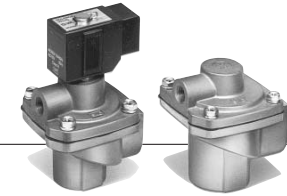




# 2 Port Solenoid Valve For Dust Collector Series VXF

## 2 port solenoid valve for dust collector Series VXF

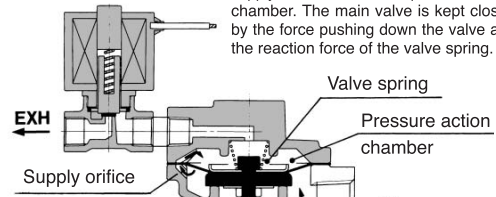
In this L-shaped 2 port valve, the bag filter is cleaned by high speed air jet and shock wave to materialize high speed response and control of instantaneous large flow rate.



Working principle (VXFA)

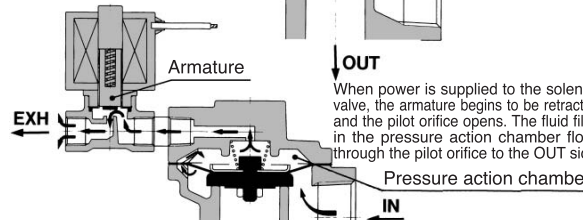
### De-energized

Fluid from the IN side goes through the supply orifice and fills the pressure action chamber. The main valve is kept closed by the force pushing down the valve and the reaction force of the valve spring.



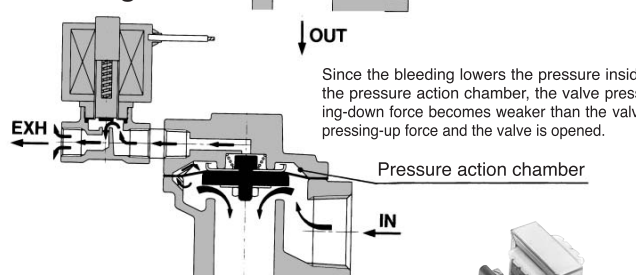
### Right after energized

When power is supplied to the solenoid valve, the armature begins to be retracted, and the pilot orifice opens. The fluid filled in the pressure action chamber flows through the pilot orifice to the OUT side.

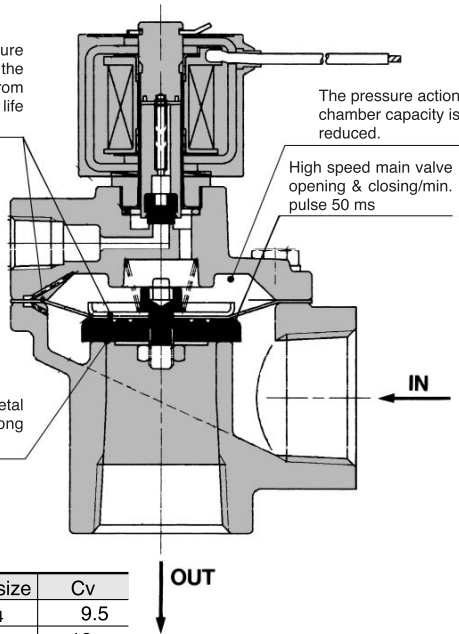


### Energized

Since the bleeding lowers the pressure inside the pressure action chamber, the valve pressing-down force becomes weaker than the valve pressing-up force and the valve is opened.



The supply port to the pressure action chamber is installed in the body and the diaphragm free from stress concentration has a long life span.



The main valve made of polyacetal is free from sticking and strong against produced shock waves.

	Model	Port size	Cv
VXF	2150	3/4	9.5
	2160	1	18
VXFA	2280	1 1/2	45

## Controller dedicated for operation Series VXFC

The valve controller turns ON/OFF many valves for the dust controller.

Power voltage: 100 VAC, 200 VAC, 24 VDC

Output points: 5 points, 10 points

### Two-time hitting function

Two-time hitting can be set to improve the sweeping effect by the bag filter. Two-time hitting is available by turning ON the DIP SW (one-time by turning OFF).

### Connection of multiple circuit boards is possible

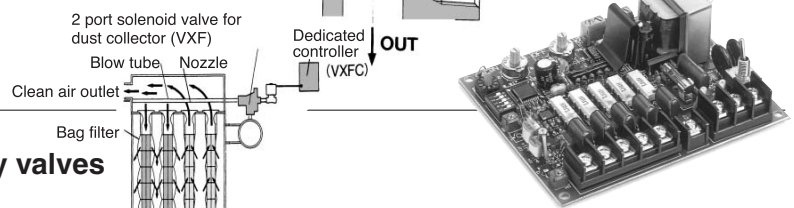
Number of output points can be increased (15/20/25/30 points) by connecting boards.

### Wide ranging time setting

ON-time (output to the valve): 0.01 to 1 sec.  
OFF-time (adjournment to next output): 1 to 120 sec.

