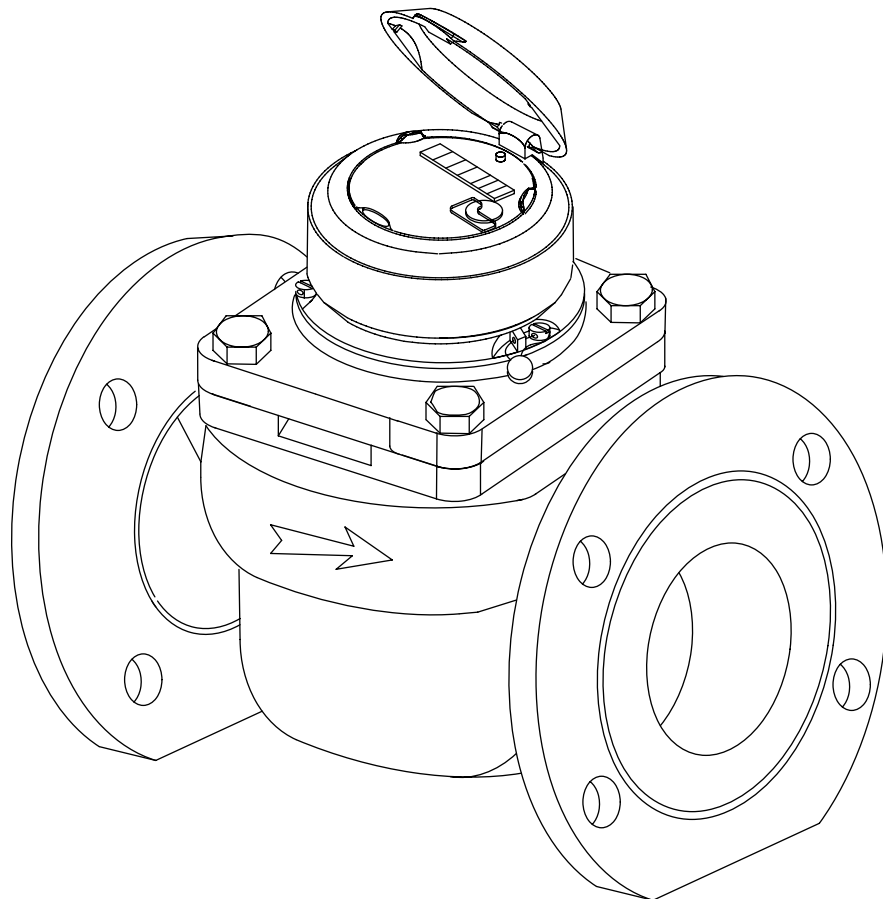


Version 1

Wesan S cold

NTA 058

TECHNICAL INSTRUCTIONS



sappel

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sappel	Wesan S cold	FTA	A	0	5	8	¹ / ₅
06/00 EDITION	INSTALLATION						

The **Wesan S** Woltman water meter is a precision measuring instrument. It has been manufactured with all due care and its qualities have earned it the approval of independent metrology bodies. The meter is an approved measuring instrument, which must be handled with care.

1 - Brief description

The meter is made up of a painted cast-iron body (1) with two fastening flanges (2). The plate (3) enclosing the metering part of the instrument is bolted to the body. The register (4) is topped by a ring (6) and protected by a cover (5). The cover may be removed to make room for a pulse emitter. The seal (7) keeps the hydraulic part of the meter protected from tampering.

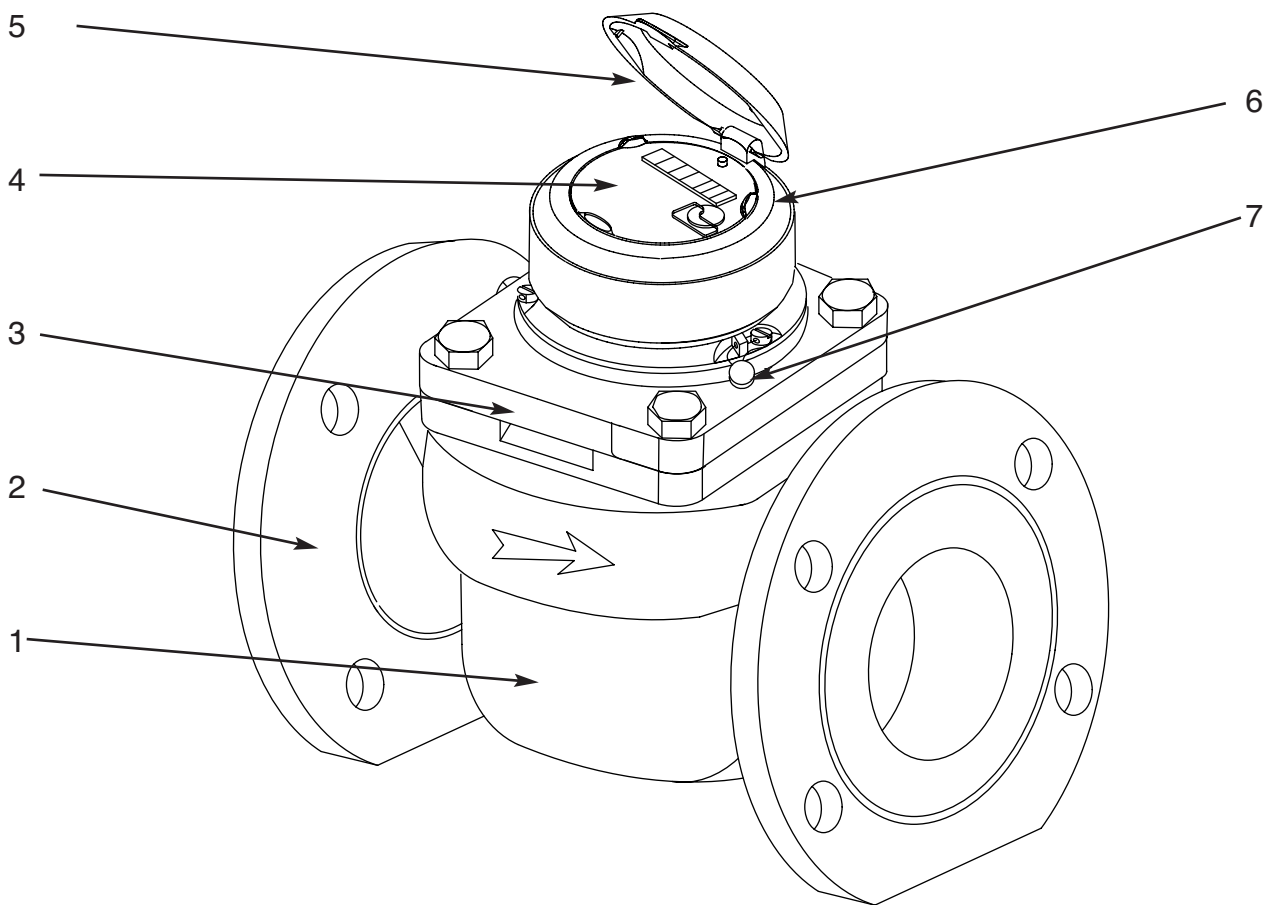


fig.1

2 - Configuration

The meter may be fitted with the following, without any need for removal from the pipe :

