

# ARIES DN15/20

User guide



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# 1 PRODUCT DESCRIPTION

## 1.1 GENERAL PRINCIPLE

ARIES is a single-jet velocity meter approved in accordance with EN 14154, ISO 4064 and OIML R49 standards. It has a MID certification and complies with the sanitary standard applying to materials in contact with water. It is a measuring device approved for invoicing that must be handled with care.

ARIES is made of a body (1) brass or composite (only DN15 - cold water) containing the hydraulic part, a register (2) and a ring (3), grey for cold water, red for hot water that locks the register to the body. As the ring rotates freely, the register can be oriented to enable optimal legibility of the data. The arrows (4) indicate which way the water is flowing. The hole (5) enables on-site sealing of the meter.

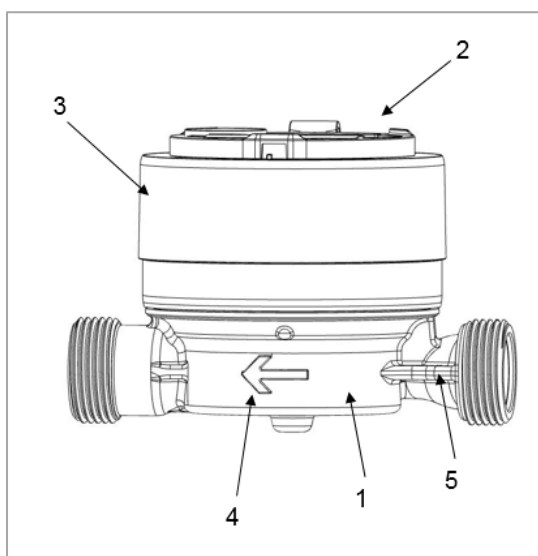


fig.1

## 1.2 METROLOGICAL FEATURES

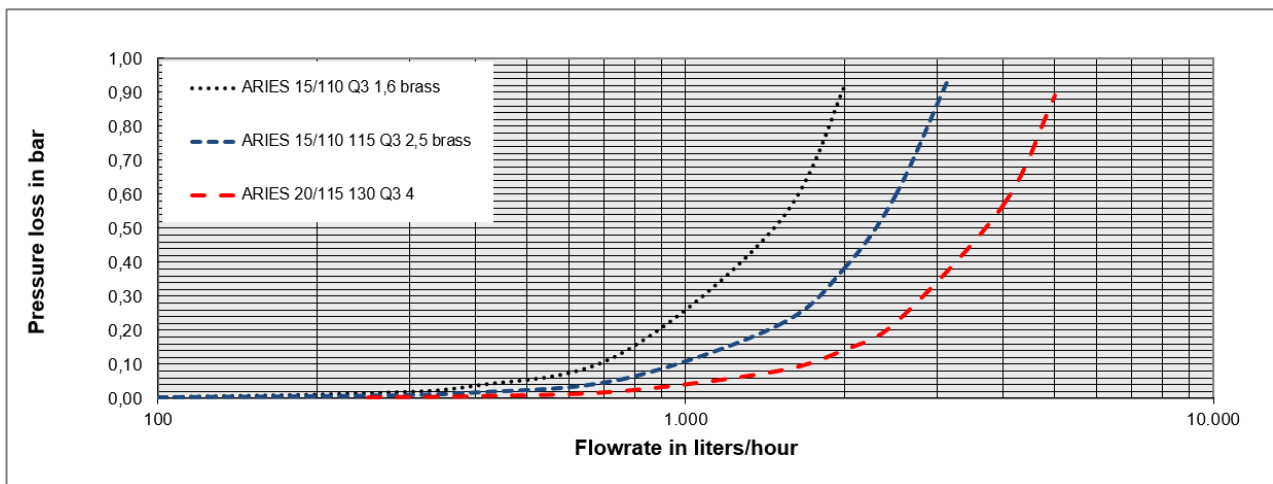
### 1.2.1 CALIBRATION CURVE

The meter has been manufactured with care in order to ensure high level of precision and reduced standard deviation (see metrological curves chapter 5). ARIES DN15/20 is MID approved up R=125 in horizontal installation position and R=63 in vertical installation position.

