

# MTW, MTW-V, MTW-VA, MTH Series

Multi-jet turbine water meters

## Technical Data Sheet



## Description

**MTW, MTW-V, MTW-VA and MTH Series** multi-jet turbine water meters are designed for measuring water flow in all applications requiring high precision and long-term reliability, with flow rates ranging from 1.5 to 15 m<sup>3</sup>/h. All models comply with the European Measuring Instruments Directive (MID) 2014/32/EU.

The part numbers with extension **E** (product identification marking MI-004) denote products used for thermal energy metering. Part numbers with extension **V** (product identification marking MI-001) denote products used for hot and cold water metering. For threaded models, the weights quoted in the tables are for the meter complete with fittings.

### MTW



Multi-jet turbine flow meter for hot water. Flanged PN16. Maximum fluid temperature: 90°C. Direct dry-dial reading with magnetic transmission. Brass body complete with nuts and sleeves. Threaded connections. Horizontal installation. Complete with pulse transmitter.

Type	Part No.	DN	Qn (m <sup>3</sup> /h)	l/pulse	Weight (Kg)
MTW	MTW15E	15	1.5	2.5	2.1
MTW	MTW15V	15	1.5	2.5	2.1
MTW	MTW20E	20	2.5	2.5	2.4
MTW	MTW20V	20	2.5	2.5	2.4
MTW	MTW25E	25	3.5	2.5	3.2
MTW	MTW25V	25	3.5	2.5	3.2
MTW	MTW32E	32	6	25	3.5
MTW	MTW32V	32	6	25	3.5
MTW	MTW40E	40	10	25	6.3
MTW	MTW40V	40	10	25	6.3
MTW	MTW50E	50	15	25	7.4
MTW	MTW50V	50	15	25	7.4

### MTW-V



Multi-jet turbine flow meter for hot water. Flanged PN16. Maximum fluid temperature: 90°C. Direct dry-dial reading with magnetic transmission. Brass body complete with nuts and sleeves. Threaded connections. Vertical installation with fluid inlet from bottom. Complete with pulse transmitter.

Type	Part No.	DN	Qn (m <sup>3</sup> /h)	l/pulse	Weight (Kg)
MTW-V	MTW-V20E	20	2.5	2.5	2.4
MTW-V	MTW-V20V	20	2.5	2.5	2.4
MTW-V	MTW-V25E	25	3.5	2.5	4.0
MTW-V	MTW-V25V	25	3.5	2.5	4.0
MTW-V	MTW-V32E	32	6	25	4.4
MTW-V	MTW-V32V	32	6	25	4.4
MTW-V	MTW-V40E	40	10	25	8.1
MTW-V	MTW-V40V	40	10	25	8.1

## MTW-VA



Multi-jet turbine flow meter for hot water. Flanged PN16. Max. fluid temperature: 90°C. Direct dry-dial reading with magnetic transmission. Brass body complete with nuts and sleeves. Threaded connections. Vertical installation with fluid inlet from top. Complete with pulse transmitter.

Type	Part No.	DN	Qn (m³/h)	l/pulse	Weight (Kg)
MTW-VA	MTW-VA20E	20	2.5	2.5	2.3
MTW-VA	MTW-VA20V	20	2.5	2.5	2.3
MTW-VA	MTW-VA25E	25	3.5	2.5	2.8
MTW-VA	MTW-VA25V	25	3.5	2.5	2.8
MTW-VA	MTW-VA32E	32	6	25	3.0
MTW-VA	MTW-VA32V	32	6	25	3.0
MTW-VA	MTW-VA40E	40	10	25	6.8
MTW-VA	MTW-VA40V	40	10	25	6.8

## MTH



Multi-jet turbine flow meter for hot water. Flanged PN16. Max. fluid temperature: 130°C. Direct dry-dial reading with magnetic transmission. Flanged connections. Horizontal installation. Complete with pulse transmitter.

Type	Part No.	DN	Qn (m³/h)	l/pulse	Weight (Kg)
MTH	MTH20E	20	2.5	2.5	3.8
MTH	MTH20V	20	2.5	2.5	3.8
MTH	MTH25E	25	3.5	2.5	5.0
MTH	MTH25V	25	3.5	2.5	5.0
MTH	MTH32E	32	6	25	5.0
MTH	MTH32V	32	6	25	5.0
MTH	MTH40E	40	10	25	9.9
MTH	MTH40V	40	10	25	9.9
MTH	MTH50E	50	15	25	10.4
MTH	MTH50V	50	15	25	10.4

