

Electric Vacuum End Effector

Model **EVE-500**

Electric vacuum end effector

e.VEE*Contributes to carbon neutrality*

Utilize a vacuum pump as a negative pressure source

Application Examples

**No compressed
air required**

Switch from Ejector to Vacuum Pump for Energy-Saving Vacuum Lifting



No compressed air required

Features

- No compressed air required due to built-in vacuum pump
- Enables energy savings in vacuum lifting

Energy saving

Pump automatically stops at preset pressure

Vacuum holding function

Valve maintains vacuum when the pump stops automatically

Suitable for use anywhere

No compressed air required

Easy setup

No need for hose routing

Quiet operation

No air discharge noise

Cleanliness

No external air inflow

I/O signal type

PNP / NPN models available

Compressor + Ejector



No compressed air required

eVEE

Power Consumption

MAX **14.4 W** *1

Energy Consumption

0.014 kWh

Up to **77%** *2
reduction in power consumption

*1 Maximum instantaneous value during operation.

*2 Compared to an ejector of the same capacity, with an air consumption of 13 L/min per unit.

Specifications

Model

EVE-500

Attainable Vacuum	kPa {mmHg}	-66.6 {-500}		
Free Air Displacement	L/min	7.5		
Rated Voltage		24 V DC		
Power Consumption	W	14.4 *1		
Energy Consumption	kWh	0.014		
Dimensions	*Excluding protrusion mm	104(W) x 96(D) x 80(H)		
Weight	kg		EVE-500-NK	EVE-500-KOM
				EVE-500-KO
		Main unit only	0.92	0.94
	When mounted	1.08	1.13	
I/O Signal Type		PNP / NPN		
Mounting Interface		ISO Mechanical Interface 4		

Model Type Selection Guide				
		I/O Signal Type		
Mounting Type			PNP	NPN
Screw type tool flange			EVE-500-NK-PNP	EVE-500-NK-NPN
Manual robotic hand changer	Master cylinder + Tool adapter		EVE-500-KOM-PNP *3	EVE-500-KOM-NPN *3
	Tool adapter only		EVE-500-KO-PNP *3	EVE-500-KO-NPN *3

*3 Made-to-order models. For details, please contact your local sales staff.



YouTube



Overview

See page 3 for standard accessories.

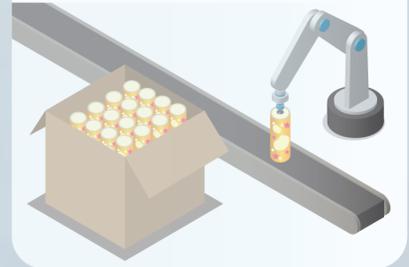
Application Examples



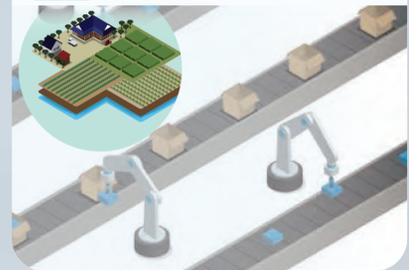
1 Warehouses



2 Food factories



3 Agricultural sectors



YouTube



Vacuum Lifting Demonstration: **Cardboard**

YouTube



Vacuum Lifting Demonstration: **Other materials**

Functions

- Select the operation mode using the mode switch on the side of the main unit.
- Switch the floating function using the lock lever on the back of the main unit.

YouTube



Functions

Operating Modes

Program Mode



Side of the main unit

- **Suction command signal (I/O) operation**
Suction and release are controlled via the I/O signals from the robot. Suction starts when the I/O signal is [ON]. Release occurs when the I/O signal is [OFF], opening the atmospheric release valve.

Timer Mode



Side of the main unit

- **Timer setting operation (2 to 30 seconds)**
Set the suction time by turning the timer dial. (No I/O signal required)
Suction starts when the suction cup touches the workpiece, and release occurs after the set time elapses.

Floating Mechanism



Back of the main unit

- **Floating stroke up to 15 mm in the Z-axis direction**

Lock : Floating OFF **Unlock** : Floating ON

For stable suction and to reduce the load on the e-VEE and robot, it is recommended to use the [Floating ON] setting. Use the [Floating OFF] setting when using the bellows suction cup or when a pushing force is required for the suction cup or the workpiece.



Do not leave the unit continuously powered on without performing suction operations. Prolonged energization without suction may cause overheating, leading to malfunction or failure. Perform suction operations periodically. It is recommended to operate the unit so that the suction state accounts for at least 50% of the operation cycle time.