### Small, lightweight, and compact

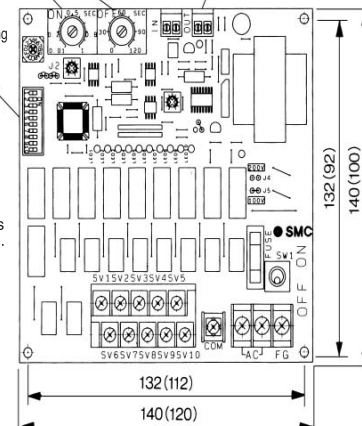
VXFC10-1: Outside dimensions 140 x 140, Mounting dimensions 132 x 132, Weight 325 g  
VXFC05-1: Outside dimensions 120 x 100, Mounting dimensions 112 x 92, Weight 280 g



ON time setting rotary SW, OFF time setting rotary SW, Connector for cascade connection

One-two-time hitting setting DIP SW

The dimensions in parentheses indicate those in VXFC05 case.



VC

VDW

VQ

VX2

VX

VX3

VXA

VN

LVC

LVA

L VH

LVD

L VQ

LQ

L VN

T/ TIL

PA

PAX

PB

## How to Order

Solenoid type  
Normally closed

VXF 2150 — 06 — 1 G

Air operated type

VXFA 2150 — 06

Option

Nil	Standard
S*	With silencer

\* Refer to the table (2) below for availability.

Table (2) Option/Silencer

Model	Noise reduction	Effective area
2504-002	19 dB or more	33.9 mm <sup>2</sup>

Model — Port size

Model	Port size	Port size
2150	06	Rc 3/4
2160	10	Rc 1
2280	14	Rc 1 1/2

Rated voltage

1	100 VAC 50/60 Hz
2	200 VAC 50/60 Hz
3	110 VAC 50/60 Hz
4	220 VAC 50/60 Hz
5	24 VDC
6	12 VDC
7	240 VAC 50/60 Hz
8	48 VAC 50/60 Hz
9	Other (Contact us for inquiry)



\* Refer to the table (1) given below for availability.

\*\* Refer to page 17-3-75 for ordering coil only.

Electrical option

Nil	None
S	With surge voltage suppressor
L	With indicator light
Z	With light/surge voltage suppressor

\* Refer to the table (1) given below for availability.

Electrical entry

G	Grommet
C	Conduit
D	DIN terminal
T	Conduit terminal

\* Refer to the table (1) given below for availability.

Table (1)  
Rated Voltage-Electrical Entry-Electrical Option

Insulation type		Class B			
Electrical entry		G	C	D, T	
Electrical option		S <sup>Note)</sup>	—	S	L, Z
AC	1 (100 V)	●	●	●	●
	2 (200 V)	●	●	●	●
	3 (110 V)	●	●	●	●
	4 (220 V)	●	●	●	●
	7 (240 V)	●	●	●	—
	8 (48 V)	●	●	●	—
DC	5 (24 V)	●	●	●	●
	6 (12 V)	●	●	●	—



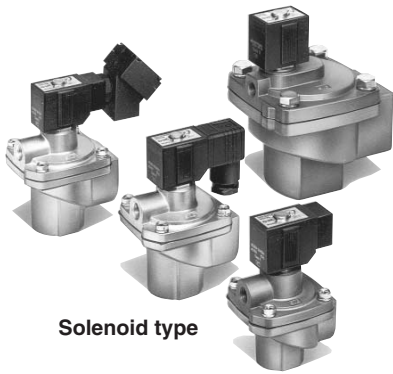
Note) Surge voltage suppressor is attached in the middle of a lead wire.

### ⚠ Caution Selection

When selecting the air operated type VXFA, select 2 port solenoid valves (with orifice dia. of ø3 or more and effective area of 6 mm<sup>2</sup> or more) in order to maintain the pilot valve performance.

## 2 Port Solenoid Valve For Dust Collector **Series VXF**

### Model/Valve Specifications



Solenoid type



Air operated type

Port size	Orifice size (mm $\phi$ )	Model	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)		Air operated valve	Flow characteristics Air Effective area (mm $^2$ )	Withstand pressure (MPa)	Fluid temperature (°C) <sup>(1)</sup>	Ambient temperature (°C)		Weight (g)		
				Solenoid valve	Air operated valve					AC	DC		5 to 60	5 to 40
3/4	20	VXF2150 VXFA2150	0.03	AC	1.0	1.0	170	2.0	-10 to 60	AC	5 to 60	VXF 2150	530	
				DC	0.7					DC	5 to 40	VXFA 2150	350	
1	27	VXF2160 VXFA2160	0.03	AC	1.0	1.0	330	2.0	-10 to 60	AC	5 to 60	VXF 2160	580	
				DC	0.7					DC	5 to 40	VXFA 2160	400	
1 1/2	40	VXF2280 VXFA2280	0.03	AC	1.0	1.0	810	2.0	-10 to 60	AC	5 to 60	VXF 2280	1500	
				DC	0.7					DC	5 to 40	VXFA 2280	1300	



Note 1) Dew point shall be -10°C or less. No condensation allowed.

