
- Tool: Hex key wrench 4

1. Remove the screws from the container.



2. Lift the container vertically and remove it.

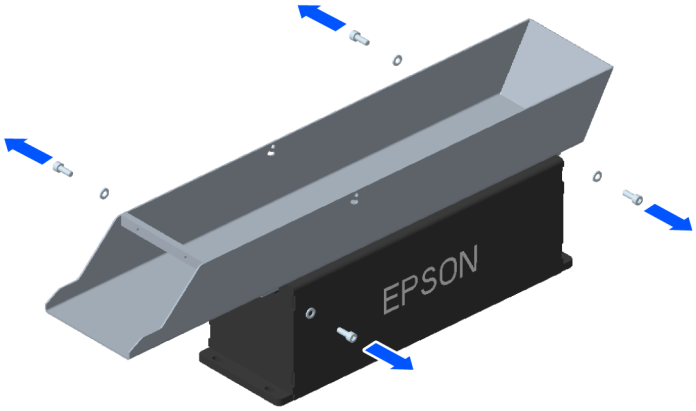


Removing a Hopper M Container

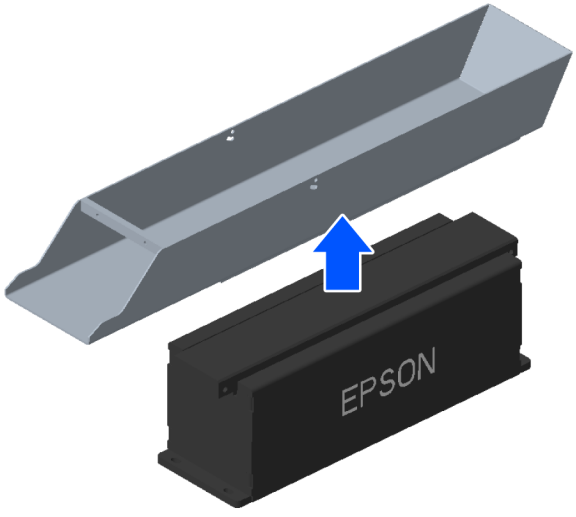
Use the following tools to remove the container.

- Screws: M6
- Tool: Hex key wrench 5

1. Remove the screws from the container.



2. Lift the container vertically and remove it.

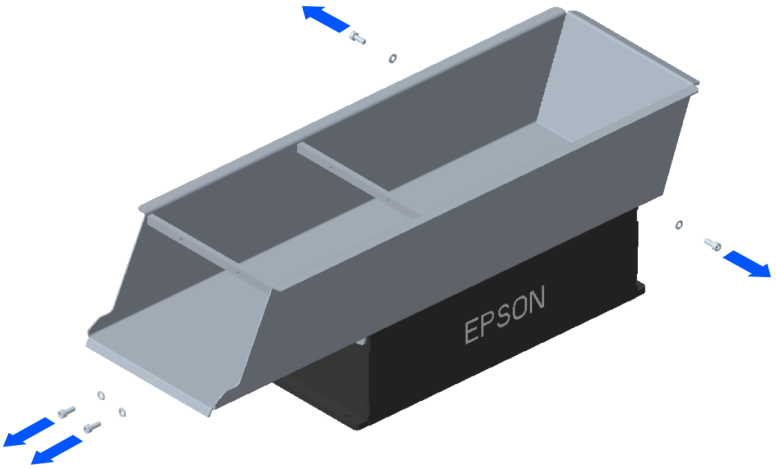


Removing a Hopper L Container

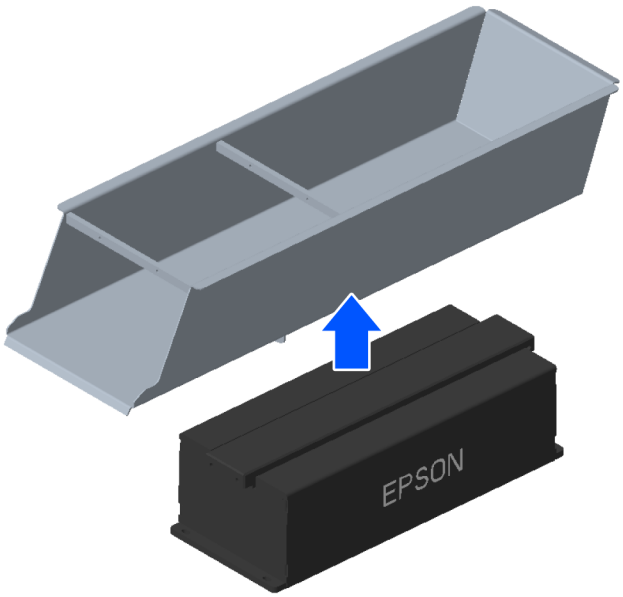
Use the following tools to remove the container.

- Screws: M6
- Tool: Hex key wrench 5

1. Remove the screws from the container.



2. Lift the container vertically and remove it.



4.2 Integrating the Hopper with a Part Feeder

⚠ CAUTION

When fixing the hopper or combining it with the part feeder, take sufficient safety precautions, such as wearing protective equipment.

4.2.1 Integration with the Part Feeder

In order to ensure the hopper's proper operation, it is necessary to properly fix it to the base table you designed along with the application. Improper installation of the hopper may result in decreased performance.

Using the base plate's four holes, you can mechanically fix the hopper with M6 screws. To fix the hopper in place, see the following to find its official dimensions.

Dimensions

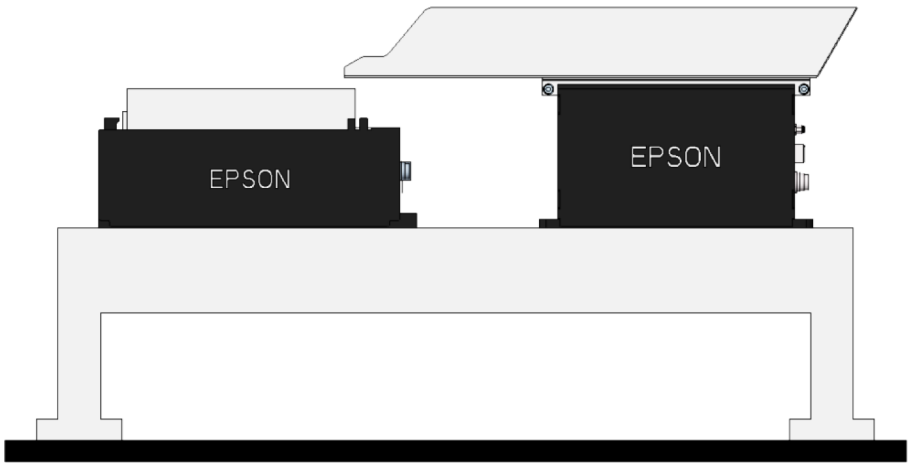
> ⚠ CAUTION
>
> If you use the HOPPER FIXATION KIT FOR L/M, make sure that the tightening torque for the four M6 screws does not exceed 4N·m.