- dry-contact type pulse emitter
- new pre-calibrated measuring insert.

sappel	Wesan S cold	FTA	A	0	5	8	² / ₅
06/00 EDITION	INSTALLATION						

3 - Fitting precautions (fit to standard ISO 4064, part 2)

3 - 1 Alignment of piping

The piping must be perfectly aligned in order to minimise the mechanical stresses applied on the meter body. To fix the meter on the inlet side, use a drilled nut that can be fitted with a seal.

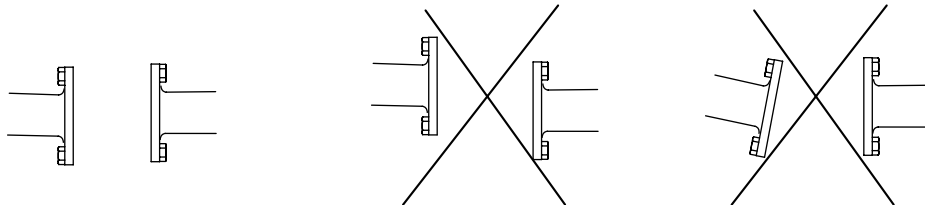


fig.2

3 - 2 Cleaning of piping

The meter must be fitted on piping that is clean on the inside and free from impurities. If in doubt, flush the pipe clean with a powerful flow of water after placing a bypass instead of the meter. If in doubt about the quality of the metered water, install a filter (200-micron mesh) before the meter. Take care to leave a straight length with about 3 DN between the filter and the meter.

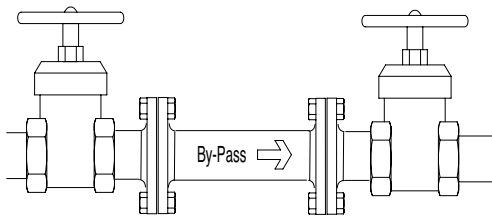


fig.3

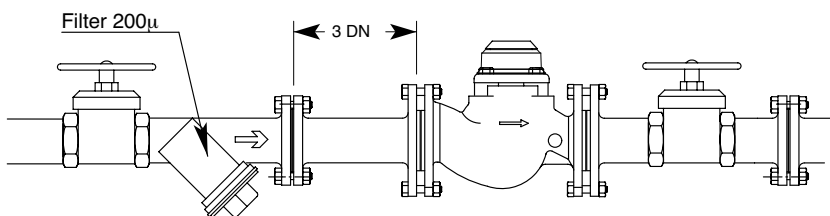


fig.4

4 - Installation

4 - 1 Installation position

Make sure that the water will flow in the direction shown by the arrow on the body of the meter

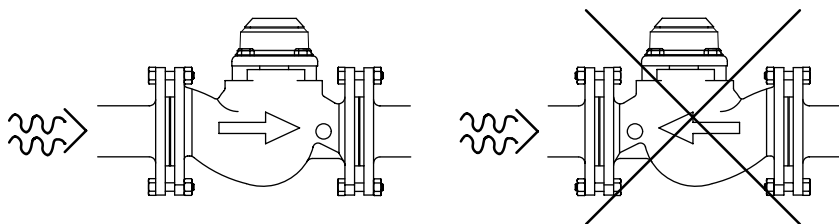
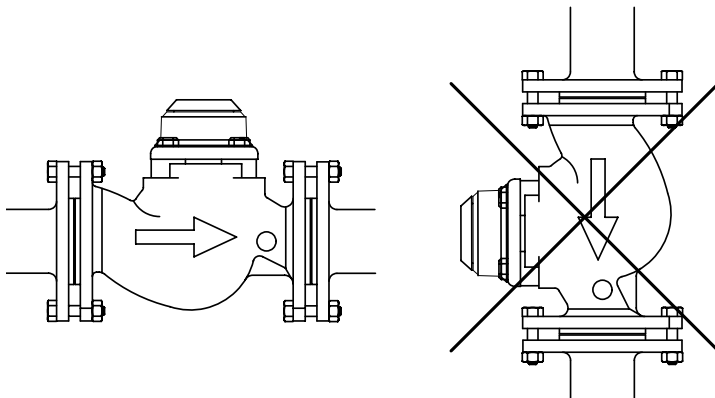


fig.5

The **Wesan S** Woltman meter is sensitive to the fitting position. Fitting it otherwise than as shown above will adversely affect its metrology properties and life.

sappel	Wesan S cold	FTA	A	0	5	8	³ / ₅
06/00 EDITION	INSTALLATION						



Wesan S: horizontal fitting only, with the register face horizontal, turned upward.

Important: fitting the meter any other way will have a very adverse effect on the metrology components and lead to premature wear in the moving parts.

fig. 6

4 – 2 Place of installation

The metering technology requires the presence of a straight length of about 3 DN before or after the meter, regardless of the type of disturbance (valve, bend, T, etc.). If necessary, use a **Sappel** flow stabiliser.

The **Wesan S** Woltman meter is designed for water and the metered liquid must be free of gas. As a result, it must be located at a low point in the piping to avoid the formation of air pockets.

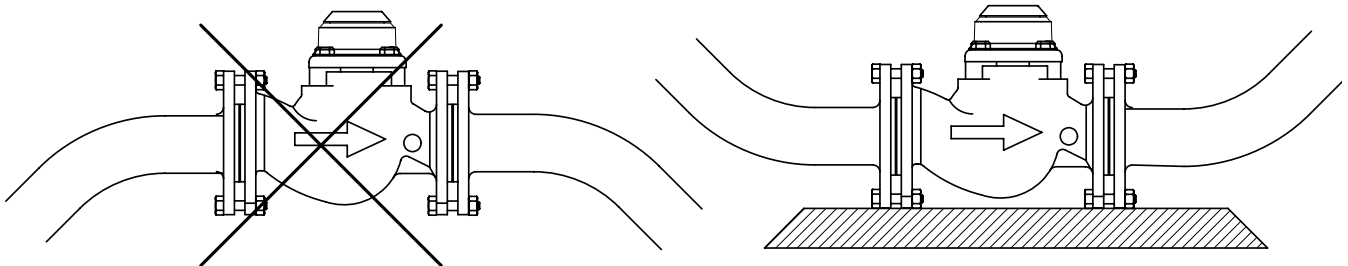


fig. 7

Important: considering the mass of the meters (14.5 kg for DN 50 and 79.5 kg for DN 200), anchor the piping firmly or provide a support under the meter.