### Solenoid Specifications

Model	Power source	Frequency (Hz)	Apparent power VA		Power consumptions W (Holding)	Temperature rise (°C) (Rated voltage)	Voltage fluctuation (%)	Pilot exhaust noise (dB)	
			Inrush	Holding				Without silencer	With silencer
VXF 2150	AC	50	20	11	4.5	45	Rated value $\pm 10$	104	83
		60				35			
VXF 2160	AC	50	20	11	4.5	45	Rated value $\pm 10$	105	85
		60				35			
VXF 2280	AC	50	40	18	7.5	60	Rated value $\pm 10$	108	85
		60				50			
	DC	—	—	—	8	60			

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/  
TIL

PA

PAX

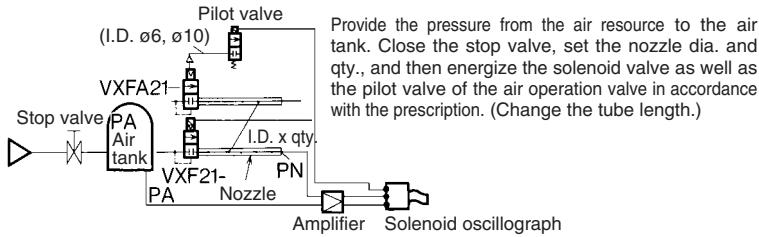
PB

## Model Selection (In the case of using as a bag filter)

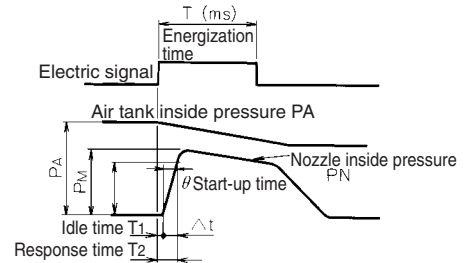
### Model selection

The deterioration of VXF/VXFA properties due to the tube length from data (B) (response time/idle time) and data (C) (start-up speed), can be measured. Refer to this data to set energization time. Use data (A) (flow rate characteristics) to calculate the flow rate for each loading time separately in relation to the nozzle dia./qty., pressure, and tube. The data does not correspond to the actual bag filter operation. (In the data: "Without tube" and Tube length  $\phi$  =

