IWAKI

Air Pumps & Gas and Liquid Transfer Pumps

DC MOTOR

APN/APN-W

Extensive Product Range
Wide Variation
Application Flexibility

The Heart of Industry

Diaphragm Air Pumps
APN

Suitable for Built-in Equipment. Diaphragm Air Pump.

Clean Air Transfer

A diaphragm pump directly connected to the motor provides clean air transter without the use of oil. Ideal for medical, sampling, and other applications in which clean air needs.

High Efficiency Design

A use of molded parts enhances the pump performance and efficiency. The high-power motor also improves the starting characteristic.

Superior Durability

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

Ease of Maintenance

The pump head consists of only a few parts and can easily be assembled and disassembled.*
*Excluded some models.

Application Examples

Analyzers

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

Laboratory

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

Gas and Liquid Transfer Pumps
APN-W

Maintaining the Features of the APN Series.
Lightweight and Compact Design.
Gas-Liquid Transfer Capability.

Compact and Lightweight

A compact and lightweight design is used that is perfect fit for built-in applications and for waste recovery. A structure with high corrosion resistance and enhanced reliability / durability enables continuous operation for an extended period of time and ensures long life.

Oil-Free Design Self-Priming Capability

The motor-driven diaphragm pumps are oil-free and are most suitable for usage requiring clean gas and liquid transfer. A wide variety of models are available for various usage. Self-priming capability makes end user's piping easily.

Unique Valve Design Flush Groove

To improve sealing performance even when the pump is stationary, a unique valve is designed to be pressed against the valve seat. A flush groove design is adapted in the valve seat to prevent accumulating debris when the debris is accidentally mixing in the pumped liquid. The flush groove helps to prevents accumulating the debris between valve and the valve seat reducing a self-priming failure.

Diaphragm Durability

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

Medical

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

Specifications

APN Diaphragm Air Pumps

Model	Gas Max. flow (1.0 – 10.0 – 30.0 L/min)	Max. Vacuum (kPa)	Max. Discharge pressure (0.02 – 0.06 – 0.10 MPa)
S041 Brushless motor	0.8	9.33	0
051 Brushless motor	1.0	61.32	0.05
085 Brushed motor	6.0	61.32	0.08
110 Brushless motor	14.0	23.99	0.10
P110 Brushless motor	28.0	23.99	0.10

APN-W Gas and Liquid Transfer Pumps

Model	Gas-liquid Max. capacity / Gas Max. flow (1.0 – 10.0 – 30.0 L/min)	Max. Vacuum (kPa)	Max. Discharge pressure (0.02 – 0.06 – 0.10 MPa)
05 Brushed motor	0.05 / 0.1	87.99	0.01
10 Brushed motor	0.1 / 0.2	74.66	0.03
10 Brushless motor	0.18 / 0.2	74.66	Note1 0.03
20 Brushed motor	0.2 / 0.2	74.66	0.03
20 Brushless motor	0.26 / 0.2	74.66	Note1 0.03
30 Brushed motor	0.3 / 1.2	47.99	0.08
30 Brushless motor	0.3 / 1.0	47.99	0.08
60 Brushed motor	0.6 / 1.2	47.99	0.08
60 Brushless motor	0.6 / 1.0	47.99	0.08
P60 Brushless motor	1.0 / 2.4	47.99	Note2 0.08
085 Brushed motor	0.5 / 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-S041
P. 5, 6

APN-051
P. 7, 8

APN-085
P. 9, 10

APN-110
P. 11, 12

Model		Power consumption (W) DC12/24	Rated current (A) DC12/24	Rated voltage (V)	Connection size IN/OUT (mm)	Mass (kg)	Allowable gas temp. (°C)	Allowable ambient temp. (°C)	Limit cold start temperature (°C)
S041	Brushless motor	–/6	–/0.25 or less	DC24	Hose Ø4.5	0.4	0 to 40	0 to 40	0
051	Brushless motor	–/6	–/0.25	DC24	Hose Ø8, Thread Rc1/8	0.5	5 to 40	5 to 40	5
085	Brushed motor	19/19	1.6/0.8	DC12/24	Hose Ø8, Thread Rc1/4, G1/4	1.1	0 to 40	0 to 40	10
110	Brushless motor	–/33.6	–/1.4	DC24		1.4		5 to 40	5
P110	Brushless motor	–/55.2	–/2.3			3.3			

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

Liquid temperature at 20°C

APN-05/10/20-W

P. 13, 14

APN-30/60-W

P. 15, 16

APN-085-W

P. 17, 18

APN-S041

Diaphragm Air Pumps

Max.flow 0.8 L/min

Max. vacuum 9.33 kPa(abs.)

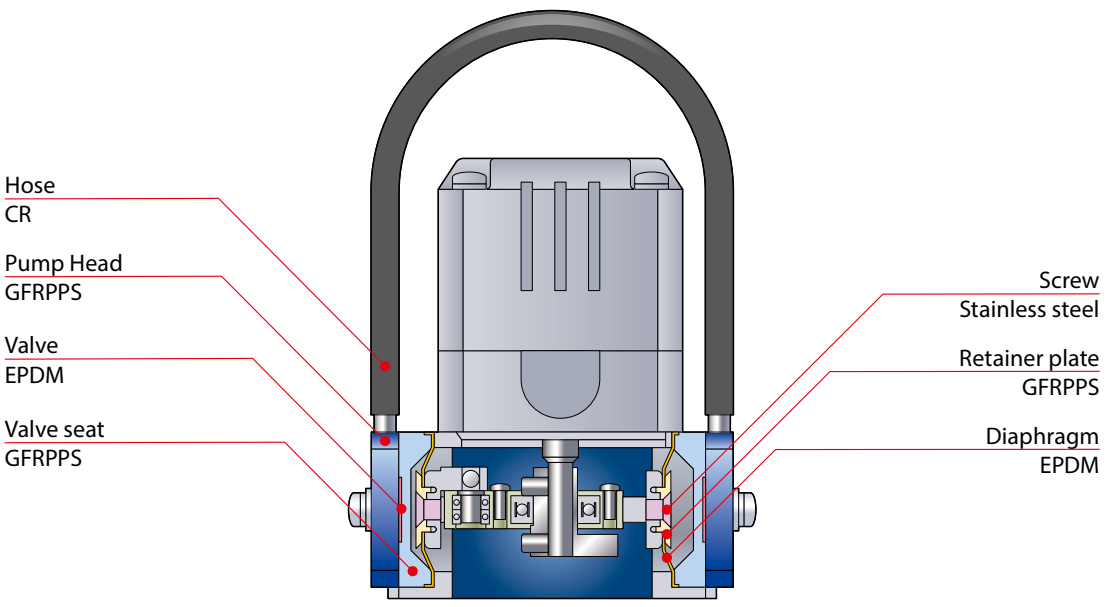
Observe the maximum allowable discharge pressure of 0.0MPa.