4 - 3 Installation tools

The installation does not require any special tools, other than the spanners required to fasten the flange fixing nuts. The gaskets for ensuring a watertight connection between the meter and the pipe flanges are provided.

4 - 4 Liability

The meter shall necessarily be located and installed as instructed in this manual.

Sappel shall not be liable for installations that do not comply with good workmanship practices or the said instructions. The fitter who makes nonconforming installations shall bear all liability in that respect.

Also, the meter shall be used in accordance with the legal metrology indications affixed on the meter.

sappel	Wesan S cold	FTA	A	0	5	8	$\frac{4}{5}$
06/00 EDITION	INSTALLATION						

5 - Storage, installation and utilisation precaution :

- Do not store the meters for more than 3 months.
- Do not stack pallets or place loads of over 80 kg on the meters.
- Do not remove the closing cap before the meter is installed. It keeps the mechanism safe.
- The temperature of the water in the meter must be located between +1°C and +30°C (exceptional peak temperature of 50°C) and the ambient temperature must not exceed 50°C (surface-temperature : 60°C).
- The maximum permissible service pressure is 16 bars.
- The water must be clear and free from suspended particles (sand etc.) larger than 0.2 mm (max. concentration 0.1 g/litre); the filter before the meter must be cleaned periodically to prevent clogging.
- The flow in the piping must never exceed the maximum flow rate of the meter.
- Any operations and disruption in the system must not lead to a water hammer effect. While working on the piping, carefully bleed the pipes to prevent the formation of air pockets when the water is turned on again. Air could damage the meter.
- Do not clean the meter with substances other than a mildly acidic solution (water with vinegar, scale-removing agent etc.) or a soap solution.
- Install the meter in an area protected from freezing or provide effective insulation.

6 - Dimensions

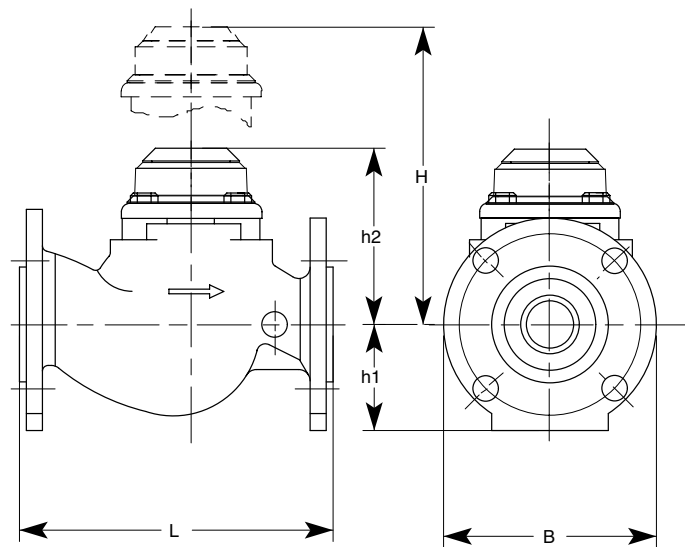


fig.8

Dn	50	65	80	100	150
L	270	300	300	360	500
B	165	185	200	220	285
h1	85	97	102	113	141
h2	135	135	180	190	351
H	325	337	432	453	761
Weight	14.5	17.7	25.5	31.5	79.5

DN	ISO PN10			ISO PN 16			ISO PN 20 = ANSI OR ASA 150			ISO PN 25			ISO PN 40			
	∅ flange	No hole	∅ on drill hole	∅ flange	No hole	∅ on drill hole	∅ flange	No hole	∅ on drill hole	∅ flange	No hole	∅ on drill hole	∅ flange	No hole	∅ on drill hole	
10													90	4	14	60
15							89	4	15,8	60,3			95	4	14	65
20	Same as PN 16			Same as PN 40			99	4	15,8	69,8	Same as PN 40		105	4	14	75
25							108	4	15,8	79,4			115	4	14	85
32							117	4	15,8	88,9			140	4	19	100
40							127	4	15,8	98,4			150	4	19	110
50							152	4	19	120,6			165	4	19	125
60							175	4	19	135			175	8	19	135
65							185	4	19	145			185	8	19	145
80	200	4	19	160			190	4	19	152,4			200	8	19	160
100	/DN 80, 4 HOLES/						220	8	19	180			235	8	23	190
125							250	8	19	210			270	8	28	220
150							285	8	23	240			300	8	28	250
200	340	8	23	295	12	23	340	12	23	295	270	8	28	28	310	320
250	395*	12	23	350	12	28	405*	12	28	355	360	12	31	370	385	
300	445*	12	23	400	12	28	460*	12	28	410	425	12	31	430	450	
350	505	16	23	460	16	28	520	16	28	470	485	16	31	490	510	
400	565	16	28	515	16	31	580	16	31	525	555	16	37	550	585	
450	615	20	28	565	20	31	640	20	31	585	620	20	37	600	610	
500	670	20	28	620	20	34	715	20	34	650	670	20	37	660	670	

*except ductile cast iron : DN 250 = 400 and DN 300 = 455

sappel	Wesan S cold	FTA	D	0	5	8	¹ / ₆
06/00 EDITION	DESCRIPTION						

1 - General

The **Wesan S** Woltman meter family is intended for the precision metering of drinking water.

The different versions cover almost all the cases of water distribution. **Wesan S** meters are characterised by strength and reliability, ensuring accurate metering in difficult conditions year after year. Their very low head loss means that they can be used in drinking water distribution systems or heat systems.

As an option, they may be fitted with pulse emitters for remote reading, radio reading or consumption analysis.

2 - General description

The **Wesan S** meter is made up of a painted cast-iron body (1) with two flanges (2). The plate (3) contains the metering components and is bolted to the body for easy replacement in the field. The register (4) is provided by six number wheels that can record a total of 999,999 cu. m. up to DN 100 mm and up 9,999,999 cu. m. from DN 150 onward. The register is topped by a cover (5). The cover can be removed if a pulse emitter is to be fitted.

