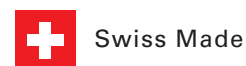


# TOPAS PMW-basic Hot water meter



## Applications

The TOPAS PMW-basic product line covers a wide range of applications in hot water measurement. This innovative system offers all types of water measurement right up to data integration into your specific management software.



## Features

- Integrated key technologies
- Adaptable for future developments
- Rugged hot water meters with high accuracy and long service life
- Correct mounting ensures high accuracy and long-term stability
- Reliable Swiss precision

## Benefits

- Innovative technology from a single source
- Open system for future concept
- Significant increase in added value with accurate flow measurement

## TOPAS PMW-basic

The TOPAS PMW-basic hot water meter has an ergonomically-designed roller counter and a non-reactive interface as standard and can be incorporated into the aquaconcept® series at any time.

## aquapuls® / aquapuls® NAMUR

The aquapuls® system module supplies pulses for controlling instruments, remote display, transmission and filling control units.

## aquadata® M-Bus

The aquadata® M-Bus system module supplies an M-Bus protocol and pulses for triggering devices controlling remote displays, data transmission and filling procedures. The system module has an internal battery when there is a power failure to the M-Bus.

## aquatarif®

The aquatarif® system module stores values on actual consumption and those of the previous year, peaks, the previous 400 days and 15 months as well as days with downtimes and leakages.

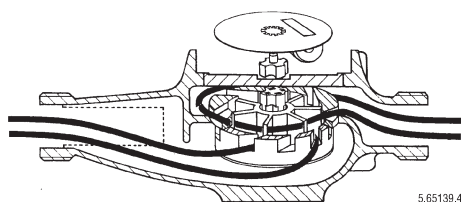
## aquareader®

The aquareader® module is an automatic readout device with an M-Bus or CS interface. If the water meter is equipped with a RFID-tag, the aquareader® will take the data from the tag, set its own parameters and thus be operational in seconds. Upon request, the aquareader® system module reads out the current meter reading, the identification number, the nominal width and the medium.

## Design

The TOPAS PMW-basic hot water meter is the key unit in the modular principle. This completely new rotating roller counter is the core unit for all system modules.

- The TOPAS PMW-basic series consists of multi-jet (dry register) meters. This measuring principle has proven its excellence over long periods of time and is insensitive to turbulences in the liquid flow.
- The impeller is supported on both sides by glass bearings (DN 15-32). This enables them to turn on a thin film of water within the casing and allows the impeller to turn both easily and accurately to ensure long-term stability.
- The measuring sensor (hydraulic part) is entirely separated from the roller. The impeller rotations are transmitted across a sturdy sealing plate by a magnetic coupling.
- The adjuster for calibrating the instrument is located inside the meter (DN 15-32) so that no accidental or unauthorised manipulation is possible.
- The measuring chamber is protected by a robust cover.
- The roller counter shows water consumption in m<sup>3</sup> with even the smallest flows displayed.



## Product range

### TOPAS PMW-basic



- Multi-jet turbine meters with dry-type registers
- Type approval as hot water meter according to 2004/22/EG (OIML R49)
- Accuracy class 2 according to OIML R49
- Suitable for horizontal mounting
- Brass housing with threaded connections according to ISO 228-1
- Nominal pressure PN 16
- Maximum temperature 90 °C
- No inlet or outlet paths required

