

IWAKI  
AIR  
PUMPS

**APN**

**APN-W**



# Wide range, wide variety

## We respond to all needs.

Iwaki gas-liquid transfer pumps and air pumps are most appropriate for built-in applications. They are widely used in analyzers and medical equipment for which high quality is required, as well as in laboratory instruments, industrial machines, and other devices.



### Analizers

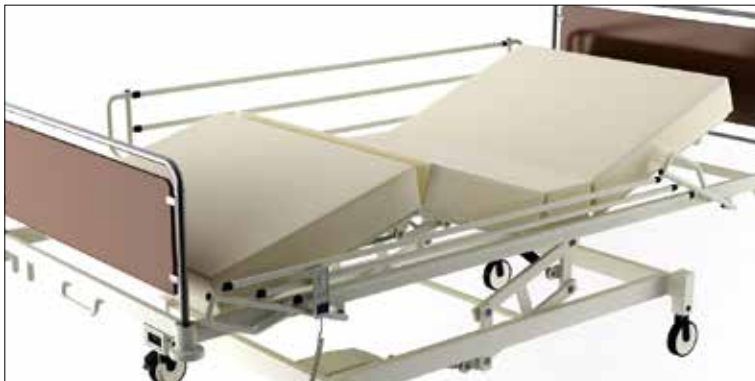
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Medical analyzers (biochemical analyzers [for medical waste liquor/washings collection]), environmental analyzers (spectral photometers [for material adsorption], leak testers, dust counters)

### Medical equipment

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Aspirators, nebulizers, low-frequency therapy equipment, blood-pressure gauges, endoscopes, X-ray film adsorption/transfer equipment, gas sterilizers, tappers, artificial respirators, interferential current therapy equipment, normal saline solution sprays, massagers, pressurization/vacuum sources for various devices



### Physics and chemistry instruments

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Aspirators, liquid chromatography, particle counters, leak testers, sprays, culture apparatus, aseptic baths



# Lineup

## APN-W Gas and liquid transfer pumps

**05** **10** **20** P. 7 8

Motor  
Brushed/Brushless  
Pump head  
Single



10/20  
Brushed motor



10/20  
Brushless motor

**30** **60** P. 9 10



30/60 Brushed motor



30/60 Brushless motor



60 Dual-head type

Brushed/Brushless  
Single/Dual

**085** P. 11 12



Brushed  
Single

## APN Diaphragm type air pumps

**S041** P. 13 14



Brushless  
Dual

**031** P. 15 16



Brushed  
Single

**051** P. 15 16



Brushless  
Single

**085** P. 17 18



Brushed  
Single

**P110** P. 19 20



Brushless  
Dual

# Specifications

## APN-W (Gas and liquid transfer pumps)

| Model                      | Gas-liquid Max. capacity |      |      | Gas Max. flow |       |       | Max. Vacuum     |      |      | Max. Discharge pressure |               |  |
|----------------------------|--------------------------|------|------|---------------|-------|-------|-----------------|------|------|-------------------------|---------------|--|
|                            | 1.0                      | 10.0 | 30.0 | L/min         | kPa   | 26.66 | 101.32<br>79.98 | 0.02 | 0.06 | 0.10                    | MPa           |  |
| <b>05</b> Brushed motor    |                          |      |      | 0.05<br>0.1   | 87.99 |       |                 |      |      |                         | 0.01          |  |
| <b>10</b>                  | Brushed motor            |      |      | 0.1<br>0.2    | 74.66 |       |                 |      |      |                         | 0.03          |  |
|                            | Brushless motor          |      |      | 0.18<br>0.2   | 74.66 |       |                 |      |      |                         | Note1<br>0.03 |  |
| <b>20</b>                  | Brushed motor            |      |      | 0.2<br>0.2    | 74.66 |       |                 |      |      |                         | 0.03          |  |
|                            | Brushless motor          |      |      | 0.26<br>0.2   | 74.66 |       |                 |      |      |                         | Note1<br>0.03 |  |
| <b>30</b>                  | Brushed motor            |      |      | 0.3<br>1.2    | 47.99 |       |                 |      |      |                         | 0.08          |  |
|                            | Brushless motor          |      |      | 0.3<br>1.0    | 47.99 |       |                 |      |      |                         | 0.08          |  |
| <b>60</b>                  | Brushed motor            |      |      | 0.6<br>1.2    | 47.99 |       |                 |      |      |                         | 0.08          |  |
|                            | Brushless motor          |      |      | 0.6<br>1.0    | 47.99 |       |                 |      |      |                         | 0.08          |  |
| <b>P60</b> Brushless motor |                          |      |      | 1.0<br>2.4    | 47.99 |       |                 |      |      |                         | Note2<br>0.08 |  |
| <b>085</b> Brushed motor   |                          |      |      | 0.5<br>4.0    | 34.66 |       |                 |      |      |                         | 0.05          |  |

Note1: Max. discharge pressure of the gas-liquid transfer is 0.1MPa.

Note2: Max. discharge pressure of the gas-liquid transfer is 0.05MPa.

## APN (Diaphragm type air pumps)

| Model                       | Gas Max. flow |      |      | Max. Vacuum |       |       | Max. Discharge pressure |      |      |      |       |
|-----------------------------|---------------|------|------|-------------|-------|-------|-------------------------|------|------|------|-------|
|                             | 1.0           | 10.0 | 30.0 | L/min       | kPa   | 26.66 | 101.32<br>79.98         | 0.02 | 0.06 | 0.10 | MPa   |
| <b>S041</b> Brushless motor |               |      |      | 0.8         | 9.33  |       |                         |      |      |      | 0     |
| <b>031</b> Brushed motor    |               |      |      | 1.5         | 74.66 |       |                         |      |      |      | 0.027 |
| <b>051</b> Brushless motor  |               |      |      | 1.0         | 61.32 |       |                         |      |      |      | 0.05  |
| <b>085</b> Brushed motor    |               |      |      | 6.0         | 61.32 |       |                         |      |      |      | 0.08  |
| <b>P110</b> Brushless motor |               |      |      | 28.0        | 23.99 |       |                         |      |      |      | 0.10  |

| Model      |                 | Output (W)<br>DC12/24 | Power consumption (W)<br>DC12/24 | Rated current (A)<br>DC12/24 | Rated voltage (V) | Connection size IN/OUT (mm) | Mass (kg)    | Handling gas temp. (°C) | Handling liquid temp. (°C) | Limit cold start temperature (°C) |                    |
|------------|-----------------|-----------------------|----------------------------------|------------------------------|-------------------|-----------------------------|--------------|-------------------------|----------------------------|-----------------------------------|--------------------|
| <b>05</b>  | Brushed motor   | 2.5/2.5               | 4.8/4.8                          | 0.4/0.2                      | DC12/24           | Hose Ø4.5                   | 0.11         | 5 to 40                 | 10 to 40                   | 5                                 |                    |
|            | Brushed motor   |                       |                                  |                              |                   |                             |              |                         |                            |                                   |                    |
| <b>10</b>  | Brushless motor | -/8                   | -/7.2                            | -/0.3                        | DC24              | Hose Ø5                     | 0.2          |                         |                            |                                   |                    |
|            | Brushed motor   | -/2.5                 | -/4.8                            | -/0.2                        |                   |                             | 0.11         |                         |                            |                                   |                    |
| <b>20</b>  | Brushless motor | -/8                   | -/7.2                            | -/0.3                        |                   | Hose Ø5                     | 0.2          |                         |                            |                                   |                    |
|            | Brushed motor   | -/2.5                 | -/4.8                            | -/0.2                        |                   |                             | 0.11         |                         |                            |                                   |                    |
| <b>30</b>  | Brushed motor   | -/5.8                 | -/11.5                           | -/0.48                       |                   | DC24                        | Hose Ø5.5    |                         |                            |                                   | 0.21               |
|            | Brushless motor | -/8                   | -/14.4                           | -/0.6                        |                   |                             |              |                         |                            |                                   | 0.24               |
| <b>60</b>  | Brushed motor   | -/5.8                 | -/11.5                           | -/0.48                       |                   |                             | Hose Ø5.5    |                         |                            |                                   | 0.21               |
|            | Brushless motor | -/8                   | -/14.4                           | -/0.6                        |                   |                             |              |                         |                            |                                   | 0.24               |
| <b>P60</b> | Brushless motor | -/16                  | -/20.6                           | -/0.86                       |                   |                             | Thread Rc1/8 | 0.24                    |                            |                                   |                    |
| <b>085</b> | Brushed motor   | 7.5/7.5               | 19/19                            | 1.6/0.8                      |                   |                             |              | 2.5                     | 0 to 40                    | 5 to 40                           | FKM: 10<br>EPDM: 5 |

Liquid temperature 20°C

| Model       |                 | Output (W)<br>DC12/24 | Power consumption (W)<br>DC12/24 | Rated current (A)<br>DC12/24 | Rated voltage (V) | Connection size IN/OUT (mm)  | Mass (kg) | Handling gas temp. (°C) | Ambient temp. (°C) | Limit cold start temperature (°C) |
|-------------|-----------------|-----------------------|----------------------------------|------------------------------|-------------------|------------------------------|-----------|-------------------------|--------------------|-----------------------------------|
| <b>S041</b> | Brushless motor | -/2.2                 | -/6                              | 0.25 or less                 | DC24              | Hose Ø4.5                    | 0.4       | 0 to 40                 | 0 to 40            | 0                                 |
| <b>031</b>  | Brushed motor   | 0.68/0.68             | 2.4/2.4                          | 0.22/0.1                     | DC12/24           | Hose Ø5                      | 0.07      |                         |                    |                                   |
| <b>051</b>  | Brushless motor | -/0.8                 | -/6                              | -/0.25                       | DC24              | Hose Ø5, Ø8,<br>Thread Rc1/8 | 0.5       | 5 to 40                 | 5 to 40            | 5                                 |
| <b>085</b>  | Brushed motor   | 7.5/7.5               | 19/19                            | 1.6/0.8                      | DC12/24           | Hose Ø8,<br>Thread           | 1.1       | 0 to 40                 | 0 to 40            | 10                                |
| <b>P110</b> | Brushless motor | -/30                  | -/55.2                           | -/2.3                        | DC24              | Rc1/4, G1/4                  | 3.3       |                         | 5 to 40            | 5                                 |

# Feature

## APN-W (Gas and liquid transfer pumps)

### Compact and lightweight

A compact and lightweight design is used that is most appropriate for built-in applications and for waste liquid collection; and a structure with high corrosion resistance and enhanced reliability/durability enables continuous operation for an extended period of time and ensures long life.

