

WESAN WP

WOLTMAN METER

SAPPEL



APPLICATION

The bulk water meter WESAN WP can be used for measuring volumes of cold water (up to 50 °C) in supply lines with high flow at low pressure loss. The measuring chamber can be replaced without removing the meter from the pipe. Equipped with a rotating glass metal register as standard, WESAN WP can be fitted with different pulse emitters.

FEATURES

- ▶ For horizontal and vertical installation
- ▶ Removeable measuring insert
- ▶ Sealed measuring insert for better accuracy
- ▶ Encapsulated and rotating counter of glass/copper IP68
- ▶ Integrated measurement outputs as standard
- ▶ Sensors for remote readout (digital) and flow measurement (analogue)

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GENERAL

WESAN WP	
Medium temperature range	°C 0 ... 30
Maximum media temperature range	°C 0 ... 50
Ambient operating temperature	°C 0 ... 55
Ambient storage temperature	°C 0 ... 55
Protection class	IP 68

TECHNICAL DATA

Nominal diameter	DN	mm	50	65	80	100	125	150
Nominal flow rate (DIN ISO 4064)	Q _n	m ³ /h	15	25	40	60	100	150
Permissible continuous load (HY)	Q _n	m ³ /h	30	50	120	230	250	250
Maximum flow rate (short-term)	Q _{max}	m ³ /h	90	120	200	300	350	350
Transition flow rate horizontal	Q _t	m ³ /h	1	1.2	0.8	1.8	2	4
Transition flow rate vertical	Q _t	m ³ /h	1.8	2	0.8	1.8	2	4
Minimum flow rate horizontal	Q _{min}	m ³ /h	0.35	0.45	0.5	0.6	0.6	1.8
Minimum flow rate vertical	Q _{min}	m ³ /h	0.4	0.5	0.5	0.6	0.6	1.8
Starting flow rate		l/h	90	130	160	190	190	1500
Flow rate at 0.1 bar pressure loss		m ³ /h	35	63	115	115	105	310
Nominal pressure	PN	bar	16	16	10 / 16	16	16	16

Nominal diameter	DN	mm	200	250	300	400	500
Nominal flow rate (DIN ISO 4064)	Q _n	m ³ /h	250	400	600	1000	1500
Permissible continuous load (HY)	Q _n	m ³ /h	325	600	700	1250	2000
Maximum flow rate (short-term)	Q _{max}	m ³ /h	650	1200	1500	2800	4200
Transition flow rate horizontal	Q _t	m ³ /h	6	20	50	50	80
Transition flow rate vertical	Q _t	m ³ /h	6	-	-	-	-
Minimum flow rate horizontal	Q _{min}	m ³ /h	4	12	18	30	45
Minimum flow rate vertical	Q _{min}	m ³ /h	4	-	-	-	-
Starting flow rate		l/h	2500	5000	10000	15000	20000
Flow rate at 0.1 bar pressure loss		m ³ /h	550	800	1250	3000	6000
Nominal pressure	PN	bar	16	10 / 16	10 / 16	10 / 16	10 / 16

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PULSE OUTPUTS

Nominal diameter	DN	mm	50	65	80	100	125	150
Reed switch 570* - pulse value 1		l/pulse	100	100	100	100	100	1000
Reed switch 570* - pulse value 2		l/pulse	1000	1000	1000	1000	1000	10000
Special pulse value		l/pulse	25 / 50	25 / 50	25 / 50	25 / 50	25 / 50	250 / 500
IR transmitter		l/pulse	1	1	1	1	1	10

Nominal diameter	DN	mm	200	250	300	400	500
Reed switch 570* - pulse value 1		l/pulse	1000	1000	1000	10000	10000
Reed switch 570* - pulse value 2		l/pulse	10000	10000	10000	100000	100000
Special pulse value		l/pulse	250 / 500	250 / 500	250 / 500	2500 / 5000	2500 / 5000
IR transmitter		l/pulse	10	10	10	100	100

* For more information about reed switch 570 please have a look at the specific datasheet.

DISPLAY RANGE

Nominal diameter	DN	mm	50	65	80	100	125	150
0.5 l ... 999,999 m ³			
5.0 l ... 9,999,999 m ³								.
50 l ... 99,999,999 m ³								

Nominal diameter	DN	mm	200	250	300	400	500
0.5 l ... 999,999 m ³							
5.0 l ... 9,999,999 m ³			.	.	.		
50 l ... 99,999,999 m ³						.	.

APPROVAL

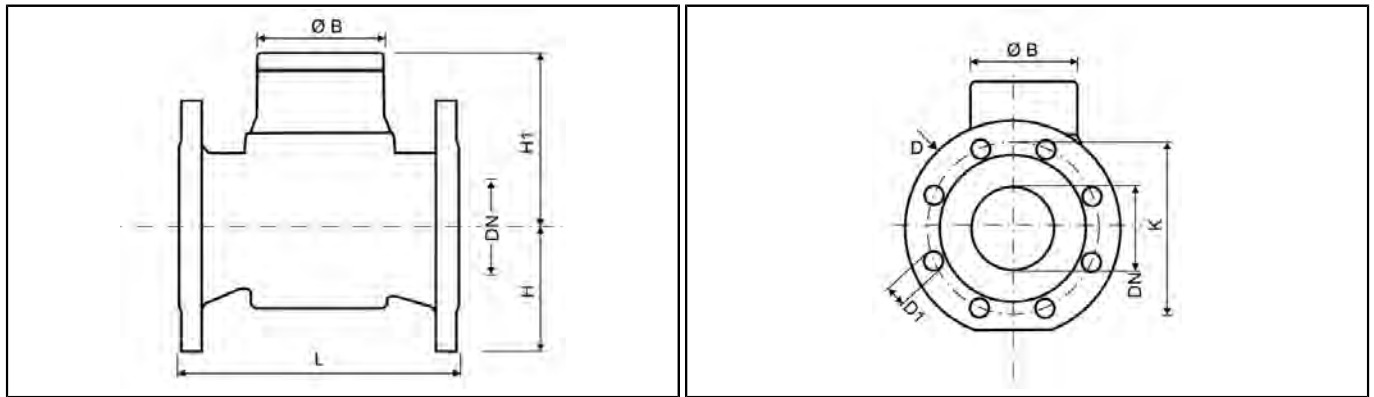
Nominal diameter	DN	mm	50	65	80	100	125	150
EC			D 92 / 6.132.33D 92 / 6.132.33D 02 / 6.132.42D 02 / 6.132.42D 02 / 6.132.42D 02 / 6.132.43					
National			-	-	-	-	-	-
Metrological class			B•H	B•H	B	B	B	B

Nominal diameter	DN	mm	200	250	300	400	500
EC			D 02 / 6.132.43				
National			-	6.132 / 06.24	6.132 / 06.24	6.132 / 92.07	6.132 / 92.07
Metrological class			B	B	B	B	B

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DIMENSIONS



Nominal diameter	DN	mm	50	65	80	100	125	150
Overall length	L	mm	200	200	200 / 225	250	250	300
Flange diameter	D	mm	165	185	200	220	250	285
Hole circle diameter PN 10 / PN 16	K	mm	- / 125	- / 145	160 / 160	- / 180	- / 210	- / 240
Number of screwholes PN 10 / PN 16		pcs	- / 4	- / 4	4 / 8	- / 8	- / 8	- / 8
Screw hole diameter PN 10 / PN 16	D1	mm	- / 18	- / 18	18 / 18	- / 18	- / 18	- / 22
Height	H	mm	75	83	89	105	115	135
Height	H1	mm	123	123	154	154	154	245
Height to remove measuring insert		mm	225	225	275	275	275	475
Meter width		mm	155	155	200	220	250	285
Diameter	Ø B	mm	110	110	110	110	110	110
Weight		kg	10.2	11.2	13	13	21.5	39

Nominal diameter	DN	mm	200	250	300	400	500
Overall length	L	mm	350	450	500	500	500
Flange diameter	D	mm	340	405	460	580	715
Hole circle diameter PN 10 / PN 16	K	mm	295 / 295	350 / 355	400 / 410	515 / 525	620 / 650
Number of screwholes PN 10 / PN 16		pcs	8 / 12	12 / 12	12 / 12	16 / 16	20 / 20
Screw hole diameter PN 10 / PN 16	D1	mm	22 / 22	23 / 27	23 / 27	27 / 30	27 / 33
Height	H	mm	163	193	230	290	360
Height	H1	mm	245	242	290	311	361
Height to remove measuring insert		mm	475	472	520	580	660
Meter width		mm	340	405	460	580	715
Diameter	Ø B	mm	110	110	110	110	110
Weight		kg	47	75	165	190	300

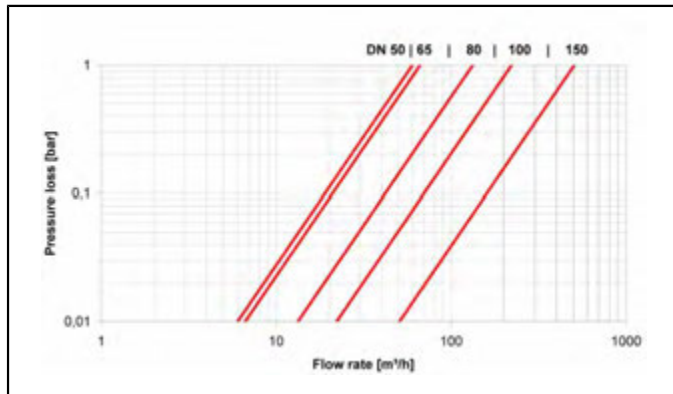
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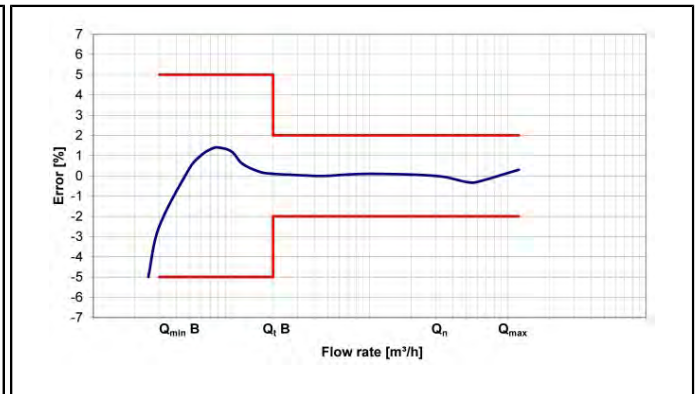
SPECIAL VERSIONS

- High-pressure version up to 25/40 bar
- Flange for ANSI and BS
- CuZn parts in V2A
- Temperature up to 90 °C
- Different pulse outputs

PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph

SAPPEL

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Subject to technical adjustments

 smart in solutions

06.05.2010 - 5

**WATER SUPPLY MANAGEMENT
FOR IMPROVEMENT OF
TECHNICAL SKILL AND
KNOWLEDGE OF
LOCAL WATER SUPPLY UTILITIES
IN NEPAL**



DECEMBER 2012

Water Meters

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Content

- **Why Water Meter?**
- **Choose the RIGHT water meter!**
- **Quality control at Delivery**
- **Water meter and Service connection**
- **Ensuring the Accuracy of water meter**

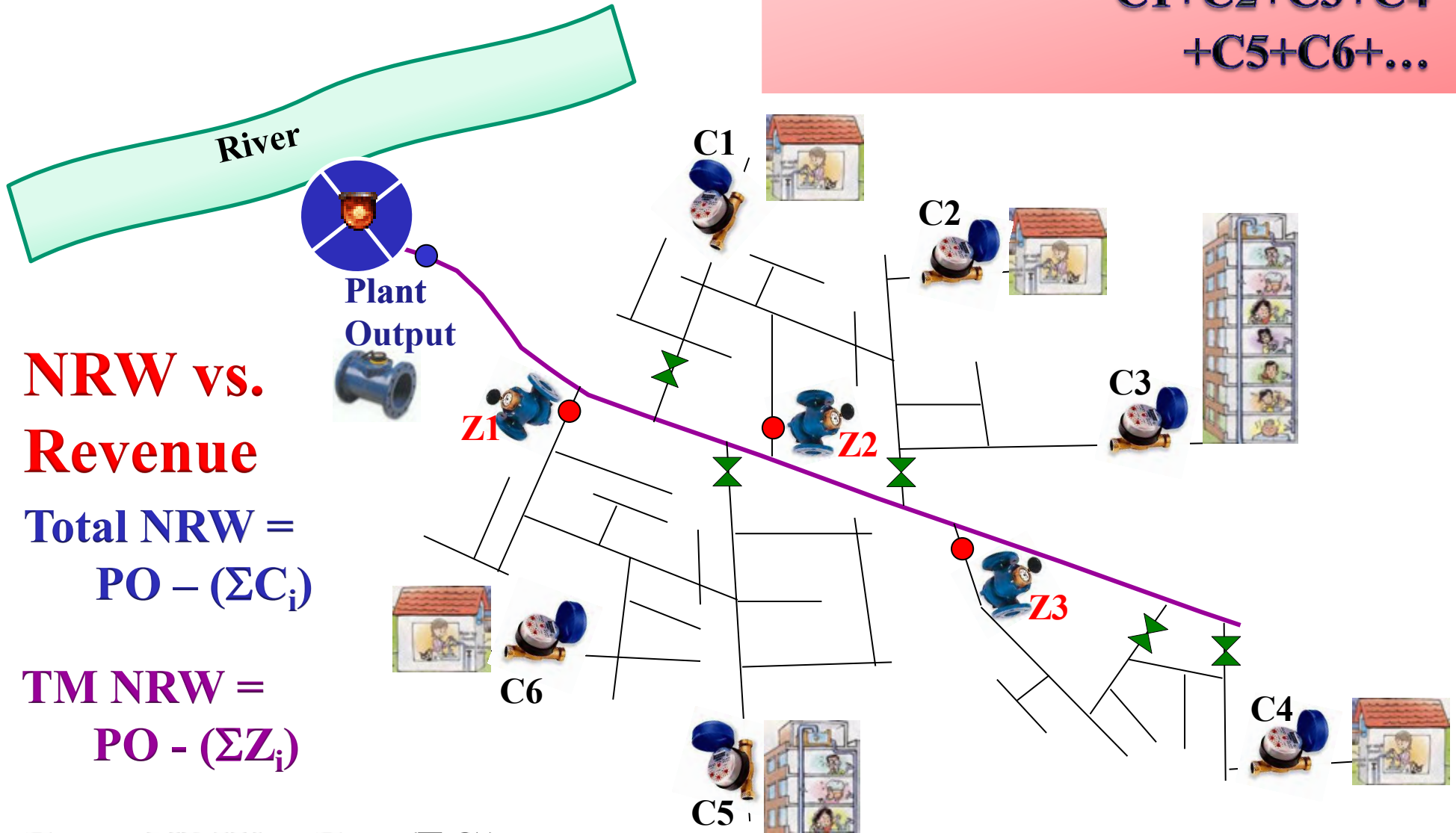
- **Why Water Meter?**

- **Consumption Counting**

- **NRW vs. Revenue**

Consumption Counting

$$= C1+C2+C3+C4 \\ +C5+C6+...$$



**NRW vs.
Revenue**

$$\text{Total NRW} = \\ \text{PO} - (\Sigma C_i)$$

$$\text{TM NRW} = \\ \text{PO} - (\Sigma Z_i)$$

$$\text{Zone}_i \text{ NRW} = Z_i - (\Sigma C_i)$$

- **Choose the RIGHT water meter !**

- **Accuracy**

- **Conditions of Service connection**



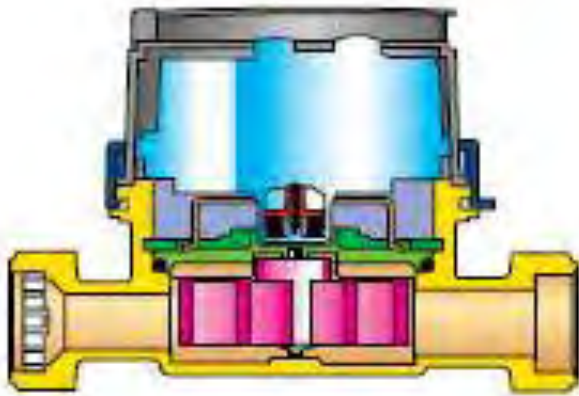
Type of WM



Single Jet
(velocity)

Dry

Magnetic coupling
Water condense

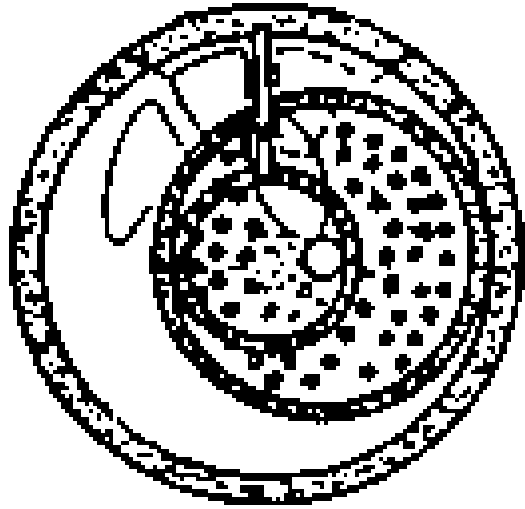


Multi Jet
(velocity)

Dry

Magnetic coupling
Water condense





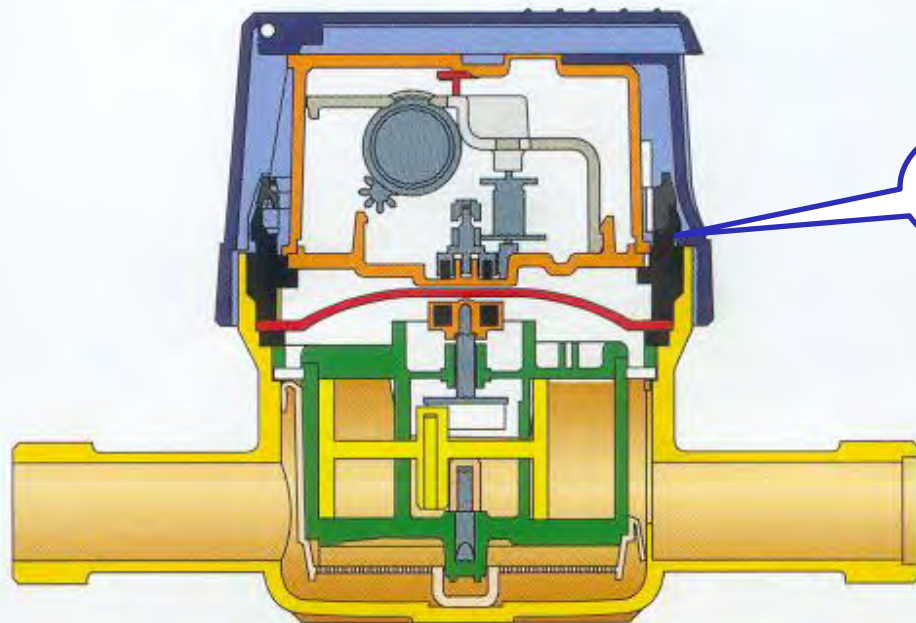
Oscillating piston (volumetric)