Technical features							
Nominal diameter DN	mm	15	20	25	32	40	50
Threaded connections (to sleeves)		1/2" M	3/4" M	1" M	1.1/4" M	1.1/2" M	2" M
Nominal pressure PN	bar	16	16	16	16	16	16
Maximum operating temperature (MTW)	°C	90	90	90	90	90	90
Maximum operating temperature (MTH)	°C	-	130	130	130	130	130
Pulse transmitter	l/pulse	2.5	2.5	2.5	25	25	25
Cable length	m	1.5	1.5	1.5	1.5	1.5	1.5
Diameter of flange holes (MTH)	mm	-	75	85	100	110	125
Number of flange holes (MTH)		-	4	4	4	4	4

Features	
Body (threaded models MTW, MTV-V, MTW-VA)	Brass
Body (flanged models MTH)	Ductile iron
Flanges (MTH)	DIN EN 1092-2
Seal seat	Brass
Seal	EPDM
Impeller	Synthetic material

## Application

**MTW, MTW-V, MTW-VA and MTH Series** water meters are used as volumetric flow sensors in direct thermal energy metering systems serving modern multi-residential buildings. The adoption of temperature control systems enables upgrading the heating systems according to the regulatory requirements (Italian legislative decree 192/05 as amended) and enables users to manage and optimise indoor comfort conditions, by linking them with the specific use of the rooms concerned, and therefore saving energy. All models are complete with pulse transmitters (see pulse value in the “Technical features” table).

## Operation

**MTW, MTW-V, MTW-VA and MTH Series** water meters measure flow rate by using the movement of a turbine struck directly by multiple jets of water. The incoming water is channelled concentrically onto all the turbine blades so as to reduce the load on the mounting pin.

The volume of fluid is totalised by counting the number of turbine revolutions. The rotary movement is transmitted to the totalisers by means of a shielded magnetic coupling. All **MTW, MTW-V, MTW-VA and MTH Series** models are dry-dial meters: the register mechanism is housed in a dry, hermetically sealed vacuum compartment, so as to eliminate all potential problems deriving from dust, condensation, etc. The counting mechanisms close an electrical contact (REED pulser IPG14 ) each time the number of turbine revolutions totalises the value corresponding to a preset volume, thereby generating a signal (pulse) corresponding to a unique reading of the amount of fluid flowing.

The instantaneous value measured can be processed and displayed by suitable electronic devices (CAMICAL) or else read directly on the mechanical totalizer (5 digits) located on the counter dial.

## How to choose a flow meter

When sizing a flow meter, it is essential to take account of the following:

- the effective flow rate of the circuit to be monitored must never exceed the permissible continuous flow rate ( $Q_n$ ) in  $m^3/h$  of the flow meter (the flow rate  $Q_{max}$  is only valid for a peak lasting a few minutes);
- when working with variable-flow circuits, use meters that cover the entire range between  $Q_n$  and  $Q_{min}$ ; to ensure accurate metering, the minimum effective flow rate must always be higher than  $Q_{min}$ ;
- maximum operating temperature must never exceed that of the flow meter;
- pressure drop across the flow meter should be compatible with the hydraulic characteristics of the system.

Check the required characteristics with the “Operating range” tables.

### MTW model - Horizontal installation and MTH model (DN20-50)

Operating range		DN15	DN20	DN25	DN32	DN40	DN50
Maximum permissible continuous flow rate	$q_p (Q_n) m^3/h$	1.5	2.5	3.5	6	10	15
Maximum flow rate	$q_s (Q_{max}) m^3/h$	3	5	7	12	20	30
Minimum flow rate	$q_i (Q_{min}) l/h$	30	50	70	120	200	300
Kvs		3.5	5	10	12	20	30
Standard range (horizontal)	$q_i/q_p Q_{min}/Q_n$	1.5	1.5	1.5	1.5	1.5	1.5