Nominal diameter	DN	mm	15	20	25	32	40	50
		inches	1/2	3/4	1	1 1/4	1 1/2	2
Standard	Art. No.		94595	94596	94600	94604	94607	94610
Flow on overload	Q <sub>4</sub>	m <sup>3</sup> /h	3.1	5	7.9	12.5	20	31
<b>Continuous flow</b>	<b>Q<sub>3</sub></b>	<b>m<sup>3</sup>/h</b>	<b>2.5</b>	<b>4</b>	<b>6.3</b>	<b>10</b>	<b>16</b>	<b>25</b>
Transitional flow rate	Q <sub>2</sub>	m <sup>3</sup> /h	0.04	0.064	0.101	0.16	0.256	0.4
Min. flow	Q <sub>1</sub>	m <sup>3</sup> /h	0.025	0.04	0.063	0.1	0.16	0.25
Starting flow at approx.		m <sup>3</sup> /h	0.014	0.014	0.022	0.022	0.045	0.045
Max. pressure drop at Q <sub>3</sub>		bar	0.3	0.5	0.5	0.6	0.4	0.6
Flowrate at Δp = 1bar		m <sup>3</sup> /h	4.5	5.2	9.5	12.7	25.6	32.5
Measuring range	Q <sub>3</sub> /Q <sub>1</sub>		R100	R100	R100	R100	R100	R100
Smallest recordable volume		litres	0.1	0.1	0.1	0.1	0.1	0.1
Recording capacity		m <sup>3</sup>	99'999	99'999	99'999	99'999	99'999	99'999
Thread size: Body	G...B	inches	3/4	1	1 1/4	1 1/2	2	2 3/8
Thread size: Connector	R...	inches	1/2	3/4	1	1 1/4	1 1/2	2
Body surface finish			lacquered					
Weight without connections		kg	1.4	1.6	2.4	2.7	5.4	6.7
Dimensions								
	a	mm	165	190	260	260	300	300
	b	mm	35.5	36.5	40	40	60	62
	c	mm	79	88	96	96	106	113
	d	mm	259	314	374	374	440	460

Pressure loss curves: page 10

## TOPAS PMWF-basic (downpipe) and PMWS-basic (riser pipe)



- Multi-jet turbine meters with dry-type registers
- Type approval as hot water meter according to 2004/22/EG (OIML R49)
- Accuracy class 2 according to OIML R49
- Suitable for vertical mounting
- Brass housing with threaded connections according to ISO 228-1
- Nominal pressure PN 16
- Maximum temperature 90 °C
- No inlet or outlet paths required

Nominal diameter	DN	mm	20	25	32	40
		inches	3/4	1	1 1/4	1 1/2
Standard	Art. No.	PMWF-basic	94598	94602	94606 <sup>1)</sup>	94609
	Art. No.	PMWS-basic	94597	94601	94605	94608
Flow on overload	Q <sub>4</sub>	m <sup>3</sup>	5	7.9	12.5	20
<b>Continuous flow</b>	<b>Q<sub>3</sub></b>	<b>m<sup>3</sup>/h</b>	<b>4</b>	<b>6.3</b>	<b>10</b>	<b>16</b>
Transitional flow rate	Q <sub>2</sub>	m <sup>3</sup> /h	0.064	0.101	0.16	0.256
Min. flow	Q <sub>1</sub>	m <sup>3</sup> /h	0.04	0.063	0.1	0.16
Starting flow at approx.		m <sup>3</sup> /h	0.014	0.022	0.022	0.045
Max. pressure drop at Q <sub>3</sub>	bar	PMWF-basic	0.5	0.6	0.9	0.6
Max. pressure drop at Q <sub>3</sub>	bar	PMWS-basic	0.5	0.5	0.6	0.6
Flowrate at Δp = 1 bar	m <sup>3</sup> /h	PMWF-basic	5.4	8.6	10.3	22.2
Flowrate at Δp = 1 bar	m <sup>3</sup> /h	PMWS-basic	6	9.7	13.6	20.8
Measuring range	Q <sub>3</sub> /Q <sub>1</sub>		R100	R100	R100	R100
Smallest recordable volume		litres	0.1	0.1	0.1	0.1
Recording capacity		m <sup>3</sup>	99'999	99'999	99'999	99'999
Thread size: Body	G...B	inches	1	1 1/4	1 1/2	2
Thread size: Connector	R...	inches	3/4	1	1 1/4	1 1/2
Body surface finish			lacquered			
Weight without connections		kg	1.8	2.4	2.7	5
Dimensions						
	a	mm	105	150	150	200
	b	mm	25	30	30	54
	c	mm	126	148	148	198
	d	mm	200	265	265	340

<sup>1)</sup> without CE marking

**Pressure loss curves:** page 10 and 11

## System modules

### aquapuls® / aquapuls® NAMUR

The aquapuls® system module supplies pulses for controlling instruments, remote display, transmission and filling control units.