Specifications

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

Connection size IN/OUT .....Hose barb Ø4.5mm
Mass 0.4kg
Allowable gas temp. .....0 to 40°C
Allowable ambient temp. .....0 to 40°C
Minimum starting temperature ...0°C
* D3: 2 wire, D4: 4 wire

Construction and Materials



Pump Identification

APN - S 041 M E - D4 - 01

1 2 3 4 5 6 7

1 Pump head
S : Dual-head with in-line tubing

2 Pump size
041

3 Type
M : Vacuum

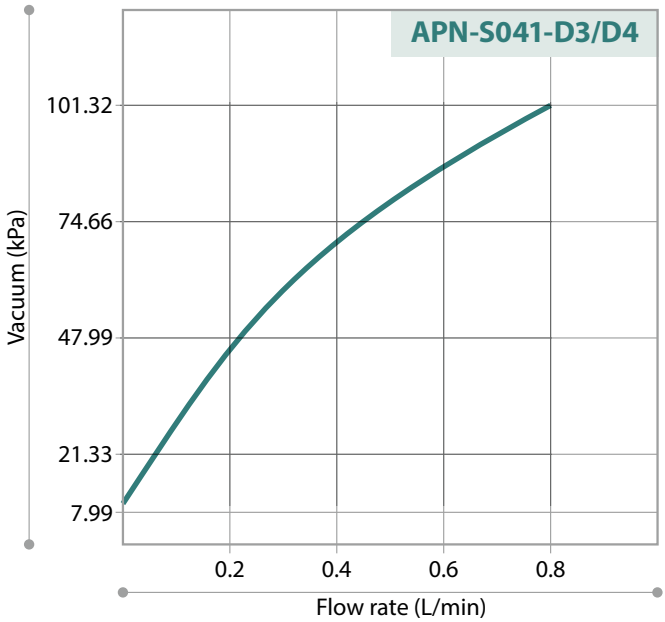
4 Diaphragm/Valve materials
E : EPDM

5 Pump connection
No symble: Hose barb (ø4.5)

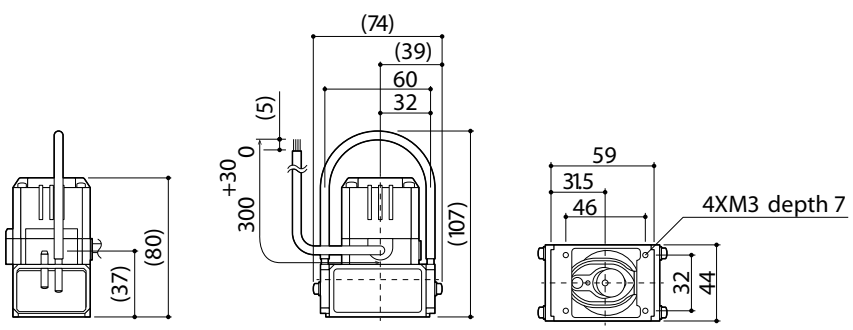
6 Motor
D3 : Brushless 24VDC (without speed control)
D4 : Brushless 24VDC (with Variable speed control)

7 Special version

Performance Curves



Dimensions in mm



APN-051

Diaphragm Air Pumps

Max.flow 1.0 L/min

Max. vacuum 61.32 kPa(abs.)

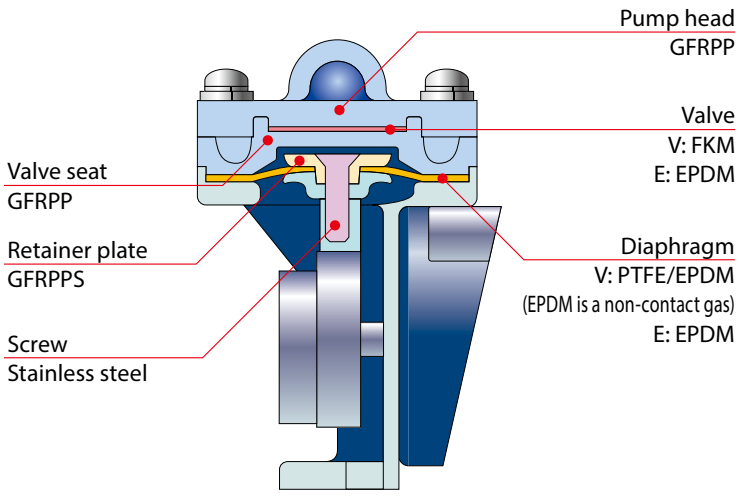
Max. discharge pressure 0.05 MPa

Specifications

Model	Max. flow (L/min)	Max. vacuum (kPa[abs.])	Max. discharge pressure (MPa)	Power consumption (W) DC24	Rated current (A) DC24	Rated voltage (V)
APN-051	1.0	61.32	0.05	6	0.25	DC24

Connection size IN/OUT .....Hose barb Ø5mm, Ø8mm, Thread Rc1/8
Mass 0.5kg
Allowable gas temp. .....0 to 40°C
Allowable ambient temp. .....0 to 40°C
Minimum starting temperature ... 5°C