### How to calculate

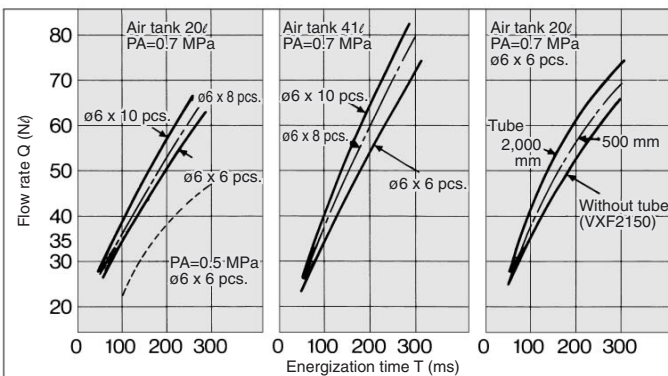


### How to read the data

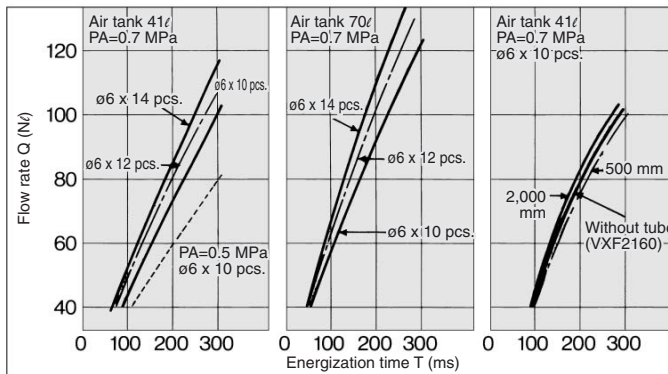


### Data (A) Flow Characteristics

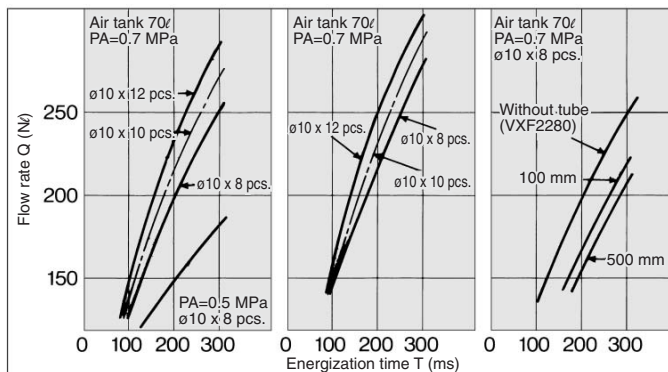
#### VXF2150/VXFA2150



#### VXF2160/VXFA2160



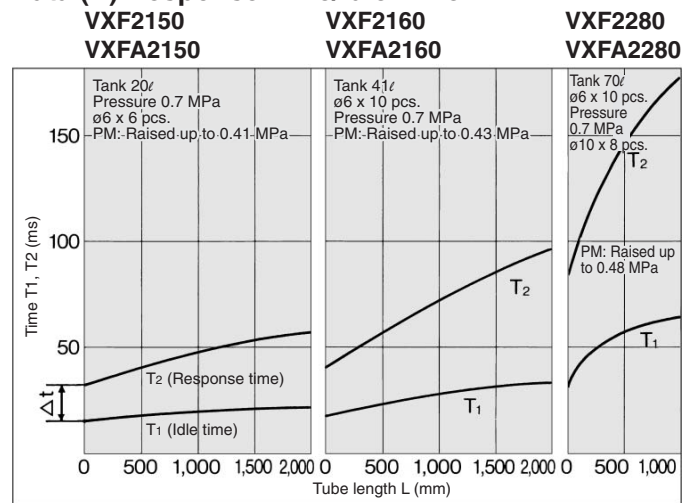
#### VXF2280/VXFA2280



### How to read the graph

Even if the energizing time is constant, a greater amount of air flows when the PA is at 0.7 MPa than at 0.5 MPa. Moreover, the greater the air tank capacity, the greater the amount of airflow. Furthermore, the greater the nozzle's total cross sectional area, the greater the amount of airflow. While the flow volume changes according to the length of the tube, be aware that a wasted flow volume is involved during a return.

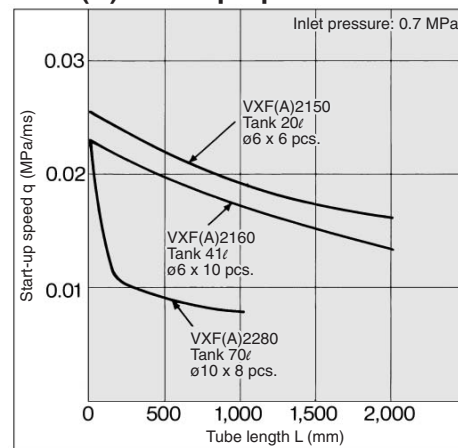
### Data (B) Response Time/Idle Time



### How to read the graph

The longer the tube length, the longer the response time and wasted time. If longer than the length in the diagram, the valve might not open due to the tube resistance.

### Data (C) Start-up Speed



### How to read the graph

The start-up speed stands for the degree of the nozzle inside pressure rise per the unit of time. The greater it is, the stronger the shock wave from the nozzle becomes. It also means that the closing speed increases and consumption of air can be used

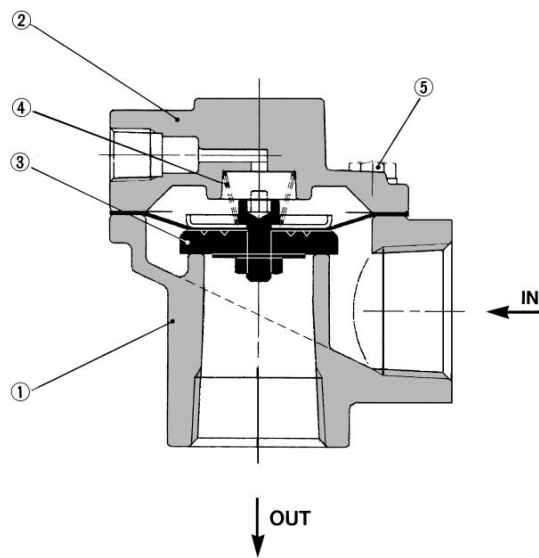
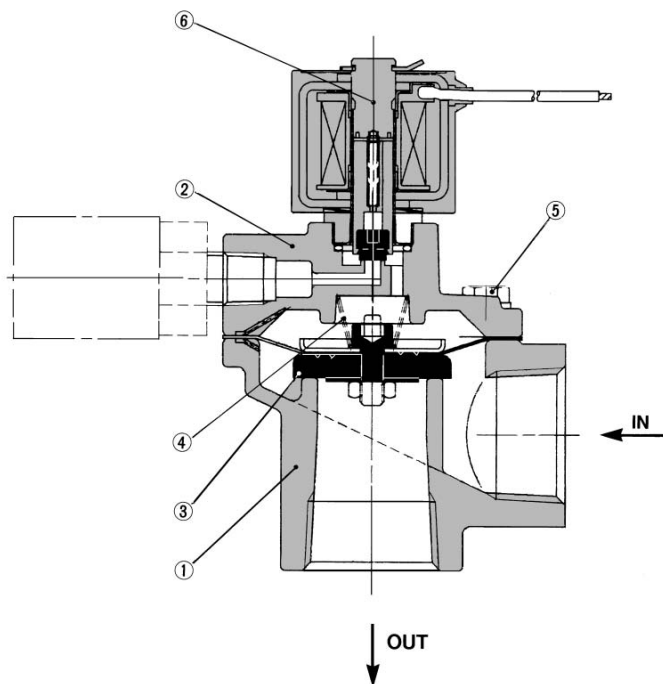
$$\text{Start-up speed } \theta = \frac{PM \times 0.9}{\Delta t} \text{ MPa/ms}$$

# 2 Port Solenoid Valve For Dust Collector Series VXF

## Construction

Solenoid type

Air operated type



### Component Parts

No.	Description	Material
①	Body	Aluminum
②	Bonnet	Aluminum
③	Diaphragm assembly	NBR, POM
④	Spring	Stainless steel
⑤	Hexagonal bolt	Stainless steel
⑥	Solenoid assembly	--

### Solenoid Assembly Part No.

VXF 2150 — 00 — 1 G

Model — Port size

2150	Rc 3/4
2160	Rc 1
2280	Rc 1 1/2

Rated voltage

1	100 VAC (50/60 Hz)	6	12 VDC
2	200 VAC (50/60 Hz)	7	240 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)	8	48 VAC (50/60 Hz)
4	220 VAC (50/60 Hz)	9	Other
5	24 VDC		