Standard Accessories

Standard



Screw type tool flange



Adapter ring

Flange adapter

Robot flange



Parallel pin



Mounting bolt

Included:
Parallel pins (2 pcs)
Mounting bolts (4 pcs)

Optional accessory

For mounting

Pin spanner for tool flange



Model
EVE-PS-7075

*Mounting Interface:
ISO Mechanical Interface 4

Made-to-order



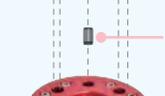
Manual robotic hand changer



Master cylinder

Model
SXR0070-M

Robot flange



Parallel pin



Pin
(in the Master cylinder)



Mounting bolt

*Mounting Interface:
ISO Mechanical Interface 4

Included:
Parallel pin (1 pc)
Mounting bolts (4 pcs)

Hole position
(in the Tool adapter)

Main unit weight

0.92 kg

*Including tool flange
*Excluding suction cup adapter



Tool flange

Tool adapter

Main unit weight

0.94 kg

*Including tool adapter and suction cup adapter flange
*Excluding suction cup adapter



Suction cup adapter flange

Mounted on the main unit

Filter (1 pc)

Built into suction cup adapter flange

Gasket for suction cup adapters

Gasket for suction cup adapters

Suction cup adapter M6

Mounting bolt

Mounting bolt

Flat suction cup $\phi 35$

Suction cup mounting screw
M6

Suction cup mounting screw
M6



Installation examples of optional accessories

Branch type

2-branch



3-branch



4-branch

Robot Hand Kit CONVUM



*Compatible with e-VEE. Not available from Nitto Kohki.

Extension type

3-branch



**Extension flange 100
EVE-EXF-100**
Length:100 mm

Safety guide

- ⚠ When attaching or detaching the main unit, always implement fall-prevention measures and exercise caution to prevent the unit from falling. Dropping the unit may result in damage to the product or personal injury. Additionally, ensure the robot's power is turned OFF prior to proceeding.
- ⚠ Regularly inspect the mounting bolts and adapter rings to ensure they are securely tightened.
- ⚠ If there is an inclination during connection, the equipment may become twisted, caught, or clamped. If clamped, releasing it may require a very large pusher force, making manual release difficult.
- ⚠ If manual release is not possible, attach a bolt or similar tool to the forced-release screw on the tool adapter and push the pusher to perform a forced release.
- ⚠ When attaching or detaching the bolts, apply a spanner to the two flats of the suction cup adapter flange and ensure that excessive torque is not applied to the center shaft.
- ⚠ If a swiveling operation is performed during transportation, the screws may loosen, causing the suction cup to come off. Perform transportation operations at a sufficiently low speed and acceleration. Pay special attention if the suction position and the center of gravity of the object being suctioned are misaligned.

See page 11 for optional accessories.

Standard Accessories

Suction cup adapter flange



Mounted on the main unit.
Filter (1 pc) is built into suction cup adapter flange.



Filter (1 pc)
EVE-FL10

Suction cup adapter M6

Model **EVE-PA-M6**



Included:



Gasket for suction cup adapters (1 pc)
EVE-PAG10



Mounting bolts (2 pcs)

Flat suction cup $\phi 35$

Model **PFG-35-S**



Included:



Suction cup mounting screw (1 pc)
TN-PF-25-M6
M6

External dimensions / Connector pin assignment / Circuit configuration

*The dimensions in the drawings are for reference only.
*Illustrations are not to scale.

Unit : mm



**Screw type
tool flange**

I/O Signal Type (PNP/NPN)

EVE-500-NK-PNP

EVE-500-NK-NPN



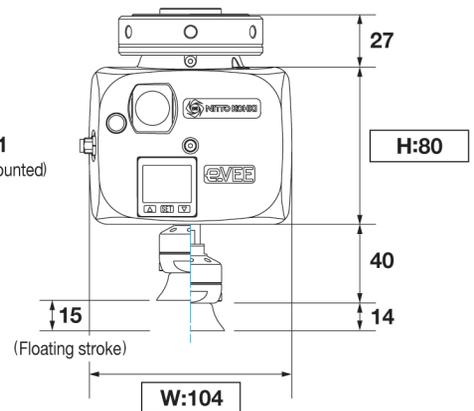
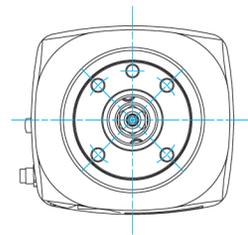
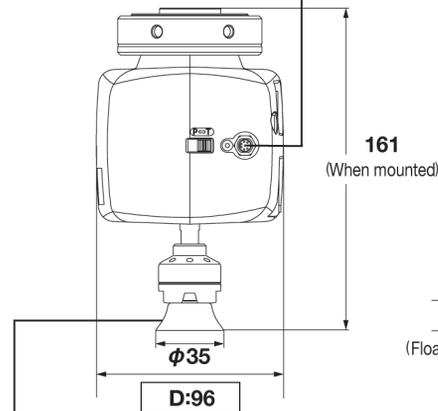
YouTube



How to calculate lifting force

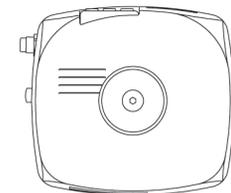
Connector of communication
cable for robots

e-VEE main unit



Flat suction cup PFG-35-S
made by Convum Ltd.