Nominal diameter	DN	mm	15	15	15	15	15	15	20	20
Length	L	mm	80	110	110	110	115	115	115	130
Nominal flowrate	Q <sub>3</sub>	m <sup>3</sup> /h	2.5	1.6	2.5	2.5	2.5	2.5	4	4
Body			brass	brass	brass	composite	brass	composite	brass	brass
R standard*	Q <sub>3</sub> /Q <sub>1</sub>		80H-40V	125H-50V	125H-63V	100H-63V	125H-63V	100H-63V	125H-63V	125H-63V
Starting flowrate horizontal		l/h	12	6	6	9	6	9	12	12
Minimum flowrate horizontal	Q <sub>1</sub>	l/h	31	12.8	20	25	20	25	32	32
Transition flowrate horizontal	Q <sub>2</sub>	l/h	50	20.5	32	40	32	40	51.2	51.2
Minimum flowrate vertical	Q <sub>1</sub>	l/h	61.5	32	39.7	39.7	39.7	39.7	63.5	63.5
Transition flowrate vertical	Q <sub>2</sub>	l/h	100	51.2	63.5	63.5	63.5	63.5	101.6	101.6
Maximum flowrate	Q <sub>4</sub>	m <sup>3</sup> /h	3.125	2	3.125	3.125	3.125	3.125	5	5
Head loss at Q <sub>3</sub>		bar	0.56	0.59	0.59	0.59	0.59	0.62	0.57	0.57
Head loss at Q <sub>4</sub>		bar	0.88	0.92	0.93	0.92	0.93	0.96	0.89	0.89
Kvs (deltaP=Q <sup>2</sup> /Kvs <sup>2</sup> )			3.34	2.09	3.24	3.25	3.24	3.19	5.30	5.30

\*other values on request - H=horizontal installation position / V=vertical installation position

### 1.2.2 PRESSURE LOSS



### 1.3 TECHNICAL FEATURES

<b>Body</b>	Brass or composite (DN15 - cold water)
<b>Ring</b>	Grey → cold water 0.1°C ... +50°C Red → hot water 0.1°C ... +90°C
<b>Register</b>	Plastic in standard. Glass/metal (in option – only for cold water) → better resistance to moisture in extreme environments (e.g. a manhole that is flooded on a regular basis). Waterproof → withstands prolonged immersion.
<b>Modularity</b>	As mentioned on the register, meters are pre-equipped to be fitted (even on-site) with clip-on modules of the IZAR range: <ul style="list-style-type: none"> <li>• IZAR RC i radio modules</li> <li>• IZAR PULSE i pulse emitter</li> <li>• IZAR MBUS COMPACT i M-Bus emitter</li> <li>• IZAR DOSING electronic register with reset</li> </ul>
<b>Temperatures</b>	Water temperature : 0.1 ... +50°C   0.1 ... +90°C Ambient operating temperature : +1 ... +55°C Storage temperature : -10 ... +55°C
<b>Frost protection</b>	Protect the meter from frost by completely draining all the water it contains. Carry out draining by opening the connection on the pipe after the meter (remove the non-return valve as needed). <b>Caution:</b> When the meter is not drained, there is a risk of the pressure plate breaking.
<b>Filtration</b>	Filter located in the nozzle before the meter -> easy check and cleaning.