- **Example of integrating a hopper and part feeder:**

  The figure below displays a representative example of hopper-part feeder integration. The hopper is fixed to the same base table as the part feeder. See the following for information on integrating the hopper and part feeder.

  - "Epson RC+ 8.0 Option Part Feeding 8.0 IF-240 - Installation"
  - "Epson RC+ 8.0 Option Part Feeding 8.0 IF-380 & IF-530 - Installation"

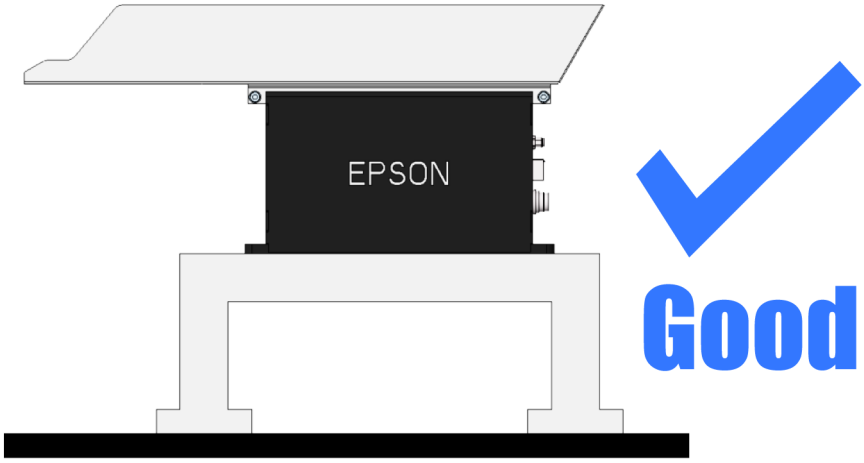
  Integrating the hopper and part feeder:



- **Precautions for fixing the hopper:**

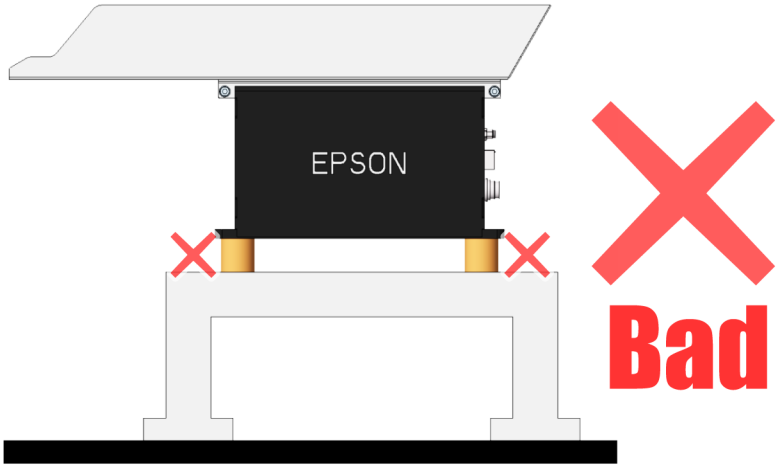
  The figures below show a good example (✓) and a bad example (×) of hopper-part feeder integration. In general, we recommend installing the hopper to the base table directly.

  Proper hopper installation



Mistaken installation method 1:

A vibration isolator is installed directly on the hopper.

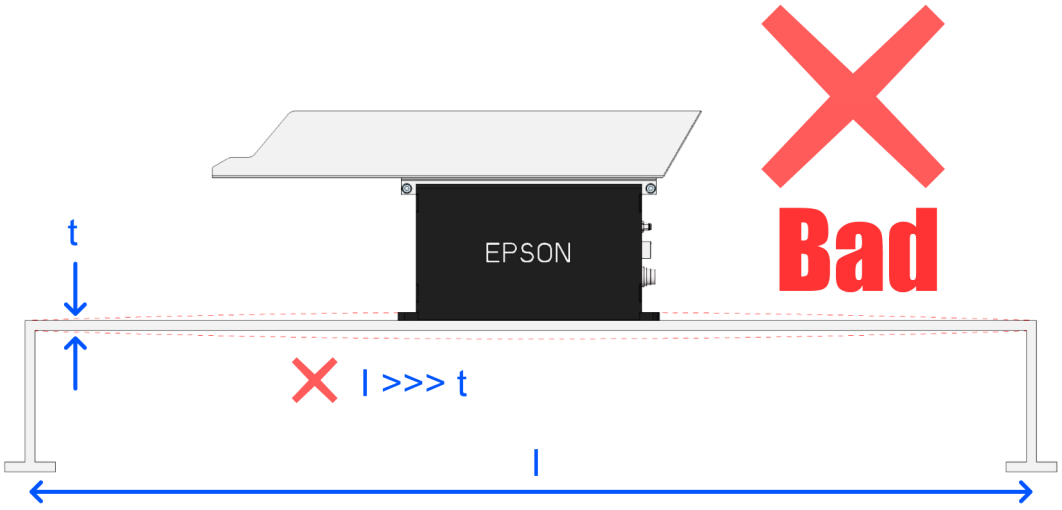


⚠ CAUTION

Do not install a vibration isolator directly on the hopper. A vibration isolator is already integrated in the hopper's casing. If you use an external vibration isolator, the inside of the hopper will vibrate more than the container itself, and may cause irreparable damage to the electronic control unit.

Mistaken installation method 2:

A hopper is installed on a table with low rigidity.



⚠ CAUTION

Do not install the hopper on a low-rigidity base table or table.

4.2.2 Hopper/Part Feeder Combinations

The hopper can be attached to the long or short side of the part feeder. This allows for applications like multi-feeding, where multiple hoppers supply multiple, differing parts to the same part feeder simultaneously.

* External hoppers cannot be connected to an IF-80 part feeder.

The table below shows the number of hoppers that can be used simultaneously when hoppers are attached on the short or long side of the part feeder.