Only flat suction cup PFG-35-S comes with
the suction cup mounting screw **M6** (1 pc).



**Manual robotic
hand changer**

I/O Signal Type (PNP/NPN)

Master cylinder + **EVE-500-KOM-PNP** *1

Tool adapter **EVE-500-KOM-NPN** *1

Tool adapter only **EVE-500-KO-PNP** *1

EVE-500-KO-NPN *1



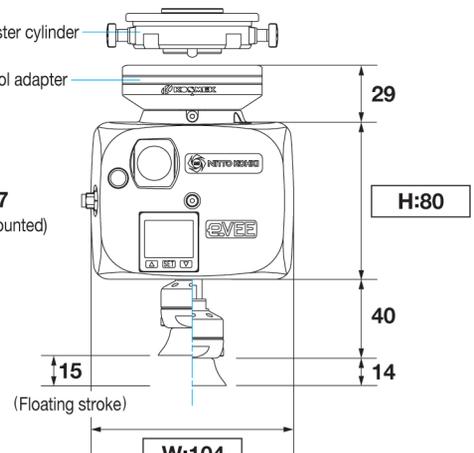
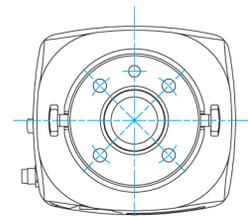
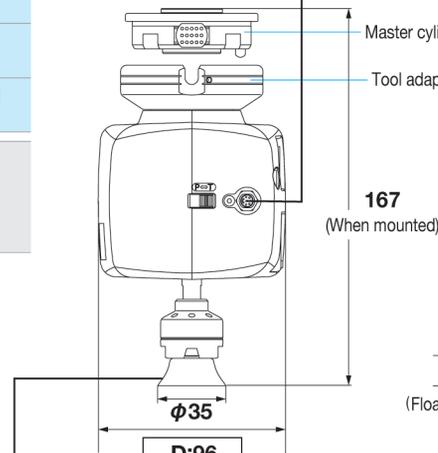
There are two types of models.
-Master cylinder + Tool adapter
-Tool adapter only

*1 Made-to-order models.
For details, please contact your local sales staff.



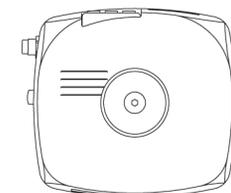
Connector of communication
cable for robots

e-VEE main unit



Flat suction cup PFG-35-S
made by Convum Ltd.

Only flat suction cup PFG-35-S comes with
the suction cup mounting screw **M6** (1 pc).

