

Technical  
Information and  
Product Range  
2008

COOL-FIT™

Pipes, fittings,  
valves and  
accessories



**+GF+**

**GEORG FISCHER**  
PIPING SYSTEMS

# GF Piping Systems

Throughout the world everyone demands a secure supply of clean water. GF Piping Systems is meeting this challenge by providing complete piping systems suitable for safe operation in virtually all environments. We have developed systems comprising of pipe, fittings, valves, and measuring and control devices in high quality corrosion resistant thermoplastics for the transport of not only clean water, but also gas and other industrial media.

Whether installed above or below ground, in industrial, commercial or domestic applications, GF Piping Systems provides a solution.

## Innovation and technology.

GF Piping Systems, through focussed research, is continually developing new products and technologies, setting new global standards in quality and performance for our customers.

**All from one source.** GF Piping Systems covers the growing demand for complete solutions from a single source in a wide range of applications.

**Quality management.** All system components are stringently tested in accredited test laboratories. Management and production procedures are certified to ISO 9001 and ISO 14001 to guarantee form, fit, function and compliance in whatever application they may be used throughout the world.

## Sales and service – worldwide.

Our local sales companies and representatives in over 100 countries provide „one stop“ shopping, including planning support, training and product availability.

**Facts and Figures.** GF Piping Systems with its 3200 employees achieves an annual turnover of about CHF 1100 million (Euros 650 million). GF Piping Systems is part of the Georg Fischer Corporation, which was founded in Schaffhausen, Switzerland in 1802. Today the corporation has more than 13,000 employees and an annual turnover of CHF 4.5 billion (Euros 3 billion).



→ your benefits

- technological expertise
- „one stop“ shopping
- premier quality and performance
- system solutions
- know-how and experience
- local support

# COOL-FIT ABS

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The technical data is not binding and not an expressly warranted characteristic of the goods. It is subject to change. Please consult our General Conditions of Supply.

# General Information

COOL-FIT is a complete system solution for secondary cooling and refrigeration piping systems. The system is based on the tried and tested ABS plastic system from GF Piping Systems which contains pipe fittings valves and transition fittings, now with the option for pre-insulated pipe and fittings with outer jackets in either black or white. You can adapt the system solution to your particular needs. For example white pre-insulated for food production halls or standard plastic pipe with control valves for pump houses or OEM chillers.

**Refrigeration and Cooling plants in general using plastic pipe as the carrier system offer complete corrosion resistance and a cost effective solution compared to traditional metal materials.**

## Pipe

The ABS pipe and fittings are available in 2 versions.

- standard un-insulated, to be insulated on-site with traditional insulation
- pre-insulated with black PE jacket

## Fittings

A complete range of fittings compatible to the pipe is also available either as standard or as insulated with black outer jackets (white on request).

The ABS range contains shut-off valves, control valves, automated valves pneumatic and electrical as well as a complete range of transition fittings for metal to plastic connections.

## GF Piping Systems ABS Raw Material

ABS is a material used in a wide range of general engineering applications from general housings for vacuum cleaners for instance to car bumpers.

GF Piping Systems ABS raw material has been specifically developed for long-life pressure bearing piping systems.

For physical properties see ISO 15493 and GF Piping Systems literature GMST 5989, pages 28–30.

Acrylonitrile Butadiene Styrene (ABS) is a styrene acrylonitrile copolymer grafted to polybutadiene to produce an homogeneous material with excellent impact and low temperature characteristics. ABS is halogen free with a low thermal conductivity and non-toxic. GF Piping Systems ABS has a range of internationally recognised approvals. Please ask if you require any details regarding approvals or raw material properties.

## PUR Insulation

COOL-FIT pre-insulated pipe and fittings are delivered ready to install using high density PUR > 45 kg/m<sup>3</sup> as the insulation material, the PUR is CFC free and recyclable.

## Jacket Pipes in Black (Metal on request)

The outer jacket in black (Metal on request) is manufactured from high density polyethylene (PE). PE offers extremely good impact resistance and a good resistance to oil splashes and grease or other external contamination. The PE is smooth, non-corroding and thus easy to clean with a long life-span.

Black PE is UV resistant and thus ideally suited to outdoor applications and for general use.

## Typical Working Conditions

Pre-insulated ABS has working temperatures from -50 °C to +40 °C and -40 °C to +60 °C for the standard ABS system with a maximum working pressure of 10 bar (water at +23 °C) COOL-FIT.

## Typical Mediums

ABS can be used for example with the following mediums:

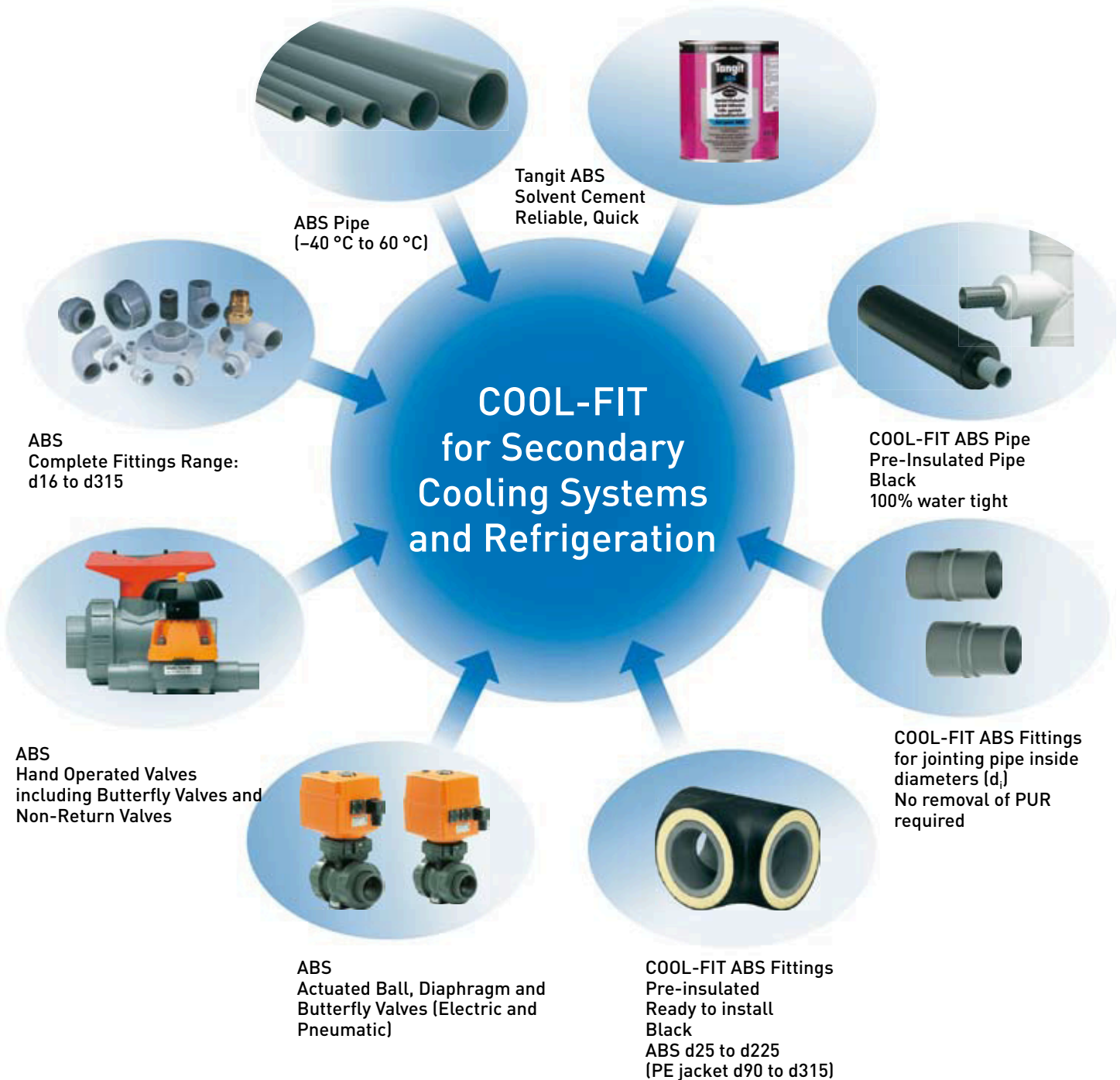
- chilled water and general water
- salt solutions
- glycol solutions
- alcohol solutions

For compatibility of ABS to non-water mediums please consult GF Piping Systems and see page 15.

Note: COOL-FIT is not for use with primary gases such as Ammonia, Propane, R407, R22, and also not for use for compressed air systems.

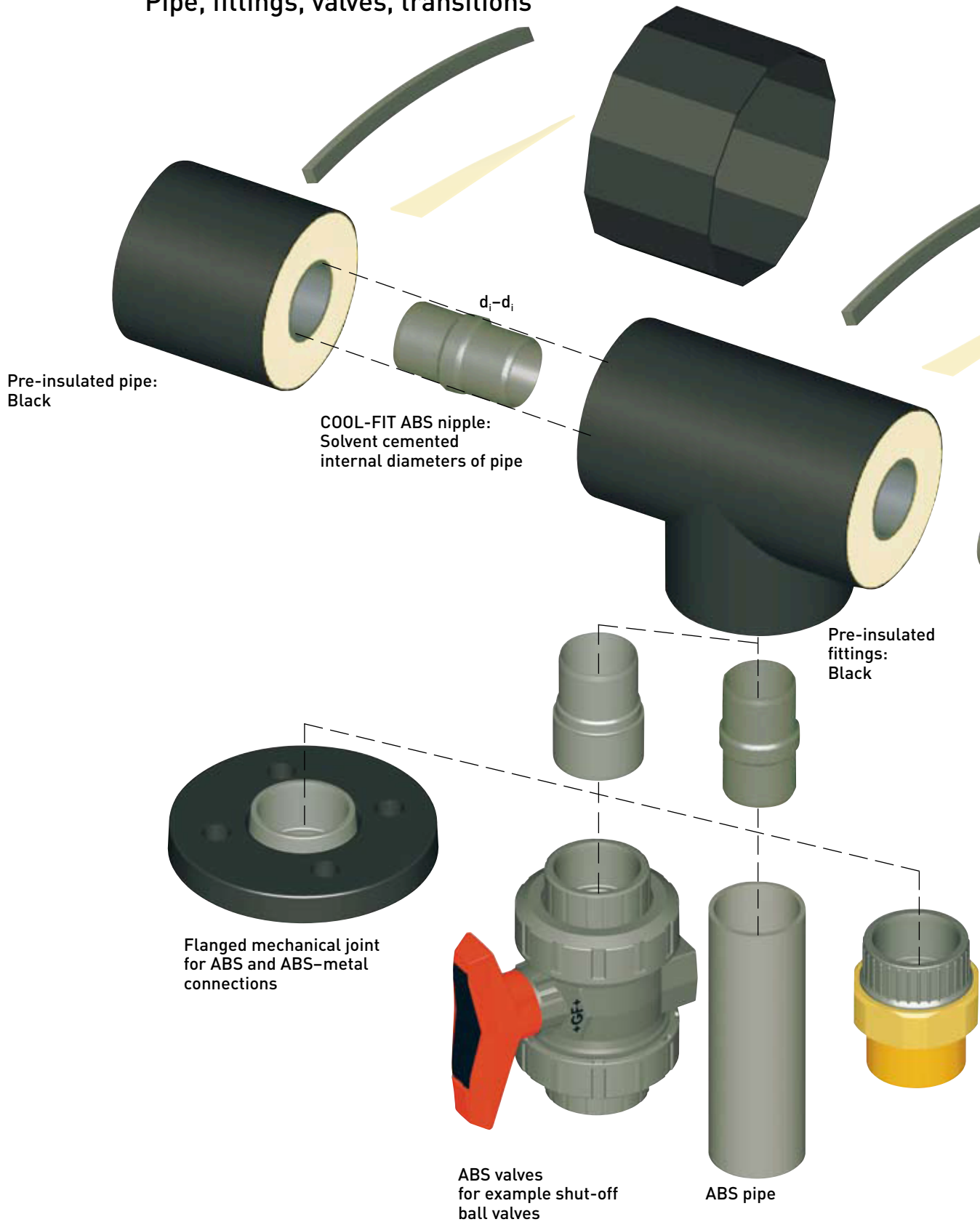
# COOL-FIT™

## Top Quality: Minimum On Site Time



# Top Quality: Minimum On Site Time

Pre-insulated pipe and fittings  
Standard ABS complete system;  
Pipe, fittings, valves, transitions



Shrink sleeve, short:  
Vapour tight and  
water tight

Gap insulator:  
For visual check when  
commissioning

Sealing tape:  
For location of sleeve and  
vapour seal, double-sided  
sticky for easy location of  
sleeve

$d_i - d_i$

$d_i - d$

COOL-FIT ABS  
nipple: No removal  
of PUR from pipe  
necessary

Pre-insulated fittings;  
For example, elbow 45°

Transition unions:  
Copper-ABS with «O»-ring  
for reliable sealing,  
stainless steel and threaded  
connections also available



# System Advantages: Your Benefit

## Speed

Fittings and Pipe are delivered direct to the site (ready to install).

Simple installation technique using speedy solvent cementing with no need to remove the PUR using internal diameter jointing fittings.

Time and cost saving handling due to the low weight of plastics.

## Zero Corrosion

No maintenance, reduced down-time, constant long-term efficiency.

## Reduce Costs for your Hanging System

Simplified pipe supports on outer jacket, no need for special refrigeration pipe hangers.

Pre-insulated pipe requires about 30% less hangers than standard plastic pipe.

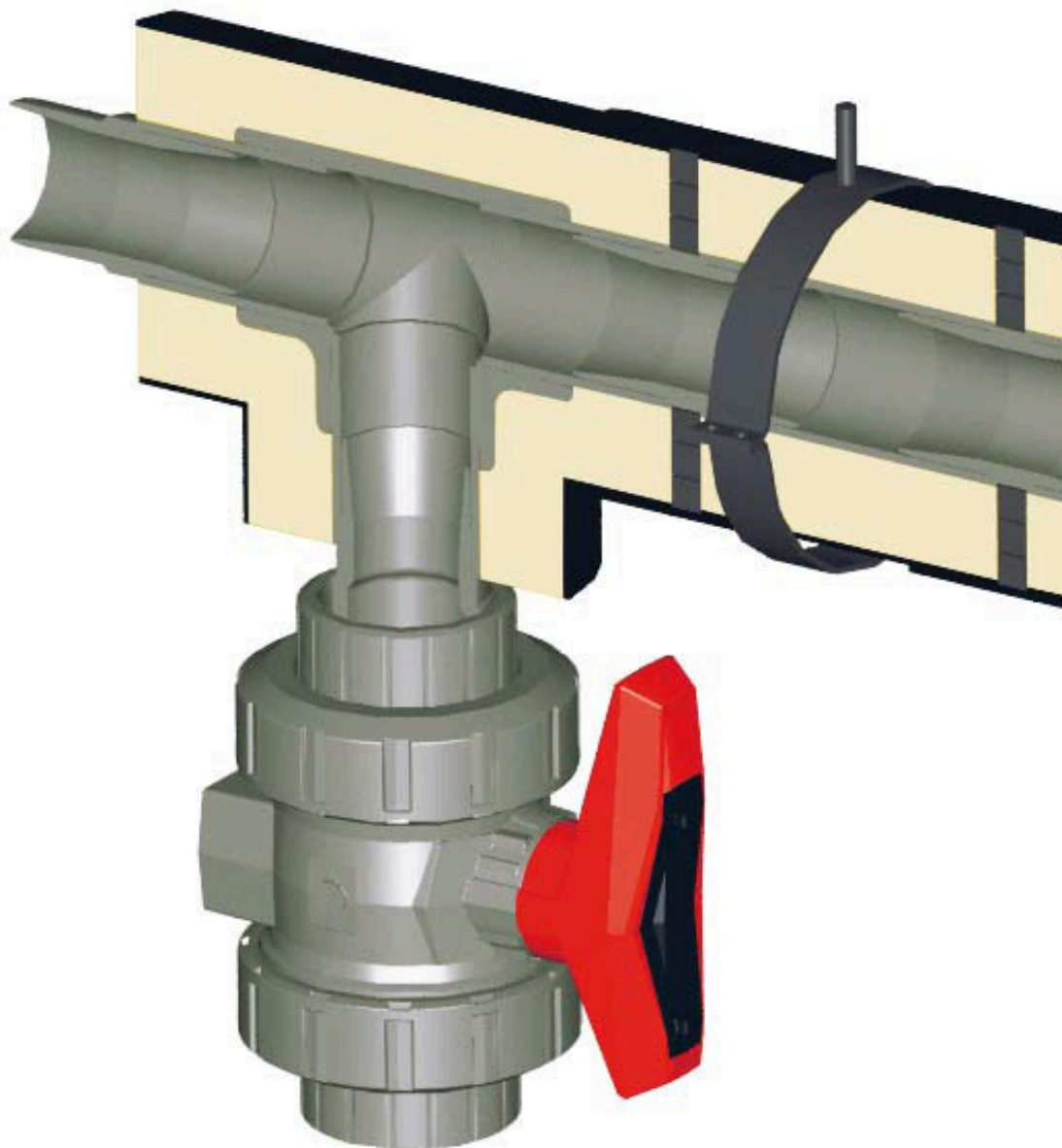
Lower weight compared to metals means lower structural costs.

0.04 mm/m.K expansion coefficient, helps simplify pipeline design (representative value).

## Top Efficiency

Save energy, thermal conductivity 0.026 W/m.K  
PUR density > 45 kg/m<sup>3</sup> with standard thickness of ± 35 mm for excellent insulating properties.

Smooth pipes: no encrustation, low pressure drops, no energy bridges due to support on outer jacket.





### Reliability

Quality GF Piping Systems products: the number 1 Plastics Industrial Piping system manufacturer in the world.

Tried and Tested jointing technique with gap filling, cold welding TANGIT ABS cement.

### Innovative: Clever

Developed for your needs.

Internal pipe connections means no need to remove the PUR insulation from the pipe or fitting.

### Outdoor and Indoor Systems: Vapour Sealed

Black shrink sleeve for 100% vapour sealing 100% water tight system.

### Hygienic Aesthetic

Top quality in performance and looks.

Smooth outer surfaces for hygienic environments.

No detrimental effects under high pressure cleaning.

### Full Technical Design Support

[www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com) for on-line calculations of energy losses, temperature differences and more.

CAD libraries for accurate and quicker drawing. Specialist guidelines for design and installation and design of venting equipment, measuring equipment, transitions.

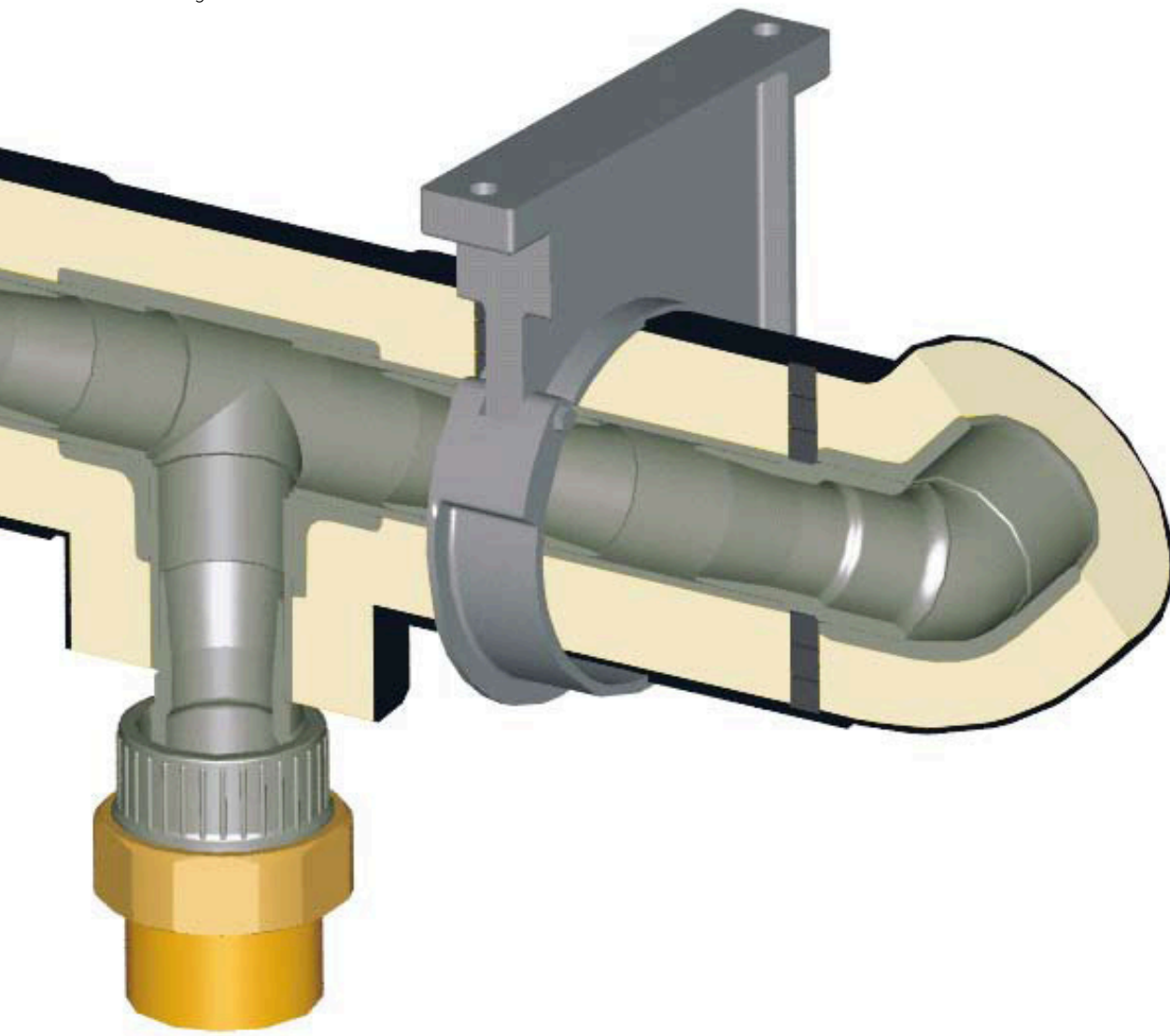
### Full Technical Support during Installation

On-site advice and jointing technique training.

Training Video for ABS jointing technique.

### Sustainability

Reduce the carbon foot-print of your plant and factory with recyclable plastics. Lower ODP and GWP values compared to traditional metal systems.



# COOL-FIT Technical Details

## Pre-insulated ABS Pipe

**COOL-FIT pre-insulated ABS** Contraction Coefficient:  
0.04 mm/m.K<sup>21</sup>

All three materials are bonded together deliberately to ensure expansion and contraction as one.)

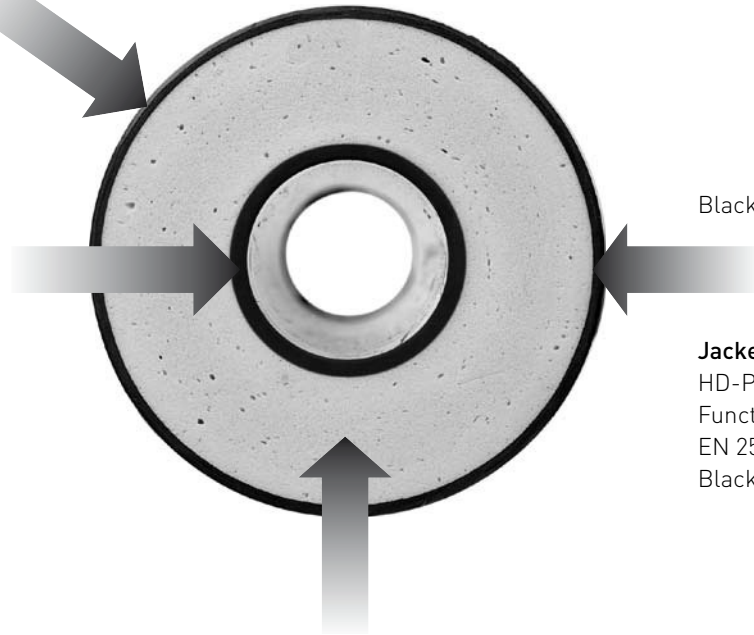
COOL-FIT ABS is produced using high grade ABS pressure piping raw material, in use for over 20 years together with high grade low temperature PUR produced in high density form to offer optimal insulating qualities.

### Pipe Specification

Product Identification;  
Colour, PN 10, Production Date,  
COOL-FIT, ABS.

### Carrier Pipe ABS

10 bar rated, cement jointed  
ABS plastic pipe.  
5 meter lengths.  
ABS Pipe to ISO 15493.



Black RAL 9004

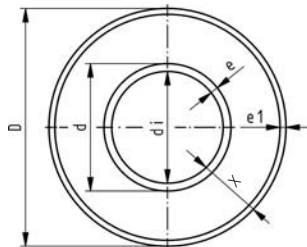
### Jacket Pipe

HD-PE to DIN 8075 in black.  
Functional requirements to  
EN 253.  
Black is UV resistant.

### Hard Polyurethane Foam (PUR)

Thermal Conductivity at 20 °C < 0.026 W/m.K  
Axial Shear Strength ≥ 0.12 N/mm<sup>2</sup>  
Tensile Strength ≥ 0.2 N/mm<sup>2</sup>  
Compressive Strength ≥ 0.3 N/mm<sup>2</sup>

Foamed using polyol and isocyanate  
Expansion Coefficient 0.04 mm/m.K<sup>21</sup>  
Core density > 45 kg/m<sup>3</sup>  
Average Cell Sizes max. 0.5 mm



| Code Number  | Carrier Pipe ABS<br>d x e | di    | Jacket Pipe HDPE<br>D x e1 | Weight (PE + ABS + PUR)<br>kg/m | Volume<br>l/m | Pipe Support Distance <sup>1)</sup><br>m | Heat Transfer Coefficient<br>W/mK | X max - X min<br>≤ |
|--------------|---------------------------|-------|----------------------------|---------------------------------|---------------|--|-----------------------------------|--------------------|
| <b>Black</b> |                           |       |                            |                                 |               |  |                                   |                    |
| 169 017 682  | 25 x 2.3                  | 20.4  | 90 x 2.2                   | 1.24                            | 0.36          | 1.55                                     | 0.13                              | 6                  |
| 169 017 683  | 32 x 1.9                  | 28.2  | 90 x 2.2                   | 1.29                            | 0.61          | 1.55                                     | 0.162                             | 6                  |
| 169 017 684  | 40 x 2.4                  | 35.2  | 110 x 2.7                  | 1.76                            | 0.95          | 1.65                                     | 0.165                             | 6                  |
| 169 017 685  | 50 x 3.0                  | 44    | 110 x 2.7                  | 1.89                            | 1.49          | 1.65                                     | 0.213                             | 6                  |
| 169 017 686  | 63 x 3.8                  | 55.4  | 125 x 3.0                  | 2.48                            | 2.34          | 1.75                                     | 0.245                             | 6                  |
| 169 017 687  | 75 x 4.6                  | 65.8  | 140 x 3.0                  | 3.17                            | 3.36          | 1.90                                     | 0.27                              | 6                  |
| 169 017 688  | 90 x 5.4                  | 79.2  | 160 x 3.0                  | 4.11                            | 4.80          | 2.05                                     | 0.293                             | 6                  |
| 169 017 689  | 110 x 6.6                 | 96.8  | 180 x 3.0                  | 5.22                            | 7.21          | 2.20                                     | 0.341                             | 10                 |
| 169 017 691  | 140 x 9.2                 | 121.6 | 225 x 3.2                  | 8.16                            | 11.69         | 2.55                                     | 0.356                             | 10                 |
| 169 017 692  | 160 x 10.5                | 139   | 250 x 3.9                  | 10.34                           | 15.22         | 2.75                                     | 0.381                             | 10                 |
| 169 017 693  | 200 x 13.1                | 173.8 | 280 x 4.4                  | 13.42                           | 24.50         | 3.05                                     | 0.513                             | 10                 |
| 169 017 694  | 225 x 14.8                | 195.4 | 315 x 4.9                  | 17.97                           | 30.05         | 3.30                                     | 0.515                             | 10                 |

COOL-FIT ABS pipe d250, d280 and d315 available on request

<sup>1)</sup> COOL-FIT ABS support distance are the same from -50 °C to +40 °C

d: nominal outside diameter of ABS pipe

di: nominal internal diameter of ABS pipe

D: nominal outside diameter of PE pipe

e and e1: nominal wall thicknesses

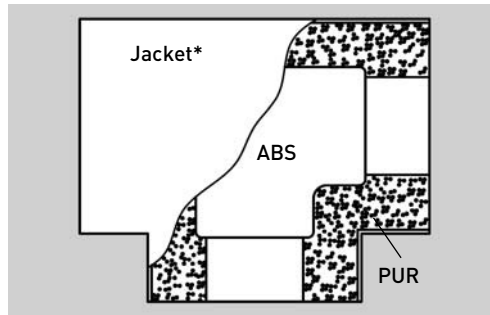
<sup>2)</sup> representative value, the ΔL must be calculated per installation (see [www.cool-fit.georgfischer.com/calculationtool](http://www.cool-fit.georgfischer.com/calculationtool))

# COOL-FIT

## ABS Pre-Insulated Fittings Technical Details

COOL-FIT ABS Fittings are manufactured using the same raw materials as the pipe and are thus completely compatible with the COOL-FIT ABS pipe in terms of insulating properties and also jointing technique.

\*PUR or PE-HD



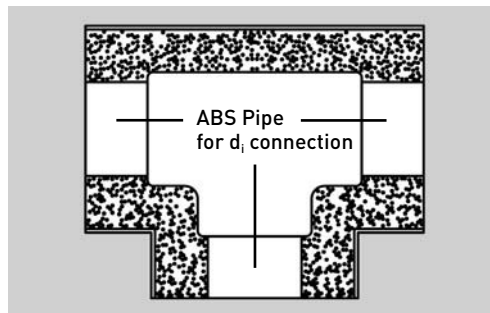
COOL-FIT ABS Fitting

There are 2 types of COOL-FIT ABS Fittings, namely the  $d_i$  type and the  $d$  type. To cement  $d_i$  fittings to COOL-FIT ABS pipe requires a  $d_i-d_i$  fitting.

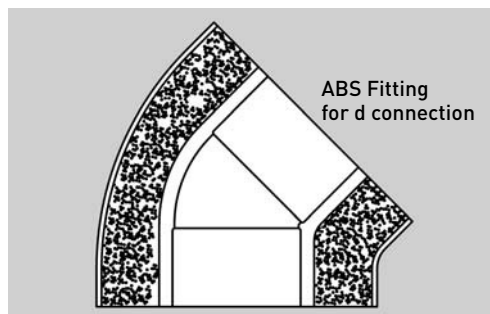
$d_i$  is the designation for a joint which takes place in the internal diameter of the pipe.  $d_i25$  for instance refers to the internal diameter of  $d25$  pipe.

$d$  is the designation for a normal socket solvent cemented joint as per the standard GF Piping Systems ABS range.

The jointing material and technique for  $d_i$  and  $d$  are the same, with the same cement and the same tooling. Refer instructions for solvent cement jointing of ABS for details.



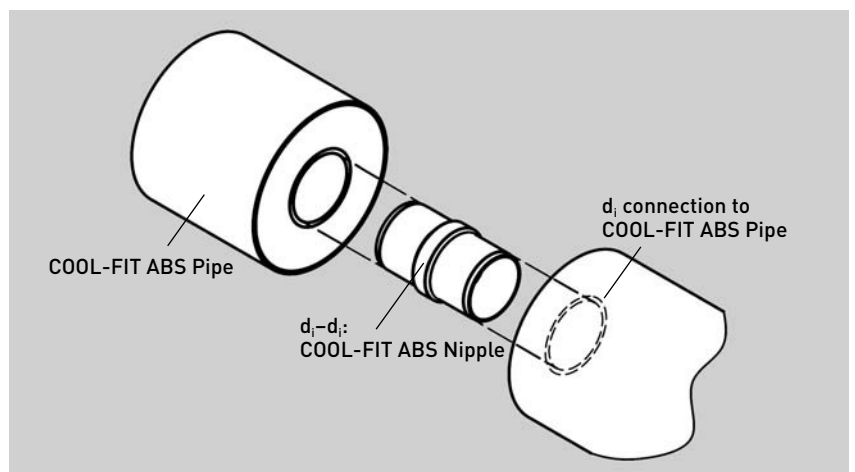
$d_i$  type fitting



$d$  type fitting

COOL-FIT ABS pipe to pipe connections are achieved using the  $d_i-d_i$  COOL-FIT ABS nipple, see diagram.

Note: dimensions  $d140$  and above must be calibrated using the COOL-FIT ABS Tool, see next page for details.