<b>aquapuls®</b>	
Pulse weighting <b>1 litre</b>	Art. No. 80113
Pulse weighting <b>10 litres</b>	Art. No. 80114
Pulse weighting <b>100 litres</b>	Art. No. 80115
Power supply	internal battery
Operating life	MnO <sub>2</sub> /Li 3 V battery 15 years
Pulse duration	1 litre = 50 ms / 100 litres = 5 s
Maximum switching capacity	48 VDC, 220 mA
Reverse flow monitoring	yes, with compensation
Ingress protection	IP 68
Ambient temperature	0 to 50 °C
Transport and storage temperature	-20 to 70 °C
Permissible ambient humidity	max. 98 % relative humidity, condensation permitted
Cable length, permanently attached	1.5 m

<b>aquapuls® NAMUR</b>	
Pulse weighting <b>1 litre</b>	Art. No. 80117
Pulse weighting <b>100 litres</b>	Art. No. 80119
Power supply	NAMUR DIN 19234
Pulse duration	50 ms
Maximum switching capacity	27 VDC, 27 mA
Reverse flow monitoring	yes, with compensation
Can be used as transmitter for SO interface	acc. to DIN 43 864
Ingress protection	IP 68
Ambient temperature	0 to 50 °C
Transport and storage temperature	-20 to 70 °C
Permissible ambient humidity	max. 98 % relative humidity, condensation permitted
Cable length, permanently attached	1.5 m

## aquadata® M-Bus

The aquadata® M-Bus system module supplies an M-Bus protocol and pulses for triggering devices controlling remote displays, data transmission and filling procedures. The system module has an internal battery when there is a power failure to the M-Bus.



aquadata® M-Bus	Art. No. 80517
Pulse value	<b>1 litre*</b> ; can be set to 1 - 1'000 litres
Power supply	max. 1.5 mA (standard load), battery rating
Internal battery	3 V Li, 6 + 4 reserve years operating life
<b>Pulse output</b>	Open Collector, max. 27 VDC, 27 mA
Reverse flow monitoring	yes, with compensation
Can be used as transmitter for SO interface	acc. to DIN 43 864
Pulse duration	50 ms
<b>Data interface</b>	M-Bus to EN 13757 (EN 1434-3), 300/2400 baud
Address	primary address 0-250 / secondary address 8-digit extended secondary address with manufacturer's ID
M-Bus data readout Telegram 1 (FCB:0)	current meter reading, due date, next due date, consumption at due date, identification number
M-Bus data readout Telegram 2 (FCB:1)	as Telegram 1 including 12 values of previous month
Protocol	production number, medium, pulse value, primary address, meter reading, date, time, due date, meter reading on due date
Meter reading	0 m <sup>3</sup> ; format: 00000,000 m <sup>3</sup> ; freely selectable
Medium	water*, cold water, hot water freely selectable
Due date	31.12.*; freely selectable
Parameterisation software	AMBUS® WIN
Ingress protection	IP 68
Ambient temperature, operation	0 °C to 50 °C
Ambient temperature, storage	- 20 °C to 60 °C
Ambient humidity	max. 98 % relative humidity, condensation permitted
Cable length	1.5 m, permanently attached
Pin assignment	M-Bus: white/black pulse: brown (+) / blue (-)

\* factory setting

## aquatarif®

The aquatarif® system module stores values on actual consumption and those of the previous year, peaks, the previous 400 days and 15 months as well as days with downtimes and leakages.