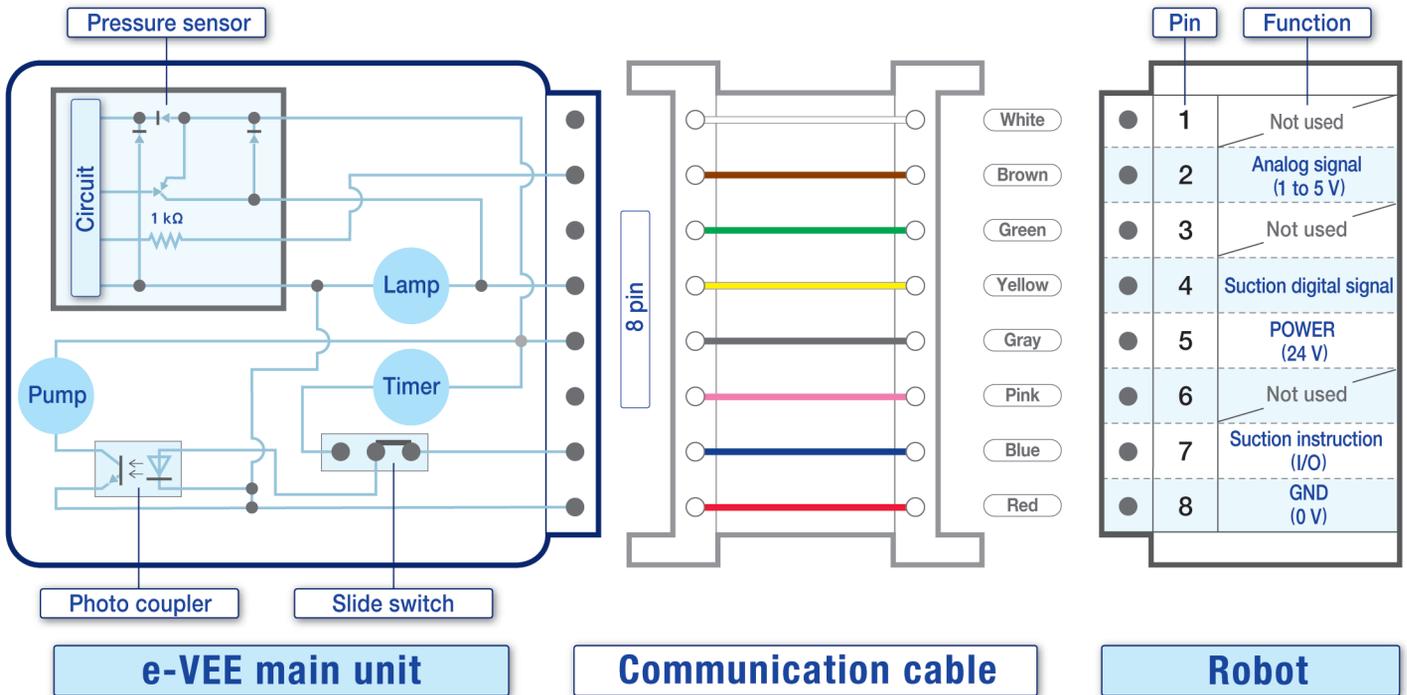


⚠ Check the function assignment of each pin and correctly set the input and output on the robot side.

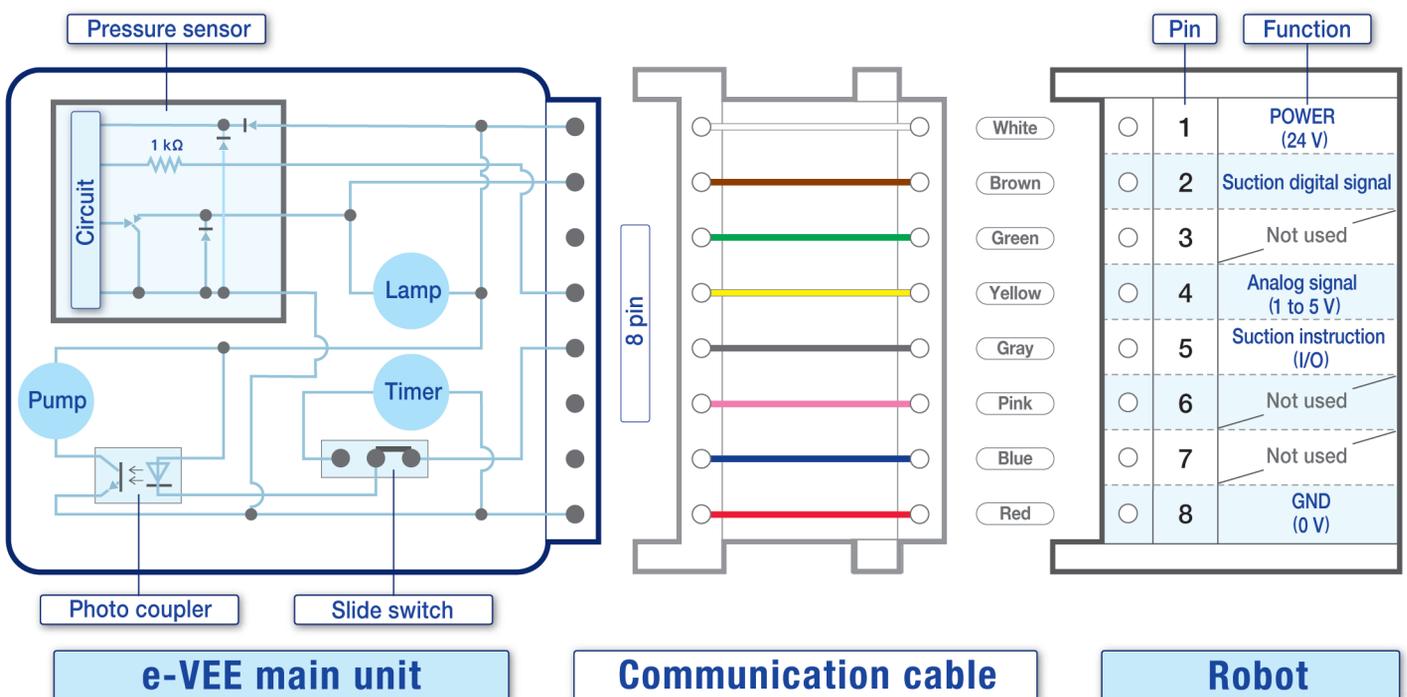
*The schematic diagram is different from the actual circuit.