Construction and Materials



Pump Identification

APN - 051 L E X - D3 - 01
1 2 3 4 5 6

1 Pump size
051

2 Pump head
L : Horizontally oriented
H: Vertically oriented

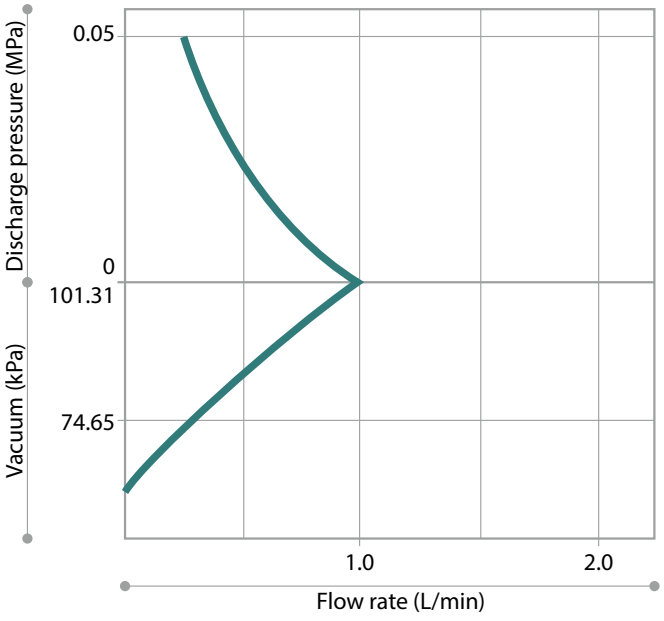
3 Diaphragm/Valve materials
V : PTFE/EPDM • FKM
E : EPDM • EPDM

4 Pump connection
No symble: Hose barb (Ø8)
X : Thread (Rc1/8)

5 Motor
D3 : Brushless 24VDC
(without speed control)

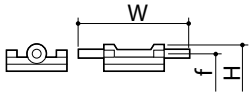
6 Special version

Performance Curves

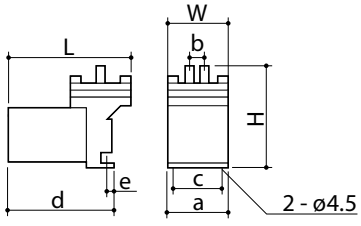


Dimensions in mm

APN-051L (lateral direction)



APN-051H (longitudinal direction)



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 Air Pumps

Max.flow 6 L/min

Max. vacuum 34.66 to 61.32 kPa(abs.)

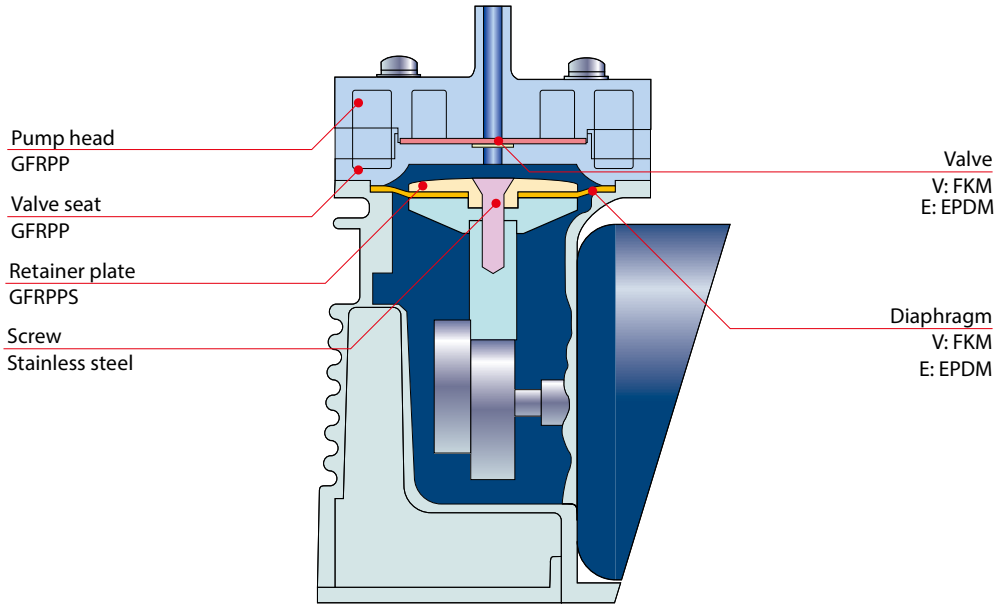
Max. discharge pressure 0.08 MPa

Specifications

Model	Max. flow (L/min)	Max. vacuum (kPa)	Max. discharge pressure (MPa)	Power consumption (W) DC12/24	Rated current (A) DC12/24	Rated voltage (V)
APN-085-D1/D2	6	61.32	0.08	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
Allowable gas temp. ..... 0 to 40°C
Allowable ambient temp. ..... 0 to 40°C
Minimum starting temperature ...10°C

Construction and Materials



Pump Identification

APN - 085 L V X - D2 - 01
1 2 3 4 5 6

1 Pump size
085

2 Pump head
No symble: Corrosion resistant
L : Horizontally oriented
H: Vertically oriented

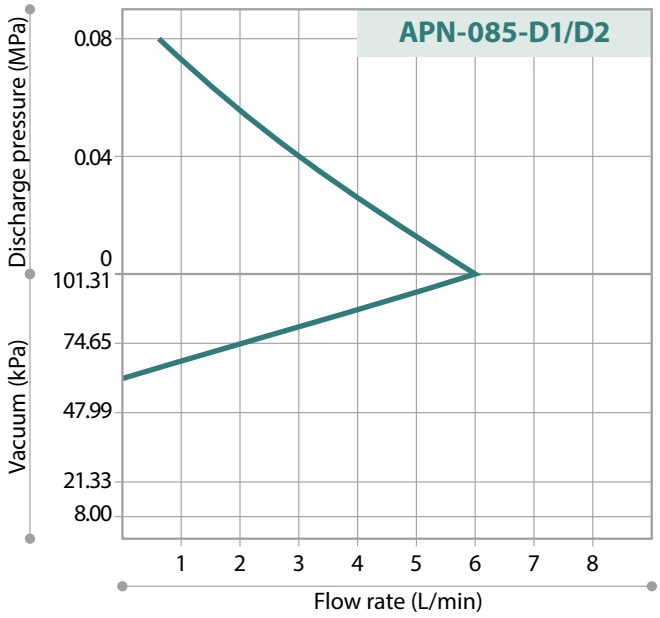
3 Diaphragm/Valve materials
E : EPDM
V : FKM

