



Type examination certificate no. CH-MI001-11045-05

Applicant:

Watertech S.p.A.
Strada Antica Fornace 2-4
I-14053 Canelli (AT)

Requirements:

Swiss ordinance on measuring instruments (SR 941.210) of 15 February 2006, annex 2 module B;

Directive 2004/22/CE of the European Parliament and of the Council of 31 March 2004 on measuring instruments (MID), annex B, measuring instrument category MI-001

Conformity standards:
OIML R49-1: Edition 2006, OIML R49-2: Edition 2006
EN 14154-3 Edition 2007

Type of instrument:

Multi-jet turbine water meter, wet dial for cold water

Type designation::

**Pegasus-..., Pegasus/..., FBM/..., FBV/...,
FPM/..., FPV/...**

Accuracy class(es):

2

Characteristics:

MAP 16, T30 / T50, class B, Q₃ 1.6 ... Q₃ 25

Certificate valid until:

November 09, 2020

CH-3003 Bern-Wabern, March 01, 2012

Notified body:

Certification Body METAS-Cert
no. 1259

For the test:

Dr. Hugo Bissig,
Technical Expert

Jürg Ramseyer, Head of METAS-Cert



Annex to Type Examination Certificate no. CH-MI001-11045-05

1 Name and type of measuring instrument

Water meter: multi-jet turbine water meter with wet dial for cold water (T30 / T50).

Type designation:

Pegasus-w/STD, Pegasus-w/V/A, Pegasus-w/V/D,
Pegasus-w/LI, Pegasus-w/V/A/LI, Pegasus-w/V/D/LI,
Pegasus-w/O, Pegasus-w/V/A/O, Pegasus-w/V/D/O
Pegasus/STD, Pegasus/V/A, Pegasus/V/D,
Pegasus/LI, Pegasus/V/A/LI, Pegasus/V/D/LI,
Pegasus/O, Pegasus/V/A/O, Pegasus/V/D/O
FBM/STD, FBV/A, FBV/D,
FBV/ LI, FBV/A/LI, FBV/D/LI
FBM/O, FBV/A/O, FBV/D/O
FPM/STD, FPV/A, FPV/D,
FPM/LI, FPV/A/LI, FPV/A/LI
FPM/O, FPV/A/O, FPV/A/O

2 Description of type

A multi-jet turbine water meter, mechanical transmission, totalizer with rollers and pointers, wet dial.

3 Design

These water meters consist of bodies suitable for any type of construction, for horizontal and vertical pipes (ascending and descending pipes) with various connection lengths and dimensions, specific dials, adapter rings and closure heads as well as various types of covers. The cover is hinged to the head by a pin.

Furthermore, the mechanism consists of several levels containing the gears.

The gears are driven directly by the turbine. In the body, it is possible to use adapter rings in the mechanism housing.

The cover and meter can be equipped with an additional application for the inscription. In this case, the application cannot be removed from the meter without being damaged.

The meters consist of a body; a mechanism and a mechanical totalizer partially separate (with protected rollers) or completely wet, safely inserted and closed in the body. The mechanism is fastened in the body by a threaded locking ring (head).

Q₃ 2,5 and Q₃ 4

In the centre of the upper plate of the totalizer is fitted a bushing, which works with a plastic axis-turbine; alternatively, a bushing with an internal sapphire can be used, which functions with a plastic or metal axis-turbine. The base of the mechanism is equipped with a plastic pivot in the measuring chamber (distributor) which works directly with the turbine without a bushing. Alternatively, it is possible to install metal pivots in the measuring chamber together with turbine with a bushing.

The body, on both its sides, has male threads $\geq G\frac{1}{2} B$ and/or flanged connections for dimensions DN 15 and DN 20 and a length ≥ 110 mm.

The mechanism has, in the measuring chamber, from 5 to 10 inlets, and 3 or 4 outlets



Annex to Type Examination Certificate no. CH-MI001-11045-05

with rectangular sections, the base of the measuring chamber has fins underneath the turbine, alternatively the fins be with grooves. The adjustment is made by a bypass device with an adjusting screw in the body or by a rotating blade.

In model Q₃ 2.5, the measuring chamber has at least 5 inlets, the meter rotates at a higher rate.

In model Q₃ 4, the measuring chamber has a maximum of 10 inlets. All the other components are the same.

As an option, the mechanism can be combined with the registers listed in point no. 5.

Q₃ 6,3 and Q₃ 10

In the centre of the upper plate in the totalizer is fitted a bushing, which works with a plastic axis-turbine; alternatively, a bushing with an internal sapphire can be used, which works with a plastic or metal axis-turbine. The base of the mechanism is equipped with a pivot in the measuring chamber, which works with a bushing inserted in the turbine.

The body, on both its sides, has male threads $\geq G1\frac{1}{4}$ B and/or flanged connections for dimensions DN 25 and DN 32 and a length ≥ 150 mm.

The mechanism has, in the measuring chamber, from 7 to 10 inlets and 4 outlets with rectangular sections, the base of the measuring chamber has fins underneath the turbine, alternatively the fins can be with grooves.

The adjustment is made by a bypass device with an adjusting screw in the body or by a rotating blade.

In model Q₃ 6.3, the measuring chamber has at least 7 inlets. The meter thus rotates at a higher rate.

In model Q₃ 10, the measuring chamber has a maximum of 10 inlets. All the other components are the same.

As an option, the mechanism can be combined with the registers listed in point no. 5.

Q₃ 16 and Q₃ 25

In the centre of the upper plate in the totalizer is a fitted bushing, which works with a plastic axis-turbine; alternatively, a bushing with an internal sapphire can be used, which works with a plastic or metal axis-turbine. The base of the mechanism is equipped with a pivot in the measuring chamber, which works with a bushing inserted in the turbine, as an option the bushing can have a sapphire inserted.