aquatarif®	Art. No. 80191	Art. No. 80220
Optical interface acc. to IEC 62056-21 (IEC 1107) for reading data	yes	-
CS interface with permanently attached 5 m cable	-	yes
Power supply	internal battery operating life >10 years	internal battery operating life >10 years
Ingress protection	IP66	IP68
Ambient temperature	0 to 50 °C	0 to 50 °C
Transport and storage temperature	-20 to 70 °C	-20 to 70 °C
Permissible ambient humidity	max. 98 % relative humidity	max. 98 % relative humidity, condensation permitted

### Art. No. 80192 additional CS interface for Art. No. 80119;

This consists of a plug-in terminal and a screwed cable connection. Maximum cable length 100 m, cross-section 0.5 mm<sup>2</sup>, cable to be supplied by the customer

## aquareader®

The aquareader® module is an automatic readout device with an M-Bus or CS interface. The module does not require a battery as it is supplied with energy when connected to a powered bus. If the water meter is equipped with a RFID-tag, the aquareader® will take the data from the tag, set its own parameters and thus be operational in seconds. Upon request, the aquareader® system module reads out the current meter reading, the identification number, the nominal width and the medium. It can then be disconnected again from the bus. Readouts and manual configuration require AMBUS® WIN II software for the M-Bus version and AMBILL® pocket for the CS version (for system requirements, see software documentation).



<b>aquareader® CS</b>	<b>Version</b>	<b>Art. No.</b>
CS interface	with socket system Volag (IP 54)	80754
	with socket system BKW (IP 32)	80756
	with cable gland (IP 66)	80755
Reading	via CS interface on the meter or via remote transmission	
Readout	actual meter reading, identification number of meter, medium, nominal width	
Data interface	CS interface according IEC 62056-21 (IEC 1107), 300 to 9600 Baud	
Parameterization	automatically from data of RFID tag or manually with parameterization software	
Parameterization software	AMBILL® pocket	
Ingress protection	IP 66	
Power supply	via the CS interface	
Ambient temperature	0 to 55 °C	
Transport and storage temperature	-20 to 70 °C	
Permissible ambient humidity	max. 98% relative humidity	



<b>aquareader® M-Bus</b>	<b>Version</b>	<b>Art. No.</b>
M-Bus	with socket system Volag and (IP 54)	80751
	with socket system BKW (IP 32)	80753
	with cable gland (IP 66)	80752
Reading	via M-Bus interface on the meter or via remote transmission with the radio controller aquaradio® smart M-Bus	
Readout	actual meter reading, identification number of meter, medium, nominal width	
Data interface	M-Bus according EN 13757 (EN 1434-3), 300/ <b>2400*</b> /9600 Baud	
Addressing	primary address <b>0*</b> -250 / secondary address 8-digit extended secondary address with manufacturer's ID	
Parameterization	automatically from data of RFID tag or manually with AMBUS® Win II	
Parameterization software	AMBUS® Win II	
Ingress protection	IP 66	
Power supply	M-Bus max. 1.5 mA (standard load)	
Ambient temperature	0 to 55 °C	
Transport and storage temperature	-20 to 70 °C	
Permissible ambient humidity	max. 98% relative humidity	

\* **Factory settings**

## aquaoci® 9600



The aquaoci® optical reading head is used for reading from devices with an optical (EN 61107) interface - IEC 62056-21 (IEC 1107).

- |                       |                                  |
|-----------------------|----------------------------------|
| Reading head          | • Art. No. 80153                 |
| Plug for reading head | • Please refer to the price list |

## K01-Blue



The readout unit „K01-Blue“ converts optical signals of devices with interface „IEC 62 056-21 (IEC 1107)“ in Bluetooth signals, which can be read by any PDA/PC with Bluetooth interface. Additionally it has a CS/CL-interface.