The seal (6) bears the original verification mark.

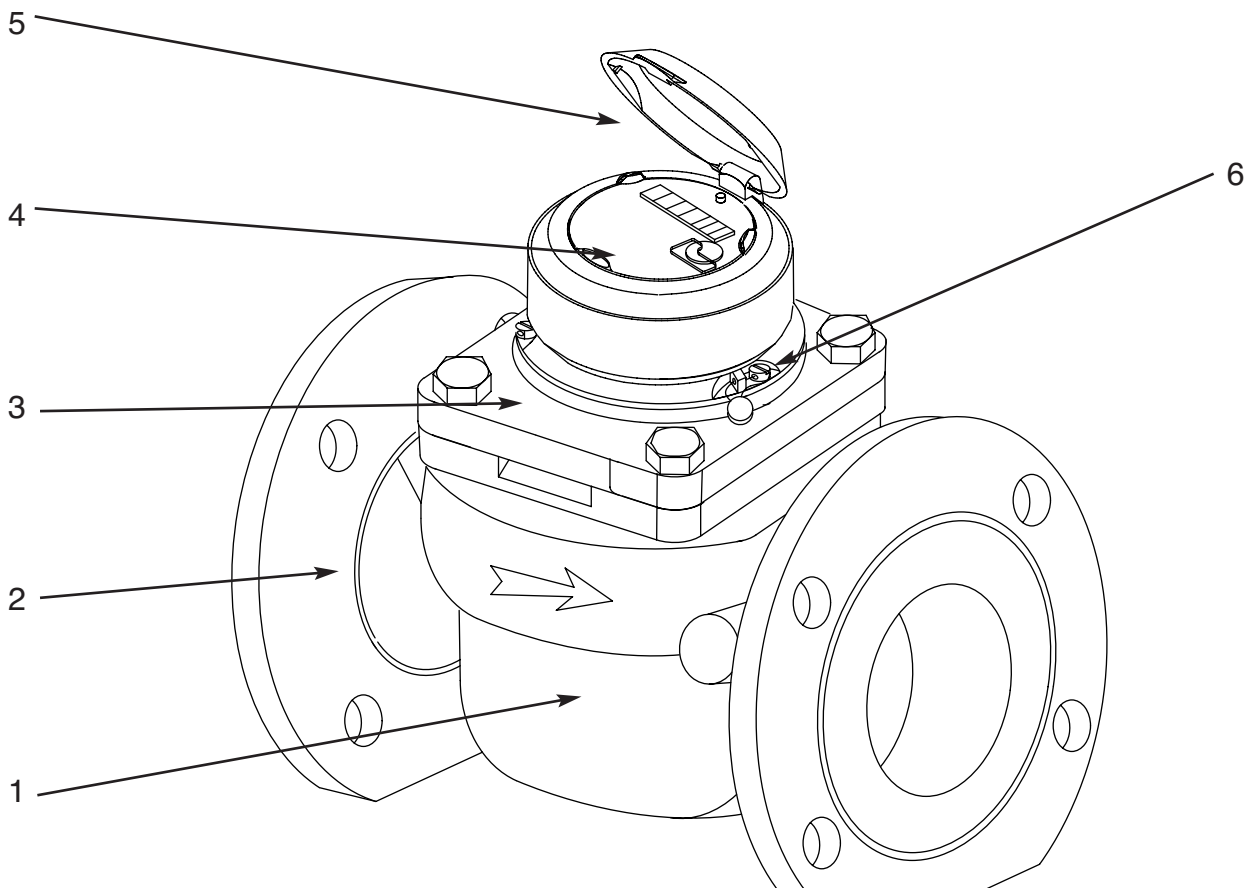


fig.1

sappel	Wesan S cold	FTA	D	0	5	8	² / ₆
06/00 EDITION	DESCRIPTION						

3 - Measuring principle

The water enters the chamber at the bottom of the impeller and goes out from the top. That principle considerably relieves the impeller pivots and extends the metering range to include small flowrates. The minimum flow of a Woltman meter with a vertical impeller is about half that of a Woltman meter with a horizontal impeller, but the head loss is slightly higher.

3 - 1 Operating principle

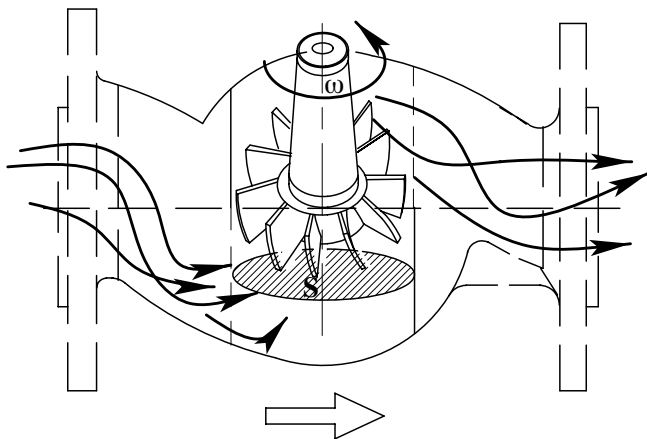


fig.2

After going through the siphon-shaped inlet pipe, the water is contained in a tube with a known diameter. As it has a given flowrate and therefore flows at a given speed, it makes the impeller rotate at a speed that is directly proportional to the flow speed.

The impeller turns at a speed proportional to the flow.