The body, on both its sides, has male threads $\geq G2$ B and/or flanged connections for dimensions DN 40 and DN 50 and a length ≥ 150 mm.

The mechanism has, in the measuring chamber, 10 inlets and 4 outlets with rectangular sections, the base of the measuring chamber has fins underneath the turbine, and alternatively the fins can be with grooves.

The adjustment is made by a bypass device with an adjusting screw in the body or by a rotating blade.

As an option, the mechanism can be combined with the registers listed in point no. 5.



Annex to Type Examination Certificate no. CH-MI001-11045-05

Pegasus/STD and Pegasus/LI, FPM/STD and FPM/LI

Multi-jet turbine water meter with wet dial, protected rollers, totalizer with encapsulated rollers (semi-dry), for installation on pipes.

- Drawing no. K 98.6332 of 29.06.2010, rev. 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus/STD, FPM/STD Q₃ 2.5 and Q₃ 4 combined with a dial with protected rollers for direct reading), alternatively the meter can be combined with various types of registers.
- With the respective list of materials W 98.6332 of 24.07.2008 revision 00.
- Drawing no. K 98.6729 of 17.06.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus/STD, FPM/STD Q₃ 2.5 and Q₃ 4 together with dials with protected rollers with magnetic index for reading with magnetic pulse).
- With the respective list of materials W 98.6729 of 24.07.2008 revision 00.
- Drawing no. K 98.6729.01.00 of 15.09.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus/L, FPM/LII Q₃ 2.5 and Q₃ 4 together with a dial with protected rollers with magnetic index for magnetic reading with reader Reed K 88.0414).
- With the respective list of materials W 98.6729.01.00 of 14.09.2010 revision 00.
- Drawing no. K 98.0333 of 31.03.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus/STD, FPM/STD Q₃ 6.3 and Q₃ 10 together with a dial with protected rollers for direct reading), alternatively the meter can be combined with various types of registers.
- With the respective list of materials W 98.0333 of 24.07.2008 revision 00.
- Drawing no. K 98.0334 of 15.07.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus/STD, FPM/STD Q₃ 16 and Q₃ 25 together with a dial with protected rollers for direct reading) alternatively the meter can be combined with various types of registers.
- With the respective list of materials W 98.0334 of 24.07.2008 revision 00.

Alternatively, the meter can be combined with various types of totalizers.

Pegasus-w/STD, FBM/STD

Multi-jet turbine meter with wet dial for installation on pipes.

- Drawing no. K 98.0064 of 08.07.2010 revision 01 (section, prospective and exploded views of the multi-jet water meter named Pegasus-w/STD, FBM/STD Q₃ 2.5 and Q₃ 4 together with a wet dial for direct reading), alternatively the meter can be combined with various types of registers.
- With the respective list of materials W 98.0064 of 24.07.2008 revision 00.
- Drawing no. K 98.0095 of 16.03.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus-w/STD, FBM/STD Q₃ 6.3 and Q₃ 10 together with a wet dial for direct reading) alternatively the meter can be combined with various types of registers.
- With the respective list of materials W 98.0095 of 24.07.2008 revision 00.
- Drawing no. K 98.6483.01 of 15.07.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus-w/STD, FBM/STD Q₃ 16 and Q₃ 25 together with a wet dial for direct reading), alternatively the meter can be combined with various types of registers.
- With the respective list of materials W 98.6483.01 of 24.07.2008 revision 00.



Annex to Type Examination Certificate no. CH-MI001-11045-05

Pegasus-w/V/A and FBV/A Version for ascending pipes

Multi-jet turbine water meter with wet dial for installation on vertical pipes with ascending flow.

- Drawing no. K 38.0418 of 22.04.2004 revision 03 (sectional diagram of the WVG body for ascending pipes, type Q₃ 2.5 and Q₃ 4).
- Drawing no. K 98.1470 of 31.03.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus-w/V/A, FBV/A Q₃ 6.3 and Q₃ 10 together with a wet dial for direct reading), alternatively the water meter can be combined with various types of registers.
- With the respective list of materials W 98.1470 of 24.07.2008 revision 00.
- Also, the water meter in Drawing no. K 98.6483.01 of 15.07.2010 revision 00 can be installed as an "ascending pipe water meter"

Pegasus-w/V/D and FBV/D Version for descending pipes

Multi-jet turbine water meter with wet dial for installation on pipes with descending flow.

- Drawing no. K 98.6180 of 30.06.2010 revision 00 (section, prospective and exploded views of the multi-jet water meter named Pegasus-w/V/D, FBV/D Q₃ 2.5 and Q₃ 4, together with the wet dial for direct reading) alternatively the water meter can be combined with various types of registers.
- With the respective list of materials W 98.6180 of 24.07.2008 revision 00.

4 Measuring system

Multi-jet measuring mechanism with side channel (Bypass) adjustment

The flow of water to the turbine travels through the inlet passing through a strainer. The tangential flows (of the measuring chamber) put the turbine in rotation. The movement of the turbine is transmitted directly to the totalizer thanks to the toothed turbine axis. The outflow travels through the outlet, which is situated opposite the inlet. It is possible to change the error curve parameters by making an adjustment, where, thanks to the rotating adjusting screw in the bypass, a more or less large partial opening is made, of the flow travelling directly towards the outlet.

