

2026

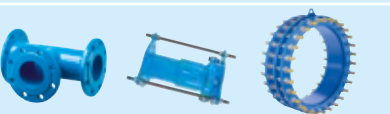
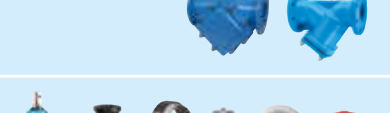
Water Catalogue

made for generations.

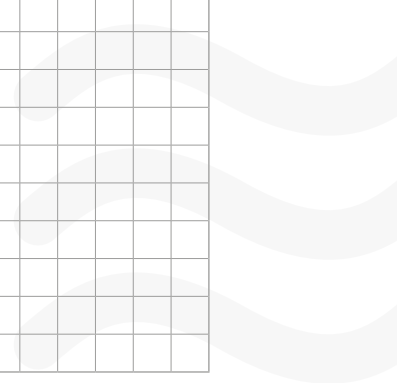
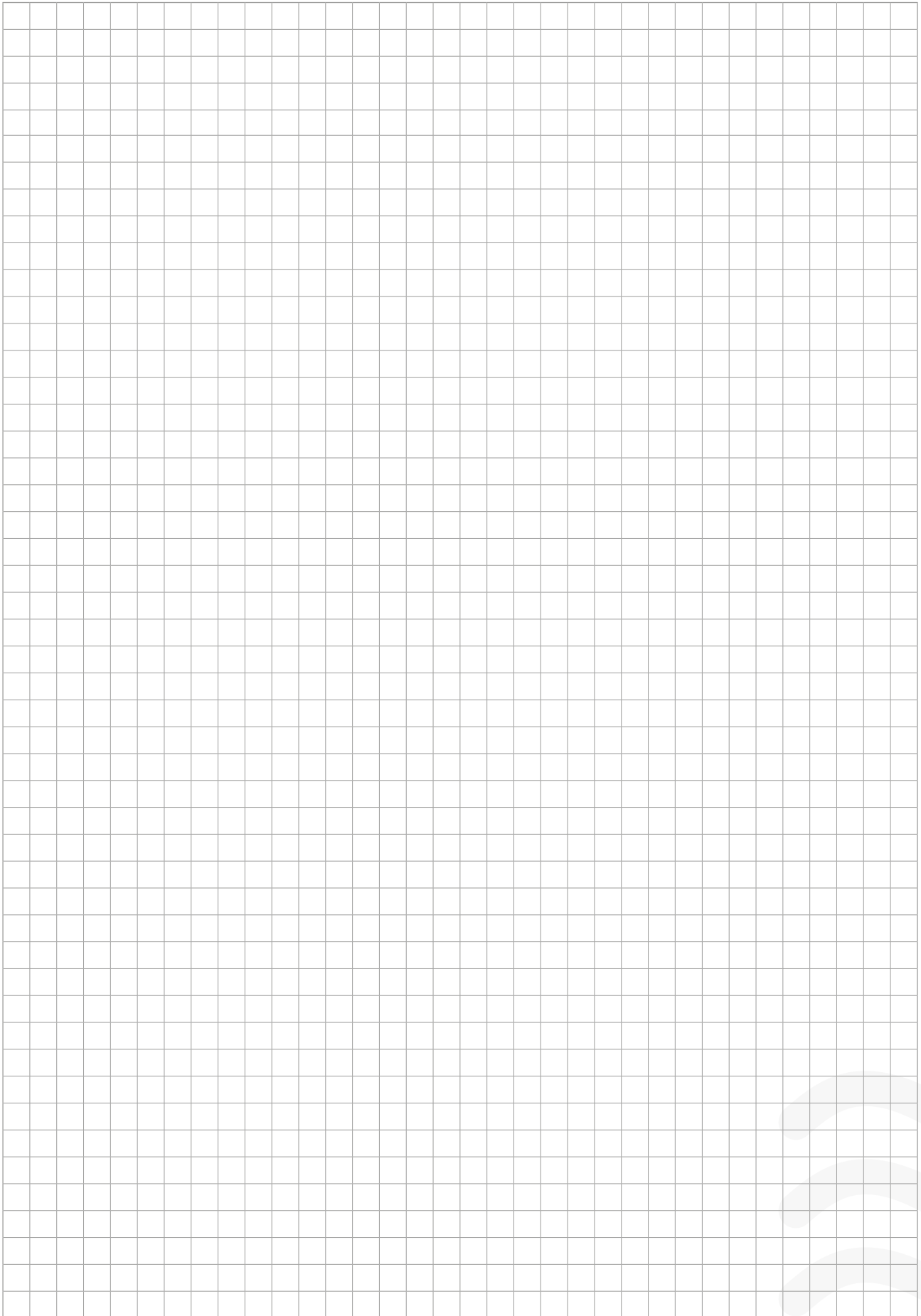


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	Valves I Combi valves		A
	Butterfly valves I Non return valves		B
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	Pipe fittings		D
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Welcome

... to the world of Hawle



A family company with a proud tradition and an eye on the future.

Hawle, a purely family-owned company founded in 1948 is the worldwide leader in the production of an extensive product range of valves and connecting pieces. Hawle is an innovation leader in the development of high-quality valve solutions. In compliance with European and additionally applicable standards, Hawle produces high-performance and durable quality fittings for the construction and the use of water pipelines, as well as the necessary accessories and the required equipment.

Our specialist area of water and wastewater systems also includes customised fittings for special applications and special conditions.

An excellent understanding of the manufacturing process and the production requirements, extensive knowledge in water supply, years of experience and a broad service program enables us to create the optimum product for pipeline connections in all areas of international water supply.

The unique **10 year quality guarantee** for Hawle products in the drinking water area confirms our leading position for innovation and quality.

The employees of our company, which has its registered office in Vöcklabruck (Austria), bring all their service and subject knowledge into the research, design, development as well as the production process.

Hawle products are exclusively produced in Europe in the most up-to-date production facilities. More than 98% of the raw materials used in the products come from Europe. Hawle products are manufactured by well-trained specialists, thus guaranteeing careful monitoring of the quality in each phase of the production process. The majority of the components are also produced by Hawle. So the functionality and the quality is assured and guaranteed in each production step.

Hawle stands for high quality, efficiency and durability. Therefore international customers trust in our products and technologies - for generations.

For more details go to **hawle.com**

Hawle - the best solution

a reliable partner

100% Hawle, 100% proven quality

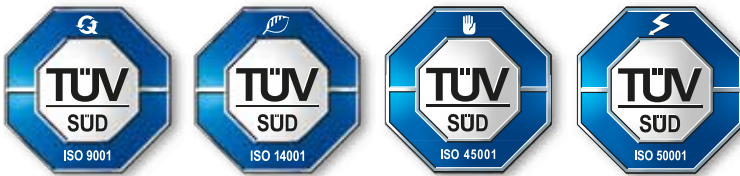
We are constantly striving for improvements together with our partner companies all over the world. In order to achieve this we focus on the requirements of our customers, invest in the most up-to-date technology and offer professional service and technical support.

Hawle has an excellent network of partners, which ensures an efficient and competent distribution of all our products. Our central warehouse in Frankenmarkt, Austria, supplies this network with numerous finished products, which are stored in over 10,000 pallet spaces.

The pipe connections which our technicians develop today will be used tomorrow for your secured water supply.

Hawle offers a competent, round-the-clock service. As soon as we receive your call we immediately put all our efforts into finding a solution to your problem.

made for generations.



Vöcklabruck plant
Austria



Frankenmarkt plant
Austria

Hawle - Guarantee and warranty



10-Years Quality Guarantee (Water for Human Consumption and Natural Gas)

E. Hawle Armaturenwerke GmbH (hereinafter referred to as “Hawle”) guarantees the functional capability of all valves and fittings manufactured by Hawle with the original “Hawle” inscription, which are used as intended for water for human consumption in accordance with Directive 98/83/EC or for natural gas in accordance with ÖVGW (Austrian Association for the Gas and Water Industry) G 31, for a period of 10 (ten) years from the date of delivery from our works. However, the maximum guarantee period afforded by Hawle is 11 (eleven) years from the date of manufacture of the product. In the event of a guarantee claim, it is the responsibility of the customer to prove that the guarantee has not expired, e.g. by presenting the invoice or the original product label.

Should a valve or fitting lose its functional capability during the guarantee period, Hawle shall either repair the product or deliver an equivalent replacement product to the place of performance agreed with Hawle, at its discretion. Hawle will not assume any additional costs or damages incurred by the customer or third parties within the scope of this guarantee, in particular no costs in connection with disassembly and installation, location or reinstallation. Purely optical flaws that in no way impair tightness, tensile safety or the operation of the valve or fitting do not constitute a guarantee claim.

The guarantee also excludes, but is not limited to, wear parts and damage caused by improper storage, transport and assembly, non-compliance with instructions for use, failure to perform pressure tests, utilisation outside the limits of standard applications and general operating parameters, inadequate maintenance, subsequent manipulation or utilisation with unsuitable liquids or gases. The guarantee does not extend to extraordinary environmental conditions, vibrations or residues from the medium or similar external influences, nor to actions by third parties, accidents and other events over which Hawle has no control.

Please also note the exceptions and special regulations applicable to certain products in our catalogue and on our homepage hawle.com.

This guarantee is subject exclusively to Austrian law to the exclusion of international conflict of law rules. Any warranty claims arising from the purchase contract shall not be restricted by this guarantee.

This guarantee applies to all deliveries as of 01.01.2019 for valves and fittings manufactured by Hawle which are used for water intended for human consumption in accordance with Directive 98/83/EC or for natural gas in accordance with ÖVGW (Austrian Association for the Gas and Water Industry) G 31. Any guarantees or warranties issued by Hawle prior to this effective date shall not be valid for any deliveries made thereafter.



Hawle - Guarantee and warranty



5-Years Quality Guarantee (Municipal Waste Water)

E. Hawle Armaturenwerke GmbH (hereinafter referred to as "Hawle") guarantees the function of all valves and fittings manufactured by Hawle with the original "Hawle" inscription, which are used for municipal wastewater as intended in accordance with EN 1085, for a period of 5 (five) years from the date of delivery from our works. However, the maximum guarantee period afforded by Hawle is 6 (six) years from the manufacturing date of the product. In the event of a guarantee claim, it is the responsibility of the customer to prove that the guarantee has not expired, e.g. by presenting the invoice or the original product label.

Should a valve or fitting cease to function during the guarantee period, Hawle shall at its discretion, either repair the product or deliver an equivalent replacement product to the place of performance agreed with Hawle. Hawle will not assume any additional costs or damages incurred by the customer or third parties within the scope of this guarantee. In particular any costs incurred by disassembly, installation, localization or reinstallation shall not be covered by Hawle. Purely optical flaws that in no way impair tightness, tensile strength, nor the operation of the valve or fitting, do not constitute a guarantee claim.

The guarantee also excludes, but is not limited to, wear parts and damage caused by improper storage, transport and assembly, non-compliance with instructions for use, failure to perform pressure tests, utilisation outside the limits of standard applications and general operating parameters, inadequate maintenance, subsequent manipulation or utilisation with unsuitable liquids or gases. The guarantee does not extend to exceptional environmental conditions, vibrations or residues from the medium or similar external influences, including third-party actions, accidents and other events over which Hawle has no influence.

Please also note the exceptions and special regulations applicable to certain products in our catalogue and on our homepage hawle.com.

This guarantee is subject exclusively to Austrian law under the exclusion of international conflict of law rules. Any warranty claims arising from the contract of sale shall not be limited by this guarantee.

This guarantee applies to all deliveries as of 01.01.2019 of valves and fittings manufactured by Hawle, which are used as intended for municipal wastewater according to EN1085. Any guarantees or warranties issued by Hawle prior to this effective date shall not be valid for any deliveries made thereafter.



2-year warranty

In addition to our quality guarantees, Hawle warrants in accordance with Austrian law that our products correspond to the relevant contract at the time of delivery. In the event of incorrect storage, transport, assembly, usage regulations not being observed, failure to pressure-test, insufficient maintenance, subsequent manipulation or usage for non-suitable fluids or gases there is no entitlement to warranty claims. The warranty period runs for a maximum of two years ex-works delivery. Please see the Hawle delivery conditions for further details of the warranty.

Hawle - Corrosion protection



High quality corrosion protection using the GSK fluidised bed Epoxy coating system.
The environmental friendly solvent and pollution free powder coating technology!



Epoxy Powder-Coated coating according to GSK:

- ⦿ Fulfils the requirements according to EN 14901 (pipes, fittings and accessories)
- ⦿ Minimum coated thickness 250 µm
- ⦿ Zero porosity
- ⦿ High adhesion to metal (min. 16 N/mm²)
- ⦿ High resilience (no cracking)
- ⦿ Smooth surface (makes incrustation more difficult)
- ⦿ Suitable for food use according to the guidelines for hygienic evaluation of organic coating in contact with drinking water (coating guideline) of the German Federal Health Office
- ⦿ High impact resistance
- ⦿ Bacteriological approval to DVGW recommendation W270
- ⦿ Regular quality tests according DIN 3476-1 and EN 14901 coating thickness, adhesion, spark-testing, impact resistance
- ⦿ Independant auditing of quality control systems by e.g. MPA Hannover in accordance with the test methods of **GSK** (Gütegemeinschaft **S**chwerer **K**orrosionsschutz - the association for high quality corrosion protection)
- ⦿ Hawle standard colour RAL 5012

Hawle - Standard- and special applications

Standard applications:

Our products are intended for localised installation in drinking water pipelines made from PE, PVC, cast iron, steel or AC pipes.

Before installing stainless steel hydrants and air-release hydrants, we recommend applying additional corrosion protection (corrosion protection tape on site or overpainting on request) to the stainless steel surfaces in contact with the ground.

Standard medium:

- **Water for human consumption**
according to EU Guideline 98/83/EC and its Appendix I, Parts A to C

General operating parameters:

Water for human consumption:

Medium temperature: 0 °C to max. 40 °C
max. 250 mg/l chloride, max. 0.3 mg/l free chlorine
min. 8.0° dH total hardness
pH value of min. 5 to max. 9.5

For the specific operating parameters of our products, please refer to the respective product pages of our catalogue and our homepage **hawle.com**.

Special applications:

In case of deviating conditions of use or ambient conditions, please inform us right on your first inquiry about the specific operating conditions. If you have any questions regarding the suitability of products for certain operating conditions, please contact our Application Engineering department (phone: +43 (0) 7672 72576-0).

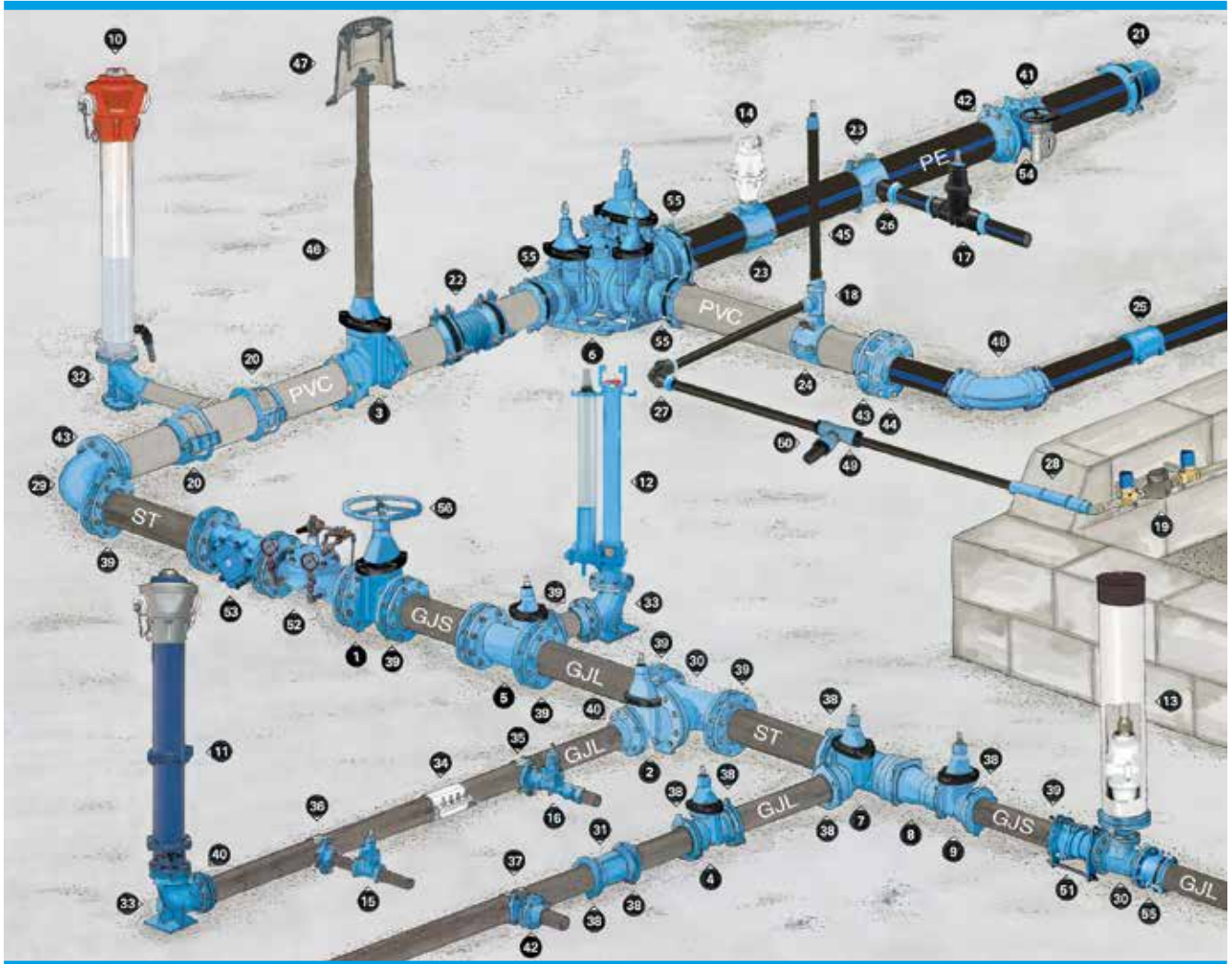
If our valves and fittings are used for other than the standard applications and without the approval granted by our Application Engineering department regarding the conditions of use, we cannot assume any liability.

Application instructions/storage conditions:

Valves and fittings should be stored in a cool, dry and low-dust environment protected from weather. Avoid exposure to direct sunlight or UV light, unless the valves and fittings are designed for use above ground. For the correct installation and maintenance of our valves and fittings, please observe our instructions as well as the pertinent European standards (EN), as well as the directives of the ÖVGW (the Austrian Association for Gas and Water) and/or comparable national technical standards.

Hawle - Product range

(extract)



	Order no.		Order no.
1 E3 Valve, flanged ends	4000E3	29 Double flanged bend 90°	8530
2 E3 Reducing Valve	4150E3	30 All flanged tee	8510
3 E3 Valve "System 2000"	4040E3	31 Connector, restraint	NL50
4 E3 Valve, Socket ends for cast iron	4500E3	32 Flange duck foot bend socket 90° "System 2000"	5045
5 E3 Combi-T, single valve tee	4340E3	33 Flange duck foot bend 90° N-piece	5049
6 E3 Hawle-Combiflex	4420E3	34 Repair clamps, single lug	0750
7 E3 MMB-Valve (E3 Combi-T socket ends)	NL10E3	35 Universal-pipe saddle	3500
8 Concentric taper	NL40	36 Universal-shut-off saddle	3800
9 E3 HSM-Valve (spigot socket valve)	NL00E3	37 Universal-pipe saddle, flanged outlet	3510
10 H4 Corrosion free hydrant - rigid type	5151H4	38 Pipe-Lock-Ring for restraint clamp	1200
11 H4 Above ground hydrant - break away	5096H4	39 Restraint flange adaptor for cast iron	7602
12 Freeflow below ground hydrant	5060	40 Double chamber flange adaptor for cast iron	7102
13 Combined air release valve	9822	41 restraint flange adaptor for PE/PVC,	0400
14 Automatic air valve	9876	42 ISO pipe-flange adaptor for PE	5500
15 Service valve	2500	43 Double chamber flange adaptor for PVC	5600
16 Service valve	2800	44 Double chamber flange adaptor for PVC, reducing	5630
17 Service valve, POM	2630	45 Extension spindle, for service valves	9101
18 Service valve	3130	46 Telescopic extension spindle, for E3 valves	9500E2/E3
19 Water meter console	2963	47 Surface box adjustable	2050
20 Restraint clamp, for PVC	1254	48 Bend 90° "System 2000"	8535
21 Endcap "Synoflex"	7980	49 Hawle-FIT fitting, T-piece with threaded outlet, POM	6520HF
22 Connector "Synoflex"	7974	50 Hawle-FIT fitting, external thread, POM	6120HF
23 HAKU-saddle for plastic pipes	5250	51 Hawle-Vario	8010S
24 HAKU-saddle for plastic pipes	5310	52 Pressure reducing valve	9700
25 Split collar (Pipe-Pipe)	9240	53 Strainer	9911
26 ISO-fitting, external thread, POM	6120	54 Hawle-butterfly valve	9881K
27 ISO-fitting, elbow, POM	6420	55 Flange "Synoflex"	7994
28 Wall inlet fitting	6990	56 Handwheel	7800

Pressure test

“buried valves”

Pressure testing of buried Hawle valves for water supply

Hawle valves are produced to the highest precision and accuracy and are subjected to routine quality control. Therefore, we can offer top-quality products and grant Hawle's 10 years quality guarantee unequalled in the market.

To ensure this quality for our customers it is necessary that installation be done professionally. Therefore, the Hawle valves as well as their connections to the pipeline system must be subjected to pressure testing after installation. In this test the tightness of pipes, pipe connections as well as components of the pipeline shall be demonstrated.



Application note:

The pressure test must be carried out according to EN 805. Prior to the pressure test, fill the trench covering only the pipes in order to prevent any expansion damage to the pipeline, but make sure to leave enough space completely open for inspection of each pipe connections site. Pipelines without restraint connections must be sufficiently secured by propping up and/or anchoring at each end, bend and branch.

We strongly recommend performing the pressure test **prior** to filling the space around the pipeline connections. **The Hawle warranty does not cover incurred excavation and filling or any other associated costs if the pressure test is done only after filling the entire trench. With regard to pressure testing, the Hawle warranty only encompasses replacement of defective products.**

The products listed in our catalogue are intended for potable, water in connection with PE, PVC, ductile iron, steel or asbestos pipe type installations in the ground.

Valve maintenance should be carried out every five years according to national standards (e.g.: ÖNORM B2539). Hawle recommends an annual actuation of the valve.

Terms and Conditions of Delivery of E. Hawle Armaturenwerke GmbH

Hawle Terms and Conditions of Delivery 2026

Last updated: January 2026 / valid as of 1 January 2026



1 General

- 1.1 All offers, sales transactions, deliveries and other services provided by E. Hawle Armaturenwerke GmbH (henceforth referred to as "Hawle") to our customers as of 01.01.2026 are subject exclusively to the following Conditions of Sale.
- 1.2 Hawle shall not recognise any conflicting or deviating terms and conditions of the customer unless Hawle has expressly agreed to their validity in writing.
- 1.3 Supplements and amendments to these Conditions of Sale, as well as ancillary agreements, must be made in writing in order to be effective. This also applies to the waiver of the written form requirement.
- 1.4 If individual provisions of these Conditions of Sale are or become invalid, the remaining provisions shall remain effective. Ineffective provisions shall automatically be replaced by legally effective provisions which come as close as possible to the economic intent of the contracting parties.
- 1.5 It is the responsibility of the customer to assess the technical and legal suitability of the goods offered by Hawle for the use intended by the customer or his buyers. The customer is also required to observe export and import restrictions.
- 1.6 Any administrative authorisations required for the import of goods into their country of destination or for the use intended by the customer or his buyers must be obtained by the customer in good time. If such authorisations are not obtained in good time, delivery dates and periods shall be extended accordingly.
- 1.7 Hawle reserves the property rights and copyrights to the product catalogue sheets, drawings, product photos, cost estimates and other documents prepared by Hawle. These documents may not be disclosed to third parties without the prior permission of Hawle.

2 Conclusion of contract

- 2.1 All offers and price lists issued by Hawle are subject to change and non-binding, unless expressly agreed otherwise, and only become binding once Hawle has confirmed the order in writing or performed an action set by Hawle in fulfilment of the contract (e.g. delivery/shipment of the goods).
- 2.2 Following the confirmation of the order or the performance of an action in fulfilment of the contract by Hawle, the customer may withdraw from the contract only with the prior written consent of Hawle. Unilateral withdrawal from the contract on the part of the customer is not permitted.

3 Prices and terms of payment

- 3.1 All documents pertaining to an offer such as drawings, illustrations and weight specifications shall only be regarded as approximate unless they are expressly designated as being binding. This reservation applies in particular to obvious errors, typographical errors, printing errors and miscalculations.
- 3.2 Unless otherwise agreed, all prices quoted by Hawle are in EURO ex works Frankenmarkt or EXW Frankenmarkt (Incoterms 2020), excluding in particular packaging, transport costs, transport insurance, sales tax and export and import duties. Packaging, loading, transport costs and transport insurance as well as potential taxes and duties shall be invoiced separately by Hawle.
- 3.3 Any changes in wage costs due to collective or statutory regulations or internal agreements as well as changes in other costs relevant to the calculation of costs necessary for the provision of the service, such as the costs incurred for materials, energy, transport, third-party work, financing, etc., shall entitle Hawle to increase the prices accordingly. For this reason, the customer shall have neither the right to withdraw from the contract nor the right to assert that the basis of the transaction has ceased to exist. Orders confirmed by Hawle are exempt from potential price changes.

- 3.4 Unless different payment terms have been agreed in writing, delivery shall be made against advance payment. Shipment shall only be arranged after full payment has been received in our account. Payments shall be offset against the oldest claim outstanding.

3.5 Claims by Hawle may not be offset.

- 3.6 In the event that the customer defaults on payment, Hawle shall be released from all further service and delivery obligations and be entitled to withhold any outstanding deliveries or services or to demand advance payments or guarantees.
- 3.7 In the event that, upon conclusion of the contract, a significant deterioration in the financial circumstances of the customer occurs, or if circumstances become known which from Hawle's point of view are likely to reduce the creditworthiness of the customer, Hawle shall have the right to change due dates for outstanding claims, withhold deliveries to the customer and adjust conditions for future legal transactions with immediate effect.

4 Delivery

- 4.1 Orders confirmed by Hawle shall be fulfilled by Hawle as swiftly and diligently as possible. The delivery dates and periods announced by Hawle are merely intended to serve as a guideline and are always non-binding unless the stated delivery dates and periods have been expressly designated as binding by Hawle.
- 4.2 In the event of force majeure or any unforeseeable obstacle for which Hawle is not responsible, delivery dates and deadlines shall be reasonably extended by the duration of the impediment. This shall also apply if Hawle's sub-suppliers encounter such impediments. These include, in particular, official measures, strikes and lock-outs, natural disasters, market-related problems with material procurement as well as import and export restrictions.
- 4.3 Hawle deliveries may always be divided into sub-deliveries. Hawle is at liberty to make partial deliveries or provide partial services and to issue partial invoices to the customer.
- 4.4 National and international goods traffic is subject to the terms of delivery FCA, 4840 Frankenmarkt, Hawle dispatch warehouse (Incoterms 2020), unless another delivery clause has been explicitly agreed.
- 4.5 In the case of a sales shipment, the transfer of risk takes place once the purchased item has been handed over to the first carrier. Where acceptance of a service is required, Hawle's notification of readiness for acceptance shall be decisive for the transfer of risk.
- 4.6 The customer is obliged to accept the deliveries and services provided by Hawle as per contract. In the event of default of acceptance or a culpable breach of other obligations to cooperate on the part of the customer, Hawle is entitled to demand compensation from the customer for any damage incurred as a result, including any additional expenses.
- 4.7 Hawle is entitled to make changes to the technical design of the goods ordered, provided that these do not result in significant functional changes and the customer does not demonstrate the unreasonable nature of such changes. Unreasonableness is to be ruled out if the change constitutes a technical improvement or is caused by the further development of the state of the art or by legal or official measures.
- 4.8 In principle, the customer is not entitled to refunds or replacements. Refunds and replacements are only possible in exceptional cases and require the prior written consent of Hawle.
- 4.9 The goods delivered by Hawle to the customer are intended for use or resale in the customer's country of residence or in the country of the place of delivery.

Terms and Conditions of Delivery of E. Hawle Armaturenwerke GmbH

Hawle Terms and Conditions of Delivery 2026

Last updated: January 2026 / valid as of 1 January 2026

5 Reservation of title

- 5.1 All goods delivered by Hawle remain the property of Hawle until payment has been made in full.
- 5.2 The customer is authorised to resell the goods in the regular course of business, even during the period in which the goods are subject to reservation of title. If, however, the customer is in default of payment to Hawle, Hawle may prohibit the resale of the goods subject to reservation of title.
- 5.3 The customer herewith cedes to Hawle all purchase price claims, including all ancillary rights, arising from a resale of the goods to his customers. Hawle accepts this assignment. These purchase price claims serve as security for the goods subject to reservation of title.

6 Warranty

- 6.1 The customer must inspect the received goods with respect to quantity and quality immediately upon receipt. Written notices of defects must be submitted by the customer immediately after receipt of the delivery, but at the latest within 10 days from the date of delivery and prior to any handling or processing, otherwise excluding any warranty claims and/or claims for damages and/or avoidance on account of mistake, but do not entitle the customer to retain the invoiced amounts or portions thereof.
- 6.2 The warranty period for defects which were not detected during the inspection of the shipment is six months from the date of delivery and is neither extended nor interrupted by attempts at improvement; it also applies to partial deliveries. Notification of any such defects must be given in writing within 10 days from the date the defect was discovered, otherwise excluding warranty claims and/or claims for damages and/or avoidance on account of mistake, but do not entitle the customer to retain the invoiced amounts or portions thereof.
- 6.3 It has been agreed between Hawle and the customer that a hydrostatic pressure test in accordance with EN 805 is to be performed after laying a pipeline but prior to the main backfilling of the pipe trench or further constructional measures in shafts, plants or buildings which restrict accessibility to the valves and pipe fittings. If such a test is not performed, the customer or his customers shall be charged with contributory negligence of at least 50% in the event of damage. The customer agrees to inform his customers accordingly and to pass on this obligation to perform the described hydrostatic pressure test to his customers.
- 6.4 Possible warranty obligations generally cover the defective goods, but not the expenses otherwise associated with correcting the defect such as excavation costs, working hours and travel expenses.
- 6.5 The customer always bears the burden of proving that the delivered goods were defective at the time of delivery.
- 6.6 The place of performance for warranty obligations is always the place of delivery agreed for the original delivery.
- 6.7 Hawle shall be free to decide whether to fulfill possible warranty claims by means of replacements, improvement measures, price reductions or withdrawal from the contract.

7 Damages and liability

- 7.1 Any consulting provided by Hawle, whether verbal or in writing, is non-binding and does not release the customer from his obligation to examine the goods with respect to their suitability and the intended purpose. This applies above all, but not exclusively, to the suitability of the goods for the use intended by the customer or his customers, in particular to their suitability for the substances (gases and/or liquids) to be conveyed.

- 7.2 Hawle shall be liable for damages caused to the customer in the course of processing the business transaction in an amount not exceeding the value of the order placed with Hawle, and only in the event of gross negligence on the part of Hawle or gross negligence on the part of the executors working for Hawle, with the exception of personal injuries in which case Hawle shall be liable even in the event of minor negligence. The burden of proving gross negligence always lies with the injured party.

- 7.3 IN NO EVENT SHALL HAWLE BE HELD LIABLE, WHETHER IN TORT OR CONTRACT, FOR INDIRECT DAMAGES, CONSEQUENTIAL DAMAGES, PURELY PECUNIARY LOSSES, FOREGONE PROFITS OR DAMAGES ARISING FROM DELAYS OR OUT OF THIRD PARTY CLAIMS.

- 7.4 The time limit for asserting claims for damages is one year from the date on which the customer gains knowledge of, or is subject to, negligent ignorance of the damage and the injuring party.

- 7.5 In the event that the customer himself is held liable under product liability law, he undertakes to immediately notify Hawle thereof by telephone or in writing and to immediately inform Hawle of the address of the claimant, failing which the customer's right of recourse against Hawle arising from product liability will cease to apply. Negotiations of claims arising from product liability with respect to Hawle products shall be conducted exclusively by Hawle.

8 Copyright and intellectual property

- 8.1 Hawle reserves all industrial property rights and intellectual property rights without restriction, in particular to its products, software, manufacturing processes, user manuals, technical documentation, catalogs, brochures, illustrations, and other materials, irrespective of their format or medium. This shall also apply to future developments, extensions and improvements based on existing property rights.
- 8.2 The customer is not permitted to modify the visual appearance of the goods, nor to modify, remove, alter, or in any way tamper with, Hawle's trademarks or other logos. This applies both to the goods themselves and to their packaging and accompanying documentation.
- 8.3 The customer undertakes to inform Hawle without delay of any infringement of property rights or intellectual property by third parties that comes to their attention and to provide Hawle with their full assistance in enforcing these rights.
- 8.4 All rights not expressly granted to the customer under this contract remain exclusively with Hawle. Any tacit or implied transfer of rights is excluded.

9 Place of performance, legal venue, applicable law

- 9.1 The place of performance for delivery and payment shall be 4840 Vöcklabruck, Austria, even if a different place of delivery is agreed individually.
- 9.2 The exclusive court of jurisdiction for all disputes arising from legal transactions between the customer and Hawle is the competent court in 4840 Vöcklabruck/Austria. Moreover, Hawle is also entitled to sue at the customer's registered office.
- 9.3 All legal transactions between the customer and Hawle are subject exclusively to Austrian substantive law, excluding international conflict of law rules. The application of the UN Convention on Contracts for the International Sale of Goods (CISG) is explicitly excluded.

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E3 Gate valve

Overview

- Medium: Water, seawater, gas
- In accordance to EN 1074-1 and -2

Advantages Hawle-E3 Gate valve

- O-ring carrier with double bayonet (up to DN 200) or heavy-duty O-ring carrier with centering flange (> DN 200) in inside and outside fully coated bonnet
- POM sliding disks (up to DN 200) and an additional axial ball bearing (> DN 200) ensure low torque actuation
- Duplex stainless steel spindle
- Extended edge protection
- Wedge and wedge nut fully coated with vulcanized elastomer
- The wedge is connected to the wedge nut with a flexible link and embedded in elastomer. This snug fit dampens vibration during opening and closing of the wedge
- Stainless steel allen screws in bonnet
- 100% corrosion protection
- E3 bonnets are entirely compatible with all E2 bodies and accessories
- Full straight bore – suitable for pigging the pipeline
- Spindle O-rings replaceable under operating pressure up to DN 600
- All components made in the EU, including ductile iron parts

Hawle-quality Guarantee



E3 Gate valve | Combi valves

Overview

Design features

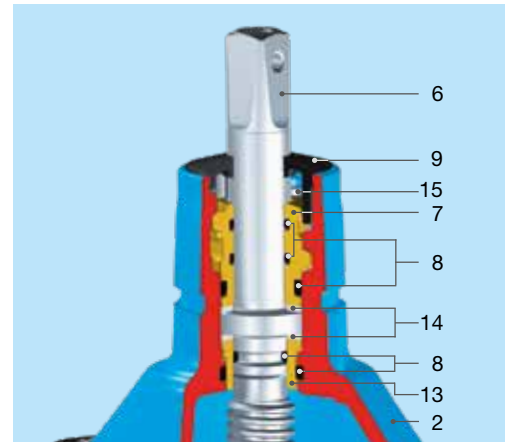
- Resilient seated gate valve according to EN 1171, EN 1074-1 and EN 1074-2 with smooth, straight-through bore
- Double bayonet O-ring carrier is connecting the spindle to the bonnet, allowing a fully encased, uniform epoxy powder coated bonnet for further improved corrosion protection
- Wedge guide made of wear resistant POM material in load optimized design minimizes attrition and ensures lowest torque actuation
- Wedge is flexible and fully linked in vulcanized elastomer to the wedge nut. This snug fit dampens vibration during opening and closing of the wedge
- Wedge nut has a long thread length allowing significantly higher torques than the standard before breaking
- O-rings, lip-seals mounted in the bonnet are replaceable under operating pressure
- Extended edge protection to avoid damages during transport, storage and assembly
- Sliding disks and ball bearing assure low friction performance of the spindle
- 100% suitable for buried installations

Material | Technical features

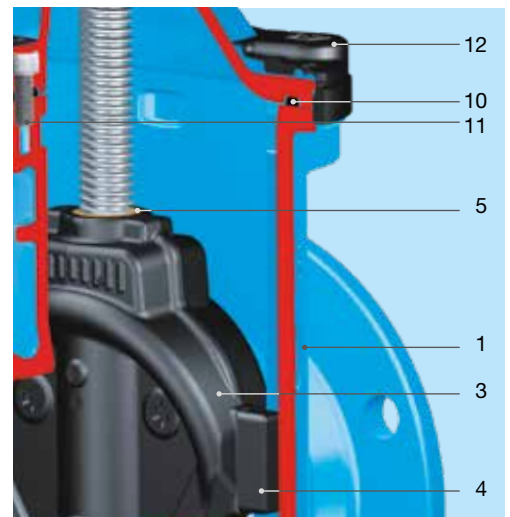
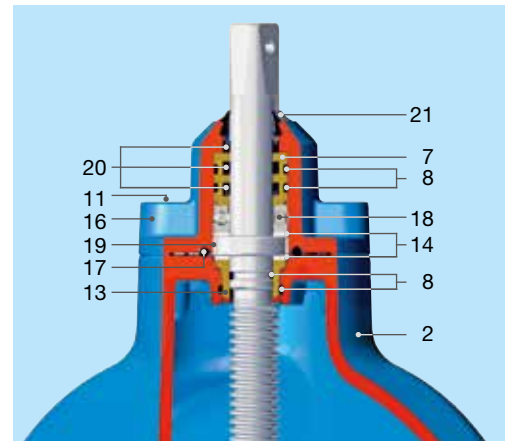
- 1,2 Body (1), bonnet (2), centering flange (16) made of ductile iron,
- 16 epoxy powder coated inside and out
- 3 Wedge made of ductile iron (DN 50 made of dezincification-resistant brass) with vulcanized elastomer all-over
- 4 Wedge guide made of wear-resistant plastic
- 5 Wedge nut made of dezincification-resistant brass
- 6 Duplex stainless steel spindle with rolled thread and flat-rolled anti-friction surface
- 7 O-ring carrier made of brass, DN 50 – 200 with double bayonet
- 8 O-rings made of elastomer
- 9 Wiper ring made of PE
- 10 Bonnet gasket made of elastomer
- 11 Allen screws made of stainless steel, encased into the body with interlacing gasket and sealing compounds, ensuring full corrosion protection
- 12 Extended edge protection made of PE
- 13 Spindle bearing made of dezincification resistant brass
- 14 Sliding disks made of POM
- 15 Safety screw made of stainless steel
- 17 Centering flange gasket made of elastomer
- 18 Axial ball bearing permanently lubricated
- 19 Centering ring made of POM
- 20 Lip seals made of elastomer
- 21 Wiper ring made of elastomer

DN 50 – 200

Spindle bearing with sliding disks



DN 250 – 600 Spindle bearing with ball bearing and additional sliding disks



Valves | Combi valves

Accessories

Handwheels	Page M 4/1
Extension spindles	Page M 2/1
Surface boxes	Page M 3/1
Base plate	Page M 3/7
Adapter and coupling socket	Page M 4/3
Operating cap	Page M 4/1
Spindle extension	Page M 4/1
Actuator	Page M 4/3
Position indicator	Page M 4/2
Bolts	Page M 4/4
Hawak-pillar	Page M 5/1
Flat gaskets	Page M 7/1
Blanking cap	Page M 4/1
Flanges	Page C 4/1
Dismantling pieces	Page D 6/1

Tools

Operating key	Page Q 4/2
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Technical information

Tightening torques for flange assembly	Page R 3/1
Pressure loss diagram	Page R 4/1
Spindle rotations per stroke	Page R 1/2

Application examples



E3 Gate valve

With flange DN 50 – 200, PN 10 | PN 16 | PN 25

Design features

- Resilient seated gate valve with smooth straight-through bore
- Flanges sized in accordance with EN 1092-2, drilled according to
EN 1092-2 | PN 10 standard (4000E3, 4700E3);
EN 1092-2 | PN 16 from DN 200 (4000E3, 4700E3)
EN 1092-2 | PN 25 (4010E3, 4710E3)
Please specify on order - other standards on request
- Suitable for cleaning with a cleaning pig
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet
- Duplex stainless steel spindle

Standard version: without handwheel and extension spindle

Design versions:

for actuator:	No. 4000ELE3
with actuator:	No. 4000EME3
with position indicator:	No. 4000STE3
for seawater:	No. 4002E3, No. 4702E3

Special versions: on request

No. 4000E3

No. 4700E3

No. 4010E3

No. 4710E3

No. 4060E3



Suitable accessories

Suitable accessories: see page A 2/2

Handwheel:	No. 7800
Extension spindles:	rigid No. 9000E2/E3 telescopic No. 9500E2/E3
Surface boxes:	rigid No. 1750 telescopic No. 2050 No. 2051K No. 9920
Valve actuator:	No. 9920
Adapter for actuator (E2/E3 adapter):	No. 8630E2/E3
Base plate:	No. 3481, No. 3482
Operating cap:	No. 2156, No. 2157
Extension spindle:	No. 7820, No. 7825
Position indicator:	No. 2170E2/E3
Bolts:	No. 8810, No. 8830, No. 8840
Hawak-pillar:	No. 9894, No. 9895
Flat gasket:	No. 3390, No. 3470

Order no.	Version	MOP (PN)	Dimensions/DN						
			50	65	80	100	125	150	200
4000E3	short EN 558 GR 14	16							
4700E3	long EN 558 GR 15	16							
4010E3	short EN 558 GR 14	25							
4710E3	long EN 558 GR 15	25							
4060E3	to BS 5163 to AS 2638	16							

Application examples



E3 Gate valve

With flange DN 50 – 200, PN 10 | PN 16 | PN 25

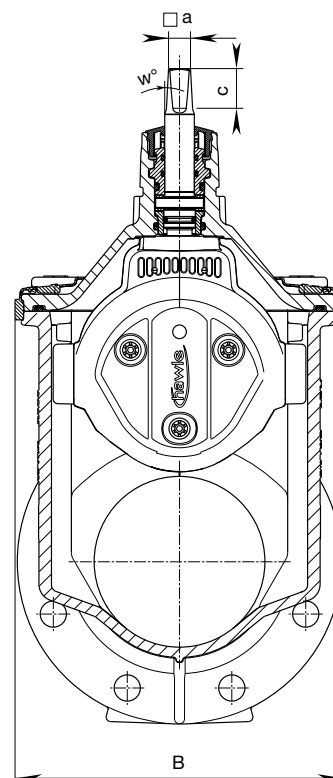
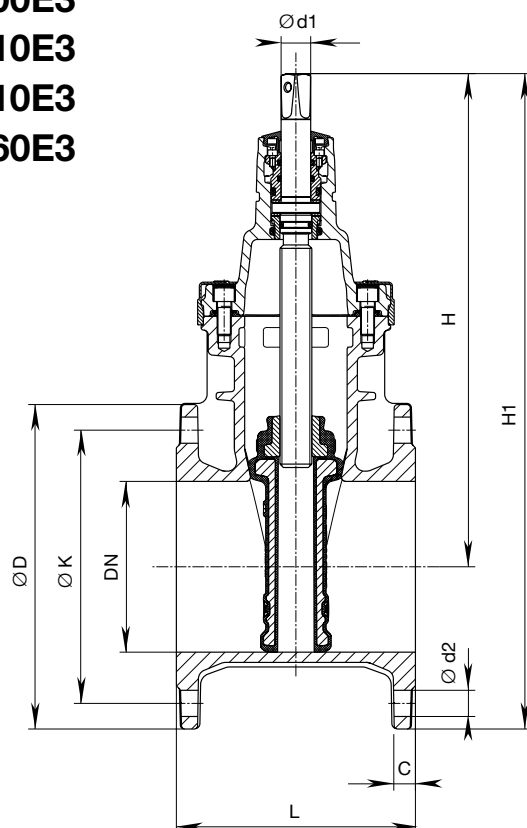
No. 4000E3

No. 4700E3

No. 4010E3

No. 4710E3

No. 4060E3



DN	MOP (PN)	Flange			Bolts			Spindle			Valve							Weight		
		ØD	C	ØK	Qty.	Thread	Ød2	□ a	c	w°	Ød1	H	H1	L short	L long	L BS 5163 AS 2638	B	short	long	BS 5163 AS 2638
50	10																			
	16	165	19	125	4	M 16	19	14,8	33		20,5	234	316,5	150	250	178	143	10,0	11,5	10,7
	25																	10,0		
65	10																			
	16	185	19	145	4	M 16	19	17,3	35		24	305	397,5	170	270		180	15,5	17,5	
	25				8													16,0		
80	10																			
	16	200	19	160	8	M 16	19	17,3	38		24	312,5	412,5	180	280	203	180	16,5	20,0	18,0
	25																	18,0		
100	10																			
	16	220	19	180	8	M 16	19	19,3	39	3°	24	343	453	190	300	229	212	20,5	25,5	23,5
	25	235		190		M 20	23						460					24,5		
125	10																			
	16	250	19	210	8	M 16	19	19,3	39		26	421	546	200	325		289	33,0	37,5	
	25	270		220		M 24	28						556					34,0		
150	10																			
	16	285	19	240	8	M 20	23	19,3	39		26	433	576	210	350	267	289	37,0	43,5	41,0
	25	300		250		M 24	28						583					47,0	49,0	
200	10																			
	16	340	20	295	8	M 20	23	24,3	49		30	541	711	230	400	292	356	60,5	71,5	65,0
	25	360		310	12	M 24	28						721					67,0	79,0	

E3 Gate valve

With flange DN 250 – 600 (700), PN 10 | PN 16 | PN 25



Design features

- Resilient seated gate valve with smooth straight-through bore
- Flanges sized in accordance with EN 1092-2, drilled according to
EN 1092-2 | PN 10 standard (4000E3, 4700E3);
EN 1092-2 | PN 16 from DN 200 (4000E3, 4700E3);
EN 1092-2 | PN 25 (4710E3)
Please specify on order - other standards on request
- Suitable for cleaning with a cleaning pig
- Suitable for operation by automatic actuators
- O-rings lip-seals replaceable under operating pressure up to DN 600
- Ball bearings in the spindle seating minimizes closing forces
- Easy to actuate without bypass and without power boost - even for 16 bar differential pressure
- For mounting a position indicator it is necessary to remove the centering flange and attach the adapter for position indicator

No. 4000E3

No. 4700E3

No. 4710E3

No. 4060E3



Standard version: without handwheel and extension spindle

Design versions: for actuator: No. 4000ELE3
with actuator: No. 4000EME3
with position indicator: No. 4000STE3
for seawater: No. 4002E3, No. 4702E3

Special versions: on request
- Bevel gearing
- for DN 500/600 - version with bypass (DN 50) available
Ventilation and exhausting; small amounts of air in the bonnet

Suitable accessories

Suitable accessories: see page A 2/2

Handwheel: No. 7800
Extension spindles: rigid No. 9000E2/E3
telescopic No. 9500E2/E3
Surface boxes: rigid No. 1750
telescopic No. 2050
No. 2051K
Valve actuator: No. 9920
Adapter for actuator (E3 adapter): No. 8630E3
Base plate: No. 3481, No. 3482
Operating cap: No. 2156, No. 2157
Extension spindle: No. 7820, No. 7825
Bolts: No. 8810, No. 8830, No. 8840
Hawak-pillar: No. 9894, No. 9895
Flat gasket: No. 3390, No. 3470

Order no.	Version	MOP (PN)	Dimensions/DN								
			250	300	350	400	450*	500*	500	600	700
4000E3	short EN 558 GR 14	10/16									
4700E3	long EN 558 GR 15	10									**
		16									
4710E3	long EN 558 GR 15	25									
4060E3	to BS 5163 to AS 2638	16									

* Body: DN 400 - flange connection: DN 450 or 500

* Body: DN 600 - flange connection: DN 700

E3 Gate valve

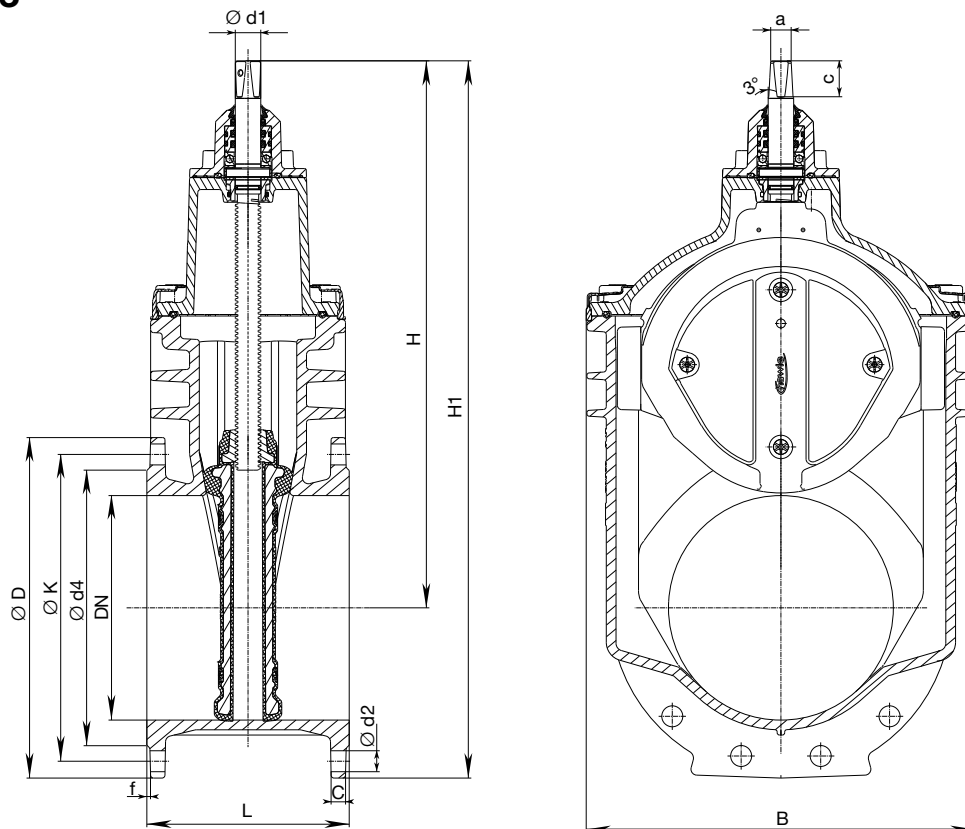
With flange DN 250 – 600 (700), PN 10 | PN 16 | PN 25

No. 4000E3

No. 4700E3

No. 4710E3

No. 4060E3



DN	MOP (PN)	Flange					Bolts			Spindle			Valve					Weight	
		Ø D	C	Ø K	Ø d4	f	Qty.	Thread	Ø d2	a	c	Ø d1	H	H1	L short	L long	B	short	long
250	10	400	22	350	319	3	12	M 20	23	27,3	48	34	649	849	250	450	436	98,5	114,5
	355			M 24				28							102,0			110,0	
	25			425				24,5	370					330	M 27			31	862
300	10	455	24,5	400	367	4	12	M 20	23	27,3	48	34	731	958	270	500	520	151,0	169,5
	410			M 24				28							150,0			169,0	
	25			485				27,5	430					389	5			16	M 27
350	10	520	26,5	460	427	4	16	M 20	23	27,3	48	34	816	1076	290		604	205,5	
	16							470	M 24					28					
400	10	580	28	515	477	4	16	M 24	28	32,3	55	44	925	1215	310	600	687	266,0	310,0
	16							525	M 27					31					
450*	10	640	30	565	530	4	20	M 24	28	32,3	55	44	925	1261		650	687		328,5
	16							585	M 27					31					
500*	10	715	31,5	620	582	4	20	M 24	28	32,3	55	44	925	1296		700	800		367,0
	16							650	M 30					34					
500	10	715	31,5	620	582	4	20	M 24	28	36,3	66	50	1149	1507	350	700	800	471,0	530,0
	16							650	M 30					34					
600	10	840	36	725	720	5	20	M 27	31	36,3	66	50	1306	1726	390	800	944	690,0	764,0
	16							770	M 33					37					
700**	10	910	32	840	770	7	24	M 27	31	36,3	66	50	1306	1761		900	945		885,0

* Body: DN 400 - flange connection: DN 450 or 500

* Body: DN 600 - flange connection: DN 700

E3 Reducing valve

With flange DN 65 – 300, PN 10 | PN 16

Design features

- Resilient seated gate valve with unequal flange sizes
- Flanges sized in accordance with EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 please specify on order - other standards on request
- This E3 reduction valve is a gate valve and a reducing connector in one piece; this feature provides for a multitude of application possibilities for the most efficient material and space requirements
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet
- Duplex stainless steel spindle

Standard version: without handwheel and extension spindle

Design versions: for actuator: No. 4150ELE3
with position indicator: No. 4150STE3

Special versions: on request

No. 4150E3



Suitable accessories

Suitable accessories: see page A 2/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050
		No. 2051K
Valve actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:		No. 3481, No. 3482
Operating cap:		No. 2156, No. 2157
Extension spindle:		No. 7820, No. 7825
Position indicator:		No. 2170E2/E3
Bolts:		No. 8810, No. 8830, No. 8840
Hawak-pillar:		No. 9894, No. 9895
Flat gasket:		No. 3390, No. 3470

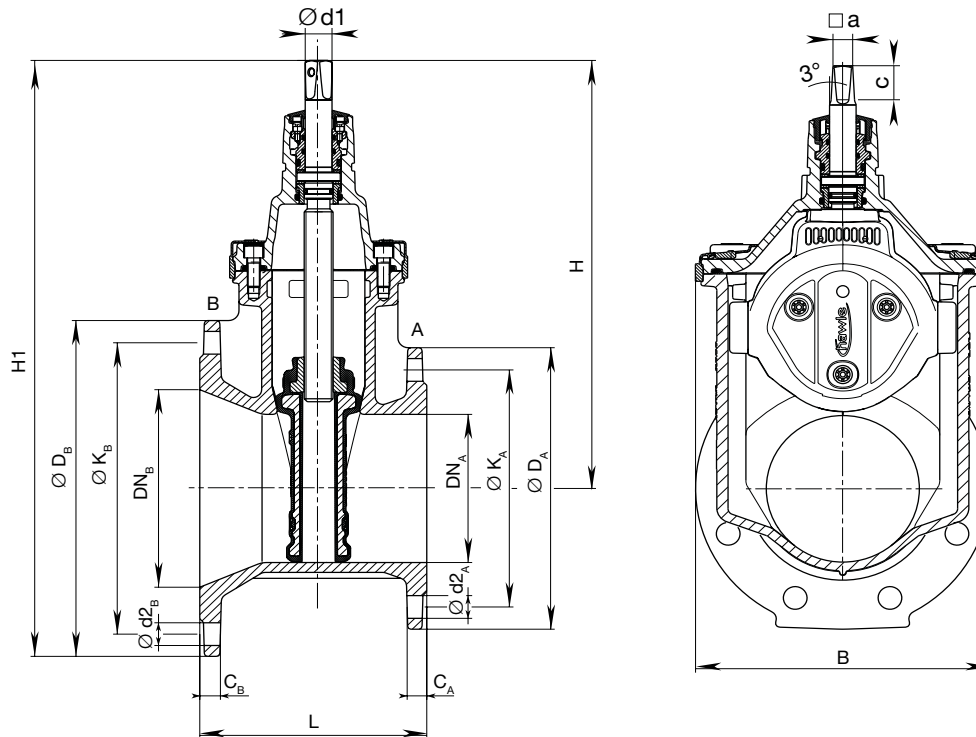
Order no.	MOP (PN)	Dimensions/DN*															
		100 65	100 80	125 80	125 100	150 80	150 100	150 125	200 100	200 150	250 150	250 200	300 150	300 200	300 250	300 300	300 300
4150E3	16																

* The valve is sized in accordance with the smaller flange

E3 Reducing valve

With flange DN 65 – 300, PN 10 | PN 16

No. 4150E3



DN	MOP (PN)	Flange A					Flange B					Spindle			Valve				Weight
		Ø D _A	C _A	Ø K _A	Ø d _{2A}	n _A *	Ø D _B	C _B	Ø K _B	Ø d _{2B}	n _B *	a	c	Ø d ₁	H	H ₁	L	B	
100 – 65	10 16	185	19	145	19	4	220	19,0	180	19	8	17,3	33,8	25	305	415	180	180	18,0
100 – 80	10 16	200	19	160	19	8	220	19,0	180	19	8	17,3	33,8	25	313	423	190	180	19,5
125 – 80	10 16	200	19	160	19	8	250	19,0	210	19	8	17,3	33,8	25	313	438	200	180	21,5
125 – 100	10 16	220	19	180	19	8	250	19,0	210	19	8	19,3	37,2	25	343	468	200	213	24,0
150 – 80	10 16	200	19	160	19	8	285	19,0	240	23	8	17,3	33,8	25	313	456	200	180	24,0
150 – 100	10 16	220	19	180	19	8	285	19,0	240	23	8	19,3	37,2	25	343	486	210	213	26,5
150 – 125	10 16	250	19	210	19	8	285	19,0	240	23	8	19,3	34,9	28	421	564	210	285	36,0
200 – 100	10 16	220	19	180	19	8	340	20,0	295	23	8 12	19,3	37,2	25	343	513	210	213	29,0
200 – 150	10 16	285	19	240	23	8	340	20,0	295	23	8 12	19,3	34,9	28	433	603	220	285	42,5
250 – 150	10 16	285	19	240	23	8	400	22,0	350 355	23 28	12	19,3	34,9	28	433	633	230	285	49,0
250 – 200	10 16	340	20	295	23	8 12	400	22,0	350 355	23 28	12	24,3	47,3	32	541	741	240	357	69,0
300 – 150	10 16	285	19	240	23	8	455	24,5	400 410	23 28	12	19,3	34,9	28	433	661	240	285	68,0
300 – 200	10 16	340	20	295	23	8 12	455	24,5	400 410	23 28	12	24,3	47,3	32	541	769	250	357	74,0
300 – 250	10 16	400	22	350 355	23 28	12	455	24,5	400 410	23 28	12	27,3	48	34	649	877	260	432	105,0

The valve is sized in accordance with the smaller flange nA*, nB* = bolts per flange

E3 Valve spigot ends

PN 16

Design features

- Resilient seated gate valve with smooth straight-through bore
- The Hawle E3 spigot valve with smooth spigot ends is a universal type, suitable for both flange as well as for socket connections
- Easy replacement of old flange valve to insertion of HAWLE-flange, as insertion of flat gaskets is not required; special lengths can even be produced through shortening of the spigot ends
- The outside diameters of the spigot ends correspond to that of the cast iron pipes (other size on request)
- Suitable for cleaning with a cleaning pig
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet

Standard version: without flanges, handwheel and extension spindle

No. 4100E3



No. 4140E3



Suitable accessories

Suitable accessories: see page A 2/2

Flange:	No. 7602
Handwheel:	No. 7800
Extension spindles:	rigid No. 9000E2/E3
	telescopic No. 9500E2/E3
Surface boxes:	rigid No. 1750
	telescopic No. 2050
	No. 2051K
Valve actuator:	No. 9920
Adapter for actuator (E2/E3 adapter):	No. 8630E2/E3
Base plate:	No. 3481, No. 3482
Operating cap:	No. 2156, No. 2157
Extension spindle:	No. 7820, No. 7825
Position indicator:	No. 2170E2/E3
Bolts:	No. 8810, No. 8830, No. 8840
Hawak-pillar:	No. 9894, No. 9895

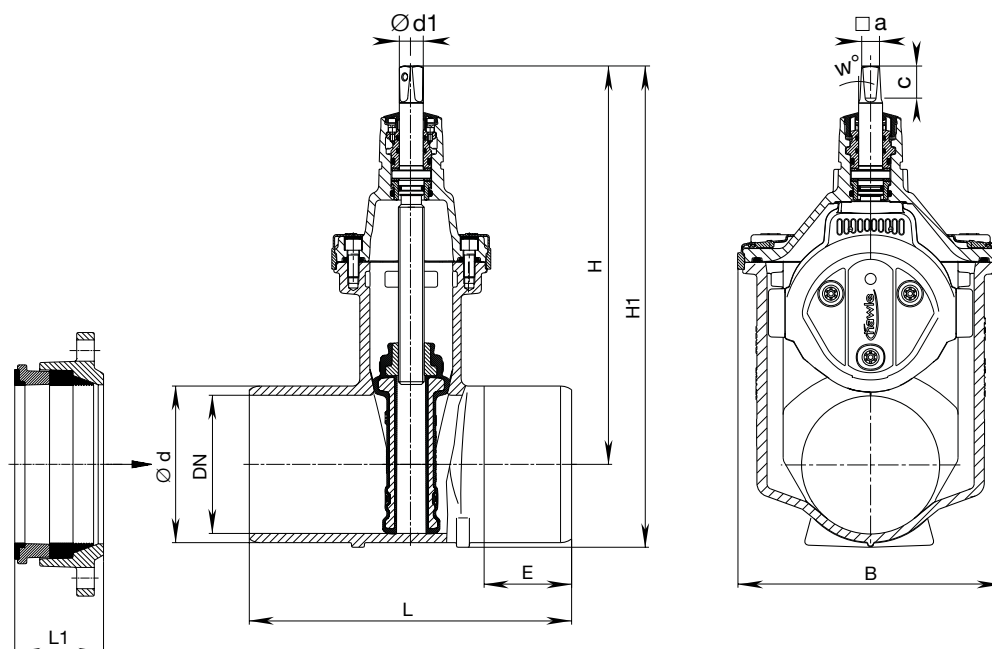
Order no.	Version Face-to-face length	MOP (PN)	Dimensions/DN									
			50	65	80	100	125	150	200	250	300	400
4100E3	Standard	16										
	600 mm											
4140E3	810 mm											
	860 mm											

E3 Valve spigot ends

PN 16

No. 4100E3

No. 4140E3



For a shorter face-to-face dimension, shorten the spigot ends¹⁾ and assemble with Hawle flanges No. 7602 (see water catalogue chapter "Flange connections")

Caution: Compare flange length "L 1" with spigot length "E"

¹⁾ Protect cutting surfaces against corrosion with Hawle repair material No. 3442 (see water catalogue page P 5/2)

DN	MOP (PN)	Valve						Spindle				Weight
		Ø d ⁺	L	E	H	H1	B	□ a	c	w°	Ø d1	
50	16	66	250	80	234	270	143	14,8	29,2	3°	20,5	8,0
65		82	270	85	305	350	180	17,3	33,8		24	12,0
80		98	280	85	313	366,5	180	17,3	33,8		24	13,5
			600	245								19,5
100		118	300	90	343	408	213	19,3	37,2		24	18,0
			600	240								24,0
125		144	325	95	421	498	285	19,3	34,9		26	28,5
150		170	350	95	433		523	285	19,3		34,9	26
			600	220		40,0						
200		222	400	115	541	657	357	24,3	47,3		30	55,0
			600	215								64,0
250		274	450	120	649	792	432	27,3	48		34	91,0
	810		300	112,5								
300	326	500	120	731	897	518	27,3	48	34	139,0		
		860	300							177,0		
400	429	600	133	925	1149	687	32,3	55	44	267,0		

* Other outside diameters on request

E3 Valve spigot ends

With flange, PN 10 | PN 16

Design features

- Resilient seated gate valve with smooth straight-through bore
- Flanges sized in accordance with EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 please specify on order - other standards on request
- The Hawle E3 spigot ends valve with the high-tensile loose flange system is especially suitable for use with new builds in addition to being a replacement for existing valves
- The flat gaskets are already contained in the conical seals
- Suitable for cleaning with a cleaning pig
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet

No. 4120E3

Standard version: without handwheel and extension spindle



Suitable accessories

Suitable accessories: see page A 2/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050
		No. 2051K
Valve actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:	No. 3481, No. 3482	
Operating cap:	No. 2156, No. 2157	
Extension spindle:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
Bolts:	No. 8810, No. 8830, No. 8840	
Hawak-pillar:	No. 9894, No. 9895	

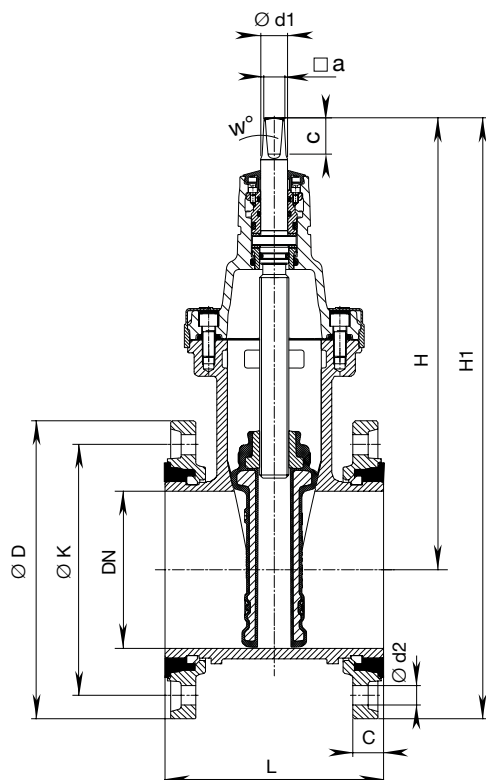
Order no.	Version	MOP (PN)	Dimensions/DN				
			80	100	125	150	200
4120E3	short EN 558 GR 14	16					

Face-to-face length EN 558 GR 15 on request

E3 Valve spigot ends

With flange, PN 10 | PN 16

No. 4120E3



DN	MOP (PN)	Flange			Bolts			Spindle				Valve			Weight
		ØD	C	ØK	Qty.	Thread	Ød2	□ a	c	w°	Ød1	H	H1	L	
80	10 16	200	19	160	8	M 16	19	17,3	33,8	3°	24	315	415	180	17,5
100	10 16	220	19	180	8	M 16	19	19,3	37,2		24	343	453	190	23,5
125	10 16	250	19	210	8	M 16	19	19,3	34,9		26	420	545	200	36,0
150	10 16	285	19	240	8	M 20	23	19,3	34,9		26	433	576	210	40,0
200	10	340	20	295	8	M 20	23	24,3	47,3		30	541	711	230	61,0
	16				12										64,0

E3 Valve for PE fusion

DN 50 – 200, PN 10 | PN 16

Design features

- Resilient seated gate valve with PE fusion tails in combination with PE pipes according to EN 12201, DIN 8074
- This resilient seated valve has PE tails screwed and sealed into the sockets
- High performance sealing of the PE tails within the sockets is assured by two separate seals and a support liner
- The valve can be connected to the PE pipeline by either butt fusion or electrofusion
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet
- Duplex stainless steel spindle

Standard version: without handwheel and extension spindle

Special versions: on request

No. 4050E3

No. 4051E3



Material | technical features

1 PE-fusion tail

Standard version PE 100-RC injection moulded

Support liner DN 50 made of POM,
from DN 65 – 200 made of stainless
steel for PE-fusion tail(see drawing)

2 **Socket sealing** made of elastomer

3 **O-Ring** made of elastomer

Suitable accessories

Suitable accessories: see page A 2/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Valve actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:		No. 3481, No. 3482
Operating cap:		No. 2156, No. 2157
Extension spindle:		No. 7820, No. 7825
Position indicator:		No. 2170E2/E3
Hawak-pillar:		No. 9894, No. 9895

Order no.	MOP (PN)	Dimensions/DN Pipe Ø									
		50	65	80	100	100	125	150	150	200	200
4050E3	16	63	75	90	110	125	140	160	180	200	225
4051E3	10										

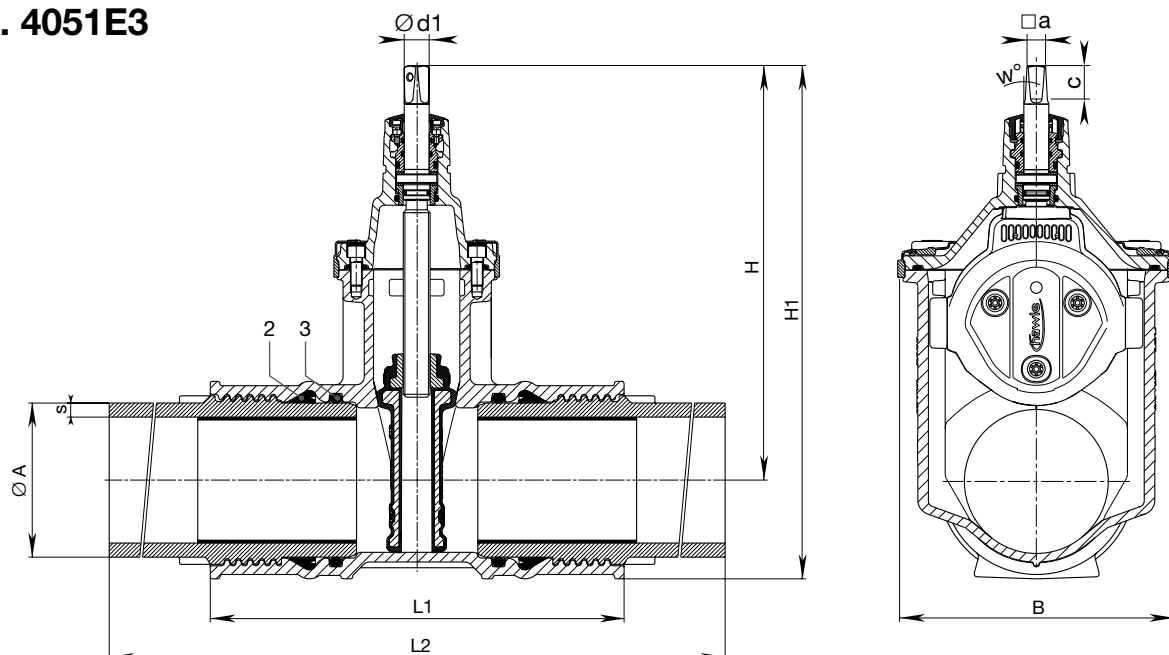
PE-fusion tail: No. 4050E3 PN 16 / SDR 11
No. 4051E3 PN 10 / SDR 17

E3 Valve for PE fusion

DN 50 – 200, PN 10 | PN 16

No. 4050E3

No. 4051E3



PE-fusion tail: No. 4050E3 PN 16 / SDR 11
No. 4051E3 PN 10 / SDR 17

DN	ØA	Valve with PE tails							Spindle				Weight
		s (SDR 17)	s (SDR 11)	H	H1	L1	L2	B	□ a	c	w°	Ø d1	
50	63	3,8	5,8	234	283	280	648	143	14,8	29,2	3°	20,5	11,0
65	75	4,5	6,8	305	361	295	657	180	17,3	33,8		24	17,0
80	90	5,4	8,2	313	377	310	668	180	17,3	33,8		24	19,0
100	110	6,6	10,0	343	419	340	710	213	19,3	37,2		24	26,0
100	125	7,4	11,4	343	428	395	761	213	19,3	37,2		24	30,5
125	140	8,3	12,7	421	513	390	756	285	19,3	34,9		26	31,5
150	160	9,5	14,6	433	536	430	796	285	19,3	34,9		26	50,0
150	180	10,7	16,4	433	548	458	814	285	19,3	34,9		26	57,5
200	200	11,9	18,2	541	679	514	900	357	24,3	47,3		30	88,0
200	225	13,4	20,5	541	679	514	900	357	24,3	47,3		30	90,0

E3 Valve flange | PE tail

DN 50 – 200, PN 10 | PN 16



Design features

- Resilient seated gate valve with flange and PE fusion tail in combination with PE pipes according to EN 12201, DIN 8074
- This resilient seated valve has one flange and one PE tail screwed and sealed into the sockets
- High performance sealing of the PE tails within the sockets is assured by two separate seals and a support liner
- The valve can be connected to the PE pipeline by either butt fusion or electrofusion
- Flanges sized in accordance with EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 please specify on order - other standards on request
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet
- Duplex stainless steel spindle

Standard version: without handwheel and extension spindle
Special versions: on request

No. 4090E3

No. 4091E3



Material | technical features

1 PE-fusion tail

Standard version PE 100-RC injection moulded
Support liner DN 50 made of POM,
 from DN 65 – 200 made of
 stainless steel for PE-fusion tail
 (see drawing)

2 **Socket sealing** made of elastomer

3 **O-Ring** made of elastomer

Suitable accessories

Suitable accessories: see page A 2/2

Handwheel: No. 7800
 Extension spindles: rigid No. 9000E2/E3
 telescopic No. 9500E2/E3
 Surface boxes: rigid No. 1750
 telescopic No. 2050, No. 2051K
 Valve actuator: No. 9920
 Adapter for actuator (E2/E3 adapter): No. 8630E2/E3
 Base plate: No. 3481, No. 3482
 Operating cap: No. 2156, No. 2157
 Extension spindle: No. 7820, No. 7825
 Position indicator: No. 2170E2/E3
 Bolts: No. 8810, No. 8830, No. 8840
 Hawak-pillar: No. 9894, No. 9895
 Flat gasket: No. 3390, No. 3470

Order no.	MOP (PN)	Dimensions/DN Pipe Ø								
		50	65	80	100	100	125	150	150	200
		63	75	90	110	125	140	160	180	225
4090E3	16									
4091E3	10									

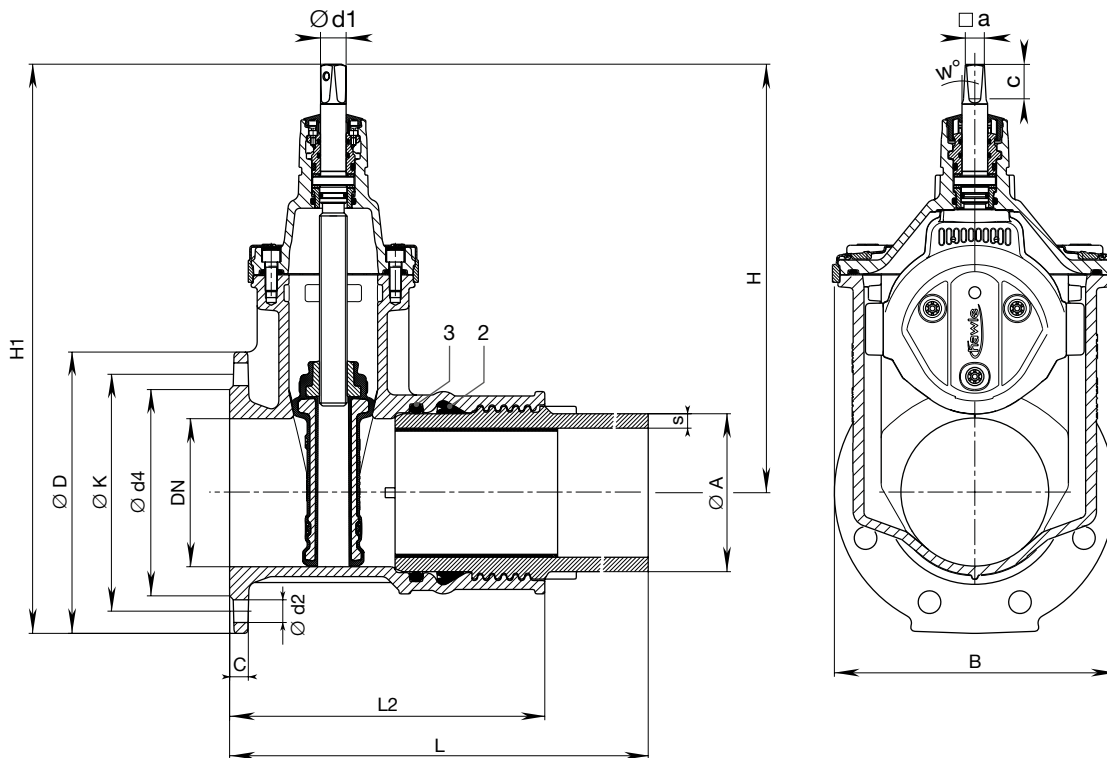
PE-fusion tail: No. 4090E3 PN 16 / SDR 11
 No. 4091E3 PN 10 / SDR 17

E3 Valve flange | PE tail

DN 50 – 200, PN 10 | PN 16

No. 4090E3

No. 4091E3



PE-fusion tail:

No. 4090E3 PN 16 / SDR 11

No. 4091E3 PN 10 / SDR 17

DN	Ø Pipe	Flange				Bolts			Valve with PE tails							Spindle				Weight
		Ø D	C	Ø K	Ø d4	Qty.	Thread	Ø d2	s (SDR 17)	s (SDR 11)	H	H1	L	L2	B	□ a	c	w°	Ø d1	
50	63	165	19	125	98	4	M 16	19	3,8	5,8	234	316	399	215	143	14,8	29,2	3°	20,5	11,5
65	75	185		145	118	4	M 16	19		6,8	305	397	416	235	180	17,3	33,8		24	17,0
80	90	200		160	133	8	M 16	19	5,4	8,2	313	413	425	245	180	17,3	33,8		24	18,0
100	110	220		180	153	8	M 16	19	6,6	10,0	343	453	450	265	213	19,3	37,2		24	25,0
100	125	220		180	153	8	M 16	19		11,4	343	453	476	293	213	19,3	37,2		24	26,5
125	140	250		210	183	8	M 16	19		12,7	421	546	485	310	285	19,3	34,9		26	38,0
150	160	285		240	209	8	M 20	23		14,6	433	576	503	320	285	19,3	34,9		26	44,5
150	180	285		240	209	8	M 20	23		16,4	433	576	512	334	285	19,3	34,9		26	49,5
200	225	340	20	295	264	8 12	M 20	23	13,4	20,5	541	711	565	372	357	24,3	47,3		30	78,0

E3 VRS-socket valve

For cast iron pipes and pipes with VRS-socket,
DN 80 – 400, PN 16

Design features

- Resilient seated gate valve with one-sided VRS-socket and one-sided VRS-spigot
- With VRS grip ring and VRS pipe restraint clamp (not included), a pipe connection can be made restraint
- Suitable for cleaning with a cleaning pig
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet
- Duplex stainless steel spindle

No. 4027E3

Standard version: without handwheel and extension spindle



Material | technical features

- 1 **Socket sealing** made of elastomer
- 2 **Pipe restraint clamp** (not included)

Suitable accessories

Suitable accessories: see page A 2/2

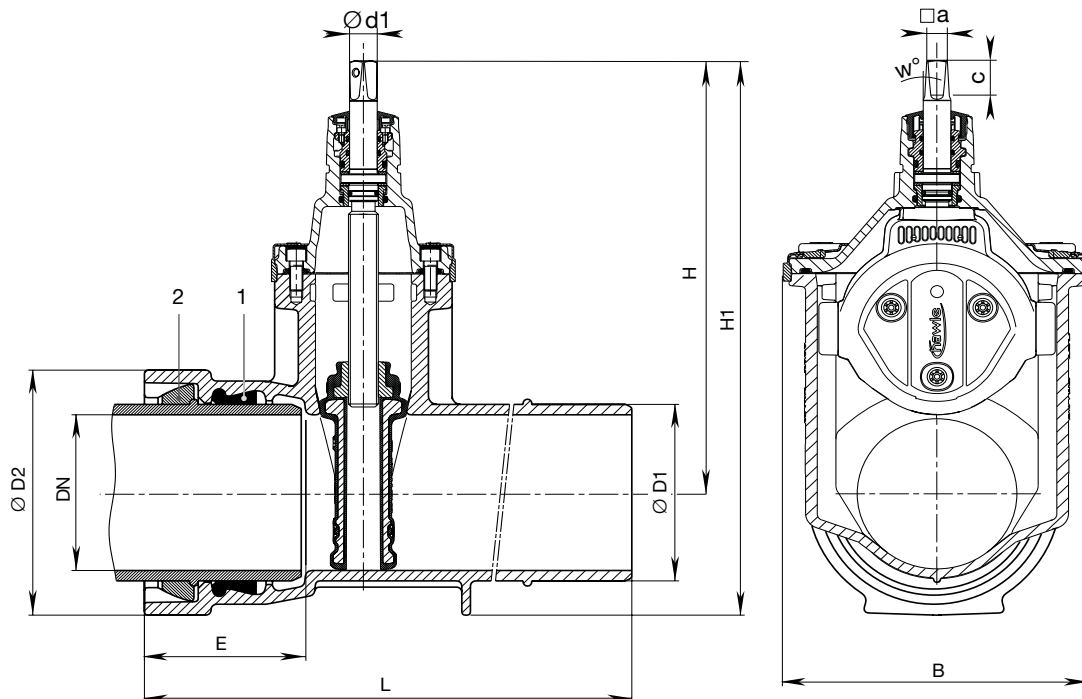
Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Valve actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:		No. 3481, No. 3482
Operating cap:		No. 2156, No. 2157
Extension spindle:		No. 7820, No. 7825
Position indicator:		No. 2170E2/E3
Hawak-pillar:		No. 9894, No. 9895

Order no.	Version	MOP (PN)	Dimensions/DN							
			80	100	125	150	200	250	300	400
4027E3	Socket-Spigot	16								

E3 VRS-socket valve

For cast iron pipes and pipes with VRS-socket,
DN 80 – 400, PN 16

No. 4027E3



DN	Ø Pipe	MOP (PN)	Valve							Spindle				Weight
			Ø D1	Ø D2	E	H	H1	L	B	□ a	c	w°	Ø d1	
80	98	16	98	156	127	313	391	422	180	17,3	33,8	3°	24	20,5
100	118		118	178	135	343	432	440	213	19,3	37,2		24	24,5
125	144		144	208	143	421	525	494	285	19,3	34,9		24	37,5
150	170		170	235	150	433	551	513	285	19,3	34,9		26	44,5
200	222		222	295	160	541	689	535	357	24,3	47,3		30	72,0
250	274		274	356	165	649	827	577	432	27,3	48		36	114,0
300	326		326	414	170	731	938	638	518	27,3	48		36	168,5
400	429		429	524	190	933	1196	765	687	32,3	55		44	296,0

E3 Combi-T

Flange T-piece with integrated E3-valve, PN 10 | PN 16

Design features

- Resilient seated gate valve combined with flange T-piece
- Short style, equal and reduced
- Space saving installation through short design as well as savings in material, work, transport and storage costs
- The compact design enables the valve chamber to be made from sectional concrete giving typical savings of 25 % in chamber construction costs
- A combination of E3 Combi-T with E3 reducing valve creates a multitude of application possibilities
- Flanges sized in accordance with EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 please specify on order - other standards on request
- Suitable for cleaning with a cleaning pig
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet
- Duplex stainless steel spindle

Standard version: without handwheel and extension spindle

Special versions: on request

No. 4340E3



Suitable accessories

Suitable accessories: see page A 2/2

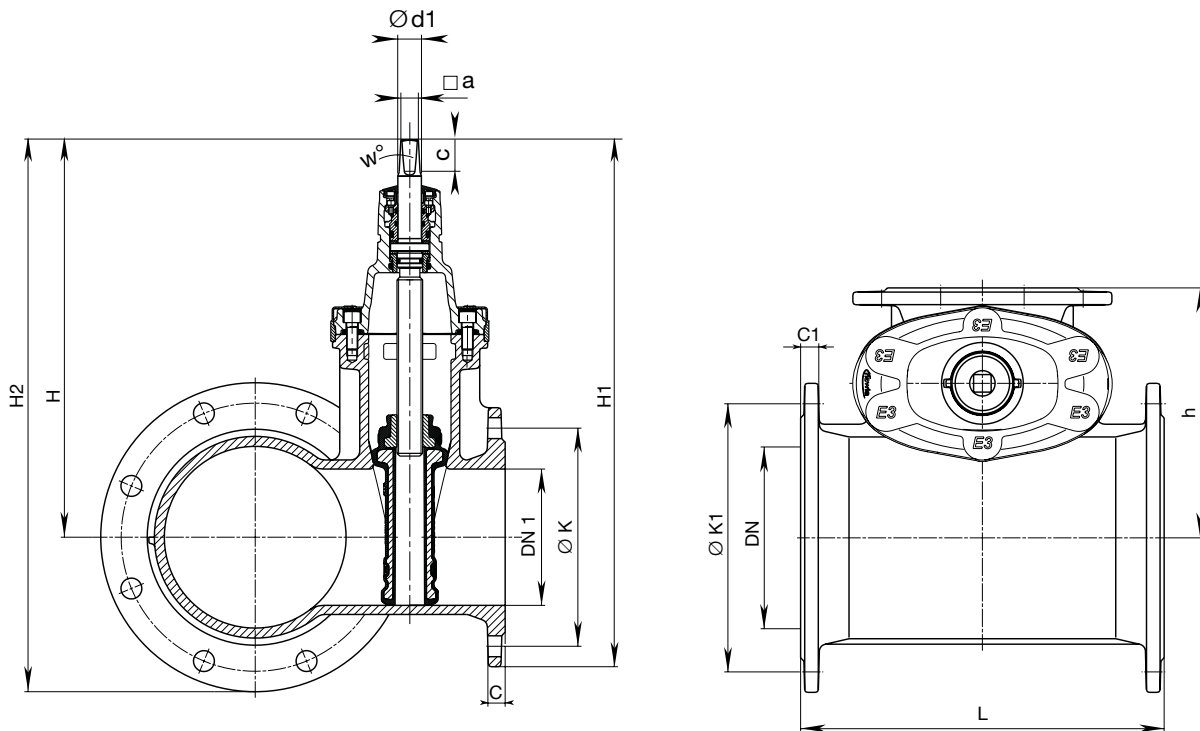
Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Valve actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:		No. 3481, No. 3482
Operating cap:		No. 2156, No. 2157
Extension spindle:		No. 7820, No. 7825
Position indicator:		No. 2170E2/E3
Bolts:		No. 8810, No. 8830, No. 8840
Flat gasket:		No. 3390, No. 3470
Hawak-pillar:		No. 9894, No. 9895

Order no.	MOP (PN)	Dimensions	Valve DN1				
		DN	65	80	100	150	200
4340E3	16	80					
		100					
		125					
		150					
		200					

E3 Combi-T

Flange T-piece with integrated E3-valve, PN 10 | PN 16

No. 4340E3



DN	DN 1 Valve	E3 Combi-T					Flange				Spindle				Weight
		L	H	H1	H2	h	ØK	C	ØK1	C1	□ a	c	w°	Ød1	
80	80	280	313	413	413	170	160	19	160	19	17,3	33,8	3°	24	24,0
100	65	260	305	397	408	180	145	19	180	19	17,3	33,8		24	29,5
100	80	280	313	413	416	200	160	19	180	19	17,3	33,8		24	30,0
100	100	310	343	453	453	200	180	19	180	19	19,3	37,2		24	34,0
125	80	280	313	413	432	200	160	19	210	19	17,3	33,8		24	30,5
125	100	310	343	453	469	215	180	19	210	19	19,3	37,2		24	36,5
150	65	260	305	397	441	210	145	19	240	19	17,3	33,8		24	33,0
150	80	280	313	413	444	220	160	19	240	19	17,3	33,8		24	36,0
150	100	310	343	453	487	220	180	19	240	19	19,3	37,2		24	40,5
150	150	400	433	576	576	250	240	19	240	19	19,3	34,9		26	55,5
200	80	280	313	413	484	250	160	19	295	20	17,3	33,8		24	43,0
200	100	310	343	453	521	250	180	19	295	20	19,3	37,2		24	49,5
200	150	400	433	576	610	275	240	19	295	20	19,3	34,9		26	68,5
200	200	460	541	711	711	295	295	20	295	20	24,3	48		30	90,0

E3 Combi-III



Flanged T-piece with 3 flanged outlets and 2 or 3 integral E3 valves, PN 10 | PN 16

Design features

- Resilient seated gate valve combined with flange-T-piece
- Space saving installation through short design as well as savings in material, work, transport and storage costs
- The compact design enables the valve chamber to be made from sectional concrete giving typical savings of 25 % in chamber construction costs
- Vertical connection DN 100 optional
- Internal thread connection $\frac{3}{4}$ " - optional for manometer, ball valve outlet etc.
- Flanges sized in accordance with EN 1092-2, drilled according EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 please specify on order - other standards on request
- Suitable for cleaning with a cleaning pig
- Duplex stainless steel spindle

No. 4450E3

No. 4460E3



Suitable accessories

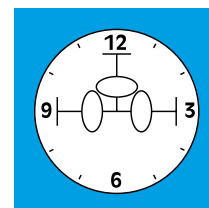
Suitable accessories: see page A 2/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface box:		No. 4550
Operating cap:	No. 2156, No. 2157	
Extension spindle:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
Bolts:	No. 8810, No. 8830, No. 8840	
Flat gasket:	No. 3390, No. 3470	
Blanking cap:	No. 8570E2/E3	

Instead of a bonnet, a cap
No. 8570E2/E3 can be fitted
onto the body of any outlet not
requiring a valve



Please specify the arrangement
of the valves
in a clockwise direction!

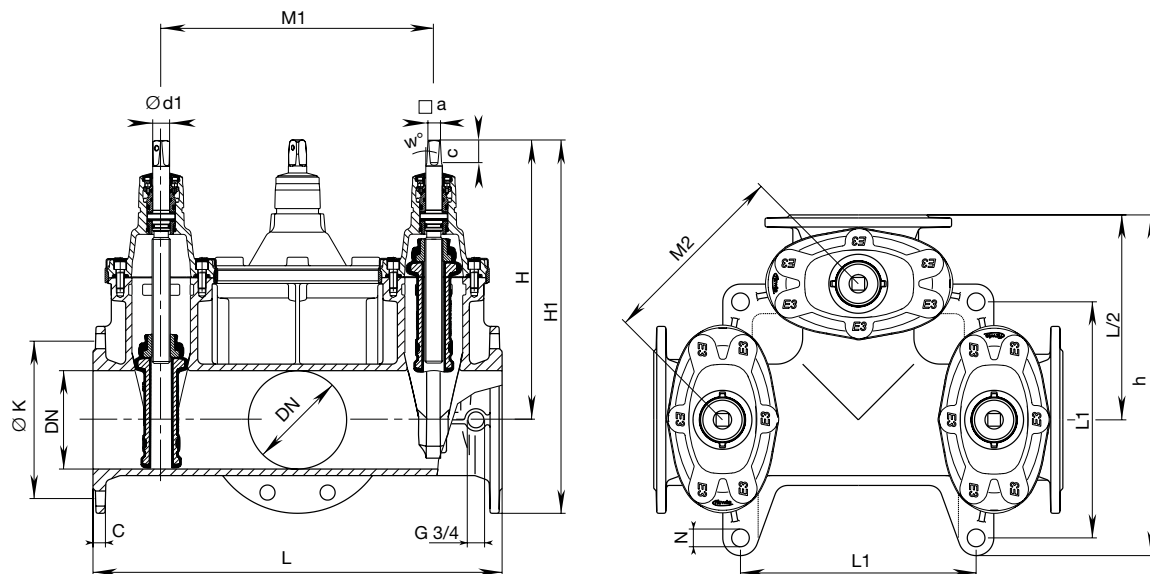


Order no.	Version	MOP (PN)	No. of valves	Dimensions/DN				
				80	100	125	150	200
4450E3	Without vertical centre outlet	16	2					
			3					
4460E3	With vertical outlet		2					
			3					

E3 Combi-III

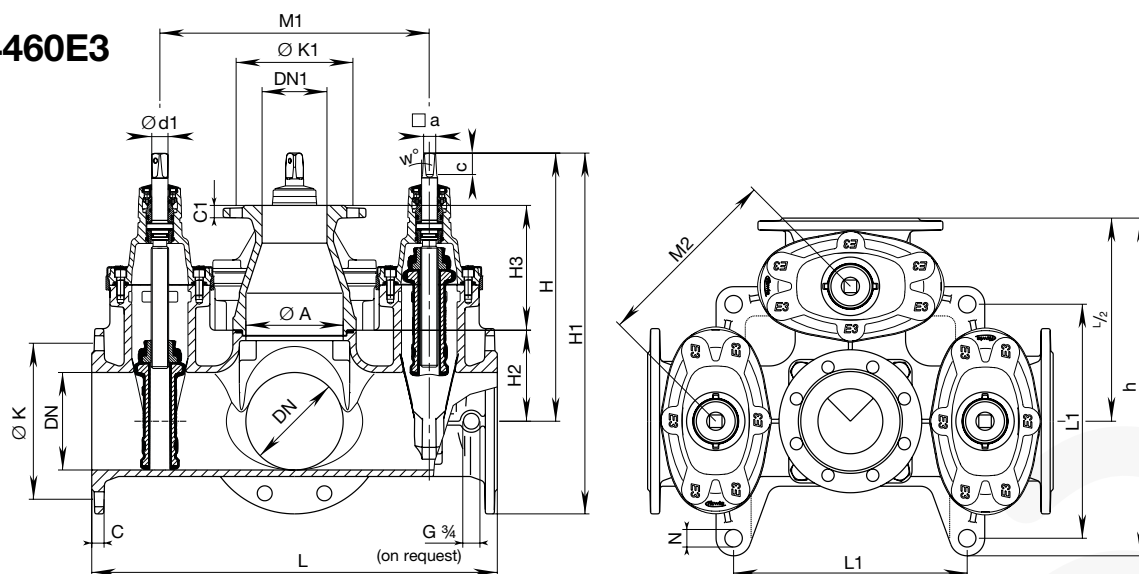
Flanged T-piece with 3 flanged outlets and 2 or 3 integral E3 valves, PN 10 | PN 16

No. 4450E3



DN	E3 Combi III without vertical centre outlet										Spindle				Weight (no. of valves)	
	L	H	H 1	ØK	C	M1	M2	L1	h	N	a	c	w°	Ød1	2	3
80	435	313	413	160	19	255	180	-	318	-	17,3	33,8		24	45,0	47,0
100	555	343	453	180	19	365	258	212	411	27	19,3	37,2		24	68,0	67,0
125	615	421	571	210	19	415	294	360	515	27	19,3	34,9	3°	26	101,0	153,0
150	625	433	576	240	19	415	294	360	520	27	19,3	34,9		26	105,0	114,5
200	695	541	711	295	20	465	329	445	602	32	24,3	48		30	167,0	183,0

No. 4460E3



DN	E3 Combi III with vertical centre outlet																Spindle				E3 Combi III with vertical centre outlet	
	ØA	DN 1	L	L1	H	H1	H2	H3	C	C1	ØK	ØK1	M1	M2	h	N	□a	c	w°	Ød1	2	3
100	100	100	555	212	343	453	90	+	19	+	180	+	365	258	411	27	19,3	37,2		24	71,0	76,0
150	150	100	625	360	433	576	140	192	19	19	240	180	415	293,5	520	27	19,3	34,9	3°	26	120,0	130,0
200	200	100	695	445	541	711	180	192	20	19	295	180	465	329	602	32	24,3	48		30	198,0	205,0

+ flange connection directly on the body - stud

E3 Combi-IV



Flanged T-piece with 4 flanged outlets and 2, 3 or 4 integral E3 valves, PN 10 | PN 16

Design features

- Resilient seated gate valve combined with flange cross piece
- Space saving installation through short design as well as savings in material, work, transport and storage costs
- The compact design enables the valve chamber to be made from sectional concrete giving typical savings of 25 % in chamber construction costs
- Vertical connection DN 100 optional
- Internal thread connection $\frac{3}{4}$ " - optional for manometer, ball valve outlet etc.
- Flanges sized in accordance with EN 1092-2, drilled according EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 please specify on order - other standards on request
- Suitable for cleaning with a cleaning pig
- Duplex stainless steel spindle

No. 4400E3

No. 4410E3



Instead of a bonnet, a cap No. 8570E2/E3 can be fitted onto the body of any outlet not requiring a valve

Suitable accessories

Suitable accessories: see page A 2/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface box:	No. 4550	
Operating cap:	No. 2156, No. 2157	
Extension spindle:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
Bolts:	No. 8810, No. 8830, No. 8840	
Flat gasket:	No. 3390, No. 3470	
Blanking cap:	No. 8570E2/E3	

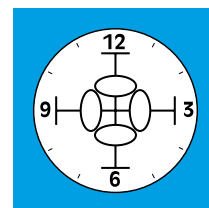


No. 4410E3 cross connection with 3 valves and vertical centre outlet



With 3 valves and no vertical outlet

Please specify the arrangement of the valves in a clockwise direction!