IF-240

IF-240	Hopper S		Hopper M		Hopper L
	1L	2L	3L	7L	14L
Short side	1	1	1	0	0
Long side	2	1	1	1	0

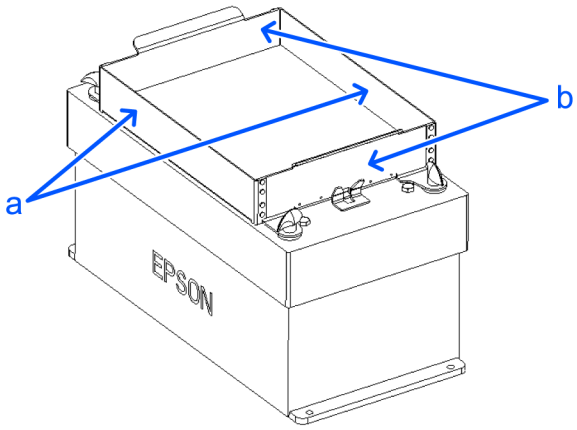
IF-380

IF-380	Hopper S		Hopper M		Hopper L
	1L	2L	3L	7L	14L
Short side	2	2	1	1	0
Long side	2	2	2	1	1

IF-530

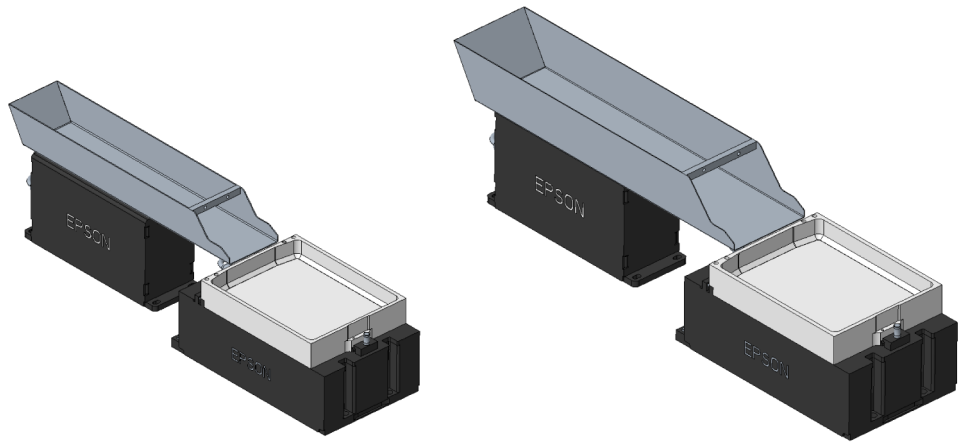
IF-530	Hopper S		Hopper M		Hopper L
	1L	2L	3L	7L	14L
Short side	2	2	2	2	1
Long side	2	2	2	2	1

Long side and short side

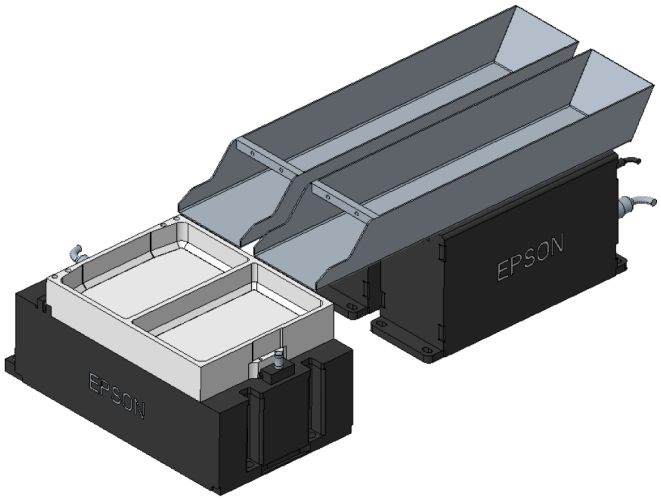


a: Long side / b: Short side

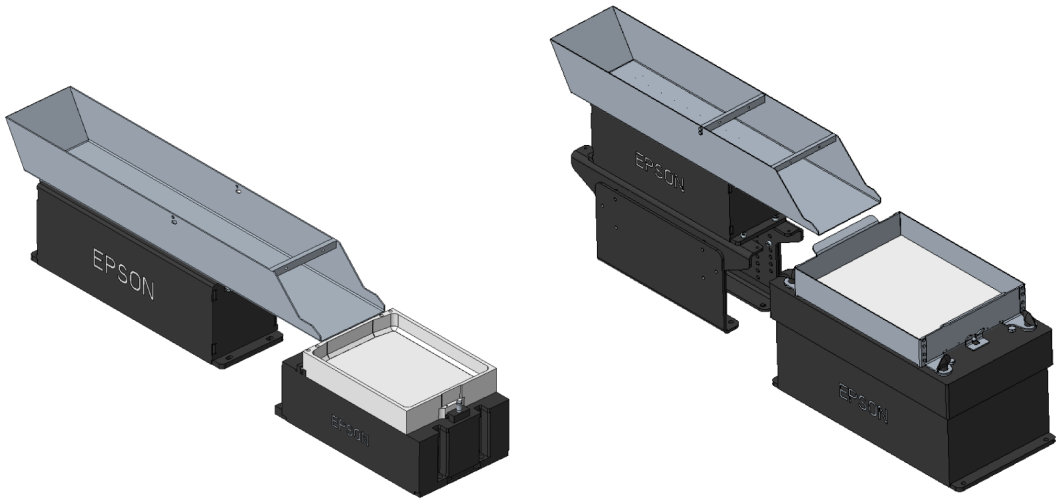
The diagrams below illustrate options for combining a part feeder with one or two hoppers.