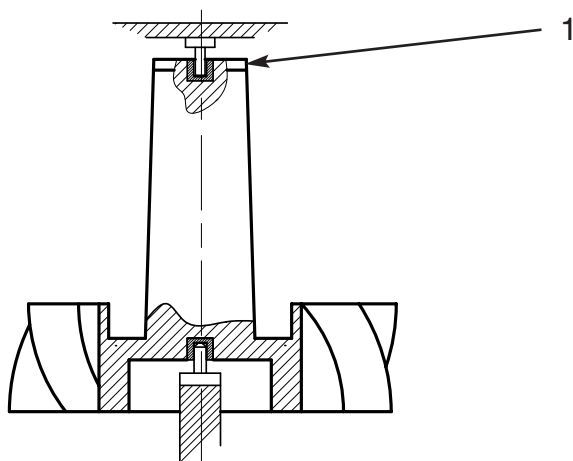


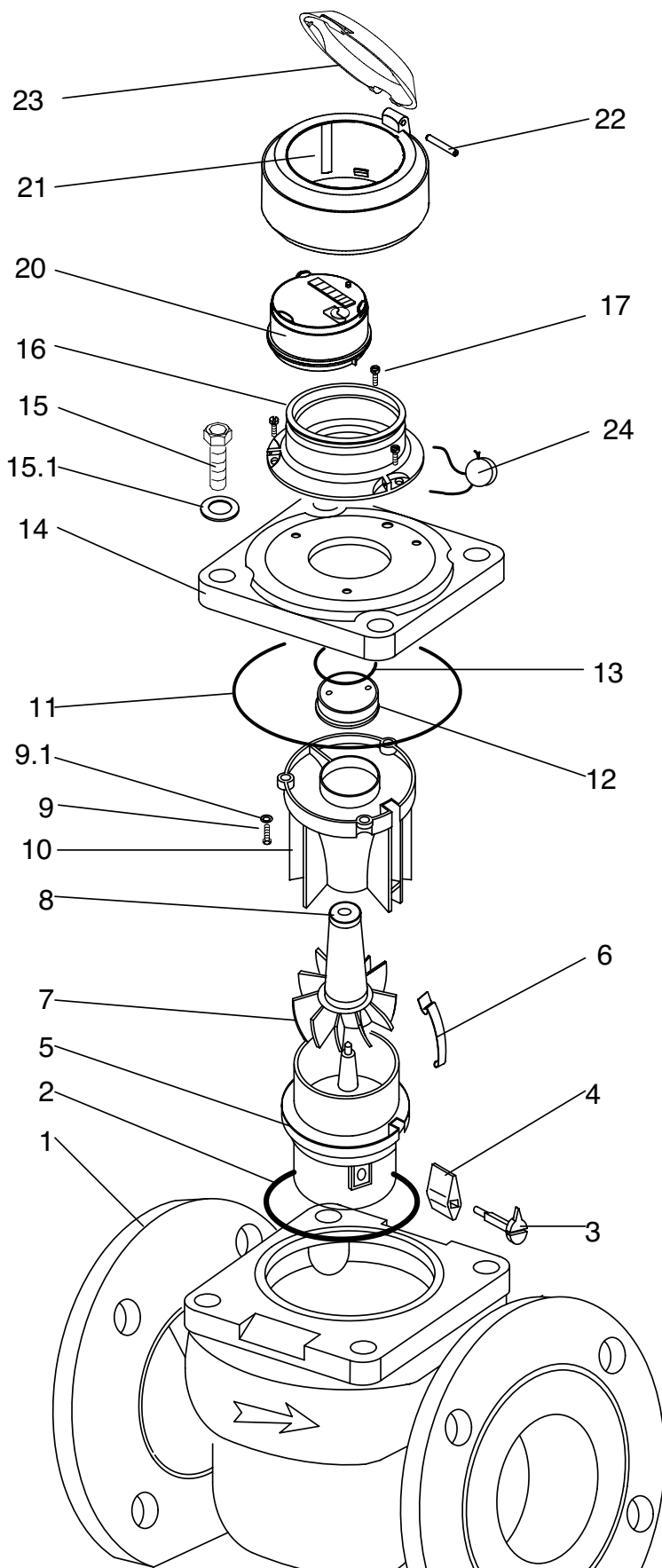
fig.3

The measuring system opposite illustrates the meter operating principle. The impeller is made to rotate by the speed of the water. The hub turns freely on the bottom and top pivot. That is what lowers the starting flow rate of the meter, offering it high precision for low flow rates.

The rotation movement is transmitted to the register by the magnet (1) located on the top of the impeller.

sappel	Wesan S cold	FTA	D	0	5	8	3	6	
06/00 EDITION	DESCRIPTION								

4 - Construction principle



The measuring system illustrated in opposite figure is made up of a cast-iron meter body (1) with two flanges. The impeller (7) turns freely in the lower (5) and upper (10) half casings. These half casings are connected by means of 3 clips (6) to form the metering chamber, that is fixed to the plate (14) with screws (9). The inlet and outlet is sealed by one O-ring gasket (2), while another such gasket (11) placed around the brass piece (12) seals the connection with the plate. That brass piece encourages the magnetic transmission from the magnet (8) on the impeller to the register (20). The meter is adjusted by the diverter (4) controlled by the screw (3).

The plate (14) is fixed to the body with screws (15). The ring (16) is fixed with screws (17) and holds the register in place. The register is topped by a ring (21). The cover (23) is fixed by a pin (22). The meter is sealed by means of a seal (24) bearing the initial verification mark.

sappel	Wesan S cold	FTA	D	0	5	8	4 6
06/00 EDITION	DESCRIPTION						

5 - Specifications of the Wesan S meter.

Description

Wesan S cold

DN	in mm	50	65	80	100	150
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Measuring range (m3/h)

Max. constructor flowrate	50	50	110	180	350
Max. approved flowrate	30	50	80	120	300
Nominal flowrate	15	25	40	60	150
Transition flowrate	4,5	5	8	12	30
Actual transition flowrate	1.5	2	2.5	3	10
Approved minimum flowrate	0.45	0.75	1.2	1.8	4.5
Minimum flowrate	0.15	0.2	0.2	0.3	0.8
Start flowrate	0.06	0.06	0.09	0.09	0.4

CEE approval

Class	B/H	
Approval number	D 95 6.132.37	D 86 6.132.21

Headloss $\Delta P = Q^2/Kvs^2$

Kvs	60	70	130	220	500
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Temperatures and pressures

Min. and max. temperatures	0°C to +30°C (+50°C peak temp.)
Max. operating pressure	16 bar

Pulse emitter (Impuls weight in litre/impuls)