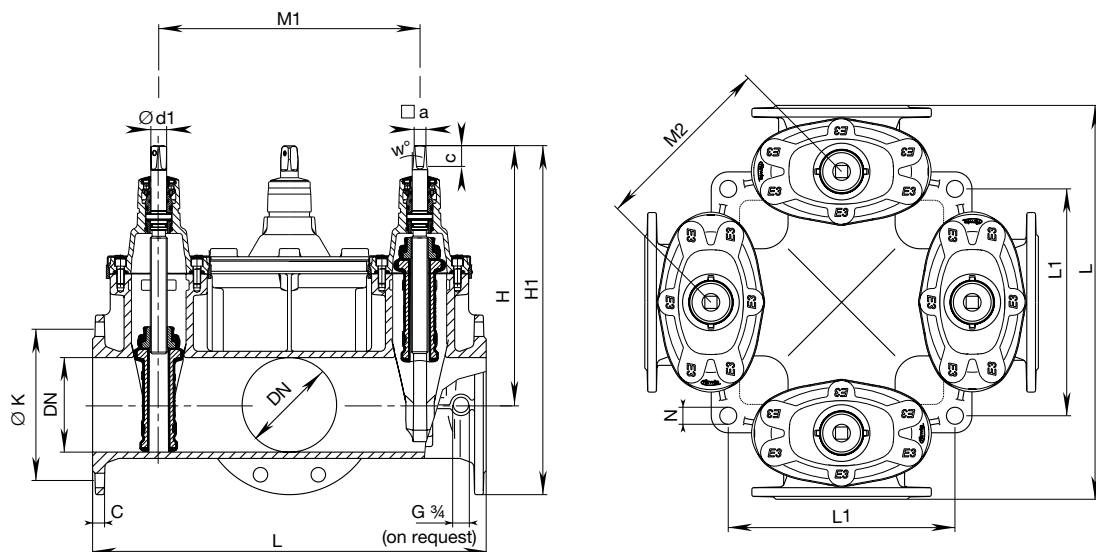


Order no.	Version	MOP (PN)	No. of valves	Dimensions/DN				
				80	100	125	150	200
4400E3	Without vertical centre outlet	16	2					
			3					
			4					
4410E3	With vertical outlet	16	3					
			4					

E3 Combi-IV

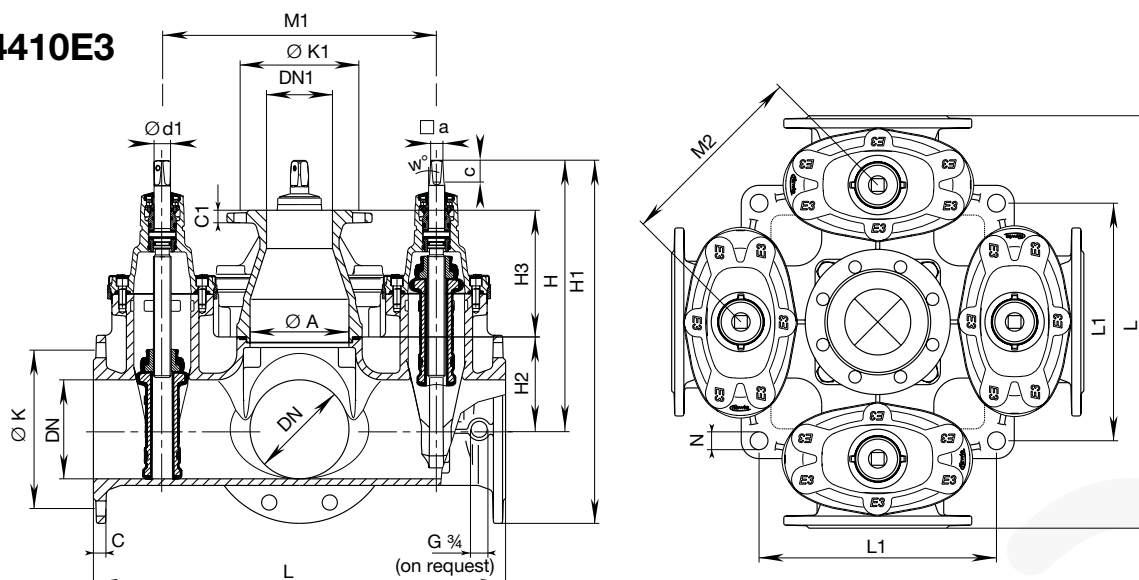
Flanged T-piece with 4 flanged outlets and 2, 3 or 4 integral E3 valves, PN 10 | PN 16

No. 4400E3



DN	E3 Combi IV without vertical centre outlet									Spindle				Weight (no. of valves)		
	L	H	H1	ØK	C	M1	M2	L1	N	□ a	c	w°	Ød1	2	3	4
80	435	313	413	160	19	255	180			17,3	33,8	3°	24	55,0	60,0	65,0
100	555	343	453	180	19	365	258	212	27	19,3	37,2		24	76,0	84,0	90,0
125	615	421	571	210	19	415	293,5	360	27	19,3	34,9		26	125,0	135,0	139,0
150	625	433	576	240	19	415	293,5	360	27	19,3	34,9		26	135,0	143,0	151,0
200	695	541	711	295	20	465	329	445	32	24,3	48		30	207,0	223,0	238,0

No. 4410E3



DN	E3 Combi IV with vertical centre outlet															Spindle				Weight (no. of valves)	
	ØA	DN1	L	L1	H	H1	H2	H3	C	C1	ØK	ØK1	M1	M2	N	□ a	c	w°	Ød1	3	4
100	100	100	555	212	343	453	90	+	19	+	180	+	365	258	27	19,3	37,2		24	90,0	96,0
150	150	100	625	360	433	576	140	192	19	19	240	180	415	293,5	27	19,3	34,9	3°	26	154,0	164,0
200	200	100	695	445	541	711	180	192	20	19	295	180	465	329	32	24,3	48		30		265,0

+ flange connection directly on the body - stud

E3 Hawle-Combiflex

DN 150, PN 10 | PN 16



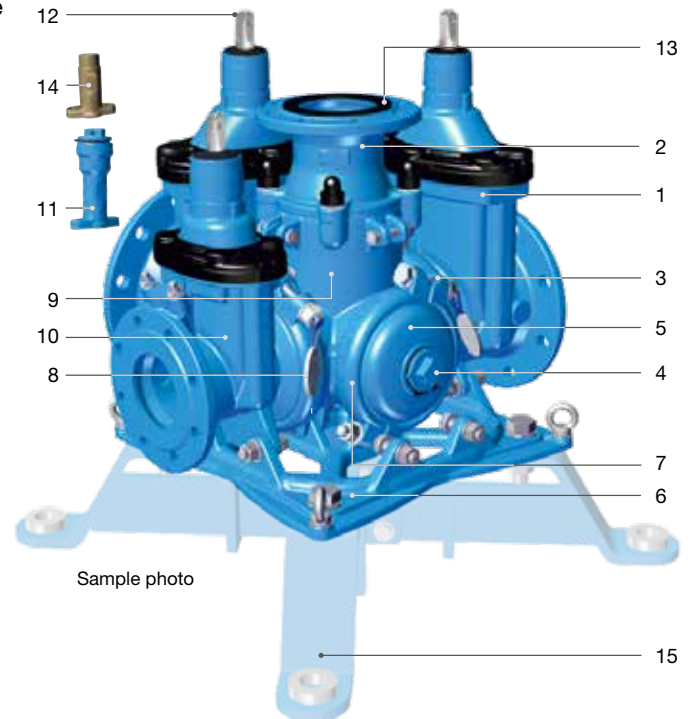
Design features

- Modular Combi-valve system enables flexible assembly arrangements
- Standardized compact construction regardless of valve configuration
- Suitable for cleaning with a cleaning pig
- Comprehensive range of interchangeable ZAK connections possible in every module
- Unique design facilitates easy, rapid exchange of any module
- Duplex stainless steel spindle

Material | technical features

- 1 Resilient seated E3 valve according to EN 1074-1 and 1074-2
- 3 Molybdenum coated, A4 type clamping ring bolts
- 4/11 ZAK-46 (4) or ZAK-34 (11) socket for corrosion-free connection of sensors or ZAK Service valve
- 2/5/7/ Hawle Combiflex vertical outlet (2) optionally
- 9/10 DN 80 or DN 100 end cap (5), clamping ring (7), middle section DN 150 (9), E3 body (10) reduced in DN 80, DN 100, DN 125; DN 150; or expanded to DN 200: ductile iron, epoxy powder coated
- 6 Hawle-Combiflex mounting frame: ductile iron, epoxy powder coated, with ring bolts for fastening hoists and integrated rings for floor connections
- 8 Quality inspection seal
- 12 Duplex stainless steel spindle with rolled thread and flat-rolled anti-friction surface
- 13 Vertical outlet with affixed flat elastomer gasket
- 14 Outlet external thread 1", optional (not installed)
- 15 Anchoring system, optional

No. 4420E3

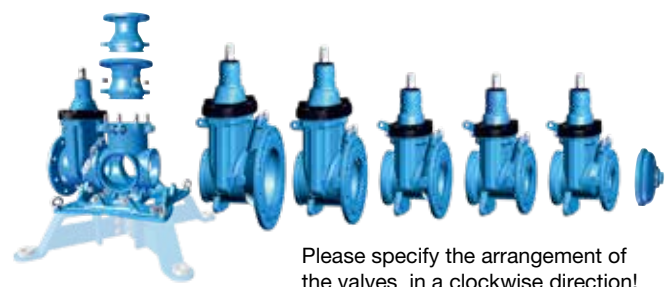


Suitable accessories

Suitable accessories: see page A 2/2

- Handwheel: No. 7800
- Extension spindles: rigid No. 9000E2/E3
telescopic No. 9500E2/E3
- Surface boxes: rigid No. 1750
telescopic No. 2050, No. 2051K
- Operating cap: No. 2156, No. 2157
- Extension spindle: No. 7820, No. 7825
- Bolts: No. 8810, No. 8830, No. 8840
- Ground-distance sets: No. 8644
- Flat gasket: No. 3390, No. 3470
- Operating cap: No. 2157
- External thread 1" outlet: No. 6979
- ZAK 34 outlet: No. 6979
- ZAK 34 plug: No. 6980
- Blanking cap: No. 8570E2/E3

Individual combination options see page A 9/3



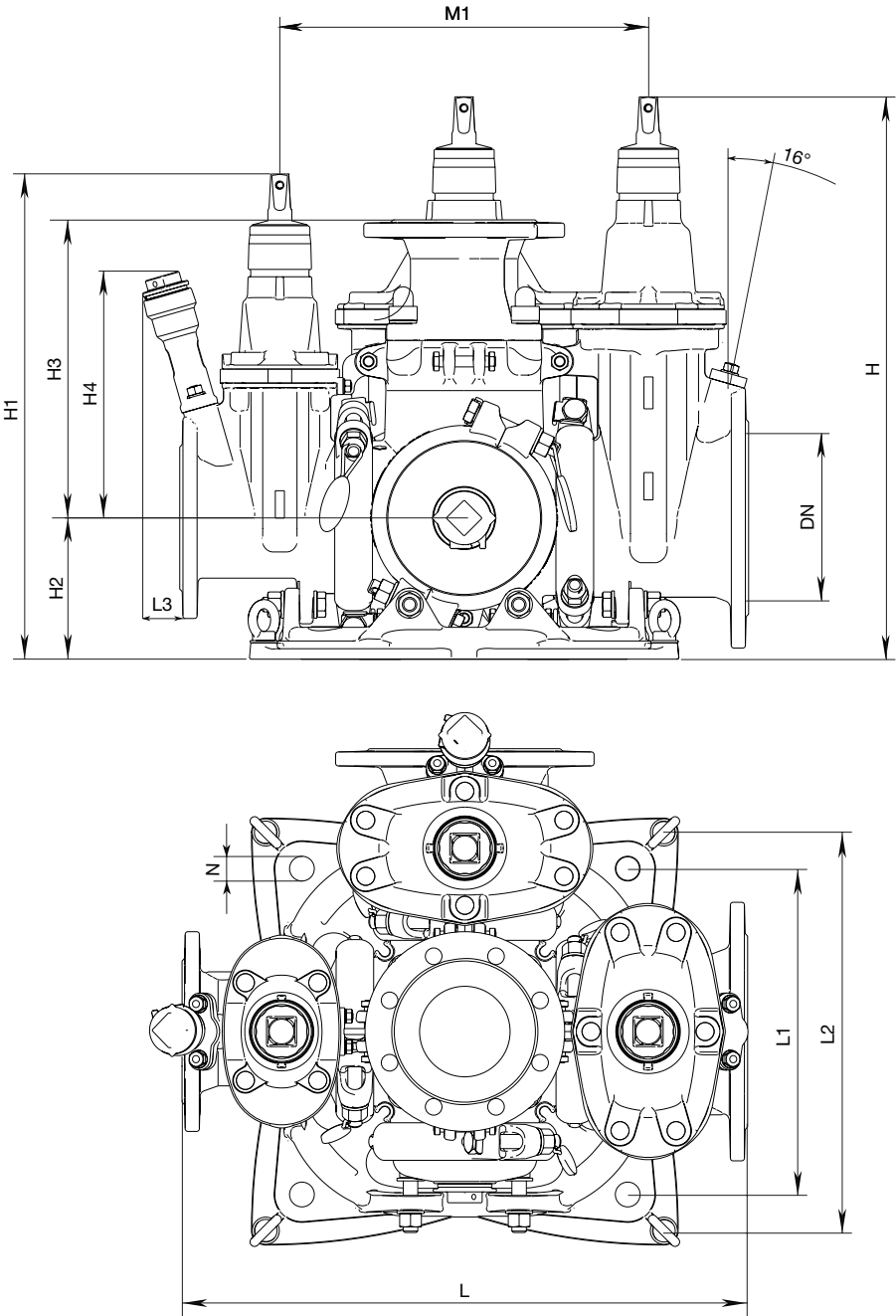
Order no.	Version	MOP (PN)	Dimensions / DN	Possible reduction / DN	Possible vertical outlet / DN	Weight min. – max.
4420E3	Individually configurable	10/16	150	80	80/100	57 – 212
				100		
				125		
				150		
				200		

Flange sized and drilled in accordance with EN 1092-2 standard PN 10. Please specify PN 16 when ordering. Please use the Hawle-Combiflex order form. It can be found on our homepage.

E3 Hawle-Combiflex

DN 150, PN 10 | PN 16

No. 4420E3

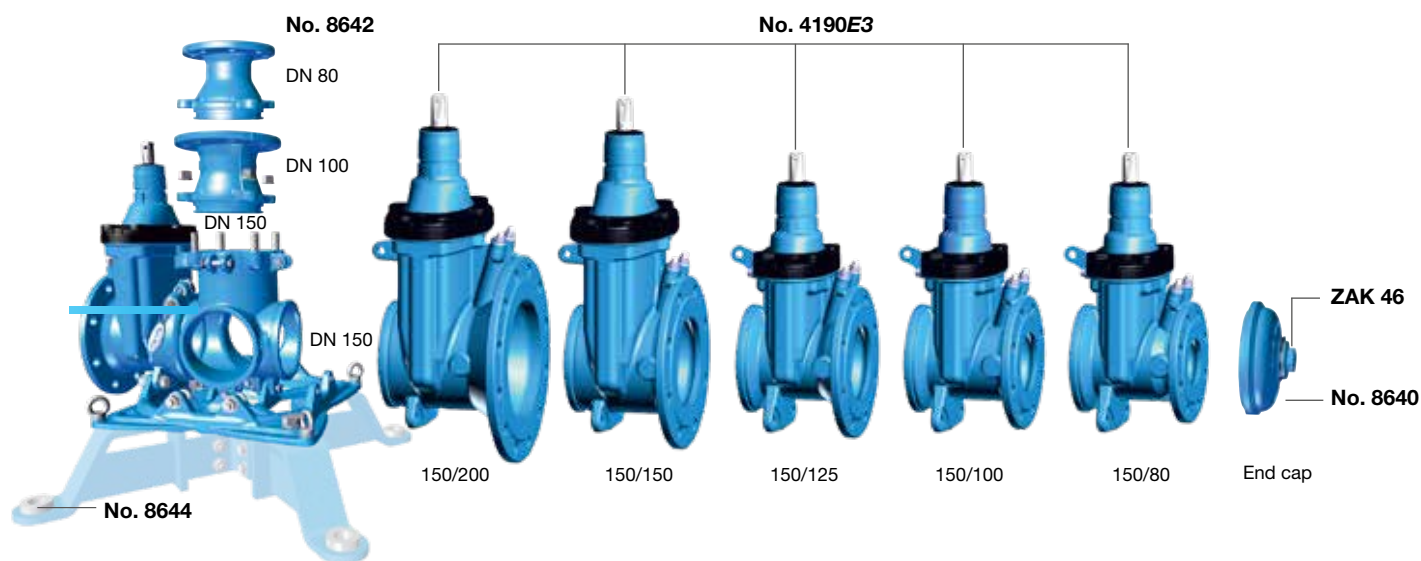


DN	E3 Hawle-Combiflex												
	MOP (PN)	DN	L*	L1	L2	L3	H	H1	H2	H3	H4	M1*	Ø N
150	10/16	80	625	360	440	37	609	518	155	328	262	405	27,4
		100				40					271		
		125				38					284		
		150	660 (1xDN 200)			40					298		
		200*	695 (2xDN 200)			24					335		

*The external dimensions (L, M1) remain the same with reducing valves!
* height compensation due to flange necessary
#Transport dimensions = L

E3 Hawle-Combiflex

Individual parts DN 150



No. 4190E3

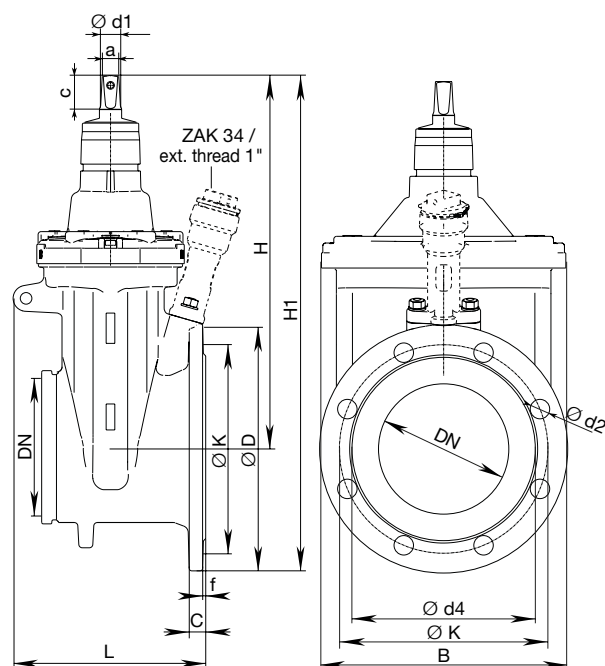
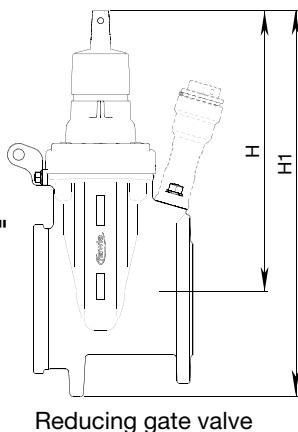


Optional
Operating cap
Order-No. 2156
Order-No. 2157

Optional
Outlet ext. thread 1"
Order-No. 6979

Optional
ZAK 34 outlet
Order-No. 6979
ZAK-plug
Order-No. 6980

- Incl. bolt fastener for the middle section
- Fits through manhole openings



DN	Hawle-Combiflex E3 gate valve																			
	Flange							Bolts			Spindle			Valve						
	DN	MOP (PN)	Ø D*	C	Ø K	Ø d4	f	Qty.	Thread	Ø d2	a	c	Ø d1	Wedge DN	Service outlet	H	H1*	L*	B*	~ Max. weight
150	80	10 16	200	19	160	133	3	8	M16	19	19,3	34,9	25	100	ZAK 34 ET 1"	343	453	258	213	21,8
	100	10 16	220	19	180	153		8	M16	19			25	100		343	453	261	213	22,5
	125	10 16	250	19	210	183		8	M16	19			25	100		343	468	259	213	23,7
	150	10 16	285	19	240	209		8	M20	23			28	150		433	576	262	283	34,7
	200	10 16	340	20	295	264		8 12	M20	23			28	150		433	603	281	283	40,0

* Transport dimensions

E3 Hawle-Combiflex

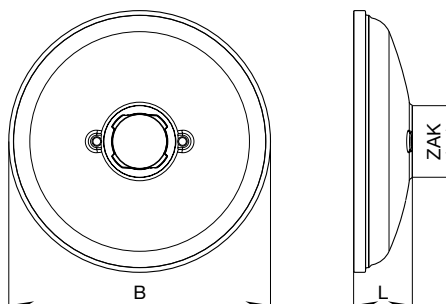
Individual parts DN 150

Hawle-Combiflex end cap

No. 8640



- ZAK 69 socket



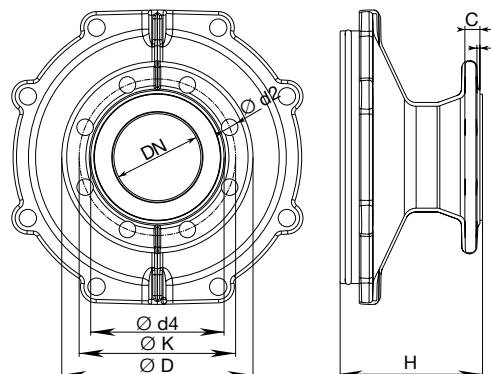
DN	Hawle-Combiflex end cap			
	B	ZAK-socket	L	Weight
150	177	ZAK 46	47	2,5

Hawle-Combiflex vertical outlet

No. 8642



- Incl. affixed elastomer flange gasket



DN	Hawle-Combiflex vertical outlet											
	Flange							Bolts			Vertical outlet	
	DN	MOP (PN)	Ø D	C	Ø K	Ø d4	f	Qty.	Thread	Ø d2	H	Weight
150	80	10/16	200	19	160	133	3	8	M16	19	155	7,0
	100	10/16	220	19	180	153	3	8	M16	19	155	8,0

Blanking cap

No. 8570E2/E3



- For combi valves in place of valve bonnet
- Made of ductile iron, epoxy powder coated without screws and hood seal

Order No.	DN	Weight
8570E2/E3	80	1,6
	100	1,9
	125 – 150	3,2
	200	5,0

Hawle-Combiflex ground-distance set

No. 8644 (order separately)

Stainless steel



A 9/4

All illustrations, technical data, dimensions (in mm) and weights (all weights specified in kg) are non-binding. Subject to change.

E3 Hawle-Combiflex

DN 250 / DN 300, PN 10 | PN 16



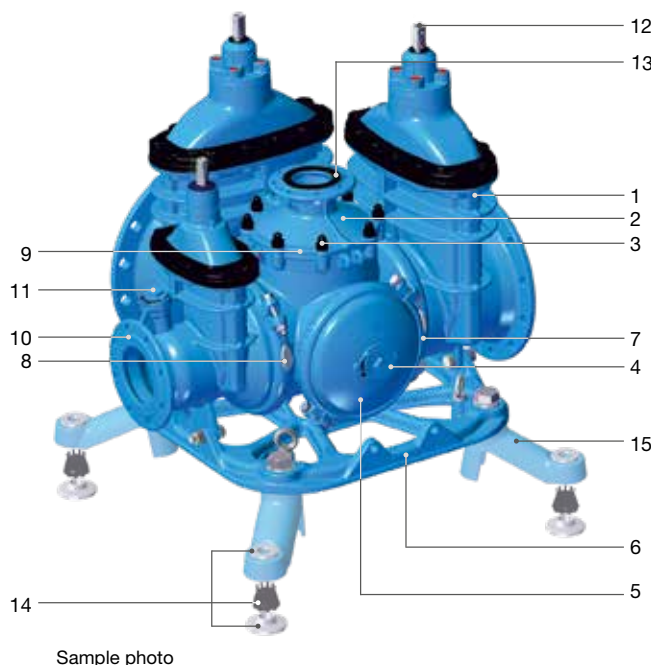
Design features

- Modular Combi-valve system enables flexible assembly arrangements
- Standardized compact construction regardless of valve configuration
- Suitable for cleaning with a cleaning pig
- Comprehensive range of interchangeable ZAK connections possible in every module
- Unique design facilitates easy, rapid exchange of any module
- Duplex stainless steel spindle

No. 4420E3

Material | technical features

- 1 Resilient seated E3 valve in DN 150 to DN 400 according to EN 1074-1 and 2
- 3 Molybdenum coated, A4 type clamping ring bolts
- 4/11 ZAK-69 (4) or ZAK-46 (11) socket for corrosion-free connection of sensors or ZAK Service valve
- 2/5/7/ Hawle-Combiflex vertical outlet (2) optionally
- 9/10 DN 100 or DN 150 end cap (5), clamping ring (7), 2 types of middle section DN 250 or DN 300 (9), E3 body (10) reduced in DN 150 and DN 200 or expanded to DN 400: ductile iron, epoxy powder coated
- 6 Hawle-Combiflex mounting frame: ductile iron, epoxy powder coated, with ring bolts for fastening hoists and integrated rings for floor connections
- 8 Quality inspection seal
- 12 Duplex stainless steel spindle with rolled thread and flat-rolled anti-friction surface
- 13 Vertical outlet with affixed flat elastomer gasket
- 14 Assembly fittings kit (4 items each: plastic support liner; hot-dip galvanized spacer disk; hot-dip galvanized washer)
- 15 Anchoring system, optional



Individual combination options see page A 9/7



Suitable accessories

Suitable accessories: see page A 2/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Operating cap:		No. 2156, No. 2157
Extension spindle:		No. 7820, No. 7825
Bolts:		No. 8810, No. 8830, No. 8840
Assembly fittings kit:		No. 8647
Flat gasket:		No. 3390, No. 3470
Blanking cap:		No. 8570E2/E3

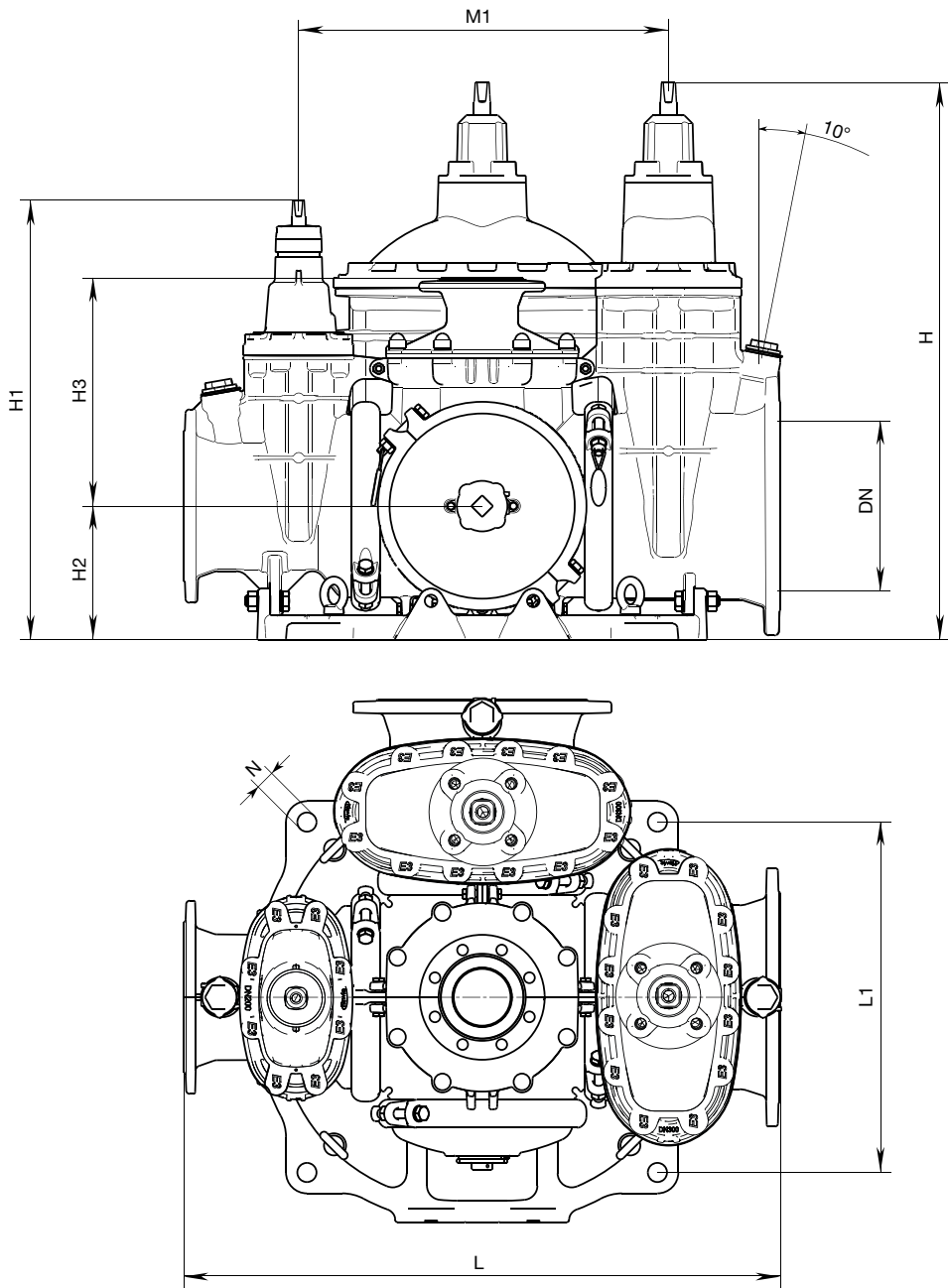
Order no.	Version	MOP (PN)	Dimensions / DN	Possible reduction / DN	Possible vertical outlet / DN	Weight min. - max.
4420E3	Individually configurable	10	250	150	100	265 – 465
		16		200	150	
				250		
		10	300	150	100	330 – 706
		16		200	150	
				250		
				300		
				400		

Flange sized and drilled in accordance with EN 1092-2 standard PN 10. Please specify PN 16 when ordering. Please use the Hawle-Combiflex order form. It can be found on our homepage.

E3 Hawle-Combiflex

DN 250 / DN 300, PN 10 | PN 16

No. 4420E3

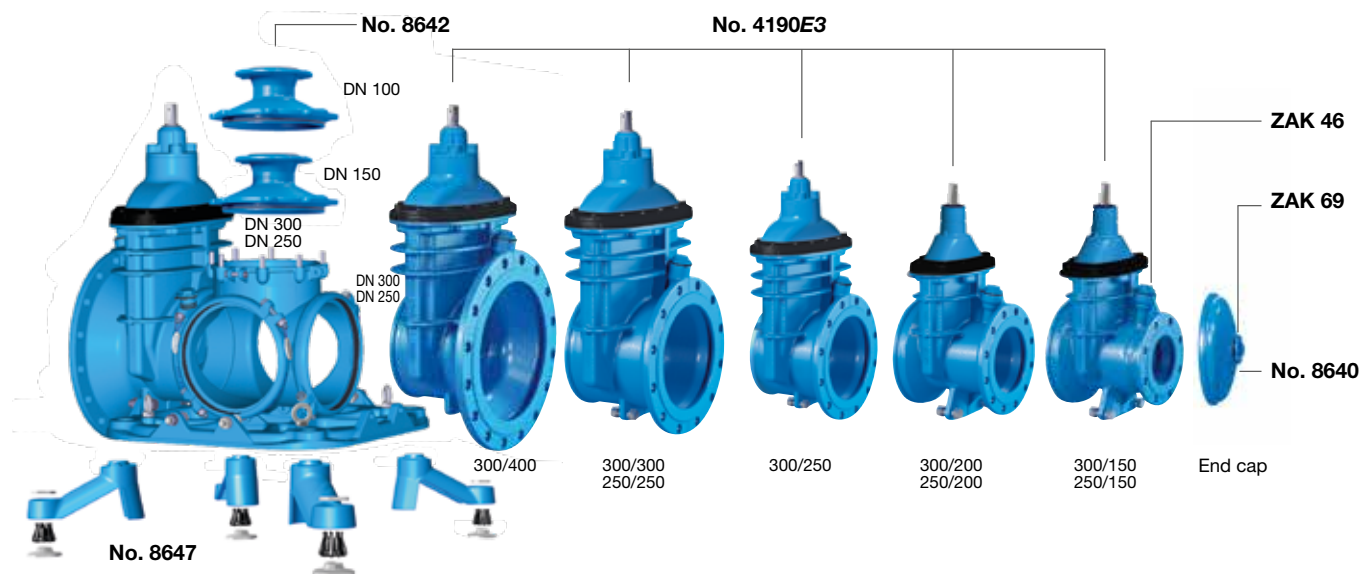


DN	E3 Hawle-Combiflex									
	MOP (PN)	L*	L1	H	H1	H2	H3	DN	M1*	ØN
250	10	960	617	911	755	210	359	150	590	34
	16							200		
								250		
300	10	1050	617	1021	809	235	399	150	646	34
								200		
								250		
	16							300		
								400		

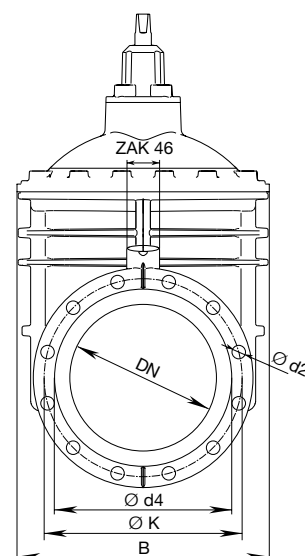
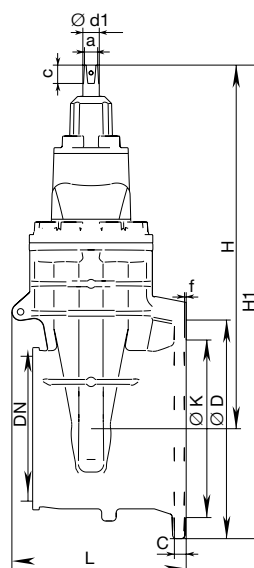
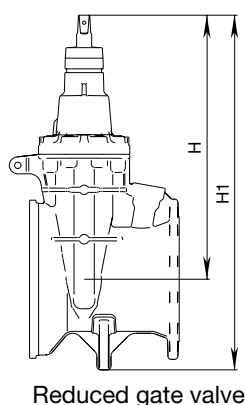
*The external dimensions (L, M1) remain the same with reducing valves!

E3 Hawle-Combiflex

Individual parts DN 250 / DN 300



Hawle-Combiflex E3 gate valve No. 4190E3

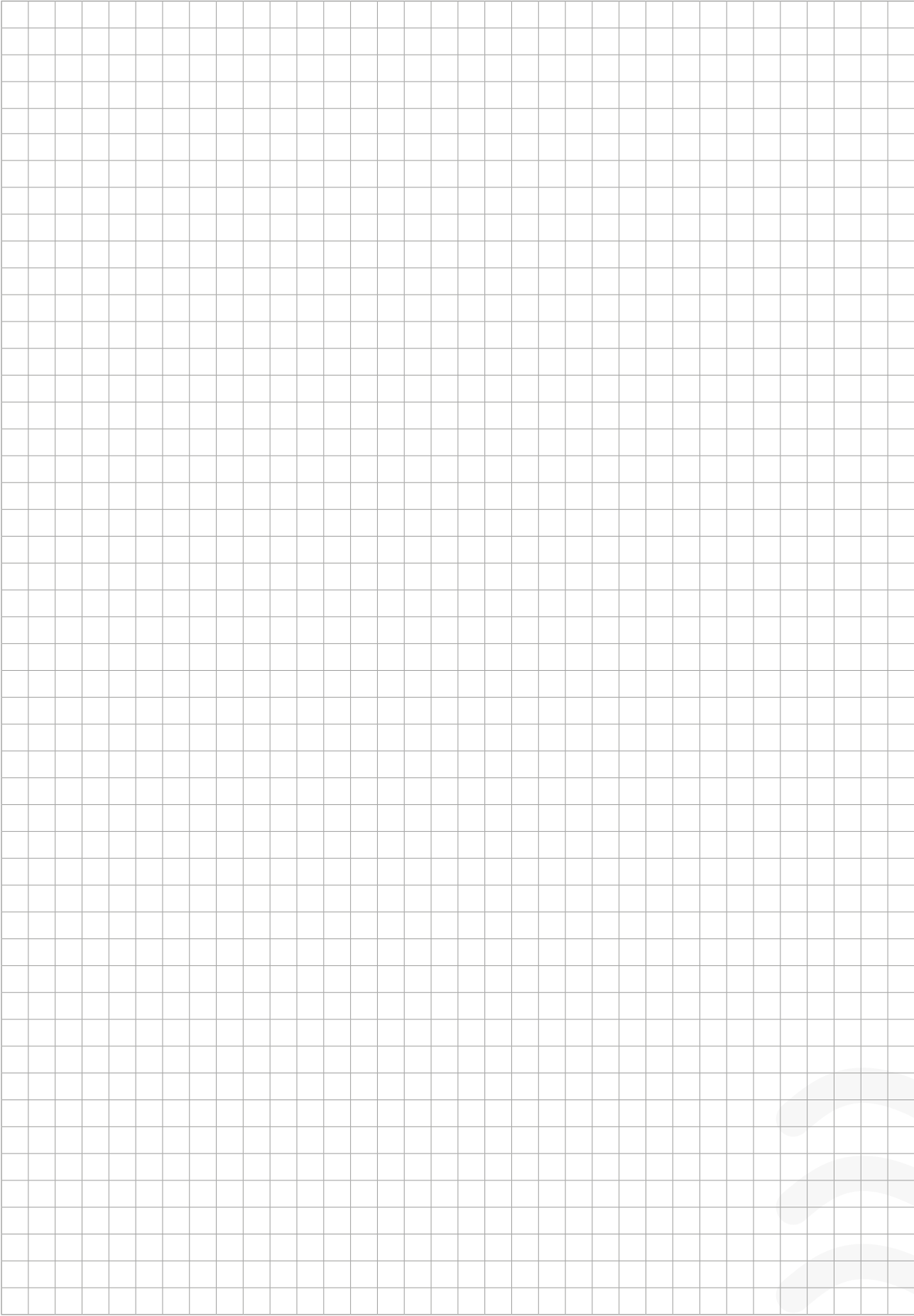


DN	Hawle-Combiflex E3 gate valve																	
	Flange					Bolts			Spindle			Valve						
	DN	MOP (PN)	Ø D	C	Ø K	Qty.	Thread	Ø d2	a	c	Ø d1	Wedge DN	Service outlet	H	H1*	L*	B*	Weight
250	150	10 16	285	19	240	8	M20	23	24,3	48	32	200	ZAK 46	541	707	337	356	61,0
	200	10 16	340	20	295	8 12	M20	23	24,3	48	32	200		541	710	337	356	62,0
	250	10 16	400	22	350 355	12	M20 M24	23 28	27,3	48	34	250		649	850	337	438	89,0
300	150	10 16	285	19	240	8	M20	23	24,3	48	32	200		541	734	361	356	65,0
	200	10 16	340	20	295	8 12	M20	23	24,3	48	32	200		541	734	361	356	66,0
	250	10 16	400	22	350 355	12	M20 M24	23 28	27,3	48	34	250		649	850	361	438	93,0
	300	10 16	455	24,5	400 410	12	M20 M24	23 28	27,3	48	34	300		731	960	361	523	132,0
	400+	10 16	580	28	515 525	16	M24 M27	28 31	27,3	48	34	300		731	1030	361	523	146,0

* Transport dimensions

*height adjustment necessary due to flange sheet

Notes



E3 Hawle-Combiflex

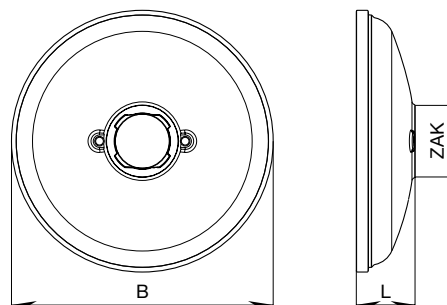
Individual parts DN 250 / DN 300



Hawle-Combiflex end cap No. 8640



- ZAK 69 socket

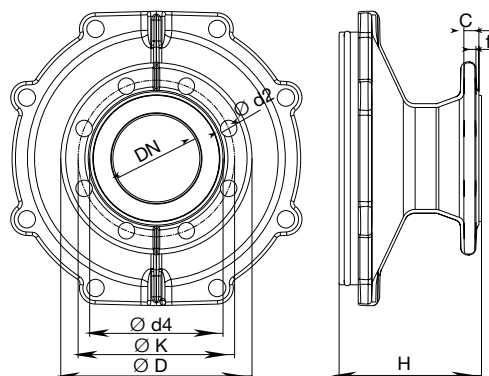


DN	Hawle-Combiflex end cap			
	B	ZAK-socket	L	Weight
250	284	ZAK 69	67	6,0
300	335	ZAK 69	77	7,5

Hawle-Combiflex vertical outlet No. 8642



- Incl. affixed elastomer flange gasket



DN	Hawle-Combiflex vertical outlet											
	Flange							Bolts			Vertical outlet	
	DN MOP (PN)		Ø D	C	Ø K	Ø d4	f	Qty.	Thread	Ø d2	H	Weight
250	100	10/16	220	19	180	153	3	8	M16	19	146	12,0
	150	10/16	285	19	240	209	3	8	M20	23	146	11,0
300	100	10/16	220	19	180	153	3	8	M16	19	160	13,0
	150	10/16	285	19	240	209	3	8	M20	23	160	13,0

Blanking cap No. 8570E2/E3



DN 150 – 200

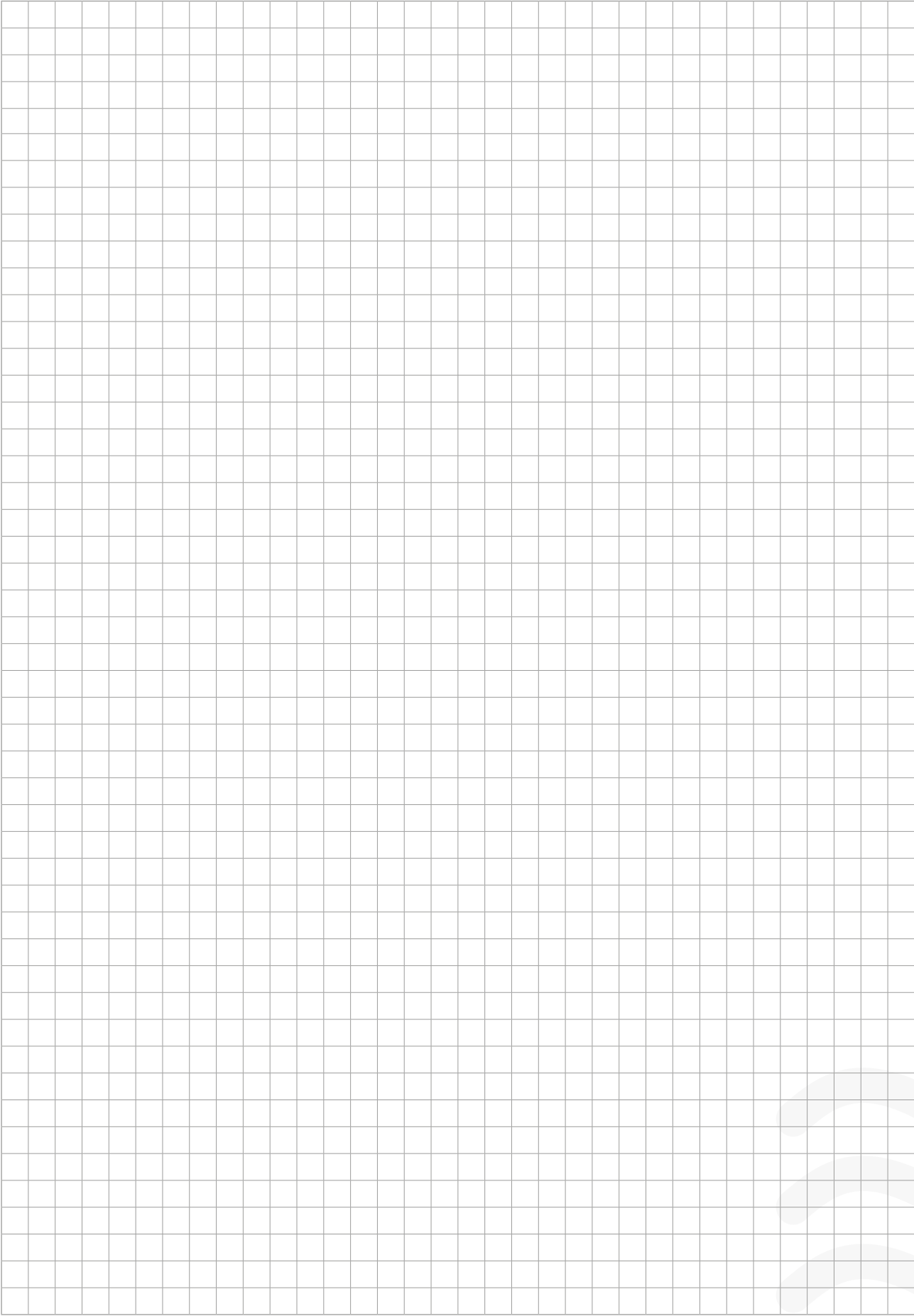


DN 250 – 300

Order No.	DN	Weight
8570E2/E3	150	3,2
	200	5,0
	250 – 300	5,0

- For combi valves in place of valve bonnet
- Made of ductile iron, epoxy powder coated without screws and hood seal

Notes



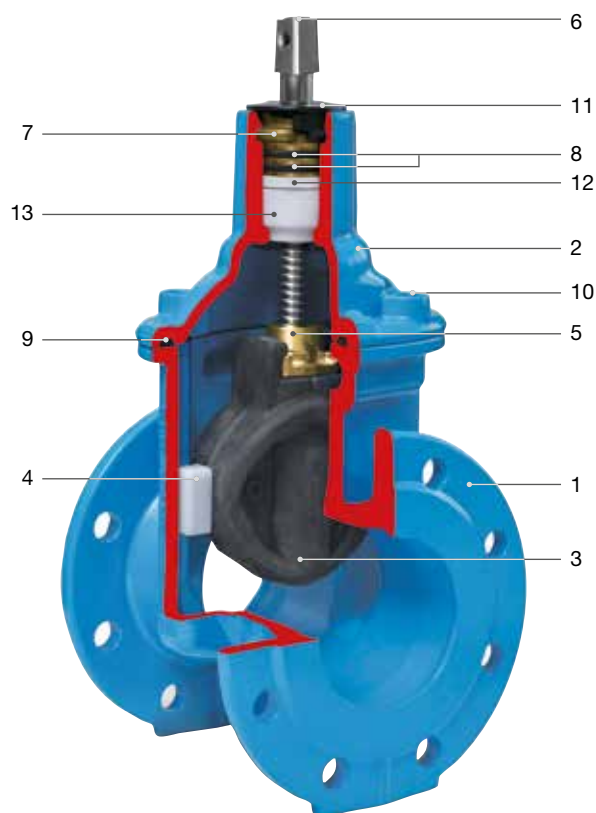
Hawle-E1+ Gate valve

Overview



Design features

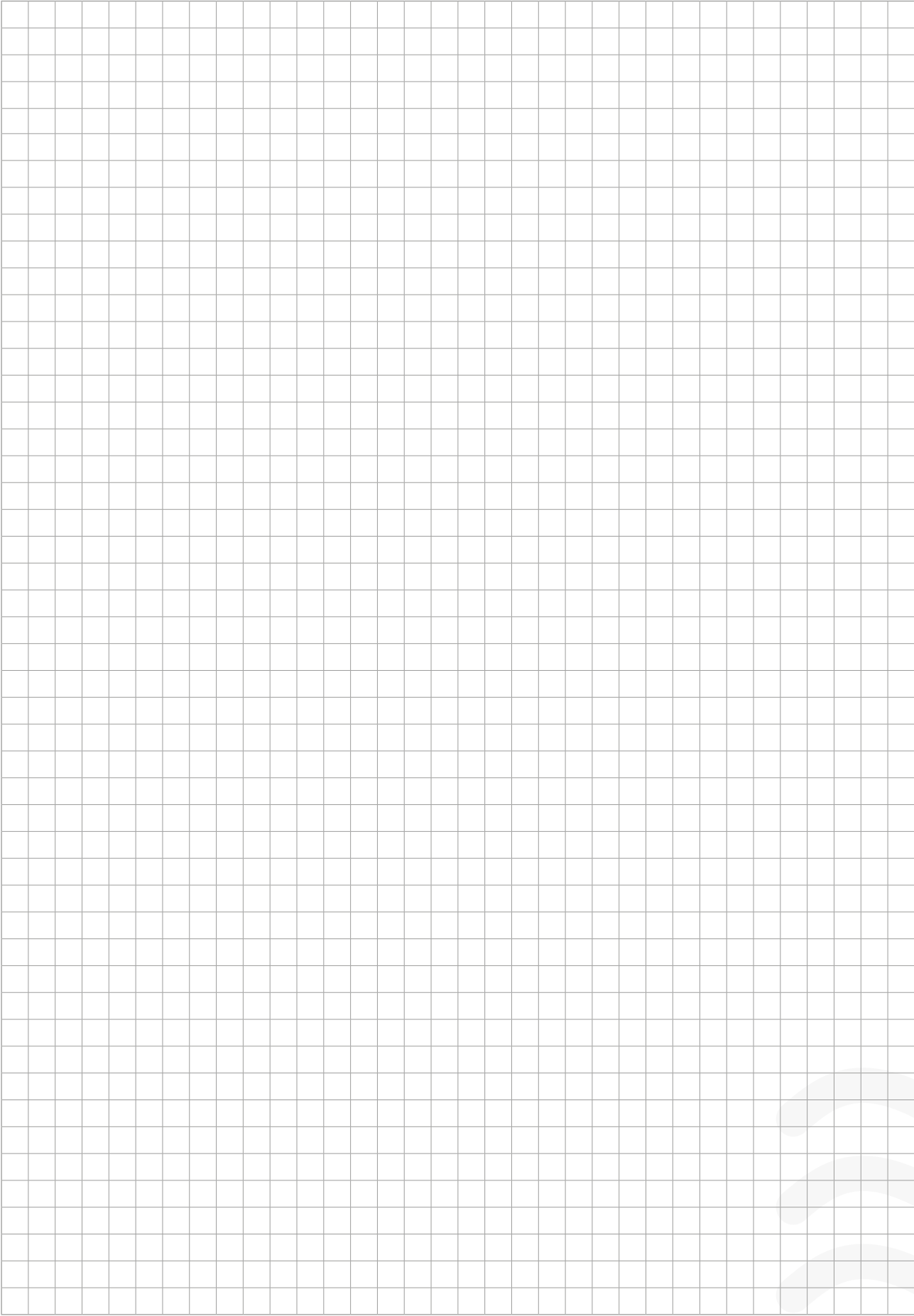
- Resilient seated gate valve according to EN 1074-1 and EN 1074-2 with smooth, straight bore
- Flanged valve, short and long face-to-face dimension
- Wedge guide with high glide characteristics; load-optimised design guarantees very low wear and closing torques
- Wedge nut resists high torque load due to its larger size with more than the required thread length
- Spindle bearing attached in bonnet by bayonet connection
- O-rings on all sides mounted in corrosion-proof material
- Friction washers guarantee smooth spindle guiding
- Suitable for underground installation
- Duplex stainless steel spindle



Material | Technical features

- 1,2 Body (1), bonnet (2) made of ductile iron, epoxy powder coated inside and outside (see page 4)
- 3 Wedge made of ductile iron, fully rubberized with vulcanized elastomer inside and outside
- 4 Wedge guide made of wear-resistant POM
- 5 Wedge nut made of brass
- 6 Duplex stainless steel spindle with rolled thread and polished O-ring slide faces, bearing made of POM
- 7 O-ring bush made of brass, attached in bonnet by bayonet connection, anti-rotation, multiple O-ring sealing
- 8 O-rings made of elastomer
- 9 Bonnet gasket made of elastomer
- 10 Allen screws corrosion protected by being encased into the body with an enclosing gasket and wax
- 11 Covering cap as dirt protection of the spindle bearing made of PE
- 12 Friction washer made of POM
- 13 Spindle bearing made of POM

Notes



Hawle-E1+ Gate valve

With flange DN 50 – 300, PN 10 | PN 16



Design features

- Resilient seated gate valve with smooth, straight bore
- Flanges sized in accordance with EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 for DN 200
Please specify on order - other standards on request
- Suitable for cleaning with a cleaning pig
- Short face-to-face length (EN 558 GR 14)
- Long face-to-face length (EN 558 GR 15)

No. 4000E1+
No. 4700E1+

Standard version: without handwheel and extension spindle
(only suitable for manual actuation)

Special versions: on request



Suitable accessories

Suitable accessories: see page A 2/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E1
	telescopic	No. 9500E1
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050
		No. 2051K
Base plate:	No. 3480, No. 3481	
Operating cap:	No. 2156, No. 2157	
Spindle extension:	No. 7820, No. 7825	
Bolts:	No. 8810, No. 8830, No. 8840	
Hawak-pillar:	No. 9894	
Flat gasket:	No. 3390, No. 3470	

Application example



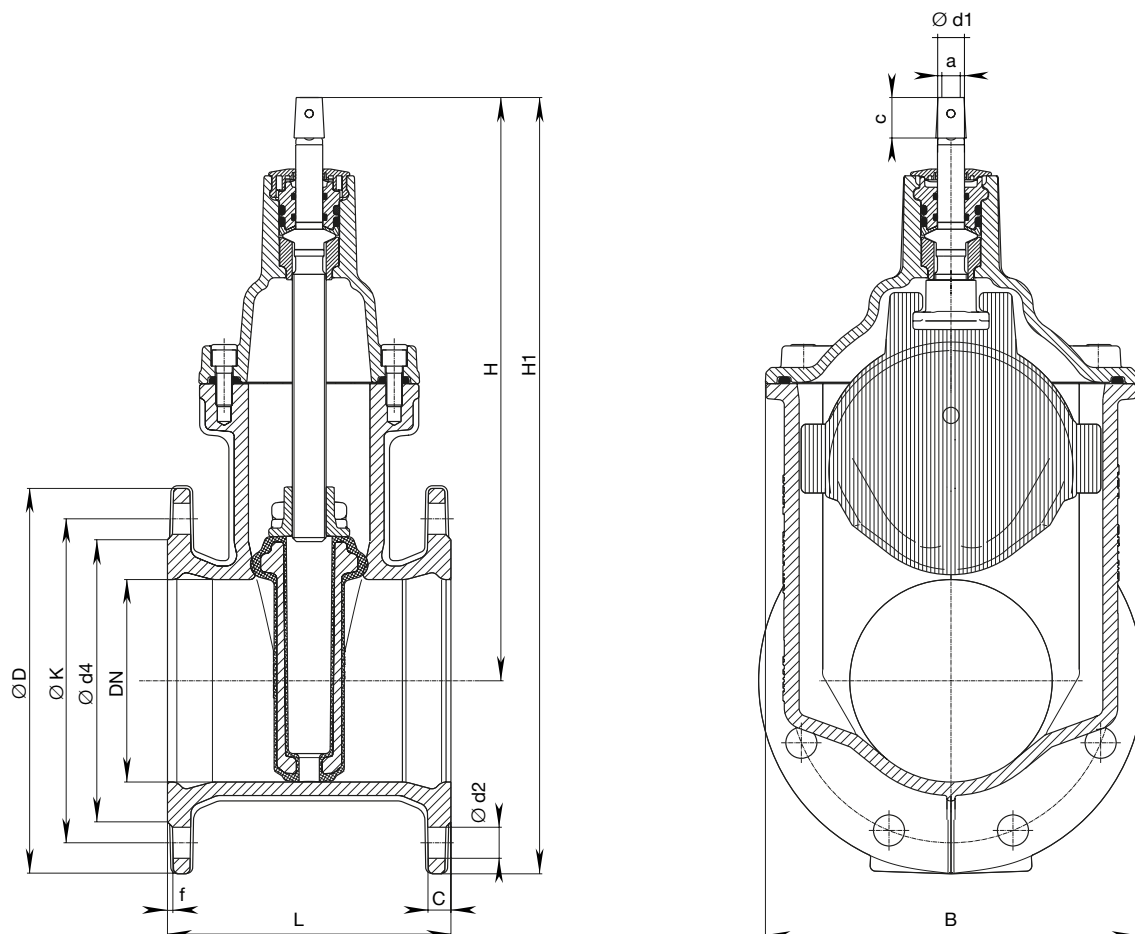
Order no.	Version	MOP (PN)	Dimensions/DN								
			50	65	80	100	125	150	200	250	300
4000E1+	short EN 558-1 GR 14	10									
		16									
4700E1+	long EN 558-1 GR 15	10									
		16									

Hawle-E1+ Gate valve

With flange DN 50 – 300, PN 10 | PN 16

No. 4000E1+

No. 4700E1+



DN	MOP (PN)	Flange					Bolts			Spindle			Valve					Weight	
		Ø D	C	Ø K	Ø d4	f	Qty	Thread	Ø d2	a	c	Ø d1	H	H1	L		B	short	long
															short	long			
50	10 16	165	18	125	98	5	4	M 16	19	14,8	30	18	230	313	150	250	135	8,8	10,7
65	10 16	185	18	145	118	5	4	M 16	19	17,3	30	20	298	390	170	270	172	13,5	16,9
80	10 16	200	18	160	133	5	8	M 16	19	17,3	30	20	305	405	180	280	172	14,5	19,0
100	10 16	220	18	180	153	5	8	M 16	19	19,3	30	20	339	449	190	300	203	18,5	25,2
125	10 16	250	17	210	183	4	8	M 16	19	19,3	30	20	420	545	200	325	275	30,5	36,7
150	10 16	285	17	240	209	4	8	M 20	23	19,3	30	20	432	575	210	350	275	34,0	42,9
200	10 16	340	19,5	295	264	4,5	8 12	M 20	23	24,3	38	25	534	704	230	400	345	54,6 53,0	68,0
250	10 16	400	21,5	350	318	4,5	12	M 20 M 24	23 28	27,3	38	32	626	826	250	450	422	80,5 82,0	
300	10 16	455	24	400	371	5,5	12	M 20 M 24	23 28	27,3	38	32	709	937	270	500	506	125,0 142,4	

Page B 2	Double eccentric butterfly valve Hawle butterfly valve	Page B 2/3	
Page B 3	Non return valves Without lever and counterweight	Page B 3/1	

Butterfly valves

Accessories

Actuator	Page M 4/3
Bolts	Page M 4/4
Flat gaskets	Page M 7/1
Dismantling Joints	Page D 6/1

Adapter extension spindle <i>E2/E3</i>	No. 9211	Page B 2/3
Adapter square cap	No. 2161	Page B 2/3

Technical information

Tightening torques for flange assembly	Page R 3/1
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Application example

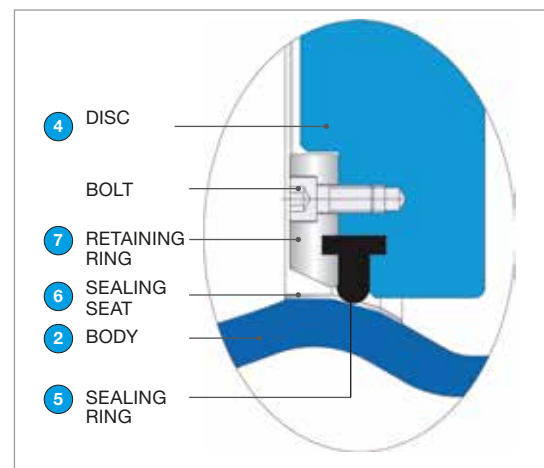
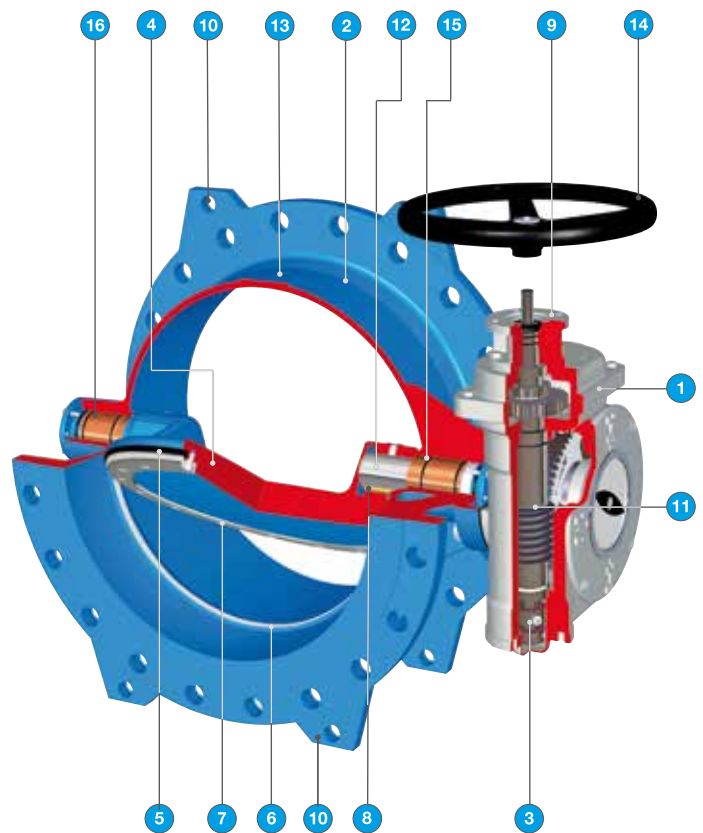


Butterfly valves

Double eccentric DN 150 – 1400

Design features

- 1 **Butterfly valve and gearbox**
Standard butterfly valve is suitable for either buried installations or chamber installations
- 2 **Body**
Streamlined design and smooth finish of the body provides minimum resistance to flow
- 3 **Travelling nut**
Bottom end of the worm shaft is threaded and a travelling nut moves up and down on this threaded spindle. When operating the gear (valve) in "open" or "close" direction, the travelling nut also moves towards the corresponding end stop and safe guards the correct travel of the valve disc to fully closed position
- 4 **Disc lenght**
Streamlined and low profiled disc including closed hubs ensures higher Kv values. Double offset disc design reduces seal wear and torque
- 5 **Sealing system**
Sealing on seat face is ensured by an endless T-profile resilient sealing ring which is held on the periphery of the disc by a retaining ring. In closed position the sealing ring is pressed against the conically shaped seat face of the body and **provides safe sealing in either direction of flow**. In opened position the sealing ring is completely unstressed due to the double eccentric disc design
- 6 **Body seat**
Stainless steel weld filled and finished integral body seat enables a corrosion and erosion resistant seat face. With this special type of seating it is possible to manufacture the valve drop tight
- 7 **Retaining ring**
The one piece retaining ring prevents sealing ring from rolling out. Sealing ring can be replaced easily at site without dismantling the valve disc and without requirement of any special tool
- 8 **Shaft connection**
Positive disc to shaft connection by use of key
- 9 **Connection flange for actuator**
All butterfly valves are provided with standard flanges according to EN ISO 5210 for installation of actuators
- 10 **Lifting holes and feet**
Integral lifting holes provide easy installation and the feet provides strong ground support
- 11 **Worm gear operators**
The drive is designed so that the disk can be actuated by just one operator with little force
- 12 **Shafts**
Split shaft guarantees maximum restriction to flow
- 13 **Unique tracking number**
Every valve is equipped with a cast tracking number for easy traceability and identification
- 14 **Handwheel**
Every valve is equipped with a handwheel (standard version)
- 15 **Shaft sealing**
Multiple O-ring shaft sealing system guarantees maintenance free sealing
- 16 **Bearing system**
Self lubricating plain bearings reduce shaft friction and operating torque. These bearings keep the shaft centralised and prevent axial movement



10



Hawle butterfly valve

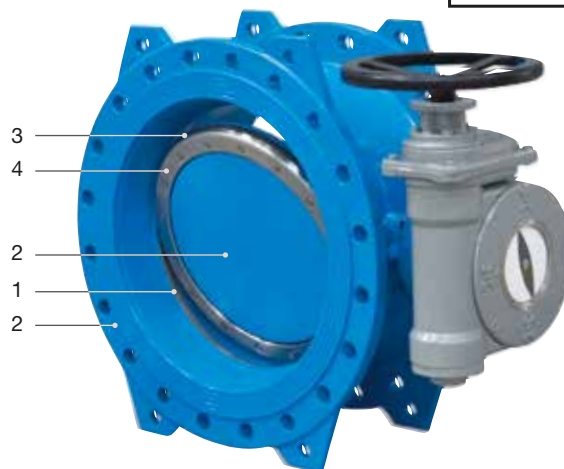
Double eccentric, DN 150 – 1400, PN 10 | PN 16



Design features

- Standard version including actuation device:
Wormgearbox and handwheel
- Protection class IP 68
- Applicable for below ground installation, simple assembly of the extension spindle
- Applicable for actuator
- Face-to-face dimension according EN 558 – 1 SERIES 14
- Flange connection dimensions according to EN 1092-2
- Pressure rating PN 10 | PN 16

No. 9881K



Material | Technical features

- 1 **Sealing seat** made of stainless steel welded and microfinished
 - 2 **Body and disk** made of ductile iron, epoxy powder coated inside and out
 - 3 **Sealing rings** made of elastomer
 - 4 **Retaining ring** made of stainless steel
- **Shafts** made of stainless steel
 - **All connections** made of stainless steel
 - **Bearings** made of bronze
 - **Handwheel** made of cast iron, epoxy powder coated

Order No.	MOP (PN)	Dimension/DN												
		150	200	250	300	350	400	450	500	600	700	800	900	1000
9881K	10													*
	16													*

* Without ÖVGW (Austrian Association for Gas and Water) certificate.

Suitable accessories

Suitable accessories:

Adapter extension spindle E2/E3 , DN 200:	No. 9211
Adapter square cap:	No. 2161
Actuator:	No. 9920
Flat gasket:	No. 3390
Dismantling piece:	No. 9810

Application example



Adapter for extension spindle **E2/E3**
(underground installation), DN 200

No. 9211



Square cap

No. 2161

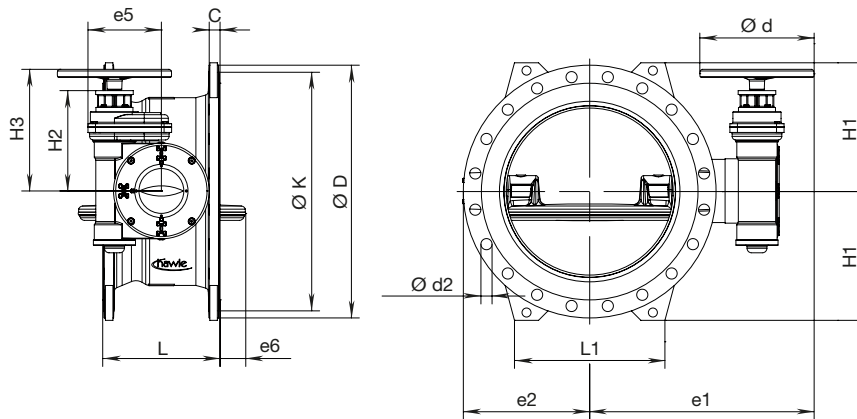


Actuator

No. 9920

Hawle butterfly valve

Double eccentric, DN 150 – 1400, PN 10 | PN 16



No. 9881K

Pressure rating PN 10

DN	MOP (PN)	L Serie 14	L1	e1	e2	e5	e6	Ø d	Ø D	Ø K	C	Bolts Qty. Ø d2		H1	H2	H3	Turns to open/close	Weight
150	10	210	190	378	151	134	0	245	285	240	19,0	8	23	143	145	212	11,25	45,0
200		230	180	405	177	134	0	245	340	295	20,0	8	23	180	145	212	11,25	60,0
250		250	220	481	214	158	5	245	405	350	22,0	12	23	213	165	239	10	95,0
300		270	280	503	237	158	11	245	460	400	24,5	12	23	242	165	239	10	115,0
350		290	320	595	283	175	28	370	505	460	24,5	16	23	264	186	271	12,5	155,0
400		310	335	626	297	175	43	370	565	515	24,5	16	28	293	186	271	12,5	165,0
450		330	380	670	333	198	57	370	615	565	25,5	20	28	320	287	372	36,25	220,0
500		350	400	701	344	244	67	370	670	620	26,5	20	28	345	336	420	43,5	285,0
600		390	440	749	414	244	98	370	780	725	30,0	20	31	400	336	420	43,5	350,0
700		430	540	838	511	313	126	370	895	840	32,5	24	31	460	399	484	104	575,0
800		470	610	855	530	313	153	370	1015	950	35,0	24	34	520	399	484	104	680,0
900		510	670	965	618	365	181	370	1115	1050	37,5	28	34	568	435	519	192,5	980,0
1000		550	740	1039	650	365	206	370	1230	1160	40,0	28	37	625	435	519	192,5	1155,0
1100		590	750	1022	720	365	237	370	1355	1270	53,5	32	37	695	435	519	192,5	1558,0
1200		630	900	1251	782	515	264	485	1455	1380	45,0	32	41	738	576	625	362,5	1965,0
1400		710	1160	1349	917	515	323	485	1675	1500	46,0	36	44	848	538	625	362,5	2690,0

No. 9881K

Pressure rating PN 16

DN	MOP (PN)	L Serie 14	L1	e1	e2	e5	e6	Ø d	Ø D	Ø K	C	Bolts Qty. Ø d2		H1	H2	H3	Turns to open/close	Weight
150	16	210	190	378	151	134	0	245	285	240	19,0	8	23	143	145	212	11,25	45,0
200		230	180	405	177	134	0	245	340	295	20,0	12	23	180	145	212	11,25	60,0
250		250	220	481	214	158	6	245	405	355	22,0	12	28	213	165	239	10	95,0
300		270	280	503	237	158	11	245	460	410	24,5	12	28	242	165	239	10	115,0
350		290	320	595	283	175	28	370	520	470	26,5	16	28	272	186	271	12,5	162,0
400		310	335	626	297	198	43	370	580	525	28,0	16	31	300	287	372	36,25	204,0
450		330	380	670	333	198	57	370	640	585	30,0	20	31	330	287	372	36,25	240,0
500		350	400	721	344	244	67	370	715	650	31,5	20	34	370	336	420	43,5	325,0
600		390	500	779	414	244	98	370	840	770	36,0	20	37	432	336	420	43,5	435,0
700		430	540	838	511	313	126	370	910	840	39,5	24	37	467	399	484	104	610,0
800		470	615	928	530	313	153	370	1025	950	43,0	24	41	525	399	484	104	780,0
900		510	675	1007	618	365	181	370	1125	1050	46,5	28	41	573	435	519	192,5	1065,0
1000		550	740	1039	650	365	206	370	1255	1170	50,0	28	44	638	435	519	192,5	1320,0
1100		590	750	1091	720	365	237	370	1355	1270	53,5	32	44	696	435	519	192,5	1558,0
1200		630	900	1251	782	515	264	485	1485	1390	57,0	32	50	753	576	625	362,5	2375,0
1400		710	1160	1349	917	515	323	485	1685	1590	60,0	36	50	848	538	625	362,5	2870,0

Check valves

Without/with lever and counterweight, PN 10 | PN 16

Design features

- Reliable prevention of medium back flow by automatic mechanical closing of the non-return valve.
- The disc opens automatically, if the medium flows in the direction indicated by the arrow on the valve body.
- Face-to-face dimensions according to EN 558-1 GR 48
- Flanges sized in accordance with EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 from DN 200 Please specify on order; other standards on request
- **No. 9831:**
 - Reduced weight, simple cleaning, fully corrosion free, optimised velocity, simple maintenance
 - Min. opening pressure 0,03 bar
 - Min. closing pressure 0,5 bar (tight)
- **No. 9830:**
 - Min. opening pressure 0,03 bar
 - Min. closing pressure 0,1 bar (tight)
- **No. 9820:**
 - With lever and counterweight
 - Min. opening pressure 0,03 bar
 - Min. closing pressure 0,1 bar (tight)

Material | Technical features

- **Body**
No. 9831: ductile iron, epoxy powder coated
No. 9830/9820: grey iron, epoxy powder coated
- **Disc/disc lever**
No. 9831: elastomer/polyamide
No. 9830/9820: grey iron, epoxy powder coated
- **Bolts/nuts**
No. 9831: stainless steel
No. 9830/9820: stainless steel
- **Disc gasket**
No. 9831: elastomer
No. 9830/9820: Klingerit
- **Shaft**
No. 9831: polyamide
No. 9830/9820: stainless steel
- **Bolts**
No. 9830/9820: stainless steel
- **Gasket**
No. 9830/9820: elastomer
- **Lever and counterweight**
9820: grey iron, epoxy powder coated

Installation advice

- In general non-return valves are designed to be installed in horizontal pipe lines. An installation in sloping and vertical pipe lines is possible if the flow of the medium is upwards.
- Direction of flow has to be according to the arrow indicated on the body. Axle of the disc shaft has to be fully horizontal.

Check valves

Without lever and counterweight

No. 9831



No. 9830



No. 9820

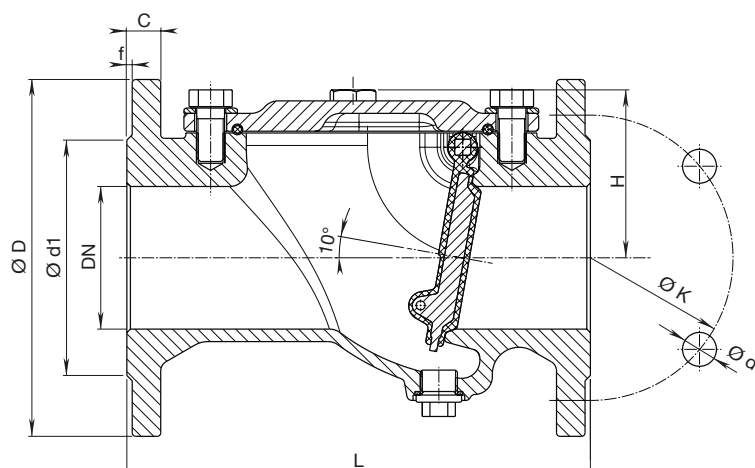
With lever and counterweight (without illustration)

Order No.	Version	MOP (PN)	Dimension/DN									
			40	50	65	80	100	125	150	200	250	300
9831	Without lever and counterweight	16										
9830												
9820	With lever and counterweight											

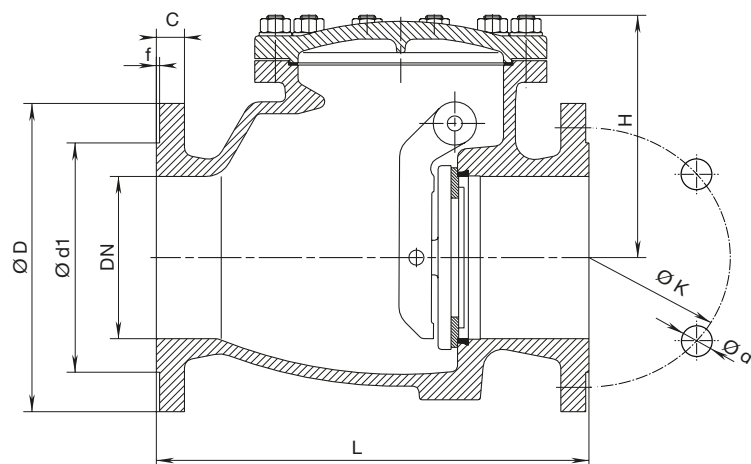
Check Valves

Without/with lever and counterweight, PN 10 | PN 16

No. 9831



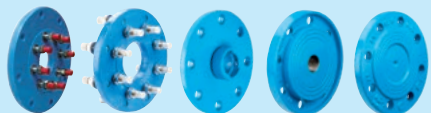
No. 9830



No. 9820 with lever and counterweight (without illustration)

DN	MOP (PN)	L	H	ØD	Ød1	ØK	Ød	f	C	Bolts		Kv	Weight
										Qty.	Ød2	m³/h	9831/9830
40	16	180	119	150	88	110	19	3	18	4	16	60	9,0
50		200	77	165	102	125	19	3	19	4	16	126	9,5
65		240	141	185	122	145	19	3	20	4	16	163	15,0
80		260	95	200	138	160	19	3	19	8	16	271	14,5
100		300	113	220	158	180	19	3	19	8	16	517	22,0
125		350	199	250	188	210	19	3	26	8	16	588	46,0
150		400	155	285	212	240	23	3	19	8	20	1028	45,0
200	10	500	187	340	268	295	23	3	20	8	20	1103	82,0
	16									12	20		
250	10	600	337	405	320	350	23	3	32	12	20		180,0
	16					355				12	24		
300	10	700	374	460	378	400	23	4	32	12	20		270,0
	16					410				12	24		

Flange connections

Page C 2	Flange connections For PE pipes, restraint <i>Synoflex flange</i> <i>System 2000 flange</i>	Page C 2/1 Page E 4/1 Page F 4/1	
Page C 3	Flange connections For PVC pipes For AC pipes <i>Synoflex flange</i> <i>System 2000 flange</i>	Page C 3/1 Page C 3/2 Page E 4/1 Page F 4/1	
Page C 4	Flange connections For ductile iron pipes, standard, restraint <i>Synoflex flange</i>	Page C 4/1 Page E 4/1	
Page C 5	Flange connections For steel pipes, standard, restraint Transition flange <i>Synoflex flange</i>	Page C 5/1 Page C 5/2 Page E 4/1	
Page C 6	Threaded, blank flange <i>Flange with ZAK-Socket</i> XR reducing flange	Page C 6/1 Page L 5/1 Page C 6/2	
Page C 7	Restraint systems For PVC pipes Split collar For PE and PVC pipes	Page C 7/1 Page C 7/2	

Flange connections

Accessories

Bolts	Page M 4/4
Washers	Page M 4/4
Screw insulation	Page M 4/4
Flat gasket	Page M 7/1

Spare parts

Gasket	Page P 3/2
Grp ring	Page P 4/1
O-ring	Page P 4/1
	Page P 4/2

Technical information

Tightening torques for flange assembly	Page R 3/1
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Flange connections

For PE pipes, restraint, PN 10 | PN 16



Design features

- For PE pipes according to EN 12201, DIN 8074
- Flange sized in accordance with EN 1092-2, drilled in accordance with EN 1092-2 | PN 10 standard; PN 16 for DN 200 please specify on order - other standards on request

No. 0310 / 0311:

- Flange adapter with PE fusion tail
- In a flange with a combined push-screw socket, a PE fusion socket is inserted from factory
- High performance sealing of the PE tail is assured by two separate seals and a stainless steel support liner within the tail
- Welding the PE fusion tail in the PE line can take place through butt fusion or electrofusion socket; twisting is not permissible after fusion of the flange

No. 5500 / 5530:

- Flange with ISO pipe socket
- The sealing and hold function acts exclusively on the external diameter of the pipe
- Corresponding to the line pressure and/or mechanical tensile forces, the seal and grip ring are pressed into the conical chamber, which increases its effectiveness
- Assembly instructions see Page K 3/2

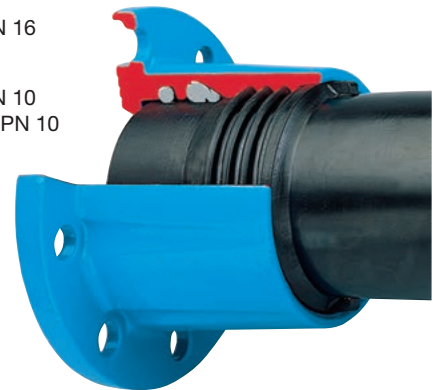
Flange adapter with PE fusion tail

No. 0310

PE 100-RC / SDR 11 - PN 16

No. 0311

PE 100-RC / SDR 17 - PN 10
(PE 100-RC / SDR 17,6 - PN 10 on request)



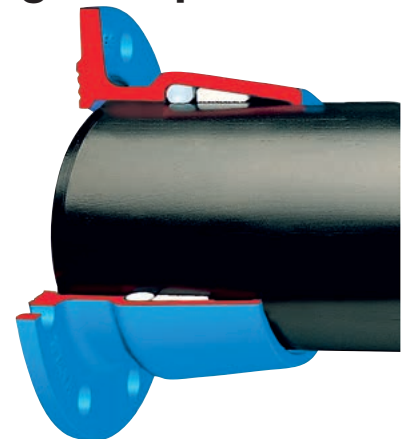
ISO pipe flange adapter

No. 5500

equal

No. 5530

reducing



Material | Technical features

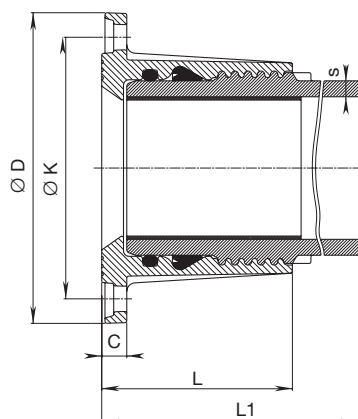
- **Flange** made of ductile iron, epoxy powder coated
- **Fusion tail** made of PE 100-RC
- **Support liners** made of stainless steel (No. 0310, No. 0311)
- **Seals** made of elastomer
- **Grip ring** made of POM

Order No.	Version	MOP (PN)	Flange DN / Ø pipe															
			40 32	40 40	40 50	50 50	50 63	60 63	65 63	65 75	80 75	80 90	100 90	100 110	100 125	150 160	150 180	200 200
0310	Flange with PE fusion tail	16																
0311		10																
5500	ISO pipe flange, equal	16																
5530	ISO pipe flange, reducing																	

Flange connections

For PE pipes, restraint, PN 10 | PN 16

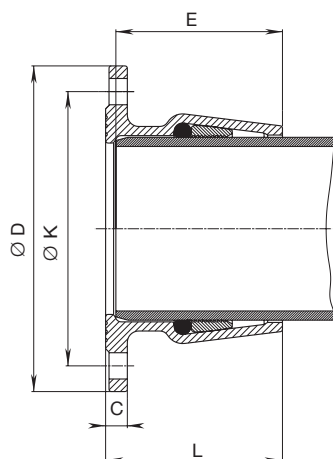
No. 0310 / 0311



Flange DN	Ø Pipe	Ø D	Ø K	C	L	L1	s		Bolts		Weight
							SDR 17	SDR 11	Quantity	Thread	
80	90	200	160	20	125	305	5,1	8,2	8	M 16	6,7
100	110	220	180	21	142	327	6,3	10,0		M 16	9,3
100	125	220	180	19	190	373	7,6	11,4		M 16	12,4
150	160	285	240	23	175	358	9,1	14,6		M 20	16,0
150	180	285	240	20	260	437	10,2	16,4		M 20	23,0
200	200	340	295	20	210	403		18,3		M 20	28,0
200	225	340	295	20	210	403	12,8	20,5		M 20	28,0

(PE 100-RC / SDR 17 - PN 10 on request)

No. 5500



Flange DN	Ø Pipe	Ø D	Ø K	C	L	E	Bolts		Weight
							Quantity	Thread	
40	50	150	112	23	97	93	4	M 16	2,5
50	63	165	125	23	94	80		M 16	3,2
65	75	185	145	24	105	99		M 16	4,0
80	90	200	160	24	101	96	8	M 16	4,2
100	110	220	180	25	124	119		M 16	6,7

No. 5530

Flange DN	Ø Pipe	Ø D	Ø K	C	L	E	Bolts		Weight
							Quantity	Thread	
40	32	150	110	19	66	62	4	M 16	1,7
40	40	150	110	21	85	80		M 16	2,4
50	50	165	125	23	97	93		M 16	3,0
60	63	175	135	24	94	90		M 16	3,6
65	63	185	145	24	94	90		M 16	4,2
80	75	200	160	24	105	100	8	M 16	5,0
100	90	220	180	25	101	96		M 16	5,9

Flange connections

For PVC pipes, PN 16



Design features

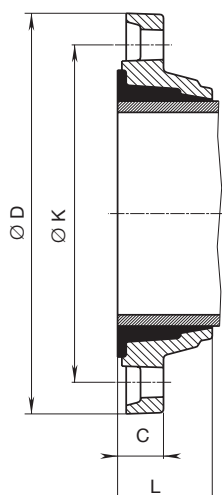
- For PVC pipes according to EN ISO 1452-2
- Flange sized according to EN 1092-2 and drilled in accordance with EN 1092-2 PN 10 standard; PN 16 for DN 200 to DN 400 please specify on order - other standards on request
- The resilience of the connection prevents tension in the pipe and minimises the danger of breakage

Assembly instructions

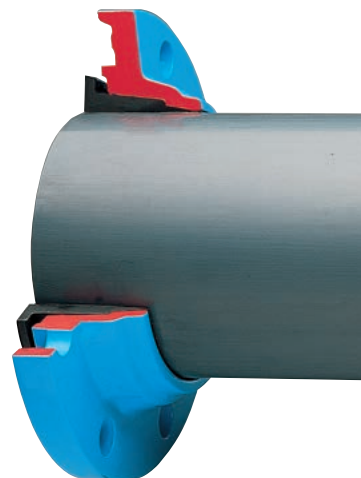
- Cut the pipe end straight, do not chamfer or moisten - push the flange onto the pipe and then push the gasket on

Material | Technical features

- **Flange** made of ductile iron, epoxy powder coated
- **Sleeve gasket** made of elastomer



Double chamber flange adapter No. 5600



Order No.	MOP (PN)	Flange DN / Ø Pipe							
		50	65	80	100	125	125	150	300
		63	75	90	110	125	140	160	315
5600	16								*

Explanation:

* also available in PN 16

¹ Flanges with an extended hole circle are not suitable for use with fixed studs!

Flange DN	Ø Pipe	Ø D	Ø K	C	L	Bolts		Weight
						Qty.	Thread	
50	63	165	125	24	54	4	M 16	2,0
65	75	185	145	24	54	4	M 16	2,7
80	90	200	160	25	60	8	M 16	3,2
100	110	220	180	26	62	8	M 16	4,1
125	125	250	210	28	66	8	M 16	5,8
125	140	250	210	28	66	8	M 16	5,0
150	160	285	240	29	66	8	M 20	5,6
300	315	445	400	33	117	12	M 20	15,8

Flange connections

For AC pipes, PN 16

Design features

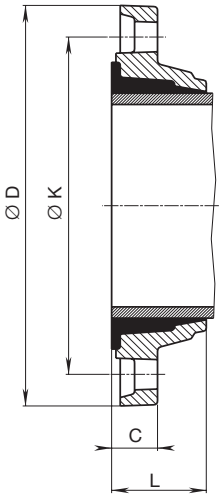
- For asbestos cement pipes
- Flange sized and drilled according to EN 1092-2 | PN16
- The long draw of the fitting and the double chambered gasket result in the pressure being spread well back from the pipe end
- The resilience of the connection prevents tension in the pipe and minimises the danger of breakage

Assembly instructions

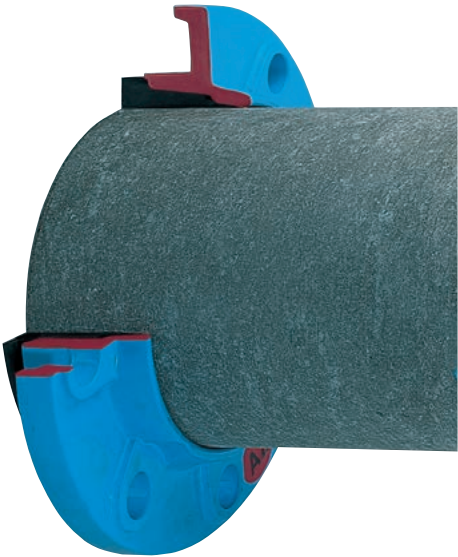
- Cut the pipe end straight, do not chamfer or moisten - push the flange onto the pipe and then push the gasket on

Material | Technical features

- **Flange** made of ductile iron, epoxy powder coated
- **Sleeve gasket** made of elastomer



Double chamber flange adapter No. 7103



Order No.	MOP (PN)	Flange DN / Ø Pipe		
		80 98	150 174	150 176
7103	16	x		

Explanation: x see page C 4/1

Flange DN	Ø Pipe	ØD	ØK	C	L	Bolts		Weight
						Quantity	Thread	
80	98	200	160	19	60	8	M 16	2,8
150	174	285	240	46	66		M 20	5,8
150	176	285	240	46	66		M 20	5,8

Flange connections

For ductile iron pipes, PN 10 | PN 16

Design features No. 7102

- For ductile iron pipes according to EN 545
- Flange sized and drilled in accordance with EN 1092-2, PN 10 standard; EN 1092-2, PN 16 for DN 200 to DN 400 please specify on order - other standards on request
- The long draw of the fitting and the double chambered gasket result in the pressure being spread well back from the pipe end
- The resilience of the connection prevents tension in the pipe and minimises the danger of breakage

Assembly instructions

- Cut the pipe end straight, do not chamfer or moisten - push the flange onto the pipe and then push the gasket on

Design features No. 7602

- For ductile iron pipes according to EN 545
- Flanges sized and drilled in accordance with EN 1092-2, PN 10 standard; EN 1092-2, PN 16 for DN 200 to DN 300 please specify on order - other standards on request
- Simultaneous pipe restraint and sealing
- This avoids the need for pipe support and additional bolts to counter the effect of axial load and pressure. This connection can be easily dismantled at any time

Assembly instructions

- Assemble the flange with the sleeve gasket and pressure ring, and push onto the pipe. Offer up the complete flange to the opposing flange, ensuring that the pressure ring projects approx. 10 mm over the end of the pipe. Cross tighten the nuts and bolts to make the connection. This fitting has the advantage that it can cope with a gap or an uneven cut that extends up to 15 mm from the opposing flange

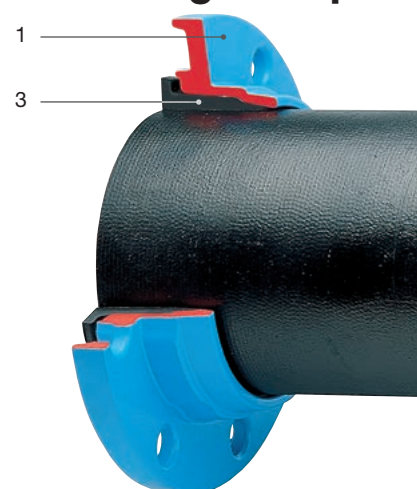
Material | Technical features

- 1 **Flange** made of ductile iron, epoxy powder coated
- 2 **Grip ring** hardened steel
- 3 **Sleeve gasket** made of elastomer
- 4 **Pressure ring** made of ductile iron, epoxy powder coated
- 5 **Seal** made of elastomer

Double chamber flange adapter

No. 7102

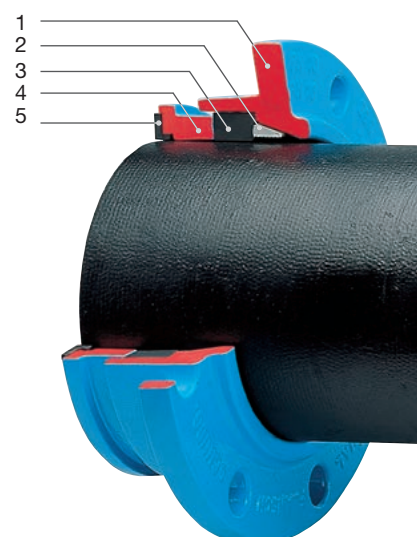
Standard



Flange adapter

No. 7602

Restraint



Tip: When shortening ductile iron pipes, observe the Ø; Heed pipe manufacturer's advice

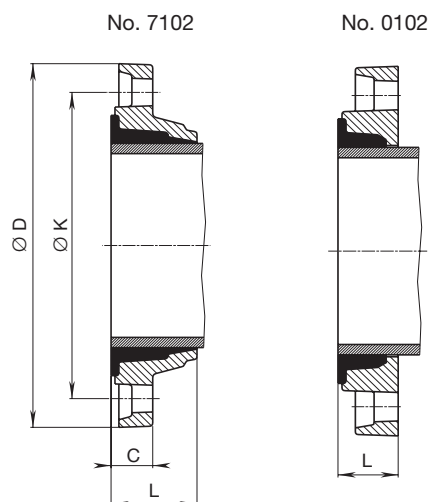
Order No.	Version	MOP (PN)	Flange DN / ØPipe												
			40 56	50 66	60 77	65 82	80 98	80 101	100 118	125 144	150 170	200 222	250 274	300 326	400 429
7102	Double chamber flange adapter, standard	16										*	*	*	*
7602	Flange adapter, restraint										1	*1	*1	*1	
0102	Flange adapter, standard														

Explanation: * also available in PN 16, ¹ Flanges with an extended hole circle are not suitable for use with fixed studs!

Flange connections

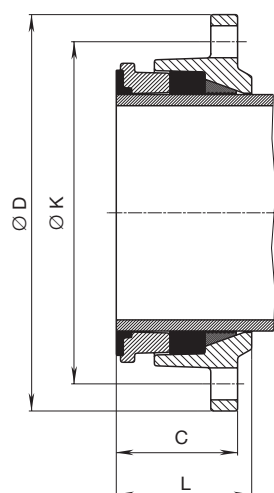
For ductile iron pipes, PN 10 | PN 16

No. 7102 / 0102



Flange DN	Ø Pipe	Ø D		Ø K	C		L		Bolts		Weight	
		7102	0102		7102	7102	0102	0102	Quantity	Thread	7102	0102
50	66	165		125	22	56			4	M 16	1,8	
60	82			135			35		4	M 16		
65	82	185		145	29	58			4	M 16	3,4	
80	98	200		160	22	64	38		8	M 16	2,6	
80	101	200		160	22	64			8	M 16	2,4	
100	118	220		180	23	62	38		8	M 16	2,8	
125	144	250		210	24	66	42		8	M 16	4,2	
150	170	285	285	240	25	66	45		8	M 20	4,7	7,0
200	222	340		295	30	71	45		8	M 20	7,6	
250	274	400		350	32	78			12	M 20	10,9	
300	326	455		400	33	82			12	M 20	13,8	
400	429	570		515	37	103			16	M 24	22,0	

No. 7602



Flange DN	Ø Pipe	Ø D	Ø K	C	L	Bolts		Weight
						Quantity	Thread	
40*	56	150	110	26	58	4	M 16	1,6
50	66	165	125	60	71	4	M 16	2,9
60	77	175	135	60	73	4	M 16	3,2
65	82	185	145	63	79	4	M 16	3,7
80	98	200	160	59	76	8	M 16	3,9
80	101	200	160	59	76	8	M 16	3,5
100	118	220	180	60	78	8	M 16	4,6
125	144	250	210	62	85	8	M 16	6,0
150	170	285	240	87	98	8	M 20	9,3
200	222	340	295	90	105	8	M 20	14,0
250	274	400	355	90	105	12	M 20	17,5
300	326	455	405	90	105	12	M 20	21,7

* DC flange with thread pin

Flange connections

For steel pipes, PN 16

Design features No. 7101

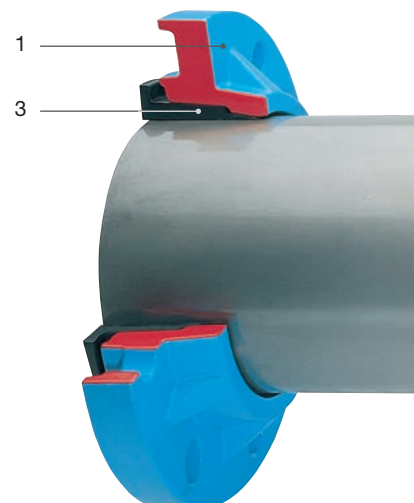
- For steel pipes according to EN 10220
- Flanges sized and drilled in accordance with EN 1092-2, PN 10 standard; EN 1092-2, PN 16 for DN 200 to DN 250 please specify on order - other standards on request
- The long draw of the fitting and the double chambered gasket result in the pressure being spread well back from the pipe end
- The resilience of the connection prevents tension in the pipe and minimises the danger of breakage

Assembly instructions

- Cut the pipe end straight, do not chamfer or moisten - push the flange onto the pipe and then push the gasket on

Double chamber flange adapter No. 7101

Standard



Design features No. 7601

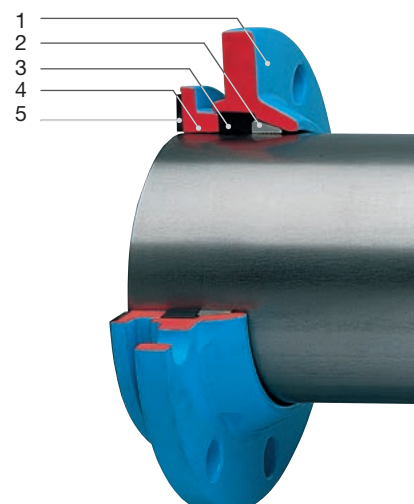
- For steel pipes according to EN 10220
Flange sized and drilled in accordance with EN 1092-2, PN 10 standard; EN 1092-2, PN 16 for DN 200 to DN 250 please specify on order - other standards on request
- Simultaneous pipe restraint and sealing
- This avoids the need for pipe support and additional bolts to counter the effect of axial load and pressure. This connection can be easily dismantled at any time

Assembly instructions

- Assemble the flange with the sleeve gasket and pressure ring, and push onto the piece. Offer up the complete flange to the opposing flange, ensuring that the pressure ring projects approx. 10 mm over the end of the pipe. Cross tighten the nuts and bolts to make the connection. This fitting has the advantage that it can cope with a gap or an uneven cut that extends up to 15 mm from the opposing flange

Flange adapter No. 7601

Restraint



Material | Technical features

- 1 **Flange** made of ductile iron, epoxy powder coated
- 2 **Grip ring** hardened steel
- 3 **Sleeve gasket** made of elastomer
- 4 **Pressure ring** made of ductile iron, epoxy powder coated
- 5 **Seal** made of elastomer

Order No.	Version	MOP (PN)	Flange DN / ØPipe										
			50 56-57	50 59-61	65 76	80 89	100 108	100 114	125 133	150 159	150 168	200 219	250 273
7101	Double chamber flange adapter, standard	16										*	*x
7601	Flange adapter, restrained							1				1	*x
	Spar flange, standard												

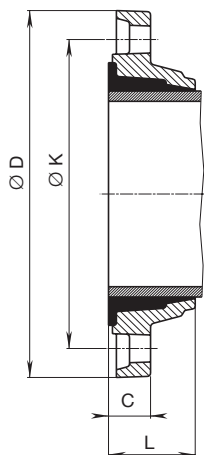
Explanation: * also available in PN 16, * see page C 4/1

¹ Flanges with an extended hole circle are not suitable for use with fixed studs!