# Accessory Equipment

## COOL-FIT ABS Nipple (ABS)

The nipple exists in three versions:

$d_i-d_i$  \_\_\_\_\_  
 for pipe to pipe and pipe to  $d_i-d_i$   
 type fitting connections using the internal  
 diameter of the pipes

$d-d_i$  \_\_\_\_\_  
 for pipe to  $d-d_i$  type fitting connections

$d_i-d$  red \_\_\_\_\_  
 to reduce diameter of the carrier pipe  
 (Note: for dimensions  $d_{140}$  and above the COOL-FIT ABS  
 Calibration Tool is required before jointing the internal  
 diameters of the pipe).



## COOL-FIT ABS Calibration Tool

It is necessary to calibrate pipe in dimension  $d_{140}$  and above  
 to allow jointing using the COOL-FIT ABS nipple.

This tool calibrates the inside diameter of the pipe to an  
 exact dimension to allow internal jointing.

See page 56 for order numbers and pages 40–41 for hand-  
 ling instructions.



## COOL-FIT ABS Shrink Sleeve, Short

Used to vapour seal the outer jacket in PE. The sleeve is  
 85 mm wide and can only seal equal dimensioned PE jackets.  
 To ensure a vapour and water tight joint with the same insu-  
 lating properties as the pipe the mini-sleeve should be used  
 with the gap-insulator and the sealing tape.



## COOL-FIT ABS Sealing Tape

A roll of 35 mm wide, double sided mastic tape to vapour seal  
 the joint. Double-sided sticky tape helps locate the shrink  
 sleeve over the gap before shrinking and ensures a top  
 quality seal.



## COOL-FIT ABS Gap Insulator

Width 13 mm and a  $\lambda$  / heat conductivity of 0.04 W/m.K,  
 use of this insulation ensures the same insulating properties  
 in the gap as the pipe.

Use of other insulating and sealing methods such as tape is  
 possible. Please consult the manufacturers of these mate-  
 rials for application instructions, insulating properties and  
 life-span.



# Accessory Equipment for Solvent Cement Jointing, Reducing Diameters and End Caps

## Tangit ABS and Cementing Equipment

The solvent cementing equipment is exactly the same for internal di jointing as for standard d jointing using Tangit ABS. Code numbers can be found on page 36 in this document, see pages 33–38 for jointing instructions.



## COOL-FIT Shrink Sleeve, Long

This sleeve is 285mm long, only to be used when sealing PE to PE outer jackets, not for use on ABS. For exact reducing possibilities see below.



## Shrink Sleeve, Long Reducing Diameters

The COOL-FIT «shrink sleeve, short» can only seal equal dimensions of PE outer jacket. The table below shows which dimensions can be sealed using which long shrink sleeve. NOTE: the sealing tape should be applied to both outer diameters of the PE pipes.

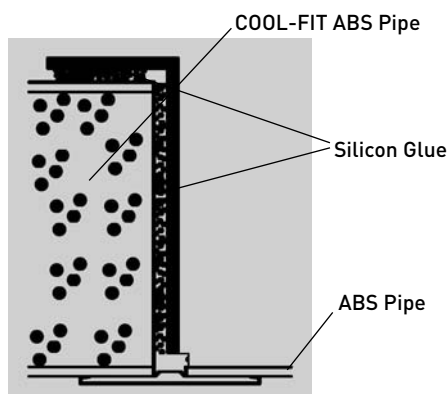
| PE Dims (D)         | 90                  | 110 | 125                 | 140 | 160 | 180                 | 225 | 250 | 280 | 315 |
|---------------------|---------------------|-----|---------------------|-----|-----|---------------------|-----|-----|-----|-----|
| Shrink Sleeve, Long | 738.011.167 (black) |     |                     |     |     |                     |     |     |     |     |
| black               |                     |     | 738.011.170 (black) |     |     |                     |     |     |     |     |
|                     |                     |     |                     |     |     | 738.011.173 (black) |     |     |     |     |



## End-Caps

End-caps are to be used for sealing the PUR against any water ingress at the transition to ABS standard.

Sealing the PUR should be achieved using a chemically compatible glue to ABS. GF Piping Systems offers silicon glue. If silicon products are prohibited then non-solvent based glues can be used. Chemical compatibility can also be checked by GF Piping Systems.



## Shrink cap

The shrink cap is only to be used to seal PE to PE, not to be used on ABS pipe. The flame used to shrink the sleeve may damage the ABS pipe. Ideal for use with T-90° reducers. For dimensions please refer to the product range in this brochure. No separate sealing tape is required, the sealant is integrated into the cap. If the length of the cap is longer than the surface to be sealed then the cap can be cut back but without removing any sealant.

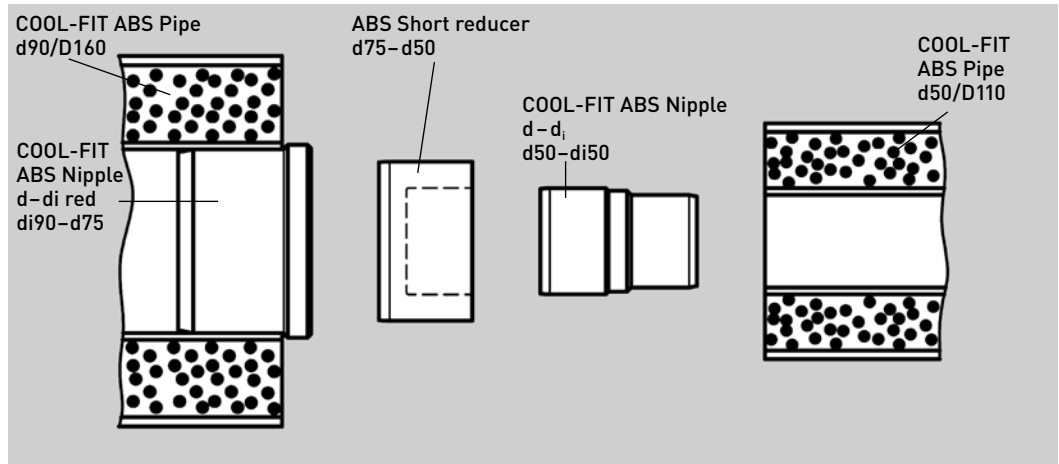


# COOL-FIT ABS Reducing Diameters

## Reducing Pipe Dimensions for COOL-FIT ABS

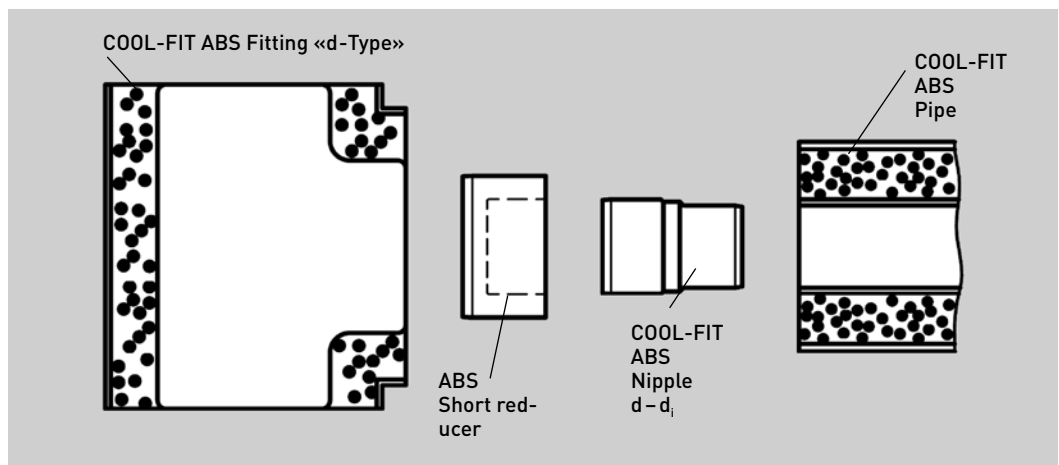
To reduce the ABS carrier pipe diameter see sketches below. The example below shows how the carrier pipe dimension is reduced from COOL-FIT ABS 90/160 to 50/110.

Note: the configuration below results in a gap twice as wide as usual (ca. 20 mm) and therefore twice the amount of gap filler is required.



## Reducing from a «d-Type» COOL-FIT ABS Fitting to COOL-FIT ABS Pipe

The d type fittings have a standard ABS d joint as the fitting connection and therefore the standard ABS short reducers can be used to reduce the diameter and then the d-di COOL-FIT ABS nipple for the connection to the COOL-FIT ABS pipe.

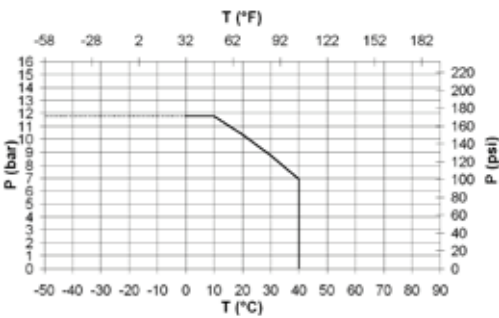


# COOL-FIT

## ABS Pre-Insulated Pressure-Temperature Parameters

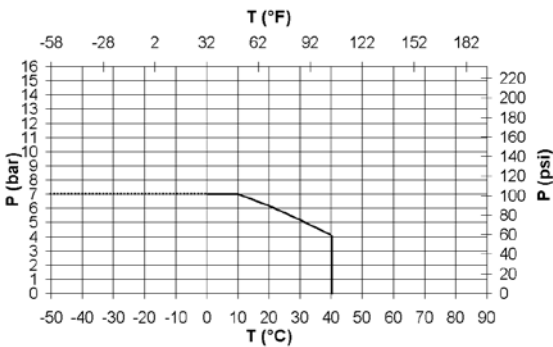
Pressure ratings for thermoplastic pipe are always quoted for water at 20 °C. It can be used at higher temperatures but it is a fundamental principle in thermoplastic pipework that if the working temperature is increased then the working pressure must be reduced.

The table below shows, for COOL-FIT ABS, the maximum permissible pressures at various temperatures up to the maximum allowable working temperature of +40 °C. The table is based on an ambient temperature of 20 °C with water as the medium. A safety factor of 1.8 is incorporated into all calculations with a minimum life span of 25 years.



For working temperatures below 0 °C an anti-freeze has to be used in the water to prevent freezing. The above pressure-temperature curve applies only when the medium is water, therefore for non pure water mediums a de-rating factor has to be applied to the above curve. This is standard procedure for all plastic piping systems.

For **example** if the medium is a water-diluted **glycol** solutions ≤ 50% (max. concentration allowable for ABS) then a de-rating factor of 0.6 applies to the standard pressure-temperature curve. So at -10 °C for a minimum life-span of 25 years the maximum allowable working pressure is  $0.6 \times 11.8 = 7.1$  bar. For more details regarding these de-rating values for chemical solutions or trade named products please consult GF Piping Systems.



### General

ABS is generally resistant to most diluted inorganic acids, bases and salts and to most animal oils and fats. It is not resistant to organic solvents, pure alcohols, petrol, acetic acid and vegetable oils.

### Ice Slurry

Ice slurry is a mixture of ice particles (0.01–0.03 mm width), water and an anti-freeze agent, usually an alcohol, salt or glycol. GF Piping Systems has undertaken extensive testing of ice slurry with ABS and can give recommendations regarding for example pipeline layout, flow rates and pressure drops. Please ask your local GF Piping Systems representative for details.



Ice Slurry

### Chemical Resistance

Please consult GF Piping Systems for detailed information regarding chemical resistance.

GF Piping Systems offers written confirmation on material compatibility for all chemical applications.

| Temperature °C | PN 10 bar (145 psi) |
|----------------|---------------------|
| -50            | 11.8                |
| -20            | 11.8                |
| 0              | 11.8                |
| 20             | 10.5                |
| 30             | 8.9                 |
| 40             | 7                   |

### Glycol Solutions

ABS can be used with glycol solutions (eg. Antifrogen L, Dowfrost) however a de-rating factor applies to the standard water based temperature – pressure curve, see example.

### Organic Salt Solutions

These mediums are usually potassium formate or acetate water based solutions, with low viscosities at low temperatures. Tradename examples: HYCOOL, TEMPER, TYFOXIT, ANTIFROGEN KF. ABS can be used with these types of mediums however, a de-rating factor applies to the standard water based pressure-temperature curve. Please consult GF Piping Systems for details. It is important that the complete pipe, irrespective of pipe system material is properly devented both during filling and commissioning. It is very important to follow the manufacturers instructions for pipeline design and handling of these mediums.



# Technical Data

## General Comments to Plastics Orientated Pipeline Design and Installation

The design and installation of thermoplastic pipe systems requires designers and installers alike to take into account the fact that plastics have different physical characteristics to metal. Although GF Piping Systems ABS and pre-insulated COOL-FIT ABS are both very robust systems, nevertheless, care should be taken during handling and transport to avoid damage. Also thermoplastics have certain physical characteristics, such as a high expansion coefficient, which need to be taken into account in the design phase.

GF Piping Systems has been successfully developing and selling plastic pipe systems into a spectrum of high performance installations, such as highly concentrated chemicals, for over 40 years, and experience has shown that when engineers and installers take into account the advice given in our technical literature plastics are an economical and reliable alternative to metals.


As a general rule for designing and installing plastics one of the major differences is that plastics can and should be allowed to move after commissioning i.e. move under the influence of temperature fluctuation and pressure changes. For instance using pipe brackets that allow horizontal movement and not clamping the system in place is a must for plastic piping installations.

The following technical information covers the fundamental information required to ensure an economical and trouble free installation: Not all details however are published in this document, for more detailed information or if you have a specific question please ask your local GF Piping Systems company, consult [www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com) or e-mail us at [info@cool-fit.georgfischer.com](mailto:info@cool-fit.georgfischer.com) for advice if you have any questions.

## COOL-FIT ABS and ABS On-Line Calculation Tool

GF Piping Systems has developed a calculation tool to calculate accurately and quickly all the necessary parameters for the engineering of secondary refrigeration or cooling systems using COOL-FIT ABS or standard ABS pipe.

On-Line via [www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com)



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PIPING SYSTEMS

|                |              |           |                   |               |                       |             |      |
|----------------|--------------|-----------|-------------------|---------------|-----------------------|-------------|------|
| Pressure drops | Condensation | Heat loss | Pipe dimensioning | Pipe supports | Expansion/Contraction | Temperature | Data |
|----------------|--------------|-----------|-------------------|---------------|-----------------------|-------------|------|

Along pipe   Over fittings   Over valves

### Pressure drops - Along pipe

System parameters

|  |   |                |
|--|---|----------------|
| <b>Temperature</b>                                     | <b>Specification</b>                              | <b>Options</b> |
| Flow temperature <input type="text" value="0"/> °C     | Pipe system <input type="text" value="ABS PN10"/> | Calculate      |
| Ambient temperature <input type="text" value="23"/> °C | Fluid type <input type="text" value="Water"/>     | Print          |
| Wind velocity <input type="text" value="0.5"/> m/s     | Concentration <input type="text" value="-"/>      | Clear          |

### Pipe Pressure Drop (ABS and COOL-FIT ABS)

When calculating the hydraulic pressure loss in m/m in a plastic pipe the excellent smoothness of ABS means that when using the standard Moody Diagram the smooth pipes curve can be used to derive the friction factor.

Imperically it is possible to use the following formulas and procedure to calculate pressure loss in the pipe for any type of fluid.

### Pressure Loss in Pipes

The hydraulic loss, in m/m, is given by:

$$\Delta p_{pi} = \frac{2fv^2}{gd_i}$$

- where  $\Delta p_{pi}$  = hydraulic loss (m/m)  
 $f$  = friction factor (dimensionless)  
 $d_i$  = pipe inside diameter (m)  
 $g$  = acceleration due to gravity = 9.81 m/s<sup>2</sup>  
 $v$  = flow velocity (m/s)

In order to determine the value of the friction factor (f) the Reynolds number must be used. The Reynolds number is dimensionless and may be considered as the ratio of the dynamic forces of mass flow to the shear resistance due to fluid viscosity. It may be calculated using the following formula:

$$Re = \frac{vd_i}{\nu}$$

The Reynolds number may then be related to the friction factor through an empirical formula such as Blasius' smooth pipe formula:

$$f = \frac{0.079}{Re^{0.25}}$$

valid for Re between 3000 and 10<sup>5</sup>.

For thermoplastic pipes the relative roughness is negligible and if the user is using Moody curves the curve labelled «smooth pipes» gives the correct relation. The roughness factor for ABS pipes is K=0.007 mm. Using the derived f value the hydraulic loss,  $\Delta p_{pi}$  can be calculated. Unlike metal pipes no allowance need be made for corrosion and subsequent reduction of pipe bore or roughness.

For ease of calculation nomograms are available in standard GF Piping Systems literature.

### Pressure Drop in Fittings (ABS and COOL-FIT ABS)

The pressure losses depend upon the type of fitting as well as on the flow in the fitting. The so-called  $\zeta$ -value is used for calculations.

Page 18 contains the  $\zeta$ -values for common fittings.

To calculate the total pressure loss in all fittings in a pipeline take the sum of the individual losses, i.e. the sum of all the  $\zeta$ -values.

The pressure loss can be calculated according to the following formula:

$$\Delta p_{fi} = \frac{\sum \zeta \cdot v^2 \cdot \rho \cdot 1000}{2g}$$

- where  $\Delta p_{fi}$  = pressure loss in all fittings (mm)  
 $\sum \zeta$  = sum of the individual losses  
 $v$  = flow velocity (m/s)  
 $g$  = acceleration due to gravity = 9.81 m/s<sup>2</sup>  
 $\rho$  = density of the transported medium (g/cm<sup>3</sup> or t/m<sup>3</sup>)

## Pressure Drop in Fittings

Please note there is a slight difference in the coefficient of resistance factors for standard ABS fittings or for COOL-FIT ABS pre-insulated fittings. This is due to the extra fitting required, namely the internal special nipple and also as some COOL-FIT ABS fittings have a piece of pipe in the fitting, namely the di fittings.

### Coefficient of Resistance for ABS Fittings

| Pipe outside diameter (d) | 20                                | 32  | 50  | ≥ 63 |
|---------------------------|-----------------------------------|-----|-----|------|
| Type of fitting           | Coefficient of Resistance $\zeta$ |     |     |      |
| 90° Bend                  | 1.5                               | 1.0 | 0.6 | 0.5  |
| 90° Elbow                 | 2.0                               | 1.7 | 1.1 | 0.8  |
| 45° Elbow                 | 0.3                               |     |     |      |
| Tee 90°                   | 1.5                               |     |     |      |
| Inlet                     | 0.5                               |     |     |      |
| Outlet                    | 1.0                               |     |     |      |

### Coefficient of Resistance for COOL-FIT ABS Fittings

The factors given below are for the COOL-FIT ABS fittings inclusive COOL-FIT ABS nipple.

| Pipe outside diameter (d)                      | 20                                | 32   | 50   | ≥ 63 |
|--|-----------------------------------|------|------|------|
| Type of fitting                                | Coefficient of Resistance $\zeta$ |      |      |      |
| 90° Bend                                       | 1.65                              | 1.15 | 0.75 | 0.65 |
| 45° Elbow                                      | 0.45                              |      |      |      |
| Tee 90°  | 1.8                               |      |      |      |
| Pipe to Pipe (d <sub>i</sub> -d <sub>j</sub> ) | 0.1                               |      | 0.25 |      |
| Tee 45°  | 0.8                               |      | 1.0  |      |

## Pressure Drop in Valves (ABS)

### Flow Rate / Flow Factor

The  $k_v$  factor is defined as the flow rate of water in litres per minute with a pressure drop of 1 kg/cm<sup>2</sup> across the valve.

The relationships between  $k_v$  factor, flow rate (Q) and pressure drop ( $\Delta p$ ) are given in the following formula:

**Liquids with kinematic viscosity less than 22 centistokes**  
e.g. water, hydraulic oil

$$k_v = Q \sqrt{\frac{\rho}{\Delta p}} \quad \text{or} \quad Q = k_v \sqrt{\frac{\Delta p}{\rho}}$$

$$\text{or } \Delta p = \frac{\rho \cdot Q^2}{k_v^2}$$

where  $Q$  = flow rate (litres per minute)  
 $\rho$  = density of the liquid (kg/dm<sup>3</sup>)  
 $\Delta p$  = pressure drop (kg/cm<sup>2</sup>)

### Liquids with kinematic viscosity greater than 22 centistokes

The effect of viscosity, caused by friction between the particles of the fluid, is no longer negligible, and the flow rate is reduced. The flow factor must be multiplied by a correction factor,  $c$ , to give a new flow factor,  $k_{vn}$ .

$$k_{vn} = k_v \cdot c$$

The correction factor is given by:

$$c = 1 + \nu \frac{\sqrt{k_v}}{200 \cdot Q} \quad \text{valid for } c \leq 3 \text{ only}$$

where  $\nu$  = kinematic viscosity (centistokes)  
 $k_v$  = flow factor for water (dimensionless)  
 $Q$  = flow rate (litres per minute)

### Pipe Support Distances Horizontals

For ABS at temperatures > +20 °C refer to ABS specific literature

|      | Standard ABS at 20 °C water, metres | COOL-FIT ABS water, metres |
|------|-------------------------------------|----------------------------|
| d16  | 0.7                                 | -                          |
| d20  | 0.8                                 | -                          |
| d25  | 0.85                                | 1.55                       |
| d32  | 1.0                                 | 1.55                       |
| d40  | 1.1                                 | 1.65                       |
| d50  | 1.15                                | 1.65                       |
| d63  | 1.3                                 | 1.75                       |
| d75  | 1.5                                 | 1.90                       |
| d90  | 1.6                                 | 2.05                       |
| d110 | 1.8                                 | 2.20                       |
| d140 | 2.05                                | 2.55                       |
| d160 | 2.2                                 | 2.75                       |
| d200 | 2.3                                 | 3.05                       |
| d225 | 2.4                                 | 3.30                       |

The above values are for pipe supported using normal 360° pipe clamps. For values using complete axial support please consult the COOL-FIT ABS on-line calculation tool at [www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com)

Pipe supports for ABS should allow the system to move under the influence of temperature, see «Pipe Supports» page 21 for details.

### Heat Transfer Coefficients – Pipe ABS and Pre-insulated ABS

|      | ABS W/m.K | COOL-FIT ABS W/m.K |
|------|-----------|--------------------|
| d16  | 1.278     | -                  |
| d20  | 1.487     | -                  |
| d25  | 1.742     | 0.13               |
| d32  | 2.078     | 0.162              |
| d40  | 2.413     | 0.165              |
| d50  | 2.81      | 0.213              |
| d63  | 3.253     | 0.245              |
| d75  | 3.643     | 0.27               |
| d90  | 4.073     | 0.293              |
| d110 | 4.637     | 0.341              |
| d140 | 5.319     | 0.356              |
| d160 | 5.686     | 0.381              |
| d200 | 6.385     | 0.513              |
| d225 | 6.73      | 0.515              |

### Pipeline Design and Layout

Following are the formulas and information required to calculate change in length of the pipe and allowable flexible length.

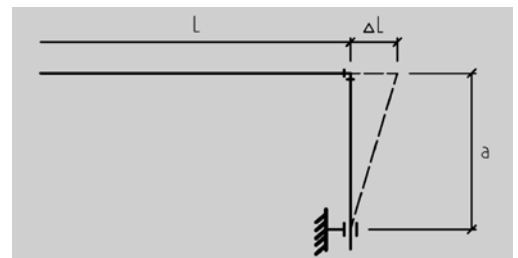
$$\Delta L = L \cdot \Delta T \cdot \delta$$

$\Delta L$  = change in length of pipe  
 $L$  = original length of pipe during installation  
 $\delta$  = coefficient of expansion (ABS 0.1)  
 $\Delta T$  = difference in temperatures between ambient temperature during installation and normal working temperature.

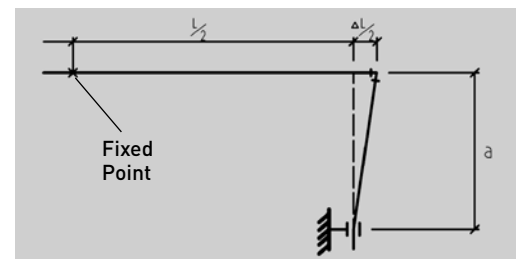
Expansion and contraction in a pipe line can only take place in a straight direction; It is therefore necessary to calculate the change in length and then design in compensation for this to avoid unnecessary stresses.

Example: Calculating  $\Delta L$  for the sketch beside for the following assumed conditions would be done as follows.  
 $L = 15$  metres (total straight length of pipe)  
 Ambient temperature during installation = +25 °C  
 Working temperature of medium = -5 °C  
 $T = -30$  (working temperature - installation temperature)  
 $\delta = 0.1$  mm/m.K (for ABS)  
 $\Delta L = 15 \times -30 \times 0.1$   
 $\Delta L = -45$  mm (minus designates a contraction of the length of pipe)

A simple and effective way to compensate for this change in length is to pre-stress the system and if necessary to place a fixed point in the middle of the line to reduce the amount of lateral expansion.



Design of other types of flexible sections and use of compensators is covered in the standard Georg Fischer technical literature for plastic pipe systems.



### Pipe Supports for ABS

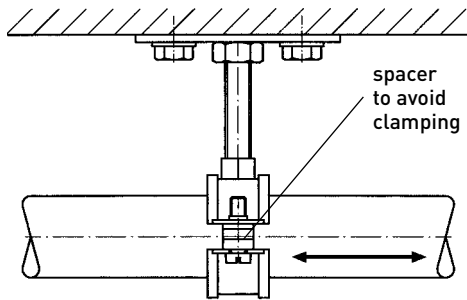
Plastic pipe systems should be installed using supports designed for use with plastics and should then be installed taking care not to damage or over stress the pipe.

#### What is a loose pipe bracket?

A **loose pipe bracket** is a bracket which allows axial movement of the pipe, to allow stress free compensation of temperature changes and compensation of any other operating condition changes.

The inner diameter of the bracket should be larger than the outside diameter of the pipe to allow free movement of the pipe. The inner edges of the brackets should be free from any sharp contours which could damage the plastic. If the brackets' inside diameter is not larger than the pipe then the bracket should not be fully tightened, thus allowing the pipe to move.

Another method is to use brackets with spacers which also avoids clamping the bracket on the pipe.



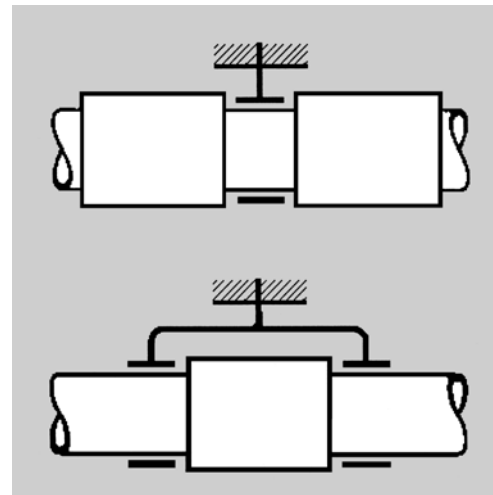
#### What is a fixed point?

A fixed pipe bracket is a bracket which prevents the pipe from moving horizontally. The aim of which is to control system stresses caused by temperature changes.

This **should not** be done by simply clamping the bracket onto the outside of the pipe! This can cause deformation and physical damage to the pipe, damage that sometimes only later becomes visible.

It should be done either by using two sockets as per sketch below or by using a «double headed» bracket, see also sketch below.

See GF Piping Systems plastic technical handbook and homepage for details regarding pipeline layout and installation.



**Allowable flexible length, H, for ABS**

To allow the pipe to bend without stressing it unduely there is a minimum length required between direction change and pipe support. This takes into account the flexibility of the pipe.

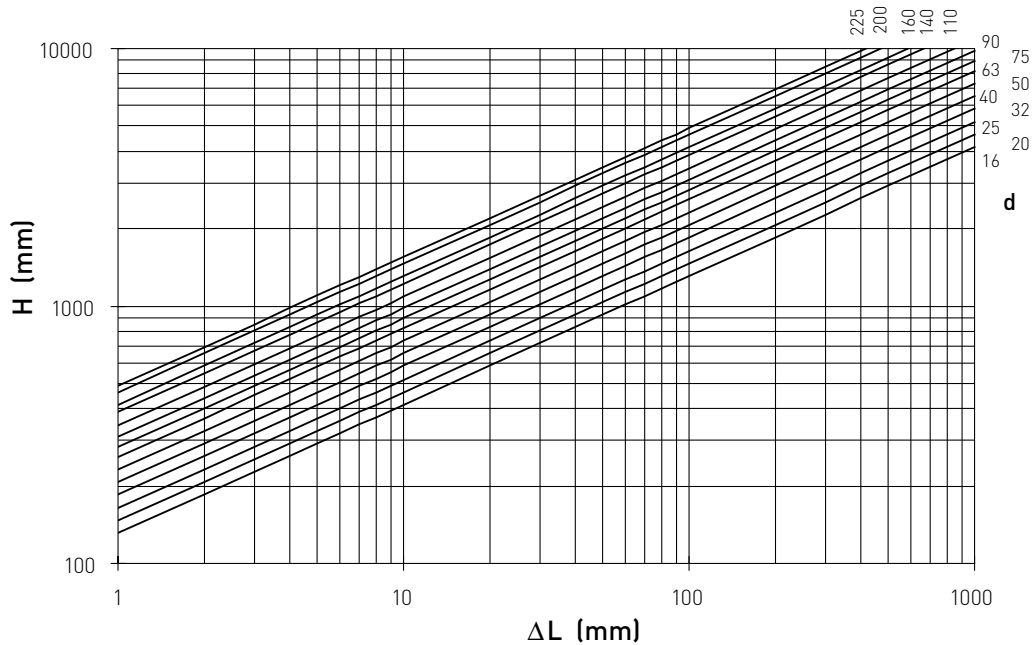
where c is the material constant which is derived from the creep modulus of the material which is: ABS 32.7

The following table allow the flexible length a to be read from the graph once delta L has been calculated.

This length is called H is calculated using the formula:

Below are the H values for ABS.

$$H = c \cdot \sqrt{d \cdot \Delta L}$$



- H Allowable flexible length (Expansion loop), mm
- d Pipe (ABS) outside diameter, mm
- ΔL Change in length, mm

**Allowable flexible length, H, for pre-insulated COOL-FIT ABS**

The H value for a given ΔL and dimension can be read from the tabel below, H values are in mm.

| COOL-FIT ABS<br>d/D | ΔL   |      |      |      |      |      |      |      |      |
|---------------------|------|------|------|------|------|------|------|------|------|
|                     | 10   | 20   | 30   | 40   | 50   | 100  | 150  | 200  | 300  |
| 25/90               | 780  | 1103 | 1351 | 1560 | 1744 | 2467 | 3021 | 3488 | 4272 |
| 32/90               | 780  | 1103 | 1351 | 1560 | 1744 | 2467 | 3021 | 3488 | 4272 |
| 40/110              | 862  | 1220 | 1494 | 1725 | 1928 | 2727 | 3340 | 3856 | 4723 |
| 50/110              | 862  | 1220 | 1494 | 1725 | 1928 | 2727 | 3340 | 3856 | 4723 |
| 63/125              | 919  | 1300 | 1592 | 1838 | 2055 | 2907 | 3560 | 4111 | 5035 |
| 75/140              | 973  | 1376 | 1685 | 1946 | 2175 | 3076 | 3768 | 4351 | 5328 |
| 90/160              | 1040 | 1471 | 1801 | 2080 | 2326 | 3289 | 4028 | 4651 | 5696 |
| 110/180             | 1103 | 1560 | 1911 | 2206 | 2467 | 3488 | 4272 | 4933 | 6042 |
| 140/225             | 1233 | 1744 | 2136 | 2467 | 2758 | 3900 | 4777 | 5515 | 6755 |
| 160/250             | 1308 | 1850 | 2266 | 2616 | 2925 | 4136 | 5066 | 5850 | 7164 |
| 200/280             | 1462 | 2068 | 2533 | 2925 | 3270 | 4624 | 5664 | 6540 | 8010 |
| 225/315             | 1551 | 2194 | 2687 | 3102 | 3468 | 4905 | 6007 | 6937 | 8496 |

## Plastic to Metal Connections

Fundamentally three options are available for plastic to metal connections, namely; threads, flanged connection and unions. GF Piping Systems recommends that wherever possible mechanical connections are used (unions and flanges) together with a located gasket such as O-Ring.

### Union Connections

This is the most reliable and cost effective method to connect metal to plastic. GF Piping Systems has a whole range of transition unions with O-Rings specially designed to compensate for the changes in length which can occur in ABS and COOL-FIT ABS due to temperature fluctuations. See ABS product range for details of the copper, brass, stainless steel and malleable iron transition unions available.

### Flange connections

Metal to ABS and also ABS to ABS connections using flange adaptors is possible up to DN300. For bolt torques, tightening sequences etc please refer to standard the GF Piping Systems Plastics Technical Handbook.