<b>Clogging</b>	Withstands occasional sanding (i.e. following work carried out on a pipe) without sustaining damage.  However, in order to protect its metering properties, the maximum sand concentration must not exceed 0.1 gram/litre.
<b>Static pressure</b>	Nominal pressure: 16 bars max.  Test pressure: 32 bars (in accordance with EN14154 / ISO4064 / OIML R49).  Breaking pressure: greater than 55 bars.
<b>Resistance to pressure changes</b>	Withstands 100,000 fast pressure increase from 0 to 16 bars in 0.2 second.
<b>Water hammer effect</b>	<b>Caution:</b> While working on the pipes, carefully bleed the pipes in order to prevent the formation of air bubbles, which could damage the meter when the water is turned back on.
<b>Endurance</b>	Compliant with the MID regulatory tests.  Resistance: 100 hours at Q <sub>4</sub> and 100,000 cycles at Q <sub>3</sub> .
<b>Overflow</b>	Resistance to a flowrate of 2xQ <sub>4</sub> during 10 minutes without damage.
<b>Non-return valve</b>	Located downstream in the nozzle of the meter.
<b>Fraud resistance</b>	Fraud attempt with a clamp: → the orange indicator pin of the plastic register will disappear or the glass of the glass/metal register will break.  Fraud attempt by opening the sealed ring: → deterioration of the tamperproof ring.

### 1.4 DIMENSIONS

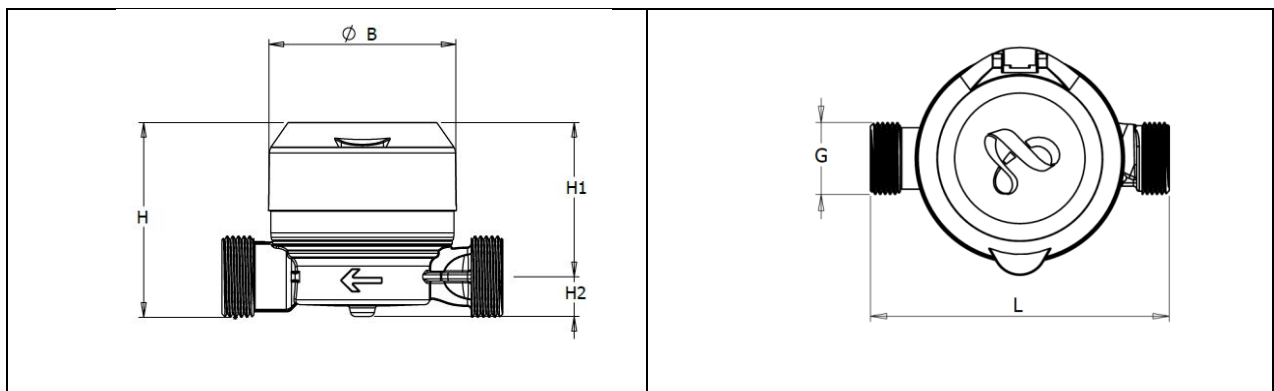


fig.2

Nominal diameter	DN	mm	15	15	15	15	15	15	20	20
Length	L	mm	80	110	110	110	115	115	115	130
Nominal flowrate	Q <sub>3</sub>	m <sup>3</sup> /h	2.5	1.6	2.5	2.5	2.5	2.5	4	4
Body			brass	brass	brass	composite	brass	composite	brass	brass
Diameter	Ø B	mm	77	77	77	77	77	77	77	77
Height	H1	mm	64	64	64	64	64	64	63	63
Height	H2	mm	15	15	15	18	15	18	17	17
Thread connections	G	inch	¾"	¾"	¾"	¾"	¾" (*)	¾"	1"	1"
Weight - plastic register		kg	0.31	0.38	0.38	0.23	0.39	0.24	0.49	0.51

\* 7/8" version also available in option

## 2 INSTALLATION

### 2.1 INSTALLATION PRECAUTIONS

Installation is to be carried out in accordance with EN ISO 4064-5:2017 and EN 14154-2:2005 + A2:2011.

#### 2.1.1 CLEANING THE PIPES

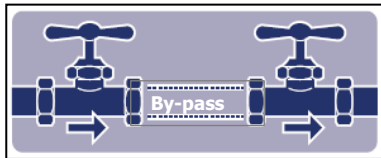


fig.3

ARIES meter must be installed on a clean pipe, free from solid particles on the inside.