Dry

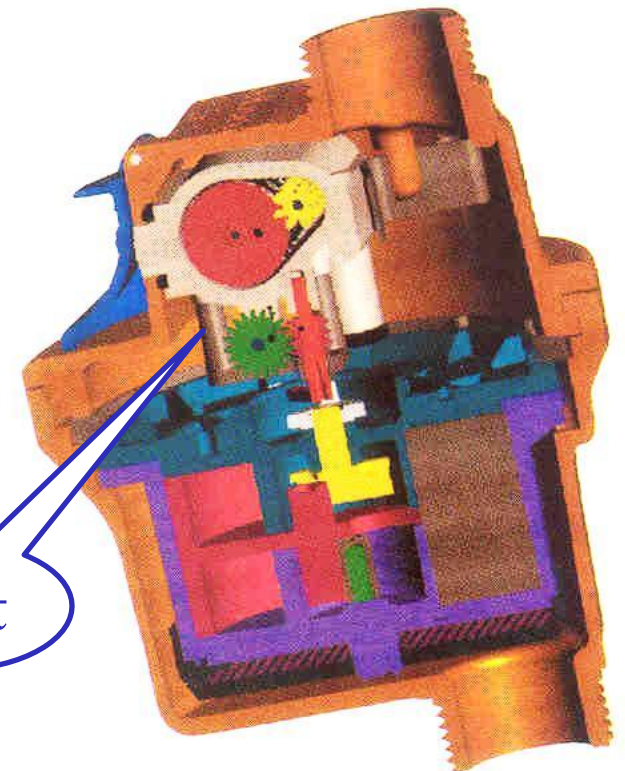
Magnetic coupling

Water condense

Wet



Dry



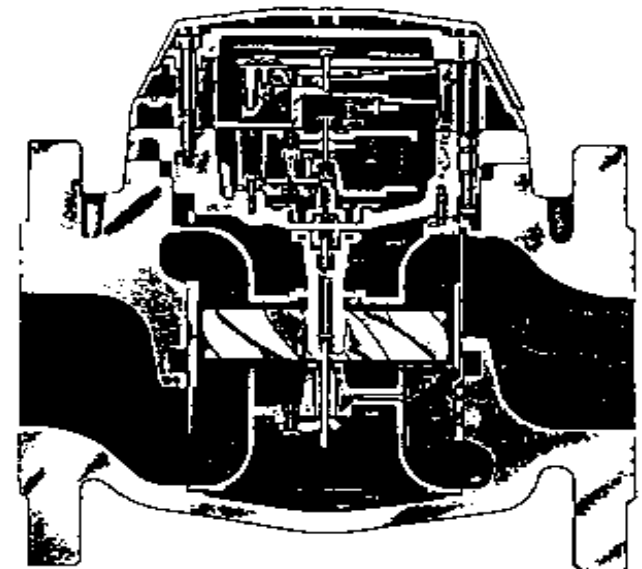
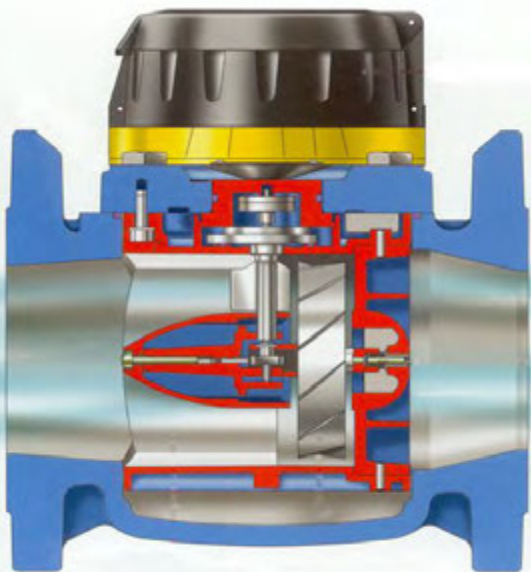
Wet



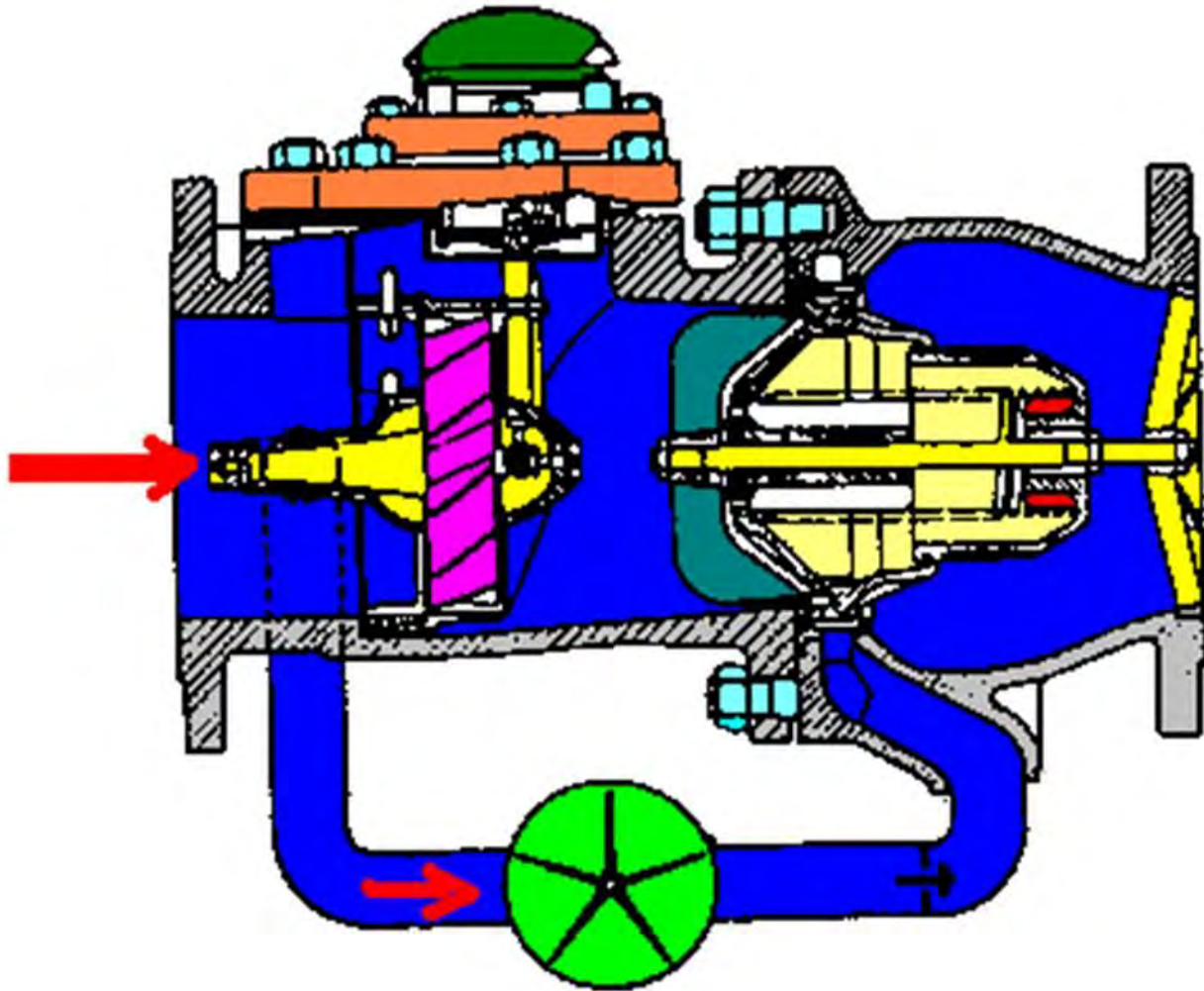
Woltman
(velocity)

