

**Overview**

**100% Customer Satisfaction**

MaxiFlo™ MMV Series Metal Tube Rotameters are rugged, versatile and accurate variable area (VA) flow meter offering 2.0% full scale accuracy.

It's based on simple and easy-to-understand flow measuring principle but is versatile in the types of fluid it can measure and site conditions, under which it can be installed.

The meter is manufactured to the user's application specifications. So, there's no configuration or calculation required at the time of installation or operation. So, it's simple to install and operate.

The flow rate is indicated on a scale with a needle that is coupled to the rotating float using a magnet. Using potentiometer circuitry, the meter can output 4-20mA signal for flow rate, which can in turn be used to display the instant flow rate and the totalized flow on a digital LCD and output pulse signal for the accumulated flow. It can also output alarm contact signal for low and/or high set points for flow controlling processes.

Various materials can be used for wetted parts. So, the meter can handle almost all liquids and gases that are highly corrosive. Also, the meter can be used for hazardous areas using Ex-Proof enclosure option.

**Main Features**

**Simple Measurement Principle**

This is one of the earliest flow meters that came into use. It adopts easy-to-understand and very intuitive principle of variable-area flow meter principle. *(Please refer to Operation Principle overleaf)*

**Simple Design**

In its primitive basics, the measuring element is composed of just a tapered tube and a float.

**Low Maintenance**

Constructed to sustain corrosion, abrasion and shocks, etc., the meter requires minimum maintenance.

**Versatile Construction**

The meter can measure all liquids, gases and steam.

**Various Flow Directions**

The meter can be configured for Bottom to Top, Bottom to Top Side, Bottom Side to Top, Bottom Side to Top Side and Bottom Rear to Top Rear.

**Various Output and Display Options**

4-20mA, pulse, alarm contact, flow rate display and total display are available.

**Explosion Proof Enclosure**

For signal output models, the user can choose ex-proof enclosure for hazardous environment.

**MAXIFLO**

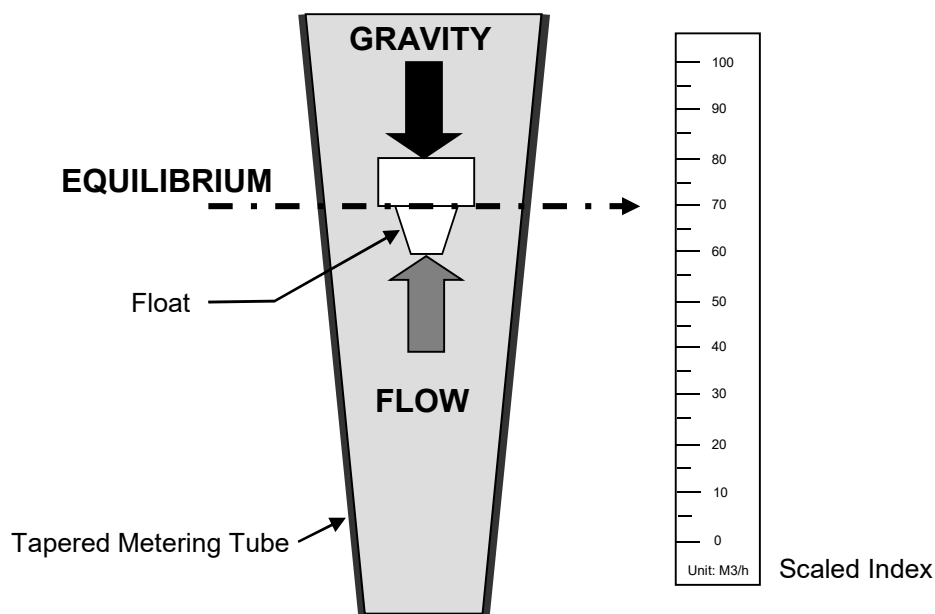
**Metal Tube Variable-Area Flow Meter (Series MMV, MMVS, MMVT, MMVU)**



### Operation Principle

Variable-area flow meters, often called rotameters, consist essentially of a tapered tube, a float and scaled indicator as you see in the figure below. Although classified as differential pressure units, they are, in reality, constant differential pressure devices. Flanged-end or screwed-end fittings provide an easy means for installing them in pipes. When there is no flow, the float rests freely at the bottom of the tube. As the fluid enters the bottom of the tube, the float begins to rise. The float material is selected so as to have a density higher than that of the fluid and the position of the float varies directly with the flow rate. Its exact position is at the point where the differential pressure between the upper and the lower surfaces balance the weight of the float.