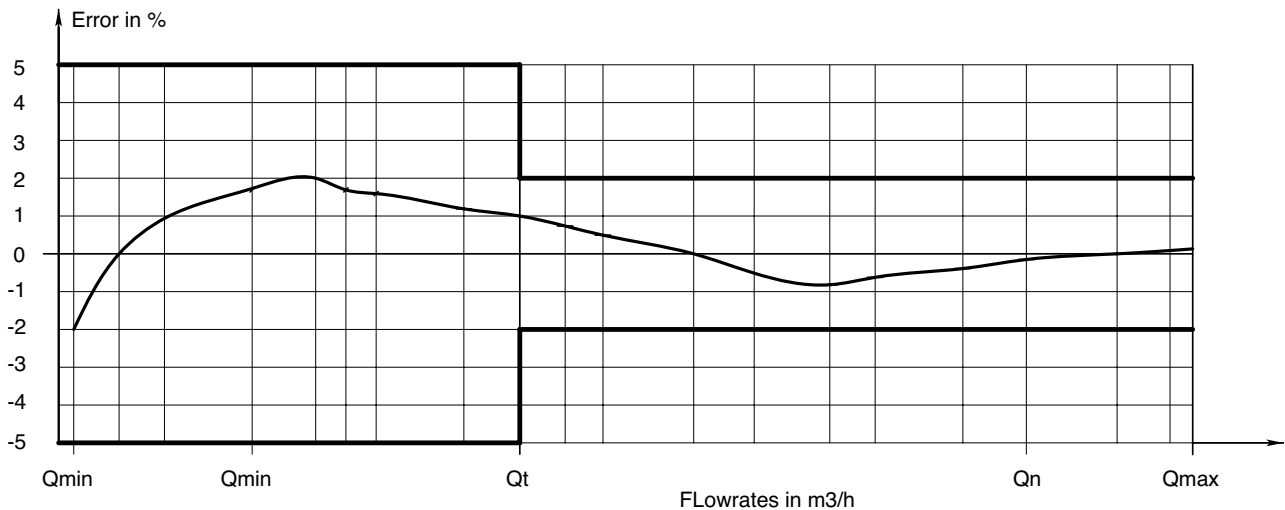
Pulsar	10	1 00
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sappel	Wesan S cold	FTA	D	0	5	8	5	6	
06/00 EDITION	DESCRIPTION								

6 - Performances

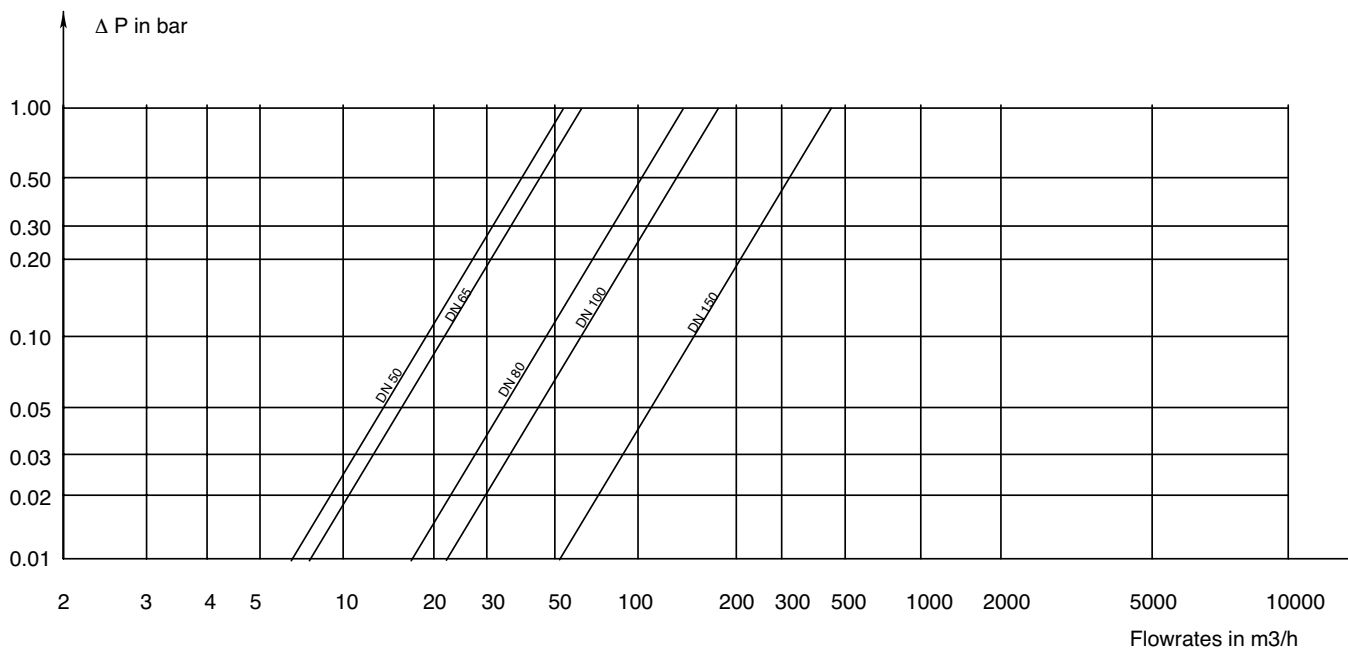
6 - 1 Metrology

The **Wesan S** Woltman meter is approved under European metrology directives. Its precision curve (solid line) is within the maximum permissible errors tolerances shown below.



The **Wesan S** meter is highly resistant to wear. That is because of the low impeller rotation speed and the balanced pivoting design without axial force. The satisfactory development of the error curve over time is a characteristic of that quality (see FTA E 058).