Single feeding: one IF-240 part feeder and one Hopper S 1L (left); one Hopper S 2L (right)


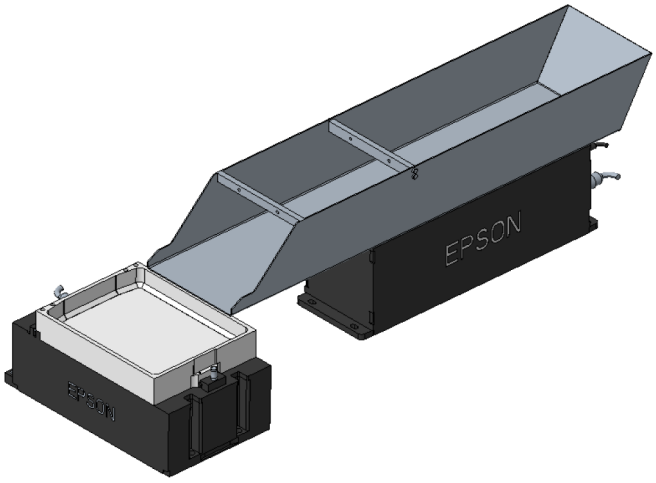
Multi-feeding: two Hopper S 1L and one IF-240 part feeder, using a partition



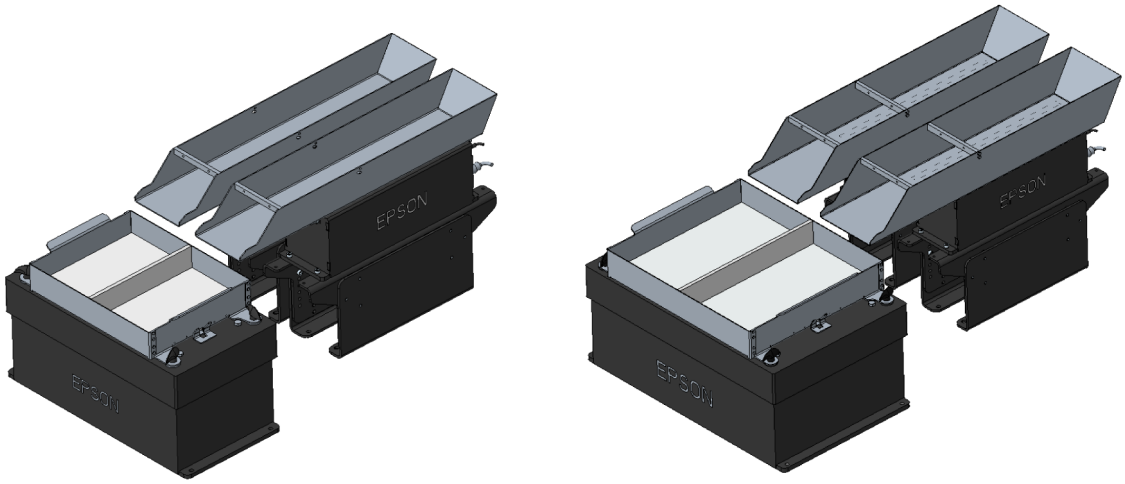
Single feeding: one IF-240 part feeder and one Hopper M 3L (left); one IF-380 part feeder and one Hopper M 7L (right)



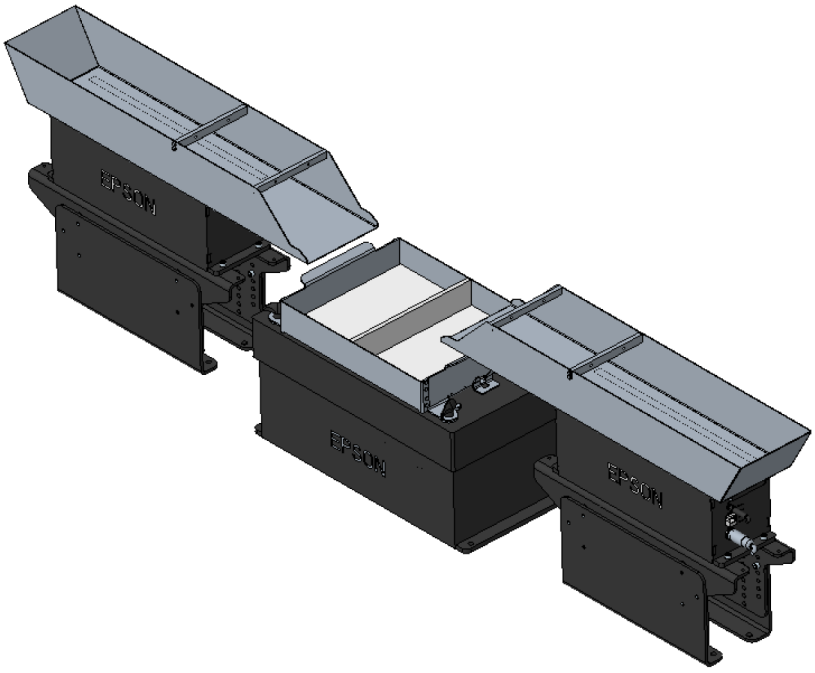
Single feeding, attached to long side: one IF-240 part feeder and one Hopper M 7L

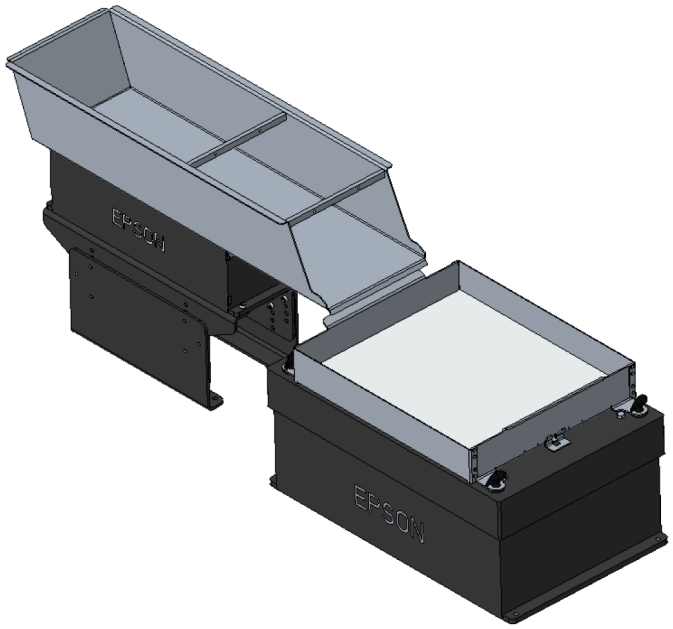


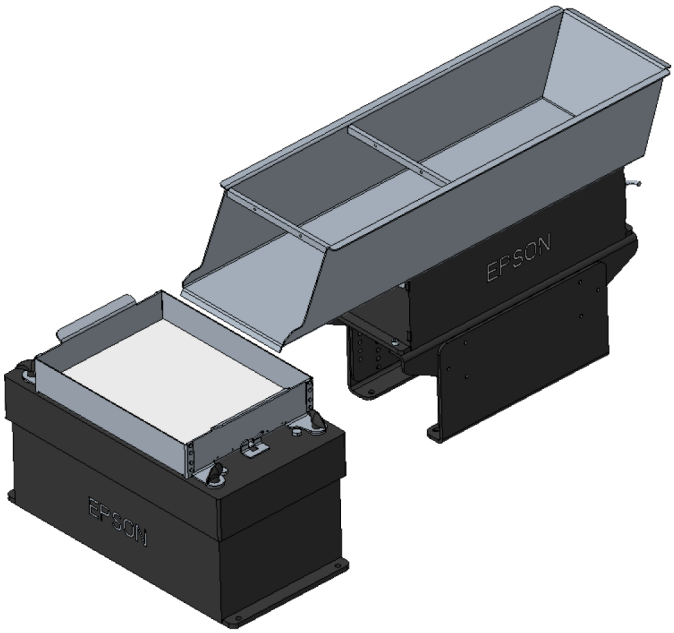
Multi-feeding two different parts: one IF-380 part feeder and two Hopper M3L (left); one IF-530 part feeder and two Hopper M 7L (right)