*It is recommended to use our optional cables for connection to this unit.

I/O Signal Type specifications PNP



I/O Signal Type specifications NPN



For communication cable for robots, see page 9.

* ~ 7 Check the mounting type, size, shape and usage type of the installation equipment to select the appropriate standard or optional accessories.



Communication cable for robots



Check the connector pin configuration on the robot side. The cable is required for connection. Not included. Please order separately.

1 Robot mounting type

* Check the I/O signal type (PNP/NPN) and select the mounting type.

Nitto Kohki Screw type tool flange

Kosmek Ltd. Manual robotic hand changer

2 Select the number of suction cups and the extension/branch type.

Select the number of suction cups according to the weight and shape of the object to be transported. (Refer to 6) Then, select 3 to 5 .

3 Extension type

Select the Extension flange made by **Nitto Kohki** or extension type made by **Convum Ltd.**

4 Branch type

Select 4 to 6 according to the weight and shape of the object to be transported.

5 Suction cup adapter

Change or add the suction cup adapter according to the size and number of suction cups being used.

6 Suction cup

Select the suction cup according to the weight and shape of the object to be transported.



Standard accessories

Adapter ring



1

Flange adapter



Tool flange



Suction cup adapter flange

2

3

4

Gasket for suction cup adapters

Suction cup adapter

5

Mounting bolts

Suction cup

6

Suction cup mounting screw

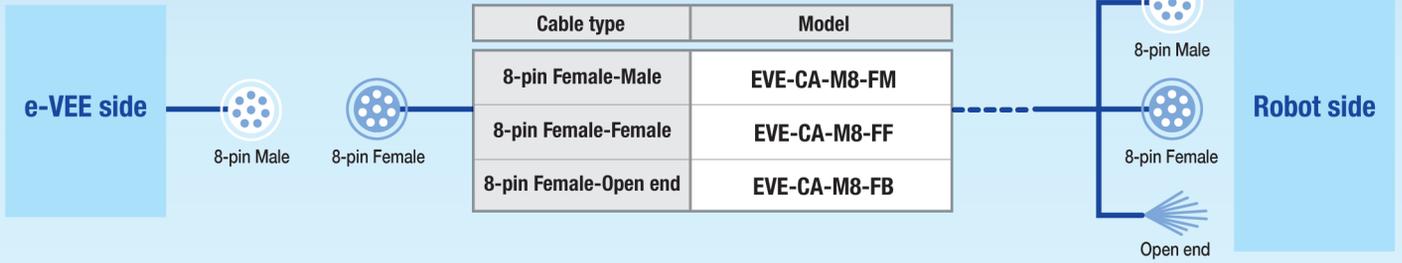


How to select the model

Nitto Kohki Standard accessories available



Select the communication cable for robots.



1 Robot mounting type ⚠️ Check **PNP** or **NPN** *Communication cables for robots are common **Standard accessories**



Screw type tool flange

Adapter ring + Flange adapter
EVE-500-NK-PNP / EVE-500-NK-NPN



Included:
Parallel pins (2 pcs)
Mounting bolts (4 pcs)



Manual robotic hand changer

Master cylinder + Tool adapter
EVE-500-KOM-PNP / EVE-500-KOM-NPN

Tool adapter only
EVE-500-KO-PNP / EVE-500-KO-NPN

Master cylinder



Tool adapter



Included:
Parallel pin (1 pc)
Mounting bolts (4 pcs)

2 Select the accessories (3 to 6) according to the application

Standard accessory Suction cup adapter flange mounted on the main unit

2

5 6

Standard accessories

5 Suction cup adapter



Suction cup adapter M6
EVE-PA-M6

Included:
Gasket for suction cup adapters (1 pc)
Mounting bolts (2 pcs)

6 Suction cup



Flat suction cup $\phi 35$
PFG-35-S

Included:
Suction cup mounting screw (1 pc)