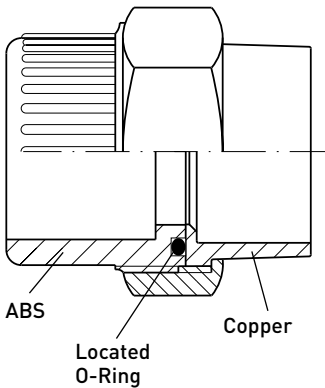
GF Piping Systems's new revolutionary PN 16 PP V-Flange is light weight, with location stubs to aid installation and is designed to avoid high stresses during tightening. GF Piping Systems recommends this type of flange for use with plastic flange connections.

All mechanical connections including flanges should be re-tightened after commissioning if the working temperature is lower than the temperature during installation.

### Threaded Connections

GF Piping Systems recommends avoiding threaded connections for plastic wherever possible, solvent cementing is a very reliable and speedy method of jointing and should be preferred to threaded connections.

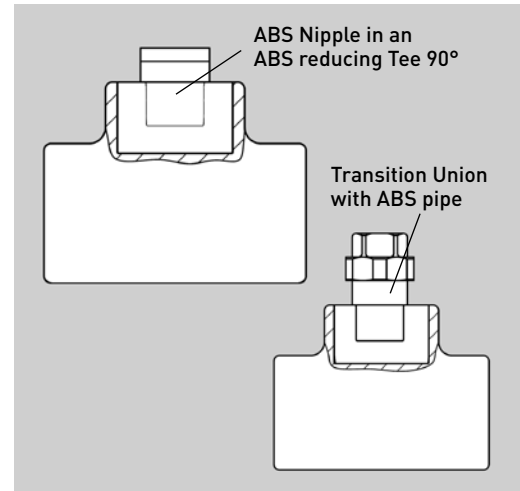
For sealing threaded joints the mating parts should always be parallel to tapered. In the ABS range only the plastic female thread with reinforced ring should be used for connection to metal threads. For sealing we recommend **only** PTFE tape. 2 layers of tape applied in a clockwise direction, the components should then be joined carefully to avoid damage to the plastic thread. Mechanical wrenches should not be used to tighten the joint. Namely strap type wrenches prevent damage to the plastic components.



## Measuring Equipment in an ABS System

### Tee 90° reduced in ABS

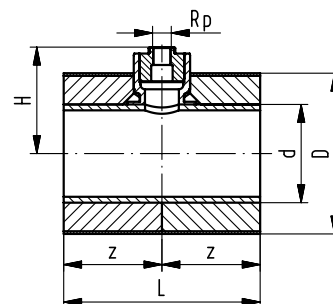
Standard ABS tees can be fitted with a short reducer and then a threaded nipple or a piece of pipe with a transition union to install equipment, this should be planned in in the design stage of the plant. We recommend use of a transition union rather than a threaded connection.



### Measuring Equipment in COOL-FIT ABS

As with the ABS system Tee 90° reducers are available in COOL-FIT ABS. These then need to be planned into the system during the design phase of the plant.

At present it is not possible to install equipment into an already existing COOL-FIT ABS pipe, other than cutting the pipe and placing a Tee in the pipe.





# Retro-Installation of Measuring Equipment, in ABS (min d125)

Occasionally there is the need to install measuring devices, venting devices or similar into an existing piping system without using additional installation fittings.

## Solution:

At the section of the piping system with greatest wall thickness (in the middle of the joint) a hole is drilled for the spigot of the adapter fitting. Then a suitable adapter fitting is solvent cemented into the hole which acts as socket.

## Installation steps in detail:

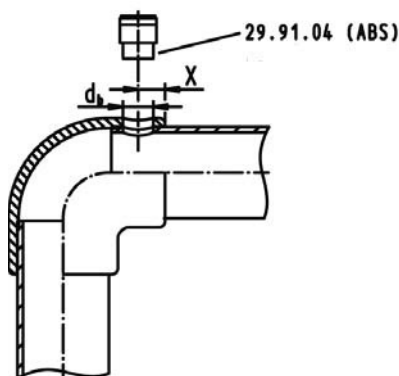
1. The hole is drilled into a drained pipe section.
2. The hole is drilled at a right angle to the pipe axis.
3. The hole diameters and tolerances given in the attached table correspond to socket dimensions according to ISO 727-1 and are to be observed.
4. The dimension X in the attached table indicates the distance from the entrance of the socket to the middle of the hole to be drilled in order to place it in the middle of the joint.
5. Use a suitable deburring tool to deburr the edges of hole.
6. Shavings should be removed from the pipe.
7. Allowed combinations of pipe and adapter fitting are indicated in the attached table with yes. The selection is such that the spigot of the adapter fitting does not reach into the medium-filled pipe for more than 1 mm as well as fully covering the hole drilled into the joint.
8. The spigot is solvent cemented into the drilled hole according to the instructions for solvent cement jointing given in our Planning Fundamentals.
9. Attend to waiting times before refilling and applying pressure to the system.

**When correctly installed the above joint is good for PN10 at 20 °C with water as the medium.**

## Retro-Installation of Equipment: into an already existing system

For dimensions > d90 it is possible to use the extra wall thickness in a cemented joint to bore through pipe and fitting and install a transition union.

See [www.cool-fit.georgefischer.com](http://www.cool-fit.georgefischer.com) for installation details.



Allowed combinations of pipe and adapter dimensions

| ABS PN10      |   | Wall thickness, e | Adapter dimensions |     |     |     |
|---------------|---|-------------------|--------------------|-----|-----|-----|
| pipe diameter |   | S8, SDR17         | 20                 | 25  | 32  | 40  |
| 75            | x | 4.5               | Yes                | Yes | No  | No  |
| 90            | x | 5.4               | Yes                | Yes | No  | No  |
| 110           | x | 6.6               | Yes                | Yes | No  | No  |
| 125           | x | 7.4               | Yes                | Yes | No  | No  |
| 140           | x | 8.6               | Yes                | Yes | No  | No  |
| 160           | x | 9.9               | Yes                | Yes | No  | No  |
| 180           | x | 10.7              | Yes                | Yes | Yes | No  |
| 200           | x | 12.3              | Yes                | Yes | Yes | No  |
| 225           | x | 13.9              | Yes                | Yes | Yes | Yes |

| ABS PN6       |   | Wall thickness, e | Adapter dimensions |     |     |     |
|---------------|---|-------------------|--------------------|-----|-----|-----|
| pipe diameter |   | S12.5, SDR26      | 20                 | 25  | 32  | 40  |
| 250           | x | 9.6               | No                 | Yes | Yes | No  |
| 280           | x | 10.7              | No                 | Yes | Yes | Yes |
| 315           | x | 12.1              | No                 | No  | Yes | Yes |

## Dimensions of hole to be drilled

| Adapter dimension | Hole diameter, d in mm |
|-------------------|------------------------|
| 20                | 20.2                   |
| 25                | 25.2                   |
| 32                | 32.2                   |
| 40                | 40.2                   |
| Tolerance         | ± 0.1 mm               |

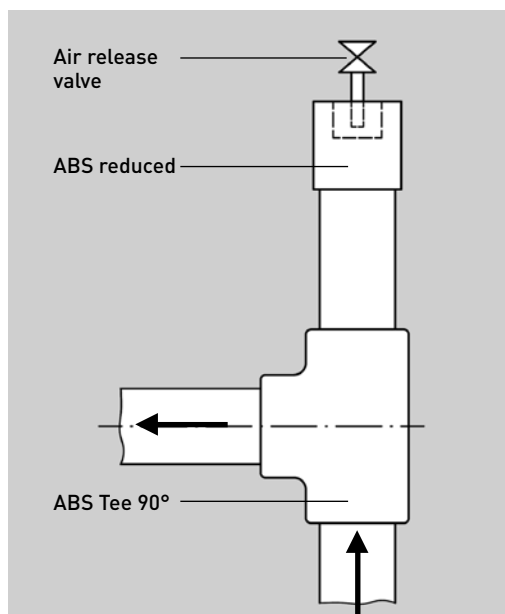
| Pipe dimension | Position X in mm |
|----------------|------------------|
| 75             | 22               |
| 90             | 26               |
| 110            | 31               |
| 125            | 34               |
| 140            | 38               |
| 160            | 43               |
| 180            | 48               |
| 200            | 53               |
| 225            | 59               |
| 250            | 66               |
| 280            | 73               |
| 315            | 82               |
| Tolerance      | ± 1 mm           |

### De-Venting or De-aeration

It is always important to remove air from any piping system, for salt solutions this is particularly important due to their corrosive nature.

Summary of De-aeration process,

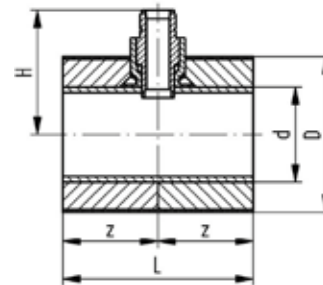
- always fill the system slowly from the bottom up
- induce a vacuum in the system before filling
- install manual and/or automatic de-aerators at the highest points in the system
- long horizontal runs should be installed at a slight gradient
- avoid low points i.e. U-configurations where air can be trapped
- install de-aerators with a buffer zone of fluid below them, see sketch below
- always observe the medium manufacturers specific recommendation for filling, mixing etc as secondary fluids differ in their composition



### SIGNET Flow Measuring Equipment

GF Piping Systems Signet offer paddle wheel flow measuring equipment which can be used to very cost effectively measure the flow of your medium, with digital and analogue display devices including cabinet housings for installation in display units.

These SIGNET flow sensors can be installed using specially designed installation fittings, ask GF Piping Systems for installation fittings details.



### COOL-FIT Easy Flow



COOL-FIT Easy Flow is a Handheld Monitor for cooling applications. The monitor allows easy and simple flow measurement reading. The actual flow rates is based on coolant media, pipe size and media temperature.

With is very easy setup and good accuracy the COOL-FIT Easy Flow is ideal for the initial setting up and balancing of cooling systems. COOL-FIT Easy Flow is the preferred solution if matched with the save and reliable COOL-FIT Inatallation Fittings for sensors.

# Internal Pressure test and leak test

Medium: We recommend the use of water as testing medium. The solvent gases which may be left in the pipe after jointing dissolve in water and thus water also removes all excess solvents from the system. Water also has a very low compression ratio and is thus safer as a testing medium. If water is not practical then inert gases can be used with ABS and COOL-FIT ABS. Compressed air should not be used with ABS or COOL-FIT ABS.

Pressures:  
For water 1.5 x working pressure, to a maximum of PN + 5 bar.

Time under Pressure Test:  
We recommend that the system is left at the test pressure for minimum 6 hours to ensure complete leak tightness control.

## Overview of the different testing methods

| Testing method                    | Internal pressure test  |   |   | Leak test    |              |
|-----------------------------------|---|---|---|--------------|--------------|
|                                   | Medium  | Gas/air*  | Compressedair*  | Gas/air      | Gas/air      |
| Art                               | incompressible  | compressible  | compressible  | compressible | compressible |
| Testpressure                      | $p_{p(perm)}$<br>resp.<br>$0.85 \times p_{p(perm)}$                             | PN, max. 10 bar   | max. 1.1xPN   | 0.5 bar      | 1.5 bar      |
| Endangerment during pressure test | small   | high  | high  | small        | middle       |
| Material                          | all plastics  | ABS   | PB, PE  | all plastics | ABS          |
| Informative value                 | High:<br>Proof of resistance to pressure including tightness against testmedium | High:<br>Proof of resistance to pressure including tightness against testmedium | High:<br>Proof of resistance to pressure including tightness against testmedium | small        | middle       |

\*Please consider the applicable safety precautions  
More information is available in DVS 2210-1 Suppl. 2.

# Installation of metric industrial piping systems

## Internal pressure test and leak test

### Internal pressure test with water or a similar incompressible test fluid

#### General

The internal pressure test is done when installation work has been completed and necessitates an operational pipeline or operational test sections. The test pressure load should furnish experimental proof of operational safety.

The test pressure is not based on the working pressure, but rather on the internal pressure load capacity, derived from the pipe wall thickness. Supplement 2 of DVS 2210-1 forms the basis for the following information. This replaces the data in DVS 2210-1 entirely. The modifications became necessary because

- the reference value nominal pressure (PN) is being used less and less to determine the test pressure (1.5xPN, or 1.3xPN) and is being replaced by SDR,
- a short-term overload or even a reduction in the service life can occur if in the course of the internal pressure test based on the nominal pressure the pipe wall temperature  $T_R=20^\circ\text{C}$  is exceeded by more than  $5^\circ\text{C}$ .

Test pressures are therefore determined in relation to SDR and the pipe wall temperature. The 100-h value from the long-term behaviour diagram is used for the test clamping.

#### Test Parameters

The following table indicates recommended methods of testing the internal pressure.

| Object  | Pre-test                  | Main test                      |
|---|---------------------------|--------------------------------|
| <b>Test pressure <math>p_p</math></b><br>(depends on the pipe wall temperature or the permissible test pressure of the built-in components, see clause Determining the test pressure) | $\leq p_{p(\text{perm})}$ | $\leq 0.85 p_{p(\text{perm})}$ |

#### Pre-test

The pre-test serves to prepare the piping system for the actual test (maintest). In the course of pre-testing, a tension-expansion equilibrium in relation to an increase in volume will develop in the piping system. A material-related drop in pressure will occur which will require repeated pumping to restore the test pressure and also frequently a re-tightening of the flange connection screws. The guidelines for an expansion-related pressure.

#### Main test

In the context of the main test, a much smaller drop in pressure can be expected at constant pipe wall temperatures so that it is not necessary to pump again.

#### Observe if using compensators

| Test duration<br>(depends on the length of the pipeline, respectively the sections)             | $L \leq 100 \text{ m}$ : 3h<br>$100 \text{ m} < L \leq 500 \text{ m}$ : 6h                    | $L \leq 100 \text{ m}$ : 3h<br>$100 \text{ m} < L \leq 500 \text{ m}$ : 6h                       |
|---|---|--|
| <b>Checks during the testing</b> (test pressure and temperature progression should be recorded) | At least 3 checks, distributed over the test duration <b>with</b> restoring the test pressure | At least 2 checks, distributed over the test duration <b>without</b> restoring the test pressure |

decrease in pipes are:

| Material | Pressure drop |
|----------|---------------|
| ABS      | 0.6 bar/h     |

The checks can focus primarily on leak detection at the flange joints and any position changes of the pipe.

If the pipeline to be tested contains compensators, this has an influence on the expected axial forces of the pipeline. Because the test pressure is higher than the working pressure, the axial forces on the fixed points become higher. This has to be taken into account when designing the fixed points.

#### Observe if using valves

When using a valve at the end of a pipeline (end or final valve), the valve and the pipe end should be closed by a dummy flange or cap. This prevents inadvertent opening of the valve or any pollution of the inside of the valve.

### Filling the pipeline

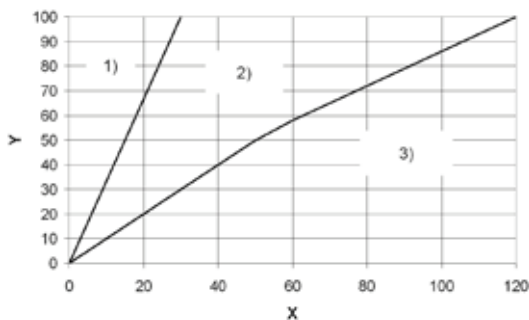
- Was installation done according to the available plans?
- All pressure relief devices and flap traps mounted in the flow direction?
- All end valves shut?
- Valves in front of other devices are shut to protect against pressure.
- Visual inspection of all joints, pumps, measurement devices and tanks.
- Has the waiting period after the last fusion cementing been observed?

Now the pipeline can be filled from the geodetic lowest point. Special attention should be given to the air vent. If possible, vents should be provided at all the high points of the pipeline and these should be open when filling the system. Flushing velocity should be at least 1m/sec. Reference values for the filling volume are given in the table below.

| DN  | V(l/sec) | DN  | V(l/sec) |
|-----|----------|-----|----------|
| ≤80 | 0.15     | 250 | 2.0      |
| 100 | 0.3      | 300 | 3.0      |
| 150 | 0.7      | 400 | 6.0      |
| 200 | 1.5      | 500 | >9.0     |

Adequate time should be allowed between filling and testing the pipeline, so that the air contained in the piping system can escape via the vents: ca. 6-12h, depending on the nominal diameter.

### Applying the test pressure



The test pressure is applied according to the diagram. Here it is important that the pressure increase rate does not cause any water hammer!

### Definitions

Y = test pressure in %

X = time for pressure increase in min

1) = pressure increase rate up to DN100

2) = range of pressure increase rates > DN100-400

3) = reference values for pressure increase rate DN500 and greater is: 500/DN [bar/10min]

### Determining the test pressure

The allowable test pressure is calculated according to the following formula:

$$P_{p(\text{perm})} = \frac{1}{\text{SDR}} \frac{20 \sigma_{v(T,100h)}}{S_p A_G}$$

with

$\sigma_{v(T,100h)}$  Long-term creep strength for the pipe wall temperature  $T_R$  (att = 100h)

$S_p$  Minimum safety factor for long-term creep strength

$A_G$  Processing or geometrical specific factor that reduces the allowable test pressure

$T_R$  Pipe wall temperature: average value of test medium temperature and pipe surface temperature



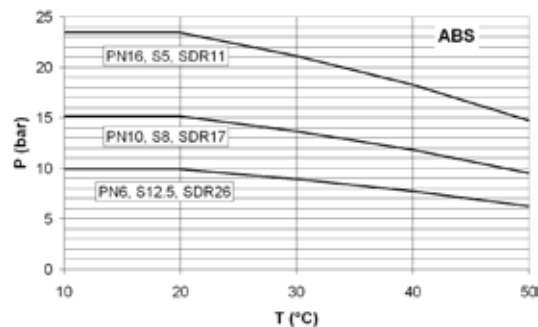
**Attention:** If the piping system contains diaphragm valves the maximum allowable test pressure is limited to the nominal pressure.

To make things easier, the permissible test pressures can be taken directly from the following diagrams.

### Definitions:

P = permissible test pressure in bar

T = pipe wall temperature in °C



### Checks during testing

The following measurement values must be recorded consistently during testing:

- Internal pressure at the absolute low point of the pipeline
- Medium and ambient temperature
- Water volume input
- Water volume output
- Pressure drop rates

# Installation of metric industrial piping systems

## Internal pressure test and leak test

### Internal pressure test and leak tightness test of ABS pipelines with gas/air as test fluid (compressible medium)

#### Introduction

Usually the pressure test is done as a **water pressure test** and only in exceptional cases (with consideration of special safety precautions) as a gas pressure test with air or nitrogen (please consider also the general chapter Introduction into pressure testing).

#### Safety precautions



**Attention:** The test is carried out with a compressible medium, please observe the necessary safety precautions.

The area around the pipeline under test pressure is to be clearly restricted for access only by persons assigned with the testing.

Necessary control equipment is to be placed at a safe distance.

The testing should be timed so that there are as few persons as possible in the immediate area. In particular at the entrances to the endangered area additional signs are to be setup (Entry prohibited, Attention! Gas pressure tests!). If necessary persons in neighbouring buildings are to be informed.

#### Observe if using compensators

If the pipeline to be tested contains compensators, this has an influence on the expected axial forces of the pipeline. Because the test pressure is higher than the working pressure, the axial forces on the fixed points become higher. This has to be taken into account when designing the fixed points.

#### Observe if using valves

When using a valve at the end of a pipeline (end or final valve), the valve and the pipe end should be closed by a dummy flange or cap. This prevents inadvertent opening of the valve or any pollution of the inside of the valve.

#### Minimum waiting times for the internal pressure test

Before carrying out the pressure test, observe the minimum waiting times after the last cementing given in the following table:

| Ambient Temperature | Waiting time  |
|---------------------|---------------|
| 10 to 30 °C         | min. 48 hours |

#### Testing procedure of the internal pressure test

The test pressure shall be equal to the PN of the installed piping system but with a maximum pressure of 10 bar. Any components with a lower PN than the rest of the piping systems shall be considered. The test temperature shall be between 10 to 30 °C.

The pipelines must be free from any grease or paint.

Only oil free air or inert gases such as nitrogen should be used as the test medium. No refrigerant gases, such as R22, may be used.

Once the pressure in the system has stabilised hold the pipeline under the test pressure for at least 15 minutes. If a drop in pressure is observed and inspection of the joints is necessary this can be done using a foam-building agent. Using a soap solution which can be removed simply with water after the test is recommended.



**Attention:** Commercial leak detection sprays can cause stress cracks in plastics. Using these sprays remove any residues after testing.

**Note:** For valves leak tightness using a gas is not representative of the valves leak tightness with a fluid. Therefore if a GF valve shows a leakage under internal pressure test with a gas it is recommended to reduce the pressure to 1.5 bar and re-inspect the valves.

#### Leak tightness test with gas/air

For checking the leak tightness shortly after installation a test pressure of up to 1.5 bar with a minimum waiting time of 3 hours applies.

# Insulation

## Insulating ABS

ABS is not chemically resistant to solvents. Solvents are used in the jointing process to soften and swell the ABS to create a weld. This use of solvent takes place under controlled conditions and uses double wall thickness by inserting pipe in fitting.

Any other contact of solvents with ABS should be avoided. Some insulation materials on the market use solvent based glues to position the insulation, as per manufacturers' instructions only the insulation itself should be glued together.

Any excess glue which may come into contact directly with the ABS should be removed with a cloth.

If insulation has been glued directly to the pipe this does not mean that the system is now dangerous. It can however only be determined on a case to case basis if the situation will have a detrimental effect on the performance of the pipe. Contact GF Piping Systems if you require more information on this subject.

## Insulation to avoid Dew on ABS

To calculate the necessary thickness of insulation required on ABS to avoid Dew or Condensation can be done via GF Piping Systems's on-line cooling calculation program, see [www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com)

Under the button «condensation» you will be asked to input the system parameters and type of insulation. The results are guideline values based on tradename published data and general physical data regarding types of insulation. We recommend the user consults the insulation manufacturer for detailed specific advice regarding the insulation when not using COOL-FIT ABS.

## COOL-FIT ABS: Condensation, Yes or No?

COOL-FIT ABS has set thicknesses of insulation, once again via [www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com) the user can input his system parameters and the program will identify whether using COOL-FIT ABS dew will appear on the outside of the pipe or not.

PUR has a thermal conductivity of 0.026 W/m.K and the thickness is +/-35mm for all dimensions so the system parameters need to be extreme for dew to appear on the outside of COOL-FIT ABS.

For example:

|                                |        |
|--------------------------------|--------|
| Medium temperature:            | -50 °C |
| Temperature of the surrounding | +20 °C |
| Relative atmospheric humidity  | 75%    |
| Wind velocity:                 | 1 m/s  |

Under the above circumstance there will be no condensation on the pipes.

## Foaming ABS with PUR On-Site

There are various types of PUR on the market using different types of activators to initiate the foaming process. All are however an exothermic reaction, i.e. generate heat, usually reaching temperatures of about 120 °C, which can be dangerous for thermoplastics. ABS has a vicat point, softening point of 98 °C, this means that any temperatures reached above this have a detrimental effect on the ABS. Also usually the foaming on-site takes place in an enclosed volume which then causes external pressures on the component. For these reasons we recommend that ABS fittings and pipe are not insulated using PUR foaming on-site.

COOL-FIT ABS is foamed under controlled conditions ensuring that the quality of the ABS is not affected by the PUR foaming process.



## De-Frosting

Many secondary refrigeration loops are not only used for normal and low temperature cooling but are also used for de-frosting. GF Piping Systems has many years of good experience with the use of ABS in such dual de-frost / cooling systems without any detrimental effects to the system.

## Long Term Life-Span of ABS Pipes

One of the major differences in physical characteristics between plastics and metals is the physical characteristic creep. Creep is a time related physical property of plastics. Under a constant stress plastics strain and the amount of strain is time related.

This characteristic is taken into account in the Pressure-Temperature curve which is based on a minimum Life-Span of 25 years and with a safety factor of 1.8.

This curve and further background data relating to creep, the long term hydrostatic curves, and other system defining criteria can be found in ISO 15493.

## Storage

All plastic pipes including pre-insulated plastic pipes, i.e. COOL-FIT ABS should be stacked on a flat surface free from sharp edges, such as stones or building debris for instance. During handling care should be taken to avoid damage to the outside surface of the pipe, for instance no dragging along the ground. Avoid pipe overhangs when stored as this will cause the pipe to bend.

## UV Resistance

Most plastics suffer some loss of physical properties when exposed to UV light, only PE Black, used also for the outer jacket of the COOL-FIT ABS black, is UV resistant.

The impact strength of ABS reduces under UV light over a time period of approximately one year, after which the oxidised layer on the outside surface of the ABS acts as a barrier and the impact strength does not deteriorate further.

Although the ABS impact strength is reduced under UV light it still remains at a very high level.

## Under-Ground Installation

Pre-insulated ABS can be used under-ground. Standard guidelines for installation of plastic pipe systems should be followed. Please pay attention to local regulations.

In general, trenches should not be less than 1 meter deep. To avoid frost damage trenches can be deeper.

The pipe should be laid in a sand bed, all large pieces of rock and sharp objects must be removed. Compressed sand should be used to pack the pipe.

We recommend use of the long shrink sleeves from the COOL-FIT product range (265 mm) for the pipe to pipe connections.

Pre-insulated ABS pipes have a higher stiffness and weight than standard ABS. It is therefore recommended to perform jointing in the trench itself wherever possible to avoid unnecessary stressing of the joints.

It should not be necessary to use any mechanical expansion elbows in the system design underground.

Please consult GF for technical advice.



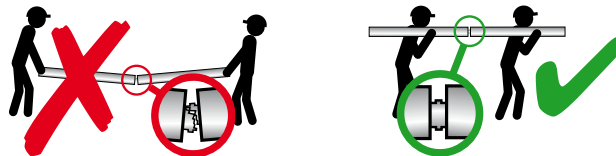
## The Environment

ABS and COOL-FIT ABS are halogen free. The materials used in COOL-FIT ABS namely ABS, PE and PUR are all recyclable materials.

GF Piping Systems as a company aims to understand and meet customer requirements regarding the environment. We design products and develop our processes taking into account the environment and its needs.

TEWI, ODP and GWP values and reports exist for COOL-FIT pre-insulated pipe, please see [www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com)

## How to carry COOL-FIT pipes after connection with ABS Nipples:



## Pipes must be kept straight!



### Flammability

A means of measuring flammability is by using the limiting oxygen index (LOI) to ASTM 2863 or BS2782-141. These values are shown below for the COOL-FIT ABS raw materials and for comparison purposes some other commonly used materials.

A material with a LOI value above 21 does not support combustion in air at room temperature.

|          |           |
|----------|-----------|
| Material | LOI       |
| ABS      | 18.3–18.8 |
| PE       | 17.4      |
| Cotton   | 16–17     |

### ABS Flammability

According to UL-94, ABS has an HB (Horizontal Burning) flammability coefficient and falls into building material class B2 (conventional inflammable, non-dripping) according to DIN 4102-1. Fundamentally, toxic substances are released by all burning processes. Carbon monoxide is generally the most important. When ABS burns, primarily carbon dioxide, carbon monoxide and water are formed. Tests have shown that the relative toxicity of the products of combustion are similar or even lower than those of natural products such as wood, wool and cotton. ABS combustion gases are not corrosive. That the burning nevertheless forms soot, smoke develops during combustion. Suitable fire-fighting agents are water, foam and carbon dioxide.

### PE Flammability

The following classifications in accordance with differing combustion standards: According to UL94, PE is classified as HB (Horizontal Burning) and according to DIN 53438-1 as K2. According to DIN 4102 part 1 and ÖNORM B3800 part 1, PE is listed as B2 (normally flammable). In the French classification of building materials, polyethylene corresponds to M3 (of average flammable rating).

The self-ignition temperature is 350 °C.

Suitable fire-fighting agents are water, foam, carbon dioxide or powder.

### PUR Flammability

Rigid polyurethane-based foams are effective insulation materials commonly used in the construction industry.

Polyurethane foam will burn if exposed to flames. The combustibility characteristics vary with chemical composition. Unlike expanded polystyrene (eps), polyurethane does not melt. It flashes into flames between 800 °F and 850 °F, and only chars rather than melts at temperatures below that range. The charring may in fact help protect the adjacent foam. Some studies have indicated that Douglas Fir was more toxic than polyurethane foam.

In a paper presented at the 1985 Society of the Plastics Industry, annual meeting on polyurethane foam. Please consult GF Piping Systems for further details.

# ABS Metric Piping System Specification

## 1 Scope

This specification covers requirements for the GF Piping Systems ABS intended for a wide range of applications including water and wastewater treatment as well as process cooling water and secondary refrigeration.

The components of the ABS pipe system are in accordance with the following standards.

## 2 Acrylonitrile Butadiene Styrene Material

GF Piping Systems ABS pipes and fittings shall be manufactured from acrylonitrile butadiene styrene, ABS. The raw material used shall be material designed for use with pressure bearing piping systems with long term hydrostatic properties in accordance with ISO 15493, as supplied by GF Piping Systems.

For detailed physical properties see GF Piping Systems literature reference Fi 9030, pages 28–30.

## 3 ABS Pipe

All ABS pipe shall be metric sizes manufactured in accordance with the requirements of ISO 15493, supplied by GF Piping Systems.

## 4 ABS Fittings

All ABS fittings shall be metric sizes manufactured by GF Piping Systems or equal, with dimensions and tolerances in accordance with ISO 727 and ISO 15493. All threaded connections shall have pipe threads in accordance with the requirements of ISO 7-1:1994.

## 5 ABS Valves

All ABS valves shall be metric sizes manufactured by GF Piping Systems or equal in accordance with DIN 3441 Parts 1 to 4.

## 6 Solvent Cement Jointing and Installation

Should be in accordance with GF Piping Systems Guide to the Installation and Use of Plastic Pipelines.

# COOL-FIT ABS Pipe and Fittings Specification

## 1 Scope

This specification covers requirements for GF Piping Systems COOL-FIT ABS (pre-insulated ABS pipe and fittings), intended primarily for use in refrigeration and cooling plants for the secondary piping systems. The system consists of pre-insulated pipe and fittings using ABS carrier pipe and fittings, with insulation from PUR and outer jacket in PE.

The components of the COOL-FIT ABS pipe and fittings are in accordance with the following standards.

## 2 ABS Carrier Pipe and Fittings

### 2.1 Raw Material

GF Piping Systems ABS pipes and fittings shall be manufactured from acrylonitrile butadiene styrene, ABS. The raw material used shall be a material for use with pressure bearing plastic pipe systems in accordance to ISO 15493. For detailed physical properties see GF Piping Systems literature reference Fi 9030, pages 32–34.

### 2.2 Physical Properties

The ABS carrier pipe and fittings shall be manufactured to metric sizes in accordance with the requirements of ISO 15493, supplied by GF Piping Systems.

## 3 PUR Insulation

The insulating material shall be hard polyurethane foam, PUR, with a thermal conductivity,  $\lambda$  value, of  $< 0.026 \text{ W/mK}$  and a density of  $> 45 \text{ kg/m}^3$ .

## 4 HD-PE Outer Jacket

The outer jacket shall be manufactured from HDPE, high density polyethylene, black and white. Colours of the jacket shall be black to RAL 9004 and white to RAL 9010. The black jacket shall be UV resistant in accordance to DIN 8075.

## 5 Solvent Cement Jointing and Installation

Should be in accordance with GF Piping Systems Guide to the Installation and Use of Plastic Pipelines.

# Jointing technology

## Cement technology

### Instructions for Tangit solvent cement jointing of ABS dimension d16 to d225

#### General

Solvent cement jointing calls for adequate technical know-how, which can be acquired in the appropriate training courses. Your GF representative will gladly provide you with information about training possibilities.

The dimensions of GF pipes, fittings and valves conform generally to the various national standards as well as to ISO 727-1 concerning dimensions of sockets. Our fittings and valves can be used with any ABS pipes whose outside diameter tolerance conforms to ISO 11922-1.