- Drawing no. K 94.0008 of 16.03.2010 revision 00 (sectional drawing of the WVG body type Q₃ 2.5 and Q₃ 4 with side flow adjustment).
- Drawing no. K 98.0095 of 16.03.2010 (sectional drawing of the measuring mechanism of the multi-jet turbine water meter named Pegasus-w/STD, FBM/STD type Q₃ 6.3 and Q₃ 10 with side flow adjustment).
- Drawing no. K 98.1470 of 31.03.2010 (sectional drawing of the measuring mechanism of the turbine water meter named Pegasus-w/V/D, FBV/D type Q₃ 6.3 and Q₃ 10 with side flow adjustment).
- Drawing no. K 96.0195 of 16.03.2010 revision 00 (detailed sectional drawing of the measuring mechanism of the multi-jet turbine water meter Pegasus-w, FBM type Q₃ 10 with reference to the components positioned above and underneath the gears).
- Drawing no. K 96.0094 of 16.03.2010 revision 00 (detailed section drawing of the mechanism of the multi-jet turbine water meter Pegasus-w, FBM type Q₃ 6.3 with reference to the components positioned above and underneath the gears).
- Drawing no. K 96.6265 of 15.07.2010 revision 00 (sectional drawing of the measuring mechanism of the turbine water meter Pegasus, FPM type Q₃ 16 and Q₃ 25 with reference to the components positioned above and underneath the



Annex to Type Examination Certificate no. CH-MI001-11045-05

gears).

- Drawing no. K 96.6202 of 15.07.2010 revision 00 (sectional drawing of the measuring mechanism of the turbine water meter Pegasus-w, FBM Q₃ 16 and Q₃ 25 with reference to the components positioned above and underneath the gears).

Multi-jet measuring mechanism with adjustable “stop fins”.

The adjustment, in this case, is made by 2 adjustable fins, which are activated through the meter inlet using a special screwdriver. This together with a special strainer with a special fastening device on the test bench.

- Drawing no. K 96.0229 of 16.03.2010 revision 00 (sectional drawing of the turbine water meter mechanism (Pegasus-w/STD, FBM/STD type Q₃ 2.5 and Q₃ 4) with adjustment by means of adjustable fins).

5 Register/Totalizer

The multi-jet turbine water meters have a mechanical totalizer with rollers and indexes with a wet dial, which as an option is available in the completely wet version or the version with encapsulated and protected rollers (semidry).

Totalizer version Pegasus-w..., FBM...

Totalizer with a wet dial in the completely wet version, with a faster roller with continual movement alternatively, jerkily. A wheel with drive pins transmits the motion from the gears to the totalizer roller unit.

The totalizer has 5 white rollers with black numbers, 4 red indexes for the m³ decimals and a toothed star with an optional number of teeth, for ex.: 6 or 20. The reading is shown in cubic meters (m³). The minimum reading on the faster measuring device is 0,05ℓ.

- Drawing no. K 90.0335 of 09.04.2010 revision 01 (drawing of the wet dial totalizer with rollers and indexes type Pegasus-w, FBM dial with 5 rollers, 4 indexes).
- With the respective list of materials W 90.0335 of 22.08.2008 revision 00

The meter can be equipped, at a later stage, with a Reed switch K 88.0413 or K 88.0414 for reading the magnet.

In the case of a wet dial, it is possible to fit one permanent magnet on the 1 litre, 10 litre, 100 litre or 1000 litre indexes for rotation, which by closing the Reed contact, generates a pulse for each rotation. The Reed contact is secured to the glass of the meter.

- Drawing no. K 90.0335 of 09.04.2010 revision 01 (drawing of a wet dial totalizer type Pegasus-w/LI, FBM/LI dial with 5 rollers, 4 indexes).
- With respective list of materials W 90.0335 of 22.08.2008 revision 00.

The meter can, at a later stage, be equipped with an optical reading “with no return effects” or inductive K 81.0001.

These totalizers can be equipped, at a later stage, with a pulse outlet, in version M – Bus or radio. The pulse value for Q₃ 2.5 up to Q₃ 25: 1 litre, 10, 100 or 1000 litres. In this position, the dial has an opening where the modulation index is found.



Annex to Type Examination Certificate no. CH-MI001-11045-05

- Drawing no. K 90.0335.06 of 09.04.2010 revision 01 (drawing of a wet dial totalizer with rollers and indexes, type Pegasus-w/O, FBM/O dial with 5 rollers, 4 indexes with modulation index for optical "no return" reading or inductive).
- With respective list of materials W 90.0335.06 of 22.08.2008 revision 00.

The totalizer is also available in a version with 5 white rollers of which 4 have black numbers and after the comma one roller with red numbers, 3 indexes and a star with an optional number of teeth, for ex. 6 or 20. The reading is shown in cubic meters (m³); the smallest reading on the faster measuring device is 0.05 l.

The totalizers can also be produced with one of the indexes from 1litre, 10litres or 100litres replaced with a modulation index applied above for pulse optical reading, or with a magnet for magnetic pulse reading. The pulse value is equal to the rotation value of the index axis.

- Drawing K 90.0339 of 09.04.2010 revision 02 (drawing of a wet dial totalizer with rollers and indexes, type Pegasus-w, FBM, dial with 5 rollers, 3 indexes).
- With respective list of materials W 90.0339 of 22.08.2008 revision 00.

Totalizer version Pegasus..., FPM...

Totalizer with rollers and indexes, wet dial in the protected roller version (semi dry)

This totalizer is similar to the Pegasus-w totalizer, however the rollers are waterproof encapsulated and the chamber is filled with a mixture of glycerine and distilled water. The difference in pressure between the part of the totalizer containing the rollers and the wet part of the totalizer is compensated by an elastic element.

The totalizer has 5 black rollers with white numbers, 4 red indexes for the m³ decimals.

