



Specification Water



hawle

CORROSION PROTECTION (inside and outside)

Acc. to DIN 30677 part 2: „External corrosion protection of buried valves - heavy-duty thermoset plastic coatings”

in accordance with:

- DIN 3476 („Corrosion protection of water valves and pipe fittings by epoxy powder or liquid epoxy resin linings ” as well as
- all quality and test requirements of RAL-GZ 662 (GSK - the association for high quality corrosion protection)

Application process: Fluidised bed epoxy powder coating (EWS)

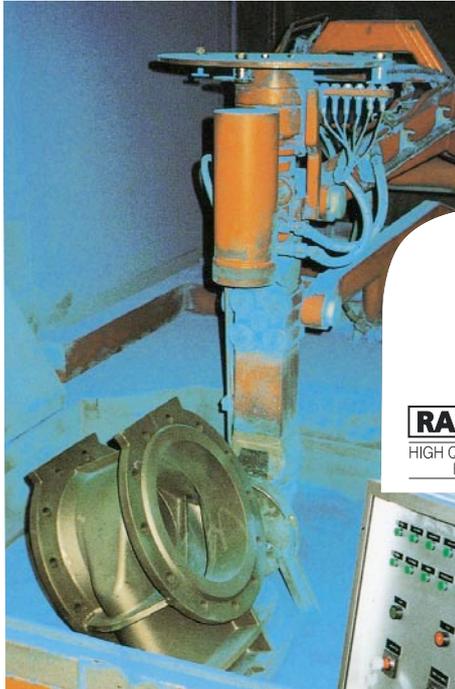


Figure left:
Fluidized: melting on of epoxy powder at 200° C

Figure top right:
Measurement of coating thickness:
at least 250 µm

Figure bottom right:
Impact testing:
spark test at 3000 V, no porosity and therefore no infiltration

Minimum requirements:

- Coating thickness: 250 µm
- Freedom from porosity: 3 kV (spark test)
- Adhesion: 12 N/mm²
- Cross-linking: 30 sec with methylisobutylcetone

Cathodic infiltration: at 23° C (±2) / 30 days - max. infiltration depth < 10 mm or
at 65° C (± 2) / 2 days - max. infiltration depth < 15 mm

Impact resistance: 5 Nm / 3 kV (spark test)

Approved for drinking water: in accordance with KTW recommendations and DVGW sheet W 270

Quality assurance:

• Self-auditing:

The coating company is obliged to perform continuous self-auditing of its preliminary treatment and production in accordance with the quality and test requirements (RAL-GZ 662) according to an auditing schedule, and to record the results and preserve these records for 5 years.

• Foreign auditing:

For a long-term use of the quality mark RAL-GZ 622 foreign audits are required at regular intervals. According to DIN 3476 foreign audits (audit inspection) for KTW admission is required at intervals of 3 years. Sampling is performed by an independent (neutral) testing institute.



Hawle Quality Warranty

Hawle products are manufactured according to the latest state of the art of materials technology.

For original Hawle products labeled with the “hawle” logo, we guarantee satisfactory operation for a period of ten years from the day of delivery. The warranty refers to products appropriately used for drinking water supply – concerning the usage of gas products the warranty refers to the distribution of fuel gases according to EN 437.

Damage caused by careless storage, transport, treatment and unqualified installation, failure to observe the applications regulations, unsatisfactory maintenance and care and the inadequate usage of products and replacement parts will not be covered by the warranty.

Damaged products will be repaired and/or replaced with equivalent products by Hawle during the warranty period.

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1. Resilient Seated Gate Valves

1.1 Elypso Valves Flanged Ends

1.1.1 „E2“ Elypso Valve Flanged Ends, short

1.1.1.1 „E2“ Elypso Valve Flanged Ends, short, PN 16 DN 50 – DN 600

- acc. to DIN 3352-T4
- face-to-face dimension acc. to EN 558-1 GR14-short (DIN 3202-F4)
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized, with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in the rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings (up to DN 200 under pressure acc. to ISO 7259 / for DN 250 and higher in pressureless condition)
- frictionless bearing of the spindle on friction washers of POM, for DN 250 mm and higher additional spindle bearing in 2 maintenance-free axial grooved ball bearings
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE „E2“ Elypso Valve Flanged Ends No. 4000E2
or equivalent

1.1.1.2 „E2“ Elypso Valve Flanged Ends, short, PN 16, with position indicator DN 50 – DN 400

as described under item 1.1.1.1.

however:

- with position indicator

e.g. HAWLE Elypso Valve Flanged Ends with position indicator
No. 4000STE2
or equivalent



Catalogue pages
A 1/1b, A 1/1c

**1.1.1.3 „E2“ Elypso Valve Flanged Ends, short, PN 16, for electric actuator
DN 50 – DN 600**

as described under item 1.1.1.1.

however:

- with adaptor for actuator

e.g. HAWLE „E2“ Elypso Valve Flanged Ends

No. 4000ELE2

or equivalent

1.1.2. Elypso Valve Flanged Ends, short
**1.1.2.1 Elypso Valve Flanged Ends, short, PN 16
DN 20 - DN 200**

- acc. to DIN 3352-T4
- face-to-face dimension acc. to EN 558-1 GR14-short (formerly DIN 3202-F4)
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²

(for more details please see page 2)
- wedge DN 20 - DN 40 of non-ferrous metal, larger dimensions of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), corrosion protected inside, encapsulated with vulcanized elastomer (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021 - X 20Cr13), rolled thread, spindle in the area of the O-ring sealing polished
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Elypso Valve Flanged Ends No. 4000

or equivalent



Catalogue pages
A 1/1, A 1/1a

1.1.3 „E2“ Elypso Valve Flanged Ends, long

1.1.3.1 „E2“ Elypso Valve Flanged Ends, long, PN 16 DN 50 – DN 600

- acc. to DIN 3352-T4
- face-to-face dimension acc. to EN 558-1 GR15-long (DIN 3202-F5)
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings (up to DN 200 under pressure acc. to ISO 7259 / for DN 250 and higher in pressureless condition)
- frictionless bearing of the spindle on friction washers of POM, for DN 250 mm and higher additional spindle bearing in 2 maintenance-free axial grooved ball bearings
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE „E2“ Elypso Valve Flanged Ends No. 4700E2 or equivalent

1.1.3.2 „E2“ Elypso Valve Flanged Ends, long, PN 16, with position indicator DN 50 – DN 400

as described under item 1.1.3.1.

however:

- with position indicator

e.g. HAWLE „E2“ Elypso Valve Flanged Ends with position indicator No.4700STE or equivalent

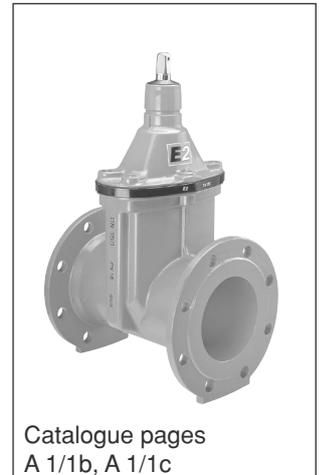
1.1.3.3 „E2“ Elypso Valve Flanged Ends, long, PN 16, for electric actuator DN 50 – DN 600

as described under item 1.1.3.1.

however:

- with adaptor for actuator

e.g. HAWLE „E2“ Elypso Valve Flanged Ends No. 4700ELE2 or equivalent



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1.1.4 Elypso Valves Flanged Ends, long

1.1.4.1 Elypso Valve Flanged Ends, long, PN 16 DN 32 - 200

- acc. to DIN 3352-T4
- face-to-face dimension acc. to EN 558-1 GR15-long (formerly DIN 3202-F5)
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge DN 32 - DN 40 of non-ferrous metal, larger dimensions of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), corrosion protected inside, encapsulated with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021 - X 20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Elypso Valve Flanged Ends No. 4700
or equivalent

1.1.5 „E2“ Elypso Reducing Valve PN 10/16 DN 65/100 - 250/300

- acc. to DIN 3352-T4
- with unequal flange sizes
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore



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- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings (up to DN 200 under pressure acc. to ISO 7259 / for DN 250 and higher in pressureless condition)
- frictionless bearing of the spindle on friction washers of POM, for DN 250 mm and higher additional spindle bearing in 2 maintenance-free axial grooved ball bearings
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE „E2“ Elypso Reducing Valve No. 4150E2
or equivalent

1.2 „E2“ Elypso Valves Spigot Ends

1.2.1 „E2“ Elypso Valve Spigot Ends, PN 16 DN 50 - 300

- acc. to DIN 3352-T4
- spigot end outer diameter suitable for DCI pipes EN 545
- with rectangular ends
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings (up to DN 200 under pressure acc. to ISO 7259 / for DN 250 and higher in pressureless condition)
- frictionless bearing of the spindle on friction washers of POM, for DN 250 mm and higher additional spindle bearing in 2 maintenance-free axial grooved ball bearings

e.g. HAWLE „E2“ Elypso Valve Spigot Ends No. 4100E2
or equivalent

1.2.2 „E2“ Elypso Valve Spigot Ends, PN 16 DN 50 - 300

as described under item 1.2.1

however:

- face-to-face dimension 600 mm

e.g. HAWLE „E2“ Elypso Valve Spigot Ends No. 4140E2
or equivalent



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Accessories:

- Flange Adaptors suitable for „E2“ Elypso Valve Spigot Ends

e.g. HAWLE Flange Adaptor No. 7102
or equivalent

**1.3 „E2“ Elypso Valve Socket Ends for DCI pipes, PN 16
DN 80 - 300**

- acc. to DIN 3352-T4
- with sockets for DCI pipes acc. to EN 545
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings (up to DN 200 under pressure acc. to ISO 7259 / for DN 250 and higher in pressureless condition)
- frictionless bearing of the spindle on friction washers of POM, for DN 250 mm and higher additional spindle bearing in 2 maintenance-free axial grooved ball bearings

e.g. HAWLE „E2“ Elypso Valve Socket Ends for DCI pipes No. 4500E2
or equivalent

Accessories:

- restraint joints for sockets for DCI pipes

e.g. HAWLE Hawle Stop No. NL80
or equivalent

**1.4 „E2“ VRS Socket-Spigot Valve for VRS DCI pipes, PN 16
DN 80 - 300**

- acc. to DIN 3352-T4
- with VRS socket and spigot end for VRS DCI pipes
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), inside corrosion-protected, outside rubberized with vulcanized elastomer rubber (EN 1074-1), with drain hole



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- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- for DN 250 mm and higher additional spindle guiding in 2 maintenance-free axial grooved ball bearings
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE „E2“ VRS Socket Valve No. 4027E2
or equivalent

1.5 „E2“ Elypso Valves with Fusion Tail for PE pipes

1.5.1 „E2“ Elypso Valve for PE Fusion , PN 10 DN 50/63 - 200/225

- acc. to DIN 3352-T4
- with PE fusion tails for use with PE piping acc. to DIN 8075
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge DN 20 - DN 40 of non-ferrous metal, larger dimensions of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), corrosion protected inside, encapsulated with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- double sealing of PE fusion tail by means of O-ring and lip seal
- PE tails reinforced by a support liner of stainless steel in the sealing area
- PE tails injection moulded of PE 80
(alternatively PE 100)
restraint acc. to DVGW VP600

e.g. HAWLE „E2“ Valve for PE Fusion No. 4050E2
or equivalent



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**1.5.2 „E2“ Elypso Valve for PE Fusion , PN 6
DN 50/63 - 200/225**

as described under item 1.5.1
however:
- working pressure PN 6

e.g. HAWLE „E2“ Valve for PE Fusion No. 4051E2
or equivalent

**1.5.3 „E2“ Elypso Valve Flange/PE tail, PN 10
DN 50/63 - 200/225**

as described under item 1.5.1
however:

- with flange and PE fusion tail for use with PE pipes acc. to DIN 8075
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)

e.g. HAWLE „E2“ Elypso Valve Flange/PE tail No. 4090E2
or equivalent

**1.5.4 „E2“ Elypso Valve Flange/PE tail, PN 6
DN 50/63 - 200/225**

as described under item 1.5.3
however:

- working pressure PN 6
(alternatively PN 10)

e.g. HAWLE „E2“ Elypso Valve Flange/PE tail No. 4091E2
or equivalent

**1.6 „E2“ Elypso Socket Valves „System 2000“ for PE and PVC pipes PN 16,
restraint**



**1.6.1 „E2“ Elypso Socket Valve „System 2000“ for PE and PVC pipes PN 16,
restraint**

DN 50/63 - 300/315

- acc. to DIN 3352-T4
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings (up to DN 200

under pressure acc. to ISO 7259 / for DN 250 and higher in pressureless condition)

- frictionless bearing of the spindle on friction washers of POM, for DN 250 mm and higher additional spindle bearing in 2 maintenance-free axial grooved ball bearings
- sockets at both ends for PE and PVC pipes (DIN 8074/8075, 8061/8062)
- grip ring for restraint joint of Ms 58 or RG 7 with special interlocking teeth
- lip seal of elastomer rubber
- all exposed bolts and washers of stainless steel (minimum quality grade A2), screw thread sealed
- restraint acc. to DIN 8076 T1/T3

e.g. HAWLE „E2“ Elypso Valve „System 2000“ No. 4040E2
or equivalent

1.6.2 „E2“ Elypso Valve Flange/Socket End „System 2000“ for PE and PVC pipes PN 16, restraint DN 50/63 - 300/315

as described under item 1.6.1

however:

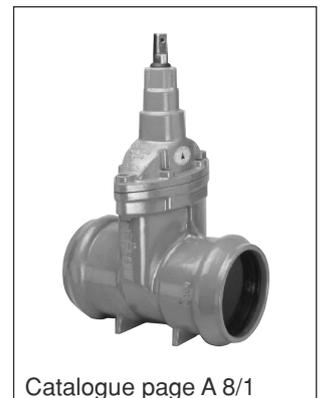
- with flange and socket end „System 2000“
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)

e.g. HAWLE „E2“ Elypso Valve with Flange/Socket End „System 2000“
No. 4041E2
or equivalent

1.7 Elypso Socket Valve for PVC pipes PN 16 DN 50/63 - 200/225

- acc. to DIN 3352-T4
- with sockets at both ends for PVC pipes acc. to DIN 8061/8062 + EN 1452-2
- body and bonnet of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), corrosion protected inside, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- lip seal of socket of elastomer rubber

e.g. HAWLE Elypso Valve Socket Ends No. 4600
or equivalent





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**1.8 „E2“ Elypso Valves System „BAIO®“
(socket alternatively for DCI or plastic pipes)**

**1.8.1 „E2“ Elypso Spigot/Socket End Valve System „BAIO®“
PN 16, DN 80 - 300**

- acc. to DIN 3352-T4
- with spigot end and double function socket System „BAIO®“
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings (up to DN 200 under pressure acc. to ISO 7259 / for DN 250 and higher in pressureless condition)
- frictionless bearing of the spindle on friction washers of POM, for DN 250 mm and higher additional spindle bearing in 2 maintenance-free axial grooved ball bearings

e.g. HAWLE „E2“ Elypso Valve Socket Ends System „BAIO®“ No. NL00E2 or equivalent

**1.8.2 „E2“ Elypso Valve Socket Ends System „BAIO®“
PN 16, DN 80 - 300**

as described under item 1.3

however:

- both ends with double function socket System „BAIO®“

e.g. HAWLE „E2“ Elypso Valve Socket Ends System „BAIO®“ No. 4500E2 or equivalent

1.8.3 Accessories: Restraint Joint for System „BAIO®“

alternatively:

- with clamp for DCI, PE or PVC pipes

e.g. HAWLE Restraint Joint „Hawle-Stop“ or equivalent

1.9 Knife Gate Valves

1.9.1 Knife Gate Valve, non-rising spindle

DN 50 - 200/PN 10 / DN 250 - 400/PN 6

- face-to-face dimension acc. to EN 558-1 GR20 (formerly DIN 3202-K1)
- thrust block and body of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691)

inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:

- coating thickness: min. 250 µm
- zero porosity: min. 3000 V spark test
- adhesion: min. 12 N/mm²

(for more details please see page 2)

- tie bars of stainless steel (minimum quality grade 1.4021)
- knife of stainless steel (minimum quality grade 1.4301)
- non-rising spindle of stainless steel (minimum quality grade 1.4021), rolled thread, finish-rolled sliding surfaces
- bolts of stainless steel (minimum quality grade A2)
- adjustable sealing system
- flange drilling to EN 1092-2 PN 10

e.g. HAWLE Knife Gate Valve No. 3600
or equivalent

1.9.2 Knife Gate Valve, non-rising spindle, for electric actuator

DN 80 - 200/PN 10 / DN 250 - 400/PN 6

as described under item 1.9.1

however:

- with adaptor for actuator

e.g. HAWLE Knife Gate Valve No. 3600EL
or equivalent



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2. Resilient Seated Combi Valves

2.1 „E2“ Combi-T

2.1.1 „E2“ Combi-T, PN 16, with flange connection DN 65 - 200

- flanged T-piece with integral Elypso Valve
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings under pressure acc. to ISO 7259
- frictionless bearing of the spindle on friction washers of POM
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE „E2“ Combi-T No. 4340E2
or equivalent

2.1.2 „E2“ Combi T „System 2000“ for PE and PVC pipes PN 16, restraint DN 50/63 - 200/225

- acc. to DIN 3352-T4
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket



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- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings under pressure acc. to ISO 7259
- frictionless bearing of the spindle on friction washers of POM
- all ends sockets for PE and PVC pipes (DIN 8074/8075, 8061/8062)
- grip ring for restraint joint of Ms 58 or RG 7 with special interlocking teeth
- lip seal of elastomer
- all exposed bolts and washers of stainless steel (minimum quality grade A2), screw thread sealed
- restraint acc. to DIN 8076 T1/T3

e.g. HAWLE „E2“ Combi-T „System 2000“ No. 4343E2
or equivalent

2.1.3 „E2“ Combi-T, with socket connection System „BAIO®“ PN 16, DN 80 - 200

- T-piece with double function socket System „BAIO®“ and integral shut-off valve
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021-X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings under pressure acc. to ISO 7259
- frictionless bearing of the spindle on friction washers of POM

e.g. HAWLE „E2“ Socket Combi Tee System „BAIO®“ No. NL10E2
or equivalent

Accessories:

- restraint joint for System „BAIO®“
alternatively: with clamp for DCI, PE or PVC pipes

e.g. HAWLE Restraint Joint „Hawle-Stop“
or equivalent



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2.2 „E2“ Combi-III
2.2.1 „E2“ Combi-III, PN 16, DN 80 - 200

- flanged T-piece *alternatively* with 2 or 3 Elypso Valves
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²*(for more details please see page 2)*
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic,
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings under pressure acc. to ISO 7259
- frictionless bearing of the spindle on friction washers of POM
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE „E2“ Combi-III No. 4450E
or equivalent

2.2.2 „E2“ Combi-III, PN 10/16, with vertical centre outlet DN 100, 150 and 200

as described under item 2.2.1
however:

- with vertical centre outlet DN 100

e.g. HAWLE „E2“ Combi-III with vertical centre outlet No. 4460E2
or equivalent

2.2.3 „E2“ Combi III, with socket connection System „BAIO®“, PN 16, DN 150

- T-piece with double function socket System „BAIO®“ *alternatively* with 2 or 3 integral shut-off valves
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²*(for more details please see page 2)*
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing



Special prospect BAIO®

- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings under pressure acc. to ISO 7259
- frictionless bearing of the spindle on friction washers of POM
e.g. HAWLE „E2“ Combi III System „BAIO®“ No. NL15E2
or equivalent

Accessories:

- restraint joint for System „BAIO®“
alternatively: with clamp for DCI, PE or PVC pipes

e.g. HAWLE Restraint Joint „Hawle-Stop“
or equivalent

2.3 „E2“ Combi-IV**2.3.1 „E2“ Combi-IV, PN 16, DN 80 - 200**

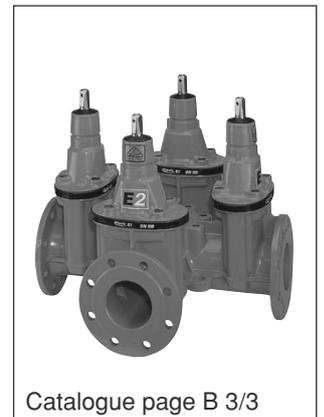
- flanged cross connection fitting with 2, 3 or 4 Elypso Valves
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693) inside and outside fully rubberized with vulcanized elastomer rubber (EN 1074-1), wedge nut (of non-ferrous metal) completely borne in rubberized wedge, with drain hole, wedge guide of wear-resistant plastic
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore in conformity with nominal width
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1), replaceable O-rings under pressure acc. to ISO 7259
- frictionless bearing of the spindle on friction washers of POM
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE „E2“ Combi-IV No. 4400E2
or equivalent

2.3.2 „E2“ Combi-IV, PN 10/16, with vertical centre outlet DN 100,150 and 200

as described under item 2.3.1
however:

- with vertical centre outlet DN 100
- e.g. HAWLE „E2“ Combi-IV No. 4410E2
or equivalent



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3. Resilient-Seated Service Valves

3.1 Service Valve, with female threads both ends

3.1.1 Service Valve, with female threads both ends, PN 16, of cast iron DN 1/2 - 2"

- both ends with female thread
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of Ms 58 or RG 7, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Service Valve No. 2500
or equivalent

3.1.2 Service Valve, with female threads both ends, PN 16, of brass DN 1" - 2"

as described under item 3.1.1
however:

- body and bonnet of stamped brass

e.g. HAWLE Service Valve No. 2510
or equivalent



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3.2 Service Valve with one female and one male thread, PN 16, DN 1" - 2"

- with one female and one male thread
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of Ms 58 or RG 7, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole



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- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Service Valve No. 2520
or equivalent

3.3 Service Valve with ISO Fitting for PE pipes and bayonet connection, restraint, PN 16, of cast iron, DN ¾" – 1 ½" with connection 34

- one end with ISO push-fit socket for PE pipes acc. to DIN 8074/8075, other end with bayonet lugs and O-ring sealing with two O-rings for perfectly corrosion protected, restraint bayonet connection with suitable pipe drilling saddles
- body and bonnet of ductile iron acc. to EN 1563 (DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662 (for more details please see page 2)
- wedge of Ms 58, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion-protected
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- restraint acc. to DIN 8076 T1/T3
- clamp with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside
- with locking piston for bayonet connection

e.g. HAWLE ZAK Service Valve No. 2810
or equivalent

alternatively:

- for PVC pipes acc. to DIN 8061/8062 (with special clamp)





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3.4 Service Valves, male thread and ISO fitting for PE pipe, restraint
3.4.1 Service Valve, male thread and ISO fitting for PE pipe, restraint PN 16, of cast iron, DN 1" - 2"

- 1 male thread, 1 ISO pipe fitting PE pipe connection (DIN 8074/8075) and 1 female thread (for drilling machine or steel pipe connection)
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of Ms 58 or RG 7, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- restraint acc. to DIN 8076 T1/T3
- clamp for restraint joint with special interlocking teeth
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Service Valve No. 2800
or equivalent

alternatively:

- for PVC pipes acc. to DIN 8061/8062 (with special clamp)

3.4.2 Service Valve, male thread and ISO fitting for PE pipe, restraint PN 16, of POM, DN 1" / d 25, 32, 40, 50 and 63 mm

- with male thread connection 2" for mounting onto saddle, 1½" connecting thread and ISO push-fit fitting for PE pipes acc. to DIN 8074/8075
- of plastic - POM (polyoxymethylene)
- wedge of Ms 58 or RG 7, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- restraint acc. to DIN 8076 T1/T3
- clamp with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside

e.g. HAWLE ISO Combination Tapping Valve No. 2680
or equivalent



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alternatively:

- without ISO push-fit fitting

e.g. HAWLE ISO Combination Tapping Valve No. 2681
or equivalent

- for PVC pipes acc. to DIN 8061/8062 (with special clamp)

Accessories:

- ISO push-fit fitting for PE pipes

e.g. HAWLE ISO push-fit fitting No. 6221F
or equivalent

3.5 Service Valves with ISO fitting for PE pipe both ends, restraint**3.5.1 Service Valve with ISO fitting for PE pipe both ends, restraint
PN 16, of cast iron, DN ¾" - 2"**

- both ends with ISO push-fit sockets for PE pipes acc. to DIN 8074/8075
- bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- body of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of Ms 58 or RG 7, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- restraint acc. to DIN 8076 T1/T3
- clamp with special interlocking teeth
- ISO push-fit sockets protected by dirt cap against water and dirt from outside
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Service Valve No. 2600
or equivalent

alternatively:

- for PVC pipes acc. to DIN 8061/8062 (with special clamp)

**3.5.2 Service Valve with ISO fitting for PE pipe both ends, restraint
PN 16, of POM, DN ½" - 2"**

as described under item 3.5.1

however:

- body and bonnet of plastic - POM (polyoxymethylene)

e.g. HAWLE Service Valve No. 2630
or equivalent

alternatively:

- for PVC pipes acc. to DIN 8061/8062 (with special clamp)





3.6 Service Valves for PE fusion

3.6.1 Service Valve for PE fusion PN 10, of cast iron, DN 1" - 2"

- 2 PE fusion tails for use with PE piping acc. to DIN 8074/8075
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- wedge of Ms 58 or RG 7, rubberized outside with vulcanized elastomer rubber (EN 1074-1), with drain hole
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- smooth straight-through bore
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- double sealing of PE tails by two O-rings
- PE tails reinforced by a support liner of stainless steel in the sealing area
- PE tails injection moulded of HDPE PE 80 (alternatively PE 100)
- restraint acc. to DVGW VP 600
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Service Valve for PE fusion No. 4050
or equivalent