M6

4 5 6

Optional accessories: Branch type

2-branch



3-branch



4-branch

Robot Hand Kit
CONVUM



3 4 5 6

Optional accessories: Extension type

3-branch



4-branch

CONVUM



Ex.1 FX type

Ex.2 FH type

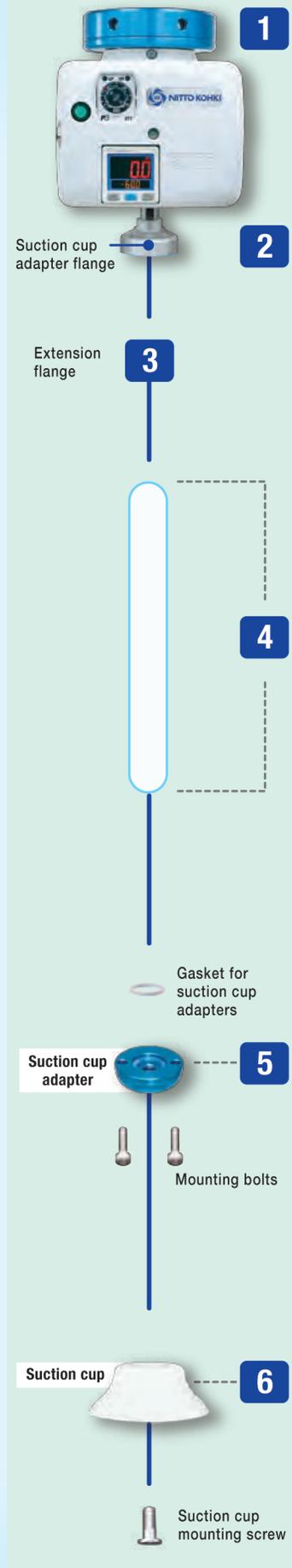


*Robot Hand Kit is compatible with e-VEE. Not available from Nitto Kohki.



How to install branch type

Branch type



1 Select robot mounting type [For details, see page 8.](#)

2 Select number of suction cups and extension/branch type

3 (If required) Select extension type [For details, see page 10.](#)

4 Select branch type

Select **4** to **6** according to the weight and shape of the object to be transported.

⚠ When using the FX/FH/FI/FE type, the optional branch adapter is required.

Optional accessory	Product of Convum Ltd.
<p>2-branch 3-branch</p> <p>3-branch suction cup adapter P40 EVE-PA-TR40</p> <p>Closing adapter</p>	<p>4-branch</p> <p>Robot Hand Kit</p> <p>CONVUM</p> <p>*Compatible with e-VEE. Not available from Nitto Kohki.</p>

5 Select suction cup adapter

Change or add the appropriate suction cup adapters according to the size and number of the suction cups to be used.

⚠ When no pad is attached in the center, be sure to attach the optional closing adapter.

Standard accessory	Optional accessories
<p>M6</p>	<p>M5</p> <p>G1/8</p> <p>Closing adapter 2-branch</p>

6 Select suction cup

Select the suction cup according to the weight and shape of the object to be transported.

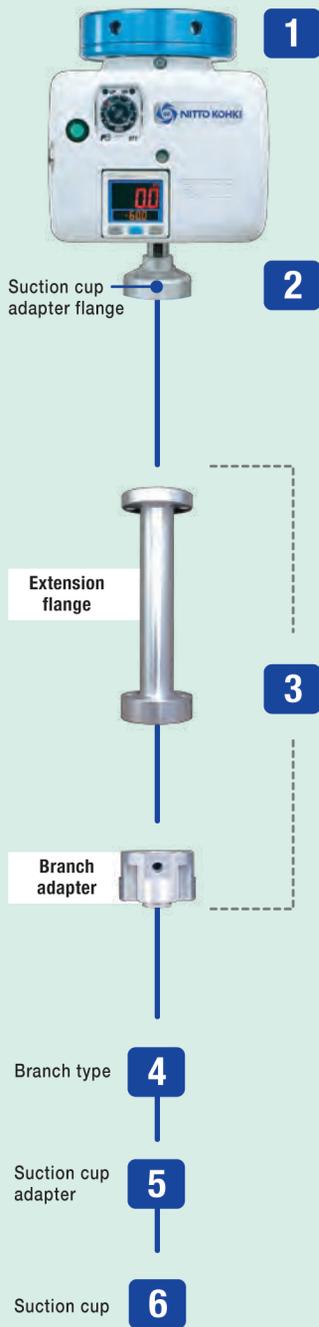
⚠ The suction cup mounting screw is sold separately.

Standard accessory	Optional accessories
<p>Flat suction cup φ35</p>	<p>Bellows suction cup φ35</p> <p>Deep suction cup φ45</p>

Change or add the suction cup adapter according to the size and number of suction cups.

How to install extension flange

Extension type



1 Select robot mounting type [For details, see page 8.](#)

2 Select number of suction cups and extension/branch type

3 Select extension type

Select the Extension flange made by **Nitto Kohki** or extension type made by **Convum Ltd.**

Nitto Kohki

Optional accessory

Extension flange
EVE-EXF-100

Can be used with:

2-branch

3-branch

4-branch



with through-passage



Optional accessory

Branch adapter

Exclusive for:

FX type FH type

FI type FE type



PCD25
EVE-BA-25



PCD31.5
EVE-BA-31.5



PCD50
EVE-BA-50

with through-passage for air distribution (3 types)



Convum Ltd.