If in doubt, insert a bypass sleeve in place of the meter, and clean the pipe out with high-flowrate water flushing.

#### 2.1.2 PIPE ALIGNMENT

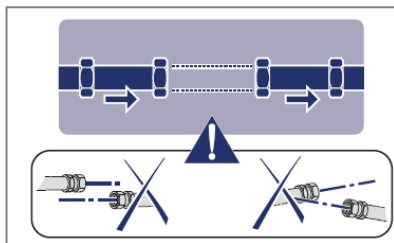


fig.4

The pipes must be perfectly aligned in order to minimize mechanical stress on the body of the meter

Use a drilled nut to seal the meter on the inlet side.

### 2.2 INSTALLATION INSTRUCTIONS

#### 2.2.1 INSTALLATION POSITION

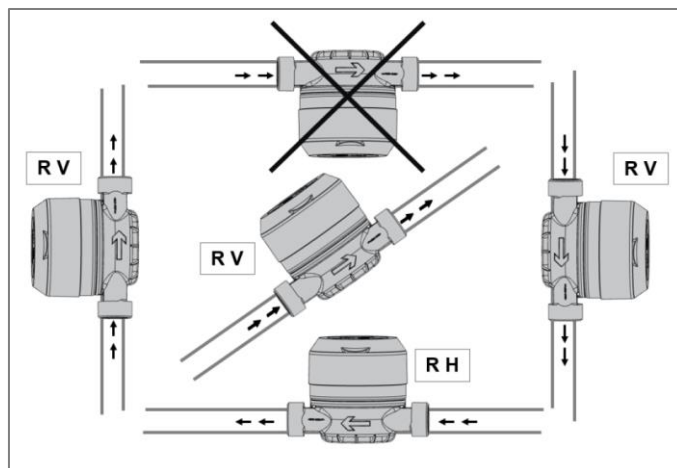


fig.5

ARIES meter is sensitive to the position in which it is installed.

To optimize its metering properties, the meter should preferably be installed horizontally (top of register facing up and horizontal).

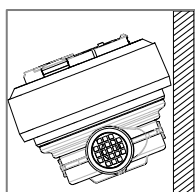


fig.6

However, if it is to be wall mounted, the meter may be inclined, either slightly (the metrology of the meter becoming class R=100) or completely (in this case, the metrology of the meter becomes class R=63).

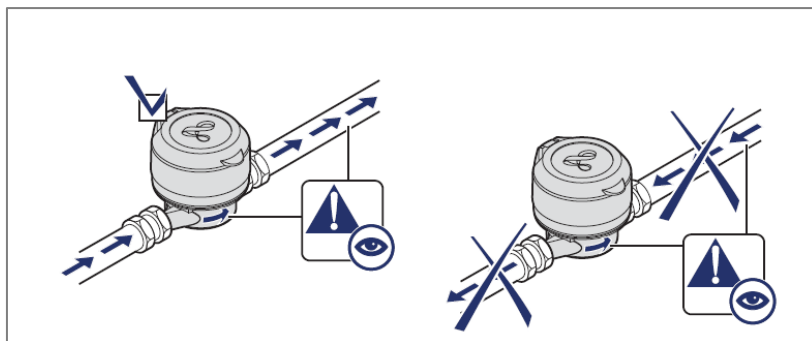


fig.7

**Caution:** Make sure that the direction of the water flow matches the direction of the arrows located on the meter's body.

### 2.2.2 PLACE OF INSTALLATION

The metered water flow must be free from gas.

Install ARIES at a low point of a pipe in order to prevent the formation of air pockets.

No straight length required either before or after the meter (U0 / D0).