3.6.2 Service Valve for PE fusion, PN 6, of cast iron, DN 1" - 2"

as described under item 3.6.1
however:
- working pressure PN 6

e.g. HAWLE Service Valve for PE Fusion No. 4051
or equivalent

3.6.3 Service Valve for PE fusion, PN 10, of POM, DN 1" - 2"

as described under item 3.6.1
however:
- body and bonnet of plastic - POM (polyoxymethylene)

e.g. HAWLE Service Valve for PE Fusion No. 2670
or equivalent



3.6.4 Service Valve for PE fusion, PN 6, of POM, DN 1" - 2"

as described under item 3.6.3
however:
- working pressure PN 6

e.g. HAWLE Service Valve for PE Fusion No. 2671
or equivalent

3.7 Service Valve, angle type, with female thread outlet

3.7.1 Service Valve, angle type, with female thread outlet PN 16, DN 1" - 2"

- with female thread outlet and male thread connection for installation on pipe saddles
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- shut-off plug of RG 7 or MS 58, rubberized outside with vulcanized elastomer rubber (EN 1074-1)
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Service Valve, angle-type No. 3120
or equivalent

3.7.2 Service Valve, angle type, with female thread outlet both ends, self-draining PN 16, DN ¾" - 2"

as described under item 3.7.1
however:
- self-draining and with pressure control

e.g. HAWLE Service Valve, angle-type No. 2491
or equivalent



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3.8 Service Valves, angle type, with ISO fitting for PE pipes, restraint
3.8.1 Service Valve, angle type, with ISO fitting for PE pipes, restraint of cast iron, PN 16, DN 1" - 2"

- with ISO push-fit socket for PE piping acc. to DIN 8074/8075 and male thread connection for installation on pipe saddles
- body and bonnet of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- shut-off plug of RG 7 or MS 58, rubberized outside with vulcanized elastomer rubber (EN 1074-1)
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion protected by being countersunk and sealed with sealing compound, and by bonnet gasket
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- restraint acc. to DIN 8076 T1/T3
- clamp with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)
- approved by ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Service Valve, angle-type No. 3130 or equivalent

alternatively:

-for PVC pipes acc. to DIN 8061/8062 (with special clamp)

3.8.2 Service Valve, angle type, with ISO fitting for PE pipes and bayonet connection, restraint

PN 16, of cast iron, DN ¾" and 1" with connection 34, DN 1¼" and 1½" with connection 46

- with ISO push-fit socket for PE piping acc. to DIN 8074/8075 and with bayonet lugs and O-ring sealing with two O-rings for a perfectly corrosion protected restraint and lockable bayonet connection with suitable drilling saddle
- body and bonnet of ductile iron acc. to EN 1563 (DIN 1693)
- inside and outside epoxy powder coated DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- shut-off plug of Ms 58, rubberized outside with vulcanized elastomer rubber (EN 1074-1)
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- bolts corrosion-protected
- maintenance-free spindle sealing by multiple O-ring system as well as



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additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)

- restraint acc. to DIN 8076 T1/T3
- clamp with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside
- with locking piston for bayonet connection

e.g. HAWLE ZAK Service Valve, angle-type No. 3160
or equivalent

alternatively:

-for PVC pipes acc. to DIN 8061/8062 (with special clamp)

3.8.3 Service Valve, angle type, with male thread and socket for PE pipe, restraint

PN 16, of POM, DN 1" / d 25, 32, 40, 50 and 63 mm

- with male thread connection 2" for mounting onto saddle, 1½" connecting thread and ISO push-fit fitting for PE pipes acc. to DIN 8074/8075
- of plastic - POM (polyoxymethylene)
- shut-off plug of RG 7, rubberized outside with vulcanized elastomer rubber (EN 1074-1)
- non-rising stainless steel spindle (minimum quality grade 1.4021– X20Cr13), rolled thread, spindle polished in the area of the O-ring sealing
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- restraint acc. to DIN 8076 T1/T3
- clamp with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside

e.g. HAWLE ISO Combination Service Valve No. 3150
or equivalent

alternatively:

- without ISO push-fit fitting

e.g. HAWLE ISO Combination Service Valve No. 3151
or equivalent

- for PVC pipes acc. to DIN 8061/8062 (with special clamp)

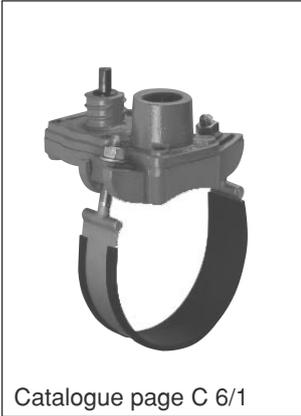
Accessories:

- ISO push-fit fittings for PE pipes

e.g. HAWLE ISO Connecting Fitting No. 6221F
or equivalent



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3.9 Pipe Drilling Saddles
3.9.1 Pipe Drilling Saddle for DCI pipes, steel pipes and AC pipes with female thread
PN 16, DN 80 - 400 / 1" - 1½"

- for DCI pipes, steel pipes and AC pipes
- for vertical drilling
- body of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310)
- saddle sealing of elastomer rubber
- strap of stainless steel (minimum quality grade 1.4571) with continuous rubber lining
- bolts of stainless steel (minimum quality grade 1.4308)
- nuts of rust-proof and acid-proof steel (minimum quality grade 1.4401), with friction lining
- smooth straight-through bore

e.g. HAWLE Universal Hawlinger No. 2402 or equivalent



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3.9.2 Pipe Drilling Saddle with bayonet connection
PN 16, DN 65 - 500 / with connection 34 or 46

- for DCI pipes, steel pipes and AC pipes
- with vertical outlet
- outlet with inside bayonet locking for completely corrosion-protected, restraint and lockable connection with suitable fitting
- bayonet connection 34 for max. drilling of Ø 25 mm, bayonet connection 46 for max. drilling of Ø 35 mm
- body of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with quality and test requirements RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310), completely straight-through bore, shut-off plate, when open, completely outside of flow medium
- saddle sealing of elastomer rubber
- strap of stainless steel (minimum quality grade 1.4571) with continuous rubber lining
- bolts of stainless steel (minimum quality grade 1.4308)
- nuts of rust-proof and acid-proof steel (minimum quality grade 1.4401), with friction lining

e.g. HAWLE ZAK Universal Hawlinger No. 2405 or equivalent

3.9.3 Pipe Drilling Saddle with bayonet connection PN 16, DN 65 - 500 / with connection 34 or 46

- for DCI pipes, steel pipes and AC pipes
- with one vertical and one horizontal outlet in pipe direction (the vertical outlet is closed by means of a sealing plug)
- outlet with inside bayonet locking for completely corrosion-protected, restraint and lockable connection with suitable fitting
- bayonet connection 34 for max. drilling of \varnothing 25 mm, bayonet connection 46 for max. drilling of \varnothing 35 mm
- body of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 μ m
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310), completely straight-through bore, shut-off plate, when open, completely outside of flow medium
- saddle sealing of elastomer rubber
- strap of stainless steel (minimum quality grade 1.4571) with continuous rubber lining
- bolts of stainless steel (minimum quality grade 1.4308)
- nuts of rust-proof and acid-proof steel (minimum quality grade 1.4401), with friction lining

e.g. HAWLE ZAK Universal Hawlinger No. 2410
or equivalent

3.9.4 Pipe Drilling Saddle for PE and PVC pipes with female thread PN 16, d 90 - 225 / 1" - 1½"

- for PE and PVC pipes acc. to DIN 8074/8075 and/or DIN 8061/8062
- for vertical drilling
- body and strap of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 μ m
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310)
- bolts of stainless steel (minimum quality grade A2)
- seal is in full contact with the entire diameter of the pipe, drilling hole is sealed by at least 2 O-ring profiles, metal stop, width acc. to DIN 3543-T3
- smooth straight-through bore

e.g. HAWLE HAKU Hawlinger No. 2300
or equivalent



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3.9.5 Pipe Drilling Saddle with bayonet connection
PN 16, d 63 - 225 / with connection 34, d 90 – 225 / with connection 46

- for PE and PVC pipes acc. to DIN 8074/8075 and/or DIN 8061/8062
- with vertical outlet
- outlet with inside bayonet locking for completely corrosion-protected, restraint and lockable connection with suitable fitting
- bayonet connection 34 for max. drilling of Ø 25 mm, bayonet connection 46 for max. drilling of Ø 35 mm
- body and strap of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310), completely straight-through bore, shut-off plate, when open, completely outside of flow medium
- bolts of stainless steel (minimum quality grade A2)
- seal is in full contact with the entire diameter of the pipe, drilling hole is sealed by at least 2 O-ring profiles, metal stop, width acc. to DIN 3543-T3

e.g. HAWLE ZAK HAKU Hawlinger No. 2305
or equivalent



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3.9.6 Pipe Drilling Saddle with bayonet connection
PN 16, d 63 - 225 / with connection 34, d 90 – 225 / with connection 46

- for PE and PVC pipes acc. to DIN 8074/8075 and/or DIN 8061/8062
- with one vertical and one horizontal outlet in pipe direction (the vertical outlet is closed by means of a sealing plug)
- outlets with inside bayonet locking for completely corrosion-protected, restraint and lockable connection with suitable fitting
- bayonet connection 34 for max. drilling of Ø 25 mm, bayonet connection 46 for max. drilling of Ø 35 mm
- body and strap of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- maintenance-free spindle sealing by multiple O-ring system and additional back seal; spindle bearing protected against water and dirt from outside by a wiper ring; O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310), completely straight-through bore, shut-off plate, when open, completely outside of flow medium
- bolts of stainless steel (minimum quality grade A2)
- seal is in full contact with the entire diameter of the pipe, drilling hole is sealed by at least 2 O-ring profiles, metal stop, width acc. to DIN 3543-T3

e.g. HAWLE ZAK HAKU Hawlinger No. 2310
or equivalent

3.10 Adaptor Valve PN 16 DN 1" - 1½"

- with male thread for use with pipe saddle
- for vertical drilling
- body of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- maintenance-free spindle sealing by multiple O-ring system as well as additional back seal, spindle bearing protected against water and dirt from outside by a wiper ring, O-rings embedded in non-corrosive material in the area of the spindle duct (acc. to DIN 3547-T1)
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310)

e.g. HAWLE Hawlinger Adaptor Valve No. 2200
or equivalent

3.11 Water Meter Consoles

3.11.1 Water Meter Consoles for 3 - 7 m³/h, threaded connection PN 16, DN 1" and 1¼"

- with integrated back flow preventer
- with retractable swivel nut - optional drainage plug
- 2 shut-off valves of stamped brass
- wall plate of aluminium
- with smooth and straight-through bore
- with axially adjustable water meter connections

e.g. HAWLE Water Meter Console No. 2961
or equivalent

3.11.2 Water Meter Consoles for 20 m³/h, threaded connection PN 16, DN 1½"

- with integrated back flow preventer
- 2 shut-off valves of hot-stamped brass
- wall plate of aluminium
- with smooth and straight-through bore
- with axially adjustable water meter connections

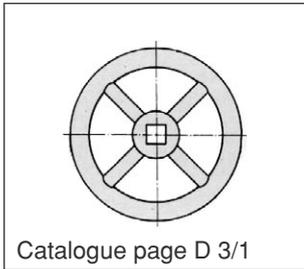
e.g. HAWLE Water Meter Console No. 2960
or equivalent

3.11.3 Water Meter Consoles for 20 (30) m³/h, flanged connection PN 16, DN 2"

- with integrated back flow preventer
- 2 shut-off valves of RG 7
- wall plate of aluminium
- with smooth and straight-through bore
- with 2 loose flanges
- with 2 retractable swivel nuts

e.g. HAWLE Water Meter Console No. 2960
or equivalent





4. Accessories for Elypso, Combi- and Service Valves

4.1 Handwheels

DN ½" - DN 600 mm

- of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691)
 - epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
- (for more details please see page 2)*

4.2 Extension Spindles

4.2.1. Extension Spindles for "E2" Elypso and "E2" Combi Valves, rigid DN 50 – DN 500

- *one extension spindle usable for different dimensions of valves*
- spindle shaft of steel, galvanized
- spindle coupling and spindle head of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), galvanized
- protecting tube of PE, up to DN 200 incl. protecting cover with integrated fixing mechanism
- sealed against dirt and water from above
- pipe cover depth 1.5 m

e.g. HAWLE Extension Spindle No. 9000E2
or equivalent

alternatively:

- other pipe cover depths up to DN 600

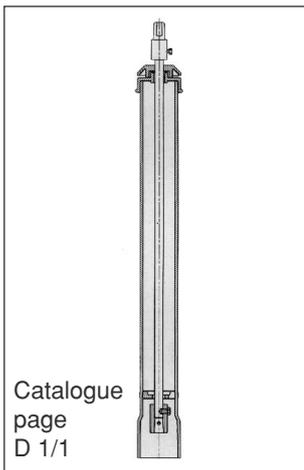
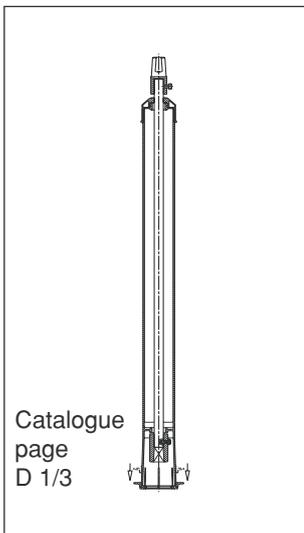
4.2.2 Extension Spindles for Elypso and Combi Valves, rigid DN 50 - 500