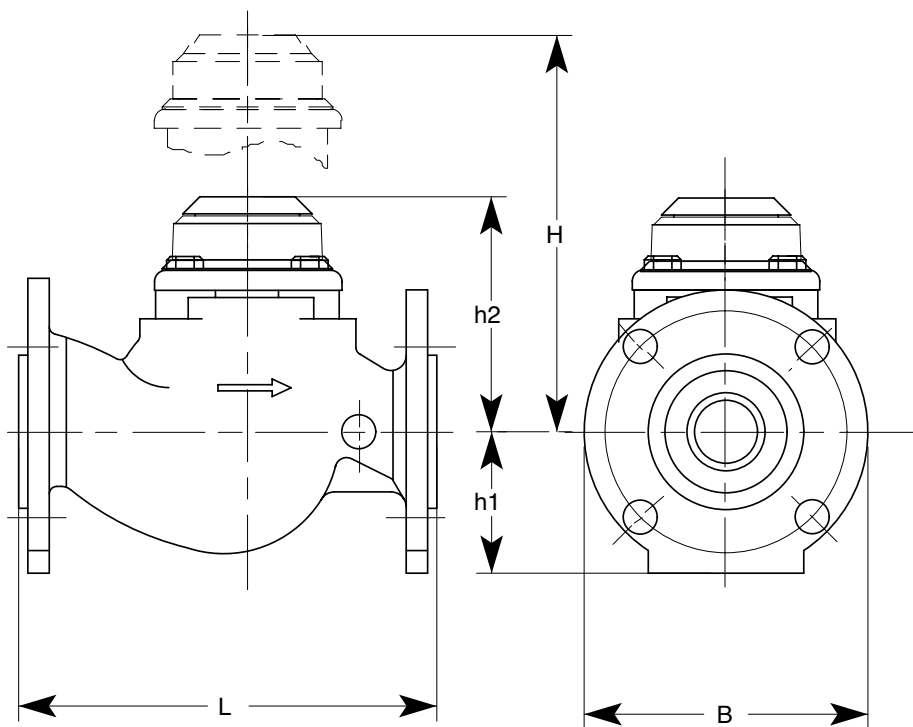
6 - 2 Head loss



sappel	Wesan S cold	FTA	D	0	5	8	⁶ / ₆
06/00 EDITION	DESCRIPTION						

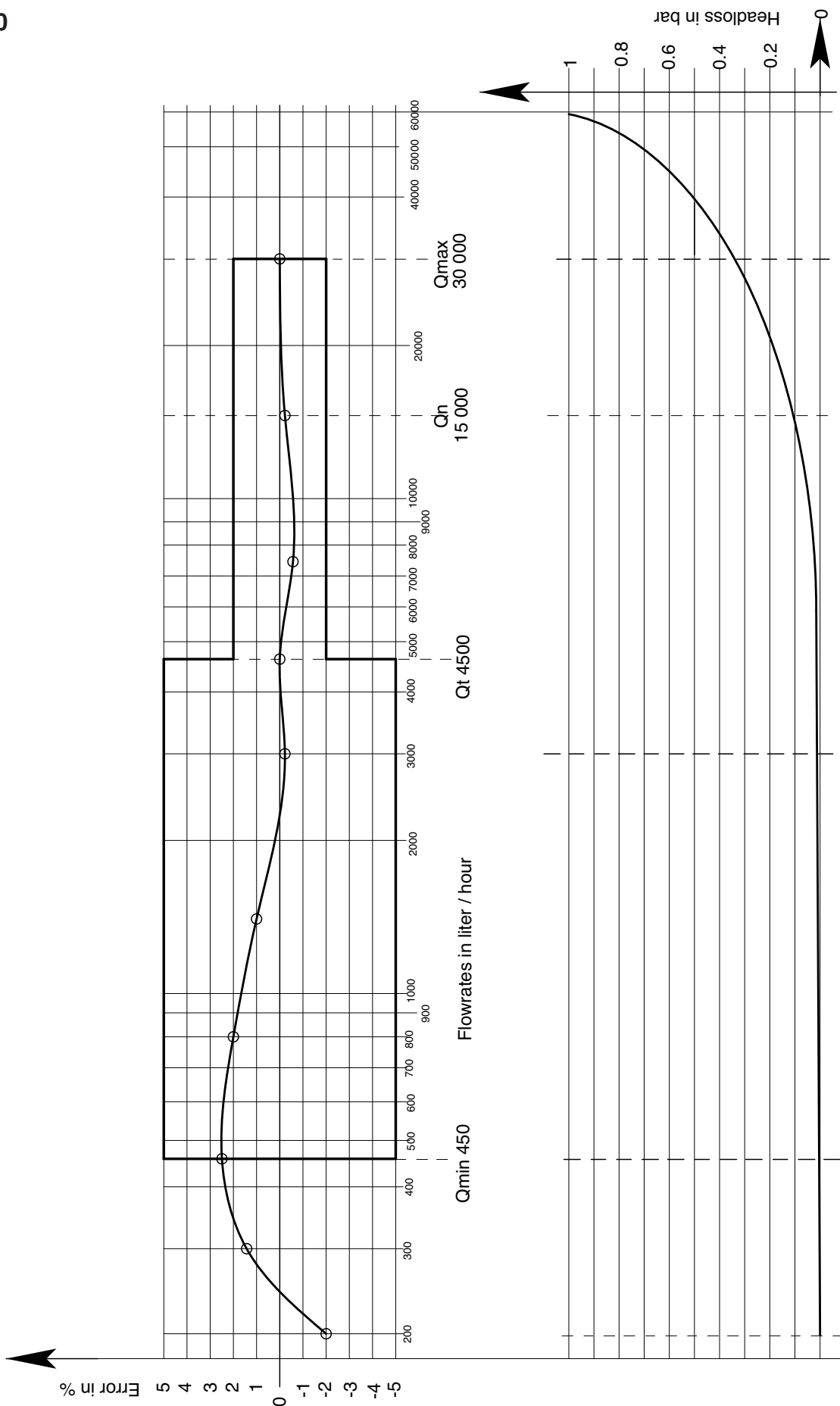
7 - Dimensions, weight and connection

DN	in mm	50	65	80	100	150
Length	in mm	270	300	300	360	430/500
h1 in mm	in mm	85	97	102	113	141
h2 in mm	in mm	135	135	180	190	351
H maintenance	in mm	325	337	432	453	761
Width (Ø flange PN 16) in mm		165	185	200	220	285
Weight	in kg	14.5	17.7	24	28	80