Flange connections

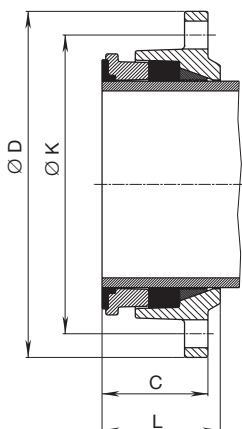
For steel pipes, PN 16

No. 7101



Flange DN	Ø Pipe	Ø D	Ø K	C	L	Bolts		Weight
						Quantity	Thread	
50	56 – 57	165	125	26	54	4	M 16	2,6
50	59 – 61	165	125	26	54	4	M 16	2,6
65	76	185	145	28	56	8	M 16	3,5
100	108	220	180	25	63	8	M 16	3,6
100	114	220	180	23	63	8	M 16	4,4
125	133	250	210	33	64	8	M 16	6,8
200	219	340	295	30	71	8	M 20	8,6

No. 7601



Flange DN	Ø Pipe	Ø D	Ø K	C	L	Bolts		Weight
						Quantity	Thread	
50	60	165	125	39	61	4	M 16	2,7
65	76	185	145	38	61	4	M 16	3,5
80	89	200	160	39	67	8	M 16	3,9
100	108	220	180	39	69	8	M 16	4,7
100	114	220	180	44	69	8	M 16	4,4
125	133	250	210	39	69	8	M 16	5,7
150	159	285	240	49	73	8	M 20	7,8
150	168	285	240	49	73	8	M 20	7,5
200	219	340	295	52	81	8	M 20	10,5

Design features

- From 4 hole to 8 hole
- Made of ductile iron, epoxy powder coated
- PN 16

DN	MOP (PN)	Length	Weight	
80	16	42	5,0	

Transition flange

No. 0800

DN 80



Threaded, blank flange

Design features

- Made of ductile iron, epoxy powder coated
- Flange sized according to EN 1092-2 and drilled in accordance with EN 1092-2 | PN 10 standard; PN 16 for DN 200 to 300 please specify on order - other standards on request

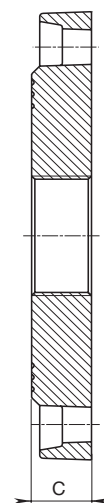
DN	MOP (PN)	Thread No. 8100							Thread No. 8100L						
		1"	1¼"	1½"	2"	2½"	3"	4"	1"	1¼"	1½"	2"	2½"	3"	4"
40	10														
50															
60															
65															
80															
100															
125															
150															
200															
250															
300															

Threaded flange

No. 8100

No. 8100L

with internal thread ISO 228



DN	MOP (PN)	C	Weight No. 8100						
			1"	1¼"	1½"	2"	2½"	3"	4"
40	10	19			1,80	1,70			
50			2,30	2,20	2,20	2,10			
60						3,00			
65			3,20	3,10	3,00	3,00	2,70		
80			3,60	3,50	3,40	3,40	3,40	2,90	
100			4,30	4,20	4,20	4,20	3,90	3,70	3,30
125		20	5,40	5,50	5,50	5,30	5,20	5,10	4,70
150			7,00	6,90	6,90	6,80	6,70	6,60	6,20
200			11,50	11,30	11,30	11,00	10,60	10,30	
250			22		16,20	16,00	15,00		
300		25				23,10			

DN	MOP (PN)	C	Weight No. 8100L						
			1"	1¼"	1½"	2"	2½"	3"	4"
50	10	32	2,70	2,60	2,60	2,50			
60			3,40	3,20	3,00	2,80	2,60		
65			3,40	3,20	3,00	2,80	2,60		
80			4,00	3,90	3,90	3,90	3,80	3,40	
100			5,90	5,70	5,70	5,50	5,20	4,80	4,50
125			8,20	8,10	8,10	7,90	7,50	7,00	6,60
150			9,50	9,30	9,20	9,10	8,70	8,50	8,10
200			15,50	15,40	15,30	15,10	14,80	14,50	14,20

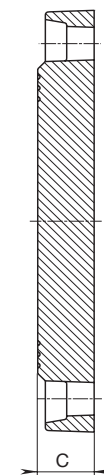
Design features

- Made of ductile iron, epoxy powder coated
- Flange sized according to EN 1092-2, and drilled in accordance with EN 1092-2, | PN 10 standard; PN 16 for DN 200 to 400 please specify on order - other standards on request
- Other nominal diameters on request

DN	MOP (PN)	C	Weight
40	10	19	2,00
50			2,90
60			2,80
65			3,80
80			4,00
100			4,60
125		20	5,70
150			7,60
200			11,40
250			17,20
300		25	25,50
400			38,00

Blank flange

No. 8000



XR reducing flange

Design features

- Made of ductile iron, epoxy powder coated
- Flange sized and drilled according to EN 1092-2
- Threaded bolt optionally made of stainless steel or galvanized
- The low profile enables transitions to be made between dimensions in the shortest possible space

Standard version:

DN	MOP (PN)	Bolts DN 1		Bolts DN 2		C	Weight	
		Qty.	Thread	Qty.	Thread			
65-50	16	4	M 16 x 50	4	M 16 x 50	47	5,6	
80-40		8	M 16 x 50	4	M 16 x 50	30	5,1	
80-50		8	M 16 x 50	4	M 16 x 50	29	5,6	
80-65		8	M 16 x 50	4	M 16 x 50	25	5,4	
100-50		8	M 16 x 50	4	M 16 x 50	27	5,5	
100-65		8	M 16 x 50	4	M 16 x 50	30	6,5	
100-80		8	M 16 x 50	8	M 16 x 50	47	8,4	
125-65		8	M 16 x 50	4	M 16 x 50	30	8,2	
125-80		8	M 16 x 50	8	M 16 x 50	30	8,0	
125-100		8	M 16 x 50	8	M 16 x 50	30	7,6	
150-100		8	M 20 x 60	8	M 16 x 50	30	12,0	
150-125		8	M 20 x 60	8	M 16 x 50	30	11,2	
200-150	10	8	M 20 x 60	8	M 20 x 60	30	17,2	
200-150	16	12	M 20 x 60	8	M 20 x 60	30	18,7	
250-200	10	12	M 20 x 60	8	M 20 x 60	32	20,0	
250-200	16	12	M 24 x 70	12	M 20 x 60	32	22,0	
300-250	10	12	M 20 x 60	12	M 20 x 60	33	22,6	
300-250	16	12	M 24 x 70	12	M 24 x 70	33	32,4	

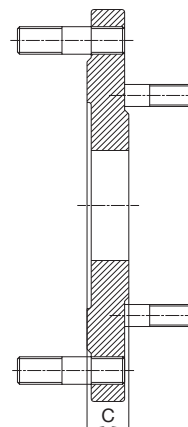
Other diameters on request

Standard version:

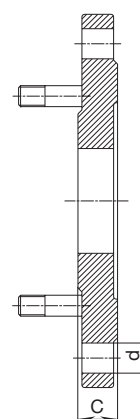
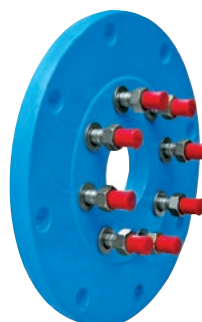
DN	MOP (PN)	Bolts DN 1		Bolts DN 2		C	Weight	
		Qty.	d	Qty.	Thread			
125-50	16	8	19	4	M 16 x 50	30	6,3	
150-50		8	23	4	M 16 x 50	30	11,0	
150-65		8	23	4	M 16 x 50	30	11,0	
150-80		8	23	8	M 16 x 50	30	10,7	
200-80	10	8	23	8	M 16 x 50	30	14,7	
200-80	16	12	23	8	M 16 x 50	30	14,5	
200-100	10	8	23	8	M 16 x 50	30	15,0	
200-125	10	8	23	8	M 16 x 50	30	13,7	
250-50	10	12	23	4	M 16 x 50	31	22,3	
250-50	16	12	28	4	M 16 x 50	31	22,3	
250-80	10	12	23	8	M 16 x 50	31	22,1	
250-80	16	12	28	8	M 16 x 50	31	22,1	
250-100	10	12	23	8	M 16 x 50	31	21,9	
250-125	10	12	23	8	M 16 x 50	31	21,5	
250-150	10	12	23	8	M 20 x 60	40	18,6	
250-150	16	12	28	8	M 20 x 60	40	18,6	
300-100	10	12	23	8	M 16 x 50	31	27,1	
300-100	16	12	28	8	M 16 x 50	31	27,1	
300-200	10	12	23	8	M 20 x 60	32	24,8	
400-300	10	16	28	12	M 20 x 60	39	39,8	

Other diameters on request

XR reducing flange "Type A" No. 0801



XR reducing flange "Type B" No. 0802



Restraint systems

For PVC pipes, PN 10 | PN 16

Design features

- 1254/1255 the restraint clamp for PVC-U pipe fittings and pipes according to EN ISO 1452-2
- 1256: the restraint clamp for a Molecor PVC-O Tom® pipe PN 25 according to ISO 16422
- This two-part body can be assembled onto an existing pipeline. If required it can be dismantled and reused
- The grip ring is self tightening within its tapered seating
- The design of the teeth avoids cutting into the pipe resulting in the highest gripping force without pipe damage
- Wedge fastening on both sides
- Hammer the wedges until the clamp is tightly closed

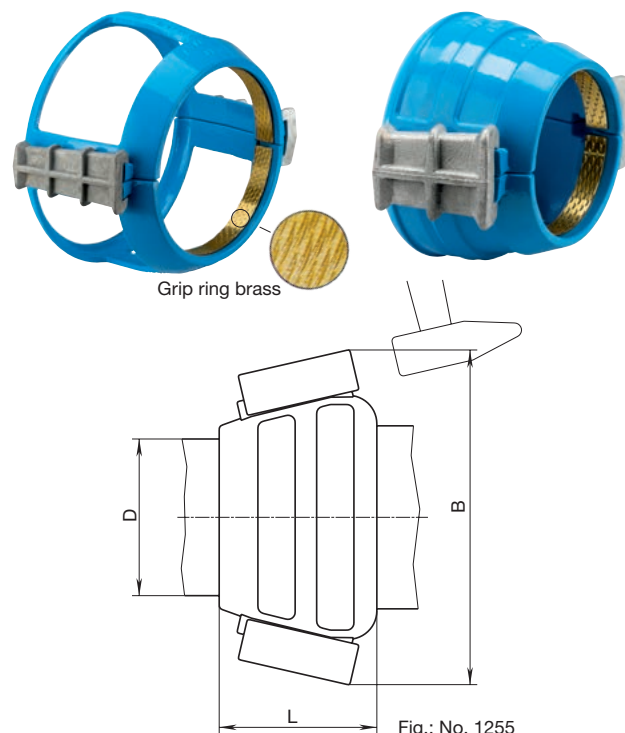
Material | Technical features

- **Body** made of ductile iron, epoxy powder coated
- **Grip ring** made of brass
- **Wedge fastener** made of ductile iron, galvanised

Restraint clamp

No. 1254 / 1255 / 1256

(Socket - Pipe)



Order No.	Version	MOP (PN)	Dimension/DN					Ø PVC-Pipe				
			50 63	65 75	80 90	100 110	125 140	150 160	200 225	250 280	300 315	
1254	Restraint clamp	10	+	+	+							
1255		16										
1256 [#]		16			#	#		#				

+ PN 10 and PN 16

[#] PVC-O pipe PN 25

Application example



DN	Ø PVC pipe	B			L			Weight	
		1254	1255	1256 [#]	1254	1255	1256 [#]	1254/1255	1256 [#]
50	63	180			91			2,5	
65	75	200			96			2,8	
80	90	220			103		114	3,0	3,2
100	110	240			110		120	3,5	3,8
125	140	280			123			3,9	
150	160	300	320	287	140	152	144	6,0	6,8
200	225	380	400		165	185		9,5	
250	280	455			195			13,5	
300	315	495			200			16,3	

Split collar

For PVC and PE pipes

Design features

- For PVC pipes according to EN ISO 1452-2
- For PE pipes according to EN 12201, DIN 8074 (thin wall PE pipes $\geq$ SDR 17 and vacuum pipes need support liners)
- Restraint connection for two spigot ends. It can also be used as a repair coupling
- The teeth of the grip ring do not abrade the pipe. It is not necessary to chamfer the pipe
- Also suitable as transition from PVC to PE pipes

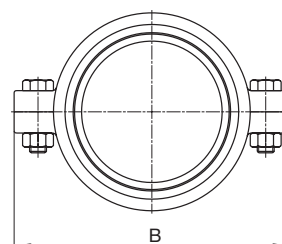
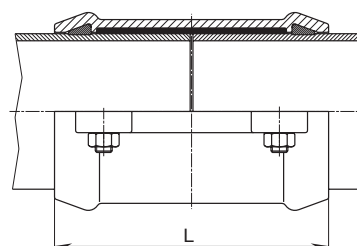
Material | Technical features

- **Body** made of ductile iron, epoxy powder coated
- **Grip ring** made of brass
- **Bolts** made of stainless steel
- **Seal** made of elastomer

Split collar

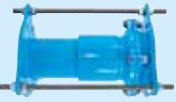
No. 9240

(pipe - pipe)



DN	ØPVC-Pipe	B	L	Weight
50	63	144	164	3,4
65	75	156	170	3,5
80	90	174	174	4,5
100	110	196	195	5,3
125	125	214	195	7,0
125	140	228	220	7,3
150	160	254	245	10,5
200	200	308	316	19,5
200	225	332	350	21,0

Order No.	Version	MOP (PN)	Dimension/DN ØPVC-Pipe									
			50	65	80	100	125	125	150	200	200	
			63	75	90	110	125	140	160	200	225	
9240	Split collar	10										

Page D 2	Fittings Double flanged piece Double flanged taper, double flanged elbows 45° Double flanged elbows 90°, all flanged short tee All flanged tee	Page D 2/1 Page D 2/2 Page D 2/3 Page D 2/4	
Page D 3	Fittings All flanged crosses, all flanged short cross Double flanged duck foot bends 90° <i>Fittings SYSTEM 2000</i> <i>SYNOFLEX end cap, flanged duck foot bends</i>	Page D 3/1 Page D 3/2 Page F 4/2 Page E 4/2	
Page D 4	Fittings Wafer tee piece, space ring, angle piece adjustable Flap valve	Page D 4/1 Page D 4/2	
Page D 5	Hawle Vario Hawle-Vario - the innovative flexible fitting	Page D 5/1	
Page D 6	Dismantling piece PN 10 PN 16 PN 25	Page D 6/1	

Fittings

Accessories

Bolts
Flat gaskets

Page M 4/4
Page M 7/1

Technical information

Tightening torques for flange assembly Page R 3/1

Application examples



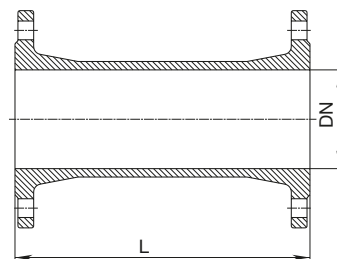
Design features

- According to EN 545
- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	L	Weight	
50	200	6,5	
	400	10,0	
65	200	8,0	
	400	13,0	
80	100	7,6	
	150	8,5	
	200	9,2	
	300	10,8	
	400	12,4	
	500	14,1	
	600	15,7	
	800	19,0	
100	1000	22,0	
	100	8,6	
	150	9,8	
	200	10,7	
	300	12,7	
	400	14,8	
	600	18,8	
	800	23,0	
125	1000	27,0	
	200	13,3	
	600	24,0	
150	1000	34,5	
	150	20,0	
	200	16,5	
	300	19,7	
	400	23,0	
	600	29,5	
	800	36,0	
200*	1000	42,5	
	200	20,0	
	600	41,5	
	800	50,5	
250	1000	60,0	
	200	22,1	
	300	38,0	
	400*	44,0	
	500*	50,5	
	600	56,3	
	800	68,5	
300	1000	81,0	
	300	49,5	
	400*	57,0	
	500	65,0	
	600	73,0	
	800	88,5	
	1000	104,0	

Double flanged pipe

FF-piece
No. 8500



* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

Fittings

Design features

- According to EN 545
- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	DN 1	L	Weight
65	50	200	9,0
80	50	200	7,4
	65	200	8,2
100	50	200	8,1
	65	200	8,8
	80	200	9,5
125	65	200	19,0
	80	200	10,7
	100	200	11,4
150	80	200	12,2
	100	200	16,7
	125	200	14,1
200*	100	300	18,6
	125	300	20,0
	150	300	22,0
250	100	300	22,0
	150	300	27,0
	200*	300	30,5
250*	125	300	41,0
	100	300	35,0
300	150*	300	37,0
	200*	300	35,5
	250*	300	41,0
350	300	300	64,0
400	350*	300	81,0
500	300	600	110,0
	400	600	129,0

Design features

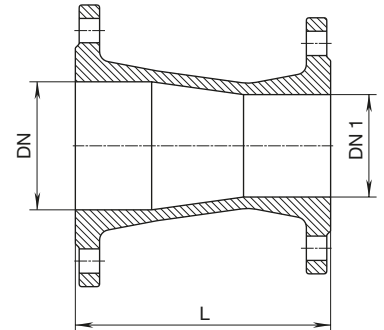
- According to EN 545
- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	b	Weight
50	150	9,0
65	165	12,0
80	130	9,5
100	140	11,5
125	150	14,6
150	160	18,7
200*	180	27,5
250	350	80,0
300	400	112,0

Double flanged taper

FFR piece

No. 8550



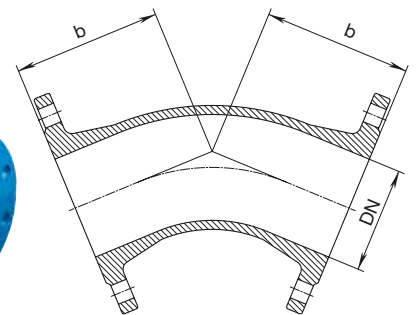
* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

* Only PN 16 available

Double flanged elbows 45°

45° FFK piece

No. 8540



* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

Design features

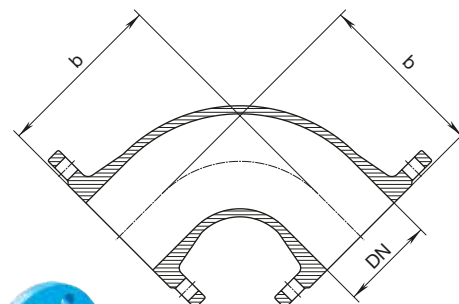
- According to EN 545
- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	b	Weight	
50	150	9,3	
65	165	9,7	
80	165	10,5	
100	180	12,9	
125	200	16,5	
150	220	20,5	
200*	260	31,0	
250*	350	50,0	
300	400	70,0	

Double flanged elbows 90°

90° Q piece

No. 8530



* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

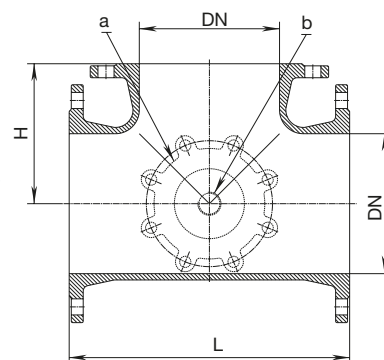
Design features

- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10
- On request: No. 8741 with vertical outlet DN 100 (surcharge)

DN	L	H	Weight	
200*	400	200	47,0	
250*	460	230	66,0	
300*	520	260	86,0	

All flanged short tee

No. 8740



* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

Fittings

Design features

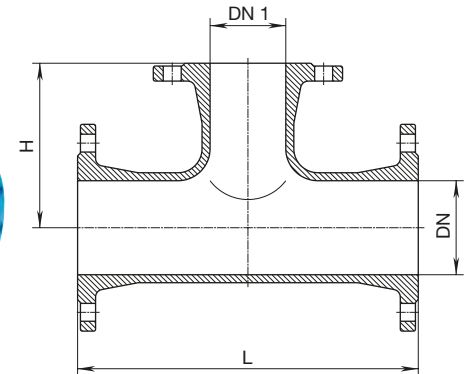
- According to EN 545
- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	DN 1	L	H	Weight	
50	50	300	150	12,5	
65	50	330	157	15,5	
	65		165	16,5	
80	50	330	160	14,0	
	65		165	14,7	
	80		165	16,0	
100	50	360	170	17,6	
	65		170	17,4	
	80		175	18,6	
	100		180	19,4	
125	50	400	185	30,0	
	65		195	31,0	
	80		190	23,0	
	100		195	24,0	
	125		200	25,5	
150	50	440	200	39,0	
	65		207	39,0	
	80		205	29,0	
	100		210	30,0	
	125		215	31,0	
	150		220	33,8	
200*	80	520	235	42,5	
	100		240	43,0	
	125		245	44,0	
	150		250	46,5	
	200		260	50,0	
250	80*	700	270	71,0	
	100*		275	75,0	
	125		280	93,0	
	150*		300	81,0	
	200*		325	76,5	
	250*		350	83,0	
300	80*	800	290	92,0	
	100		300	94,0	
	150*		325	101,0	
	200		350	102,0	
	300*		400	114,0	
300*	250	800	400	120,0	
400	200	900	350	162,0	
	250		350	170,0	
500	150*	1000	400	245,0	
	500		500	278,0	

All flanged tee

T-piece

No. 8510



* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

* Only PN 16 available

Design features

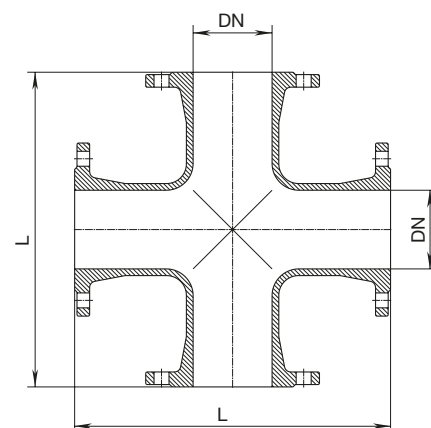
- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	L	Weight	
80	330	27,0	
100	360	34,0	
150	440	46,0	
200*	520	59,7	
250*	700	135,0	
300*	800	186,0	

* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

All flanged crosses

TT-piece
No. 8520



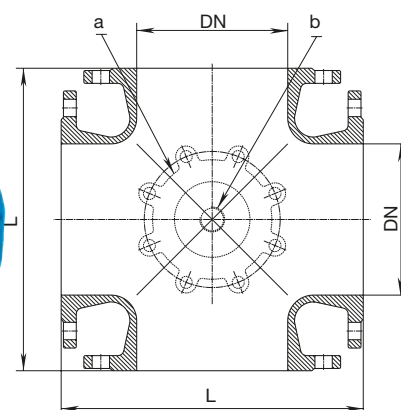
Design features

- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10
- On request: No. 8751 with vertical connection DN 100 (additional price)

DN	L	Weight	
200*	400	60,0	
250*	460	91,0	
500	830	333,0	

All flanged short cross

TT-piece
No. 8750



* Also available drilled to EN 1092-2 | PN 16
(Please specify on order)

Fittings

Design features

- According to EN 545
- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	b	c	Weight	
50	150	95	8,4	
80	165	110	13,4	
100	180	125	16,8	
150	220	160	29,5	
200	260	190	46,0	

Design features

- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

DN	b	Length (b1)	c	Weight	
80	165	365	110	17,8	

Design features

- Working pressure MOP (PN) 16
- Made of ductile iron, epoxy powder coated
- Flange size according to EN 1092-2 | PN 16
- Standard drilling to EN 1092-2 | PN 10

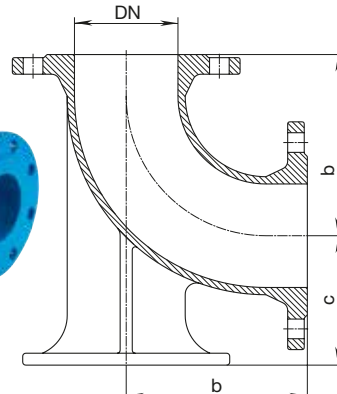
DN	a	b	c	d	Weight	
80	260	165	110	90	16,5	
100	280	180	125	110	19,5	

Double flanged duck foot bend 90°

N-pieces

No. 5049

No. 5044

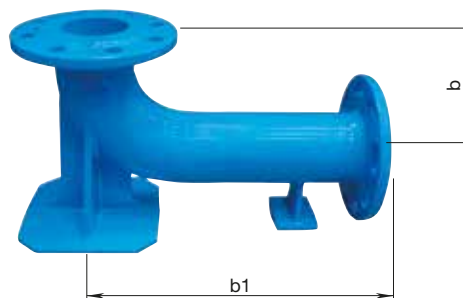


DN 80 and DN 100 also available with loose flange No. 5044

Double flanged duck foot bend long

N-pieces

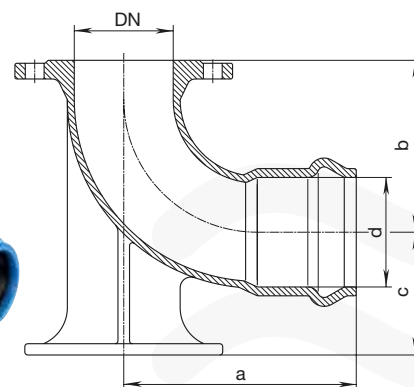
No. 5049L



Flanged duck foot bend with PVC socket 90°

EN-KS-pieces

No. 5046



Order No.	DN	Thread	Length	Weight	
8580	80	1 1/4"	60	3,8	
	100		60	4,9	
	150		60	8,0	



Wafer tee piece

No. 8580

- With one threaded outlet ISO 228
- MOP (PN) 16, made of grey ductile iron, epoxy powder coated

Order No.	DN	Thread	Length	Weight	
8590	100	1 1/4"	60	4,36	
	125		60	6,3	
	150		60	7,8	
	250		60	19,2	



Wafer tee piece

No. 8590

- With two threaded outlets ISO 228
- MOP (PN) 16, made of grey ductile iron, epoxy powder coated

Order No.	DN	Thread	Length	Weight	
8591	100	ZAK 46	70	3,35	
	150		70	5,28	
	200		70	6,75	
	250		70	9,9	
	300		70	12,0	
	400		70	16,6	



Wafer tee piece ZAK

No. 8591

- With two ZAK 46 outlets
- MOP (PN) 16, made of ductile iron, epoxy powder coated

Order No.	DN	
8615	50	
	65	
	80	
	100	
	125	
	150	
	200	



Spacer ring

No. 8615

- For length equalisation between flanges
- Steel, epoxy powder coated
- Give face-to-face length "L" on order

Order No.	DN	Weight	
8730	50	1,5	
	65	1,7	
	80	0,35	
	100	2,0	
	125	0,5	
	150	0,6	
	200	0,9	
	250	1,26	
	300	1,8	



Angle piece adjustable 0° – 8°

No. 8730

- Made of steel with vulcanised elastomer
- No flat gasket needed

DN	MOP (PN)	Width	
		Min.	Max.
50	10 – 40	11	22
65		11	25
80		11	30
100	10 – 16	11	32
125		11	35
150		11	39
200		12	46
250	10	12	52
300		14	55

Fittings

Flap valve, PN 10 | PN 16

Design features

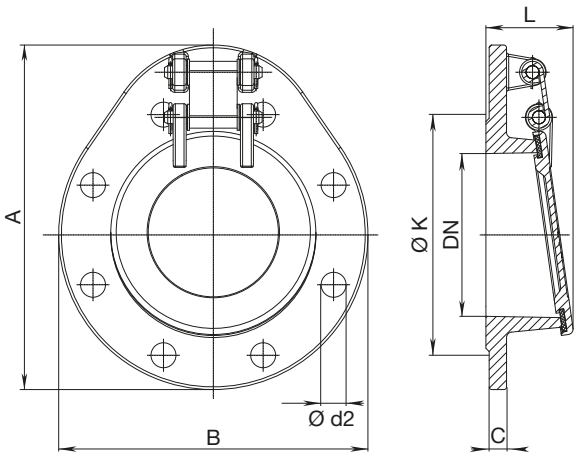
- Flange connection according to EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 — DN 600 please specify on order
- Double hinged for improved sealing performance
- Gasket on the cover for noise reduction and durability of the coating

Material | Technical features

- **Body and cover** made of ductile iron, epoxy powder coated
- **All connections** made of stainless steel
- **Seal** made of elastomer
- **External joint** prevents any obstruction thanks to the free outflow

No. 9930
DN 50 — 150

DN 200 — 600



Ill.: symbol

DN	MOP (PN)	A	B	L	ØK	C	Bolts		Weight	
							Qty	Ød2		
50	10/16	177,5	165	56	125	19	8	19	3,05	
65		197,5	185	56	145	19	8	19	3,67	
80		245,0	200	68	160	19	8	19	5,17	
100		267,5	220	73	180	19	8	19	5,88	
125		295,0	250	78	210	19	8	19	7,81	
150		317,5	285	80	240	19,0	8	23	9,2	
200	10	406	340	130	295	20,0	8	23	23,0	
	16				295		12	23		
250	10	462	405	138	350	22,0	12	23	30,0	
	16				355		12	28		
300	10	518	455	142	400	24,5	12	23	37,0	
	16				410		12	28		
400	10	658	580	177	515	24,5	16	28	68,0	
	16				525		16	31		
500	10	793	715	207	620	26,5	20	28	112,0	
	16				650		20	34		
600	10	918	840	217	725	30,0	20	31	160,0	
	16				770		20	37		

Larger dimensions on request

Hawle-Vario

The innovative flexible fitting, PN 10 | PN 16



Design features

- Hawle Vario is a flanged, telescopic fitting with integrated ball-and socket joint, permitting bending to all sides up to an angular deflection of 10 degrees
- Flange size according to EN 1092-2 | PN 16, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 please specify on order - other standards on request
- Hawle Vario will be fixed in the installed position by means of a tension lock assembly
- Combines the function of an FF-piece, an adjustable elbow piece and a fitting and extension piece
- HHawle Vario saves time and has numerous application possibilities

No. 8010S

No. 8011S



Material | Technical features

- **Body** made of ductile iron, epoxy powder coated
- **Locking ring, bolts, nuts and washers** made of stainless steel
- **Tension lock** made of stainless steel
- **O-rings** made of elastomer

Order No.	Set-version	MOP (PN)	Dimensions/DN				
			50	80	100	150	200
8010S	short	16					
8011S	long						

Application example

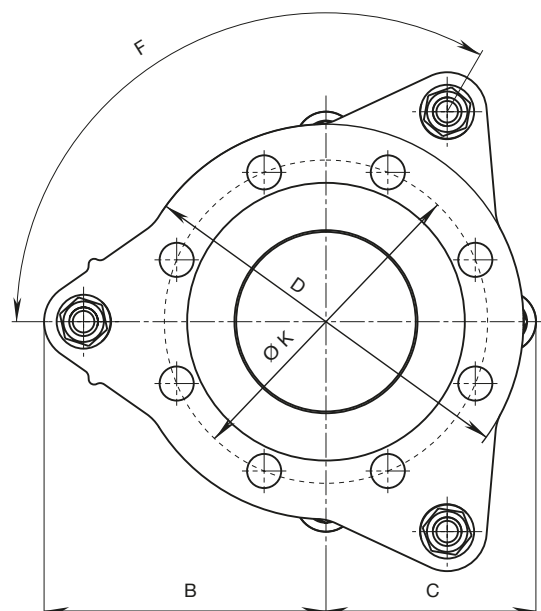
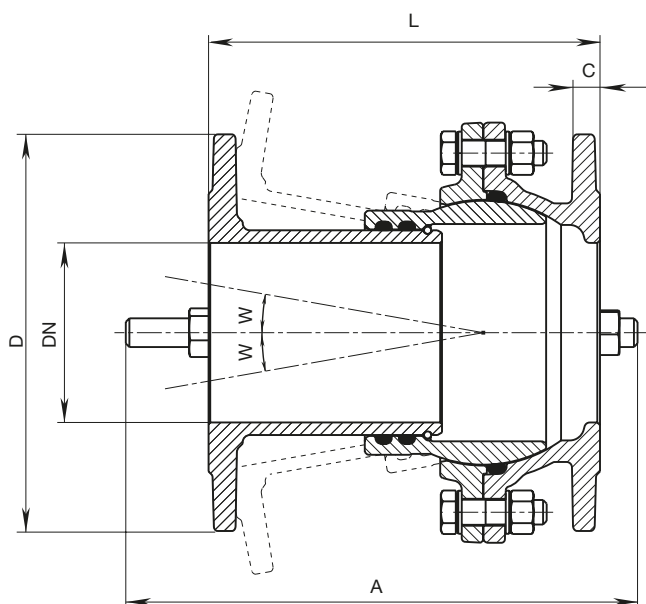


Hawle-Vario

The innovative flexible fitting, PN 10 | PN 16

No. 8010S Short version, with tension lock

No. 8011S Long version, with tension lock



DN	MOP (PN)	Version	Adjustment range L	A	B	C	D	F	C	Ø K	Angle W	Weight
50	16	short	150 — 207	285	130	87	165	3 x 120°	16	125	0 — 10°	8,9
		long	207 — 323	415								11,8
80		short	150 — 214	285	147	107	200	3 x 120°	16	160	0 — 10°	14,3
		long	214 — 344	415								16,85
100		short	150 — 216	285	157	117	220	3 x 120°	16	180	0 — 10°	16,2
		long	216 — 350	415								18,9
150		short	175 — 250	330	190	190	285	4 x 90°	18	240	0 — 10°	27,0
		long	250 — 408	480								29,3
200	10/16	short	195 — 290	360	229	229	340	4 x 90°	20	297	0 — 8°	44,8
		long	282 — 450	530								52,2

Dismantling piece

PN 10 | PN 16 | PN 25

Design features

- Double flanged fitting, which allows longitudinal adjustment in flanged pipe systems
- Easy assembly and disassembly of flanged connections
- Continuous threaded bars, therefore, no additional mounting screws necessary
- Length adjustment range: (see table) +/- 25 mm
- Flange in accordance with and drilled to EN 1092-2 | PN 10, PN 16, PN 25 (PN 40 on request)

Material | Technical features

- 1,2 **Flanges** made of ductile iron, epoxy powder coated
* made of steel, epoxy powder coated
- 3 **Retaining flange** made of steel, epoxy powder coated
- 4 **Sealing ring** made of elastomer
- 5 **Threaded bar** made of galvanized steel
- 6 **Bolts** made of galvanized steel

Pressure rating PN 10

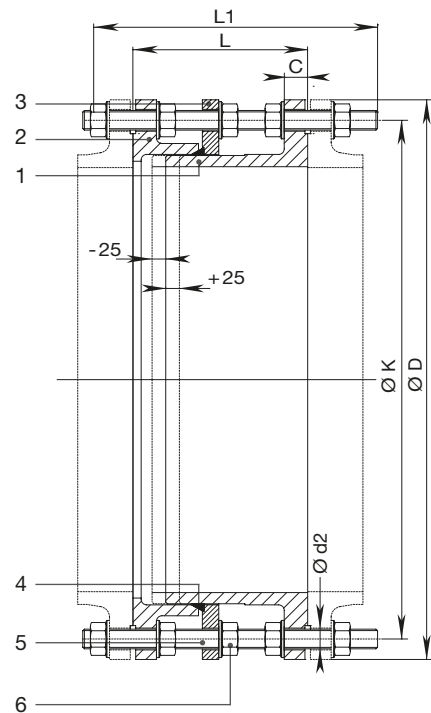
DN	MOP (PN)	L	L1	ØD	ØK	C	Bolts Qty.	Ø d2	Weight
50*	10	180	280	165	125	19,0	4	19	11,0
65*		180	280	185	145	19,0	4	19	13,0
80		200	330	200	160	19,0	8	19	17,0
100		200	330	220	180	19,0	8	19	20,0
125		200	330	250	210	19,0	8	19	24,0
150		200	330	285	240	19,0	8	23	30,0
200		200	330	340	295	20,0	8	23	42,0
250		220	360	405	350	22,0	12	23	62,0
300		220	360	460	400	24,5	12	23	67,0
350		230	360	505	460	24,5	16	23	85,0
400		230	370	565	515	24,5	16	28	105,0
450		250	390	615	565	25,5	20	28	131,0
500		260	390	670	620	26,5	20	28	155,0
600		260	410	780	725	30,0	20	31	225,0
700		260	410	895	840	32,5	24	31	300,0
800		290	460	1015	950	35,0	24	34	361,0
900		290	460	1115	1050	37,5	28	34	400,0
1000		290	500	1230	1160	40,0	28	37	516,0
1100		300	480	1355	1270	53,5	32	37	830,0
1200		320	520	1455	1380	45,0	32	41	895,0
1300		370	630	1585	1490	59,0	32	42	1172,0
1400		360	560	1675	1590	46,0	36	44	1194,0
1500		380	590	1785	1700	47,0	36	44	1560,0
1600		390	600	1915	1820	49,0	40	50	1436,0

Dismantling piece No. 9810



Order No.	MOP (PN)	Dimensions/DN																							
		50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600*
9810	10																								
	16																								
	25																								

*Larger dimensions or pressure rating of PN 40 on request



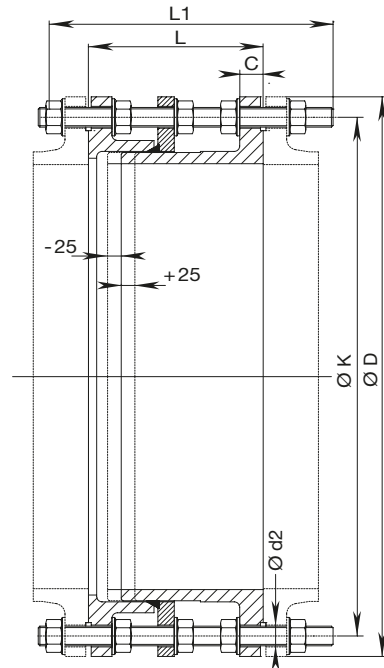
Dismantling piece

PN 10 | PN 16 | PN 25

No. 9810

Pressure rating PN 16

DN	MOP (PN)	L	L1	Ø D	Ø K	C	Bolts		Weight
							Qty.	Ø d2	
50	16	180	280	165	125	19,0	4	19	11,0
65		180	280	185	145	19,0	4	19	13,0
80		200	330	200	160	19,0	8	19	17,0
100		200	330	220	180	19,0	8	19	20,0
125		200	330	250	210	19,0	8	19	24,0
150		200	330	285	240	19,0	8	23	30,0
200		200	330	340	295	20,0	12	23	45,0
250		230	370	405	355	22,0	12	28	66,0
300		250	410	460	410	24,5	12	28	84,0
350		260	410	520	470	26,5	16	28	107,0
400		270	430	580	525	28,0	16	31	142,0
450		270	430	640	585	30,0	20	31	177,0
500		280	440	715	650	31,5	20	34	200,0
600		300	500	840	770	36,0	20	37	305,0
700		300	500	910	840	39,5	24	37	321,0
800		320	520	1025	950	43,0	24	41	469,0
900		320	520	1125	1050	46,5	28	41	535,0
1000		340	560	1255	1170	50,0	28	44	698,0
1100		340	560	1355	1270	53,5	32	44	830,0
1200		360	600	1485	1390	57,0	32	50	1070,0
1300		370	630	1585	1490	59,0	32	50	1172,0
1400		380	630	1685	1590	60,0	36	50	1270,0
1500		380	610	1820	1710	62,5	36	57	1560,0
1600		400	700	1930	1820	65,0	40	57	1705,0



No. 9810

Pressure rating PN 25

DN	MOP (PN)	L	L1	Ø D	Ø K	C	Bolts		Weight
							Qty.	Ø d2	
100	25	220	340	235	190	19,0	8	23	32,0
125		220	370	270	220	19,0	8	28	43,0
150		230	370	300	250	20,0	8	28	52,0
200		230	370	360	310	22,0	12	28	76,0
250		250	410	425	370	24,5	12	31	108,0
300		250	410	485	430	27,5	16	31	129,0
350		270	480	555	490	30,0	16	34	196,0
400		280	500	620	550	32,0	16	37	212,0
450		280	480	670	600	34,5	20	37	281,0
500		300	500	730	660	36,5	20	37	290,0
600		320	520	845	770	42,0	20	41	389,0
700		340	530	960	875	46,5	24	44	505,0
800		360	600	1085	990	51,0	24	50	690,0
900		380	600	1185	1090	55,5	28	50	920,0
1000		400	650	1320	1210	60,0	28	57	1257,0
1200		450	720	1530	1420	69,0	32	57	1870,0

Hawle-Synoflex

Restraint multi-range connection for all common types of pipes

**Page
E 2**

Hawle-Synoflex

Restraint multi-range connection for all common types of pipes
Assembly instructions

Page E 2/1
Page E 2/2

**Page
E 3**

Synoflex connector

SYNOFLEX connector
SYNO2000 connector
System 2000 connector

Page E 3/1
Page E 3/2
Page F 4/2



**Page
E 4**

Synoflex

SYNOZAK connector
SYNOFLEX end cap
SYNOFLEX flange
SYNOFLEX BAIO Spigot end

Page E 4/1
Page E 4/1
Page E 4/2
Seite E 4/3



further product with Synoflex socket

EMS-piece SYNOFLEX - BAIO spigot end

Page G 6/5



Hawle-Synoflex

Restraint multi-range connection for all common types of pipes

Accessories

Bolts	Page M 4/4
Adjustable elbow piece "fully rubberised"	Page D 4/1
Washers	Page M 4/4
Flat gasket	Page M 7/1

Spare parts

Hawle-Synoflex grip ring complete, restraint	Page P 6/1
Hawle Synoflex grip ring complete	Page P 6/1

Technical information

Tightening torques for flange assembly	Page R 3/1
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Application examples



Hawle-Synoflex

Restraint multi-range connection for all common types of pipes

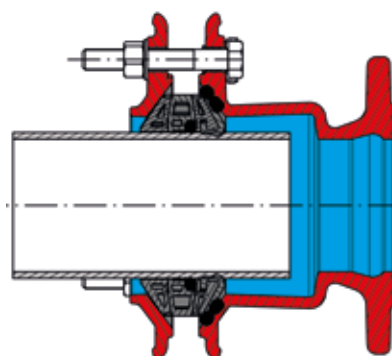
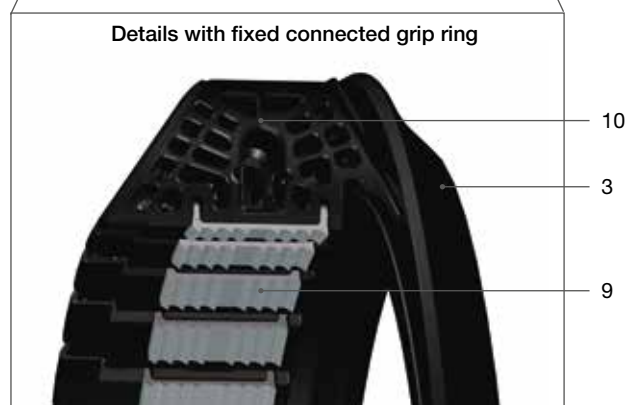
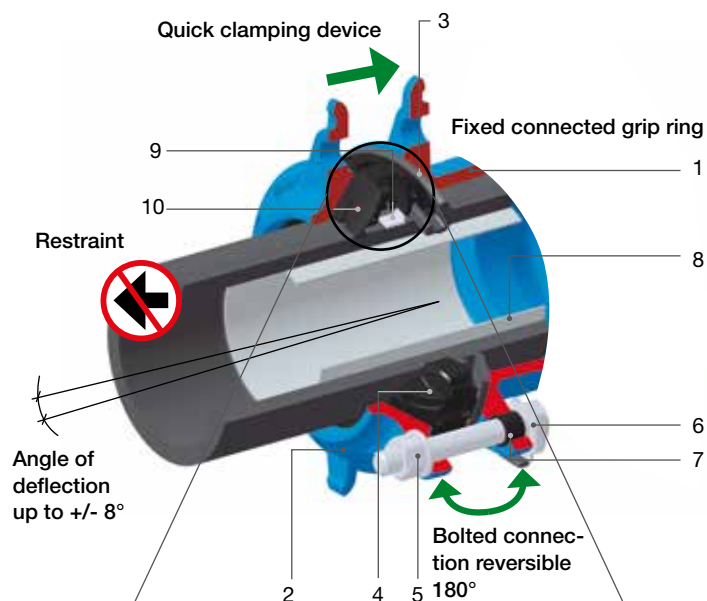


Design features

- **Hawle-Synoflex socket system** provides high quality restraint connections to all common water supply pipes. The patented Hawle-Synoflex secures steel, DCI, PE/PVC and AC* pipes with fully corrosion protected connections
- According to EN 14525
- Flexible gasket
- Flexible Synoflex grip ring
- Tension locks corrosion resistant. Each support element in the grip ring holds a tension lock element
- Bolts reversible 180°
- Angle compensation up to $\pm 8^\circ$ (pressure test according to EN 14525)
- For restraint connections with PE pipes ($PE \geq SDR 17$), a support liner No. 6035 is required
- Support element and grip element are pressed into one another. The grip elements does not fall off as a result of inserting of pulling the pipe out

Material | Technical features

- 1|2 **Body (1)** and **lock ring (2)** made of ductile iron, epoxy powder coated
- 3 **Gasket** made of elastomer
- 4 **Synoflex grip ring** made of POM support elements (9) and steel grip elements (10)
- 5 **Bolts and nuts** made of stainless steel, coated against rubbing
- 6 **Bolt head locking anchor** made of steel, with protective cap made of elastomer
- 7 **Spacer bush** made of plastic
- 8 **Support liner** made of stainless steel (No. 6035)
- 9 **Grip element** made of steel
- 10 **Support element** made of POM

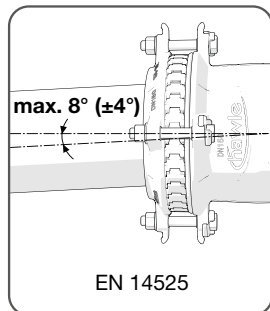
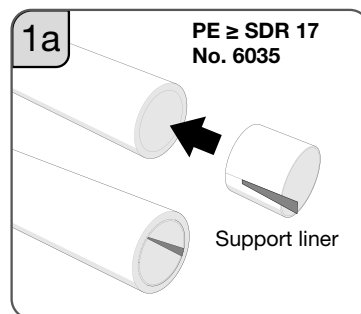
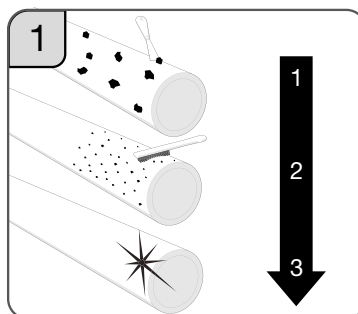
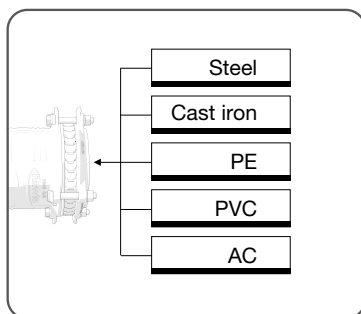
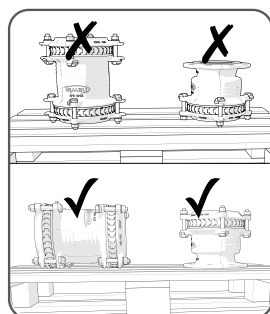


Steel | ductile iron | PE/PVC | AC*

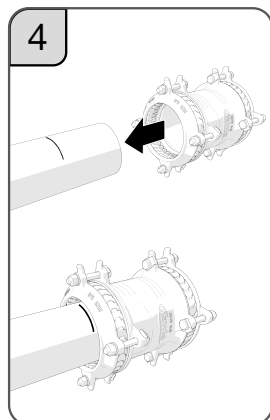
*Warning! A restraint connection between Synoflex and asbestos cement pipes can't be confirmed. Removal of the grip ring is not necessary.

Hawle-Synoflex DN 40 – 300 PN16, DN 350 – 400 PN10

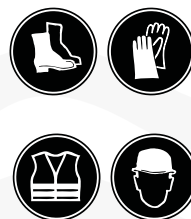
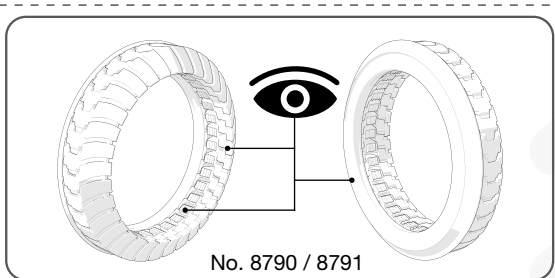
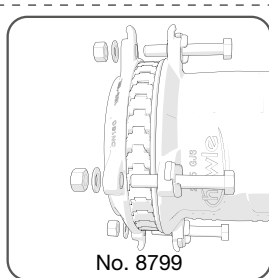
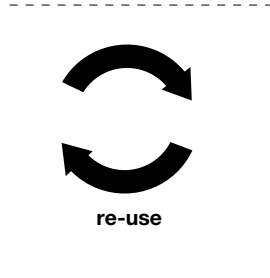
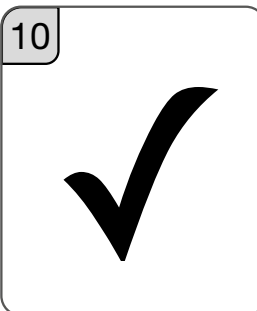
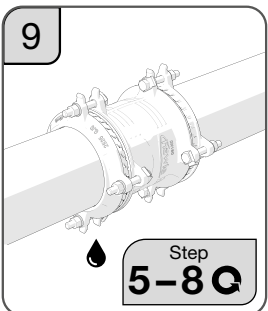
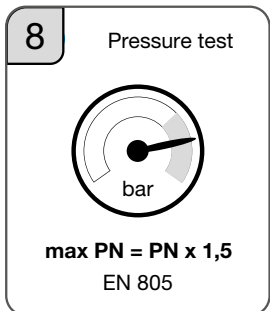
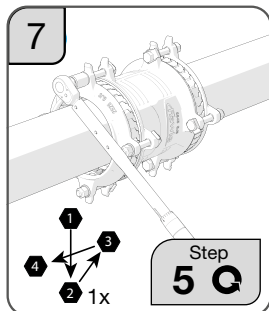
Assembly instructions



2	DN [mm]	40	50	65	80	100	125	150	200	225	250	300	350	400
	DN [inch]	1½"	2"	2½"	3"	4"	5"	6"	8"	9"	10"	12"	14"	16"
	Ø external [mm]	46 – 58	56 – 71	71 – 88	85 – 105	104 – 132	131 – 160	155 – 192	198 – 230	230 – 260	265 – 310	313 – 356	352 – 396	398 – 442
	Temp. [°C]	0 – 40 °C												
	[bar]	16 bar												10 bar



3	EN 14525	X	MIN. [mm]	55	55	53	45	39	62	56	56	74	73	137	82	80
			MIN. [mm]	84	84	85	86	119	143	126	143	149	155	161	171	181
			MAX. [mm]	85	91	97	103	136	161	143	161	161	167	180	190	200
4																
5																
			Screw	M12	M12	M12	M12	M16	M16	M16	M16	M20	M20	M20	M20	M20
			[mm]	19	19	19	19	24	24	24	24	30	30	30	30	30
			GJS/Steel [Nm]	50	70	70	70	90	110	110	110	130	130	130	150	150
			PE/PVC/AC [Nm]	40	60	60	60	70	90	80	80	110	110	110	120	120

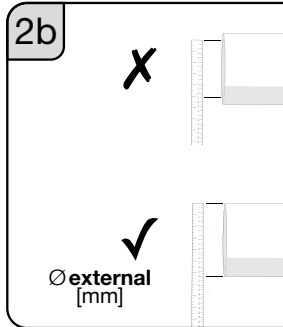
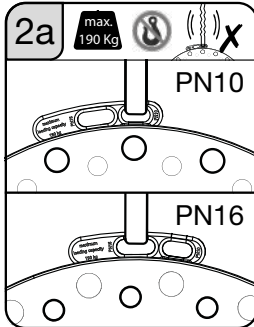
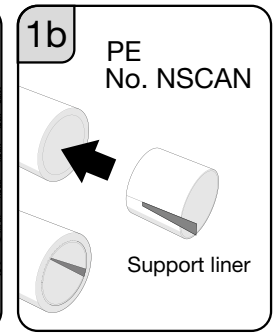
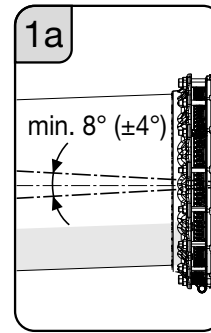
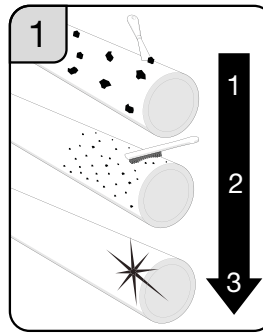
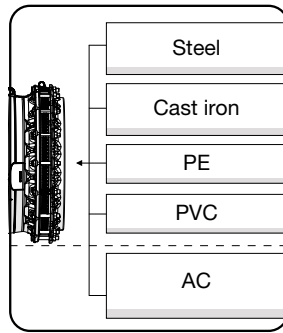
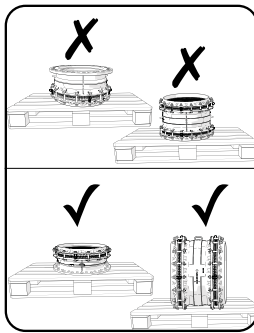


Hawle-Synoflex products may be reused. Hawle suggests that you exchange the bolts and nuts. After dismantling, please check the Synoflex grip ring for possible damage. If you detect any damage at the grip ring the Synoflex ring must be replaced.

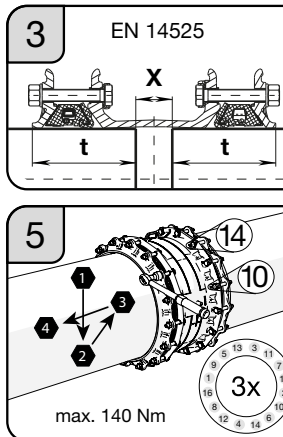
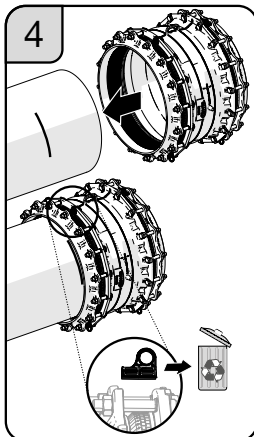
Hawle-Synoflex DN 250 – 300 PN16



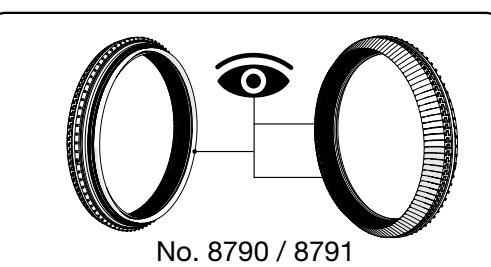
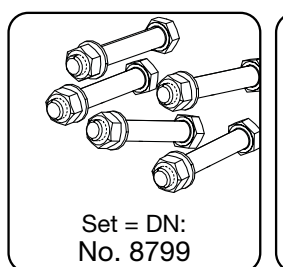
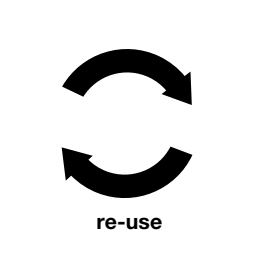
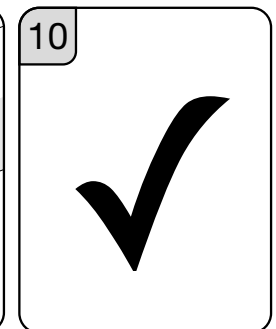
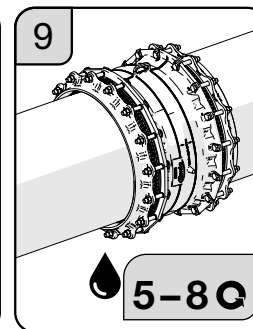
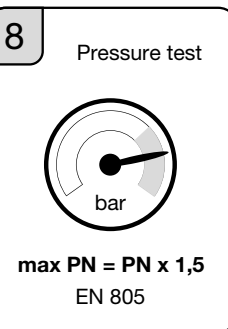
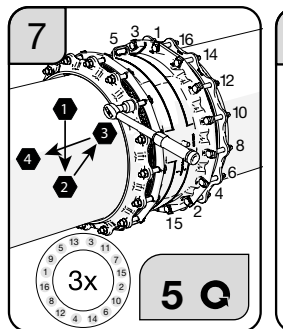
Assembly instructions



DN [mm]	350	400	450	500	600
DN [inch]	14"	16"	18"	20"	24"
Ø external [mm]	352 – 396	398 – 442	448 – 485	498 – 535	602 – 640
Temp. [°C]	0 – 40 °C				
[bar]	16 bar				



EN 14525	X	MIN. [mm]	83	86	104	108	115
t		MIN. [mm]	229	222	233	237	240
t		MAX. [mm]	267	257	255	258	264



Hawle-Synoflex products may be reused. Hawle suggests that you exchange the bolts and nuts. After dismantling, please check the Synoflex grip ring for possible damage. If you detect any damage at the grip ring the Synoflex ring must be replaced.

Notes

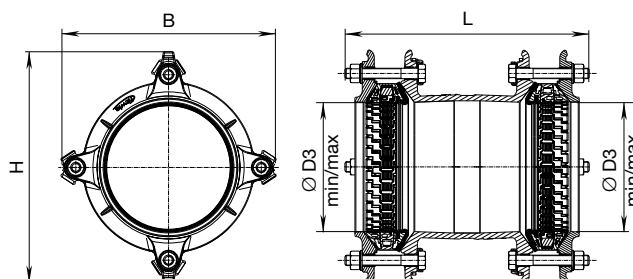


Design features

- Hawle-Synoflex socket system provides high quality restraint connections to all common water supply pipes. The patented Hawle-Synoflex secures steel, DCI, PE/PVC and AC* pipes with fully corrosion protected connections



Synoflex connector No. 7974



Application example



Socket 1 DN	Socket 2 DN	MOP (PN)	Socket 1				Socket 2				L	Weight
			B	H	Ø Pipe D3 min/max	Bolts	B	H	Ø Pipe D3 min/max	Bolts		
40	40	10/16	130	157	46 – 58	3 x M 12-80	130	157	46 – 58	3 x M 12-80	243	3,9
50	50		141	170	56 – 71	3 x M 12-80	141	170	56 – 71	3 x M 12-80	254	4,9
65	65		156	187	71 – 88	3 x M 12-80	156	187	71 – 88	3 x M 12-80	264	5,6
80	65		171	204	85 – 105	3 x M 12-80	156	187	71 – 88	3 x M 12-80	274	6,6
80	80		171	204	85 – 105	3 x M 12-80	171	204	85 – 105	3 x M 12-80	270	6,9
100	80		226	260	104 – 132	3 x M 16-100	171	204	85 – 105	3 x M 12-80	312	9,7
100	100		226	260	104 – 132	3 x M 16-100	226	260	104 – 132	3 x M 16-100	332	12,5
125	100		250	290	131 – 160	3 x M 16-110	226	260	104 – 132	3 x M 16-100	355	14,3
125	125		250	290	131 – 160	3 x M 16-110	250	290	131 – 160	3 x M 16-110	357	14,9
150	100		315	350	155 – 192	4 x M 16-110	226	260	104 – 132	3 x M 16-100	361	16,7
150	125		315	350	155 – 192	4 x M 16-110	250	290	131 – 160	3 x M 16-110	375	17,4
150	150		315	350	155 – 192	4 x M 16-110	315	350	155 – 192	4 x M 16-110	367	19,3
200	150		326	371	198 – 230	6 x M 16-120	315	350	155 – 192	4 x M 16-110	431	41,8
200	200		326	371	198 – 230	6 x M 16-120	326	371	198 – 230	6 x M 16-120	406	30,2
225	200		361	410	230 – 260	6 x M 20-130	326	371	198 – 230	6 x M 16-120	450	61,3
225	225	10	361	410	230 – 260	6 x M 20-130	361	410	230 – 260	6 x M 20-130	429	41,0
250	200		408	464	265 – 310	6 x M 20-130	326	371	198 – 230	6 x M 16-120	468	42,4
250	225		408	464	265 – 310	6 x M 20-130	361	410	230 – 260	6 x M 20-130	454	50,2
250	250		408	464	265 – 310	6 x M 20-130	408	464	265 – 310	6 x M 20-130	441	48,6
300	250		510	510	313 – 356	8 x M 20-130	408	464	265 – 310	6 x M 20-130	473	61,4
300	300		510	510	313 – 356	8 x M 20-130	510	510	313 – 356	8 x M 20-130	460	60,0
350	300		550	550	352 – 396	12 x M 20-150	510	510	313 – 356	8 x M 20-130	494	71,3
350	350		550	550	352 – 396	12 x M 20-150	550	550	352 – 396	12 x M 20-150	502	82,6
400	350		592	592	352 – 396	12 x M 20-150	592	592	352 – 396	12 x M 20-150	596	153
400	400		596	596	398 – 442	12 x M 20-150	550	550	352 – 396	12 x M 20-150	526	94,5
400	400		596	596	398 – 442	12 x M 20-150	596	596	398 – 442	12 x M 20-150	523	95,4
400	400		628	628	398 – 442	12 x M 20-150	628	628	398 – 442	12 x M 20-150	592	166
450	450		672	672	448 – 485	14 x M 20-150	672	672	448 – 485	14 x M 20-150	595	189
450	450		672	672	448 – 485	14 x M 20-150	672	672	448 – 485	14 x M 20-150	595	189
500	500		721	721	498 – 535	14 x M 20-150	721	721	498 – 535	14 x M 20-150	593	214
500	500		721	721	498 – 535	14 x M 20-150	721	721	498 – 535	14 x M 20-150	593	214
600	600		825	825	602 – 640	16 x M 20-150	825	825	602 – 640	16 x M 20-150	594	233
600	600		825	825	602 – 640	16 x M 20-150	828	828	602 – 640	16 x M 20-150	594	233

* Warning! A restraint connection between Synoflex and asbestos cement pipes can't be confirmed.
Removal of the grip ring is not necessary.

Hawle-SYNO2000 connector

Ideal for repairs and network expansions with plastic pipes

Design features

- Specially developed for repairs or expansion of existing networks using plastic pipes
- Easy assembly and disassembly (superiour mechanical connection, no welding, minimal assembly and disassembly forces)
- The SYNO2000 can be used as a sliding connector upon removal of the pipe stop ring (Note: when used as a sliding connector chamfer the pipe firstly)

System 2000 socket

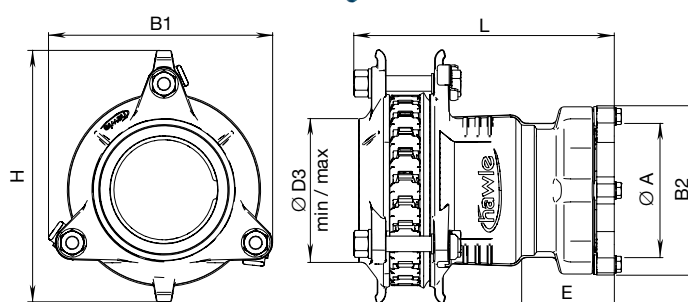
- Using a lip seal ring for sealing the pipe allows for easier insertion of the pipe into the System 2000 socket
- The pipe restraining system is required for pushing the pipe into the seal and chamfer with an appropriate tool
- For PE pipes with thin walls ($\geq$ SDR21) and low internal pressure we recommend using a support liner (see page M 6/2)
- Suitable for **PE pipes 80/100**, EN 12201, DIN 8074
- For **PVC pipes** according to EN ISO 1452-2

Synoflex socket (see Page E 2/1)

Material | Technical features

Body and lock rings	made of ductile iron, epoxy powder coated
Gasket	made of elastomer
System 2000 grip ring	made of brass

Syno2000 No. 7975



Application examples



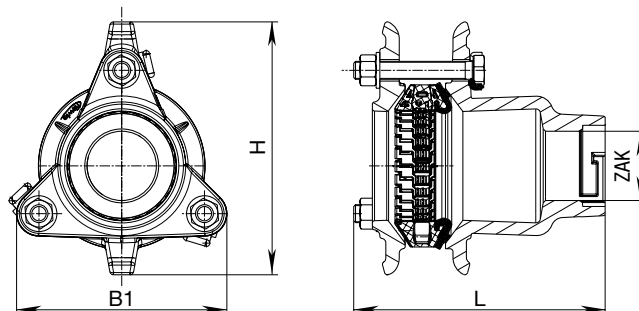
Synoflex socket DN	System 2000 socket	MOP (PN)	Synoflex socket				System 2000 socket			L	Weight
			B1	H	Ø Pipe D3 min/max	Bolts	E	B2	Ø Pipe A		
50	63	16	141	170	56 – 71	3 x M 12-80	80	124	63	238	4,0
80	90		171	204	85 – 105	3 x M 12-80	85	152	90	253	6,2
100	110		226	260	104 – 132	3 x M 16-100	85	172	110	285	10,2
	125						91	195	125	289	10,8
150	160		315	350	155 – 192	4 x M 16-110	105	236	160	326	17,2
	180						119	258	180	336	19,6
200	200		326	371	198 – 230	6 x M 16-130	129	284	200	342	30,0
	225						127	314	225	354	30,5
250	250		408	464	265 – 310	6 x M 20-130	148	347	250	406	45,8
	280						151	376	280	407	46,8
300	315	10	510	510	313 – 356	8 x M 20-130	178	422	315	444	68,0
350	355		550	550	352 – 396	12 x M 20-150	238	472	355	541	87,0
400	400		596	596	398 – 442	12 x M 20-150	261	490	400	573	112,0

Design features

- Combinable with all ZAK 46 and ZAK 69 products with ZAK spigots



SynoZAK connector No. 7976



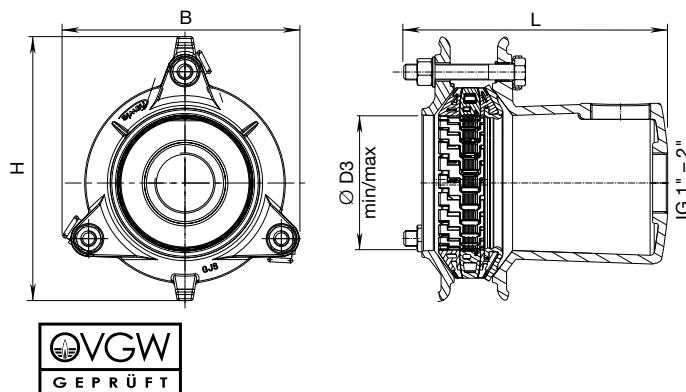
Synoflex socket DN	ZAK socket	MOP (PN)	Synoflex socket				L	Weight
			B1	H	Ø Pipe D3 min/max	Bolts		
40	46	16	130	157	46 – 58	3 x M12-80	162	2,4
50	46		141	170	56 – 71		168	2,7
50	69		141	170	56 – 71		176	3,3

Design features

- Optional with or without internal thread 1" - 2" axial or radial



Synoflex end cap No. 7980



DN	MOP (PN)	Socket				L	Weight
		B	H	Ø Pipe D3 min/max	Bolts		
50	16	141	170	56 – 71	3 x M 12-80	207	3,9
65		156	186	71 – 88	3 x M 12-80	223	5,2
80		171	204	85 – 105	3 x M 12-80	227	5,7
100		226	260	104 – 132	3 x M 16-100	256	8,8
125		250	290	131 – 160	3 x M 16-110	274	12,7
150		315	350	155 – 192	4 x M 16-110	279	15,2
200		326	371	198 – 230	6 x M 16-120	304	22,0
225		360	410	230 – 260	6 x M 20-130	321	31,3
250		407	464	265 – 310	6 x M 20-130	329	39,0
300		510	510	313 – 356	8 x M 20-130	339	50,3
350	10	550	550	352 – 396	12 x M 20-150	367	61,0
400		596	596	398 – 442	12 x M 20-150	502	85,0

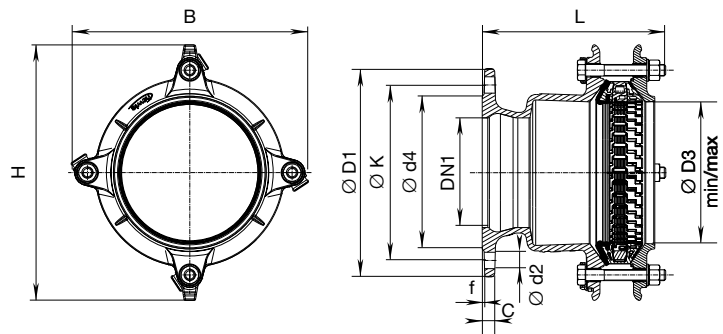
Hawle-Synoflex

Design features

- **Hawle-Synoflex socket system** provides high quality restraint connections to all common water supply pipes. The patented Hawle-Synoflex secures steel, DCI, PE/PVC and AC* pipes with fully corrosion protected connections
- Flange sized and drilled in accordance with EN 1092-2, PN 10 standard; EN 1092-2, PN 16 for DN 200 to DN 400 please specify on order - other standards on request



Synoflex flange No. 7994



Application examples



Flange DN1	Socket DN	MOP (PN)	Flange					Bolts (flange)			B	H	Ø Pipe D3 min/max	L	Bolts	Weight
			Ø D1	C	Ø K	Ø d4	f	Quantity	Thread	Ø d2						
50	50	10/16	165	18	125	98	4	4	M 16	19	141	170	56 – 71	204	3 x M 12-80	5,1
65	65		185	18	145	118	4	4	M 16	19	156	187	71 – 88	204	3 x M 12-80	6,1
80	65		198	18	160	133	4	8	M 16	19	156	187	71 – 88	205	3 x M 12-80	6,3
80	80		198	18	160	133	4	8	M 16	19	171	204	85 – 105	194	3 x M 12-80	7,1
80	100		198	18	160	133	4	8	M 16	19	226	260	104 – 132	263	3 x M 16-100	10,2
100	80		220	18	180	153	4	8	M 16	19	171	204	85 – 105	188	3 x M 12-80	7,4
100	100		220	18	180	153	4	8	M 16	19	226	260	104 – 132	225	3 x M 16-100	10,8
100	125		220	18	180	153	4	8	M 16	19	250	290	131 – 160	273	3 x M 16-110	13,2
125	100		250	14	210	183	4	8	M 16	19	226	260	104 – 132	235	3 x M 16-100	11,8
125	125		250	18	210	183	4	8	M 16	19	250	290	131 – 160	243	3 x M 16-110	13,2
125	150		250	14	210	183	4	8	M 16	19	315	350	155 – 192	271	4 x M 16-110	19,2
150	125		285	18	240	209	4	8	M 20	23	250	290	131 – 160	240	3 x M 16-110	14,0
150	150		285	18	240	209	4	8	M 20	23	315	350	155 – 192	251	4 x M 16-110	16,7
150	200		285	14	240	209	4	8	M 20	23	326	371	198 – 230	309	6 x M 16-120	25,9
200	150	10/16	340	15	295	264	4	8/12	M 20	23	315	350	155 – 192	261	4 x M 16-110	22,1
200	200	10/16	340	19	295	264	4	8/12	M 20	23	326	371	198 – 230	269	6 x M 16-120	24,8
200	225	10/16	340	19	295	264	4	8/12	M 20	23	361	410	230 – 260	310	6 x M 20-130	31,4
250	200	10/16	400	16	350/355	319	4	12	M 20/24	23/28	326	371	198 – 230	314	6 x M 16-120	30,8
250	250	10/16	400	20	350/355	319	4	12	M 20/24	23/28	408	464	265 – 310	325	6 x M 20-130	40,0
300	300	10/16	455	22	400/410	367	4	12	M 20/24	23/28	510	510	313 – 356	344	8 x M 20-130	53,0
350	350	10/16	523	26,5	460/470	429	4	16	M 20/24	23/28	592	592	352 – 396	395	12 x M 20-150	67,2
400	400	10/16	582	28	515/525	480	4	16	M 24/27	28/31	628	628	398 – 442	394	12 x M 20-150	96,0
450	450	10/16	642	30	565/585	548	4	20	M 24/27	28/31	672	672	448 – 485	396	14 x M 20-150	123
500	500	10/16	717	31,5	620/650	609	4	20	M 24/30	28/34	721	721	498 – 535	414	14 x M 20-150	161
600	600	10/16	840	36	725/770	720	5	20	M 27/33	31/37	825	825	602 – 640	421	16 x M 20-150	189
														412	16 x M 20-150	186,7

System 2000

For PE and PVC pipes

Page F 2	System 2000 valves Assembly instructions <i>E3</i> valve socket-socket for PE and PVC pipes <i>E3</i> valve flange-socket for PE and PVC pipes	Page F 2/2 Page F 2/3 Page F 2/5	
Page F 3	System 2000 Combi-T All socket tee with one integral <i>E3</i> valve for PE and PVC pipes	Page F 3/1	
Page F 4	System 2000 flange/fitting Flange for PE and PVC pipes Connector <i>Syno2000</i> connector Duck foot bend End cap	Page F 4/1 Page F 4/2 Page E 3/2 Page F 4/2 Page F 4/2	
Page F 5	System 2000 fittings All socket tee Double socket tee with flanged branch Bend 90°, 45°, 30°, 11°	Page F 5/1 Page F 5/1 Page F 5/2	

System 2000

For PE and PVC pipes

Accessories

Handwheels	Page M 4/1
Extension spindles	Page M 2/1
Surface boxes	Page M 3/1
Base plate	Page M 3/7
Adapter and coupling socket	Page M 4/3
Operating cap	Page M 4/1
Spindle extension	Page M 4/1
Actuator	Page M 4/3
Position indicator	Page M 4/2
Bolts	Page M 4/4
HAWAK headstock	Page M 5/1
Flat gasket	Page M 7/1
Direction indicator	Page M 4/1
Blanking cap	Page M 4/1
Mounting spray	Page M 7/2
Support liner	Page M 6/2

Technical information

Tightening torques for flange assembly	Page R 3/1
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Application examples

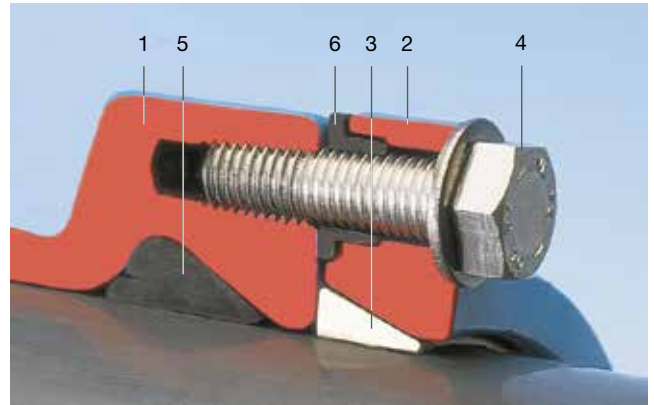


System 2000

For PE and PVC pipes

Design features

- Using a lip seal ring for sealing the pipe allows for easier insertion of the pipe into the System 2000 socket
- The pipe restraining system is required for pushing the pipe into the seal and chamfer with an appropriate tool
- For PE pipes with thin walls ($\geq$ SDR 21) and for vacuum pipelines, the use of a support liner is required
- Suitable for **PE pipes 80/100**, EN 12201, DIN 8074
- For **PVC pipes** according to EN ISO 1452-2



Push socket for PE- (PE 80/100, EN 12201, DIN 8074)
and PVC pipe (EN ISO 1452-2) - absolutely restraint

Material | Technical features

- 1,2 **Body (1) and lock ring (2)**
made of ductile iron, epoxy powder coated
- 3 **Grip ring** made of brass (from DN 300 bronze)
- 4 **Hexagonal bolts** made of stainless steel
- 5 **Lip seal ring** made of elastomer
- 6 **Spacer bushes** made of PE

Additional information

- **Assembly instructions:** see page F 2/2
- **Tensile test:** see page F 2/2
- **Tightening torque System 2000 - lock ring** see page R 3/1

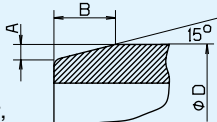
System 2000

Assembly instructions

Assembly instructions:

For flange adapters:
bolt the flange to the mating flange first

Chamfer the pipe -
use lubricant no. 3443
or no. 3444
(see M 7/2)
Do not use oil!
When used as overslider,
steeply chamfer the pipe

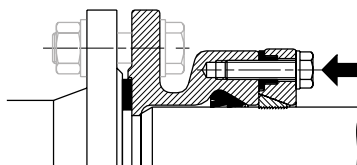
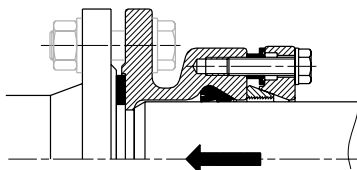
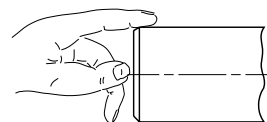
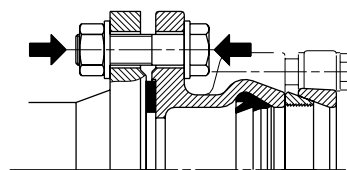


Ø D	A	B
63 – 140	2,5	10
160 – 180	4,0	16
200 – 225	5,0	20
250 – 315	7,0	25
355 – 450	9,0	35
500 – 630	10,0	40

Push the pipe to the end of the socket

For thin-walled PE pipes ($\geq$ SDR 21) and for vacuum pipelines,
the use of a support liner is required

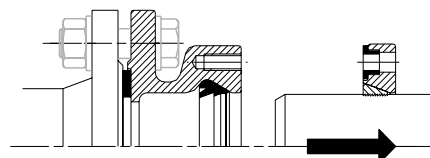
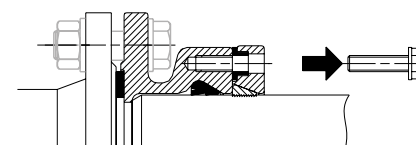
Tighten the lock ring bolts crosswise until lock ring is tight on bushes.
Max. tightening torque for lock ring see page R 3/1



Dismantling instructions:

Loosen and remove lock ring bolts

Twist and withdraw the pipe



Tensile test:

The following maximum tensile loads have been established

Test data: Hawle test laboratory tensile testing machine

HDPE pipe (PE 80) DIN 8074 - EN 12201 | PN 10

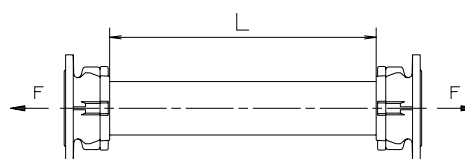
Data established by use of a support liner and under 0 bar internal pressure

Room temperature: 23 °C

Speed of tensile test (mm/min.): 0.1 x the free pipe length (L)

The table shows the maximum end load capacity of a System 2000 connection, compared with the effective theoretical loads in a PE pipeline with 10 bar

A System 2000 connection provides a safety factor of **4 to 6 times!**



Ø pipe	Theoretical tensile load - (kN*) at 10 bar internal pressure	Max. tensile load (kN*) established in tests
63	3,15	20
75	4,42	28
90	6,37	38
110	9,50	56
125	12,27	63
140	15,40	66
160	20,10	98
180	25,45	130
200	31,40	145
225	39,80	153
250	49,10	233
280	61,60	215
315	77,80	270

*1 kN = 100 kp

E3 Valve System 2000

E3 valve socket-socket for PE and PVC pipes,
DN 50 – 350, PN 10 | PN 16



Design features

- Resilient seated gate valve with smooth straight-through bore
- With sockets for PE and PVC pipes
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuator on the standard bonnet

Standard version: without handwheel and extension spindle

Special versions: on request

No. 4040E3



Suitable accessories

Suitable accessories: see page F 1/2

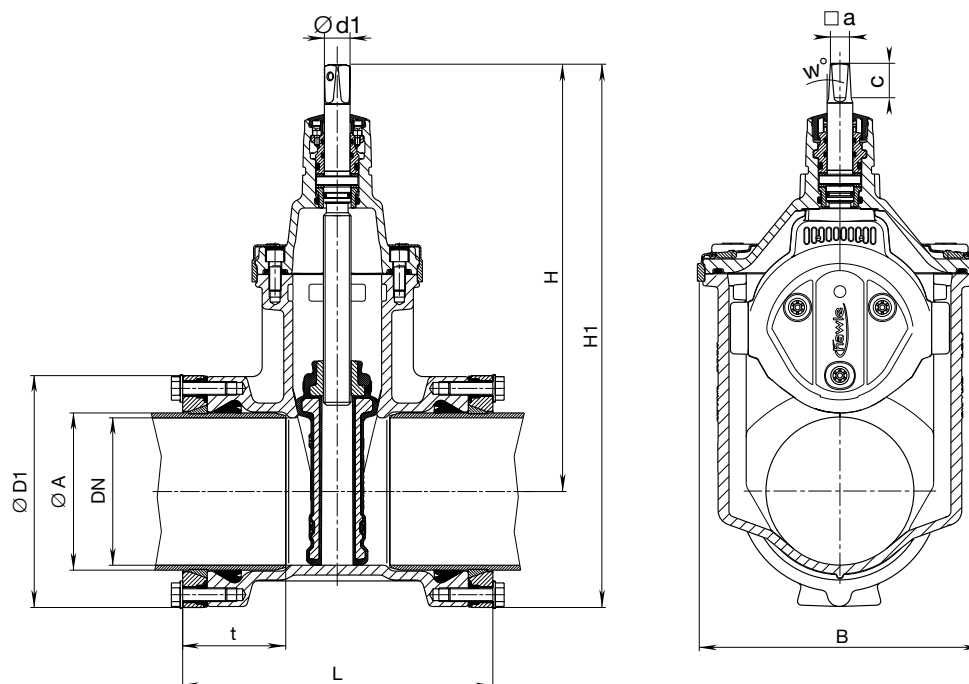
Handwheel:		No. 7800
Extension spindle:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surfaces boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:	No. 3481, No. 3482	
Operating cap:	No. 2156, No. 2157	
Spindle extension:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
HAWAK pillar:	No. 9894, No. 9895	

Order No.	MOP (PN)	Dimensions/DN Ø pipe A																	
		50	65	80	100	100	125	125	150	150	200	200	200	250	250	250	280	315	355
4040E3	16																		

E3 Valve System 2000

E3 valve socket-socket for PE and PVC pipes,
DN 50 – 350, PN 10 | PN 16

No. 4040E3



DN	Ø pipe A	Valve						Spindle				Weight
		Ø D1	t	H	H1	L	B	□ a	c	w°	Ø d1	
50	63	124	83	234	296	226	143	14,8	29,2	3°	20,5	9,0
65	75	138	85	305	374	240	180	17,3	33,8		24	14,0
80	90	152	88	313	389	242	180	17,3	33,8		24	16,0
100	110	174	88	343	430	252	213	19,3	37,2		24	20,0
	125	195	88	343	440	260	213	19,3	37,2		24	21,5
125	125	195	90	421	518	280	285	19,3	34,9		26	31,5
	140	212	96	421	527	278	285	19,3	34,9		26	32,5
150	160	236	108	433	551	316	285	19,3	34,9		26	37,5
	180	258	118	433	562	342	285	19,3	34,9		26	44,0
200	200	284	128	541	683	366	357	24,3	48		30	65,0
	225	314	130	541	698	366	357	24,3	48		30	67,5
	250	347	147	541	716	469	357	24,3	48		30	81,5
250	250	347	147	649	844	400	432	27,3	48		34	108,5
	280	376	150	649	858	420	432	27,3	48		34	116,0
300	315	422	176	731	964	472	518	27,3	48		34	172,0
	355	470	237	731	988	687	518	27,3	48		34	198,0
350	400	516	253	816	1075	744	603	27,3	48		34	250,0

E3 Valve System 2000

E3 valve flange-socket for PE and PVC pipes,
DN 50 – 300, PN 10 | PN 16



Design features

- Resilient seated gate valve with smooth straight-through bore
- With socket for high-tensile connection with PE and PVC pipes
- Flange sized according to EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16
DN 200 – 250 please specify on order - other standards on request
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuator on the standard bonnet

Standard version: without handwheel and extension spindle

Special versions: on request

No. 4041E3



Suitable accessories

Suitable accessories:

see page F 1/2

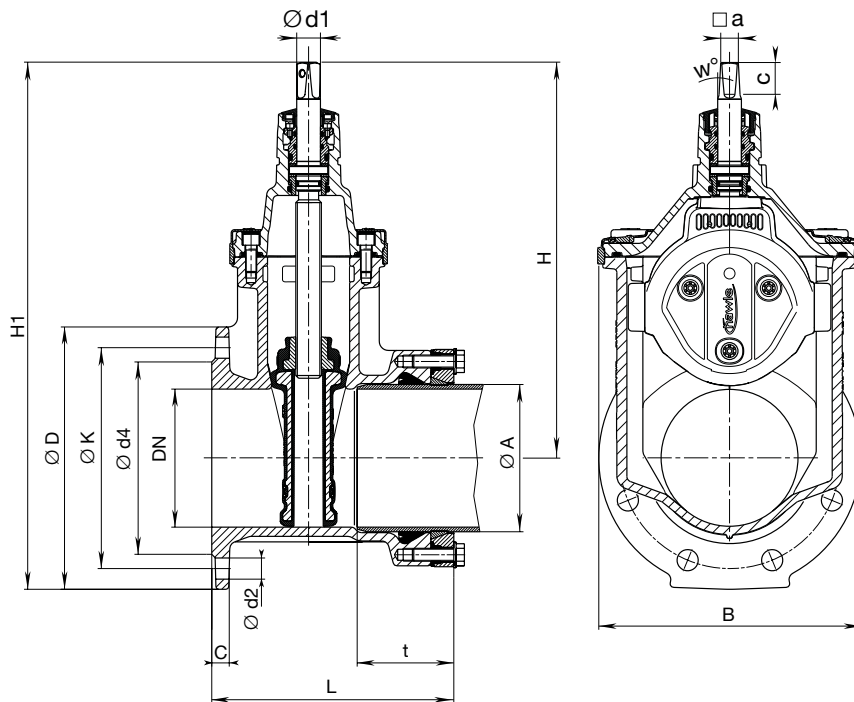
Handwheel:		No. 7800
Extension spindle:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surfaces boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:	No. 3481, No. 3482	
Operating cap:	No. 2156, No. 2157	
Spindle extension:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
Bolts:	No. 8810, No. 8830 No. 8840	
Flat gasket:	No. 3390, No. 3470	
HAWAK pillar:	No. 9894, No. 9895	

Order No.	MOP (PN)	Dimension/DN Ø pipe A													
		50 63	65 75	80 90	100 110	100 125	125 140	150 160	150 180	200 200	200 225	250 250	250 280	300 315	
4041E3	16														

E3 Valve System 2000

E3 valve flange-socket for PE and PVC pipes,
DN 50 – 300, PN 10 | PN 16

No. 4041E3



DN	MOP (PN)	Ø Pipe A	Flange			Bolts		Valve					Spindle				Weight
			ØD	C	ØK	Qty.	Thread	t	H	H1	L	B	□ a	c	w°	Ød1	
50	10 16	63	165	19	125	4	M 16	83	234	316	188	143	14,8	29,2		20,5	9,5
65	10 16	75	185	19	145	4	M 16	85	305	397	205	180	17,3	33,8		24	15,0
80	10 16	90	200	19	160	8	M 16	88	313	413	211	180	17,3	33,8		24	17,0
100	10 16	110	220	19	180	8	M 16	88	343	453	221	213	19,3	37,2		24	21,5
	10 16	125	220	19	180	8	M 16	88	343	453	225	213	19,3	37,2		24	22,0
125	10 16	140	250	19	210	8	M 16	96	421	546	239	285	19,3	34,9		26	32,0
150	10 16	160	285	19	240	8	M 20	108	433	576	263	285	19,3	34,9	3°	26	38,0
	10 16	180	285	19	240	8	M 20	118	433	576	276	285	19,3	34,9		26	40,5
200	10 16	200	340	20	295	8 12	M 20	128	541	711	298	357	24,3	48		30	63,0
	10 16	225	340	20	295	8 12	M 20	130	541	711	298	357	24,3	48		30	65,5
250	10 16	250	400	22	350 355	12	M 20 M 24	147	649	849	325	432	27,3	48		34	99,0
	10 16	280	400	22	350 355	12	M 20 M 24	150	649	849	335	432	27,3	48		34	106,0
300	10 16	315	455	24,5	400 410	12	M 20 M 24	176	731	959	371	518	27,3	48		34	158,0

E3 all Socket Tee System 2000

All socket tee with one integral E3 valve for PE and PVC pipes

Design features

- Resilient seated gate valve combined with socket T-piece
- With push sockets for high-tensile connection with PE and PVC pipes
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Easy retrofitting of position indicator and automatic actuator on the standard bonnet

Standard version: without handwheel and extension spindle

Special versions: on request

Suitable accessories

Suitable accessories: see page F 1/2

Handwheel:		No. 7800
Extension spindle:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surfaces boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:	No. 3481, No. 3482	
Operating cap:	No. 2156, No. 2157	
Spindle extension:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
HAWAK pillar:	No. 9894, No. 9895	

No. 4343E3

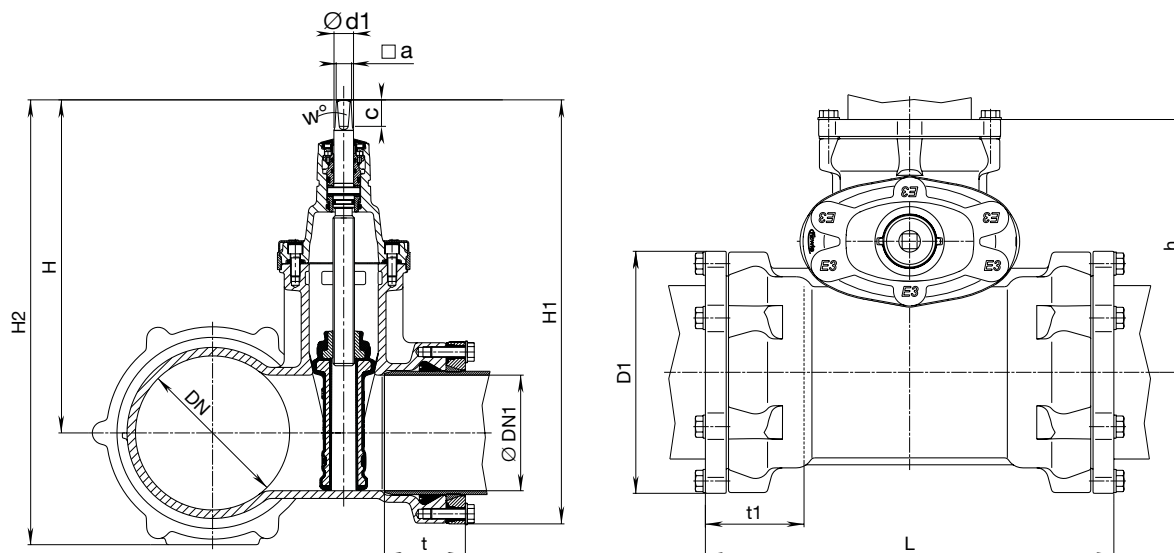


Order no.	MOP (PN)	Valve DN1 / Ø Pipe					
		DN/ Ø Pipe	50 63	80 90	100 110	100 125	150 160
4343E3	16	80/90					
		100/110					
		100/125					
		150/160					
		200/225					

E3 all Socket Tee System 2000

All socket tee with one integral E3 valve for PE and PVC pipes

No. 4343E3



DN Ø Pipe	DN 1 Ø Pipe	E3 Combi-T					Socket			Spindle				Weight
		H	H1	H2	t	L	t1	D1	h	a	c	w°	Ø d1	
80/90	80/90	313	389	389	88	310	88	150	201	17,3	33,8	3°	24	21,0
100/110	50/63	234	296	326	83	290	88	172	218	14,8	29,2		20,5	17,0
100/110	80/90	313	389	399	88	320	88	172	231	17,3	33,8		24	23,0
100/110	100/110	343	430	430	88	340	88	172	231	19,3	37,2		24	27,5
100/125	100/125	343	440	411	88	345	88	195	235	19,3	34,9		24	30,0
150/160	80/90	313	389	430	88	350	108	234	251	17,3	33,8		24	27,0
150/160	100/110	350	430	460	88	370	108	234	251	19,3	37,2		24	34,5
150/160	100/125	350	440	460	88	370	108	234	255	19,3	34,9		24	36,5
150/160	150/160	433	551	551	108	420	108	234	303	19,3	34,9		26	51,0
200/225	80/90	313	389	464	88	410	130	312	281	17,3	33,8		24	48,0
200/225	100/110	343	430	488	88	430	130	312	291	19,3	37,2		24	53,0

System 2000

Flange for PE and PVC pipes



Design features

- With push socket for high-tensile restraint connection with PE and PVC pipes
- Flange sized according to EN 1092-2, drilled according to EN 1092-2 | PN 10 standard; EN 1092-2 | PN 16 DN 200 to DN 600 please specify on order - other standards on request
- With integrated flange seal made of elastomer

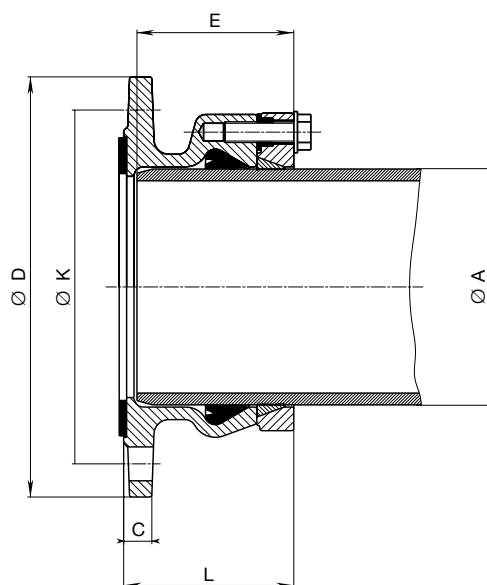
No. 0400



Order No.	MOP (PN)		Dimension/DN													
			50	60	65	80	100	125	150	200	250	300	400	500	600	
0400	16 (DN 50 – 150) 10 (DN 200 – 600)	Ø pipe A	63	63	63	63	90	110	140	200	250	315	400	500	630	
				75	75	75	110	125	160	225	280	355	450	560		
						90	125	140	180	250						
							160									

*DN 200 – 600, PN 16 on request

Flange DN	Ø pipe A	Ø D	Ø K	C	L	E	Bolts		Weight
							Qty	Thread	
50	63	165	125	19	90	80	4	M 16	3,7
60	63	175	135	19	90	80	4	M 16	3,8
60	75	175	135	19	92	82	4	M 16	4,0
65	63	185	145	19	90	80	4	M 16	4,3
65	75	185	145	19	92	82	4	M 16	4,6
80	63	200	160	19	90	80	8	M 16	4,7
80	75	200	160	19	92	82	8	M 16	4,8
80	90	200	160	19	95	85	8	M 16	5,5
100	90	220	180	19	95	85	8	M 16	6,8
100	110	220	180	19	95	85	8	M 16	6,3
100	125	220	180	19	97	87	8	M 16	6,6
125	110	250	210	19	95	85	8	M 16	7,7
125	125	250	210	19	97	87	8	M 16	7,8
125	140	250	210	19	103	93	8	M 16	10,3
125	160	250	210	19	145	110	8	M 16	11,5
150	140	285	240	19	103	93	8	M 20	11,3
150	160	285	240	19	115	105	8	M 20	10,5
150	180	285	240	19	125	115	8	M 20	12,5
200	200	340	295	20	135	125	8	M 20	16,8
200	225	340	295	20	138	128	8	M 20	18,0
200	250	340	295	20	225	145	8	M 20	27,0
250	250	400	350	22	155	145	12	M 20	28,4
250	280	400	350	22	158	148	12	M 20	29,0
300	315	455	400	25	184	174	12	M 20	43,0
300	355	455	400	25	277	237	12	M 20	63,0
400	400	565	515	25	242	230	16	M 24	76,5
400	450	565	515	25	302	260	16	M 24	84,0
500	500	715	620	32	365	346	20	M 24	144,0
500	560	715	620	32	450	372	20	M 24	167,0
600	630	840	725	36	459	399	20	M 27	256,0



System 2000

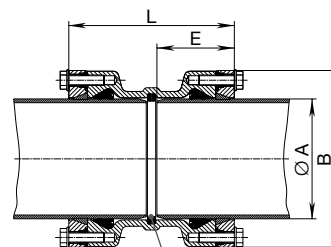
Fittings for PE and PVC pipes

Ø pipe A	L	E	B	Weight
63	171	80	124	3,6
75	175	82	138	4,3
90	181	85	152	5,8
110	181	85	172	6,5
125	185	87	193	8,2
140	197	93	210	9,0
160	221	105	236	11,8
180	241	113	258	19,0
200	261	125	284	24,0
225	265	128	314	28,0
250	300	145	347	34,0
280	306	148	376	40,5
315	358	174	422	62,5
355	464	237	472	98,0
400	506	237	520	112,0
450	544	262	566	142,0
500	720	350	675	216,0
560	770	375	730	273,0
630	823	400	820	358,0

DN	Ø pipe A	L	E	H	H1	Weight
80	90	210	85	110	165	12,7
80	110	223	85	110	165	14,2
100	110	223	85	125	180	16,0

Ø pipe A	L	E	B	Weight
63	106	80	124	2,7
75	138	82	138	3,2
90	141	85	152	4,6
110	159	85	172	6,4
125	162	87	193	6,1
140	169	93	210	7,7
160	180	105	236	8,6
180	192	113	258	11,7
200	203	125	284	14,5
225	207	128	314	16,5
250	225	145	347	20,5
280	228	148	376	25,0
315	254	174	422	33,5

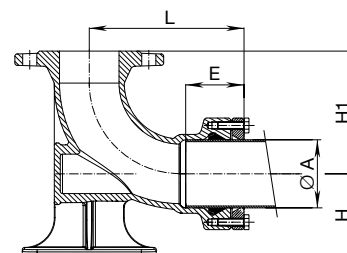
Connector No. 0430



Caution! When using as coupling valve: **remove stop ring** and steeply chamfer pipe (see assembly instructions)

Order No.	MOP (PN)	Dimension Ø pipe A									
		63	75	90	110	125	140	160	180	200	225
0430	16										
		250	280	315	355	400	450	500	560	630	

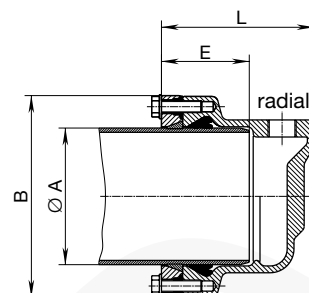
Duck foot bend No. 5045



Optionally with or without axial thread outlet 2", No. 5047

Order No.	MOP (PN)	Dimension/DN Ø pipe A		
		80 90	80 110	100 110
5045	16			

End cap No. 8075



Optionally with or without axial or radial thread outlet 1" – 2"

Order No.	MOP (PN)	Dimension Ø pipe A												
		63	75	90	110	125	140	160	180	200	225	250	280	315
8075	16													

System 2000

Fittings for PE and PVC pipes

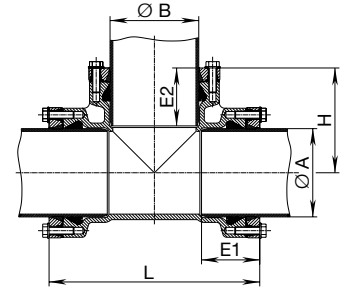


Ø pipe A	Ø B	L	E1	E2	H	Weight
63	63	236	83	83	118	6,0
75	75	250	85	85	125	7,7
90	90	268	85	85	134	9,0
110	63	240	85	80	140	7,7
	90	270	85	85	145	8,9
	110	290	85	85	145	9,2
125	90	274	87	85	150	10,4
	110	294	97	85	150	10,7
	125	306	90	90	153	15,0
140	90	288	93	85	157,5	12,2
	110	305	93	85	160	12,5
	140	344	96	96	167	19,0
160	90	310	105	85	170	14,0
	110	330	105	85	170	14,5
	125	380	107	90	170	19,8
	160	380	105	105	190	16,5
180	125	360	113	87	180	24,0
	180	415	113	113	207,5	29,0
200	200	460	128	128	230	35,0
225	90	356	128	85	200	29,5
	110	376	128	128	200	30,0
	225	488	130	130	244	55,0

All socket tee

No. 8515

equal and reduced side outlet



Order No.	MOP (PN)	Dimension Ø pipe										
		Ø pipe A	63	75	90	110	125	140	160	180	200	225
8515	16	Ø pipe B	63	75	90	63	90	90	90	125	90	
						90	110	110	110	200		110
						110	125	140	160	180	225	

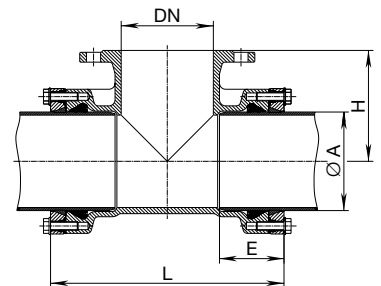
Ø pipe A	DN	L	E	H	Weight
63	50	236	83	100	8,0
75	65	250	85	110	9,0
90	80	268	85	140	11,0
110	50	240	85	150	10,0
	80	270	85	150	11,5
	100	290	85	150	12,0
125	80	274	87	160	14,0
	100	294	87	160	14,0
	80	288	93	170	15,0
140	100	308	93	170	15,5
	125	334	93	170	16,0
	80	300	105	180	16,5
160	100	320	105	180	17,0
	150	380	105	180	20,0
	80	310	113	200	23,0
180	150	415	113	200	31,0
	200	480	130	220	47,0
200	80	356	130	220	33,5
	100	376	130	220	33,0
	200	488	130	230	55,0

Double socket tee

with flanged branch

No. 8525

equal and reduced side outlet



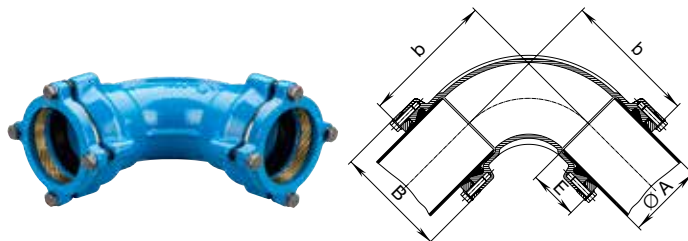
Order No.	MOP (PN)	DN	Ø pipe A									
			63	75	90	110	125	140	160	180	200	225
8525	16	DN	50	65	80	50	80	80	80	80	200	80
						80	100	100	100	150		100
						100		125	150	200		200

System 2000

Fittings for PE and PVC pipes

Ø pipe A	b				E	B	Weight			
	90°	45°	30°	11°			90°	45°	30°	11°
63	153	112			80	124	4,2	4,7		
75	170	120			82	138	5,5	5,0		
90	188	129	115	98	85	152	7,6	6,4	5,8	5,7
110	213	140	122	100	85	172	10,0	7,9	7,2	6,6
125	240	153			87	193	9,8	9,9		
140	246	159			93	210	15,0	13,1		
160	283	181	120	115	105	236	19,5	16,0	15,0	14,5
180	293	191			113	258	26,0	21,0		
200	353	221			125	284	37,5	30,0	27,7	
225	355	224	136		128	314	43,0	38,0	32,0	
250	427	263			145	347	57,0	47,0		
280	430	266			148	376	69,0	55,0		
315	506	313			174	422	100,0	80,0		

Bend
No. 8535 90°
No. 8545 45°
No. 8555 30°
No. 8557 11°



Order No.	MOP (PN)	Dimension Ø pipe A												
		63	75	90	110	125	140	160	180	200	225	250	280	315
8535 90°	16													
8545 45°														
8555 30°														
8557 11°														

Hawle - BAIO System

The easy and time-saving solution



Page G 2	Hawle - BAIO System The fastest connection in the pipeline system Accessories	Page G 2/1 Page G 2/2	
Page G 3	E3 valve - BAIO socket-socket For ductile iron, steel, PE and PVC pipes, PN 16	Page G 3/1	
Page G 4	E3 valve - BAIO socket-spigot For ductile iron, steel, PE and PVC pipes, PN 16	Page G 4/1	
Page G 5	E3 MMB valve - BAIO For ductile iron, steel, PE and PVC pipes, PN 16 E3 Combi-III valve - BAIO With vertical outlet for ductile iron, steel, PE and PVC pipes, PN 16	Page G 5/1 Page G 5/2	 
Page G 6	BAIO - Fittings Without gaskets	Page G 6/1	
	further product with BAIO connection <i>Synoflex BAIO spigot end</i>	Page E 4/3	

Hawle BAIO System

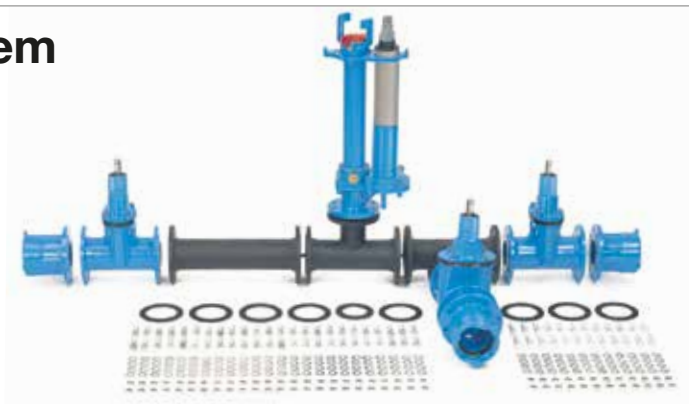
The easy and time saving solution

Accessories

Handwheels	Page M 4/1
Extension spindle "rigid" or "telescopic"	Page M 2/1
Surface box "rigid"	Page M 3/3
Surface box "telescopic"	Page M 3/1
Base plate	Page M 3/7
Adapter and coupling socket	Page M 4/3
Sealing cap	Page M 4/1
Actuator	Page M 4/3
Position indicator	Page M 4/2
Bolts	Page M 4/4
HAWAK pillar	Page M 5/1
Flat gaskets	Page M 7/1
Mounting spray	Page M 7/2
Support liner	Page M 6/2
BAIO-STOP traction protection	Page G 2/2
BAIO lip seal BLD	Page G 2/2
BAIO lip seal GKS	Page G 2/2
BAIO anti twist device	Page G 2/2

Application example

Flange system



307 parts

Hawle **BAIO System**



7 parts

Hawle BAIO System



The fastest connection in the pipeline system,
DN 80 — 300

Design features

- Savings in material, joints and piping costs
- Most pipe network situations can be handled
- Joints without flanges or bolts, socket connections allow angular deflection (max. 3°)
- Spigot ends with bayonet lugs for positive connection with the double-function BAIO socket and BAIO spigot (seal + grip)
- Applicable for ductile iron, steel and PE-/ PVC pipes
- Minimizes stock holding costs
- Hawle-STOP restraint connection for ductile iron and PE/PVC pipes
- High quality corrosion protection due to epoxy coating
- **All socket fittings are supplied without gasket.**
Please choose the suitable gasket for the pipe material used. The gaskets are provided with a lubricant
- Product range:
Gate valve
Combi valves
Fittings
Hawle below-ground hydrant



1 socket for 3 pipe types



Accessories

Restraints, accessories, assembly instructions



**Order No. NL78
BAIO-SIT**
with special grip ring
for ductile iron pipes
DN 250 to 300



**Order No. NL79
BAIO-SIT**
with grip ring
for PE-pipes
DN 250 to 300
(Use support liner
order no. 6035/6036)



**Order No. NL80
Hawle-Stop**
with segmented grip
ring
for ductile iron pipes
DN 80 to 200



**Order No. NL82
Hawle-Stop**
with grip ring
for PE-pipes
DN 80 to 200
(Use support liner
order no. 6035/6036)



**Order No. NL84
Hawle-Stop**
with carborundum
grip ring
for PVC-pipes
DN 80 to 200



**Order No. NL85
BAIO-Lip seal (BLD)**
PN 16, for easy
assembly onto ductile iron pipes
in BAIO sockets



Order No. 6035 Class SDR 17
Order No. 6036 Class SDR 11
support liner with wedge made of
stainless steel



**Order No. NL86
GKS-pipe-gasket**
PN 16, for use on PE/PVC pipes
in BAIO sockets



**Order No. NL8A
Anti twist device**
for BAIO spigot socket connection



**Order No. 8716
Tyton gasket**
for use on
ductile iron pipes
in BAIO sockets



**Order No. NL92
Dirt and anti-twist protection
DN 80**
for below-ground hydrants with BAIO
spigots

Assembly instructions

Assemble the Hawle Stop and grip ring over the chamfered end of the pipe. Insert the pipe end through the seal in the BAIO socket and slide the grip ring along the pipe to the face of the BAIO socket.