### Hygienic oil-free design, self-priming pumps without use of priming water

The motor-driven diaphragm pumps are oil-free and are most suitable for usage requiring clean liquid relay. A wide variety of models is available for various usage. Self-priming pumps require no priming water and realize gas-liquid transfer.

### V-type valve for high sealing performance and for preventing foreign matter intrusion

A V-type valve is adopted. Pressing the valve enhances sealing performance, even when the valve is not in operation. In case of the intrusion of foreign matter into the transferred liquid, as a measure against the self-priming defect caused by weakened sealing performance due to the attachment of foreign matter to the valve, a groove is formed at the part to which the valve is fixed to prevent foreign matter intrusion. This keeps foreign matter out.

## APN (Diaphragm type air pumps)

### Clean air transfer

The motor-driven diaphragm pumps are oil-/carbon-free and are highly airtight. Most suitable in medical or sampling equipment where air cleanness is required.

### Long-life design

Fiber reinforced diaphragms, enlarged bearings and enhanced con rods have further improved reliability and durability in order for the pump to run over an extended time period in a continuous operation.

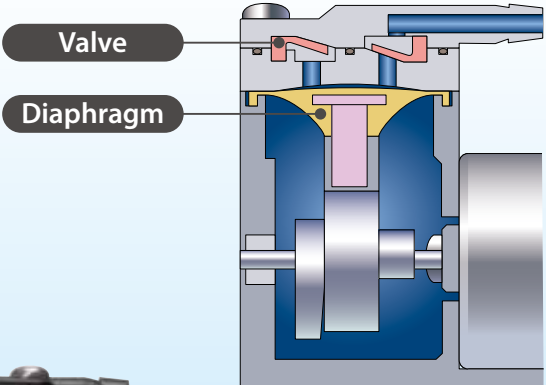
### Easy maintenance

The pump head consists of only a few parts and can easily be dismantled and assembled.

• Except for some products.

# Pressure-withstanding diaphragm

The diaphragm is made thick regarding its moving parts, in order to withstand the pump pressure in gas-liquid transfer.



APN-W



APN



# APN-05/10/20-W

## Gas and liquid transfer pumps

|                                   |                    |
|-----------------------------------|--------------------|
| <b>Max. capacity</b> (Gas-liquid) | 0.05 to 0.26 L/min |
| <b>Max. flow</b> (Gas)            | 0.1 to 0.2 L/min   |
| <b>Max. vacuum</b>                | 74.66 to 87.99 kPa |
| <b>Max. discharge pressure</b>    | 0.03 MPa           |



10 Brushed motor type



10 Brushless motor type

Adjustment valve of fluid, please to be installed on the suction side of the pump.

## Specifications

| Model    | Motor     | Gas-liquid Max. capacity (L/min) | Gas Max. flow (L/min) | Max. vacuum (kPa) | Max. discharge pressure (MPa) | Output (W) DC12/24 | Power consumption (W) DC12/24 | Rated current (A) DC12/24 | Rated voltage (V) |
|----------|-----------|----------------------------------|-----------------------|-------------------|-------------------------------|--------------------|-------------------------------|---------------------------|-------------------|
| APN-05-W |           | 0.05                             | 0.1                   | 87.99             | 0.01                          | 2.5/2.5            | 4.8/4.8                       | 0.4/0.2                   | DC12/24           |
| APN-10-W | Brushed   | 0.1                              | 0.2                   | 74.66             | 0.03                          |                    |                               |                           |                   |
|          | Brushless | 0.18                             |                       |                   | 0.03 <sup>Note</sup>          | -/8                | -/7.2                         | -/0.3                     |                   |
| APN-20-W | Brushed   | 0.2                              |                       |                   | 0.03                          | -/2.5              | -/4.8                         | -/0.2                     |                   |
|          | Brushless | 0.26                             |                       |                   | 0.03 <sup>Note</sup>          | -/8                | -/7.2                         | -/0.3                     |                   |

Connection size IN/OUT ..... APN-05/10-W: Hose Ø4.5mm, APN-20-W: Hose Ø5mm

Mass ..... Brushed type: 0.11kg, Brushless type: 0.2kg

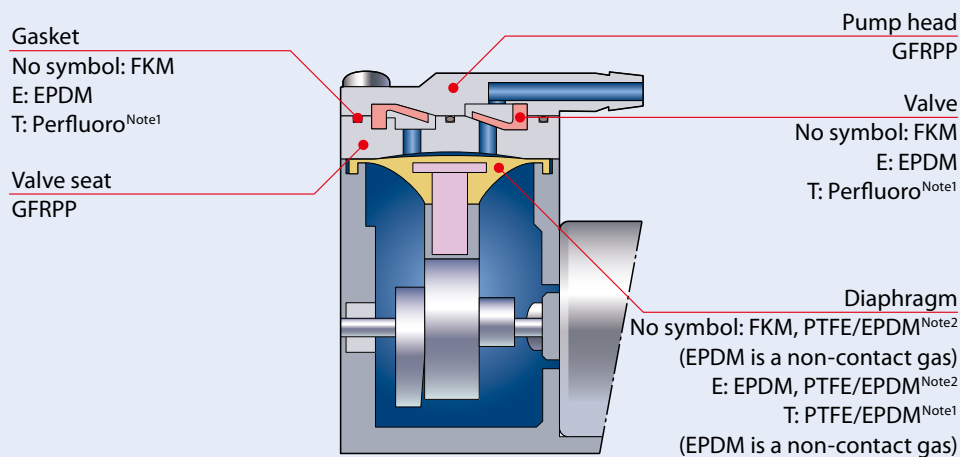
Handling gas temp. .... 5 to 40°C

Handling liquid temp. .... 10 to 40°C

Limit cold start temperature... 5°C

Note: Max. discharge pressure of the gas-liquid transfer is 0.1MPa.

## Construction and materials



Note1: Special order on APN-10/20-W.

Note2: Diaphragm of APN-10 / 20D3-W is the PTFE / EPDM.



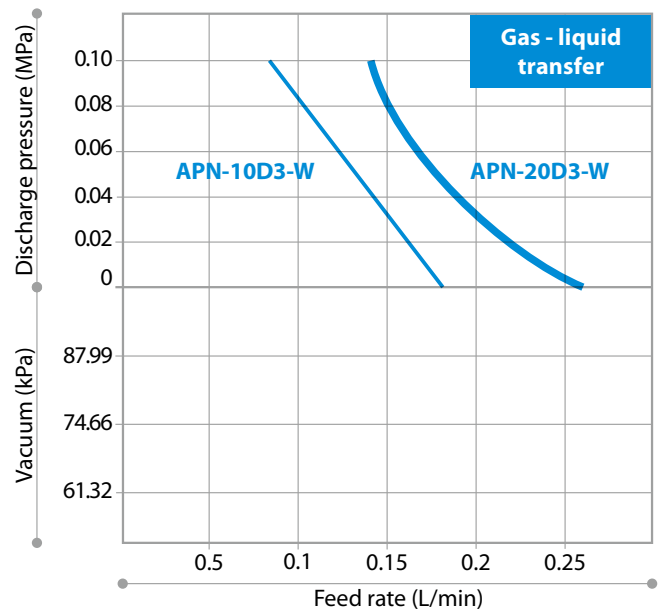
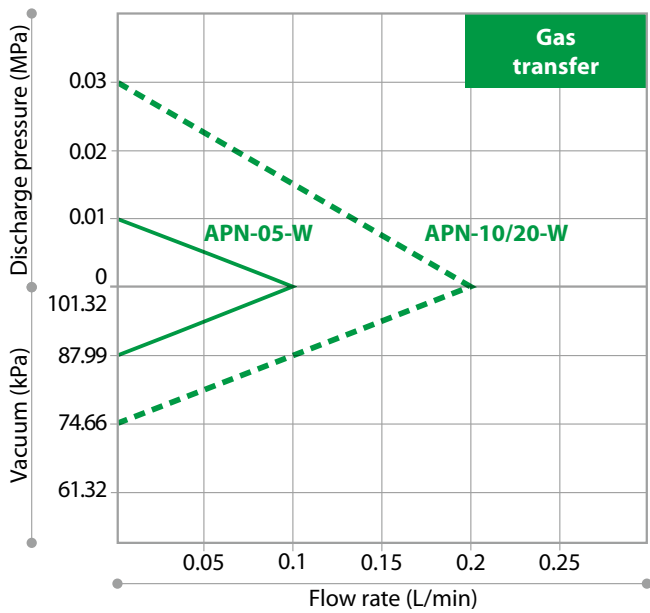
## Pump identification

**APN - 10 G E D1 - W 02**

- **Model**  
**05•10•20**
- **Bracket type**  
No symbol: Without base  
**G**: With base
- **Diaphragm/Valve/Gasket materials**  
No symbol: FKM  
**E**: EPDM<sup>Note1</sup>  
**T**: PTFE/EPDM Perfluor<sup>®</sup>Note1
- **Motor**  
**D1**: Brushed 12VDC<sup>Note2</sup>  
**D2**: Brushed 24VDC  
**D3**: Brushless 24VDC<sup>Note1</sup>
- **Type**  
**W**: Gas-liquid transfer
- **Special version**

Note1: 10•20 only  
Note2: 05•10 only

## Performance curves



## Dimensions in mm

APN-05/10-W

APN-20-W

APN-10-W Brushless

APN-20-W Brushless

# APN-30/60-W

## Gas and liquid transfer pumps

**Max. capacity** (Gas-liquid) 0.3 to 1.0 L/min

**Max. flow** (Gas) 1.0 to 2.4 L/min

**Max. vacuum** 47.99 kPa

**Max. discharge pressure** 0.08 MPa

Adjustment valve of fluid, please to be installed on the suction side of the pump.