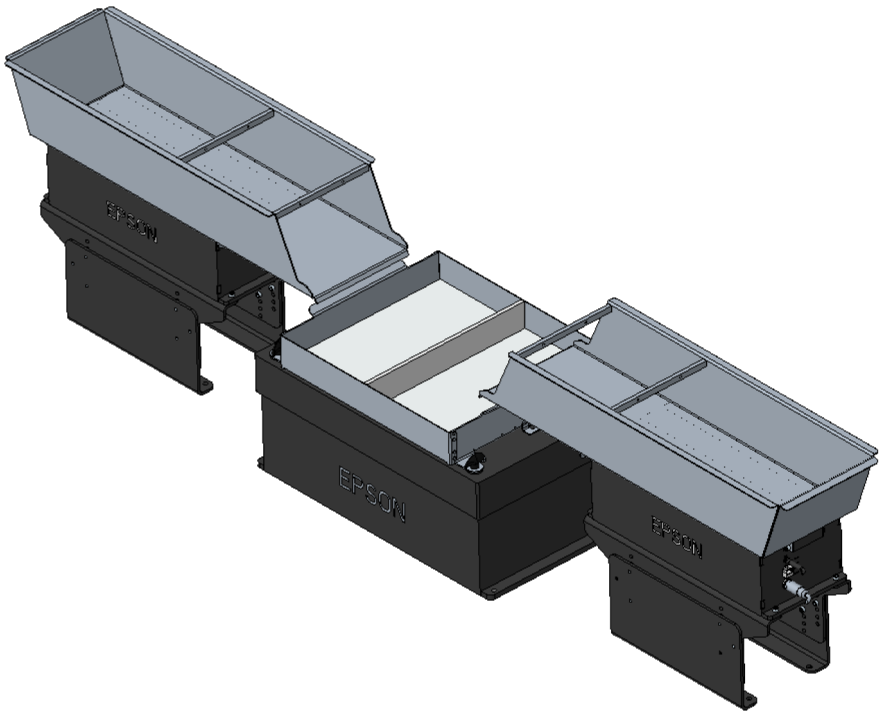
Multi-feeding from different sides: one IF-380 part feeder and two Hopper M7L



Single feeding: one IF-530 and one Hopper L14L


Single feeding from the long side: one IF-380 part feeder and one Hopper L 14L


Multi-feeding from different sides: one IF-530 and two Hopper L 14L



KEY POINTS

Customers wishing to place a divider above the multi-feeding container must prepare the divider themselves.

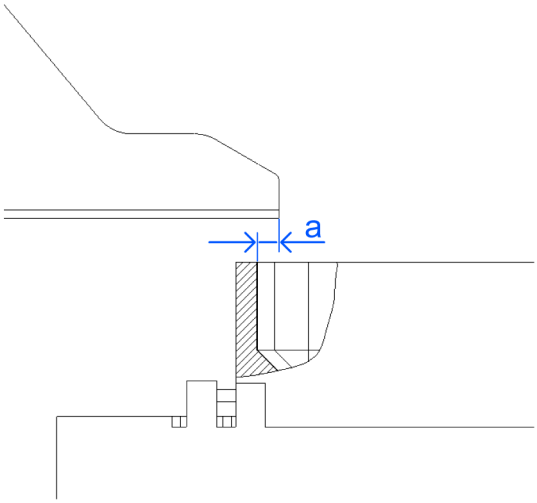
4.2.3 Overlap with the Part Feeder

The recommended overlaps for hoppers and part feeders are shown in the table below.

Recommended overlap (a) between the container and part feeder:

	IF-240	IF-380	IF-530
Hopper S	5 mm (diagram A)	5 mm (diagram B)	5 mm (diagram B)
Hopper M	5 mm (diagram A)	5 mm (diagram B)	5 mm (diagram B)
Hopper L	-	5 mm (diagram C)	5 mm (diagram C)

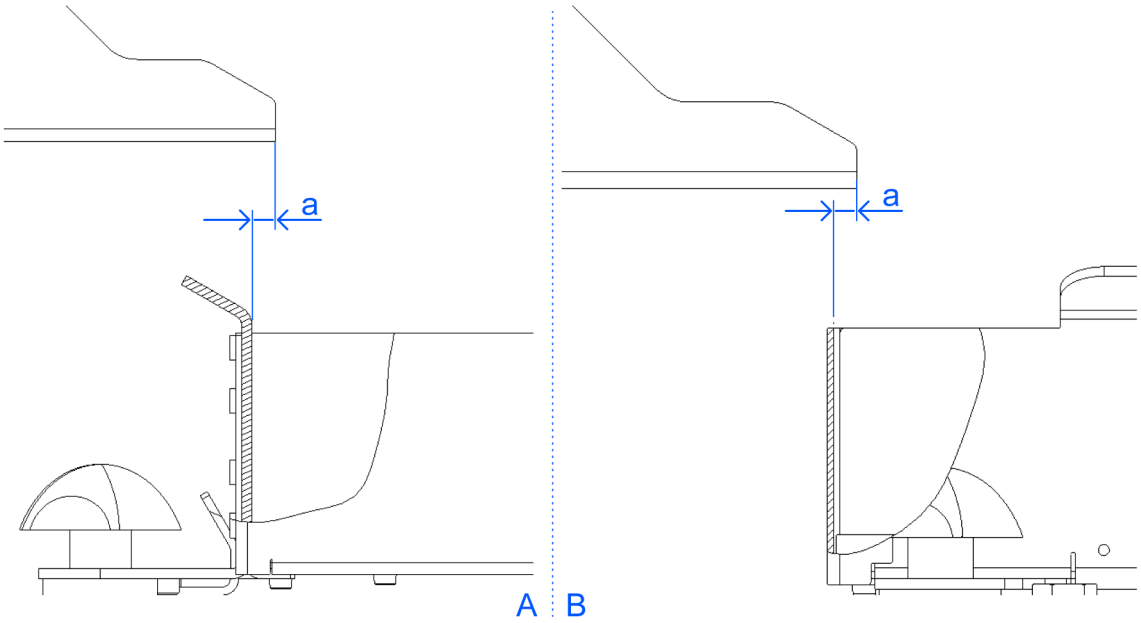
Diagram A: Overlap between Hopper S/M and IF-240