According to ISO 727-1 the following minimal cement lengths are as shown in the table:

| Pipe outside diameter<br>–<br>Socket inside<br>diameter<br>d (mm) | Minimal cement<br>length<br><br>L (mm) |
|---|--|
| 16  | 13.0                                   |
| 20  | 15.0                                   |
| 25  | 17.5                                   |
| 32  | 21.0                                   |
| 40  | 25.0                                   |
| 50  | 30.0                                   |
| 63  | 36.5                                   |
| 75  | 42.5                                   |
| 90  | 50.0                                   |
| 110   | 60.0                                   |
| 125   | 67.5                                   |
| 140   | 75.0                                   |
| 160   | 85.0                                   |
| 200   | 105.0                                  |
| 225   | 117.5                                  |



Cutting the pipe to length



Chamfering the pipe



Solvent cementing equipment

#### Tools and equipment

|                                     |                             |                      |             |
|-------------------------------------|-----------------------------|----------------------|-------------|
| Pipe cutter                         | d 10–63                     | 790 109 001          |             |
| Type KRA                            | d 50–110                    | 790 109 002          |             |
|                                     | d 110–160                   | 790 109 003          |             |
| Pipe cutter Type KS 355             | 230 V/50–60 Hz              | 790 202 001          |             |
| Chamfering tool                     | d 16–75                     | 799 495 145          |             |
|                                     | d 32–200                    | 799 495 146          |             |
| Cleaner                             | 799 298 010 (1 litre tin)   |                      |             |
| Tangit ABS Solvent Cement           | 799 298 022 (0.65 kg tin)   |                      |             |
| Brush sizes                         | Pipe outside diameter in mm | Brush                | Code-No.    |
|                                     | 16– 32                      | Round brush ø 8 mm   | 799 299 002 |
|                                     | 40– 63                      | Flat brush 25 x 3 mm | 799 299 003 |
|                                     | 75–225                      | Flat brush 50 x 5 mm | 799 299 004 |
| Tin lid                             | 799 298 028                 |                      |             |
| White absorbent paper               | commercially available      |                      |             |
| Solvent resistant protecting gloves | commercially available      |                      |             |

# ABS Tangit and Cleaner: Amounts required

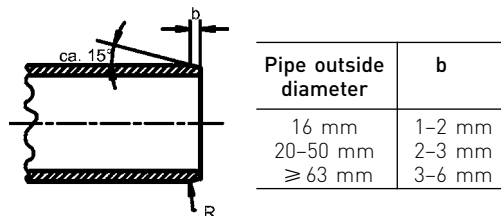
| Pipe diameter d (mm) | ABS Tangit-Amount per 100 Joints kg | ABS Tangit Number of Joints per Tin 0.650 kg | Pipe diameter d (mm) | Tangit-Cleaner Amount per 100 Joints litre | Tangit-Cleaner Number of Joints per Tin (1 litre) |
|----------------------|-------------------------------------|--|----------------------|--|---|
| 16                   | 0,25                                | 260  | 16                   | 0,2  | 500   |
| 20                   | 0,35                                | 186  | 20                   | 0,3  | 333   |
| 25                   | 0,40                                | 163  | 25                   | 0,4  | 250   |
| 32                   | 0,45                                | 144  | 32                   | 0,5  | 200   |
| 40                   | 0,60                                | 108  | 40                   | 0,7  | 143   |
| 50                   | 0,90                                | 72   | 50                   | 0,9  | 111   |
| 63                   | 1,10                                | 59   | 63                   | 1,1  | 91  |
| 75                   | 1,25                                | 52   | 75                   | 1,3  | 77  |
| 90                   | 1,70                                | 38   | 90                   | 1,4  | 71  |
| 110                  | 2,50                                | 26   | 110                  | 1,7  | 59  |
| 140                  | 5,00                                | 13   | 140                  | 2,1  | 48  |
| 160                  | 6,50                                | 10   | 160                  | 2,5  | 40  |
| 200                  | 10,00                               | 6  | 200                  | 3,5  | 29  |
| 225                  | 12,50                               | 5  | 225                  | 4,5  | 22  |

**Note:** The quantities specified above are to be understood as practice-orientated maximum values. In principle the quantities depend on gap dimensions, temperatures, working technique.

### Preparations

The pipe must be cut off at right angles. Remove the inside edges and chamfer the outside ones as illustrated in the sketch. Only then is an optimal solvent cemented joint possible.

**Important:** Well-chamfered pipe ends prevent the layer of cement from being removed as the pipe is inserted into the fitting.



Wipe the outside of the pipe and the inside of the socket with a clean cloth to remove obvious dirt. Marking the jointing length on the pipe end makes it possible to check afterwards whether the pipe has been inserted to the full extent of the socket.

**Note:** If the outside diameter of the pipe and the inside diameter of the socket are at opposite extremes of their tolerances, then the pipe cannot be inserted dry into the fitting socket. This will only become possible once the cement has been applied.

The Tangit ABS Cement is supplied ready for use. Stir thoroughly before using! Cement of the correct consistency will run evenly from a wooden spatula held at a slant. Cement which no longer runs smoothly is unusable. The cement must not be thinned.

For more information please consult the safety data-sheets under the following link: <https://www.sdb.henkel.de/index.cfm>

Cement and cleaner should be stored in a cool, dry place (5-35 °C)! Under these conditions the cement and cleaner are durable for 24 months starting from the date of filling (imprinted on the tin).



## Cementing

Clean the outside of the pipe end and the inside of the socket **thoroughly** with ABS cleaner and absorbent paper.

Use a fresh piece of paper for each component. If the surfaces are free from grease, cleaning with absorbent paper and Tangit cleaner is not absolutely necessary for ABS.

But remove any condensation which may have formed on the parts.

**Important:** Pipe end and fitting socket must be dry and free from grease and dirt and must not be touched after cleaning.



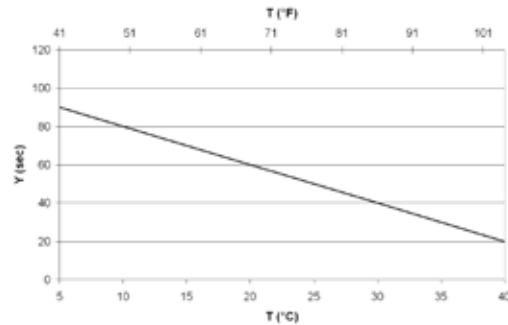
Cleaning the pipe and socket

ABS pipes should be cemented at temperatures between +5 °C and +40 °C. Take the following protective measures if the temperatures deviate from the above:

At low temperatures, condensation or ice water which may have formed must be removed, e. g. with warm air. Cement and cleaner should be stored at room temperature. Please observe the waiting times mentioned in the following until the next cementing.

Avoid uneven overheating (→ shorten the opening time) when cementing at higher temperatures by protecting the jointing area from direct sunlight.

The quick curing time of the cement necessitates that the joint is made within the opening time after application of the cement has started. The opening time of the ABS cement varies with the ambient temperature and the thickness of the cement applied:



T Temperature in °C / °F  
Y Opening time [sec]

Begin by applying a normal layer of cement to the fitting and then a thicker one to the pipe end with firm brush pressure. **Work in well.**

The brush strokes should always be in an axial direction.

To ensure that both jointing surfaces are completely covered with a smooth, even layer of cement, the brush should be generously loaded with cement.

To ensure that both jointing surfaces are completely covered with a smooth, even layer of cement, the brush should be generously loaded with cement.



Applying the cement

The joints can be made single-handed for pipes with diameters up to d63 mm.

For d75 mm and larger pipes, two people are needed to apply the cement to the pipe end and fitting socket simultaneously in order to avoid exceeding the maximum opening time of the cement.

After the cement has been applied, insert the pipe to the full depth of the socket immediately without twisting and bring them into the correct alignment. Ensure that the outlet of the fitting is in the correct position. Hold them in this position to allow the cement to set.

Up to the dimension **d140** wait at least 10 minutes before the next joint, extend the waiting time at temperatures under 10 °C to 15 minutes.



For the dimensions **d160 to d225** wait at least 30 minutes before the next joint, extend the waiting time at temperatures under 10 °C to 60 minutes. In order to avoid any forces on the cemented components by the weight of the piping system a support of the pipeline is necessary.

Remove any surplus cement immediately, using absorbent paper.

A bead of excess solvent cement around the complete external circumference of the joint and a slightly smaller bead again around the complete internal circumference show that the joint has been performed correctly.

After use, clean the brush of excess cement with dry absorbent paper and then clean thoroughly using TANGIT cleaner. Brushes must be dry before being reused (shake out).



Replace the lid of the cement tin during work breaks.

Replace the lid of the cement tin after use to prevent the solvent evaporating. Using the conical lid allows leaving the brush in the cement tin during breaks.

Solvent cement dissolves ABS. Pipes and fittings must therefore not be laid on or allowed to come into contact with spilled cement or paper containing cement residues.



Do not close off cement pipelines during the drying process. This is particularly important at temperatures below + 5 °C, when there is otherwise a danger of damaging the material. After the drying process (see waiting times in the following table) the pipelines can be filled. It is recommended to flush the pipeline before use, and leave it filled with water if it is not directly used.

To ensure the traceability (if necessary) of the used Tangit ABS batch, place the batch marking on the test report. This batch marking is attached to each dispatch unit. If several batches are used in one project, place one marking from each batch on the test report.

**Tangit ABS**



Charge/Batch-No.: \_\_\_\_\_

Abfülldatum/Filling date: \_\_\_\_\_

Diese Chargenkennzeichnung ist auf dem Prüf-/Abnahmeprotokoll anzubringen. / Put this product identification on the final test report.

### Drying period and pressure testing of ABS piping systems d16 - d225

The length of the drying period before the joint may be subjected to testing or operating pressure depends on the ambient temperature, the dimension and the tolerances. The following tables shows the different waiting times.

**Remark:** For temperatures above 20 °C the test pressure must be reduced according to the requirements given in the chapter „Final testing and commissioning“.



**Attention:** Care should be taken, if the medium has a large temperature difference to the installation temperature. Please consult your local GF Representative.



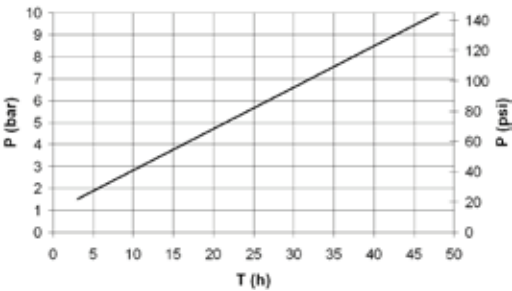
**Internal pressure test with water**

This pressure test shall be carried out according to the information given in the chapter „Internal pressure test with water or a similar incompressible fluid“. The waiting time after the last joint until the pressure test is shown in the following table:

| Ambient Temperature            | Waiting time  |
|--------------------------------|---------------|
| 10 ° to 30 °C                  | min. 24 hours |
| - below 10 °C<br>- above 30 °C | min. 48 hours |

**Internal pressure test or leak tightness test with gas/air**

Due to the risk of a pressure test with a compressible test medium this pressure test shall be carried out only in exceptional cases! Please consult also the safety precautions given in the chapter „Internal pressure test of ABS pipelines“. The following diagram shows the waiting depending on the test pressure for a ambient temperature between 10 to 30 °C:



- Ambient temperature between 10 to 30 °C
- P Test pressure in bar, psi
- T Waiting time after last joint in hour

**Repair works**

If the pipeline is only subjected to the operating pressure with fluids, e. g. after adaptation or repair works, the following rule of thumb for the waiting time applies, which is depending on the diameter:

| Ambient Temperature            | Waiting time for testing with fluids (non compressible) |
|--------------------------------|---|
| 10 ° to 30 °C                  | 1-hour waiting time per 1bar operating pressure.        |
| - below 10 °C<br>- above 30 °C | 2-hour waiting time per 1bar operating pressure.        |

**Dimension d16 up to d140**

| Ambient Temperature            | Waiting time for testing with fluids (non compressible) |
|--------------------------------|---|
| 10 ° to 30 °C                  | 2-hour waiting time per 1bar operating pressure.        |
| - below 10 °C<br>- above 30 °C | 4-hour waiting time per 1bar operating pressure.        |

**Dimension d160 up to d225**

### Safety precautions

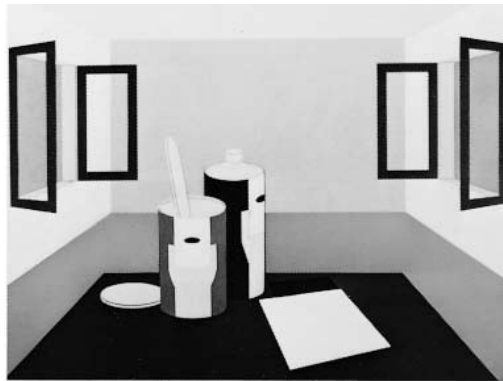
Tangit cement and cleaner contain highly volatile solvents. This makes good ventilation or adequate fume extraction essential in closed spaces. Since the solvent fumes are heavier than air, extraction must occur at floor level, or at least below the working level. Place paper which has been used for cleaning or for the removal of surplus cement into closed containers to minimise the amount of solvent fumes in the air.

Cement and cleaner are inflammable. Extinguish open fires before commencing work. Switch off unprotected electrical apparatus, electric heaters, etc. Do not smoke! Discontinue any welding operations. Furthermore, observe all instructions issued by the solvent cement manufacturer (e. g. label of the tin and any supplementary documentation).

Protect pipes and fittings from spilled solvent cement, cleaner and absorbent paper which has been used to wipe off cement. Do not dispose of surplus solvent cement or cleaner in drainage systems.

The use of protective gloves is recommended to avoid contact with skin. If the cement or the cleaner get in contact with eyes, rinse immediately with water. Consult a doctor! Immediately change clothes that have solvent cement on them.

Always obey the safety regulations issued by the authorities responsible.



Adequate ventilation of the workplace



No open flames when cementing. No smoking

# Instructions for Solvent Cementing Pre-insulated COOL-FIT ABS

The jointing technique for COOL-FIT ABS internal jointing follows the same tried and tested technique as that for standard ABS using exactly the same tooling and Tangit cement.

Following is a summary of ABS solvent cement jointing for COOL-FIT ABS. Please refer to the standard ABS solvent cementing jointing instructions for exact curing times, handling instructions, health and safety advice and commissioning procedure.



Mark the inside diameter of the pipe to the minimum socket depth required. Socket depth is always  $d/2 + 6$  (mm), for example socket length for  $d90 = 90/2 + 6$ .



Chamfer to 45° the internal diameter of the ABS pipe.



Apply the ABS cement to the outside of the COOL-FIT ABS nipple, axially, smoothly in one action, in an even layer, approximately 1 mm thick. Use a firm pressure on the brush when applying the cement to work the cement into the fitting.



Check the consistency of the ABS Tangit cement. The cement should run smoothly and before jointing check that all tools required are readily to hand.



Apply the ABS Cement to the inside surface of the COOL-FIT ABS pipe. Apply the cement to the depth marked, using the same technique as with the fitting.



The outside surface of the COOL-FIT ABS nipple and the inner surfaces of the COOL-FIT ABS pipe, must always be cleaned using Tangit cleaner with clean absorbent paper.

Insert the COOL-FIT ABS nipple axially into the pipe being careful not to rotate the parts. Remove all excess cement using absorbent paper.

The installer should take note of the Tangit ABS opening time and safety precautions written on the Tangit tin and in standard ABS jointing instructions.

# Joining technique: Pipe preparation

(Calibration only required for d140 and above)

Please read the operating instructions prior to using the Calibration Tool

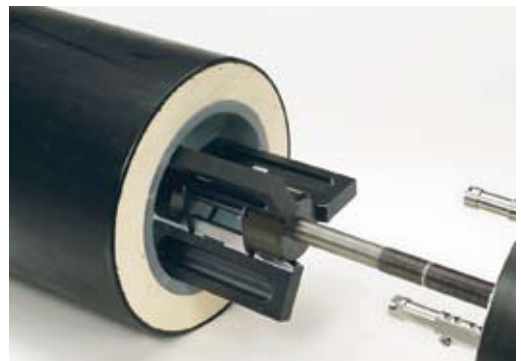


1 Cut pipe at right angles, 90°.

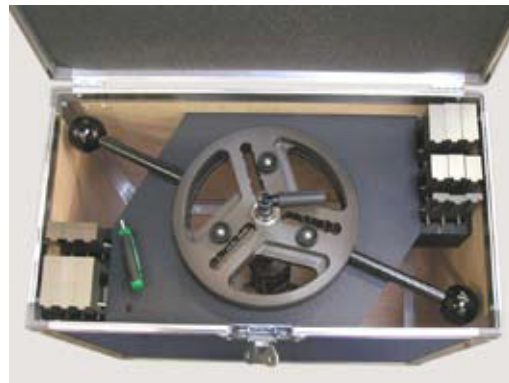
For ABS dimensions below d140 calibration of the pipe is not required, please follow cementing instructions.



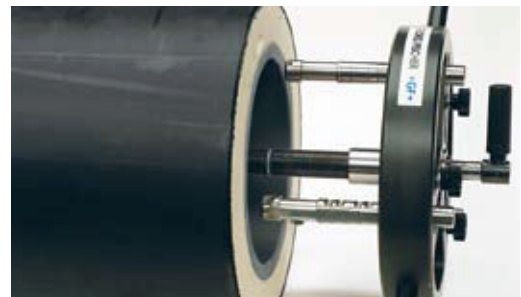
4. Always ensure that the pipe has been chamfered before inserting the calibration tool



5 Insert the tool into the pipe to the depth indicated on the spindle. For short lengths of pipe see instructions packed with the tool.



2 For dimensions d140 and above the internal diameter of the pipe needs to be calibrated using the COOL-FIT ABS calibration tool.



6 Wind-out the jaws of the tool until the tool is firmly located.



3 Assemble the COOL-FIT ABS calibration tool using the relevant parts for the required dimension. Detailed instructions are delivered with the tool.



7 Wind-in cutting head checking that the cutting knife and the other 2 locating heads are assembled in the correct location.

## Joining technique: Pipe preparation



8 Please note that the tool calibrates the pipe and therefore may not always remove material and may remove different amounts of material as it cuts.



11 Wind-in the locating jaws until the tool is loose then carefully retract the tool taking care not to damage the pipe.



9 The cutting knife can be rotated to cut with a fresh edge if the knife becomes blunt or if it is damaged.



12 It is recommended that the installer checks the diameter of the calibrated pipe using the enclosed gauge. The internal diameters required are also listed in the COOL-FIT ABS catalogue and in the tooling instructions.



10 Wind-in the cutting head until it butts up to the end of the pipe.



13 After the calibration process the pipe must be chamfered again!

# Instructions for Insulating the Gap

Please take care that the «shrink sleeve, short» has been placed over the pipe before jointing.



If it is not possible to use the shrink sleeve or the sleeve is damaged GF Piping Systems has a «sealing wrap», effectively a high-duty tape available on demand.

It is also possible to use other heavy-duty insulating tapes instead of the shrink sleeve. For the life-span and sealing properties of these tapes please consult the individual manufacturers.

Place the shrink sleeve over the middle of the gap.

Fittings of the latest generation do have indicators that help to position the shrink sleeve correctly.

Locate the sleeve by pressing it onto the double sided sticky tape.



Wrap the «gap insulator» into the gap between the COOL-FIT ABS components taking care to ensure that the gap is completely filled.

Using an open flame apply heat to the sleeve, taking care to keep the flame moving to avoid the sleeve melting.

To avoid the sleeve distorting apply the heat to the middle of the sleeve, not from the side.

The sleeve will now shrink to the outside diameter of the jacket pipe.

Note: hot air can be used to shrink the sleeve but is not recommended due to the high amount of energy required to activate shrinking.



Apply the double sided sealing tape around the complete circumference of the outer pipe.



# ABS Product Range



## Background Information to the ABS Product Range from GF Piping Systems



ABS from GF Piping Systems is a pressure bearing complete piping system that has been available from GF Piping Systems since the mid 80's.

GF Piping Systems offers 2 standard systems in ABS; firstly a BS Inch dimensioned system and secondly a metric mm dimensioned system. See ISO15493 for details.

ABS metric is available in dimensions from d16 to d315 with a complete range of fittings and transition fittings for metal to plastic connections as well as a complete range of manually and actuated valves. COOL-FIT ABS is only available using the metric ABS system, d25-d225.

The ABS valves are completely corrosion resistant with no metal parts and can be actuated either pneumatically or electrically.


ABS metric can be used for mediums at temperatures between  $-40\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$  and has a nominal pressure rating of PN10 (10 bar water at  $20\text{ }^{\circ}\text{C}$ ).

Examples of application areas are: refrigeration secondary systems, for instance in supermarkets or breweries, iced-water or ice slurry systems in pharmaceutical plants, water treatment plants, for drinking and cooling water on ships. Many other application areas are possible. Please ask GF Piping Systems for recommendations of suitability.





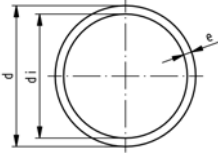
# COOL-FIT

|   |             | Page |
|---|-------------|------|
|  | Pipes       | 46   |
|  | Fittings    | 47   |
|  | Accessories | 54   |

# COOL-FIT

## Pipes

### Pipe 1m length, ABS metric



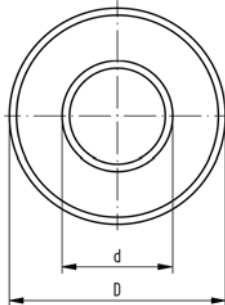
**Model:**

- Colour: RAL 7001, gravel grey
- Length: 1m
- PN 10 (10 bar) / PN 16 (16 bar) at 20°C

| d<br>[mm] | PN | Code               | kg/m   | e<br>[mm] | di<br>[mm] | Length<br>[m] |
|-----------|----|--------------------|--------|-----------|------------|---------------|
| 16        | 16 | <b>700 262 080</b> | 0.095  | 1.8       | 12.4       | 1.00          |
| 20        | 16 | <b>700 262 081</b> | 0.152  | 2.3       | 15.4       | 1.00          |
| 25        | 16 | <b>700 262 082</b> | 0.193  | 2.3       | 20.4       | 1.00          |
| 32        | 10 | <b>700 262 083</b> | 0.212  | 1.9       | 28.2       | 1.00          |
| 40        | 10 | <b>700 262 084</b> | 0.334  | 2.4       | 35.2       | 1.00          |
| 50        | 10 | <b>700 262 085</b> | 0.523  | 3.0       | 44.0       | 1.00          |
| 63        | 10 | <b>700 262 086</b> | 0.834  | 3.8       | 55.4       | 1.00          |
| 75        | 10 | <b>700 262 087</b> | 1.176  | 4.5       | 66.0       | 1.00          |
| 90        | 10 | <b>700 262 088</b> | 1.693  | 5.4       | 79.2       | 1.00          |
| 110       | 10 | <b>700 262 089</b> | 2.529  | 6.6       | 96.8       | 1.00          |
| 140       | 10 | <b>700 262 091</b> | 4.489  | 8.6       | 122.8      | 1.00          |
| 160       | 10 | <b>700 262 092</b> | 5.856  | 9.9       | 140.2      | 1.00          |
| 200       | 10 | <b>700 262 093</b> | 9.133  | 12.3      | 175.4      | 1.00          |
| 225       | 10 | <b>700 262 094</b> | 11.605 | 13.9      | 197.2      | 1.00          |

PF 2 33 198 007

### Pipe pre-insulated, ABS metric



**Model:**

- Length: 5 m
- Outer jacket impact resistant. Color: black
- Insulation made from PUR

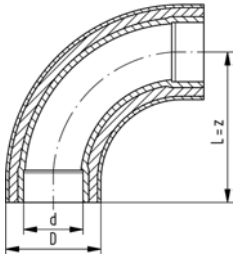
| d<br>[mm] | D<br>[mm] | PN | Code               | kg/m   | e<br>[mm] | di<br>[mm] |
|-----------|-----------|----|--------------------|--------|-----------|------------|
| 25        | 90        | 10 | <b>169 017 682</b> | 1.300  | 2.3       | 20.4       |
| 32        | 90        | 10 | <b>169 017 683</b> | 1.500  | 1.9       | 28.2       |
| 40        | 110       | 10 | <b>169 017 684</b> | 1.900  | 2.4       | 35.2       |
| 50        | 110       | 10 | <b>169 017 685</b> | 2.100  | 3.0       | 44.0       |
| 63        | 125       | 10 | <b>169 017 686</b> | 2.700  | 3.8       | 55.4       |
| 75        | 140       | 10 | <b>169 017 687</b> | 3.500  | 4.5       | 66.0       |
| 90        | 160       | 10 | <b>169 017 688</b> | 4.400  | 5.4       | 79.2       |
| 110       | 180       | 10 | <b>169 017 689</b> | 5.500  | 6.6       | 96.8       |
| 140       | 225       | 10 | <b>169 017 691</b> | 8.500  | 8.6       | 123.8      |
| 160       | 250       | 10 | <b>169 017 692</b> | 10.500 | 9.9       | 140.2      |
| 200       | 280       | 10 | <b>169 017 693</b> | 13.500 | 12.3      | 175.4      |
| 225       | 315       | 10 | <b>169 017 694</b> | 18.500 | 13.9      | 197.2      |

PF 2 33 372 001

# COOL-FIT

## Fittings

### Bend 90° pre-insulated, ABS metric



**Model:**

- Insulation made from PUR
- Outer jacket impact resistant. Color: black

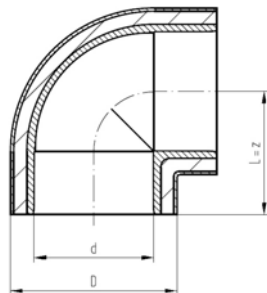
Connecting dimensions = Pipe outer diameter

\* Available as long as our stock will last

| d<br>[mm] | D<br>[mm] | PN | Code               | kg    | z<br>[mm] | L<br>[mm] | required Nipple |
|-----------|-----------|----|--------------------|-------|-----------|-----------|-----------------|
| 25        | 90        | 10 | <b>738 001 107</b> | 0.183 | 69        | 69        | 738 901 607     |
| 32        | 90        | 10 | <b>738 001 108</b> | 0.234 | 86        | 86        | 738 901 608     |
| 40        | 110       | 10 | <b>738 001 109</b> | 0.442 | 109       | 109       | 738 901 609     |
| 50        | 110       | 10 | <b>738 001 110</b> | 0.520 | 131       | 131       | 738 901 610     |
| 63        | 125       | 10 | <b>738 001 111</b> | 0.826 | 164       | 164       | 738 901 611     |
| 75        | 140       | 10 | <b>738 001 112</b> | 1.188 | 194       | 194       | 738 901 612     |
| 90        | 160       | 10 | <b>738 001 113</b> | 1.000 | 231       | 231       | 738 901 613     |
| 110       | 180       | 10 | <b>738 001 114</b> | 2.500 | 281       | 281       | 738 901 614     |
| 140       | 225       | 10 | <b>738 001 116</b> | 4.500 | 356       | 356       | 738 901 616     |
| *160      | 250       | 10 | <b>738 001 117</b> | 6.000 | 406       | 406       | 738 901 617     |
| 225       | 315       | 10 | <b>738 001 120</b> | 6.000 | 287       | 287       | 738 901 620     |

PF 2 33 372 020

### Elbow 90° pre-insulated, ABS metric



**Model:**

- Insulation made from PUR
- Outer jacket impact resistant. Color: black
- Compact design

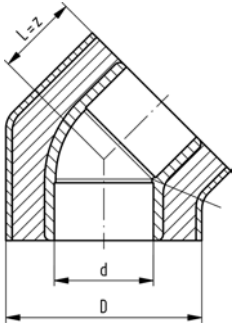
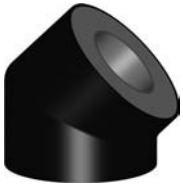
Connecting dimensions = Pipe outer diameter

| d<br>[mm] | D<br>[mm] | PN | Code               | kg    | z<br>[mm] | L<br>[mm] | required Nipple |
|-----------|-----------|----|--------------------|-------|-----------|-----------|-----------------|
| 160       | 250       | 10 | <b>738 101 117</b> | 2.600 | 166       | 166       | 738901617       |
| 200       | 280       | 10 | <b>738 101 119</b> | 3.700 | 207       | 207       | 738901619       |

PF 2 33 372 020

# COOL-FIT

## Elbow 45° pre-insulated, ABS metric



### Model:

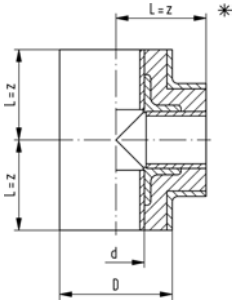
- Insulation made from PUR
- Outer jacket impact resistant. Color: black

Connecting dimensions = Pipe outer diameter

| d<br>[mm] | D<br>[mm] | PN | Code               | kg    | z<br>[mm] | L<br>[mm] | required Nipple |
|-----------|-----------|----|--------------------|-------|-----------|-----------|-----------------|
| 25        | 90        | 10 | <b>738 151 107</b> | 0.079 | 25        | 25        | 738 901 607     |
| 32        | 90        | 10 | <b>738 151 108</b> | 0.094 | 30        | 30        | 738 901 608     |
| 40        | 110       | 10 | <b>738 151 109</b> | 0.167 | 36        | 36        | 738 901 609     |
| 50        | 110       | 10 | <b>738 151 110</b> | 0.198 | 43        | 43        | 738 901 610     |
| 63        | 125       | 10 | <b>738 151 111</b> | 0.321 | 52        | 52        | 738 901 611     |
| 75        | 140       | 10 | <b>738 151 112</b> | 0.452 | 61        | 61        | 738 901 612     |
| 90        | 160       | 10 | <b>738 151 113</b> | 0.500 | 71        | 71        | 738 901 613     |
| 110       | 180       | 10 | <b>738 151 114</b> | 0.800 | 89        | 89        | 738 901 614     |
| 140       | 225       | 10 | <b>738 151 116</b> | 1.300 | 108       | 108       | 738 901 616     |
| 160       | 250       | 10 | <b>738 151 117</b> | 1.800 | 122       | 122       | 738 901 617     |
| 200       | 280       | 10 | <b>738 151 119</b> | 2.600 | 149       | 149       | 738 901 619     |
| 225       | 315       | 10 | <b>738 151 120</b> | 3.300 | 168       | 168       | 738 901 620     |

PF 2 33 372 020

## Tee 90° pre-insulated, ABS metric



### Model:

- Insulation made from PUR
- Outer jacket impact resistant. Color: black

\* Connecting dimensions = Pipe inner diameter

| d<br>[mm] | D<br>[mm] | PN | Code               | kg    | z<br>[mm] | L<br>[mm] | required Nipple |
|-----------|-----------|----|--------------------|-------|-----------|-----------|-----------------|
| *25       | 90        | 10 | <b>738 201 107</b> | 0.100 | 80        | 80        | 738 901 107     |
| *32       | 90        | 10 | <b>738 201 108</b> | 0.100 | 80        | 80        | 738 901 108     |
| *40       | 110       | 10 | <b>738 201 109</b> | 0.545 | 90        | 90        | 738 901 109     |
| *50       | 110       | 10 | <b>738 201 110</b> | 0.200 | 90        | 90        | 738 901 110     |
| *63       | 125       | 10 | <b>738 201 011</b> | 0.788 | 100       | 100       | 738 901 611     |
| *75       | 140       | 10 | <b>738 201 012</b> | 1.290 | 125       | 125       | 738 901 612     |
| *90       | 160       | 10 | <b>738 201 113</b> | 1.000 | 140       | 140       | 738 901 113     |
| 110       | 180       | 10 | <b>738 201 114</b> | 2.000 | 122       | 122       | 738 901 614     |
| 140       | 225       | 10 | <b>738 201 116</b> | 3.000 | 147       | 147       | 738 901 616     |
| 160       | 250       | 10 | <b>738 201 117</b> | 4.000 | 167       | 167       | 738 901 617     |
| 200       | 280       | 10 | <b>738 201 119</b> | 5.000 | 207       | 207       | 738 901 619     |
| 225       | 315       | 10 | <b>738 201 120</b> | 7.000 | 233       | 233       | 738 901 620     |

PF 2 33 372 020

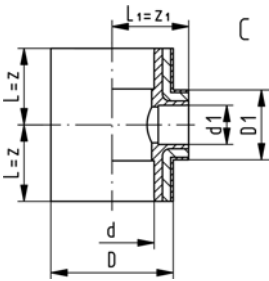
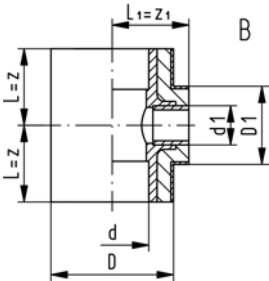
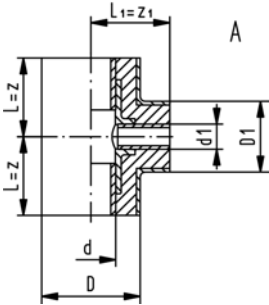
# COOL-FIT