Ensure that the gripping location area is free from lubricant. Locate the Hawle-STOP on the external lug of the socket and rotate clockwise to lock.



E3 Valve - BAIO Socket-Socket



For ductile iron, steel, PE and PVC pipes,
DN 80 — 300, PN 16

Design features

- Resilient seated gate valve with smooth straight-through bore
- With socket for ductile iron pipes
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Suitable for cleaning with a cleaning pig
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet

No. 4500E3

Standard version: without handwheel and extension spindle
without gaskets

Suitable accessories

Suitable accessories: see page G 1/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Restraint clamp:	Hawle stop	No. NL80, NL78
		NL82, NL84
BAIO lip seal (BLD):	for DCI pipes	No. NL85
GKS pipe seal:	for PE/PVC pipes	No. NL86
Actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:	No. 3481, No. 3482	
Sealing cap:	No. 2156, No. 2157	
Spindle extension:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
HAWAK pillar:	No. 9894, No. 9895	

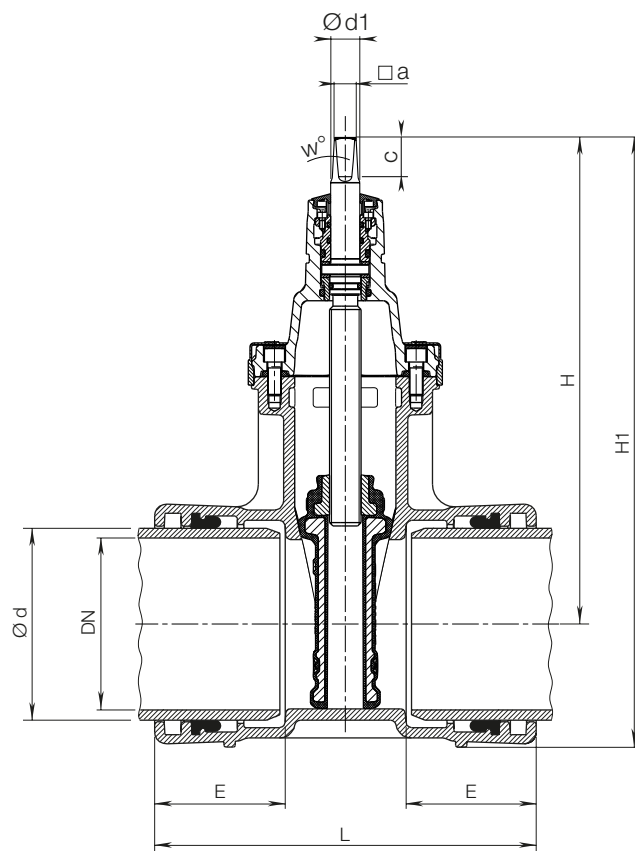


Order no.	MOP (PN)	Dimension/DN						
		80	100	125	150	200	250	300
4500E3	16							

E3 Valve - BA10 Socket-Socket

For ductile iron, steel, PE and PVC pipes, DN 80 – 300, PN 16

No. 4500E3



DN	Pipe Ød	Valve						Spindle				Hawle-Stop
		E	H	H1	L	max. width	Weight	□ a	c	w°	Ød1	Weight
80	98	110	313	433	300	180	18,0	17,3	35	3°	24	3,7
100	118	105	343	475	300	213	23,5	19,3	38		24	4,7
125	144	115	421	566	345	285	34,0	19,3	38		26	5,0
150	170	115	433	595	340	285	38,0	19,3	38		26	5,5
200	222	125	541	735	365	357	53,0	24,3	48		30	9,5
250	274	174	649	874	470	432	89,0	27,3	48		36	10,1
300	326	198	731	986	537	518	162,0	27,3	48		36	12,9

E3 Valve - BAIO Socket-Spigot



For ductile iron, steel, PE and PVC pipes,
DN 80 — 300, PN 16

Design features

- Resilient seated gate valve with smooth straight-through bore
- One side with spigot and with one side socket for ductile iron pipes
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Suitable for cleaning with a cleaning pig
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet

No. NL00E3

Standard version: without handwheel and extension spindle without gaskets



Suitable accessories

Suitable accessories: see page G 1/2

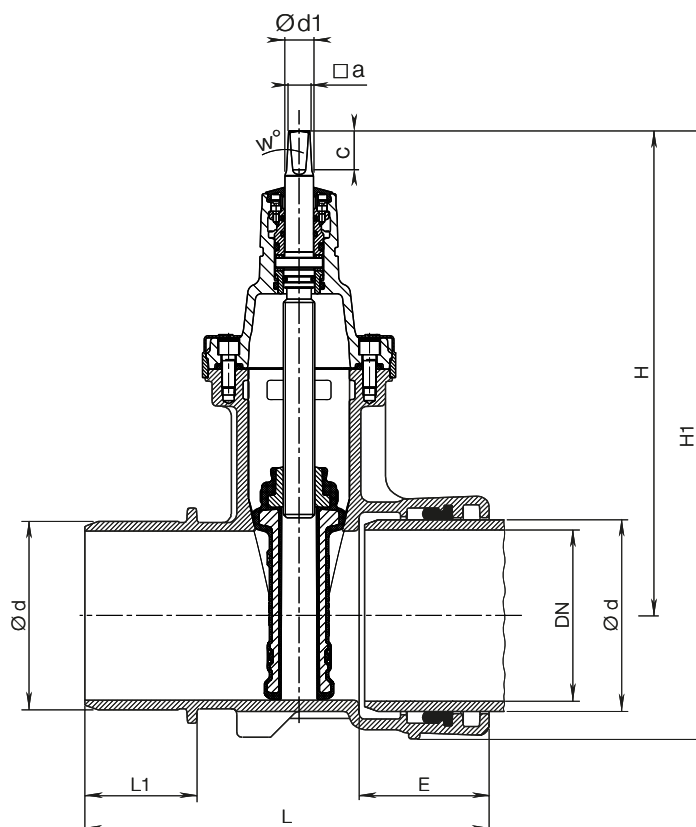
Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Restraint clamp:	Hawle stop	No. NL80, NL78
		NL82, NL84
BAIO lip seal (BLD):	for DCI pipes	No. NL85
GKS pipe seal:	for PE/PVC pipes	No. NL86
Actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:		No. 3481, No. 3482
Sealing cap:		No. 2156, No. 2157
Spindle extension:		No. 7820, No. 7825
Position indicator:		No. 2170E2/E3
HAWAK pillar:		No. 9894, No. 9895

Order no.	Version	MOP (PN)	Dimensions/DN						
			80	100	125	150	200	250	300
NL00E2	Socket-spigot	16							

E3 Valve - BA10 Socket-Spigot

For ductile iron, steel, PE and PVC pipes, DN 80 – 300, PN 16

No. NL00E3



DN	Ød	Valve					Spindle				Weight
		L	L1	E	H	H1	□ a	c	w°	Ød1	
80	98	295	82	110	313	433	17,3	35	3°	24	16,0
100	118	320	102	105	343	475	19,3	38		24	21,3
125	144	350	109	115	421	566	19,3	38		26	34,5
150	170	360	109	115	433	595	19,3	38		26	37,5
200	222	390	115	125	541	735	24,3	48		30	59,5
250	274	536	164	174	670	874	27,3	48		36	104,0
300	326	599	177	198	731	986	27,3	48		36	155,0

E3 MMB-Valve - BAIO

For ductile iron, steel, PE and PVC pipes, PN 16



Design features

- Resilient seated gate valve combined with socket T-piece
- With socket for ductile iron pipes
- One extension spindle for several dimensions
- Suitable for operation by automatic actuators
- Suitable for cleaning with a cleaning pig
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet

Standard version: without handwheel and extension spindle without gaskets

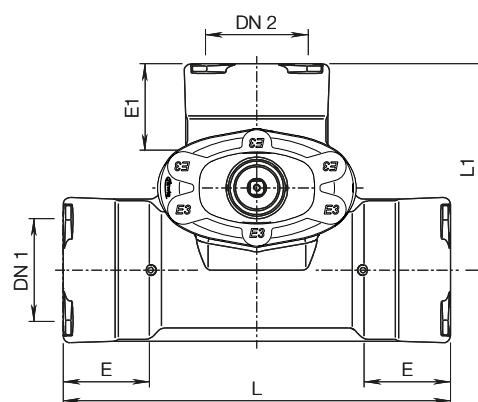
No. NL10E3



Suitable accessories

Suitable accessories: see page G 1/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:	rigid	No. 1750
	telescopic	No. 2050, No. 2051K
Restraint clamp:	Hawle stop	No. NL80, NL78 NL82, NL84
BAIO lip seal (BLD):	for DCI pipes	No. NL85
GKS pipe seal:	for PE/PVC pipes	No. NL86
Actuator:		No. 9920
Adapter for actuator (E2/E3 adapter):		No. 8630E2/E3
Base plate:		No. 3481, No. 3482
Sealing cap:		No. 2156, No. 2157
Spindle extension:		No. 7820, No. 7825
Position indicator:		No. 2170E2/E3
HAWAK pillar:		No. 9894, No. 9895



Order no.	MOP (PN)	Dimension/ DN 1					
		DN 2	80	100	125	150	200
NL10E3	16	80					
		100					
		125					
		150					
		200					

DN 1	DN 2	Valve				Spindle				Weight
		L	E	E1	L1	a	c	w°	Ød1	
80	80	410	105	105	220	17,3	35	3°	24	26,0
100	80	435	120	105	230	17,3	35		24	30,0
100	100	455	120	120	255	19,3	38		24	35,0
125	100	435	125	120	270	19,3	38		24	38,5
125	125	440	125	125	290	19,3	38		24	53,0
150	80	450	125	105	260	17,3	35		24	35,0
150	100	475	125	120	280	19,3	38		24	43,0
150	125	565	125	125	295	19,3	38		24	59,0
150	150	565	125	125	300	19,3	38		26	61,0
200	80	490	145	105	280	17,3	35		24	46,5
200	100	515	145	120	305	19,3	38		24	52,0
200	125	605	145	125	320	19,3	38		24	71,0
200	150	605	145	125	325	19,3	38		26	72,5
200	200	670	145	145	355	24,3	48		30	100,5

E3 Combi-III-Valve - BAIO

With vertical outlet for ductile iron, steel, PE and PVC pipes, PN 16

Design features

- Resilient seated gate valve combined with socket T-piece
- With socket for ductile iron pipes
- With vertical outlet BAIO DN 80 and two ZAK-46 sockets
- Space-saving design through short construction
- Save material, labour, transport and storage costs
- One extension spindle for several dimensions
- Suitable for cleaning with a cleaning pig
- Easy retrofitting of position indicator and automatic actuators on the standard bonnet

No. NL15E3

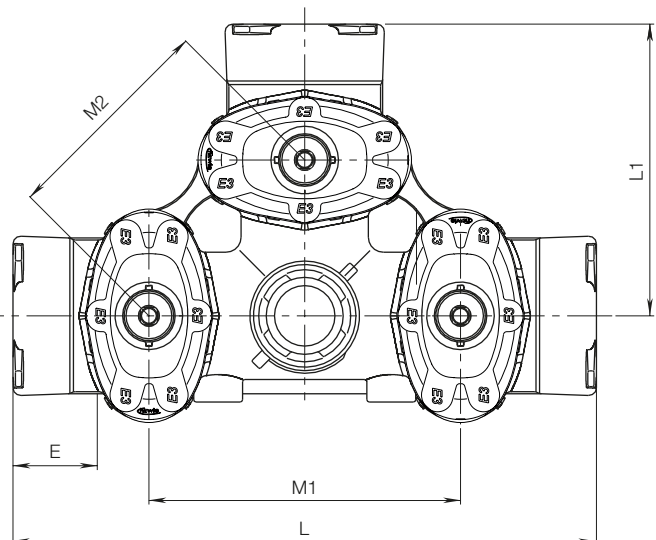


Standard version: without handwheel and extension spindle without gaskets

Suitable accessories

Suitable accessories: see page G 1/2

Handwheel:		No. 7800
Extension spindles:	rigid	No. 9000E2/E3
	telescopic	No. 9500E2/E3
Surface boxes:		No. 4550
Restraint clamp:	Hawle-Stop	No. NL80, NL78, NL82, NL84
BAIO lip seal (BLD):	for DCI pipes	No. NL85
GKS pipe seal:	for PE/PVC pipes	No. NL86
Sealing cap:	No. 2156, No. 2157	
Spindle extension:	No. 7820, No. 7825	
Position indicator:	No. 2170E2/E3	
Below-ground hydrant:	No. 5059, No. 5061	



Order no.	Version	MOP (PN)	Valve-Qty.	Dimension/DN		
				100	150	200
NL15E3	with 2x ZAK 46-socket	16	3			

DN	E3 Combi-III with vertical outlet						Spindle				Weight for valve quantity	
	Ø d	L	L1	E	M1	M2	□ a	c	w°	Ø d1	3	
100	118	691	346	105	365	258	19,3	38		24	88,00	
150	170	777	389	125	415	293	19,3	38	3°	26	142,00	
200	222	875	437,5	145	465	330	24,3	48		30	230,00	

BAIO - Fittings

Without gaskets

Design features

- BAIO-socket / BAIO-socket

DN	MOP (PN)	L	Weight
80	16	290	8,60
100		300	11,00
125		315	12,50
150		310	14,00
200		330	21,70

Design features

- BAIO socket / BAIO socket with two ZAK outlets

DN	Version	MOP (PN)	L	E	Weight
100	with ZAK-46 sockets	16	300	115	11,10
150			310	115	15,15
200			330	125	22,40
250	with ZAK-69 sockets	16	422	175	37,50

Design features

- BAIO socket / BAIO socket with two side outlets IT 2"

DN	Thread	MOP (PN)	L	E	Weight
100	2"	16	300	115	12,00
150			310	115	15,35
200			330	125	21,20

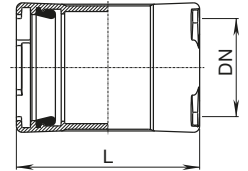
Design features

- BAIO socket / BAIO spigot, reduced

DN1	DN2	MOP (PN)	L	E	Weight
100	80	16	310	105	7,6
100	125		325	125	10,3
100	150		395	125	13,0
125	80		370	105	9,4
125	100		340	120	10,0
150	80		420	105	12,0
150	100		395	120	13,0
150	125		335	125	13,5
200	100		500	120	18,5
200	150		410	125	18,5
250	200		476	145	30,5
300	200		624	145	45,0
300	250		526	145	45,0

BAIO U-piece (socket piece)

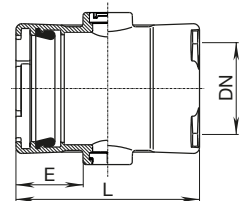
No. NL50



BAIO U-piece (socket piece)

with ZAK 46 or ZAK-69 outlets

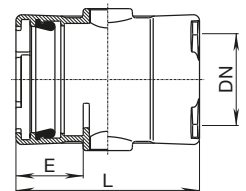
No. NL5A



BAIO U-piece (socket piece)

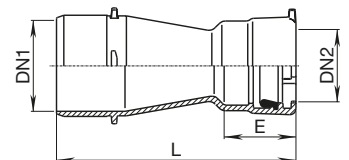
with IT 2" outlets

No. NL51



BAIO R-/RU-piece (reducer piece)

No. NL40



BAIO - Fittings

Without gaskets

Design features

- BAIO socket / BAIO socket
- Angles 11°, 22°, 30°, 45° on request

DN	MOP (PN)	L	E	Weight
80	16	220	105	9,30
100		255	120	12,30
125		275	125	17,00
150		315	125	21,90
200		390	145	35,00

Design features

- BAIO socket / BAIO spigot

DN	MOP (PN)	L	E	Weight
80	16	185	105	6,30
100		205	120	9,30
150		230	125	15,20
200		355	145	25,30

Design features

- BAIO socket / BAIO socket / BAIO socket

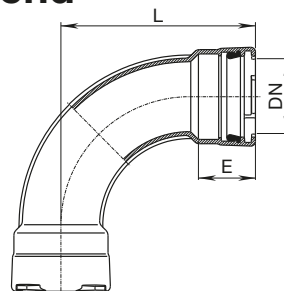
DN	DN1	MOP (PN)	L	E	H	E1	Weight
80	80	16	380	105	190	105	13,30
100	80		410	120	200	105	16,80
100	100		420	120	215	120	17,50
125	125		465	125	225	125	23,60
150	80		415	125	230	105	22,10
150	100		495	125	235	120	25,35
150	150		500	125	250	125	27,40
200	80		460	145	250	105	33,10
200	100		485	145	265	120	34,20
200	150		540	145	275	125	39,00
200	200		600	145	300	145	44,00
250	80		552	166	277	105	48,00
250	100		572	166	303	120	49,00
250	150		641	166	314	123	65,00
250	200		694	182	339	123	66,50
250	250		747	166	376	166	71,10
300	80		614	182	328	105	65,00
300	100		614	182	328	120	65,00
300	150		678	182	328	123	78,00
300	200		738	182	379	143	78,00
300	300		844	182	425	182	101,00

Design features

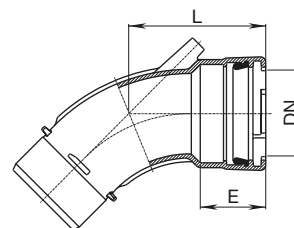
- DN 80 — 200, PN 16

DN	MOP (PN)	L	E	Weight
80	16	390	105	17,40
100		420	120	23,40
150		500	125	29,00
200		600	145	49,50

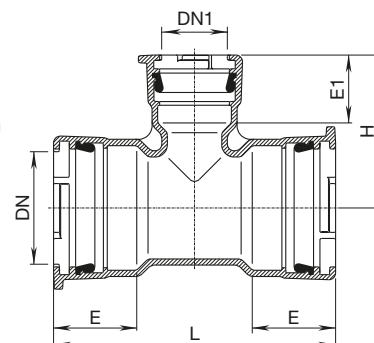
BAIO 90° MMQ bend No. NL30



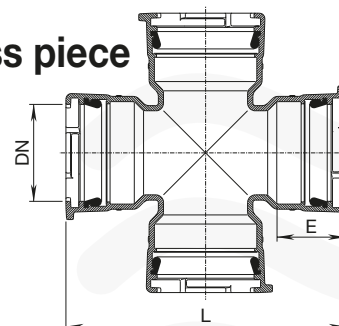
BAIO MSK 45° bend No. NL57



BAIO MMB-tee piece No. NL20



BAIO MTT-cross piece No. NL25



BAIO - Fittings

Without gaskets

Design features

- BAIO socket / BAIO socket
- Available on request with two or three lateral threads IT 1½" - or ZAK 46 outlets

DN	DN1	MOP (PN)	L	H	E	E1	H1	Weight
80	80	16	215	330	105	105	115	15,70
100	80		260	330	120	105	115	16,20

Design features

- Flange / BAIO socket
- Flange size drilled according to EN 1092-2 | PN 10
- Available on request with two or three lateral threads IT 1½" - or ZAK 46 outlets

DN	DN1	MOP (PN)	L	H	H1	E	Weight
80	80	16	215	260	115	105	17,00
100	80		260	285	115	105	18,80
100	100		260	305	125	120	19,60

Design features

- BAIO socket / thread connector
- BAIO socket / ZAK 46 outlet

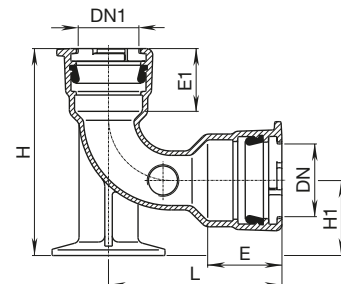
DN	Outlet		MOP (PN)	L	E	Weight
	Thread	ZAK				
80	1 "	ZAK46	16	140	105	5,50
100	1 "	ZAK46		145	120	6,20
	1½"					
125	1 "			145	125	7,90
150	1 "	ZAK46		150	125	9,40
	1½"					
200	1 "			165	145	14,75
	1½"					

Design features

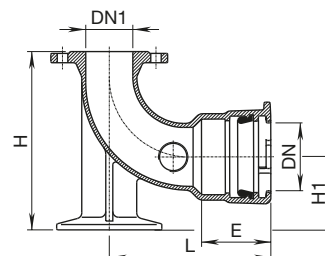
- BAIO spigot with 2 thread connectors 1"
- Thread connections 1½" and 2" on request

DN	Thread	MOP (PN)	L	Weight
80	1"	16	185	4,70
100			205	5,60
125			195	6,80
150			195	8,60
200			205	13,00

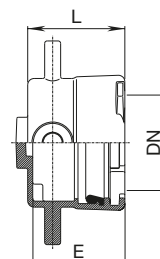
BAIO MMN duck foot bend No. NL60



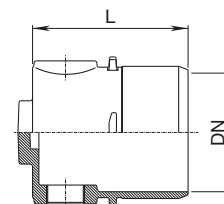
BAIO EN duck foot bend No. NL65



BAIO socket end cap No. NL47



BAIO spigot end cap No. NL48



BAIO - Fittings

Without gaskets

Design features

- BAIO spigot / BAIO spigot

DN	MOP (PN)	L	L1	Weight
80	16	215	45	3,70
80		500	330	8,00
100		255	45	5,00
100		500	290	11,00
150		270	50	8,60
200		280	50	14,10
250		400	73	26,50
300		425	72	36,00

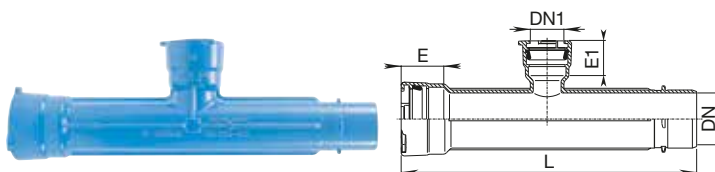
BAIO S piece (spigot piece) No. NL46



Design features

- BAIO socket / BAIO socket / BAIO spigot
- Assembly of below-ground hydrant in the pipe section

DN	DN1	MOP (PN)	L	E	E1	Weight
100	80	16	850	120	105	24,30
150	80			125	105	35,00
200	80			145	105	47,00



Design features

- Flange / BAIO socket
- Flange according to EN 1092-2, drilled according to EN 1092-2 | PN 10; EN 1092-2 | PN 16; DN 200 please specify on order - other standards on request

DN	Flange DN	MOP (PN)	L	E	Weight
80	80	16	170	155	7,70
100	100		175	160	9,10
100	150		175	160	12,00
125	125		180	165	11,60
150	150		180	165	13,20
200	200		185	170	19,10



BAIO EU piece (flange-socket piece) No. NL42

Design features

- Flange / BAIO spigot
- Flange according to EN 1092-2, drilled according to EN 1092-2 | PN 10; EN 1092-2 | PN 16; DN 200 please specify on order - other standards on request

DN	Flange DN	MOP (PN)	L	Weight
80	80	16	145	5,90
100	100		165	7,00
150	150		155	10,50
200	200		190	16,00



BAIO F piece (flange-spigot piece) No. NL41

BAIO - Fittings

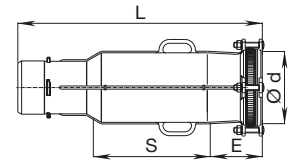
BAIO EMS piece without gaskets

Design features

- BAIO spigot / wide range socket
- For sanitation with wide range socket
- Long socket with slipover length

DN	Ød	MOP (PN)	L	E	Adjustment area S	Weight
80	84 – 105	16	740	117	414 – 426	16,80
100	104 – 132		725	110	374 – 395	19,00
150	154 – 192		774	120	361 – 390	28,00
200	192 – 232		778	140	355 – 382	43,50

BAIO EMS piece “MULTI/JOINT” No. NL44MJ

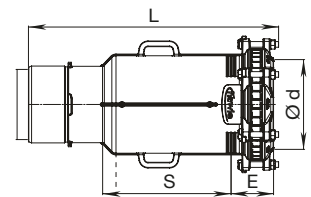


Design features

- BAIO spigot / Synoflex multi-range socket
- For sanitation with wide range socket
- Long socket with slipover length

DN	Ød	MOP (PN)	L	E	Adjustment area S	Weight
200	230 – 260	16	880	149 – 161	420 – 450	58,00
250	265 – 310		885	155 – 167	420 – 450	65,50
300	313 – 356		920	161 – 180	450 – 490	99,50

BAIO EMS piece “Synoflex” No. NL44SY

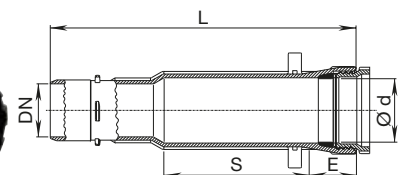


Design features

- BAIO spigot / screw socket
- For sanitation with screw sockets
- Long socket with slipover length

DN	Ød	MOP (PN)	L	E	Adjustment area S	Weight
80	98	16	555	85	275	13,30
100	118		580	90	280	14,50
125	144		615	90	290	19,60
150	170		615	95	285	24,00
200	222		695	100	350	35,40
250	274		730	106	379	55,00
300	326		750	110	397	71,00

BAIO EMS piece (cut-in socket fitting) No. NL44



BAIO - Fittings

Without gaskets

Design features

- ZAK socket / BAIO spigot

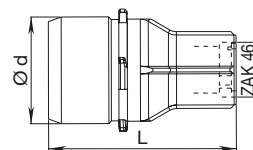
DN	Version	MOP (PN)	Ø d	L	Weight
80	ZAK 46	16	98	176	2,30

Design features

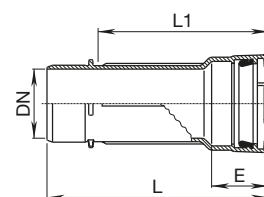
- BAIO spigot / BAIO socket
- Also available with ZAK 46 outlets

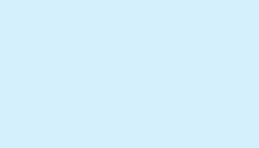
DN	MOP (PN)	L	L1	E	Weight
80	16	230	150	105	5,30
80		280	200	105	6,40
80		380	300	105	7,80
100		465	360	120	10,30
150		480	370	125	16,60
200		510	395	145	27,00

BAIO adapter piece No. NL4A



BAIO SM-adapter piece No. NL45



Page H 2	H4 Hawle hydrant	Page H 2/1	
Page H 3	H4 Corrosion free hydrant <i>H4 Corrosion free hydrant - rigid type</i> <i>H4 Corrosion free hydrant - break away</i> <i>H4 Corrosion free hydrant with drop jacket</i>	Page H 3/1 Page H 3/3 Page H 3/5	
Page H 4	H4 Above ground hydrant <i>H4 Above ground hydrant - rigid type</i> <i>H4 Above ground hydrant - break away</i>	Page H 4/1 Page H 4/3	
Page H 5	Below ground hydrant Freeflow below ground hydrant, flange or BAIO spigot end Freeflow below ground hydrant tele, flange or BAIO spigot end Freeflow below ground hydrant, flange or BAIO spigot end, high adjustable	Page H 5/1 Page H 5/3 Page H 5/4	
Page H 6	Chamber hydrant/Freeflow garden underground hydrant/Hawle drainage pipe Chamber hydrant Freeflow garden underground hydrant Hawle drainage pipe	Page H 6/1 Page H 6/2 Page H 6/2	
Page H 7	Operating instructions Above ground hydrant; assembly operation maintenance Above ground hydrant; drainage untight or change of the valve plug	Page H 7/1 Page H 7/2	

Hydrants

Accessories

Theft safety device	Page M 6/1
Hawle drainage pipe	Page H 6/2
Surface boxes	Page M 3/1
Flanged duck foot bend	Page D 3/2
Bolts	Page M 4/4
Flat gasket	Page M 7/1
Hawle-Vario	Page D 5/1

Extension for break-away area on request

Spare parts

Air valve	Page P 5/2
Cap	Page P 5/1
Valve plug	Page P 5/1
Bayonet coupling	Page P 5/2
Theft indicator cap	Page P 4/2
Set of replacement screws for Hawle-breakaway hydrants	Page P 5/2

Tools

Hydrant operating key	Page Q 4/2
Hydrant-master universal key	Page Q 4/2

Technical information

Tightening torques for flange assembly	Page R 3/1
Pressure-loss table Hawle hydrants	Page R 4/2

Annual inspection (in-house monitoring) with documentation acc. to. ÖNORM B 2539 prescribed.

Application examples



Hydrants

H4 Hawle-hydrant

Design features

- Modern design
- Made entirely of corrosion free materials
- O-rings embedded in non-corrosive material
- Minimal torque for operation
(MOT < 80 Nm, mST > 250 Nm)
- Noticeable stop at the limits when opening and closing
- Hydrant head can be turned completely 360°
- Easy exchange of all inner parts
- Remaining water content according to EN 1074-6
- Automatic drainage system with pressure control, drainage time less than 10 min.
- Opening direction left
- 15 turns to open position
- Connection option for drainage line PE pipe Ø32 or Hawle drainage pipe no. 5067
- **Outlets according to other international standards possible**
- Several outlets on the stand pipe possible, positions on request
- Resistant against disinfectants acc. to EN 1074-1

Above ground hydrant - break away

- Simple repair of the breakaway areas
- Spare bolts for quick repair of the break away line are contained in the hydrant head
- Safety bar for spindle housing in the area of the break away line
- Hydrant head can be delivered with individual colors

Material | Technical features

Both the stainless steel*- as well as the ductile iron version have completely identical internal parts made from corrosion-proof materials such as stainless steel, non-ferrous metal and plastic

* except "drop jacket" version

H4 above ground hydrants "stainless steel"

- According to EN 14384, EN 1074-6 and ÖNORM F 2010
- **Hydrant head** made of aluminium alloy, UV resistant coat
- **Stand pipe and break away line** made of stainless steel
- **Stand pipe with base flange** made of stainless steel, with additional outside coating of the below ground area

H4-above ground hydrants "cast iron"

- According to EN 14384, EN 1074-6 and ÖNORM F 2010
- **Hydrant head** made of ductile iron, epoxy powder and UV resistant coat RAL 9006
- **Stand pipe and break away line** made of hot-galvanised steel and UV resistant coat RAL 5003
- **Base** made of ductile iron, epoxy powder coated RAL 5012

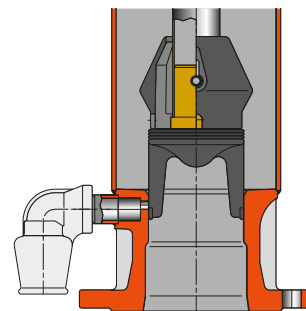
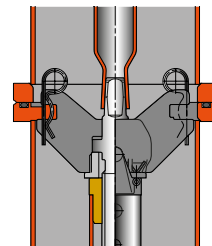
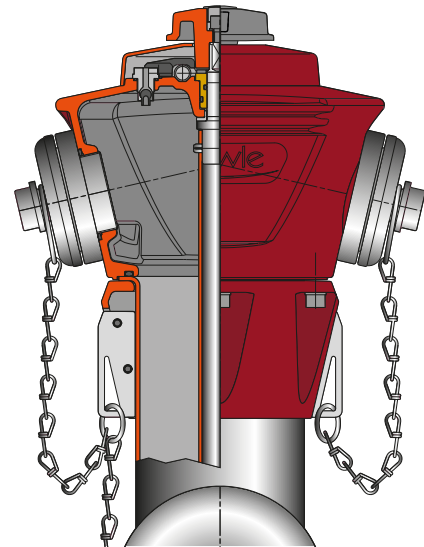


Fig.: break away version

Notes



H4 Corrosion free hydrant

Rigid type, PN 16



Technical features

Standard: ÖNORM F 2010 - EN 14384,
EN 1074-6

Max. working pressure: 16 bar

Standard pipe cover: 1,50 m
(on request 1,25 m and 1,00 m possible)

Rate of flow: Rate of flow Q (m³/h) at a differential pressure of 1 bar is for all HAWLE-H4 hydrants higher than requested by ÖNORM F 2010 and EN 14384

Remaining water content: < EN 1074-6

- Flange sized and drilled in accordance with EN 1092-1 | PN 16

Material

Hydrant head: aluminium alloy, UV resistant coated

Stand pipe: thick walled stainless steel pipe, polished, with additional outside coating of the below ground area

Operating controls: stainless steel

Base: cast stainless steel, with additional outside coating

Suitable accessories

Suitable accessories: see page H 1/2

Hawle drainage pipe No. 5067
Flanged duck foot bend No. 5045, No. 5046, No. 5049
Operating key No. 3460, No. 3461
Flat gasket No. 3390
Bolts No. 8810, No. 8830, No. 8840

No. 5151H4

No. 5140H4



Order No.	Colour / RAL	DN	Outlet			Weight
			A	B	C	
5151H4	red / 3003	80		1	2	62,2
	blue / 5003					
5140H4	red / 3003	80		2		61,0
	blue / 5003					
5151H4	red / 3003	100	1	2		65,5
	blue / 5003					
	red / 3003	150	1	2		70,0
	blue / 5003					
5140H4*	red / 3003	100		2		63,6
	blue / 5003					

* ÖVGW (Austrian Association for Gas and Water) tested

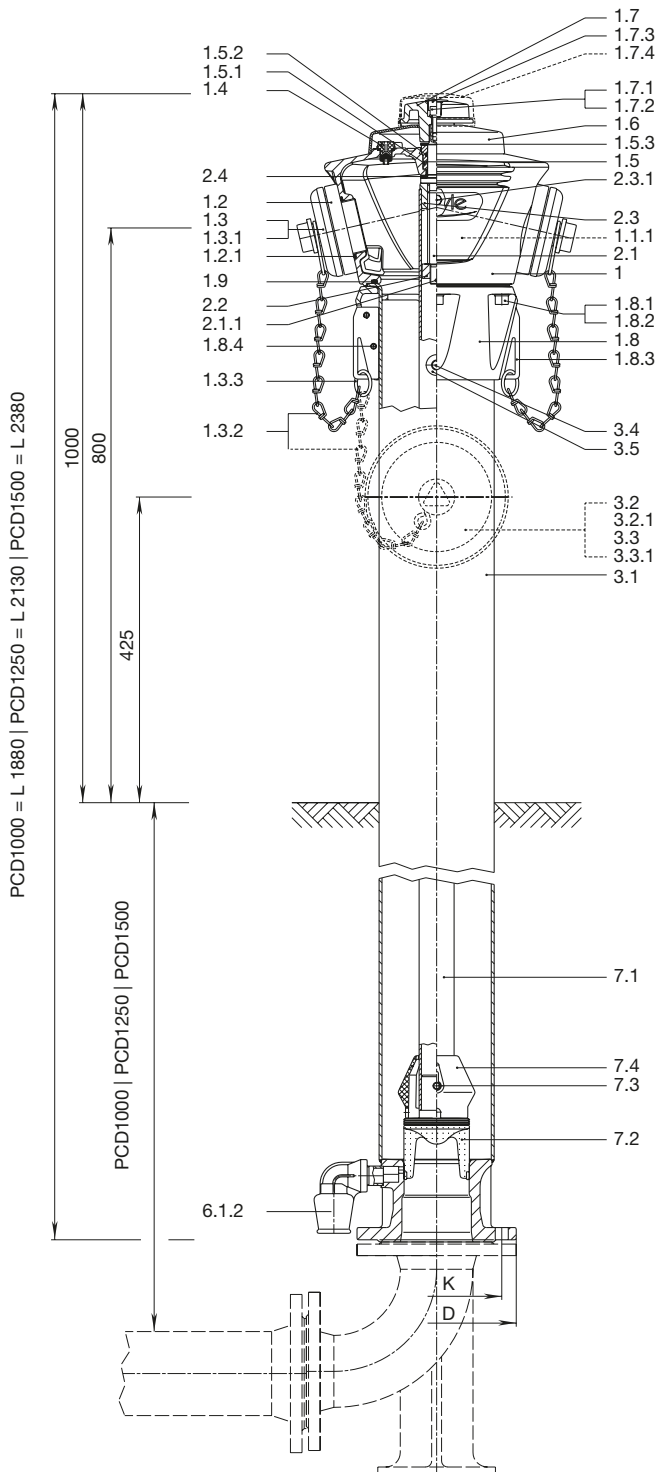
Other colours on request

Application example



H4 Corrosion free hydrant

Rigid type, PN 16



Upper coupling connecting angle 77°

DN	Outlet			Pipe cover PCD	Base flange sized and drilled according to EN 1092-1				Quantity
	A	B	C		DN	D	K	Bolts	
80		1	2	1,50 m	80	200	160	M 16	8
		2		1,25 m					
100	1	2		1,00 m	100	220	180		

Required details for ordering spare parts:
order no. / DN / PCD / year of construction

	Parts	Material
1	Hydrant head	Al
1.1.1	Identification plate	metallic foil
1.2	DN 80 C coupling DIN 14317 - C1 52 mm DN 100 B coupling DIN 14318 - B1 75 mm	Al
1.2.1	DN 80 O-ring 64 x 4 DN 100 O-ring 79 x 4	elastomer
1.3	DN 80 C cap DIN 14317 - C 4 DN 100 B cap DIN 14318 - B 4	Al
1.3.1	DN 80 C flat seal ring DIN 14317 - C3 DN 100 B flat seal ring DIN 14318 - B3	elastomer
1.3.2	Chain with S-hooks	stainless steel
1.3.3	Ring for chain	stainless steel
1.4	Air valve	POM
1.5	O-ring bush	brass
1.5.1	O-ring 32 x 4	elastomer
1.5.2	O-ring 25 x 3.5	elastomer
1.5.3	Friction washer	POM
1.6	Cap	Al
1.7	Operating nut	Al
1.7.1	Washer A 13	stainless steel
1.7.2	Allen bolt M 12 x 30	stainless steel
1.7.3	Isolating cap	PE
1.7.4	Theft safety device	polystyrene
1.8	Head flange for hydrant head	Al
1.8.1	Washer A 13	stainless steel
1.8.2	Allen bolt M 12 x 40	stainless steel
1.8.3	Fixing strap	stainless steel
1.8.4	Brace 8 x 16	stainless steel
1.9	O-ring 170 x 6	elastomer
2.1	Spindle rigid	stainless steel
2.1.1	Pin 4 x 25	stainless steel
2.2	Stop nut	stainless steel
2.3	Stem nut	brass
2.3.1	Hexagonal bolt M 8 x 10	stainless steel
2.4	Friction washer	POM
3.1	Stand pipe	stainless steel
3.2	DN 80 B coupling DIN 14318 - B1 75 mm DN 100 A coupling DIN 14319 - A1 110 mm	Al
3.2.1	DN 80 O-ring 79 x 4 DN 100 O-ring 116 x 4	elastomer
3.3	DN 80 B cap DIN 14318 - B4 DN 100 A cap DIN 14319 - A4	Al
3.3.1	DN 80 B flat seal ring DIN 14318 - B3 DN 100 A flat seal ring DIN 14319 - A3	elastomer
3.4	Guide pin	stainless steel
3.5	Guide bush	POM
6.1.2	Fitting 1" / 90°	POM
7.1	Operating pipe	stainless steel
7.2	Valve plug	brass/elastomer
7.3	Securing pin for valve plug	stainless steel
7.4	Flow former	PE

H4 Corrosion free hydrant

Break away, PN 16



Technical features

Standard: ÖNORM (Austrian standard)
F 2010 - EN 14384, EN 1074-6
with break away line

Max. operating pressure: 16 bar

Standard pipe cover: 1,50 m
(on request 1,25 m and 1,00 m possible)

Rate of flow: Rate of flow Q (m³/h) at a differential pressure of 1 bar is for all HAWLE-H4 hydrants higher than requested by ÖNORM F 2010 and EN 14384

Remaining water content: < EN 1074-6

- Flange sized and drilled in accordance with EN 1092-1 | PN 16

Material

Hydrant head: aluminium alloy, UV resistant coated

Stand pipe: thick walled stainless steel pipe, polished, with additional outside coating of the below ground area

Operating controls: stainless steel

Base: cast stainless steel, with additional outside coating

Suitable accessories

Suitable accessories: see page H 1/2

Hawle drainage pipe No. 5067
Flanged duck foot bend No. 5045, No. 5046, No. 5049
Operating key No. 3460, No. 3461
Flat gasket No. 3390
Bolts No. 8810, No. 8830, No. 8840

No. 5195H4

No. 5196H4



Order No.	Colour / RAL	DN	Outlet			Weight
			A	B	C	
5195H4	red / 3003	80		1	2	69,5
	blue / 5003					
5196H4*	red / 3003	80		2		68,0
	blue / 5003					
5195H4	red / 3003	100	1	2		74,0
	blue / 5003					
	red / 3003	150	1	2		79,0
	blue / 5003					
5196H4*	red / 3003	100		2		69,0
	blue / 5003					

* ÖVGW (Austrian Association for Gas and Water) tested

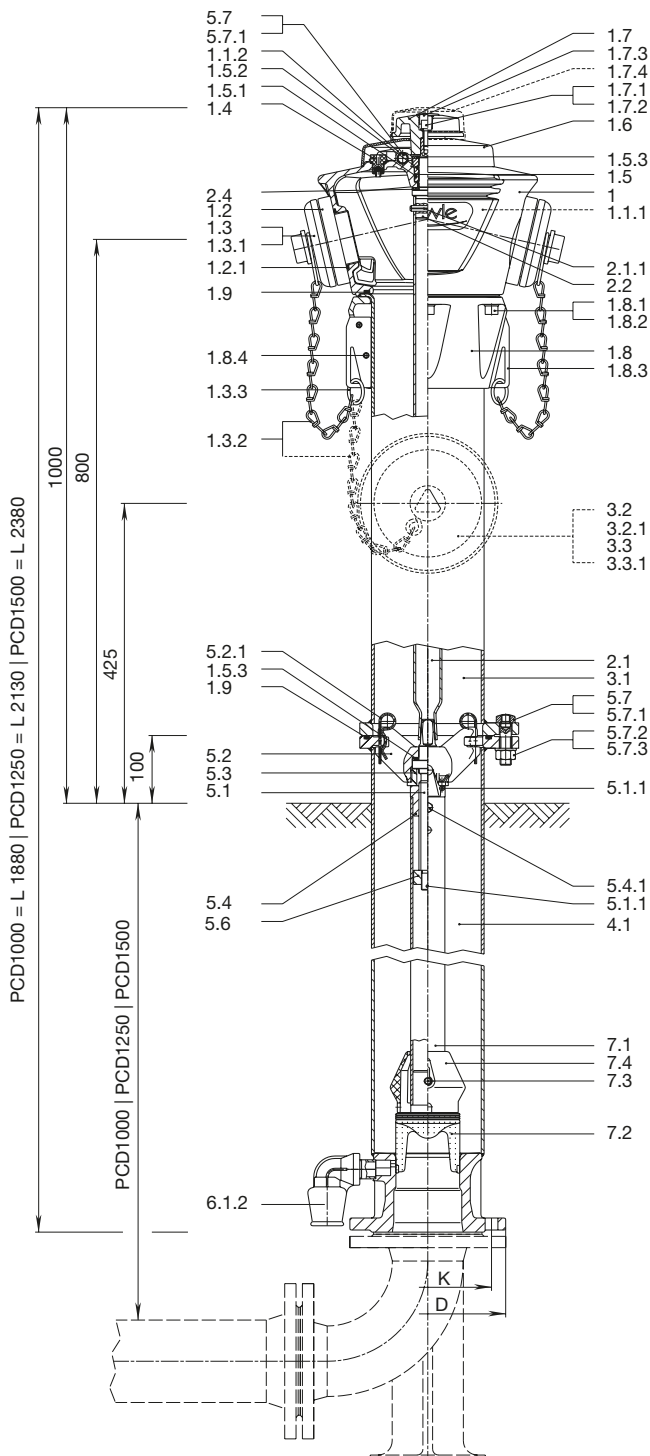
Other colours on request

Application example



H4 Corrosion free hydrant

Break away, PN 16



Upper coupling connecting angle 77°

DN	Outlet			Pipe cover	Base flange sized and drilled according to EN 1092-1					
	A	B	C	PCD	DN	D	K	Bolts	Quantity	
80	1	1	2	1,50 m	80	200	160	M 16	8	
		2		1,25 m						
100		2		1,00 m	100	220	180			

	Parts	Material
1	Hydrant head	Al
1.1.1	Identification plate	metallic foil
1.1.2	Bolt fastener	elastomer
1.2	DN 80 C coupling DIN 14317 - C1 52 mm DN 100 B coupling DIN 14318 - B1 75 mm	Al
1.2.1	DN 80 O-ring 64 x 4 DN 100 O-ring 79 x 4	elastomer
1.3	DN 80 C cap DIN 14317 - C 4 DN 100 B cap DIN 14318 - B 4	Al
1.3.1	DN 80 C flat seal ring DIN 14317 - C3 DN 100 B flat seal ring DIN 14318 - B3	elastomer
1.3.2	Chain with S-hooks	stainless steel
1.3.3	Ring for chain	stainless steel
1.4	Air valve	POM
1.5	O-ring bush	brass
1.5.1	O-ring 32 x 4	elastomer
1.5.2	O-ring 25 x 3.5	elastomer
1.5.3	Friction washer	POM
1.6	Cap	Al
1.7	Operating nut	Al
1.7.1	Washer A 13	stainless steel
1.7.2	Allen bolt M 12 x 30	stainless steel
1.7.3	Isolating cap	PE
1.7.4	Theft safety device	polystyrene
1.8	Head flange for hydrant head	Al
1.8.1	Washer A 13	stainless steel
1.8.2	Allen bolt M 12 x 40	stainless steel
1.8.3	Fixing strap	stainless steel
1.8.4	Brace 8 x 16	stainless steel
1.9	O-ring 170 x 6	elastomer
2.1	Extension spindle	stainless steel
2.1.1	Brace 8 x 50	stainless steel
2.2	Pin	stainless steel
2.4	Friction washer	POM
3.1	Stand pipe - upper part	stainless steel
3.2	DN 80 B coupling DIN 14318 - B1 75 mm DN 100 A coupling DIN 14319 - A1 110 mm	Al
3.2.1	DN 80 O-ring 79 x 4 DN 100 O-ring 116 x 4	elastomer
3.3	DN 80 B cap DIN 14318 - B4 DN 100 A cap DIN 14319 - A4	Al
3.3.1	DN 80 B flat seal ring DIN 14318 - B3 DN 100 A flat seal ring DIN 14319 - A3	elastomer
4.1	Stand pipe - lower part	stainless steel
5.1	Spindle break away	stainless steel
5.1.1	Pin 4 x 25	stainless steel
5.2	Spindle housing	brass
5.2.1	Spring clip	stainless steel
5.3	Securing bush	POM
5.4	Stem nut	Brass
5.4.1	Hexagonal bolt M 8 x 10	stainless steel
5.6	Stop nut	stainless steel
5.7	Hexagonal bolt with break away line M 16 x 60	stainless steel
5.7.1	Plug for bolt	PE
5.7.2	Washer A 17	stainless steel
5.7.3	Hexagonal nut M 16	stainless steel
6.1.2	Fitting 1" / 90°	POM
7.1	Operating pipe	stainless steel
7.2	Valve plug	brass/elastomer
7.3	Securing pin for valve plug	stainless steel
7.4	Flow former	PE

H4 Corrosion free hydrant

Break away, with drop jacket, PN 16



Design features

- This above ground hydrant is convincing both in terms of technology and its construction in non-corroding material. In terms of optical effect, it has a remarkable and clear design
- The "drop jacket technology" protects the upper outlets from unauthorized use and weather. Upon unlocking the plastic jacket and it drops downwards the two individually lockable B-outlets can be opened
- Pressure relieving shut-off valves on hydrant head
- Simple locking and loosening of the drop jacket by means of snap. "Shock absorbers" prevents the drop jacket from bumping hard
- Easy and quick repair of the break away line
- Spare bolts no. 8841 for quick repair of the break away line are stored in the head of the hydrant
- Safety bar for spindle housing in the area of the break away line
- Easy exchange of all inner parts without excavation

No. 5186

No. 5185



Material | Technical features

Hydrant head: aluminium alloy, UV resistant coated

Drop jacket: shock-proof UV-resistant plastic

Stand pipe: thick walled stainless steel pipe, polished, with additional outside coating of the below ground area

Operating controls: stainless steel

Base: stainless steel, with additional outside coating

Standard: **ÖNORM (Austrian standard)**
F 2010 - EN 14384, EN 1074-6

Max. operating pressure: 16 bar

Standard pipe cover: 1,50 m
(on request 1,25 m and 1,00 m possible)

Rate of flow: Rate of flow Q (m³/h) at a differential pressure of 1 bar is for all HAWLE-H4 hydrants higher than requested by ÖNORM F 2010 and EN 14384

Remaining water content: < EN 1074-6

- Flange sized and drilled in accordance with EN 1092-1 | PN 16



Order No.	DN	Outlet		Weight	
		A	B		
5186	80		2	79,0	
	100		2	80,0	
5185	100	1	2	81,0	
	150	1	2	85,0	

Suitable accessories

Suitable accessories: see page H 1/2

Hawle drainage pipe No. 5067

Flanged duck foot bend No. 5045, No. 5046, No. 5049

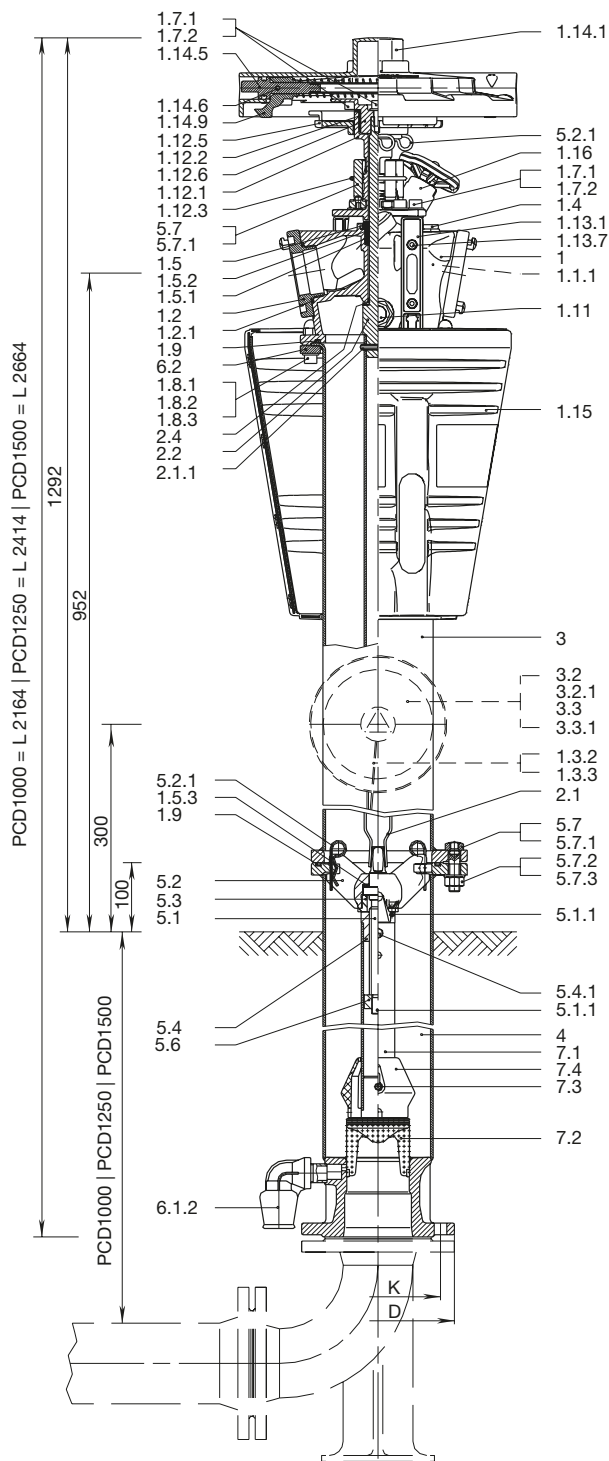
Operating key No. 3460, No. 3461

Flat gasket No. 3390

Bolts No. 8810, No. 8830, No. 8840

H4 Corrosion free hydrant

Break away, with drop jacket, PN 16



Upper coupling connecting angle 80°

DN	Outlet		Pipe cover	Base flange sized and drilled according to EN 1092-1				
	A	B	PCD	DN	D	K	Bolts	Quantity
80		2	1,50 m	80	200	160	M 16	8
100		2	1,25 m					
	1	2	1,00 m	100	220	180		

	Parts	Material
1	Hydrant head	Al
1.1.1	Identification plate	metallic foil
1.2	B coupling DIN 14318 - B1 75 mm	Al
1.2.1	O-ring	elastomer
1.3.2	Grip ring	various
1.3.3	Rope	stainless steel
1.4	Air valve	POM
1.5	O-ring bush	brass
1.5.1	O-ring 32 x 4	elastomer
1.5.2	O-ring 25 x 3.5	elastomer
1.5.3	Friction washer	POM
1.7.1	Washer A 13	stainless steel
1.7.2	Allen bolt M 12 x 25	stainless steel
1.8.1	Washer A 13	stainless steel
1.8.2	Allen bolt M 12 x 40	stainless steel
1.8.3	Cap nut M 12	stainless steel
1.9	O-ring 170 x 6	elastomer
1.11	Pressure indicator	brass
1.12.1	Covering column	Al
1.12.2	Bearing bush	POM
1.12.3	O-ring	elastomer
1.12.5	Hood lock	Al
1.12.6	Hood support	Al
1.13.1	Guide strip	POM
1.13.7	Allen bolt M 8 x 20	stainless steel
1.14.1	Hood cover	Al
1.14.5	Spindle	stainless steel
1.14.6	Straight pin	stainless steel
1.14.9	Locking bar	brass
1.15	Drop jacket	ABS
1.16	Valve bonnet, complete	Al
2.1	Extension spindle	stainless steel
2.1.1	Brace 8 x 50	stainless steel
2.2	Pin for extension spindle	stainless steel
2.4	Friction washer	POM
3	Stand pipe, complete	stainless steel
3.2	A coupling DIN 14319 - A1 110 mm	Al
3.2.1	O-ring 116 x 4	elastomer
3.3	A cap	Al
3.3.1	Flat gasket	elastomer
4	Stand pipe	stainless steel
5.1	Spindle	stainless steel
5.1.1	Pin 4 x 25	stainless steel
5.2	Spindle housing	brass
5.2.1	Spring clip	stainless steel
5.3	Securing bush	POM
5.4	Stem nut	brass
5.4.1	Hexagonal bolt M 8 x 10	stainless steel
5.6	Stop nut	stainless steel
5.7	Hexagonal bolt for breaking point M 16 x 60	stainless steel
5.7.1	Plug for bolt	PE
5.7.2	Washer A 17	stainless steel
5.7.3	Hexagonal nut M 16	stainless steel
6.1.2	Fitting 1" / 90°	POM
6.2	Lock ring	Al
7.1	Operating pipe	stainless steel
7.2	Valve plug	brass/elastomer
7.3	Securing pin for valve plug	stainless steel
7.4	Flow former	PE

H4 Above ground hydrant

Rigid type, PN 16



Technical features

Standard: ÖNORM (Austrian standard)
F 2010 - EN 14384, EN 1074-6

Max. operating pressure: 16 bar

Standard pipe cover: 1,50 m
(on request 1,25 m and 1,00 m possible)

Rate of flow: Rate of flow Q (m³/h) at a differential pressure of 1 bar is for all HAWLE-H4 hydrants higher than requested by ÖNORM F 2010 and EN 14384

Remaining water content: < EN 1074-6

- Flange sized and drilled according to EN 1092-2 | PN 16

Material

Hydrant head: made of ductile iron, epoxy powder- + UV resistant coated RAL 9006

Stand pipe: thick walled steel pipe, galvanised, UV resistant coated RAL 5003

Operating controls: stainless steel

Base: made of ductile iron, epoxy powder-coated RAL 5012

Suitable accessories

Suitable accessories: see page H 1/2

Hawle drainage pipe No. 5067
Flanged duck foot bend No. 5045, No. 5046, No. 5049
Operating key No. 3460, No. 3461
Flat gasket No. 3390
Bolts No. 8810, No. 8830, No. 8840

No. 5051H4

No. 5053H4



Order No.	DN	Outlet			Weight	
		A	B	C		
5051H4*	80		1	2	71,0	
5053H4*			2		70,5	
5051H4	100	1	2		72,0	
5053H4			2		71,0	
5051H4	150	1	2		78,0	

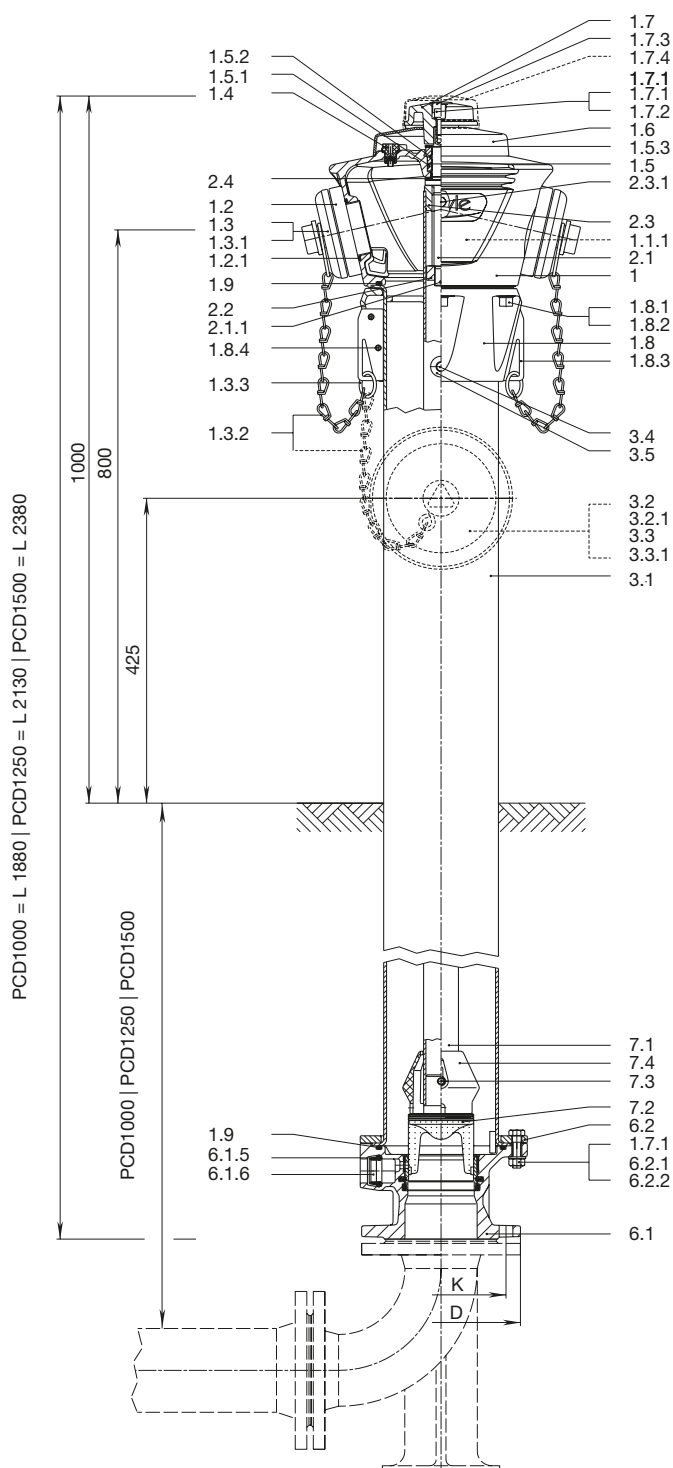
* ÖVGW (Austrian Association for Gas and Water) tested

Application example



H4 Above ground hydrant

Rigid type, PN 16



Upper coupling connecting angle 77°

DN	Outlet			Pipe cover PCD	Base flange sized and drilled according to EN 1092-1			Bolts	Qty.
	A	B	C		DN	D	K		
80	1	2	2	1,50 m	80	200	160	M 16	8
		2	2	1,25 m					
100	1	2	2	1,00 m	100	220	180	M 20	8
		2	2	1,50 m					
150	1	2	2	1,50 m	150	285	240	M 20	8

	Parts	Material
1	Hydrant head	ductile iron
1.1.1	Identification plate	metallic foil
1.2	DN 80 C coupling DIN 14317 - C1 52 mm DN 100 B coupling DIN 14318 - B1 75 mm	Al
1.2.1	DN 80 O-ring 64 x 4 DN 100 O-ring 79 x 4	elastomer
1.3	DN 80 C cap DIN 14317 - C 4 DN 100 B cap DIN 14318 - B 4	Al
1.3.1	DN 80 C flat seal ring DIN 14317 - C3 DN 100 B flat seal ring DIN 14318 - B3	elastomer
1.3.2	Chain with S-hooks	stainless steel
1.3.3	Ring for chain	stainless steel
1.4	Air valve	POM
1.5	O-ring bush	brass
1.5.1	O-ring 32 x 4	elastomer
1.5.2	O-ring 25 x 3.5	elastomer
1.5.3	Friction washer	POM
1.6	Cap	Al
1.7	Operating nut	Al
1.7.1	Washer A 13	stainless steel
1.7.2	Allen bolt M 12 x 30	stainless steel
1.7.3	Isolating cap	PE
1.7.4	Theft safety device	Polystyrene
1.8	Head flange for hydrant head	Al
1.8.1	Washer A 13	stainless steel
1.8.2	Allen bolt M 12 x 40	stainless steel
1.8.3	Fixing strap	stainless steel
1.8.4	Brace 8 x 16	stainless steel
1.9	O-ring 170 x 6	elastomer
2.1	Spindle rigid	stainless steel
2.1.1	Pin 4 x 25	stainless steel
2.2	Stop nut	stainless steel
2.3	Stem nut	brass
2.3.1	Hexagonal bolt M 8 x 10	stainless steel
2.4	Friction washer	POM
3.1	Standpipe	steel
3.2	DN 80 B coupling DIN 14318 - B1 75 mm DN 100 A coupling DIN 14319 - A1 110 mm	Al
3.2.1	DN 80 O-ring 79 x 4 DN 100 O-ring 116 x 4	elastomer
3.3	DN 80 B cap DIN 14318 - B4 DN 100 A cap DIN 14319 - A4	Al
3.3.1	DN 80 B flat seal ring DIN 14318 - B3 DN 100 A flat seal ring DIN 14319 - A3	elastomer
3.4	Guide pin	stainless steel
3.5	Guide bush	POM
6.1	Base	ductile iron
6.1.5	O-ring 30.3 x 7.5	elastomer
6.1.6	Grip ring	POM
6.2	Head flange for base	steel
6.2.1	Hexagonal bolt M 12 x 45	stainless steel
6.2.2	Hexagonal nut M 12	stainless steel
7.1	Operating pipe	stainless steel
7.2	Valve plug	brass/elastomer
7.3	Securing pin for valve plug	stainless steel
7.4	Flow former	PE

H4 Above ground hydrant

Break away, PN 16



Technical features

Standard: ÖNORM F 2010 - EN 14384, EN 1074-6 with break-away line

Max. operating pressure: 16 bar

Standard pipe cover: 1,50 m
(on request 1,25 m and 1,00 m possible)

Rate of flow: Rate of flow Q (m³/h) at a differential pressure of 1 bar is for all Hawle-H4 hydrants higher than requested by ÖNORM F 2010 and EN 14384

Remaining water content: < EN 1074-6

- Flange sized and drilled according to EN 1092-2 | PN 16

Material

Hydrant head: made of ductile iron, coated with epoxy powder and UV resistant RAL 9006

Stand pipe: galvanised thick walled steel pipe coated with UV resistant RAL 5003

Operating controls: stainless steel

Base: made of ductile iron, epoxy powder coated RAL 5012

Suitable accessories

Suitable accessories: see page H 1/2

Hawle drainage pipe No. 5067
Flanged duck foot bend No. 5045, No. 5046, No. 5049
Operating key No. 3460, No. 3461
Flat gasket No. 3390
Bolts No. 8810, No. 8830, No. 8840

No. 5095H4

No. 5096H4



Order No.	DN	Outlet			Weight	
		A	B	C		
5095H4*	80		1	2	82,0	
5096H4*			2		78,0	
5095H4	100	1	2		85,0	
5096H4			2		81,0	
5095H4	150	1	2		94,0	

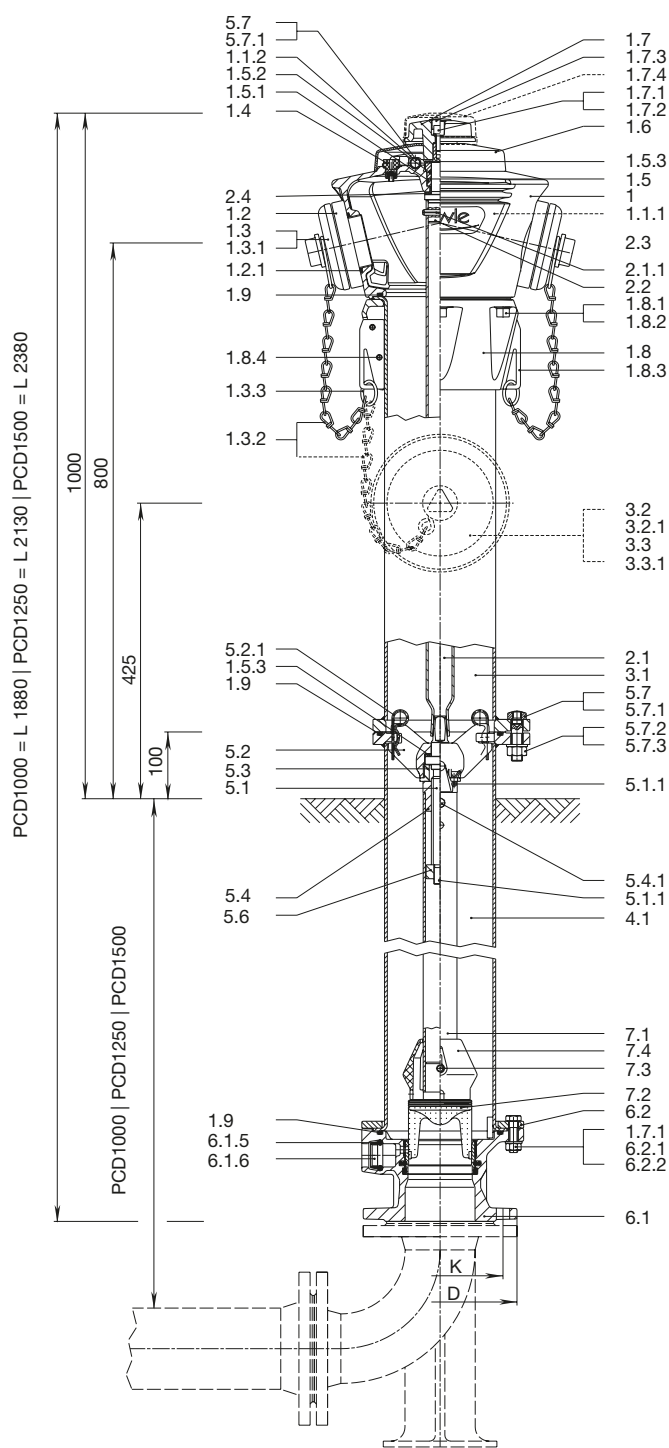
* ÖVGW (Austrian Association for Gas and Water) tested

Application example



H4 Above ground hydrant

Break away, PN 16



Upper coupling connecting angle 77°

DN	Outlet			Pipe cover	Base flange sized and drilled according to EN 1092-2					
	A	B	C	PCD	DN	D	K	Bolts	Quantity	
80		1	2	1,50 m	80	200	160	M 16	8	
100	1	2		1,25 m						
		2		1,00 m	100	220	180			
150	1	2		1,50 m	150	285	240	M 20	8	

	Parts	Material
1	Hydrant head	ductile iron
1.1.1	Identification plate	metallic foil
1.1.2	Bolt fastener	elastomer
1.2	DN 80 C coupling DIN 14317 - C1 52 mm DN 100 B coupling DIN 14318 - B1 75 mm	Al
1.2.1	DN 80 O-ring 64 x 4 DN 100 O-ring 79 x 4	elastomer
1.3	DN 80 C cap DIN 14317 - C 4 DN 100 B cap DIN 14318 - B 4	Al
1.3.1	DN 80 C flat seal ring DIN 14317 - C3 DN 100 B flat seal ring DIN 14318 - B3	elastomer
1.3.2	Chain with S-hooks	stainless steel
1.3.3	Ring for chain	stainless steel
1.4	Air valve	POM
1.5	O-ring bush	brass
1.5.1	O-ring 32 x 4	elastomer
1.5.2	O-ring 25 x 3,5	elastomer
1.5.3	Friction washer	POM
1.6	Cap	Al
1.7	Operating nut	Al
1.7.1	Washer A 13	stainless steel
1.7.2	Allen bolt M 12 x 30	stainless steel
1.7.3	Isolating cap	PE
1.7.4	Theft safety device	Polystyrene
1.8	Head flange for hydrant head	Al
1.8.1	Washer 13	stainless steel
1.8.2	Allen bolt M 12 x 40	stainless steel
1.8.3	Fixing strap	stainless steel
1.8.4	Brace 8 x 16	stainless steel
1.9	O-ring 170 x 6	elastomer
2.1	Extension spindle	stainless steel
2.1.1	Brace 8 x 50	stainless steel
2.2	Pin	stainless steel
2.4	Friction washer	POM
3.1	Stand pipe	steel
3.2	DN 80 B coupling DIN 14318 - B1 75 mm DN 100 A coupling DIN 14319 - A1 110 mm	Al
3.2.1	DN 80 O-ring 79 x 4 DN 100 O-ring 116 x 4	elastomer
3.3	DN 80 B cap DIN 14318 - B4 DN 100 A cap DIN 14319 - A4	Al
3.3.1	DN 80 B flat seal ring DIN 14318 - B3 DN 100 A flat seal ring DIN 14319 - A3	elastomer
4.1	Stand pipe	steel
5.1	Spindle break away	stainless steel
5.1.1	Pin 4 x 25	stainless steel
5.2	Spindle housing	brass
5.2.1	Spring clip	stainless steel
5.3	Securing bush	POM
5.4	Stem nut	brass
5.4.1	Hexagonal bolt M 8 x 10	stainless steel
5.6	Stop nut	stainless steel
5.7	Hexagonal bolt for breaking point M 16 x 60	stainless steel
5.7.1	Plug for bolt	PE
5.7.2	Washer A 17	stainless steel
5.7.3	Hexagonal nut M 16	stainless steel
6.1	Base	ductile iron
6.1.5	O-ring 30.3 x 7.5	elastomer
6.1.6	Grip ring	POM
6.2	Head flange for base	steel
6.2.1	Hexagonal bolt M 12 x 45	stainless steel
6.2.2	Hexagonal nut M 12	stainless steel
7.1	Operating pipe	stainless steel
7.2	Valve plug	brass/elastomer
7.3	Securing pin for valve plug	stainless steel
7.4	Flow former	PE

Freeflow below ground hydrant

PN 16



Design features

- Free passage
- Stainless steel plate mechanism with fixed opening and closing points, which will not be affected by encrustation or pollution.
- Good corrosion protection by epoxy coating and non-corroding materials
- Maintenance free
- Automatic drainage system with pressure control, drain time less than 10 min.
- Minimal torque for operation
- Suitable for installation by under pressure drilling (installation afterwards)
- Multiple functions possible
- Seals in shut-off element is protected against damage

Technical features

Standard: EN 14339

Max. operating pressure: 16 bar

Standard pipe cover: 1,50 m

Rate of flow: Rate of flow Q (m³/h) at a differential pressure of 1 bar is higher than K_v[m³/h] demanded by EN 14339

Remaining water content: < EN 1074-6

- Flange sized and drilled according to EN 1092-2 | PN 16

Connection possibilities:

- Flange connection: EN piece, F piece, drilling clamp flange sized and drilled according to EN 1092-2
- BAIO spigot connection: B piece, MMB piece, SM piece, MMN piece

On request:

- Below ground extensions 100 to 500 mm
- Protection against dirt and twisting no. NL92 of the BAIO spigot

Suitable accessories

Suitable accessories: see page H 1/2

Drainage element	No. 5062
Flanged duck foot bend	No. 5045, No. 5046, No. 5049
Operating key	No. 3460, No. 3461
Flat gasket	No. 3390
Bolts	No. 8810, No. 8830, No. 8840
Surface boxes	No. 1950, No 1950E, No 1950K
Dirt and anti-twist protection	No. NL92

No. 5060

No. 5061

Bayonet coupling
DN 80



Order No.	Version	MOP (PN)	Pipe cover*		
			1,00 m	1,25 m	1,50 m
5060	Flange connection DN 80	16			
5061	BAIO spigot connection DN 80				

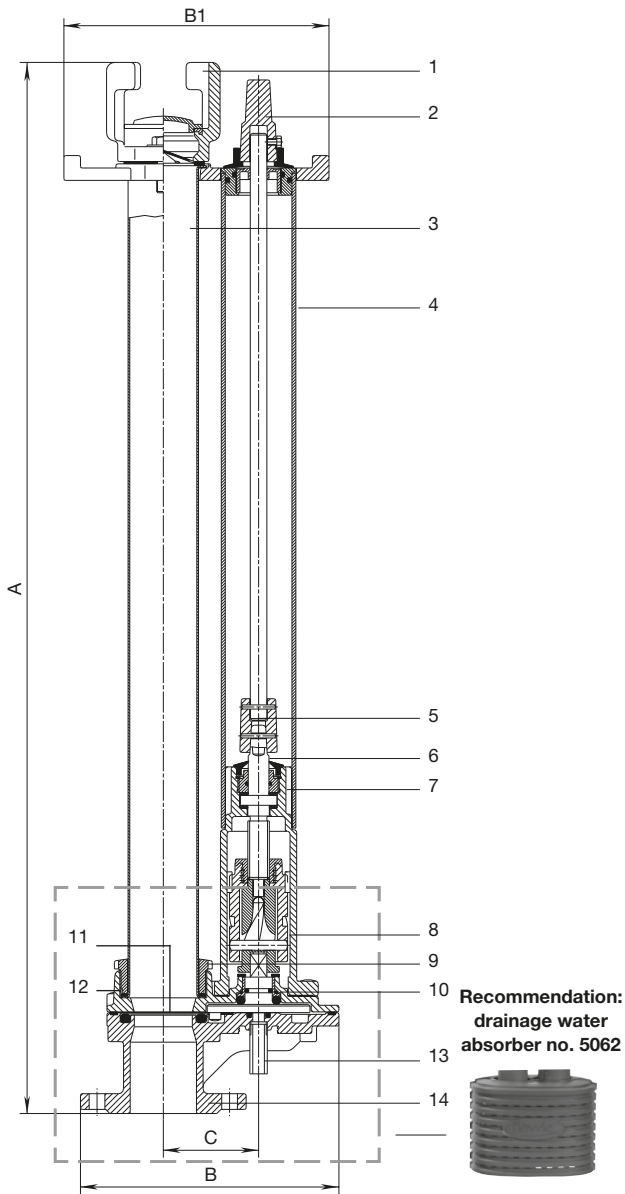
*Optional intermediate lengths possible (smallest pipe cover 0,85 m)
Overlengths up to 3 m on request

Application example



Freeflow below ground hydrant

PN 16

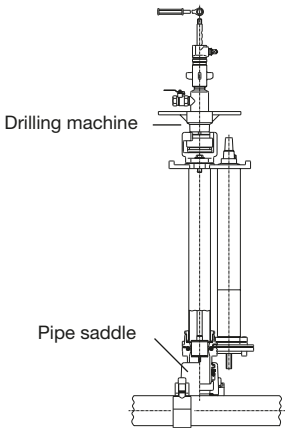


	Parts	Material
1	Bayonet coupling	ductile iron
2	Operating nut	ductile iron, galvanised
3	Pipe	stainless steel, epoxy powder-coated
4	Plastic protection pipe	PP
5	Spindle sleeve	ductile iron, galvanised
6	Spindle	stainless steel
7	Gear	ductile iron
8	Plate drive	stainless steel
9	Ring nut	PA
10	Diving worm	brass
11	Valve plate	stainless steel
12	Hydrant top	ductile iron
13	Drain connection	PE </td
14	Hydrant end with flange connector or BAIO spigot connector	ductile iron

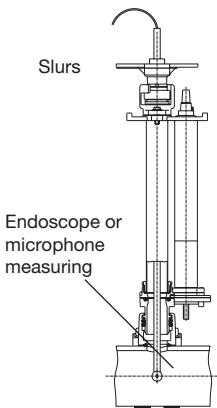
Order No.	Connection	Pipe cover	A	B	B1	C	Weight
5060	Flange DN 80	1,00 m	740	280	320	115	35,0
		1,25 m	990				37,5
		1,50 m	1240				39,5
5061	BAIO spigot DN 80	1,00 m	785	280	320	115	31,5
		1,25 m	1045				34,0
		1,50 m	1295				36,0

Other application opportunities

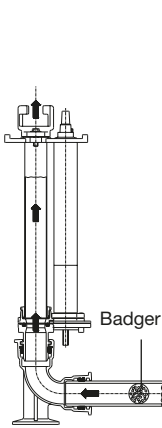
Under pressure drilling



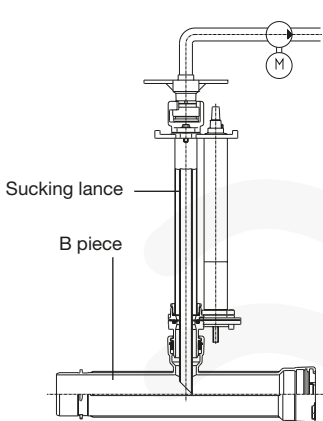
Pipe inspection



Pipe cleaning via badger



Pipe draining with sucking lance



Freeflow below ground hydrant

Tele, PN 16

Design features

- With flange or BAIO spigot
- Integrated telescopic stand pipe
- Replacement of the jaw coupling by encapsulated hydrant head
- Minimal torque for operation
- Safe against dirt
- Heavy corrosion protection by epoxy coating and non-corroding materials
- Every pipe covering from 1 to 3 m possible
- Tried and tested, not sensitive to dirt
Plug disk shut-off with fixed stops
- No risk of damage for seals on shut-off element
- Completely free passage
- Maintenance free
- Connecting coupling according to other standard possible
- Flange sized and drilled according to EN 1092-2 | PN 16

Suitable accessories

Suitable accessories:	see page H 1/2
Drainage water absorber	No. 5062
Surface box	No. 1951
Flange duck-foot bend	No. 5045, No. 5046, No. 5049
Operating key	No. 3420
Flat gasket	No. 3390
Bolts	No. 8810, No. 8830, No. 8840

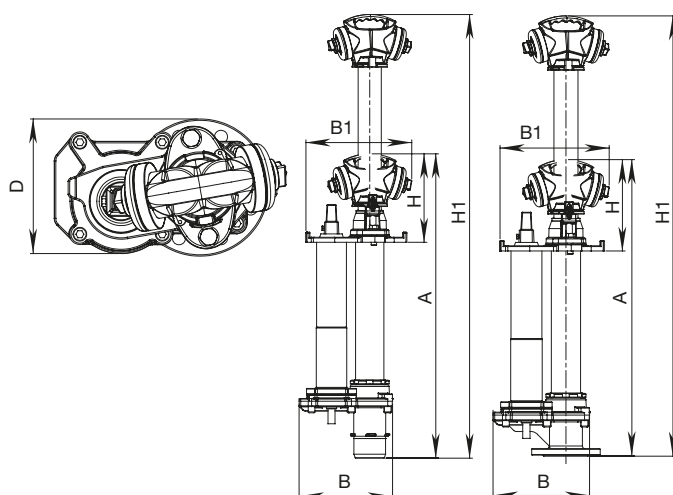
Freeflow below ground hydrant tele

No. 5058

No. 5059



Order No.	Version	MOP (PN)	Pipe cover		
			1,00 m	1,25 m	1,50 m
5058	Flange connection DN 80	16			
5059	BAIO spigot connection DN 80				



Order No.	MOP (PN)	Pipe cover	C-outlet	Connection	A	B	B1	D	H	H1	Weight
5058	16	1,00 m	2	Flange connection DN 80*	810	280	320	200	260	1235	38,0
		1,25 m			1060					1735	46,0
		1,50 m			1310					1985	48,0
5059	16	1,00 m	2	BAIO spigot connection DN 80	835	280	320	200	260	1260	35,0
		1,25 m			1085					1760	39,0
		1,50 m			1335					2010	43,0

* Flange sized and drilled according to EN 1092-2 | PN 16

Freeflow below ground hydrant

“height adjustable” PN 16

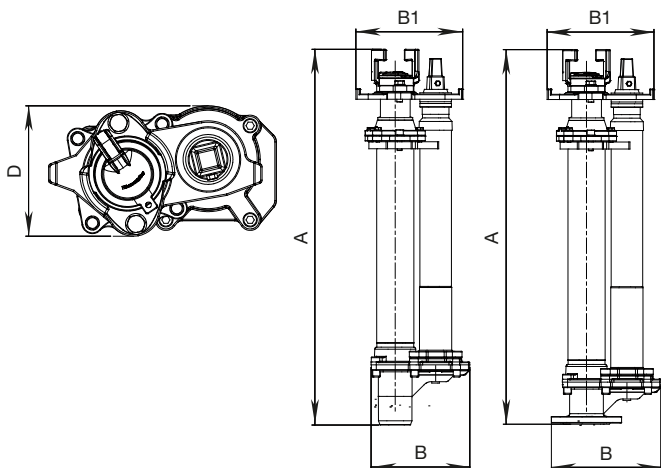
Design features

- Height adjustable
- Completely free passage
- With flange or BAIO spigot
- Heavy corrosion protection by epoxy coating and non-corroding materials
- Tried and tested, not sensitive to dirt
Plug disk shut-off with fixed stops
- Automatic drainage system with pressure control,
drain time less than 10 min.
- Minimal torque for operation
- Maintenance free
- Flange sized and drilled according to EN 1092-2 |
PN 16

Suitable accessories

Suitable accessories: see page H 1/2

Drainage element	No. 5062
Flanged duck foot bend	No. 5045, No. 5046, No. 5049
Operating key	No. 3460, No. 3461
Flat gasket	No. 3390
Bolts	No. 8810, No. 8830, No. 8840
Surface boxes	No. 1950, No 1950E, No 1950K
Dirt and anti-twist protection	No. NL92



Freeflow below ground hydrant “height adjustable”

No. 5070

No. 5071



Order no.	Version	MOP (PN)	Pipe cover			
			1,00 – 1,30 m	1,25 – 1,55 m	1,50 – 2,05 m	2,00 – 2,55 m
5070	Flange connection DN 80	16				
5071	BAIO spigot connection DN 80					

Flange connection DN 100 on request

Order no.	MOP (PN)	Pipe cover	Connection	A min — max	B	B1	D	Weight
5070	16	1,00 — 1,30 m	Flange DN 80	740 — 1040	280	305	190	40,0
		1,25 — 1,55 m		990 — 1290				52,0
		1,50 — 2,05 m		1240 — 1740				58,0
		2,00 — 2,55 m		1740 — 2290				75,0
5071		1,00 — 1,30 m	BAIO spigot DN 80	805 — 1105				38,0
		1,25 — 1,55 m		1065 — 1365				43,0
		1,50 — 2,05 m		1315 — 1865				48,0
		2,00 — 2,55 m		1815 — 2365				72,0

Chamber hydrant

PN 16, with claw DN 80

Design features

- Working pressure: max. 16 bar (PN 16)
- Automatic drainage system (maintainable)
- Residual water zero < EN 1074-6; draining time < 10 min.
- Rudget, but weight and flow optimized design
- Opening for the use of slings
- Enough space for bolts assembling
- 100% corrosion protected
- Excellent spindle bearing for many openings / closings (no blank areas).
- Large thread engagement of the spindle even in maximum closed position
- Minimal torque for operation (MOT < 130 Nm, mST > 260 Nm)
- Vibration free plug guide with plastic slides.
- 15 turns to open position
- Screwless connection of the bonnet
- Particularly suitable for pigging, by simply disassembling the bonnet, the cleaning pig can be inserted vertically
- All internal parts made of corrosion-resistant material and can be removed upwards without uninstal the hydrant
- Cover cap with non-slip tread surface - easy to remove also from outside
- Flange sized and drilled according to EN 1092-2 / PN 16
- Other couplings of different national standards on request
- Resistance to disinfectants according to EN 1074-1

Material | Technical features

Body, bonnet:	made of ductile iron, according to EN 1563
adapter, claw:	made of ductile iron, epoxy powder coated on all sides
Valve plug:	made of brass / elastomer
Spindle:	duplex stainless steel
Spindle bearing, sliding washer, wedge guide and drain valve:	made of POM
Rate of flow: Kv[m ³ /h]	Q (m ³ /h) at a differential pressure of 1 bar is higher than EN14339
Dimension:	DN 100
Outlets:	Claw DN 80, Storz B (2½") or A (4"), Norwegian standard 2½"

Suitable accessories

Operating key:	No. 3420
Flat gasket:	No. 3390
Bolts, washers:	No. 8810, 8830, 8840, No. 8871, 8873, 8874

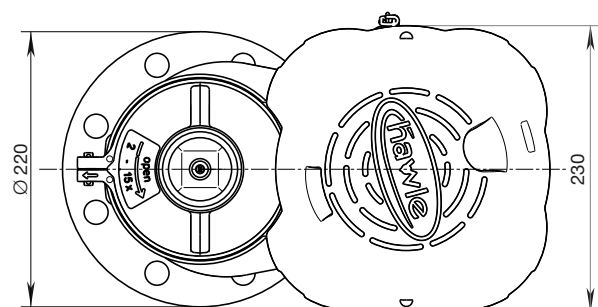
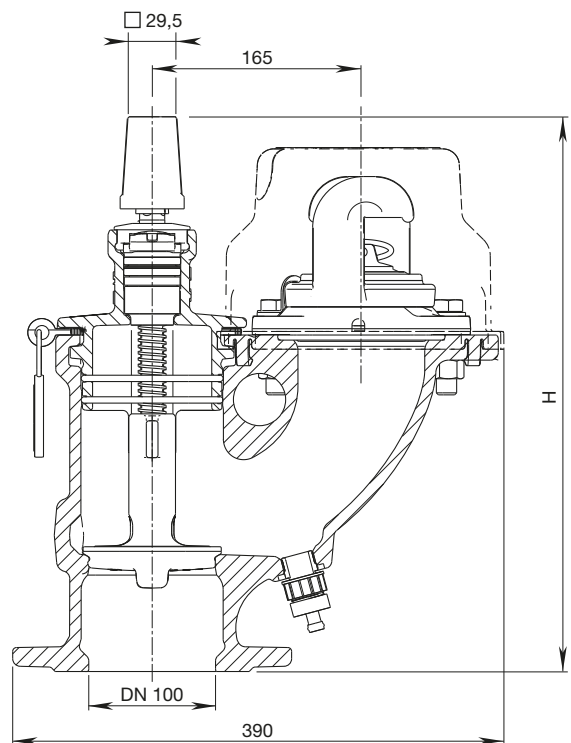
Adapter for pipe cleaning: No. 5033814

No. 5025



Adapter for
pipe cleaning
No. 5033814

Order no.	Outlet	MOP (PN)	DN	Total height H	Weight
5025	with claw DN 80	16	100	450	27,0



Freeflow garden underground hydrant

PN 16

Design features

Because of the completely straight-through outlet area the freeflow underground garden hydrant permits very high flow rates.

Ideal for use in gardens and parks, as well as on camping sites.

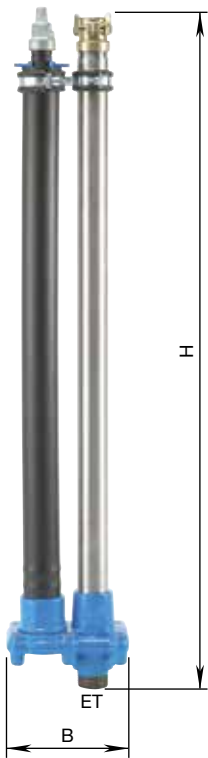
Shutting off is effected via a shut-off blade of stainless steel with fixed stops in open/closed position.

Material | Technical features

- **Cast components:** GJS-400, epoxy powder coated
- **Medium pipe:** stainless steel
- **Spindle/shut-off blade/shut-off device:** stainless steel
- **Protection jacket:** PE (polypropylene)
- **Gaskets:** EPDM)
- **GEKA plus coupling:** brass
Other couplings of different national standards on request

Order no.	MOP (PN)	RD Pipe cover depth	Connection	B	H	Weight
5085	16	0,80 m	ET 1 1/4"	165	710	7,50
		1,00 m			910	8,60
		1,25 m			1160	10,00
		1,50 m			1410	11,40

No. 5085



Design features

- Intelligent solution for continuous functionality of your hydrants drainage
- Large surface area to output the drainage water to the gravel pack; the drainpipe (Hawle drainage pipe) evenly discharges the water over the whole surface, which is over 300 times larger than the opening of a conventional 1"-hose
- No displacement or extension of the small 1"-pipe opening
- No frost damage

Hawle drainage pipe

Drainage pipe for hydrants

No. 5067

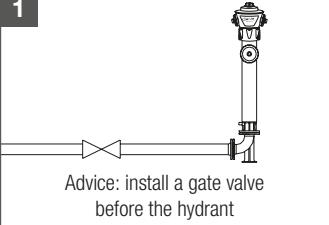
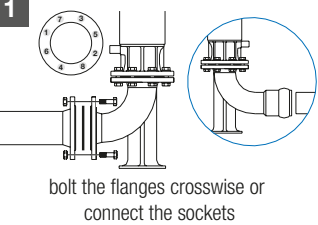
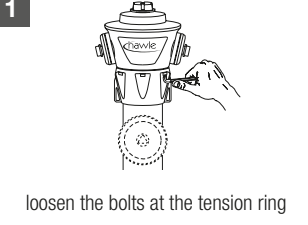
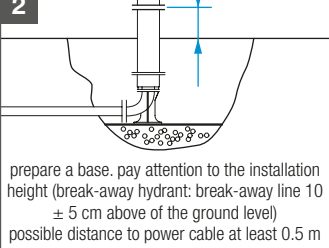
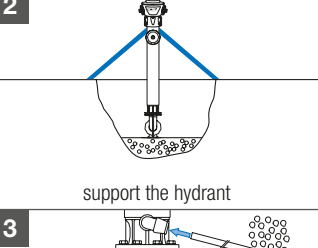
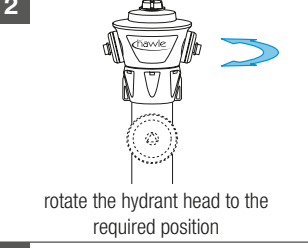
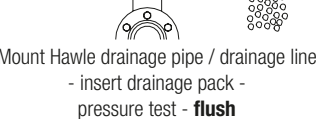
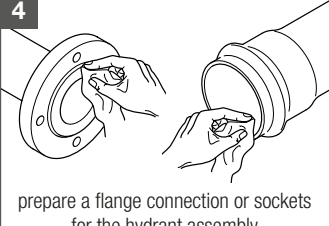
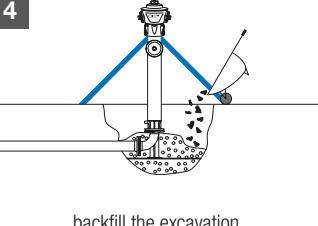


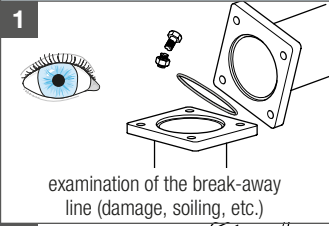
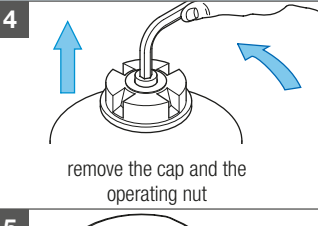
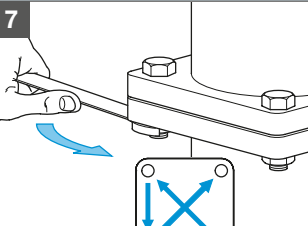
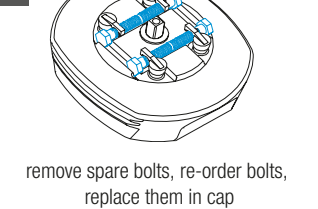
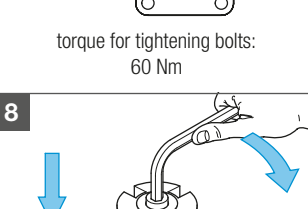
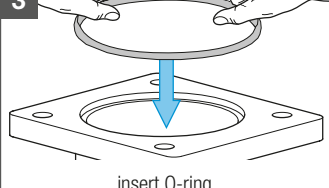
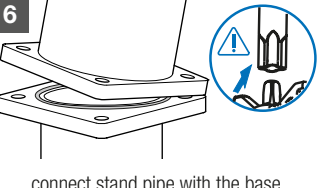
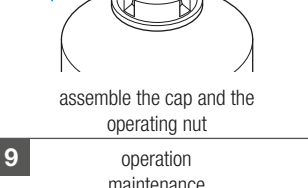
Application example



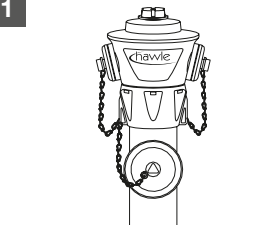
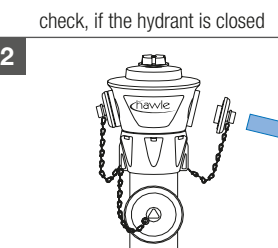
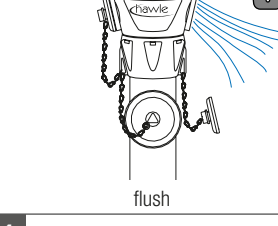
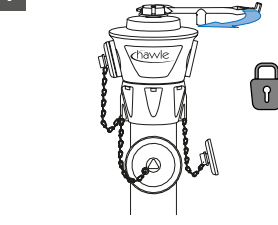
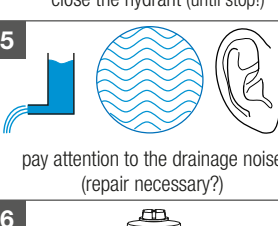
Operating instruction Above ground hydrant

Assembly

Preperation work	Hydrant assembly	Rotation of the hydrant head
1  Advice: install a gate valve before the hydrant	1  bolt the flanges crosswise or connect the sockets	1  loosen the bolts at the tension ring
2  prepare a base. pay attention to the installation height (break-away hydrant: break-away line 10 ± 5 cm above of the ground level) possible distance to power cable at least 0.5 m	2  support the hydrant	2  rotate the hydrant head to the required position
3  prepare Hawle drainage pipe or drainage line 1" (1 - 3 m)	3  Mount Hawle drainage pipe / drainage line - insert drainage pack - pressure test - flush	3  tighten the bolts
4  prepare a flange connection or sockets for the hydrant assembly	4  backfill the excavation	 Caution! It's not allowed to open the bolts of the base flange!

Damage of the break away line (break away hydrant)		
1  examination of the break-away line (damage, soiling, etc.)	4  remove the cap and the operating nut	7  torque for tightening bolts: 60 Nm
2  if necessary: clean the flange	5  remove spare bolts, re-order bolts, replace them in cap	8  assemble the cap and the operating nut
3  insert O-ring	6  connect stand pipe with the base	9  operation maintenance

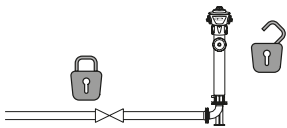
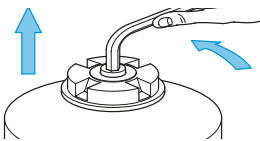
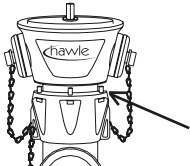
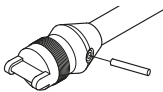
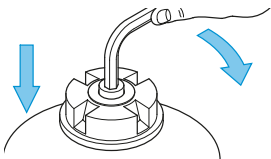
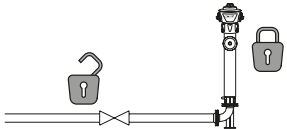
Operation Maintenance

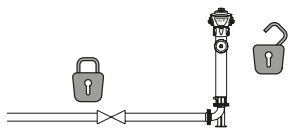
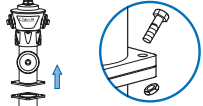
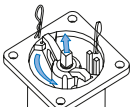
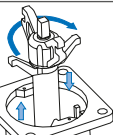
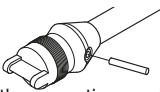
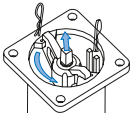
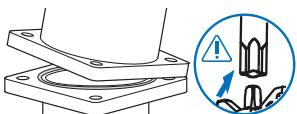
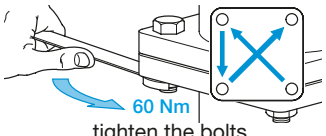
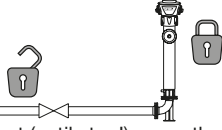
Annual inspection
1  check, if the hydrant is closed
2  remove the cap
3  flush
4  close the hydrant (until stop!)
5  pay attention to the drainage noise (repair necessary?)
6  put the cap back on

Operating instruction

Above ground hydrant

Drainage untight or Change of the valve plug

Above ground hydrant	
If the drainage is untight, skip step 5. If the valve plug has to be changed, skip step 4.	
1	 close the supply and open the hydrant completely
2	 remove the operating nut and the cap
3	 loosen the bolts, remove the head
4	 take out the operating controls, mark the position of the operating controls, rotate it by 180°. Put the hydrant head on, tighten the bolts.
or	
5	 take out the operating controls, change the valve plug, insert the operating control, put head in place again, tighten the bolts
6	 assemble the cap and the operating nut
7	 close the hydrant (until stop!); open the supply
8	operation maintenance

break-away	
If the drainage is untight, skip step 5. If the valve plug has to be changed, skip step 4.	
1	 close the supply and open the hydrant completely
2	 remove the bolts detach the stand pipe
3	 remove the spring clip; turn the spindle housing out of the anchoring
4	 rotate the operating controls by 180°
or	
5	 take out the operating controls, change the valve plug, insert the operating control
6	 lock the spindle housing connect the spring clip
7	 connect the stand pipe with the base
8	 tighten the bolts 60 Nm
9	 close the hydrant (until stop!); open the supply
10	operation maintenance

Saddles

For steel, ductile iron, PE and PVC pipes



Page I 2	Universal pipe saddle Pipe saddle with internal thread Pipe saddle with flange outlet <i>Universal-H saddle with ZAK sleeve</i> <i>Universal-H-Hawlinger with ZAK sleeve</i> Saddles without drilled connection hole	Page I 2/1 Page I 2/1 Page L 3/1 Page L 3/1 Page I 2/1	
Page I 3	Universal shut-off saddle Drilling instructions Universal shut-off saddle with internal thread <i>Universal-Hawlinger with internal thread</i> <i>Universal-H shut-off saddle with ZAK sleeve</i> Strap Universal-H-shut off saddle with internal thread Strap for universal-H shut-off saddle	Page I 3/1 Page I 3/2 Page J 8/4 Page L 3/1 Page I 3/3 Page I 3/4 Page I 3/5	
Page I 4	HAKU saddle HAKU saddle with internal thread HAKU pipe saddle with flange outlet <i>HAKU saddle clamp with ZAK sleeve</i>	Page I 4/1 Page I 4/3 Page L 3/2	
Page I 5	HAKU shut-off saddle HAKU shut-off saddle with internal thread <i>HAKU-Hawlinger with internal thread, Hawlinger adapter</i> <i>HAKU shut-off saddle with ZAK sleeve</i> Shut-off adapter	Page I 5/1 Page J 8/4 Page L 3/3 Page I 5/2	
Page I 6	Pipe repair clamp Pipe repair clamp made of stainless steel Pipe repair clamp made of cast iron	Page I 6/1 Page I 6/3	

Saddles

For steel, ductile iron, PE and PVC pipes

Accessories

Bolts	Page M 4/4
Service valves	Chapter J
Fittings	Chapter K
Strap No. 3111	Page I 3/3
Strap No. 3110	Page I 3/5

Tools

Drilling machine	Page Q 2/1
Saddle blade	Page Q 2/2
	Page Q 4/1

Technical information

Tightening torques for flange assembly	Page R 3/1
Tightening torques shut-off saddle mounting HAKU	Page R 3/1
Tightening torques for strap attachment	Page I 3/2

Application examples



Universal pipe saddle

For steel, ductile iron and asbestos cement pipes



Design features

- Compact saddle body
- Favorable angle of contact
- Flexible padded wrap around strap for easy installation
- Optimum force transfer of the strap screw connection through strap and cylinder disks as bolt contact area
- The saddle seal is moulded to fit the pipe diameter and is prefixed in the saddle body
- All internal threads are fitted with a corrosion protection ring to prevent corrosion and incrustations
- Version for potential equalization ("grounding") on request
- No. 3500 / 3510 for drilling without pressure

Material | Technical features

- 1 **Saddle body** made of ductile iron, epoxy powder-coated
- 2 **Saddle seal** made of elastomer
- 3 **Nuts** free lying, (Molybdenum-coated)
No. 3500 / 3530: made of stainless steel spherical bearings
No. 3510: on stainless steel cylinder disk
- 4 **Strap** made of passivated stainless steel, strength 1,5 with insulating elastomer **rubber padding**
- 5 **Corrosion protection ring** made of elastomer

Suitable accessories

Drilling machine: No. 5800, No 5805, No 5807

No. 3500 Pipe saddle / internal thread

No. 3510 Pipe saddle / flange

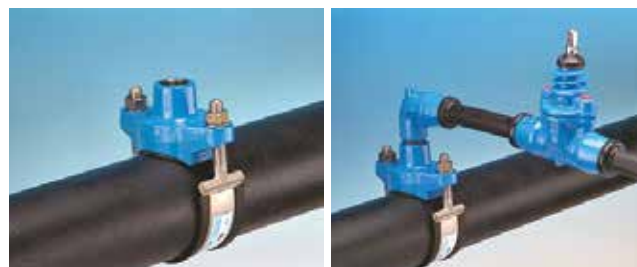
No. 3530 Saddle without drilled connection hole



Order no.	Internal thread DN	MOP (PN)	Dimensions/DN															
			50	65	80	100	125	150	200	250	300	350	400	450	500	600		
3500	1"	16																
	1¼"																	
	1½"																	
	2"																	
	2½"																	
	3"																	
3510	40																	
	50																	
	80																	
	100																	
3530	150																	

Please specify pipe material on order
Larger nominal sizes on request!