Horizontal
Vertical

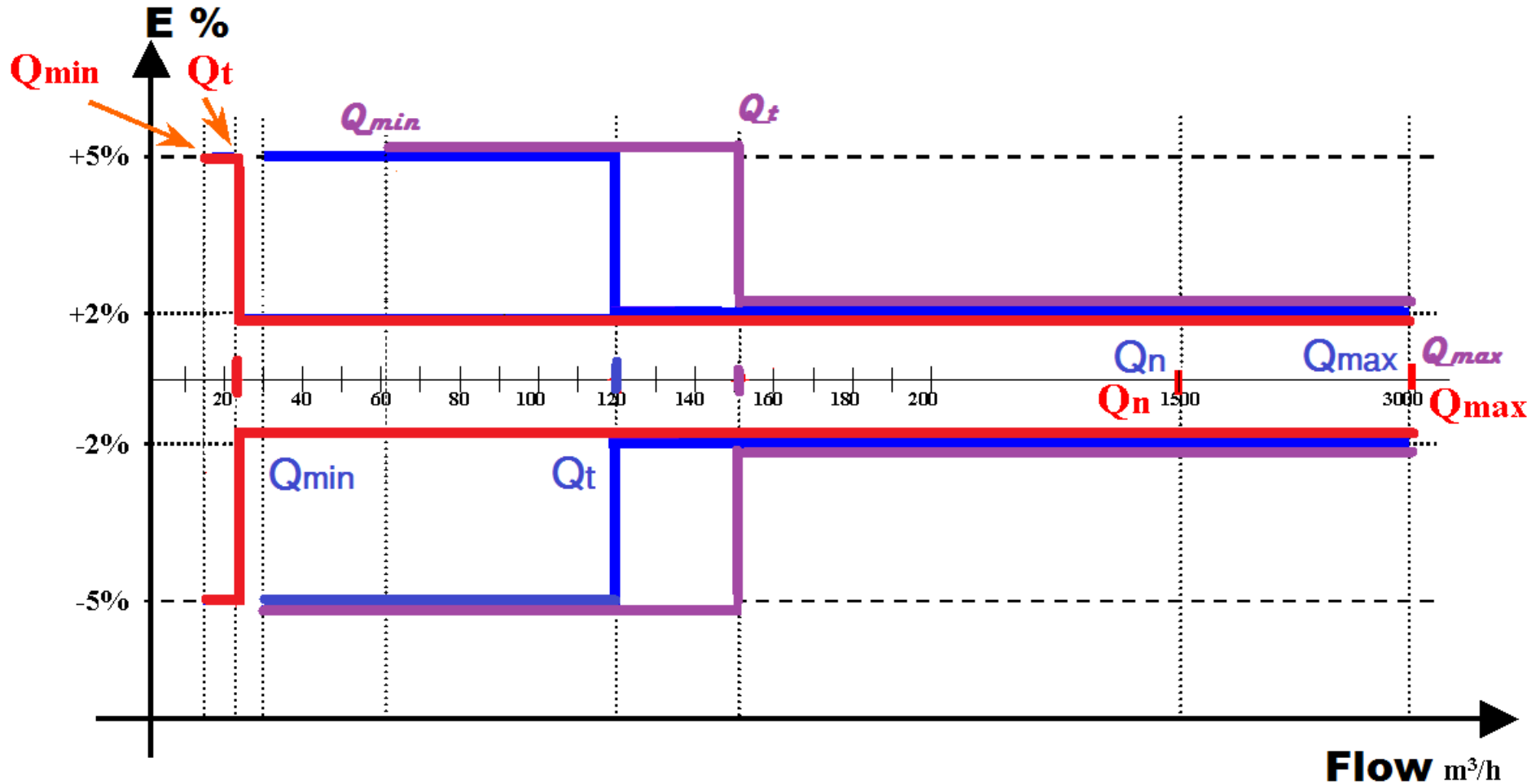
Dry
Magnetic coupling



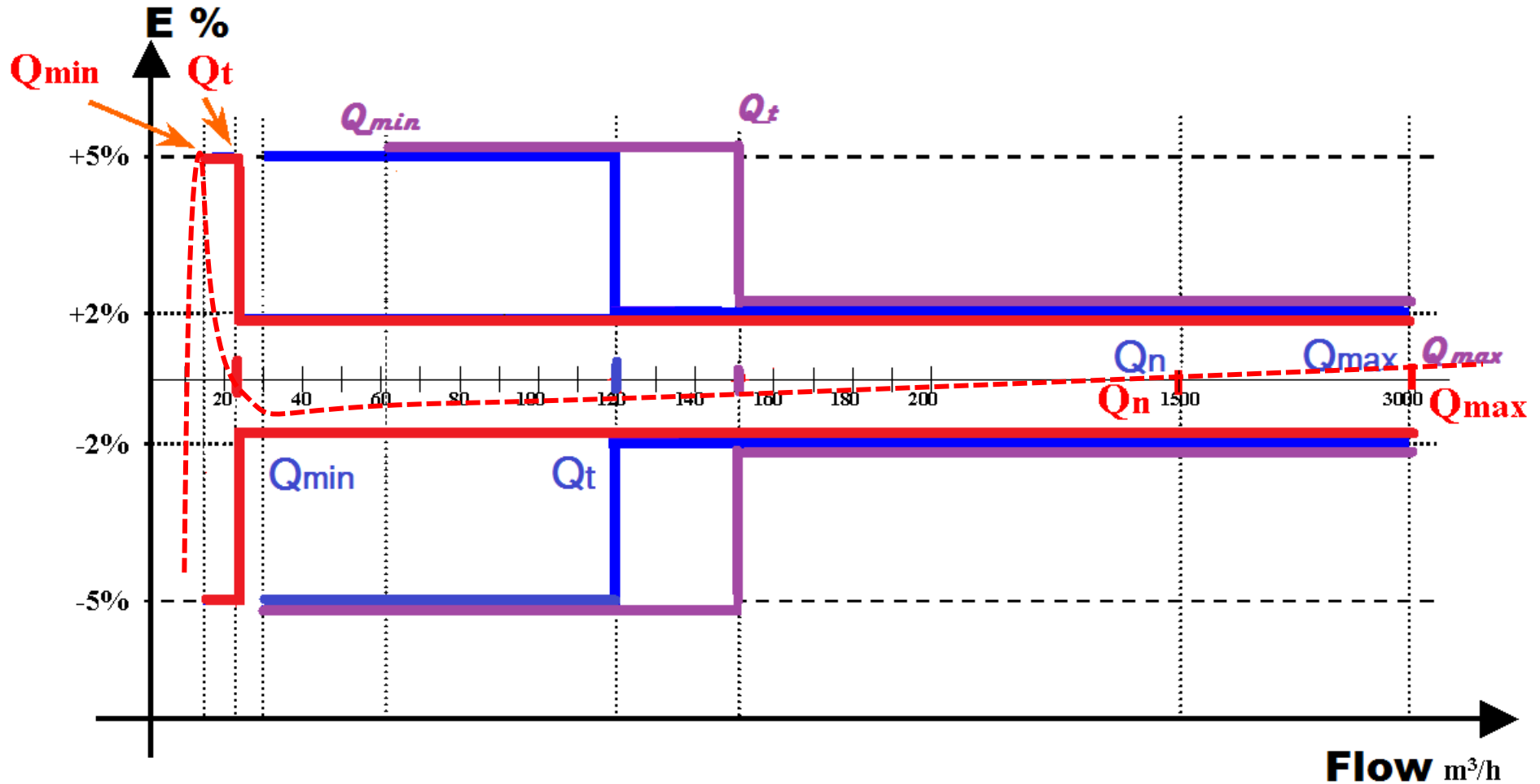
Compound



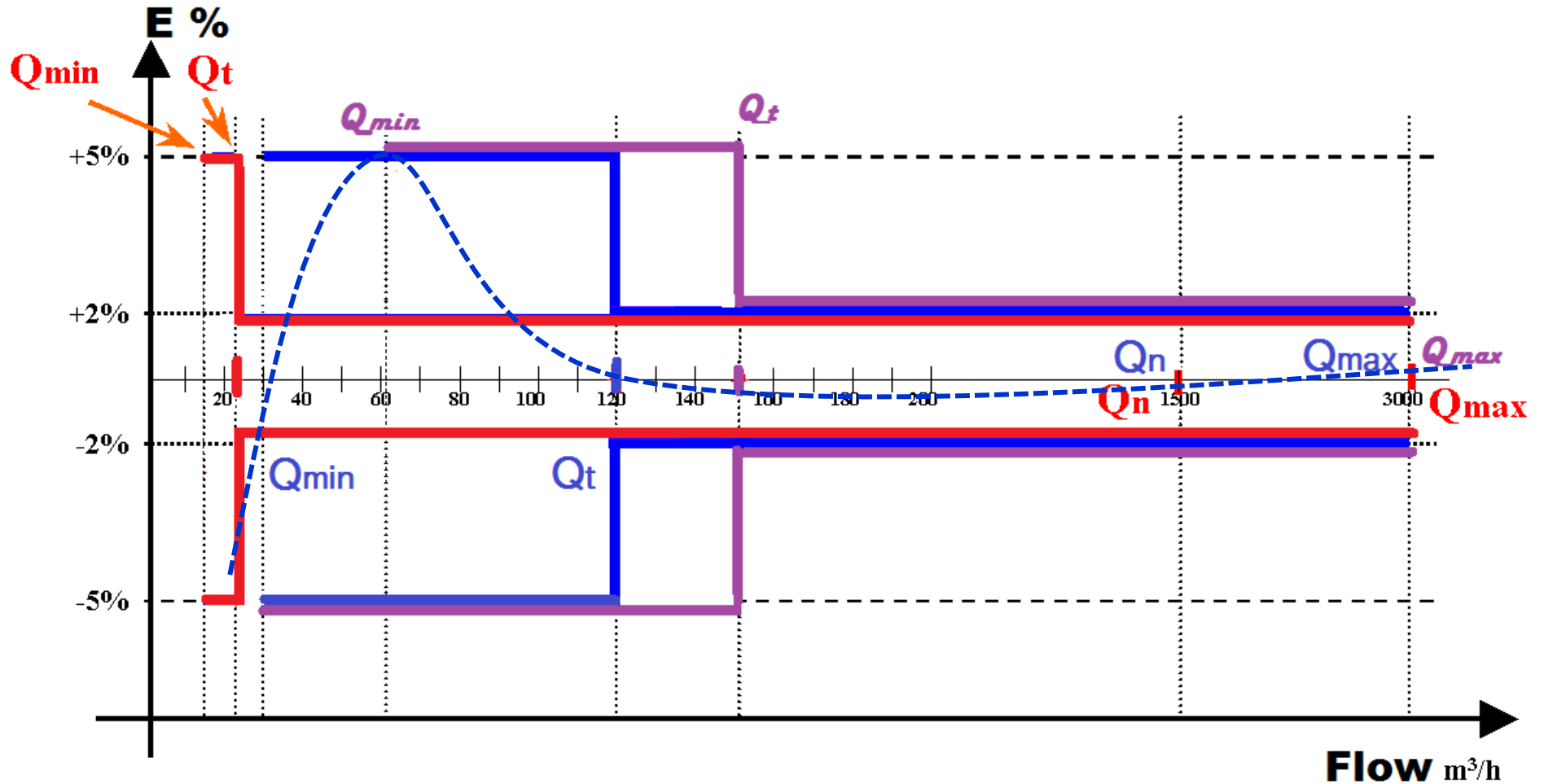
Meter Class : D, C, B, A (ISO 4064)



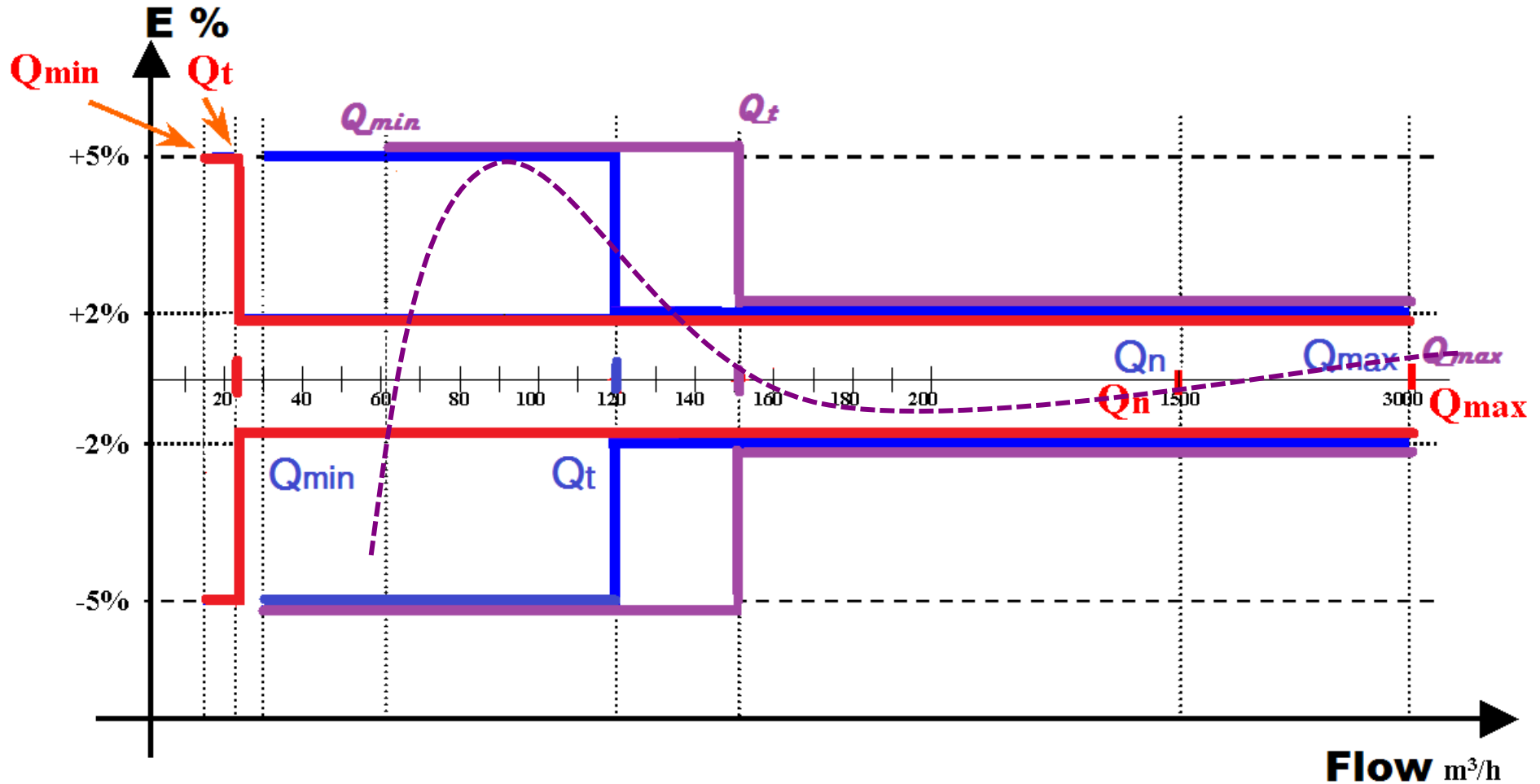
Meter Class : D, C, B, A (ISO 4064)