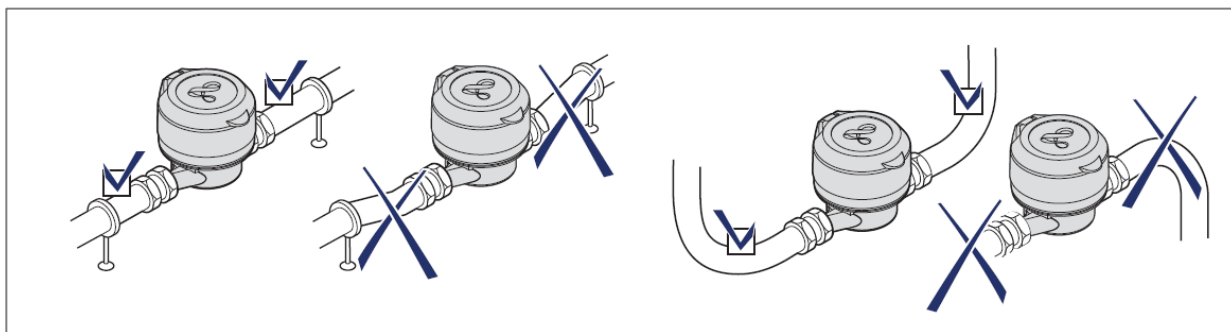


fig.8

### 2.2.3 INSTALLATION RECOMMENDATIONS

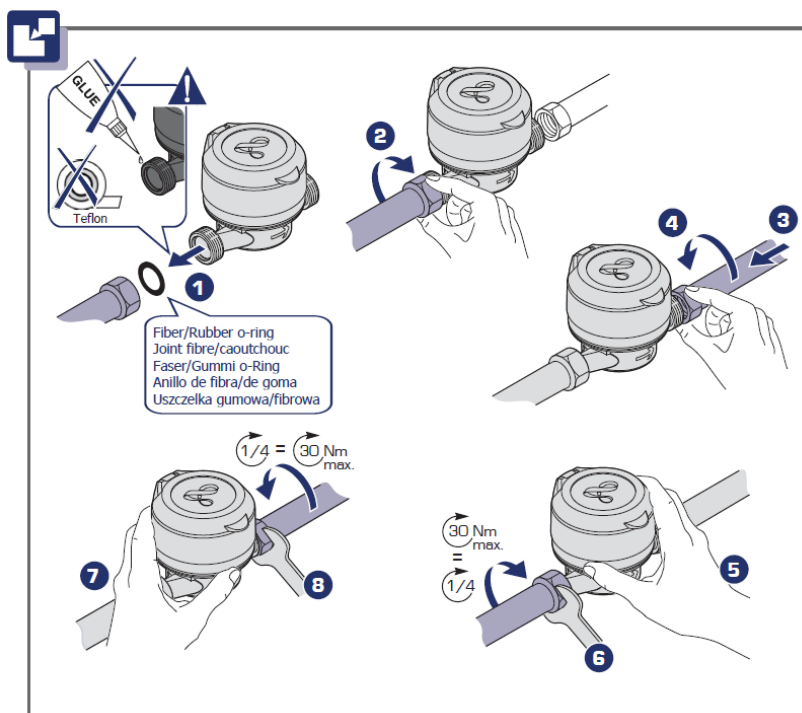


fig.9

The body of the meter incorporates 2 nozzles, each with a standard connection thread. The gaskets that form the seal between the meter and the connectors are not included.

### 2.2.4 LIABILITY



If the installation is not carried out in accordance with good workmanship practices, and if the above-mentioned procedures are not followed, the warranty shall be null and void.



**If there are additives or additional substances in the water or any process of the installation, the installer or the operator has to make sure that the characteristics of the drinking water and the materials of the installation - meter included - are not altered.**

## 3 PRECAUTIONS OF USE

<b>Storage</b>	<p>Do not store the meters for more than 3 months.</p> <p>Do not stack the pallets.</p> <p>Do not place loads heavier than 80 kg on the meter.</p>
<b>Cleaning</b>	<p>Only use soapy or slightly acidified water to clean the meter. The use of solvents or abrasive cleaners is prohibited.</p>
<b>Stepping</b>	<p>ARIES must not be stepped upon. However, with its cover (optional) closed, it can withstand the load of a person weighting 80 kg.</p>
<b>Drop test</b>	<p>Designed to withstand a fall of 1 m onto a hard floor. In the event of a fall, or if the meter shows traces of impact, we recommend testing it prior to installation.</p>