Short side or long side

a: Recommended overlap between hopper and part feeder

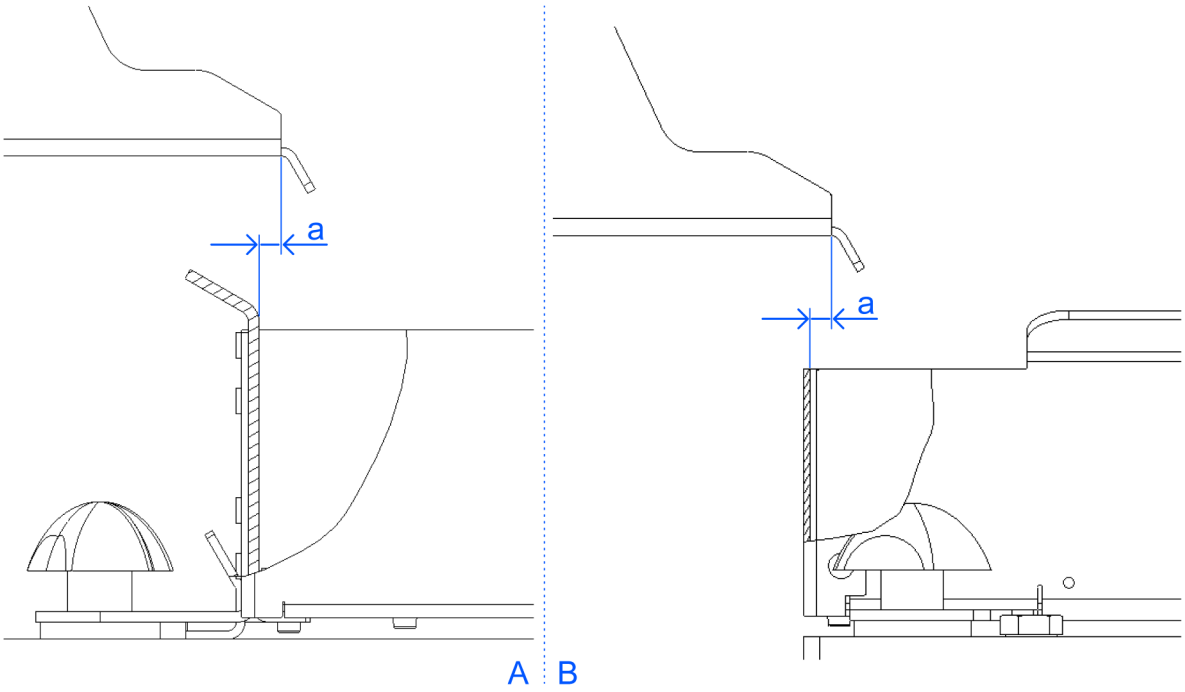
Diagram B: Overlap between Hopper S/M and IF-380/IF-530



A: Short side / B: Long side

a: Recommended overlap between hopper and part feeder

Diagram C: Overlap between Hopper L and IF-380/IF-530



A: Short side / B: Long side

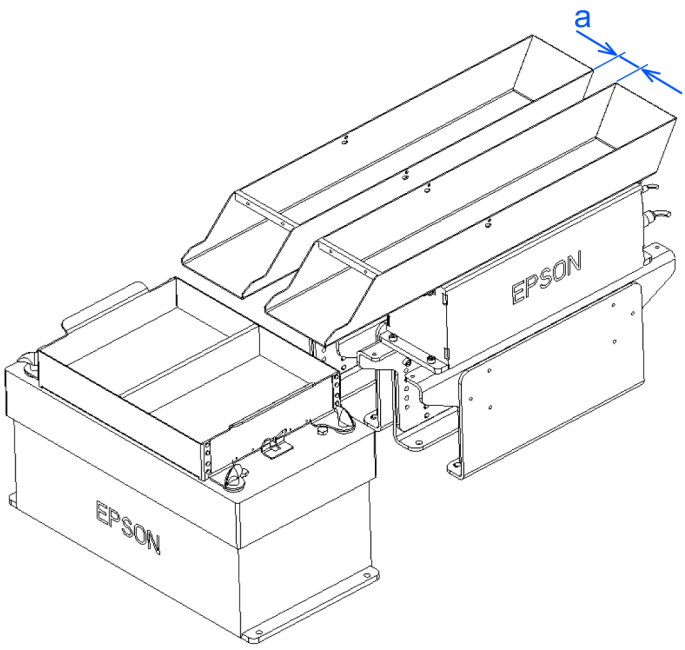
a: Recommended overlap between hopper and part feeder

4.2.4 The Distance Between Two Hoppers

When two hoppers are used together on the long side of a part feeder, the recommended distances between the two are as shown below.

(a) Recommended distance between multi-feeding hoppers

	IF-240	IF-380	IF-530
Hopper S 1L	17 mm	-	-
Hopper S 2L	-	-	-
Hopper M 3L	-	43 mm	95 mm
Hopper M 7L	-	-	66 mm
Hopper L 14L	-	-	-