- spindle shaft of steel, galvanized
- spindle coupling and spindle head of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), corrosion-protected
- protecting tube of PE
- sealed against dirt and water from above
- pipe cover depth 1.5 m

e.g. HAWLE Extension Spindle No. 9000
or equivalent

alternatively:

- other pipe cover depths



**4.2.3. Extension Spindles for "E2" Elypso and "E2" Combi Valves, telescopic
DN 50 – DN 500**

- one extension spindle usable for different dimensions of valves
- spindle shaft of steel, galvanized
- spindle coupling and spindle head of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 – DIN 1693), galvanized
- outer and inner protecting tube of PE, up to DN 200 incl. protecting cover with integrated fixing mechanism
- sealed against dirt and water from above
- pull out stop
- pipe cover depth 1.3 - 1.8 m

e.g. HAWLE Extension Spindle No. 9500E2
or equivalent

alternatively:

- other pipe cover depths up to DN 600

**4.2.4 Extension Spindles for Elypso and Combi Valves, telescopic
DN 50 - 400/500**

- spindle shaft and hollow top spindle of steel, galvanized
- spindle coupling and spindle head of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), corrosion-protected
- inner and outer protecting tube of PE
- sealed against dirt and water from above
- pull out stop
- pipe cover depth 1.3 - 1.8 m

e.g. HAWLE Extension Spindle No. 9500
or equivalent

alternatively:

- other pipe cover depths

**4.2.5 Extension Spindles for Service Valves, rigid
DN ¾" - 2"**

as described under item 4.2.2

however:

- for Service Valves (with threaded connection)

e.g. HAWLE Extension Spindle No. 9101
or equivalent

alternatively:

- other pipe cover depths

**4.2.6 Extension Spindles for Service Valves, telescopic
DN ¾" - 2"**

as described under item 4.2.4

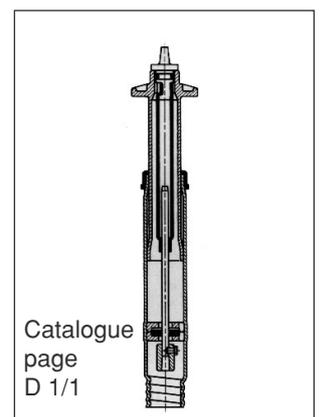
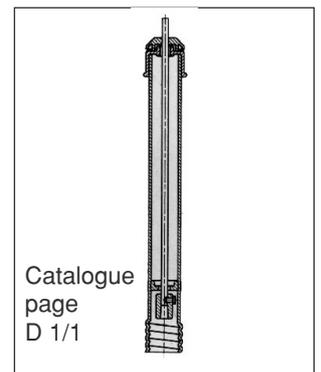
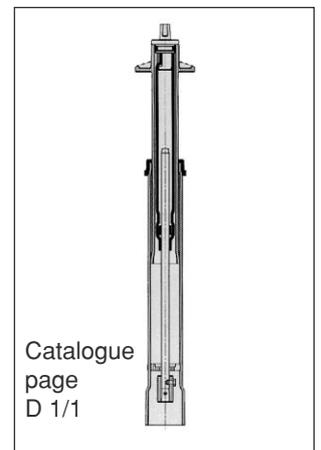
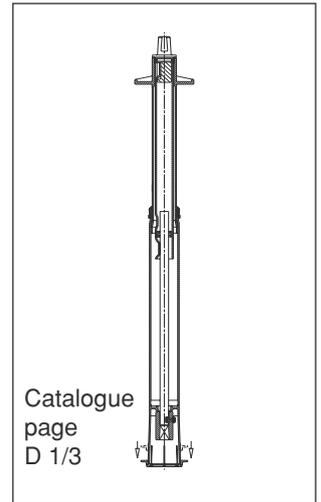
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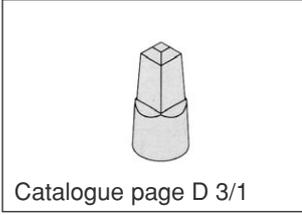
- for Service Valves (with threaded connection)

e.g. HAWLE Extension Spindle No. 9601
or equivalent

alternatively:

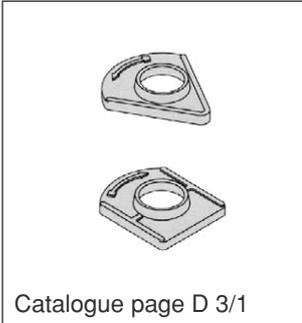
- other pipe cover depths




**4.3 Operating Cap
DN 50 - 500**

of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
 • corrosion-protected

e.g. HAWLE Operating Cap No. 2156
 or equivalent


**4.4 Direction Indicator for Operating Cap
DN 50 - 500**

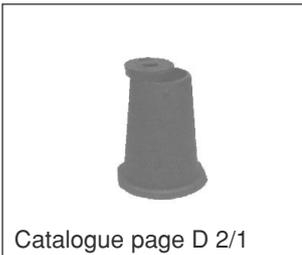
- suitable for Operating Cap
- of elastomer rubber
- indication for "clockwise closing"

e.g. HAWLE Direction Indicator No. 2162
 or equivalent

alternatively:

- anticlockwise closing

e.g. HAWLE Direction Indicator No. 2152
 or equivalent

4.5 Surface Boxes

4.5.1 Surface Boxes for Elypso Valves and Combi-T, rigid

- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), bitumen coated
- minimum test load for lid: 200 kN - for body: 400 kN

e.g. HAWLE Surface Box No. 1750
 or equivalent


4.5.2 Surface Boxes for Elypso Valves and Combi-T, telescopic

- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), bitumen coated
- minimum test load for lid: 200 kN - for body: 400 kN
- height-adjustable via extension rings
- lid with cylindrical guide combined with machined conical seating

e.g. HAWLE Surface Box No. 2050
 or equivalent

Accessories:

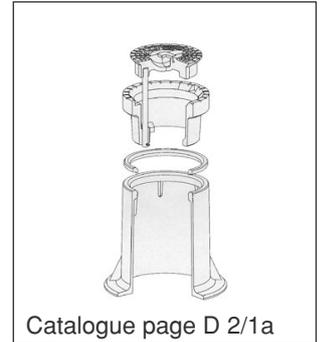
- extension rings 15 - 50 mm

e.g. HAWLE Extension Rings No. 2040
 or equivalent

4.5.3 Surface Boxes for Elypso Valves and Combi-T, telescopic, acc. to DIN

- design acc. to DIN 4056
- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691)
- epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662 (for more details please see page 2)
- minimum test load for lid: 200 kN - for body: 400 kN
- with removable mounting ring for road surfaces which have to be milled down
- cover secured by stainless steel retaining rod
- turned angle seat
- cover with stainless steel neck
- height-adjustable via extension rings

e.g. HAWLE Height Adjustable DIN-Surface Box No. 2051 or equivalent



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4.5.4 Surface Boxes for Combi-III and Combi-IV, rigid

- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), bitumen coated
- minimum test load for lid: 200 kN - for body: 400 kN

e.g. HAWLE Surface Box No. 4550 or equivalent



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4.5.5 Surface Box for Service Valves, rigid, light version

- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), bitumen coated

e.g. HAWLE Surface Box No. 1550 or equivalent



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4.5.6 Surface Box for Service Valves, rigid, heavy version

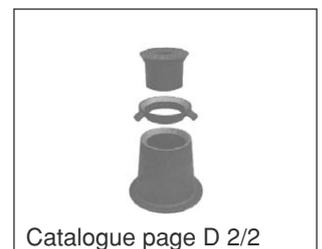
- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), bitumen coated
- minimum test load for lid: 200 kN - for body: 400 kN

e.g. HAWLE Surface Box No. 1650 or equivalent

4.5.7 Surface Box for Service Valves, telescopic

- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), bitumen coated
- minimum test load for lid: 200 kN - for body: 400 kN
- height-adjustable via extension rings
- lid with cylindrical guide combined with machined conical seating

e.g. HAWLE Surface Box No. 1850 or equivalent



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Accessories:

- extension rings 12 - 50 mm

e.g. HAWLE Extension Rings No. 2030 or equivalent



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4.5.8 Surface Boxes for Service Valves, telescopic, acc. to DIN

- design acc. to DIN 4057
- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691)
- epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662 (for more details please see page 2)
- minimum test load for lid: 200 kN - for body: 400 kN
- with removable mounting ring for road surfaces which have to be milled down
- cover secured by stainless steel retaining pin
- turned angle seat
- cover with stainless steel neck
- height-adjustable via extension rings

e.g. HAWLE Height Adjustable DIN-Surface Box No. 1851 or equivalent

Accessories:

- extension rings 10 - 50 mm

e.g. HAWLE Extension Rings No. 2035 or equivalent

4.6 Base Plates

4.6.1 Base Plates for Surface Boxes (Elyspo Valves and Combi-T)

- stamped sheet steel, galvanized
- for Elyspo Valves and Combi-T

e.g. HAWLE Base Plate No. 3490 or equivalent

4.6.2 Base Plates for Surface Boxes (Service Valve)

- stamped sheet steel, galvanized
- for Service Valves

e.g. HAWLE Base Plate No. 3480 or equivalent

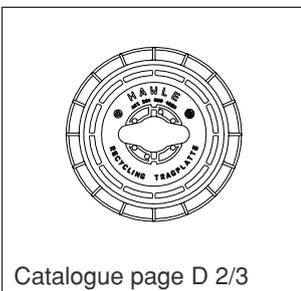
4.6.3 Universal Base Plates

- for Surface Boxes acc. to DIN 4056 and DIN 4057
- of recycled plastic
- unbreakable and unrottable

e.g. HAWLE Universal Base Plate No. 3481 or equivalent



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5. Air Valves

5.1 Air Valves for Water

5.1.1 Air Valve DN 1"

- entirely of corrosion-free materials
- automatic operation
- body and float of POM (PE shield for UV protection)
- seal of elastomer rubber
- max. air release capacity not less than 0,13 m³/min.
- test pressure 24 bar
- working pressure: 0,1 - 6 bar or 0,8 - 16 bar
- female thread inlet reinforced with a stainless steel ring

e.g. HAWLE Air Valve No. 9876, DN 1"
or equivalent

5.1.2 Air Valve DN 2"

- for small and large air discharge
- entirely of corrosion-free materials
- automatic operation
- body and float of POM (PE shield for UV protection)
- seal of elastomer rubber
- max. air release capacity not less than 3,2 m³/min.
- test pressure 24 bar
- working pressure: 0,1 - 6 bar or 1 - 16 bar
- female thread inlet reinforced with a stainless steel ring

e.g. HAWLE Air Valve No. 9876, DN 2"
or equivalent

alternatively:

- with flange connection DN 50 or DN 80 mm

e.g. HAWLE Air Valve No. 9874
or equivalent

5.1.3 Combined Air Release Valve DN 50 - 80

- suitable for installation without construction of a shaft
- stand pipe of stainless steel (minimum quality grade 1.4571)
- with integral automatic shut-off valve
- air valve can be removed under pressure
- air valve as described under item 5.1.2
- all non-corrosion-free materials epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
(for more details please see page 2)
- with automatic drainage
- suitable for use with a flushing stand pipe
(see item 5.3.2)
- with flange
- various installation depths on request

e.g. HAWLE Combined Air Release Valve No. 9822
or equivalent



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5.1.4. Air Valve, PN 16
DN 80, 100, 150, 200

- for small and large air discharge
- automatic operation
- body and cover of grey iron EN-GJL-250 acc. to EN1561 (GG 250 - DIN 1691)
inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
(for more details please see page 2)
- basic valve:
 - float of polycarbonate (DN 80, DN 100)
 - float of A2, passivated (DN 150, DN 200)
 - seat of Ms58/elastomer rubber
- travelling valve:
 - body and float of POM (acetal)
 - PE shield for UV protection
 - seat of elastomer rubber
- max. air release capacity not less than:

DN 80	- 26,00 m ³ /min
DN 100	- 54,16 m ³ /min
DN 150	- 281,66 m ³ /min
DN 200	- 463,33 m ³ /min
- bolts, nuts, washers of stainless steel (min. grade A2)
- test pressure: 24 bar (equivalent to 1,5 times the max. working pressure)
- working pressure: 0,2 – 6 bar or 0,8 – 16 bar
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)

e.g. HAWLE Automatic Air Valve No. 9835
or equivalent

alternatively:

- Double Orifice Air Valve, with insect grid and PE pipe, DN 80, DN 100 Hawle No. 9836
- Single Orifice Valve (without travelling valve:), Hawle No. 9837
- Single Orifice Valve (without travelling valve:), outlet with PE pipe and insect grid for DN 80, DN 100 Hawle No. 9838

5.2 Air Valves for waste water
**5.2.1 Air Valve for waste water, with female thread connection
PN 16, DN 2"**

- continuous air discharge
- automatic operation
- body of stainless steel A4
- travelling valve: with rolling seal mechanism, entirely of corrosion-free material
- float and rod of stainless steel, all welding seams passivated
- test pressure 24 bar
- working pressure: 0,2 - 16 bar
- air gap cushion inhibits water hammer
- max. air release capacity not less than 3,8 m³/min.
- with flushing outlet and shut-off valve
- female thread connection

e.g. HAWLE Air Valve No. 9864
or equivalent

5.2.2 Air Valve for waste water, with flanged connection PN 10/16, DN 50 - 200

as described under item 5.2.1
however:

- with flanged connection

e.g. HAWLE Air Valve No. 9864
or equivalent

5.2.3 Air Valve for waste water, with female thread connection PN 16, DN 2"

as described under item 5.2.1
however:

- body of St 37

inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:

- coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
- (for more details please see page 2)

e.g. HAWLE Air Valve No. 9863
or equivalent

5.2.4 Air Valve for waste water, with flanged connection PN 10/16, DN 50 - 200

as described under item 5.2.1
however:

- body of St 37
- with flanged connection

inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:

- coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
- (for more details please see page 2)

e.g. HAWLE Air Valve No. 9863
or equivalent

5.3 Accessories

5.3.1 Surface Box for Combined Air Release Valve

- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), bitumen coated
- minimum test load for lid: 200 kN - for body: 400 kN

e.g. HAWLE Surface Box for Combined Air Release Valve No. 1790
or equivalent

5.3.2 Flushing Stand Pipe for Combined Air Release Valve

- for flushing, temporary water discharge and for manual air release
- with integral shut-off valve

e.g. HAWLE Flushing Stand Pipe No. 9824
or equivalent



6. Pipe Saddles

6.1 Pipe Saddles for DCI pipes, steel pipes and AC pipes

6.1.1 Pipe Saddle for drilling without pressure, with female thread outlet PN 16, DN 50 - 600 / 1" - 3"

- for DCI, steel and AC pipes up to PN 16
- with female thread outlet
- saddle body of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- saddle sealing of elastomer rubber
- strap of stainless steel (minimum quality grade 1.4571) with continuous rubber lining
- bolts of stainless steel (minimum quality grade 1.4308)
- nuts of rust-proof and acid-proof steel (minimum quality grade 1.4401), with friction lining

e.g. HAWLE Universal Pipe Saddle No. 3500
or equivalent

6.1.2 Pipe Saddle for drilling without pressure, with flanged outlet PN 16, DN 80 - 600

as described under item 6.1.1

however:

- with flanged outlet DN 40, 50, 80, 100 or 150
- flange EN 1092-2

e.g. HAWLE Universal Pipe Saddle No. 3510
or equivalent

6.1.3 Undrilled Saddle

as described under item 6.1.1

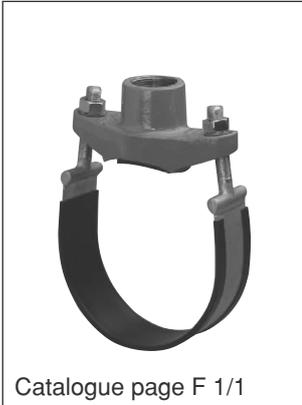
however:

- undrilled

e.g. HAWLE Undrilled Saddle No. 3530
or equivalent

6.1.4 Pipe Saddle for drilling without pressure, with bayonet connection PN 16, DN 65 - 500 / with connection 34 or 46

- for DCI, steel and AC pipes up to PN 16
- outlet with inside bayonet locking for completely corrosion-protected, restraint and lockable connection with suitable fitting
- bayonet connection 34 for max. drilling of Ø 25 mm,
bayonet connection 46 for max. drilling of Ø 35 mm
- saddle body and sealing cover of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- saddle sealing of elastomer rubber
- strap of stainless steel (minimum quality grade 1.4571)
with continuous rubber lining



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- strap bolts of stainless steel (minimum quality grade 1.4308)
- nuts of rust-proof and acid-proof steel (minimum quality grade 1.4401), with friction lining

e.g. HAWLE ZAK Universal Shut-off Saddle No. 3540
or equivalent

6.1.5 Pipe Saddle for drilling under pressure, with female thread outlet PN 16, DN 50 - 300 / 1" - 2"

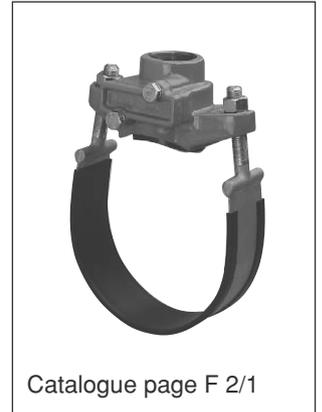
- for DCI, steel and AC pipes up to PN 16
- corrosion protection ring for female thread
- saddle body and sealing cover of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- with integrated shut-off device, pressure-tight from both directions up to 16 bar, shut-off chamber with additional sealing cover
- saddle sealing of elastomer rubber
- strap of stainless steel (minimum quality grade 1.4301)
with continuous rubber lining
- bolts of stainless steel (minimum quality grade 1.4308)
- nuts of rust-proof and acid-proof steel (minimum quality grade 1.4401), with friction lining

e.g. HAWLE Universal Shut-off Saddle No. 3800
or equivalent

6.1.6 Pipe Saddle for drilling under pressure, with bayonet connection PN 16, DN 65 - 500 / with connection 34 or 46

- for DCI, steel and AC pipes up to PN 16
- outlet with inside bayonet locking for completely corrosion-protected, restraint and lockable connection with suitable fitting
- bayonet connection 34 for max. drilling of Ø 25 mm,
bayonet connection 46 for max. drilling of Ø 35 mm
- saddle body and sealing cover of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- with integrated shut-off device, pressure-tight from both directions up to 16 bar, shut-off chamber with additional sealing cover
- saddle sealing of elastomer rubber
- strap of stainless steel (minimum quality grade 1.4571)
with continuous rubber lining
- strap bolts of stainless steel (minimum quality grade 1.4308)
- nuts of rust-proof and acid-proof steel (minimum quality grade 1.4401), with friction lining

e.g. HAWLE ZAK Universal Shut-off Saddle No. 3810
or equivalent



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Catalogue Annex ZAK

6.2 Pipe Saddles for PE and PVC pipes
**6.2.1 Pipe Saddle for drilling without pressure
PN 16, d 40 - 315 / 1" - 2"**

- for PE and PVC pipes DIN 8074/8075 and/or 8061/8062 up to PN 16
- corrosion protection ring for female thread
- saddle body and strap d 40 of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691), d 50 - 500 of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- completely pipe covering CI saddle with seal (elastomer rubber) which is in full contact with the entire diameter of the pipe; drilling hole is sealed by at least 2 O-ring profiles; metal stop up to DN 200; width acc. to DIN 3543-T3
- bolts and washers of stainless steel (minimum quality grade A2)

e.g. HAWLE HAKU Pipe Saddle No. 5250
or equivalent

alternatively

- from DN 280 to DN 500 with strap

**6.2.2 Pipe Saddle for drilling without pressure, with flanged outlet
PN 16, d 110 - 250 / DN 80, DN 100**

- for PE and PVC pipes DIN 8074/8075 and/or 8061/8062 up to PN 16
- flanged outlet DN 80, DN 100
- completely pipe covering CI saddle with seal (elastomer rubber) which is in full contact with the entire diameter of the pipe; drilling hole is sealed by at least 2 O-ring profiles
- saddle body and strap of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- metal stop
- bolts and washers of stainless steel (minimum quality grade A2)

e.g. HAWLE HAKU Pipe Saddle No. 5230
or equivalent

**6.2.3 Pipe Saddle for drilling under pressure
PN 16, d 63 - 225 / ¾" - 2"**

- for PE and PVC pipes DIN 8074/8075 and/or 8061/8062 up to PN 16
- corrosion protection ring for female thread
- saddle body and strap of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- completely pipe covering CI saddle with seal (elastomer rubber) which is in full contact with the entire diameter of the pipe; drilling hole is sealed by at least 2 O-ring profiles, metal stop, width acc. to DIN 3543-T3
- with integrated shut-off device, pressure-tight from both directions up to 16



- bar, shut-off chamber with additional sealing cover
- bolts and washers of stainless steel (minimum quality grade A2)

e.g. HAWLE HAKU Shut-off Saddle No. 5310
or equivalent

6.2.4 Pipe Saddle for drilling under pressure, with bayonet connection PN 16, d 90 - 225 / with connection 34 or 46

- for PE and PVC pipes DIN 8074/8075 and/or 8061/8062 up to PN 16
- outlet with inside bayonet locking for completely corrosion-protected, restraint and lockable connection with suitable fitting
- bayonet connection 34 for max. drilling of \varnothing 25 mm, bayonet connection 46 for max. drilling of \varnothing 35 mm
- saddle body and strap of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL -GZ 662
 - coating thickness: min. 250 μ m
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- completely pipe covering CI saddle with seal (elastomer rubber) which is in full contact with the entire diameter of the pipe; drilling hole is sealed by at least 2 O-ring profiles, metal stop, width acc. to DIN 3543-T3
- with integrated shut-off device, pressure-tight from both directions up to 16 bar, shut-off chamber with additional sealing cover
- bolts and washers of stainless steel (minimum quality grade A2)

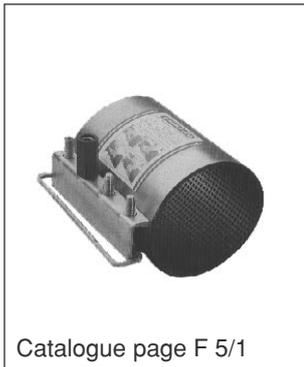
e.g. HAWLE ZAK HAKU Shut-off Saddle No. 5320
or equivalent

6.3 Shut-off Adaptor for drilling under pressure PN 16, DN 1" - 2"

- for drilling under pressure
- input side male thread, output side female thread outlet with corrosion protection ring
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL -GZ 662
 - coating thickness: min. 250 μ m
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pressure-tight from both directions up to 16 bar, shut-off chamber with additional sealing cover

e.g. HAWLE Shut-off Adaptor No. 3720
or equivalent





7. Pipe Repair and Coupling Clamps

7.1 **Pipe Repair and Coupling Clamp for DCI, steel, AC and PVC pipes d 54 - 430**

- single lug
- of stainless steel (minimum quality grade 1.4571), welding seams passivated
- fully encircling (wafer tread) elastomer rubber gasket with vulcanized reinforcement sheet metal of stainless steel
- 1 bolt longer for easy mounting
- nuts of stainless steel with antifriction coating in nut dispenser
- with handle

e.g. HAWLE Pipe Repair and Coupling Clamp No. 0750 or equivalent



7.2 **Pipe Repair and Coupling Clamp for DCI, steel, AC and PVC pipes d 87 - 471**

as described under item 7.1

however:

- double lug

e.g. HAWLE Pipe Repair and Coupling Clamp No. 0751 or equivalent

8. Flanged Connections

8.1 **Flanged Connections for PE pipes**

8.1.1 **Flange Adaptor „System 2000“ for PE pipes, PN 16, restraint DN 50/63 - 400/450**

- for PE pipes acc. to DIN 8074/8075 and PVC pipes acc. to DIN 8061/8062
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- flange and locking ring of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL- GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²

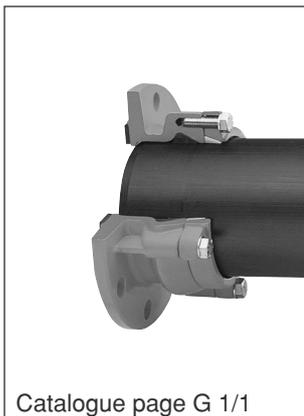
(for more details please see page 2)

- pipe sealing by lip seal (elastomer rubber)
- with integral flat gasket of elastomer rubber
- grip ring of Ms 58 or RG 7 with special interlocking teeth
- bolts and washers of stainless steel (minimum quality grade A2), screw thread sealed

e.g. HAWLE Flange Adaptor „System 2000“ No. 0400 or equivalent

alternatively

- reduced version



8.1.2 Flange Adaptor for PE pipes, PN 16, restraint DN 40/40 - 150/160

- for PE pipes acc. to DIN 8074/8075
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691), all-round epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by means of O-ring of elastomer rubber
- grip ring of POM with special interlocking teeth
- restraint acc. to DIN 8076 T1/T3

e.g. HAWLE ISO Pipe Flange, equal No. 5500
or equivalent

alternatively:

- reduced version

e.g. HAWLE ISO Pipe Flange, reduced, No. 5530
or equivalent

8.1.3 Flange Adaptors with PE fusion tail

8.1.3.1 Flange Adaptor with PE fusion tail, PN 10, restraint DN 50/63 - 200/225

- with PE fusion tail for use with PE piping acc. to DIN 8074/8075
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated DIN 30677-T2 in accordance with quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- double sealing of PE tail by O-ring and lip seal
- PE tails reinforced by a support liner of stainless steel in the sealing area
- restraint acc. to DIN 8076 T1/T3
- PE tails injection moulded of PE 80 (alternatively PE 100)

e.g. HAWLE Flange Adaptor with PE fusion tail No. 0310
or equivalent

8.1.3.2 Flange Adaptor with PE fusion tail, PN 6, restraint DN 50/63 - 200/225

as described under item 8.1.3.1

however:

- for working pressure PN 6

e.g. HAWLE Flange Adaptor with PE fusion tail No. 0311
or equivalent



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8.2 Flanged Connections for PVC pipes