Because the flow rate can be read directly on a scale mounted next to the tube, no secondary flow-reading devices are necessary. However, if desired, automatic sensing devices can be used to sense the float's level and transmit a flow signal. Rotameter tubes are manufactured from glass, metal, or plastic. Tube diameters vary from 1/4 to greater than 6 in.



### Applications

- Hot and cold water as well as air flow measurement in air conditioning
- Medium and large line measurement in general process industry
- Cooling water lines
- Water treatment process
- Pure and ultra-pure water production facilities
- Testing of fire fighting pumps
- Testing of blowers
- Etc.

## Model Overview

Model Code	Description	Remarks
MMV	Metal Tube Variable Area Flow Meter (Rotameter)	
MMVS	Micro Metal Tube Variable Area Flow Meter (Rotameter)	25A and below sizes
MMVT		
MMVU		

## Specifications

Item	Specifications	Remarks
Size	8A (1/4") ~ 250A (10")	
Media Measured	Liquids and Gases	
Flow Ranges	Liquids: Water Max: ~ 250 m <sup>3</sup> /h Min: 0.01 ~ 0.1 m <sup>3</sup> /h	Normal Condition: 20 °C, 0 MPa
	Gases: Air Max: ~ 4000 Nm <sup>3</sup> /h Min: 0.5 ~ 5 Nm <sup>3</sup> /h	
Operating Temperature	- 20 ~ 120 °C	Optionally up to 150 °C
Operating Pressure	Max. 4.1 MpaG at ambient temperature Max. 3.3 MpaG at 120 °C	
Process Connections	Flanges: JIS, ANSI, DIN, etc. Screws: NPT, PT, etc. Sanitary Ferrule	
Flow Directions	Bottom to Top Bottom to Top Side Bottom Side to Top Side Side to Side	
Materials	Taper Tube: SUS 304, SUS 316, SUS 316L, PVC, etc. Float: SUS 304, SUS 316, SUS 316L, PVC, etc. Flange: Carbon Steel, SUS 304, SUS 316, SUS 316L, SCS13, SCS 14, PVC, etc.	
Accuracy	± 2% of Full Scale	
Turndown Ratio (Rangeability)	10:1	
Outputs	4-20mA (2-wire) 4-20mA with HART (2-wire) Alarm Switch Contacts	
Enclosure (Indicator)	Weather Proof (IP65) Intrinsic Safety (Exia II CT6) Flame Proof (Exia II CT6)	