30/60 Brushed motor type



30/60 Brushless motor type



P60 Dual head type

## Specifications

| Model     | Motor     | Gas-liquid<br>Max. capacity<br>(L/min) | Gas<br>Max. flow<br>(L/min) | Max.<br>vacuum<br>(kPa) | Max. discharge<br>pressure<br>(MPa) | Output<br>(W)        | Power con-<br>sumption (W) | Rated<br>current (A) | Rated<br>voltage (V) |      |
|-----------|-----------|--|-----------------------------|-------------------------|-------------------------------------|----------------------|----------------------------|----------------------|----------------------|------|
| APN-30-W  | Brushed   | 0.3                                    | 1.2                         | 47.99                   | 0.08                                | 5.8                  | 11.5                       | 0.48                 | DC24                 |      |
|           | Brushless |  | 1.0                         |                         |                                     | 8                    | 14.4                       | 0.6                  |                      |      |
| APN-60-W  | Brushed   | 0.6                                    | 1.2                         |                         |                                     | 0.08 <sup>Note</sup> | 5.8                        | 11.5                 |                      | 0.48 |
|           | Brushless |  | 1.0                         |                         |                                     |                      | 8                          | 14.4                 |                      | 0.6  |
| APN-P60-W |           | 1.0                                    | 2.4                         |                         |                                     |                      | 16                         | 20.6                 |                      | 0.86 |

Connection size IN/OUT ..... Hose Ø5.5mm

Mass ..... 30/60 Brushed type: 0.21kg, 30/60 Brushless type / P60: 0.24kg

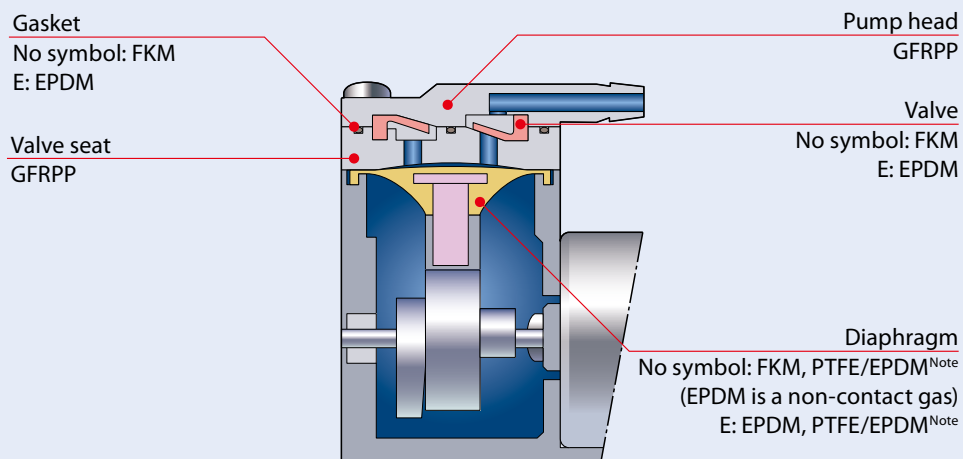
Handling gas temp. .... 5 to 40°C

Handling liquid temp. .... 10 to 40°C

Limit cold start temperature... 5°C

Note: Max. discharge pressure of the gas-liquid transfer is 0.05MPa.

## Construction and materials



Note: Diaphragm only APN-P60 will PTFE / EPDM.

**Pump identification**

**APN - 30 G E D1 - W 02**

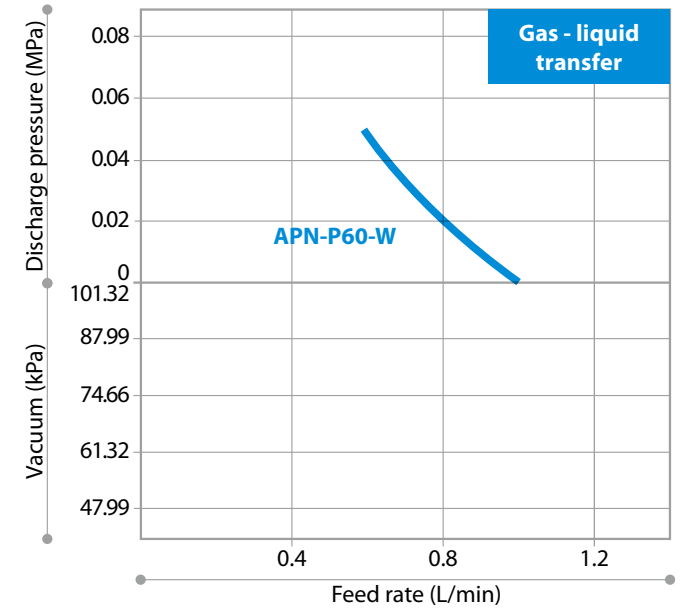
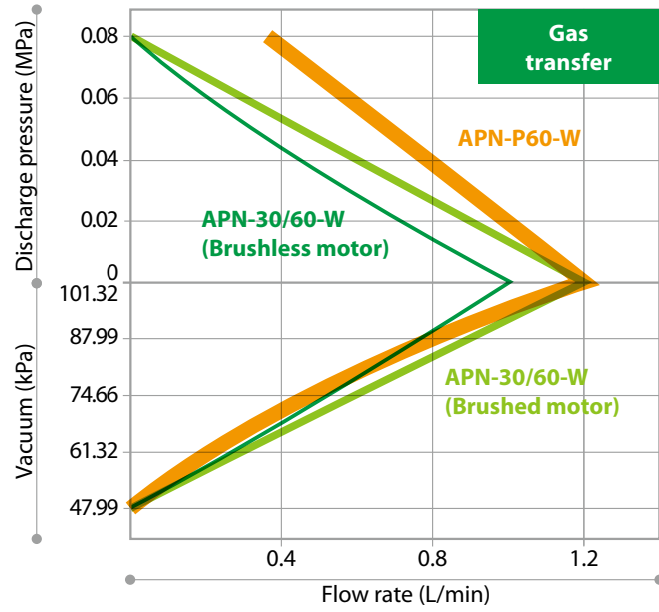
- Model **30-60**
- Diaphragm/Valve/Gasket materials  
No symbol: FKM  
**E**: EPDM
- Motor  
**D1**: Brushed 12VDC<sup>Note</sup>  
**D2**: Brushed 24VDC  
**D3**: Brushless 24VDC (Uncontrollable)
- Bracket type  
No symbol: Without base  
**G**: With base
- Type **W**: Gas-liquid transfer
- Special version

**APN - P 60 G E D4 - W 02**

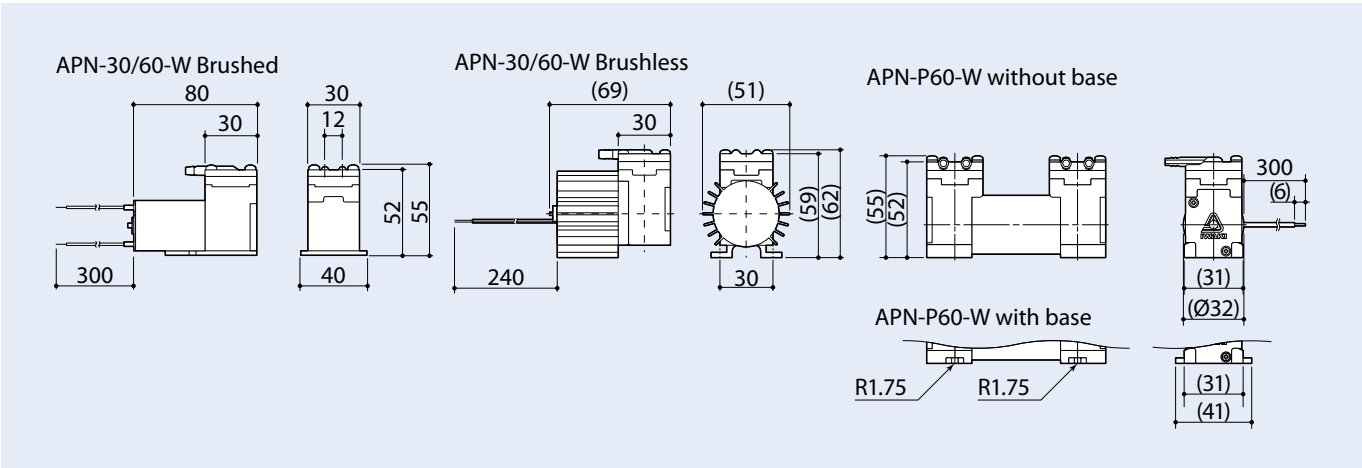
- Pump head **P**: Dual-head with parallel tubing
- Model **60**
- Bracket type  
No symbol: Without base  
**G**: With base
- Diaphragm/Valve/Gasket materials  
No symbol: PTFE/EPDM-FKM  
**E**: PTFE/EPDM-EPDM
- Motor **D4**: Brushless 24VDC (controllable)
- Type **W**: Gas-liquid transfer
- Special version

Note: Please contact us for details about brushed 12VDC products.