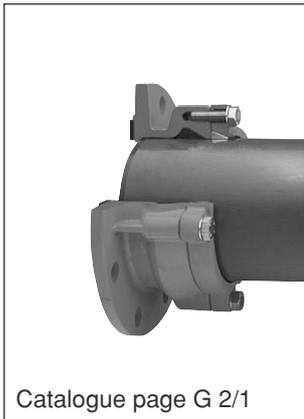
8.2.1 Flange Adaptor "System 2000" for PVC pipes, PN 16, restraint DN 50/63 - 400/450

- for PVC pipes acc. to DIN 8061/8062 and PE pipes acc. to DIN 8074/8075
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- flange and locking ring of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by lip seal of elastomer rubber
- with integral flat gasket of elastomer rubber
- grip ring of Ms 58 or RG 7 with special interlocking teeth
- bolts and washers of stainless steel (minimum quality grade A2), screw thread sealed
- restraint

e.g. HAWLE Flange Adaptor „System 2000“ No. 0400 or equivalent

alternatively

- reduced version



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8.2.2 Flange Adaptor for PVC pipes, PN 16 DN 50/63 - 400/400

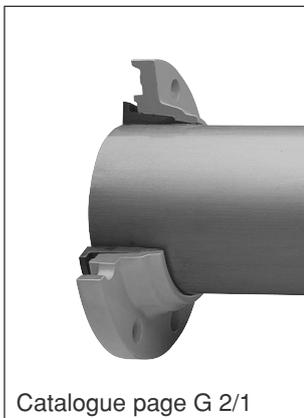
- for PVC pipes DIN 8061/8062
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691) and/or ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by means of sleeve gasket with integral flat gasket of elastomer rubber

e.g. HAWLE Double Chamber Flange Adaptor, equal, No. 5600 or equivalent

alternatively:

- reduced version

e.g. HAWLE Double Chamber Flange Adaptor, reduced, No. 5630 or equivalent



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8.3 Flanged Connections for DCI pipes

8.3.1 Flange Adaptor for DCI pipes, PN 16, restraint DN 50/66 - 300/326

- for DCI pipes EN 545
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), pressure ring of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by means of sleeve gasket of elastomer rubber
- flat gasket of elastomer rubber integrated in the pressure ring
- grip ring with special interlocking teeth of steel 1.0037, hardened

e.g. HAWLE Flange Adaptor No. 7602
or equivalent

8.3.2 Flange Adaptor for DCI pipes, PN 16 DN 50/56 - 400/429

- for DCI pipes EN 545
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by means of sleeve gasket with integral flat gasket of elastomer rubber

e.g. HAWLE Double Chamber Flange Adaptor, equal, No. 7102
or equivalent

alternatively:

- reduced version

e.g. HAWLE Double Chamber Flange Adaptor, reduced, No. 7402
or equivalent

8.4 Flanged Connections for steel pipes

8.4.1 Flange Adaptor for steel pipes, PN 16, restraint DN 50/59 - 250/273

- for steel pipes
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), pressure ring of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by means of sleeve gasket of elastomer rubber
- flat gasket of elastomer rubber integrated in the pressure ring
- grip ring of steel 1.0037, hardened

e.g. HAWLE Flange Adaptor No. 7601
or equivalent



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**8.4.2 Flange Adaptor for steel pipes, PN 16
DN 50/56 - 300/316**

- for steel pipes
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691) or ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), all-round epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by means of sleeve gasket with integral flat gasket of elastomer rubber

e.g. HAWLE Double Chamber Flange Adaptor No. 7101
or equivalent



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**8.5 Flange Adaptor for AC pipes, PN 16
DN 80/98 - 150/178**

- for AC pipes (DIN 19800 - PN 10)
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691) or ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- pipe sealing by means of sleeve gasket with integral flat gasket of elastomer rubber

e.g. HAWLE Double Chamber Flange Adaptor No. 7103
or equivalent



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9. Other Restraint Systems
**9.1 Restraint System for PVC pipes
PN 10/16, for socket to spigot**

- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- grip ring of Ms 58 with special interlocking teeth
- for bolt-less assembly

e.g. HAWLE PVC Restraint Clamp No. 1254/1255
or equivalent

10. ISO Pipe Fittings for Plastic Pipes

10.1 General Description

10.1.1 ISO Pipe Fittings for plastic pipes, of POM

- for PE pipes DIN 8074/8075
- working pressure: PN 16
- with ISO push-fit socket (restraint without screwing)
- body of plastic - POM (polyoxymethylene)
- sealing by O-ring
- grip ring of plastic - POM (polyoxymethylene) with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside
- restraint acc. to DIN 8076 T1/T3

alternatively:

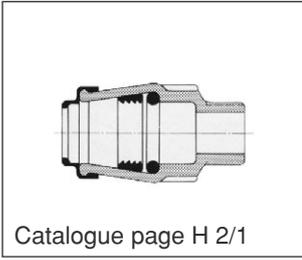
- with special clamp for PVC pipes acc. to DIN 8061/8062

10.1.2 ◆ ISO Pipe Fittings for plastic pipes, of cast iron

- for PE pipes DIN 8074/8075
- working pressure: PN 16
- with ISO push-fit socket (restraint without screwing)
- body of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²*(for more details please see page 2)*
- sealing by O-ring
- grip ring of plastic - POM (polyoxymethylene) with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside
- restraint acc. to DIN 8076 T1/T3

alternatively:

- with special clamp for PVC pipes acc. to DIN 8061/8062



10.2 Versions

10.2.1 ISO Pipe Fitting - Male Adaptor

- ◆ of cast iron
DN 1/2" (d20) - 2" (d 63)
e.g. HAWLE ISO Pipe Fitting - Male Adaptor No. 6100
or equivalent

alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Male Adaptor No. 6110
or equivalent

- of plastic - POM (polyoxymethylene)
DN 1/2" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Male Adaptor No. 6120
or equivalent

alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Male Adaptor No. 6150
or equivalent

10.2.2 ISO Pipe Fitting - Female Adaptor

- ◆ of cast iron
DN 1/2" (d20) - 3" (d 125)
e.g. HAWLE ISO Pipe Fitting - Female Adaptor No. 6200
or equivalent

alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Female Adaptor No. 6210
or equivalent

- of plastic - POM (polyoxymethylene)
DN 1/2" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Female Adaptor No. 6220
or equivalent

10.2.3 ISO Pipe Fitting - Connector

- ◆ of cast iron
DN 1/2" (d20) - 4" (d 125)
e.g. HAWLE ISO Pipe Fitting - Connector No. 6300
or equivalent

alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Connector No. 6310
or equivalent

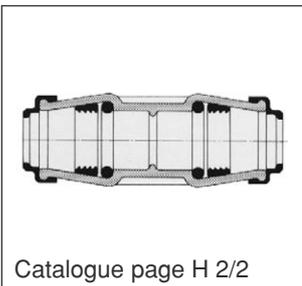
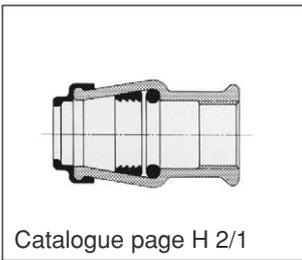
- of plastic - POM (polyoxymethylene)
DN 1/2" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Connector No. 6320
or equivalent

alternatively:

- special dimensions (reduced versions)

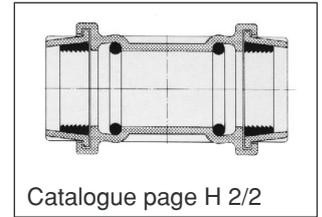
e.g. HAWLE ISO Pipe Fitting - Connector No. 6330
or equivalent



10.2.4 ISO Pipe Fitting - Connector with detachable taper

- ◆ of cast iron
DN 1" (d 32) - 2" (d 63)

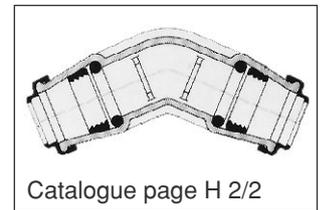
e.g. HAWLE ISO Pipe Fitting - Connector No. 6301
or equivalent



10.2.5 ISO Pipe Fitting - Elbow 45°

- ◆ of cast iron
DN 1 ¼" (d 40) - 3 ½" (d 110)

e.g. HAWLE ISO Pipe Fitting - Elbow 45° No. 6440
or equivalent



10.2.6 ISO Pipe Fitting - Elbow 90°

- ◆ of cast iron
DN ½" (d20) - 3 ½" (d 110)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° No. 6400
or equivalent

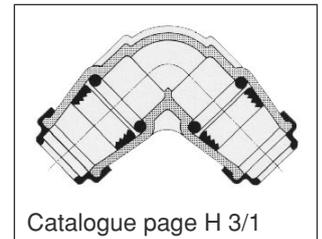
- of plastic - POM (polyoxymethylene)
DN ½" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° No. 6420
or equivalent

alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° No. 6490
or equivalent



10.2.7 ISO Pipe Fitting - Elbow 90° with female thread

- ◆ of cast iron
DN ½" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° with female thread No. 6410
or equivalent

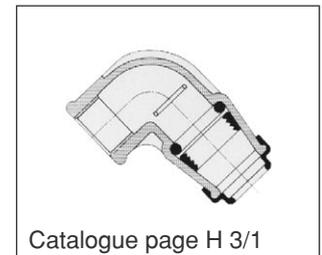
alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° with female thread No. 6450
or equivalent

- of plastic - POM (polyoxymethylene)
DN ½" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° with female thread No. 6430
or equivalent



10.2.8 ISO Pipe Fitting - Elbow 90° with male thread

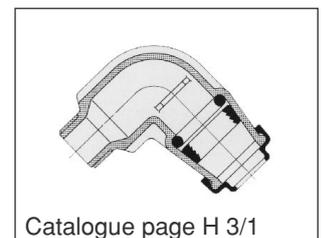
- ◆ of cast iron
DN ¾" (d25) - 2" (d 63)

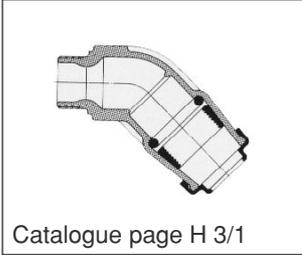
e.g. HAWLE ISO Pipe Fitting - Elbow 90° with male thread No. 6460
or equivalent

alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° with male thread No. 6470
or equivalent

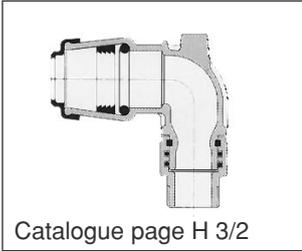




10.2.9 ISO Pipe Fitting - Elbow 45° with male thread

- ◆ of cast iron
DN 1" (d32) - 2" (d 63)

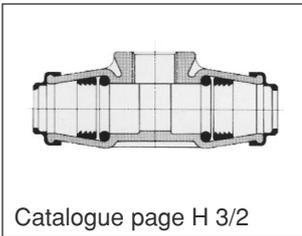
e.g. HAWLE ISO Pipe Fitting - Elbow 45° with male thread No. 6411 or equivalent



10.2.10 ISO Pipe Fitting - Elbow 90° with male thread, swivelling

- ◆ of cast iron
DN 1" (d32) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Elbow 90° with male thread, swivelling No. 6462 or equivalent



10.2.11 ISO Pipe Fitting - Tee with female thread outlet

- ◆ of cast iron
DN ½" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Tee with female thread outlet No. 6500 or equivalent

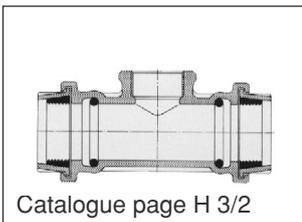
alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Tee with female thread outlet No. 6510 or equivalent

- of plastic - POM (polyoxymethylene)
DN ½" (d20) - 2" (d 63)

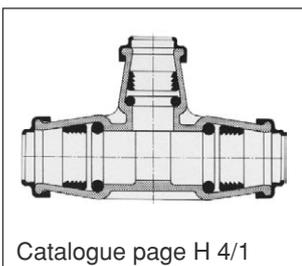
e.g. HAWLE ISO Pipe Fitting - Tee with female thread outlet No. 6520 or equivalent



10.2.12 ISO Pipe Fitting - Tee with female thread outlet, with detachable taper

- ◆ of cast iron
DN 1" (d32) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - Tee with female thread outlet No. 6501 or equivalent



10.2.13 ISO Pipe Fitting - Tee with 3 sockets

- ◆ of cast iron
DN ½" (d20) and 1 ½" (d 50)

e.g. HAWLE ISO Pipe Fitting - Tee with 3 sockets No. 6530 or equivalent

alternatively:

- special dimensions (reduced versions)

e.g. HAWLE ISO Pipe Fitting - Tee with 3 sockets No. 6531 or equivalent

10.2.14 ISO Pipe Fitting - Tee with flanged outlet

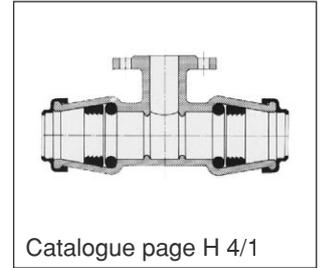
- ◆ of cast iron
DN 2" (d 63) - 4" (d110/125)

e.g. HAWLE ISO Pipe Fitting - Tee with flanged outlet No. 6600
or equivalent

alternatively:

- special dimensions (reduced versions)

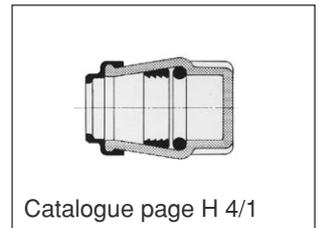
e.g. HAWLE ISO Pipe Fitting - Tee with flanged outlet No. 6610
or equivalent



10.2.15 ISO Pipe Fitting - End Stop

- of plastic - POM (polyoxymethylene)
DN ½" (d20) - 2" (d 63)

e.g. HAWLE ISO Pipe Fitting - End Stop No. 6223
or equivalent



10.3 ISO Pipe Fittings for plastic pipes, of cast iron

- for PE pipes DIN 8074/8075
- working pressure: PN 16
- with ISO push-fit socket (restraint without screwing) and with bayonet lugs and O-ring sealing with two O-rings for a perfectly corrosion protected restraint and lockable bayonet connection with suitable drilling saddle
- body of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- sealing by O-rings of elastomer rubber
- grip ring of plastic - POM (polyoxymethylene) with special interlocking teeth
- ISO push-fit socket protected by dirt cap against water and dirt from outside
- restraint acc. to DIN 8076 T1/T3
- with locking piston for bayonet connection

alternatively:

- with special clamp for PVC pipes acc. to DIN 8061/8062

Versions:

- straight version e.g. HAWLE ZAK Fitting No. 6160,
Ø 25, 32 and 40 with connection 34
Ø 32, 40, 50 and 63 with connection 46
or equivalent
- elbow version 90° e.g. HAWLE ZAK Elbow No. 6480,
Ø 25, 32 and 40 with connection 34
Ø 32, 40, 50 and 63 with connection 46
or equivalent
- elbow version 90° e.g. HAWLE ZAK Elbow 90° swivel type No. 6465, with rotary joint for alignment of fitting,
Ø 32 and 40 with connection 34
Ø 32, 40, 50 and 63 with connection 46
or equivalent



- 10.4** ISO Pipe Fittings for plastic pipes, of cast iron
- for PE pipes DIN 8074/8075
 - working pressure: PN 16
 - with PE fusion tail (leak-proof connection between PE fusion tail and cast part assembled non-detachable at the factory) and with bayonet lugs and O-ring sealing with two O-rings for a perfectly corrosion protected restraint and lockable bayonet connection with suitable drilling saddle
 - body of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
 - sealing by O-rings of elastomer rubber
 - restraint acc. to DIN 8076 T1/T3
 - with locking piston for bayonet connection

Versions:

- straight version e.g. HAWLE ZAK PE tail No. 6180,
 - Ø 32 and 40 with connection 34
 - Ø 32, 40, 50 and 63 with connection 46 or equivalent
- elbow version 90° e.g. HAWLE ZAK Elbow 90° PE tail No. 6479,
 - Ø 32 and 40 with connection 34
 - Ø 32, 40, 50 and 63 with connection 46 or equivalent



Catalogue Annex ZAK



Catalogue Annex ZAK

11. Hydrants

11.1 Above Ground Hydrants

11.1.1 Above Ground Hydrant of stainless steel, rigid type PN 16, DN 80 and DN 100

- acc. to DIN 3222 / ÖNORM F 2010
- outlets: DN 80 1 x B and 2 x C
DN 100 1 x A and 2 x B
- entirely of corrosion free material
- hydrant head of sea water proof tempered aluminium alloy, UV resistant coating, swivelling from 0° to 360°
- stand pipe of stainless steel (minimum quality grade 1.4541)
- operating controls of stainless steel (minimum quality grade 1.4301)
- spindle of stainless steel (minimum quality grade 1.4021)
- spindle sealing (O-rings) embedded in non-corrosive material (acc. to DIN 3547-T1)
- base of cast stainless steel
- all welding seams passivated
- stand pipe polished
- pressure-relieving drain off system
- base flange acc. to DIN 2543, drilled acc. to DIN 2501
- remaining water content acc. to DIN 3321
- spindle and valve plug replaceable from top of hydrant
- pipe cover depth 1,5 m

e.g. HAWLE Corrosion Free Hydrant rigid type No. 5151H4 or equivalent

alternatively:

- outlets: DN 80 2 x B
DN 100 2 x B

e.g. HAWLE Corrosion Free Hydrant rigid type No. 5140H4 or equivalent



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11.1.2 Above Ground Hydrant of stainless steel, break away PN 16, DN 80 and DN 100

as described under item 11.1.1
however:

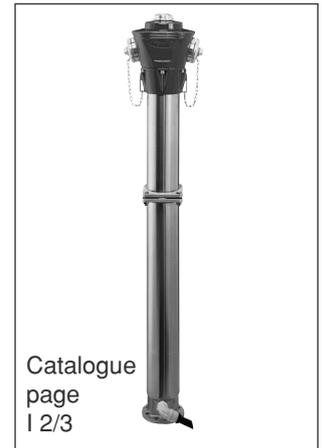
- with break away line
- spare bolts under the cap

e.g. HAWLE Corrosion Free Hydrant - break away No. 5195H4
or equivalent

alternatively:

- outlets: DN 80 2 x B
 DN 100 2 x B

e.g. HAWLE Corrosion Free Hydrant - break away No. 5196H4
or equivalent



11.1.3 Above Ground Hydrant of cast iron, rigid type

PN 16, DN 80 and DN 100

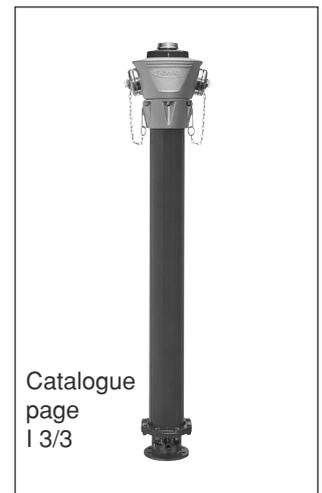
- acc. to DIN 3222 / ÖNORM F 2010
- outlets: DN 80 1 x B and 2 x C
 DN 100 1 x A and 2 x B
- hydrant head of cast iron GG 250, epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662 (*for more details please see page 2*), additionally with UV resistant coating, swivelling from 0° to 360°
- hydrant base of ductile iron GGG 400, epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662 (*for more details please see page 2*)
- stand pipe of St. 37, galvanized and with UV resistant coating
- spindle of stainless steel (minimum quality grade 1.4021)
- spindle sealing (O-rings) embedded in non-corrosive material (acc. to DIN 3547-T1)
- all inner parts entirely of corrosion free materials
- pressure relieving drain off system
- spindle and valve plug replaceable from top of hydrant
- base flange drilled acc. to DIN 2501
- pipe cover depth 1,5 m

e.g. HAWLE Above Ground Hydrant rigid type No. 5051H4
or equivalent

alternatively:

- outlets: DN 80 2 x B
 DN 100 2 x B

e.g. HAWLE Above Ground Hydrant rigid type No. 5053H4
or equivalent



11.1.4 Above Ground Hydrant of cast iron, break away type PN 16, DN 80, DN 100 and DN 150

as described under item 11.1.3
however:

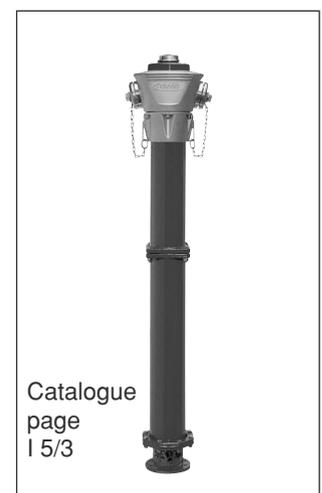
- with break away line
- mit spare bolts under the cap

e.g. HAWLE Above Ground Hydrant - break away type No. 5095H4
or equivalent

alternatively:

- outlets: DN 80 2 x B
 DN 100 2 x B

e.g. HAWLE Above Ground Hydrant - break away type No. 5096H4
or equivalent





11.2 Below Ground Hydrants

11.2.1 Below Ground Hydrant, 1,5 m pipe cover depth PN 16, DN 80

- acc. to DIN 3221
- 1,5 m pipe cover depth
- bayonet coupling outlet
- hydrant base and bayonet coupling of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
- (for more details please see page 2)
- spindle of stainless steel (minimum quality grade 1.4021)
- stand pipe of stainless steel (minimum quality grade 1.4571)
- pressure relieving drain off system
- eccentric disc and shut-off plate of stainless steel (minimum quality grade 1.4021/1.4310), completely straight-through bore, shut-off plate, when open, completely outside of flow medium
- base flange drilled to EN 1092-2 (DIN 2501)
- pipe cover depth 1,5 m

e.g. HAWLE Freeflow Below Ground Hydrant No. 5060
or equivalent

alternatively

- with spigot end DN 80

e.g. HAWLE Freeflow Below Ground Hydrant No. 5061
or equivalent

11.2.2 Below Ground Hydrant, 1,25 m pipe cover depth PN 16, DN 80

as described under item 11.2.1

however

- 1,25 m pipe cover depth

e.g. HAWLE Freeflow Below Ground Hydrant No. 5060
or equivalent

alternatively

- with spigot end DN 80

e.g. HAWLE Freeflow Below Ground Hydrant No. 5061
or equivalent

11.3 Accessories for Below Ground Hydrants

11.3.1 Surface Box for Below Ground Hydrant

- of grey iron EN-GJL-200 acc. to EN 1561 (GG 200 - DIN 1691), bitumen coated
- minimum test load for lid: 200 kN - for body: 400 kN

e.g. HAWLE Surface Box for Below Ground Hydrant No. 1950
or equivalent

11.3.2 Base Plate for Surface Box (Below Ground Hydrant)

- for Surface Boxes acc. to DIN 4055
- of recycled plastic
- unbreakable and unrottable

e.g. HAWLE Base Plate No. 3482
or equivalent

12. Pipe Fittings

12.1 Pipe Fittings „System 2000“ with socket connection for PE and PVC pipes, restraint, PN 10/16

12.1.1 General Description

- for PVC pipes acc. to DIN 8061/8062 and PE pipes acc. to DIN 8074/8075
- working pressure: PN 16
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- grip ring of Ms 58 or RG 7 with special interlocking teeth
- lip seal of elastomer rubber
- bolts and washers of stainless steel (minimum quality grade A2), screw thread sealed
- restraint acc. to DIN 8076 T1/T3

12.1.2 Versions

12.1.2.1 Connector „System 2000“ / PN 16 d 63 - 355

- as described under item 12.1.1
- 2 x socket

e.g. HAWLE Connector „System 2000“ No. 0430
or equivalent



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12.1.2.2 Double Socket Tee „System 2000“ / PN 16 d 63/DN 50 - d 225/DN 200

- as described under item 12.1.1
- Tee, 2 x socket, flanged outlet

e.g. HAWLE Double Socket Tee „System 2000“ No. 8525
or equivalent



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12.1.2.3 All socket Tee „System 2000“ / PN 16 d 63 - 225

- as described under item 12.1.1
- Tee, 3 x socket

e.g. HAWLE All Socket Tee „System 2000“ No. 8515
or equivalent



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12.1.2.4 Bend 90° „System 2000“ / PN 16 d 63 - 315

- as described under item 12.1.1
- 2 x socket

e.g. HAWLE Bend 90° „System 2000“ No. 8535
or equivalent



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12.1.2.5 Bend 45° „System 2000“ / PN 16 d 63 - 315

- as described under item 12.1.1
- 2 x socket

e.g. HAWLE Bend 45° „System 2000“ No. 8545
or equivalent



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**12.1.2.6 Bend 30° „System 2000“ / PN 16
d 90 / 110 / 160**

as described under item 12.1.1
• 2 x socket

e.g. HAWLE Bend 30° „System 2000“ No. 8555
or equivalent

**12.1.2.7 End Cap „System 2000“ / PN 16
d 63 - 315**

as described under item 12.1.1
• *alternatively with 1", 1¼", 1½" or 2" threaded connection*

e.g. HAWLE End Cap „System 2000“ No. 8075
or equivalent

**12.1.2.8 Duck Foot Bend 90° „System 2000“ / PN 16
DN 80 / 100**

as described under item 12.1.1
• with socket connection

e.g. HAWLE Duck Foot Bend 90° „System 2000“ No. 5045
or equivalent

12.2 Pipe Fittings System „BAIO®“ with socket connection alternatively for DCI or plastic pipes

12.2.1 General Description

- DN 80 - DN 200
 - with double socket System „BAIO®“ for DCI or plastic pipes
 - working pressure: PN 16
 - of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
- (for more details please see page 2)*