## Model Code

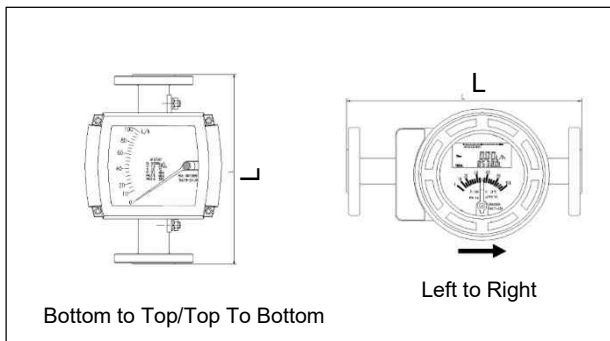
## Model Selection Guide

MMV-###-#-##-#-##/Options		Code
<b>Size</b>		DN Size
<b>Indicator</b>	Square Aluminum Type	A
	Round Aluminum Type	B
	Square Aluminum Type with LCD (4-20mA, Pulse Output as default)	C
	Round Aluminum Type with LCD (4-20mA, Pulse Output as default)	D
	Axle Type	E
<b>Flow Direction</b>	Bottom to Top	1
	Top to Bottom	2
	Side to Side	3
	Bottom to Top Side	4
	Bottom Side to Top	5
	Bottom Side to Top Side	6
<b>Material</b>	SUS 304	B
	SUS 316	C
	SUS 316L	D
	PVC	P
	Teflon Lining for wetted part	T
	Others	X
<b>Connection</b>	KS/JIS Flange	F1
	ANSI Flange	F2
	DIN Flange	F3
	Thread	F4
	Sanitary	F5
	Others	FX
<b>Options</b>	4-20mA Output	S
	4-20mA with HART	SH
	1-point Alarm Contact	R1
	2-point Alarm Contact (Reed Switch)	R2
	Cooling Fin	CF
	Damper	DR
	Full Heat Jacket	FJ
	Semi Heat Jacket	SJ
	Explosion Proof Enclosure	EX
	Control Valve	V
	Reducer Pipe Large Flow	LF
	Air Chamber	AC
	Spring Loaded Float Type	SL

**Flow Directions, Flow Rates and Dimensions**

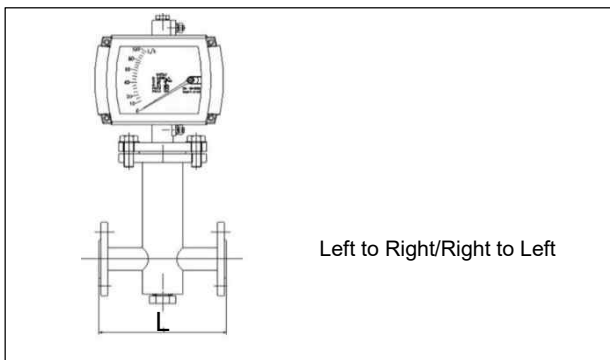
**Flow Rate Table**

Size	Water (m <sup>3</sup> /h)				Air (Nm <sup>3</sup> /h, at 0 °C, 1 atm)	
	Normal Type		Teflon-Lined Type		Flow Range	Pressure Loss (KPa)
	Flow Range	Pressure Loss (KPa)	Flow Range	Pressure Loss (KPa)		
<b>15A</b>	0.0025 ~ 0.63	6.5 ~ 11.1	0.0025 ~ 0.4	5.5 ~ 7.3	0.07 ~ 16	7.1 ~ 14.0
<b>20A</b>	0.0025 ~ 4	6.5 ~ 15.8	0.0025 ~ 2.5	5.5 ~ 9.2	0.07 ~ 110	7.1 ~ 19.0
<b>25A</b>	0.1 ~ 4	7.0 ~ 15.8	0.063 ~ 2.5	5.9 ~ 9.2	3 ~ 110	7.7 ~ 19.0
<b>32A</b>	0.1 ~ 6	7.0 ~ 12.6	0.063 ~ 3.5	5.9 ~ 10.4	3 ~ 160	7.7 ~ 16.5
<b>40A</b>	0.5 ~ 6	10.8 ~ 12.6	0.3 ~ 3.5	8.6 ~ 10.4	12 ~ 160	9.8 ~ 16.5
<b>50A</b>	0.63 ~ 16	8.1 ~ 17.0	0.4 ~ 10	6.8 ~ 14.5	18 ~ 400	8.6 ~ 15.5
<b>65A</b>	0.63 ~ 40	8.1 ~ 9.5	0.4 ~ 25	6.8 ~ 8.0	18 ~ 800	8.6 ~ 18.5
<b>80A</b>	2.5 ~ 40	8.1 ~ 9.5	1.6 ~ 25	6.9 ~ 8.0	60 ~ 800	12.9 ~ 18.5
<b>100A</b>	6.3 ~ 63	15.0	4 ~ 40	8.5	100 ~ 1000	19.2
<b>125A</b>	6.3 ~ 100	15.0 ~ 19.2	---	---	100 ~ 3000	19.2 ~ 20.3
<b>150A</b>	20 ~ 100	19.2	---	---	600 ~ 3000	20.3