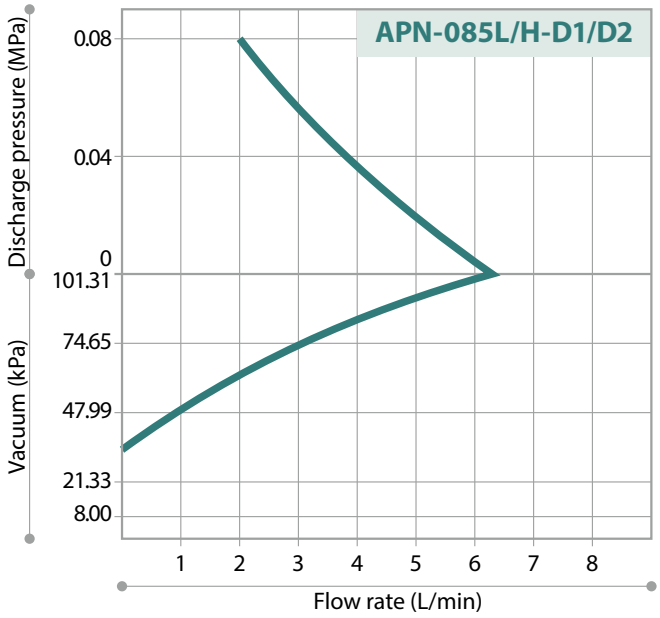
4 Pump connection
No symble : Tube (ø8)
X : Thread (Rc1/4)
X1 : Thread (G1/4)

5 Motor
D1 : Brushed 12VDC
D2 : Brushed 24VDC

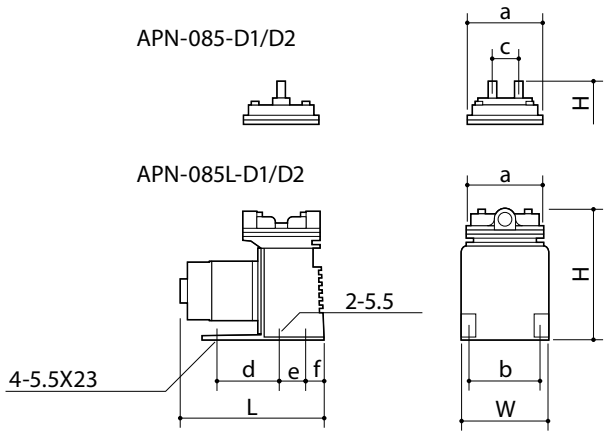
6 Special version

Performance Curves





Dimensions in mm



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

APN-110

Diaphragm Air Pumps

Max.flow 14 to 28 L/min

Max. vacuum 23.99 kPa(abs.)

Max. discharge pressure 0.1 MPa

APN-110

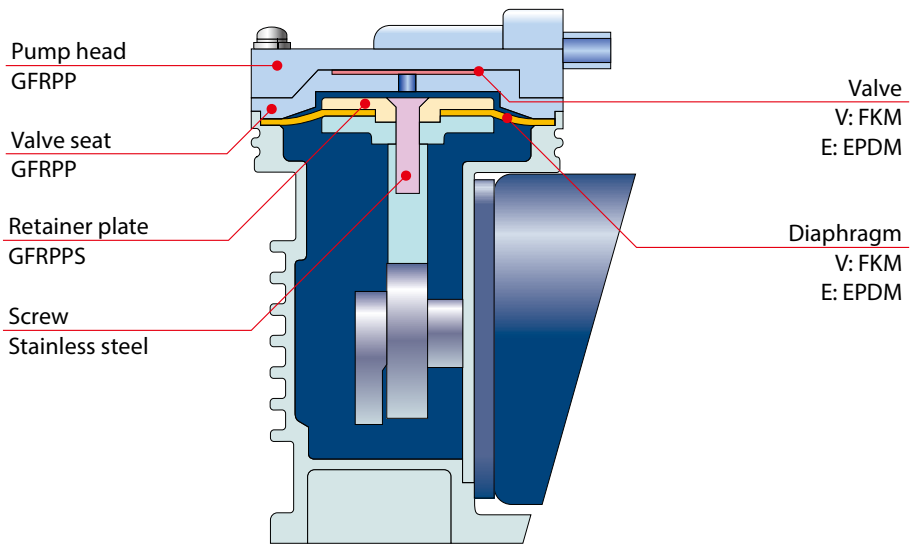
APN-P110

Specifications

Model	Max. flow (L/min)	Max. vacuum (kPa[abs.])	Max. discharge pressure (MPa)	Power consumption (W)	Rated current (A)	Rated voltage (V)
APN-110K/L-D4	14	23.99	0.1	33.6	1.4	DC24
APN-P110L-D4	28	23.99	0.1	55.2	2.3	DC24

Connection size IN/OUT .....Hose barb Ø8mm, 110: Thread Rc1/4, G1/4, P110: Thread Rc1/4
Mass 110: 1.4kg, P110: 3.3kg
Allowable gas temp. .....0 to 40°C
Allowable ambient temp. .....5 to 40°C
Minimum starting temperature ...5°C