Application examples



Universal pipe saddle

For steel, ductile iron and asbestos cement pipes

Thread outlet G		Dimension/DN													
		50	65	80	100	125	150	200	250	300	350	400	450	500	600
1"	Weight	2,30	2,20	2,40	2,50	3,30	3,40	3,90	4,60	4,70					
	H	64	64	61	61	78	78	86	89	89					
1¼"	Weight	2,30	2,20	2,40	2,50	3,40	3,50	4,10	4,60	4,70					
	H	64	64	61	61	78	78	86	89	89					
1½"	Weight			2,40	2,50	3,60	3,60	4,20	4,80	4,90					
	H			57	57	78	78	86	89	89					
2"	Weight			2,45	2,50	3,80	3,90	4,40	5,00	5,10	7,30	7,60	8,00	8,20	8,80
	H			57	57	78	78	86	89	89	74*	74*	74*	74*	74*
2½"	Weight							5,70							
	H							56*							
3"	Weight								5,90						
	H								56*						

*Version with double strap

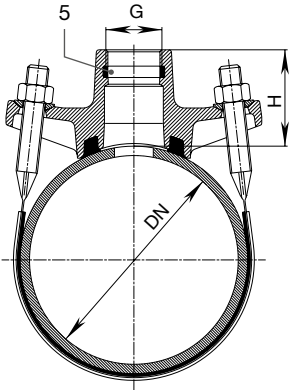
Flange outlet DN 1		Dimension/DN											
		80	100	125	150	200	250	300	350	400	450	500	600
40	Weight					7,70							
	H					145							
50	Weight	6,60	6,60	6,80	6,90	7,70	7,90	8,00		10,90			
	H	114	114	126	126	145	153	153		140			
80	Weight				9,50	10,30	11,50	11,80	14,50	14,90	15,70	16,50	17,30
	H				135	150	147	147	146	146	146	146	146
100	Weight				11,10	11,80	12,50	12,70	15,80	16,00	16,90	17,60	18,30
	H				140	155	158	158	165	165	165	165	165
150	Weight									24,00	29,40	30,50	31,90
	H									186*	186*	186*	186*

*Version with three straps

Dimension/DN	65	80	100	125	150	200	250	300	350	400	600
Weight	2,60	2,70	2,90	3,50	3,60	4,30	4,80	4,90	6,50	8,90	10,00

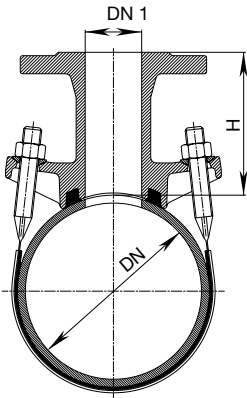
No. 3500 Saddle clamp

With internal threaded outlet ISO 228, in conjunction with shut-off adapter No. 3720 for under pressure drilling



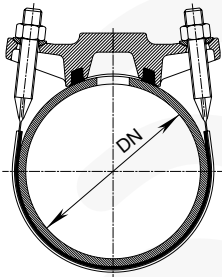
No. 3510 Saddle clamp

With flanged outlet - EN 1092-2; all models have a double strap, flange drilling to EN 1092-2 | PN 16, larger DN on request



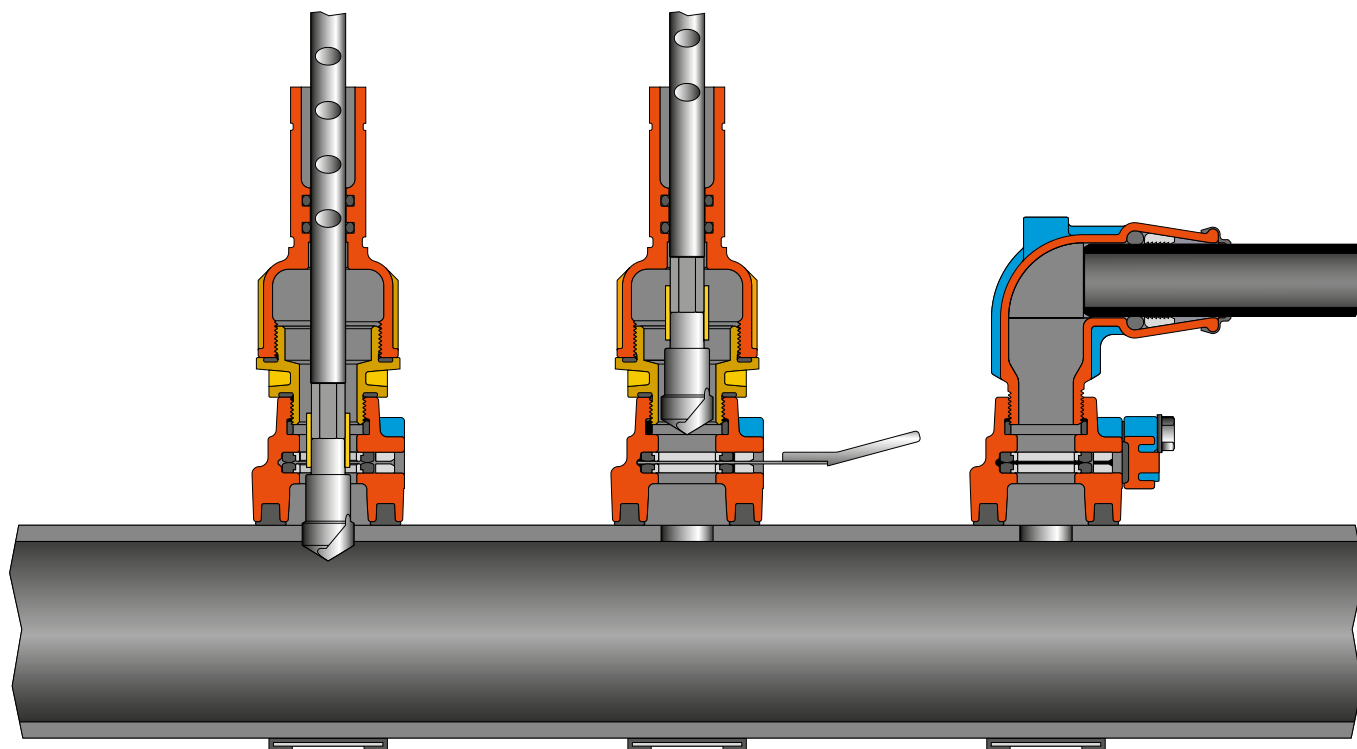
No. 3530 Pipe saddle without drilled hole

Suitable for covering drill holes up to max. Ø40



Saddles

Drilling instructions under pressure



1 Drilling:

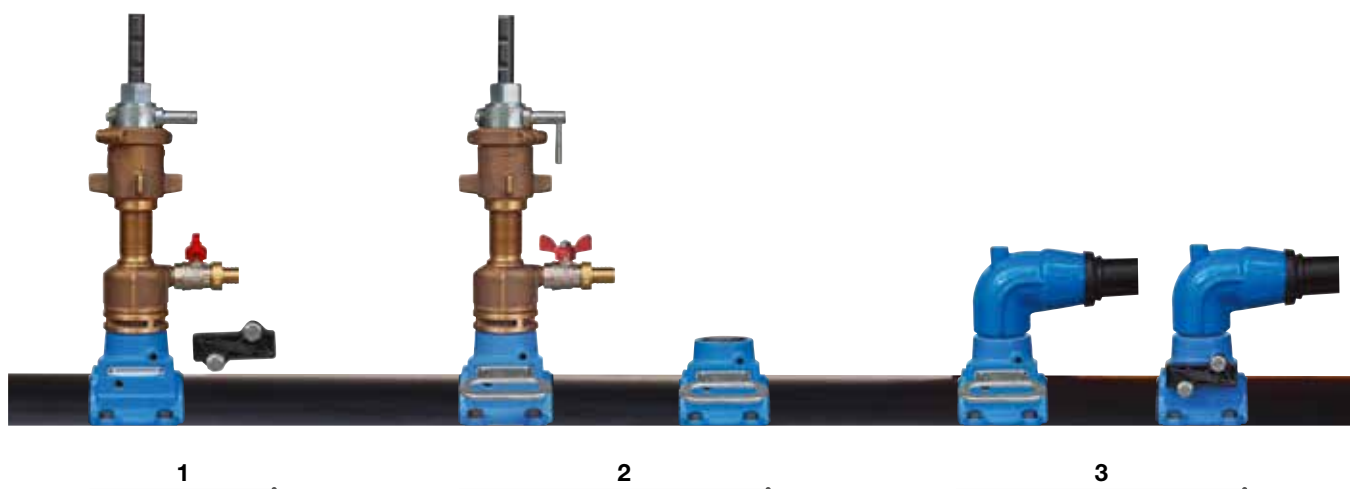
Drill the pipe with a drilling machine
No. 5800, No. 5805 (Hawle drilling
machine see "Tools") - retract the drill

2 Shut-off:

Lubricate No. 3443 the saddle
blade (No. 8401) - shut-off

3 Connection:

Connect the pipe - remove
saddle blade - cover must be
replaced



Universal shut-off saddle

For steel, ductile iron and asbestos cement pipes

Design features

- For under pressure drilling
- Can be pressure tested from both directions
- Solid body
- Flexible padded wrap around strap for easy installation
- Favorable angle of contact
- Optimum force transfer of the strap screw connection through strap and cylinder disks as bolt contact area
- The saddle seal is moulded to fit the pipe diameter and is prefixed in the saddle body
- All internal threads are fitted with a corrosion protection ring to prevent corrosion and incrustations

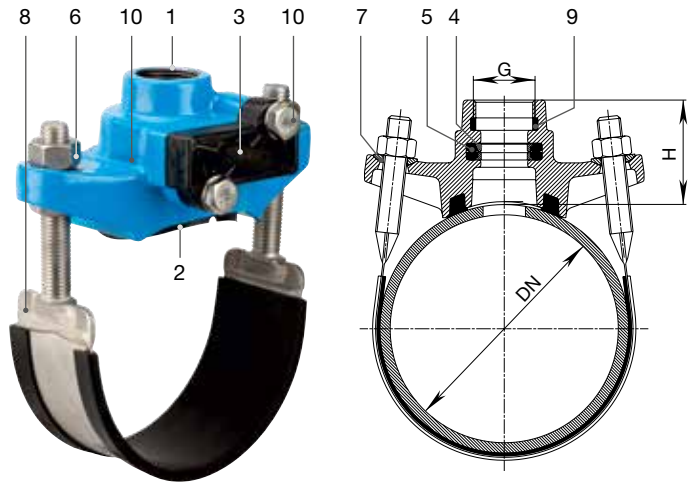
Material | Technical features

- Saddle body** made of ductile iron, epoxy powder-coated
 - Saddle seal and seal** for intermediate shut-off made of elastomer
 - Cover** made of POM, fiber glass reinforced (with rubber seal)
 - O-ring carrier** made of POM
 - Nuts** made of stainless steel (Molybdenum-coated)
 - Ball disc** made of stainless steel
 - Strap** of passivated stainless steel, strength 1,5 with insulating elastomer **rubber padding**
 - Corrosion protection ring** made of elastomer
 - Hexagonal screws and washers** made of stainless steel
- Drilling instructions (see page I 3/1)

Suitable accessories

Drilling machine: No. 5800, No. 5805
Saddle blade No. 8401

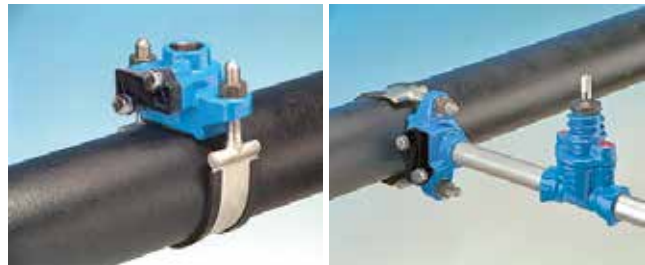
No. 3800



Order No.	Internal thread ISO 228	MOP (PN)	Dimension/DN													
			50	65	80	100	125	150	200	250	300	350	400	450	500	600
3800	1"	16														
	1¼"															
	1½"															
	2"															

Please specify pipe material on order

Application examples



Order No.	Internal thread ISO 228 G		Dimension/DN													
			50	65	80	100	125	150	200	250	300	350	400	450	500	600
3800	1"	Weight	2,10	2,10	2,10	2,70	3,10	3,20	4,00	4,60	4,70	7,00			8,00	8,60
		H	67	68	69	69	70	70	80	82	82	78*			78*	78*
	1¼"	Weight	2,10	2,10	2,70	2,70	2,75	3,30	4,10	4,70	4,70				8,00	
		H	70	71	72	72	73	73	80	82	82				78*	
	1½"	Weight			3,00	3,00	3,60	3,70	4,30	4,90	4,90	7,00	7,40		8,10	9,00
		H			73	73	74	74	80	82	82	78*	78*		78*	78*
	2"	Weight			3,10	3,10	3,00	3,80	4,60	5,30	5,40	7,70	8,00	8,30	8,60	9,00
		H			78	78	78	78	81	83	83	78*	78*	78*	78*	78*

*Version with double strap

Strap

For Hawle pipe saddles for steel, cast iron and asbestos cement pipes

Design features

- Including ball discs and nuts
- Max. tightening torque 80 Nm
- Made of stainless steel, passivated
- Rubber cover made of elastomer

No. 3111



Dimension DN	Suitable for pipe type			Markings					
	Steel	Cast iron	AZ	Ø-Diameter range of strap	Control dimension “L”	DN	Pipe type		
*50				60 – 70	344	50	ST	G	AZ
*65				70 – 82	374	65	ST	G	AZ
*80				89 – 108	410	80	ST	G	AZ
*100				102 – 130	455	100	ST	G	AZ
*125				132 – 158	520	125	ST	G	AZ
*150				159 – 185	595	150	ST	G	AZ
175				185 – 210	685	175	ST	G	
200				210 – 235	760	200	ST	G	
*200				219 – 244	785	200		G	AZ
*250				264 – 288	905	250	ST	G	
250				288 – 310	975	250			AZ
*300				316 – 340	1055	300	ST	G	
300				335 – 360	1130	300			AZ
*350				355 – 380	1155	350	ST	G	
350				390 – 410	1250	350			AZ
400				406 – 429	1300	400	ST		
*400				415 – 440	1325	400	ST	G	
400				450 – 475	1425	400			AZ
*450				467 – 485	1480	400	ST	G	
450				496 – 520	1570	450			AZ
*500				518 – 535	1630	450	ST	G	
500				578 – 600	1810	500			AZ
*600				620 – 640	1945	600	ST	G	
600				680 – 700	2120	600			AZ

* When ordering without reference to the pipe type or without information on the external Ø, the saddle clamps will be delivered with a strap for this labelled Ø range

Universal-H shut-off saddle

For steel, ductile iron and asbestos cement pipes

Design features

- For under pressure drilling
- Can be pressure tested from both directions
- Solid body
- Flexible padded wrap around strap for easy installation
- Favorable angle of contact
- Optimal force transition via bolt nut and holding piece
- The saddle seal is moulded to fit the pipe diameter
- All internal threads are fitted with a corrosion protection ring to prevent corrosion and incrustations

Material | Technical features

- Saddle body** made of ductile iron, epoxy powder-coated
 - Saddle seal** and **seal** for intermediate shut-off made of elastomer
 - Cover** made of POM, fiber glass reinforced (with rubber seal)
 - O-ring carrier** made of POM
 - Nuts** and **washers** made of stainless steel (Molybdenum-coated)
 - Strap** of passivated stainless steel, strength 1,5 with insulating elastomer **rubber padding**
 - Holding piece** made of glasfibre-reinforced PA
 - Corrosion protection ring** made of elastomer
 - Hexagonal screws** and **washers** made of stainless steel
- Drilling instructions (see page I 3/1)

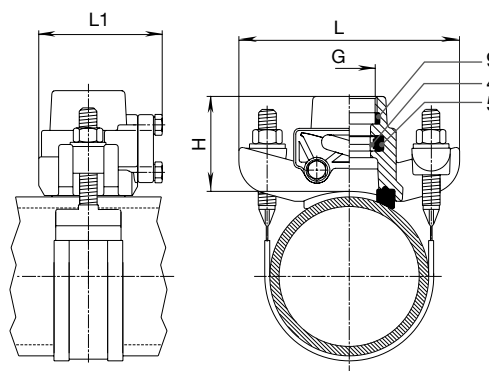
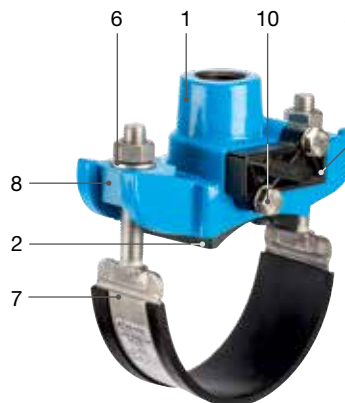
Suitable accessories

Drilling machine: No. 5800, No. 5805
Saddle blade No. 8401
Strap: No. 3110 (see page L 4/2)

Universal-H shut-off saddle

No. 3811 Complete

No. 3811G Without strap and saddle seal



Order-No.	MOP (PN)	Internal thread ISO 228 G	Dimension/DN									
			65	80	100	125	150	200	250	300	400	500
3811	16	1"										
		1½"										
3811G		1"										
		1½"										

DN	ISO 228	H	L	L1	Weight
65 – 500	1"	84	200	112	2,60
	1½"				2,80

When ordering, please state DN, pipe Ø and pipe type;
weight without strap | strap see page I 3/5

Strap

For universal-H shut-off saddles

Design features

- Includes holding pieces, washers, nuts
- Max. tightening torque 80 Nm
- Made of passivated stainless steel
- DN 65 to 500
- For all ZAK saddles, ZAK-Hawlinger and universal-H shut-off saddles

Strap with saddle seal No. 3110



When ordering, please state DN, pipe Ø and pipe type

Pipe Ø	Control dimension "L"	e.g.: for main pipe - DN			Weight
		Steel	Cast iron	AC	
75 – 83	365	65	65		0,73
88 – 97	395	80			0,76
90 – 105	410		80	80	0,76
98 – 105	415			80	0,78
106 – 118	440	100		80	0,80
112 – 122	455	100	100		0,82
123 – 137	485			100	0,85
129 – 139	490	125			0,86
139 – 149	520	125	125		0,88
147 – 160	540	150		125	0,90
156 – 165	560	150		125	0,92
166 – 177	595	150	150		0,95
175 – 185	610			150	0,97
185 – 197	645			150	1,00
200 – 212	685	200			1,03
211 – 223	720	200	200		1,05
216 – 227	735	200	200		1,07
224 – 236	760			200	1,11
235 – 244	785			200	1,13
251 – 263	840			200	1,19
260 – 275	865	250	250		1,20
268 – 280	880	250	250		1,21
273 – 285	905			250	1,25
287 – 298	945			250	1,28
305 – 315	995			250	1,33
323 – 330	1055	300	300		1,39
331 – 343	1075			300	1,41
344 – 356	1110	350		300	1,44
358 – 369	1155	350			1,50
365 – 376	1175	350			1,50
374 – 381	1205		350		1,53
405 – 415	1300			350	1,62
411 – 420	1320	400			1,64
414 – 423	1325	400			1,67
420 – 432	1345		400		1,66
450 – 460	1435			400	1,68
462 – 472	1475			400	1,78
493 – 503	1570			400	1,87
501 – 510	1600	500		450	1,91
526 – 534	1660	500		532	1,96
541 – 549	1705			450	2,00
556 – 564	1750			500	2,30

Notes



HAKU saddle

For PE and PVC pipes



Design features

- For **PE pipes** according to EN 12201 and DIN 8074 and **PVC pipes** according to EN ISO 1452-2
- The HAKU seal is in full contact with the entire diameter of the PE or PVC pipe and is glued onto the saddle for ease of assembly
- Several concentric seals with increasing diameter surround the outlet, relieving pressure exerted upon the drill hole and protects it from deformation
- The protective layer on PE pipes should be removed prior to mounting the saddle
- No. 5250 for drilling without pressure

No. 5250



Material | Technical features

- Saddle body** made of ductile iron, epoxy powder coated
- Seals** made of elastomer
- Bolts** (Molybdenum-coated) and **washers** made of stainless steel
- Corrosion protection ring** made of elastomer

Suitable accessories

Drilling machine: No. 5800, No. 5805

Order No.	Pipe Ø	MOP (PN)	Internal thread outlet ISO 228			
			1"	1¼"	1½"	2"
5250	40	16				
	50					
	63					
	75					
	90					
	110					
	125					
	140					
	160					
	180					
	200					
	225					
	250					
	250*					
	280					
	280*					
	315					
	315*					
	355*					
	400*					
	450*					
	500*					
	630*					

* Supplied as saddle piece with strap

Application examples



HAKU saddle

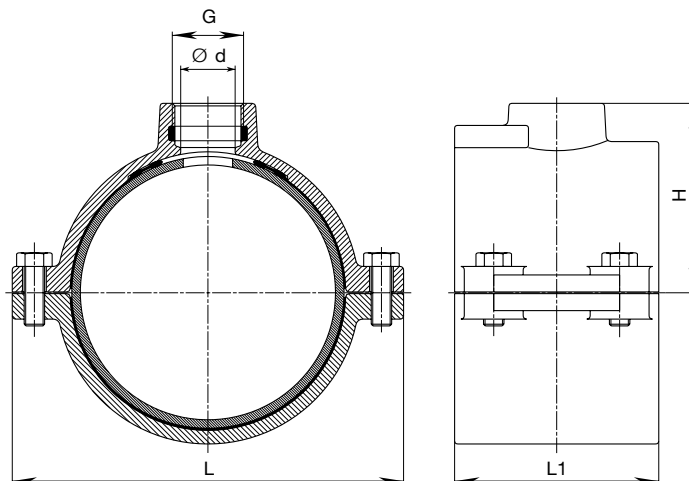
For PE and PVC pipes

Ø Pipe	G ISO 228	Ø d	H	L	L 1	Weight
40	1"	27	42	98	70	0,95
50	1"	27	56	110	80	1,20
63	1"	27	57	124	100	1,80
	1¼"	33	62			2,00
	1½"	40+	62			1,90
75	2"	40+	68	135	110	2,10
	1"	27	63			2,15
	1¼"	33	68			2,25
	1½"	40	68			2,20
90	2"	50	73	150	110	2,30
	1"	27	71			2,60
	1¼"	33	75			2,70
	1½"	40	75			2,60
110	2"	50	80	170	120	2,70
	1"	27	81			3,60
	1¼"	33	85			3,60
	1½"	40	85			3,80
125	2"	50	90	192	120	3,60
	1"	27	87			3,70
	1¼"	33	93			3,70
	1½"	40	93			4,15
140	2"	50	98	208	120	4,10
	1"	27	96			4,40
	1¼"	33	100			4,30
	1½"	40	100			4,60
160	2"	50	106	230	120	4,50
	1"	27	106			5,90
	1¼"	33	111			6,10
	1½"	40	111			6,30
180	2"	50	116	262	120	6,20
	1"	27	125			8,00
	1¼"	33	125			8,00
	1½"	40	127			8,10
200	2"	50	127	282	120	8,10
	1"	27	132			8,10
	1¼"	33	132			7,80
	1½"	40	137			8,30
225	2"	50	137	310	120	8,10
	1"	27	143			9,10
	1¼"	33	145			9,40
	1½"	40	145			9,70
250	2"	50	150	347	180	9,60
	1"	27	156			11,00
	1¼"	33	156			11,30
	1½"	40	163			11,50
280	2"	50	163	204	120	12,00
	1"	27	176			3,80
	1¼"	33	176			3,60
	1½"	40	176			3,60
315	2"	50	176	194	200	3,30
	1"	27	178			3,30
	1¼"	33	196			3,58
	1½"	40	196			3,80
355	2"	50	220	200	120	3,75
	1"	27	243			3,75
	1¼"	33	243			3,55
	1½"	40	243			3,55
400	2"	50	268	235	120	16,70
	1"	27	292			3,50
	1¼"	33	292			4,90
	1½"	40	292			4,90
450	2"	50	292	255	120	4,60
	1"	27	342			4,60
500	1"	27	292	255	120	4,90
	1½"	40	292			4,90
630	2"	50	342	255	120	9,50

No. 5250

Pipe Ø40 — 315

With internal threaded outlet ISO 228, in conjunction with shut-off adapter No. 3720 for under pressure drilling

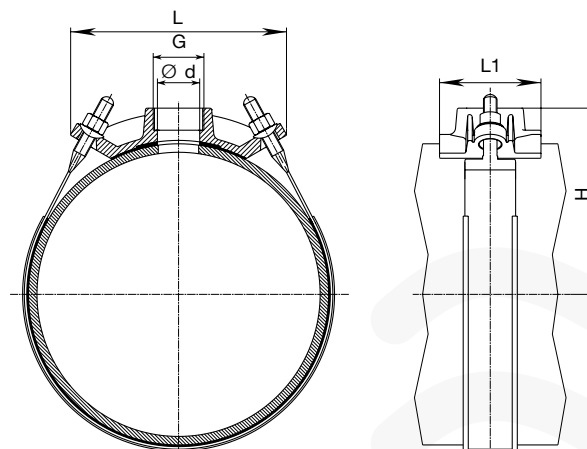


+ Drilling max. 35

*Pipe Ø250 — 630 (supplied as saddle piece with strap)

Suitable only for SDR 11 PE pipes or stronger SDR class

With internal threaded outlet ISO 228, in conjunction with shut-off adapter No. 3720 for under pressure drilling



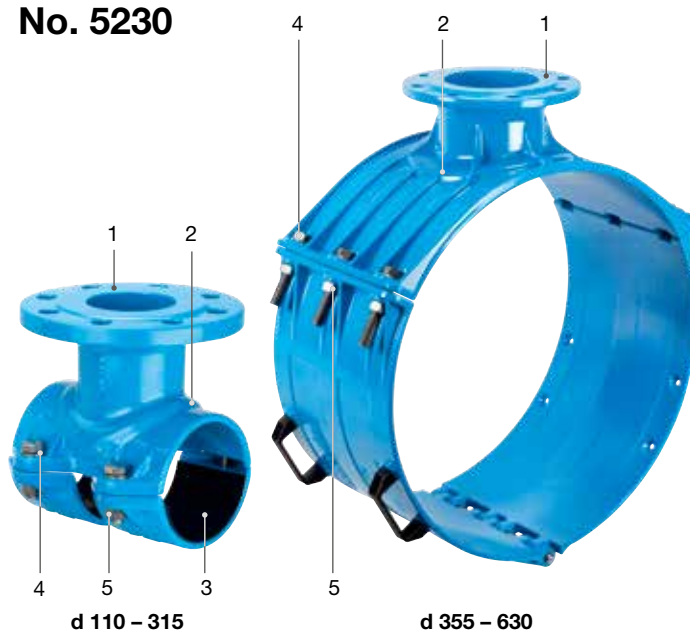
HAKU pipe saddle

With flanged outlet for PE and PVC pipes

Design features

- For **PE pipes** according to EN 12201 and DIN 8074 (**SDR 7.4 and SDR 11**) for **PVC pipes** according to EN ISO 1452-2 (**SDR 13.5 and SDR 21**)
- Solid construction of ductile iron epoxy powder coated
- No deformation of the pipe
- The drilled hole is sealed by an O-ring inserted in the upper part of saddle
- The rubber linings are bonded to the lower part of saddle - this ensures positive positioning of saddle (only for d 110 to 315)
- For holes from d 355 to 630 pipes, special drilling machine is available from Hawle
- Flange sized and drilled according to EN 1092-2 | PN 16 other standards on request
- For PE pipes with protective layer, this must be removed prior to mounting the saddle

No. 5230



Material | Technical features

- 1 **Saddle body** and **segments** made of ductile iron, epoxy powder coated
- 2 **O-ring seal in the bonnet** made of elastomer
- 3 **Rubber in the lower part** of the saddle made of elastomer
- 4 **Bolts and washers** made of stainless steel
- 5 **Nuts** (Molybdenum-coated) made of stainless steel

Suitable accessories

Drilling machine for flange outlet
DN 80 – 100:

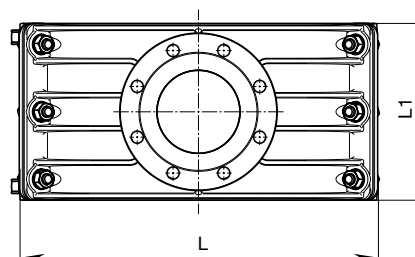
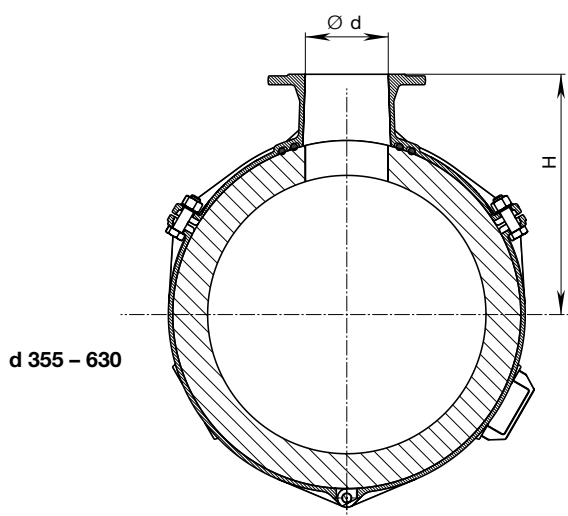
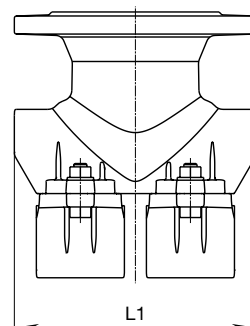
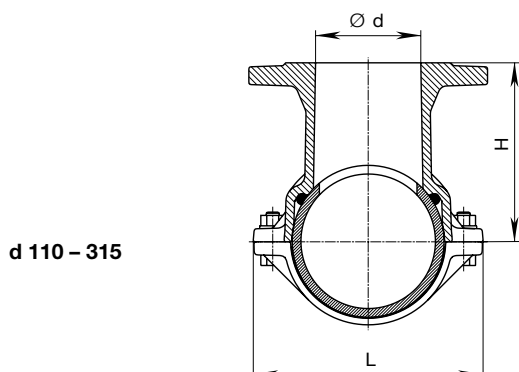
No. 5807

Order No.	Flange DN	MOP (PN)	Ø Pipe													
			110	125	140	160	180	200	225	250	280	315	355	450	500	630
5230	80	16														
	100															
	150															

HAKU pipe saddle

With flanged outlet for PE and PVC pipes

No. 5230 PE pipes EN 12201 DIN 8074 (SDR 7.4 and SDR 11) d 110 — 630
PVC pipes EN ISO 1452-2 (SDR 13.5 and SDR 21) d 110 — 315



ØPipe	Flange DN	Ø d	H	L	L1	Weight
110	80	80	150	182	180	8,3
125	80	80	159	197	220	8,4
	100	100*	159	197	220	9,4
140	80	80	166	212	220	11,8
	100	100	166	212	220	13,3
160	80	80	176	234	220	10,1
	100	100	176	234	220	11,0
180	80	80	186	254	220	11,2
	100	100	186	254	220	12,2
200	80	80	191	270	220	11,8
	100	100	191	270	220	13,8
225	80	80	206	301	220	14,0
	100	100	206	301	220	16,0
250	80	80	221	347	220	15,3
	150	150	225	342	285	19,3
280	100	100	225	374	285	19,5
	150	150	239	374	285	21,0
315	80	80	255	410	285	20,0
	150	150	257	409	285	24,5
355	150	150	298	460	320	36,2
450	150	150	345	475	320	42,0
500	150	150	370	520	320	45,2
630	150	150	435	649	320	50,2

* Maximum drilling possible with 70 mm

HAKU shut-off saddle

For PE and PVC pipes



Design features

- For **PE pipes** according to EN 12201 and DIN 8074 and **PVC pipes** according to EN ISO 1452-2
- For under pressure drilling
- Can be pressure tested from both directions
- The HAKU seal is in full contact with the entire diameter of the PE or PVC pipe and is glued into the saddle for ease of assembly
- In addition several concentric seals with increasing diameter surround the outlet thus relieving the pressure upon the drill hole and protecting it from deformation
- For PE pipes with protective layer, this must be removed prior to mounting the saddle

Material | Technical features

- Saddle body** made of ductile iron, epoxy powder coated
 - Seal** made of elastomer
 - Bolts** (Molybdenum-coated) and **washers** made of stainless steel
 - Seal cover** made of POM, with rubber seal, glass fiber reinforced
 - Bolts** and **washers** made of stainless steel
 - Corrosion protection ring** made of elastomer
- Drilling instructions (see page I 3/1)

No. 5310

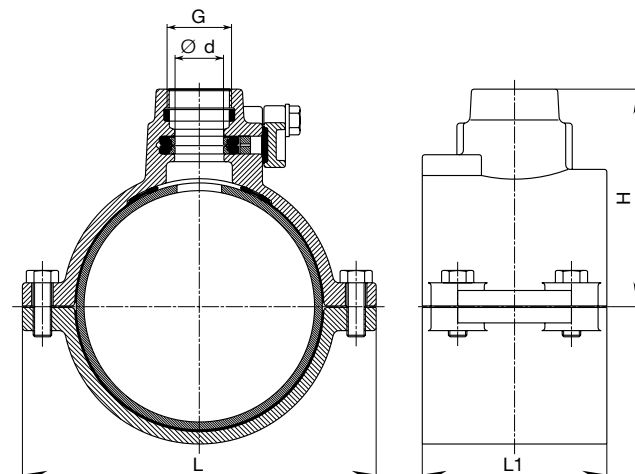


Ø Pipe	MOP (PN)	Internal thread outlet ISO 228			
		1"	1¼"	1½"	2"
63	16				
75					
90					
110					
160					
225					

No. 5210 Combined assembly: HAKU saddle No. 5250 with shut-off adapter No. 3720

125	16				
140					
200					
225					
250					

Ø Pipe	G ISO 228	Ø d	H	L	L1	Weight
63	1"	28	84	124	100	2,5
	1¼"	32	87			2,4
75	1"	28	91	135	110	2,8
	1¼"	32	94			2,6
	1½"	43	91			3,3
	2"	43	95			3,0
90	1"	28	100	150	110	3,0
	1¼"	32	103			2,5
	1½"	43	101			3,6
	2"	43	105			3,4
110	1"	28	110	170	120	3,6
	1¼"	32	113			3,6
	1½"	43	113			4,3
	2"	43	117			4,0
160	1"	28	138	230	120	5,5
	1¼"	32	141			5,4
	1½"	43	140			5,6
	2"	43	145			5,6
225	2"	43	185	310	120	7,5



125	1"	27	167	192	120	4,8
	1¼"	31	170			5,5
	1½"	37	180			5,8
	2"	42	183			5,8
140	1"	27	174	208	120	5,4
	1¼"	31	177			5,9
	1½"	37	188			6,2
	2"	42	191			6,2
200	1"	27	212	285	120	7,0
	1¼"	31	218			7,2
	1½"	37	224			7,6
	2"	42	230			7,7
225	1"	27	219	310	120	10,5
	1¼"	31	222			11,0
	1½"	37	232			11,3
	2"	50	248			14,2

Application examples



Shut-off adapter

For saddle

Design features

- Drilling under pressure with the shut-off system that has been tried and tested for decades
- This shut-off adapter can be used for under pressure drilling with every type of standard saddle
- Note: The external thread is one size larger than the internal threaded outlet, except on the 2 "size, this to provide greater strenght
- Cover shut-offs with internal thread are fitted with a corrosion protection ring to prevent corrosion and incrustation
- All external threads must be protected according to standard occupational procedure

Material | Technical features

- 1 **Body** made of ductile iron, epoxy powder-coated
 - 2 **Seal cover** made of POM, with rubber seal, fibre glass reinforced
 - 3 **Bolts and washers** made of stainless steel
- **Seal and corrosion protection ring** made of elastomer
 - Drilling instructions (see page I 3/1)

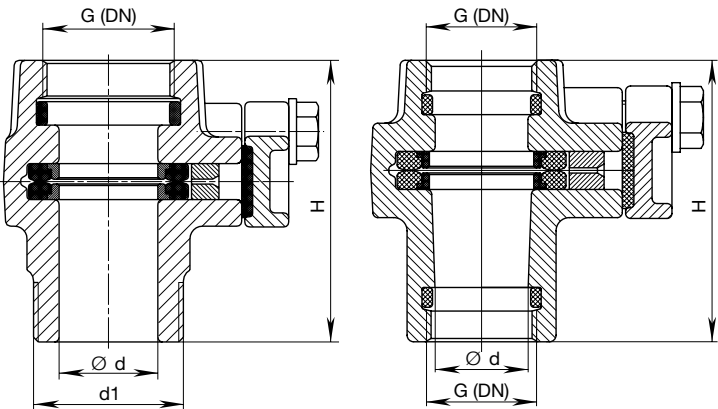
Suitable accessories

Drilling machine: No. 5800, No. 5805
Saddle blade No. 8401

No. 3720



Order No.	MOP (PN)	Int. thread ISO 228	Ext. thread EN 10221-1	Int. thread ISO 228	
3720	16	1"	1¼"		
		1"		1"	
		1¼"	1¼"		
		1¼"	1½"		
		1½"	2"		
		2"	2"		



* Both ends internal thread ISO 228

G (DN) ISO 228	d1 EN 10226-1	H	Ø d	Weight
1"	1¼"	85	27	1,1
1"		85	27	1,1
1¼"	1¼"	90	27	1,4
1¼"	1½"	90	31	1,3
1½"	2"	95	37	1,7
2"	2"	100	42	1,8

Application examples



Pipe repair clamp

For steel, ductile iron, asbestos cement and PVC-pipes



Design features

- The clamp with the self-centering lug system
- Fully encompassing gasket seals complete gaps and other pipe damage
- The bolts (3) are welded to the bolt bar (4). Squeezing the handle makes for easy assembly onto the pipe. The nuts are fed directly to the bolts from a special nut dispenser (8). This eases the positioning of the lugs and bolts and avoids handling of loose parts.
- Special version such as larger diameters and other lengths on request
- **No. 0750** tested with new pipes in delivery condition
 $\varnothing 54$ — $\varnothing 190$ PN 16
 $\varnothing 190$ — $\varnothing 430$ PN 10
- **No. 0751** tested with new pipes in delivery condition
 $\varnothing 87$ — $\varnothing 186$ PN 16
 $\varnothing 208$ — $\varnothing 430$ PN 10
 $\varnothing 448$ — $\varnothing 471$ PN 6

No. 0750 “single lug”

Pipe diameter 54 — 430, length 150 — 380

No. 0751 “double lug”

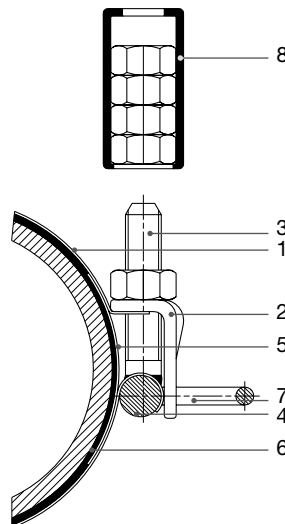
Pipe diameter 87 — 471, length 200 — 380



Quick assembly with H-Nut dispenser which prevents loss of nuts into the dirty trench.

Material | Technical features

- 1 **Band** made of stainless steel
- 2 **Lug** made of stainless steel
- 3 **Bolts** made of stainless steel
- 4 **Bolt-bar** made of stainless steel
- 5 **Bridging plate** made of stainless steel
- 6 **Gasket** made of elastomer
- 7 **Handle** made of stainless steel
- 8 **Nut dispenser** made of elastomer (from 3 bolts)



Application examples



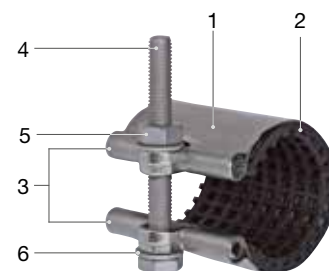
Design features

- For steel, ductile iron and AC pipes
- For pipe diameters from 21 — 64, length 70

Material | Technical features

- 1 **Band** made of stainless steel
- 2 **Gasket** made of elastomer
- 3 **Lug** bridge of galvanised iron
- 4 **Bolts** galvanised
- 5 **Nuts** galvanised
- 6 **Washers** made of stainless steel

No. 0501 “single lug”



Pipe repair clamp

For steel, cast iron, AC and PVC pipes

No. 0750 single lug

Type	ØPipe	Length	Suitable for pipe DN							Weight
			Steel	Cast iron	AC-PN 10		AC-PN 16		PVC	
					raw	turned	raw	turned	ext. Ø	
K 54	54 – 58	150	50							1,1
M 54		200								1,5
K 58	58 – 64	150	50						63	1,1
M 58		200								1,5
K 63	63 – 68	150		50					63	1,2
M 63		200								1,6
K 68	68 – 76	150			50	50				1,2
M 68		200								1,7
K 75	75 – 83	150	65	60	60	60			75	1,3
M 75		200								1,7
K 82	82 – 91	150	80	65					90	1,3
M 82		200								1,8
K 95	95 – 104	150		80	80	80		80		1,4
M 95		200								1,9
K 104	104 – 112	150	100				80	80	110	1,5
M 104		200								2,0
K 112	112 – 121	150	100	100		100				1,5
M 112		200								2,1
K 115	115 – 125	150		100	100	100			125	1,5
M 115		200								2,1
K 120	120 – 130	150			100	100		100	125	1,7
M 120		200								2,2
K 131	131 – 141	200	125				100		140	3,2
M 131		250								4,0
K 140	140 – 150	200								3,2
M 140		250		125		125				4,0
L 140		315								5,2
K 151	151 – 161	200								3,4
M 151		250	150		125			125	160	4,3
L 151		315								5,4
K 166	166 – 178	200								3,5
M 166		250	150	150		150				4,4
L 166		315								5,5
K 178	178 – 190	200								3,6
M 178		250			150	150		150	180	4,5
L 178		315								5,7
K 190	190 – 202	200					150	150	200	3,9
M 190		250								4,7
L 190		315								5,8
K 200	200 – 212	250								5,0
M 200		315	200							6,2
L 200		380								7,5
K 215	215 – 227	250								5,0
M 215		315	200	200					225	6,3
L 215		380								7,6
K 233	233 – 246	250								5,2
M 233		315			200	200				6,3
L 233		380								7,8
M 250	250 – 262	315					200	200	250	6,8
L 250		380								8,1
K 269	269 – 281	250								5,6
M 269		315	250	250					280	7,1
L 269		380								8,5
M 285	285 – 297	315			250	250				7,5
L 285		380								9,0
K 306	306 – 318	250								6,0
M 306		315					250	250	315	7,8
L 306		380								9,2
K 315	315 – 327	250								6,2
M 315		315	300	300					315	7,8
L 315		380								9,5
K 345	345 – 357	250								6,7
M 345		315	350		300	300			355	8,3
L 345		380								10,0
M 366	366 – 379	315	350	350			300	300		8,7
L 366		380								10,5
K 400	400 – 412	250								7,4
M 400		315	400		350	350			400	9,2
L 400		380								10,9
K 418	418 – 430	250								7,6
M 418		315	400	400						9,7
L 418		380								11,8

No. 0751 double lug

Type	Ø Pipe	Length	Suitable for pipe DN							Weight
			Steel	Cast iron	AC-PN 10		AC-PN 16		PVC ext. Ø	
					raw	turned	raw	turned		
M 87	87 – 102	200	80	80	80	80			90	2,7
M 106	106 – 124	200	100	100	100	100	80		110	2,8
M 114	114 – 132	200	125	100	100	100		100	125	2,9
K 132	132 – 152	200	125	125	125	125	100		140	4,9
M 132		250								
K 142	142 – 162	200	150	125	125	125	125	125	160	6,4
M 142		250								
K 160	160 – 180	200	150	150		150			160	6,5
M 160		250								
L 160		315								5,3
K 166		200								
M 166	166 – 186	250	150	150						8,3
L 166		315								
K 208	208 – 230	250	200	200					225	8,8
M 208		315								
L 208		380								7,3
K 220		250								
M 220	220 – 242	315	200		200					11,1
L 220		380								
K 236	236 – 258	250			200	200	200	200	250	9,4
M 236		315								
L 236		380								7,8
K 271		250								
M 271	271 – 293	315	250	250						11,8
L 271		380								
M 306	306 – 328	315	300	300			250	250	315	12,0
L 306		380								
K 330	330 – 352	250				300				13,1
L 330		380								
M 346	346 – 368	380	350		300	300			355	
L 346										
M 369	369 – 392	315	350				300	300		13,8
L 369		380								
M 406	406 – 430	315	400	400	350					14,5
L 406		380								
M 448	448 – 471	315			400	400			450	

No. 0750 / 0751 Special versions

Order No.	Version	Type	Ø Pipe	Length							
0750	single lug	S	50 – 550	150	200	250	315	380	510	640	835
0751	double lug										

No. 0501 for steel, ductile iron and AC pipes

Type	Ø Pipe	Length	Weight
D 21	21 – 25	70	0,25
D 26	26 – 30	70	0,26
D 33	33 – 37	70	0,27
D 42	42 – 45	70	0,28
D 48	48 – 54	70	0,29
D 60	60 – 64	70	0,31

Page J 2	Service valve Overview	Page J 2/1	
Page J 3	Service valve E-valve with flange DN 20 —40	Page J 3/1	
Page J 4	Service valve With internal thread With internal and external thread / ISO-fitting <i>ZAK service valve</i>	Page J 4/1 Page J 4/3 Page L 4/1	
Page J 5	Service valve With ISO-fitting for PE pipes both ends ISO-Combination tapping valve made of POM	Page J 5/1 Page J 5/3	
Page J 6	Service valve Made of POM with Hawle-FIT sockets	Page J 6/1	
Page J 7	Service valve for PE fusion Made of ductile iron Made of POM	Page J 7/1 Page J 7/3	
Page J 8	Service valve Made of ductile iron ISO-Combination service valve made of POM Hawlinger pipe drilling saddle With automatic drainage, made of ductile iron <i>ZAK-service valves</i>	Page J 8/1 Page J 8/3 Page J 8/4 Page J 8/5 Page L 4/2	
Page J 9	Water meter consoles	Page J 9/1	

Service valve

Accessories

Handwheels	Page M 4/1
Extension spindles	Page M 2/3
Surface boxes	Page M 3/1
Operating cap	Page M 4/1
Spindle extension	Page M 4/1
Bolts	Page M 4/4
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Spare parts

Valve bonnet	Page P 2/1
Valve wedge	Page P 2/1
Valve bonnet flat gasket	Page P 2/2

Tools

Operating key	Page Q 4/2
Drilling machine	Page Q 2/1
Pipe cutter	Page Q 4/1
Chamfering tool	Page Q 4/1
Saddle blade	Page Q 4/2

Technical information

Tightening torques for flange assembly	Page R 3/1
Spindle rotations per stroke	Page R 1/2

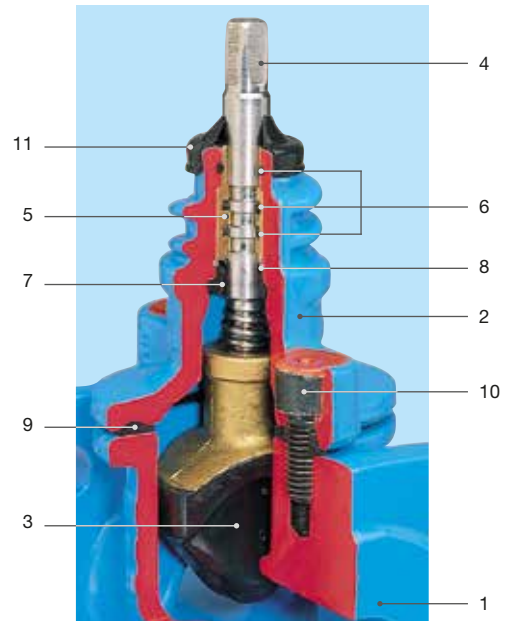
Service valve

Overview

Design features

Ductile iron valve

- **Resilient seated gate valve** with smooth and straight-through bore
- Flange valve
- Valve with ISO-fitting
- Valve with thread
- Service valve for PE fusion
- Service valve
- Service valve with drainage
- 2 O-rings mounted on all sides in rust-proof material
- Spindle bearing made of brass
- Threaded connection for extension spindle
- Suitable for all underground installations
- For service connection fittings made of ductile iron with external thread, the free lying threads must be protected against corrosion according to trade regulations after assembly



Material | Technical features

- 12 **Body (1), bonnet (2)** made of ductile iron, epoxy powder coated inside and out (see page 4)
- 3 **Wedge** made of brass, with vulcanised elastomer
- 4 **Duplex stainless steel spindle** with rolled thread and flat-rolled sealed sliding surface
- 5 **Spindle bearing** (O-ring carrier) made of brass
- 6 **O-rings** made of elastomer
- 7 **Back seat** made of elastomer
- 8 **Retaining ring** made of stainless steel
- 9 **Bonnet gasket** made of elastomer
- 10 **Internal hexagonal screws** recessed and absolutely corrosion protected through casting compound
- 11 **Wiper ring** made of elastomer

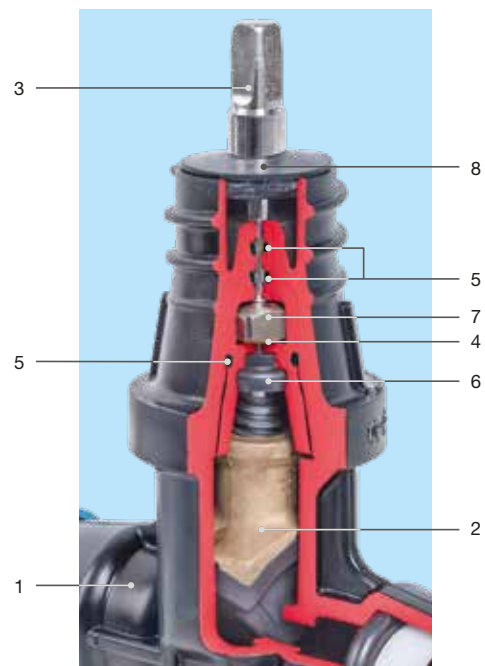
Design features

Valve made of POM

- **Resilient seated gate valve** with smooth and straight-through bore
- Valve with ISO-fitting
- Valve with Hawle-Fit socket
- Valve with thread
- Service valve for PE fusion
- Service valve
- Bonnet with body homogeneously connected through rotational welding
- 2 O-rings for spindle sealing
- Spindle bearing made of brass
- Overload protection
- Threaded connection for extension spindle
- Suitable for all underground installations

Material | Technical features

- 1 **Body** made of POM
- 2 **Wedge** made of brass, with vulcanised elastomer
- 3 **Duplex stainless steel spindle** with rolled thread and flat-rolled sealed sliding surface
- 4 **Spindle bearing** made of brass
- 5 **O-rings** made of elastomer
- 6 **Back seat** made of elastomer
- 7 **Overload protection** made of stainless steel
- 8 **Wiper ring** made of elastomer



Notes



Service valve

E-valve with flange DN 20 – 40

Design features

- Resilient seated gate valve with smooth straight-through bore
- Flange sized and drilled according to EN 1092-2 | PN 16

Standard version: without handwheel and extension spindle

Special versions: on request

No. 4000

No. 4700

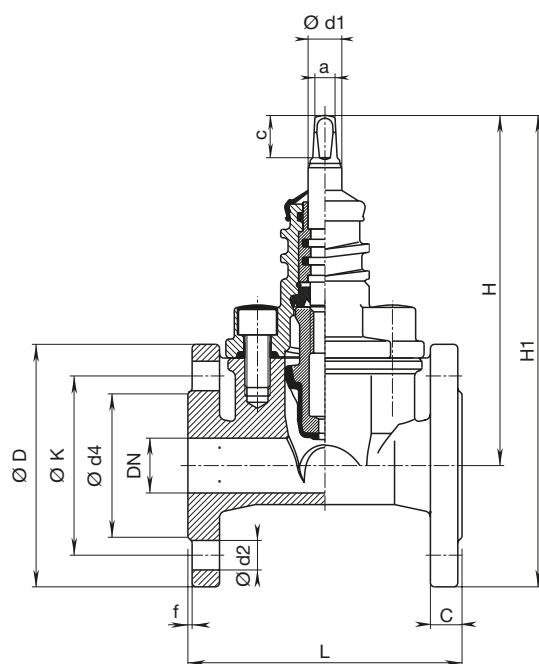


Suitable accessories

Suitable accessories: see page J 1/2

Handwheel: No. 7800
 Extension spindle: rigid No. 9101
 telescopic No. 9601
 Surface box: rigid No. 1550, No. 1650
 telescopic: No. 1850, No. 1851K
 Spindle extension: No. 7820
 Sealing cap: No. 2156, No. 2157
 Bolts: No. 8810, No. 8830, No. 8840
 Flat gasket: No. 3390, No. 3470

Order No.	Version	MOP (PN)	Dimensions/DN			
			20	25	32	40
4000	short	16				
4700	long EN 558 GR 15					



DN	MOP (PN)	Flange					Bolts			Spindle			Valve				Weight	
		Ø D	C	Ø K	Ø d4	f	Quantity	Thread	Ø d2	a	c	Ø d1	H	H1	L short	L long	short	long
20	10 16	115	16	75	58	2	4	M 12	14	10,3	20	16	164	223	130		4,2	
25	10 16	115	16	85	68	2	4	M 12	14				164	223	130		4,2	
32	10 16	150	18	100	78	2	4	M 16	19				200	275	140		6,6	
40	10 16	150	18	110	88	2	4	M 16	19				200	275	140	240	6,7	7,5

Notes



Service valve

With internal thread

Design features

- Resilient seated gate valve with smooth straight-through bore
- Internal thread ISO 228
- Service valve with internal thread are fitted with a corrosion protection ring to prevent corrosion
- **No. 2510:** Bonnet is screwed and glued to the body. To unscrew, the thread must be heated

Standard version: without handwheel and extension spindle

Special versions: on request

Material | Technical features

- **Body and bonnet:**
No. 2500 made of ductile iron, epoxy powder coated
No. 2510 made of brass

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel:		No. 7800
Extension spindle:	rigid	No. 9101
	telescopic	No. 9601
Surface box:	rigid	No. 1550, No. 1650
	telescopic:	No. 1850, No. 1851K
Spindle extension:	No. 7820	
Sealing cap:	No. 2156, No. 2157	

No. 2500



No. 2510



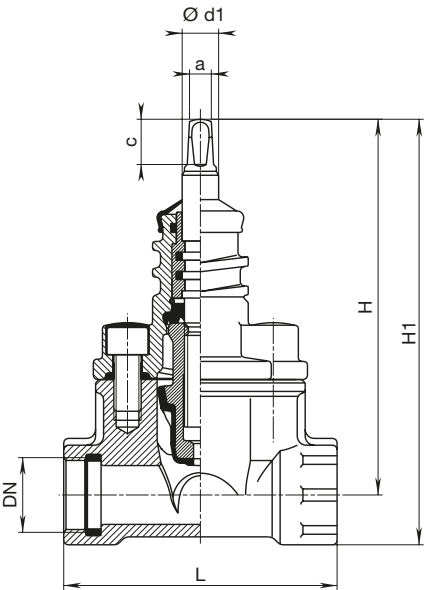
Order No.	Version	MOP (PN)	Dimensions/DN				
			3/4"	1"	1 1/4"	1 1/2"	2"
2500	Ductile iron, epoxy powder coated internal threads both ends ISO 228	16					
2510	Brass, internal thread both ends ISO 228						

Application examples



Service valve

With internal thread

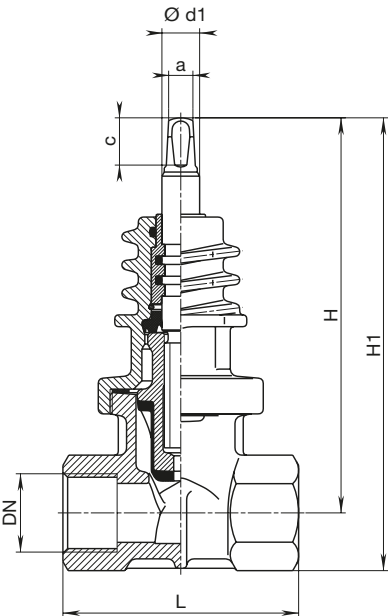


Service valves

Internal thread both ends ISO 228

No. 2500

DN	Valve			Spindle			Weight
	L	H	H1	a	c	Ø d1	
¾"	120	164	185	10,3	20	16	2,20
1"	120	164	188				2,28
1¼"	140	200	229				3,53
1½"	140	200	232				3,70
2"	150	219	258				4,40



Service valves, brass

Internal thread both ends ISO 228

No. 2510

DN	Valve			Spindle			Weight
	L	H	H1	a	c	Ø d1	
1"	100	161	182	10,3	20	16	1,90
1¼"	100	194	223				2,60
1½"	100	194	223				2,81
2"	100	219	256				4,00

Service valve

With internal and external threads / ISO-fitting

Design features

- Resilient seated gate valve with smooth straight-through bore
 - Internal thread ISO 228, external thread EN 10226-1
 - Service valve fitted with a corrosion protection ring to prevent corrosion
 - For service valves with external thread, the free lying threads must be protected against corrosion according to the trade regulations after assembly
 - **No. 2800:** Internal thread for assembly of a drilling machine for drilling under pressure
 - For PE-pipes according to EN 12201 and DIN 8074 | to PN 16; up to 30 °C medium temperature
- Pipe guide nipple serves for precise guidance of the PE pipe and as corrosion protection of the internal thread

Standard version: without handwheel and extension spindle

Special versions: on request

Material | Technical features

- **Body and bonnet** made of ductile iron
- **Corrosion protection ring** made of elastomer
- **Pipe guide nipple** made of PE

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel:		No. 7800
Extension spindle:	rigid	No. 9101
	telescopic	No. 9601
Surface box:	rigid	No. 1550, No. 1650
	telescopic:	No. 1850, No. 1851K
Spindle extension:		No. 7820
Sealing cap:		No. 2156, No. 2157
Chamfering tool:		No. 6000
Saddle blades:		No. 6010
Pipe cutter:		No. 6050
Mounting spray:		No. 3443
Drilling machine:		No. 5800, No. 5805

No. 2520



No. 2800



STRUCTURE
of grip ring for
PE pipes

Order No.	Version	MOP (PN)	Dimensions/DN			
			1"	1¼"	1½"	2"
2520	1 internal thread	16				
	1 external thread					
2800	1 external thread					
	1 ISO-fitting for PE pipe					
	1 internal thread					

No. 2800 can be adapted for PVC pipe with grip ring „2K“ at extra cost

Application example



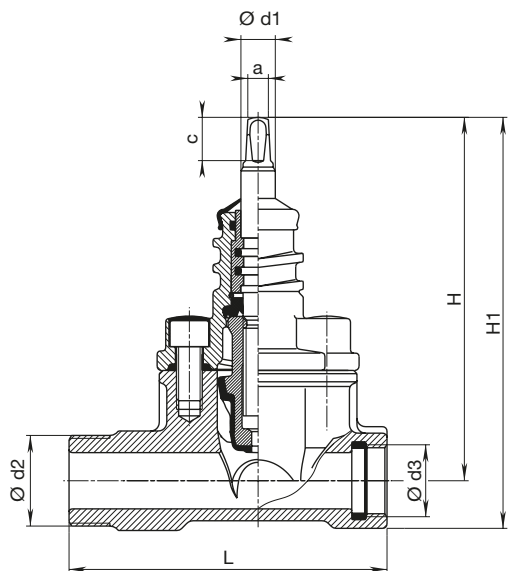
Service valve

With internal and external threads / ISO-fitting

Service valve, ductile iron

With one internal thread ISO 228 and one external thread EN 10226-1

No. 2520

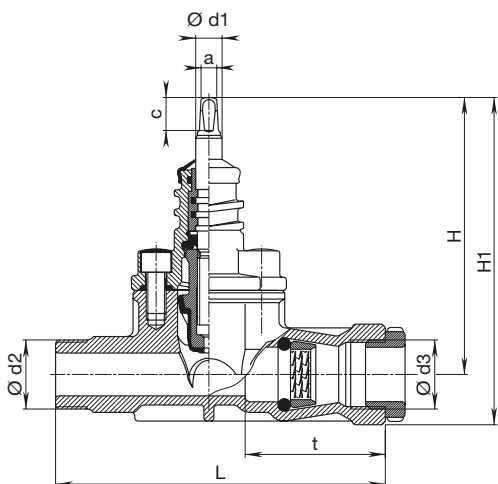


DN	Valve					Spindle			Weight
	Ø d2	Ø d3	L	H	H1	a	c	Ø d1	
1"	1 1/4"	1"	148	164	191	10,3	20	16	2,40
1 1/4"	2"	1 1/4"	167	200	234				3,80
1 1/2"	2"	1 1/2"	167	200	238				4,00
1 1/2"	1 1/2"	1 1/2"	167	200	238				4,00
2"	2"	2"	172	219	264				4,60

Service valve, ductile iron

1 external thread EN 10226-1, 1 ISO-fitting, 1 internal thread ISO 228

No. 2800



DN	Valve							Spindle			Weight
	Ø pipe ext.	Ø d2	Ø d3	t	L	H	H1	a	c	Ø d1	
1"	32	1 1/4"	1 1/4"	85	200	164	193	10,3	20	16	2,72
1 1/4"	40	2"	1 1/2"	101	245	200	234				4,46
1 1/2"	50	2"	2"	121	255	200	239				4,90
2"	63	2"	2 1/2"	137	264	219	267				6,81

Service valve

With ISO-fitting for PE pipe both ends

Design features

- Resilient seated gate valve with smooth straight-through bore
- For PE pipes according to EN 12201 and DIN 8074 | up to PN16; up to 30 °C medium temperature
- **No. 2630: Sealing system:** the contact between wedge and body is friction free. Therefore no scuffing or abrasion of the wedge
- All parts made of corrosion free materials
- Maximum spindle torque: 80 Nm
- Technical details ISO-fitting see page K 3/1

Standard version: without handwheel and extension spindle

Special versions: on request

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel:		No. 7800
Extension spindle:	rigid	No. 9101
	telescopic	No. 9601
Surface box:	rigid	No. 1550, No. 1650
	telescopic:	No. 1850, No. 1851K
Spindle extension :		No. 7820
Sealing cap:		No. 2156, No. 2157
Chamfering tool:		No. 6000
Saddle blade:		No. 6010
Pipe cutter:		No. 6050
Mounting spray:		No. 3443

No. 2600



STRUCTURE
of grip ring for
PE pipes

No. 2630



Order No.	Version	MOP (PN)	Dimensions/DN					
			½"	¾"	1"	1¼"	1½"	2"
2600	Made of ductile iron	16						
2630	Made of POM							

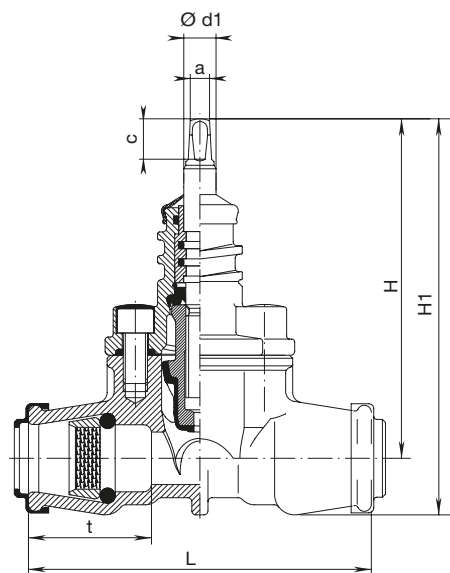
Both valves can be adapted for PVC pipe with grip ring „2K“ at extra cost

Application example



Service valve

With ISO-fitting for PE pipe both ends

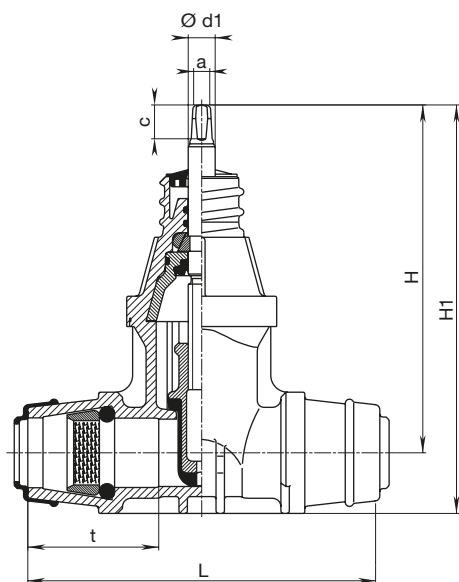


Service valve, ductile iron

ISO-fitting for PE pipe both ends

No. 2600

DN	Ø pipe ext.	Valves				Spindle			Weight
		t	L	H	H1	a	c	Ø d1	
¾"	25	52	165	164	187	10,3	20	16	2,30
1"	32	61	170	164	192				2,33
1¼"	40	76	220	200	235				4,00
1½"	50	91	232	200	240				4,10
2"	63	103	270	219	267				7,00



Service valve, POM

ISO-fitting for PE pipe both ends

No. 2630

DN	Ø pipe ext.	Valves				Spindle			Weight
		t	L	H	H1	a	c	Ø d1	
½"	20	43	125	178	200	10,3	20	16	0,85
¾"	25	52	152	177	205				0,85
1"	32	63	174	177	205				0,95
1¼"	40	78	208	205	241				1,50
1½"	50	92	246	205	247				1,65
2"	63	100	261	221	271				2,10

ISO combination tapping valve

Made of POM



Design features

- Resilient seated gate valve with smooth straight-through bore
- With conical 2" external thread according to EN 10226 for the clamp attachment and with cylindrical connection thread 1½" according to ISO 228 for connection fitting No. 6221F
- For PE pipes according to EN 12201 and DIN 8074
- One valve with 5 ISO push-fit fittings for PE pipes (pipe Ø 25/32/40/50/63 mm) - reduces stockkeeping!
- A robust valve made of POM
- All parts made of corrosion free materials
- For the easiest under pressure tapping and the quickest installation of ISO push-fit fittings
- Sealing system: the contact between wedge and body is friction free. Therefore no scuffing or abrasion of the wedge

Standard version: without handwheel and extension spindle

Special versions: on request

No. 2681

No. 2680

No. 6221F

No. 5940



Max. drill tip
Ø 24 mm

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel: No. 7800
 Extension spindle: rigid No. 9101
 telescopic No. 9601
 Surface box: rigid No. 1550, No. 1650
 telescopic: No. 1850, No. 1851K
 Extension spindle: No. 7820
 Sealing cap: No. 2156, No. 2157
 Chamfering tool: No. 6000
 Saddle blades: No. 6010
 Pipe cutter: No. 6050
 Mounting spray: No. 3443
 Drilling machine: No. 5800, No. 5805

Order No.	Version	MOP (PN)	DN	Thread	Ø PE-pipe	Weight	
2681	ISO Combination tapping valve without fitting	16	1"	2" — 1½"		0,81	
2680	ISO Combination tapping valve with choice of ISO push-fit fitting		1"	2" — 1½"	25	0,90	
					32	0,94	
					40	1,02	
					50	1,10	
6221F	ISO push-fit fitting with backing washer			1½"	63	1,23	
					25	0,10	
					32	0,13	
					40	0,22	
5940	Adapter for Hawle drilling machine 2"			1½" — 2"	50	0,29	
		63			0,41		
					1,30		

ISO combination tapping valve

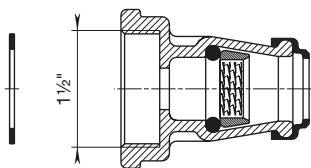
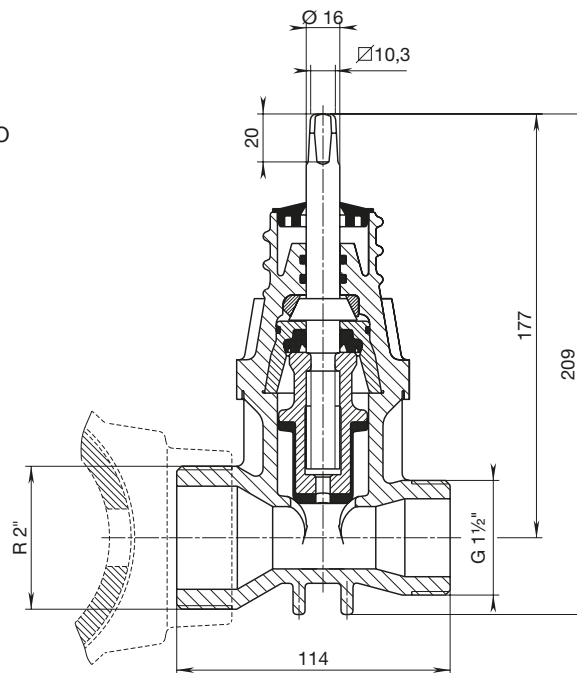
Made of POM

Tapping valve DN 1"

With 2" external thread EN 10226-1 for mounting onto saddle and

1½" external thread ISO 228 only for ISO push-fit fitting No. 6221F

No. 2681



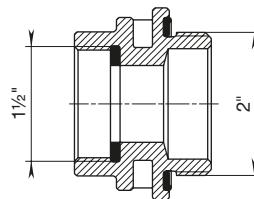
ISO push-fit fitting No. 6221F

Made of POM

Internal thread 1½" ISO 228

Push-fit socket for PE pipes up to PN 16, pipe Ø 25/32/40/50/63 mm

The flat gasket saves the need for seal



Adapter No. 5940

Made of bronze

Internal thread 1½" ISO 228

External thread 2" ISO 228

For Hawle drilling machine
No. 5800 or No. 5805

Drilling and assembly instructions

1. Mounting onto the saddle:

Screws the 2" external thread into the internal thread of the saddle

2. Drilling:

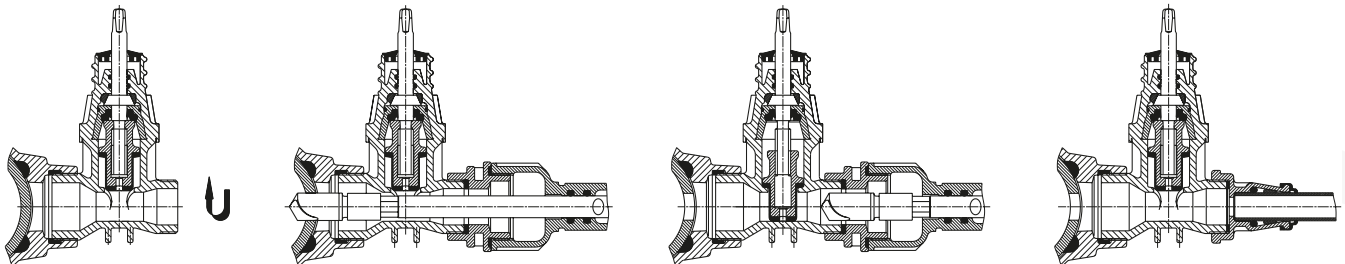
Open the valve completely; if necessary use adapter (see above)

3. Shut-off:

After drilling, retract the drill and close the valve

4. Pipe assembly:

Screw on one of the five ISO push-fit fittings - push the pipe in - finished



Service valve

Made of POM with Hawle-FIT sockets

Design features

- Resilient seated gate valve with smooth straight-through bore
- For PE pipes according to EN 12201 and DIN 8074 | up to PN 16; up to 30 °C medium temperature
- The high-tensile connection to the pipe is achieved via the two HAWLE-FIT sockets
- Assembly-ready supply: no screwing required before inserting the pipe
- All parts made of corrosion free materials
- Maximum spindle torque: 80 Nm.
- Easy disassembly without special tools
- Sealing system: the contact between wedge and body is friction free. Therefore no scuffing or abrasion of the wedge
- Hawle FIT socket details see page K 2/1

Standard version: without handwheel and extension spindle

Special versions: on request

Material | Technical features

- 1 **Clamping nut** made of POM
- 2 **Lip seal** made of elastomer
- 3 **Grip ring** made of POM

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel: No. 7800

Extension spindle: rigid No. 9101

telescopic No. 9601

Surface box: rigid No. 1550, No. 1650

telescopic: No. 1850, No. 1851K

Spindle extension: No. 7820

Sealing cap: No. 2156, No. 2157

Pipe cutter: No. 6050

Mounting spray: No. 3443

Support liners: No. 6021

Hawle-FIT type for reducer: No. 6640HF

No. 2631



Order No.	Version	MOP (PN)	Dimensions/DN			
			1"	1¼"	1½"	2"
2631	With Hawle-FIT socket	16				

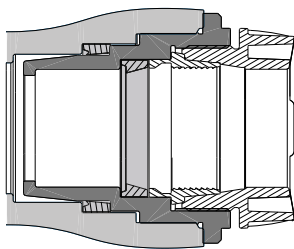
PE 80: SDR 7,4 - SDR 17,6

PE 100: SDR 11 - SDR 17

For PE 80 and PE 100: SDR 17,6 and 17 we recommend using a support liner

Design features

- For the reduction of Hawle-FIT socket



Hawle-FIT type for reducer No. 6640HF



Order No.	Version	MOP (PN)	Dimensions/DN							
			32 25	40 25	40 32	50 32	50 40	63 40	63 50	
6640HF	With Hawle-FIT socket	16								

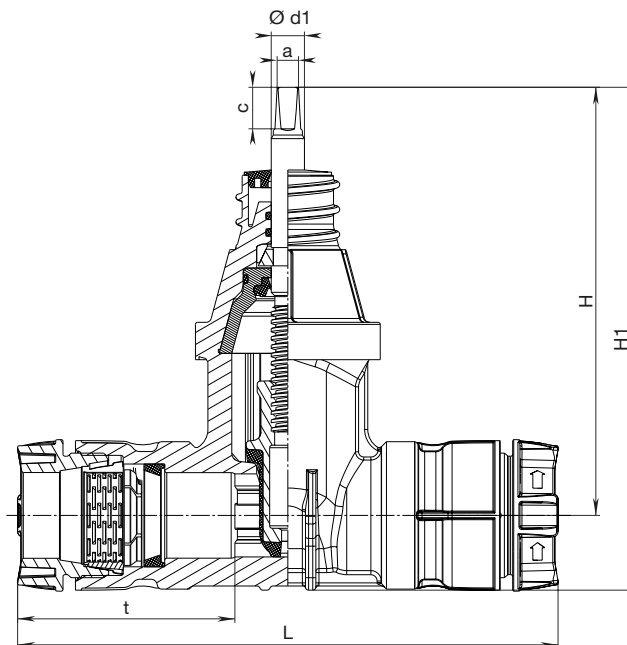
Service valve

Made of POM with Hawle-FIT sockets

Service valve, POM

With dual Hawle-Fit connections sockets for PE-pipes

No. 2631

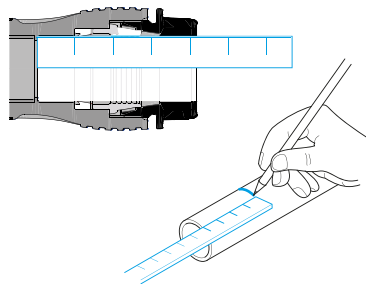


DN	Ø pipe ext.	Valve				Spindle			Weight
		t	L	H	H1	a	c	Ø d1	
1"	32	84	216	177	212	10,3	20	16	1,05
1¼"	40	105	260	205	241				1,56
1½"	50	116	294	205	247				1,83
2"	63	123	306	228	278				2,47

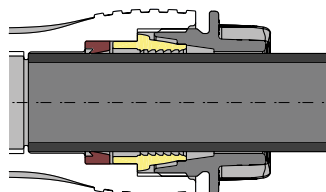
Benefits of the Hawle-FIT sockets

- Ready to install from packaging
- Can be mounted without previous chamfering of the pipe ends
- Low insertion forces
- Defined stop of the clamping nut made of POM for a secure connection
- Easy assembly and disassembly without special tools
(Clamping nut can be fixed with a standard commercially available pipe cutter)

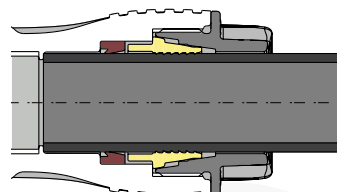
Assembly instructions



Measuring the insertion depth



POM clamping nut open



Pom clamping nut fully tightened

Service valve for pe fusion

Made of ductile iron

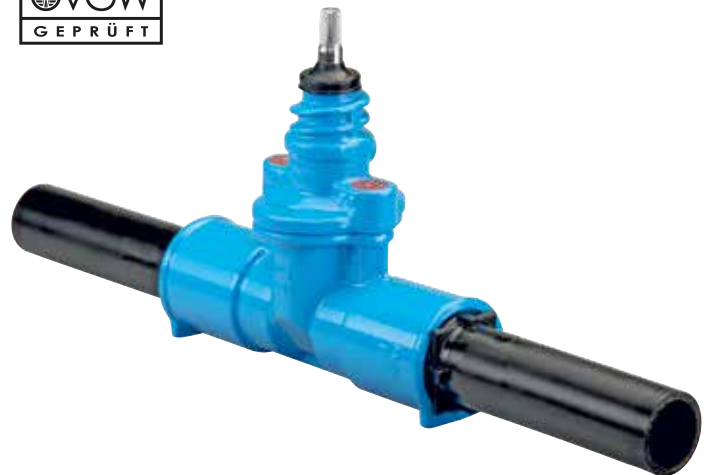
Design features

- Resilient seated gate valve with PE-fusion tails in combination with PE pipes according to EN 12201, DIN 8074
- This resilient seated valve has PE-fusion tails screwed into and sealed in the sockets
- The seal of the welding socket is guaranteed by two independent O-ring seals as well as a POM support liner in the welding socket
- The valve can be connected to the PE pipeline by either butt fusion or electrofusion

Standard version: without handwheel and extension spindle

Special versions: on request

No. 4050



Material | Technical features

1 PE-fusion tails

Standard version PE 100-RC injection moulded
Support liner made of POM for PE tails
 (see overleaf drawing))

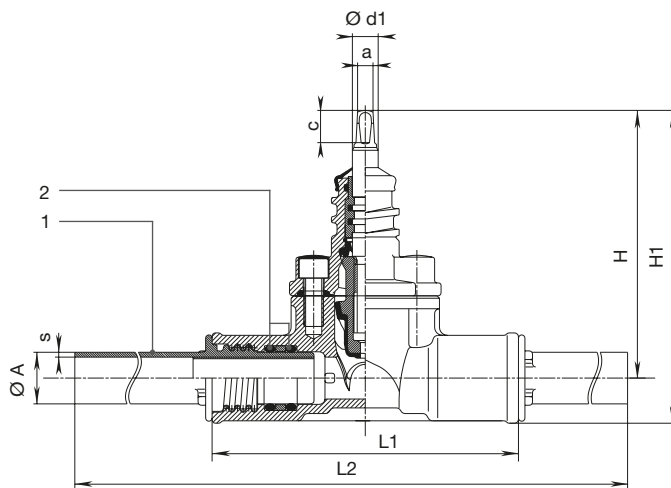
2 O-ring made of elastomer

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel: No. 7800
 Extension spindle: rigid No. 9101
 telescopic No. 9601
 Surface box: rigid No. 1550, No. 1650
 telescopic: No. 1850, No. 1851K
 Spindle extension: No. 7820
 Sealing cap: No. 2156, No. 2157

Order No.	PE-fusion tail	MOP (PN)	Dimensions/DN		
			1" / d 32	1 1/4" / d 40	1 1/2" / d 50
4050	PE 100-RC / SDR 11	16			



DN	Ø A	Valve with PE-fusion tail					Spindle			Weight
		s	H	H1	L1	L2	a	c	Ø d1	
1"	32	3,0	164	192	196	518	10,3	20	14	3,07
1 1/4"	40	3,7	199	234	230	556	10,3	20	16	4,54
1 1/2"	50	4,6	199	242	240	576	10,3	20	16	5,52

Notes



Service valve for PE fusion

Made of POM



Design features

- Resilient seated gate valve with PE-fusion tails in combination with PE pipes according to EN 12201, DIN 8074
- Sealing system: the contact between wedge and body is friction free. Therefore no scuffing or abrasion of the wedge
- The valve can be connected to the PE pipeline by either butt fusion or electrofusion
- Maximum spindle torque: 80 Nm.
- **No. 2670:** This resilient seated valve has PE tails screwed into and sealed in the sockets
High performance sealing of the PE tails within the sockets is assured by two separate seals and a support liner within the tails

Standard version: without handwheel and extension spindle

Special versions: on request

Material | technical features

- 1 **PE-fusion tail** PE 100-RC / SDR 11, injection moulded
- **O-ring** made of elastomer

No. 2670

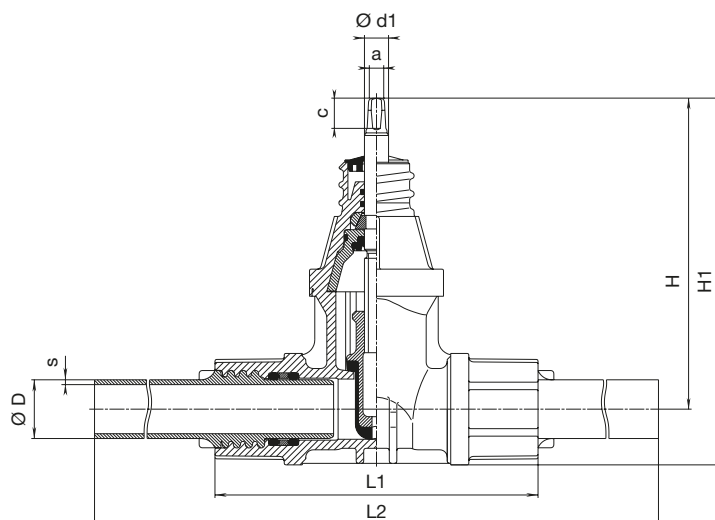


Order No.	Version	MOP (PN)	Dimensions/DN			
			1" / d 32	1 1/4" / d 40	1 1/2" / d 50	2" / d 63
2670	Made of POM welded-in with PE fusion tails	16				

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel: No. 7800
 Extension spindle: rigid No. 9101
 telescopic No. 9601
 Surface box: rigid No. 1550, No. 1650
 telescopic: No. 1850, No. 1851K
 Spindle extension: No. 7820
 Sealing cap: No. 2156, No. 2157



DN	Ø D	Valve with PE tails					Spindle			Weight
		s	H	H1	L1	L2	a	c	Ø d1	
1"	32	3,0	177	212	180	502	10,3	20	14	1,25
1 1/4"	40	3,7	205	241	218	544	10,3	20	16	1,85
1 1/2"	50	4,6	205	247	251	587	10,3	20	16	2,30
2"	63	5,8	221	271	271	639	10,3	20	16	3,10

Notes



Service valves

Made of ductile iron

Design features

- Resilient seated gate valve with optimum flow passage
- For vertical installation on pipe saddles
- Sealing system: the contact between shut-off plug and body is friction free. Therefore no scuffing or abrasion of the seal
- Service connection service valves with internal thread are equipped with a corrosion protection ring to prevent corrosion
- For service connection angle valves with external thread, the free lying threads must be corrosion protected according to the trade regulations after assembly
- **No. 3128:** Protection against pressure water only when fully opened

Standard version: without handwheel and extension spindle

Special versions: on request

Material | Technical features

- **Body and bonnet:** made of ductile iron, epoxy powder coated
- **Shut-off plug** made of brass, with vulcanized elastomer
- **Hose fitting** made of chrome-plated brass

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel:		No. 7800
Extension spindle:	rigid	No. 9101
	telescopic	No. 9601
Surface box:	rigid	No. 1550, No. 1650
	telescopic:	No. 1850, No. 1851K
Spindle extension:		No. 7820
Sealing cap:		No. 2156, No. 2157
Chamfering tool:		No. 6000
Saddle blade:		No. 6010
Pipe cutter:		No. 6050
Mounting spray:		No. 3443

No. 3120

No. 3128

No. 3130



STRUCTURE
of grip ring for
PE pipes

Order No.	Version	MOP (PN)	Dimensions/DN			
			1"	1¼"	1½"	2"
3120*	with thread outlet	16				
3128	with thread outlet and automatic drainage device					
3130*	with ISO-fitting for PE pipes acc. to EN 12201, DIN 8074*					

No. 3130 can be adapted for PVC pipe with carborundum grip ring at extra cost

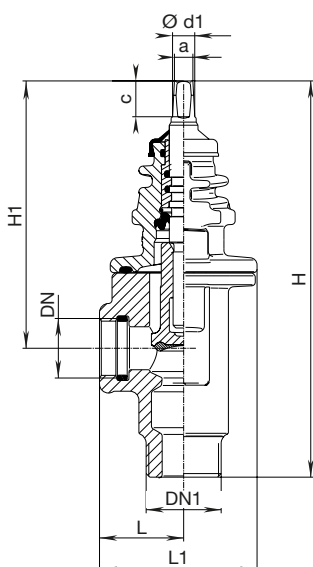
* Up to 30 °C medium temperature

Application example



Service valves

Made of ductile iron



Service valve with thread outlet

No. 3120

DN ISO 228	DN 1 EN 10226-1	Valve				Spindle			Weight
		L	L1	H	H1	a	c	Ø d1	
1"	1¼"	47	93	227	159	10,3	20	16	2,34
1¼"	2"	55	108	271	191				3,60
1½"	2"	56	109	280	193				3,90
2"	2"	60	113	289	196				4,40

Service valve

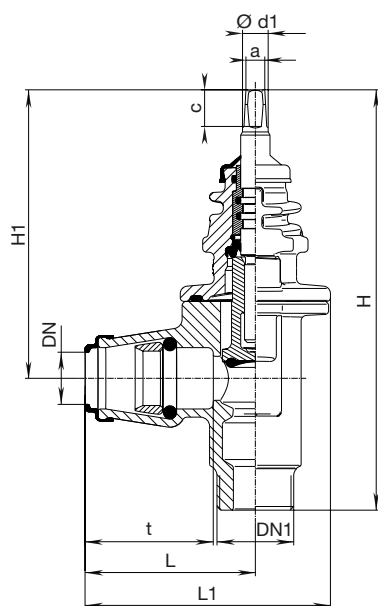
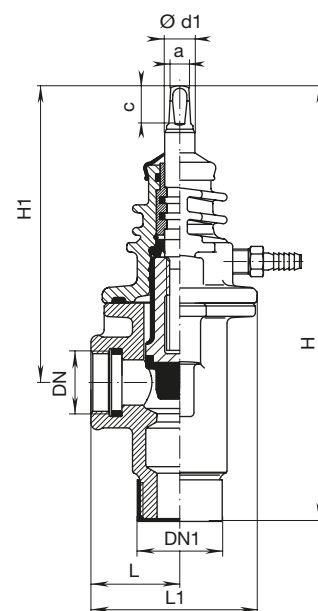
With internal thread outlet and automatic drainage device

NOT suitable for locations with a drainage hole under the water table; Please observe the flow directional arrow - protection against pressure water only when fully opened;

The automatic drainage of the service is only available when the valve is fully shut!

No. 3128

DN ISO 228	DN 1 EN 10226-1	Valve				Spindle			Weight
		L	L1	H	H1	a	c	Ø d1	
1"	1¼"	47	93	242	170	10,3	20	16	2,34
1½"	2"	56	109	292	205				3,90



Service valve

With ISO outlet for PE pipes

No. 3130

DN	Ø Pipe ext.	DN 1 EN 10226-1	Valve					Spindle			Weight
			t	L	L1	H	H1	a	c	Ø d1	
1"	32	1¼"	63	86	132	231	159	10,3	20	16	2,50
1¼"	40	2"	77	106	159	273	191				3,90
1½"	50	2"	91	120	173	283	193				4,23
2"	63	2"	103	135	188	289	196				5,30

ISO combination service valve

Made of POM



Design features

- Resilient seated gate valve with smooth straight-through bore
- With conical 2" external thread according to EN 10226 for mounting onto saddle and 1½" external thread according to ISO 228 only for ISO push-fit fitting No. 6221F
- One valve with 5 ISO push-fit fittings for PE pipes (pipe Ø 25/32/40/50/63 mm) reduces stockkeeping
- For PE pipes according to EN 12201 and DIN 8074 | up to PN 16; up to 30 °C medium temperature
- A robust design made of POM
- All parts made from corrosion free materials
- Sealing system: The contact between plug and body is friction free. Therefore no scuffing or abrasion on the plug

Standard version: without handwheel and extension spindle

Special versions: on request

Material | Technical features

- **Shut-off plug** made of brass, with vulcanized elastomer

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel: No. 7800
 Extension spindle: rigid No. 9101
 telescopic No. 9601
 Surface box: rigid No. 1550, No. 1650
 telescopic: No. 1850, No. 1851K
 Spindle extension: No. 7820
 Sealing cap: No. 2156, No. 2157
 Chamfering tool: No. 6000
 Saddle blade: No. 6010
 Pipe cutter: No. 6050
 Mounting spray: No. 3443

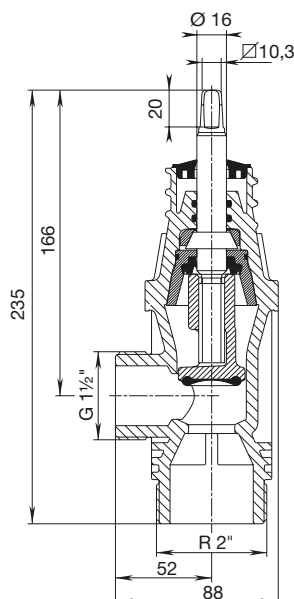
No. 3151

No. 3150

No. 6221F



Order No.	Article	MOP (PN)	DN	Thread	Ø PE-pipe	Weight		
3151	ISO Combination service valve without fitting	16	1"	2" - 1½"		0,85		
3150	ISO Combination service valve with choice of ISO push-fit fitting		1"	2" - 1½"		25	0,96	
						32	0,99	
						40	1,07	
						50	1,14	
						63	1,28	
6221F	ISO push-fit fitting with backing washer		1½"			25	0,10	
						32	0,13	
						40	0,22	
						50	0,29	
						63	0,41	



Hawlinger pipe drilling saddle

Made of ductile iron

Design features

- Robust and simple construction
- In open position: clear, unobstructed waterway
- Working parts not in contact with water
- Just half a turn to open or close
- Outlet is 1", 1¼" and 1½" internal thread on all models and sizes
- **No. 2402:** Supplied complete with plastic operating key
- **No. 2402 and No. 2300**
Internal thread 1" drilling-Ø max. 24
Internal thread 1¼" drilling-Ø max. 24
Internal thread 1½" drilling-Ø max. 35

Material | Technical features

- **Body** of ductile iron, epoxy powder coated
- **Eccentric disc and shut-off plate** made of stainless steel
- **Strap (No. 3110)** made of stainless steel
- **Seals** made of elastomer

Suitable accessories

Suitable accessories: see page J 1/2

Extension spindle: rigid No. 9101
telescopic No. 9601

Surface box: rigid No. 1550, No. 1650
telescopic: No. 1850, No. 1851K

Spindle extension: No. 7820

Drill: No. 5800, No. 5805

No. 2402



No. 2300

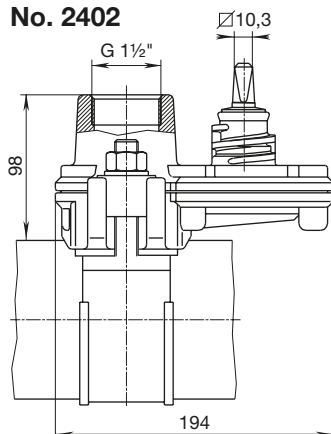


No. 2200



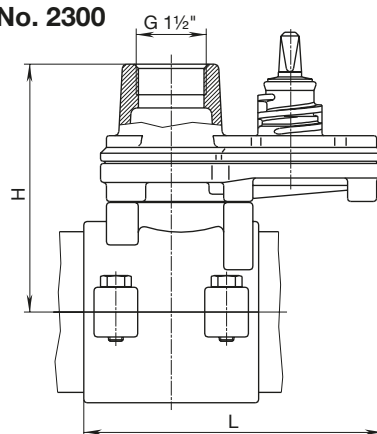
Order No.	Version	MOP (PN)	Internal thread ISO 228	Dimensions/DN						
				80	100	125	150	200	250	300
2402	Universal-Hawlinger ductile iron, steel and AC pipes	16	1"							
			1¼"							
			1½"							
Order No.	Version	MOP (PN)	Internal thread ISO 228	Ø pipe						
				90	110	160				
2300	HAKU-Hawlinger PE and PVC pipes	16	1"							
			1¼"							
			1½"							
Order No.	Version	MOP (PN)	Internal thread ISO 228	External thread EN 10226-1						
				1½"			2"			
2200	Hawlinger adapter for use with any pipe saddle	16	1½"							

No. 2402



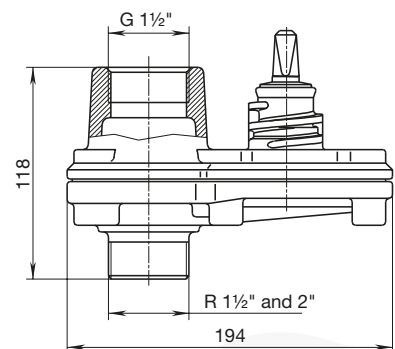
DN	Weight	DN	Weight
80	6,20	200	6,50
100	6,20	250	6,60
125	6,30	300	6,80
150	6,40		

No. 2300



DN	Ø pipe	L	H	Weight
80	90	194	146	7,00
100	110	194	160	7,40
150	160	194	188	9,00

No. 2200



Hawlinger adapter

R 1½" drilling-Ø max. 28
R 2" drilling-Ø max. 35
Weight: 4,70

Service valve

With automatic drainage, made of ductile iron



Design features

- Resilient seated gate valve with optimum flow passage
- Suitable for drainage of pipes which might freeze e.g. irrigation pipes etc. In below ground applications sufficient draining for the valve has to be considered (e.g. drainage pit)
- Sealing system: Automatic secured drainage when valve is completely closed. No clearing when the valve is partly or completely open
NOT suitable for sites with a drainage hole situated above the groundwater table
- Internal thread is equipped with a corrosion protection ring to prevent corrosion

No. 2491



Standard version: without handwheel and extension spindle

Special versions: on request

Material | Technical features

- **Shut-off plug** made of brass, with vulcanized elastomer
- **Hose fitting** made of chrome-plated brass

Suitable accessories

Suitable accessories: see page J 1/2

Handwheel: No. 7800
Extension spindle: rigid No. 9101
telescopic No. 9601
Surface box: rigid No. 1550, No. 1650
telescopic: No. 1850, No. 1851K
Spindle extension: No. 7820
Sealing cap: No. 2156, No. 2157

Order No.	Version	MOP (PN)	Dimensions/DN				
			¾"	1"	1¼"	1½"	2"
2491	internal iron threads both ends, automatic drainage device	16					

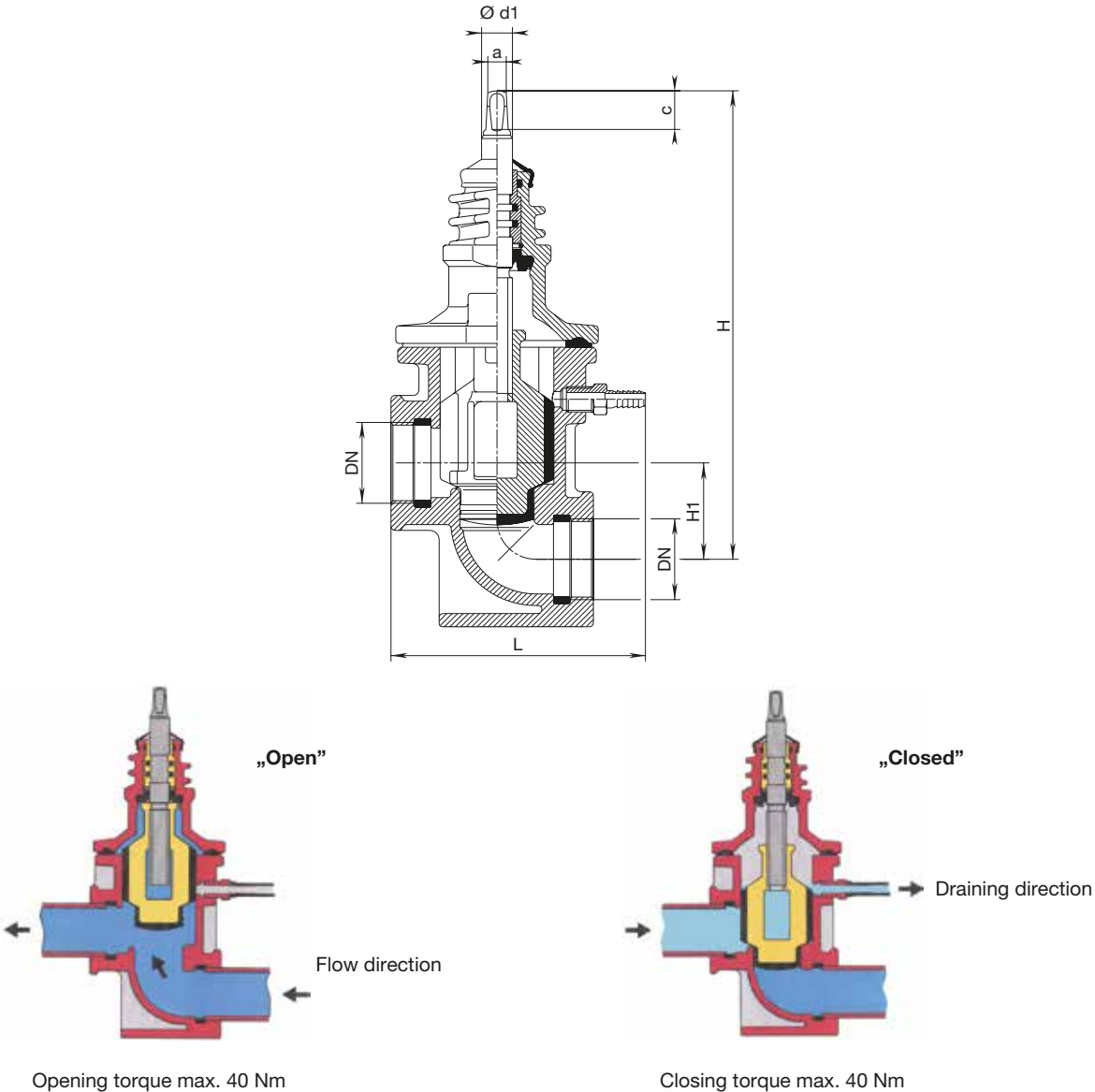
Service valve

With automatic drainage, made of ductile iron

No. 2491

Thread drainhole and automatic draining

Note installation direction (arrow). Drainage only when the valve is completely closed:
 Note that drainhole must be positioned above ground water level in case of below ground installation
 (no backflow preventer in the drainhole!)