Installation examples



FX type

FH type



*Compatible with e-VEE.
Not available from Nitto Kohki.

FX type FH type FI type FE type

Optional branch adapters are required when using the FX/FH/FI/FE type.

[For details, see page 9.](#)

4 Select branch type

5 Select suction cup adapter

6 Select suction cup

Optional accessories



* Communication cable for robots

 Length: 300 mm	 Length: 300 mm	 Length: 1500 mm
8-pin Female-Male EVE-CA-M8-FM	8-pin Female-Female EVE-CA-M8-FF	8-pin Female-Open end EVE-CA-M8-FB

1 Robot mounting type

Kosmek Ltd.  Included: •Parallel pin (1 pc) •Mounting bolts (4 pcs)	 For mounting the tool flange	10 pcs per box  Built into suction cup adapter flange
Master cylinder SXR0070-M	Pin spanner EVE-PS-7075	Filter EVE-FL10

3 Extension type

*Each branch adapter includes a gasket for suction cup adapters (1 pc) and mounting bolts (4 pcs).

 with through-passage Weight: Approx. 60 g Material: Aluminum	Included: •Gasket for suction cup adapters (1 pc) •Mounting bolts (2 pcs)	
Extension flange 100 EVE-EXF-100		
Branch adapter with through-passage for air distribution (3 types)		10 pcs per box
		
Branch adapter PCD25 EVE-BA-25	Branch adapter PCD31.5 EVE-BA-31.5	Branch adapter PCD50 EVE-BA-50
 Gasket for suction cup adapters EVE-PAG10		

4 Branch type

 Weight: Approx. 95 g Material: Aluminum	Included: •Gasket for suction cup adapters (4 pcs) •Mounting bolts (4 pcs) •Spacer (3 pcs)	 Included: •Gasket for suction cup adapters (1 pc) •Mounting bolts (2 pcs)
3-branch suction cup adapter P40 EVE-PA-TR40		Closing adapter EVE-CA

5 Suction cup adapters

*The screw sizes in the center are different.

 Included: •Gasket for suction cup adapters (1 pc) •Mounting bolts (2 pcs)	 Included: •Gasket for suction cup adapters (1 pc) •Mounting bolts (2 pcs)	 Included: •Gasket for suction cup adapters (1 pc) •Mounting bolts (2 pcs)
Suction cup adapter M6 EVE-PA-M6	Suction cup adapter M5 EVE-PA-M5	Suction cup adapter G1/8 EVE-PA-G1/8

6 Suction cups Convum Ltd.

*Suction cup mounting screw is not included.

 Φ35	 Φ35	 Φ45	 M6
Flat suction cup PFG-35-S	Bellows suction cup PJG-35-S	Deep suction cup PHG-45-S	Suction cup mounting screw TN-PF-25-M6

We offer a wide lineup of air compressors and vacuum pumps utilizing our unique linear-motor-driven free piston system.

With their low power consumption and compact design, these pumps are suitable as a "vacuum source" for integration into various devices and equipment.

Achieve energy and space savings by switching from ejectors and compressors

DC drive DC motor

Model **DP0410**

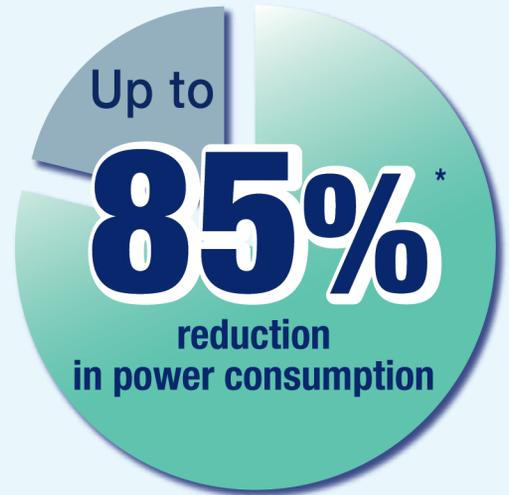
Power Consumption **36 W**



Model		DP0410
Attainable Vacuum	kPa (mmHg)	-77.3 {-580}
Free Air Displacement	L/min	18
Rated Voltage		24 V DC
Maximum Current		1.5 A
Rated Performance (MTTF)		10000 hours
Main unit weight	kg	1.1

Compressor + Ejector

Switch to a vacuum pump



* Compared to an ejector of the same capacity, with an air consumption of 50 L/min per unit