**Performance curves**



**Dimensions in mm**



# APN-085-W

## Gas and liquid transfer pumps

- Max. capacity (Gas-liquid) **0.5 L/min**
- Max. flow (Gas) **4.0 L/min**
- Max. vacuum **34.66 to 37.33 kPa**
- Max. discharge pressure **0.05 MPa**

Adjustment valve of fluid, please to be installed on the suction side of the pump.



## Specifications

| Model     |         | Gas-liquid<br>Max. capacity<br>(L/min) | Gas<br>Max. flow<br>(L/min) | Max.<br>vacuum<br>(kPa) | Max. discharge<br>pressure<br>(MPa) | Output<br>(W)<br>DC12/24 | Power con-<br>sumption (W)<br>DC12/24 | Rated<br>current (A)<br>DC12/24 | Rated<br>voltage (V)<br>DC12/24 |
|-----------|---------|--|-----------------------------|-------------------------|-------------------------------------|--------------------------|---------------------------------------|---------------------------------|---------------------------------|
| APN-085-W | EX type | 0.5                                    | 4.0                         | 34.66                   | 0.05                                | 7.5/7.5                  | 19/19                                 | 1.6/0.8                         | DC12/24                         |
|           | VX type |  |                             | 37.33                   |                                     |                          |                                       |                                 |                                 |

Connection size IN/OUT ..... Thread Rc1/8

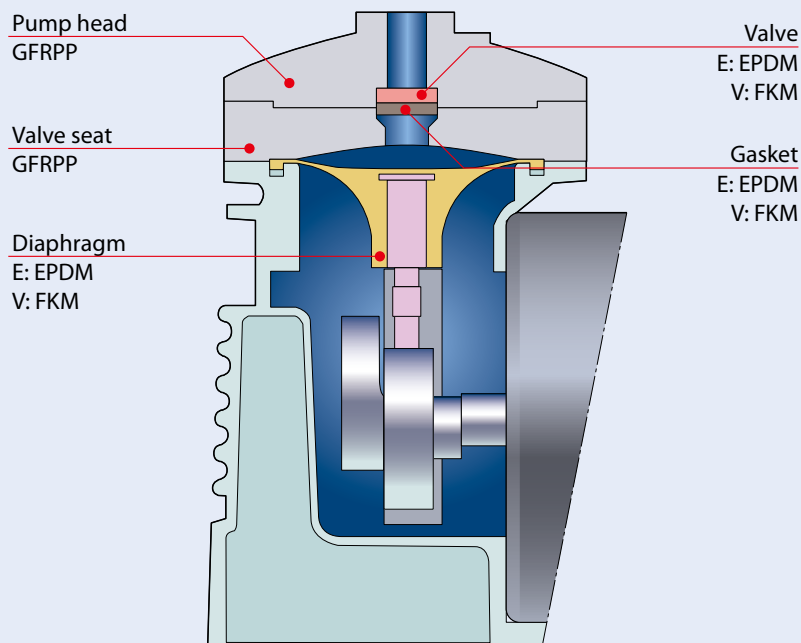
Mass ..... 2.5kg

Handling gas temp. .... 0 to 40°C

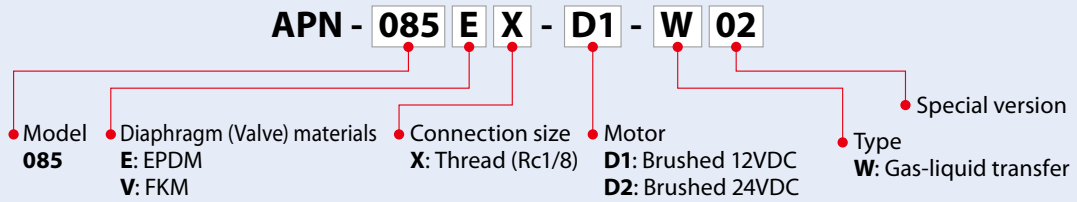
Handling liquid temp. .... 5 to 40°C

Limit cold start temperature... FKM: 10°C, EPDM: 5°C

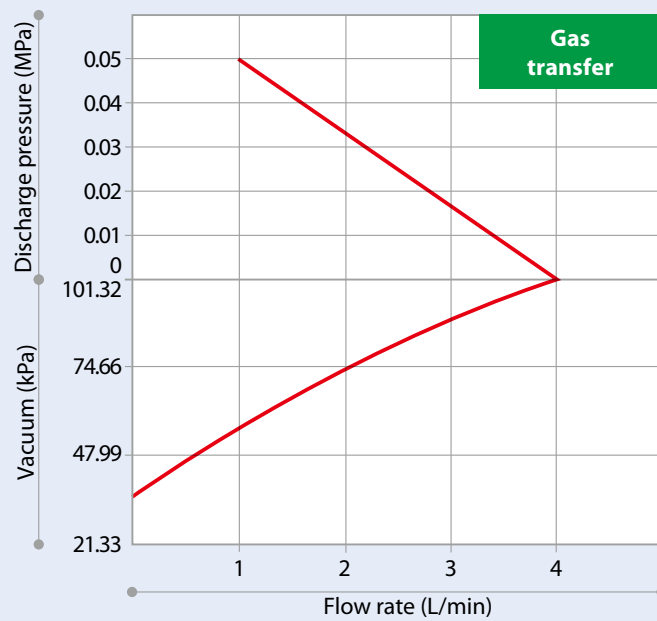
## Construction and materials



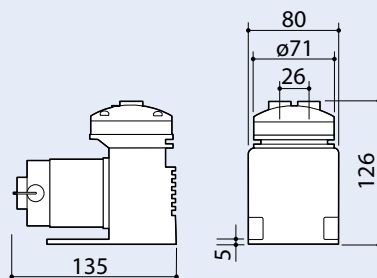
## Pump identification



## Performance curves



## Dimensions in mm



# APN-S041

**Max. flow** 0.8 L/min

**Max. vacuum** 9.33 kPa



Observe the maximum allowable discharge pressure of 0.0MPa.

## Specifications

| Model           | Max. flow (L/min) | Max. vacuum (kPa) | Output (W) | Power consumption (W) | Rated current (A) | Rated voltage (V) |
|-----------------|-------------------|-------------------|------------|-----------------------|-------------------|-------------------|
| APN-S041ME-D3 * | 0.8               | 9.33              | 2.2        | 6.0                   | 0.25 or less      | DC24              |
| APN-S041ME-D4 * |                   |                   |            |                       |                   |                   |

