

Orifice Flowmeter for Steam (Differential Pressure Type)

ODF-100 series*Kawaki*

Mechanical Type	Orifice Type	Positive Displacement Type	Variable Area Type
Cold and Hot Water	Oil, Fluid	Gas	Steam
Micro Flow Rate	Small Flow Rate	Medium Flow Rate	Large Flow Rate
Water-Proof Type			

An orifice flowmeter can measure the flow rate using a transmitter because the square root of the differential pressure generated before and after the orifice is proportional to the flow rate.

<Differential Pressure Type>

It is less subject to drain and vibration.
Fast response speed.

<Multi-Function Transmitter>

Suitable for a wide range of steam conditions.

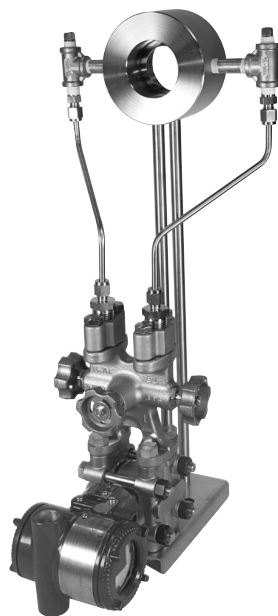
Steam flowrate measurement of various devices.

Measurement pertaining to Sale of Commodities for purchased steam.

Steam flow measurement in sterilization process.

Steam flow measurement of air conditioning system.

Flow control by combination with control valve.



■ Specifications

Model	ODF-100
Application	Saturated steam
Nominal size	15A ~ 200A
Connection	Wafer connection JIS10K
Maximum working pressure	1.0MPa
Maximum working temperature	220°C (Heat resistant temperature of differential pressure gauge is -40°C to 120°C, and no freezing)
Working temperature	-30°C ~ 80°C
Degree of protection	IP67
Built-in indicator	Lcd digital indicator (Instantaneous flow rate, integrated flow rate, static pressure, etc.)
Flow direction	Horizontal / Vertical
Power supply voltage	10.5 ~ 42V DC (Power connection port G1/2 female thread)
Output	4-20mA, Pulse
Communication	Hart
Required straight pipe length	Normally piping: upstream 10D, downstream 5D (D stands for caliber diameter) Upstream and downstream can be used on 8D and 5D by combination with a rectifier

■ Features

High precision

Static pressure, differential pressure, and temperature can be measured by adopting a multi-functional transmitter. Based on the built-in steam table, a wide range of conditions can be accurately measured with a mass flow calculation function.

Low-pressure loss

Feasible low-pressure loss by designing the differential pressure and throttle diameter according to the measured flow rate.

Easy installation

Because of the wafer connection structure, centering is achieved by flange bolts simply by sandwiching between connection flanges.

No connecting pipe work required

The integrated structure with the differential pressure gauge eliminates the need for impulse pipe construction, making it easy to install the flowmeter and contributing to space savings.

Equipped with three-way valve

Equipped with a three-way valve that integrates a stop valve (high pressure side, low pressure side) and a pressure equalizing valve (high pressure side and low pressure side bypass), enabling maintenance work without stopping the steam process.

Built-in indicator

Built-in LCD digital indicator can alternately display up to 4 process values.
<Instantaneous flow rate value, integrated flow rate value, static pressure, differential pressure, bar graph, etc.>

Compatible with all flow directions

Available on left to right, right to left, top to bottom, and bottom to top flow directions.
*Please specify the flow direction when ordering.

It is less subject to drain

Error is smaller than vortex flowmeter due to measurement of using differential pressure and response speed is fast.

Robust and long life

The orifice measurement part has no moving parts and is hard to break, making it ideal for lines that repeat ON/OFF action.

HART communication

HART communication allows you to manage the parameters of the transmitter and check the flow rate status remotely.
*Software and equipment are required separately.

Wireless fluid monitoring system

Surveillance monitoring, data accumulation, and trend analysis are possible by combining with a Wi-Flo system.

Please check Our Wi-Flo website for more information.



Flow control system

Flow control is possible by combining with our control valve.