- |                                    |                  |
|------------------------------------|------------------|
| Readout unit<br>(incl. recharger ) | • Art. No. 80249 |
|------------------------------------|------------------|



## Mounting instructions

### Piping

Ensure that the measuring and ancillary devices can be easily accessed for reading and operation. The measuring instruments should be mounted with the dial horizontal.

The piping must be designed so that the measuring instrument is always filled with fluid when in operation and that no air bubbles are present. The TOPAS PMW-basic hot water meter requires no straight inlet or outlet paths.

### Installing measuring instruments and accessories

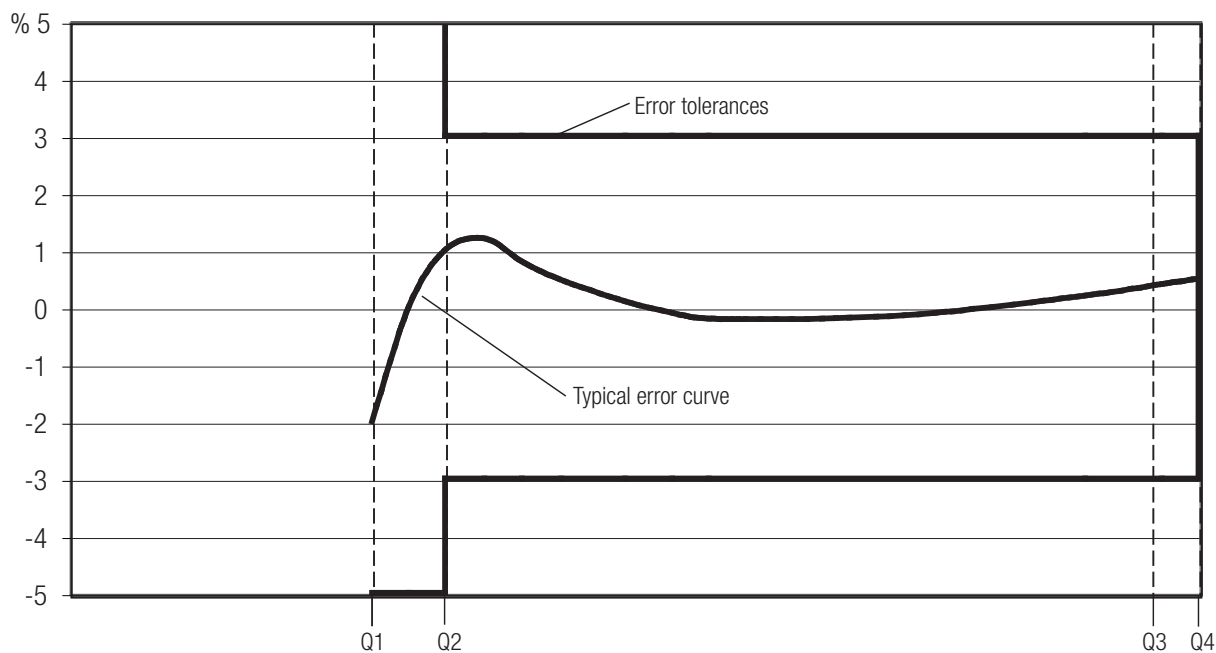
The flowmeters are laid out according to the load values and the piping is to be altered where required. The type of measuring instruments and accessories used depends on the maximum operating conditions to be expected:

- Flowrate
- Operating pressure
- Operating temperature
- Ambient temperature

## Error tolerances and metrological classes 2

### According to Directive OIML R 49

Reference conditions: liquid measured: water, temperature: 55 °C

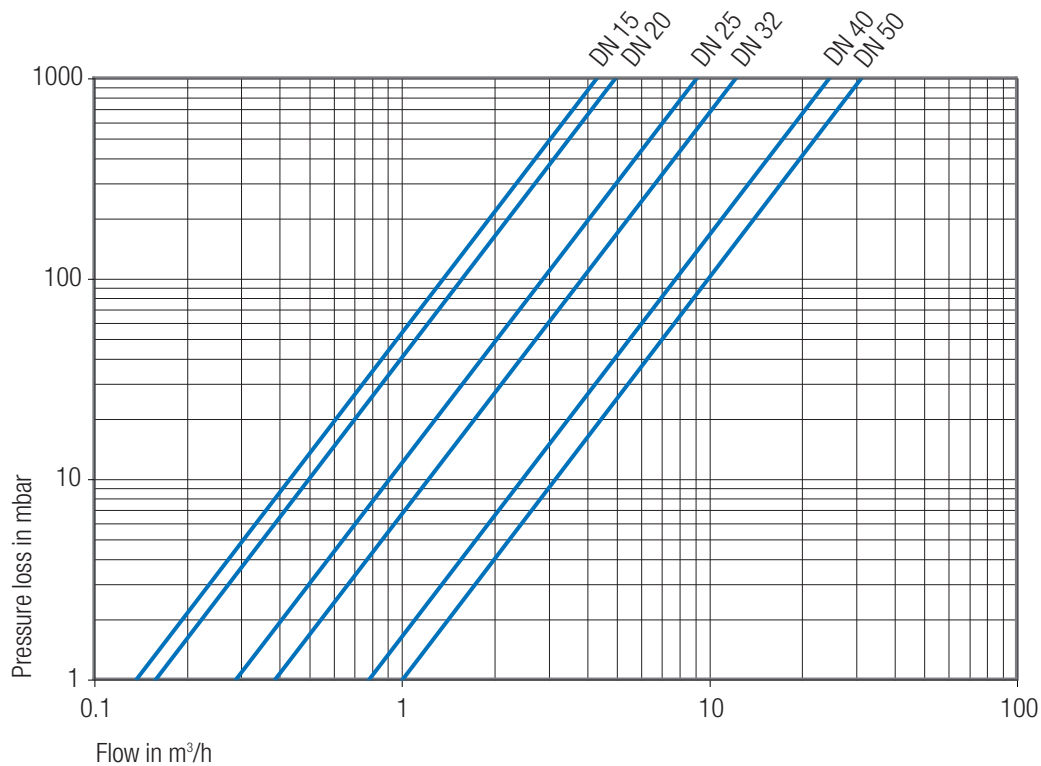


$Q_1 < Q < Q_2$  lower measuring range

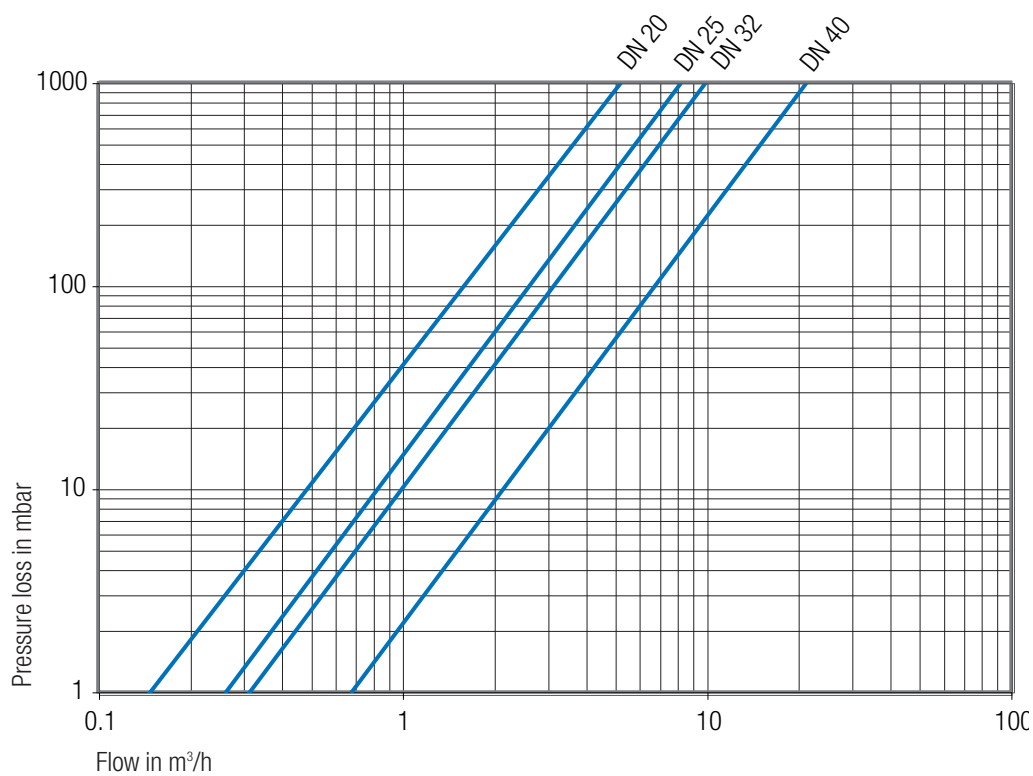
$Q_2 \leq Q < Q_4$  upper measuring range