AC drive Free piston

Model **VP0660**

Power Consumption **60 W**



Model		VP0660
Attainable Vacuum	kPa (mmHg)	-80 {-600}
Free Air Displacement	L/min	25
Rated Voltage		230 V AC
Rated Performance (MTTF)		6000 hours
Main unit weight	kg	5.0

AC drive Free piston

Model **VP0940**

Power Consumption **95 W**



Model		VP0940
Attainable Vacuum	kPa (mmHg)	-53.3 {-400}
Free Air Displacement	L/min	60
Rated Voltage		230 V AC
Rated Performance (MTTF)		10000 hours
Main unit weight	kg	4.55

Installation examples



Robot installation example

Tools

Pneumatic Belt Sander **BELTON**

Installation example



YouTube



B-20CL-01 w/ floating



B-20CL-01 w/o floating



Model **B-20CL-01**

Grinding & Sanding

Deburring

Features

- For deburring die casting parts
- Belt size 20 mm (W)
- The flexibility of the belt enables curved surface grinding

Specifications

Air Pressure	MPa(kgf/cm ²)	0.6 (6)
Air Consumption (No-load)	m ³ /min	0.52
Free Speed	min ⁻¹	18000
Belt Speed	m/min	2770
Belt Size	mm	20×520
Inlet Size		Rc 1/4
Mass (Weight)	kg	1.6
Abrasive Belt Installed		Z #60×20mm

Accessories Included

- Abrasive Belt Z #60 x 20 mm, #80 x 20 mm, #100 x 20 mm, #120 x 20 mm
- 2.5 mm Hex. Socket Screw Key
- 4 mm Hex. Socket Screw Key
- Silencer
- Offset Bracket 20 Ass'y
- Bushing R 1/4 x NPT 1/4
- HI CUPLA 20PM Steel



Tools

Pneumatic Die Grinder **AIR SONIC**

Installation example



YouTube



Model **L-35C-02**

Grinding

Deburring

Features

- For grinding die casting parts
- Free speed is 37500 min⁻¹
- Precision grinding with high-speed rotation

Specifications

Air Pressure	MPa(kgf/cm ²)	0.6 (6)
Air Consumption (No-load)	m ³ /min	0.35
Free Speed	min ⁻¹	37500
Chuck Size	mm	φ6
Mass (Weight)	kg	1.1

Accessories Included

- 2 pieces of 14 mm Single Ended Spanner
- Bushing R 1/4 x NPT 1/4
- HI CUPLA 20PM Steel (Installed)



Tools

Pneumatic Double Action Sander **ORBITAL SANDER**

Installation example



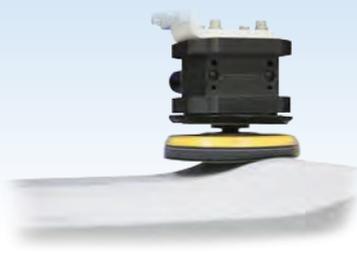
YouTube



Installation example 1



Installation example 2



Model **APS-125-01**

Surface sanding

Features

- For surface sanding of metal workpieces
- Paper size 125 mm dia
- Double action movement reduces swirl patterns

Specifications

Air Pressure	MPa(kgf/cm ²)	0.6 (6)
Air Consumption (No-load)	m ³ /min	0.45
Free Speed	min ⁻¹	11000
Orbit Diameter	mm	5
Paper Size	mm	125 (5")
Mass (Weight)	kg	1.5

Accessories Included

- 2 pieces of Abrasive Paper #80 (Velcro)
- 2 pieces of Abrasive Paper #120 (Velcro)
- 17 mm Single Ended Spanner
- Bushing R1/4 x NPT 1/4
- HI CUPLA 20PM Steel
- Silencer





DLV45C12L

DLV70C06P



Controller
DCC0241X-AZ

YouTube



Special Website

Model **DLV45C/DLV70C**

Thirty different torque settings can be set on a single screwdriver

Installation examples on robots



Can be mounted on desktop robots, Cartesian robots, and 6-axis robots.

Features

- Current controlled torque system suitable for screw fastening work
- Low-voltage brushless motor
- ESD (Electrostatic Discharge) protection structure
- For both hand-held / automatic machines
- Controller has built in counting function. Prevents human errors
- Nine speed settings available
- Automatic three step speed control function
- Two types of measuring methods (Time/Motor rotation signal)
- Seven color indication LED (At the tip of the screwdriver)
- Two external I/O signal connection ports (NPN ↔ PNP switchable, RS-232C)
- Various settings can be configured via a PC
(Free setting software available on Nitto Kohki website)

e.VEE



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NANDEE INTER-TRADE CO., LTD.

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