a: Recommended distance between multi-feeding hoppers

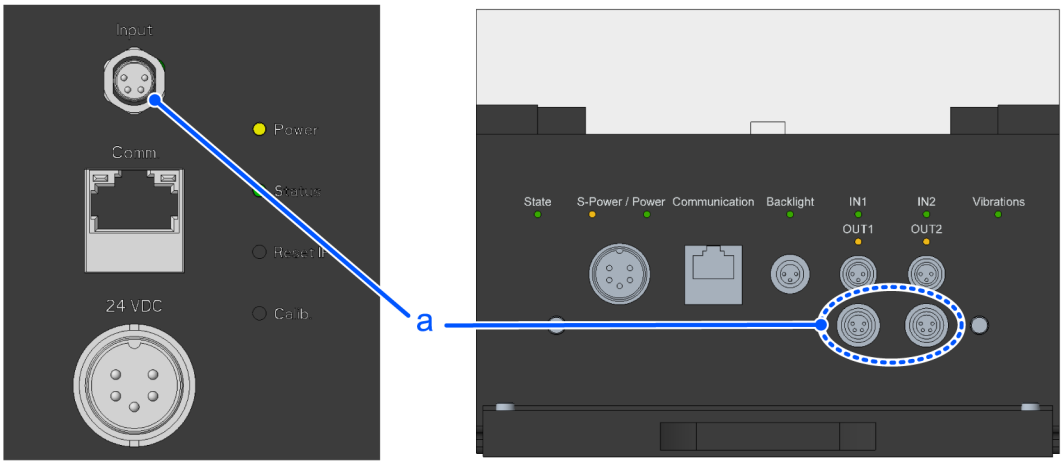
4.3 Connecting to the Part Feeder

Connect the hopper's Input interface to the part feeder's OUT1 or OUT2 interface using the I/O cable (option). A maximum of two hoppers can be connected to a single part feeder.

For details about the I/O cable option, refer to the following.

Option List

When connecting to a feeder:



a: connect them with a male/female M8 4P cable

4.4 Calibration

A smart sensor is incorporated into the hopper, making it possible to adjust the amplitude of vibrations. Hopper calibration is necessary to make it work correctly.

4.4.1 When to Perform Calibration

Perform calibration before using the hopper for the first time.

Also perform calibration when:

- You replace the container with a model of differing size.
- You modify the container.
- You perform periodic maintenance on the hopper.

> ⚠ CAUTION
>
> Customers are responsible for any modification to the container.
>
> If you are going to modify the container, refer to the following:
>
> - **Removing the Container**
> - **Mounting the Container on the Base**

4.4.2 Preparations for Calibration

> KEY POINTS
>
> Before performing calibration, confirm each of the following:
>
> - All parts have been removed from the container.
> - The fixing bolts used during transport have been removed (Hopper L/M only).
> - The hopper has been correctly fixed in place. See the following for details:
>
> **Installation**
> - The container has been correctly mounted on the base.
> - The container is able to move freely without interfering with adjacent objects.
> - There are no devices nearby that cause unneeded vibrations.

4.4.3 Performing Calibration

Hold down the [Calib.] push button for five seconds to begin the calibration process.

During calibration, the control unit will perform sweeps at multiple frequencies and various amplitudes in order to find the best operational conditions. During calibration, the status LED display will blink blue. See the following for details:

LED Display

Calibration takes 30 to 60 seconds.

The Calibration Push Button

* Push the [Calib.] push button with the included wire or similar.

KEY POINTS

While calibration is being performed, observe the following:

- Do not touch the hopper.
- Do not touch the base table to which the hopper is affixed.

4.4.4 Confirming Calibration Results

After completing calibration, confirm whether or not the calibration was successful.

- If a non-blinking green light shines for five seconds on the status LED display, calibration was successful. The new settings will be saved.
- If a non-blinking red light shines for five seconds on the status LED display, calibration has failed. The old settings will be saved.

If calibration fails, check to make sure you have followed all the points in this chapter, then repeat the procedure. If this does not resolve the problem, contact the supplier for your region.

4.5 Constraints when adjusting vibrational amplitude

A smart sensor is incorporated into the hopper, making it possible to adjust the amplitude of vibrations.

With it, the system can detect the current part load and automatically adjust the amplitude of vibrations, guaranteeing that parts are supplied at a constant rate.

KEY POINTS

If you apply amplitudes greater than the recommended limits shown in the table below, the control unit will become unable to reach the intended amplitudes. As a result, the hopper's vibrational amplitude will increase as the container empties out.

Hopper S

Total Part Load	Recommended Amplitude
0.5 kg or less	Maximum 100%
0.5 kg to 1 kg	Maximum 75%
1 kg to 1.5 kg	Maximum 50%
1.5 kg to 2 kg	Maximum 25%

Hopper M

Total Part Load	Recommended Amplitude
4 kg or less	Maximum 100%
4 kg to 6 kg	Maximum 75%
6 kg to 9 kg	Maximum 50%
9 kg to 12 kg	Maximum 25%

Hopper L

Total Part Load	Recommended Amplitude
5 kg or less	Maximum 100%
5 kg to 10 kg	Maximum 75%
10 kg to 15 kg	Maximum 50%
15 kg to 20 kg	Maximum 25%

5. Options

5.1 Option List

See the table below for information on the option list.

Name	Code	Notes
POWER CABLE 80/240	R12NZ9016K	24 VDC power cable (single-side discrete cable)
MALE/FEMALE M8 4P 1 m CABLE	R12NZ901ML	Cable for connecting with the part feeder (1 m)
MALE/FEMALE M8 4P 2 m CABLE	R12NZ901MM	Cable for connecting with the part feeder (2 m)
HOPPER FIXATION KIT FOR L/M	R12NZ901MJ	Kit for adjusting mounting height (L/M only)

⚠ CAUTION

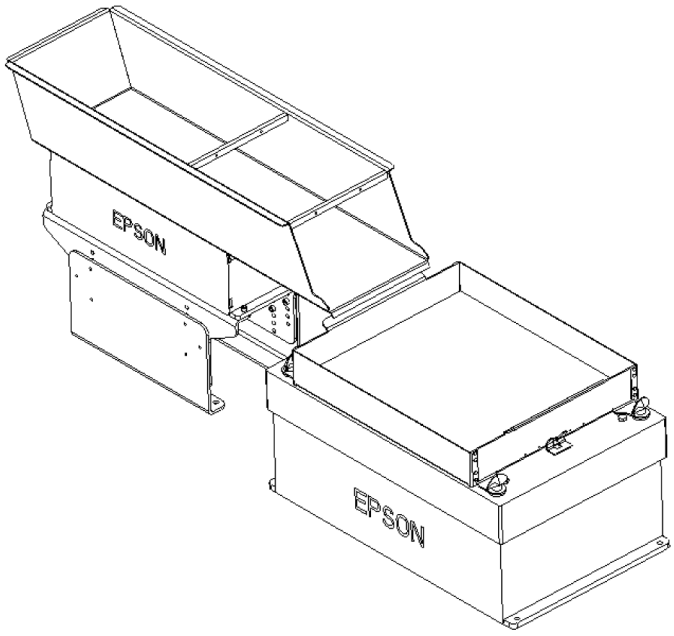
Option cables cannot be used with cable carriers (cable tracks).