Electrical option

Nil	None
S	With surge voltage suppressor
L	With indicator light
Z	With light/surge voltage suppressor

Electrical entry

G	Grommet (G, GS)
C	Conduit (C)
D	DIN terminal (D, DS, DL, DZ)
T	Conduit terminal (T, TS, TL, TZ)

VC

VDW

VQ

VX2

VX

VX3

VXA

VN

LVC

LVA

LVH

LVD

LVQ

LQ

LVN

TI/  
TIL

PA

PAX

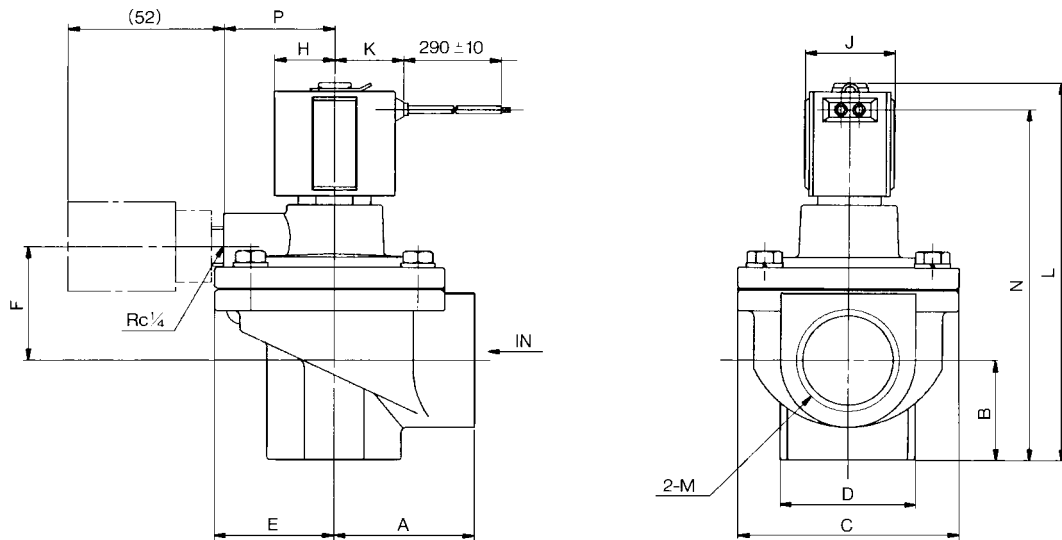
PB

# Series VXF

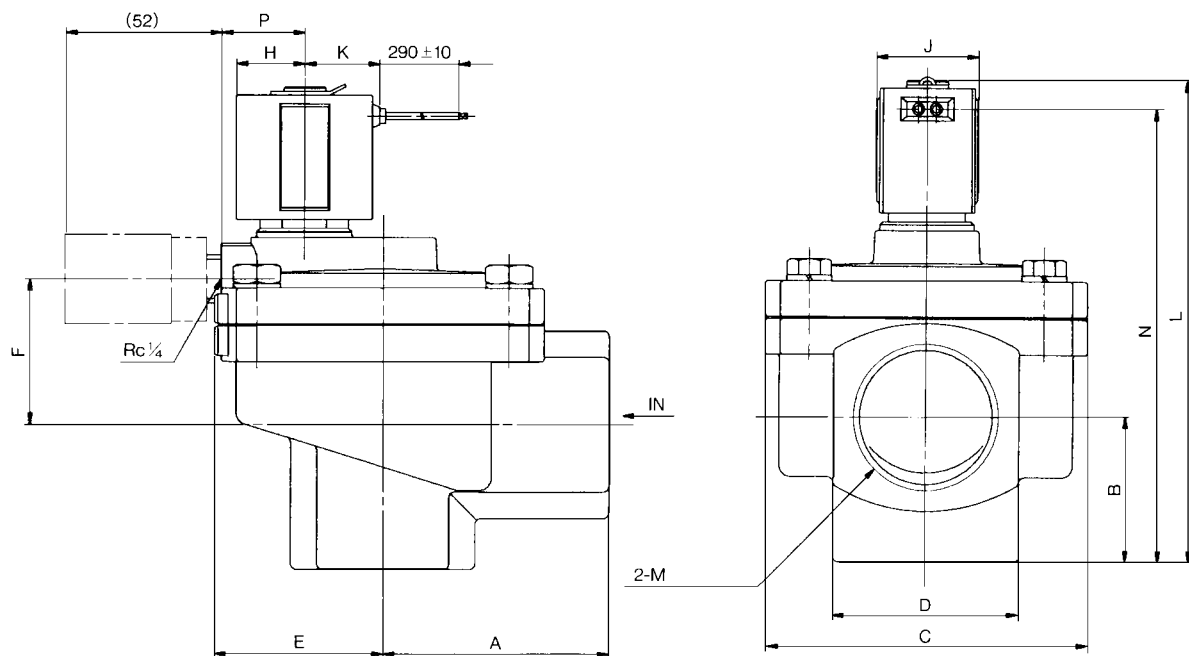
The VX\* series will be revised shortly.

