

## Required Straight Run to install flowmeters

To obtain specified accuracy, straight run both for upstream and downstream is needed. The required straight run is depending on the type of flowmeter.

The recommended straight run by type is shown below.

Type of Flowmeter	Tokyo Keiso Model		Required straight run		Remarks
			Upstream	Downstream	
Variable Area Flowmeter	R-100 AC AM-1000 M A P etc.		Not required	Not required	Turbulence in large size flowmeter may result unstable float movement.
Magnetic Flowmeter	MAGMAX Series		5D*	2D	Flow control valves are to be located downstream, if any.
Ultrasonic Flowmeter	UCUF		Not required	Not required	Flow control valves are to be located downstream, if any.
	UL330/UL350 UL6400 UL3030K		10D	5D	
DP type Flowmeter	Orifice type	O-010 O-100 O-1000 O-180(780)	20D	10D	---
	Pitot Tube type	HDT CFW-1000, 2000 CDT			---
	V Cone Flowmeter	VC,VD,VM	Not required	3D	2D upstream and 5D downstream is recommended in case that valve and other fittings than elbows are located.
Vortex Flowmeter	VF-2000 VF-2200		10D	5D	Flow control valves are to be located downstream, if

	VF-2300 VF-3000 VF-4000			any.
Wheel type Flowmeter	W-100 W-200 W-300 W-400 W-800 W-2000 W-3000 MU-1000 TW-070 TW-080 TW-090 TW-100	Not required	Not required	The inner diameter of the process piping is to be larger than the flowmeter's diameter.
	W-500 WX-2000	20D	5D	Flow control valves are to be located downstream, if any.
Corioli Force Mass flowmeter	MASSMAX	Not required	Not required	---
Thermal Mass flowmeter/ Conroller	TF TC HM	Not required	Not required	5D both upstream and downstream for type TF-1150,A1250,A1251, A1551,A2251. 5D upstream 0D for downstream for TF-2421 to 2441.
Thermal flowmeter	TH	20D*	5D	3D upstream 0D for downstream for TH-1600 and TH-1800 with flow strainer.

D: Inside diameter of piping. (5D: 5 times of Inside diameter of piping)

\* Recommended straight run in the table is subject to the condition that one 90 deg elbow is located upstream. Double elbows, pumps and valves upstream may require further straight run.