- Drawing no. K 90.0343 of 08.04.2010 revision 01 (drawing of totalizer with protected rollers, rollers and indexes type Pegasus, FPM, dial with 5 rollers, 4 indexes).
- With the respective list of materials W 90.0343 of 26.07.2010 revision 01.
- Drawing no. K 90.0343 of 08.04.2010 revision 01 (drawing of totalizer with protected rollers, rollers and indexes type Pegasus/LI, FPM/LI (with magnetic index for reading via a Reed switch) dial with 5 rollers, 4 indexes).
- With respective list of materials W 90.0343 of 26.07.2010 revision 01.
- Drawing no. K 90.0344 of 21.08.2008 revision 00 (drawing of totalizer with protected rollers, rollers and indexes type Pegasus, FPM dial with 6 rollers, 4 indexes).
- With respective list of materials W 90.0344 of 26.07.2010 revision 01.
- Drawing no. K 90.0344 of 21.08.2010 revision 00 (drawing of totalizer with protected rollers, rollers and indexes type Pegasus/LI, FPM/LI (with magnetic index for reading via a Reed switch) dial with 6 rollers, 4 indexes).
- With respective list of materials W 90.0344 of 26.07.2010 revision 01.
- Drawing no. K 90.0343.01 of 09.04.2010 revision 01 (drawing of totalizer with protected rollers, rollers and indexes, type Pegasus/O, FPM/O (with modulation index for optical no return reading or inductive) dial with 5 rollers, 4 indexes).
- With respective list of materials W 90.0343.01 of 26.07.2010 revision 01.

The protected rollers registers are also available in a no return optical reading type, using modified indexes with optical lens for the values of 1litre, 10litres, 100litres or 1000litres and a pulse transmission unit, the pulse value is equal to the rotation value of



Annex to Type Examination Certificate no. CH-MI001-11045-05

the index axis.

- Drawing no. K 90.0342.01 of 12.04.2010 revision 03 (drawing of wet dial totalizer, protected rollers, type Pegasus/O, FPM/O (with modulation index for no return optical reading or inductive) dial with 5 rollers, 4 indexes.
- With respective list of materials W 90.0342.01 of 26.07.2010 revision 01.

6 Technical documents

Q₃ 2.5 and Q₃ 4

Drawing Document No.	Date	Description
K 81.0669	14.07.2010	Using Instructions
K 98.6332	29.06.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus/STD, FPM/STD (direct reading), Q ₃ 2.5 and Q ₃ 4 - Exploded
K 98.6332	29.06.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus/STD, FPM/STD (direct reading), Q ₃ 2.5 and Q ₃ 4 – Section
W 98.6332	24.07.2008	List of water meter materials (multi-jet-wet dial/protected rollers)
K 98.6729	17.06.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus/LI, FPM/LI (with magnetic index for magnetic reading), Q ₃ 2.5 and Q ₃ 4 – Exploded
K 98.6729	17.06.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus/LI, FPM/LI (with magnetic index for magnetic reading), Q ₃ 2.5 and Q ₃ 4 – Section
K 98.6729.01.00	15.09.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus/LI, FPM/LI (with magnetic index for magnetic reading via Reed switch K 88.04.14), Q ₃ 2.5 and Q ₃ 4 – Section
W 98.6729.01.00	14.09.2010	List of water meter materials (multi-jet-wet dial/protected rollers)
W 98.6729	24.07.2008	List of water meter materials (multi-jet-wet dial/protected rollers)
K 98.0064	08.07.2010	Multi-jet wet dial water meter, horizontal version Pegasus-w/STD, FBM/STD (direct reading), Q ₃ 2.5 and Q ₃ 4 – Section
K 98.0064	08.07.2010	Multi-jet wet dial water meter, horizontal version Pegasus-w/STD, FBM/STD (direct reading), Q ₃ 2.5 and Q ₃ 4 – Exploded
W 98.0064	24.07.2008	List of water meter materials (multi-jet-wet dial)
K 38.0418	22.04.2004	Section drawing of the WVG body for ascending pipes, type Q ₃ 2.5 and Q ₃ 4
K 98.6180	30.06.2010	Multi-jet wet dial water meter, version with body for descending pipes Pegasus-w/V/D, FBV/D (direct reading), Q ₃ 2.5 and Q ₃ 4 - Exploded
K 98.6180	30.06.2010	Multi-jet wet dial water meter, version with body for descending pipes Pegasus-w/V/D, FBV/D (direct reading), Q ₃ 2.5 and Q ₃ 4 - Sectional
W 98.6180	24.07.2008	List of water meter materials (multi-jet-wet dial/protected rollers)



Annex to Type Examination Certificate no. CH-MI001-11045-05

K 94.0008	16.03.2010	Section and views of the WVG bodies, type Q ₃ 2.5 and Q ₃ 4 with adjustment via a secondary channel.
K 96.0229	16.03.2010	Section and views of the multi-jet turbine water meter with wet dial Pegasus-w/STD, FBM/STD (direct reading), Q ₃ 2.5 and Q ₃ 4 with adjustment via adjustable fins
K 96.1163	13.07.2010	Sectional view of the mechanism Q ₃ 4 of turbine wet dial water meters Pegasus-w/STD, FBM/STD (direct reading)- a with this model has been made the test programm
K 90.0335	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus-w/STD, FBM/STD (direct reading) and Pegasus-w/LI, FBM/LI (for reed contact)
W 90.0335	22.08.2008	List of materials of totalizer Pegasus-w ..., FBM....
K 90.0335.06	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus-w/O, FBM/O (for optical reading)
W 90.0335.06	22.08.2008	List of materials of totalizer Pegasus-w ..., FBM....
K 90.0339	09.04.2010	Totalizer rollers and indexes 5/3 Pegasus-w/STD, FBM/STD (direct reading)
W 90.0339	22.08.2008	List of materials of totalizer Pegasus-w ..., FBM....
K 90.0342.01	12.04.2010	Totalizer rollers and indexes 5/4 Pegasus/O, FPM/O (for optical reading)
W 90.0342.01	26.07.2008	List of materials of totalizer Pegasus-w ..., FPM....
K 90.0343.01	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus-w/O, FPM/O (for optical reading)
W 90.0343.01	22.08.2008	List of materials of totalizer Pegasus...., FPM...
K 90.0343	08.04.2010	Totalizer rollers and indexes 5/4 Pegasus/STD, FPM/STD (direct reading) and Pegasus/LI (for reed contact)
W 90.0343	22.08.2008	List of materials of totalizer Pegasus...., FPM... Rollers and indexes 5/4 Pegasus...., FPM...