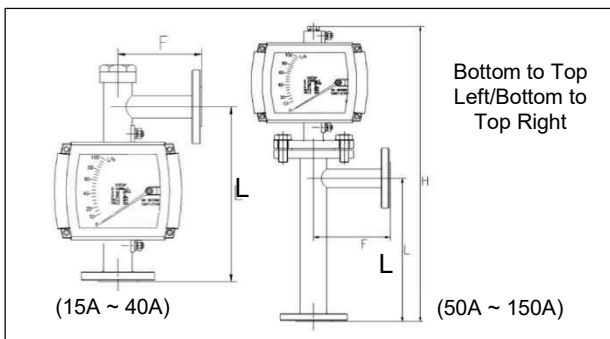
Face to Face Lengths (L)

Size	L (mm)	Size	L (mm)
<b>15A</b>	250	<b>65A</b>	250
<b>20A</b>		<b>80A</b>	
<b>25A</b>		<b>100A</b>	
<b>32A</b>		<b>125A</b>	
<b>40A</b>		<b>150A</b>	
<b>50A</b>			



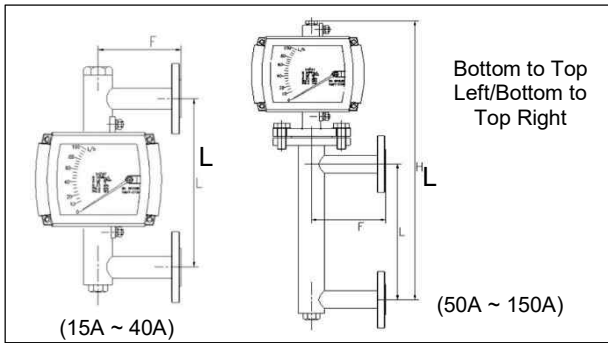
Face to Face Lengths (L)

Size	L (mm)	Size	L (mm)
<b>15A</b>	250	<b>65A</b>	400
<b>20A</b>		<b>80A</b>	
<b>25A</b>		<b>100A</b>	
<b>32A</b>		<b>125A</b>	
<b>40A</b>	300	<b>150A</b>	500
<b>50A</b>			



Face to Center Lengths (L)

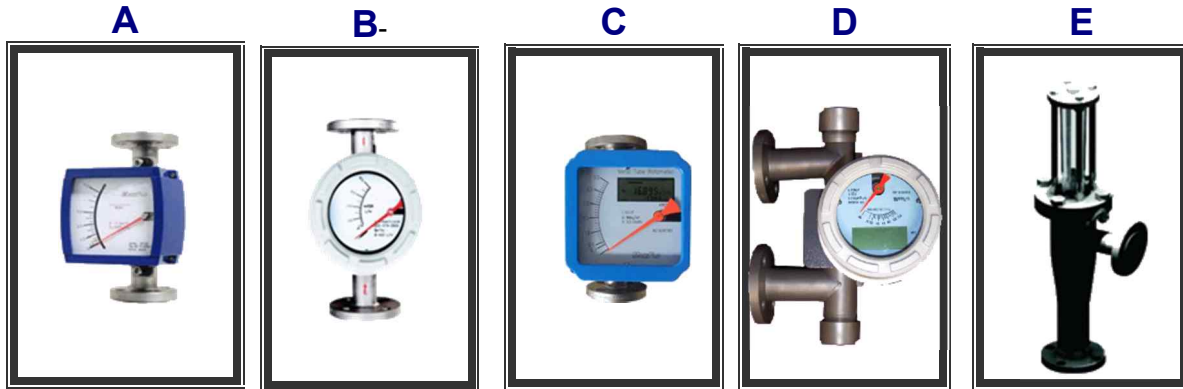
Size	L (mm)	Size	L (mm)
<b>15A</b>	250	<b>65A</b>	350
<b>20A</b>		<b>80A</b>	
<b>25A</b>		<b>100A</b>	
<b>32A</b>		<b>125A</b>	450
<b>40A</b>		<b>150A</b>	
<b>50A</b>			