Construction and Materials



Pump Identification

APN - P 110 L V X - D4 - 02

1 2 3 4 5 6 7

1 Pump head
No symble **:** Single hend
P : Dual-head

2 Pump size
110

3 Inlet/outlet
K : Parallel type
L : In-line type

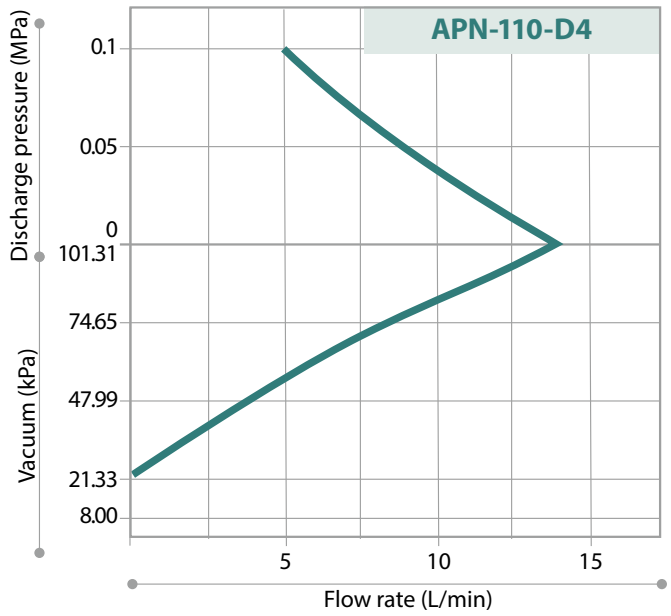
4 Diaphragm/Valve materials
E : EPDM
V : FKM

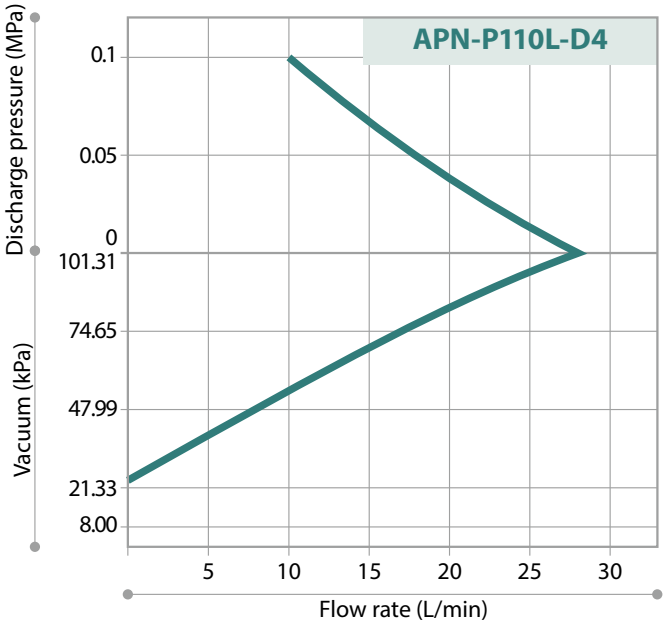
5 Pump connection
No symble: Hose barb (O.D.ø8)
X : Thread (Rc1/4)
X1 : Thread (G1/4)

6 Motor
D4 : Brushless 24VDC(with Variable speed control)

7 Special version

Performance Curves

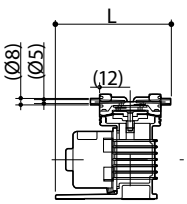


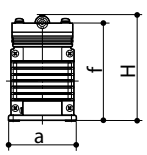


Dimensions in mm

APN-110L V/E X/X1 APN-110K V/E (X/X1)

APN-110L V/E

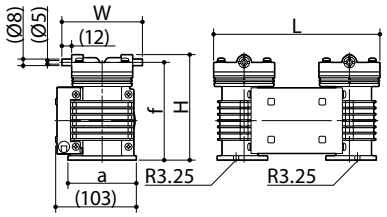




Model	W	H	L	a	f
APN-110K V/E	78	134	134	74	124
APN-110K V/E X/X1					
APN-110L V/E			146		
APN-110L V/E X/X1			134		

APN-P110LX

APN-P110L



Model	W	H	L	a	f
APN-P110L	(102)	(134)	(129)	86	124
APN-P110LX	(78)				

APN-05/10/20-W

Gas and Liquid Transfer Pumps

Max. capacity (Gas-liquid) 0.05 to 0.26 L/min

Max.flow (Gas) 0.1 to 0.2 L/min

Max. vacuum 74.66 to 87.99 kPa(abs.)

Max. discharge pressure 0.03 MPa

Always use a suction valve to adjust an air / liquid flow.

APN-10-W
Brushed motor type

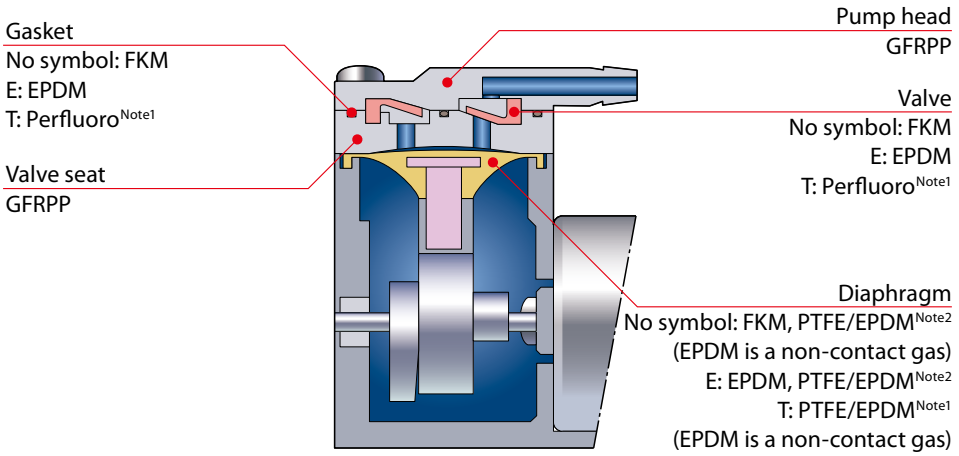
APN-10-W
Brushless motor type

Specifications

Model	Motor	Gas-liquid Max. capacity (L/min)	Gas Max. flow (L/min)	Max. vacuum (kPa[abs.])	Max. discharge pressure (MPa)	Power consumption (W) DC12/24	Rated current (A) DC12/24	Rated voltage (V)
APN-05-W		0.05	0.1	87.99	0.01	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[Note]	–/7.2	–/0.3	DC24
APN-20-W	Brushed	0.2			0.03	–/4.8	–/0.2	
	Brushless	0.26			0.03[Note]	–/7.2	–/0.3	