## Tee 90° reduced pre-insulated, ABS metric



### Model:

- Insulation made from PUR
- Outer jacket impact resistant. Color: black



| d<br>[mm] | d1<br>[mm] | D<br>[mm] | D1<br>[mm] | Type | PN | Code        |
|-----------|------------|-----------|------------|------|----|-------------|
| 32        | 25         | 90        | 90         | A    | 10 | 738 201 138 |
| 40        | 25         | 110       | 90         | A    | 10 | 738 201 151 |
| 40        | 32         | 110       | 90         | A    | 10 | 738 201 147 |
| 50        | 25         | 110       | 90         | A    | 10 | 738 201 192 |
| 50        | 32         | 110       | 90         | A    | 10 | 738 201 164 |
| 63        | 25         | 125       | 90         | A    | 10 | 738 201 193 |
| 63        | 32         | 125       | 90         | A    | 10 | 738 201 178 |
| 63        | 50         | 125       | 110        | A    | 10 | 738 201 170 |
| 75        | 40         | 140       | 110        | A    | 10 | 738 201 182 |
| 90        | 32         | 160       | 90         | B    | 10 | 738 201 143 |
| 90        | 63         | 160       | 125        | B    | 10 | 738 201 146 |
| 110       | 32         | 180       | 90         | B    | 10 | 738 201 144 |
| 110       | 50         | 180       | 110        | B    | 10 | 738 201 136 |
| 140       | 50         | 225       | 110        | B    | 10 | 738 201 148 |
| 140       | 75         | 225       | 140        | B    | 10 | 738 201 149 |
| 160       | 90         | 250       | 160        | B    | 10 | 738 201 158 |
| 200       | 110        | 280       | 180        | C    | 10 | 738 201 153 |
| 225       | 110        | 315       | 180        | C    | 10 | 738 201 156 |
| 225       | 160        | 315       | 250        | C    | 10 | 738 201 157 |

| d<br>[mm] | d1<br>[mm] | z<br>[mm] | z1<br>[mm] | required Nipple                 |
|-----------|------------|-----------|------------|---------------------------------|
| 32        | 25         | 80        | 80         | 1 x 738 901 107; 2x 738 901 108 |
| 40        | 25         | 90        | 90         | 1 x 738 901 107; 2x 738 901 109 |
| 40        | 32         | 90        | 90         | 1 x 738 901 108; 2x 738 901 109 |
| 50        | 25         | 90        | 90         | 1 x 738 901 107; 2x 738 901 110 |
| 50        | 32         | 90        | 90         | 1 x 738 901 108; 2x 738 901 110 |
| 63        | 25         | 100       | 100        | 1 x 738 901 107; 2x 738 901 111 |
| 63        | 32         | 100       | 100        | 1 x 738 901 108; 2x 738 901 111 |
| 63        | 50         | 100       | 100        | 1 x 738 901 110; 2x 738 901 111 |
| 75        | 40         | 115       | 110        | 1 x 738 901 109; 2x 738 901 112 |
| 90        | 32         | 97        | 120        | 1 x 738 901 108; 2x 738 901 613 |
| 90        | 63         | 97        | 120        | 1 x 738 901 111; 2x 738 901 613 |
| 110       | 32         | 117       | 130        | 1 x 738 901 108; 2x 738 901 614 |
| 110       | 50         | 117       | 130        | 1 x 738 901 110; 2x 738 901 614 |
| 140       | 50         | 147       | 153        | 1 x 738 901 110; 2x 738 901 616 |
| 140       | 75         | 147       | 153        | 1 x 738 901 112; 2x 738 901 616 |
| 160       | 90         | 167       | 165        | 1 x 738 901 113; 2x 738 901 617 |
| 200       | 110        | 213       | 193        | 1 x 738 901 614; 2x 738 901 619 |
| 225       | 110        | 239       | 206        | 1 x 738 901 614; 2x 738 901 620 |
| 225       | 160        | 239       | 206        | 1 x 738 901 617; 2x 738 901 620 |

PF 2 33 372 020

# COOL-FIT

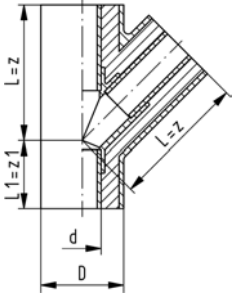
## Tee 45° pre-insulated, ABS metric



### Model:

- Insulation made from PUR
- Outer jacket impact resistant. Color: black

\* Connecting dimensions = Pipe inner diameter



PF 2 33 372 020

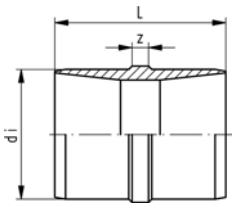
| d<br>[mm] | D<br>[mm] | PN | Code               | kg    | L<br>[mm] | z<br>[mm] | L1<br>[mm] | z1<br>[mm] | required Nipple |
|-----------|-----------|----|--------------------|-------|-----------|-----------|------------|------------|-----------------|
| *25       | 90        | 10 | <b>738 251 107</b> | 0.100 | 160       | 160       | 80         | 80         | 738 901 107     |
| *32       | 90        | 10 | <b>738 251 108</b> | 0.200 | 160       | 160       | 80         | 80         | 738 901 108     |
| *40       | 110       | 10 | <b>738 251 109</b> | 0.200 | 180       | 180       | 90         | 90         | 738 901 109     |
| *50       | 110       | 10 | <b>738 251 110</b> | 0.300 | 180       | 180       | 90         | 90         | 738 901 110     |
| *63       | 125       | 10 | <b>738 251 111</b> | 0.500 | 200       | 200       | 100        | 100        | 738 901 111     |
| *75       | 140       | 10 | <b>738 251 112</b> | 0.800 | 240       | 240       | 120        | 120        | 738 901 112     |
| *90       | 160       | 10 | <b>738 251 113</b> | 1.200 | 250       | 250       | 125        | 125        | 738 901 113     |
| *110      | 180       | 10 | <b>738 251 114</b> | 2.200 | 300       | 300       | 150        | 150        | 738 901 114     |



## Barrel Nipple di-di, ABS

### Model:

- To connect pipe inner diameters di

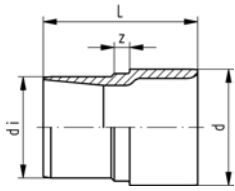


PF 2 33 372 020

| d<br>[mm] | PN | Code               | kg    | di<br>[mm] | L<br>[mm] | z<br>[mm] |
|-----------|----|--------------------|-------|------------|-----------|-----------|
| 25        | 10 | <b>738 901 107</b> | 0.008 | 20         | 52        | 10        |
| 32        | 10 | <b>738 901 108</b> | 0.014 | 28         | 58        | 10        |
| 40        | 10 | <b>738 901 109</b> | 0.022 | 35         | 66        | 10        |
| 50        | 10 | <b>738 901 110</b> | 0.035 | 44         | 76        | 10        |
| 63        | 10 | <b>738 901 111</b> | 0.060 | 55         | 90        | 10        |
| 75        | 10 | <b>738 901 112</b> | 0.090 | 65         | 102       | 10        |
| 90        | 10 | <b>738 901 113</b> | 0.127 | 79         | 104       | 10        |
| 110       | 10 | <b>738 901 114</b> | 0.208 | 96         | 122       | 10        |
| 140       | 10 | <b>738 901 116</b> | 0.422 | 123        | 150       | 10        |
| 160       | 10 | <b>738 901 117</b> | 0.596 | 141        | 166       | 10        |
| 200       | 10 | <b>738 901 119</b> | 1.086 | 176        | 202       | 10        |
| 225       | 10 | <b>738 901 120</b> | 1.502 | 198        | 224       | 10        |

# COOL-FIT

## Adaptor Nipple d-di, ABS



### Model:

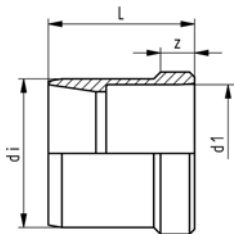
- To connect d to pipe inner diameter di

\* Can also be used as a reducer di 160 to di 140

| d<br>[mm] | PN | Code        | kg    | di<br>[mm] | L<br>[mm] | z<br>[mm] |  |
|-----------|----|-------------|-------|------------|-----------|-----------|--|
| 25        | 10 | 738 901 607 | 0.009 | 20         | 50        | 10        |  |
| 32        | 10 | 738 901 608 | 0.016 | 28         | 56        | 10        |  |
| 40        | 10 | 738 901 609 | 0.026 | 35         | 64        | 10        |  |
| 50        | 10 | 738 901 610 | 0.044 | 44         | 74        | 10        |  |
| 63        | 10 | 738 901 611 | 0.080 | 55         | 88        | 10        |  |
| 75        | 10 | 738 901 612 | 0.114 | 65         | 100       | 10        |  |
| 90        | 10 | 738 901 613 | 0.179 | 79         | 108       | 10        |  |
| 110       | 10 | 738 901 614 | 0.321 | 96         | 127       | 10        |  |
| *140      | 10 | 738 901 616 | 0.510 | 123        | 156       | 10        |  |
| 160       | 10 | 738 901 617 | 0.780 | 141        | 174       | 10        |  |
| 200       | 10 | 738 901 619 | 1.869 | 176        | 212       | 10        |  |
| 225       | 10 | 738 901 620 | 1.930 | 198        | 236       | 10        |  |

PF 2 33 372 020

## Reducing Nipple di-dred, ABS



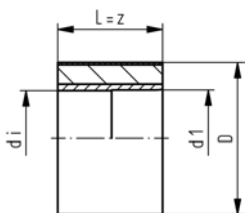
### Model:

- To connect pipe inner diameter di to reduced dred

| d<br>[mm] | d1<br>[mm] | PN | Code        | kg    | di<br>[mm] | L<br>[mm] | z<br>[mm] |  |
|-----------|------------|----|-------------|-------|------------|-----------|-----------|--|
| 32        | 25         | 10 | 738 911 341 | 0.006 | 28         | 34        | 10        |  |
| 40        | 32         | 10 | 738 911 346 | 0.009 | 35         | 38        | 10        |  |
| 50        | 40         | 10 | 738 911 352 | 0.014 | 44         | 43        | 10        |  |
| 63        | 50         | 10 | 738 911 358 | 0.025 | 55         | 50        | 10        |  |
| 75        | 63         | 10 | 738 911 364 | 0.022 | 65         | 56        | 10        |  |
| 90        | 75         | 10 | 738 911 370 | 0.033 | 79         | 57        | 10        |  |
| 110       | 90         | 10 | 738 911 376 | 0.073 | 96         | 66        | 10        |  |
| 140       | 110        | 10 | 738 911 385 | 0.198 | 123        | 80        | 10        |  |
| 200       | 160        | 10 | 738 911 392 | 0.453 | 176        | 106       | 10        |  |

PF 2 33 372 020

## Reducing Bush, pre-insulated, ABS metric



### Model:

- To connect di 225 to d 200
- Insulation made from PUR
- Outer jacket impact resistant. Color: black

| d<br>[mm] | d1<br>[mm] | PN | Code        | kg    | di<br>[mm] | L<br>[mm] | z<br>[mm] |  |
|-----------|------------|----|-------------|-------|------------|-----------|-----------|--|
| 225       | 200        | 10 | 738 911 396 | 3.924 | 198        | 220       | 220       |  |

PF 2 33 372 020

# COOL-FIT

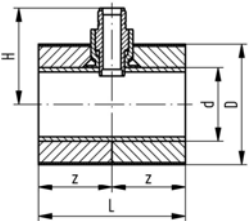
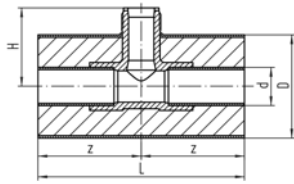
38 31 01

## Installation Fitting Type 310 pre-insulated, ABS metric

### Model:

- Threaded outlet 1 ¼" NPSM
- For Signet paddlewheel sensors Type -X0 (104 mm) and Type -X1 (137 mm)
- Insulation made from PUR
- Outer jacket impact resistant. Color: black

Connecting dimensions = Pipe inner diameter



| d<br>[mm] | DN<br>[mm] | PN | black<br>Code      | kg    |
|-----------|------------|----|--------------------|-------|
| 25        | 20         | 10 | <b>738 310 107</b> | 0.340 |
| 32        | 25         | 10 | <b>738 310 108</b> | 0.380 |
| 40        | 32         | 10 | <b>738 310 109</b> | 0.480 |
| 50        | 40         | 10 | <b>738 310 110</b> | 0.550 |
| 63        | 50         | 10 | <b>738 310 111</b> | 0.700 |
| *75       | 65         | 10 | <b>738 310 112</b> | 0.824 |
| *90       | 80         | 10 | <b>738 310 113</b> | 1.011 |
| *110      | 100        | 10 | <b>738 310 114</b> | 1.256 |
| *140      | 125        | 10 | <b>738 310 116</b> | 1.926 |
| *160      | 150        | 10 | <b>738 310 117</b> | 2.385 |
| *200      | 200        | 10 | <b>738 310 119</b> | 3.693 |
| *225      | 200        | 10 | <b>738 310 120</b> | 5.154 |

| d<br>[mm] | D<br>[mm] | L<br>[mm] | H<br>[mm] | z<br>[mm] | Sensor Type | required Nipple |
|-----------|-----------|-----------|-----------|-----------|-------------|-----------------|
| 25        | 90        | 220       | 78        | 110       | X0          | 738 901 107     |
| 32        | 90        | 220       | 81        | 110       | X0          | 738 901 108     |
| 40        | 110       | 220       | 85        | 110       | X0          | 738 901 109     |
| 50        | 110       | 220       | 89        | 110       | X0          | 738 901 110     |
| 63        | 125       | 220       | 95        | 110       | X0          | 738 901 111     |
| *75       | 140       | 220       | 161       | 110       | X1          | 738 901 112     |
| *90       | 160       | 220       | 171       | 110       | X1          | 738 901 113     |
| *110      | 180       | 220       | 181       | 110       | X1          | 738 901 114     |
| *140      | 225       | 220       | 193       | 110       | X1          | 738 901 116     |
| *160      | 250       | 220       | 202       | 110       | X1          | 738 901 117     |
| *200      | 280       | 250       | 211       | 125       | X1          | 738 901 119     |
| *225      | 315       | 280       | 225       | 140       | X1          | 738 901 120     |

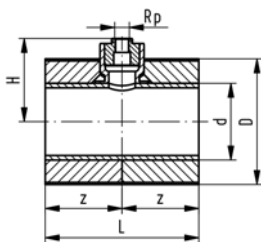
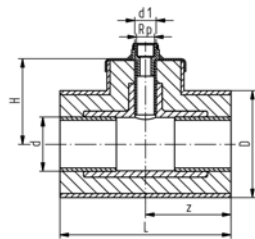
PF 2 98 930 002



# COOL-FIT

38 31 31

## Installation Fitting Type 313 pre-insulated, ABS metric



PF 2 98 930 002

### Model:

- With 1/2 " Rp threaded branch for sensors (i.e. temperature or pressure)
- Insulation made from PUR
- Outer jacket impact resistant. Color: black

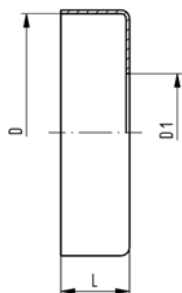
Connecting dimensions = Pipe inner diameter

| d<br>[mm] | DN<br>[mm] | PN | black<br>Code      | kg    | D<br>[mm] | d1<br>[mm] | Rp<br>[inch] | L<br>[mm] | H<br>[mm] | z<br>[mm] | required Nipple |
|-----------|------------|----|--------------------|-------|-----------|------------|--------------|-----------|-----------|-----------|-----------------|
| 25        | 20         | 10 | <b>738 313 107</b> | 0.330 | 90        | 12         | ½            | 160       | 100       | 80        | 738 901 107     |
| 32        | 25         | 10 | <b>738 313 108</b> | 0.400 | 90        | 14         | ½            | 160       | 100       | 80        | 738 901 108     |
| 40        | 32         | 10 | <b>738 313 109</b> | 0.500 | 110       | 14         | ½            | 180       | 100       | 90        | 738 901 109     |
| 50        | 40         | 10 | <b>738 313 110</b> | 0.570 | 110       | 14         | ½            | 180       | 100       | 90        | 738 901 110     |
| 63        | 50         | 10 | <b>738 313 111</b> | 0.890 | 125       | 12         | ½            | 200       | 100       | 100       | 738 901 111     |
| *75       | 65         | 10 | <b>738 313 112</b> | 0.794 | 140       |            | ½            | 220       | 101       | 110       | 738 901 112     |
| *90       | 80         | 10 | <b>738 313 113</b> | 0.981 | 160       |            | ½            | 220       | 109       | 110       | 738 901 113     |
| *110      | 100        | 10 | <b>738 313 114</b> | 1.226 | 180       |            | ½            | 220       | 119       | 110       | 738 901 114     |
| *140      | 125        | 10 | <b>738 313 116</b> | 1.898 | 225       |            | ½            | 220       | 134       | 110       | 738 901 116     |
| *160      | 150        | 10 | <b>738 313 117</b> | 2.360 | 250       |            | ½            | 220       | 145       | 110       | 738 901 117     |
| *200      | 200        | 10 | <b>738 313 119</b> | 3.681 | 280       |            | ½            | 250       | 165       | 125       | 738 901 119     |
| *225      | 200        | 10 | <b>738 313 120</b> | 5.151 | 315       |            | ½            | 280       | 178       | 140       | 738 901 120     |

# COOL-FIT

## Accessories

### Cap, PE, black



**Model:**

- to seal the end of a COOL-FIT pipe to ABS

| d   | D<br>[mm] | D1<br>[mm] | Code               | kg    | L<br>[mm] |
|-----|-----------|------------|--------------------|-------|-----------|
| 25  | 90        | 24         | <b>733 960 171</b> | 0.032 | 35        |
| 32  | 90        | 32         | <b>733 960 172</b> | 0.030 | 35        |
| 40  | 110       | 39         | <b>733 960 173</b> | 0.041 | 35        |
| 50  | 110       | 48         | <b>733 960 174</b> | 0.040 | 35        |
| 63  | 125       | 59         | <b>733 960 175</b> | 0.045 | 35        |
| 75  | 140       | 70         | <b>733 960 176</b> | 0.054 | 35        |
| 90  | 160       | 83         | <b>733 960 177</b> | 0.064 | 35        |
| 110 | 180       | 100        | <b>733 960 178</b> | 0.075 | 35        |
| 140 | 225       | 127        | <b>733 960 180</b> | 0.102 | 35        |
| 160 | 250       | 144        | <b>733 960 181</b> | 0.118 | 35        |
| 200 | 280       | 187        | <b>733 960 183</b> | 0.128 | 35        |
| 225 | 315       | 210        | <b>733 960 184</b> | 0.153 | 35        |

PF 2 33 372 030



### Silicon Glue

**Model:**

- For sealing and glueing caps
- Tube à 50 ml
- Cartridge à 290 ml

|        | Code               | kg    |
|--------|--------------------|-------|
| 50 ml  | <b>738 011 102</b> | 0.100 |
| 290 ml | <b>738 011 103</b> | 0.400 |

PF 2 33 372 030



### Gap filler

- 13 x 13mm, 2.5 m on a roll
- To insulate inspection gap at joints

| d-d<br>[mm] | Code               | kg    |
|-------------|--------------------|-------|
| 25 - 225    | <b>738 011 150</b> | 0.050 |

PF 2 33 372 030

# COOL-FIT



## Sealing tape

- To provide a water tight seal in combination with sealing tape
- 35mm, 80 m on a roll

| d-d<br>[mm] | Code               | kg    |  |
|-------------|--------------------|-------|--|
| 25 - 225    | <b>738 011 151</b> | 2.590 |  |

PF 2 33 372 030



## Shrink sleeve short, PE, black

- To provide a water tight seal in combination with sealing tape. For connections of the same outer diameter (D).
- Length = 85mm

| D<br>[mm] | Code               | kg    |  |
|-----------|--------------------|-------|--|
| 90 - 110  | <b>738 011 131</b> | 0.045 |  |
| 125 - 160 | <b>738 011 132</b> | 0.060 |  |
| 180 - 225 | <b>738 011 133</b> | 0.090 |  |
| 250 - 315 | <b>738 011 134</b> | 0.120 |  |

PF 2 33 372 020



## Shrink sleeve long, PE, black

### Model:

- To provide a water tight seal in combination with sealing tape
- For straight connections only
- D-D1 connections can be realized with the sleeves listed in the table below
- Length: 265 mm

| Code               | kg    | L<br>[mm] |  |
|--------------------|-------|-----------|--|
| <b>738 011 167</b> | 0.210 | 265       |  |
| <b>738 011 170</b> | 0.300 | 265       |  |
| <b>738 011 173</b> | 0.420 | 265       |  |

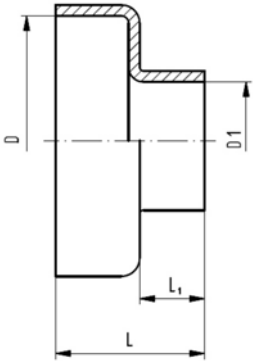
**Table black**

|        | D 110       | D 125       | D 140       | D 160       | D 180       | D 225       | D 250       | D 280       | D 315       |
|--------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| D1 90  | 738.011.167 | 738.011.167 | 738.011.167 | 738.011.167 |             |             |             |             |             |
| D1 110 |             | 738.011.167 | 738.011.167 | 738.011.167 |             |             |             |             |             |
| D1 125 |             |             | 738.011.167 | 738.011.167 |             |             |             |             |             |
| D1 140 |             |             |             | 738.011.167 | 738.011.170 | 738.011.170 |             |             |             |
| D1 160 |             |             |             |             | 738.011.170 | 738.011.170 |             |             |             |
| D1 180 |             |             |             |             |             | 738.011.170 | 738.011.173 | 738.011.173 |             |
| D1 225 |             |             |             |             |             |             | 738.011.173 | 738.011.173 | 738.011.173 |
| D1 250 |             |             |             |             |             |             |             | 738.011.173 | 738.011.173 |
| D1 280 |             |             |             |             |             |             |             |             | 738.011.173 |

PF 2 33 372 020

# COOL-FIT

## Shrink cap, PE, black



PF 2 33 372 030

### Model:

- To seal dimension reductions on PE
- Can also be used for T 90° reducers
- No sealing tape required (In cap included)
- Attention: Do not shrink onto ABS

| D<br>[mm] | D1<br>[mm] | Code               | kg    | L<br>[mm] | L1<br>[mm] |
|-----------|------------|--------------------|-------|-----------|------------|
| 225 - 160 | 140 - 90   | <b>733 960 135</b> | 0.550 | 137       | 61         |
| 315 - 225 | 250 - 125  | <b>733 960 140</b> | 0.900 | 143       | 43         |

## Shrink tape, PE, black



PF 2 33 372 030

### Model:

- For later closing of gaps
- Mastic backed
- Width (L) available in 100mm or 300mm
- 10 m on a roll

| d-d<br>[mm] | Code               | kg    | L<br>[mm] |
|-------------|--------------------|-------|-----------|
| 25 - 225    | <b>738 011 105</b> | 1.000 | 100       |
| 25 - 225    | <b>738 011 106</b> | 3.000 | 300       |

## Repairing Tape, PE, black



PF 2 33 372 030

### Model:

- For later closing of gaps instead of shrink sleeve
- 1150mmx150mm, black

| d-d<br>[mm] | Code               | kg    |
|-------------|--------------------|-------|
| 25 - 225    | <b>738 011 104</b> | 1.500 |

## COOL-FIT Chamfering Tool



PF 2 33 372 050

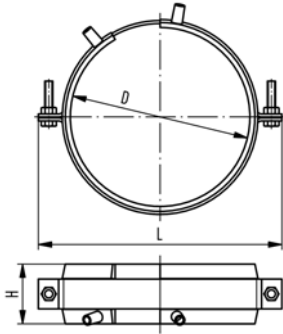
### Model:

- To calibrate pipe inner diameters of COOL-FIT pipes
- including transportation case

| d-d<br>[mm] | Code               | kg     |
|-------------|--------------------|--------|
| 140 - 225   | <b>790 205 001</b> | 19.500 |

# COOL-FIT

## COOL-FIT Fixed point



- The product consists of two components namely a welding band and a pipe bracket.
- Electro-fusion welded band as permanent connection to transmit the forces that occur in the pipe to the fixed point.
- The delivered pipe brackets are needed to deliver welding pressure during installation and give stability during operation.
- For welding, use an MSA 250, 300, 350, 400 or commercially available 220 V fusion machines.
- If you use an MSA fusion machine from GF Piping Systems, use the 799 350 339 adapter.
- Please take note of the maximum allowed forces for this version in the table below.
- **Fixed point brackets and cross braces have to be calculated and obtained by the installer. They are not included in the fixed point set from GF.**

| D<br>[mm] | d<br>[mm] | Code               | kg    | L<br>[mm] | H<br>[mm] | max. Force<br>[kN] |
|-----------|-----------|--------------------|-------|-----------|-----------|--------------------|
| 90        | 25 / 32   | <b>738 912 013</b> | 0.780 | 140       | 60        | 1.5                |
| 110       | 40 / 50   | <b>738 912 014</b> | 0.904 | 170       | 60        | 2.0                |
| 125       | 63        | <b>738 912 015</b> | 0.994 | 185       | 60        | 3.5                |
| 140       | 75        | <b>738 912 016</b> | 1.193 | 210       | 60        | 5.5                |
| 160       | 90        | <b>738 912 017</b> | 1.246 | 220       | 60        | 9.0                |
| 180       | 110       | <b>738 912 018</b> | 1.488 | 244       | 60        | 10.0               |
| 225       | 140       | <b>738 912 020</b> | 1.762 | 295       | 60        | 10.0               |
| 250       | 160       | <b>738 912 021</b> | 1.922 | 320       | 60        | 10.0               |
| 280       | 200       | <b>738 912 022</b> | 2.062 | 350       | 60        | 10.0               |
| 315       | 225       | <b>738 912 023</b> | 2.388 | 385       | 60        | 10.0               |

| Scope of delivery: |                             |   |                                  |                          |                          |
|--------------------|-----------------------------|---|----------------------------------|--------------------------|--------------------------|
| Code               | Outside diameter<br>PE pipe | Pipe brackets<br>(for electro welding tape)<br>[pieces] | Electro welding tape<br>[pieces] | Barcode-Card<br>[pieces] | Assembly<br>instructions |
| 738 912 013        | D90                         | 2 x d90   | 2 x d90                          | 1 x d90                  | 1                        |
| 738 912 014        | D110                        | 2 x d110  | 2 x d110                         | 1 x d110                 | 1                        |
| 738 912 015        | D125                        | 2 x d125  | 2 x d125                         | 1 x d125                 | 1                        |
| 738 912 016        | D140                        | 2 x d140  | 2 x d63; 2 x d75                 | 1 x d63; 1 x d75         | 1                        |
| 738 912 017        | D160                        | 2 x d160  | 2 x d160                         | 1 x d160                 | 1                        |
| 738 912 018        | D180                        | 2 x d180  | 4 x d90                          | 1 x d90                  | 1                        |
| 738 912 020        | D225                        | 2 x d225  | 4 x d110                         | 1 x d110                 | 1                        |
| 738 912 021        | D250                        | 2 x d250  | 4 x d125                         | 1 x d125                 | 1                        |
| 738 912 022        | D280                        | 2 x d280  | 4 x d125                         | 1 x d125                 | 1                        |
| 738 912 023        | D315                        | 2 x d315  | 4 x d160                         | 1 x d160                 | 1                        |

PF 2 33 372 040



PF 2 33 372 999






## Adaptor

- MSA electrofusion adaptor for COOL-Fit Fixed point

| Code               | kg    |
|--------------------|-------|
| <b>799 350 339</b> | 0.023 |



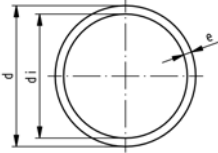
# ABS metric Fittings

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# ABS metric Fittings

## Metric Pipe

### Pipe 1m length, ABS metric



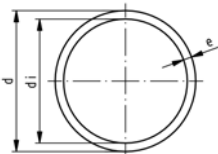
**Model:**

- Colour: RAL 7001, gravel grey
- Length: 1m
- PN 10 (10 bar) / PN 16 (16 bar) at 20°C

| d<br>[mm] | PN | Code               | kg/m   | e<br>[mm] | di<br>[mm] | Length<br>[m] |
|-----------|----|--------------------|--------|-----------|------------|---------------|
| 16        | 16 | <b>700 262 080</b> | 0.095  | 1.8       | 12.4       | 1.00          |
| 20        | 16 | <b>700 262 081</b> | 0.152  | 2.3       | 15.4       | 1.00          |
| 25        | 16 | <b>700 262 082</b> | 0.193  | 2.3       | 20.4       | 1.00          |
| 32        | 10 | <b>700 262 083</b> | 0.212  | 1.9       | 28.2       | 1.00          |
| 40        | 10 | <b>700 262 084</b> | 0.334  | 2.4       | 35.2       | 1.00          |
| 50        | 10 | <b>700 262 085</b> | 0.523  | 3.0       | 44.0       | 1.00          |
| 63        | 10 | <b>700 262 086</b> | 0.834  | 3.8       | 55.4       | 1.00          |
| 75        | 10 | <b>700 262 087</b> | 1.176  | 4.5       | 66.0       | 1.00          |
| 90        | 10 | <b>700 262 088</b> | 1.693  | 5.4       | 79.2       | 1.00          |
| 110       | 10 | <b>700 262 089</b> | 2.529  | 6.6       | 96.8       | 1.00          |
| 140       | 10 | <b>700 262 091</b> | 4.489  | 8.6       | 122.8      | 1.00          |
| 160       | 10 | <b>700 262 092</b> | 5.856  | 9.9       | 140.2      | 1.00          |
| 200       | 10 | <b>700 262 093</b> | 9.133  | 12.3      | 175.4      | 1.00          |
| 225       | 10 | <b>700 262 094</b> | 11.605 | 13.9      | 197.2      | 1.00          |

PF 2 33 198 007

### Pipe 5m length, ABS metric



**Model:**

- Colour: RAL 7001, gravel grey
- Length: 5 m
- PN6 (6 bar) / PN10 (10 bar) / PN16 (16 bar) at 20°C

| d<br>[mm] | d<br>[inch] | PN | Code               | kg/m   | e<br>[mm] | di<br>[mm] | closest<br>inch |
|-----------|-------------|----|--------------------|--------|-----------|------------|-----------------|
| 16        |             | 16 | <b>169 017 080</b> | 0.475  | 1.8       | 12.4       | 3/8             |
| 20        |             | 16 | <b>169 017 081</b> | 0.760  | 2.3       | 15.4       | 1/2             |
| 25        |             | 16 | <b>169 017 082</b> | 0.975  | 2.3       | 20.4       | 3/4             |
| 32        |             | 10 | <b>169 017 083</b> | 1.065  | 1.9       | 28.2       | 1               |
| 40        |             | 10 | <b>169 017 084</b> | 1.685  | 2.4       | 35.2       | 1 1/4           |
| 50        |             | 10 | <b>169 017 085</b> | 2.630  | 3.0       | 44.0       | 1 1/2           |
| 63        |             | 10 | <b>169 017 086</b> | 4.195  | 3.8       | 55.4       | 2               |
| 75        | 2 1/2       | 10 | <b>169 017 087</b> | 5.915  | 4.5       | 66.0       | 2 1/2           |
| 90        |             | 10 | <b>169 017 088</b> | 8.520  | 5.4       | 79.2       | 3               |
| 110       |             | 10 | <b>169 017 089</b> | 12.730 | 6.6       | 96.8       | 4               |
| 140       | 5           | 10 | <b>169 017 091</b> | 20.295 | 8.6       | 122.8      | 5 1/4           |
| 160       |             | 10 | <b>169 017 092</b> | 27.715 | 9.9       | 140.2      | 6               |
| 200       |             | 10 | <b>169 017 093</b> | 43.060 | 12.3      | 175.4      | 8               |
| 225       |             | 10 | <b>169 017 094</b> | 52.700 | 13.9      | 197.2      | 9               |
| 250       |             | 6  | <b>169 017 095</b> | 14.800 | 9.6       | 230.8      | 10              |
| 280       |             | 6  | <b>169 017 096</b> | 16.800 | 10.7      | 258.6      | 11              |
| 315       |             | 6  | <b>169 017 097</b> | 20.500 | 12.1      | 290.8      | 12              |

PF 2 33 472 001



# ABS metric Fittings

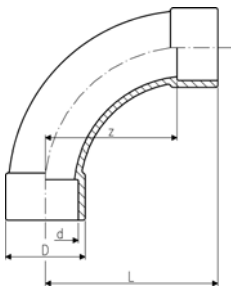
## Pipe Fittings for solvent cement jointing

29 00 01

### Bend 90°, ABS metric

- Radius = 2 d

\* Available as long as our stock will last



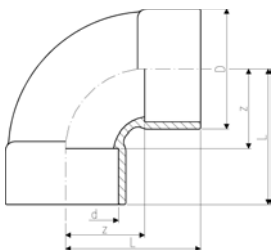
PF 2 33 197 001

| d<br>[mm] | d<br>[inch] | PN | Code        | SP | kg    | z<br>[mm] | D<br>[mm] | L<br>[mm] | closest<br>inch |
|-----------|-------------|----|-------------|----|-------|-----------|-----------|-----------|-----------------|
| 20        |             | 16 | 729 000 106 | -  | 0.027 | 40        | 27        | 58        | 1/2             |
| 25        |             | 16 | 729 000 107 | 10 | 0.038 | 50        | 35        | 69        | 3/4             |
| 32        |             | 10 | 729 000 108 | -  | 0.051 | 64        | 38        | 86        | 1               |
| 40        |             | 10 | 729 000 109 | 30 | 0.099 | 80        | 54        | 109       | 1 1/4           |
| 50        |             | 10 | 729 000 110 | 10 | 0.206 | 100       | 61        | 131       | 1 1/2           |
| 63        |             | 10 | 729 000 111 | 5  | 0.387 | 126       | 76        | 164       | 2               |
| 75        | 2 1/2       | 10 | 729 000 112 | 5  | 0.585 | 150       | 90        | 194       | 2 1/2           |
| 90        |             | 10 | 729 000 113 | 5  | 0.750 | 180       | 113       | 231       | 3               |
| 110       |             | 10 | 729 000 114 | 5  | 2.030 | 220       | 137       | 281       | 4               |
| 140       |             | 10 | 729 000 116 | 1  | 4.100 | 280       | 168       | 356       | 5 1/2           |
| *160      |             | 10 | 729 000 117 | 1  | 5.600 | 320       | 191       | 406       | 6               |