Q₃ 6.3 and Q₃ 10

Drawing Document No.	Date	Description
K 81.0669	14.07.2010	Using Instructions
K 98.0095	16.03.2010	Multi-jet wet dial water meter, horizontal version Pegasus-w/STD, FBM/STD for Q ₃ 6.3 and Q ₃ 10 – Exploded
K 98.0095	29.06.2010	Multi-jet wet dial water meter, horizontal version Pegasus-w/STD, FBM/STD for Q ₃ 6.3 and Q ₃ 10 – Section
W 98.0095	24.07.2008	List of water meter materials (multi-jet- wet dial/protected rollers)
K 98.1470	01.04.2010	Multi-jet wet dial water meter, ascending flow version Pegasus-w/V/A, FBV/A for Q ₃ 6.3 and Q ₃ 10 – Exploded
K 98.1470	01.04.2010	Multi-jet wet dial water meter, ascending flow version Pegasus-w/V/A, FBV/A for Q ₃ 6.3 and Q ₃ 10 – Section
W 98.1470	24.07.2008	List of water meter materials (multi-jet- wet dial/protected rollers)
K 98.0333	31.03.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus/STD, FPM/STD for Q ₃ 6.3 and Q ₃ 10- Exploded
K 98.0333	31.03.2010	Multi-jet wet dial water meter, protected rollers, horizontal version, Pegasus/STD, FPM/STD for Q ₃ 6.3 and Q ₃ 10- Section
W 98.0333	24.07.2008	List of water meter materials (multi-jet- wet dial/protected rollers)



Annex to Type Examination Certificate no. CH-MI001-11045-05

K 98.6729.01.00	15.09.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus-w/LI, FBM/LI (with magnetic index for magnetic reading via Reed switch K 88.04.14), Q ₃ 2.5 and Q ₃ 4 – Section
W 98.6729.01.00	14.09.2010	List of water meter materials (multi-jet- wet dial/protected rollers)
K 98.6800	16.03.2010	Multi-jet wet dial water meter, Pegasus/O, FPM/O 10 R250/R80V CE (version for optical reading), - Section
K 96.0094	16.03.2010	Mechanism Pegasus-w/STD, FPM/STD Q ₃ 6.3 (7 inlets)
K 96.0195	16.03.2010	Mechanism Pegasus/STD, FPM/STD, Q ₃ 10 (10 inlets)
K 90.0335	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus-w, FBM (direct reading) and Pegasus-w/LI, FBM/LI (for reed contact)
W 90.0335	22.08.2008	List of materials totalizer Pegasus-w..., FBM...
K 90.0335.06	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus-w/O, FBM/O (for optical reading)
W 90.0335.06	22.08.2008	List of materials totalizer Pegasus-w..., FBM...
K 90.0339	09.04.2010	Totalizer rollers and indexes 5/3 Pegasus-w/STD, FBM/STD (direct reading)
W 90.0339	22.08.2008	List of materials totalizer Pegasus-w..., FBM...
K 90.0342.01	12.04.2010	Totalizer rollers and indexes 5/4 Pegasus/O, FPM/O (for optical reading)
W 90.0342.01	26.07.2008	List of materials totalizer 5/4
K 90.0343.01	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus/O, FPM/O (for optical reading)
W 90.0343.01	22.08.2008	List of materials totalizer Pegasus/STD, FPM
K 90.0343	08.04.2010	Totalizer rollers and indexes 5/4 Pegasus, FPM/O (direct reading) and Pegasus/LI, FPM/LI (for reed contact)
W 90.0343	22.08.2008	List of materials totalizer Pegasus..., FPM.... Rollers and indexes 5/4 Pegasus..., FPM...

Q₃ 16 and Q₃ 25

Drawing Document N°	Date	Description
K 81.0669	14.07.2010	Using Instructions
K 98.6334	15.07.2010	Multi-jet water meter with protected rollers, horizontal version Pegasus/STD, FPM/STD for Q ₃ 16 and Q ₃ 25 – Section
K 98.6334	15.07.2010	Multi-jet water meter with protected rollers, horizontal version Pegasus/STD, FPM/STD for Q ₃ 16 and Q ₃ 25 – Exploded
W 98.6334	24.07.2008	List of materials.
K 98.6483.01	15.06.2010	Multi-jet wet dial water meter, horizontal version Pegasus-w/STD, FBM/STD, for Q ₃ 16 and Q ₃ 25 – Section
K 98.6483.01	15.06.2010	Multi-jet wet dial water meter, horizontal version Pegasus-w/STD, FBM/STD, for Q ₃ 16 and Q ₃ 25 – Exploded
W 98.6483.01	24.07.2008	List of materials.
K 96.6265	15.07.2010	Mechanism Pegasus..., FPM... for Q ₃ 16 and Q ₃ 25 Detailed section
K 98.6729.01.00	15.09.2010	Multi-jet wet dial water meter, protected rollers, horizontal version Pegasus/LI, FPM/LI (with magnetic index for magnetic reading via Reed switch K 88.0414), Q ₃ 2.5 and Q ₃ 4 – Section
W 98.6729.01.00	14.09.2010	List of water meter materials (multi-jet- wet dial/protected rollers)
K 96.6202	15.07.2010	Mechanism Pegasus-w..., FBM... for Q ₃ 16 and Q ₃ 25 Detailed section