## Dimensions

VXF21<sub>5</sub>0: Solenoid type  
Grommet: G



VXF2280: Solenoid type  
Grommet: G



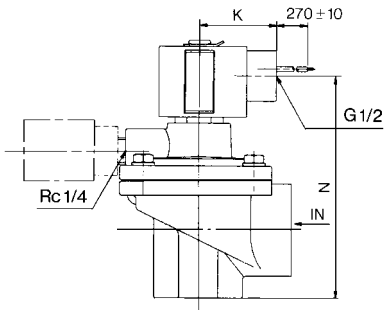
Model	M Port size Rc	A	B	C	D	E	F	H	J	K	L	N	P
VXF2150	3/4	40	25	66	36	35.5	32.5	20	30	23	113	103	33
VXF2160	1	48	33.5	74	45	40	38	20	30	23	127	118	37
VXF2280	1 1/2	77	48.5	110	63	57	49	23	35	25	162	152	28



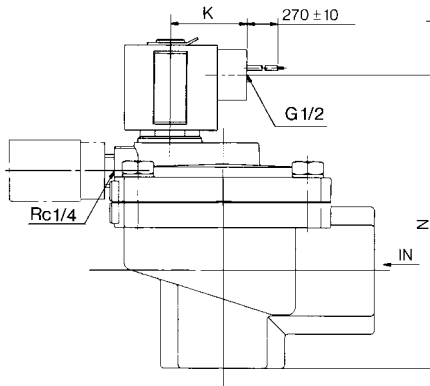
# 2 Port Solenoid Valve For Dust Collector Series VXF

## Conduit: C

VXF2150/2160



VXF2280

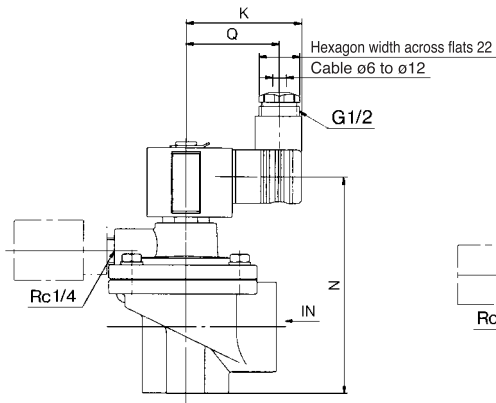


## Conduit

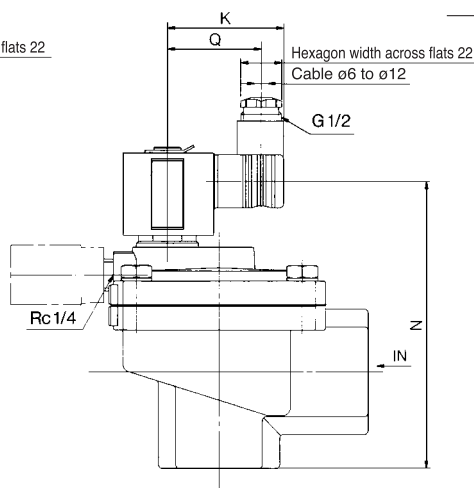
Model	K	N
VXF2150	39	96
VXF2160	39	110
VXF2280	41	144.5

## DIN terminal: D

VXF2150/2160



VXF2280

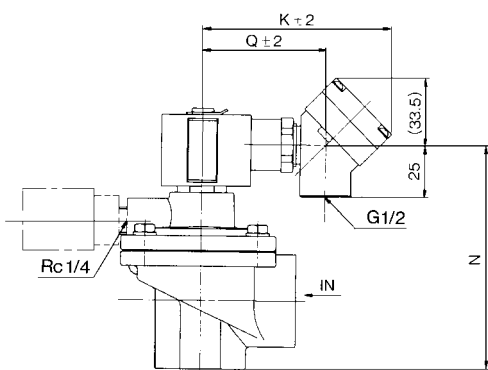


## DIN Terminal

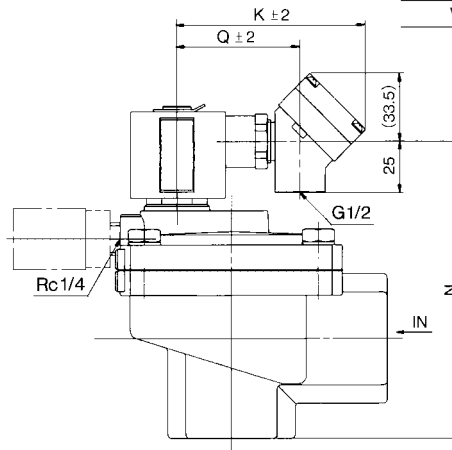
Model	K	N	Q
VXF2150	59	96	45
VXF2160	59	110	45
VXF2280	60	144.5	48