29 01 01

### Bend 90° short pattern, ABS metric

- >d225 - maximum operating temperature: +40°C



PF 2 33 197 001

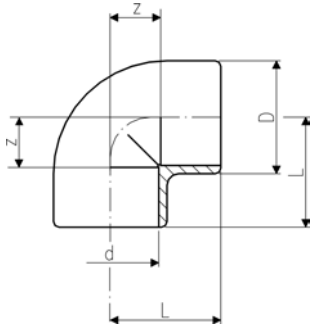
| d<br>[mm] | PN | Code        | SP | kg     | z<br>[mm] | D<br>[mm] | L<br>[mm] | closest<br>inch |
|-----------|----|-------------|----|--------|-----------|-----------|-----------|-----------------|
| 225       | 10 | 729 010 120 | -  | 5.650  | 168       | 256       | 287       | 9               |
| 280       | 6  | 729 010 122 | -  | 16.000 | 210       | 318       | 357       | 11              |
| 315       | 6  | 729 010 123 | -  | 21.000 | 237       | 356       | 401       | 12              |

# ABS metric Fittings

29 10 01

## Elbow 90°, ABS metric

- >d225 - maximum operating temperature: +40°C



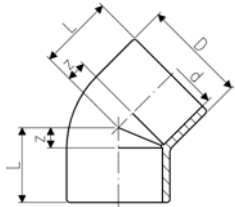
PF 2 33 197 003

| d<br>[mm] | d<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | D<br>[mm] | L<br>[mm] | closest<br>inch |
|-----------|-------------|----|--------------------|----|-------|-----------|-----------|-----------|-----------------|
| 16        |             | 16 | <b>729 100 105</b> | 10 | 0.007 | 9         | 21        | 23        | 3/8             |
| 20        |             | 16 | <b>729 100 106</b> | 10 | 0.010 | 11        | 26        | 27        | 1/2             |
| 25        |             | 16 | <b>729 100 107</b> | 10 | 0.017 | 14        | 31        | 33        | 3/4             |
| 32        |             | 10 | <b>729 100 108</b> | 10 | 0.032 | 17        | 40        | 39        | 1               |
| 40        |             | 10 | <b>729 100 109</b> | 10 | 0.051 | 21        | 49        | 47        | 1 1/4           |
| 50        |             | 10 | <b>729 100 110</b> | 10 | 0.103 | 26        | 61        | 57        | 1 1/2           |
| 63        |             | 10 | <b>729 100 111</b> | 10 | 0.196 | 33        | 76        | 72        | 2               |
| 75        | 2 1/2       | 10 | <b>729 100 112</b> | 5  | 0.308 | 40        | 90        | 84        | 2 1/2           |
| 90        |             | 10 | <b>729 100 113</b> | 5  | 0.429 | 46        | 110       | 97        | 3               |
| 110       |             | 10 | <b>729 100 114</b> | 2  | 0.786 | 61        | 136       | 122       | 4               |
| 140       | 5           | 10 | <b>729 100 116</b> | 4  | 1.470 | 70        | 162       | 146       | 5 1/2           |
| 160       |             | 10 | <b>729 100 117</b> | 1  | 2.150 | 80        | 185       | 166       | 6               |
| 200       |             | 10 | <b>729 100 119</b> | 1  | 3.372 | 101       | 225       | 207       | 8               |
| 250       |             | 6  | <b>729 100 121</b> | -  | 8.200 | 131       | 282       | 263       | 9               |

29 15 01

## Elbow 45°, ABS metric

- >d225 - maximum operating temperature: +40°C



PF 2 33 197 004

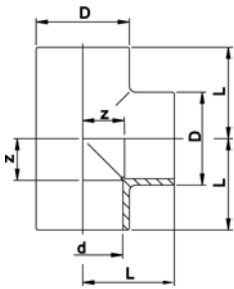
| d<br>[mm] | d<br>[inch] | PN | Code               | SP | kg     | z<br>[mm] | D<br>[mm] | L<br>[mm] | closest<br>inch |
|-----------|-------------|----|--------------------|----|--------|-----------|-----------|-----------|-----------------|
| 20        |             | 16 | <b>729 150 106</b> | 10 | 0.008  | 5         | 25        | 21        | 1/2             |
| 25        |             | 16 | <b>729 150 107</b> | 10 | 0.013  | 6         | 31        | 25        | 3/4             |
| 32        |             | 10 | <b>729 150 108</b> | 10 | 0.046  | 8         | 40        | 30        | 1               |
| 40        |             | 10 | <b>729 150 109</b> | 10 | 0.082  | 10        | 49        | 36        | 1 1/4           |
| 50        |             | 10 | <b>729 150 110</b> | 5  | 0.121  | 12        | 61        | 43        | 1 1/2           |
| 63        |             | 10 | <b>729 150 111</b> | 10 | 0.144  | 14        | 76        | 52        | 2               |
| 75        | 2 1/2       | 10 | <b>729 150 112</b> | 5  | 0.228  | 17        | 89        | 61        | 2 1/2           |
| 90        |             | 10 | <b>729 150 113</b> | 5  | 0.362  | 20        | 107       | 71        | 3               |
| 110       |             | 10 | <b>729 150 114</b> | 10 | 0.775  | 28        | 131       | 89        | 4               |
| 140       | 5           | 10 | <b>729 150 116</b> | 1  | 1.190  | 32        | 162       | 108       | 5 1/2           |
| 160       |             | 10 | <b>729 150 117</b> | 4  | 1.680  | 36        | 185       | 122       | 6               |
| 200       |             | 10 | <b>729 150 119</b> | 1  | 2.506  | 43        | 225       | 149       | 8               |
| 225       |             | 10 | <b>729 150 120</b> | -  | 3.100  | 49        | 250       | 168       | 9               |
| 250       |             | 6  | <b>729 150 121</b> | -  | 7.200  | 60        | 282       | 192       |                 |
| 280       |             | 6  | <b>729 150 122</b> | -  | 10.500 | 66        | 318       | 213       |                 |
| 315       |             | 6  | <b>729 150 123</b> | -  | 14.600 | 74        | 356       | 239       |                 |

# ABS metric Fittings

29 20 01

## Tee 90°, ABS metric

- >d225 - maximum operating temperature: +40°C

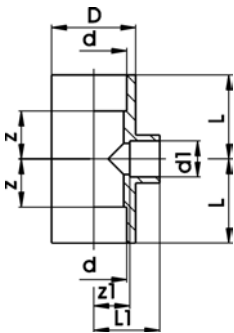


PF 2 33 197 005

| d<br>[mm] | d<br>[inch] | PN | Code        | SP | kg     | z<br>[mm] | D<br>[mm] | L<br>[mm] | closest<br>inch |
|-----------|-------------|----|-------------|----|--------|-----------|-----------|-----------|-----------------|
| 16        |             | 16 | 729 200 105 | 10 | 0.010  | 9         | 21        | 23        | 3/8             |
| 20        |             | 16 | 729 200 106 | 10 | 0.014  | 11        | 25        | 27        | 1/2             |
| 25        |             | 16 | 729 200 107 | 10 | 0.024  | 14        | 31        | 33        | 3/4             |
| 32        |             | 10 | 729 200 108 | 10 | 0.042  | 17        | 40        | 39        | 1               |
| 40        |             | 10 | 729 200 109 | 10 | 0.074  | 21        | 49        | 47        | 1 1/4           |
| 50        |             | 10 | 729 200 110 | 5  | 0.131  | 26        | 61        | 57        | 1 1/2           |
| 63        |             | 10 | 729 200 111 | 5  | 0.250  | 34        | 76        | 72        | 2               |
| 75        | 2 1/2       | 10 | 729 200 112 | 5  | 0.421  | 40        | 90        | 84        | 2 1/2           |
| 90        |             | 10 | 729 200 113 | 5  | 0.687  | 47        | 107       | 98        | 3               |
| 110       |             | 10 | 729 200 114 | 3  | 1.020  | 55        | 133       | 116       | 4               |
| 140       | 4           | 10 | 729 200 116 | 1  | 2.500  | 71        | 169       | 147       | 5 1/2           |
| 160       |             | 10 | 729 200 117 | 1  | 3.700  | 81        | 193       | 167       | 6               |
| 200       |             | 10 | 729 200 119 | 1  | 4.430  | 101       | 225       | 207       | 8               |
| 225       |             | 10 | 729 200 120 | -  | 6.850  | 114       | 256       | 233       | 9               |
| 250       |             | 6  | 729 200 121 | -  | 12.400 | 132       | 282       | 263       |                 |
| 280       |             | 6  | 729 200 122 | -  | 17.300 | 152       | 318       | 298       |                 |
| 315       |             | 6  | 729 200 123 | -  | 24.100 | 168       | 356       | 332       |                 |

29 20 01

## Tee 90°, reducing, ABS metric

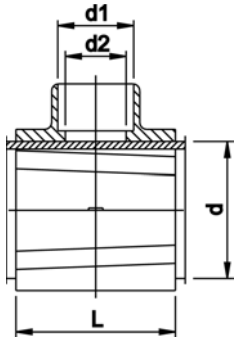


PF 2 33 197 010

| d<br>[mm] | d1<br>[mm] | PN | Code        | SP | kg    | z<br>[mm] | z1<br>[mm] | D<br>[mm] | L<br>[mm] | L1<br>[mm] | Closest inch<br>run-branch-run |
|-----------|------------|----|-------------|----|-------|-----------|------------|-----------|-----------|------------|--------------------------------|
| 25        | 20         | 16 | 729 200 134 | 10 | 0.029 | 14        | 14         | 33        | 33        | 30         | 3/4 - 1/2 - 3/4                |
| 32        | 25         | 10 | 729 200 138 | 10 | 0.048 | 17        | 17         | 41        | 39        | 36         | 1 - 3/4 - 1                    |
| 40        | 25         | 10 | 729 200 151 | 10 | 0.081 | 23        | 23         | 50        | 49        | 42         | 1 1/4 - 3/4 - 1 1/4            |
| 40        | 32         | 10 | 729 200 147 | 10 | 0.085 | 23        | 23         | 50        | 49        | 45         | 1 1/4 - 1 - 1 1/4              |
| 50        | 25         | 10 | 729 200 010 | 5  | 0.135 | 28        | 28         | 62        | 59        | 47         | 1 1/2 - 3/4 - 1 1/2            |
| 50        | 32         | 10 | 729 200 164 | 5  | 0.200 | 28        | 28         | 62        | 59        | 50         | 1 1/2 - 1 - 1 1/2              |
| 63        | 25         | 10 | 729 200 011 | 10 | 0.245 | 34        | 34         | 77        | 73        | 53         | 2 - 3/4 - 2                    |
| 63        | 32         | 10 | 729 200 178 | 5  | 0.249 | 35        | 34         | 77        | 73        | 56         | 2 - 1 - 2                      |
| 63        | 50         | 10 | 729 200 170 | 5  | 0.265 | 35        | 34         | 77        | 73        | 65         | 2 - 1 1/2 - 2                  |
| 75        | 40         | 10 | 729 200 182 | -  | 0.500 | 40        | 41         | 92        | 84        | 66         | 2 1/2 - 1 1/4 - 2 1/2          |
| 90        | 32         | 10 | 729 200 143 | -  | 1.000 | 46        | 55         | 110       | 97        | 93         | 3 - 1 - 3                      |
| 90        | 63         | 10 | 729 200 146 | -  | 0.900 | 46        | 55         | 110       | 97        | 93         | 3 - 2 - 3                      |
| 110       | 32         | 10 | 729 200 144 | -  | 2.000 | 56        | 67         | 133       | 117       | 89         | 4 - 1 - 4                      |
| 110       | 50         | 10 | 729 200 136 | -  | 1.900 | 56        | 67         | 133       | 117       | 98         | 4 - 1 1/2 - 4                  |
| 140       | 50         | 10 | 729 200 148 | -  | 1.899 | 72        | 82         | 172       | 148       | 113        | 5 - 1 1/2 - 5                  |
| 140       | 75         | 10 | 729 200 149 | -  | 2.500 | 72        | 78         | 172       | 148       | 122        | 5 - 2 1/2 - 5                  |
| 160       | 90         | 10 | 729 200 158 | -  | 2.800 | 81        | 91         | 192       | 167       | 142        | 6 - 3 - 6                      |
| 200       | 110        | 10 | 729 200 153 | -  | 6.110 | 106       | 131        | 232       | 213       | 192        | 7 - 4 - 7                      |
| 225       | 110        | 10 | 729 200 156 | -  | 7.500 | 119       | 143        | 257       | 239       | 204        | 8 - 4 - 8                      |
| 225       | 160        | 10 | 729 200 157 | -  | 7.900 | 119       | 119        | 257       | 239       | 205        | 8 - 6 - 8                      |

# ABS metric Fittings

## Branch Saddle, ABS metric



PF 2 33 198 008

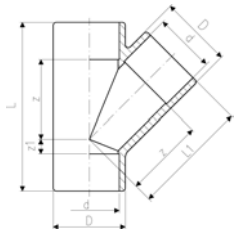
### Model:

- For ABS-pipes
- Top saddle (ABS) for solvent cementing
- Bottom part and wedges made from PVC-U
- Outlet with solvent cement socket metric
- PN 10

| d<br>[mm] | Code               | kg    | d1<br>[mm] | d2<br>[mm] | Tapping-Ø<br>[mm] | L<br>[mm] |
|-----------|--------------------|-------|------------|------------|-------------------|-----------|
| 90        | <b>169 110 056</b> | 0.786 | 50         | 40         | 39                | 105       |
| 110       | <b>169 110 066</b> | 0.864 | 50         | 40         | 39                | 105       |
| 160       | <b>169 110 097</b> | 1.185 | 63         | 49         | 48                | 120       |
| 225       | <b>169 110 117</b> | 1.483 | 63         | 49         | 48                | 120       |

29 25 01

## Tee 45°, ABS metric



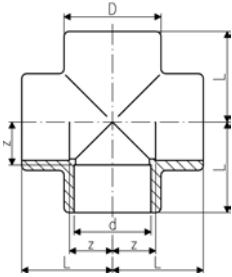
PF 2 33 197 013

| d<br>[mm] | d<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | z1<br>[mm] | D<br>[mm] | L<br>[mm] | L1<br>[mm] | closest<br>inch |
|-----------|-------------|----|--------------------|----|-------|-----------|------------|-----------|-----------|------------|-----------------|
| 20        |             | 10 | <b>729 250 106</b> | 10 | 0.027 | 30        | 6          | 28        | 68        | 46         | ½               |
| 25        |             | 10 | <b>729 250 107</b> | 10 | 0.043 | 36        | 9          | 33        | 83        | 55         | ¾               |
| 32        |             | 10 | <b>729 250 108</b> | 10 | 0.073 | 45        | 10         | 41        | 99        | 67         | 1               |
| 40        |             | 10 | <b>729 250 109</b> | -  | 0.119 | 56        | 10         | 50        | 118       | 82         | 1 ¼             |
| 50        |             | 10 | <b>729 250 110</b> | 10 | 0.202 | 66        | 12         | 60        | 140       | 97         | 1 ½             |
| 63        |             | 10 | <b>729 250 111</b> | 5  | 0.325 | 85        | 14         | 74        | 175       | 123        | 2               |
| 75        | 2 ½         | 6  | <b>729 250 112</b> | 5  | 0.637 | 101       | 18         | 91        | 207       | 145        | 2 ½             |
| 90        |             | 6  | <b>729 250 113</b> | 1  | 0.940 | 122       | 20         | 107       | 245       | 173        | 3               |
| 110       |             | 6  | <b>729 250 114</b> | 3  | 1.870 | 149       | 27         | 134       | 298       | 210        | 4               |
| 140       |             | 6  | <b>729 250 116</b> | -  | 4.315 | 190       | 34         | 168       | 376       | 266        | 5 ½             |

# ABS metric Fittings

29 30 01

## Cross, ABS metric



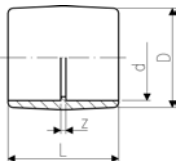
PF 2 33 197 015

| d<br>[mm] | PN | Code               | kg    | z<br>[mm] | D<br>[mm] | L<br>[mm] | closest<br>inch |  |
|-----------|----|--------------------|-------|-----------|-----------|-----------|-----------------|--|
| 32        | 10 | <b>729 300 108</b> | 0.070 | 17        | 43        | 39        | 1               |  |
| 63        | 10 | <b>729 300 111</b> | 0.361 | 34        | 79        | 72        | 2               |  |

29 91 01

## Socket, ABS metric

- >d225 - maximum operating temperature: +40°C



PF 2 33 197 008

| d<br>[mm] | d<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | D<br>[mm] | L<br>[mm] | closest<br>inch |  |
|-----------|-------------|----|--------------------|----|-------|-----------|-----------|-----------|-----------------|--|
| 16        |             | 16 | <b>729 910 105</b> | 10 | 0.005 | 3         | 22        | 31        | 3/8             |  |
| 20        |             | 16 | <b>729 910 106</b> | 10 | 0.007 | 3         | 26        | 35        | 1/2             |  |
| 25        |             | 16 | <b>729 910 107</b> | 10 | 0.011 | 3         | 32        | 41        | 3/4             |  |
| 32        |             | 10 | <b>729 910 108</b> | 10 | 0.020 | 3         | 40        | 47        | 1               |  |
| 40        |             | 10 | <b>729 910 109</b> | 10 | 0.034 | 3         | 49        | 55        | 1 1/4           |  |
| 50        |             | 10 | <b>729 910 110</b> | 10 | 0.060 | 3         | 61        | 65        | 1 1/2           |  |
| 63        |             | 10 | <b>729 910 111</b> | 5  | 0.107 | 3         | 76        | 79        | 2               |  |
| 75        | 2 1/2       | 10 | <b>729 910 112</b> | 10 | 0.140 | 4         | 87        | 92        | 2 1/2           |  |
| 90        |             | 10 | <b>729 910 113</b> | 10 | 0.242 | 5         | 104       | 107       | 3               |  |
| 110       |             | 10 | <b>729 910 114</b> | 5  | 0.570 | 5         | 131       | 132       | 4               |  |
| 140       | 5           | 10 | <b>729 910 116</b> | 2  | 0.760 | 7         | 162       | 159       | 5 1/2           |  |
| 160       |             | 10 | <b>729 910 117</b> | 1  | 1.176 | 8         | 183       | 180       | 6               |  |
| 200       |             | 10 | <b>729 910 119</b> | 1  | 1.480 | 9         | 221       | 221       | 8               |  |
| 225       |             | 10 | <b>729 910 120</b> | 1  | 2.500 | 10        | 253       | 248       | 9               |  |
| 250       |             | 6  | <b>729 910 121</b> | -  | 5.400 | 16        | 284       | 272       |                 |  |
| 280       |             | 6  | <b>729 910 122</b> | -  | 6.600 | 16        | 321       | 302       |                 |  |
| 315       |             | 6  | <b>729 910 123</b> | -  | 8.100 | 16        | 356       | 338       |                 |  |

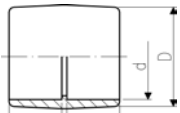
# ABS metric Fittings

29 91 31

## Adaptor Socket, ABS metric - Inch BS

**Model:**

- with BS Inch and metric solvent cement sockets



PF 2 33 172 001

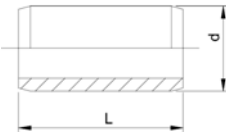
| d<br>[mm] | d<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | L<br>[mm] | D<br>[mm] |
|-----------|-------------|----|--------------------|----|-------|-----------|-----------|-----------|
| 16        | 3/8         | 10 | <b>729 913 105</b> | -  | 0.007 | 5         | 35        | 23        |
| 20        | 1/2         | 10 | <b>729 913 106</b> | -  | 0.010 | 5         | 38        | 27        |
| 25        | 3/4         | 10 | <b>729 913 107</b> | -  | 0.016 | 5         | 45        | 33        |
| 32        | 1           | 10 | <b>729 913 108</b> | -  | 0.025 | 5         | 51        | 41        |
| 40        | 1 1/4       | 10 | <b>729 913 109</b> | -  | 0.045 | 5         | 60        | 51        |
| 50        | 1 1/2       | 10 | <b>729 913 110</b> | -  | 0.070 | 4         | 65        | 59        |
| 63        | 2           | 10 | <b>729 913 111</b> | -  | 0.130 | 5         | 79        | 75        |
| 75        | 2 1/2       | 10 | <b>729 910 112</b> | 10 | 0.140 | 4         | 92        | 87        |
| 90        | 3           | 10 | <b>729 913 113</b> | -  | 0.365 | 6         | 108       | 104       |
| 110       | 4           | 10 | <b>729 913 115</b> | -  | 0.630 | 7         | 135       | 134       |

29 90 09

## Barrel Nipple, ABS metric

**Model:**

- For quick connections between fittings
- For the shortest possible distance between fittings
- Overall length L = 2 x socket length



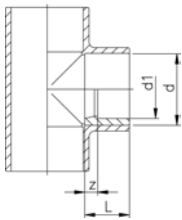
PF 2 33 198 007


| d<br>[mm] | d<br>[inch] | PN | Code               | kg    | L<br>[mm] | closest<br>inch |
|-----------|-------------|----|--------------------|-------|-----------|-----------------|
| 16        |             | 16 | <b>729 900 905</b> | 0.003 | 28        | 3/8             |
| 20        |             | 16 | <b>729 900 906</b> | 0.004 | 32        | 1/2             |
| 25        |             | 16 | <b>729 900 907</b> | 0.007 | 38        | 3/4             |
| 32        |             | 10 | <b>729 900 908</b> | 0.009 | 44        | 1               |
| 40        |             | 10 | <b>729 900 909</b> | 0.017 | 52        | 1 1/4           |
| 50        |             | 10 | <b>729 900 910</b> | 0.032 | 62        | 1 1/2           |
| 63        |             | 10 | <b>729 900 911</b> | 0.063 | 76        | 2               |
| 75        | 2 1/2       | 10 | <b>729 900 912</b> | 0.102 | 88        | 2 1/2           |
| 90        |             | 10 | <b>729 900 913</b> | 0.173 | 102       | 3               |
| 110       |             | 10 | <b>729 900 914</b> | 0.309 | 122       | 4               |

# ABS metric Fittings

29 90 03

## Reducing Bush, ABS metric

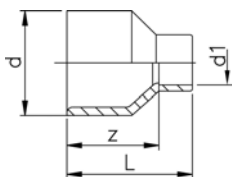


| d<br>[mm]   | d1<br>[mm] | PN | Code        | SP | kg    | z<br>[mm] | L<br>[mm] | Closest inch |
|---|------------|----|-------------|----|-------|-----------|-----------|--------------|
| 20  | 16         | 16 | 729 900 334 | 10 | 0.003 | 2         | 16        | 1/2 - 3/8    |
| 25  | 20         | 16 | 729 900 337 | 10 | 0.005 | 3         | 19        | 3/4 - 1/2    |
| 32  | 20         | 10 | 729 900 342 | 10 | 0.012 | 6         | 22        | 1 - 1/2      |
| 32  | 25         | 10 | 729 900 341 | 10 | 0.009 | 4         | 22        | 1 - 3/4      |
| 40  | 20         | 10 | 729 900 348 | 10 | 0.016 | 10        | 26        | 1 1/4 - 1/2  |
| 40  | 25         | 10 | 729 900 347 | 10 | 0.016 | 7         | 26        | 1 1/2 - 3/4  |
| 40  | 32         | 10 | 729 900 346 | 10 | 0.012 | 4         | 26        | 1 1/4 - 1    |
| 50  | 20         | 10 | 729 900 355 | 10 | 0.024 | 15        | 31        | 1 1/2 - 1/2  |
| 50  | 25         | 10 | 729 900 354 | 10 | 0.025 | 12        | 31        | 1 1/2 - 3/4  |
| 50  | 32         | 10 | 729 900 353 | 10 | 0.035 | 9         | 31        | 1 1/2 - 1    |
| 50  | 40         | 10 | 729 900 352 | 10 | 0.038 | 5         | 31        |              |
| 63  | 32         | 10 | 729 900 360 | 10 | 0.060 | 16        | 38        |              |
| 63  | 40         | 10 | 729 900 359 | 10 | 0.067 | 12        | 38        |              |
| 63  | 50         | 10 | 729 900 358 | 10 | 0.044 | 7         | 36        |              |
| 75  | 50         | 10 | 729 900 365 | 10 | 0.105 | 13        | 44        |              |
| 75  | 63         | 10 | 729 900 364 | 10 | 0.076 | 7         | 44        |              |
| 90  | 50         | 10 | 729 900 372 | 10 | 0.136 | 20        | 51        |              |
| 90  | 63         | 10 | 729 900 371 | 10 | 0.130 | 14        | 51        |              |
| 90  | 75         | 10 | 729 900 370 | 5  | 0.133 | 7         | 51        |              |
| 110   | 63         | 10 | 729 900 378 | 5  | 0.238 | 24        | 61        |              |
| 110   | 90         | 10 | 729 900 376 | 5  | 0.196 | 10        | 61        |              |
|  125 | 110        | 10 | 700 244 660 | -  | 0.356 | 8         | 69        |              |
| 140   | 110        | 10 | 729 900 385 | 5  | 0.454 | 15        | 76        |              |
| 160   | 110        | 10 | 729 900 390 | 5  | 0.666 | 25        | 86        |              |
| 160   | 140        | 10 | 729 900 388 | 5  | 0.416 | 10        | 86        |              |
| 200   | 160        | 10 | 729 900 392 | 1  | 0.818 | 20        | 106       |              |
| 225   | 160        | 10 | 729 900 396 | 2  | 1.640 | 33        | 119       |              |
| 225   | 200        | 10 | 729 900 181 | -  | 1.440 | 13        | 119       |              |
| 250   | 225        | 6  | 729 900 303 | -  | 1.000 | 12        | 131       |              |
| 280   | 250        | 6  | 729 900 306 | -  | 2.500 | 15        | 146       |              |
| 315   | 280        | 6  | 729 900 312 | -  | 3.350 | 17        | 164       |              |

PF 2 33 197 006

29 91 03

## Reducing Bush long, ABS metric



### Model:

- With spigot and solvent cement socket

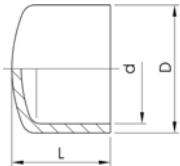
| d<br>[mm] | d1<br>[mm] | PN | Code        | SP | kg    | z<br>[mm] | L<br>[mm] |
|-----------|------------|----|-------------|----|-------|-----------|-----------|
| 32        | 20         | 10 | 729 910 342 | 10 | 0.016 | 30        | 46        |
| 40        | 25         | 10 | 729 910 347 | 10 | 0.026 | 36        | 55        |
| 50        | 25         | 10 | 729 910 354 | 10 | 0.041 | 44        | 63        |
| 63        | 32         | 10 | 729 910 360 | 5  | 0.077 | 54        | 76        |
| 75        | 40         | 10 | 729 910 366 | 5  | 0.115 | 62        | 88        |
| 90        | 63         | 10 | 729 910 371 | 5  | 0.218 | 74        | 112       |

PF 2 33 197 002

# ABS metric Fittings

29 96 01

## Cap, ABS metric



PF 2 33 197 009

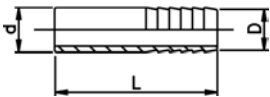
| d<br>[mm] | PN | Code               | SP | kg    | D<br>[mm] | L<br>[mm] |  |
|-----------|----|--------------------|----|-------|-----------|-----------|--|
| 16        | 16 | <b>729 960 105</b> | 10 | 0.006 | 26        | 24        |  |
| 20        | 16 | <b>729 960 106</b> | 10 | 0.008 | 30        | 25        |  |
| 25        | 16 | <b>729 960 107</b> | 10 | 0.013 | 37        | 30        |  |
| 32        | 10 | <b>729 960 108</b> | 10 | 0.020 | 44        | 34        |  |
| 40        | 10 | <b>729 960 109</b> | 10 | 0.034 | 55        | 41        |  |
| 50        | 10 | <b>729 960 110</b> | 10 | 0.034 | 64        | 44        |  |
| 63        | 10 | <b>729 960 111</b> | 5  | 0.086 | 80        | 54        |  |
| 75        | 10 | <b>729 960 112</b> | 5  | 0.115 | 87        | 65        |  |
| 90        | 10 | <b>729 960 113</b> | -  | 0.215 | 112       | 77        |  |
| 110       | 10 | <b>729 960 114</b> | 5  | 0.480 | 145       | 101       |  |
| 140       | 10 | <b>729 960 116</b> | 10 | 0.880 | 163       | 114       |  |
| 160       | 10 | <b>729 960 117</b> | 2  | 1.130 | 188       | 130       |  |

29 96 04

## Hose Connector, ABS metric

### Model:

- With solvent cement spigot metric and parallel hose connection



PF 2 33 197 012

| d<br>[mm] | PN | Code               | SP | kg    | D<br>[mm] | L<br>[mm] | closest<br>inch |  |
|-----------|----|--------------------|----|-------|-----------|-----------|-----------------|--|
| 16        | 10 | <b>729 960 405</b> | 10 | 0.007 | 16        | 57        | $\frac{3}{8}$   |  |
| 20        | 10 | <b>729 960 406</b> | 10 | 0.011 | 20        | 73        | $\frac{1}{2}$   |  |
| 25        | 10 | <b>729 960 407</b> | 10 | 0.016 | 25        | 79        | $\frac{3}{4}$   |  |
| 32        | 10 | <b>729 960 408</b> | 10 | 0.026 | 30        | 89        | 1               |  |

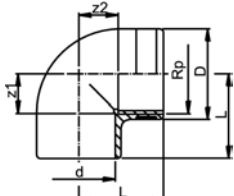


# ABS metric Fittings

## Adaptor Fittings

29 10 02

### Elbow 90°, ABS metric



PF 2 33 198 002

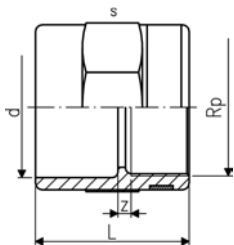
**Model:**

- With solvent cement socket metric and parallel female thread (Rp)
- Reinforcing ring stainless (A2)
- Connection to plastic or metal
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

| d<br>[mm] | Rp<br>[inch] | PN | Code               | SP | kg    | z1<br>[mm] | z2<br>[mm] | D<br>[mm] | L<br>[mm] |
|-----------|--------------|----|--------------------|----|-------|------------|------------|-----------|-----------|
| 20        | ½            | 10 | <b>729 100 206</b> | 10 | 0.018 | 11         | 14         | 30        | 27        |
| 25        | ¾            | 10 | <b>729 100 207</b> | 10 | 0.028 | 14         | 17         | 35        | 33        |
| 32        | 1            | 10 | <b>729 100 208</b> | 10 | 0.047 | 17         | 22         | 45        | 39        |
| 40        | 1 ¼          | 10 | <b>729 100 209</b> | 10 | 0.088 | 23         | 27         | 55        | 50        |
| 50        | 1 ½          | 10 | <b>729 100 210</b> | 5  | 0.128 | 27         | 36         | 62        | 58        |
| 63        | 2            | 10 | <b>729 100 211</b> | 5  | 0.233 | 33         | 46         | 75        | 73        |

29 91 02

### Socket, ABS metric



PF 2 33 172 001

**Model:**

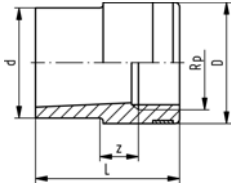
- With solvent cement socket metric and parallel female thread Rp
- Reinforcing ring stainless (A2)
- Connection to plastic or metal
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

| d<br>[mm] | Rp<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | L<br>[mm] | s<br>[mm] | closest<br>inch |
|-----------|--------------|----|--------------------|----|-------|-----------|-----------|-----------|-----------------|
| 20        | ½            | 10 | <b>729 910 206</b> | 10 | 0.020 | 4         | 35        | 32        | ½               |
| 25        | ¾            | 10 | <b>729 910 207</b> | 10 | 0.030 | 3         | 40        | 36        | ¾               |
| 32        | 1            | 10 | <b>729 910 208</b> | 10 | 0.040 | 3         | 45        | 46        | 1               |
| 40        | 1 ¼          | 10 | <b>729 910 209</b> | 10 | 0.069 | 5         | 51        | 55        | 1 ¼             |
| 50        | 1 ½          | 10 | <b>729 910 210</b> | 10 | 0.100 | 7         | 59        | 65        | 1 ½             |
| 63        | 2            | 10 | <b>729 910 211</b> | 5  | 0.162 | 7         | 69        | 80        | 2               |

