



TECHNICAL GUIDANCE

Wide Line-up, Best cost performance

W-400, W-500

MAG-WHEEL FLOWMETER

OUTLINE

W series is rotary vane type flow meter for liquid. A vane with magnet built in is placed in the flow, and the flow rate is measured by detecting in a non-contacting method the number of rotation which is proportional to the speed.

Since one piece mold impeller made of the highly efficient engineering plastic is adopted, it has high resistance to corrosion and high durability in addition to the simple structure, resulting in easy maintenance.

The following types are available, depending on the applications.

- a) Local flow indication without power supply type
- b) Local alternative indication of flow rate and totalization, battery driven type
- c) DC4 to 20mA output type
- d) Open collector pulse output type to be used with scaling indicator combined

FEATURES

□ W-400 Series

The various materials are available for the main body of pipe line. As the liquid contact part of resin body is made of the perfect nonmetal, it can be used without anxiety for the application of the measurement of pure water and ultra-pure water in which the metal ion must not be mixed. Applicable connection; Screw [Size: 20mm (3/4 inch) to 40mm (1-1/2 inch)]

□ W-500 Series

This series is optimum for the application of the general piping. Applicable connection; Flange [Size: 15mm (1/2 inch) to 200mm (8 inch)]

STANDARD SPECIFICATION

Measuring liquid	: Liquids without solids (Viscosity: Less than 2mPa · s)
Connection size	: Refer to MODEL CODE
Connection rating	: Refer to MODEL CODE
Fluid temp.	: 0 to 80°C (PVC version: 0 to 60°C)
Fluid pressure	: Max. 0.7MPa (Test press.: 1.0MPa)
Installation	: Horizontal or Vertical (The process line to be full)
Construction	: Water proof (Equivalent to IP65)
Material	: [Body] Refer to MODEL CODE [Wheel] PPS resin [Bearing] Glass containing PTFE [Holder] PPS resin [Shaft] Quartz glass [O ring] NBR or FKM [Case] AC2A



W-400 MODEL CODE

Model code				Description	
W-4		-			
Function	2	1			DC4 to 20mA output
	5	1			Local flow indication without power supply
	5	2			Separate flow indication without power supply
	5	3			Open collector pulse output
	9	1			Local alternative indication of flow rate and totalization, Battery driven
	9	2			Separate alternative indication of flow rate and totalization, Battery driven
Range of flow rate Connection size			1		5 to 30L/min Rc (NPT) 3/4
			2		10 to 50L/min Rc (NPT) 1
			3		10 to 60L/min Rc (NPT) 1-1/4
			4		15 to 80L/min Rc (NPT) 1-1/2
			9		Special
Material of body			P		PE
			T		PTFE
			V		PVC
			4		SUS304
			6		SUS316
			9		Special
Connection			R		Rc thread
			N		NPT thread

W-500 MODEL CODE

Model code				Description	
W-5		-			
Function	2	1			DC4 to 20mA output
	5	1			Local flow indication without power supply
	5	2			Separate flow indication without power supply
	5	3			Open collector pulse output
	9	1			Local alternative indication of flow rate and totalization, Battery driven
	9	2			Separate alternative indication of flow rate and totalization, Battery driven
Range of flow rate Connection size (Connection rating: JIS10K FF (std.))			A	0.7 to 3.5m³/h	15mm
			B	1.2 to 6m³/h	20mm
			C	1.6 to 8m³/h	25mm
			1	2.5 to 18m³/h	40mm
			2	4 to 25m³/h	50mm
			3	6 to 45m³/h	65mm
			4	10 to 60m³/h	80mm
			5	15 to 100m³/h	100mm
			6	20 to 150m³/h	125mm
			7	30 to 200m³/h	150mm
		8	50 to 400m³/h	200mm	
		9		Special	
Material of body			V		PVC
			4		SUS304
			6		SUS316
			9		Special

MEASURABLE FLOW RATE AND PRESSURE DROP

W-400 Series

Size	Flow range (L/min)		Press. drop (kPa)*2
	Drop out *1	Max.	
3/4"	5	30	5
1"	10	50	6
1-1/4"	10	60	6
1-1/2"	15	80	6.5

W-500 Series

Size (mm)	Flow range (m ³ /h)		Press. drop (kPa)*2
	Drop out *1	Max. *3	
15	0.7	2.1 to 3.5	4
20	1.2	3.6 to 6	4
25	1.6	4.8 to 8	4
40	2.5	10.8 to 18	4
50	4	15 to 25	3
65	6	27 to 45	4
80	10	36 to 60	3
100	15	60 to 100	4.5
125	20	90 to 150	3
150	30	120 to 200	3
200	50	240 to 400	3

*1 : Measurement accuracy is not guaranteed in case the flow rate is smaller than drop out.