DN Internal thread (ISO 228)	Valve			Spindle			Weight
	L	H	H1	a	c	$\varnothing d1$	
3/4"	115	207	41	10,3	20	16	2,40
1"	115	207	41				2,30
1 1/4"	130	243	50				3,90
1 1/2"	130	243	50				4,00
2"	140	243	50				4,50

Water meter consoles

Design features

- Compact design - with integral backflow preventer
- Problem-free assembly and dismantling of the water meter by length adjustment (supplied without water meter)
- Potable water up to 30 °C
- Electrical earthing link to base plate
- Order no. 2931 and 2932 with drainage plug

Material | Technical features

- **Valve body** made of brass
- **Wall plate** made of aluminum
(including fastening set for water meter console)
No. 2931, 2932 made of ductile iron, epoxy powder coated
- **Handwheel:**
No. 2930, 2960 made of steel
No. 2931, 2932 made of POM
- **Meter substitution connector:**
No. 2933 1¼" made of POM with gasket (for No. 2931, No. 2932)
2" made of galvanized steel (for No. 2930)

Application example



No. 2930

No. 2931

No. 2932

No. 2960



No. 2931
DN 1"

No. 2931
DN 1¼"

No. 2932
DN 1"

No. 2960
DN 2"

No. 2933
od 1¼"

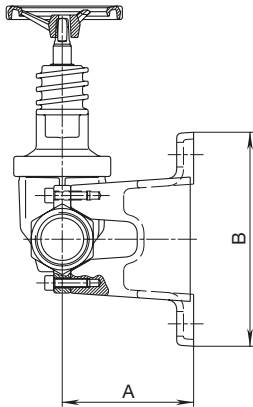
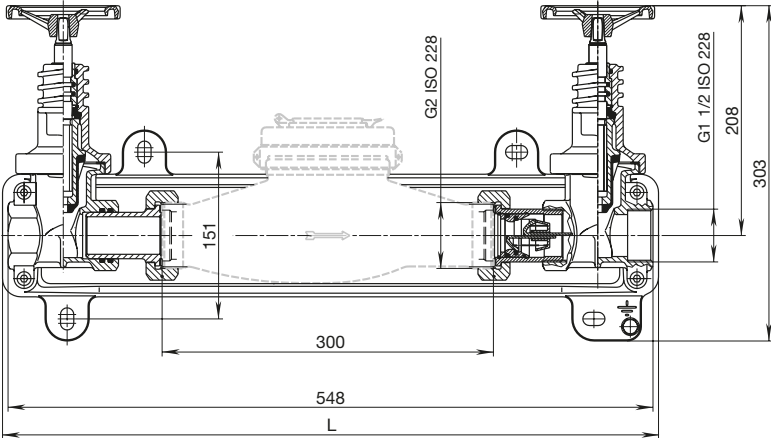


Order No.	MOP (PN)	DN	Valve connection (without meter substitution connector)	k _v -value m³/h at 1 bar Δ p	For water meter EN 15154-1	
2930	16	1½"	2 internal threads G 1½" ISO 228	32,1	20 m³/h	
2931		1 "	2 internal threads G 1" ISO 228	11,4	3 (5) m³/h - 7 (10) m³/h	
		1¼"	2 external threads R 1¼" EN 10226	11,4	3 (5) m³/h - 7 (10) m³/h	
2932		1 "	1 ZAK 34 socket connector, 1 internal thread G 1" ISO 228	11,4	3 (5) m³/h - 7 (10) m³/h	
2960		2"	2 internal threads G 2" ISO 228	47,2	20 m³/h	

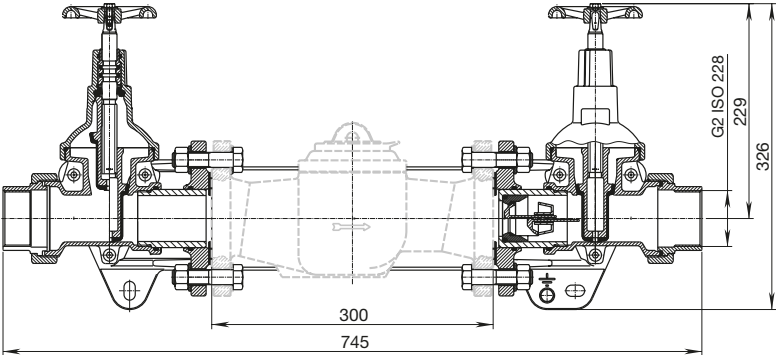
Special versions: "DN 1¼" with 2 internal threads G 1¼ ISO 228

Water meter consoles

No. 2930 DN 1½"



No. 2960 DN 2"

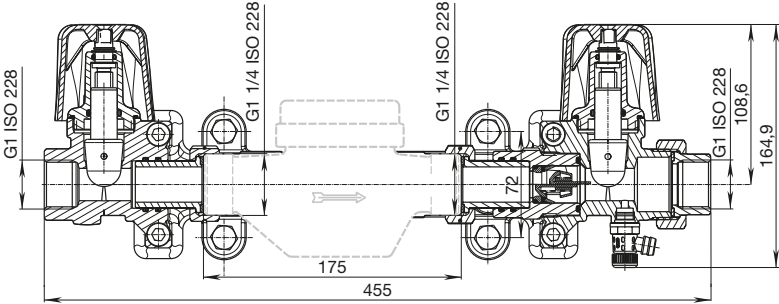


DN	Meter connection	A	Wall plate		Weight
			L	B	
1"	1¼"	90	300	100	7,00
1¼"	1¼"	90	300	100	7,10
1½"	2"	115	590	190	10,50
2"	Flange DN 50	125	590	190	20,00

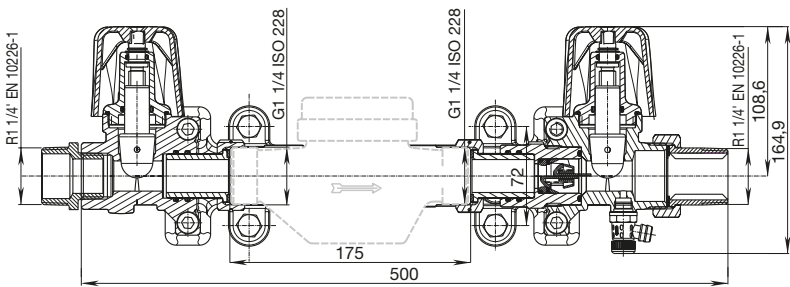
Meter substitution connector

DN	No. 2933 ET ISO 228	Length	Weight
1"	1¼"	175	0,16
1¼"	1¼"		
1½"	2"	300	1,67

No. 2931 DN 1"



No. 2931 DN 1¼"



Page K 2	Hawle-FIT Fittings for PE pipes Assembly and dismantling instructions	Page K 2/1 Page K 2/2	
Page K 3	ISO pipe fitting Fittings for PE pipes ISO pipe fitting assembly and dismantling instructions <i>ZAK plug-fit fitting</i>	Page K 3/1 Page K 3/2 Page L 4/4	
Page K 4	ISO pipe fitting With external and internal thread ISO pipe fitting connector ISO pipe fitting connector "PE pipe - steel pipe"	Page K 4/1 Page K 4/2 Page K 5/1	
Page K 5	ISO pipe fitting elbow <i>ZAK elbow 90°</i> <i>ZAK elbow 90°</i>	Page K 5/1 Page L 4/5 Page L 4/5	
Page K 6	ISO pipe fitting T-piece ISO pipe fitting Fitting for wall inlet fitting, End stop, Push fit swivel converter	Page K 6/1 Page K 6/2	
Page K 7	Hawle wall inlet fitting <i>ZAK wall inlet fitting</i>	Page K 7/1 Page L 5/1	

Fittings

Accessories

Support liner	Page M 6/2
Push fit swivel converter	Page M 7/4
Hawle-FIT type for reducer	Page J 6/1

Spare parts

ISO fitting O-ring	Page P 4/2
ISO fitting Grip ring	Page P 4/1
ISO fitting Grip ring for PVC pipes	Page P 4/2

Tools

Pipe cutter	Page Q 4/1
Chamfering tool	Page Q 4/1
Pincers	Page Q 4/1
Extractors	Seite Q 4/2

Application examples



Hawle-FIT

Fittings for PE pipes

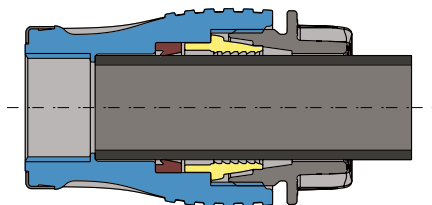
Design features

- For PE pipes according to EN 12201-2 and DIN 8074, up to PN16
- The new generation of fitting pipes Hawle-FIT has been designed to connect PE pipes* with an outside diameter of d 25 to 63 and a working pressure of up to 16 bar
- The Hawle-FIT is designed for drinking water applications within a temperature range of up to 30 °C
- Installation and dismantling is simply performed with no special tools required
- The service life of the Hawle-FIT is guaranteed by the use of high-quality polymer materials; the clamping nut as functional carrier is very stable through its unique construction
- The special clamp toothing (no continuous groove) reduces the impact force on the pipe. This significantly enhances the service life of the pipe
- The stainless steel reinforcing ring increases the strength of the fitting with internal thread outlets
- UV resistant

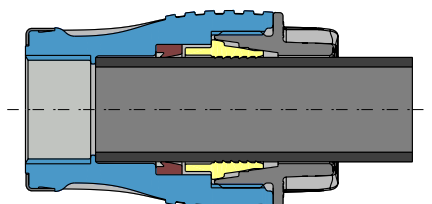


Material | Technical features

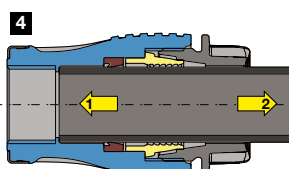
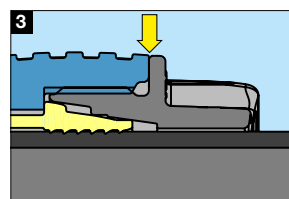
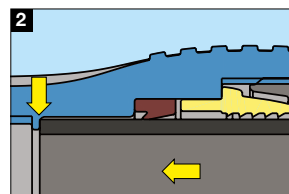
- **Body** made of high-quality polymer
- **Grip rings and clamping unit** made of POM
- **Seal** made of elastomer



Open clamping nut



Clamping nut fully tightened



- The Hawle-FIT fitting is supplied ready for installation which means no turning of the screw is required before inserting the pipe! The fitting is unpacked and is then ready for use (ill. 1).
- The Hawle-FIT fitting can be assembled without any pipe chamfering. Push until reaching built-in end stops. This saves time and money (ill. 2/3).
- Prior to fastening the screw, the grip ring does not reveal any initial tension or teeth. For this reason only very low insertion forces are required
- The construction of the Hawle-FIT fitting amplifies the dismantling of the pipe since the fitting does not have to be completely dismantled. The clamping nut is loosened but not actually removed (ill. 4)

* PE 80: SDR 9 — SDR 17
PE 100: SDR 11
PE 100: SDR 17

The standard requirement for SDR 17 according to ISO17885, is only fulfilled when a support liner No. 6021 is used.

Hawle-FIT

Assembly and dismantling

- Instruction - Fittings / Valves
- For PE pipes Ø d 25 — d 63 up to PN 16

Hawle-fit assembly instructions

Chamfer pipe with chamfering tool
No. 6000

Low pressure conditions require a support liner No. 6021

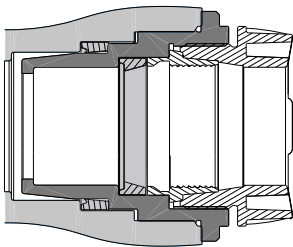
For PE pipes SDR 17, is required a support liner No. 6021

Hawle-FIT dismantling

Without tools!
Grip ring opens automatically

Design features

- For the reduction of Hawle-FIT socket



Hawle-FIT type for reducer No. 6640HF



Order No.	Version	MOP (PN)	Dimensions/DN					
			32 25	40 25	40 32	50 32	50 40	63 40
6640HF	With Hawle-FIT socket	16						

Hawle-FIT

Fittings for PE pipes

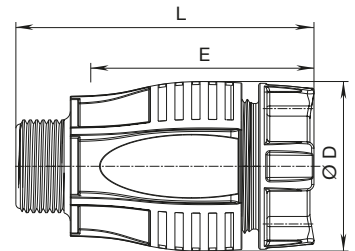


Design feature

- With external thread according to EN 10226-1

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6120HF	25	¾"	16	98	74	54	0,09
	32	1"		107	80	61	0,12
	40	1¼"		117	81	75	0,21
	50	1½"		133	103	90	0,31
	63	2"		149	115	105	0,45

With external thread No. 6120HF

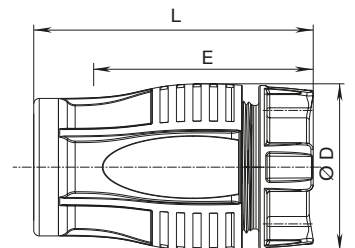


Design features

- With internal thread according to ISO 228

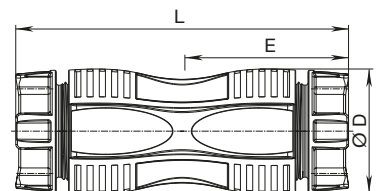
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6220HF	25	¾"	16	93	74	54	0,10
	32	1"		102	80	61	0,14
	40	1¼"		117	81	75	0,23
	50	1½"		131	103	90	0,34
	63	2"		149	115	105	0,48

With internal thread No. 6220HF



Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6320HF	25	16	151	74	54	0,16
	32		163	80	61	0,22
	40		182	81	75	0,37
	50		208	103	90	0,54
	63		234	115	105	0,80

Connector No. 6320HF

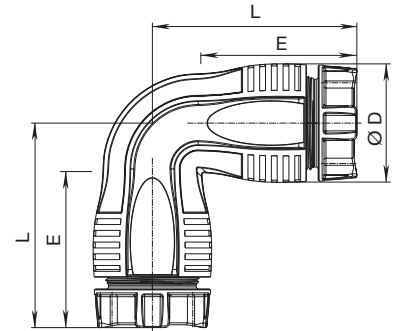


Hawle-FIT

Fittings for PE pipes

Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight	
6420HF	25	16	94	74	54	0,18	
	32		105	80	61	0,26	
	40		121	81	75	0,43	
	50		136	103	90	0,63	
	63		159	115	105	0,91	

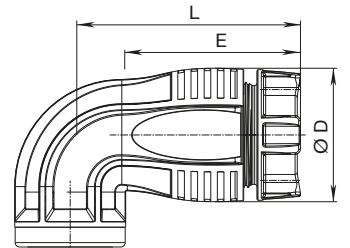
Elbow 90°
No. 6420HF



Design features

- With internal thread according to ISO 228

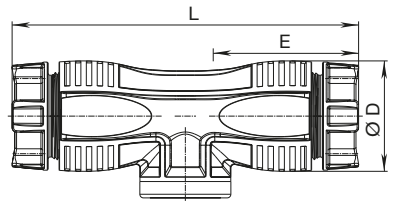
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight	
6430HF	25	¾"	16	94	74	54	0,12	
	32	1"		105	80	61	0,18	
	40	1¼"		121	81	75	0,28	
	50	1½"		137	103	90	0,44	
	63	2"		159	115	105	0,62	



Design features

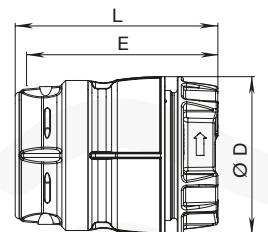
- With internal thread according to ISO 228

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight	
6520HF	25	¾"	16	173	74	54	0,20	
	32	1"		191	80	61	0,27	
	40	1¼"		214	81	75	0,44	
	50	1½"		240	103	90	0,65	
	63	2"		291	115	105	0,99	



Order No.	Ø pipe	MOP (PN)	L	E	Ø D	Weight	
6223HF	25	16	99	82	62,5	0,25	
	32		90	84	62,5	0,17	
	40		113	105	73	0,28	
	50		90	84	62,5	0,39	
	63		132	125	103	0,57	

End stop
No. 6223HF



ISO pipe fitting

Fittings for PE pipes

Design features

- For PE pipes according to EN 12201-2 and DIN 8074, up to PN 16
- The HAWLE ISO pipe fitting is the ideal push connection for polyethylene pipes that has been tried and tested for decades
- The function of the ISO pipe fitting is clear and simple: the O-ring made of highly elastic elastomer seals even when depressurized due to its pretension on the pipe.
- As the water pressure and pipe tension increase, the sealing and grip rings are compressed further into the conical chamber, thus increasing the sealing and gripping effect
- The gripping and sealing functions only act on the outer diameter of the pipe; therefore only one fitting is required for all pressure ratings up to PN 16
- The joint is flexible; the fitting can be turned on the pipe and disassembled on demand without affecting the grip or seal.
- The installation of the fitting is quick and simple.
- The POM fitting in the new copolymer version is UV-stabilized and offers excellent long-term stability
- The colored dust caps of the POM fitting indicate the different leading medium (gas, water) and offer protection against contamination
- In POM fittings all internal threads are reinforced with a stainless steel ring
- All ductile iron fittings with internal threads are equipped with a corrosion protection ring to prevent corrosion
- Internal thread ISO 228 and internal thread EN 10226-1 are compatible with external thread EN 10226-1.
- For ductile iron fittings with external thread, after assembly the free lying threads must be protected against corrosion according to the trade regulations
- The ISO pipe fitting is suitable for use in the area of drinking water up to 30 °C medium temperature and f or pressure levels up to PN16 (also vacuum, with support liner)

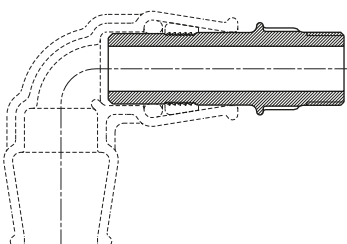
Material | Technical features

- **Body** made of POM or ductile iron, epoxy powder coated
- **Grip ring** made of POM
- **O-ring gasket** made of elastomer

Suitable accessories

Suitable accessories:

Chamfering tool:	No. 6000
Extractors:	No. 6010
Support liner:	No. 6021



Push fit swivel converter

Made of POM with external thread end, every fitting in the range can be converted to a swivel external thread outlet; (see page M 7/4)

Made of ductile iron

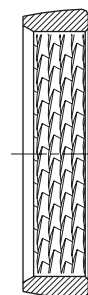
Epoxy powder-coated



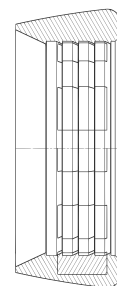
Made of POM



All ISO pipe fittings can also be supplied for PVC pipes with a grip ring „2K“ Order No. 6933 at extra cost.
(„2K“ grip ring see page P 4/2)



Grip ring
"Standard"
Interlocking
teeth



Grip ring
„2K“

Instruction

ISO pipe fitting instruction for assembly and dismantling

Assembly

1

2

Pipe cutter No. 6050

3

Chamfering tool No. 6000

4

Support liner No. 6021
for zero pressure and low pressure pipelines.
Don't chamfer the pipe

5

6

7

Moisten with water or lubricants (see M 7/2)

8

9

10

11

Pressure test on installed line and exposed, unfilled connections

Dismantling

1

Extractors No. 6010

2

Grip ring No. 6932 for PE pipes acc. to EN 12201-2
Grip ring No. 6933 for PVC pipes

3

O-ring No. 6940

4

5

Assembly

Max. torque for tightening the threads (observe pipe fitter rules acc. to national standards):

1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
20 Nm	25 Nm	40 Nm	42 Nm	42 Nm	45 Nm

ISO pipe fitting

With external and internal thread

Design feature

- With external thread according to EN 10226-1

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6100	20	1/2"	16	68	48	39	0,16
	25	3/4"		82	58	44	0,25
	32	1"		95	70	53	0,35
	40	1 1/4"		112	84	65	0,63
	50	1 1/2"		130	101	76	0,90
	63	2"		148	114	94	1,45
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6120	20	1/2"	16	68	48	39	0,04
	25	3/4"		82	58	43	0,06
	32	1"		95	70	53	0,10
	40	1 1/4"		110	82	72	0,24
	50	1 1/2"		126	99	83	0,27
	63	2"		144	110	99	0,44
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6110	25	1"	16	83,5	58,5	50	0,28
	32	1 1/4"		96	70	53	0,39
	32	1 1/2"		96	70	53	0,60
	32	2"		112	70	62	0,63
	40	1"		112	84	65	0,65
	40	1 1/2"		112	84	65	0,64
	40	2"		113	84	65	0,72
	50	1 1/4"		130	101	76	0,90
	50	2"		130	101	76	0,95
	63	1 1/4"		148	114	93	1,50
	63	1 1/2"		148	114	93	1,45
	75	2"		152	109	111	2,41
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6130	25	1"	16	82	58	43	0,06
	32	2"		102	70	65	0,13
	40	2"		110	82	72	0,24

Design features

- With internal thread according to ISO 228, ductile iron
- With internal thread according to EN 10226-1, POM

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6200	20	1/2"	16	65	48	45	0,16
	25	3/4"		76	58	50	0,24
	32	1"		91	70	55	0,42
	40	1 1/4"		108	84	65	0,70
	50	1 1/2"		125	99	76	1,00
	63	2"		144	110	94	1,70
	75	2 1/2"		144	110	110	3,20
	90	3"		144	110	126	3,60
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6220	20	1/2"	16	66	47	39	0,06
	25	3/4"		76	58	44	0,08
	32	1"		91	70	53	0,12
	40	1 1/4"		109	82	72	0,23
	50	1 1/2"		127	99	83	0,34
	63	2"		135	108	103	0,47
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6210	32	1 1/4"	16	96	70	65	0,57
	50	1 1/4"		125	99	76	1,10
	90	2"		144	110	126	4,00
Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Ø D	Weight
6230	32	1/2"	16	89	70	53	0,12
	32	3/4"		91	70	53	0,11
	40	1"		108	82	55	0,25
	40	2"		108	82	80	0,31
	50	2"		125	99	80	0,36
	50	2"		125	99	80	0,36

External thread

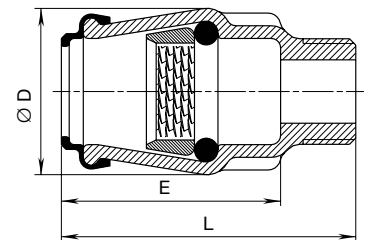
No. 6100 Made of ductile iron

No. 6120 Made of POM

External thread, reduced outlet

No. 6110 Made of ductile iron

No. 6130 Made of POM



Internal thread

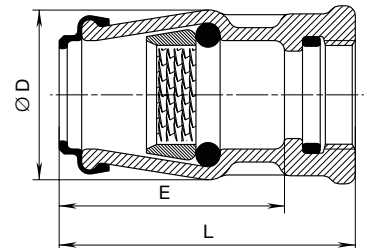
No. 6200 Made of ductile iron

No. 6220 Made of POM

Internal thread, reduced outlet

No. 6210 Made of ductile iron

No. 6230 Made of POM



ISO pipe fitting

Connector

Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6300	20	16	99	48	39	0,26
	25		120	58	44	0,35
	32		144	70	53	0,65
	40		172	84	65	0,97
	50		206	101	76	1,45
	63		232	114	94	2,70
	75		221	109	106	3,20
	90		195	109	126	4,70

Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6320	20	16	99	48	39	0,07
	25		121	58	43	0,10
	32		145	70	53	0,15
	40		164	82	72	0,35
	50		200	99	83	0,57
	63		224	110	99	0,71

Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6301	32	16	172	86	70	1,10
	40		207	103	79	1,90
	50		216	108	90	2,10
	63		238	119	103	3,20

If using as sleeve - Attention: no stop

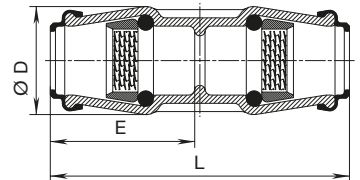
Order No.	Ø Pipe 1	Ø Pipe 2	MOP (PN)	L	E	E1	Ø D	Weight
6310	25	20	16	110	58	48	43	0,33
	32	20		122	70	48	53	0,63
	32	25		135	70	58	53	0,51
	40	32		160	84	70	72	0,80
	50	32		189	100	70	76	1,70
	50	40		191	100	84	76	1,20
	63	50		224	114	101	94	1,70
	75	63		221	109	103	106	3,70
	90	75		210	100	100	126	3,30

Order No.	Ø Pipe 1	Ø Pipe 2	MOP (PN)	L	E	E1	Ø D	Weight
6330	25	20	16	111	58	48	43	0,08
	32	25		134	70	58	53	0,13
	40	25		145	82	58	72	0,20
	40	32		156	82	70	72	0,25
	50	32		172	99	70	83	0,32
	50	40		182	99	84	83	0,42
	63	40		204	110	84	99	0,53
	63	50		213	110	99	99	0,60

Connector

No. 6300 Made of ductile iron

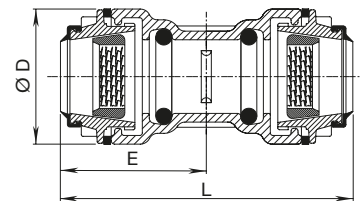
No. 6320 Made of POM



Connector

With detachable ends for subsequent assembly

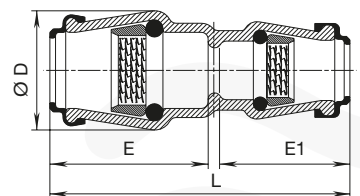
No. 6301 Made of ductile iron



Connector reduced

No. 6310 Made of ductile iron

No. 6330 Made of POM



ISO pipe fitting

Connector | elbow



Order No.	Ø PE-pipe	Ø Steel pipe	MOP (PN)	L	E	E1	Ø D	Weight
6310ST	32	¾" (D 26,9)	16	132	70	55	53	0,66
6300ST	32	1" (D 33,7)		132	70	55	60	0,76

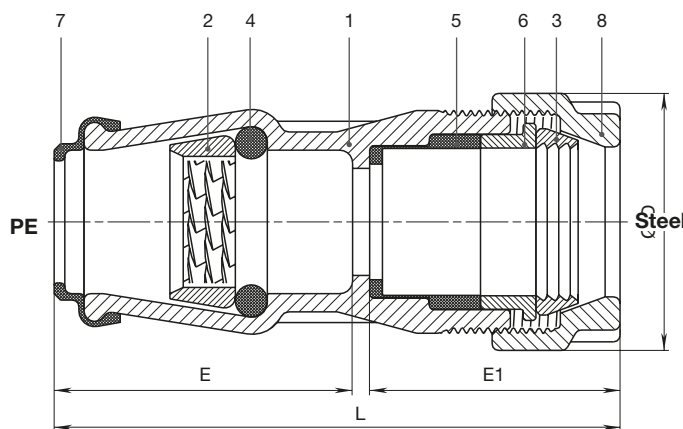
	Component	Material
1/8	Body (1) tension nut (8)	Ductile iron, epoxy powder coated
2	Grip ring PE	POM
3	Grip ring acier	Hardened acier
4	O-ring	Elastomer
5	Gasket	Elastomer
6	Thrust collar	POM
7	Protective cap	Elastomer

Tip: First strip PE-covered steel pipes to insertion length

Connector "PE pipe - steel pipe" total restraint

No. 6310ST Made of ductile iron

No. 6300ST Made of ductile iron



Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6400	20	16	58	48	39	0,30
	25		72	58	44	0,45
	32		87	70	53	0,80
	40		104	84	65	1,20
	50		141	101	76	1,90
	63		163	114	94	3,15

Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6420	20	16	58	48	39	0,07
	25		73	58	43	0,10
	32		87	70	53	0,18
	40		104	82	72	0,37
	50		125	99	83	0,52
	63		144	110	99	0,80

Order No.	Ø Pipe 1	Ø Pipe 2	MOP (PN)	L	E	E1	Ø D	Weight
6490	32	25	16	87/71	70	58	53	0,16
	40	32		102/87	84	70	72	0,27

Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6440	40	16	95	84	65	1,20
	50		108	101	76	1,89
	63		119	114	94	2,60

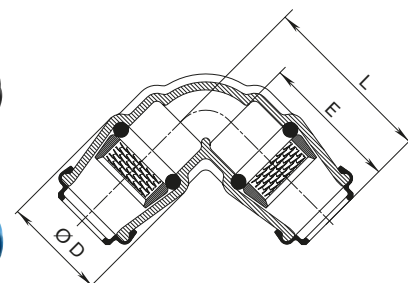
Elbow 90°

No. 6400 Made of ductile iron

No. 6420 Made of POM

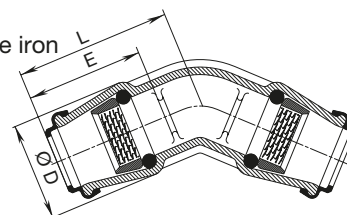
Elbow 90° reduced

No. 6490 Made of POM



Elbow 45°

No. 6440 Made of ductile iron



ISO pipe fitting

Elbow

Design features

- With internal thread according to ISO 228, ductile iron
- With internal thread according to EN 10226-1, POM

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	ØD	Weight
6410	25	¾"	16	71	58	44	0,38
	32	1"		87	70	53	0,70
	40	1¼"		106	84	65	1,17
	50	1½"		141	101	76	1,50
	63	2"		163	114	94	2,75

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	ØD	Weight
6430	20	½"	16	60	48	39	0,07
	25	¾"		71	58	43	0,10
	32	¾"		87	70	53	0,13
	32	1"		87	70	53	0,14
	40	1¼"		103	82	72	0,28
	50	1½"		137	99	83	0,42
	63	2"		145	110	99	0,67

Design feature

- With external thread according to EN 10226-1

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	ØD	Weight
6460	25	¾"	16	71	58	44	0,40
	32	1"		87	70	53	0,56
	40	1¼"		104	84	65	1,10
	50	1½"		141	101	76	1,70
	63	2"		163	114	94	2,52

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	ØD	Weight
6470	25	1"	16	82	70	44	0,57
	32	1¼"		90	70	53	0,60
	32	1½"		90	70	53	0,90
	32	2"		87	70	53	0,69
	40	1½"		141	101	76	1,10

Design feature

- With external thread according to EN 10226-1

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	ØD	Weight
6411	32	1"	16	77	70	53	0,55
	32	2"		78	70	53	0,59

Design features

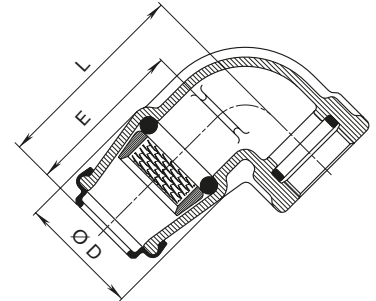
- With external thread according to EN 10226-1
- ISO socket 360° rotatable

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	ØD	Weight
6462	63	1½"	16	148	105	93	2,65

Elbow 90° With internal thread

No. 6410 Made of ductile iron

No. 6430 Made of POM

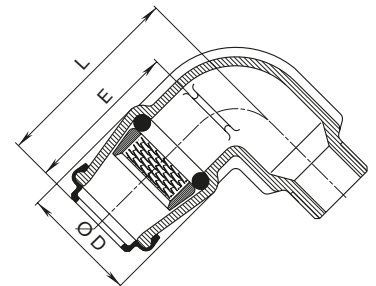


Elbow 90° With external thread

No. 6460 Made of ductile iron

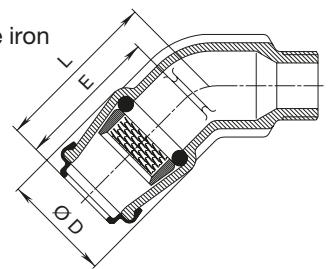
90° elbow with external thread reduced

No. 6470 Made of ductile iron



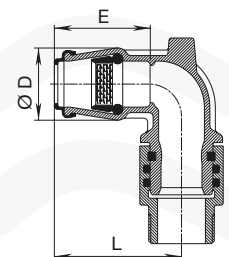
Elbow 45° With external thread

No. 6411 Made of ductile iron



Elbow 90° Swivelling fitting, with external thread

No. 6462 Made of ductile iron



ISO pipe fitting

T-piece

Design features

- With internal thread according to ISO 228, ductile iron
- With internal thread according to EN 10226-1, POM

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Weight
6501	32	1"	16	195	80	1,50
	40	1¼"		228	93	2,40
	50	1½"		235	93	2,70
	63	2"		273	105	4,10

If using as sleeve - Attention: no stop

Design features

- With internal thread according to ISO 228, ductile iron
- With internal thread according to EN 10226-1, POM

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Weight
6500	20	½"	16	114	48	0,38
	25	¾"		134	58	0,56
	32	1"		162	70	0,83
	40	1¼"		199	84	1,45
	50	1½"		239	101	2,20
	63	2"		245	114	3,90

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Weight
6520	20	½"	16	110	48	0,10
	25	¾"		134	58	0,13
	32	1"		163	70	0,24
	40	1¼"		193	82	0,43
	50	1½"		235	99	0,60
	63	2"		267	110	0,90

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Weight
6510	50	2"	16	240	101	2,40
	75	1"		258	99	5,20
	75	2"		258	99	4,75

Order No.	Ø Pipe	Thread	MOP (PN)	L	E	Weight
6521	40	1"	16	210	84	0,50
	63	1"		275	108	0,83
	63	1½"		275	108	0,80

Order No.	Ø Pipe	MOP (PN)	L	E	Weight
6530	32	16	176	70	1,00
	40		214	84	2,20
	50		250	101	3,20
	63		300	114	4,80

Order No.	Ø Pipe	MOP (PN)	L	E	Weight
6550	25	16	144	58	0,16
	32		179	70	0,25
	40		216	82	0,57
	50		248	99	0,75
	63		297	110	1,20

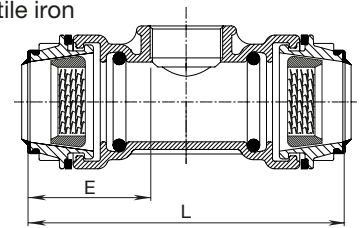
Order No.	Ø Pipe 1	Ø Pipe 2	MOP (PN)	L	E	E1	Weight
6531	32	25	16	157	70	58	0,90
	40	25		185	84	58	1,50
	40	32		185	84	70	1,50
	50	25		218	101	58	2,00
	50	32		227	89	70	2,00
	50	40		240	89	84	2,60
	63	32		251	114	70	2,70
	63	40		262	114	84	3,20
	63	50		275	114	99	3,50

T-piece

With internal thread outlet, with detachable ends for subsequent assembly

No. 6501

Made of ductile iron



T-piece

With threaded outlet

No. 6500

Made of ductile iron

No. 6520

Made of POM

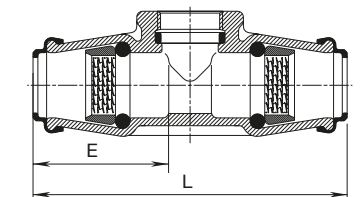
Internal thread reduced

No. 6510

Made of ductile iron

No. 6521

Made of POM



T-piece

With 3 sockets

No. 6530

Made of ductile iron

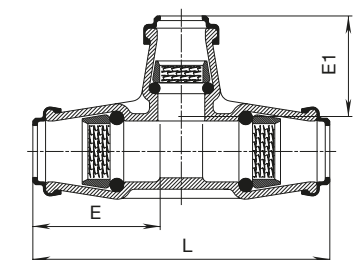
No. 6550

Made of POM

T-piece reduced

No. 6531

Made of ductile iron



ISO pipe fitting

T-piece | Fitting | End stop

Order No.	Ø Pipe 1	Ø Pipe 2	Ø Pipe 3	MOP (PN)	L	E1	E2	E3	Weight
6551	40	63	40	16	246	88	115	88	1,18
	63	40	40		272	115	88	88	1,18
	63	40	63		297	115	88	115	1,23
	63	63	40		272	115	115	88	1,23

Design features

- With external thread according to EN 10226-1
- With external thread for protective sleeve according to EN 10226-1

Order No.	Ø Pipe	Thread 1	Thread 2	MOP (PN)	L	E	Ø D	Weight
6901	32	1"	1½"	16	88	63	53	0,40
	40	1¼"	2"		104	76	64,5	0,70
	50	1½"	2½"		120	91	76	1,10

Order No.	Ø Pipe	MOP (PN)	L	E	Ø D	Weight
6223	20	16	54,5	48,5	39	0,04
	25		65,5	58,5	43	0,06
	32		75,0	70,0	53	0,09
	40		92,5	82,5	72	0,20
	50		107	101	83	0,28
	63		117	111	99	0,40

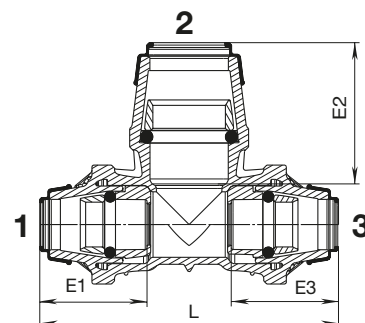
Design features

- With one external thread outlet EN 10226-1
- Made of POM
- Every push-fit end can be modified to a external thread outlet

Order No.	DN	Thread	L	Weight
6630	¾"	¾"	92	0,05
	1"	1"	105	0,10
	1¼"	1¼"	123	0,13
	1½"	1½"	144	0,18
	2"	2"	160	0,28
6631	1"	1½"	117	0,07
	1"	2"	126	0,12

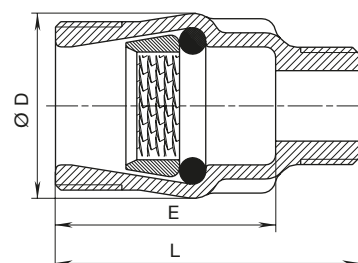
T-piece reduced With 3 sockets

No. 6551 Made of POM



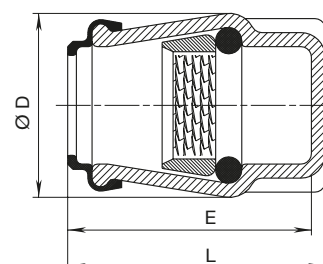
Fitting For wall inlet fitting No. 690 (old version)

No. 6901 Made of ductile iron



End stop

No. 6223 Made of POM



Push fit swivel converter

No. 6630 equal

No. 6631 special dimensions



ISO pipe fitting

Hawle wall inlet fitting



Design features

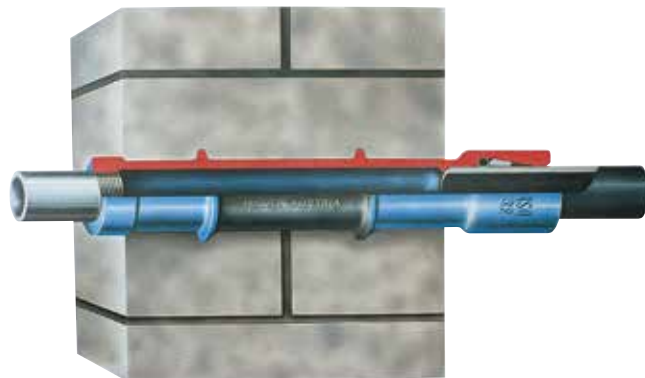
- This wall inlet fitting enables the plastic pipe connection to end on the outside of the wall
- The outside central portion of the wall inlet body is ribbed and uncoated to ensure good adhesion to concrete
- The ISO socket on the outside of the wall is cylindrical to enable pushing on an additional PE protective sleeve
- There are two connection possibilities on the inside wall. The standard version with internal thread connection or an additional external thread to the internal thread for connection of a protective sleeve

Material | Technical features

- **Body** made of ductile iron, epoxy powder coated
- **Seals** made of elastomer

Hawle wall inlet fitting

No. 6990 Made of ductile iron



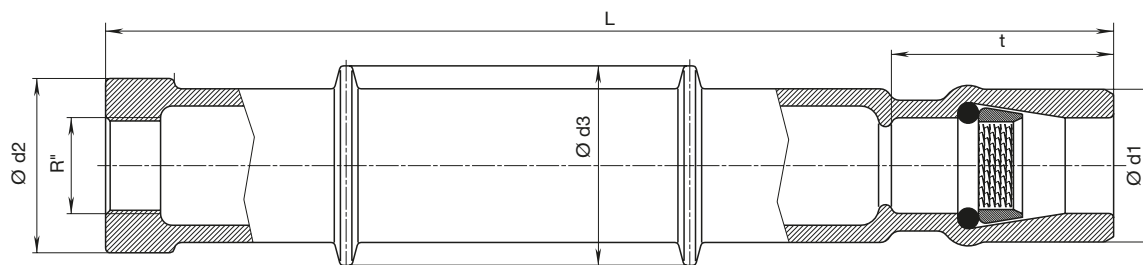
Ø Pipe	Ø d1*	R" ISO 228	Ø d2** ISO 228	t	L	Ø d3	Weight
32	56	1"	R 2"	75	440	80	4,65
40	66,5	1¼"	R 2½"	90	440	87	5,40
50	80	1½"	R 2½"	105	440	87	5,70
63	97	2"	R 3"	510	470	95	8,40

* A protective sleeve can be pushed on

** Can be supplied with external thread (for tank room traverse etc.)

+ Maximum wall thickness

Assembly instructions:
see page K 3/2



Design features

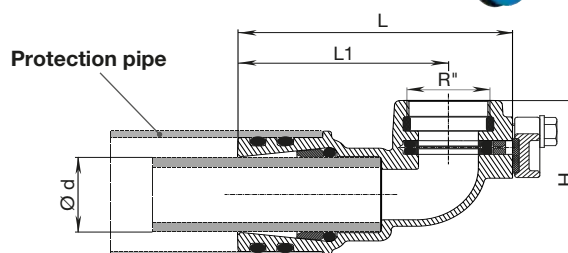
- with internal thread ISO 228
- with intermediate shut-off
- Suitable protection pipe PVC 110x5,3 (not included in scope of supply!)

Order No.	PE pipe Ø d	IT R" ISO 228	L	L1	H	H1	Weight	
6909	32	1"	220		123	68,5	3,0	
	50	1½"	223	177	124	70,0	3,7	
	63	2"	223		134	80,0	3,5	

Hawle wall inlet fitting

Protection pipe

No. 6909
Made of ductile iron



Notes



Hawle ZAK-System

The threadless, restraint jointing system for service connections



Page L 2	Hawle ZAK-System The threadless, restraint jointing system for service connections	Page L 2/1	
Page L 3	Saddles ZAK-Universal-H ZAK-HAKU ZAK-HAKU-Hawlinger ZAK shut-off adapter, ZAK-drilling adapter, ZAK-plug	Page L 3/1 Page L 3/2 Page L 3/3 Page L 3/4	
Page L 4	Service valve ZAK-Service valve, for horizontal outlet ZAK-Service valve, for vertical outlet; for horizontal outlet with automatic drainage ZAK-Service valve, 360° swivel type ZAK-ISO-adapter, -ISO fitting, -reduction, -connector, swiveling ZAK-elbow 90° ZAK-adapter, ZAK-Tee piece	Page L 4/1 Page L 4/2 Page L 4/3 Page L 4/4 Page L 4/5 Page L 4/6	
Page L 5	ZAK-range ZAK-wall inlet fitting, ZAK-adapter with flange, ZAK-adapter fitting ZAK-thread adapter ET, ZAK-Press-Fit ZAK-O-ring, ZAK-Retaining ring	Page L 5/1 Page L 5/2 Page L 5/2	
Page L 6	ZAK-fittings ZAK-fittings with PE-tail	Page L 6/1	
	Further products with ZAK connection <i>Hawle-Combiflex E3</i> <i>DN 150</i> <i>Hawle-Combiflex E3</i> <i>DN 250, DN 300</i>	<i>Pages A 9/1</i> <i>Pages A 9/5</i>	
	<i>Wafer tee piece ZAK 46</i> <i>SynoZAK connector</i>	<i>Page D 4/1</i> <i>Page E 4/1</i>	
	<i>Hawle-BAIO Combi III E3</i> <i>BAIO EN-duck foot bend ZAK 46</i> <i>BAIO MMN-duck foot bend ZAK 46</i> <i>BAIO SM-adapter piece ZAK 46</i> <i>BAIO U-piece ZAK 46</i>	<i>Page G 5/2</i> <i>Page G 6/3</i> <i>Page G 6/3</i> <i>Page G 6/6</i> <i>Page G 6/1</i>	
	<i>Water meter consoles ZAK 34</i>	<i>Page J 9/1</i>	

Hawle ZAK-System

The threadless, restraint jointing system for service connections

Accessories

Mounting spray

Extension spindles

Strap No. 3110

Page M 7/2

Page M 2/3

Page I 3/5

Spare parts

Retaining ring for ZAK

O-ring for ZAK

Page L 5/2

Page L 5/2

Tools

Drilling machine

Saddle blade

Page Q 2/1

Page Q 4/1

Application examples

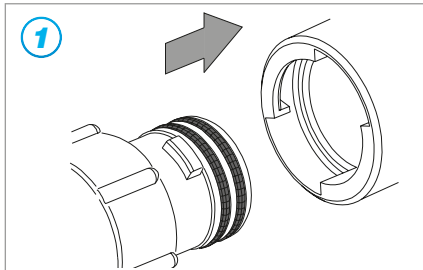


Design features

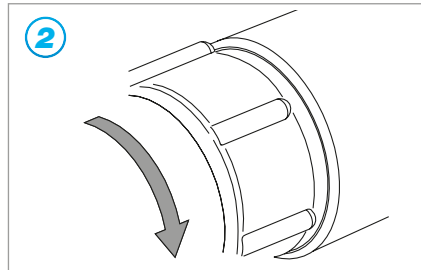
- The threadless, restraint jointing system for the service connections made of ductile iron, epoxy powder coated
- Integrated on pipe saddles, service valves and fittings
- Operating pressure PN 16
- Simple installation:
Push into socket - rotate for 90° - pull out - fit the snap ring
- **ZAK socket d 34** max. drilling Ø 25
ISO push-fit for PE pipes Ø 20 - Ø 50 according to EN 12201 and DIN 8074 | up to PN 16.
Suitable up to 30 °C medium temperature
- **ZAK socket d 46** max. drilling Ø 35
ISO push-fit for PE pipes Ø 32 - Ø 63 according to EN 12201 and DIN 8074 | up to PN 16.
Suitable up to 30 °C medium temperature
- **ZAK socket d 69** max. drilling Ø 40/50
ISO push-fit for PE pipes Ø 50 - Ø 63 according to EN 12201 and DIN 8074 | up to PN 16.
Suitable up to 30 °C medium temperature



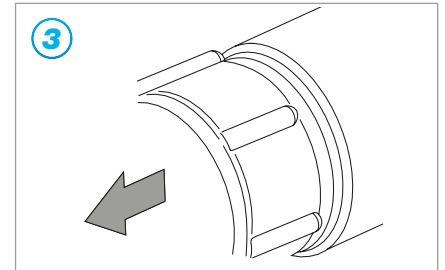
ZAK-System assembly instructions



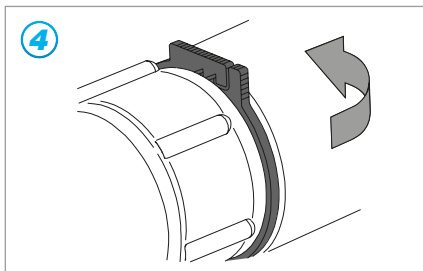
Grease the O-rings of the spigot end. Push the ZAK-spigot end into the ZAK-socket to the stop.



Rotate the ZAK-Fitting for 90 °Clockwise to the stop.

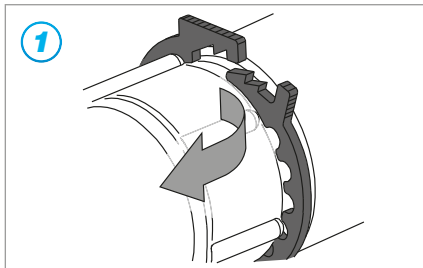


Pull out the ZAK-Fitting to the stop (app. 4 mm).

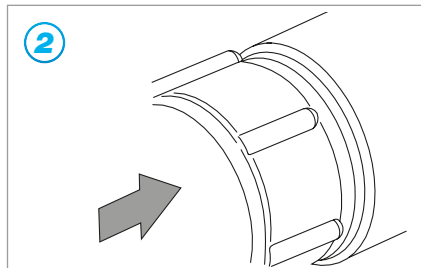


Fit the snap ring in the gap and push the locking ends together.

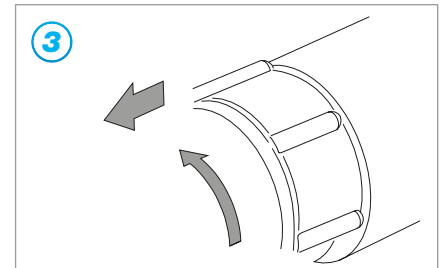
ZAK-System dismantling



Open the snap ring, widen it and pull it back.



Push in the ZAK-Fitting to the stop (app. 4 mm).



Turn the ZAK-Fitting for 90 °Counterclockwise to the stop and pull it out of the ZAK-socket.

Notes



Hawle ZAK-System Saddles



Design features

- For ductile iron, steel and AC pipes
- For drilling without pressure

Order No.	MOP (PN)	Version	Dimension/DN				
			80	100	125	150	200
3540	16	ZAK 46					
3540G			DN 65 — DN 500				

DN		H	L	L1	Weight
65 — 500	ZAK 46	65	200	90	1,70

When ordering, please state DN, pipe Ø and pipe type; ZAK 46 max. drilling Ø 35 mm | weight without strap strap see page I 3/5

Design features

- For ductile iron, steel and AC pipes
- For drilling under pressure

Order No.	MOP (PN)	Version	Dimension/DN									
			65	80	100	125	150	200	250	300	400	500
3810	16	ZAK 34										
		ZAK 46										
		ZAK 34										
3810G		ZAK 46	DN 65 — DN 500									

DN		H	L	L1	Weight
65 — 500	ZAK 34	84	200	112	2,50
	ZAK 46				3,00

When ordering, please state DN, pipe Ø and pipe type; ZAK 34, max. drilling Ø 25 | ZAK 46, max. drilling Ø 35 weight without strap | strap see page I 3/5

Design features

- For ductile iron, steel and AC pipes
- For vertical drilling under pressure
- Supplied complete with plastic operating key

Order No.	MOP (PN)	Version	Dimension/DN
2410	16	ZAK 46	100
2410G		ZAK 34	DN 65 — DN 500
		ZAK 46	

DN		H	L	L1	A	B	Weight
65 — 500	ZAK 34	110	200	170	68	60	4,70
	ZAK 46	120		225	82	65	6,10

When ordering, please state DN, pipe Ø and pipe type; ZAK 34, max. drilling Ø 25 | ZAK 46, max. drilling Ø 35 dimension no. 2410G | no. 2405 only vertical outlet (without illustration) Strap see page I 3/5

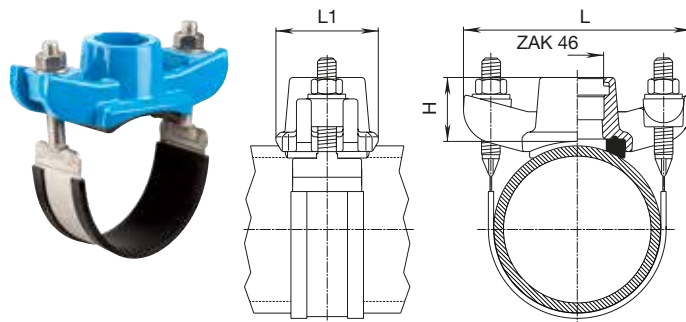
ZAK-universal-H pipe saddle

No. 3540

Complete

No. 3540G

Without strap and saddle seal



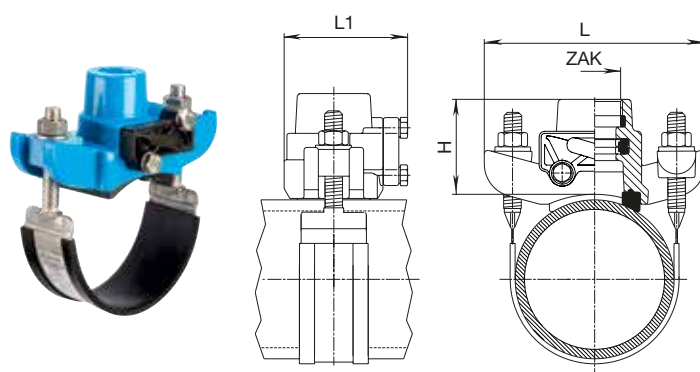
ZAK-universal-H shut-off saddle

No. 3810

Complete

No. 3810G

Without strap and saddle seal



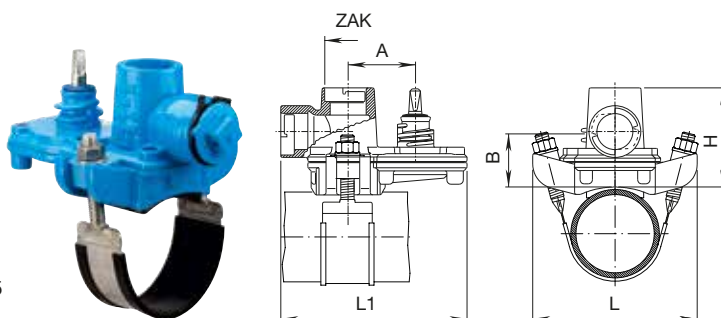
ZAK-universal-H Hawlinger

No. 2410

Complete

No. 2410G

Without strap and saddle seal



Hawle ZAK-System

Saddles

Design features

- For PE and PVC pipes
- For drilling without pressure

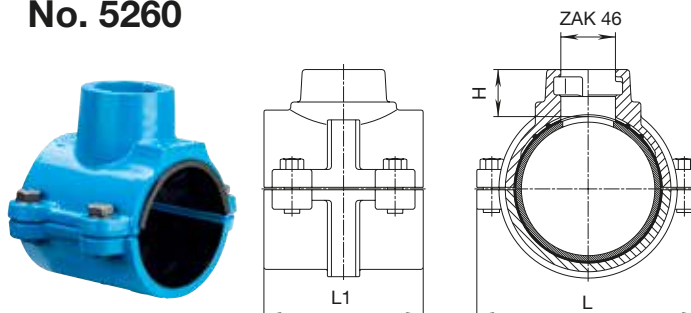
Order No.	MOP (PN)	Version	Pipe Ø							
			63	90	110	125	140	160	180	225

5260	16	ZAK 46								
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Pipe Ø		H	L	L1	Weight
63	ZAK 46	46	135	100	1,90
90			150	110	3,00
110			170	120	3,10
125			190		3,80
140			205		4,80
160		39	230		5,00
180			262		5,30
225			310	180	9,70

ZAK 46, max. drilling Ø35 mm

ZAK-HAKU pipe saddle No. 5260



Design features

- For PE and PVC pipes
- For drilling under pressure

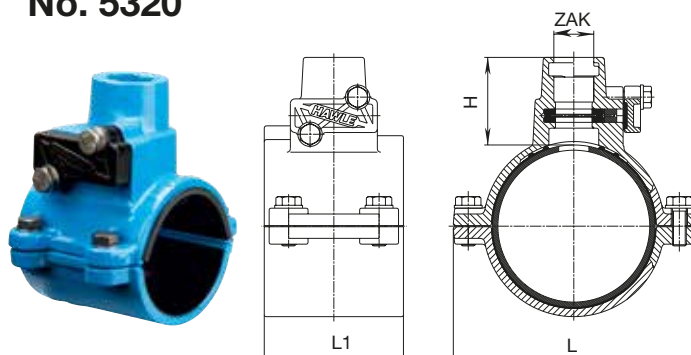
Order No.	MOP (PN)	Version	Pipe Ø											
			63	90	110	125	140	160	180	200	225	250	280	
5320	16	ZAK 34												
		ZAK 46												

5320	16	ZAK 34											
		ZAK 46											

Ø Pipe		H	L	L1	Weight
63	ZAK 34	107	135	100	2,90
90		73	150	110	3,35
110		73	170	120	3,75
140		76	208	120	5,00
160		80	230	120	5,85
225	ZAK 46	83	310	120	7,65
90		72	150	110	3,55
110		74	170	120	4,00
125		76,5	192	120	4,90
140		79	208	120	5,20
160		74	230	120	5,20
180		81	262	120	6,55
200		83	285	120	5,95
225		86	310	120	7,70
250		83	350	180	13,15
280		83	380	180	13,40

ZAK 34, max. drilling Ø25 mm | ZAK 46, max. drilling Ø35 mm

ZAK-HAKU shut-off saddle No. 5320



Hawle ZAK-System Saddles



Design features

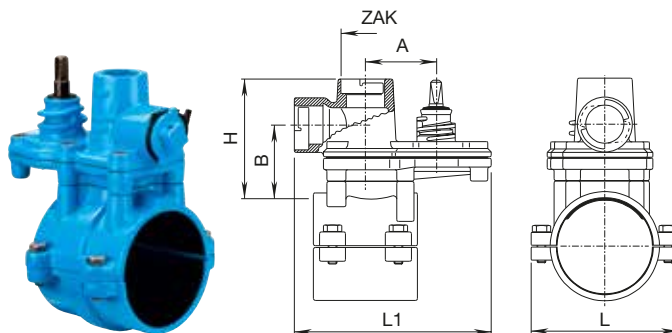
- For PE and PVC pipes
- For vertical drilling under pressure

Order No.	MOP (PN)	Version	Pipe Ø						
			63	90	110	125	140	160	225
2310	16	ZAK 34 ZAK 46							

Ø Pipe		H	L	L1	A	B	Weight
63	ZAK 34	125	155	175	68	70	6,80
110			170			70	7,30
160			230			75	9,00
90	ZAK 46	130	155	225	82	75	8,70
110			170			80	9,10
125			190			80	10,40
140			205			80	10,00
160			230			80	11,00
225			305			90	13,90

ZAK 34, max. drilling Ø25 mm | ZAK 46, max. drilling Ø35 mm

ZAK-HAKU Hawlinger No. 2310



Design features

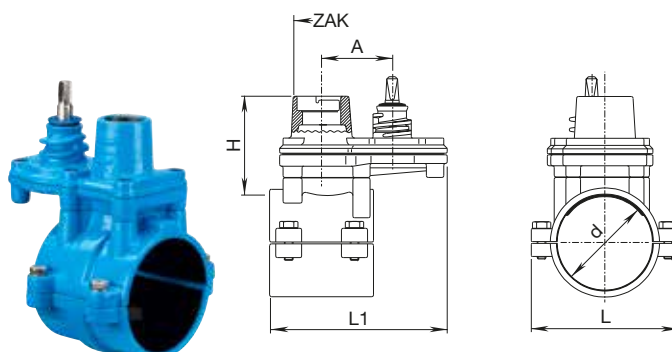
- For PE and PVC pipes
- For vertical drilling under pressure

Order No.	MOP (PN)	Version	Pipe Ø						
			90	110	125	140	160	180	225
2305	16	ZAK 34 ZAK 46							

Ø Pipe		H	L	L1	A	Weight
90	ZAK 34	125	155	175	68	6,40
110			170			7,30
140			205			7,60
160			230			9,00
225	ZAK 46	130	305	225	82	10,90
90			155			8,70
110			170			9,10
125			190			10,40
140			205			10,00
160			230			11,00
180			250			12,50
225			305			13,90

ZAK 34, max. drilling Ø25 mm | ZAK 46, max. drilling Ø35 mm

ZAK-HAKU Hawlinger No. 2305



Hawle ZAK-System Range

Design features

- The shut-off adapter with ZAK outlets is to be used in combination with pipe saddle
- The lower ZAK spigot is to be used for assembly in the drill fittings with ZAK socket; the upper ZAK socket outlet serves for positive integration of fittings and fittings with ZAK spigot
- In combination with a drill, the adapter allows simple, problem-free drilling of main lines under pressure

Material | Technical features

- 1 **Body** made of ductile iron, epoxy powder coated
 - 2 **Sealing cover** made of ductile iron, epoxy powder coated with rubber seal
 - 3 **Screws and washers** made of stainless steel
- **Seals** made of Elastomer

Suitable accessories

Drilling machines: No. 5800, No. 5805
Saddle blade: No. 8401
ZAK adapter: No. 5895

Design features

- For Hawle drilling machines No. 5800, No. 5805

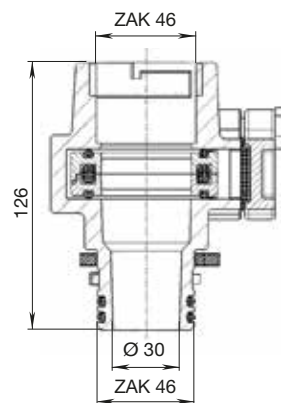
Order No.	MOP (PN)	Version	Weight	
5895	16	IG 1" ZAK 34	0,75	
		IG 1½" ZAK 46	1,10	
		IG 2" ZAK 46	1,00	

Design features

- For ZAK-adapter

Order No.	MOP (PN)	Version	Weight	
6980	16	ZAK 34	0,25	
		ZAK 46	0,45	
		ZAK 69	0,84	

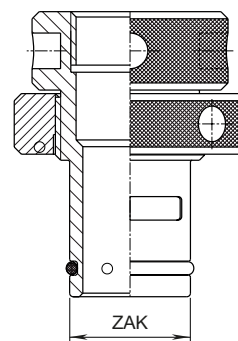
ZAK shut-off adapter No. 3721



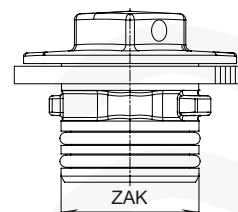
Order No.	MOP (PN)	Version		Dimension/DN 1¼"
3721	16	With ZAK spigot and ZAK socket	ZAK 46	

DN		Drill hole max.	Weight
1¼"	ZAK 46	29	2,20

ZAK-drilling adapter No. 5895



ZAK-plug No. 6980



Hawle ZAK-System

Service valve



Design features

- Resilient seated gate valve
- With ZAK-spigot and ISO-socket
- For horizontal outlet

Order No.	MOP (PN)	Version		Dimension/DN				
				3/4"	1"	1 1/4"	1 1/2"	2"

DN		Ø PE-pipe	H	H1	L	t	a	c	Ø d1	Weight
3/4"		25	164	185	173	52				2,35
1"	ZAK	32	164	190	175	63				2,50
1 1/4"	34	40	164	200	205	76	10,3	20	16	2,90
1 1/2"		50	164	200	232	91				3,15
1"		32	164	190	175	63				3,60
1 1/4"	ZAK	40	200	230	230	76	10,3	20	16	4,00
1 1/2"	46	50	200	235	236	91				4,30
2"		63	200	244	267	103				4,80

Design features

- Resilient seated gate valve
- With ZAK-spigot and ZAK-socket
- For horizontal outlet

Order No.	MOP (PN)	Version		Dimension/DN 1 1/2"
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DN		H	H1	L	a	c	Ø d1	Weight
1 1/2"	ZAK 46	200	230	209	10,3	20	16	4,00

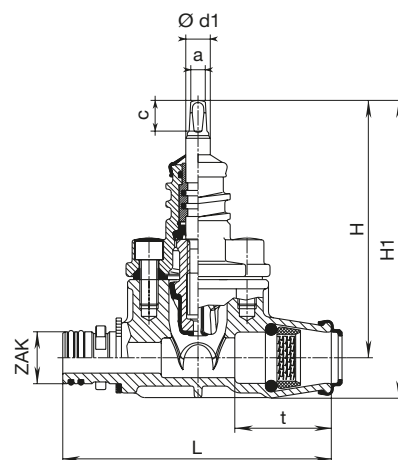
Design features

- Resilient seated gate valve
- With double ZAK-socket
- For horizontal outlet

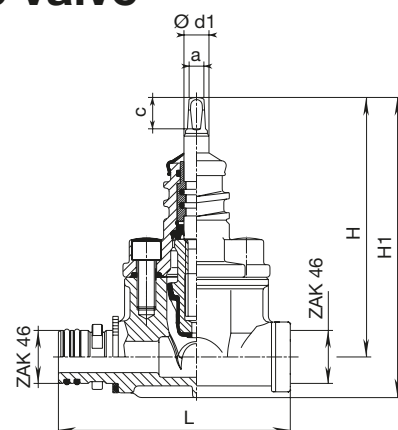
Order No.	MOP (PN)	Version		Dimension/DN 1 1/2"
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DN		H	H1	L	a	c	Ø d1	Weight
1 1/2"	ZAK 46	200	230	160	10,3	20	16	3,72

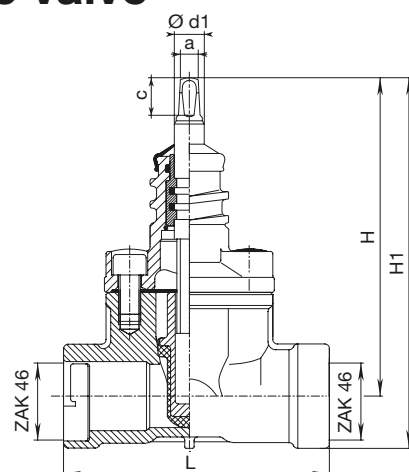
ZAK-service valve No. 2810



ZAK-service valve No. 2811



ZAK-service valve No. 2812



Hawle ZAK-System

Service valve

Design features

- Resilient seated gate valve
- With ZAK spigot and ISO socket
- For vertical outlet

Order No.	MOP (PN)	Version		Dimension/DN			
				¾"	1"	1¼"	1½"
3160	16	With ZAK spigot and ISO socket	ZAK 34				
			ZAK 46				

DN		Ø PE-pipe	H	H1	L	t	a	c	Ød1	Weight
¾"	ZAK 34	25	240	159	80	52	10,3	20	16	2,30
1"		32	240	159	80	63	10,3	20	16	2,40
1¼"	ZAK 46	40	272	190	106	76	10,3	20	16	4,15
1½"		50	286	190	220	91	10,3	20	16	4,25

Design features

- Resilient seated gate valve
- With ZAK spigot and ZAK socket
- For vertical outlet

Order No.	MOP (PN)	Version		Dimension/DN 1½"
3161	16	With ZAK spigot and ZAK socket	ZAK 46	

DN		H	H1	L	a	c	Ød1	Weight
1½"	ZAK 46	297	190	69	10,3	20	16	3,90

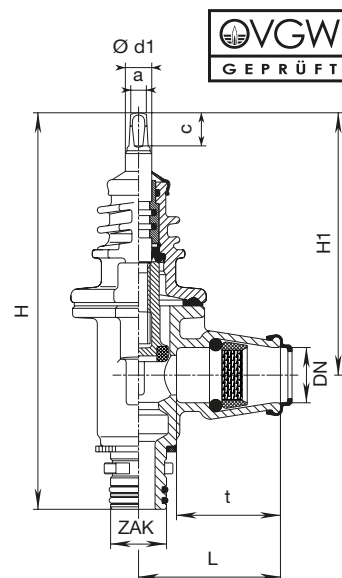
Design features

- Resilient seated gate valve
- With automatic drainage
- With two horizontal outlets

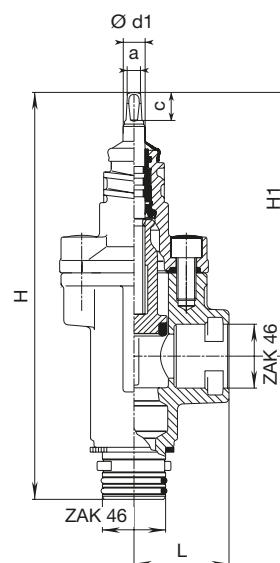
Order No.	MOP (PN)	Version		Dimension DN 1½"
2830	16	With automatic drainage device and two ZAK-sockets	ZAK 46	

DN		H	L	L1	L2	a	c	Ød1	Weight
1½"	ZAK 46	243	148	70	78	10,3	20	16	4,15

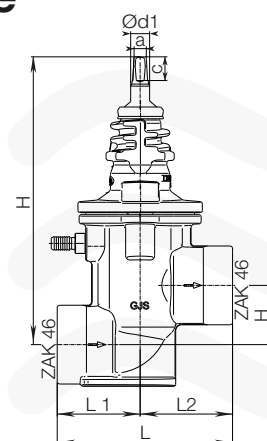
ZAK-service valve No. 3160



ZAK-service valve No. 3161



ZAK-service valve No. 2830



Hawle ZAK-System

Service valve



Design features

- Resilient seated gate valve
- 360° swivel type, with ZAK spigot and ISO socket
- For vertical outlet

Order No.	MOP (PN)	Version		Dimension/DN	
				1"	1¼"
3162	16	360° swivel type, with ZAK spigot and ISO socket	ZAK 34 ZAK 46		

DN		Ø PE-pipe	H	H1	L	a	c	Ød1	Weight
1"	ZAK 34	32	285	159	80	10,3	20	16	2,92
1"	ZAK 46	32	285	159	86	10,3	20	16	3,72
1¼"	ZAK 46	40	355	190	106	10,3	20	16	4,85

Design features

- Resilient seated gate valve
- 360° swivel type, with ZAK spigot and ZAK socket
- For vertical outlet

Order No.	MOP (PN)	Version		Dimension/DN	
				1½"	
3163	16	360° swivel type, with ZAK spigot and ZAK socket	ZAK 46		

DN		H	H1	L	a	c	Ød1	Weight
1½"	ZAK 46	355	190	69	10,3	20	16	4,53

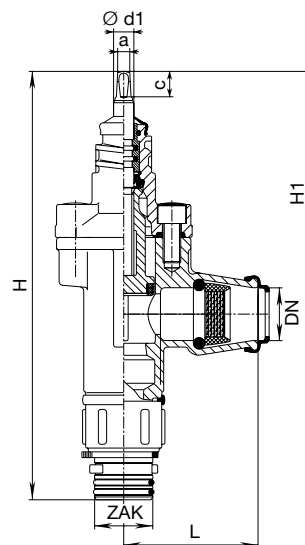
Design features

- Resilient seated gate valve
- 360° swivel type, with ZAK spigot and ZAK socket
- For vertical outlet
- With automatic drainage

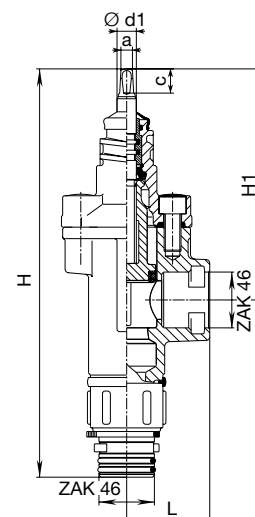
Order No.	MOP (PN)	Version		Dimension/DN	
				1½"	
3164	16	With 360° swivel type, with ZAK spigot and ZAK socket	ZAK 46		

DN		H	H1	L	a	c	Ød1	Weight
1½"	ZAK 46	355	190	69	10,3	20	16	5,23

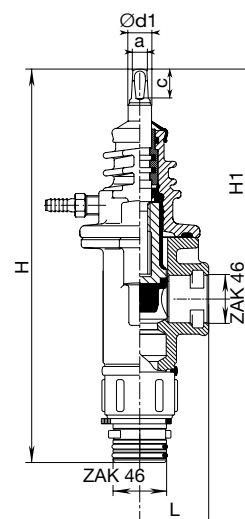
ZAK-service valve No. 3162



ZAK-service valve No. 3163



ZAK-service valve No. 3164



Hawle ZAK-System

Range

Order No.	MOP (PN)	Version	Pipe Ø d					
			20	25	32	40	50	63
6160	16	ZAK 34						
		ZAK 46						
		ZAK 69						

Pipe Ø d		E	Weight
20	ZAK 34	48	0,30
25		58	0,40
32		70	0,50
40		84	0,70
25	ZAK 46	58	0,50
32		70	0,70
40		84	0,80
50		101	1,20
63	ZAK 69	114	1,60
50		101	1,44
63		114	1,82

Design features

- Sanitation fitting with extended insertion
- Can be displaced, with cone part that can be dismantled

Order No.	MOP (PN)	Version	Pipe Ø d			
			32	40	50	63
6170	16	ZAK 34				
		ZAK 46				

Pipe Ø d		L max.	L min.	Weight
32	ZAK 34	127	71	1,05
50		149	82	1,85
32	ZAK 46	154	71	1,40
40		147	77	1,50
50		149	82	1,70
63		201	104	2,70

Design features

- Adapter ZAK spigot on ZAK socket

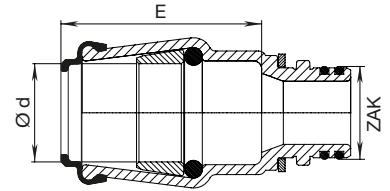
Order No.	MOP (PN)	Version		L	Weight	
		A	B			
6350	16	ZAK 34	ZAK 46	58	0,40	
		ZAK 46	ZAK 69	102	1,00	

Design features

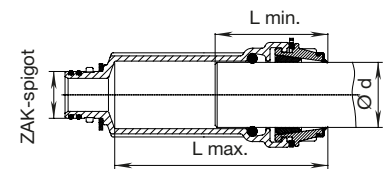
- With ZAK-spigot and ZAK socket
- 360° swivelling

Order No.	MOP (PN)	Version	Weight	
6468	16	ZAK 46	1,35	

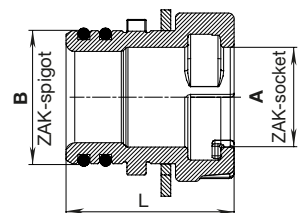
ZAK-ISO-adapter No. 6160



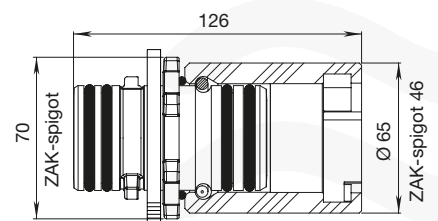
ZAK-fitting No. 6170



ZAK-reduction No. 6350



ZAK-connector, swiveling No. 6468



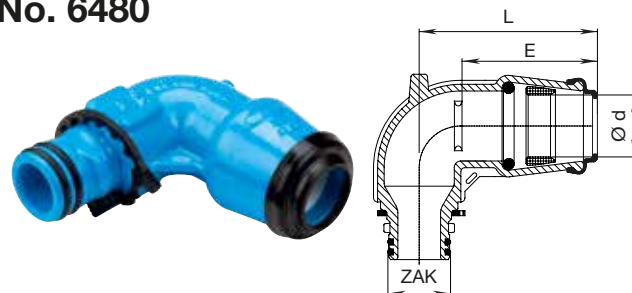
Hawle ZAK-System Range



Order No.	MOP (PN)	Version	Pipe Ø d				
			25	32	40	50	63
6480	16	ZAK 34 ZAK 46					

Pipe Ø d	Version	L	E	Weight
25	ZAK 34	72	58	0,55
32		93	70	0,80
40		104	84	1,10
25	ZAK 46	71	58	0,72
32		87	70	0,96
40		104	84	1,20
50		141	101	1,65
63		163	114	2,10

ZAK-ISO elbow 90° No. 6480



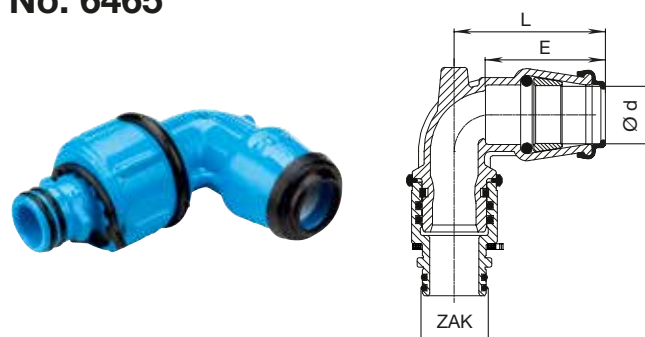
Design features

- 360° swivel type, ZAK-spigot and ISO-socket

Order No.	MOP (PN)	Version	Pipe Ø d				
			25	32	40	50	63
6465	16	ZAK 34 ZAK 46					

Pipe Ø d	Version	L	E	Weight
25	ZAK 34	60	48	1,20
32		93	70	1,60
40		105	84	1,80
25	ZAK 46	60	48	1,40
32		93	70	1,70
40		105	84	1,90
50		130	101	2,30
63		147	114	2,80

ZAK-ISO elbow 90° No. 6465

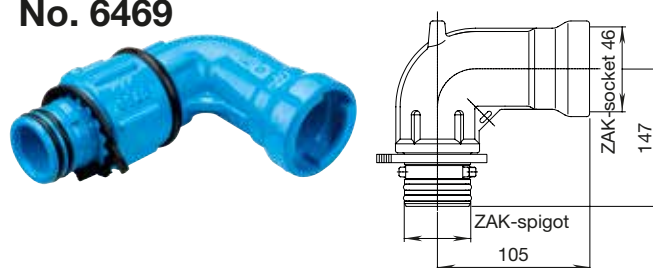


Design features

- 360° swivel type, ZAK-spigot and ZAK-socket

Order No.	MOP (PN)	Version	Weight	
6469	16	ZAK 46	1,10	

ZAK-elbow 90° No. 6469

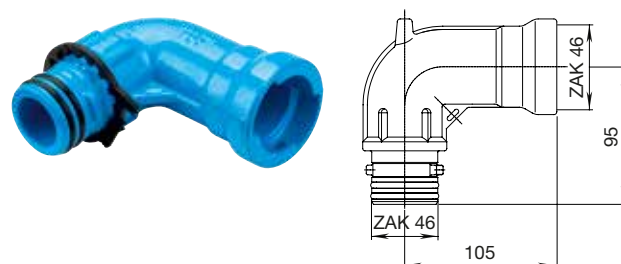


Design features

- With ZAK-spigot and ZAK-socket

Order No.	MOP (PN)	Version	Weight	
6473	16	ZAK 46	1,15	

ZAK-elbow 90° No. 6473



Hawle ZAK-System Range

Design features

- With double ZAK-spigots

Order No.	MOP (PN)	Version	L	Weight	
6341	16	ZAK 46 1 piece	84,5	0,60	
		ZAK 46 turnable	136	1,30	

Design features

- With double ZAK-sockets

Order No.	MOP (PN)	Version	L	Weight	
6340	16	ZAK 46	120	1,00	

Design features

- With ZAK-socket

Order No.	Ø Pipe		MOP (PN)	L	E	Weight	
6503	50	ZAK 46	16	235	93	3,30	
	63			273	105	4,70	

Attention: no pipe stop

Design features

- With ZAK-sockets on all sides

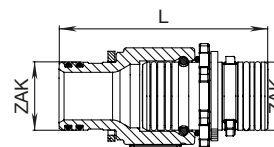
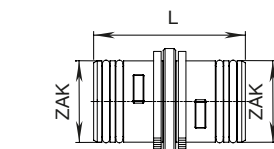
Order No.	MOP (PN)	Version	L	H	Weight	
6540	16	ZAK 46	120	60	1,10	

Design features

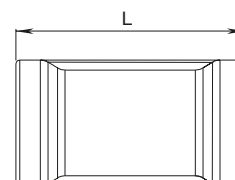
- With ZAK-sockets and ZAK-spigot

Order No.	MOP (PN)	Version	L	H	Weight	
6541	16	ZAK 46	146	62	1,20	

ZAK-adapter No. 6341

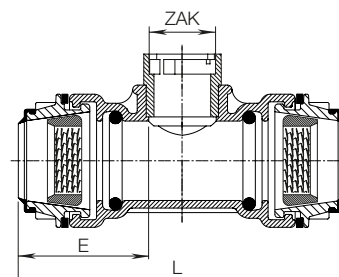


ZAK-adapter No. 6340

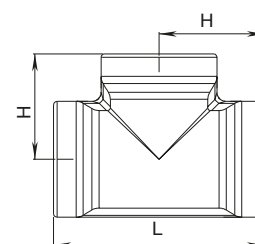


ZAK-Tee piece No. 6503

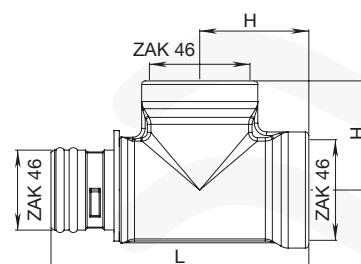
With ZAK outlet, with detachable ends for subsequent assembly



ZAK-Tee piece No. 6540



ZAK-Tee piece No. 6541



Hawle ZAK-System Range



Design features

- For installation in masonry (No. 6992, No. 6993) or with ring seal in RDS* (No. 6994)

Order No.	MOP (PN)	Version	Outlet A	Outlet B	L	Weight
6992	16	Casing ribbed	ZAK 46 Socket	Internal thread 1¼"	500	5,30
6993				ZAK 46 socket		
6994		Casing over-wound for RDS		Internal thread 1¼"		

* RDS = pipe ducting system

ZAK-wall inlet fitting

No. 6992
No. 6993
No. 6994

No. 6992

ZAK



IT 1¼"

No. 6994

IT 1¼"



ZAK

No. 6993

ZAK



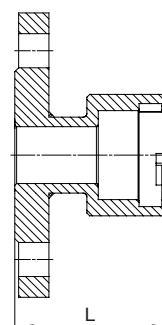
ZAK

Design features

- Adapter flange on ZAK socket

Order No.	MOP (PN)	DN	Version	L	Weight
8190	16	40	ZAK 46	82	2,70
		50			
		80		51	3,90
		100		51	4,70
		125		51	5,80
		150		51	7,30
		200		51	11,50

ZAK-adapter with flange No. 8190



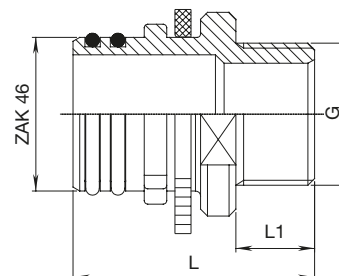
Design features

- With conical external thread and ZAK spigot

Order No.	MOP (PN)	Version	External thread EN 10226-1		
			1"	1¼"	1½"
6189SP	16	ZAK 46			

External thread G		L	L1	Weight
1"	ZAK 46	70	20	0,40
1¼"		70	21,5	0,50
1½"		70	21,5	0,60

ZAK-adapter fitting No. 6189SP Made of brass



Hawle ZAK-System Range

Design features

- ZAK 34 / ZAK 46 with conical external thread EN 10226-1
- ZAK 46 with cylindrical external thread ISO 228
(Please specify on order, cylindrical thread not suitable for usage with hemp or teflon)

Order No.	MOP (PN)	Version	External thread EN 10226-1		
			1 1/4"	1 1/2"	2"
6189	16	ZAK 34			
		ZAK 46			
			External thread ISO 228		
		ZAK 46			

External thread		L	Weight
1 1/4"	ZAK 34	60	0,36
1 1/2"		55	0,35
1 1/4"	ZAK 46	67	0,50
1 1/2"		67	0,60
2"		50	0,50

ZAK 34, max. drilling Ø25 | ZAK 46, max. drilling Ø35

Design features

- With internal thread ISO 228 and ZAK-spigot end

Order No.	MOP (PN)	Version	Internal thread ISO 228	
			1 1/4"	1 1/2"
6189IG	16	ZAK 46		

Internal thread G		L	L1	Weight
1 1/4"	ZAK 46	82	19	0,50
1 1/2"		90	19	0,60

Design features

- With ZAK spigot end and Viega Geopress socket

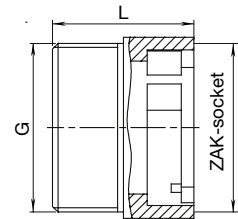
Order No.	MOP (PN)	Version	PE pipe Ø d			
			32	40	50	63
6164	16	ZAK 46				

Pipe Ø d		L	Weight
32	ZAK 46	103	0,58
40		112	0,68
50		112	0,69
63		117	0,76

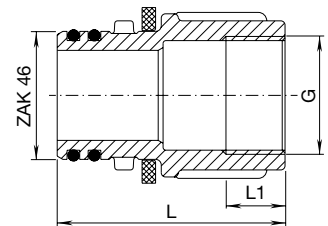
Version
ZAK 34
ZAK 46
ZAK 69

Version
ZAK 34
ZAK 46
ZAK 69

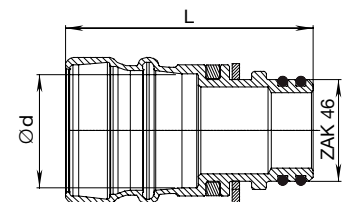
ZAK-thread adapter No. 6189



ZAK-adapter fitting No. 6189IG



ZAK-Press-FIT No. 6164 of brass



O-ring For ZAK spigot No. 6945



Retaining ring For ZAK system No. 6970



Hawle ZAK-System Range



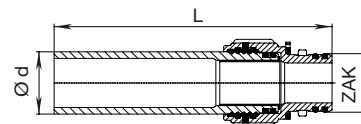
Design features

- For fusion in PE-service valves with E-socket technology

ZAK-PE-tail No. 6180

Order No.	MOP (PN)	Version	Pipe Ø d			
			32	40	50	63
6180	16	ZAK 34				
		ZAK 46				

Pipe Ø d		L	Weight
40	ZAK 34	210	0,95
32	ZAK 46	200	0,60
40		200	0,60
50		220	0,90
63		230	1,20



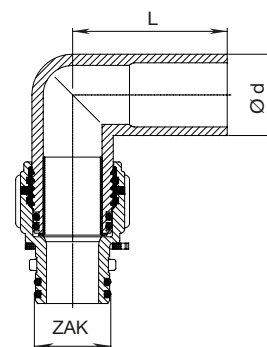
Design features

- For fusion in PE-service valves with E-socket technology

ZAK-elbow PE 90° No. 6479

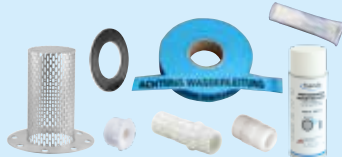
Order No.	MOP (PN)	Version	Pipe Ø d			
			32	40	50	63
6479	16	ZAK 34				
		ZAK 46				

Pipe Ø d		L	Weight
32	ZAK 34	69	0,80
40		78	0,90
32	ZAK 46	69	1,00
40		78	0,65
50		89	0,85
63		110	1,30



Notes



Page M 2	Extension spindles Rigid or telescopic	Page M 2/1	
Page M 3	Surface boxes & base plates Telescopic made of plastic Rigid Telescopic made of ductile iron Height adjustable DIN rated Surface box Base plates made of recycled plastic	Page M 3/1 Page M 3/3 Page M 3/4 Page M 3/5 Page M 3/7	
Page M 4	Valve accessories	Page M 4/1	
Page M 5	HAWAK-pillar For above ground operation of valve	Page M 5/1	
Page M 6	Hydrant accessories Support liners For PE pipes	Page M 6/1 Page M 6/2	
Page M 7	Accessories	Page M 7/1	

Notes



Extension spindles

Rigid or telescopic



Design features

- One extension spindle for several dimensions
- Protective cover with integrated locking mechanism
- No additional fixing (bolt/pin) necessary
- DN 50 to 200

Order No.	Version	Pipe cover (RD) m	L (length) m Dimension/DN		
			50/65/80/100	125/150	200
9000E2/E3	rigid	0,75	0,42	0,29	
		1,00	0,67	0,54	0,45
		1,25	0,92	0,79	0,70
		1,50	1,17	1,04	0,95
		2,00	1,67	1,54	1,45
9500E2/E3	telescopic	2,50	2,17	2,04	1,95
		1,30 – 1,80	0,93 – 1,43	0,84 – 1,34	
		1,35 – 1,80			0,79 – 1,24
		1,80 – 2,50	1,45 – 2,15	1,33 – 2,03	1,22 – 1,92
		2,50 – 3,50	2,15 – 3,15	2,03 – 3,03	1,92 – 2,92
		3,50 – 4,50		2,85 – 3,94	2,88 – 3,93

Other pipe cover depths on request

Suitable accessories

- **Extender for rigid spindle**
Order no. 7830 price for first meter
Order no. 7831 price for each additional half meter
- Please specify dimensions and length when ordering

Design features

- Attachment of the extension spindle to the valve spindle takes place with a stainless steel splint
- DN 250 to 600

Order No.	Version	Pipe cover (RD) m	L (length) m Dimension/DN					
			250	300	350	400	500	600
9000E2/E3	rigid	1,00	0,37	0,31				
		1,25	0,62	0,56	0,50	0,42		
		1,50	0,87	0,81	0,76	0,67		
		1,90					0,89	
		2,00	1,37	1,31	1,26	1,17		0,89
		2,40					1,39	
		2,50	1,87	1,81	2,26	1,67		1,39
9500E2/E3	telescopic	1,3 – 1,5	0,62-0,86	0,59-0,81				
		1,4 – 1,8	0,75-1,15					
		1,5 – 1,8		0,75-1,13	0,72-1,10	0,64-0,95		
		1,8 – 2,4				0,95-1,54		
		1,8 – 2,5	1,12-1,87	1,07-1,80	1,04-1,73			
		2,0 – 2,3					0,97-1,18	
		2,2 – 2,8					1,16-1,77	
		2,4 – 3,5				1,52-2,67		
		2,50 – 3,50		1,75-2,84	1,69-2,77	1,52-2,67		
		2,60 – 3,50					1,57-2,47	1,47-2,37
		3,50 – 4,50	2,30-3,87					

Other pipe cover depths on request

For **E3 and E2 valves** and **E3 Combi valves** DN 50 – 200

No. 9000E2/E3

Rigid

No. 9500E2/E3

Telescopic



For **E3 and E2 valves** DN 250 – 600

No. 9000E2/E3

Rigid

No. 9500E2/E3

Telescopic



Extension spindles

Rigid or telescopic

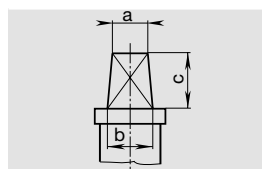
No. 9000E2/E3 / 9500E2/E3

All extension spindles (rigid or telescopic) of all types and dimensions are protected against dirt and surface water.

The telescopic extension spindle can be progressively adjusted to ground level. This is done by pushing or pulling the tube and the spindle shaft.

The telescopic effect protects the pipe and fitting from surface impact.

Spindle head | square



For valves and
combi valves

a 27 mm

b 32 mm

c 48 mm

9000E2/E3	Weights extension spindles, rigid – DN								
Pipe cover (RD) m	50/65/80/100	125/150	200	250	300	350	400	500	600
0,75	2,60	1,90							
1,00	3,50	2,80	2,70	3,10	3,00				
1,25	4,50	3,70	3,50	4,70	4,30	4,20	3,55		
1,50	5,50	4,80	4,50	6,00	5,80	5,40	5,00		
1,90								7,40	
2,00	7,45	6,60	6,50	9,00	8,70	8,45	7,80		7,40
2,40								7,40	
2,50	9,40	8,60	8,50	12,20	11,60	10,80	9,65		7,40

9500E2/E3	Weights extension spindles, telescopic – DN									
Pipe cover (RD) m	50/65/80/100	125/150	200	250	300	350	400	500	600	
1,30 – 1,50				5,75	6,00					
1,30 – 1,80	6,60	6,25								
1,35 – 1,80			5,80							
1,40 – 1,80				7,10						
1,50 – 1,80					6,90	7,00	6,30			
1,80 – 2,40							8,30			
1,80 – 2,50	9,50	8,50	8,60	9,80	9,50	9,10				
2,00 – 2,30									8,80	
2,00 – 2,50				11,00	10,50	10,30				
2,20 – 2,80								11,70		
2,40 – 3,50							13,10			
2,50 – 3,50	12,80	12,00	14,90		14,90	14,50	14,20			
2,60 – 3,50								14,50	14,00	
3,50 – 4,50		16,10	14,90	20,40						

Assembly instructions

Fig.: Assembly E3 extension spindle DN 50 – 200

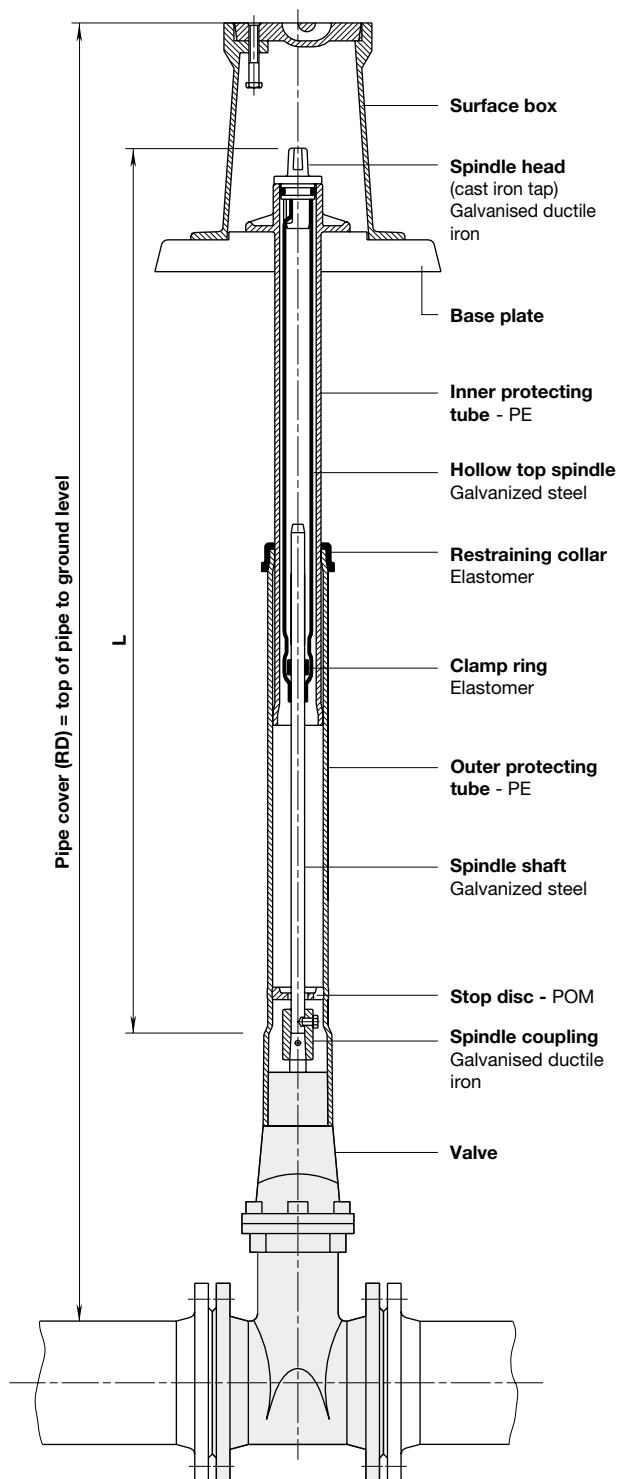
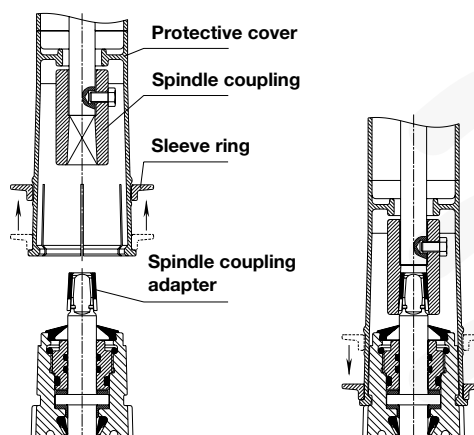


Illustration: 9500E2/E3 DN 250 – 600

Extension spindles

Rigid or telescopic



Design features

- One extension spindle for several dimensions
- Threaded connection for attachment to the service valve
- No additional fixing (bolt/pin) necessary

Order No.	Version	Pipe cover (RD) m	L (length) m	¾" – 2"
9101	rigid	0,75	0,46	
		1,00	0,71	
		1,25	0,96	
		1,50	1,21	
		2,00	1,71	
		2,50	2,21	
9601	telescopic	0,60 – 0,80	0,37 – 0,57	
		0,80 – 1,20	0,56 – 0,96	
		1,00 – 1,60	0,80 – 1,40	
		1,30 – 1,80	0,84 – 1,40	
		1,80 – 2,50	1,34 – 2,04	
		2,50 – 3,50	2,04 – 3,04	
		3,00 – 4,50	2,56 – 4,29	

Other pipe cover depths on request

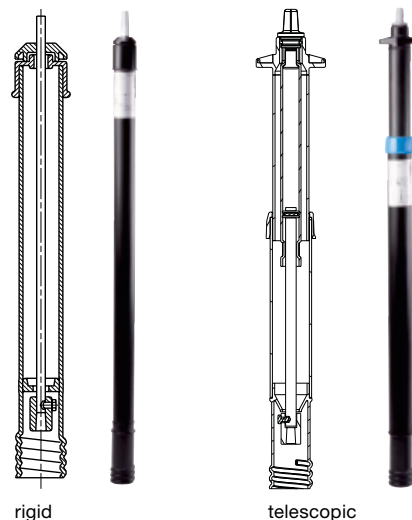
Extension spindle for service valves with threaded connection for spindle DN ¾" – 2"

No. 9101

Rigid

No. 9601

Telescopic

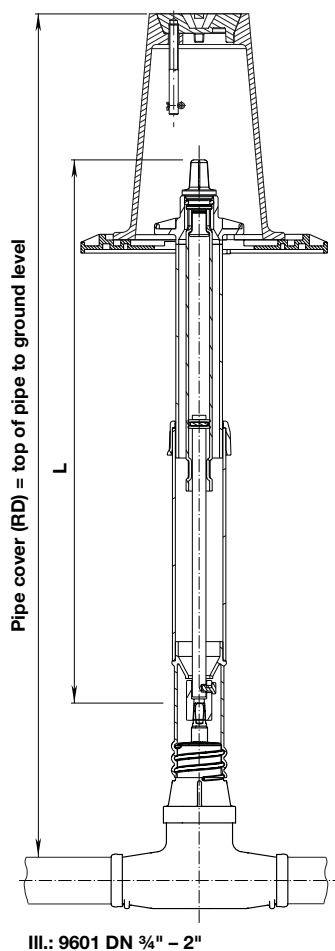


rigid

telescopic

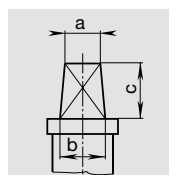
Suitable accessories

- **Extender for rigid spindle**
Order no. 7830 price for first meter
Order no. 7831 price for each additional half meter
- Please specify dimensions and length when ordering



III.: 9601 DN ¾" – 2"

Spindle head | square



for service valves

a 13 mm

b 15 mm

c 24 mm

Weight of extension spindle for service valves

Order No.	9101						9601					
RD m	0,75	1,00	1,25	1,50	2,00	2,50	0,60	0,80	1,00	1,30	1,80	2,50
							0,80	1,20	1,60	1,80	2,50	3,50
Weight	1,10	1,60	2,10	2,60	3,70	4,60	1,60	2,40	3,20	3,50	4,80	6,90
												16,00

All extension spindle dimensions and types (rigid or telescopic) are protected against dirt and surface water.

The telescopic extension spindle can be progressively adjusted to ground level. This is done by pushing or pulling the protecting tube and the spindle shaft.

The telescopic effect protects the pipe and fitting from surface impact.