Connection size IN/OUT ..... APN-05/10-W: Hose barb Ø4.5mm, APN-20-W: Hose barb Ø5mm
Mass ..... Brushed type: 0.11kg, Brushless type: 0.2kg
Allowable gas temp. ..... 5 to 40°C
Allowable liquid temp. ..... 10 to 40°C
Minimum starting 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
(1) (2) (3) (4) (5) (6)

(1) Pump size
05, **10**, **20**

(2) Bracket type
No symbol : Without base
G : With base

(3) Diaphragm/Valve/Gasket materials
No symbol : FKM
E : EPDM[Note1]
T : PTFE/EPDM Perfluor*[Note1]

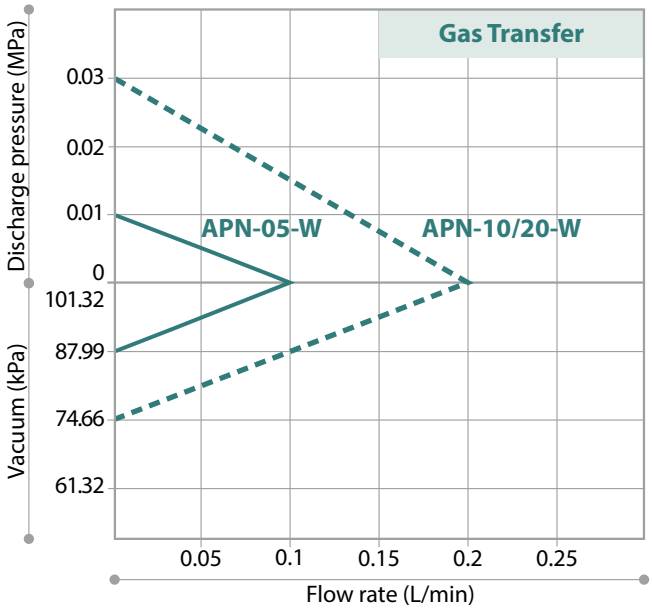
(4) Motor
D1 : Brushed 12VDC[Note2]
D2 : Brushed 24VDC
D3 : Brushless 24VDC[Note1]

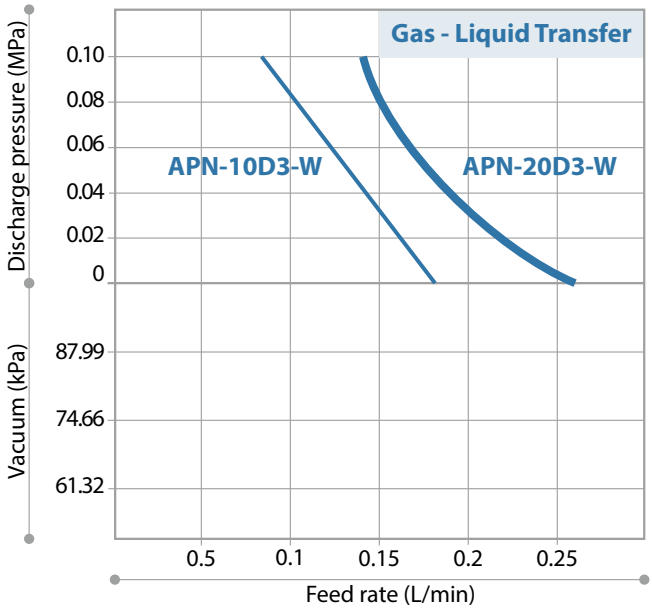
(5) Type
W : Gas-liquid transfer

(6) Special version

Note1: 10•20 only
Note2: 05•10 only

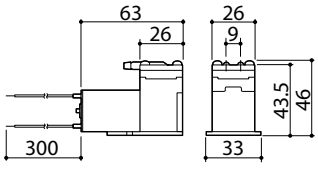
Performance Curves



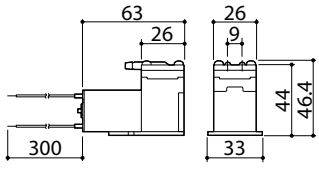


Dimensions in mm

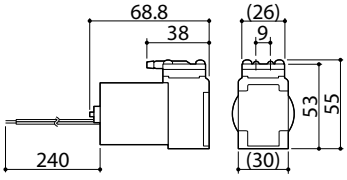
APN-05/10-W



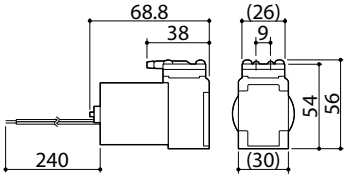
APN-20-W



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

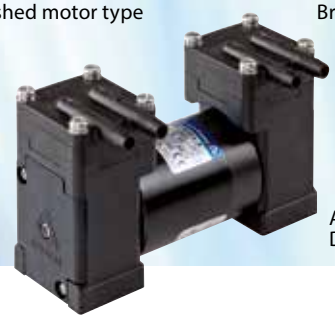
Max. vacuum 47.99 kPa(abs.)

Max. discharge pressure 0.08 MPa

Always use a suction valve to adjust an air / liquid flow.