*2 : Press.drop at the max. value of max. flow range.

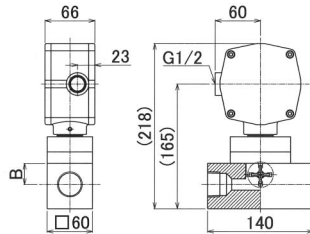
*3 : The accuracy as stated for each model means the accuracy against the max value of max. flow range for each diameter. (Setting up when delivered)

<W-421, W-521 / DC4 to 20mA output (2-wire)>

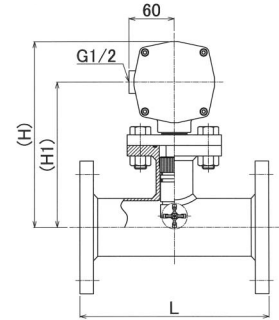


Output: DC4 to 20mA output (2-wire)
 Accuracy: W-421; ±3% F.S.
 W-521; ±2% F.S.
 (±3% F.S. for 15 to 25mm)
 Load resistance: Max.500Ω
 Electric connection: G1/2 (M3.5 screw connection)
 Power supply: DC24V±10%

● W-421



● W-521

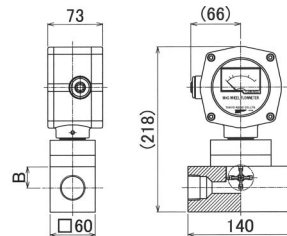


<W-451, W-551 / Local flow indication without power supply>

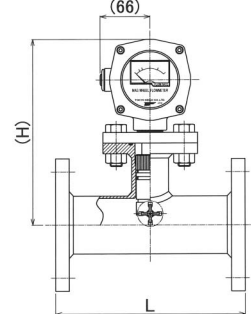


Accuracy: ±4% F.S.

● W-451



● W-551

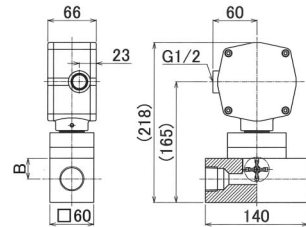


<W-452, W-552 / Separate flow indication without power supply>

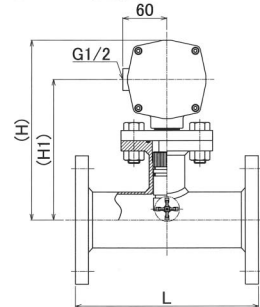


Accuracy: ±4% F.S.
 Electric connection: G1/2 (M3.5 screw connection)
 Cable: Detector to Indicator distance: Max.10m
 CVVS 2c 1.25mm² (customer's scope)

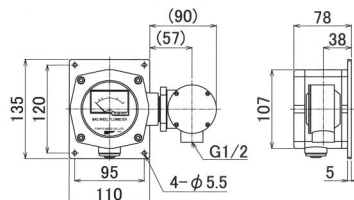
● W-452Detector



● W-552Detector



● W-452/W-552Indicator

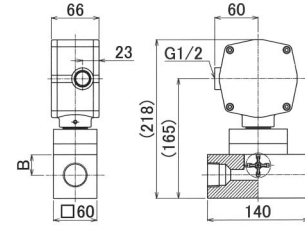


<W-453, W-553 / Open collector pulse output>

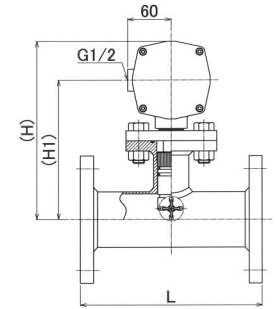


Output: Open collector pulse output (Unscaled pulse)
 Frequency input type panel indicators with scaling function are to be used in combination with W-453 / W-553.
 Accuracy: W-453; ±3% F.S.
 W-553; ±2% F.S.
 (±3% F.S. for 15 to 25mm)
 Electric connection: G1/2 (M3.5 screw connection)
 Power supply: DC10 to 26V, 23mA