# Pressure loss curves

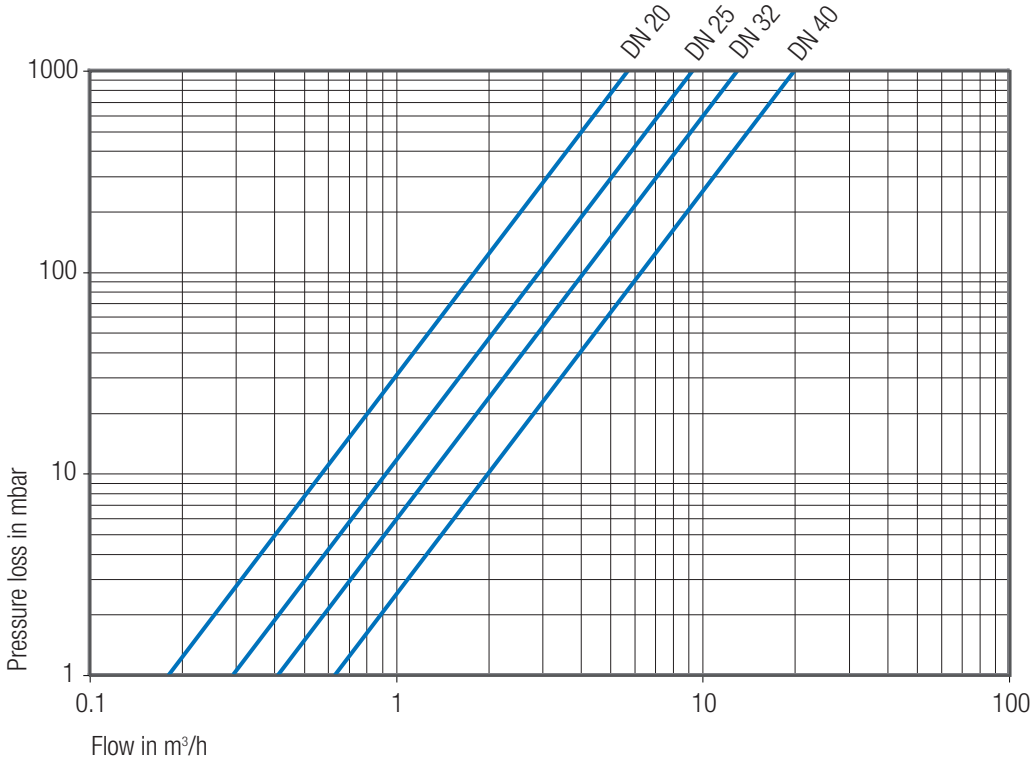
## TOPAS PMW-basic



## TOPAS PMWF-basic



**TOPAS PMWS-basic**



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