## 4 REGULATIONS

ARIES meter complies with the European directives as indicated on the EU Declaration of conformity delivered with the product and available on Diehl metering website:

<https://www.diehl.com/metering/en/support-center/download-center/>

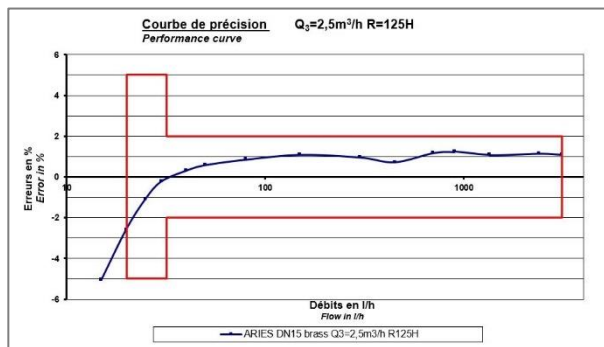
ARIES also meets the food-grade requirements pertaining to materials in contact with water.

For more information, contact your local Diehl Metering agency.

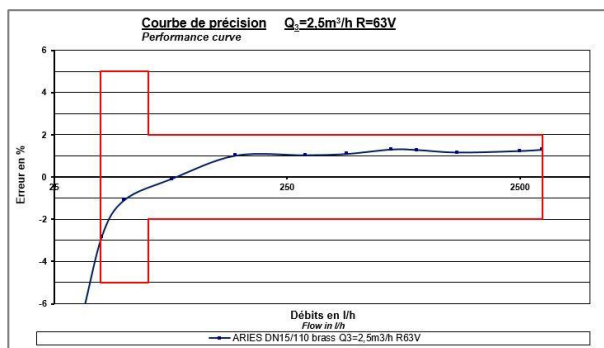


## 5 METROLOGICAL CURVES

Installation in horizontal position – brass DN15 - Q3=2.5m<sup>3</sup>/h

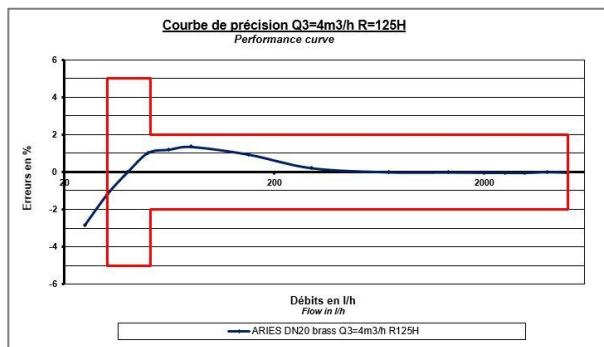


Installation in vertical position – brass DN15 - Q3=2.5m<sup>3</sup>/h

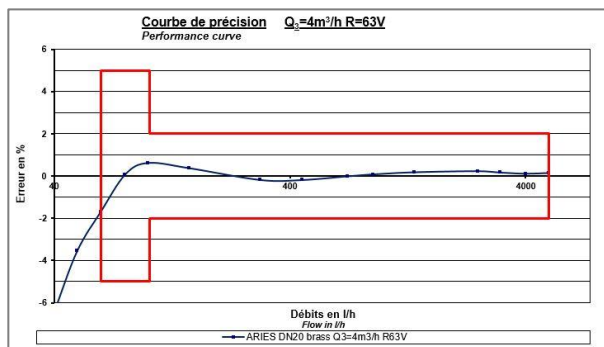


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Installation in horizontal position – brass DN20 – Q3=4m<sup>3</sup>/h



Installation in vertical position – brass DN20 – Q3=4m<sup>3</sup>/h



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