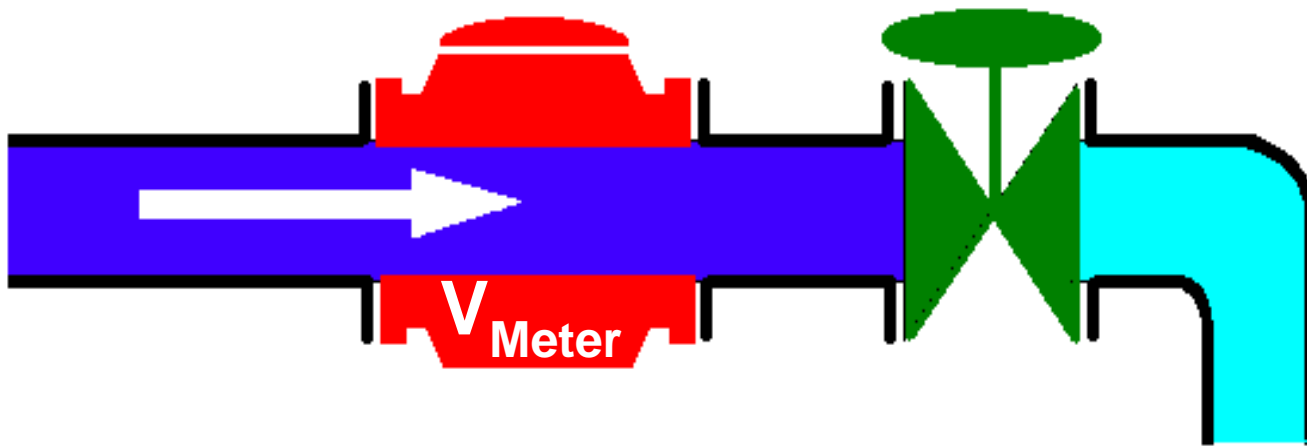
Meter Class : D, C, B, A (ISO 4064)



Meter Class : D, C, B, A (ISO 4064)



ACCURATE =
Real Error (E) ≤
Acceptable Error (±5 or 2%)



$$E (\%) = 100 \times (V_M - V_T) / V_T$$



Besides Accuracy :

Conditions of Service connection

- ✓ **Durability (robust)**
- ✓ **Easy maintenance**
- ✓ **Resistance against**

damage and modification



Meters Installation - Singapore



Meters Installation - Australia



Meters Installation - Philippines



Meters Installation



- **Quality control at Delivery**

- **Clear technical specification**

- **Quality control**

Clear technical specification

Type of Water : Cold or Hot

Standard :

- **ISO 4064:1993**
- **OIML R49:2003**
- **EN14154:2004**

Class : D, C, B, or A

Type of Meter :

- **Dry, Wet**
 - **Piston, Impeller, Woltman, ...**
 - **Single, Compound**
 - **Analog, Electronic**

Clear technical specification ...

Housing / Body material :

➤ **Brass**

➤ **Plastic**

➤ **Cast iron**

Installation : any position, influenced by magnetic field,
resistance to illegal tampering

Calibration : With / Without

Dimension : Length, Wide, High

Type of Connection : threaded / flange

Maintenance : spare part.

Quality Control

❖ At delivery

❖ In service

At delivery (clear condition in purchase contract)

1. General Condition
2. Leak at high pressure
3. Pressure loss
4. Accuracy



General Condition

- Visible condition of water meters
- Mark, etc.

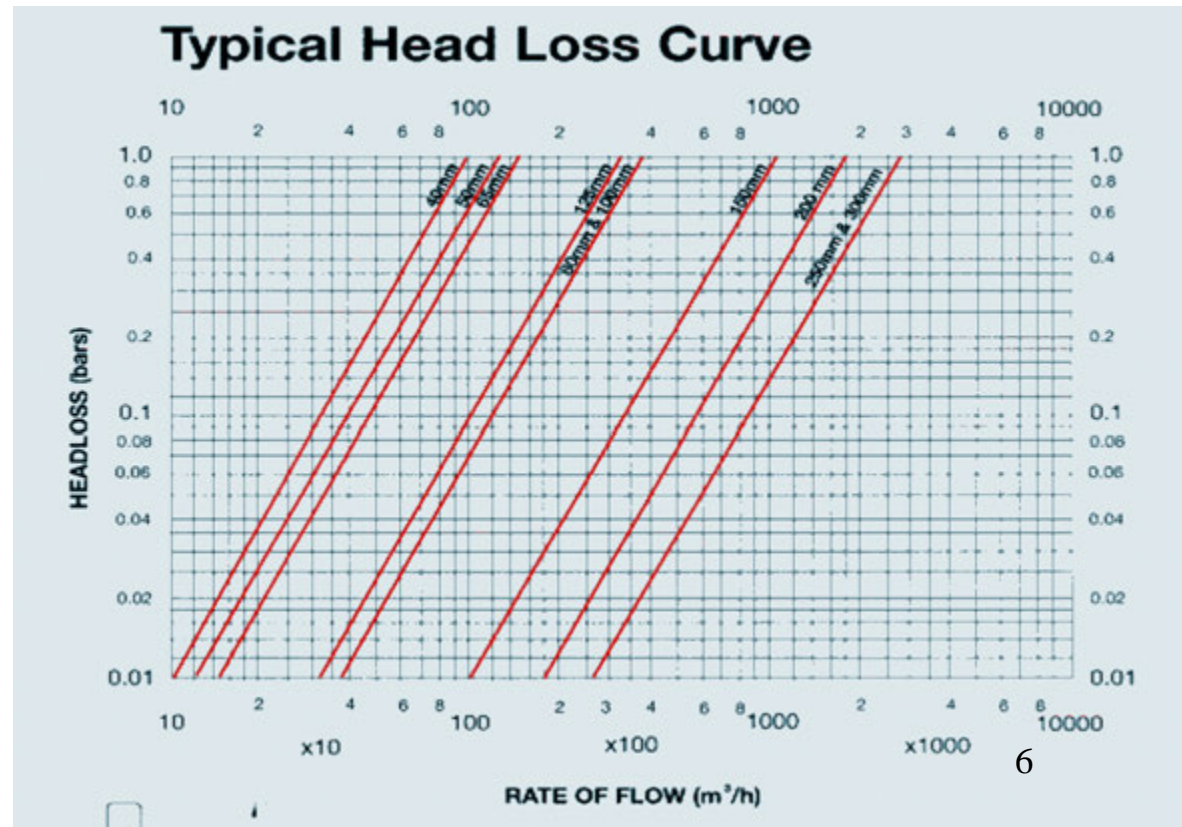


Leak at high pressure

-Put water meter under 1.6 x Nominal Pressure of 15min. and check if any leak to out site or in site of water meter (dry type)

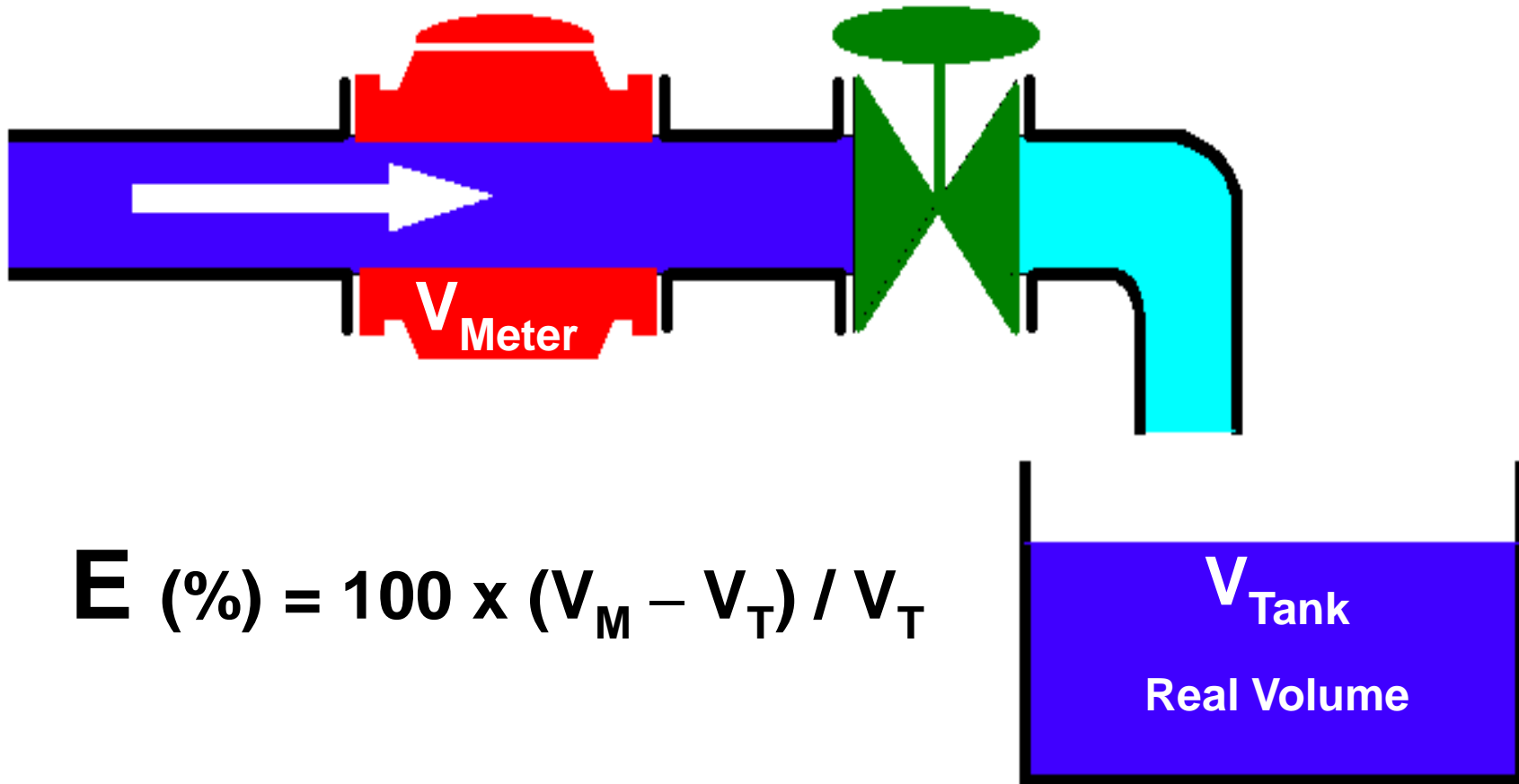
Pressure Loss/Drop

-Put water meter under operation and check Pressure loss/ Head loss not response to technical specification