## MTW-V and MTW-VA model - Vertical installation

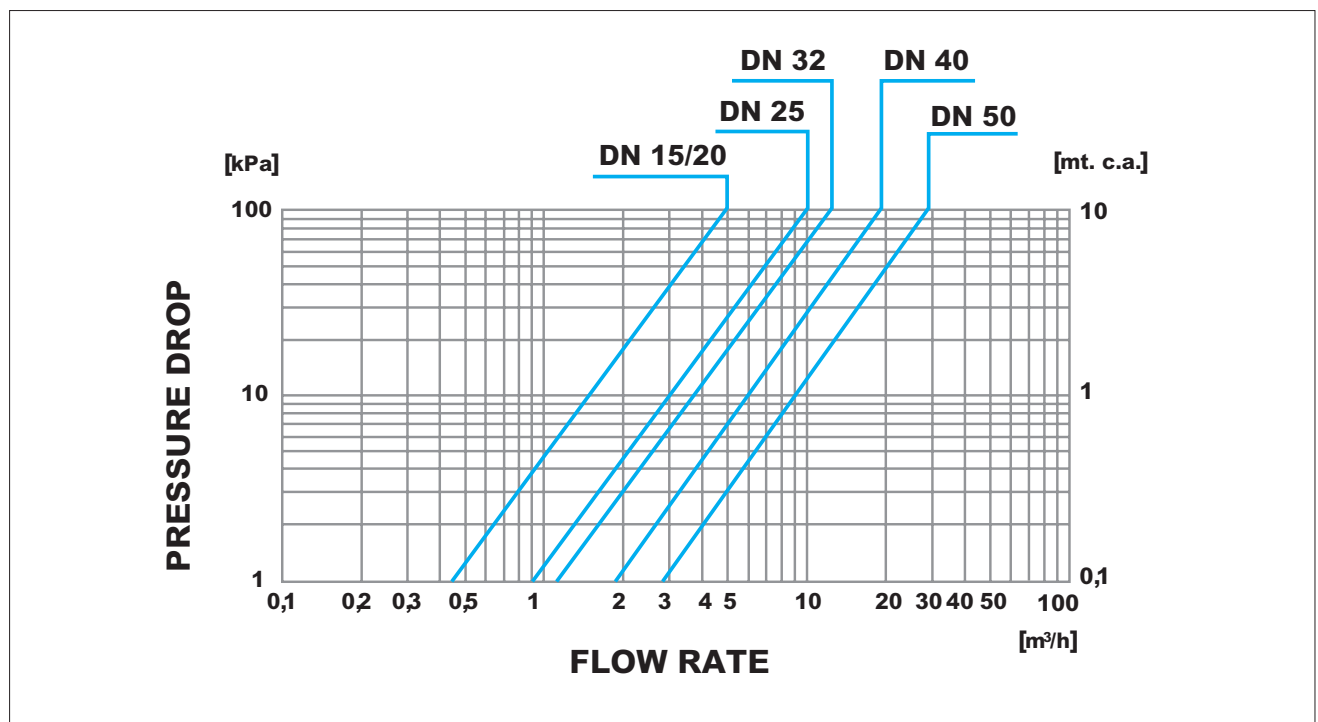
Operating range	DN20	DN25	DN32	DN40
Permissible continuous flow rate $q_p$ ( $Q_n$ ) $m^3/h$	2.5	3.5	6	10
Maximum flow rate $q_s$ ( $Q_{max}$ ) $m^3/h$	5	7	12	20
Minimum flow rate $q_i$ ( $Q_{min}$ ) $l/h$	50	70	120	200
Kvs	5	10	12	20
Standard range (horizontal) $q_i/q_p$ $Q_{min}/Q_n$	1.5	1.5	1.5	1.5

$Q_i$  ( $Q_{min}$ ) = minimum flow rate below which no accuracy is guaranteed;

$Q_s$  ( $Q_{max}$ ) = maximum flow rate, which must never be exceeded, even momentarily;

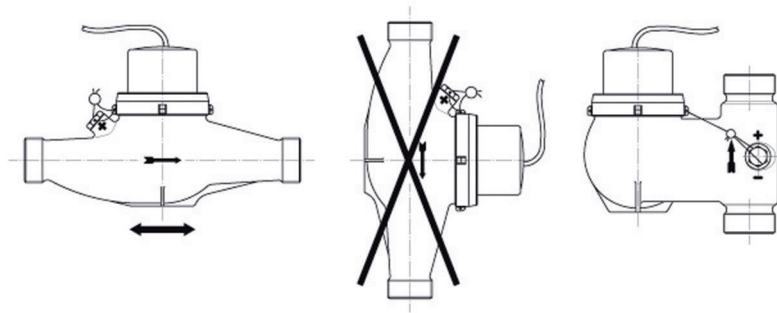
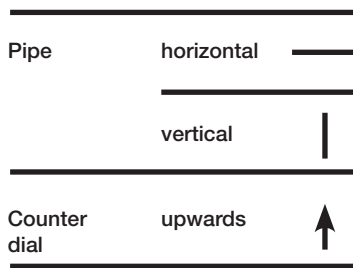
$Q_p$  ( $Q_n$ ) = nominal flow rate, i.e. the maximum flow rate at which the volumetric flow meter can operate under steady conditions and for an indefinite period.