Center to Center Lengths (L)

Size	L (mm)	Size	L (mm)
15A	250	65A	300
20A		80A	
25A		100A	350
32A		125A	
40A		150A	
50A			

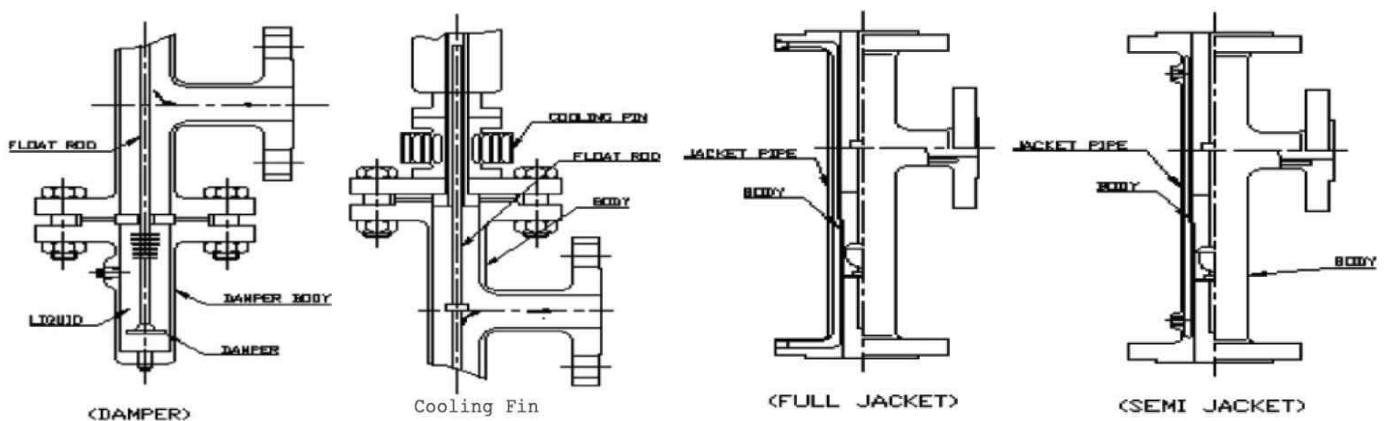
Indicator Options



Output Options (Code: S1, S2, R1, R2)

Output	Description	Remarks
4-20mA	Loop powered, 2 wire type	The flow range for the output is set at the factory.
Alarm Contact	1 point or 2 point contacts	
Pulse Output	Open Collector type	Available only with "C" and "D" type indicators.

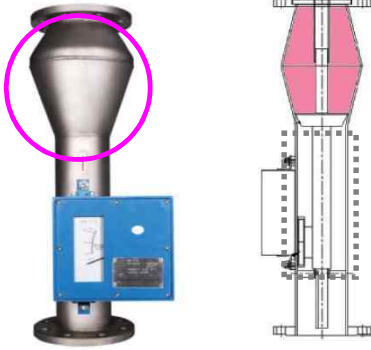
Damper, Cooling Fin and Heat Jacket Options (Code: DR, CF, FJ and SJ)



Explosion Proof Enclosure (Code: EX)

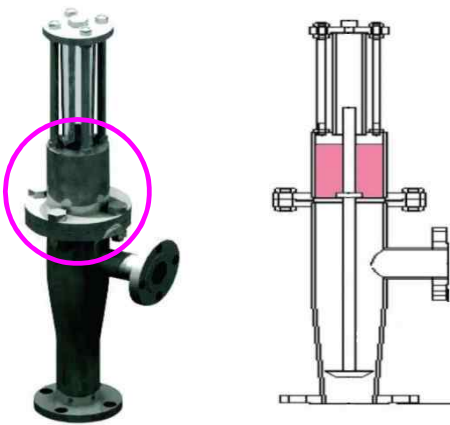
- EXd IIC T6 (KTL Certified)

**Reducer Pipe Large Flow (Code: LF)**



This option is applied to sizes from 65A. The flow sensing part (tapered tube) is compacted into the section highlighted in pink color, while the normal types have flow sensing part (tapered tube) into the longer meter body highlighted in grey color.