# ABS metric Fittings

29 91 04

## Reducing Bush, ABS metric-Rp



**Model:**

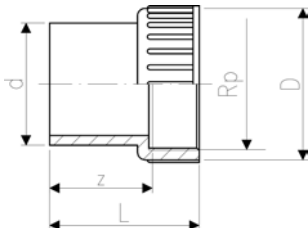
- With solvent cement spigot metric and parallel female thread Rp
- Reinforcing ring stainless (A2)
- Connection to plastic or metal
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

| d<br>[mm] | Rp<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | D<br>[mm] | L<br>[mm] | s<br>[mm] |
|-----------|--------------|----|--------------------|----|-------|-----------|-----------|-----------|-----------|
| 20        | 3/8          | 10 | <b>729 910 434</b> | 10 | 0.012 | 24        | 25        | 35        | 15        |
| 25        | 1/2          | 10 | <b>729 910 437</b> | 10 | 0.018 | 27        | 30        | 41        | 21        |
| 32        | 3/4          | 10 | <b>729 910 441</b> | 10 | 0.027 | 32        | 35        | 48        | 33        |
| 40        | 1            | 10 | <b>729 910 446</b> | 10 | 0.048 | 38        | 45        | 56        | 60        |
| 50        | 1 1/4        | 10 | <b>729 910 452</b> | 10 | 0.073 | 46        | 55        | 66        | 99        |
| 63        | 1 1/2        | 10 | <b>729 910 458</b> | 5  | 0.106 | 57        | 62        | 77        | 150       |

PF 2 33 198 020

29 90 04

## Adaptor, ABS metric - Rp



**Model:**

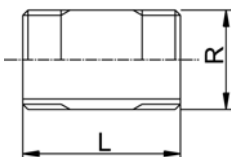
- With solvent cement spigot metric and parallel female thread Rp
- Connection to plastic thread only
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

| d<br>[mm] | Rp<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | L<br>[mm] | D<br>[mm] |
|-----------|--------------|----|--------------------|----|-------|-----------|-----------|-----------|
| 20        | 1/2          | 10 | <b>729 900 406</b> | 10 | 0.009 | 21        | 37        | 28        |
| 25        | 3/4          | 10 | <b>729 900 407</b> | 10 | 0.014 | 23        | 41        | 33        |
| 32        | 1            | 10 | <b>729 900 408</b> | -  | 0.026 | 27        | 48        | 42        |
| 40        | 1 1/4        | 10 | <b>729 900 409</b> | 10 | 0.046 | 33        | 56        | 52        |
| 50        | 1 1/2        | 10 | <b>729 900 410</b> | 10 | 0.073 | 38        | 61        | 62        |
| 63        | 2            | 10 | <b>729 900 411</b> | 5  | 0.127 | 47        | 74        | 77        |

PF 2 33 198 004

29 91 15

## Barrel Nipple, ABS R



**Model:**

- BSP taper male threads (R)
- Connection to plastic thread only
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

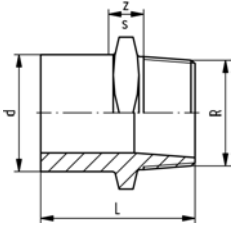
| R<br>[inch] | PN | Code               | kg    | L<br>[mm] |
|-------------|----|--------------------|-------|-----------|
| 3/8         | 10 | <b>729 911 505</b> | 0.014 | 43        |
| 1/2         | 10 | <b>729 911 506</b> | 0.014 | 50        |
| 3/4         | 10 | <b>729 911 507</b> | 0.021 | 56        |
| 1           | 10 | <b>729 911 508</b> | 0.035 | 63        |
| 1 1/4       | 10 | <b>729 911 509</b> | 0.053 | 75        |
| 1 1/2       | 10 | <b>729 911 510</b> | 0.031 | 88        |
| 2           | 10 | <b>729 911 511</b> | 0.135 | 88        |
| 3           | 10 | <b>729 911 513</b> | 0.196 | 128       |
| 4           | 10 | <b>729 911 515</b> | 0.357 | 153       |

PF 2 33 172 016

# ABS metric Fittings

29 91 05

## Adaptor Spigot-Nipple, ABS metric - R



PF 2 33 198 004

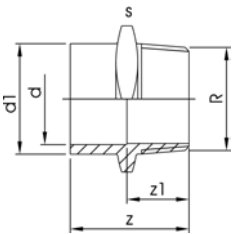
### Model:

- With solvent cement spigot metric and taper male thread R
- Connection to plastic thread only
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

| d<br>[mm] | R<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | s<br>[mm] |
|-----------|-------------|----|--------------------|----|-------|-----------|-----------|
| 16        | 3/8         | 10 | <b>729 910 505</b> | 10 | 0.009 | 35        | 27        |

29 91 05

## Adaptor Socket-Nipple, ABS metric - R



PF 2 33 198 001

### Model:

- With solvent cement spigot/socket metric and taper male thread R
- Connection for plastic threads
- Do not use thread sealing pastes that are harmful to ABS

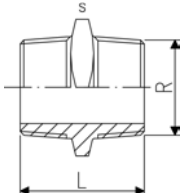
| d<br>[mm] | d1<br>[mm] | R<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | z1<br>[mm] | s<br>[mm] |
|-----------|------------|-------------|----|--------------------|----|-------|-----------|------------|-----------|
| 16        | 20         | 1/2         | 10 | <b>729 910 556</b> | 10 | 0.012 | 42        | 28         | 32        |
| 20        | 25         | 3/4         | 10 | <b>729 910 557</b> | 10 | 0.020 | 47        | 31         | 36        |
| 25        | 32         | 1           | 10 | <b>729 910 558</b> | 10 | 0.031 | 54        | 35         | 46        |
| 32        | 40         | 1 1/4       | 10 | <b>729 910 559</b> | 10 | 0.050 | 60        | 38         | 55        |
| 40        | 50         | 1 1/2       | 10 | <b>729 910 560</b> | 10 | 0.070 | 66        | 40         | 65        |
| 50        | 63         | 2           | 10 | <b>729 910 561</b> | 5  | 0.123 | 78        | 47         | 80        |

# ABS metric Fittings

## Threaded Fittings

29 91 19

### Hexagon Nipple, ABS R



PF 2 33 172 016

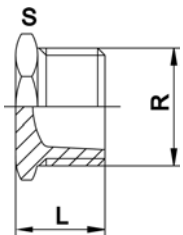
**Model:**

- With taper male thread R
- Connection to plastic thread only
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

| R<br>[inch] | PN | Code               | SP | kg    | L<br>[mm] | s<br>[mm] |
|-------------|----|--------------------|----|-------|-----------|-----------|
| 1/2         | 10 | <b>729 911 906</b> | 10 | 0.009 | 45        | 22        |
| 3/4         | 10 | <b>729 911 907</b> | 10 | 0.014 | 49        | 27        |
| 1           | 10 | <b>729 911 908</b> | 10 | 0.026 | 57        | 36        |

29 96 19

### Plug, ABS R



PF 2 33 172 018

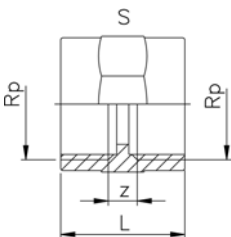
**Model:**

- With taper male thread R
- Connection to plastic thread only
- Do not use thread sealing pastes that are harmful to ABS

| R<br>[inch] | PN | Code               | SP | kg    | s<br>[mm] | L<br>[mm] |
|-------------|----|--------------------|----|-------|-----------|-----------|
| 1/2         | 10 | <b>729 961 906</b> | 10 | 0.008 | 27        | 25        |
| 3/4         | 9  | <b>729 961 907</b> | 10 | 0.014 | 36        | 29        |
| 1           | 9  | <b>729 961 908</b> | 10 | 0.022 | 41        | 32        |

29 91 06

### Threaded socket, ABS metric - Rp



PF 2 33 172 001

**Model:**

- With parallel female thread Rp
- Connection to plastic thread only
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

| Rp<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | L<br>[mm] | s<br>[mm] |
|--------------|----|--------------------|----|-------|-----------|-----------|-----------|
| 1/2          | 10 | <b>729 910 606</b> | 10 | 0.019 | 9         | 35        | 32        |
| 3/4          | 10 | <b>729 910 607</b> | 10 | 0.022 | 9         | 39        | 36        |
| 1            | 10 | <b>729 910 608</b> | 10 | 0.041 | 11        | 45        | 46        |

# ABS metric Fittings

## Installation Fittings

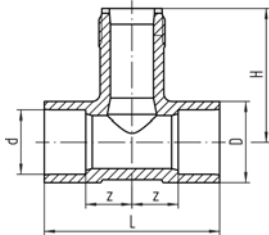
29 31 00

### Installation Fitting Type 310, ABS metric



**Model:**

- Threaded outlet 1 ¼" NPSM
- For Signet Paddlewheel Sensors Type -X0 (104 mm)
- With solvent cement socket metric



PF 2 98 930 001

| d<br>[mm] | DN<br>[mm] | PN | Code               | kg    | D<br>[mm] | L<br>[mm] | H<br>[mm] | z<br>[mm] | Sensor Type |
|-----------|------------|----|--------------------|-------|-----------|-----------|-----------|-----------|-------------|
| 25        | 20         | 10 | <b>729 310 007</b> | 0.107 | 35        | 100       | 78        | 32        | X0          |
| 32        | 25         | 10 | <b>729 310 008</b> | 0.141 | 44        | 110       | 81        | 33        | X0          |
| 40        | 32         | 10 | <b>729 310 009</b> | 0.143 | 51        | 110       | 85        | 29        | X0          |
| 50        | 40         | 10 | <b>729 310 010</b> | 0.192 | 63        | 120       | 89        | 29        | X0          |
| 63        | 50         | 10 | <b>729 310 011</b> | 0.273 | 78        | 130       | 95        | 28        | X0          |

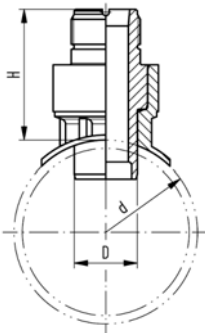
29 31 20

### Installation Fitting Type 312, ABS metric



**Model:**

- For Signet paddlewheel sensors Type -X1 (137 mm)
- Saddle with threaded outlet 1 ¼" NPSM



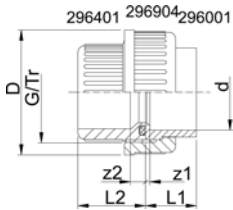
PF 2 98 931 001

| d<br>[mm] | DN<br>[mm] | PN | Code               | kg    | D<br>[mm] | H<br>[mm] | Sensor Type |
|-----------|------------|----|--------------------|-------|-----------|-----------|-------------|
| 75        | 65         | 10 | <b>729 312 012</b> | 0.165 | 38        | 91        | X1          |
| 90        | 80         | 10 | <b>729 312 013</b> | 0.170 | 38        | 91        | X1          |
| 110       | 100        | 10 | <b>729 312 014</b> | 0.169 | 38        | 91        | X1          |
| 140       | 125        | 10 | <b>729 312 016</b> | 0.165 | 38        | 81        | X1          |
| 160       | 150        | 10 | <b>729 312 017</b> | 0.163 | 38        | 77        | X1          |
| 200       | 200        | 10 | <b>729 312 019</b> | 0.149 | 38        | 71        | X1          |
| 225       | 200        | 10 | <b>729 312 020</b> | 0.143 | 38        | 67        | X1          |

# ABS metric Fittings

## Unions and Adaptor Unions

29 51 01



### Union, ABS metric

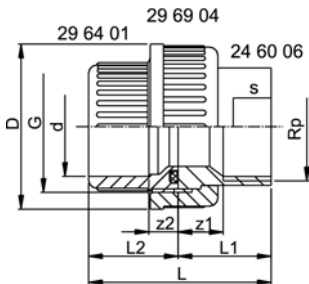
**Model:**

- Union end: Solvent cement socket metric
- Union bush: Solvent cement socket metric
- Gasket: O-ring EPDM No. 48 41 00

| d    | d      | PN | Code               | SP | kg    | z1   | z2   | D    | L1   | L2   | G/Tr     |  |
|------|--------|----|--------------------|----|-------|------|------|------|------|------|----------|--|
| [mm] | [inch] |    |                    |    |       | [mm] | [mm] | [mm] | [mm] | [mm] |          |  |
| 16   |        | 10 | <b>729 510 105</b> | 10 | 0.025 | 5    | 10   | 35   | 19   | 24   | 3/4      |  |
| 20   |        | 10 | <b>729 510 106</b> | 10 | 0.035 | 4    | 10   | 43   | 21   | 26   | 1        |  |
| 25   |        | 10 | <b>729 510 107</b> | 10 | 0.050 | 5    | 10   | 53   | 24   | 29   | 1 1/4    |  |
| 32   |        | 10 | <b>729 510 108</b> | 10 | 0.070 | 5    | 10   | 60   | 27   | 33   | 1 1/2    |  |
| 40   |        | 10 | <b>729 510 109</b> | 10 | 0.130 | 5    | 12   | 74   | 32   | 39   | 2        |  |
| 50   |        | 10 | <b>729 510 110</b> | 5  | 0.170 | 3    | 14   | 83   | 33   | 46   | 2 1/4    |  |
| 63   |        | 10 | <b>729 510 111</b> | 5  | 0.340 | 3    | 18   | 103  | 40   | 58   | 2 3/4    |  |
| 75   | 2 1/2  | 10 | <b>729 510 112</b> | 2  | 0.461 | 3    | 18   | 135  | 47   | 62   | Tr 108x5 |  |
| 90   |        | 10 | <b>729 510 113</b> | 2  | 0.694 | 5    | 18   | 158  | 56   | 69   | Tr 128x5 |  |
| 110  |        | 10 | <b>729 510 114</b> | 1  | 1.069 | 5    | 11   | 158  | 66   | 72   | Tr 154x5 |  |

PF 2 33 198 008

29 54 02



### Adaptor Union ABS / Stainless Steel, metric - Rp

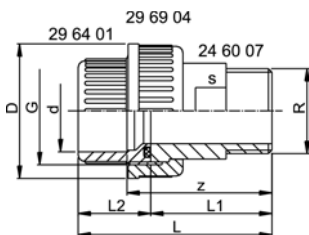
**Model:**

- Union End: stainless steel WN 1.4404 (316L), parallel female thread Rp
- Union Bush: solvent cement socket ABS metric
- Union Nut: ABS
- Gasket: O-ring EPDM No. 48 41 00

| d    | Rp     | PN | EPDM Code          | kg    | z1   | z2   | D    | L    | L1   | L2   | G      | s    |  |
|------|--------|----|--------------------|-------|------|------|------|------|------|------|--------|------|--|
| [mm] | [inch] |    |                    |       | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [inch] | [mm] |  |
| 16   | 3/8    | 10 | <b>729 540 205</b> | 0.053 | 9    | 10   | 35   | 43   | 19   | 24   | 3/4    | 19   |  |
| 20   | 1/2    | 10 | <b>729 540 206</b> | 0.096 | 11   | 10   | 43   | 50   | 24   | 26   | 1      | 24   |  |
| 25   | 3/4    | 10 | <b>729 540 207</b> | 0.154 | 11   | 10   | 51   | 55   | 26   | 29   | 1 1/4  | 29   |  |
| 32   | 1      | 10 | <b>729 540 208</b> | 0.212 | 12   | 10   | 58   | 61   | 29   | 33   | 1 1/2  | 36   |  |
| 40   | 1 1/4  | 10 | <b>729 540 209</b> | 0.356 | 14   | 12   | 74   | 71   | 33   | 39   | 2      | 45   |  |
| 50   | 1 1/2  | 10 | <b>729 540 210</b> | 0.455 | 15   | 14   | 83   | 79   | 34   | 46   | 2 1/4  | 54   |  |
| 63   | 2      | 10 | <b>729 540 211</b> | 0.721 | 15   | 18   | 100  | 95   | 39   | 58   | 2 3/4  | 63   |  |

PF 2 33 198 021

29 54 07



### Adaptor Union ABS / Stainless Steel, metric - R

**Model:**

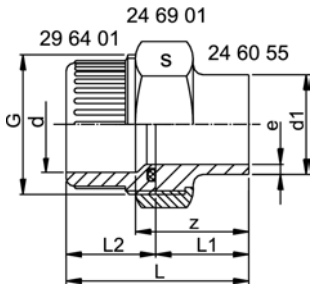
- Union End: stainless steel WN 1.4404 (316L), taper male thread R
- Union Bush: solvent cement socket ABS metric
- Union Nut: ABS
- Gasket: O-ring EPDM No. 48 41 00

| d    | R      | PN | EPDM Code          | kg    | z    | D    | L    | L1   | L2   | G      | s    |  |
|------|--------|----|--------------------|-------|------|------|------|------|------|--------|------|--|
| [mm] | [inch] |    |                    |       | [mm] | [mm] | [mm] | [mm] | [mm] | [inch] | [mm] |  |
| 16   | 3/8    | 10 | <b>729 540 705</b> | 0.073 | 40   | 35   | 54   | 30   | 24   | 3/4    | 19   |  |
| 20   | 1/2    | 10 | <b>729 540 706</b> | 0.126 | 44   | 43   | 60   | 34   | 26   | 1      | 24   |  |
| 25   | 3/4    | 10 | <b>729 540 707</b> | 0.174 | 46   | 51   | 65   | 36   | 29   | 1 1/4  | 32   |  |
| 32   | 1      | 10 | <b>729 540 708</b> | 0.262 | 50   | 58   | 72   | 40   | 33   | 1 1/2  | 37   |  |
| 40   | 1 1/4  | 10 | <b>729 540 709</b> | 0.476 | 58   | 74   | 84   | 46   | 39   | 2      | 48   |  |
| 50   | 1 1/2  | 10 | <b>729 540 710</b> | 0.535 | 62   | 83   | 93   | 48   | 46   | 2 1/4  | 54   |  |
| 63   | 2      | 10 | <b>729 540 711</b> | 0.931 | 73   | 100  | 111  | 55   | 58   | 2 3/4  | 69   |  |

PF 2 33 198 021

# ABS metric Fittings

29 54 55



PF 2 33 198 021

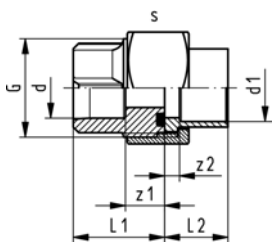
## Adaptor Union ABS / Stainless Steel, metric - Welding End

### Model:

- Union End: stainless steel WN 1.4404 (316L) with welding end
- Union Bush: solvent cement socket ABS metric
- Union Nut: stainless steel WN 1.4404 (316L)
- Gasket: O-ring EPDM No. 48 41 00

| d<br>[mm] | d1<br>[mm] | PN | EPDM<br>Code | kg    | z<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | e<br>[mm] | G<br>[inch] | s<br>[mm] |
|-----------|------------|----|--------------|-------|-----------|-----------|------------|------------|-----------|-------------|-----------|
| 16        | 17         | 10 | 729 545 505  | 0.101 | 28        | 42        | 18         | 24         | 1.6       | 3/4         | 32        |
| 20        | 21         | 10 | 729 545 506  | 0.176 | 32        | 48        | 22         | 26         | 2.0       | 1           | 41        |
| 25        | 27         | 10 | 729 545 507  | 0.204 | 33        | 52        | 23         | 29         | 2.0       | 1 1/4       | 46        |
| 32        | 34         | 10 | 729 545 508  | 0.313 | 36        | 58        | 26         | 33         | 2.0       | 1 1/2       | 55        |
| 40        | 42         | 10 | 729 545 509  | 0.493 | 38        | 64        | 26         | 39         | 2.0       | 2           | 68        |
| 50        | 48         | 10 | 729 545 510  | 0.566 | 42        | 73        | 28         | 46         | 2.0       | 2 1/4       | 74        |
| 63        | 60         | 10 | 729 545 511  | 0.902 | 50        | 88        | 32         | 58         | 2.6       | 2 3/4       | 88        |

20 51 01



PF 2 33 198 005

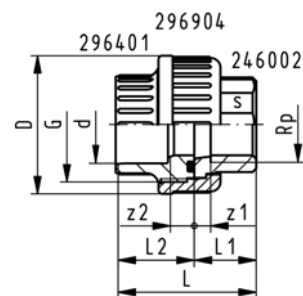
## Adaptor Union ABS / Copper for soldering metric

### Model:

- Union End: Copper
- Union Bush: solvent cement socket ABS metric
- Union Nut: brass
- Gasket: O-ring EPDM No. 48 41 00

| d<br>[mm] | d1<br>[mm] | PN | Code        | kg    | L1<br>[mm] | L2<br>[mm] | z1<br>[mm] | z2<br>[mm] | G<br>[inch] | s<br>[mm] |
|-----------|------------|----|-------------|-------|------------|------------|------------|------------|-------------|-----------|
| 16        | 18         | 10 | 720 510 105 | 0.079 | 25         | 17         | 11         | 4          | 3/4         | 32        |
| 20        | 22         | 10 | 720 510 106 | 0.140 | 26         | 19         | 9          | 3          | 1           | 40        |
| 25        | 28         | 10 | 720 510 107 | 0.269 | 29         | 28         | 9          | 6          | 1 1/4       | 50        |
| 32        | 35         | 10 | 720 510 108 | 0.198 | 33         | 27         | 10         | 5          | 1 1/2       | 52        |
| 40        | 42         | 10 | 720 510 109 | 0.350 | 39         | 35         | 12         | 6          | 2           | 66        |
| 50        | 54         | 10 | 720 510 110 | 0.438 | 46         | 46         | 14         | 3          | 2 1/4       | 72        |

29 53 03



PF 2 33 198 012

## Adaptor Union ABS / Malleable Iron, metric - Rp



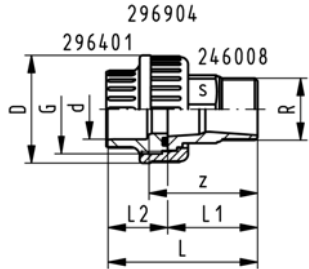
### Model:

- Union Nut: ABS
- Union Bush: solvent cement socket ABS metric
- Union End: malleable iron with parallel female thread Rp
- Gasket: O-Ring EPDM No. 48 41 00

| d<br>[mm] | Rp<br>[inch] | Code        | SP | kg    | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | z1<br>[mm] | z2<br>[mm] | G<br>[inch] | s<br>[mm] |
|-----------|--------------|-------------|----|-------|-----------|-----------|------------|------------|------------|------------|-------------|-----------|
| 20        | 1/2          | 729 530 306 | -  | 0.064 | 43        | 48        | 22         | 26         | 9          | 10         | 1           | 25        |
| 25        | 3/4          | 729 530 307 | -  | 0.095 | 51        | 51        | 22         | 29         | 7          | 10         | 1 1/4       | 31        |
| 32        | 1            | 729 530 308 | -  | 0.139 | 58        | 58        | 26         | 33         | 9          | 10         | 1 1/2       | 38        |
| 40        | 1 1/4        | 729 530 309 | -  | 0.240 | 72        | 69        | 31         | 39         | 12         | 12         | 2           | 48        |
| 50        | 1 1/2        | 729 530 310 | -  | 0.339 | 83        | 78        | 33         | 46         | 14         | 14         | 2 1/4       | 54        |
| 63        | 2            | 729 530 311 | -  | 0.516 | 100       | 91        | 35         | 58         | 11         | 18         | 2 3/4       | 67        |

# ABS metric Fittings

29 53 08



PF 2 33 198 013

## Adaptor Union ABS / Malleable Iron, metric - R

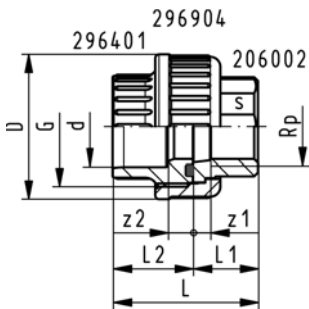


### Model:

- Union Nut: ABS
- Union Bush: solvent cement socket ABS metric
- Union End: malleable iron with taper male thread R
- Gasket: O-Ring EPDM No. 48 41 00

| d<br>[mm] | R<br>[inch] | Code        | SP | kg    | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | z<br>[mm] | G<br>[inch] | s<br>[mm] |
|-----------|-------------|-------------|----|-------|-----------|-----------|------------|------------|-----------|-------------|-----------|
| 20        | 1/2         | 729 530 806 | -  | 0.100 | 43        | 66        | 40         | 26         | 50        | 1           | 25        |
| 25        | 3/4         | 729 530 807 | -  | 0.147 | 51        | 72        | 43         | 29         | 53        | 1 1/4       | 31        |
| 32        | 1           | 729 530 808 | -  | 0.198 | 58        | 80        | 48         | 33         | 58        | 1 1/2       | 38        |
| 40        | 1 1/4       | 729 530 809 | -  | 0.400 | 72        | 95        | 57         | 39         | 69        | 2           | 48        |
| 50        | 1 1/2       | 729 530 810 | -  | 0.490 | 83        | 104       | 59         | 46         | 73        | 2 1/4       | 54        |
| 63        | 2           | 729 530 811 | -  | 0.675 | 100       | 118       | 62         | 58         | 80        | 2 3/4       | 67        |

29 55 03



PF 2 33 198 015

## Adaptor Union ABS / Brass, metric - Rp

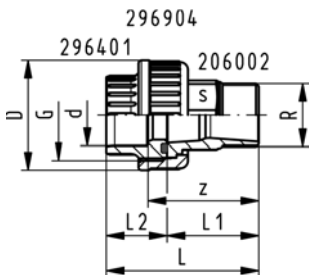


### Model:

- Union Nut: ABS
- Union Bush: solvent cement socket ABS metric
- Union End: brass with parallel female thread Rp
- Gasket: O-Ring EPDM No. 48 41 00

| d<br>[mm] | Rp<br>[inch] | Code        | SP | kg    | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | z1<br>[mm] | z2<br>[mm] | G<br>[inch] | s<br>[mm] |
|-----------|--------------|-------------|----|-------|-----------|-----------|------------|------------|------------|------------|-------------|-----------|
| 20        | 1/2          | 729 550 306 | -  | 0.077 | 43        | 48        | 22         | 26         | 10         | 10         | 1           | 25        |
| 25        | 3/4          | 729 550 307 | 5  | 0.115 | 51        | 51        | 22         | 29         | 6          | 10         | 1 1/4       | 31        |
| 32        | 1            | 729 550 308 | 5  | 0.170 | 58        | 58        | 27         | 33         | 8          | 10         | 1 1/2       | 38        |
| 40        | 1 1/4        | 729 550 309 | 2  | 0.290 | 72        | 69        | 31         | 39         | 10         | 12         | 2           | 48        |
| 50        | 1 1/2        | 729 550 310 | 2  | 0.377 | 83        | 75        | 30         | 46         | 9          | 14         | 2 1/4       | 54        |
| 63        | 2            | 729 550 311 | -  | 0.624 | 100       | 90        | 34         | 58         | 8          | 18         | 2 3/4       | 67        |

29 55 08



PF 2 33 198 016

## Adaptor Union ABS / Brass, metric - R



### Model:

- Union Nut: ABS
- Union Bush: solvent cement socket ABS metric
- Union End: brass with taper male thread R
- Gasket: O-Ring EPDM No. 48 41 00

| d<br>[mm] | R<br>[inch] | Code        | SP | kg    | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | z<br>[mm] | G<br>[inch] | s<br>[mm] |
|-----------|-------------|-------------|----|-------|-----------|-----------|------------|------------|-----------|-------------|-----------|
| 20        | 1/2         | 729 550 806 | 10 | 0.117 | 43        | 63        | 37         | 26         | 47        | 1           | 25        |
| 25        | 3/4         | 729 550 807 | 5  | 0.166 | 51        | 69        | 40         | 29         | 50        | 1 1/4       | 31        |
| 32        | 1           | 729 550 808 | 5  | 0.255 | 58        | 75        | 43         | 33         | 53        | 1 1/2       | 38        |
| 40        | 1 1/4       | 729 550 809 | 2  | 0.360 | 72        | 86        | 48         | 39         | 60        | 2           | 48        |
| 50        | 1 1/2       | 729 550 810 | -  | 0.560 | 83        | 95        | 50         | 46         | 64        | 2 1/4       | 54        |
| 63        | 2           | 729 550 811 | -  | 0.894 | 100       | 113       | 57         | 58         | 75        | 2 3/4       | 67        |

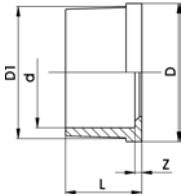


# ABS metric Fittings

## Union Spare Parts

29 60 01

### Union End, ABS metric



**Model:**

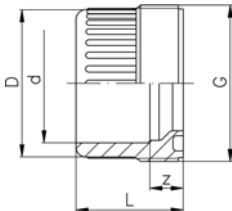
- Solvent cement socket metric
- For adaptor unions 29 53 02, 29 53 07, 29 55 02, 29 55 07
- For union 29 51 01

| d<br>[mm] | PN | Code               | kg    | z<br>[mm] | L<br>[mm] | D<br>[mm] | D1<br>[mm] |
|-----------|----|--------------------|-------|-----------|-----------|-----------|------------|
| 16        | 10 | <b>729 600 105</b> | 0.004 | 5         | 19        | 24        | 22         |
| 20        | 10 | <b>729 600 106</b> | 0.007 | 4         | 21        | 30        | 28         |
| 25        | 10 | <b>729 600 107</b> | 0.012 | 5         | 24        | 39        | 36         |
| 32        | 10 | <b>729 600 108</b> | 0.016 | 5         | 27        | 44        | 41         |
| 40        | 10 | <b>729 600 109</b> | 0.042 | 3         | 31        | 57        | 53         |
| 50        | 10 | <b>729 600 110</b> | 0.045 | 3         | 34        | 63        | 59         |
| 63        | 10 | <b>729 600 111</b> | 0.084 | 3         | 41        | 78        | 74         |
| 75        | 10 | <b>729 600 162</b> | 0.109 | 3         | 47        | 101       | 91         |
| 90        | 10 | <b>729 600 163</b> | 0.178 | 5         | 56        | 121       | 108        |
| 110       | 10 | <b>729 600 164</b> | 0.295 | 5         | 66        | 146       | 131        |

PF 2 33 198 999

29 64 01

### Union Bush, ABS metric



**Model:**

- Solvent cement socket metric
- For union 29 51 01
- Jointing Face: with O-Ring groove

| d<br>[mm] | PN | Code               | kg    | z<br>[mm] | D<br>[mm] | L<br>[mm] | G/Tr    |
|-----------|----|--------------------|-------|-----------|-----------|-----------|---------|
| 16        | 10 | <b>729 640 105</b> | 0.008 | 10        | 24        | 24        | 3/4     |
| 20        | 10 | <b>729 640 106</b> | 0.011 | 10        | 28        | 26        | 1       |
| 25        | 10 | <b>729 640 107</b> | 0.016 | 10        | 33        | 29        | 1 1/4   |
| 32        | 10 | <b>729 640 108</b> | 0.027 | 10        | 41        | 33        | 1 1/2   |
| 40        | 10 | <b>729 640 109</b> | 0.046 | 12        | 50        | 39        | 2       |
| 50        | 10 | <b>729 640 110</b> | 0.058 | 14        | 62        | 46        | 2 1/4   |
| 63        | 10 | <b>729 640 111</b> | 0.111 | 18        | 77        | 58        | 2 3/4   |
| 75        | 10 | <b>729 640 112</b> | 0.160 | 18        | 93        | 62        | Tr108x5 |
| 90        | 10 | <b>729 640 113</b> | 0.238 | 18        | 110       | 69        | Tr128x5 |
| 110       | 10 | <b>729 640 114</b> | 0.330 | 11        | 133       | 72        | Tr154x6 |

PF 2 33 198 999

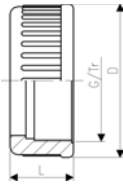
# ABS metric Fittings

29 69 04

## Union Nut, ABS

### Model:

- For union 23 51 01



PF 2 33 172 999

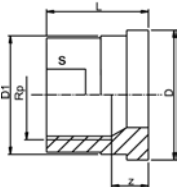
| d<br>[mm] | PN | Code               | SP | kg    | D<br>[mm] | L<br>[mm] | G/Tr    |
|-----------|----|--------------------|----|-------|-----------|-----------|---------|
| 16        | 10 | <b>729 690 405</b> | -  | 0.009 | 35        | 21        | 3/4     |
| 20        | 10 | <b>729 690 406</b> | -  | 0.014 | 43        | 23        | 1       |
| 25        | 10 | <b>729 690 407</b> | -  | 0.018 | 53        | 25        | 1 1/4   |
| 32        | 10 | <b>729 690 408</b> | -  | 0.024 | 60        | 27        | 1 1/2   |
| 40        | 10 | <b>729 690 409</b> | -  | 0.049 | 74        | 30        | 2       |
| 50        | 10 | <b>729 690 410</b> | -  | 0.070 | 83        | 34        | 2 1/4   |
| 63        | 10 | <b>729 690 411</b> | -  | 0.101 | 103       | 38        | 2 3/4   |
| 75        | 10 | <b>729 690 012</b> | -  | 0.188 | 135       | 40        | Tr108x5 |
| 90        | 10 | <b>729 690 013</b> | -  | 0.267 | 158       | 43        | Tr128x5 |
| 110       | 10 | <b>729 690 014</b> | -  | 0.423 | 188       | 48        | Tr154x6 |