Annex to Type Examination Certificate no. CH-MI001-11045-05

K 90.0335	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus-w/STD, FBM/STD (direct reading) and Pegasus-w/LI, FBM/LI (for reed contact)
W 90.0335	22.08.2008	List of materials totalizer Pegasus-w...., FBM...
K 90.0335.06	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus-w/O, FBM/O (for optical reading)
W 90.0335.06	22.08.2008	List of materials totalizer Pegasus-w...., FBM...
K 90.0339	09.04.2010	Totalizer rollers and indexes 5/3 Pegasus-w/STD, FBM/STD (direct reading)
W 90.0339	22.08.2008	List of materials totalizer Pegasus-w...., FBM...
K 90.0342.01	12.04.2010	Totalizer rollers and indexes 5/4 Pegasus/O, FPM/O (for optical reading)
W 90.0342.01	26.07.2008	List of materials totalizer Pegasus, FPM
K 90.0343.01	09.04.2010	Totalizer rollers and indexes 5/4 Pegasus/O, FPM/O (for optical reading)
W 90.0343.01	26.07.2010	List of materials totalizer Pegasus...., FPM...
K 90.0343	08.04.2010	Totalizer rollers and indexes 5/4 Pegasus/STD, FPM/STD (direct reading) and Pegasus/LI, FPM/LI (for reed contact)
W 90.0343	22.08.2008	List of materials totalizer Pegasus, FPM Rollers and indexes 5/4 Pegasus, FPM
K 98.0344	21.08.2008	Totalizer rollers and indexes 6/4 Pegasus/STD, FPM/STD (direct reading) and Pegasus/LI, FPM/LI (for reed contact)
W 98.0344	26.07.2010	List of materials of register Pegasus, FPM Totalizer– rollers – indexes 6/4 Pegasus, FPM

7 Additional applications and functions not subject to relevant measuring instrument directive

Non-return valve

The water meter, as an option, can be fitted with a spring device to prevent return of the water flow.

This device may already be present during the technical measurement test or, in case of need, can be installed at a later stage in the water meter outlet, on condition that the safety seal is not damaged.

Totalizer pre-set for the pulse transmission

The water meters can be fitted with pulse transmission systems

- Reading with a Reed switch, see detailed drawing K 88.0413 of 02.07.2007 or K 88.0414 of 15.09.2010 (see paragraph 5)
- Opto electronic and inductive pulser, see assembly instructions and declaration of conformity in K 81.0001 of July 2009 (see paragraph 5)

All the pulse transmitter are interchangeable and can be replaced



Annex to Type Examination Certificate no. CH-MI001-11045-05

8 Specifications

Identical for all nominal flow rates

Setting value	ℓ	0.05
Water pressure class MAP	bar	16
Temperature range		T30: 0,1° C ≤ T ≤ 30° C T50: 0,1° C ≤ T ≤ 50° C
Accuracy class		± 2% (Q ₂ ≤ Q ≤ Q ₄), T ≤ 30° C ± 3% (Q ₂ ≤ Q ≤ Q ₄), T > 30° C ± 5% (Q ₁ ≤ Q < Q ₂)
Climatic and mechanical environment conditions: according to EN14154-3, 6.1.1		Class B 5°C - 55°C
Electromagnetic environmental conditions		Not applicable
Lifespan		12 years, abiding by normal conditions
Environmental and mechanical conditions		B (M1)
class of flow disturbance sensitivity		U0 / D0

Q₃ 1.6

Q ₃	m ³ /h	1.6
Q ₄	m ³ /h	2.0
Q ₂ /Q ₁		1.6
Dimensions in length	mm	Horizontal bodies ≥ 110 Vertical bodies ≥ 105
Fitting	DN	≥15
Fitting thread		No smaller than G ½" B (special threads M22 x 1.5)
Q ₁ Horizontal installation	l/h	12.8 / 16 / 20 / 25.4 / 32 / 40 / 50.8 / 64 / 80 / 100 128 / 160
Q ₁ Vertical installation	l/h	32 / 40 / 50.8 / 64 / 80 / 100 / 128 / 160
Q ₂ Horizontal installation	l/h	20.5 / 25.6 / 32 / 40.6 / 51.2 / 64 / 81.3 / 102.4 128 / 160 / 204.8 / 256
Q ₂ Vertical installation	l/h	512 / 64 / 81.3 / 102.4 / 128 / 160 / 204.8 / 256
Q ₃ /Q ₁ , (R) Horizontal installation		125 / 100 / 80 / 63 / 50 / 40 / 31.5 / 25 / 20 / 16 12.5 / 10
Q ₃ /Q ₁ , (R) Vertical installation		50 / 40 / 31.5 / 25 / 20 / 16 / 12.5 / 10
Pressure loss class Δp		40