**Air Chamber (Code: AC)**



The air chamber is available as an option for the Axle Type Indicator model (Indicator option code: E).

The air chamber blocks the liquid from entering into the indicator.

**Model Code**

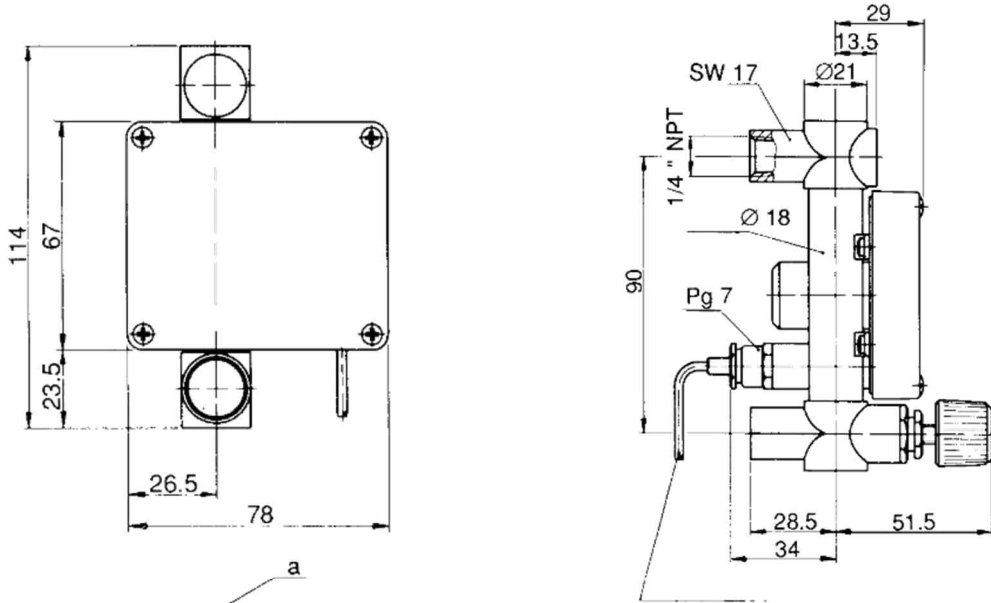


**Model Selection Guide**

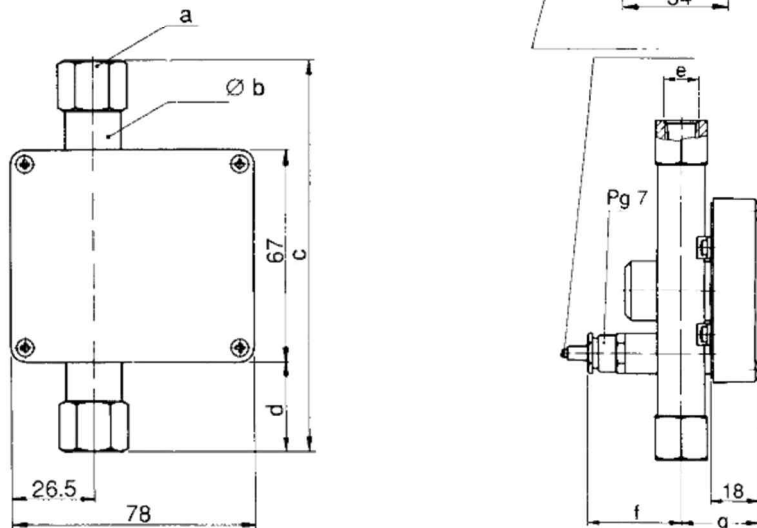
MMVS-###-##-#/Options		
<b>Size</b>		DN Size
<b>Flow Direction</b>	Bottom to Top	1
	Bottom Side to Top Side (DN8 only)	6
<b>Material</b>	SUS 304	B
	SUS 316	C
	SUS 316L (Default)	D
	Special (Hastelloy-C, Titanium, etc.)	X
<b>Options</b>	4-20mA Output	S
	4-20mA Output + HART	SH
	Needle Valve	V
	Intrinsically Safe (Exia IIC T3~T6)	EX