Notes



Extension spindles

Rigid or telescopic



Design features

- One extension spindle for several dimensions

Order No.	Version	Pipe cover (RD)	Dimension/DN					
			E1 and E1+ valve					
			50	65/80	100	125/150	200	250 – 300
9000E1	rigid	1,00						
		1,25						
		1,50						
		2,00						
		2,50						
9500E1	tele-scopic	1,30 – 1,80						
		1,35 – 1,80						
		1,40 – 1,80						
		1,80 – 2,50						
		2,50 – 3,50						
		3,50 – 5,00						

Suitable accessories

- **Extender for rigid spindle**
Order no. 7830 price for first meter
Order no. 7831 price for each additional half meter
- Please specify dimensions and length when ordering

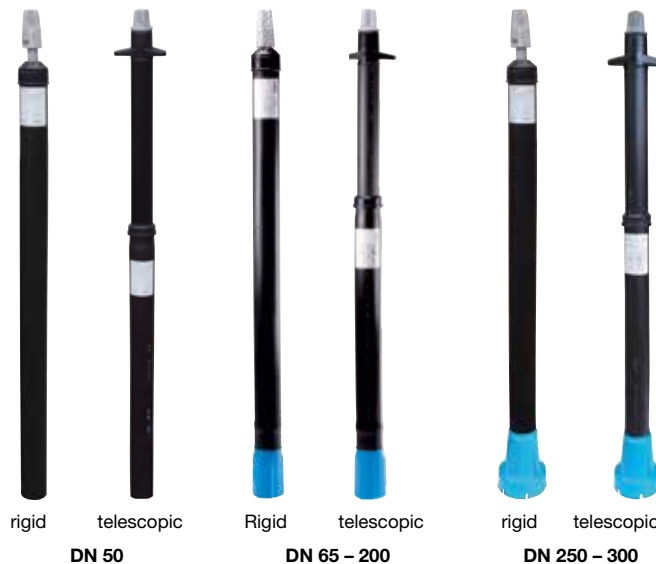
Extension spindle for E1 and E1+ valves DN 50 – 300

No. 9000E1

Rigid

No. 9500E1

Telescopic



Order No.	Version	Pipe cover (RD) m	L (length) m					
			Dimension/DN					
			50	65/80	100	125/150	200	250 – 300
9000E1	rigid	1,00	0,68	0,64	0,64	0,56	0,49	0,39
		1,25	0,93	0,89	0,89			0,64
		1,50	1,18	1,14	1,14	1,06	0,99	0,89
		2,00	1,68	1,64		1,56		1,39
		2,50	2,18	2,14		2,06		1,89
9500E1	tele-scopic	1,30 – 1,80	0,92 – 1,42	0,91 – 1,40	0,91 – 1,40	0,83 – 1,32		
		1,35 – 1,80					0,75 – 1,24	
		1,40 – 1,80						0,73 – 1,19
		1,80 – 2,50	1,44 – 2,10	1,41 – 2,12	1,41 – 2,12	1,33 – 2,03	1,25 – 1,95	1,14 – 1,90
		2,50 – 3,50	2,13 – 3,21	2,11 – 3,10	2,11 – 3,10	2,03 – 3,02	1,95 – 2,94	1,63 – 2,92
		3,50 – 5,00				3,06 – 4,52		

Other pipe cover depths on request

Extension spindles

Rigid or telescopic

No. 9000E1

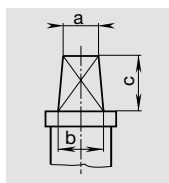
No. 9500E1

All extension spindle dimensions and types (rigid or telescopic) are protected against dirt and surface water.

The telescopic extension spindle can be progressively adjusted to ground level. This is done by pushing or pulling the protecting tube and the spindle shaft.

The telescopic effect protects the pipe and fitting from surface impact.

Spindle head | square



for gate valves

a 27 mm

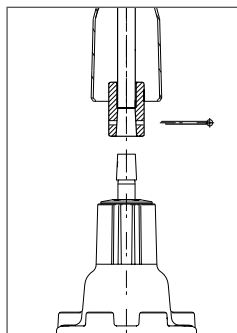
b 32 mm

c 48 mm

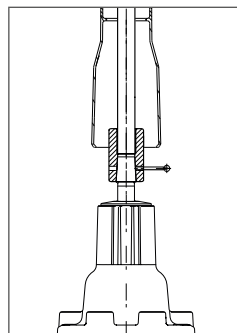
Weight extension spindle for E1 and E1+ valves

Order No.	Version	Pipe cover (RD) m	Valve Dimension/DN					
			50	65/80	100	125/150	200	250 – 300
9000E1	rigid	1,00	3,40	3,20	3,30	3,00	2,90	3,40
		1,25	4,30	4,20	4,30			4,70
		1,50	5,50	5,00	5,20	4,90	4,90	6,00
		2,00	7,20	7,20		7,00		8,70
		2,50	9,80	9,20		8,90		11,40
9500E1	tele- scopic	1,30 – 1,80	6,40	6,60	6,80	6,50		
		1,35 – 1,80					6,10	
		1,40 – 1,80						7,00
		1,80 – 2,50	9,30	9,50	9,50	8,70	8,60	10,20
		2,50 – 3,50	12,90	12,90	12,90	12,40	12,50	14,70
		3,50 – 5,00				19,00		

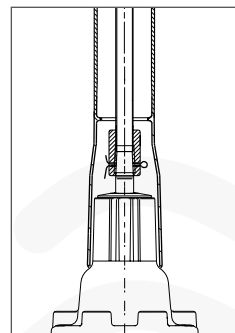
9000E1 / 9500E1 assembly instructions



Slide back outer protecting tube, remove split pin



Place extension spindle shaft over valve spindle



Slide outer protecting tube over gate valve housing

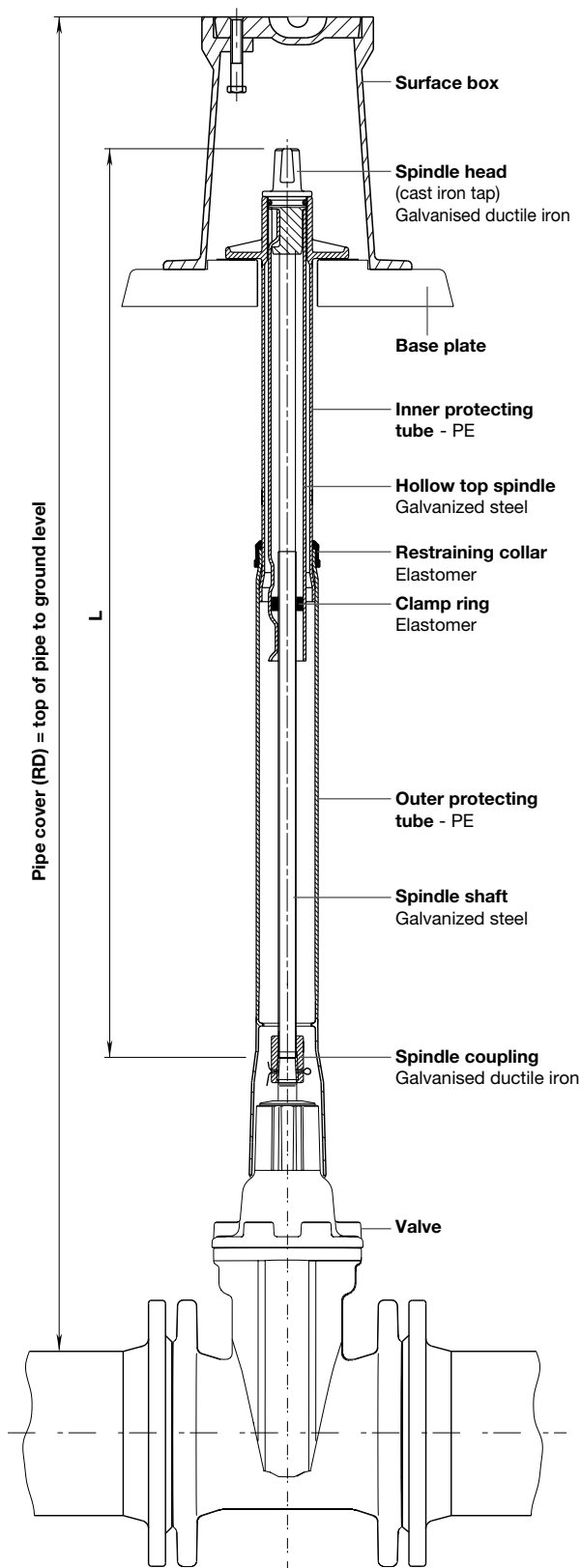


Illustration: Hawle-E1 extension spindle
"telescopic", DN 50 – 300

Surface box

“Telescopic” made of plastic



Design features

- Adjustable height enables fixation of street cover at the desired level
- Cap remains standing on the road surface during work
- 4° Angular offset possible, depending on level of extension
- Less hands on work during road construction
- Homogenous connection with the tarmac, minimizing frost damage
- Quiet, no rattling of street cover
- Low maintenance (no rust problems, application of grease not necessary)
- Low weight
- No loose parts
- High stability, pressure load according to DIN 3580
- Extremely durable glass fibre construction
- Temperature invariant between: -20 °C up to 245 °C
- DVGW certified

Accessories: see overleaf

Material | Technical features

- **Coverlid** made of grey cast iron, bituminised
- **Surface box body** made of polyamide 66 with 30% fibre glass
- **Safety pin** made of stainless steel

Order No.	Version	Weight	
1851K	For service valves DIN 4057	4,3	
2051K	For gate valves, DIN 4056	6,8	
1950K	For below ground hydrants DIN 4055	17,8	

Progressively height adjustable

No. 1851K



No. 2051K



No. 1950K



Surface box

“Telescopic” made of plastic

Assembly instructions

New road construction

Warning:

To avoid damage, surface boxes must be installed only after laying the gravel

- Lay and compact the gravel
- Position and align the surface box
- Mark location of surface box at the roadside
- Spray the surface box with a releasing agent
- Lay the bitumen binder on the ground
- Pull the surface box top approximately 2 cm above the ground and fill the surrounding base space with tarmac.
- Clean and free the surface box cover from all foreign material

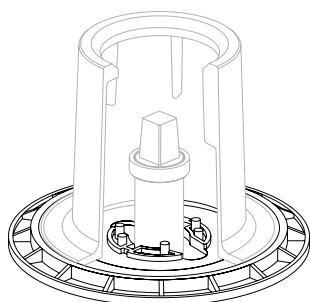
Replace wearing surface

- Mark position of the surface box body at the roadside, spray box with a releasing agent
- Apply the tarmac layer
- Pull the surface box approximately 2 cm above the final tarmac layer. Fill the space with tarmac
- Clean cover of surface box from all foreign material
- Roll the tarmac surrounding the surface box
- Immediately loosen and clean the surface box and cap

Suitable accessories

- **Base plate** made of recycled-plastic

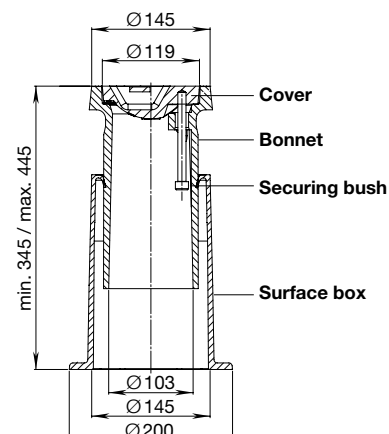
Robust and stable
Easy assembly
Low weight
Non-degradable



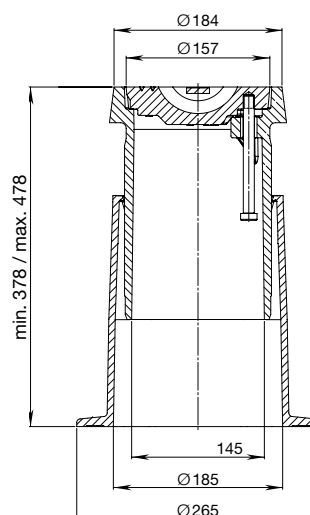
Order No.	Suitable for surface box acc. to	Weight
3481	Valve DIN 4056 and service valves DIN 4057	0,6
3482	DIN 4055 for below ground hydrants	2,0

see page M 3/7

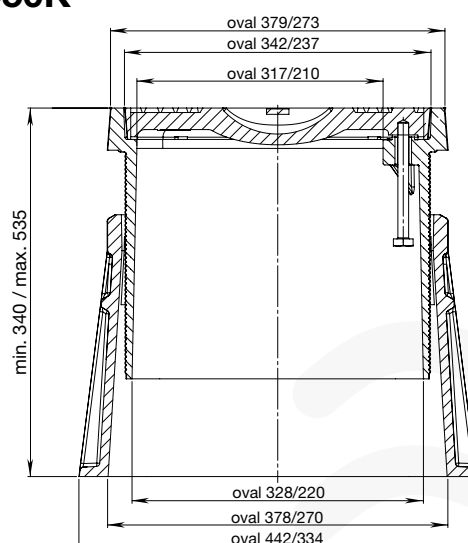
No. 1851K



No. 2051K



No. 1950K

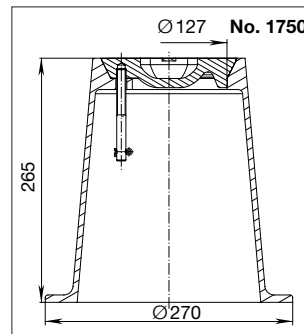
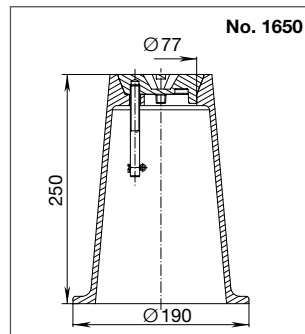
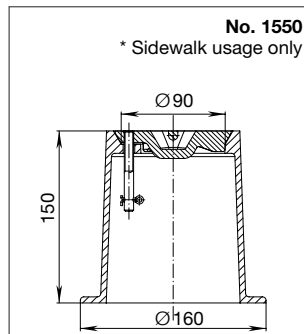


Surface box

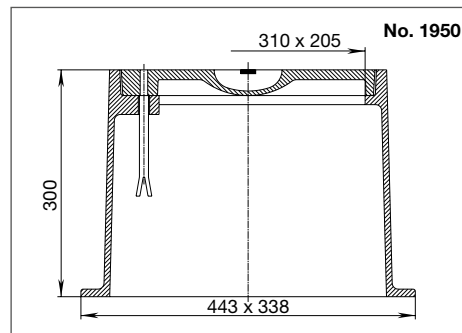
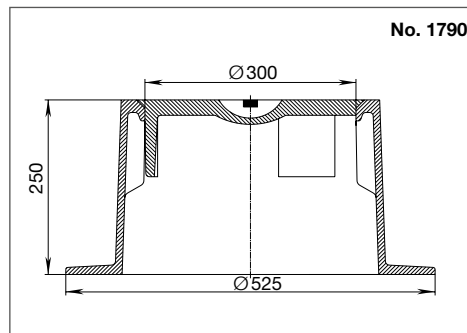
"Rigid"

Order No.	Model for	Version	Material	Weight
1550	Service valves	light*	Bitumen coated cast grey iron	3,4
1650		heavy		6,5
1750				11,9
1950E	Below ground hydrants		Plastic	15,9
1950		heavy	Bitumen coated cast grey iron	27,8
1790	Air-release hydrants			41,5
4550	Combi-III and Combi-IV	DN 80+	Bitumen coated ductile iron	34,0
		DN 100 – 200++		54,5

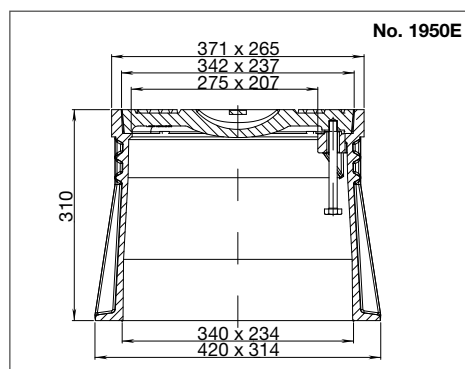
+ E-version DN 80 – 150, E3-version DN 80; ++ E-version DN 200, E3-version DN 100 – 200



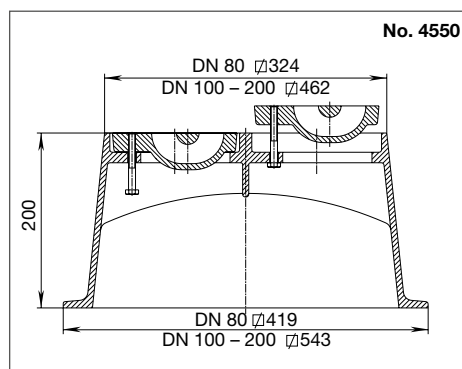
No. 1750



No. 1950



No. 1950E



No. 4550

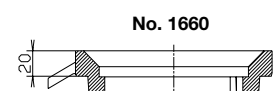
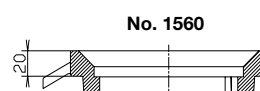


Max. load 200 kN
(excluding No. 1550)

Suitable accessories

• Conversion rings

These rings are used to adapt non adjustable surface boxes already installed to Hawle adjustable types.



Order No.	For surface box	Material	Weight
1560	No. 1550	Bitumen coated cast grey iron	0,90
1660	No. 1650		0,90
	No. 1750		

Surface box

“Telescopic”, of ductile iron

Order No.	Model for:	Version	Material	Weight	
1850	Service valves	Complete box, without extension rings	Bitumen coated grey iron	7,0	
2050	Valves und Combi-T			12,2	

Height adjustable Surface Box for service valves to DIN see page M 3/5



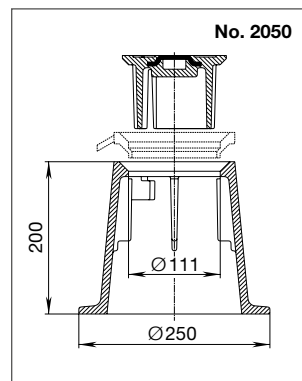
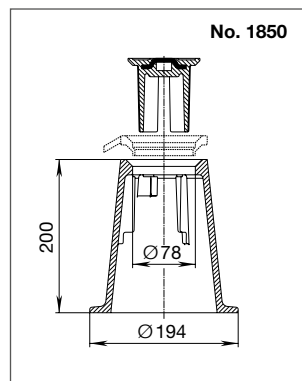
Surface box telescopic

with extension rings to adjust to ground level!

The cylindrical guide combined with machined conical seating results in tight and noiseless fitting of the lid.

The design enables the lid to be easily removed.

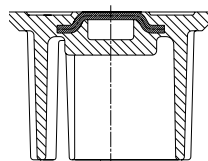
Max. load 200 kN



Suitable accessories | Spare parts

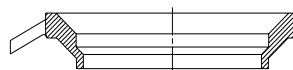
- Lid for adjustable surface boxes of bitumen coated grey iron

Order No.	For surface box	Weight	
1860	No. 1850	1,30	
2060	No. 2050	2,65	



- Extension rings of bitumen coated grey iron adjusting to ground level with extension ring

Order No.	For tele surface box	High Weight					
		12	15	20	30	40	50
2030	No. 1850	0,50	0,70	0,90	1,10	1,50	1,20
2040	No. 2050		1,00	1,40	2,00	2,70	3,50



- Base plate
of stamped, galvanized sheet steel
Measurement: 360 mm x 360 mm

Order No.	For surface box	Weight	
3480	No. 1550, 1650, 1850	1,70	
3490	No. 1750, 2050	1,70	



Height adjustable DIN rated surface box



With separate removable mounting ring for road surfaces which have to be milled down

Design features

- Proven angle seat prevents the cover from rattling
- High quality corrosion protection using the GSK fluidised bed epoxy coating system
- The removable mounting ring enables a milling down of the road surface without removing the surface box
- Height adjustable with extension rings
- Cover secured by stainless steel retaining rod
- Available on request: extension ring for sloping roads (see illustration 1)

Surface box

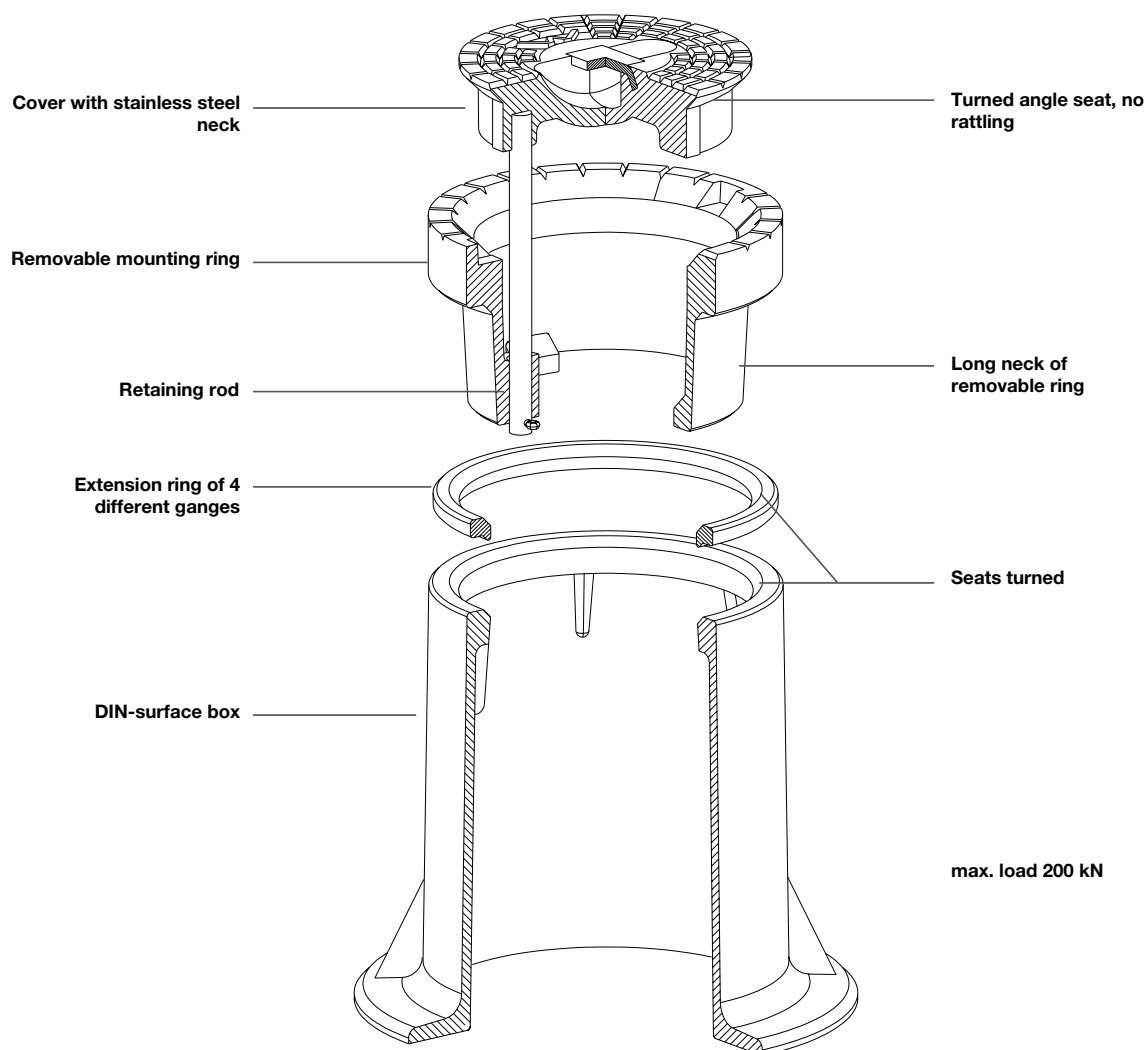
Order No.	Version	Weight	
1851	DIN 4057	11,0	

Extension rings

Order No.	For surface box	Height Weight			
		10	20	30	50
2035	No. 1851	0,4	0,8	1,2	2,0

Material | Technical features

- **Cover** made of gray cast iron, epoxy powder coating
- **Retaining rod and cover neck** of stainless steel
- **Turned angle seats** are processed

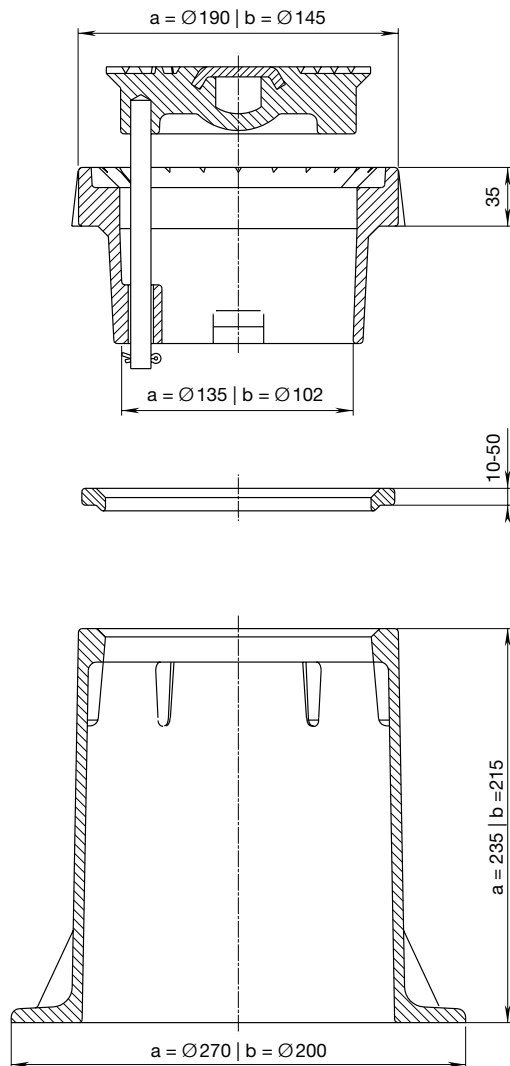


Height adjustable DIN rated surface box

With separate removable mounting ring for road surfaces which have to be milled down

Dimensions for DIN surface boxes

a = DIN 4056 b = DIN 4057



Extension ring for sloping roads

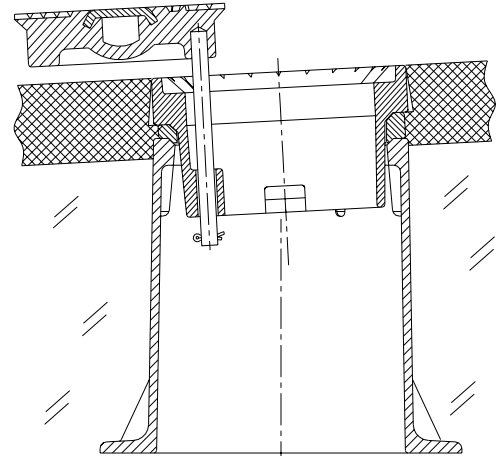


Illustration 1

Base plates for surface boxes

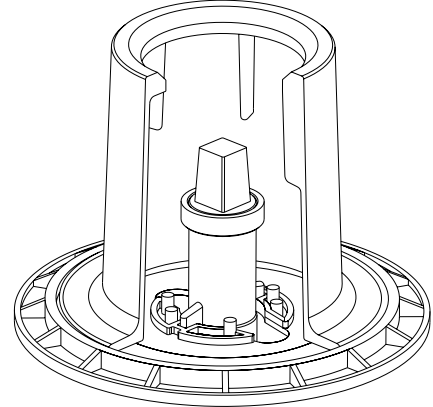
Made of recycled plastic

Design features

- Unbreakable and solid
- Easy assembly
- Low weight
- Durable, non-degradable

Order No.	Suitable for surface boxes acc. to	Weight	
3481	DIN 4056, DIN 4057	0,6	
3482	DIN 4055	2,0	

Installation situation:

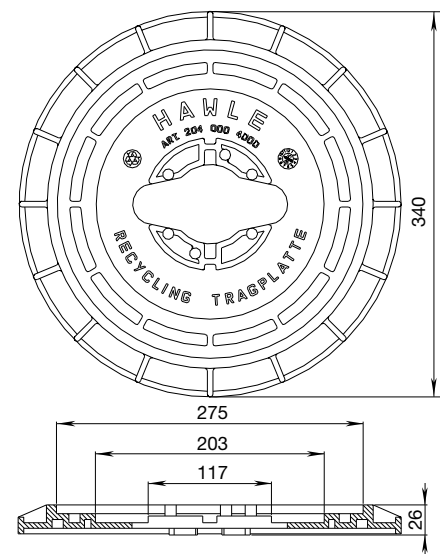


Universal base plate No. 3481

For surface boxes according to:

- DIN 4056 (gate valves)
- DIN 4057 (service valves)

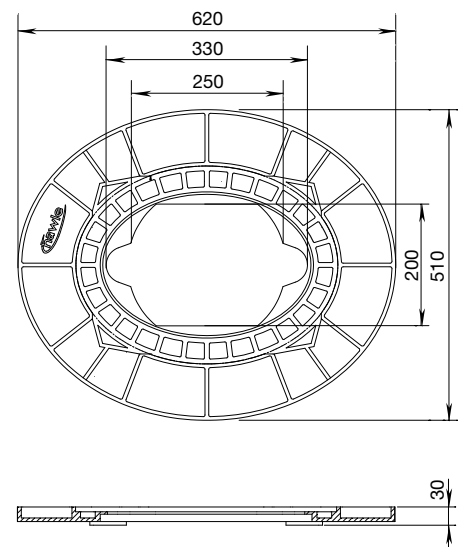
Safe fixture of Hawle telescopic extension spindles for gate valves, Combi-T and service valves



Base plate No. 3482

For surface boxes according to:

- DIN 4055 (for below ground hydrants)



Notes

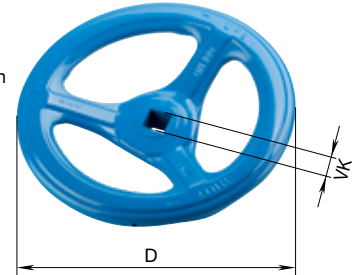


Order No.	DN	D	VK slider spindle	Weight	
7800	3/4" – 2"	140	10,3	0,60	
	50	160	14,8	0,69	
	65	190	16,3	0,90	
	65 – 80	190	17,3	0,95	
	100	240	19,3	1,50	
	125 – 150	320	19,3	2,30	
	200	360	24,3	2,80	
	250 – 350	486	27,3	4,80	
	400	600	32,3	21,00	
	500 – 600	800	36,3	20,00	

No. 7800 Handwheel

- For service valves, gate valves and combi valves
Made of ductile iron, epoxy powder coated

- * DN 250 – 350 made of steel, epoxy powder coated handwheel made of steel 2" up to DN 200 on request!
- ** DN 400 made of grey ductile iron

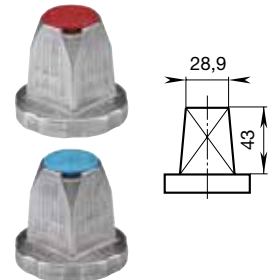


DN	No. 2157	No. 2156
20 – 40		
50		
65		
80		
100 – 150		
200		
250 – 350		
400		
500 – 600		

Operating cap

- Adapter for actuation by Operating key No. 3420
- Protection for valve spindle square
- Made of aluminum, with cap and direction indicator

- No. 2157** "clockwise closing"
- red
"anti-clockwise closing"
- blue



- No. 2156** made of galvanised ductile iron
(without illustration)

DN	No. 7820	No. 7822	No. 7825 No. 7826
1/2" – 2"			
50			
65			
80			
100 – 150			
200			
250 – 350			
400			
500 – 600			

Additional extension spindle

please specify total length "L" on order

- Material:** galvanised steel

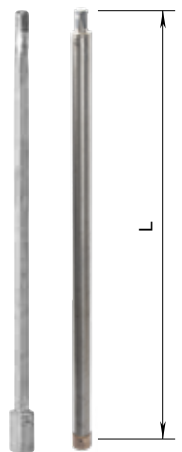
No. 7820 price for first meter

No. 7822 price for first meter

- Material:** stainless steel

No. 7825 price for first meter

No. 7826 price for each additional half meter



No. 7820 No. 7825
No. 7822

Order No.	DN	Weight	
8570E2/E3	65 – 80	1,50	
	100	1,90	
	125 – 150	3,20	
	200	5,00	
	250 – 350	5,00	

Blanking cap

No. 8570E2/E3

- For combi valves in place of valve bonnet
- Made of ductile iron, epoxy powder coated without screws and hood seal



Valve accessories

DN	No. 2170E2/E3	No. 2170E3	No. 4000STE3
50			
65			
80			
100			
125			
150			
200			
250			
300			
350			
400			



Position indicator

No. 2170E2/E3 / No. 2170E3

- For visual display of the wedge position in *E3* valve
- Limit switch (No. 2190) for electrical signal transmission set-up is possible
- Actuation by handwheel (No. 7800)
- DN 50 to 200 for retrofitting on standard *E3* upper section



Limit switch

No. 2190

- For set-up on the 2170E2/E3 / 2170E3 position indicator
- Body made of metal
- Operating current 230 V / 3 A
- IP 66 / IP 67 protection type
- Switching principle: slow-action contact element
- Design of the switching function: positively driven contact
- Number of openers: 1
- Number of closers: 1



E3 valve "short"

No. 4000STE3

- *E3* valve with flange with installed position indicator

Order No.	DN	Weight	
7850	¾" – 2"	0,08	
	50 – 200	0,30	



Anti-operation cap

No. 7850

- Only suitable for extension spindles for service valves and *E3* valve
- Use: protection against misuse (e.g.: mains disconnection valve)

Order No.	DN	Weight	
7851	¾" – 2"	0,20	
	50 – 200	1,00	



T-key adapter

No. 7851

- Suitable for anti-operation cap No. 7850

Valve accessories

Design features

- In standard version 400 V, 50 Hz, three phase motor, easily adjustable limit switch, dual torque switch, signal output to control flasher, thermoswitch for motor protection, handwheel for emergency use.
- Connection according: EN ISO 5210 F10 / F14
- Shaft coupling: EN ISO 5210 B3
- Enclosure of actuator: IP 68
- Enclosure of switches: IP 66

Variations from the standard version on request.

E3 valve		Actuator						
DN	MOP (PN)	Type	Max. torque	L	B	H	Weight	
50 – 100	16	SA 07.6	60	514	300	288	21,0	
125 – 200		SA 10.2	120	536	312	290	23,5	
200	25	SA 14.2	250	725	375	316	46,0	
250 – 400	16	SA 14.2	250	725	375	316	46,0	
500 – 600		SA 14.6	500	728	375	316	50,0	

DN	Actuator U/min	~ Closing time
50 – 80	16	1,0 min
100 – 125	16	1,5 min
150 – 200	16	2,0 min
250	16	2,5 min
300 – 400	22	2,5 min
500 – 600	16	4,5 min

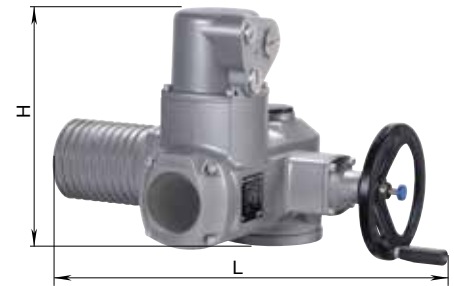
Other closing times and versions on request!

Design features

- E3 valve including bolts (stud bolts and nuts) Connector suitable for actuator No. 9920

DN	Bolt circle LK	Shaft Ø d	Weight			
			4000ELE3	4700ELE3	8630E2/E3	8630E3
50	102	20	15,0	36,0	3,7	
65	102	20	21,0	42,5		
80	102	20	22,5	44,5	4,0	
100	102	20	28,5	51,5		
125	102	20	39,0	62,0	4,0	
150	102	20	44,5	70,0		
200	102	20	71,0	101,0	5,5	
250	140	30	109,0	176,0		
300	140	30	156,0	225,0		8,5
350	140	30	214,0			
400	140	30	270,0			9,5
500	140	30	499,0	543,0		20,0
600	140	30	730,0	820,0		

Actuator No. 9920



Actuator control unit
AUMA MATIC and AUMATIC
on request

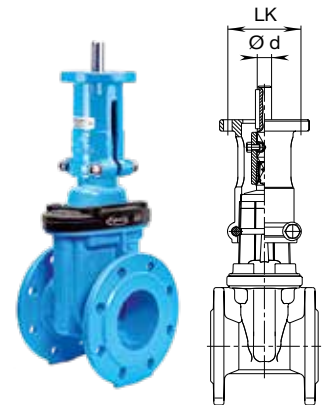
The actuator should not be used with **Hawle-E3** Elypso Valve for partial flow control.

For using the actuator with **Hawle-E3** Elypso valves please specify the following details on order:

1. working pressure
2. alignment of the valve
3. how often the valve is to be opened and closed within 24 hours

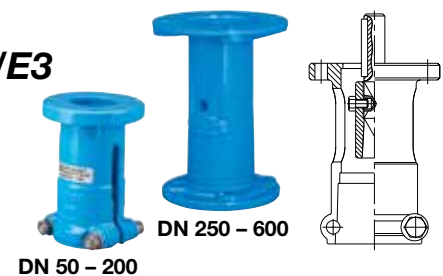
E3 valve “short” with adapter for actuator No. 4000ELE3

E3 valve “long” with adapter for actuator No. 4700ELE3



E3 Adapter No. 8630E2/E3 DN 50 – 200

No. 8630E3 DN 250 – 600



Valve accessories

Bolts / L	No. 8810					No. 8830		No. 8840	
	M 16	M 20	M 24	M 27	M 30	M 16	M 20	M 16	M 20
60									
70									
80									
90									
100									
110									
120									
130									
140									



Nut and Bolt

No. 8810

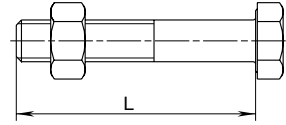
- Electro-galvanised

No. 8830

- Stainless steel, corrosion proofing

No. 8840

- Stainless steel, corrosion and acid proofing



No. 8873	for M 16	
	for M 20	
No. 8871 No. 8874	for M 16	
	for M 20	
	for M 24	



Washer

No. 8871

- Electro-galvanised

No. 8873

- Stainless steel, corrosion proofing

No. 8874

- Stainless steel, corrosion and acid proofing

	For thread	
No. 8877	M 16	
	M 20	
No. 8820	M 16	
	M 20	



Bolt insulation

- For electrical insulation of bolts to prevention of electrolytic corrosion

No. 8877 ISO washers

- Thickness 3 mm, made from epoxy glass

No. 8820 pipe

- Polyester, length 1 m

Required bolt lengths: flanged valves to flange

Flanged valve DN	MOP (PN)	Bolt Dimension	Bolt Quantity	Bolt length for flange no.								
				0102	7101 7102 7103	0400 0800 0802 7994	5500 5530	5600	0310 0311	7602	7601	8000 8100
50	10/16	M 16	4	70	70	70	70	70	70	100	80	70
65		M 16	4	70	70	70	70	70	70	100	80	70
80		M 16	8	80	70	70	70	70	70	100	80	70
100		M 16	8	80	70	70	70	70	70	100	80	70
125		M 16	8	80	80	70	70	70	70	100	80	70
150		M 20	8	90	80	70	70	80	70	140	100	70
200	10	M 20	8	90	80	70		80	70	140	100	70
	16		12									80
250	10	M 20	12	100	90	80		90	80	140		80
	16	M 24								150		90
300	10	M 20	12	100	90	90		90	90	140		90
	16	M 24								150		
350	10	M 20	16	120		90						90
	16	M 24		130								
400	10	M 24	16	120	100	90						100
	16	M 27		130		100						
500	10	M 24	20	150		100						
	16	M 30				110						
600	10	M 27	20	150		120						
	16	M 33		160								

HAWAK-pillar

For above ground operation of valve

Design features

- For the ergonomic above-ground operation of shut-off valves buried in the ground or installed in manholes and valve chambers
- Standpipe and connecting flanges of stainless steel
- Connecting flange for fixing on support base
DN 65 drilled to EN 1092

Version with handwheel (No. 9894)

- The extended inner pipe made from galvanised steel allows quick and easy connection of the HAWAK-pillar with the square rod of the spindle extension or extension spindle.
- The telescopic connection in the HAWAK-Pillar allows a generous tolerance when cutting the square rod to length
- Spindle made of stainless steel
- Spindle bearing made of POM
- Wiper ring made of elastomer
- Position indicator for monitoring of valve position
- Maintenance-free

Version for electric actuator (No. 9895)

- Connecting flange for actuator according to
EN ISO 5210 / DIN 3210

Suitable accessories

Suitable accessories

- Additional extension spindle No. 7822
- Actuator No. 9920

Pillar

No. 9894

No. 9895



No. 9894



No. 9895

Not included in scope of supply!

Order No.	Version	For valves of nominal widths / DN													
		50	65	80	100	125	150	200	250	300	350	400	450	500	600
9894	Equipped with handwheel and position indicator														
9895	Model with connection for electric actuator														

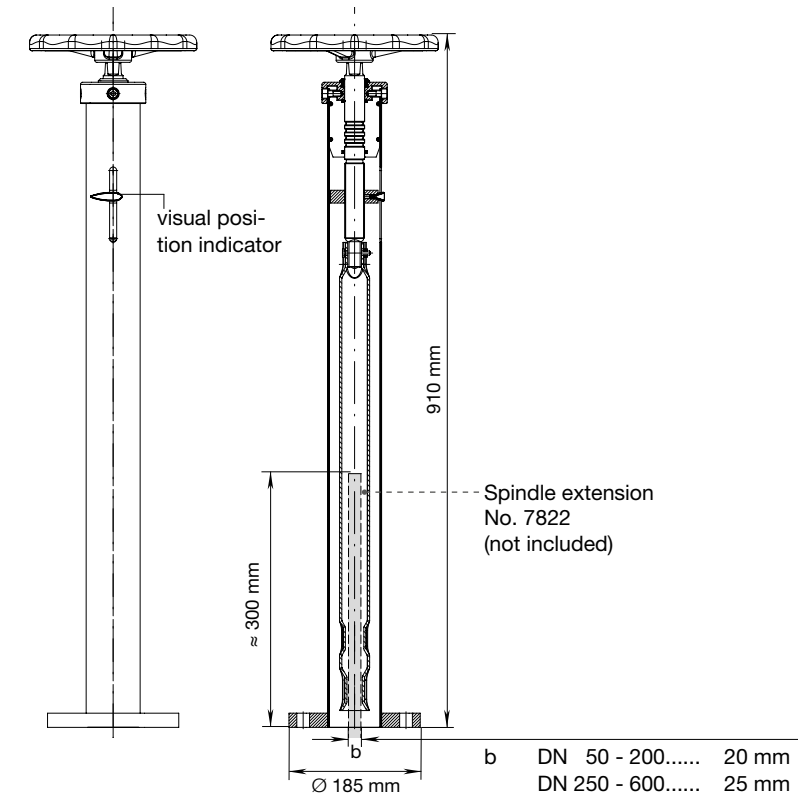
When ordering please specify the valve type and the nominal width

HAWAK-pillar

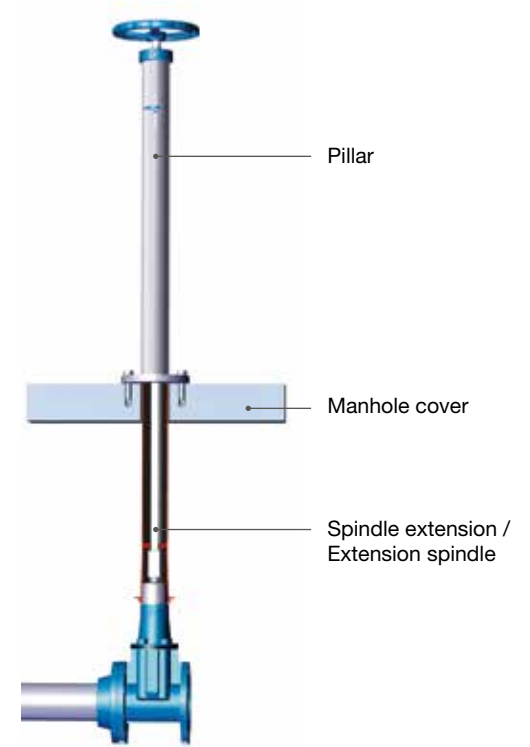
For above ground operation of valve

No. 9894

- Equipped with handwheel and position indicator

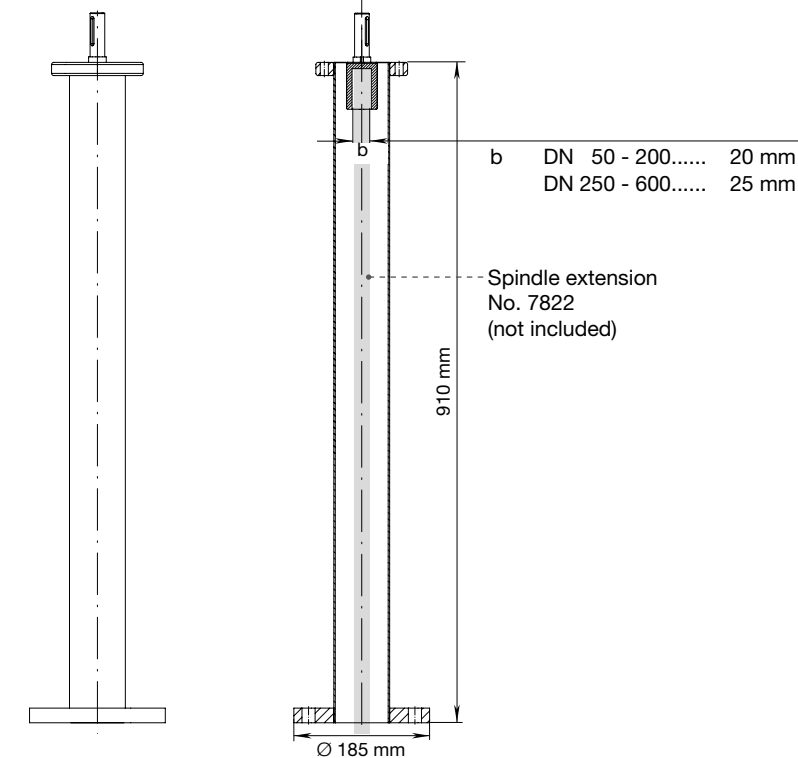


Application example:

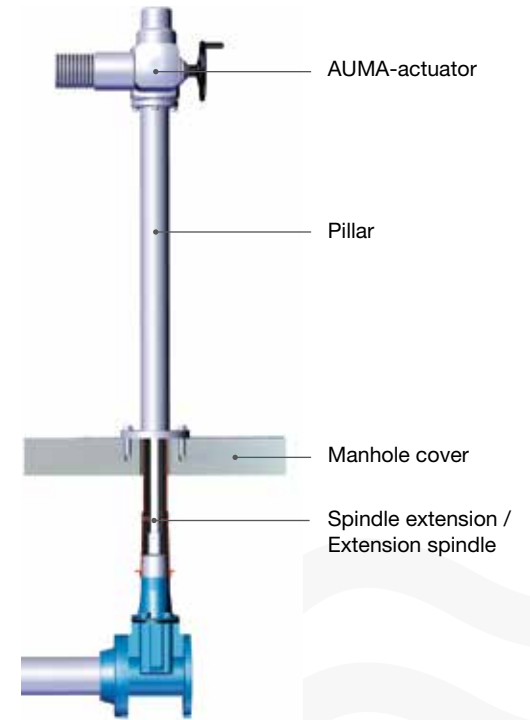


No. 9895

- Model with motor adapter



Application example:



Order No.	Theft indicator	Weight	
KRE300PC	for A coupling	3,70	
	for B coupling	2,20	
	for C coupling	1,70	



Theft indicator No. KRE300PC

For Hawle above ground hydrants

- Effective protection against unauthorised access
- For all Hawle above ground hydrants from 1998
- For Hawle above ground hydrants before 1998 on request

Order No. 5417

For hydrants made before September 1998, a "conversion kit" is needed



Theft indicator cap No. 5417

- For above ground hydrants
- Since September 1998, all HAWLE above ground hydrants have been supplied in a form that can accept theft indicator caps

Order No.	DN	L	Weight	
5191H4	80 100 150	100		
		150		
		200		
		250		
		300		



Length extension for H4 hydrants No. 5191H4

- For break away hydrants

Order No.	L	Weight	
5011407	1m	0,90	



Snow pole No. 5011407

- Suitable for snow pole adapter No. 5429H4

Order No.	DN	Weight	
5429H4	80/100/150	0,80	



Snow pole adapter No. 5429H4

- For H4 above ground hydrants

Support liners

For PE pipes

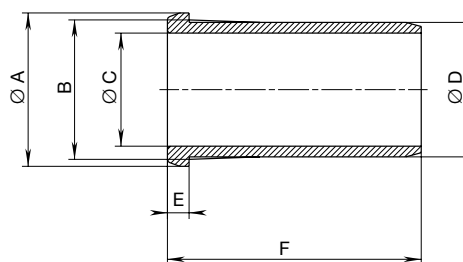
Class SDR 11 (PE 100 | PN 16)

Ø Pipe ext.	Ø D	Ø C	Ø A	F	E	B	
20	15,4	10,3	19,5	42	4	16,5	
25	19,8	14,3	24,5	52	5	20,9	
32	25,2	19,3	31,5	62	6	26,5	
40	31,6	25,3	39,5	72	7	33,2	
50	39,6	32,7	49,5	82	7	41,5	
63	50	42,1	62,5	91	8	52,2	

Class SDR 17 (PE 100 | PN 10)

Ø Pipe ext.	Ø D	Ø C	Ø A	F	E	B	
20	15,4	10,3	19,5	42	4	16,5	
25	20,4	15,2	24,5	52	5	21,5	
32	27,4	22,2	31,5	67	6	28,5	
40	34,8	28,5	39,5	84	7	36,0	
50	43,4	36,5	49,5	82	7	44,9	
63	54,8	46,9	62,5	92	8	56,6	

Support liners made of POM for PE pipes No. 6021



Ø Pipe ext.	L	Weight		
		SDR 11	SDR 17	
75	175	0,25	0,25	
90	175	0,45	0,40	
110	175	0,80	0,45	
125	175	0,50	0,55	
140	175	0,55	0,55	
160	195	0,90	0,85	
180	195	1,00	1,10	
200	220	1,05	1,10	
225	220	1,60	1,80	
250	220	1,80	1,90	
280	220	1,90	1,85	
315	220	2,10	2,30	
355	220	2,80	2,75	
400	220	2,70	3,15	

Support liner made of stainless steel for PE pipes

No. 6035

Class SDR 17 (PE 100 | PN 10)

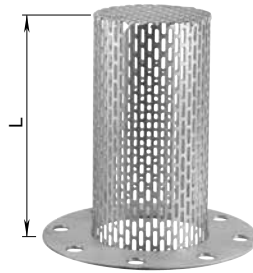
No. 6036

Class SDR 11 (PE 100 | PN 16)



Order No.	DN	Face-to-face length L	Weight	
8653	50	300	0,9	
	65		1,1	
	80		1,3	
	100		1,5	
	125		1,9	
	150		2,4	
	200		3,2	
	250		3,9	
	300		4,8	
	350		5,7	
	400		6,7	

other dimensions on request!



Suction strainer No. 8653

- Made of stainless steel
- Flange hole according to EN 1092-1 | PN 10

DN	b		Weight		
	3470	3390	3470	3390	
25		4		0,01	
32		4		0,02	
40		4		0,03	
50	3	4	0,02	0,04	
65	3	4	0,03	0,06	
80	3	4	0,04	0,07	
100	3	5	0,04	0,07	
125	3	5	0,05	0,12	
150	4	5	0,06	0,13	
200	4	6	0,10	0,18	
250	4	6	0,13	0,23	
300	4	6	0,17	0,60	
350		7		0,70	
400		7		0,77	
500		7		1,00	
600		7		1,11	



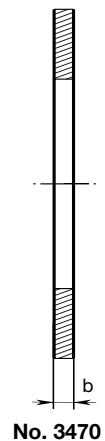
Flat gasket No. 3470

- With fabric liner, PN 10
- Made of elastomer

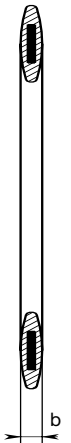


Flat gasket No. 3390

- Dimensionally stable reinforced steel, thus simpler to install
- Made of elastomer
- Standard version PN 10, PN 16 or PN 25 on request



No. 3470



No. 3390

Accessories

Design features

- For an easy installation
- Lubricant for pipe connections, before commissioning the pipeline must be flushed thoroughly
- Made of pure silicon (with a special solvent)
- Content: 400 ml
- **Attention:** observe the safety-instruction label on the can

Mounting spray For PE and PVC pipes

No. 3443



Design features

- Suitable for valves, spindles and O-rings
- Content: 90 g

Fitting grease

For potable water valves

No. 3444



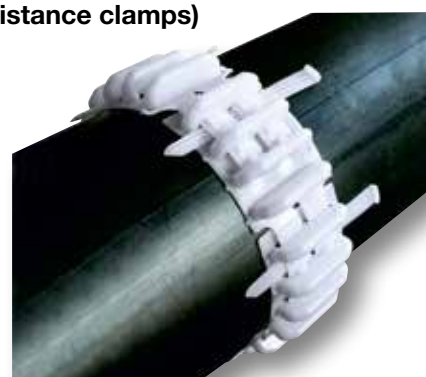
Design features

- The dimension and type of spacer is determined by the diameter of the medium carrier pipe
- The pipeline spacer height is dependent on the inside diameter of the protective tube
- Fits easy onto pipe
- Elements portioned per ring
- No additional tools necessary
- High tolerance, withstands 2000 kg/ring
- Suitable for water, gas, sewage

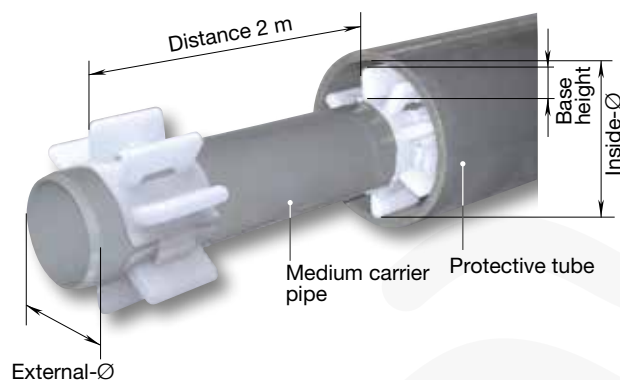
Pipeline spacer

(Anti-friction distance clamps)

No. 9941



DN	External Ø medium pipe	Base height		
		25	41	60
80	76 – 115			
100	103 – 131			
125	117 – 172			
150	155 – 195			
200	207 – 260			
250	258 – 326			
250	236 – 312			
300				
350	295 – 390			
400	353 – 468			
450	413 – 546			
500	446 – 624			
600	501 – 702			



Design features

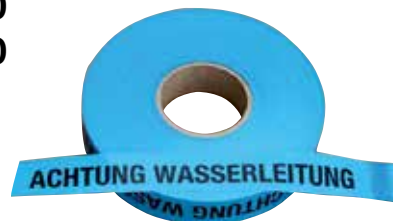
- Non-decaying locating and warning tape with the message "BEWARE WATER PIPE"
- **No. 0820:** without metal insert
- **No. 0830:** with metal insert - for laying on non-metallic lines

Roller to 250 meters

Warning tape

No. 0820

No. 0830



Design features

- With one external thread outlet EN 10226-1
- Made of POM
- Every push-fit end can be modified to a external thread outlet

Order No.	DN	Thread	L	Weight	
6630	¾"	¾"	92	0,05	
	1"	1"	105	0,10	
	1¼"	1¼"	123	0,13	
	1½"	1½"	144	0,18	
	2"	2"	160	0,28	
6631	1"	1½"	117	0,07	
	1"	2"	126	0,12	

Push fit swivel converter

No. 6630 equal

No. 6631 special dimensions



Design features

- With one internal and one external thread EN 10226-1
- Made of POM

OD EN10226-1	ID ISO 228	L	Weight	
1"	½"	31	0,03	
1"	¾"	31	0,02	
1¼"	¾"	33	0,05	
1¼"	1"	33	0,03	
1½"	½"	33	0,07	
1½"	¾"	33	0,06	
1½"	1"	33	0,04	
2"	¾"	38	0,10	
2"	1"	38	0,09	
2"	1¼"	38	0,07	
2"	1½"	38	0,05	

Reducing Adapter

No. 6710



Design features

- Both ends external threads EN 10226-1
- Made of POM

Order No.	Ø d	Thread	L	Weight	
6711	1"	1"	56	0,05	

Equal Adapter

No. 6711



Notes



Automatic air valves

For potable water

Page N 2	Air release valve DN 1" and DN 2", PN 6, PN 16	Page N 2/1	
Page N 3	Air release valve HaVent PN 25	Page N 3/1	
Page N 4	Air release valve DN 80 / DN 100, DN 150 / DN 200	Page N 4/1	
Page N 5	Combined air release valve	Page N 5/1	
Page N 6	Air release valve Dynamic PN 10 PN 16 PN 25 PN 40	Page N 6/1	

Air release valves

Accessories

Flushing stand pipe
Surface box

Page N 5/1
Page M 3/3

Spare parts

Valve 1"

Seite N 2/2

Tools

Valve key 1"

Page Q 4/3

Dimensioning (recommendation)

Pipe	Valve
DN ≤ 80	DN 1"
DN 100 — 250	DN 2" (DN 50)
DN 300 — 400	DN 80
DN 450 — 500	DN 100
DN 600 — 900	DN 150
DN ≥ 1000	DN 200

Technical information

Tightening torques for flange assembly

Page R 3/1

Application examples



Air release valves

PN 6 | PN 16

Design features

- Automatic, dynamic air release valve
- PE shield for UV protection
- The internal thread inlet is reinforced with a stainless steel ring
- Connection variants: Internal thread or flange
- Insect protective grid (2" valve)
- Installation: upright, preferably at the highest point in the pipeline together with isolating valves
- Air valve for releasing air only: on request (minimum pressure of 0,3 bar needed)

Material | Technical features

- **DN 1"**
 - Max. air release capacity:** 7,8 m³/h
 - Test pressure:** Body 24 bar
 - Working pressure:** 0,1 — 6 bar
0,8 — 16 bar
 - **Body** made of POM
 - **Orifice and valve plug** made of brass
 - **Float** made of POM
 - **Seal** made of Elastomer
 - **UV-shield** made of PE
- **DN 2" - double acting**
 - Max. air release capacity:** 192 m³/h
 - Test pressure:** Body 24 bar
 - Working pressure:** 0,1 — 6 bar
1 — 16 bar
 - **Body and elbow** made of POM
 - **Valve seat** made of brass
 - **Float** made of POM
 - **Seal** made of Elastomer
 - **UV-shield** made of PE
 - **Insect protective grid** made of stainless steel

No. 9876 DN 1"



No. 9876 DN 2"



No. 9874 DN 2"

Order No.	Version	DN	Working pressure bar
9876	Standard	1"	PN 0,1 — PN 6
			PN 0,8 — PN 16
9876	Standard	2"	PN 0,1 — PN 6
			PN 1 — PN 16
9874	With flange connection DN 50 or DN 80 (ductile iron)	2"	PN 0,1 — PN 6
			PN 1 — PN 16

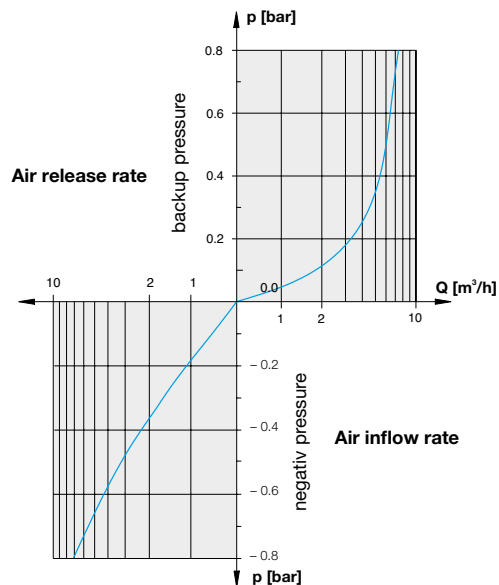
Automatic air valves are to be maintained according to the usage conditions

Air release valves

PN 6 | PN 16

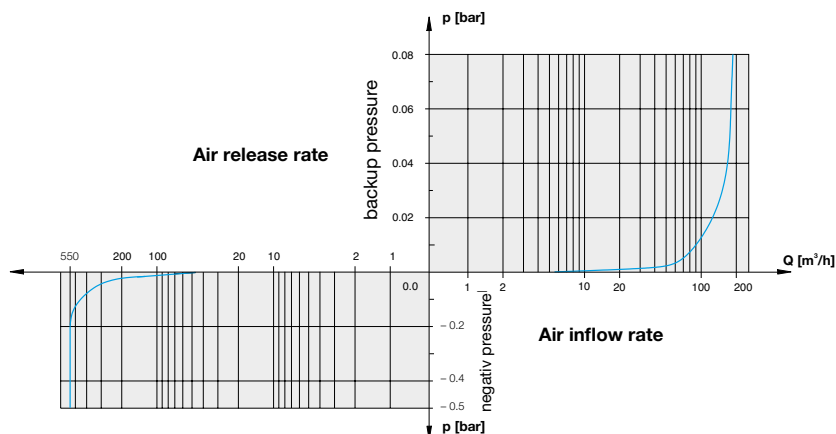
DN	MOP (PN)	Working pressure bar	Size of the opening	Ø D	Ø D1	H	Weight
1"	6	0,1 – 6	1,77 mm ²	109	122	172	0,90
	16	0,8 – 16					

Please specify working pressure when ordering



DN	MOP (PN)	Working pressure bar	Size of the opening	Ø A	Ø A1	H	H1	Weight
2"	6	0,1 – 6	900/2 mm ²	160	175	305	320	2,90
	16	1 – 16						3,40

Please specify working pressure when ordering



No. 9876 DN 1"

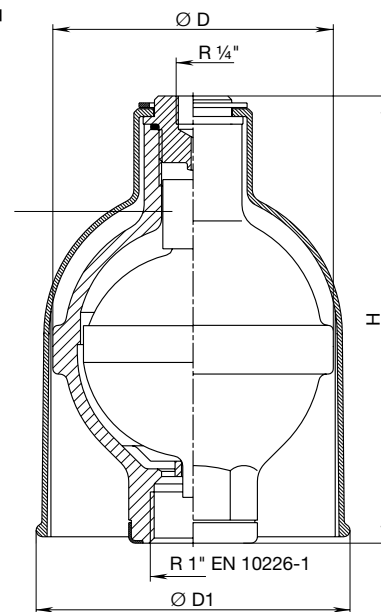
Valve (= wearing part)

No: 5031657 PN 16

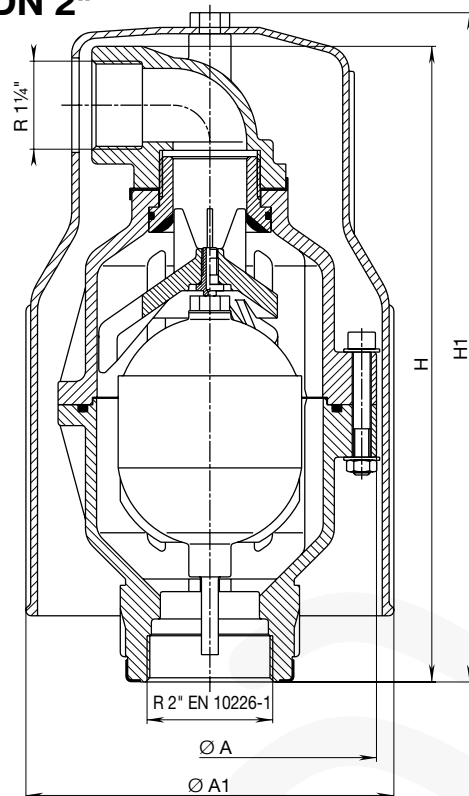
No: 5031658 PN 6

Replaceable on the spot in depressurised status

- Demount safeguard ring
- Remove cap
- Loosen locking screw
- Valve with valve key unscrew No. 3454



No. 9876 DN 2"



Air release valves HaVent

PN 25



Design features

- High performance air release valve with new nozzle mechanism for the optimal absorption of high pressures
- Low wear and tear due to optimum geometry
- Easy maintenance
- High-quality materials
- UV resistance
- Air release only on request
- Connecting variants: Flange DN 50, DN 80, internal thread 2"
- With insect protective grid

No. 9859



Material | Technical features

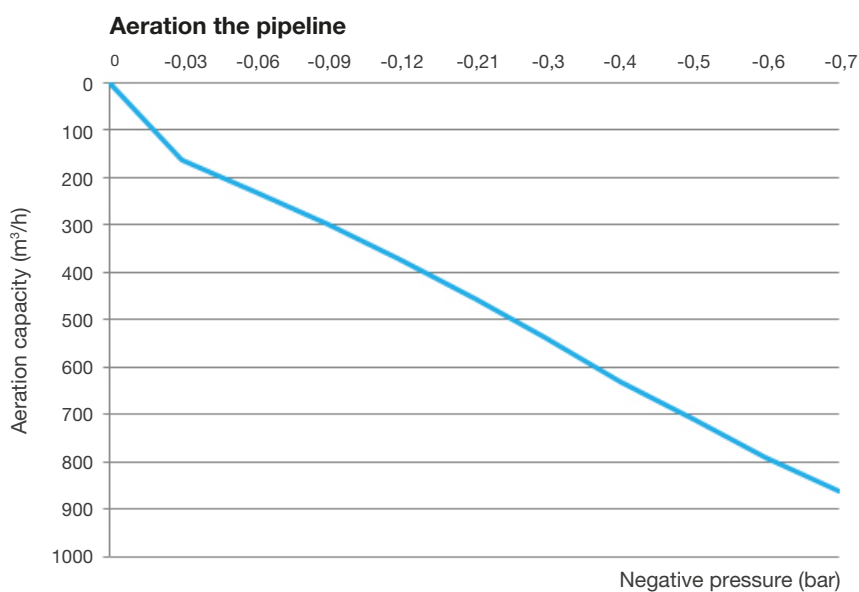
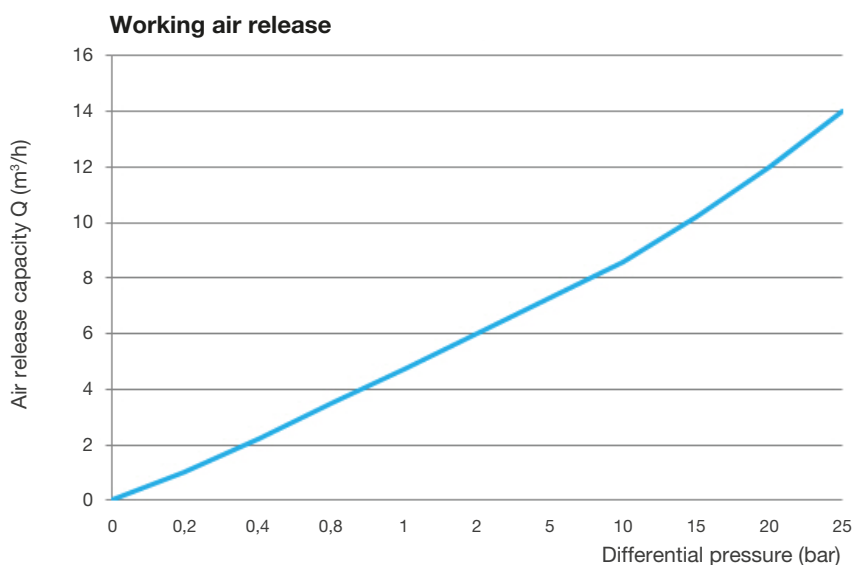
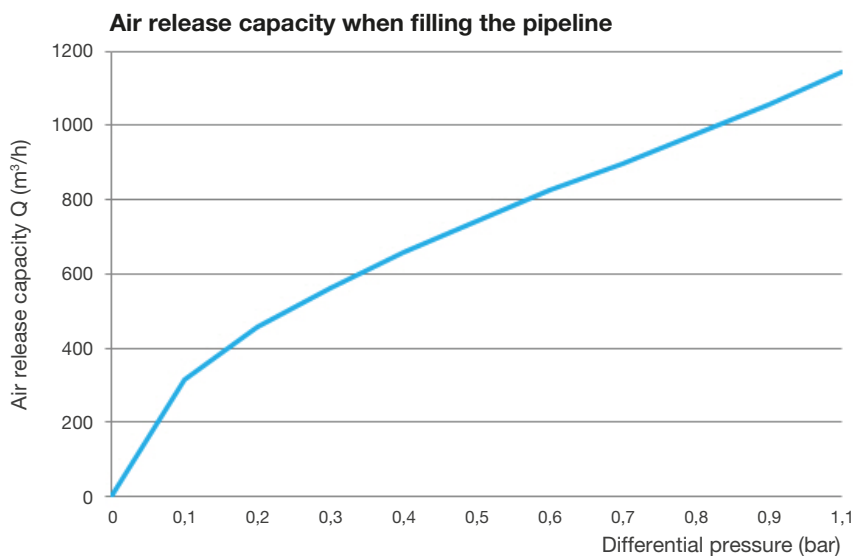
- **Size of the opening:** 1500 mm² / 3,15 mm²
- **Max. air release capacity:** 1150 m³/h
- **Working pressure:** 0,2 — 25 bar
- **Body** made of stainless steel
- **Float** made of foamed PP
- **Seal** made of Elastomer
- **Outlet elbow** made of PE
- **Flange** acc. EN 1092

Connection	H	Ø D	Weight	
IT 2"	420	160	10,00	
Flange DN 50*	455	160	12,50	
Flange DN 80*	455	160	14,50	

*on request

Air release valves HaVent

PN 25



Air release valves

PN 6 | PN 16

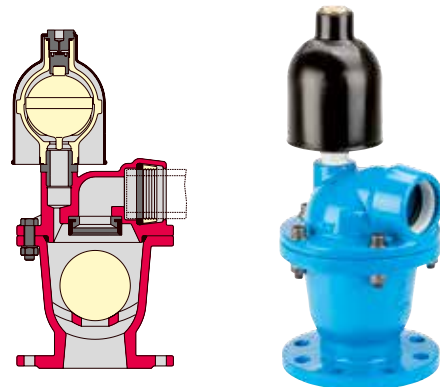
Design features

- Automatic air release valve
- All mechanical parts made of corrosion resistant materials

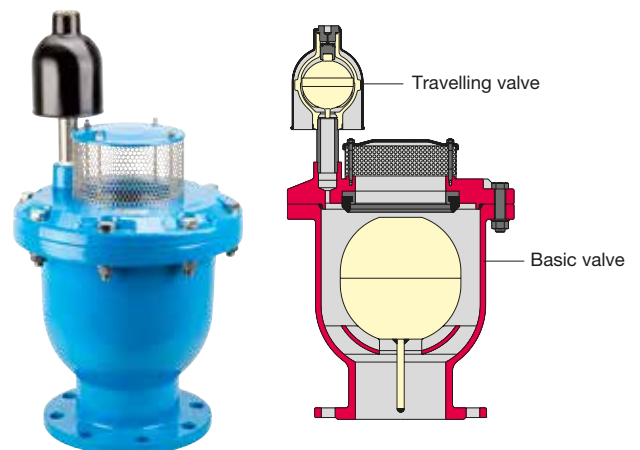
Material | technical features

- **Body and bonnet** made of ductile cast iron, epoxy powder coated
- **Seat** made of stainless steel / elastomer
- **Float:** DN 80 — 100 polycarbonate
DN 150 — 200 passivated stainless steel
- **Double nipple** made of POM / stainless steel
- **Bolts and nuts** made of stainless steel

No. 9835 DN 80 / DN 100



DN 150 / DN 200



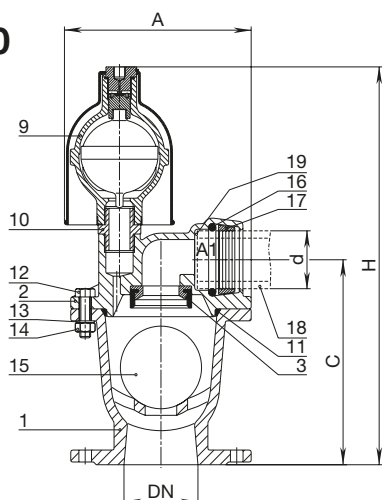
Dimensions	DN 80	DN 100	DN 150	DN 200*
Test pressure (body)	24 bar			
Working pressure PN 16 (standard)	0,8 — 16 bar			
Working pressure PN 6	0,2 — 6 bar			
Max. air release capacity	1305 m³/h	2450 m³/h	7500 m³/h	
Size of the opening	1810/1,77 mm²	3320/1,77 mm²	17670/1,77 mm²	
PE pipe connection	d 63	d 75		
Flange drilled acc. EN 1092-2 PN 10; *DN 200 PN 16 EN 1092-2 please specify on order				

Order No.	Version	Working pressure bar	DN 80	DN 100	DN 150	DN 200
9835	Double orifice (with travelling valve)	PN 6 (0,2 — 6 bar)				
		PN 16 (0,8 — 16 bar)				
9836	Double orifice, (with travelling valve) with PE pipe & insect protective grid	PN 6 (0,2 — 6 bar)				
		PN 16 (0,8 — 16 bar)				
9837	Single orifice (without travelling valve)	PN 16 (0,2 — 16 bar)				
9838	Single orifice (without travelling valve) with PE pipe & insect protective grid	PN 16 (0,2 — 16 bar)				

Air release valves

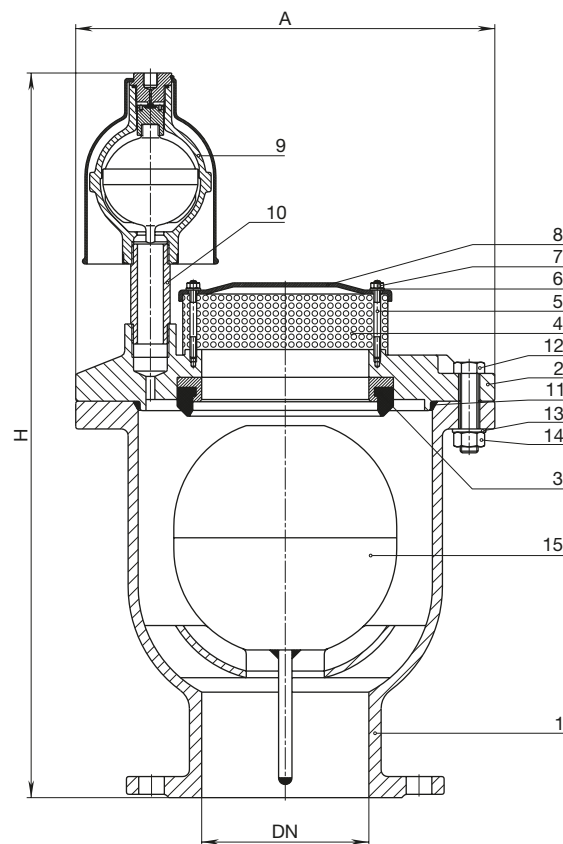
PN 6 | PN 16

DN 80 / DN 100

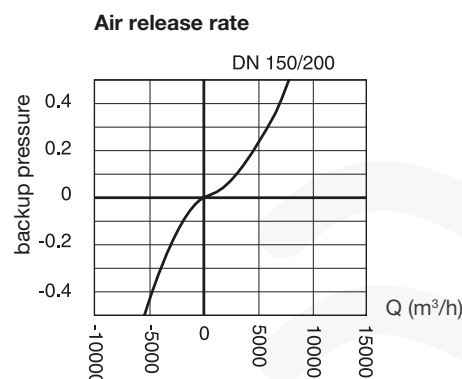
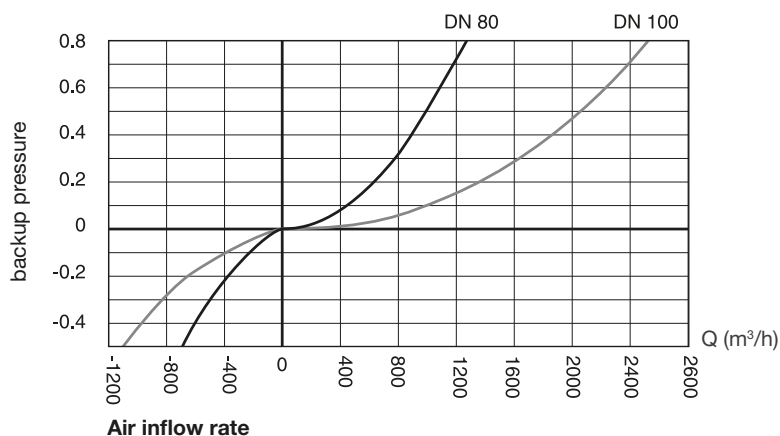


	Parts	Material
1,2	Body and bonnet	Ductile cast iron, epoxy powder coated
3	Seat	Stainless steel / Elastomer
4	Grid	Stainless steel
5	Bolt	Stainless steel
6	Washer	Stainless steel
7	Nut	Stainless steel
8	Cap	Steel, epoxy powder coated
9	Automatic air valve 1"	Divers (see page N 2/1)
10	Nipple	POM (DN 80-100) / NIRO (DN 150-200)
11	O-ring	Elastomer
12	Hexagonal bolt	Stainless steel
13	Washer	Stainless steel
14	Hexagonal nut	Stainless steel
15	Float	DN 80 – 200 Polycarbonat DN 80 – 200 Passivated stainless steel on request
16	O-ring	Elastomer
17	Clamp ring	POM
18	Pipe tail (on request)	PE
19	Insect protective grid (on request)	Stainless steel

DN 150 / DN 200



DN	A	H	C	d	Weight
80	212	455	230	63	17,0
100	250	505	260	75	25,0
150	387	686			75,0
200	387	686			81,0



Combined air release valves

Design features

- This arrangement eliminates expensive valve chambers
- The stand pipe protects the automatic air valve
- An automatic shut-off valve enables the equipment to be easily removed for inspection and reinstalled under pressure
- The materials used for the air release valve guarantee absolute corrosion resistance
- Excess water is drained away through an DN 1/2" ISO-pipe-fitting
- For below-ground installation a surface box with minimum opening of 300 mm diameter is required. Gravel backfilling should be used to prevent rain water from accumulating in the surface box (see Illu. 2 page N 5/2)
- The air release valve can be shortened by 100 mm by cutting the standpipe 5 and extension pipe 3 at the red marks
- Valve only for air release: on request (minimum pressure of 0,3 bar needed)

Material | Technical features

- **Standpipe** made of stainless steel
- **Air release valve** made of POM and brass
- **Max. air release capacity:** 3,2 m³/min
- **Inlet flange:** DN 50 or DN 80
sized and drilled according to
EN 1092-2 | PN 16

Connections options: **Flange:** DN 50 or 80,
according and drilled to
EN 1092-2 | PN 16

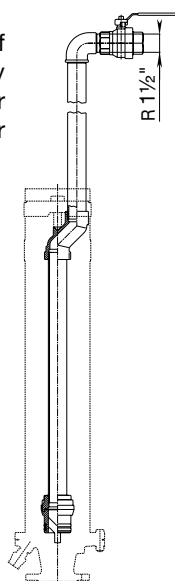
BAIO: DN 50 or 80

Suitable accessories

- Surface box No. 1790
- **Flushing stand pipe** including shut-off valve; Instead of the air valve assembly a stand pipe can be supplied for water main flushing and for general water discharge

Order No.	L	Weight	
9824	755	4,70	
	1055	5,80	
	1305	6,75	
	1555	9,50	
	2055	11,40	

L = Total length of the combined air release valve



No. 9822

No. 9823

Air valve for releasing
air only:
(with air inflow stop)
on request
(see over page illu. 3)



No. 9825

No. 9826

with BAIO connection
DN 50 | DN 80

Order No.	Working pressure bar	DN	Pipe cover (RD) (Illustrations see back page)	L*	Weight	
9822	PN 1 – 16	50	1,00 m	755	22,0	
			1,30 m	1055	25,6	
			1,50 m	1305	29,0	
			1,80 m	1555	33,8	
		80	1,00 m	755	24,0	
			1,30 m	1055	27,0	
			1,50 m	1305	30,2	
			1,80 m	1555	31,0	
9823	PN 0,1 – 6	50	2,30 m	2055	45,8	
			1,00 m	755	22,0	
			1,30 m	1055	25,5	
			1,50 m	1305	26,5	
		80	1,80 m	1555	30,5	
			1,00 m	755	24,0	
			1,30 m	1055	28,0	
			1,50 m	1305	30,0	
9825	PN 1 – 16	50 – 80	1,80 m	1555	34,0	
			1,00 m	815	22,0	
			1,30 m	1115	25,2	
			1,50 m	1365	28,6	
9826	PN 0,1 – 6	50 – 80	1,80 m	1615	31,6	
			1,00 m	815	20,4	
			1,30 m	1115	26,0	
			1,50 m	1365	29,0	
9826	PN 0,1 – 6	50 – 80	1,80 m	1615	31,0	
			1,80 m	1615	31,0	

PN 25 on request

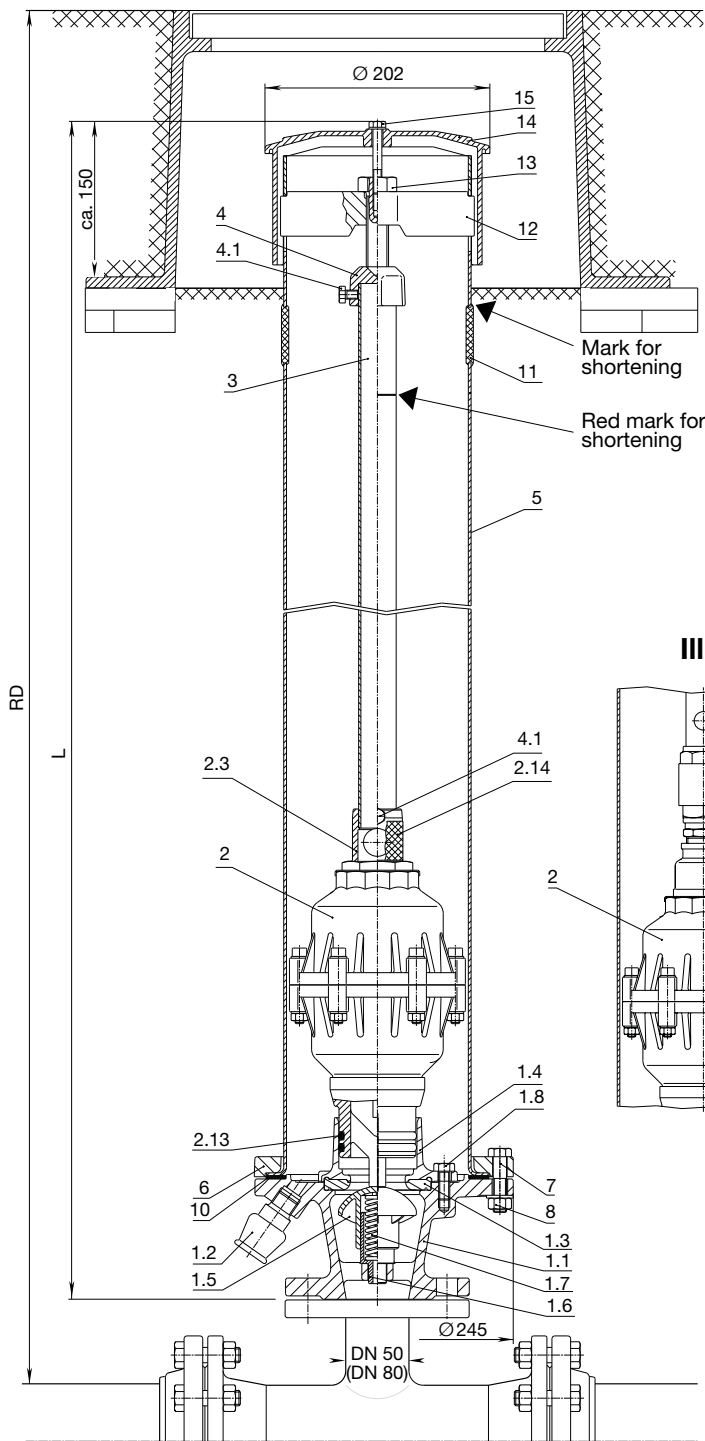
L* = 100 reducible
Minimum length = 620, no shortening possible
Maximum length = 2500

Application example

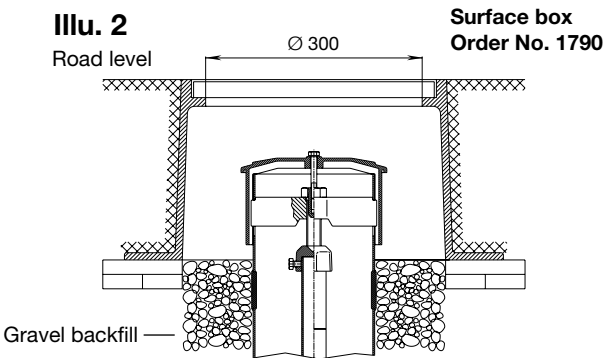


Combined air release valves

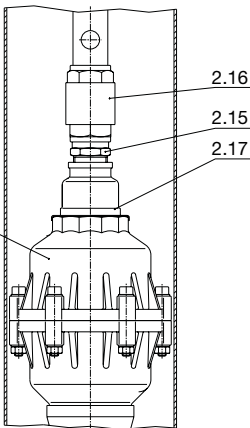
Illu. 1



Illu. 2



Illu. 3



	Parts	Material
1.1	Inlet flange	Ductile iron
1.2	Drain-off fitting	Ductile iron
1.3	Seal	Elastomer
1.4	Foot valve flange	Brass
1.5	Foot valve	POM
1.6	Spring case	POM
1.7	Spring	Stainless steel
1.8	Hexagon bolt M 10	Stainless steel
2	Air valve	see page N 2/1
2.3	Seat	Brass/Elastomer
2.13	O-ring	Elastomer
2.14	Insect protective grid	Stainless steel
2.15	Double nipple	Brass
2.16	Non return valve	Brass
2.17	Reducing socket	Brass
3	Pipe	Stainless steel
4	Coupling	Ductile iron
4.1	Hexagon bolt	Stainless steel
5	Stand pipe	Stainless steel
6	Lock ring	Ductile iron
7	Hexagon bolt M 12 x 55	Stainless steel
8	Hexagon nut	Stainless steel
10	Seal	Elastomer
11	Blind cover	Elastomer
12	Spindle support	
13	Operating bolt	Stainless steel
14	Hood	HDPE
15	Hexagon bolt	Stainless steel

Air release valves

Dynamic PN 10 | PN 16 | PN 25 | PN 40



Design features

- Automatic 3-way air release valve with cylindrical floats
- Ventilation outlet in nominal size (large opening cross-section according to the flange size)
- Flange pursuant to EN 1092-2 (DN 50 can also be shipped with threaded connection 2")
- Efficient, high performance ventilation protects pipeline from vacuum related damages
- High velocity air discharge prevents premature closure, thus safeguarding optimum ventilation during filling process of pipe lines or containers
- 2-level ventilation system provides effective protection against pressure shocks during high ventilation speeds through a small opening
- Continuously reliable ventilation of air inlets under normal operating conditions
- Compact construction, low volume and weight
- Robust and reliable technology

No. 9842K



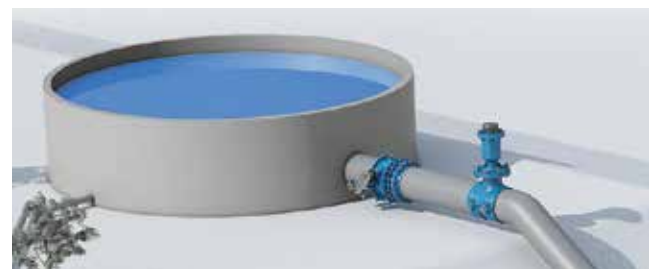
Order No.	MOP (PN)	Dimension/DN						
		50	80	100	150	200	250	300
9842K	10							
	16							
	25							
	40							

Other dimensions or pressure rating on request

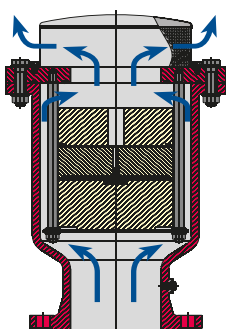
Material | Technical features

- **Body** made of ductile iron, epoxy powder coated inside and outside (see page 4)
- **Sealing rings** made of elastomer
- **All other metallic parts** made of stainless steel
- **Float material** made of PE
- **Medium:** water

Application example

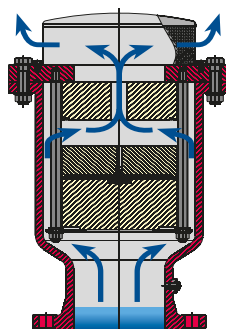


Functional principle



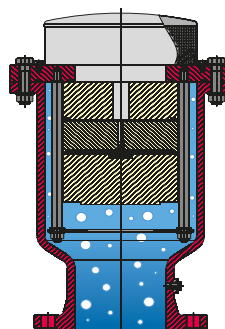
Ventilation of large quantities of air:

During filling, the line will be ventilated via the large cross-section



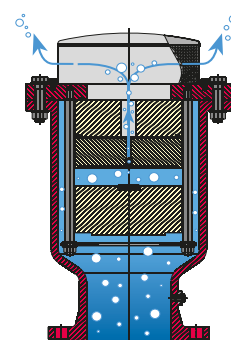
Ventilation at high air velocity through small opening:

Prevention of pressure shocks or premature closure



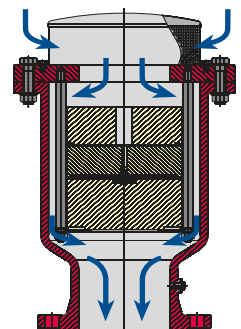
Closure:

After ventilation the valve closes automatically



Ventilation of small quantities of air:

During operation of a line, ventilation is carried out via the small cross-section



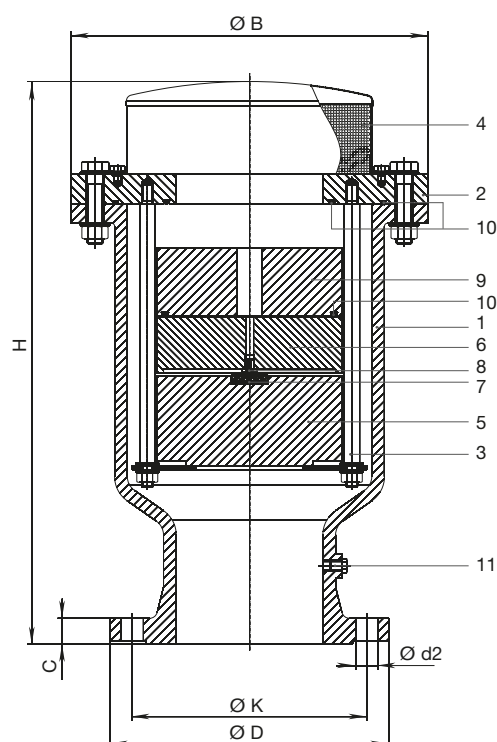
Ventilation:

During drainage of a line, ventilation is carried out via the large cross-section.