Connection size IN/OUT ..... Hose Ø4.5mm

Mass ..... 0.4kg

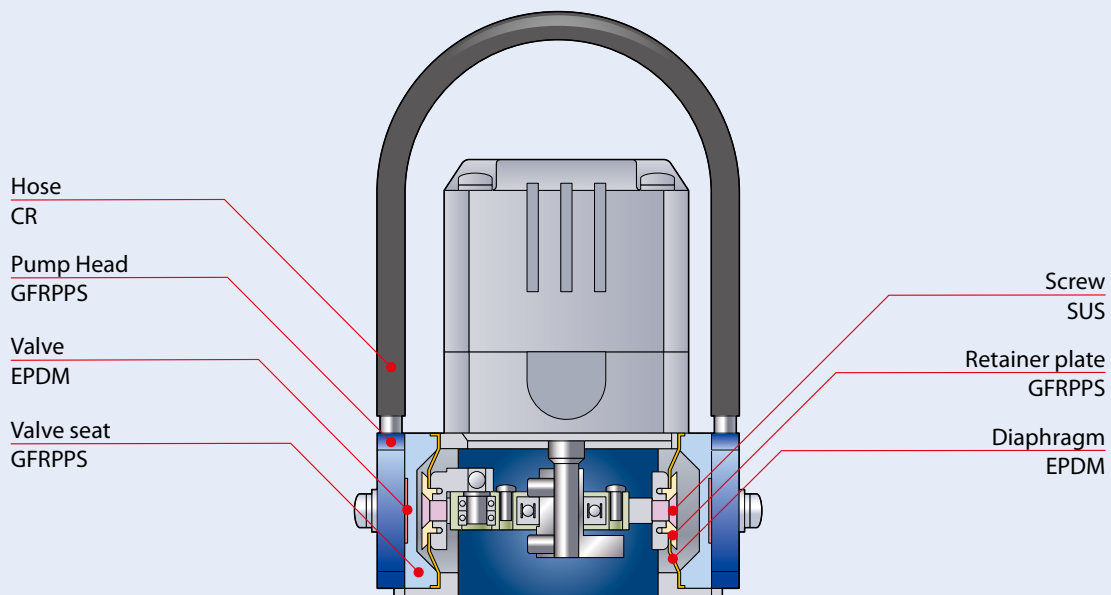
Handling gas temp. .... 0 to 40°C

Ambient temp. .... 0 to 40°C

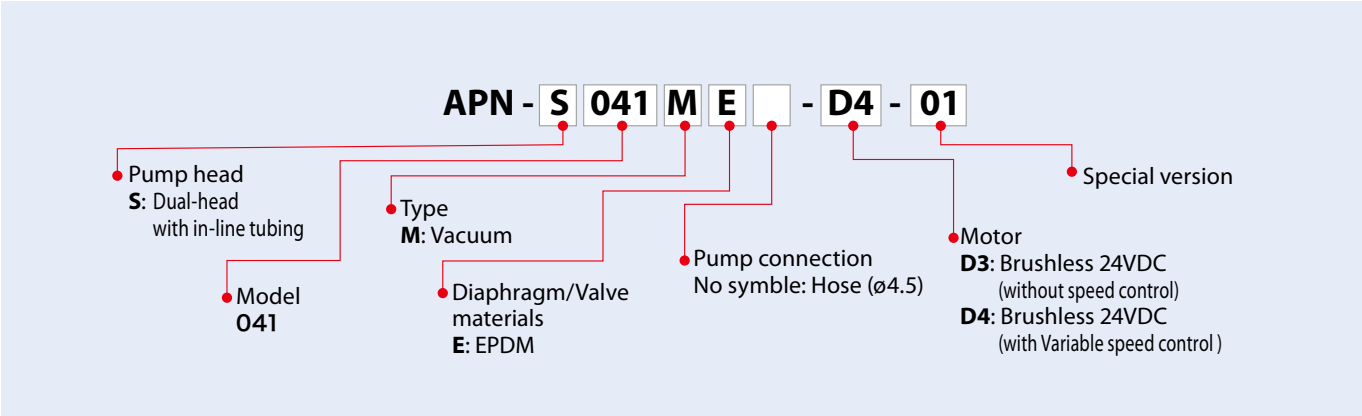
Limit cold start temperature... 0°C

\* D3: 2 wire, D4: 4 wire

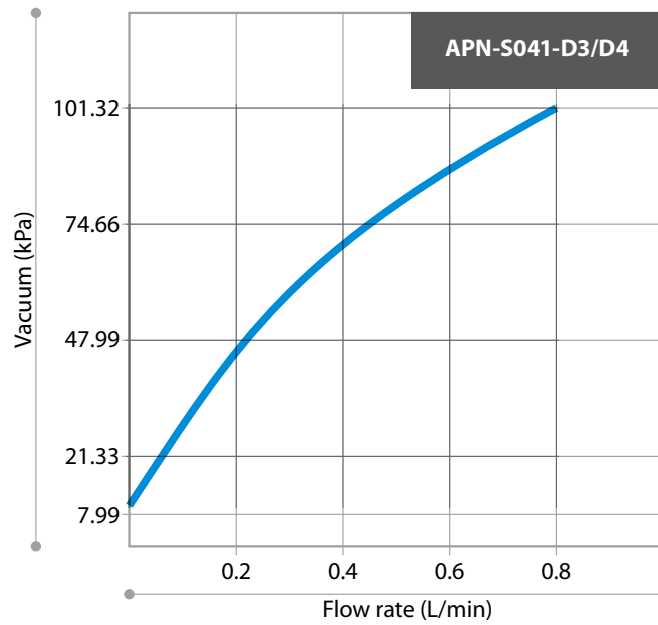
## Construction and materials



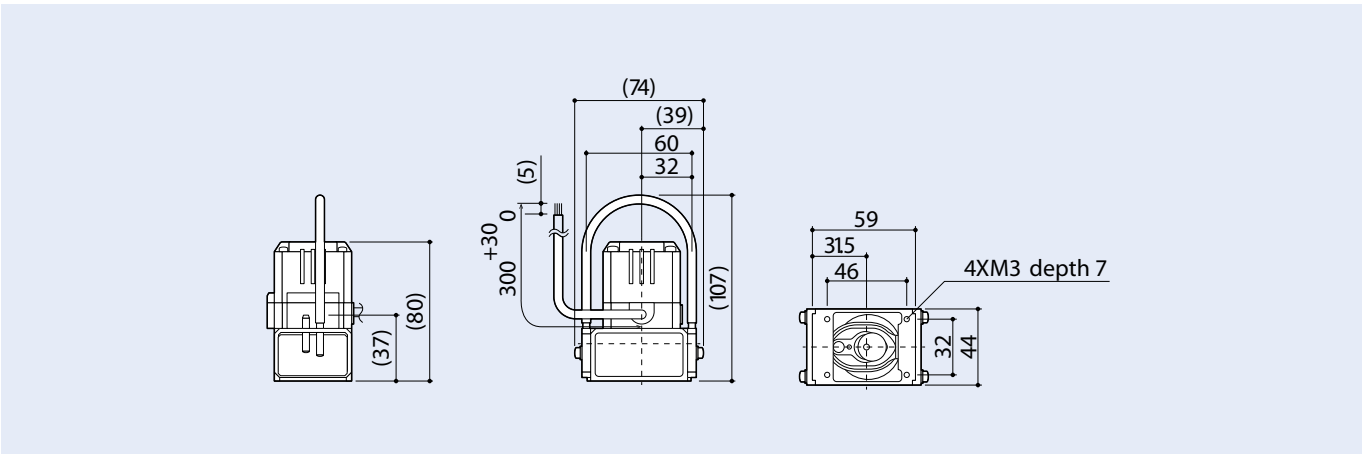
### Pump identification



### Performance curves



### Dimensions in mm



# APN-031/051

## Diaphragm type air pumps

**Max. flow** 1.0 to 1.5 L/min

**Max. vacuum** 61.32 to 74.66 kPa

**Max. discharge pressure** 0.027 to 0.05 MPa



031



051

### Specifications

| Model   | Max. flow (L/min) | Max. vacuum (kPa) | Max. discharge pressure (MPa) | Output (W) DC12/24 | Power consumption (W) DC12/24 | Rated current (A) DC12/24 | Rated voltage (V) |
|---------|-------------------|-------------------|-------------------------------|--------------------|-------------------------------|---------------------------|-------------------|
| APN-031 | 1.5               | 74.66             | 0.027                         | 0.68/0.68          | 2.4/2.4                       | 0.22/0.1                  | DC12/24           |
| APN-051 | 1.0               | 61.32             | 0.05                          | -/0.8              | -/6                           | -/0.25                    | DC24              |

Connection size IN/OUT ..... 031: Hose Ø5mm, 051/052: Hose Ø5mm, Ø8mm, Thread Rc1/8

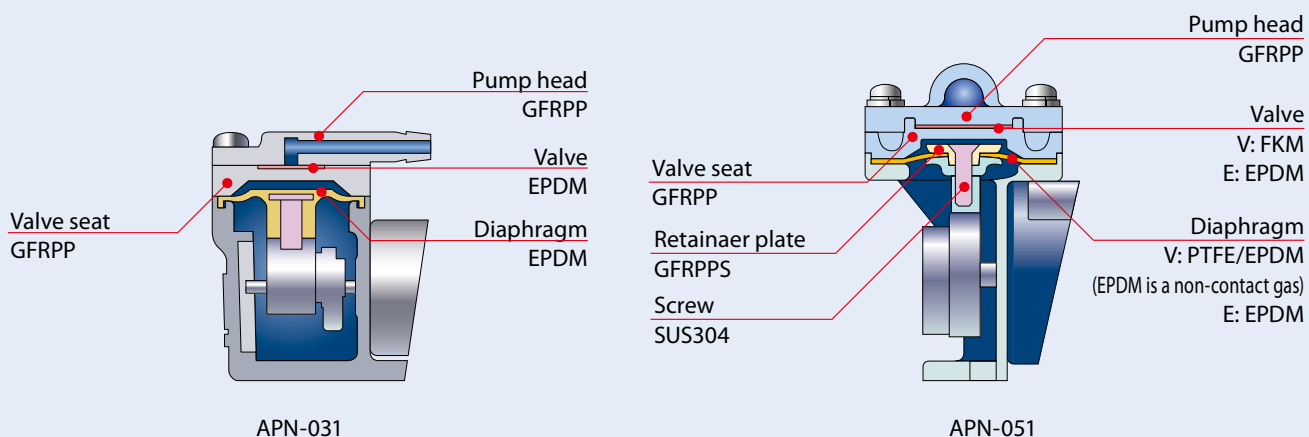
Mass ..... 031: 0.07kg, 051: 0.5kg, 052: 0.4kg