**Dimensions and Flow Rates**

For DN8



For DN10~DN25





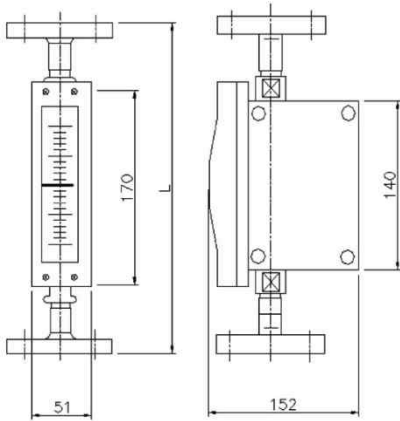
Size (mm/inch)	Flow Range		Viscosity Limit (mPas)	Press ure Drop (mbar)	a	b	c	d	e	f	g	Flow Direction
	Water (L/h)	Air (NL/h)										
<b>8 / 1/4"</b>	0.1 ~ 1	3.5 ~ 35	4	8	SW19	18	125	29	1/4" NPT Female	34	29	Bottom Side to Top Side
	0.16 ~ 1.6	5.4 ~ 54	4	8								
	0.25 ~ 2.5	10 ~ 100	6	8								
	0.4 ~ 4	16 ~ 160	6	8								
	0.6 ~ 6	23 ~ 230	18	8								
	1 ~ 10	35 ~ 350	18	8								
	1.6 ~ 16	54 ~ 540	18	8								
	2.5 ~ 25	85 ~ 850	18	9								
	4 ~ 40	125 ~ 1250	18	11								
	6 ~ 60	190 ~ 1900	18	13								
10 ~ 100	310 ~ 3100	12	17									
<b>10 / 3/8"</b>	10 ~ 100	320 ~ 3200	8	60	SW24	25	164	49	3/8" NPT Female	31	33	Bottom to Top
	16 ~ 160	500 ~ 5000	8	70								
	20 ~ 200	600 ~ 6000	8	80								
	25 ~ 250	800 ~ 8000	8	90								
	30 ~ 300	900 ~ 9000	8	160								
<b>15 / 1/2"</b>	40 ~ 400	1200 ~ 12000	8	75	SW27	25	164	49	1/2" NPT Female	31	33	Bottom to Top
	50 ~ 500	1500 ~ 15000	8	85								
	60 ~ 600	1800 ~ 18000	8	95								
	80 ~ 800	2400 ~ 24000	8	130								
<b>20 / 3/4"</b>	Both DN15 and DN25 data are applicable for this size.								3/4" NPT Female			
<b>25 / 1"</b>	80 ~ 800	2400 ~ 24000	3	60	SW50	50	230	81	1" NPT Female	18	45/50	Bottom to Top
	100 ~ 1000	3000 ~ 30000	3	62								
	160 ~ 1600	4500 ~ 45000	3	74								
	200 ~ 2000	6000 ~ 60000	3	85								
	250 ~ 2500	7500 ~ 75000	3	105								
	300 ~ 3000	9000 ~ 90000	3	130								



Model Selection Guide

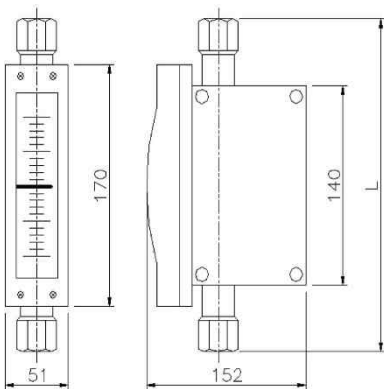
MMVT-#-#-##		
<b>Size</b>		DN Size
<b>Flow Direction</b>	Bottom to Top	1
	Bottom to Top Side	4
	Bottom Side to Top	5
	Bottom Side to Top Side	6
<b>Material</b>	SUS 304	B
	SUS 316	C
	SUS 316L	D
	Others	X
<b>Connection</b>	KS/JIS Flange	F1
	ANSI Flange	F2
	DIN Flange	F3
	Thread	F4
	Sanitary	F5
	Others	FX
<b>Options</b>	1-point Alarm Contact (Reed Switch)	R1
	Control Valve	V