12.2.2 Versions

12.2.2.1 Socket Tee System „BAIO®“ / PN 16

as described under item 12.2.1
Tee, 3 x socket

e.g. HAWLE Socket Tee System „BAIO®“ No. NL20
or equivalent

12.2.2.2 Collar (connector) System „BAIO®“ / PN 16

as described under item 12.2.1
• 2 x socket, equal dimensions

e.g. HAWLE Collar System „BAIO®“ No. NL50
or equivalent

alternatively:
- with threaded outlet

e.g. HAWLE Collar System „BAIO®“ No. NL51
or equivalent

12.2.2.3 Concentric Taper System „BAIO®“ / PN 16

as described under item 12.2.1

- 2 x socket, reduced dimensions

e.g. HAWLE Concentric Taper „BAIO®“ No. NL40
or equivalent



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12.2.2.4 Bend 90° System „BAIO®“ / PN 16

as described under item 12.2.1

- 2 x socket

e.g. HAWLE Bend 90° System „BAIO®“ No. NL30
or equivalent



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12.2.2.5 Bend 45° System „BAIO®“ / PN 16

as described under item 12.2.1

- 2 x socket

e.g. HAWLE Bend 45° System „BAIO®“ No. NL32
or equivalent

12.2.2.6 Bend 30° System „BAIO®“ / PN 16

as described under item 12.2.1

- 2 x socket

e.g. HAWLE Bend 30° System „BAIO®“ No. NL33
or equivalent

12.2.2.7 Bend 22° System „BAIO®“ / PN 16

as described under item 12.2.1

- 2 x socket

e.g. HAWLE Bend 22° System „BAIO®“ No. NL34
or equivalent

12.2.2.8 Flanged Spigot System „BAIO®“ / PN 16

as described under item 12.2.1

- flange-spigot piece
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) -
(alternatively PN 16)

e.g. HAWLE Flanged Spigot System „BAIO®“ No. NL41
or equivalent



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12.2.2.9 Flanged Socket System „BAIO®“ / PN 16

as described under item 12.2.1

- flange-socket piece
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) -
(alternatively PN 16)

e.g. HAWLE Flanged Socket System „BAIO®“ No. NL42
or equivalent



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12.2.2.10 End Cap System „BAIO®“ / PN 16

as described under item 12.2.1

e.g. HAWLE End Cap System „BAIO®“ No. NL47
or equivalent



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12.2.2.11 Duck Foot Bend System „BAIO®“ / PN 16

as described under item 12.2.1

- 2 x socket

e.g. HAWLE Duck Foot Bend System „BAIO®“ No. NL60
or equivalent

12.2.3 Accessories: Restraint Joint for System „BAIO®“

alternatively:

- with clamp for DCI, PE or PVC pipes

e.g. HAWLE Restraint Joint „Hawle-Stop“
or equivalent

12.3 Flanged Fittings

12.3.1 General Description

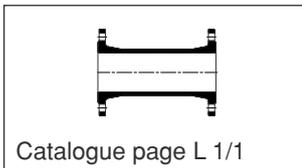
- DN 50 - DN 500
 - of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
 - working pressure: PN 16
 - flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
 - epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with quality and test requirements of RAL -GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
- (for more details please see page 2)

12.3.2 Versions

12.3.2.1 Double Flanged Pipe (FF)

as described under item 12.3.1

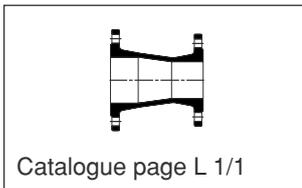
e.g. HAWLE Double Flanged Pipe No. 8500
or equivalent



12.3.2.2 Double Flanged Taper (FFR)

as described under item 12.3.1

e.g. HAWLE Double Flanged Taper No. 8550
or equivalent



12.3.2.3 Double Flanged Bend 45° (FFK 45°)

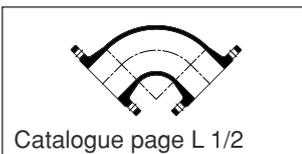
as described under item 12.3.1

e.g. HAWLE Double Flanged Bend 45° No. 8540
or equivalent

12.3.2.4 Double Flanged Bend 90° (Q)

as described under item 12.3.1

e.g. HAWLE Double Flanged Bend 90° No. 8530
or equivalent



12.3.2.5 All Flanged Tee (T)

as described under item 12.3.1

e.g. HAWLE All Flanged Tee No. 8510
or equivalent

12.3.2.6 All Flanged Short Tee (Short-T)

as described under item 12.3.1

- short face-to-face dimension

e.g. HAWLE All Flanged Short Tee No. 8740
or equivalent

alternatively:

- with vertical centre outlet DN 100
- with thread 1"

12.3.2.7 All Flanged Crosses (TT)

as described under item 12.3.1

e.g. HAWLE All Flanged Crosses No. 8520
or equivalent

12.3.2.8 All Flanged Short Crosses (Short -TT)

as described under item 12.3.1

- short face-to-face dimension

e.g. HAWLE All Flanged Cross No. 8750
or equivalent

alternatively:

- with vertical centre outlet DN 100
- with thread 1"

12.3.2.9 Double Flanged Duck Foot Bend 90° (N)

as described under item 12.3.1

e.g. HAWLE Double Flanged Duck Foot Bend No. 5049
or equivalent

12.4 Other Pipe Fittings

12.4.1 General Description

- DN 50 - DN 300
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693)
- working pressure: PN 16
- epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
(for more details please see page 2)

12.4.2 Versions

12.4.2.1 Cut-in Socket Fittings (EMS) / PN 16

as described under item 12.4.1.

- DN 80 - 200
- for later installation of valves and fittings in grey iron and ductile iron pipelines

e.g. HAWLE Cut-in Socket Fitting No. NL44
or equivalent

12.4.2.2 Flanged Duck Foot Bend 90° with PVC socket (EN-KS) / PN 16 DN 80 - 100

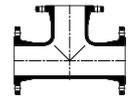
as described under item 12.4.1

- for PVC pipes acc. to DIN 8061/8062
- flanges to EN 1092-2, connection to DIN 2501- PN 16

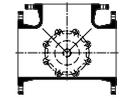
however:

- of grey iron EN-GJL-250 acc. to EN 1561 (GG 250 - DIN 1691)

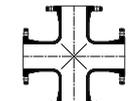
e.g. HAWLE Flanged Duck Foot Bend 90° with PVC socket No. 5046
or equivalent



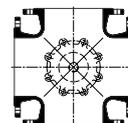
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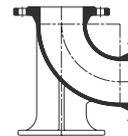
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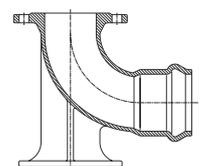
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13. Overall View „System 2000“

13.1 General Description

- valves, flange adaptors and fittings with socket connection for PVC pipes acc. to DIN 8061/8062 and PE pipes acc. to DIN 8074/8075
- working pressure: PN 16
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- grip ring of Ms 58 or RG7 with special interlocking teeth
- lip seal of elastomer rubber
- bolts and washers of stainless steel (minimum quality grade A2), screw thread sealed
- restraint acc. to DIN 8076 T1/T3

13.2 Versions

- 13.2.1 „E2“ Elypso Socket Valve „System 2000“ for PE and PVC pipes, restraint as described under item 1.6.1
- 13.2.2 „E2“ Elypso Valve mit Flange/Socket End „System 2000“ for PE and PVC pipes, restraint as described under item 1.6.2
- 13.2.3 „E2“ Combi-T „System 2000“ for PE and PVC pipes, restraint as described under item 2.1.2
- 13.2.4 Flange Adaptor „System 2000“ for PE and PVC pipes, restraint, as described under item 8.1.1 and 8.2.1
- 13.2.5 Connector „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.1
- 13.2.6 Double Socket Tee „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.2
- 13.2.7 All socket Tee „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.3
- 13.2.8 Bend 90° „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.4
- 13.2.9 Bend 45° „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.5
- 13.2.10 Bend 30° „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.6
- 13.2.11 End Cap „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.7
- 13.2.12 Flanged Duck Foot Bend 90° „System 2000“ for PE and PVC pipes, restraint as described under item 12.1.2.8

14 Overall View System „BAIO®“

14.1 General Description

- valves and fittings with double function socket System „BAIO®“ for DCI or plastic pipes
- DN 80 - DN 200
- working pressure: PN 16
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- of ductile iron EN-GJS-400-18 acc. to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)

14.2 Versions

- 14.2.1 „E2“ Elypso Valve System „BAIO®“ for DCI or plastic pipes as described under item 1.3
- 14.2.2 „E2“ Elypso Spigot/Socket End System „BAIO®“ as described under item 1.8.1
- 14.2.3 „E2“ Elypso Socket Ends System „BAIO®“ as described under item 1.8.2
- 14.2.4 „E2“ Combi-T, with socket connection System „BAIO®“ as described under item 2.1.3
- 14.2.5 „E2“ Combi-III, with socket connection System „BAIO®“ as described under item 2.2.3
- 14.2.6 All Socket Tee System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.1
- 14.2.7 Collar (connector) System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.2
- 14.2.8 Concentric Taper System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.3
- 14.2.9 Bend 90° System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.4
- 14.2.10 Bend 45° System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.5
- 14.2.11 Bend 30° System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.6
- 14.2.12 Bend 22° System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.7
- 14.2.13 Flanged Spigot System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.8
- 14.2.14 Flanged Socket System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.9
- 14.2.15 End Cap System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.10
- 14.2.16 Duck Foot Bend System „BAIO®“ for DCI or plastic pipes as described under item 12.2.2.11
- 14.2.17 Accessories: Restraint Joint for System „BAIO®“ for DCI or plastic pipes
e.g. HAWLE-Stop"
or equivalent

15 Overall View System „ZAK“

15.1 General Description

- for PE pipes DIN 8074/8075
- working pressure: PN 16
- with bayonet lugs and O-ring sealing with two O-rings for a entirely corrosion-protected, restraint and lockable bayonet connection with the suitable pipe saddle
- body of ductile iron acc. to EN 1563 (DIN 1693), epoxy powder coated inside and outside acc. to DIN 30677-T2 in accordance with the quality and test requirements RAL-GZ 662
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- sealing by O-rings of elastomer rubber
- restraint acc. to DIN 8076 T1/T3
- with locking piston for bayonet connection

15.2 Versions

15.2.1 ZAK Service Valve with ISO socket for PE pipes and bayonet connection
as described under item 3.3

15.2.2 ZAK Service Valve, angle type, with ISO fitting for PE pipes and bayonet connection
as described under item 3.8.2

15.2.3 Pipe Drilling Saddle, with bayonet connection for DCI pipes, steel pipes and AC pipes
as described under item 3.9.2

15.2.4 Pipe Drilling Saddle, with bayonet connection for DCI pipes, steel pipes and AC pipes
as described under item 3.9.3

15.2.5 Pipe Drilling Saddle, with bayonet connection for PE and PVC pipes
as described under item 3.9.5

15.2.6 Pipe Drilling Saddle, with bayonet connection for PE and PVC pipes
as described under item 3.9.6

15.2.7 Pipe Saddle for drilling without pressure, with bayonet connection for DCI pipes, steel pipes and AC pipes
as described under item 6.1.4

15.2.8 Pipe Saddle for drilling under pressure, with bayonet connection for DCI pipes, steel pipes and AC pipes
as described under item 6.1.6

15.2.9 Pipe Saddle for drilling under pressure, with bayonet connection for PE and PVC pipes
as described under item 6.2.4

15.2.10 ISO Pipe Fittings of cast iron, with bayonet connection and ISO socket for PE pipes
as described under item 10.3

15.2.11 ISO Pipe Fittings of cast iron, with bayonet connection and PE-fusion tail for PE pipes
as described under item 10.4

16. Valves, other

16.1 Non Return Valve, PN 16 DN 40 – DN 300

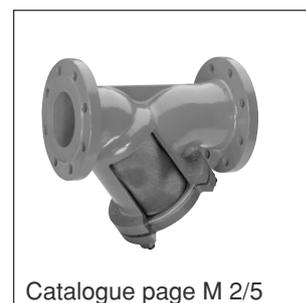
- face-to-face dimension acc. to EN 558-1 GR48 (DIN 3202 T1 - F6)
 - flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
 - body and disc of grey iron GG 250, disc lever-arm of ductile iron GGG 500, inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
 - shaft and pin of stainless steel
 - disc gasket of elastomer rubber
 - bolts, nuts and washers of stainless steel
 - acc. to the test requirements "Water PW 50"1 of the ÖVGW (Austrian Association for Gas and Water)
- e.g. HAWLE Non Return Valve No. 9830
or equivalent



16.2 Strainer, PN 16 DN 40 – DN 300

- face-to-face dimension acc. to EN 558-1 GR48 (DIN 3202 T1 - F1)
- flange dimensions and drilling to EN 1092-2 PN 10 (DIN 2501) - (alternatively PN 16)
- body and cover of grey iron GG 250, inside and outside epoxy powder coated acc. to DIN 30677-T2 in accordance with the quality and test requirements of RAL-GZ 662:
 - coating thickness: min. 250 µm
 - zero porosity: min. 3000 V spark test
 - adhesion: min. 12 N/mm²
 (for more details please see page 2)
- double screen of stainless steel, fine-meshed, mesh-size max. 0,6 mm
- gasket of Klingerit
- bolts, nuts and washers of stainless steel
- acc. to the test requirements "Water PW 501" of the ÖVGW (Austrian Association for Gas and Water)

e.g. HAWLE Non Return Valve No. 9910
or equivalent





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