Annex to Type Examination Certificate no. CH-MI001-11045-05

Q₃ 2.5

Q ₃	m ³ /h	2.5
Q ₄	m ³ /h	3.125
Q ₂ /Q ₁		1.6
Dimensions in length	mm	Horizontal bodies ≥ 110 Vertical bodies ≥ 105
Fitting	DN	≥15
Fitting thread		No smaller than G ½" B (special threads M22 x 1.5)
Q ₁ Horizontal installation	l/h	12.5 / 15.6 / 20 / 25 / 31.3 / 39.7 / 50 / 62.5 / 79.4 100 / 125 / 156.3 / 200 / 250
Q ₁ Vertical installation	l/h	31.3 / 39.7 / 50 / 62.5 / 79.4 / 100 / 125 / 156.3 200 / 250
Q ₂ Horizontal installation	l/h	20 / 25 / 32 / 40 / 50 / 63.5 / 80 / 100 / 127 / 160 200 / 250 / 320 / 400
Q ₂ Vertical installation	l/h	50 / 63.5 / 80 / 100 / 127 / 160 / 200 / 250 / 320 400
Q ₃ /Q ₁ , (R) Horizontal installation		200 / 160 / 125 / 100 / 80 / 63 / 50 / 40 / 31.5 / 25 20 / 16 / 12.5 / 10
Q ₃ /Q ₁ , (R) Vertical installation		80 / 63 / 50 / 40 / 31.5 / 25 / 20 / 16 / 12.5 / 10
Pressure loss class Δp		63, 40 ⁽¹⁾

⁽¹⁾ Pressure loss per body DN20 vertical = Class 40

Q₃ 4

Q ₃	m ³ /h	4	
Q ₄	m ³ /h	5	
Q ₂ /Q ₁		1.6	
Dimensions in length	mm	Horizontal bodies ≥ 160 Vertical bodies ≥ 105	Horizontal bodies ≥ 190
Fitting	DN	≥20	
Fitting thread		No smaller than G ¾" B	
Q ₁ Horizontal installation	l/h	16 / 20 / 25 / 32 / 40 / 50 / 63 / 80 / 100 / 127 160 / 200 / 250 / 320 / 400	
Q ₁ Vertical installation	l/h	50 / 63 / 80 / 100 / 127 160 / 200 / 250 / 320 /400 ⁽²⁾	40 / 50 / 63 / 80 / 100 127 / 160 / 200 / 250 320 / 400
Q ₂ Horizontal installation	l/h	25.6 / 32 / 40 / 51.2 / 64 / 80 / 100.8 / 128 / 160 203.2 / 256 / 320 / 400 / 512 / 640	
Q ₂ Vertical installation	l/h	80 / 100.8 / 128 / 160 203.2 / 256 / 320 400 / 512 / 640 ⁽²⁾	64 / 80 / 100.8 / 128 160 / 203.2 / 256 / 320 400 / 512 / 640
Q ₃ /Q ₁ , (R) Horizontal installation		250 / 200 / 160 / 125 / 100 / 80 / 63 / 50 / 40 / 31.5 25 / 20 / 16 / 12.5 / 10	



Annex to Type Examination Certificate no. CH-MI001-11045-05

Q ₃ /Q ₁ , (R) Vertical installation		80 / 63 / 50 / 40 / 31.5 25 / 20 / 16 / 12.5 10 ⁽²⁾	100 / 80 / 63 / 50 / 40 31.5 / 25 / 20 / 16 / 12.5 10
Pressure loss class Δp		63	

⁽²⁾

Vertical installation instructions are only for the horizontal body (not for the vertical one)

Q₃ 6.3

Q ₃	m ³ /h	6,3	
Q ₄	m ³ /h	7.875	
Q ₂ /Q ₁		16	
Dimensions in length	mm	Horizontal bodies ≥ 160 Vertical bodies ≥ 150	
Fitting	DN	≥25	
Fitting thread		≥ G 1 ⁿ /4 B	
Q ₁ Horizontal installation	l/h	25.2 / 31.5 / 39.4 / 50.4 / 63 / 78.8 / 100 / 126 157.5 / 200 / 252 / 315 / 393.8 / 504 / 630	
Q ₁ Vertical installation	l/h	78.8 / 100 / 126 / 157.5 / 200 / 252 / 315 / 393.8 504 / 630	
Q ₂ Horizontal installation	l/h	40.3 / 50.4 / 63 / 80.6 / 100.8 / 126 / 160 / 201.6 252 / 320 / 403.2 / 504 / 630 / 806.4 / 1008	
Q ₂ Vertical installation	l/h	126 / 160 / 201.6 / 252 / 320 / 403.2 / 504 / 630 806.4 / 1008	
Q ₃ /Q ₁ , (R) Horizontal installation		250 / 200 / 160 / 125 / 100 / 80 / 63 / 50 / 40 31.5 / 25 / 20 / 16 / 12.5 / 10	
Q ₃ /Q ₁ , (R) Vertical installation		80 / 63 / 50 / 40 / 31.5 / 25 / 20 / 16 / 12.5 / 10	
Pressure loss class Δp		40	

Q₃ 10

Q ₃	m ³ /h	10	
Q ₄	m ³ /h	12.5	
Q ₂ /Q ₁		1.6	
Dimensions in length	mm	Horizontal bodies ≥ 160 Vertical bodies ≥ 150	
Fitting	DN	≥25	
Fitting thread		≥ G 1 ⁿ /4 B	
Q ₁ Horizontal installation	l/h	40 / 50 / 62.5 / 80 / 100 / 125 / 158.7 / 200 / 250 317.5 / 400 / 500 / 625 / 800 / 1000	
Q ₁ Vertical installation	l/h	125 / 158.7 / 200 / 250 / 317.5 / 400 / 500 / 625 800 / 1000	
Q ₂ Horizontal installation	l/h	64 / 80 / 100 / 128 / 160 / 200 / 254 / 320 / 400 507.9 / 640 / 800 / 1000 / 1280 / 1600	



Annex to Type Examination Certificate no. CH-MI001-11045-05

Q ₂ Vertical installation	l/h	200 / 254 / 320 / 400 / 507.9 / 640 / 800 / 1000 1280 / 1600
Q ₃ /Q ₁ , (R) Horizontal installation		250 / 200 / 160 / 125 / 100 / 80 / 63 / 50 / 40 31.5 / 25 / 20 / 16 / 12.5 / 10
Q ₃ /Q ₁ , (R) Vertical installation		80 / 63 / 50 / 40 / 31.5 / 25 / 20 / 16 / 12.5 / 10
Pressure loss class Δp		63