Handling gas temp. .... 0 to 40°C

Ambient temp. .... 0 to 40°C

Limit cold start temperature... 031: 0°C, 051: 5°C

### Construction and materials





## Pump identification

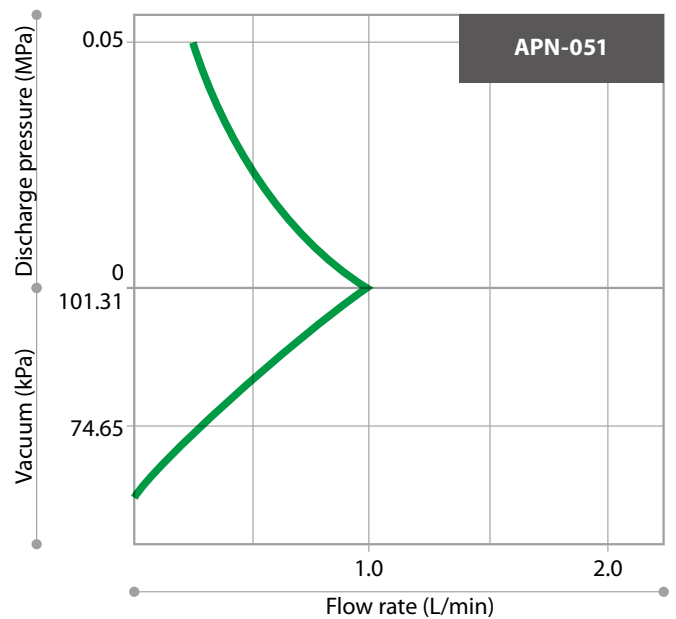
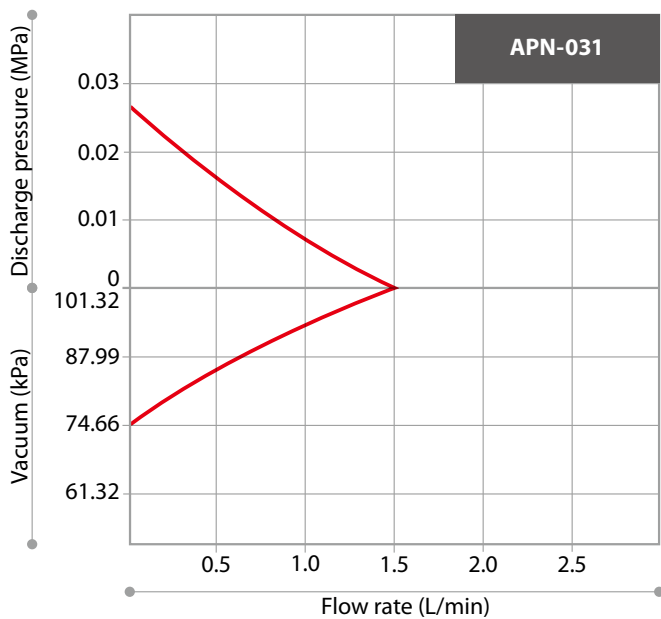
APN - 031 D2 - 01

- Model 031
- Motor D2: 24VDC
- Special version

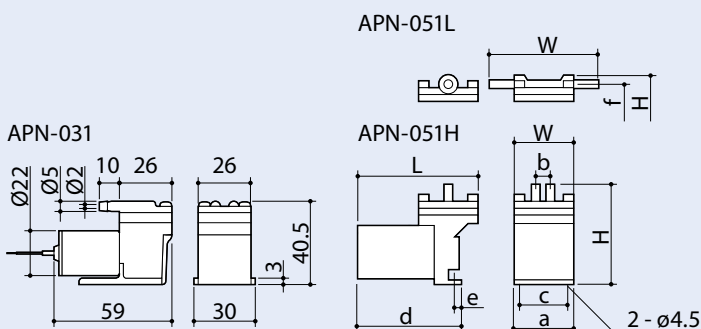
APN - 051 L E X - D3 - 01

- Model 051
- Pump head  
L: Horizontally oriented  
H: Vertically oriented
- Diaphragm/Valve materials  
V: PTFE/EPDM • FKM  
E: EPDM • EPDM
- Motor D3: Brushless 24VDC (Uncontrollable) (Only 051)
- Special version
- Pump connection  
No symbol: Hose (Ø8)  
X: Thread (Rc1/8)

## Performance curves



## Dimensions in mm



| Model    | W  | H    | L    | a  | b  | c  | d    | e   | f    |
|----------|----|------|------|----|----|----|------|-----|------|
| APN-051L | 86 | (75) | (90) | 46 | —  | 32 | (76) | 6.5 | (67) |
| APN-051H | 46 | (78) | —    | —  | 13 | —  | —    | —   | —    |

# APN-085

## Diaphragm type air pumps

|                         |                    |
|-------------------------|--------------------|
| Max. flow               | 6 L/min            |
| Max. vacuum             | 34.66 to 61.32 kPa |
| Max. discharge pressure | 0.08 MPa           |



### Specifications

| Model            | Max. flow (L/min) | Max. vacuum (kPa) | Max. discharge pressure (MPa) | Output (W) DC12/24 | Power consumption (W) DC12/24 | Rated current (A) DC12/24 | Rated voltage (V) |
|------------------|-------------------|-------------------|-------------------------------|--------------------|-------------------------------|---------------------------|-------------------|
| APN-085-D1/D2    | 6                 | 61.32             | 0.08                          | 7.5/7.5            | 19/19                         | 1.6/0.8                   | DC12/24           |
| APN-085L/H-D1/D2 |                   | 34.66             |                               |                    |                               |                           |                   |

Connection size IN/OUT ..... Hose Ø8mm, Thread Rc1/4, G1/4

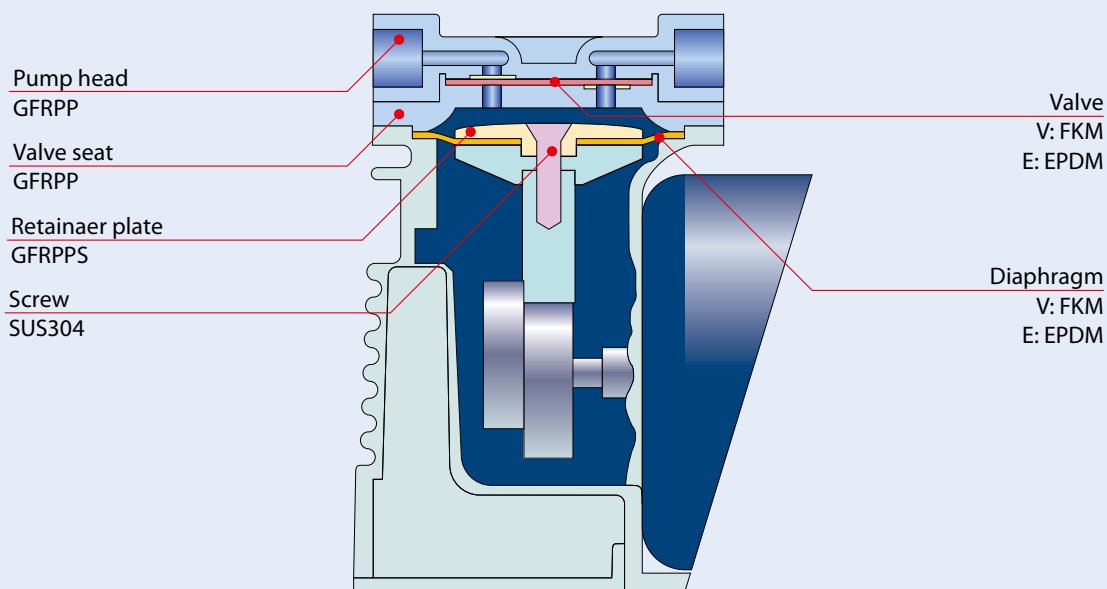
Mass ..... 1.1kg

Handling gas temp. .... 0 to 40°C

Ambient temp. .... 0 to 40°C

Limit cold start temperature... 10°C

### Construction and materials

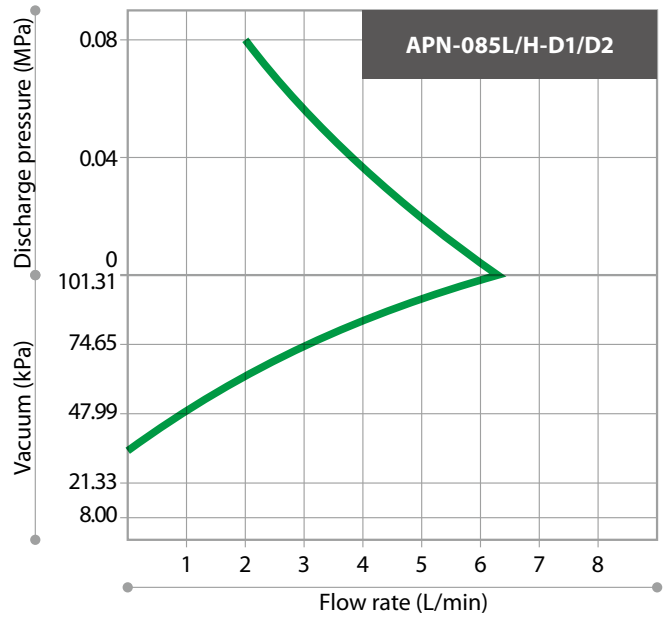
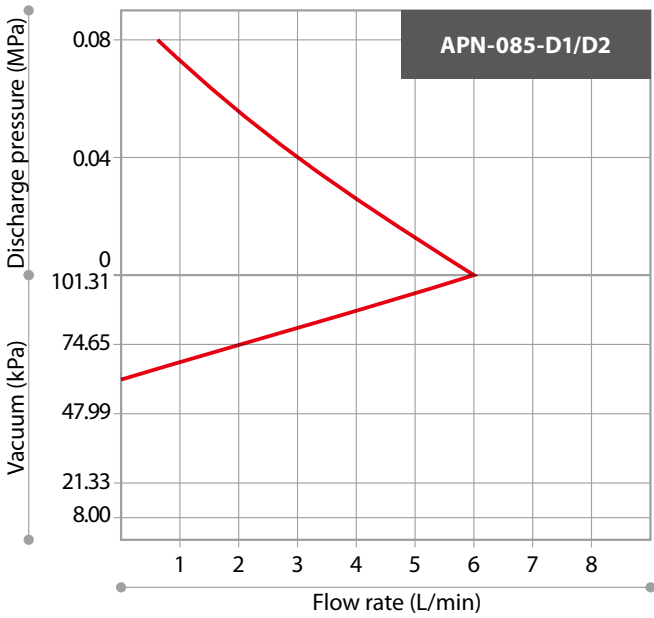


### Pump identification

**APN - 085 L V X - D2 - 01**

- Model **085**
- Pump head  
No symble: Corrosion resistant  
**L**: Horizontally oriented  
**H**: Vertically oriented
- Diaphragm/Valve materials  
**E**: EPDM  
**V**: FKM
- Pump connection  
No symble: Tube (ø8)  
**X**: Thread (Rc1/4)  
**X1**: Thread (G1/4)
- Motor  
**D1**: Brushed 12VDC  
**D2**: Brushed 24VDC
- Special version