Air release valves

Dynamic PN 10 | PN 16 | PN 25 | PN 40

No. 9842K



	Parts	Material
1	Body	Ductile iron
2	Bonnet	Steel (stainless steel optional)
3	Float guide	Stainless steel
4	Cover	Stainless steel
5	Float	PE
6	Float	PE
7	Seat seal	Elastomer
8	Seat	Stainless steel
9	Float	PE
10	O-ring	Elastomer
11	Plug	Steel

DN	MOP (PN)	Ø D	Ø K	C	Bolts		Ø B	H	Weight
					Quantity	Ø d2			
50	10/16	165	125	19	4	19	200	355	20
80		200	160	19	8	19	240	420	26
100		220	180	19	8	19	255	420	28
150		285	240	19	8	23	365	580	90
200	10	340	295	20	8	23	410	630	98
200	16	340	295	20	12	23	410	630	98
250	10	405	355	22	12	23	540	820	160
250	16	405	355	22	12	28	540	820	160
300	16	460	410	24,5	12	28	650	927	310

DN	MOP (PN)	Ø D	Ø K	C	Bolts		Ø B	H	Weight
					Quantity	Ø d2			
50	25	165	125	19	4	19	200	355	22
80		200	160	19	8	19	240	420	28
100		235	190	19	8	23	255	420	30
150		300	250	20	8	28	365	580	95

DN	MOP (PN)	Ø D	Ø K	C	Bolts		Ø B	H	Weight
					Quantity	Ø d2			
50	40	165	125	19	4	19	200	355	22
100		235	190	19	8	23	255	420	30

Page 0 2	Strainer With stainless steel double-screen	Page O 2/1 

Filter

Application examples



Strainer

With stainless steel double-screen

Design features

- Strainer serves to protect the pipelines and its installations from dirt
- The fine-meshed double screen made of stainless steel reliably removes all parts bigger than 0,5 mm (DN 40 — 150) or bigger than 0,6 mm Ø from continued flow
- Face-to-face dimension according to EN 558-1 GR 48
- Flanges acc. to EN 1092-2 PN 16, drilled acc. to EN 1092-2 | PN 10 standard; | PN 16 from DN 200 to be mentioned on order. Other standards on request!
- **No. 9911:**
The new design enables a simpler and quicker maintenance of the filter screen and guarantees a considerably higher flow capacity

Material | Technical features

- **Body and cover**
No. 9911: ductile iron, epoxy powder coated
No. 9910: made of grey cast iron, epoxy powder coated
- **Bolts, nuts**
Made of stainless steel
- **Double screen**
Stainless steel,
Mesh-size DN 40 to 150: ca. 0,5 mm
DN 200 to 300: ca. 0,6 mm
- **Gasket**
No. 9911: made of elastomer
No. 9910: made of Klingerit

Installation advice

- Strainers are designed to be installed in a horizontal position in pipe lines. Installations in sloping or vertical pipe lines is possible if the flow of the medium is downwards
- Direction of flow has to be according to the arrow indicated on the body whereby the lid has to look to the bottom No. 9910
- Depending on the level of dirt to be removed, the double strainer is to be cleaned periodically

Strainer

With stainless steel double-screen

No. 9911



No. 9910



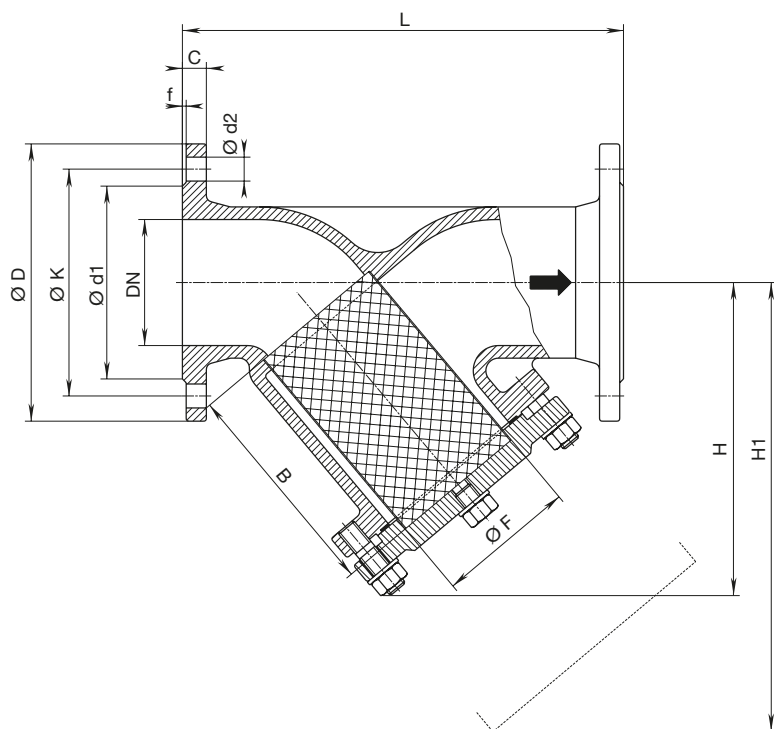
Order No.	Version	MOP (PN)	Dimension/DN									
			40	50	65	80	100	125	150	200	250	300
9911	With stainless steel double-screen	16										
9910												

Strainer

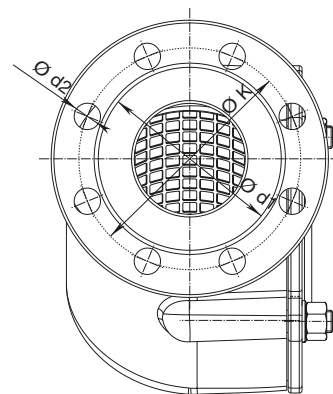
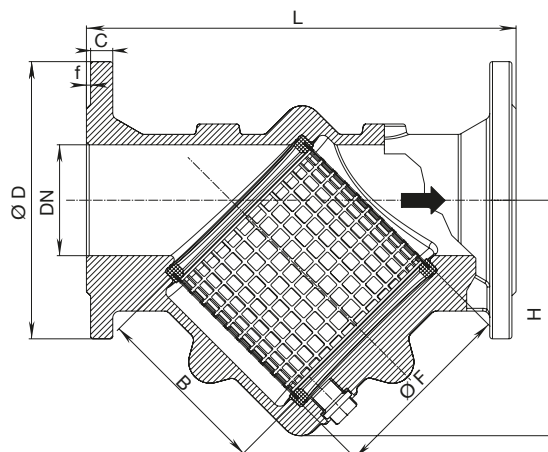
With stainless steel double-screen

No. 9910 (9911)

With stainless steel double-screen



No. 9910



No. 9911

DN	MOP (PN)	L	H	H1	$\varnothing D$	$\varnothing d1$	B	$\varnothing F$	$\varnothing K$	$\varnothing d2$	f	C	Bolts	Weight
40	16	200	150	240	150	88	114	50	110	18	3	18	4 x M 16	6,6
50	16	230	120		165	99	102	90	125	19	3	19	4 x M 16	11,0
65	16	290	170		185	122	127	136	145	18	3	20	4 x M 16	17,0
80	16	310	170		200	132	127	136	160	19	3	19	8 x M 16	19,5
100	16	350	205		220	156	174	170	180	19	3	19	8 x M 16	34,0
125	16	400	280	425	250	188	199	138	210	18	3	26	8 x M 16	42,5
150	16	480	298		285	211	250	248	240	23	3	19	8 x M 20	56,0
200	10 16	600	379		340	266	311	322	295	23	3	20	8 x M 20 12 x M 20	110,0
250	10 16	730	540	915	405	320	434	258	350 355	22 26	3	32	12 x M 20 12 x M 24	165,0
300	10 16	850	680	1110	460	370	555	308	400 410	22 26	4	32	12 x M 20 12 x M 24	285,0

Page P 2	Spare parts <i>E</i> -valve bonnet and wedge, <i>E2</i> valve bonnet and wedge <i>E</i> -valve flat gasket, <i>E2</i> valve flat gasket, spindle shaft, outer and inner protecting pipe	Page P 2/1 Page P 2/2	
Page P 3	Spare parts Sealing cap, plastic cap, spindle head, spindle coupling Sleeve gasket	Page P 3/1 Page P 3/2	
Page P 4	Spare parts Sleeve gasket, grip ring „Standard“ Grip ring „2K“, O-ring, theft indicator cap, operating controls	Page P 4/1 Page P 4/2	
Page P 5	Spare parts Valve plug, coupling, O-ring, cap, flat gasket, operating nut Air valve, bayonet coupling, colour repairs, repair cartridge, Set of replacement screws	Page P 5/1 Page P 5/2	
Page P 6	Spare parts Hawle-Synoflex-ring complete, with grip elements (for restraint function), Hawle-Synoflex-ring complete, without grip elements Bonnet complete, cover seal, double screen	Page P 6/1 Page P 6/2	

Notes



Design features

- Made of ductile iron, epoxy powder coated with spindle, bonnet flat gasket and bolts
- Also available with anti clockwise closing

DN	No. 8690		No. 8690E2	
		Weight		Weight
¾" — 1"		0,90		
1¼" — 1½"		1,30		
2"		1,40		
50		3,20		3,10
65		2,60		4,70
80		3,20		4,70
100		4,40		5,70
125		5,80		7,80
150		6,80		7,80
200		10,80		12,40
250		23,00		21,50
300		29,50		27,50
350		36,00		34,00
400		48,00		43,00
500				95,50
600				134,00

Design features

- **No. 8700**
DN ¾" — 2" made of brass
DN 50 — 400 made of ductile iron
Coated outside with vulcanized elastomer, inside with bitumen
- **No. 8700E2**
DN 50 — 600 made of ductile iron
Inside and outside with vulcanized elastomer
- Also available with anti clockwise closing threads

DN	No. 8700		No. 8700E2	
		Weight		Weight
¾" — 1"		0,25		
1¼" — 1½"		0,40		
2"		0,50		
50		0,75		0,70
65		0,80		1,60
80		1,35		1,60
100		2,15		2,30
125		2,90		5,20
150		4,50		5,20
200		7,90		9,30
250		14,00		13,40
300		20,50		21,10
350		27,50		30,20
400		40,00		40,00
500				89,50
600				130,00

E-valve bonnet

For service valves, valves and combi valves

No. 8690



E2 valve bonnet

For E2 valves and E2 Combi valves

No. 8690E2



E-valve wedge

For service valves, valves and combi valves

No. 8700



E2 valve wedge

For E2 valves and E2 Combi valves

No. 8700E2



Spare parts

Design features

- **No. 8710**, made of elastomer
- **No. 8710E2**, made of elastomer

DN	No. 8710		No. 8710E2	
		Weight		Weight
¾" — 1"		0,01		
1¼" — 2"		0,02		
50		0,02		0,02
65		0,03		0,03
80		0,02		0,03
100		0,05		0,03
125		0,04		0,04
150		0,04		0,04
200		0,08		0,05
250		0,18		0,08
300		0,40		0,10
350		0,21		0,18
400		0,25		0,13
500		0,25		0,35
600				0,58

Design features

- Please specify pipe covering when ordering

DN	Spindle head	Weight (RD 1,5 m)	
¾" — 2"	14	2,05	
50	20	3,60	
65	20	3,60	
80	20	3,60	
100	20	3,60	
200	20	4,10	
250	25	3,75	
300	25	3,55	
350	25	3,45	
400 — 500	25	3,10	

Design features

- **No. 9631** for DN ¾" — 2", service valves (threaded connection)
- **No. 9630** for DN 50 — 300, valves and combi valves

DN	No. 9631	
¾" — 2"		

DN	No. 9630	
50 — 100		
125 — 150		
200		
250		
300		

E-valve flat gasket No. 8710



E2 valve flat gasket No. 8710E2



Other dimensions on request

Spindle shaft

For all "rigid" type extension spindles
No. 9620



Outer protection pipe

For all "rigid" type extension spindles
No. 9631, No. 9630



Illu. No. 9631
DN ¾" — 2"



Illu. No. 9630
DN 50 — 300

Please specify pipe covering when ordering

Design features

- Made of PE

DN	No. 9650	No. 9651
¾" — 2"		
50 — 200		
250 — 500		

Plastic cap

For all "rigid" type extension spindles

No. 9650



Sealing cap

For all "rigid" type extension spindles

No. 9651



Design features

- Made of ductile iron, galvanised, with fixed bolts

DN	Square bar	Weight	
50 — 200	20,5	0,65	
250 — 600	25,5	0,68	

Spindle head

For all "rigid" type extension spindles

No. 8670



Design features

- Made of ductile iron, galvanised, with fixed bolts and splint

DN	Weight	
¾" — 2"	0,15	
50	0,30	
65	0,30	
80	0,40	
100 — 150	0,40	
200	0,60	
250 — 350	0,80	
400 — 500	0,80	
500 — 600	1,44	

Spindle coupling

For all extension spindles

No. 8660



Spare parts

Design features

- Made of elastomer
- Please specify type of pipe and outside diameter

DN	Weight	
40	0,065	
50	0,12	
65	0,13	
80	0,18	
100	0,21	
125	0,31	
150	0,37	
200	0,51	
250	0,85	
300	1,20	
400	2,25	

Design features

- Made of elastomer
- Please specify outside diameter

DN	Pipe Ø	Weight	
50	63	0,10	
65	75	0,13	
80	90	0,18	
100	110	0,20	
125	140	0,31	
150	160	0,40	
200	200	0,75	
200	225	0,80	
250	250	1,30	
250	280	1,35	
300	315	1,65	
400	400	2,80	

Sleeve gasket

For double chamber flange adapter
No. 7101, 7102, 7103

No. 7510



Sleeve gasket

For double chamber flange adapter
No. 5600

No. 7524



Design features

- Please specify outside diameter
- Gasket made of elastomer; the gasket has grip ring segments glued to it

DN	Pipe Ø	Weight	
50	60	0,14	
80	89	0,21	
100	108	0,26	
100	114	0,26	
125	133	0,35	
150	159	0,65	
150	168	0,52	
200	219	1,20	

Design features

- Please specify outside diameter
- Gasket made of elastomer; the gasket has grip ring segments glued to it

DN	Pipe Ø	Weight	
50	66	0,14	
60	77	0,14	
65	82	0,16	
80	98	0,24	
100	118	0,28	
125	144	0,37	
150	170	0,69	
200	222	1,30	
250	274	1,67	
300	326	1,98	

Design features

- Made of POM
- Interlocking teeth

DN	Pipe Ø	Weight	
20	1/2"	0,003	
25	3/4"	0,004	
32	1"	0,009	
40	1 1/4"	0,019	
50	1 1/2"	0,027	
63	2"	0,040	
75		0,042	
90		0,054	
110		0,102	
125		0,151	
140		0,155	
160		0,194	

Sleeve gasket

For spar flange, restraint No. 7601 (steel)

No. 7531



Sleeve gasket

For spar flange, restraint No. 7602 (cast iron)

No. 7532



Grip ring "Standard"

For PE pipes, for all Hawle products with ISO pipe push-fit fittings

No. 6932



Spare parts

DN	Ø Pipe	Weight	
20	1/2"	0,01	
25	3/4"	0,01	
32	1"	0,01	
40	1 1/4"	0,02	
50	1 1/2"	0,03	
63	2"	0,04	
75		0,05	
90		0,07	
110		0,13	
125		0,166	

Design features

- Made of elastomer

DN	Ø Pipe	Weight	
20	1/2"	0,01	
25	3/4"	0,01	
32	1"	0,01	
40	1 1/4"	0,01	
50	1 1/2"	0,01	
63	2"	0,02	
75		0,03	
90		0,03	
110		0,06	
125		0,09	
160		0,11	

Order No.	
5417	

Order No.	Operating set for	DN	Pipe cover	Weight	
5430	Above ground hydrant "rigid"	80	1,50	11,00	
		100	1,50	11,80	
		150	1,50	12,30	
5431	Above ground hydrant - break away	80	1,50	8,00	
		100	1,50	8,80	
		150	1,50	9,30	
5432	Above ground hydrant "telescopic"	80	1,30 – 1,80	9,00	
5433	Below ground hydrant	80	1,25	5,00	
		80	1,50	7,00	

Grip ring "2K" for PVC pipes

For all Hawle products with ISO pipe push-fit fittings

No. 6933



O-ring

For all Hawle products with ISO pipe push-fit fittings

No. 6940



Theft indicator cap

For all above ground hydrants

No. 5417



Operating controls

For hydrants type H3



Spare parts

Design features

- Made of brass / elastomer

Order No.	DN	Weight	
5440	80 — 150	1,70	

Design features

- Made of aluminum

Order No.	DN	Weight	
5403	A coupling 4" DIN 14319	1,60	
5404	B coupling 2½" DIN 14318	0,40	
5405	C coupling 2" DIN 14317	0,22	

Design features

- Made of elastomer

Order No.	For	Weight	
5410	A coupling	0,01	
5411	B coupling	0,01	
5412	C coupling	0,06	

Design features

- Cap made of aluminum
- Chain made of aluminum
- Flat gasket made of elastomer

Order No.	For	Weight	
5400	A coupling	3,45	
5401	B coupling	1,45	
5402	C coupling	1,10	

Design features

- Made of elastomer

Order No.	For	Weight	
5406	A-cap	0,15	
5407	B-cap	0,09	
5408	C-cap	0,05	

Design features

- Made of aluminum

Order No.	Weight	
5415	1,80	

Valve plug

For H4 above ground hydrants

No. 5440



Coupling

For above ground hydrants

No. 5403

No. 5404

No. 5405



O-ring

For coupling

No. 5410

No. 5411

No. 5412



Cap

For above ground hydrants

No. 5400

No. 5401

No. 5402



Flat gasket

For cap

No. 5406

No. 5407

No. 5408



Operating nut

For above ground hydrants

No. 5415



Spare parts

Design features

- Made of POM / elastomer

Order No.	Thread	Weight	
5180	3/8"	0,02	

Design features

- Without cap

Order No.	For	Weight	
5170	Garden hydrant DN 50	2,70	
5171	Below ground hydrant DN 80	4,40	

Design features

- Attention! Not suitable for potable water
- Colour repairs for potable water on request

Order No.	Contents of can	
3441	1	

Design features

- Unit size. 4 pieces of each; damage control fracture screws, washers and nuts

Order No.	Dimension	for hydrant type / year	
8841	M 16x70	H3 ductile iron /1982-2000	
	M 16x60	H3 stainless steel, H4 /1985-2017	

Design features

- For repair of minor mechanical damage caused by transport or installation.
- **Cartridge with plunger**
Exact 1:1 proportional dosing of resin and hardener. Good mixing is essential
- For repairing large areas we recommend No. 3441
- For potable water

Order No.	Cartridge content	
3442	32 cm ³	

Air valve

For above ground hydrants

No. 5180



Bayonet coupling

No. 5170

No. 5171



Colour repairs

Blue synthetic resin coating,
UV-resistant

No. 3441



Set of replacement screws for Hawle-breakaway hydrants

No. 8841



Repair cartridge

For powder coated Hawle products

No. 3442



Spare parts



Design features

- For all common types of pipes

Order No.	MOP (PN)	DN	Weight	
8790	16	40	0,12	
		50	0,15	
		65	0,18	
		80	0,22	
		100	0,68	
		125	0,81	
		150	0,95	
		200	2,10	
		225	2,39	
		250	2,76	
		300	3,18	
	10	350	3,66	
		400	3,84	

Hawle-Synoflex-grip ring

Complete, with grip elements (for restraint function)

No. 8790



Design features

- For all common types of pipes

Order No.	MOP (PN)	DN	Weight	
8791	16	40	0,11	
		50	0,13	
		65	0,16	
		80	0,18	
		100	0,59	
		125	0,73	
		150	0,87	
		200	1,72	
		225	2,07	
		250	2,39	
		300	3,00	
	10	350	3,10	
		400	3,24	

Hawle-Synoflex-grip ring

Complete, without grip elements

No. 8791



Spare parts

Design features

- Bonnet and wedge made of brass
- Wedge with vulcanised elastomer
- Spindle made of stainless steel
- Handwheel made of plastic

Order No.	Dimension/DN	
8695	1" — 1¼"	
8696		

Design features

- Bonnet and wedge made of brass
- Wedge with vulcanised elastomer
- Spindle made of stainless steel
- Handwheel made of plastic

Order No.	Dimension/DN	
8697	1" — 1¼"	

Design features

- Made of elastomer

Order No.	Dimension/DN									
	40	50	65	80	100	125	150	200	250	300
9916										
9917										

Design features

- Made of stainless steel
- Mesh width: DN 40 to 150: ca. 0,5 mm
DN 200 to 300: ca. 0,6 mm

Order No.	Dimension/DN							
	40	50	65	80	100	125	150	200
9918								
9919								

Bonnet complete

For water meter console No. 2960
No. 8695



Bonnet complete

For water meter console No. 2961
No. 8696



Bonnet (without handwheel)

For water meter console
No. 2931, No. 2932
No. 8697



Handwheel

made of plastic, blue
No. 8698



Cover seal

For strainer No. 9910
and non return valve No. 9830
No. 9916



Fig.: No. 9916

Cover seal

For strainer No. 9911
No. 9917

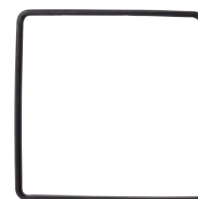


Fig.: No. 9917

Double screen for strainer No. 9910 No. 9918

Double screen for strainer No. 9911 No. 9919



Page Q 2	Drilling machine Drilling machine for under pressure drilling Motorised drilling machine	Page Q 2/1 Page Q 2/2	
Page Q 3	Changeable carbide drill (WHM) Drilling machine Tonisco	Page Q 3/1 Page Q 3/2	
Page Q 4	Tools Pipe cutter, Chamfering tool, Saddle blade, Locking plier Extractors, Hydrant-Master Universal Key, Operating keys Valve key 1", Assembly key, Caliper	Page Q 4/1 Page Q 4/2 Page Q 4/3	

Tools

Application examples



Drilling machine

For drilling under pressure

Design features

- Can be used for drilling pipes of **steel, ductile iron, AC, PE and PVC**
- When drilling under pressure, swarf is washed out via an outlet
- Rotated by ratchet handle and fed by feed wing nut
- The ratchet is connected to the drill shaft with a simple locking device
- Pipe saddle adapters and reducers are sealed with captivated rubber rings

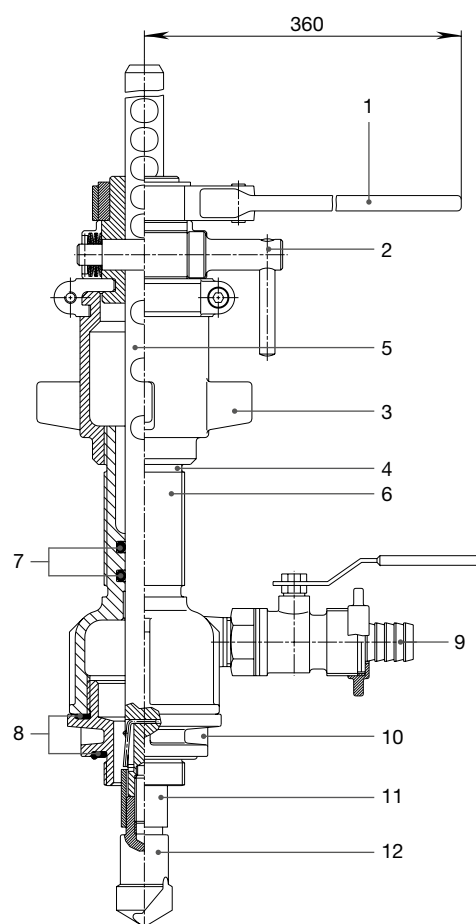
Drilling machine No. 5800



Content case		
Order No.	Description	Dimensions
5820	Drilling machine	
5810	Case	
5830	Ratchet	
5840	Shaft	
5850	Twist drill for steel, ductile iron and AC pipes	1" - Ø 24
		1¼" - Ø 29
		1½" - Ø 35
		2" - Ø 40
5860	Cup drill for PE and PVC-pipes	1" - Ø 24
		1¼" - Ø 29
		1½" - Ø 35
		2" - Ø 40
5890	Reducing adapter with rubber seals	2" - 1"
		2" - 1¼"
		2" - 1½"
5900	Equal adapter with rubber seals	2" - 2"
5910	1 pc. Allen key size 5	SW 5
5920	2 pc. C spanner for adapter	
8401	Saddle blade for shut-off	1" - 1¼"
		1½" - 2"
5800	Complete in case (weight 17,5)	

Suitable accessories

- Cup drill for steel and ductil iron pipes: No. 5870
- Reducing adapter with rubber seals (2" - 2½"): No. 5890
- Adapter for ISO-combination tapping valve (2" - 1½"): No. 5940
- Adapter for thread-cutting machine Rems Amigo 2: No. 5893



- | | |
|----------------------|-------------------------------|
| 1 Ratchet | 7 O-ring |
| 2 Shaft locking bolt | 8 Rubber seal |
| 3 Feed wing nut | 9 Ball valve outlet (carrier) |
| 4 Red marking | 10 Adapter or reducer |
| 5 Drill shaft | 11 Hexagonal socket |
| 6 Body | 12 Twist drill |



No. 5860
Cup drilling
For PE- and
PVC-pipes



No. 5850
Twist drill
For steel,
ductile iron
and AC-pipes



No. 5893
Adapter for
thread-cutting
machine
Rems Amigo 2



No. 5965
Adapter for
hole saw ZAK46
including hole
saw Ø 35

Motorised drilling machine

Design features

- **Powered drilling machine** with continuous feed
- **Drive options**
Hand ratchet, (Cordless screwdriver; Rems Amigo 2)
- Also for under pressure drilling
- Massively increases the service life of the drilling tools
- For quick and simple drilling of **ductile iron-, steel-, AC-, PE and PVC-pipes**
- Motorised power and continuous feed are necessary for driving the special carbide drills which are needed for cement lined cast iron pipes

Content case		
Order No.	Description	Dimension
5825	Drilling machine	
5815	Case	
5830	Ratchet	
5840	Shaft	
5850	Twist drill for steel, ductile iron and AC pipes	1" - Ø 24
		1¼" - Ø 29
		1½" - Ø 35
		2" - Ø 40
5860	Cup drill for PE and PVC-pipes	1" - Ø 24
		1¼" - Ø 29
		1½" - Ø 35
		2" - Ø 40
5890	Reducing adapter with rubber seals	2" - 1"
		2" - 1¼"
		2" - 1½"
5900	Equal adapter with rubber seals	2" - 2"
5920	2 pcs. C spanner for adapter	
8401	Saddle blade for shut-off	1" - 1¼"
		1½" - 2"
5805	Complete in case (weight 22,5)	

Suitable accessories

- Cup drill for steel and ductile iron pipes: No. 5870
- Reducing adapter with rubber seals (2" - 2½"): No. 5890
- Adapter for ISO combination tapping valve (2" - 1½"): No. 5940
- Special version for cement lined cast iron pipes and AC pipes: No. 5805W
No. 5855W
- Carbide drill:
- Adapter for thread-cutting machine Rems Amigo 2: No. 5893

Drilling machine with hand ratchet

Standard version (in metal case)

No. 5805



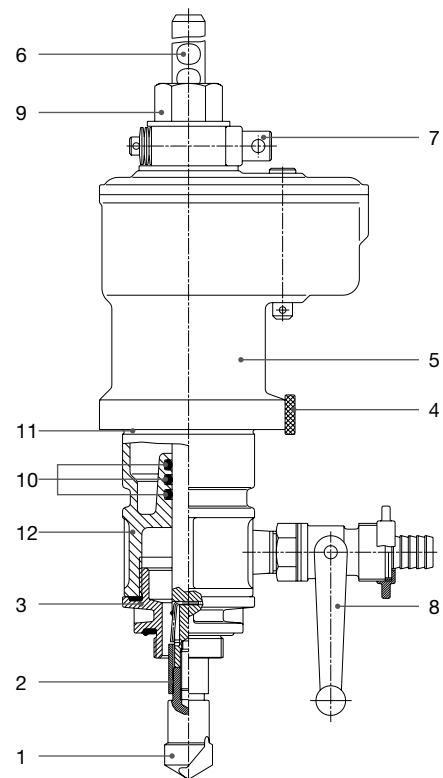
No. 5805



Adapter set

for drilling machine No. 5805
(for accu-screwdriver Metabo with torque attachment)

No. 5806



No. 5860
Cup drilling
For PE- and PVC-pipes



No. 5850
Twist drill
For steel, ductile iron and AC-pipes



No. 5893
Adapter for
thread-cutting machine
Rems Amigo 2



No. 5965
Adapter for
hole saw ZAK46
including hole
saw Ø 35

- 1 Cup drill or twist drill
- 2 Hexagonal socket
- 3 Adapter or reducer
- 4 Knurled nut
- 5 Gear transmission
- 6 Shaft

- 7 Shaft locking bolt
- 8 Ball valve (washout)
- 9 Carrier
- 10 O-ring
- 11 Red marking
- 12 Body

Drilling machine

Changeable carbide drill (WHM)



Design features

- Dimensiones:
1" – Ø 24
1¼" – Ø 29
1½" – Ø 35
2" – Ø 40

Design features

- Continuous feed and motorised power are necessary!
- Easy and cost saving replacement of worm cutting tips without any technical efforts
- **One** cutting tip holder for each **two** dimensions of cutting tips
- Available as set for one dimension each and in single components for an individual demand

Order No.	Description	Dimensions
5855W	WHM-drill complete	1" – Ø 24
		1¼" – Ø 29
		1½" – Ø 35
		2" – Ø 40
5856	WHM-cutting tip holder including set bolt	1" – 1¼"
		1½" – 2"
5857	WHM-cutting tip	1" – Ø 24
		1¼" – Ø 29
		1½" – Ø 35
		2" – Ø 40
	Borehole sealing sleeve	2" – Ø 36
NN52	Torx-set bolt for WHM-cutting tip holder	GWS 25 1" – 1¼" GWS 32 1½" – 2"
5911	Torx-pin key	

Cup drill for steel and ductile iron pipes No. 5870



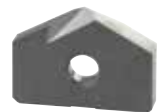
WHM-drill for cast iron, cement lined cast iron and AC pipes No. 5855W



WHM-cutting tip holder No. 5856



WHM-cutting tip No. 5857



Set bolt No. NN52



Torx-pin key No. 5911



Drilling machine

Tonisco

Design features

- The Tonisco drilling machine is suitable for drilling up to Ø 89 pipelines made of **steel, ductile iron, AC, PE and PVC**
- Manual feed by means of a feed nut with a handwheel

Content case		
Order No.	Description	Dimensions
5807	Drilling machine	
	Case	
	Electrical drive*	220 – 240V / 50 – 60 Hz / 1000 VA
	Ratchet	
	Shaft + extensions	
	Adapter for hole sawing	
	Hole saw	1" – Ø 24
		1¼" – Ø 30
		1½" – Ø 38
		2" – Ø 44
		DN 80 – Ø 70
		DN 100 – Ø 89
	Centre drill	Ø 7
	Drill adapter with external thread	1"
		1¼"
		1½"
	Drill adapter with flange	2"
		DN 80
		DN 100

* Attention: 230 V - please observe safety regulations.

Tonisco-drilling machine No. 5807



Tonisco-drilling machine No. 5807 can also be leased.

Thread adapter



Flange adapter



Hole saw



Centre drill



Design features

- Cut pipes square and straight
- The lever design minimises the force required

Order No.		For ØPipe	Weight	
6050	Model I:	up to 1¼" or Ø 40	0,30	
	Model II:	up to 2" or Ø 63	1,10	

Design features

- For easy assembly of ISO push-fit fittings the pipe should be beveled.

We recommend our precision-made steel chamfering tool.

This provides the correct chamfer when turned clockwise a few times on the pipe end

Order No.	ØPipe	DN	Weight	
6000	20	½"	0,07	
	25	¾"	0,07	
	32	1"	0,10	
	40	1¼"	0,17	
	50	1½"	0,22	
	63	2"	0,62	

Design features

- For shut-off saddles and shut-off adapters
- For under pressure drilling

Order No.		Size	Weight	
8401	Model I:	For saddle 1" - 1¼"	0,41	
	Model II:	For saddle 1½" - 2"	0,43	

Design features

- To hold and push the open POM clamp for the assembly of fittings with cone that can be dismantled (No. 6301)
- Made of stainless steel

Pipe cutter

Cuts PE- and PVC pipes

No. 6050



Symbol photo

Chamfering tool

For beveling PE pipes

No. 6000



Saddle blade

No. 8401



Locking plier

No. 6011



Tools

Design features

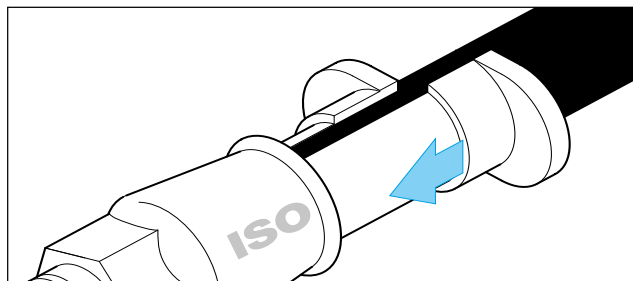
- First ensure that the grip ring is not under tension. When pushed in, the extractors separate the grip ring from the pipe, which can then be pulled out
- **Application:** for all Hawle products with ISO push-fit fittings

Order No.	Ø Pipe	DN	Qty. Extractors	Weight	
6010	20	1/2"	2	0,04	
	25	3/4"	2	0,07	
	32	1"	2	0,09	
	40	1 1/4"	2	0,14	
	50	1 1/2"	2	0,19	
	63	2"	2	0,36	
	75		3	0,18	
	90		3	0,31	
	110		3	0,41	

Extractors

For dismantling ISO push-fit fittings

No. 6010



Design features

- Made of aluminium and ductile iron with reversible ratchet
- For opening and closing
- For operating coupling caps A + B + C
- For operating hose couplings B + C
- For breaking theft indicator caps

Order No.	Weight	
3461	2,50	

Hydrant-Master Universal Key

Lightweight - robust - practical

No. 3461



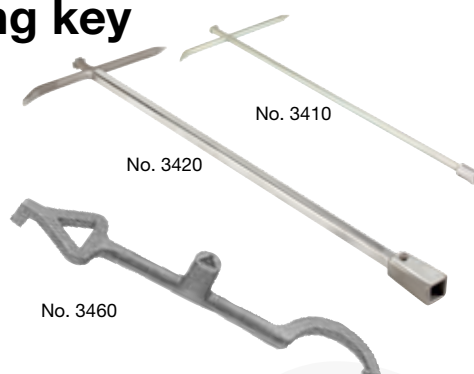
Order No.	Operating key for	Length	Weight	
3410	Service valves extension spindles	850	1,90	
3420	Valves, extension spindles and below ground hydrants	1130	4,10	
3460	Above ground hydrants	420	1,25	

Operating key

No. 3410

No. 3420

No. 3460



Design features

- of ductile iron

Order No.	Coupling	Weight	
KR281.1	A+B+C	1,25	

Hydrant key with adapter

to open the theft indicator No. KRE300PC

No. KR281.1



Design features

- Installation tool to change air valve 1" No. 9876

Design features

- For assembling service valves No. 3120 and No. 3130
- Made of ductile iron, epoxy powder coated
- No damage to the epoxy powder coating of the valve
- No stress on the bonnet screws
- Operated via size 36 hexagonal nut with regular spanner or using the ratchet of the Hawle drilling machine

Order No.	Weight	
3455	1,20	

Design features

- For assembling service valves No. 2491, No. 2500, No. 2520, No. 2800
- Of stainless steel
- No damage to the epoxy powder coating
- No stress on the bonnet
- Operated via size 36 hexagonal nut with regular spanner or using the ratchet of the Hawle drilling machine

Order No.	For internal thread	Weight	
3456	1¼" / 2"	0,50	
	1" / 1½"	0,65	

Design features

- To measure the outside pipe diameter up to DN 400
- With scale to read the right Synoflex multi-range connection
- Resistant to corrosion
- Easy to clean

Valve key

For air valve 1"
No. 3454



Assembly key

for service valves
No. 3455



Assembly key

for service valves with internal thread
No. 3456



Caliper

immediate indicator of the right
Synoflex multi-range connection
No. 7996



Notes



Page R 1	Spindle turns For Hawle valves Max. drill diameter For drilling through the E2 valve	Page R 1/2 Page R 1/2
Page R 2	Flange table Pipe size table Required bolts length	Page R 2/1 Page R 2/2 Page R 2/2
Page R 3	Tightening torques For flange assembly System 2000 lock ring HAKU drill clamp assembly	Page R 3/1 Page R 3/1 Page R 3/1
Page R 4	Flow capacity HAWLE-valve Pressure loss diagramm Pressure loss table HAWLE-hydrants	Page R 4/1 Page R 4/2
Page R 5	Definition of abbreviations	Page R 5/1

Technical information

General information

- Spindle turns and guideline values for closing torques in delivered state of **Hawle valves**
- Upper stop – lower stop

Spindle turns for Hawle valves

	Service valve				E3 valve		E1+ valve		E3 valve / E1+ valve								E3 valve		E2 valve		
DN	20	25	32	40	50	65	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
Stroke	20	25	40	40	50	65	50	65	80	100	125	150	200	250	300	350	400	400	500	600	
Turns/stroke	7,5	7,5	11	11	10	13	13	16	16	20	25	30	34	42	50	59	58	58	63	76	
Closing torque [Nm] at 16 bar (water)	25	25	30	30	40	40	40	40	45	50	60	60	80	100	120	140	160	180	220	250	
Spindle square	10,3	10,3	10,3	10,3	14,8	17,3	14,8	17,3	17,3	19,3	19,3	19,3	24,3	27,3	27,3	27,3	32,3	32,3	36,3	36,3	
Thread in spindle square for handwheel attachment					M6	M8	M6	M8	M8	M10	M10	M10	M12	M16	M16	M16	M16	M16	M16	M20	

Max. drill Ø d

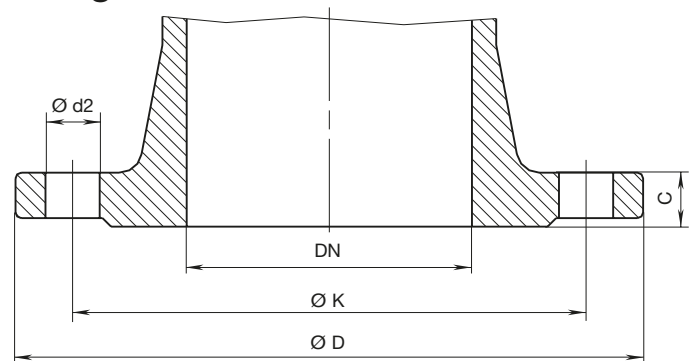
For drilling through the **E3 valve**

DN	25	32	40	50	65	80	100	125	150	200	250	300
Ø d	24	36	36	46	60	75	95	120	145	195	240	290

General information

- Flange according to EN 1092-2
- n = number of holes

Flange table



MOP (PN)	DN	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450
6	Ø D	90	110	120	130	140	160	190	210	240	265	320	375	440	490	540	595
	Ø K	65	75	90	100	110	130	150	170	200	225	280	335	395	445	495	550
	n	4	4	4	4	4	4	4	4	8	8	8	12	12	12	16	16
	Ø d2	11	11	14	14	14	14	19	19	19	19	19	19	23	23	23	23
	C	-	-	16	16	16	16	18	18	20	20	22	24	24	26	28	28
10	Ø D	105	115	140	150	165	185	200	220	250	285	340	400	455	505	565	615
	Ø K	75	85	100	110	125	145	160	180	210	240	295	350	400	460	515	565
	n	4	4	4	4	4	4	8	8	8	8	8	12	12	16	16	20
	Ø d2	14	14	19	19	19	19	19	19	19	23	23	23	23	23	28	28
	C	16	16	18	19	19	19	19	19	19	19	20	22	24,5	24,5	24,5	25,5
16	Ø D	105	115	140	150	165	185	200	220	250	285	340	400	455	520	580	640
	Ø K	75	85	100	110	125	145	160	180	210	240	295	355	410	470	525	585
	n	4	4	4	4	4	4	8	8	8	8	12	12	12	16	16	20
	Ø d2	14	14	19	19	19	19	19	19	19	23	23	28	28	28	31	31
	C	16	16	18	19	19	19	19	19	19	19	20	22	24,5	26,5	28	30
25	Ø D	105	115	150	150	165	185	200	235	270	300	360	425	485	555	620	670
	Ø K	75	85	100	110	125	145	160	190	220	250	310	370	430	490	550	600
	n	4	4	4	4	4	8	8	8	8	8	12	12	16	16	16	20
	Ø d2	14	14	19	19	19	19	19	23	28	28	28	31	31	34	37	37
	C	16	16	18	19	19	19	19	19	19	20	22	24,5	27,5	30	32	34,5
40	Ø D	105	115	150	150	165	185	200	235	270	300	375	450	515	580	660	685
	Ø K	75	85	100	110	125	145	160	190	220	250	320	385	450	510	585	610
	n	4	4	4	4	4	8	8	8	8	8	12	12	16	16	16	20
	Ø d2	14	14	19	19	19	19	19	23	28	28	31	34	34	37	41	41
	C	16	16	18	19	19	19	19	19	23,5	26	30	34,5	39,5	44	48	49

MOP (PN)	DN	500	600	700	800	900	1000	1200	1400	1500	1600	1800	2000
10	Ø D	670	780	895	1015	1115	1230	1455	1675	11785	1915	2115	2325
	Ø K	620	725	840	950	1050	1160	1380	1590	1700	1820	2020	2230
	n	20	20	24	24	28	28	32	36	36	40	44	48
	Ø d2	28	31	31	34	34	37	41	44	44	50	50	50
	C	26,5	30	32,5	35	37,5	40	45	46	47,5	49	52	55
16	Ø D	715	840	910	1025	1125	1255	1485	1685	1820	1930	2130	2345
	Ø K	650	770	840	950	1050	1170	1390	1590	1710	1820	2020	2230
	n	20	20	24	24	28	28	32	36	36	40	44	48
	Ø d2	34	37	37	41	41	44	50	54	57	57	57	62
	C	31,5	36	39,5	43	46,5	50	57	60	62,5	65	70	75
25	Ø D	730	845	960	1085	1185	1320	1530	1755	1865	1975	2195	2425
	Ø K	660	770	875	990	1090	1210	1420	1640	1750	1860	2070	2300
	n	20	20	24	24	28	28	32	36	36	40	44	48
	Ø d2	37	41	44	50	50	57	57	62	62	62	70	70
	C	36,5	42	46,5	51	55,5	60	69	74	77,5	81	88	95
40	Ø D	755	890	995	1140	1250	1360	1575	1795		2025	2240	
	Ø K	670	795	900	1030	1140	1250	1460	1680		1900	2110	
	n	20	20	24	24	28	28	32	36		40	48	
	Ø d2	44	50	50	57	57	57	62	62		70	70	
	C	52	58	64	72	80	95	95	105		120	165	

Technical information

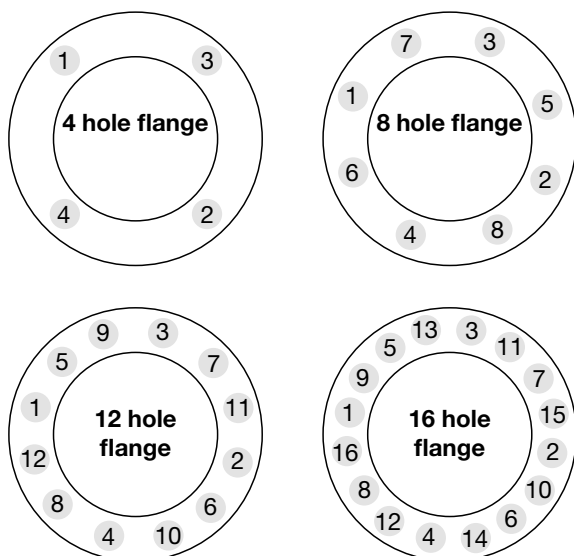
Pipe sizing table

Dimension		Ductile iron pipe EN 545	Steel pipe EN 10217	PE-pressure pipe EN 12201	PVC-pressure pipe EN ISO 1452-2	Asbestos cement pipe PN 10
DN	Zoll	Ø external diameter				
20	¾"		26,9 ±0,5	25 +0,3		
25	1"		33,7 ±0,5	32 +0,3		
32	1¼"		42,4 ±0,5	40 +0,4		
40	1½"	56 +1/-1,2	48,3 ±0,5	50 +0,5		
50	2"	66 +1/-1,2	60,3 ±0,6	63 +0,4	63 +0,3	
60		77 +1/-1,2				
65	2½"	82 +1/-1,2	76,1 ±0,8	75 +0,5	75 +0,3	
80	3"	98 +1/-2,7	88,9 ±0,9	90 +0,6	90 +0,3	~ 102
100	4"	118 +1/-2,8	108,0 ±1,1 114,3 ±1,1	110 +0,7 125 +0,9	110 +0,4	~ 125
125	5"	144 +1/-2,8	133,0 ±1,3 139,7 ±1,4	140 +0,9	140 +0,5	~ 154
150	6"	170 +1/-2,9	159,0 ±1,6 168,3 ±1,7	160 +1,0 180 +1,0	160 +0,5	~ 183
200	8"	222 +1/-3,0	219,1 ±2,2	200 +1,4 225 +1,4	225 +0,7	~ 241
250	10"	274 +1/-3,1	273,0 ±2,0	250 +1,7 280 +1,7	250 +0,8 280 +0,9	~ 293
300	12"	326 +1/-3,3	323,9 ±2,4	315 +1,9	315 +1,0	~ 351
350	14"	378 +1/-3,4	355,6 ±2,7 368,0 ±2,7	355 +2,2	355 +1,1	~ 410
400	16"	429 +1/-3,5	406,4 ±3,0 419,0 ±3,1	400 +2,7 450 +2,7	400 +1,2	~ 468
450	18"	480 +1/-3,5				
500	20"	532 +1/-3,8	508,0 ±3,8	500 +3,0 560 +3,0	500 +1,5	
600	24"	635 +1/-4,0	610,0 ±4,6	630 +3,8	630 +1,9	

Required bolt lengths: Valve-flange to flange

Flanged valve DN	MOP (PN)	Bolt Dimension	Bolt Quantity	Bolt length for flange no.								
				0101 0102	7101 7102 7103	0400 0800 0802 7994	5500 5530	5600	0310 0311	7602	7601	8000 8100
50	10/16	M 16	4	70	70	70	70	70	70	100	80	70
65		M 16	4	70	70	70	70	70	70	100	80	70
80		M 16	8	80	70	70	70	70	70	100	80	70
100		M 16	8	80	70	70	70	70	70	100	80	70
125		M 16	8	80	80	70	70	70	70	100	80	70
150		M 20	8	90	80	70	70	80	70	140	100	70
200	10 16	M 20	8 12	90	80	70		80	70	140	100	70 80
250	10 16	M 20 M 24	12	100	90	80		90	80	140 150		80 90
300	10 16	M 20 M 24	12	100	90	90		90	90	140 150		90
350	10 16	M 20 M 24	16	120 130		90						90
400	10 16	M 24 M 27	16	120 130	100	90 100						100
500	10 16	M 24 M 30	20	150		100 110						
600	10 16	M 27 M 33	20	150 160		120						

Sequence Of bolt assembly



Tightening torques For flange assembly

Flange - flange PN 10

DN	Bolt dimensions	Tightening torque	
		Nm min.	Nm max.
50 – 125	M 16	80	100
150 – 350	M 20	100	120
400 – 500	M 24	140	160
600	M 27	200	220
700	M 27	270	290

Flange - flange PN 16

DN	Bolt dimensions	Tightening torque	
		Nm min.	Nm max.
50 – 125	M 16	80	100
150 – 200	M 20	100	120
300 – 350	M 24	140	160
400 – 450	M 27	200	220
500	M 30	260	280
600	M 33	330	350
700	M 33	330	350

Average values depending on the bolt quality or friction coefficient and specifications of the gasket manufacturer.

Tightening torques System 2000 - lock ring

ØPipe	Bolt dimensions	Tightening torque	
		Nm min.	Nm max.
63 – 110	M 10	50	60
125 – 140	M 12	60	70
160 – 200	M 14	70	80
225 – 280	M 16	90	100
315 – 450	M 20	110	120
500 – 630	M 24	190	200

Tightening torques HAKU shut-off saddle assembly

ØPipe	Bolt dimensions	Tightening torque	
		Nm min.	Nm max.
50 – 110	M 10	50	60
125 – 160	M 12	60	70
180 – 225	M 14	70	80
250 – 315	M 16	80	90
355 – 630	M 20	110	120

Tighten the hexagon head screws evenly and crosswise until the upper and lower parts are in contact with each other.

Tightening torques

Set of replacement screws for Hawle-breakaway hydrants No. 8841

Hydrant type	Bolt dimensions	Tightening torque Nm max.
H3 ductile iron /1982-2000	M 16x70	60
H3 stainless steel, H4 /1985-2025	M 16x60	

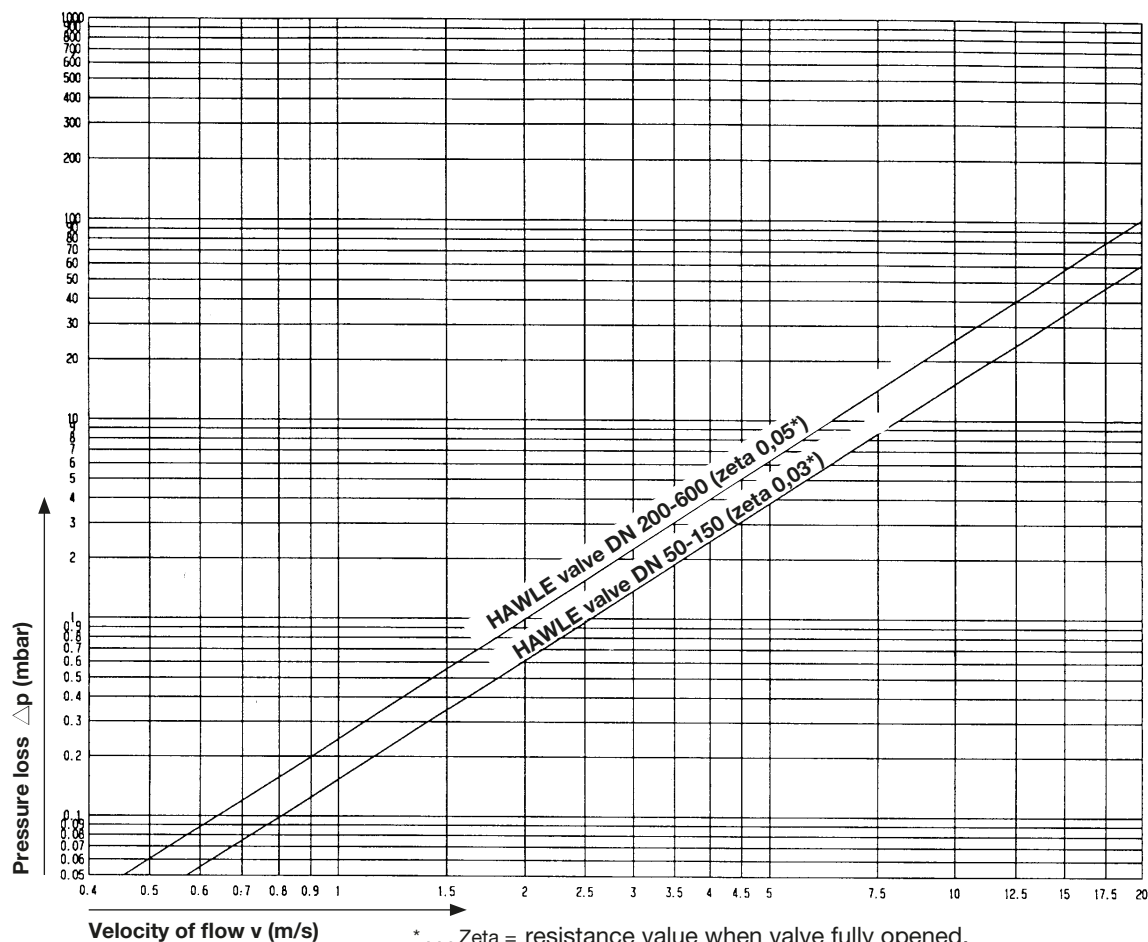
Notes



Flow capacity Hawle valve (m³/h)

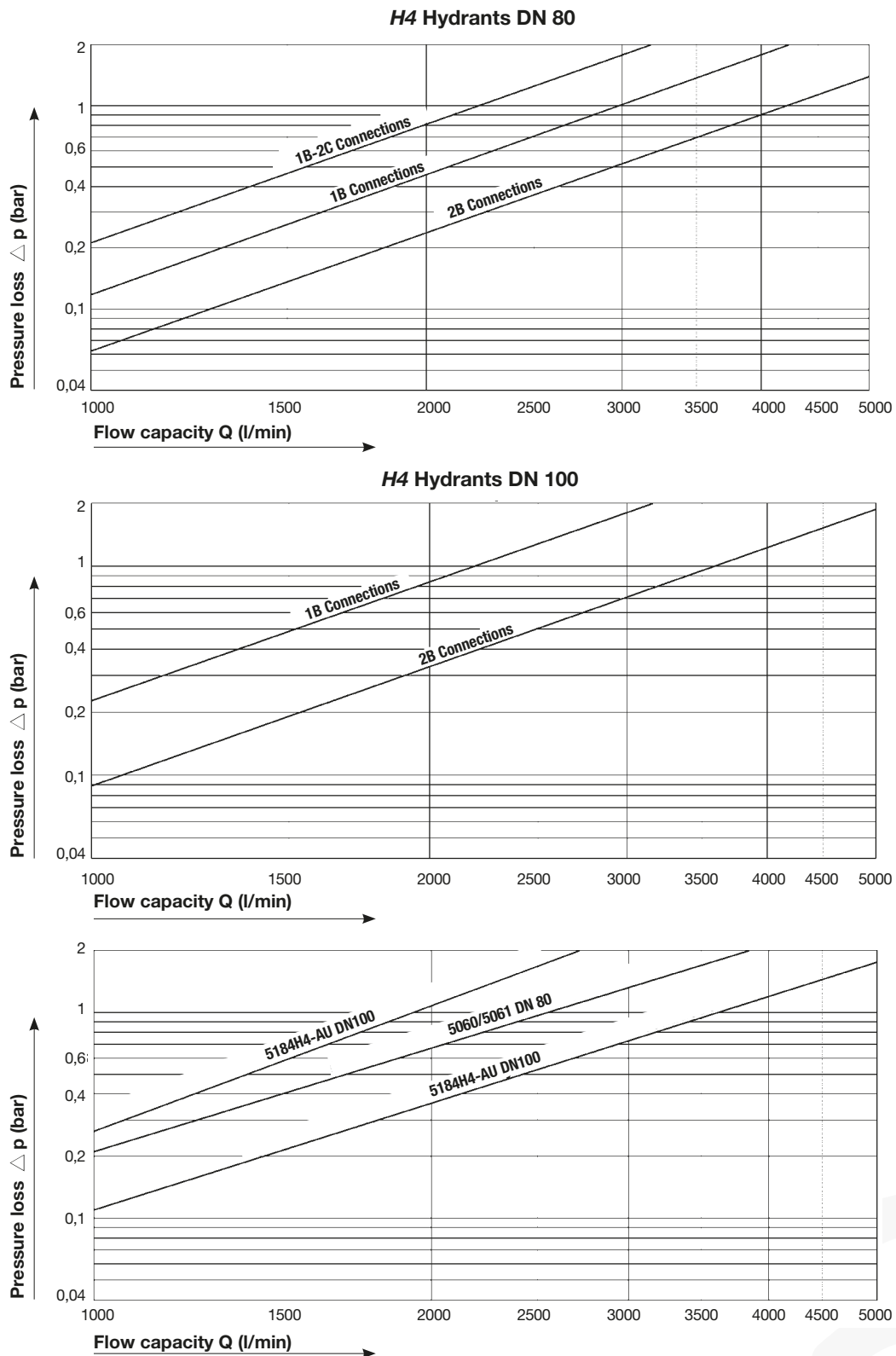
DN	Velocity of flow v (m/s)								
	1	1,5	2	2,5	3	3,5	4	4,5	5
50	7,069	10,603	14,137	17,671	21,206	24,740	28,274	31,809	35,343
65	11,946	17,919	23,892	29,865	35,838	41,811	47,784	53,757	59,730
80	18,096	27,143	36,191	45,239	54,287	63,335	72,382	81,430	90,478
100	28,274	42,412	56,549	70,686	84,823	98,960	113,097	127,235	141,372
125	44,179	66,268	88,357	110,447	132,536	154,625	176,715	198,804	220,893
150	63,617	95,426	127,235	159,043	190,852	222,660	254,469	286,278	318,086
200	113,097	169,646	226,195	282,743	339,292	395,841	452,389	508,938	565,487
250	176,715	265,072	353,429	441,786	530,144	618,501	706,858	795,216	883,573
300	254,469	381,704	508,938	636,173	763,407	890,642	1017,876	1145,111	1272,345
350	346,361	519,541	692,721	865,901	1039,082	1212,262	1385,442	1558,623	1731,803
400	452,389	678,584	904,779	1130,973	1357,168	1583,363	1809,557	2035,752	2261,947
500	706,858	1060,288	1413,717	1767,146	2120,575	2474,004	2827,433	3180,863	3534,292
600	1017,876	1526,814	2035,752	2544,690	3053,628	3562,566	4071,504	4580,442	5089,380

Pressure loss diagram



Technical information

Pressure loss table Hawle hydrants



Source: TÜV Verkehr und Fahrzeug GmbH Regensburg Testing and Inspection Center TGM Research Institute Vienna

Technical information

Definition of abbreviations

Abbreviation	Definition
ABS	Acrylonitrile-butadiene-styrene
AG	External thread
Al	Aluminum
AC	Asbestos cement (fibre cement)
Order No.	Order number
BG	Operating set
DIN	German industry standard
DN	Diameter Nominal
DVGW	German Association for Gas and Water
EN	European standard
EXW	Ex-Works, from plant (... named delivery location)
GKS	Cast-plastic
HDPE	High density polyethylene
IF (Award)	Industrie forum design
IG	Internal thread
ISO	International Organization for Standardization
kN	Kilo newton
MFR	Melt flow rate
MOP	Maximum operating pressure
MOT	Maximum operating torque
MPA Hannover	Materials Testing Institute for Materials and Production Technology Hanover
Ms	Brass
mST	Minimum strength torque
NIRO	stainless steel
Nm	Newton meter
No.	Number
NW	Nominal Ø
Ö-Norm	Austrian standard
ÖVGW	Austrian Association for Gas and Water
P	Pressure
PE	Polyethylene
PN	Pressure nominal (operating pressure)
POM	Polyoxymethylene
PVC	Polyvinylchloride
RAL (color)	German Governmental Committee for Delivery Conditions
RC	Resistance to crack
RD	Pipe cover depth
SDR	Standard Dimension Ratio (Ø wall thickness relationship)
6KT-Schraube	Hexagonal bolt
UV	Ultraviolet
VA	Voltampere
VRS	Von Roll System

Notes



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Page S 5	Liners	Page S 5/1	
Pages S 6	Duofit coupling in two pieces Shaped version Single bolt straight version Double bolt straight version	Page S 6/3 Page S 6/4 Page S 6/5	

Solutions provided by Hawle for large diameter pipelines

Customized connections, maintenance products and fittings for various big pipe types are now available from Hawle. These connection solutions include a range of products extending from butterfly valves, gate valves, dismantling joints, non-return valves etc..

Furthermore, a range of customized products are designed for easy and safe pipeline repairs, eliminating the necessity of replacing the pipe.

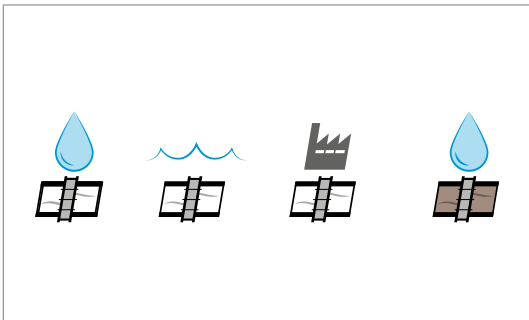


Advantages of Nova Siria fittings



Advantages of our fittings

- Suitable for pipes of any material
- Wide range
- Wide tolerance
- Choice of body length
- Resistant to corrosion
- Multi-material end restraint system



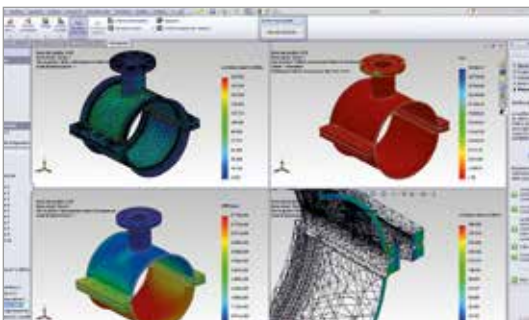
Applications

- Water industry
- Marine applications
- Industrial plants
- Sewage industry



Tests

- Pressure test
- Cyclical test
- Endurance test
- Temperature test
- Pull-out resistance test
- Angular deflection test



Designing to the customer needs

NOVA SIRIA uses design systems with “solid modeling 3D” (Solidworks® - Dassault Systemes) techniques which allow the management of specific structural calculations of “Stress Analysis” relative to materials resistance, external and internal stresses such as loads and pressures, through simulation of mechanical and hydraulic stresses in operating conditions.

Wide range

of wide range steel fittings



Versions	NSLSN10, NSLSN10D, NSLSN40	
	Standard	Options
Nominal sizes DN	300 — 2000 and bigger	
Pressure MOP (PN)	PN 6 to PN 25 (and higher ratings)	
Medium	Potable and raw water	Sea water
Body	Carbon steel	
Compression rings	Carbon steel	
Sealing gaskets	EPDM rubber	NBR, NEOPRENE
Compression bolts	Steel with anti-corrosion coating	Grade 304/316 stainless steel
Coating	Rilsan nylon 11	
Range Ød	30 mm	50 mm
Angular deflection	From DN 300 to DN 1000 = +/-3° on each side with coupling ends*	
Angular deflection	From DN 1000 to DN 2000: +/-2° on each side with coupling ends*	
*average angle in the middle of the range		
For flanged version	EN 1092	Flanges according to different standards on request
Flanges	PN 6, PN 10, PN 16 PN 25 (PN 40 and higher on request)	

Design features of wide range steel fittings



1 Central body

Carbon steel central body conveniently built in order to allow a perfect movement of the gasket inside its dedicated conical seat.

2 Compression ring

Carbon steel compression followers which allow compression of the gasket onto the pipe surface upon tightening the bolts.

3 Gasket

Truncated-cone sealing gasket which can be perfectly inserted between the central body of the coupling and the circumference of the pipe. It allows a complete hydraulic seal and a 30 mm or 50 mm of tolerance range on pipe OD.

4 Bolt holes

Round or square holes for the bolt installation.

5 Compression bolts

The compression bolts allow the approaching of the compression flanges and the consequent compression of the gasket onto the pipe.

6 Connection flange (Flanged version)

Carbon steel flange.

7 Separate bolt version

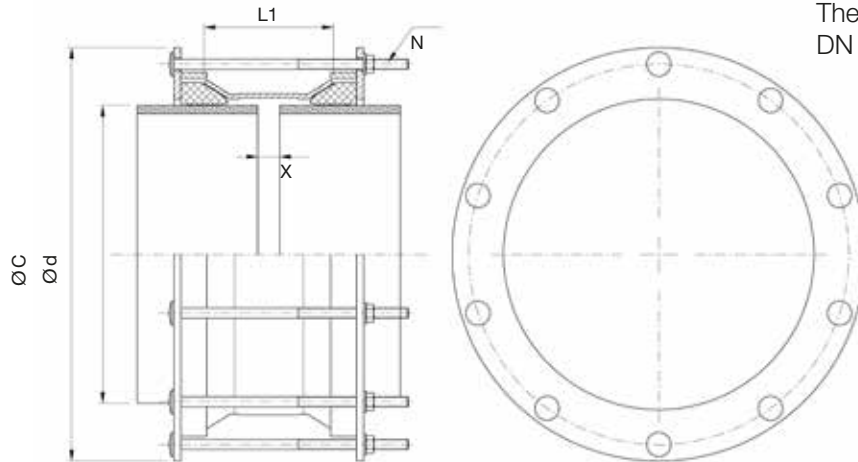
Independent tightening of the bolts, improves the coupling alignment and the performance of the gasket.

Wide range NSLSN10

Single bolt coupling



Designed and tailor-made on demand,
are suitable for pipes of any material.
The full range starts with DN 300 up to
DN 2000 and over.



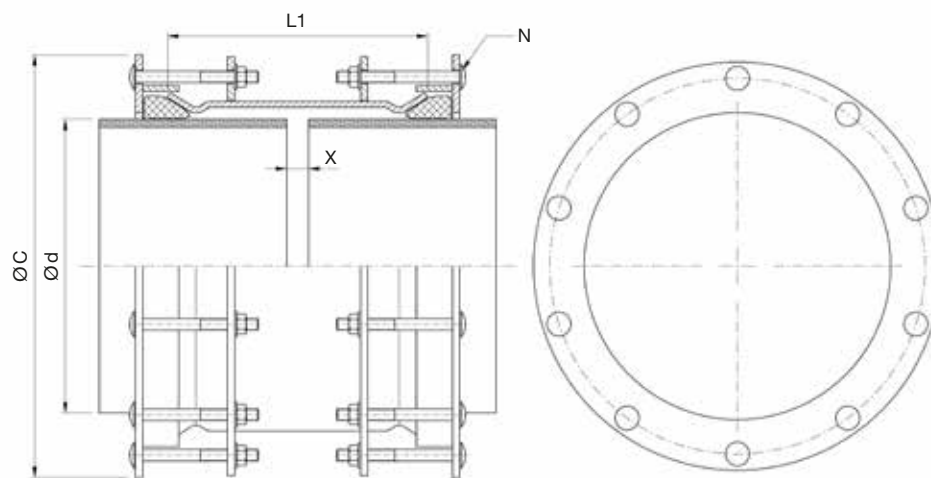
Multisize series and wide range steel fittings provide the maximum hydraulic seal,
however do not restrain axial pipes movement (for this type of products please refer to the MULTIGRIP section)

Other sizes or ranges on request

DN	MOP (PN)	Ø d		L1	Max. external dimension Ø C	Compression bolts	Gap X		Weight
		min.	max.			Quantity N	max.	min.	
300	6/10/16	320	350	176	500	8	50	20	46,0
350		340	370		520	10			48,0
		360	390		540				51,0
400		390	420		580				54,0
		410	440		600				56,0
450		435	465		620	12			59,0
		460	490		650				62,0
500		490	520		680				65,0
		510	540		700				67,0
		535	565		725	70,0			
		560	590		750	73,0			
600		590	620		780	14			76,0
		620	650		810				79,0
		645	675		835				82,0
		670	700		860				85,0
700		695	725		885	16			88,0
		720	750		910				90,0
		750	780		940				101,0
		780	810		970				105,0
800		805	835		995	18			108,0
		835	865		1025				112,0
		860	890		1050				115,0
		895	925		1085				119,0
900		925	955		1115	20			123,0
		955	985	1145	126,0				
		985	1015	1175	174,0				
		1000	1030	1190	178,0				
1000		1030	1060	1220	22	182,0			
		1060	1090	1250		187,0			
		1080	1110	1270		190,0			
		1100	1130	1290		198,0			
1100		1130	1160	1320	24	199,0			
		1160	1190	1350		203,0			
		1185	1215	1375		207,0			
		1200	1205	1235		1398	211,0		
1200		1235	1265	1428	26	216,0			
		1300	1330	1490		227,0			
		1335	1365	1525		232,0			
		1385	1415	1575		240,0			
1400		1410	1440	1600	30	245,0			
		1440	1470	1630		249,0			
		1510	1540	1700		32	336,0		
		1585	1615	1775		34	351,0		
1600		1610	1800	357,0					
1600		1650	1680	1840	365,0				
		1825	1855	2035	38		404,0		
		1860	1890	2073		411,0			
		2020	2050	2230		491,0			
2000		2065	2095	2275		46	501,0		

Wide range NSLSN10D

Double bolt coupling



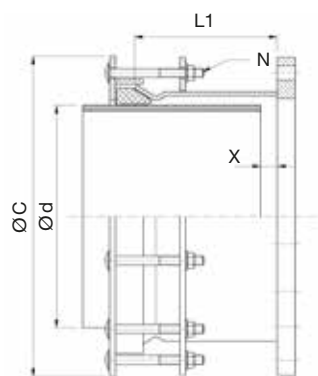
Multisize series and wide range steel fittings provide the maximum hydraulic seal, however do not restrain axial pipes movement (for this type of products please refer to the MULTIGRIP section)

Other sizes or ranges on request

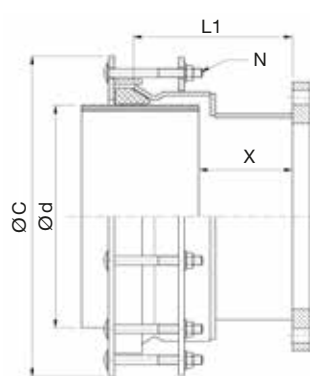
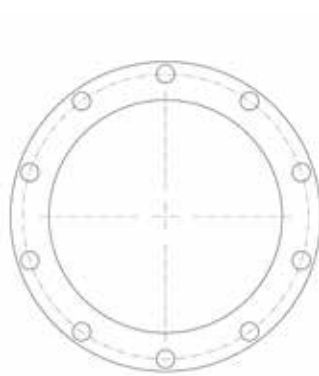
DN	MOP (PN)	Ø d		L1	Max. external dimension Ø C	Compression bolts	Gap X		Weight
		min.	max.			Quantity N	max.	min.	
300	6/10/16	320	350	346	500	16	50	20	77,0
350		340	370		520	20			83,0
		360	390		540				86,0
400		390	420		580	24			91,0
		410	440		600				94,0
450		435	465		620	28			101,0
		460	490		640				105,0
500		490	520		680	32			110,0
		510	540		700				113,0
		535	565		720				120,0
		560	590		740				124,0
600		590	620		763	36			129,0
		620	650		793				134,0
		645	675		818				138,0
700		670	700		843	40			145,0
		695	725		868				149,0
		720	750		893				153,0
		750	780		923				173,0
800		780	810		953	44			178,0
		805	835		978				186,0
		835	865		1008				191,0
900		860	890		1033	48			196,0
		895	925		1068				202,0
		925	955		1098				210,0
		955	985		1128				215,0
1000		985	1015		1158	52			263,0
		1000	1030		1173				269,0
		1030	1060		1203				275,0
		1060	1090		1233				282,0
1100		1080	1110		1253	56			286,0
		1100	1130		1273				293,0
		1130	1160		1303				300,0
		1160	1190		1333				306,0
1200		1185	1215		1358	60			335,0
		1205	1235		1378				343,0
		1235	1265		1408				350,0
1300		1300	1330		1473	64			368,0
		1335	1365		1508				377,0
		1385	1415		1558				389,0
1400		1410	1440		1583	68			397,0
		1440	1470		1613				404,0
1500		1510	1540		1683	64			424,0
1600		1585	1615		1758	76			442,0
		1610	1640		1783				450,0
		1650	1680		1823				460,0
1800		1825	1855		1998	92			473,0
		1860	1890		2033				570,0
2000		2020	2050		2193				664,0
		2065	2095		2238				678,0

Wide range NSLSN40

Flange adaptor



TYPE A



TYPE B

Multisize series and wide range steel fittings provide the maximum hydraulic seal, however do not restrain axial pipes movement (for this type of products please refer to the MULTIGRIP section)

Other sizes or ranges on request

Flange DN	Socket DN	MOP (PN)	Ø d		TYPE	L1	max. external dimension Ø C	Compression bolts	Gap X		Weight
			min.	max.				Quantity N	max.	min.	
300	300	6/10/ 16	320	350	A	256	500	8	210	170	57,0
350	350		340	370			520	10	180	25	74,0
			360	390			540				76,0
400	400		390	420			580				87,0
			410	440			600	89,0			
450	450		435	465			620	12			180
			460	490	640	106,0					
500	500		490	520	680	128,0					
			510	540	700	130,0					
550	550		535	565	720	14	210	170	133,0		
			560	590	B		286	740	135,0		
600	600		590	620	A		256	763	180	25	
			620	650	B	286	793	210	170	177,0	
650	650		645	675	B	286	818	210	170	179,0	
			670	700	A	256	843	16	180	25	165,0
695	725		868	168,0							
700	700		720	750			B				286
			750	780	923	210	170	184,0			
750	750		780	810	A	256	953	18	180	25	211,0
			805	835			978				215,0
800	800		835	865			B				286
			860	890	1033	210	170	221,0			
850	850		895	925	A	256	1068	20	180	25	241,0
			925	955	1098	245,0					
900	900		955	985	B	286	1128				210
			985	1015	A	256	1158	22	180	25	307,0
1000	1030		1173	310,0							
1000	1000		1030	1060			B				286
			1060	1090	1233	210	170	318,0			
1050	1050		1185	1215	A	256	1358	24	180	25	415,0
			1205	1235			1378	26			418,0
1100	1100		1235	1265			1408	28			423,0
			1385	1415			1558	489,0			
1150	1150		1410	1440			1583	30			494,0
			1440	1470			1613				498,0
1200	1200		1585	1615			1758				34
			1610	1640			1783	621,0			
1250	1250		1650	1680			1823	38			
			1825	1855			1998				680,0
1300	1300		1860	1890			2033				46
			2020	2050			2193	905,0			
1350	1350		2065	2095			2238	914,0			



Multisize

Couplings and flange adaptors



Versions	NSM10 / NSM40-F	
	Standard	Options
Nominal sizes (DN)	350 — 1200	
PN	From PN 6 to PN 16	
Medium	Potable and raw water	Sea water
Body	Carbon steel	
Compression rings	Ductile iron $\leq \varnothing d 650$ * Carbon steel $\geq \varnothing d 652$ **	
Sealing gaskets	EPDM rubber	NBR
Compression bolts	Steel with anti-corrosion coating	Grade 304/316 stainless steel
Coating	Rilsan Nylon 11	
Range $\varnothing d$	30 mm $\leq \varnothing d 650$ ** 24 mm $\geq \varnothing d 652$	
Angular deflection	From DN 350 to DN 700 = $\pm 3^\circ$ on each side with coupling ends*	
Angular deflection	From DN 800 to DN 900 = $\pm 2^\circ$ on each side with coupling ends*	
Angular deflection	From DN 1000 to DN 1200 = $\pm 1.5^\circ$ on each side with coupling ends*	
	*average angle in the middle of the range, before tightening the end restraint system	
For flanged version	EN 1092	
Flanges	PN 6, PN 10, PN 16	

Design features

of multisize couplings and flange adaptors



1 Central body

Carbon steel central body conveniently built in order to allow a perfect movement of the gasket inside its dedicated conical seat.

2 Compression ring

Carbon steel compression followers which allow compression of the gasket onto the pipe surface upon tightening the bolts.

3 Gasket

Truncated-cone sealing gasket which can be perfectly inserted between the central body of the coupling and the circumference of the pipe. It allows a complete hydraulic seal and a 24 mm or 30 mm of tolerance range on pipe OD.

4 Bolt holes

Round or square holes for the bolts installation.

5 Compression bolts

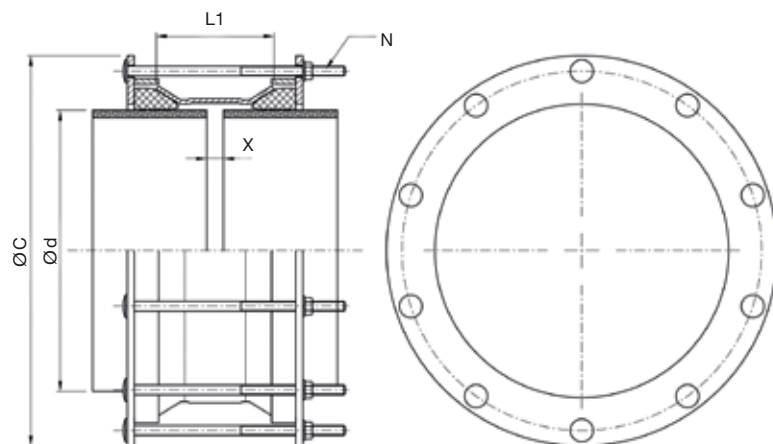
The compression bolts allow the approaching of the compression flanges and the consequent compression of the gasket onto the pipe.

6 Connection flange (Flanged version)

Carbon steel flange.

Multisize NSM10

Single bolt coupling

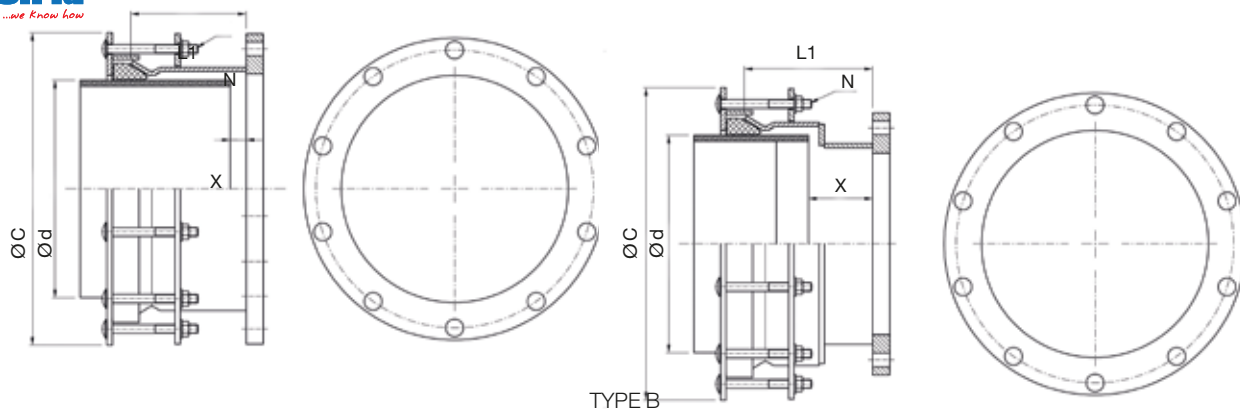


Multisize series and wide range steel fittings provide the maximum hydraulic seal, however do not restrain axial pipes movement (for this type of products please refer to the MULTIGRIP section)

DN	MOP (PN)	Ø d		L1	Max. external dimension Ø C	Compression bolts	Gap X		Weight
		min.	max.			Quantity N	max.	min.	
350	6/10/ 16	340	370	170	546	10	60	20	35,0
		365	395		571				37,0
400		390	420		596				40,0
		410	440		616				42,0
450		438	468		644	12			45,0
		465	495		671				47,0
500		490	520		696				49,0
		518	548		724				53,0
600		590	620		796	14			58,0
		620	650		826				60,0
		652	676		819				62,0
700		680	704		847	16			65,0
		700	724		867				67,0
		726	750		893				72,0
		754	778		921				75,0
800		792	816		959	18			79,0
		806	830		973				82,0
		824	848		991				83,0
		856	880		1023				85,0
900		882	906		1049	20			88,0
		902	926		1069				89,0
		934	958		1101				92,0
		960	984		1127				95,0
1000		996	1020		1163	22			97,0
		1016	1040		1183				100,0
		1036	1060		1203				102,0
		1068	1092		1235				104,0
		1100	1124		1267				108,0
		1116	1140		1283				109,0
1200		1140	1164		1307	24			111,0
		1180	1204		1347				115,0
		1206	1230		1373	26			117,0
		1244	1268		1411				119,0

Multisize NSM40-F

flange adaptor



TYPE A

TYPE B

Multisize series and wide range steel fittings provide the maximum hydraulic seal, however do not restrain axial pipes movement (for this type of products please refer to the MULTIGRIP section)

Flange DN	Socket DN	MOP (PN)	Ø d		TYPE	L1	Max. external dimension Ø C	Compression bolts	Gap X		Weight			
			min.	max.				Quantity N	max.	min.				
350	350	10/16	340	370	A	216	546	10	160	20	62,0			
400	400		365	395			571				64,0			
			390	420			596				73,0			
450	450		410	440			616				75,0			
			438	468			644	12			88,0			
500	500		465	495			671				90,0			
			490	520			696				110,0			
600	600		518	548			724				112,0			
			590	620			796	14			150,0			
			620	650			826				152,0			
			652	676			819				154,0			
700	700		680	704			847				16	170	120	156,0
			700	724			867	158,0						
			726	750			893	161,0						
			754	778	921		165,0							
800	800		792	816	B		959	160	20	172,0				
			806	830			A			973	173,0			
			824	848	B		991			175,0				
			856	880			1023			18	170	120	177,0	
900	900		882	906	A		1049	20	160	20	194,0			
			902	926			1069				196,0			
			934	958	B		1101				22	170	120	198,0
			960	984			1127							200,0
1000	1000		996	1020	A		1163	24	160	20				235,0
			1016	1040			1183							237,0
			1036	1060			1203				239,0			
			1068	1092	B		1235				170	120	241,0	
			1100	1124			1267						244,0	
			1116	1140			1283						245,0	
1200	1200		1140	1164	A		1307	26	160	20	247,0			
			1180	1204			1347				308,0			
			1206	1230			1373				310,0			
			1244	1268			1411				313,0			

Multigrip

End restraint steel fittings



Versions	NSMGR-S / NSMGR-D / NSMGR-F	
	Standard	Options
Nominal Sizes DN	350 — 1400 and bigger	
PN	From PN 10 to PN 16 (higher pressures on request)	
Medium	Potable and raw water	Sea water
Body	Carbon steel	
Compression rings	Carbon steel	
Sealing gaskets	EPDM rubber	NBR, NEOPRENE
Compression bolts	Steel with anti-corrosion coating	Grade 304 / 316 stainless steel
End restraint grippers	Tempered steel with anti-corrosion coating	Martensitic stainless steel
Coating	Rilsan Nylon 11	
Range Ø d	30 mm	
Angular deflection	From DN 350 to DN 1000: +/-3° on each side with coupling ends*	
Angular deflection	From DN 1000 to DN 1400: +/-2° on each side with coupling ends*	
*average angle in the middle of the range, before tightening the end restraint system		
For flanged version	EN 1092	Flanges according to different standards on request
Flanges	PN 10, PN 16, PN 25, PN 40 and higher ratings	

Design features of multigrip end restraint steel fittings



1 Central body

Carbon steel central body conveniently built in order to allow a perfect movement of the gasket inside its dedicated conical seat.

2 Compression ring

Carbon steel compression followers which allow compression of the gasket onto the pipe surface upon tightening the bolts.

3 Gasket

Truncated-cone sealing gasket which can be perfectly inserted between the central body of the coupling and the circumference of the pipe. It allows a complete hydraulic seal and a 30 mm of tolerance range on pipe OD.

4 Bolt holes

Round or square holes for the bolt installation.

5 Compression bolts

The compression bolts allow the approaching of the compression flanges and the consequent compression of the gasket onto the pipe.

6 Radial set of pull-out resistance grippers

Manufactured from C40 tempered steel, they allow the total locking of the pipe. End restraint grippers can be used on PE, Steel, DCI and PVC pipe lines and they guarantee a pull-out resistance action during the installation and their special design allows an easy assembly and disassembly of the coupling without damaging the rilsan coating.

6a Bolts

Bolts of stainless steel 8.8, coated with dacromet, for fixing the gripper elements (6).

7 End restraint containing ring

Manufactured from carbon steel, optimizes the pull-out resistance action, also avoiding the rotation of the grippers during the tightening phase.

8 Connection flange (Flanged version)

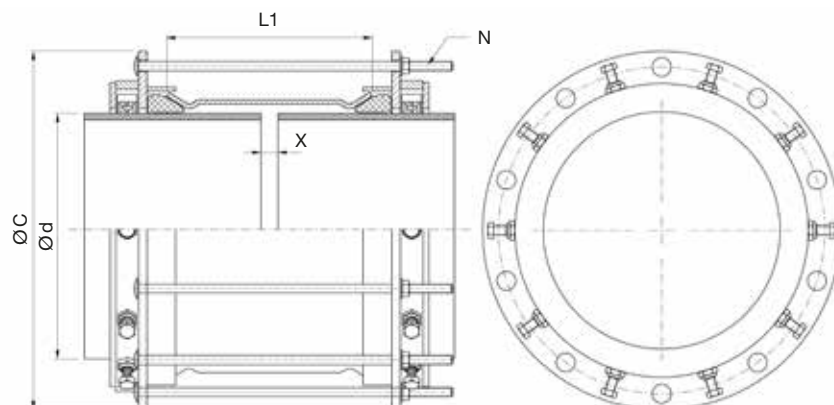
Carbon steel flange.

9 Separate bolts version

The bolts tightening is independent in order to improve the coupling centering and the performances of the gasket.

Multigrip NSMGR-S

Single bolt coupling



PN 10 / PN 16 rated hydraulic sealing and end restraint system

NOVA SIRIA'S end restraint fittings are suitable for the following pipes: steel, CI/DI, PE, pressure PVC.

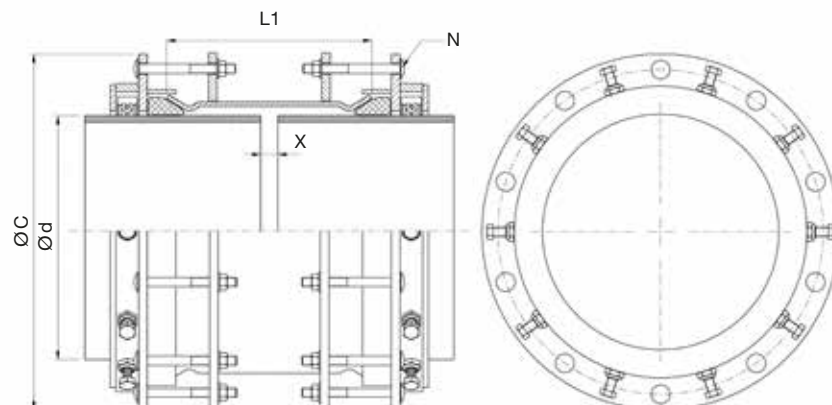
All end restraint fittings installed on PE or pressure PVC pipes must be integrated with an internal reinforcing liner provided or approved by NOVA SIRIA.

Other sizes or ranges on request

DN	MOP (PN)	Ø d		L1	max. external dimension Ø C	Compression bolts	Gap X		Weight		
		min.	max.			Quantity N	max.	min.	PN 10	PN 16	
350	10/16	340	370	355	560	9	220	25	101,0	119,0	
		360	390		580				105,0	124,0	
400		385	415		600				110,0	130,0	
		415	445		640				117,0	139,0	
450		440	470		660	12			131,0	153,0	
		465	495		680				136,0	159,0	
500		490	520		720				142,0	166,0	
		515	545		740				148,0	173,0	
		545	575		788	14			159,0	181,0	
600		595	625		808	15			171,0	192,0	
		615	645		828				175,0	197,0	
700		695	725		908	18			196,0	235,0	
		720	750		933				224,0	245,0	
800		785	815		998				20	239,0	262,0
		795	825		1008					241,0	265,0
		825	855		1038	277,0				285,0	
900		885	915		1098	22				292,0	301,0
		900	930		1113				296,0	305,0	
1000		930	960		1143				24	308,0	345,0
		985	1015		1198					322,0	361,0
		1000	1030		1213	326,0				366,0	
1100		1030	1060		1243	30				359,0	380,0
	1100	1130	1313		378,0				-		
	1135	1165	1348		403,0				-		
1200	1185	1215	1398		32				418,0	-	
	1205	1235	1418			423,0			-		
1400	1240	1270	1453			32			438,0	-	
	1385	1415	1598						-	-	
	1405	1435	1618		-				-		
	1445	1475	1658						-	-	

Multigrip NSMGR-D

Double bolt coupling



PN 10 / PN 16 rated hydraulic sealing and end restraint system

NOVA SIRIA'S end restraint fittings are suitable for the following pipes: steel, Cl/DI, PE, pressure PVC.

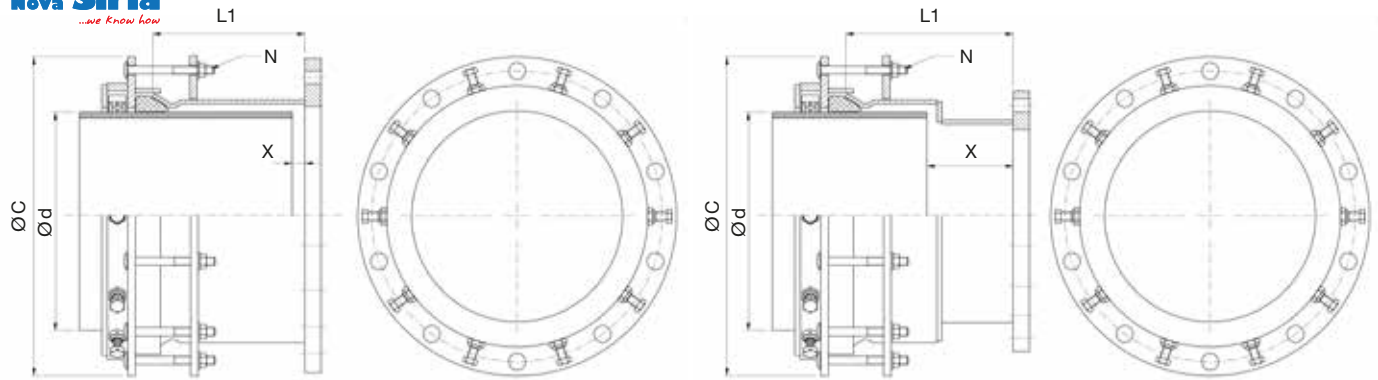
All end restraint fittings installed on PE or pressure PVC pipes must be integrated with an internal reinforcing liner provided or approved by NOVA SIRIA.

Other sizes or ranges on request

DN	MOP (PN)	Ø d		L1	max. external dimension Ø C	Compression bolts	Gap X		Weight	
		min.	max.			Quantity N	max.	min.	PN 10	PN 16
350	10/16	340	370	355	560	18	220	25	127,0	156,0
		360	390		580				133,0	163,0
400		385	415		600				144,0	172,0
		415	445		640				148,0	182,0
450		440	470		660	24			163,0	199,0
		465	495		680				170,0	207,0
500		490	520		720				177,0	216,0
		515	545		740				184,0	225,0
560		545	575		788	28			207,0	228,0
600		595	625		808	30			222,0	244,0
		615	645		828				228,0	250,0
700		695	725		908	36			254,0	295,0
		720	750		933				284,0	307,0
800		785	815		998				304,0	329,0
		795	825		1008				307,0	332,0
		825	855		1038				347,0	355,0
		885	915		1098				367,0	376,0
900		900	930		1113	40			372,0	381,0
		930	960		1143				386,0	425,0
1000		985	1015		1198	44			404,0	446,0
		1000	1030		1213				409,0	451,0
		1030	1060		1243				447,0	465,0
1100	10	1100	1130	355	1313	48			471,0	-
		1135	1165		1348				499,0	-
1200		1185	1215		1398				517,0	-
		1205	1235		1418				525,0	-
1240		1270	1453		542,0				-	
1400		1385	1415		1598	60			-	-
		1405	1435		1618				-	-
		1445	1475		1658				64	-

Multigrip NSMGR-F

Flange adaptor



Type A

Type B

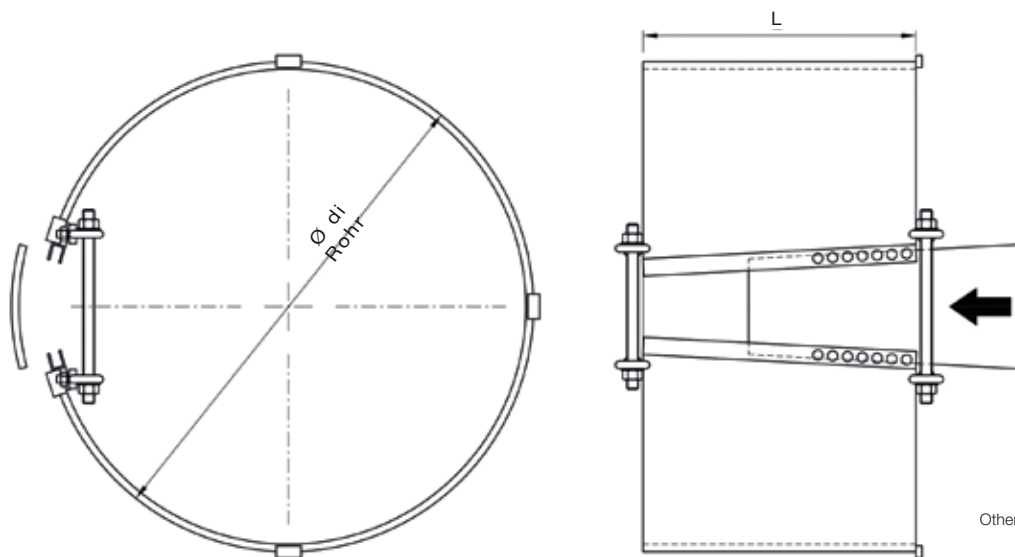
PN 6 / PN 10 / PN 16 rated hydraulic sealing and end restraint system

NOVA SIRIA'S end restraint fittings are suitable for the following pipes: steel, CI/DI, PE, pressure PVC.

All end restraint fittings installed on PE or pressure PVC pipes must be integrated with an internal reinforcing liner provided or approved by NOVA SIRIA.

Other sizes or ranges on request

Flange DN	Socket DN	Flange MOP (PN)	Ø d		TYPE	L1	Max. external dimension Ø C	Compression bolts Quantity N	Gap X		Weight	
			min.	max.					min.	max.	PN 6 / PN 10	PN 16
350	350	6/10/16	340	370	A	296	560	9	220	25	106,0	132,0
			360	390			580				109,0	136,0
400	400		385	415			600				122,0	150,0
			415	445			640				127,0	157,0
450	450		440	470			660	12			143,0	178,0
			465	495			680				148,0	183,0
500	500		490	520			720				160,0	208,0
			515	545			740				165,0	213,0
600	600		545	575	B	326	788	14	250	170	178,0	216,0
			595	625	A	296	808	15	220	25	203,0	261,0
615	645		828	207,0			265,0					
700	700		695	725			908	18			238,0	278,0
			720	750			933				255,0	291,0
800	800		785	815			998				290,0	330,0
			795	825			1008				292,0	332,0
900	900		825	855			1038	315,0			342,0	
			885	915			1098	342,0			355,0	
1000	1000		900	930			1113	20			345,0	375,0
			930	960			1143				366,0	440,0
1200	1200		985	1015			1198	22			403,0	490,0
			1000	1030			1213				407,0	494,0
1400	1400		1030	1060			1243				460,0	510,0
			1185	1215			1398				24	556,0
1200	1200		1205	1235	1418	561,0	-					
			1240	1270	1453	580,0	-					
1400	1400		1385	1415	1598	1618	-	-				
			1405	1435	1618	-	-					
			1445	1475			1658	30			-	-



Always use the **NOVA SIRIA** reinforcing liner inside the pipe when installing an end restraint coupling onto PE and pressure PVC pipes. Liners are manufactured from carbon steel and coated with Rilsan Nylon 11 anticorrosion coating.

The liners reinforce the section of the pipe intended for the **MULTIGRIP** improving the overall performance of the radial grip. The design of the reinforcing liner can involve the use of one or more expansion wedges according to the ovality and tolerance of the PE/PVC pipe.

During the liner installation stage, once the insertion of grub screws and nuts system is completed, the internal threaded bolts, nuts and washers, necessary to expand the liner will be removed in order to unscrew the lifting eyes.

IN THIS WAY NO INTERNAL OBSTRUCTION OF FLOW WILL BE CREATED.

NSCAN	SDR			
	7,4	11	17	26
355	258,0	290,6	312,8	327,8
400	290,6	327,4	352,6	369,4
450	327,0	368,2	396,6	415,6
500	-	409,2	440,6	461,8
560	-	458,4	493,6	517,2
630	-	515,6	555,2	581,8
710	-	581,0	625,8	655,6
800	-	654,6	705,2	738,8
900	-	736,6	793,7	831,2
1000	-	818,4	881,4	923,6
1200	-	-	-	1108,2
1400	-	-	-	1293,0
1600	-	-	-	1477,6
L	350			

Duofit

Coupling in two pieces for pipe repair and hot-tapping without flow interruption

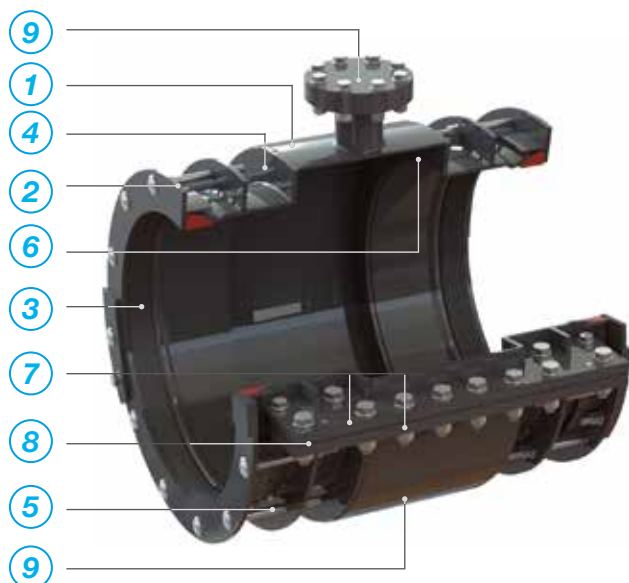


Versions	NSD30 / NSD10 / NSD20-D	
	Standard	Options
Nominal sizes DN	300 — 2000 and bigger	Hot tapping version
Pressure MOP PN	from PN 10 to PN 25 and higher ratings	
Medium	Potable and raw water	Sea water
Body	Carbon steel	
Compression rings	Carbon steel	
Sealing gaskets	EPDM rubber	NBR, NEOPRENE
Compression bolts	steel with anti-corrosion coating	Grade 304 / 316 stainless steel
Coating	Rilsan Nylon 11	
Range Ø d	30 mm	

Design features

of Duofit coupling in two pieces

for pipe repair and hot-tapping



1 Central body

Carbon steel central body conveniently built in order to allow a perfect movement of the gasket inside its dedicated conical seat.

2 Compression ring

Carbon steel compression followers which allow compression of the gasket onto the pipe surface upon tightening the bolts.

3 Gasket

Truncated-cone sealing gasket which can be perfectly inserted between the central body of the coupling and the circumference of the pipe. It allows a complete hydraulic seal and a 30 mm of tolerance range on pipe OD.

4 Bolt holes

Round or square holes for the bolt installation.

5 Compression bolts

The compression bolts allow the approaching of the compression flanges and the consequent compression of the gasket onto the pipe.

6 Shaping

Manufactured from carbon steel, designed according to the length and the diameter of the pipe or of the sleeve to be repaired, in order to perfectly cover them.

7 Lateral plates

Manufactured from carbon steel, they allow the union of the two longitudinal shells of the DUOFIT allowing the repairing of the leak.

8 Lateral gasket

Lateral gasket with square section, it is compressed between the lateral plates and allows the hydraulic seal along the entire length of the Duofit.

9 Upper and lower outlets

They allow the DUOFIT assembly decreasing the pressure during the installation. They are also used in order to test the DUOFIT tightness once the installation is completed.

10 Straight version

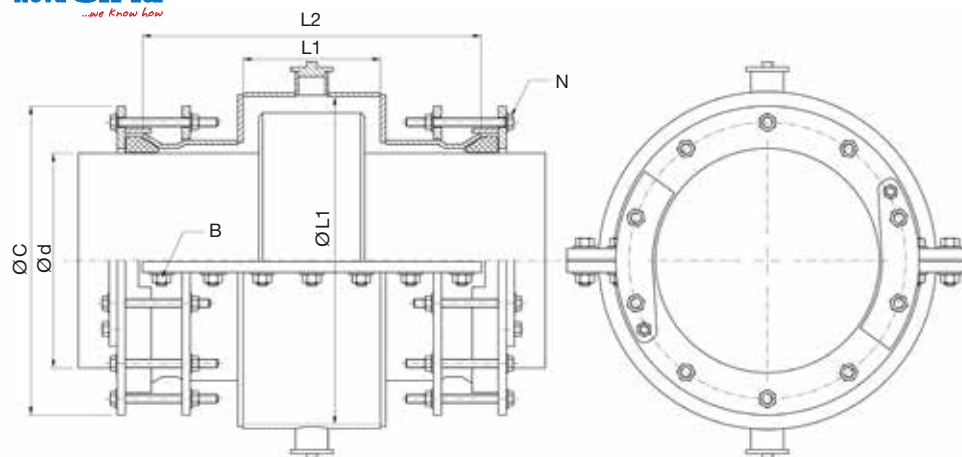
Straight version for repairing pipeline straight sections.

11 Separate followers version

The bolts tightening is independent in order to improve the coupling centering and the performances of the gasket.

Duofit NSD30

Shaped version



NSD30 shaped version for repairs on sleeve collars of asbestos cement pipes, DCI pipes sockets, on a "GIBALT" type joints, PE electrowelded fittings without interruption of supply. **NSD30** version duofits can be also used for hot-tapping techniques on pipes of any material and diameter with running fluids.

No. NSD30 for cast iron pipes

Other sizes or ranges on request

DN	MOP (PN)	Ø d		Shaping length L1	Shaping length DN Ø L1	Total length L2	Max. external dimension Ø C	No. flange bolts N	No. lateral plates bolts B	Weight
		min.	max.							
350	6/10/16	360	390	260	500	752	553	16	22	215,0
400		415	445		560		608	20		232,0
450		465	495		600		658	24		246,0
500		515	545		670		708	24		266,0
600		615	645		780		808	28		300,0
700		720	750	300	890	792	913	32	26	343,0
800		825	855		1000		1018	36		379,0
900		930	960		1110		1123	40		410,0
1000		1030	1060		1220		1223	44		451,0
1100		1135	1165		1320		1328	48		483,0
1200		1240	1270		1430		1433	52		519,0
1400		1445	1475		1680		1638	60		610,0
1600		1650	1680	350	1890	842	1843	68		700,0
1800		1860	1890		1940		2053	76		801,0
2000		2065	2095		2140		2258	84		891,0

No. NSD30 for asbestos cement pipe cl.10

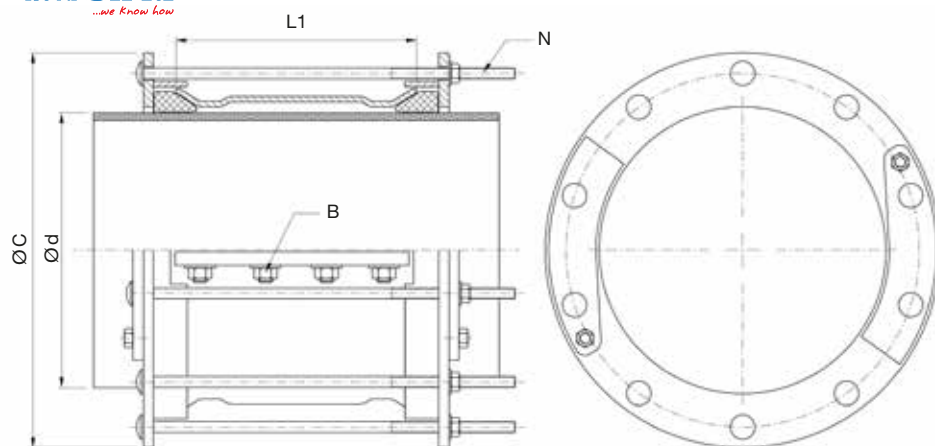
300	6/10/16	330	360	260	460	752	523	16	22	202,0
350		385	415		520		578	20		221,0
400		440	470		600		633	24		245,0
450		495	525		660		688	24		263,0
500		555	585		730		748	28		286,0
600		665	695	300	850	792	858	32	26	332,0
700		780	810		990		973	32		376,0
800		890	920		1120		1083	36		420,0
900		1005	1035		1240		1198	44		463,0
1000		1120	1150		1360		1313	48		503,0

No. NSD30 for SDR 17 PE pipes on electrowelded body

355	6/10/16	340	370	350	460	842	533	20	26	219,0
400		385	415	400	520	892	578	20	30	244,0
450		435	465	440	560	932	628	24		266,0
500		485	515	460	620	952	678	24		288,0
560		545	575	500	680	992	738	28	32	316,0
630		615	645	550	770	1042	808	28		356,0
710		695	725		870		888	32	34	392,0
800		785	815		970		978	32	36	426,0
900		885	915	570	1080	1062	1078	36	38	472,0
1000		985	1015		1190		1178	40	40	513,0
1100		1085	1115	600	1290	1092	1278	44	44	558,0
1200		1185	1215	620	1410	1112	1378	48	48	612,0

Duofit NSD10

Single bolt straight version



Straight version **DUOFIT NSD10** for repairs on damaged pipes (cracks, faulty weldings, corrosion, etc.) with no service cut off on pipes of any diameter. Can be also used for hot tapping techniques on pipes of any material and diameter with running fluids.

Other sizes or ranges on request

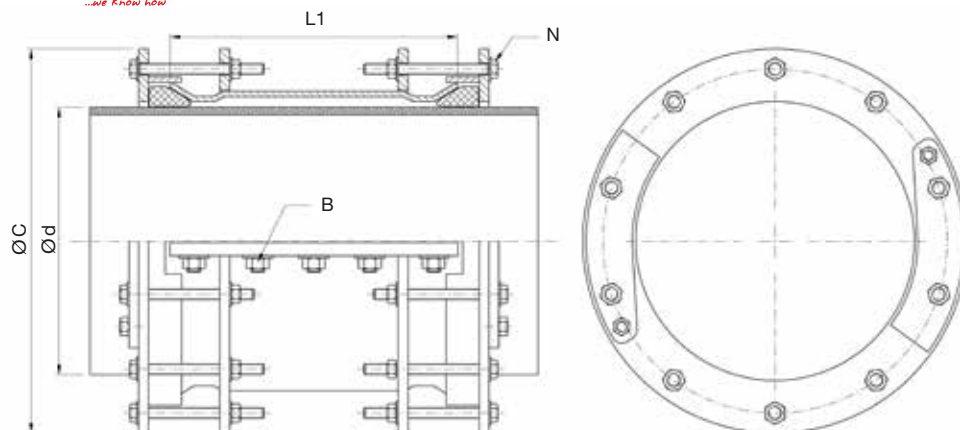
DN	MOP (PN)	Ø d		L1	Max. external dimension Ø C	No. Flange bolts N	No. lateral plates bolts B	Weight
		min.	max.					
300	6/10/16	320	350	355	500	8	10	99,0
350		340	370		520	10		105,0
		360	390		540			108,0
400		390	420		580			12
		410	440		600	116,0		
450		435	465		620	14		
		460	490		640			127,0
500		490	520		680			16
		510	540		700	135,0		
		535	565		720	142,0		
		560	590		740	146,0		
600		590	620		783	18		151,0
		620	650		813			160,0
		645	675		838			164,0
		670	700		863			171,0
700		695	725		888	20		175,0
		720	750		913			179,0
		750	780		943			184,0
		780	810		973			189,0
800		835	865		1028	22		200,0
		860	890		1053			205,0
		895	925		1088			214,0
900		925	955		1118	24		222,0
		955	985		1148			227,0
		985	1015		1178			232,0
1000		1000	1030		1193	26		237,0
		1030	1060		1223			241,0
		1060	1090		1253			246,0
		1080	1110		1273			250,0
1100		1100	1130		1293	28		255,0
		1130	1160		1323			260,0
		1160	1190		1353			265,0
		1185	1215		1378			270,0
1200		1205	1235		1398	30		275,0
		1235	1265		1428			280,0
		1300	1330		1493			297,0
1300		1335	1365		1528	32		303,0
		1385	1415		1578			311,0
		1410	1440		1603			318,0
1400		1440	1470		1633	34		323,0
		1510	1540		1703			337,0
		1585	1615		1778			349,0
1600		1610	1640		1803	40		356,0
		1650	1680		1843			363,0
		1825	1855		2018			403,0
1800		1860	1890		2053	42		408,0
		2020	2050		2213			442,0
2000		2065	2095		2258	46		442,0
						48		450,0

Duofit NSD20-D

Double bolt straight version



Straight version **DUOFIT NSD20** for repairs on damaged pipes (cracks, faulty weldings, corrosion, etc.) with no service interruption on pipes of any diameter. Can also be used for hot-tapping techniques on pipes of any material and diameter with running fluids.



Other sizes or ranges on request

DN	MOP (PN)	Ø d		L1	max. external dimension Ø C	No. Flange bolts N	No. lateral plates bolts B	Weight
		min.	max.					
300	6/10/16	320	350	435	513	16	12	118,0
350		340	370		533	20		125,0
		360	390		553			129,0
400		390	420		583	24		135,0
		410	440		603			139,0
450		435	465		628	28		147,0
		460	490		653			152,0
500		490	520		683	32		158,0
		510	540		703			162,0
		535	565		728			171,0
		560	590		753			176,0
600		590	620		783	36		186,0
		620	650		813			192,0
		645	675		838			197,0
		670	700		863			205,0
700		695	725		888	40		210,0
		720	750		913			215,0
		750	780		943			221,0
		780	810		973			227,0
800		835	865		1028	44		241,0
		860	890		1053			246,0
900		895	925		1088	48		257,0
		925	955		1118			267,0
		955	985		1148			273,0
1000		985	1015		1178	52		279,0
		1000	1030		1193			285,0
		1030	1060		1223			291,0
		1060	1090		1253			297,0
1100		1080	1110		1273	56		301,0
		1100	1130		1293			308,0
		1130	1160		1323			314,0
		1160	1190		1353			320,0
1200		1185	1215		1378	60		325,0
		1205	1235		1398			333,0
		1235	1265		1428			339,0
1300		1300	1330		1493	64		359,0
		1335	1365		1528			366,0
1400		1385	1415		1578	68		376,0
		1410	1440		1603			384,0
		1440	1470		1633			390,0
1500		1510	1540		1703	64		407,0
1600		1585	1615		1778	80		422,0
		1610	1640		1803			431,0
		1650	1680		1843			439,0
1800		1825	1855		2018	84		488,0
		1860	1890		2053			495,0
2000		2020	2050		2213	92		536,0
		2065	2095		2258	96		545,0

Duofit

Assembling steps