5.2 Hopper Fixation Kit

By using a hopper fixation kit, you can install a Hopper M or Hopper L at your ideal height.

You can use this fixation kit to install a Hopper M or Hopper L on a part feeder (IF-380 or IF-530).

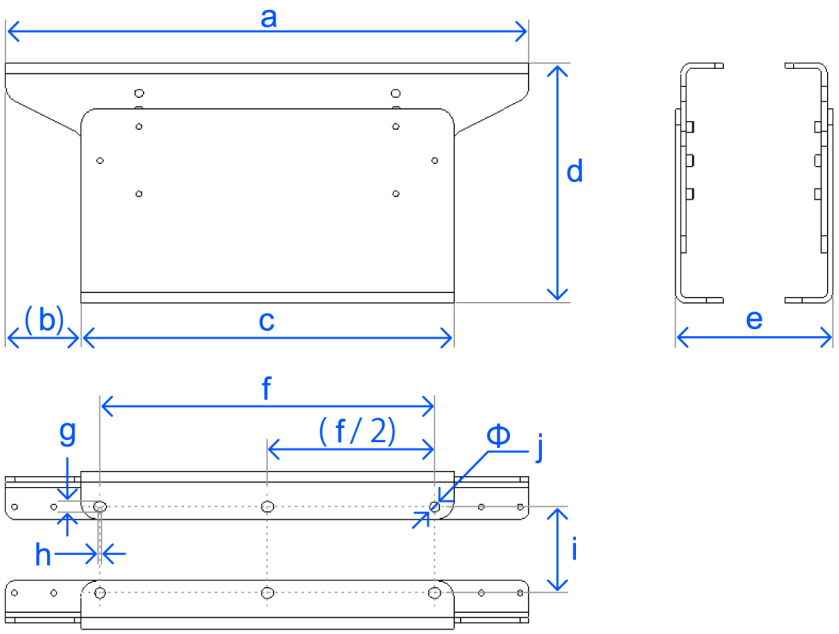
When a Hopper L is installed on top of a hopper fixation kit:



KEY POINTS

"HOPPER FIXATION KIT FOR L/M" cannot be used with Hopper S.

5.2.1 Dimensions



Dimensions (mm)

Symbol	Hopper M	Hopper L
a	469	
b	67.5	
c	334	
d	185 to 260, at five levels Refer to: **Recommended Height**	
e	141	206
f	300	
g	9	
h	2	
i	77	142
j	9	

5.2.2 Recommended Height

The table below shows the recommended height for Hopper M and Hopper L fixation kits when combined with an IF-380 or IF-530 part feeder. This height varies depending on the part feeder frame's height and the structure (long side or short side) of the combined machines.

Recommended Height: IF-380

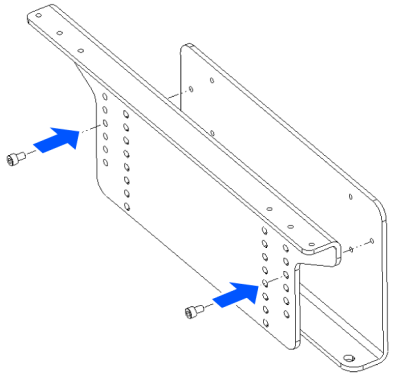
Frame Height	H=60 mm		H=85 mm	
Feeding Direction	Long side	Short side	Long side	Short side
Height B of Fixing Kit (mm)	185	200	200	215

Recommended Height: IF-530

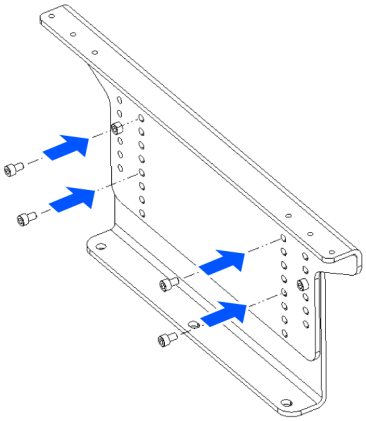
Frame Height	H=68 mm		H=100 mm	
Feeding Direction	Long side	Short side	Long side	Short side
Height B of Fixing Kit (mm)	200	215	230	245

5.2.3 Assembling the Hopper Fixation Kit

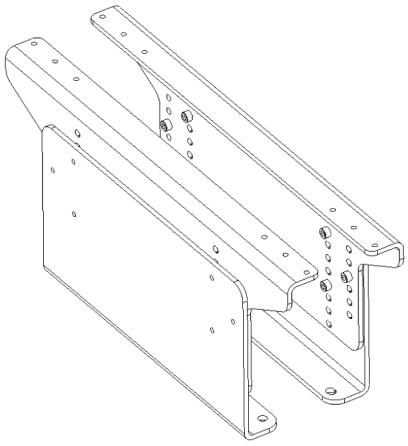
1. Align the plates' holes to select your preferred height and join the plates with two M6 screws. When tightening the screws, use a maximum torque of 4 N·m.



2. Use four M6 screws to securely fasten the plates. Tighten them with a maximum torque of 4 N·m.



3. Repeat this process for the remaining half of the Fixation Kit.



6. Maintenance

6.1 Replacement Parts

KEY POINTS

There are no user replaceable parts inside the product. Contact the supplier of your region or your local supplier for repairs.

6.2 Periodic Maintenance Plan

WARNING

Observe the following when performing maintenance, except when it is necessary to perform maintenance with the power on (e.g. during recalibration).

1. Turn off the power and unplug all the cables.
2. Allow the system to cool down for ten minutes.

Perform simple, periodic inspections so that the hopper runs safely and maintains its maximum level of performance.

Item	Period	Details
Calibration	Six months, or 180 hours of vibration	See the following: **Calibration**
Inspection of Fixing Bolts	One month	See the following: **Inspection of Fixing Bolts**

KEY POINTS

The information in the table above is for reference. The content and frequency of maintenance work must be changed to fit the system being used, the environment where it is used, and the amount of usage.

6.3 Inspection of Fixing Bolts

CAUTION

Loose or missing bolts may cause a danger of the product falling. Also, the system cannot perform to its full potential when bolts are loose, and parts may wear out early.

Refer to the following, and use the recommended torque.

- Torque for container mounting screws

  Mounting the Container on the Base

- Torque for Hopper Fixation Kit fixing bolts

Assembling the Hopper Fixation Kit