### Performance curves



### Dimensions in mm

APN-085-D1/D2

APN-085L-D1/D2

| Model           | W  | H     | L     | a  | b  | c  | d    | e    | f    |
|-----------------|----|-------|-------|----|----|----|------|------|------|
| APN-085-D1/2    |    | (136) | (135) | 71 | 66 | 24 | 57   | 21.5 | 18.5 |
| APN-085L/H-D1/2 | 80 | (121) |       | 72 |    | —  | 56.5 |      |      |

# APN-P110

## Diaphragm type air pumps

Max. flow **28** L/min

Max. vacuum **23.99** kPa

Max. discharge pressure **0.1** MPa



### Specifications

| Model        | Max. flow (L/min) | Max. vacuum (kPa) | Max. discharge pressure (MPa) | Output (W) | Power consumption (W) | Rated current (A) | Rated voltage (V) |
|--------------|-------------------|-------------------|-------------------------------|------------|-----------------------|-------------------|-------------------|
| APN-P110L-D4 | 28                | 23.99             | 0.1                           | 30         | 55.2                  | 2.3               | DC24              |

Connection size IN/OUT ..... Hose Ø8mm, Thread Rc1/4, G1/4

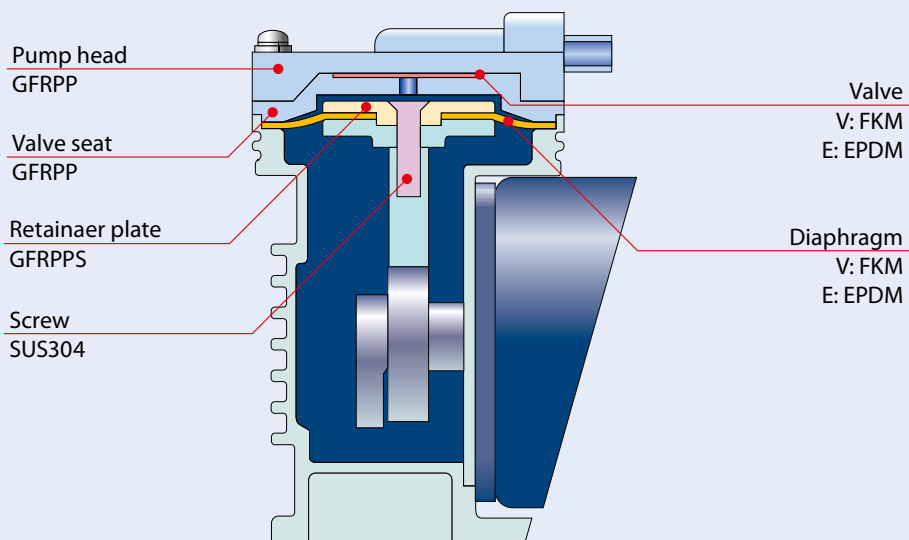
Mass ..... 3.3kg

Handling gas temp. .... 0 to 40°C

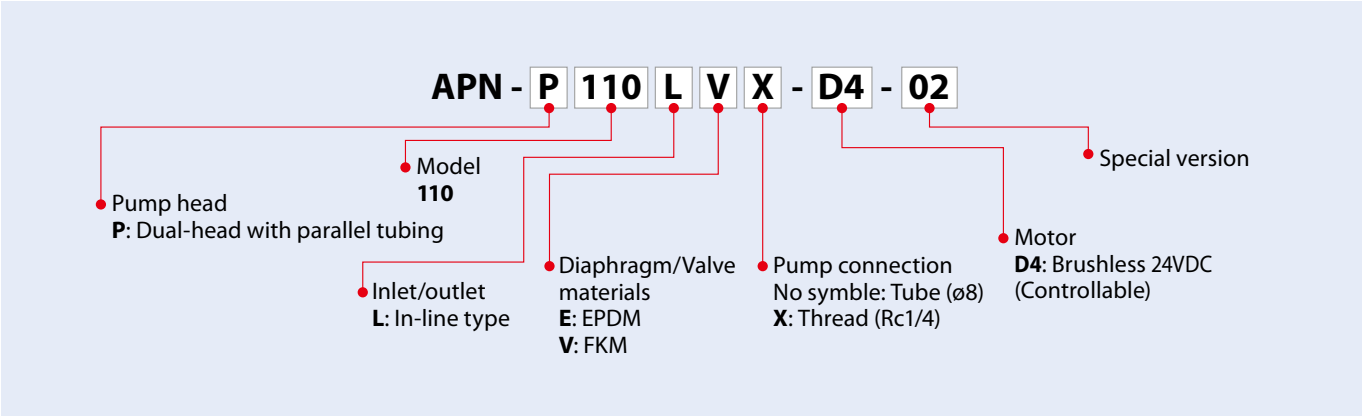
Ambient temp. .... 5 to 40°C

Limit cold start temperature... 5°C

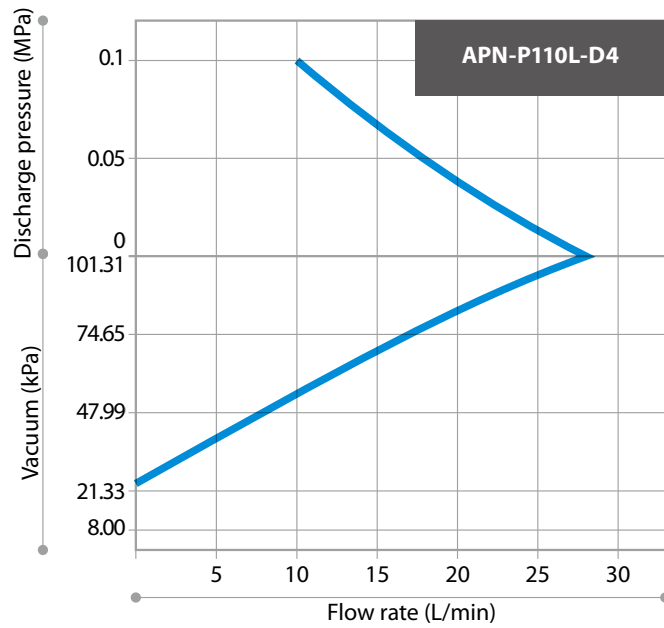
### Construction and materials



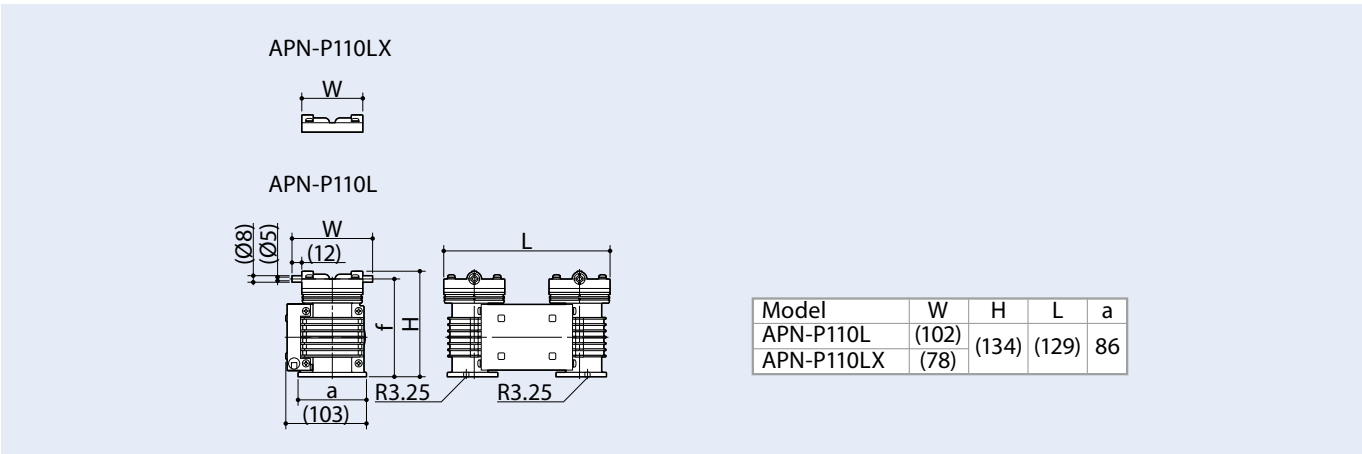
### Pump identification



### Performance curves



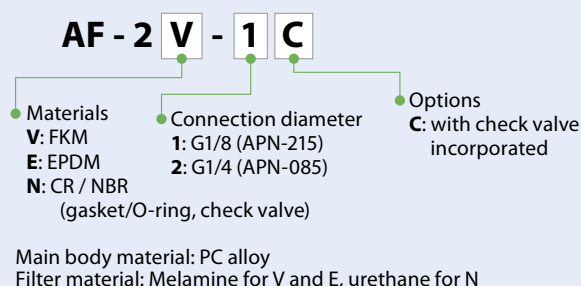
### Dimensions in mm



## Optional accessory

### Filter and Muffler (APN series)

To be used as muffler when installed at discharge side and also as filter when installed at suction side. (Check valve incorporated filter is available as option)



This may not be usable for some pump types and pump head shapes. When installed, performance will be affected.