Please check Our CT-1 Control Valve website for more information.



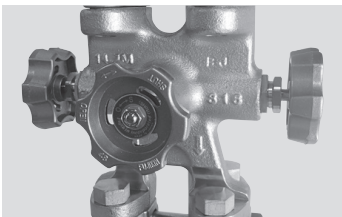
An orifice flowmeter can measure the flow rate using a transmitter because the square root of the differential pressure generated before and after the orifice is proportional to the flow rate.

■ Indicator

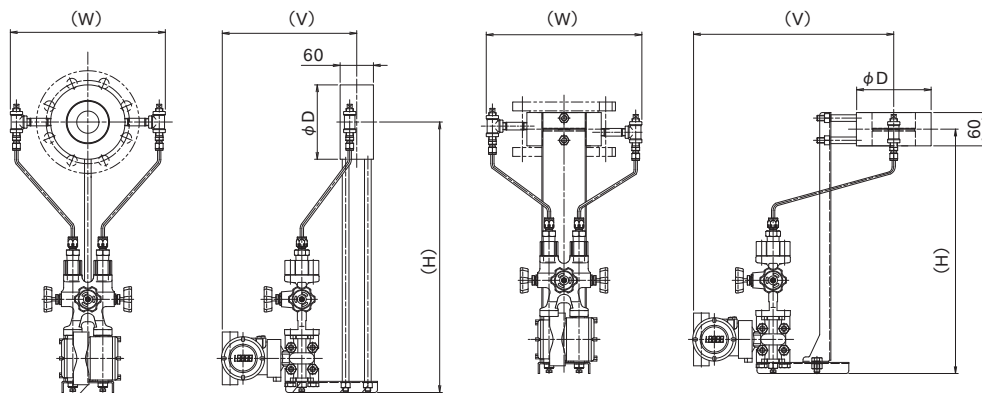


※ Flow unit is kg/h for steam

■ Three-Way Valve



■ Dimensions and Mass



Horizontal Pipe

Size BORE SIZE	D	V	W	H	Weight (kg)
15A JIS10K	58	243	204	452	16
20A JIS10K	63	243	209	455	16
25A JIS10K	74	243	220	460	16
32A JIS10K	84	243	230	465	18
40A JIS10K	89	243	235	468	18
50A JIS10K	104	243	250	475	19
65A JIS10K	124	243	270	485	21
80A JIS10K	134	243	280	490	22
100A JIS10K	159	243	305	503	25
125A JIS10K	190	243	336	518	31
150A JIS10K	220	243	366	533	35
200A JIS10K	270	243	416	558	41

Vertical Pipe

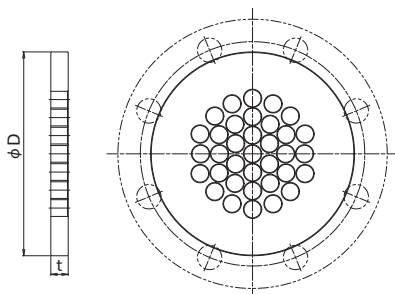
Size BORE SIZE	D	V	W	H	Weight (kg)
15A JIS10K	58	302	204	440	17
20A JIS10K	63	305	209	440	17
25A JIS10K	74	310	220	440	18
32A JIS10K	84	315	230	440	19
40A JIS10K	89	318	235	440	19
50A JIS10K	104	325	250	440	21
65A JIS10K	124	335	270	440	22
80A JIS10K	134	340	280	440	23
100A JIS10K	159	353	305	440	27
125A JIS10K	190	368	336	440	32
150A JIS10K	220	383	366	440	36
200A JIS10K	270	408	416	440	42

Please note that companion flange, packing, bolts and nuts are not included. Please prepare them separately.

Please keep the stop valves on both sides of the 3-way valve open and the equalizing valve in the center closed when measuring. When performing thermal insulation work on the orifice flowmeter, please place the transmitter and the connecting pipe outside the heat insulating material.

Rectifier

Upstream and downstream can be used on 8D and 5D by combination with a rectifier.