● W-453



● W-553

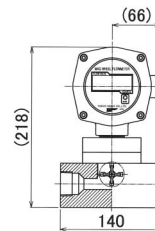


<W-491, W-591 / Local alternative indication of flow rate and totalization, Battery driven>

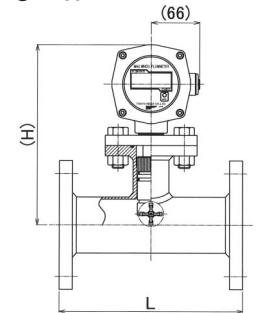


Accuracy: ±3% F.S.
 Power supply: AA Lithium dry cell x2
 Battery life: About 2 years
 Indication: Totalization; 8 figures
 (Unit: L or m³)
 Flow rate; 3 figures
 (Unit: L/min or m³/h)
 (L/min indication of 65mm or more will be 4 figures.)

● W-491



● W-591

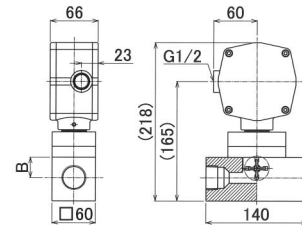


<W-492, W-592 / Separate alternative indication of flow rate and totalization, Battery driven>

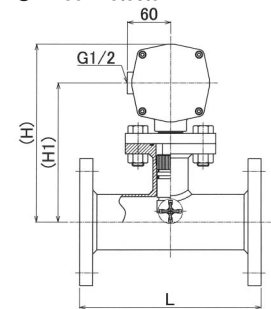


Accuracy: ±3% F.S.
 Power supply: AA Lithium dry cell x2
 Battery life: About 2 years
 Indication: Totalization; 8 figures (Unit: L or m³)
 Flow rate; 3 figures (Unit: L/min or m³/h)
 (L/min indication of 65mm or more will be 4 figures.)
 Cable: Detector to Indicator distance: Max.2m
 MVVS 2c 0.5mm² (provided)

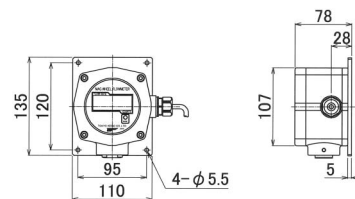
● W-492Detector



● W-592Detector



● W-492/W-592Indicator



DIMENSION AND MASS

W-400 Series

d	B (mm)	Mass (kg)(Approx.)
3/4"	27	1.5
1"	28	
1-1/4"	29	
1-1/2"	30	

W-500 Series

Size (mm)	PVC version				Mass (kg)(Approx.)
	L	H1	H		
15	180	133	186	1.5	
20	190	135	188	1.5	
25	200	135	188	2	
40	295	248	301	3	
50	330	252	305	3.5	
65	340	260	313	4	
80	355	266	319	5	
100	445	300	353	6	
125	590	288	341	8	
150	710	302	355	9	
200	500	297	350	11	

Unit: mm

Size (mm)	Stainless steel version				Mass (kg)(Approx.)
	L	H1	H		
15	250	133	186	5.5	
20		135	188	6	
25		135	188	7	
40		182	235	8	
50		184	237	11	
65		192	245	15	
80		194	247	17	
100		212	265	20	
125		231	284	23	
150		242	295	27	
200		267	320	39	

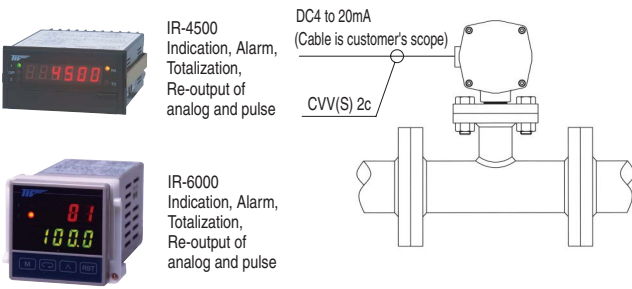
Unit: mm

APPLICATION EXAMPLES

The following is the typical application for W-400 and W-500 Series Mag-Wheel Flowmeters:

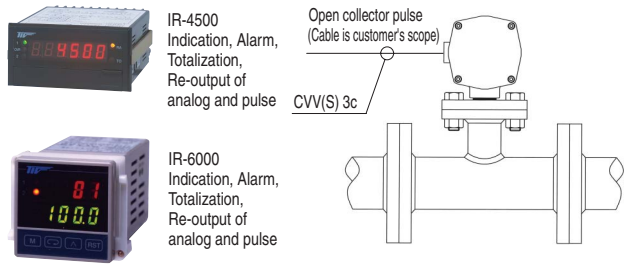
Remote indication

W-421 or W-521, DC 4 to 20mA (2 wire system) output type, is used. This is the most cost effective liquid flow measurement.



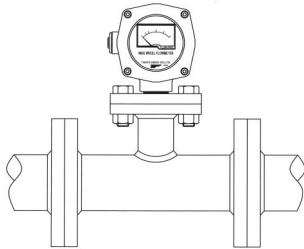
Multi-functional remote indication

W-453 or W-553, open collector pulse output type, is used. They are connected to IR series Universal Totalizer to meet the control purpose.



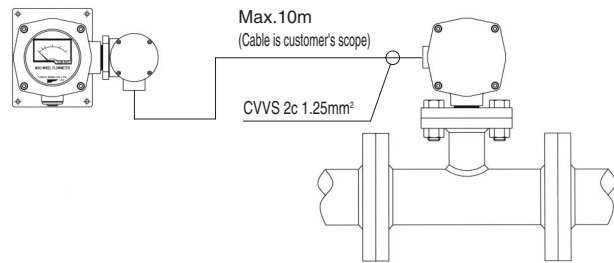
To obtain flow rate indication locally (Analog)

W-451 or W-551 is used. No power supply is required. Flow rate (e.g.XXXm³/h) is indicated by pointer and scale plate.



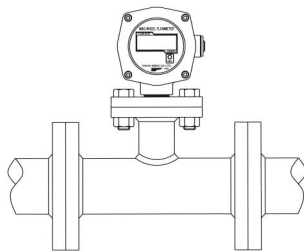
To obtain flow rate indication away from the line (Analog)

W-452 or W-552 is used. No power supply is required. The indicator can be located max.10m away from the detector. Flow rate (e.g.XXXm³/h) is indicated by pointer and scale plate.



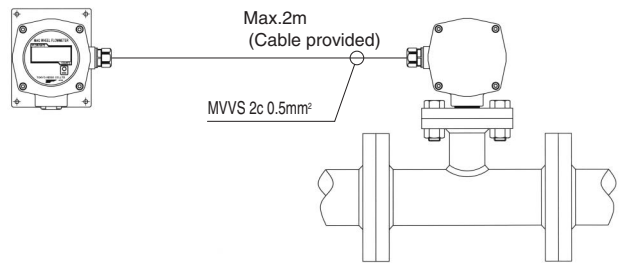
To obtain total flow locally

W-491 or W-591 is used. They are battery operated and no external power supply is required. W-491 / W-591 have an alternative indication of flow rate and totalization.



To obtain total flow away from the line

W-492 or W-592 is used. They are also battery operated and no external power supply is required. The indicator can be located max. 2m away from the detector. W-492 / W-592 have an alternative indication of flow rate and totalization.



NOTES

- Straight runs of 20D for upstream and 5 D for downstream are recommended to obtain specified accuracy.(D: Pipe inner diameter). Provide flow strainer at the upstream of the detector if such straight runs are not practical.
- The detector is to be full with measuring liquid. Take care to prevent the existence of air in the detector during measurement.
- Mag-wheel flowmeter is not suitable for very high viscosity liquids and/or liquids with solids or fibers.

* Specification is subject to change without notice.

TOKYO KEISO CO., LTD.

Head Office : Shiba Toho Building, 1-7-24 Shibakoen, Minato-ku, Tokyo 105-8558
Tel : +81-3-3431-1625 (KEY) ; Fax : +81-3-3433-4922
e-mail : overseas.sales@tokyokeiso.co.jp ; URL : <http://www.tokyokeiso.co.jp>