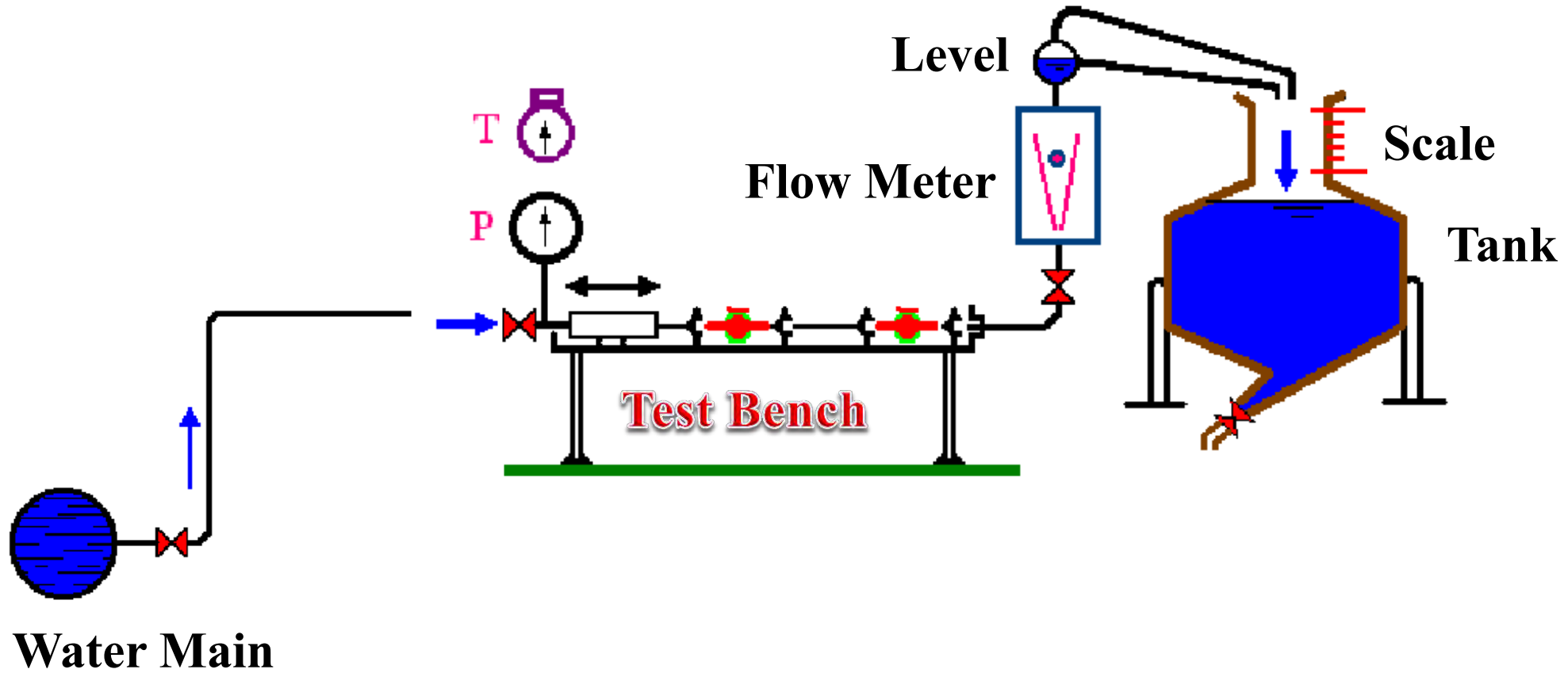
Accuracy = Real Error (E) \leq Acceptable Error (± 5 or 2%)

Principle

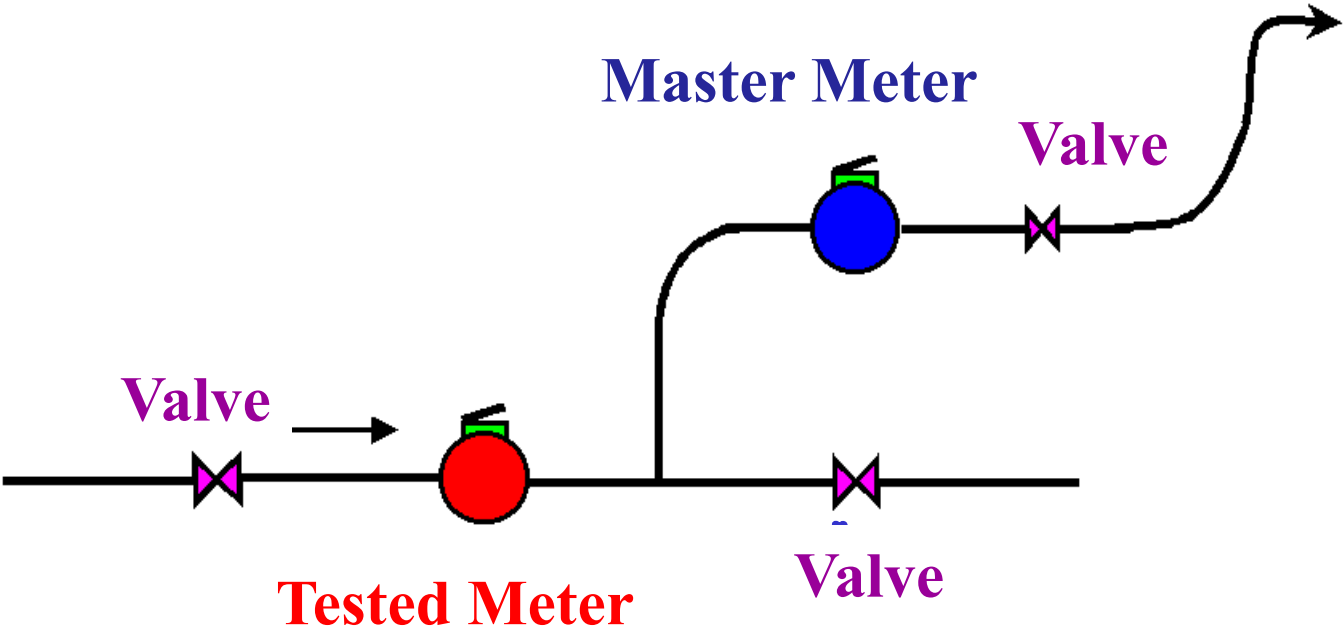


$$E (\%) = 100 \times (V_M - V_T) / V_T$$

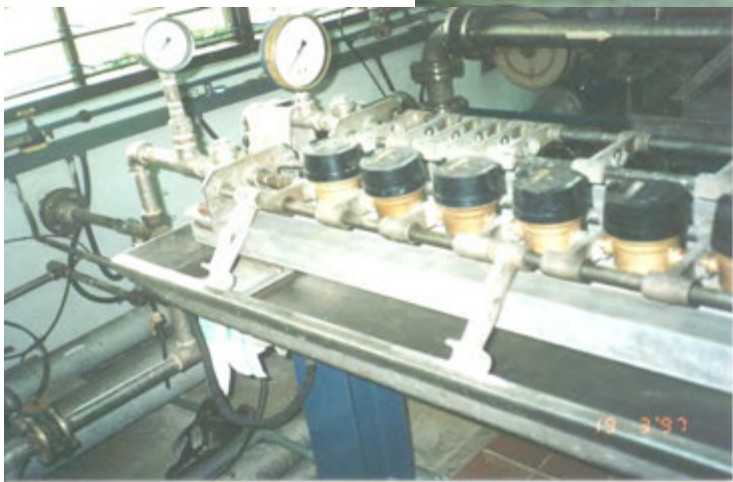
Test Bench



Master Meter







Singapore₁

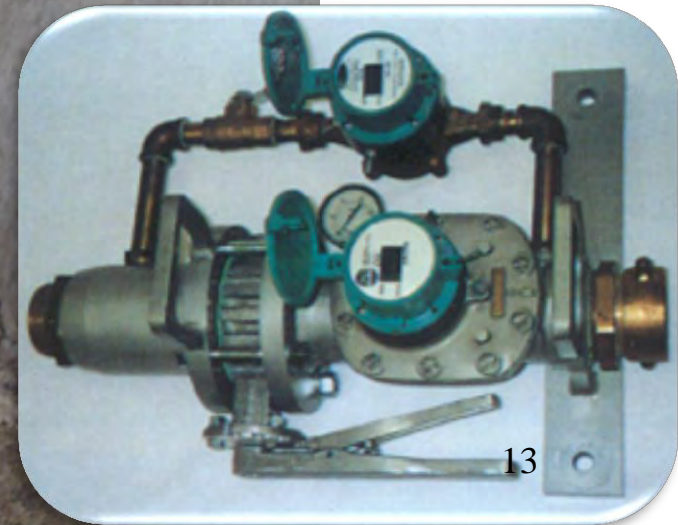
Japan



In service : Accuracy



**Master Meter on Site
or Test Bench at Workshop**

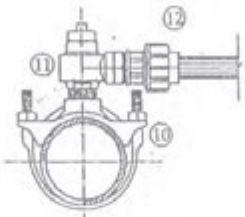


- **Water meter and Service connection**

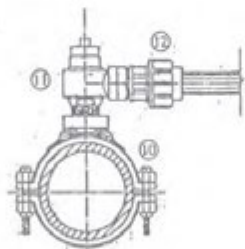
- **Standardization**

- **Sizing of connection**

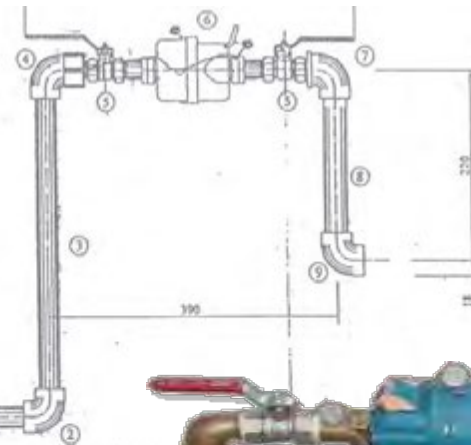
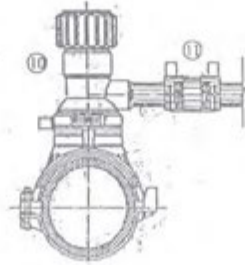
Type - A Connection to DIC Main Pipe