Size BORE SIZE	D	t	Size BORE SIZE	D	t
15A JIS10K	58	7.0	65A JIS10K	124	8.6
20A JIS10K	63	7.0	80A JIS10K	134	10.2
25A JIS10K	74	7.0	100A JIS10K	159	13.3
32A JIS10K	84	7.0	125A JIS10K	190	16.5
40A JIS10K	89	7.0	150A JIS10K	220	19.6
50A JIS10K	104	7.0	200A JIS10K	270	26.0

■ Flow Rate Table

Three flow ranges are available: standard flow for general piping, large flow for upstream on main pipe use, and small flow for downstream equipment.

Standard Flow Rate (Flow Velocity Max. 30m/s, Differential Pressure 50kPa, Measurement Range 10:1) (kg/h)

Working Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
15A	55	66	76	84	91	98	105	111	117	122
20A	99	119	136	152	165	177	189	200	210	220
25A	161	195	223	248	270	290	309	327	344	360
32A	270	327	374	415	452	486	518	548	576	603
40A	367	444	508	564	614	661	704	744	783	819
50A	594	718	822	912	993	1,069	1,139	1,204	1,266	1,325
65A	978	1,183	1,354	1,503	1,637	1,761	1,876	1,984	2,086	2,183
80A	1,382	1,671	1,912	2,123	2,311	2,487	2,649	2,802	2,946	3,083
100A	2,353	2,845	3,257	3,615	3,936	4,235	4,511	4,771	5,016	5,250
125A	3,631	4,390	5,025	5,579	6,074	6,535	6,961	7,362	7,741	8,101
150A	5,112	6,181	7,075	7,855	8,551	9,202	9,801	10,365	10,899	11,406
200A	8,893	10,753	12,308	13,664	14,876	16,007	17,050	18,032	18,959	19,842

Small Flow Rate (Flow Velocity Max. 15m/s, Differential Pressure 50kPa, Measurement Range 10:1) (kg/h)

Working Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
15A	27	33	38	42	46	49	52	55	58	61
20A	49	60	68	76	82	89	95	100	105	110
25A	81	98	112	124	135	145	155	164	172	180
32A	135	163	187	208	226	243	259	274	288	302
40A	184	222	254	282	307	330	352	372	391	410
50A	297	359	411	456	497	534	569	602	633	663
65A	489	592	677	752	818	881	938	992	1,043	1,092
80A	691	835	956	1,062	1,156	1,244	1,325	1,401	1,473	1,542
100A	1,177	1,423	1,628	1,808	1,968	2,118	2,256	2,386	2,508	2,625
125A	1,815	2,195	2,513	2,789	3,037	3,268	3,480	3,681	3,870	4,051
150A	2,556	3,091	3,538	3,927	4,276	4,601	4,900	5,183	5,449	5,703
200A	4,447	5,377	6,154	6,832	7,438	8,004	8,525	9,016	9,480	9,921

Large Flow Rate (Flow Velocity Max. 15m/s, Differential Pressure 50kPa, Measurement Range 10:1) (kg/h)

Working Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
15A	82	99	114	126	137	148	157	166	175	183
20A	148	179	205	227	247	266	284	300	315	330
25A	242	293	335	372	405	436	464	491	516	540
32A	405	490	561	623	678	730	777	822	864	905
40A	551	666	762	846	921	991	1,056	1,116	1,174	1,229
50A	891	1,077	1,233	1,369	1,490	1,603	1,708	1,806	1,899	1,988
65A	1,468	1,775	2,031	2,255	2,455	2,642	2,814	2,976	3,129	3,275
80A	2,073	2,506	2,869	3,185	3,467	3,731	3,974	4,203	4,419	4,625
100A	3,530	4,268	4,885	5,423	5,904	6,353	6,767	7,157	7,525	7,875
125A	5,446	6,586	7,538	8,368	9,110	9,803	10,441	11,043	11,611	12,152
150A	7,668	9,272	10,613	11,782	12,827	13,803	14,701	15,548	16,348	17,109
200A	13,340	16,130	18,462	20,496	22,314	24,011	25,575	27,048	28,439	29,763