## List of Available Materials

| Symbol of Material | Name   |
|--------------------|--|
| GFRPP              | Glass-fiber-reinforced polypropylene                               |
| GFRPPS             | Glass-fiber-reinforced polyphenylene sulfide resin                 |
| GFRPA              | Glass-fiber-reinforced polyamide resin                             |
| GFRPPE             | Glass-fiber-reinforced polyphenyl ether resin                      |
| PTFE               | Tetra-fluoroethylene resin   |
| PCTFE              | Polychlorotrifluoroethylene  |
| FKM                | Fluorocarbon rubber  |
| EPDM               | Ethylene propylene rubber  |
| NBR                | Nitrile butadiene rubber   |
| CR                 | Chloroprene rubber   |
| ADC12              | Aluminum diecast   |
| SUS304             | Stainless steel 304  |
| SUS316             | Stainless steel 316  |
| SUS631-CSP         | Stainless steel (strip steel for spring)                           |
| AM350              | Precipitation-hardening stainless steel (steel plates for springs) |
| AC2A               | aluminum casting alloy   |

## Unit of vacuum pressure

In the new Measurement Act, the following are used as the SI unit: "Pa (pascal)," "N/m<sup>2</sup> (newton per square meter)," and "bar (bar)." As well, the non-SI unit, "Torr" (Torr), is admitted for the pressure within an organism, and "mmHg" (millimeter of mercury) is admitted for blood pressure.

There are two methods of vacuum pressure notation, as below.

In the vacuum industry, absolute pressure is used. In other industries, however, gauge pressure is used in many cases. Thus, when viewing materials or catalogues, you need to check which method is used for the notation of pressure.

### 1. Absolute pressure by setting the absolute vacuum equal to 0 (zero)

"a" or "abs" is notated after the unit notation (often omitted).

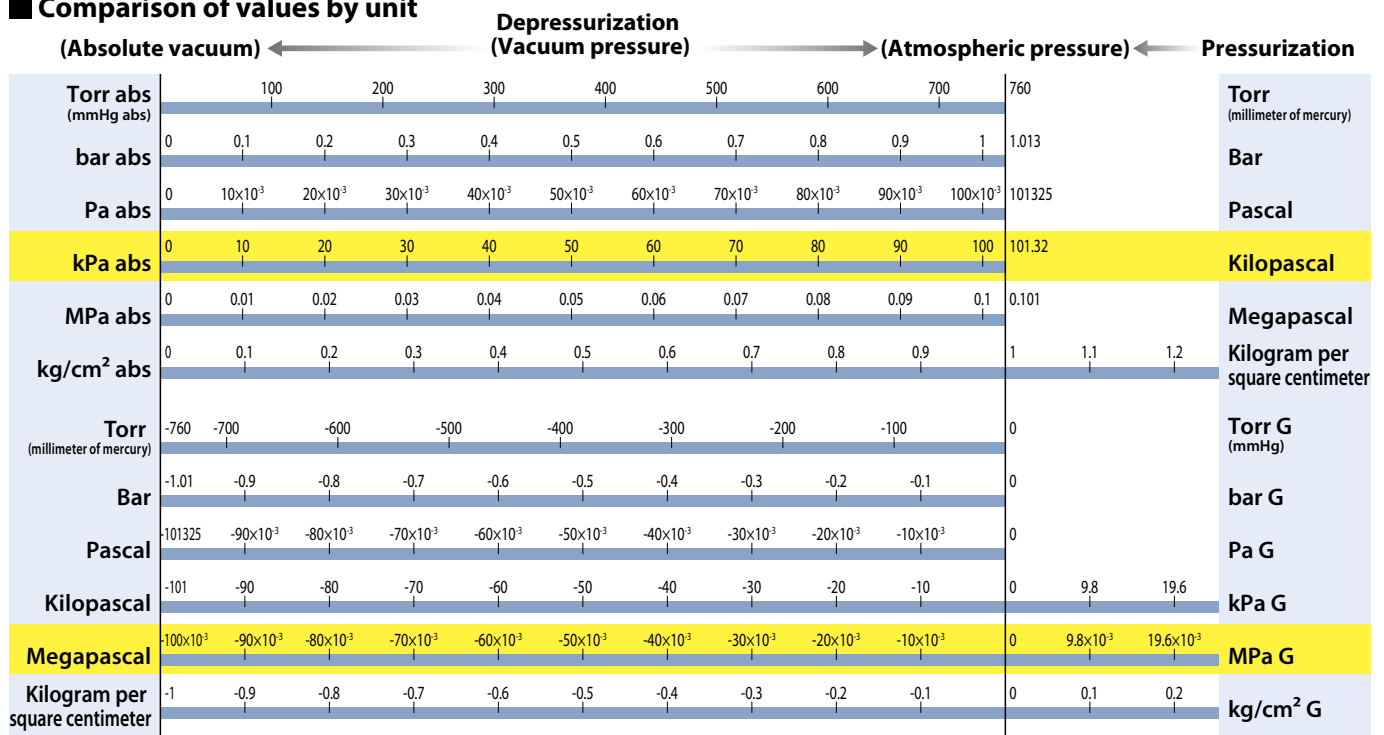
### 2. Gauge pressure by setting the atmospheric pressure equal to 0 (zero)

"G" or "Gauge" is notated after the unit notation (often omitted).

■ Values of atmospheric pressure by each unit of pressure

| Unit                       | Pronunciation                        | Values by absolute pressure notation |                          |                 | Values by gauge pressure notation |                          |                 |
|----------------------------|--------------------------------------|--------------------------------------|--------------------------|-----------------|-----------------------------------|--------------------------|-----------------|
|                            |                                      | Atmospheric pressure                 | Range of vacuum pressure | Absolute vacuum | Atmospheric pressure              | Range of vacuum pressure | Absolute vacuum |
| Pa (N/m <sup>2</sup> )     | Pascal (newton per square meter)     | 101325                               | ↔                        | 0               | 0                                 | ↔                        | -101325         |
| kPa                        | Kilopascal                           | 101.3                                | ↔                        | 0               | 0                                 | ↔                        | -101.3          |
| MPa                        | Megapascal                           | 0.101                                | ↔                        | 0               | 0                                 | ↔                        | -0.101          |
| bar                        | Bar                                  | 1.013                                | ↔                        | 0               | 0                                 | ↔                        | -1.013          |
| mbar                       | Millibar                             | 1013                                 | ↔                        | 0               | 0                                 | ↔                        | -1013           |
| Torr                       | Torr                                 | 760                                  | ↔                        | 0               | 0                                 | ↔                        | -760            |
| mmHg                       | Millimeter of mercury                | 760                                  | ↔                        | 0               | 0                                 | ↔                        | -760            |
| mmH <sub>2</sub> O (Aq)    | Millimeter of water (Aqua)           | 10342                                | ↔                        | 0               | 0                                 | ↔                        | -10342          |
| atm                        | Atmosphere                           | 1                                    | ↔                        | 0               | 0                                 | ↔                        | -1              |
| psi (lbf/in <sup>2</sup> ) | Pound-force per square inch          | 14.696                               | ↔                        | 0               | 0                                 | ↔                        | -14.696         |
| kgf/cm <sup>2</sup>        | Kilogram-force per square centimeter | 1.0332                               | ↔                        | 0               | 0                                 | ↔                        | -1.0332         |

■ Comparison of values by unit



■ Unit conversion table

|                             | Pa (N/m <sup>2</sup> ) | Torr (mmHg)           | atm                    | mbar                  | psi (bf/in <sup>2</sup> ) | kgf/cm <sup>2</sup>    | mH <sub>2</sub> O       |
|-----------------------------|------------------------|-----------------------|------------------------|-----------------------|---------------------------|------------------------|-------------------------|
| 1 Pa (N/m <sup>2</sup> )    | 1                      | 7.50×10 <sup>-3</sup> | 9.87×10 <sup>-6</sup>  | 10 <sup>-2</sup>      | 1.45×10 <sup>-4</sup>     | 1.02×10 <sup>-5</sup>  | 1.02×10 <sup>-4</sup>   |
| 1 Torr (mmHg)               | 133.32                 | 1                     | 1.316×10 <sup>-3</sup> | 1.33                  | 1.93×10 <sup>-2</sup>     | 1.359×10 <sup>-3</sup> | 1.36×10 <sup>-2</sup>   |
| 1 atm                       | 1.013×10 <sup>5</sup>  | 760                   | 1                      | 1.013×10 <sup>3</sup> | 14.696                    | 1.033                  | 10.34                   |
| 1 mbar                      | 100                    | 0.750                 | 9.87×10 <sup>-4</sup>  | 1                     | 1.45×10 <sup>-2</sup>     | 1.02×10 <sup>-3</sup>  | 10.206×10 <sup>-3</sup> |
| 1 psi (bf/in <sup>2</sup> ) | 6.89×10 <sup>3</sup>   | 51.71                 | 6.8×10 <sup>-2</sup>   | 6.89                  | 1                         | 7.031×10 <sup>-2</sup> | 0.703                   |
| 1 kgf/cm <sup>2</sup>       | 9.8×10 <sup>4</sup>    | 735.56                | 0.968                  | 9.81×10 <sup>2</sup>  | 14.223                    | 1                      | 10                      |
| 1 mH <sub>2</sub> O         | 9.8×10 <sup>3</sup>    | 73.49                 | 9.68×10 <sup>-2</sup>  | 98.0                  | 1.421                     | 0.1                    | 1                       |

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( )Country codes



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The RoHS Directive is a restriction related to chemicals contained in electric/electronic devices issued by the EU (European Union). Currently, it has been replaced with the RoHS Recast Directive, and the RoHS Recast Directive is now being applied. CE Marking applied to a product is a manufacturer's or importer's declaration of product conformity to the EC Directive issued by the EU (European Union) and ensures free distribution within the EU area.

IWAKI has been promoting the switching of parts to those compliant with RoHS, and has been taking measures for the EC Directive one after another. Contact us for details on products compliant with RoHS and the EC Directive.

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