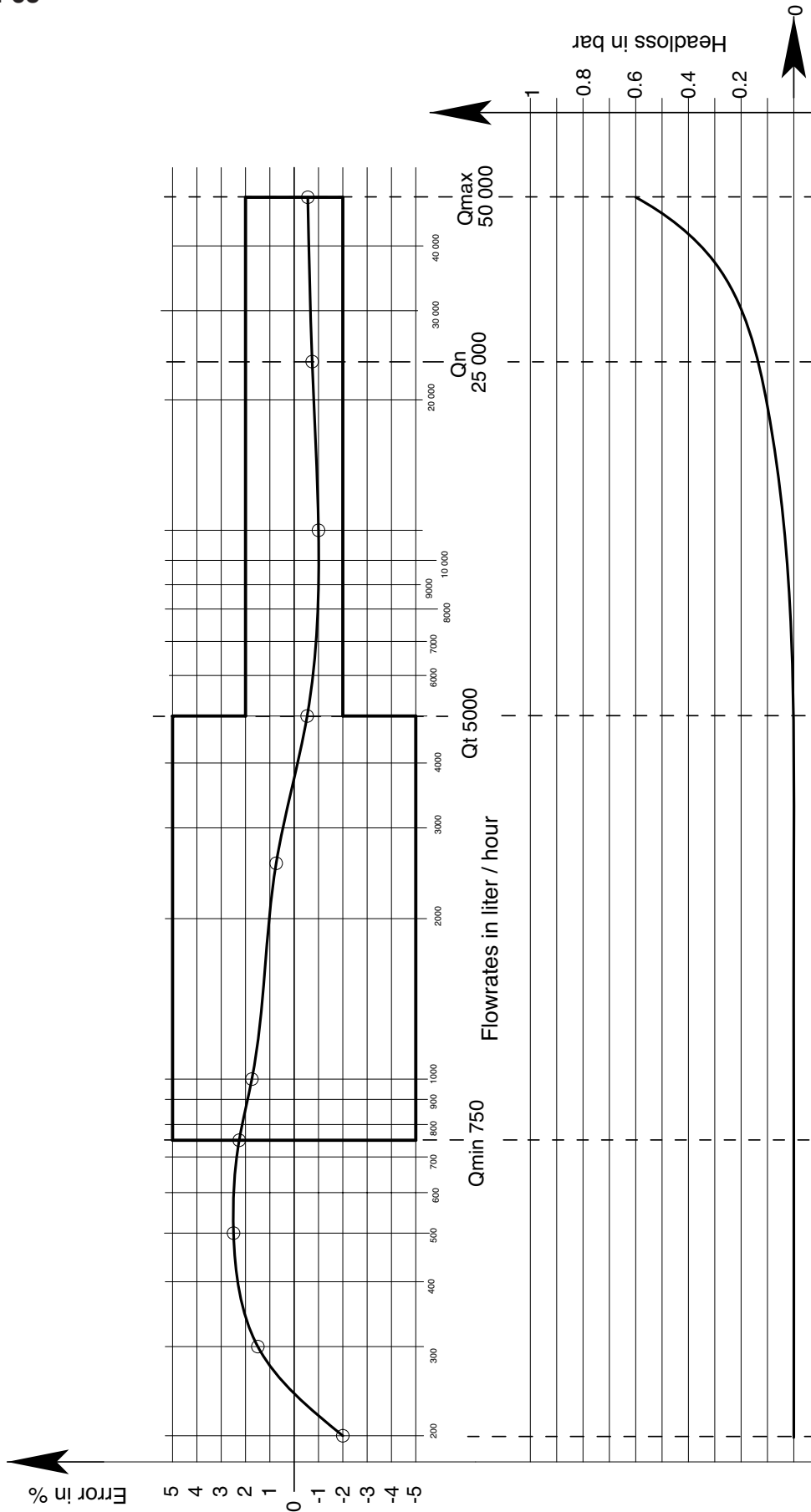
sappel	Wesan S cold	FTA	E	0	5	8	1	4	
06/00 EDITION	PERFORMANCE								

1- Wesan S Dn 50



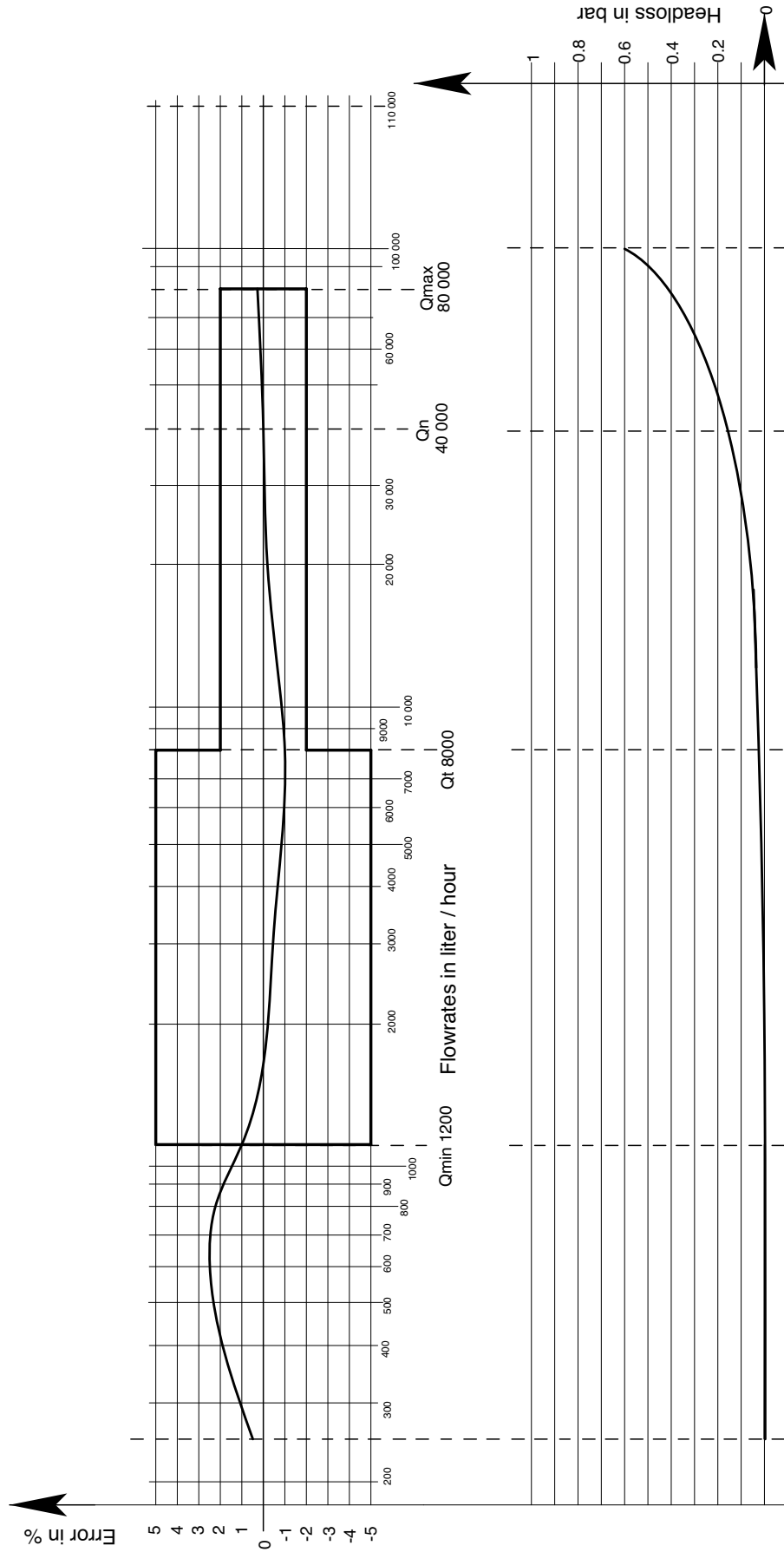
sappel	Wesan S cold	FTA	E	0	5	8	2	4	
12/99 EDITION	PERFORMANCE								

2- Wesan S Dn 65



sappel	Wesan S cold	FTA	E	0	5	8	3	4	
12/99 EDITION	PERFORMANCE								

3- Wesan S Dn 80



sappel	Wesan S cold	FTA	E	0	5	8	4	4	
12/99 EDITION	PERFORMANCE								

4 - Wesan S Dn 100