APN-30/60-W
Brushed motor type

APN-30/60-W
Brushless motor type



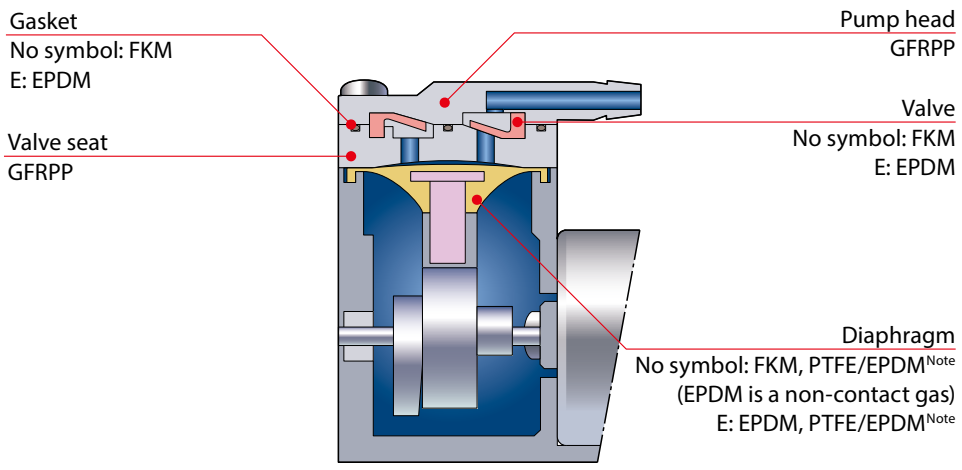
APN-P60-W
Dual head type

Specifications

Model	Motor	Gas-liquid Max. capacity (L/min)	Gas Max. flow (L/min)	Max. vacuum (kPa[abs.])	Max. discharge pressure (MPa)	Power consumption (W)	Rated current (A)	Rated voltage (V)
APN-30-W	Brushed	0.3	1.2	47.99	0.08	11.5	0.48	DC24
	Brushless		1.0			14.4	0.6	
APN-60-W	Brushed	0.6	1.2			11.5	0.48	
	Brushless		1.0			14.4	0.6	
APN-P60-W		1.0	2.4		0.08[Note]	20.6	0.86	

Connection size IN/OUT .....Hose barb Ø5.5mm
Mass .....30/60 Brushed type: 0.21kg, 30/60 Brushless type / P60: 0.24kg
Allowable gas temp. .....5 to 40°C
Allowable liquid temp. .....10 to 40°C
Minimum starting temperature ...5°C
Note: Max. discharge pressure of the gas-liquid transfer is 0.05MPa.

Construction and Materials



Note: Diaphragm of APN-P60-W is PTFE / EPDM.

Pump Identification

APN - 30 G E D1 - W 02
(1) (2) (3) (4) (5) (6)

(1) Pump size
30, **60**

(2) Bracket type
No symbol : Without base
G : With base

(3) Diaphragm/Valve/Gasket materials
No symbol : FKM
E : EPDM

(4) Motor
D1 : Brushed 12VDC[Note]
D2 : Brushed 24VDC
D3 : Brushless 24VDC (without speed control)

(5) Type
W : Gas-liquid transfer

(6) Special version

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

APN - P 60 G E D4 - W 02
(1) (2) (3) (4) (5) (6) (7)

(1) Pump head
P : Dual-head with parallel tubing

(2) Pump size
60

(3) Bracket type
No symbol : Without base
G : With base

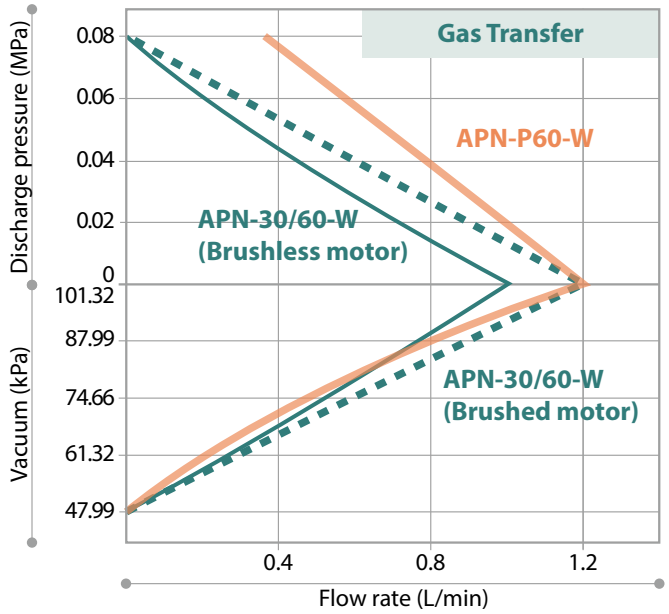
(4) Diaphragm/Valve/Gasket materials
No symbol : PTFE/EPDM • FKM
E : PTFE/EPDM • EPDM

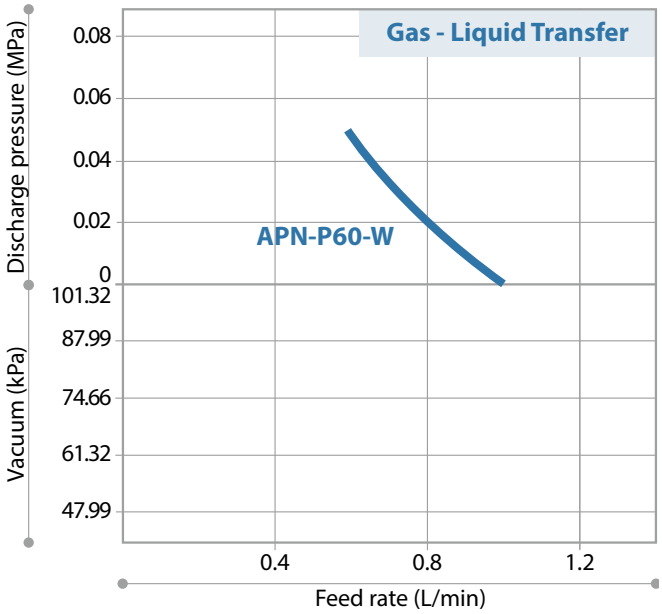
(5) Motor
D4 : Brushless 24VDC (with Variable speed control)