## Chart



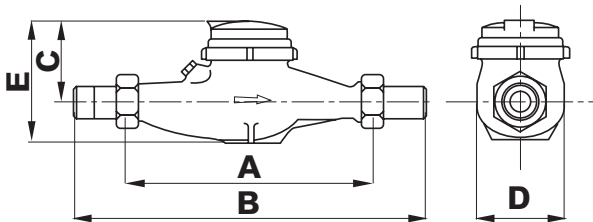
## Installation

**MTW, MTW-V, MTW-VA and MTH Series** meters are supplied with nuts and threaded sleeves packaged loose in a box. They can be installed vertically or horizontally, depending on model, but the dial must always face upwards. The run of pipe into and out of the meter need not be straight. It is advisable to install a shut-off device upstream and downstream of the meter to facilitate periodic inspection and maintenance operations. Before fitting the volumetric flow meter, always flush the main network to avoid clogging the internal filter. It is good practice to install a filter upstream of the flow meter. During installation, observe the direction of flow stamped on the body. For commissioning and maintenance of the flow meter, refer to the reference standard UNI EN 1434/07 Part 6.



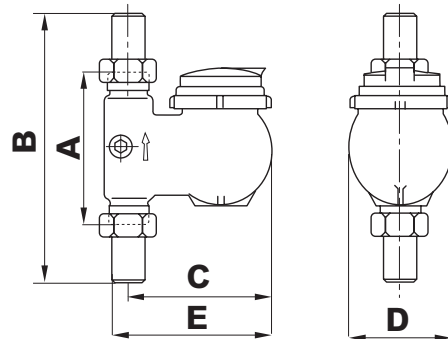
## Overall dimensions (mm)

MTW



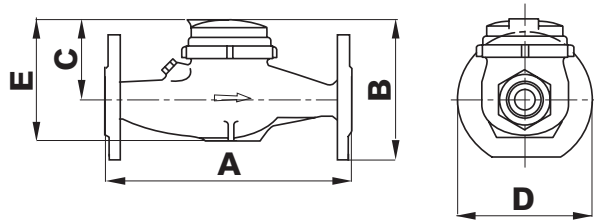
DN	A	B	C	D	E
15	165	244	100	95	143
20	190	318	109	95	149
25	260	378	116	101	159
32	260	378	116	100	159
40	300	438	139	137	185
50	300	438	142	150	199

MTV/MTW-V/MTW-VA



DN	A	B	C	D	E
20	105	203	130	95	148
25	150	268	145	100	171
32	150	268	146	103	171
40	200	338	162	134	186

## MTH



DN	A	B	C	D	E
20	190	156	109	105	149
25	260	168	116	115	159
32	260	178	116	140	159
40	300	208	139	150	185
50	300	220	142	165	199

## Specification text

### **MTW Series**

Multi-jet turbine water meter **MTW Series** – WATTS brand – for hot water. PN16. Maximum fluid temperature: 90°C. Direct dry-dial reading with magnetic transmission. Brass body complete with nuts and sleeves. Threaded connection: DN 15-50, Qn 1.5-15 m³/h, 2.5-25 l/pulse. Horizontal installation. Complete with pulse transmitter. Compliant with MID Directive 2014/32/EU.

### **MTW-V Series**

Multi-jet turbine water meter **MTW-V Series** – WATTS brand – for hot water. PN16. Maximum fluid temperature: 90°C. Direct dry-dial reading with magnetic transmission. Brass body complete with nuts and sleeves. Threaded connection: DN 20-40, Qn 2.5-10 m³/h, 2.5-25 l/pulse, weight 2.4-8.1 kg. Vertical installation with fluid inlet from bottom. Complete with pulse transmitter. Compliant with MID directive 2014/32/EU.

### **MTW-VA Series**

Multi-jet turbine water meter **MTW-VA Series** – WATTS brand – for hot water. PN16. Maximum fluid temperature: 90°C. Direct dry-dial reading with magnetic transmission. Brass body complete with nuts and sleeves. Threaded connection: DN20-40, Qn 2.5-10 m³/h, 2.5-25 l/pulse, weight 2.3-6.8 kg. Vertical installation with fluid inlet from top. Complete with pulse transmitter. Compliant with MID Directive 2014/32/EU.

### **MTH Series**

Multi-jet turbine water meter **MTH Series** – WATTS brand – for hot water. PN16. Maximum fluid temperature: 130°C. Direct dry-dial reading with magnetic transmission. Flanged connection: DN 20-50, Qn 2.5-15 m³/h, 2.5-25 l/pulse, weight 3.8-10.4 kg. Horizontal installation. Complete with pulse transmitter. Compliant with MID Directive 2014/32/EU.



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