## Conduit terminal: T

VXF2150/2160



VXF2280



## Conduit Terminal

Model	K	N	Q
VXF2150	92	96	59
VXF2160	92	110	59
VXF2280	95	144.5	62

VC □

VDW

VQ

VX2

VX □

VX3

VXA

VN □

LVC

LVA

L VH

LVD

L VQ

LQ

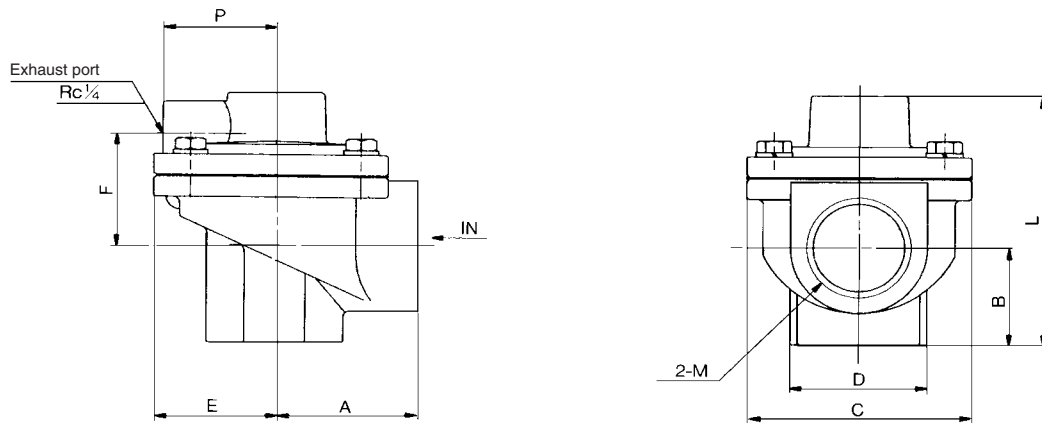
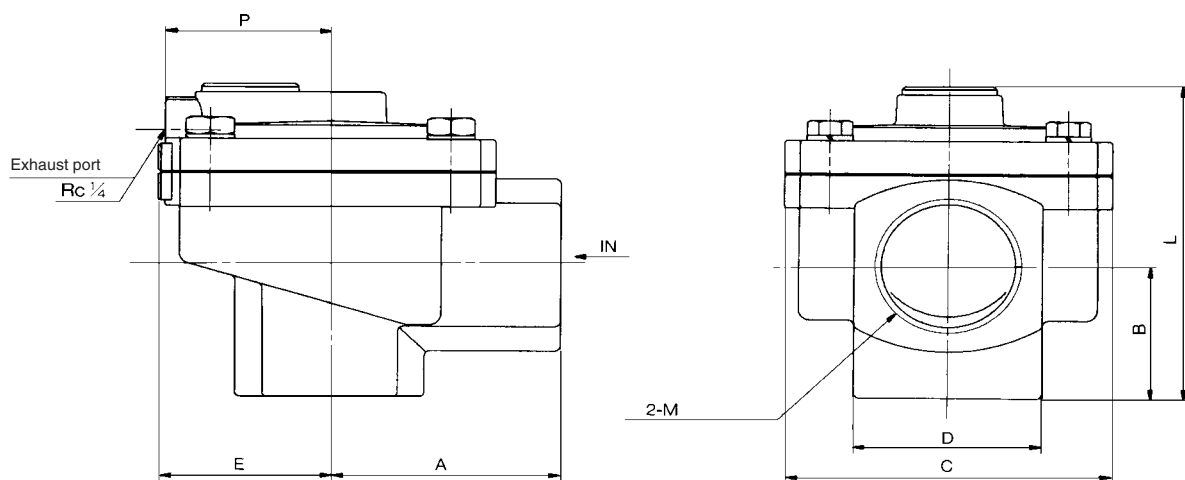
L VN

T / TIL

PA

PAX

PB

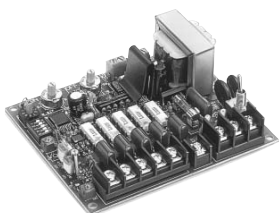
**Dimensions****VXFA2150/2160: Air operated type****VXFA2280: Air operated type**

Model	M Port size Rc	A	B	C	D	E	F	H	J	K	L	P
VXFA2150	3/4	40	25	66	36	35.5	32.5	20	30	23	72	33
VXFA2160	1	48	33.5	74	45	40	38	20	30	23	86	37
VXFA2280	1 1/2	77	48.5	110	63	57	49	23	35	25	114	55



# 2 Port Solenoid Valve For Dust Collector Series **VXF**

## Controller Specifications: Series VXFC



### Specifications

Model	VXFC <sup>05</sup> <sub>10</sub> -1	VXFC <sup>05</sup> <sub>10</sub> -2	VXFC <sup>05</sup> <sub>10</sub> -5
Voltage <sup>Note)</sup>	100 VAC	200 VAC	24 VDC
Power supply fuse	3 A		1 A
Time setting	ON time	0.01 to 1 sec.	
	OFF time	0 to 120 sec.	
	Time repeatability	Max. ±20% of set time	
Number of output points	5 outputs, 10 outputs		
Operating ambient temperature	0 to 50 °C		
Operating ambient humidity	35 to 85% (No condensation allowed)		
Output current	Max. 1 A		Max. 0.5 A
Noise resistance	2000 V		

Note) The output and input voltages are the same.