(6) Type
W : Gas-liquid transfer

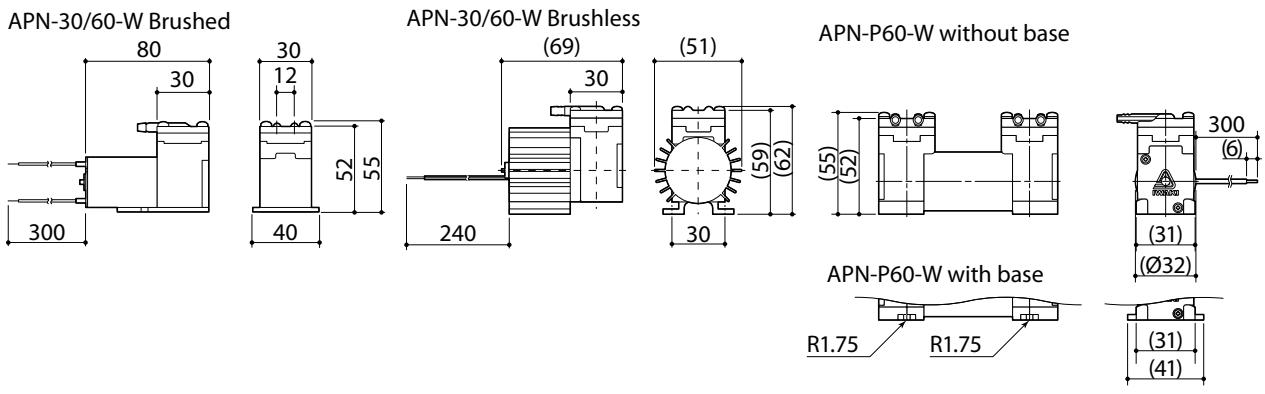
(7) Special version

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(abs.)

Max. discharge pressure 0.05 MPa

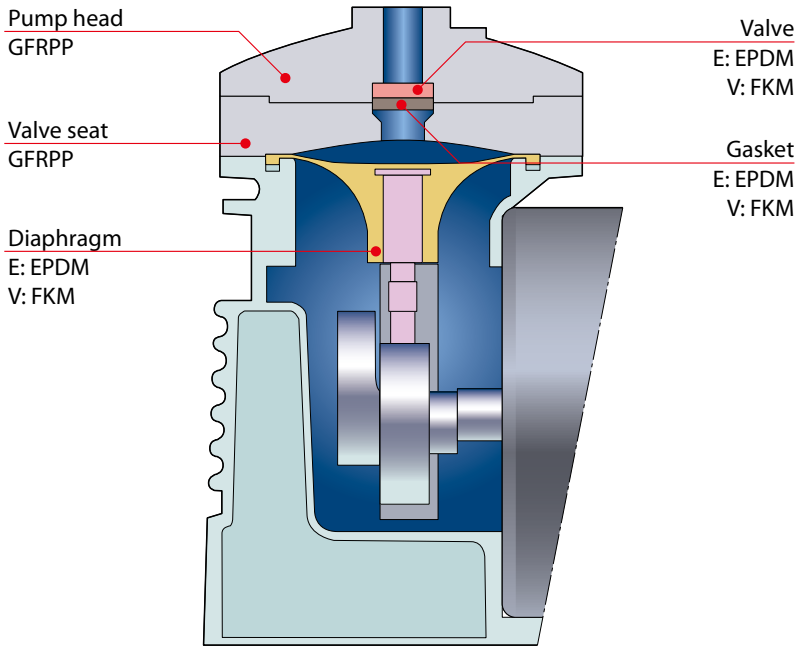
Always use a suction valve to adjust an air / liquid flow.

Specifications

Model		Gas-liquid Max. capacity (L/min)	Gas Max. flow (L/min)	Max. vacuum (kPa[abs.])	Max. discharge pressure (MPa)	Power consumption (W) DC12/24	Rated current (A) DC12/24	Rated voltage (V) DC12/24
APN-085-W	EX type	0.5	4.0	34.66	0.05	19/19	1.6/0.8	DC12/24
	VX type			37.33				

Connection size IN/OUT .....Thread Rc1/8
Mass 2.5kg
Allowable gas temp. .....0 to 40°C
Allowable liquid temp. .....5 to 40°C
Minimum starting temperature ...FKM: 10°C, EPDM: 5°C

Construction and Materials



Pump Identification

APN - 085 E X - D1 - W 02
1 2 3 4 5 6

1 Pump size
085

2 Diaphragm (Valve) materials
E : EPDM
V : FKM

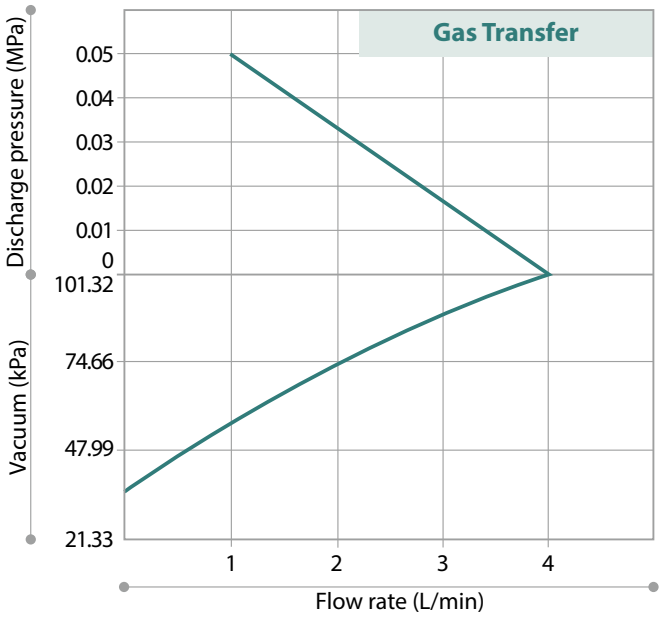
3 Connectuon size
X : Thread (Rc1/8)

4 Motor
D1 : Brushed 12VDC
D2 : Brushed 24VDC

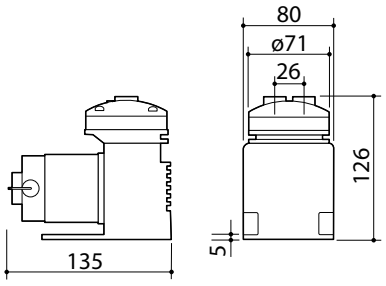
5 Type
W : Gas-liquid transfer

6 Special version

Performance Curves



Dimensions in mm



Optional Accessory

Muffler / Filter (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)

AF - 2 V - 1 C
(1) (2) (3)

1 Materials
- **V** : FKM
- **E** : EPDM
- **N** : CR / NBR (gasket/O-ring, check valve)

2 Connection diameter
- **1** : G1/8 (APN-215)
- **2** : G1/4 (APN-085)

3 Options
- **C** : with check valve incorporated

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

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