Type-B Connection to HDPE Main Pipe



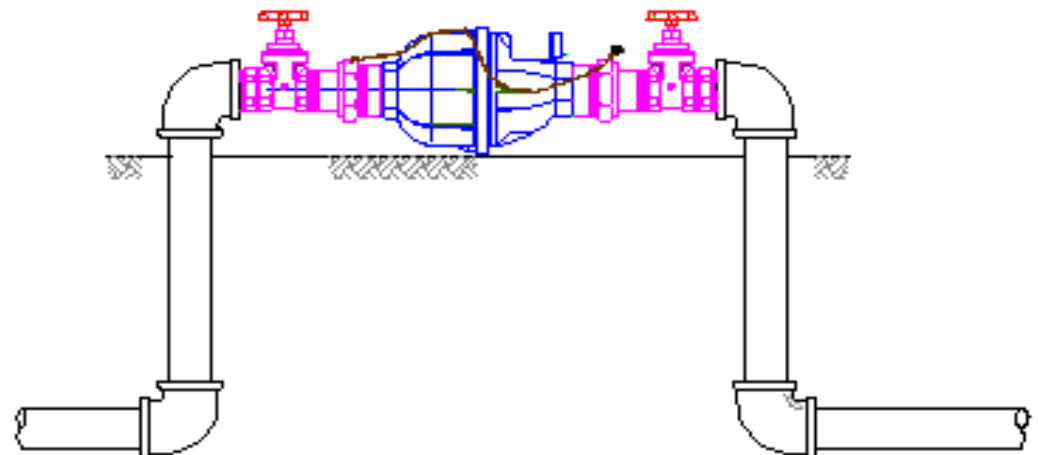
Type-C Connection to HDPE Main Pipe



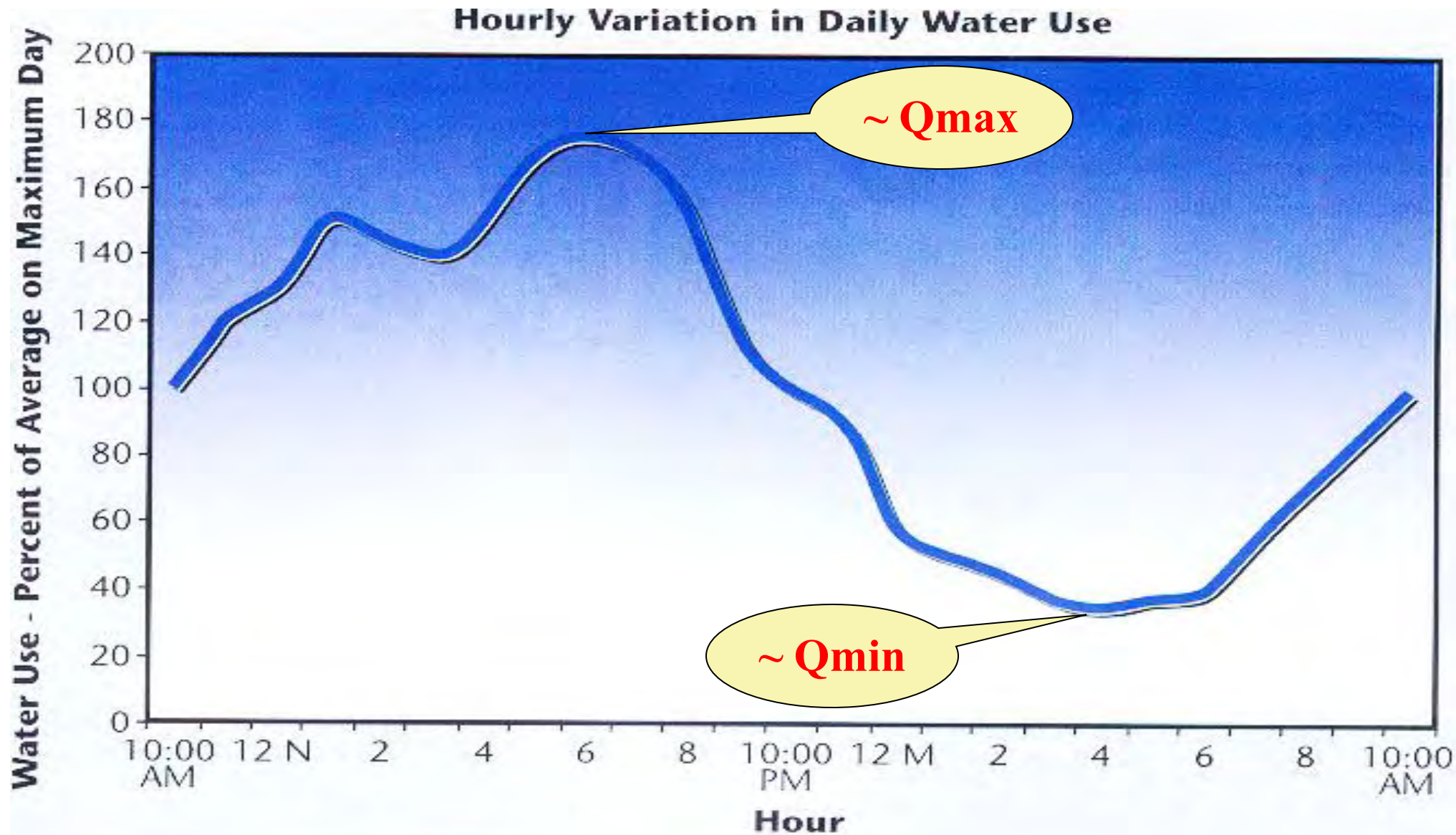
LIST OF FITTING

No	Description	Size	Unit	Quantity
1	HDPE Pipe	25mm	m	Dependent on location
2	HDPE Socket Fusion Elbow 90°	25mm	PC	1
3	HDPE Pipe	25mm	mm	500
4	HDPE Socket Fusion Male with Socket Fusion	25 X 1/2"	PC	1
5	Break Ball Valve	1/2"	PC	2
6	Valve Insulator Filter Water	1/2mm	PC	1
7	PVC Socket Male and Socket Elbow 90°	25mm X 1/2"	PC	1
8	PVC Socket Pipe	25mm	mm	220
9	PVC Elbow 90°	25mm	PC	1
Connection to the Main Type-A				
10	Flange Gasket	Ø Main Pipe X 1"	PC	1
11	Break Female	1/2"	PC	1
12	Compression Male Adapter	25mm X 1/2"	PC	1
Connection to the Main Type-B				
10	Clamp Gasket	Ø Main Pipe X 1"	PC	1
11	Break Female	1/2"	PC	1
12	Compression Male Adapter	25mm X 1/2"	PC	1