### How to Order Controller

**VXFC** **05** - **1**

Number of output points

05	5
10	10

Voltage

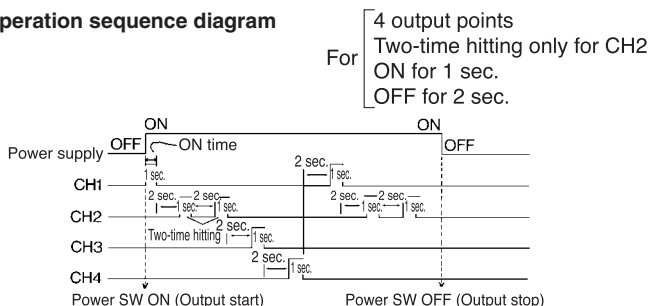
1	100 VAC
2	200 VAC
5	24 VDC

### Two-time Hitting Function

A two-time hitting function is adopted to improve the bag filter dusting efficiency. Turn ON the dip switch for two-time hitting (OFF for one-time hitting).

(Effective up to the number of setting channels)

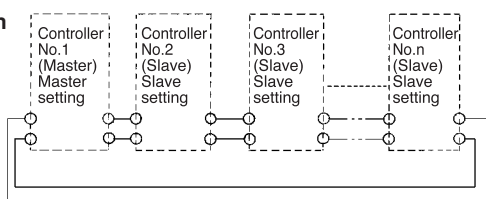
#### Operation sequence diagram



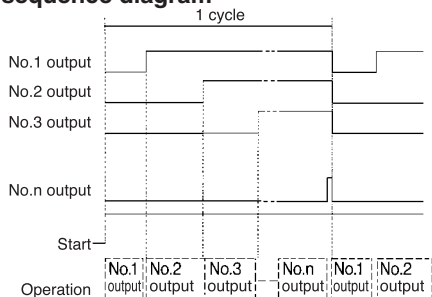
### Cascade Connection (Multiple-board connection)

VXFC10-1: One board allows outputs at merely 10 output points max. But the points can be increased to 20 and 30 output points by connecting cascades.

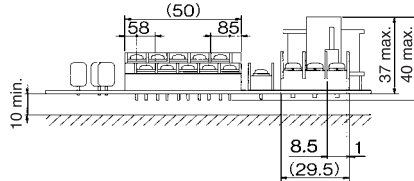
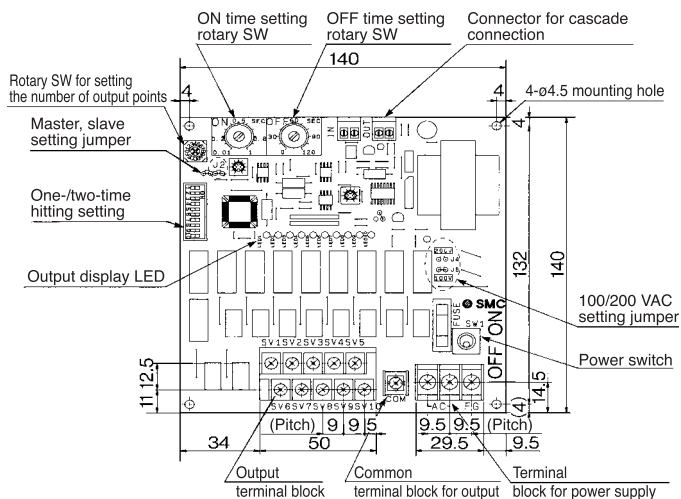
#### Connection



#### Operation sequence diagram



### Dimensions



(VXFC10)

VC□

VDW

VQ

VX2

VX□

VX3

VXA

VN□

LVC

LVA

L VH

LVD

LVQ

LQ

LVN

T/ TIL

PA

PAX

PB

## ⚠ Precautions

Be sure to read before handling.

Refer to pages 17-6-1 to 17-6-10 for Safety Instructions and Solenoid Valve Precautions.

### 2 Port Solenoid Valve for Dust Collector: Series VXF

#### Silencer

#### ⚠ Caution

1. The silencer's response properties do not change in the initial stage, but will change due to the blockage after long use. Replace it after using about 500,000 times. This number is subject to change based on fluid quality and energization time.
2. When using a silencer, make space for silencer replacement.

#### Selection

#### ⚠ Caution

1. The response performance and start-up speed deteriorate in case of air operated type (VXFA) as compared with a solenoid type (VXF) case. Refer to the data for pilot piping.
2. Note that for DC units, idle time and return time increase if the voltage is lowered. If a surge voltage suppressor is installed, the return speed decreases.

### Dedicated Controller for Operation: Series VXFC

#### Wiring

#### ⚠ Warning

1. The controller starts its output the moment the power switch is turned ON. Be aware that even if the power switch is turned OFF, power is connected to the terminal board.

#### ⚠ Caution

1. Make sure that the voltage of the power to be input matches the voltage in the controller's specifications. The voltage of the power that has been input becomes the voltage that is output to the solenoid valves.
2. Connect a ground that is rated Class 3 or greater to the power supply terminal board.
3. If the power source is DC, use caution to its polarity. If the polarity is incorrect, it may result in a malfunction or damage.
4. Operate at a voltage in the range of -10% to +10% of the rated voltage.

#### Environment

#### ⚠ Caution

1. Operate under conditions that are free of vibration and impact.
2. Operate in an ambient temperature range between 0°C and 50°C.
3. Operate in an ambient humidity range between 35% to 85% (with no condensation). For further details, refer to the instruction manual in which it is explained separately.