Flow Rates, Dimensions and Weights



Flange Connection

MMVT-1-F1	Liquid (L/hr)	Gas (Nm <sup>3</sup> /hr)	Length (mm)	Weight (kg)
8A	5 ~ 50	0.3 ~ 3	280	3.5
10A	5 ~ 100	0.3 ~ 5		4
15A	5 ~ 150	1 ~ 10		5.5
20A	5 ~ 300	5 ~ 15		7
25A	5 ~ 450	8 ~ 25		8



Screw Connection

MMVT-1-F4	Liquid (L/hr)	Gas (Nm <sup>3</sup> /hr)	Length (mm)	Weight (kg)
8A	5 ~ 50	0.3 ~ 3	280	3
10A	5 ~ 100	0.3 ~ 5		3.5
15A	5 ~ 150	1 ~ 10		4.5
20A	5 ~ 300	5 ~ 15		5
25A	5 ~ 450	8 ~ 25		6

**Model Code**



**Model Selection Guide**

MMVU-#-#-##/Options		
<b>MMVU</b>		DN Size
<b>Indicator</b>	Metal Tube Magnetic Coupling	A
	Metal Tube Magnetic Coupling with Protect Case	B
<b>Flow Direction</b>	Bottom to Top	1
	Side to Side	3
<b>Material</b>	SUS 304	B
	SUS 316	C
	Other	X
<b>Connection</b>	KS/JIS Flange	F1
	ANSI Flange	F2
	DIN Flange	F3
	Thread	F4
	Sanitary	F5
	Others	FX
<b>Options</b>	1-point Alarm Contact (Reed Switch)	R1
	2-point Alarm Contact (Reed Switch)	R2

**Specifications**

Item	Specifications	Remarks
<b>Size</b>	8A (1/4") ~ 25A (1")	
<b>Media Measured</b>	Liquids and Gases with Low Viscosity	
<b>Available Scale Range</b>	Min. 0.2 ~ 2 L/min, Max. 15 ~ 150 L/min	
<b>Max. Temperature</b>	100℃	Optionally 180℃
<b>Max. Pressure</b>	1.0 MPa	
<b>Connection Type</b>	RC, NPT, JIS, ANSI, DIN, etc.	
<b>Accuracy</b>	Indicator - ±5%, FS, Alarm Setting - ±3%, FS	

**Flow Rates and Dimensions**

Size	Length (mm)	Weight (kg)	Flow Rate							
			MMVSS-M				MMVSS-M2			
			Liquid (L/hr)		Gas (Nm <sup>3</sup> /hr)		Liquid (L/hr)		Gas (Nm <sup>3</sup> /hr)	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
8A	180	2	~ 5	~ 250	~ 0.3	~ 5	~ 5	~ 250	~ 0.3	~ 3
10A		2.5	~ 5	~ 600	~ 0.3	~ 15	~ 5	~ 600	~ 0.3	~ 5
15A		4	~ 5	~ 900	~ 1	~ 30	~ 5	~ 900	~ 1	~ 10
20A		5	~ 5	~ 1500	~ 5	~ 50	~ 5	~ 1500	~ 5	~ 15
25A		6	~ 5	~ 3000	~ 8	~ 80	~ 5	~ 3000	~ 8	~ 25

We are here for you

For further information, visit us at

[www.maxiflo.co.kr](http://www.maxiflo.co.kr)

The information contained in this catalog contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in terms of the contract.

All product designations may be trademarks or product names of Seil Enterprise Co. whose use by third parties for their own purposes could violate the rights of the owners.

## **Seil Enterprise Co.**

Seoul Korea  
[www.maxiflo.co.kr](http://www.maxiflo.co.kr)

**MAXIFLO™** is a registered trademark of Seil Enterprise Co.