Q₃ 16

Q ₃	m ³ /h	16
Q ₄	m ³ /h	20
Q ₂ /Q ₁		1.6
Dimensions in length	mm	Horizontal bodies \geq 270 Vertical bodies \geq 150
Fitting	DN	\geq 40
Fitting thread		\geq G 2" B
Q ₁ Horizontal installation	l/h	64 / 80 / 100 / 128 / 160 / 200 / 254 / 320 / 400 507.9 / 640 / 800 / 1000 / 1280 / 1600
Q ₂ Horizontal installation	l/h	102.4 / 128 / 160 / 204.8 / 256 / 320 / 406.4 / 512 640 / 812.7 / 1024 / 1280 / 1600 / 2048 / 2560
Q ₃ /Q ₁ , (R) Horizontal installation		250 / 200 / 160 / 125 / 100 / 80 / 63 / 50 / 40 31.5 / 25 / 20 / 16 / 12.5 / 10
Pressure loss class Δp		63

Q₃ 25

Q ₃	m ³ /h	25
Q ₄	m ³ /h	31.250
Q ₂ /Q ₁		1.6
Dimensions in length	mm	Horizontal bodies \geq 270 Vertical bodies \geq 150
Fitting	DN	\geq 40
Fitting thread		\geq G 2" B
Q ₁ Horizontal installation	l/h	79.4 / 100 / 125 / 156.3 / 200 / 250 / 312.5 / 396.8 / 500 / 625 / 793.7 / 1000 / 1250 / 1562.5 2000 / 2500
Q ₂ Horizontal installation	l/h	127 / 160 / 200 / 250 / 320 / 400 / 500 / 634.9 / 800 1000 / 1269.8 / 1600 / 2000 / 2500 / 3200 4000
Q ₃ /Q ₁ , (R) Horizontal installation		315 / 250 / 200 / 160 / 125 / 100 / 80 / 63 / 50 40 / 31.5 / 25 / 20 / 16 / 12.5 / 10
Pressure loss class Δp		63



Annex to Type Examination Certificate no. CH-MI001-11045-05

9 Requirements for production, initial operation and use

Requirements for production

The final technical measurement test is carried out according to OIML R 49-1, version 2006 at the following flow rates at a water temperature of $20^{\circ}\text{C} \pm 10^{\circ}\text{C}$ at the three following flow rates:

$$Q_1 \leq Q \leq 1.1 Q_1$$

$$Q_2 \leq Q \leq 1.1 Q_2$$

$$0.9 Q_3 \leq Q \leq Q_3$$

The measurement error should not exceed the maximum admissible error at any of the flow rates mentioned above.

Requirements for initial operation

Straight pipelines are not required after or before the water meter.

It is advisable to install a safety device at the connection points from the pipes. This device, (adhesive marking, lead seal or other) used to prevent removal of the water meter should be installed so that it cannot be removed without being evidently damaged.

Each water meter must be supplied with clear instructions for its assembly and use.

The pulse devices K 81.0001 and K 88.0413 and K 88.0414 can also be applied at a later stage. This should only be carried out by professionals.

The device should be made safe via a safety system, which prevents disassembly by the user.

User notice

Always abide by the above-mentioned instructions at each subsequent connection or modification.

10 Information on inspecting meters in operation

Documents for the inspection

This certificate and the documents mentioned in point 6.

Test equipment

The test can be a volume or gravity type test or by comparing data. The test procedure must cover the flow rates indicated in point 9.

Technical measurement tests

This test must be carried out in an environment with nominal operating conditions.

11 Conditions for commercialisation

Information to be supplied with the instrument

Each water meter must be supplied with clear installation instructions. The instructions must contain the following points, to which special attention must be paid:

- Check the waterproof surfaces and gaskets prior to installation
- Check the readability of the dial data after installation. The visual readability of the reading data, of all the identification markings of the water meter and the conformity and metrological markings must not be compromised.



Annex to Type Examination Certificate no. CH-MI001-11045-05

- A pulse system can also be installed at a later stage. This should only be carried out by qualified personnel. The device must be made safe using a safety system, which prevents disassembly by the user.

The water meter must have the following labels:

- Q_3
- R class
- type examination certificate number
- logo or manufacturer's name
- year of manufacture and serial number
- water flow direction
- maximum operating pressure, if different from PN 1.0 MPa
- Temperature class T30 / T50
- Assembly position
- Measurement unit m^3
- class of flow disturbance sensitivity (These declarations can be on a separate data sheet which has to be assigned to the meter by means of an unambiguous identification)

12 Stamp locations and conformance labelling

The head must be sealed to the body of the water meter, so if voluntarily opened this can only be carried out using force and leaving evident traces.

The water meter must be fitted with a safety device, for ex.: sealing of lead, wire and lead, adhesive marking or other.

To protect against dirt or damages during transport to its installation site, the inlet and outlet on the body of the water meter must be protected.

The CE marking, the M metrological marking, the KBS identification for form D or F of the body in charge and the number of the type examination certificate must be affixed at a suitable place.

13 Certificate history

Issue	Date	Description
CH-MI001-11045-00	March 16, 2011	First Type Examination Certificate
CH-MI001-11045-01	June 16, 2011	Declaration of the class of flow disturbance sensitivity
CH-MI001-11045-02	September 12, 2011	Additional type designation
CH-MI001-11045-03	September 29, 2011	New company designation
CH-MI001-11045-04	November 25, 2011	New temperature class
CH-MI001-11045-05	March 01, 2012	Editorial changes