Standardization

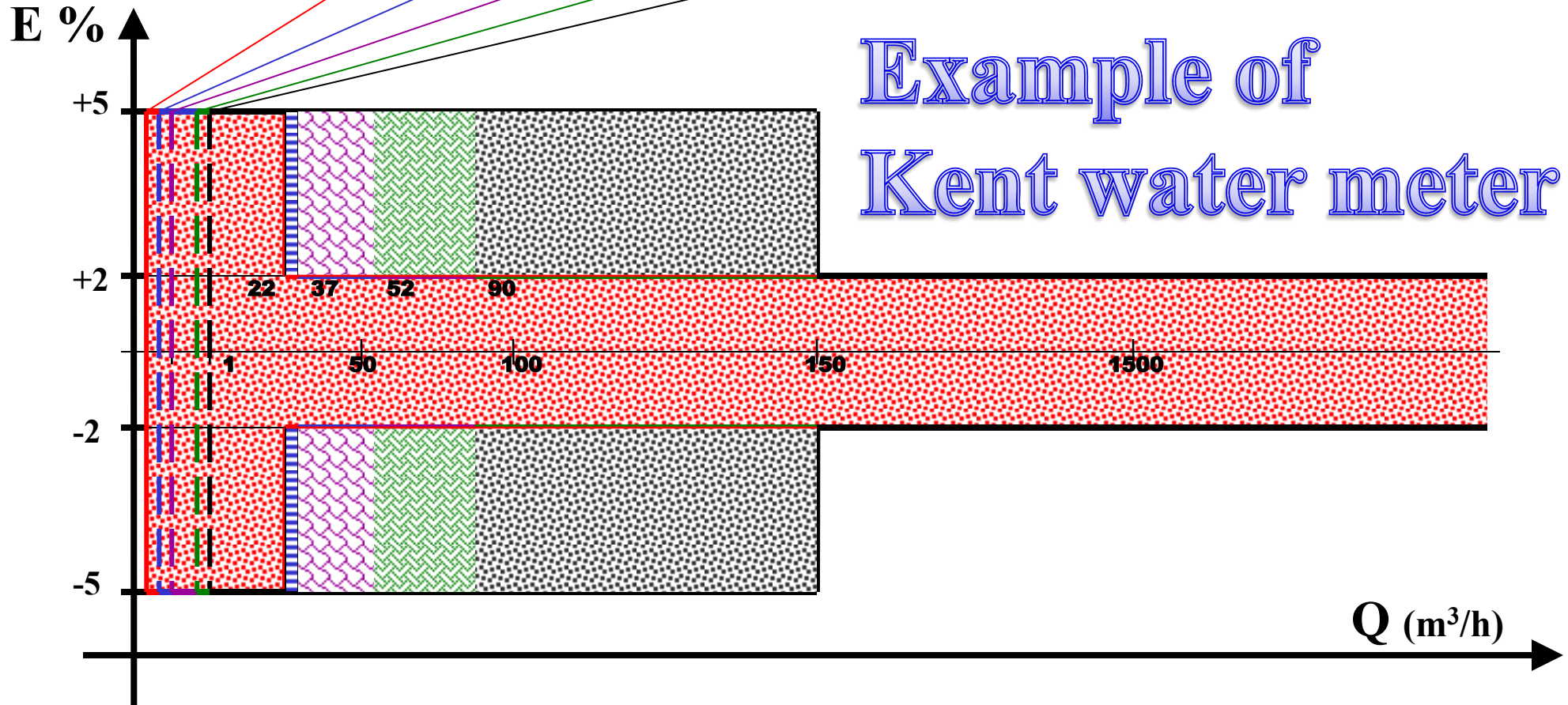


Sizing of connection



Don't OVER Sizing

15mm 20mm 25mm 30mm 40mm

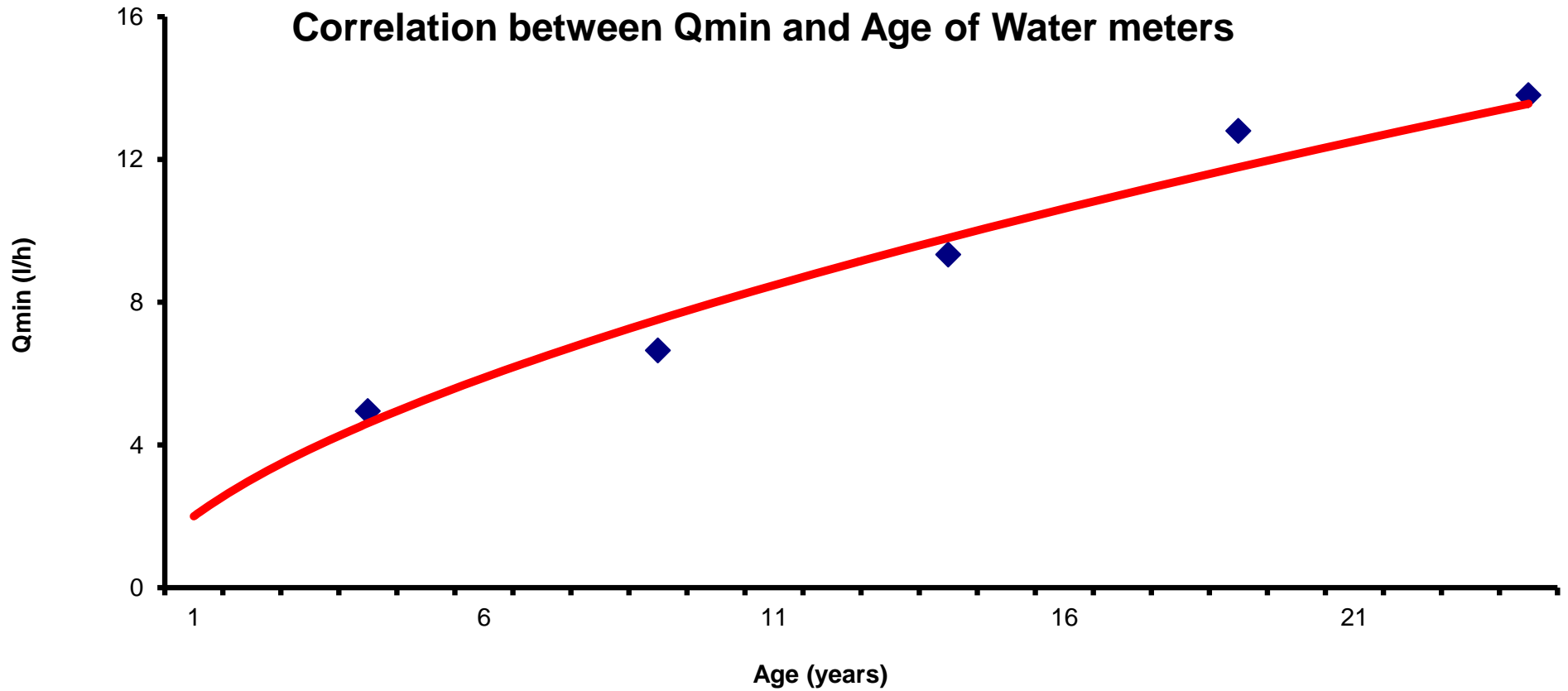


- **Ensuring the Accuracy
of water meter**

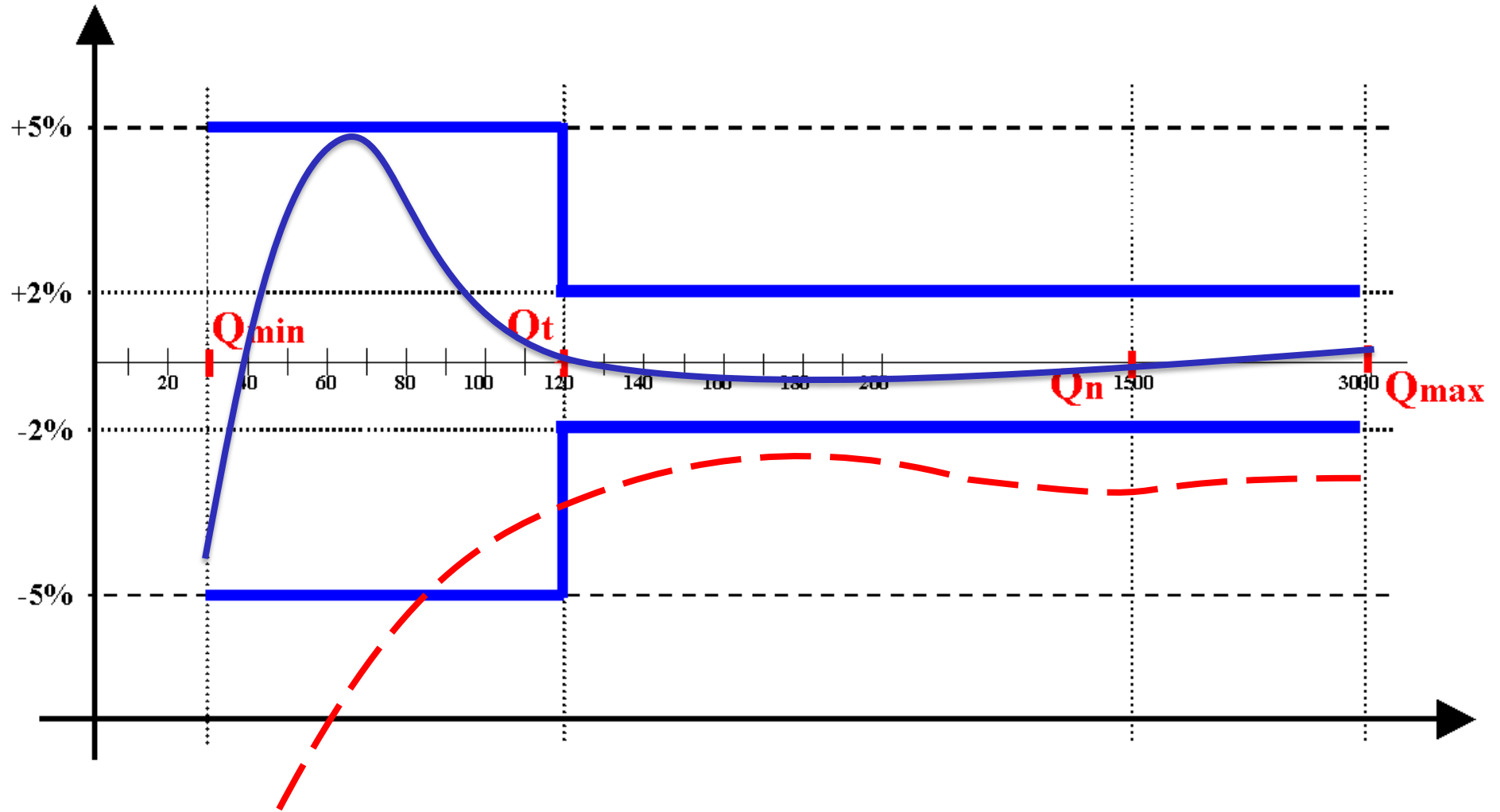
- **Causes of inaccuracy**

- **Maintenance – How ?**

Inaccurate by Ages



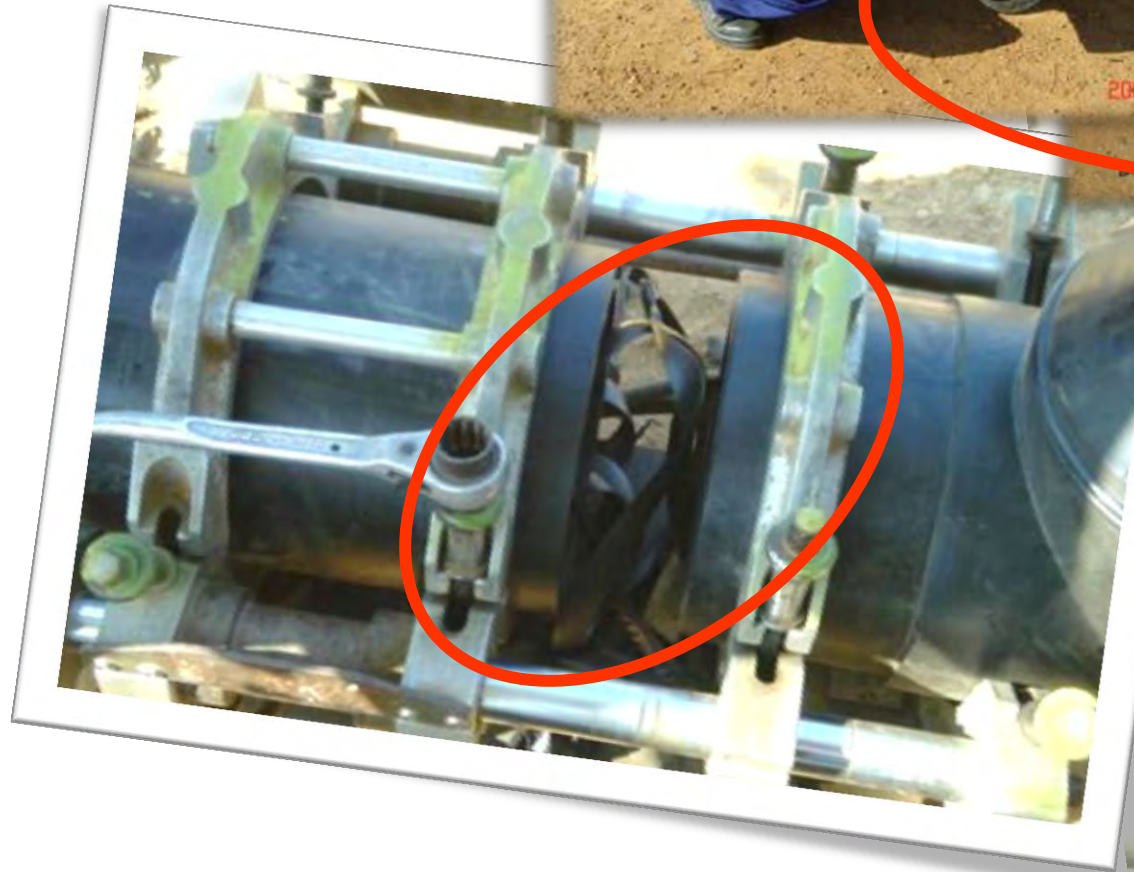
Under Counting by Ages



Pollutions



Reasons

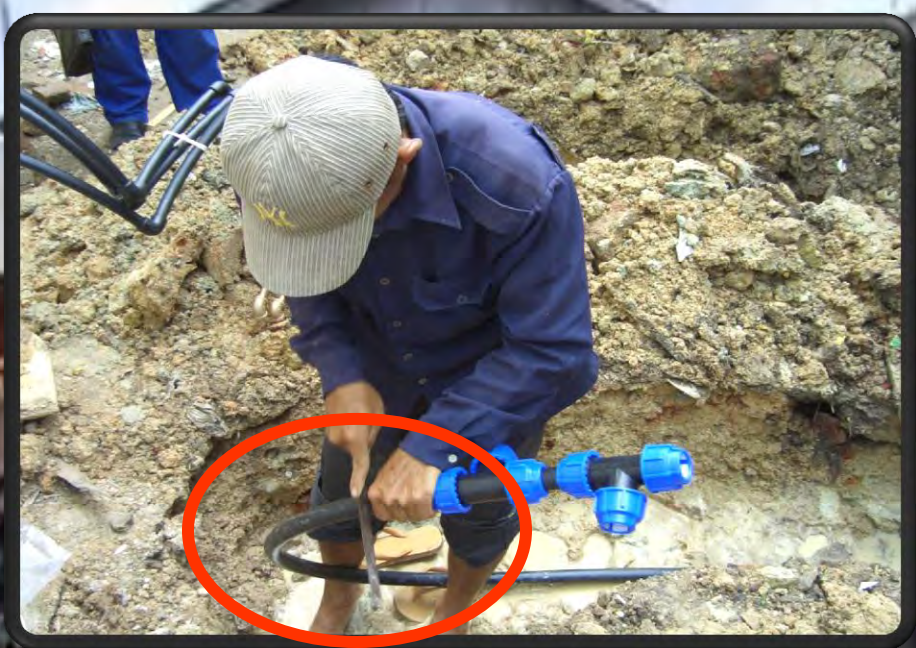


2007

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Counter Measures