24 60 06

## Union Ends, Stainless Steel Rp

### Model:

- Material: Stainless Steel 1.4404 (316L)
- Parallel female thread Rp



PF 2 30 153 999

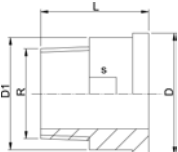
| Rp<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | D<br>[mm] | D1<br>[mm] | L<br>[mm] | s<br>[mm] |
|--------------|----|--------------------|----|-------|-----------|-----------|------------|-----------|-----------|
| 3/8          | 16 | <b>724 600 655</b> | -  | 0.030 | 9         | 24        | 22         | 19        | 19        |
| 1/2          | 16 | <b>724 600 656</b> | -  | 0.060 | 11        | 30        | 28         | 24        | 24        |
| 3/4          | 16 | <b>724 600 657</b> | -  | 0.100 | 11        | 39        | 36         | 26        | 29        |
| 1            | 16 | <b>724 600 658</b> | -  | 0.140 | 12        | 45        | 42         | 29        | 36        |
| 1 1/4        | 16 | <b>724 600 659</b> | -  | 0.230 | 14        | 57        | 53         | 33        | 45        |
| 1 1/2        | 16 | <b>724 600 660</b> | -  | 0.320 | 15        | 63        | 59         | 34        | 54        |
| 2            | 16 | <b>724 600 661</b> | -  | 0.450 | 15        | 78        | 74         | 39        | 63        |

24 60 07

## Union Ends, Stainless Steel R

### Model:

- Material: Stainless Steel 1.4404 (316L)
- Taper male thread R



PF 2 30 153 999

| R<br>[inch] | PN | Code               | SP | kg    | D<br>[mm] | D1<br>[mm] | L<br>[mm] | s<br>[mm] |
|-------------|----|--------------------|----|-------|-----------|------------|-----------|-----------|
| 3/8         | 16 | <b>724 600 705</b> | -  | 0.050 | 24        | 22         | 30        | 19        |
| 1/2         | 16 | <b>724 600 706</b> | -  | 0.090 | 30        | 28         | 34        | 24        |
| 3/4         | 16 | <b>724 600 707</b> | -  | 0.120 | 39        | 36         | 36        | 32        |
| 1           | 16 | <b>724 600 708</b> | -  | 0.190 | 45        | 42         | 40        | 37        |
| 1 1/4       | 16 | <b>724 600 709</b> | -  | 0.350 | 57        | 53         | 46        | 48        |
| 1 1/2       | 16 | <b>724 600 710</b> | -  | 0.400 | 63        | 59         | 48        | 54        |
| 2           | 16 | <b>724 600 711</b> | -  | 0.660 | 78        | 74         | 55        | 69        |

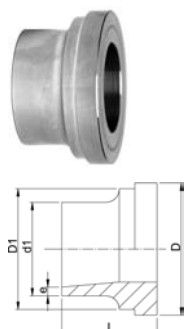
# ABS metric Fittings

24 60 55

## Union Ends, Stainless Steel Welding End

**Model:**

- Material: Stainless Steel 1.4404 (316L)



PF 2 30 153 999

| d<br>[mm] | d1<br>[mm] | PN | Code               | SP | kg    | D<br>[mm] | D1<br>[mm] | L<br>[mm] | e<br>[mm] |
|-----------|------------|----|--------------------|----|-------|-----------|------------|-----------|-----------|
| 16        | 17         | 16 | <b>724 605 505</b> | -  | 0.030 | 24        | 22         | 18        | 1.6       |
| 20        | 21         | 16 | <b>724 605 506</b> | -  | 0.050 | 30        | 28         | 22        | 2.0       |
| 25        | 26         | 16 | <b>724 605 507</b> | -  | 0.080 | 39        | 36         | 23        | 2.0       |
| 32        | 33         | 16 | <b>724 605 508</b> | -  | 0.110 | 45        | 42         | 26        | 2.0       |
| 40        | 42         | 16 | <b>724 605 509</b> | -  | 0.190 | 57        | 53         | 26        | 2.0       |
| 50        | 48         | 16 | <b>724 605 510</b> | -  | 0.220 | 63        | 59         | 28        | 2.0       |
| 63        | 60         | 16 | <b>724 605 511</b> | -  | 0.370 | 78        | 74         | 32        | 2.6       |

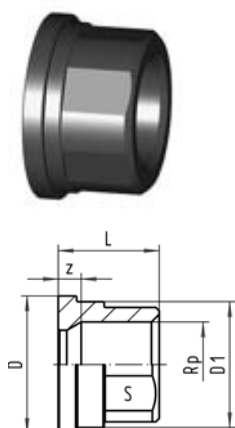
20 60 02

## Union Ends, Brass Rp



**Model:**

- Union End: brass with parallel female thread Rp



PF 2 30 153 999

| d<br>[mm] | Rp<br>[inch] | Code               | SP | kg    | D<br>[mm] | D1<br>[mm] | z<br>[mm] | L<br>[mm] |
|-----------|--------------|--------------------|----|-------|-----------|------------|-----------|-----------|
| 20        | 1/2          | <b>720 600 206</b> | -  | 0.059 | 30        | 28         | 7         | 22        |
| 25        | 3/4          | <b>720 600 207</b> | -  | 0.094 | 39        | 36         | 6         | 22        |
| 32        | 1            | <b>720 600 208</b> | -  | 0.138 | 45        | 42         | 8         | 27        |
| 40        | 1 1/4        | <b>720 600 209</b> | -  | 0.250 | 56        | 53         | 10        | 31        |
| 50        | 1 1/2        | <b>720 600 210</b> | -  | 0.282 | 62        | 59         | 10        | 30        |
| 63        | 2            | <b>720 600 211</b> | -  | 0.480 | 78        | 74         | 8         | 34        |
| 75        | 2 1/2        | <b>720 600 212</b> | -  | 0.796 | 100       | 91         | 8         | 38        |
| 90        | 3            | <b>720 600 213</b> | -  | 1.238 | 121       | 110        | 7         | 40        |

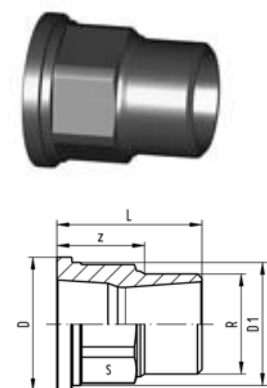
20 60 02

## Union Ends, Brass R



**Model:**

- Union End: brass with taper male thread R



PF 2 30 153 999

| d<br>[mm] | R<br>[inch] | Code               | SP | kg    | D<br>[mm] | D1<br>[mm] | L<br>[mm] | z<br>[mm] | s<br>[mm] |
|-----------|-------------|--------------------|----|-------|-----------|------------|-----------|-----------|-----------|
| 20        | 1/2         | <b>720 600 226</b> | -  | 0.097 | 30        | 27         | 37        | 24        | 25        |
| 25        | 3/4         | <b>720 600 227</b> | -  | 0.148 | 39        | 36         | 40        | 26        | 31        |
| 32        | 1           | <b>720 600 228</b> | -  | 0.224 | 45        | 42         | 43        | 26        | 38        |
| 32        | 1 1/4       | <b>720 600 229</b> | -  | 0.384 | 56        | 53         | 48        | 29        | 48        |
| 50        | 1 1/2       | <b>720 600 230</b> | -  | 0.468 | 62        | 59         | 50        | 31        | 54        |
| 63        | 2           | <b>720 600 231</b> | -  | 0.746 | 78        | 74         | 57        | 34        | 67        |
| 75        | 2 1/2       | <b>720 600 232</b> | -  | 1.285 | 100       | 92         | 70        | 43        | 83        |
| 90        | 3           | <b>720 600 233</b> | -  | 1.809 | 121       | 110        | 72        | 42        | 96        |

# ABS metric Fittings

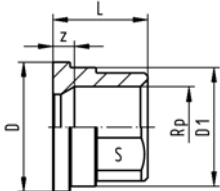
70 37 22

## Union Ends, Malleable Iron Galvanized Rp



Model:

- Union End: malleable iron with parallel female thread Rp



PF 2 30 153 999

| d<br>[mm] | Rp<br>[inch] | Code        | SP | kg    | D<br>[mm] | D1<br>[mm] | L<br>[mm] | z<br>[mm] | s<br>[mm] |
|-----------|--------------|-------------|----|-------|-----------|------------|-----------|-----------|-----------|
| 20        | 1/2          | 724 600 206 | -  | 0.058 | 30        | 27         | 22        | 9         | 25        |
| 25        | 3/4          | 724 600 207 | -  | 0.096 | 39        | 36         | 22        | 7         | 31        |
| 32        | 1            | 724 600 208 | -  | 0.127 | 44        | 41         | 26        | 9         | 38        |
| 32        | 1 1/4        | 724 600 209 | -  | 0.204 | 56        | 52         | 31        | 12        | 48        |
| 50        | 1 1/2        | 724 600 210 | 1  | 0.268 | 62        | 58         | 33        | 14        | 54        |
| 63        | 2            | 724 600 211 | -  | 0.443 | 78        | 73         | 35        | 11        | 67        |
| 75        | 2 1/2        | 724 600 212 | -  | 0.737 | 97        | 92         | 39        | 12        | 85        |
| 90        | 3            | 724 600 213 | -  | 0.913 | 110       | 104        | 45        | 15        | 96        |

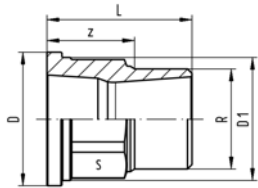
70 37 12

## Union Ends, Malleable Iron Galvanized R



Model:

- Union End: malleable iron with taper male thread R



PF 2 30 153 999

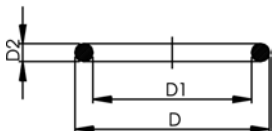
| d<br>[mm] | R<br>[inch] | Code        | SP  | kg    | D<br>[mm] | D1<br>[mm] | L<br>[mm] | z<br>[mm] | s<br>[mm] |
|-----------|-------------|-------------|-----|-------|-----------|------------|-----------|-----------|-----------|
| 20        | 1/2         | 724 600 806 | -   | 0.085 | 30        | 27         | 40        | 25        | 23        |
| 25        | 3/4         | 724 600 807 | 100 | 0.147 | 39        | 36         | 43        | 27        | 30        |
| 32        | 1           | 724 600 808 | -   | 0.210 | 44        | 41         | 48        | 29        | 36        |
| 40        | 1 1/4       | 724 600 809 | -   | 0.315 | 56        | 52         | 57        | 36        | 48        |
| 50        | 1 1/2       | 724 600 810 | -   | 0.411 | 62        | 58         | 59        | 37        | 54        |
| 63        | 2           | 724 600 811 | -   | 0.665 | 78        | 73         | 62        | 36        | 66        |
| 75        | 2 1/2       | 724 600 812 | -   | 0.897 | 97        | 92         | 75        | 45        | 85        |
| 90        | 3           | 724 600 813 | -   | 1.146 | 110       | 104        | 80        | 47        | 95        |

EPDM 48 41 00  
FPM 49 41 00

## O-Ring Gaskets

Model:

- For unions and adaptor unions
- Hardness approx. 65° Shore
- EPDM minimum temperature -40°C
- FPM minimum temperature -15°C



PF 2 30 162 006

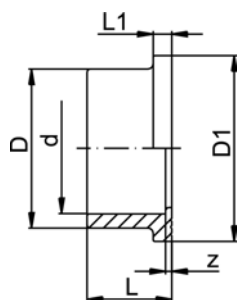
| d<br>[mm] | DN<br>[mm] | EPDM<br>Code | FPM<br>Code | SP  | kg    | D<br>[mm] | D1<br>[mm] | D2<br>[mm] |
|-----------|------------|--------------|-------------|-----|-------|-----------|------------|------------|
| 10 - 12   | 8          | 748 410 004  | 749 410 004 | -   | 0.002 | 18        | 12         | 2.62       |
| 16        | 10         | 748 410 005  | 749 410 005 | -   | 0.002 | 21        | 16         | 2.62       |
| 20        | 15         | 748 410 006  | 749 410 006 | -   | 0.002 | 27        | 20         | 3.53       |
| 25        | 20         | 748 410 007  | 749 410 007 | 100 | 0.002 | 35        | 28         | 3.53       |
| 32        | 25         | 748 410 008  | 749 410 008 | 100 | 0.002 | 40        | 33         | 3.53       |
| 40        | 32         | 748 410 009  | 749 410 009 | -   | 0.006 | 51        | 41         | 5.34       |
| 50        | 40         | 748 410 010  | 749 410 010 | -   | 0.007 | 58        | 47         | 5.34       |
| 63        | 50         | 748 410 011  | 749 410 011 | 100 | 0.010 | 70        | 60         | 5.34       |
| 75        | 65         | 748 410 014  | 749 410 014 | 100 | 0.012 | 93        | 82         | 5.34       |
| 90        | 80         | 748 410 015  | 749 410 015 | 100 | 0.015 | 112       | 101        | 5.34       |
| 110       | 100        | 748 410 016  | 749 410 016 | 50  | 0.031 | 134       | 120        | 6.99       |

# ABS metric Fittings

## Flange Adaptors

29 79 01

### Flange Adaptor, ABS metric



**Model:**

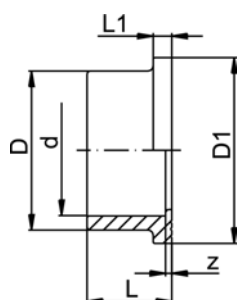
- Jointing faces flat/serrated
  - Counter part: Same flange adaptor
  - Gasket: Profile flange gasket EPDM No. 48 44 07, FPM No. 49 44 07
  - Gasket: Flat gasket EPDM No. 48 40 03
- >d225 - maximum operating temperature: +40°C

| d<br>[mm] | DN<br>[mm] | d<br>[inch] | PN | Code               | SP | kg    | z<br>[mm] | D<br>[mm] | D1<br>[mm] | L<br>[mm] | L1<br>[mm] |
|-----------|------------|-------------|----|--------------------|----|-------|-----------|-----------|------------|-----------|------------|
| 20        | 15         |             | 10 | <b>729 790 106</b> | 10 | 0.008 | 3         | 27        | 34         | 21        | 6          |
| 25        | 20         |             | 10 | <b>729 790 107</b> | 10 | 0.012 | 3         | 33        | 41         | 24        | 7          |
| 32        | 25         |             | 10 | <b>729 790 108</b> | -  | 0.020 | 3         | 41        | 50         | 27        | 7          |
| 40        | 32         |             | 10 | <b>729 790 109</b> | 10 | 0.058 | 3         | 50        | 61         | 30        | 8          |
| 50        | 40         |             | 10 | <b>729 790 110</b> | 10 | 0.058 | 3         | 61        | 73         | 34        | 8          |
| 63        | 50         |             | 10 | <b>729 790 111</b> | 10 | 0.074 | 3         | 76        | 90         | 41        | 9          |
| 75        | 65         | 2 ½         | 10 | <b>729 790 112</b> | 10 | 0.118 | 3         | 91        | 106        | 47        | 10         |
| 90        | 80         |             | 10 | <b>729 790 113</b> | 10 | 0.187 | 5         | 108       | 125        | 56        | 11         |
| 110       | 100        |             | 10 | <b>729 790 114</b> | 10 | 0.300 | 5         | 131       | 150        | 66        | 12         |
| 140       | 125        | 5           | 10 | <b>729 790 116</b> | 6  | 0.567 | 5         | 165       | 188        | 81        | 14         |
| 160       | 150        |             | 10 | <b>729 790 117</b> | 2  | 0.800 | 5         | 188       | 213        | 91        | 16         |
| 200       | 200        |             | 10 | <b>729 790 119</b> | 2  | 1.120 | 6         | 224       | 250        | 112       | 24         |
| 225       | 200        |             | 10 | <b>729 790 120</b> | 2  | 1.300 | 6         | 248       | 274        | 125       | 25         |
| 250       | 250        |             | 6  | <b>729 790 121</b> | -  | 1.000 | 9         | 274       | 303        | 140       | 23         |
| 280       | 250        |             | 6  | <b>729 790 122</b> | 1  | 2.161 | 5         | 307       | 329        | 151       | 23         |
| 315       | 300        |             | 6  | <b>729 790 123</b> | 1  | 3.321 | 8         | 346       | 379        | 172       | 27         |

PF 2 33 198 019

29 79 11

### Flange Adaptors, ABS Combined Jointing face flat and serrated, BS inch



| d<br>[inch] | PN | Code               | SP | kg    | D1<br>[mm] | D<br>[mm] | L<br>[mm] | L1<br>[mm] | z<br>[mm] |
|-------------|----|--------------------|----|-------|------------|-----------|-----------|------------|-----------|
| ½           | 15 | <b>729 791 106</b> | -  | 0.007 | 34         | 27        | 21        | 6          | 3         |
| ¾           | 15 | <b>729 791 107</b> | -  | 0.011 | 41         | 33        | 24        | 7          | 3         |
| 1           | 15 | <b>729 791 108</b> | -  | 0.018 | 27         | 41        | 27        | 7          | 3         |
| 1 ¼         | 15 | <b>729 791 109</b> | -  | 0.027 | 32         | 50        | 32        | 8          | 3         |
| 1 ½         | 15 | <b>729 791 110</b> | 10 | 0.050 | 33         | 61        | 33        | 8          | 3         |
| 2           | 15 | <b>729 791 111</b> | 5  | 0.078 | 40         | 77        | 40        | 9          | 3         |
| 2 ½         | 10 | <b>729 790 112</b> | 10 | 0.118 | 106        | 91        | 47        | 10         | 3         |
| 3           | 15 | <b>729 791 113</b> | 10 | 0.187 | 56         | 108       | 56        | 11         | 5         |
| 4           | 15 | <b>729 791 115</b> | 10 | 0.309 | 69         | 136       | 69        | 12         | 5         |
| 5           | 10 | <b>729 790 116</b> | 6  | 0.567 | 188        | 165       | 81        | 14         | 5         |
| 6           | 12 | <b>729 791 117</b> | 2  | 0.912 | 96         | 198       | 96        | 16         | 5         |
| 8           | 9  | <b>729 791 120</b> | 2  | 1.449 | 122        | 248       | 122       | 20         | 6         |

PF 2 33 172 012

# Accessories

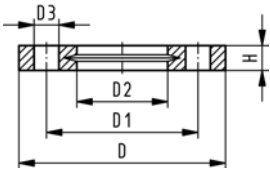
## Backing Flanges

27 70 04  
27 70 05

### Backing Flanges, PP-V for Socket Systems metric

**Model:**

- Modern full-plastic flange PP-GF (30 % glass-fibre reinforced)
- With V-groove which applies force evenly on collar
- With integrated bolt retainers as an assembly aid
- Connecting dimension: ISO 7005, EN 1092, BS 4504, DIN 2501
- **Bolt circle PN 10**



1) Suitable for socket- and butt fusion systems (no pictograph on flange)  
AL: number of holes

| d<br>[mm] | Inch | DN<br>[mm] | PN | Code               | SP | GP | kg    |
|-----------|------|------------|----|--------------------|----|----|-------|
| '20       |      | 15         | 16 | <b>727 700 406</b> | 56 | -  | 0.080 |
| '25       |      | 20         | 16 | <b>727 700 407</b> | 38 | -  | 0.100 |
| '32       |      | 25         | 16 | <b>727 700 408</b> | 80 | -  | 0.140 |
| '40       |      | 32         | 16 | <b>727 700 409</b> | 40 | -  | 0.220 |
| '50       |      | 40         | 16 | <b>727 700 410</b> | 30 | -  | 0.210 |
| '63       |      | 50         | 16 | <b>727 700 411</b> | 25 | -  | 0.380 |
| '75       |      | 65         | 16 | <b>727 700 412</b> | 19 | -  | 0.480 |
| 90        |      | 80         | 16 | <b>727 700 413</b> | 15 | -  | 0.520 |
| 110       |      | 100        | 16 | <b>727 700 414</b> | 13 | -  | 0.680 |
| 140       |      | 125        | 16 | <b>727 700 416</b> | 10 | -  | 0.800 |
| 160       | 6    | 150        | 16 | <b>727 700 417</b> | -  | -  | 1.200 |
| 200       |      | 200        | 16 | <b>727 700 419</b> | -  | -  | 1.500 |
| 225       | 8    | 200        | 16 | <b>727 700 420</b> | -  | -  | 1.400 |
| 250       |      | 250        | 16 | <b>727 700 421</b> | -  | -  | 1.700 |
| 280       |      | 250        | 16 | <b>727 700 422</b> | -  | -  | 1.700 |
| 315       |      | 300        | 16 | <b>727 700 423</b> | -  | -  | 2.400 |

| d<br>[mm] | D<br>[mm] | D1<br>[mm] | D2<br>[mm] | D3<br>[mm] | H<br>[mm] | AL | SC  |
|-----------|-----------|------------|------------|------------|-----------|----|-----|
| '20       | 95        | 65         | 28         | 14         | 16        | 4  | M12 |
| '25       | 105       | 75         | 34         | 14         | 17        | 4  | M12 |
| '32       | 115       | 85         | 42         | 14         | 18        | 4  | M12 |
| '40       | 140       | 100        | 51         | 18         | 20        | 4  | M16 |
| '50       | 150       | 110        | 62         | 18         | 22        | 4  | M16 |
| '63       | 165       | 125        | 78         | 18         | 24        | 4  | M16 |
| '75       | 185       | 145        | 92         | 18         | 26        | 4  | M16 |
| 90        | 200       | 160        | 110        | 18         | 27        | 8  | M16 |
| 110       | 220       | 180        | 133        | 18         | 28        | 8  | M16 |
| 140       | 250       | 210        | 167        | 18         | 30        | 8  | M16 |
| 160       | 285       | 241        | 190        | 22         | 32        | 8  | M20 |
| 200       | 340       | 296        | 226        | 22         | 34        | 8  | M20 |
| 225       | 340       | 295        | 250        | 22         | 34        | 8  | M20 |
| 250       | 395       | 350        | 277        | 22         | 38        | 12 | M20 |
| 280       | 395       | 350        | 310        | 22         | 38        | 12 | M20 |
| 315       | 445       | 400        | 348        | 22         | 42        | 12 | M20 |

PF 2 34 238 030

# Accessories

27 70 02

## Backing Flanges, PP/Steel for Socket Systems metric



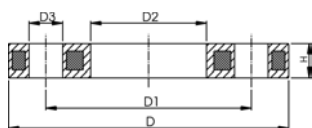
### Model:

- PP-GF (30% glass-fibre reinforced) with steel ring
- Connecting dimension: ISO 7005, EN 1092, BS 4504, DIN 2501
- **Bolt circle PN 10**

### <sup>1</sup> Connecting dimension: ISO 2536 DN125

\* Connecting dimension: ISO 2536

AL: number of holes



| d<br>[mm]        | d<br>[inch] | DN<br>[mm] | PN | Code               | kg    | D<br>[mm] | D1<br>[mm] | D2<br>[mm] | D3<br>[mm] | H<br>[mm] | AL | SC  |
|------------------|-------------|------------|----|--------------------|-------|-----------|------------|------------|------------|-----------|----|-----|
| 20               |             | 15         | 16 | <b>727 700 206</b> | 0.220 | 95        | 65         | 28         | 14         | 12        | 4  | M12 |
| 25               |             | 20         | 16 | <b>727 700 207</b> | 0.260 | 105       | 75         | 34         | 14         | 12        | 4  | M12 |
| 32               |             | 25         | 16 | <b>727 700 208</b> | 0.430 | 115       | 85         | 42         | 14         | 16        | 4  | M12 |
| 40               |             | 32         | 16 | <b>727 700 209</b> | 0.650 | 140       | 100        | 51         | 18         | 16        | 4  | M16 |
| 50               |             | 40         | 16 | <b>727 700 210</b> | 0.820 | 150       | 110        | 62         | 18         | 18        | 4  | M16 |
| 63               |             | 50         | 16 | <b>727 700 211</b> | 0.940 | 165       | 125        | 78         | 18         | 18        | 4  | M16 |
| 75               |             | 65         | 16 | <b>727 700 212</b> | 1.300 | 185       | 145        | 92         | 18         | 18        | 4  | M16 |
| 90               |             | 80         | 16 | <b>727 700 213</b> | 1.400 | 200       | 160        | 110        | 18         | 20        | 8  | M16 |
| 110              |             | 100        | 16 | <b>727 700 214</b> | 1.560 | 220       | 180        | 133        | 18         | 20        | 8  | M16 |
| <sup>1</sup> 125 |             | 100        | 16 | <b>727 700 215</b> | 2.590 | 250       | 210        | 150        | 18         | 24        | 8  | M16 |
| 140              |             | 125        | 16 | <b>727 700 216</b> | 2.120 | 250       | 210        | 167        | 18         | 24        | 8  | M16 |
| 160              | 6           | 150        | 16 | <b>727 700 217</b> | 3.390 | 285       | 240        | 190        | 22         | 24        | 8  | M20 |
| 200              |             | 200        | 16 | <b>727 700 219</b> | 5.850 | 340       | 295        | 226        | 22         | 27        | 8  | M20 |
| 225              |             | 200        | 16 | <b>727 700 220</b> | 4.410 | 340       | 295        | 250        | 22         | 27        | 8  | M20 |
| 250              |             | 250        | 16 | <b>727 700 021</b> | 8.340 | 395       | 350        | 277        | 22         | 30        | 12 | M20 |
| *250             |             | 250        | 16 | <b>727 700 221</b> | 8.340 | 395       | 325        | 277        | 22         | 30        | 8  | M20 |
| 280              |             | 250        | 16 | <b>727 700 222</b> | 5.520 | 395       | 350        | 310        | 22         | 30        | 12 | M20 |
| 315              |             | 300        | 16 | <b>727 700 223</b> | 7.600 | 445       | 400        | 348        | 22         | 34        | 12 | M20 |

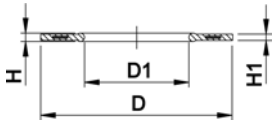
PF 2 34 238 020

# Accessories

## Seals

EPDM 48 44 07  
FPM 49 44 07

### Profile Flange Gaskets metric EPDM / FPM



#### Model:

- For all GF Flange Adaptors
- Profile Gasket with steel insert (type G-ST-P/K)
- Hardness: 70° Shore **EPDM**, 75° Shore **FPM**
- Centering on the inner diameter of the screw crown

di FA are the suitable inner diameters of flange adaptors

| d<br>[mm] | DN<br>[mm] | PN | EPDM<br>Code | FPM<br>Code | kg    | D<br>[mm] | D1<br>[mm] | H<br>[mm] | H1<br>[mm] | di FA<br>[mm] |
|-----------|------------|----|--------------|-------------|-------|-----------|------------|-----------|------------|---------------|
| 16        | 10         | 16 | 748 440 705  | 749 440 705 | 0.007 | 46        | 16         | 4         | 3          | 6 - 16        |
| 20        | 15         | 16 | 748 440 706  | 749 440 706 | 0.008 | 51        | 20         | 4         | 3          | 10 - 20       |
| 25        | 20         | 16 | 748 440 707  | 749 440 707 | 0.011 | 61        | 22         | 4         | 3          | 12 - 22       |
| 32        | 25         | 16 | 748 440 708  | 749 440 708 | 0.014 | 71        | 28         | 4         | 3          | 18 - 28       |
| 40        | 32         | 16 | 748 440 709  | 749 440 709 | 0.021 | 82        | 40         | 4         | 3          | 30 - 40       |
| 50        | 40         | 16 | 748 440 710  | 749 440 710 | 0.022 | 92        | 46         | 4         | 3          | 36 - 46       |
| 63        | 50         | 16 | 748 440 711  | 749 440 711 | 0.041 | 107       | 58         | 5         | 4          | 48 - 58       |
| 75        | 65         | 16 | 748 440 712  | 749 440 712 | 0.055 | 127       | 69         | 5         | 4          | 59 - 69       |
| 90        | 80         | 16 | 748 440 713  | 749 440 713 | 0.062 | 142       | 84         | 5         | 4          | 73 - 84       |
| 110       | 100        | 16 | 748 440 714  | 749 440 714 | 0.085 | 162       | 104        | 6         | 5          | 94 - 104      |
| 125       | 100        | 16 | 748 440 715  | 749 440 715 | 0.158 | 162       | 123        | 6         | 5          | 113 - 123     |
| 140       | 125        | 16 | 748 440 716  | 749 440 716 | 0.118 | 192       | 137        | 6         | 5          | 127 - 137     |
| 160 / 180 | 150        | 16 | 748 440 717  | 749 440 717 | 0.153 | 218       | 160        | 8         | 6          | 150 - 160     |
| 200       | 200        | 16 | 748 440 719  | 749 440 719 | 0.263 | 273       | 203        | 8         | 6          | 192 - 203     |
| 225       | 200        | 16 | 748 440 720  | 749 440 720 | 0.181 | 273       | 220        | 8         | 6          | 207 - 220     |
| 250       | 250        | 16 | 748 440 721  | 749 440 721 | 0.410 | 328       | 252        | 8         | 6          | 238 - 252     |
| 280       | 250        | 16 | 748 440 722  | 749 440 722 | 0.226 | 328       | 274        | 8         | 6          | 264 - 274     |
| 315       | 300        | 16 | 748 440 723  | 749 440 723 | 0.334 | 378       | 306        | 8         | 6          | 296 - 306     |

PF 2 30 162 037



# Accessories

EPDM 48 40 03

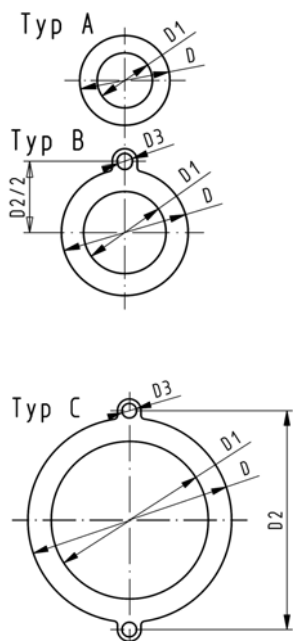
## Flat Gasket EPDM



### Model:

- For all GF Flange Adaptors
- Hardness : EPDM ca. 70° Shore
- Integrated fixation aids from d110
- Centering on the inner diameter of the screw crown

di FA are the suitable inner diameters of flange adaptors



| d<br>[mm] | DN<br>[mm] | PN | Type | EPDM<br>Code | kg    | D<br>[mm] | D1<br>[mm] | D2<br>[mm] | D3<br>[mm] | H<br>[mm] | di FA<br>[mm] |
|-----------|------------|----|------|--------------|-------|-----------|------------|------------|------------|-----------|---------------|
| 16        | 10         | 10 | A    | 748 400 305  | 0.005 | 46        | 16         |            |            | 2         | 6 - 26        |
| 20        | 15         | 10 | A    | 748 400 306  | 0.010 | 51        | 20         |            |            | 2         | 10 - 30       |
| 25        | 20         | 10 | A    | 748 400 307  | 0.020 | 61        | 25         |            |            | 2         | 15 - 35       |
| 32        | 25         | 10 | A    | 748 400 308  | 0.025 | 71        | 32         |            |            | 2         | 22 - 42       |
| 40        | 32         | 10 | A    | 748 400 309  | 0.030 | 82        | 40         |            |            | 3         | 30 - 50       |
| 50        | 40         | 10 | A    | 748 400 310  | 0.035 | 92        | 50         |            |            | 3         | 40 - 60       |
| 63        | 50         | 10 | A    | 748 400 311  | 0.040 | 107       | 63         |            |            | 3         | 53 - 73       |
| 75        | 65         | 10 | A    | 748 400 312  | 0.045 | 127       | 71         |            |            | 3         | 61 - 81       |
| 90        | 80         | 10 | A    | 748 400 313  | 0.050 | 142       | 84         |            |            | 3         | 74 - 94       |
| 110       | 100        | 10 | B    | 748 400 314  | 0.032 | 162       | 104        | 180        | 18         | 4         | 94 - 114      |
| 125       | 100        | 10 | B    | 748 400 315  | 0.058 | 162       | 119        | 180        | 18         | 4         | 109 - 129     |
| 140       | 125        | 10 | B    | 748 400 316  | 0.062 | 192       | 134        | 210        | 18         | 4         | 124 - 144     |
| 160 / 180 | 150        | 10 | B    | 748 400 317  | 0.068 | 218       | 155        | 241        | 22         | 4         | 145 - 165     |
| 200       | 200        | 6  | C    | 748 400 319  | 0.075 | 273       | 195        | 295        | 22         | 5         | 185 - 205     |
| 225       | 200        | 6  | C    | 748 400 320  | 0.079 | 273       | 216        | 295        | 22         | 5         | 206 - 226     |
| 250       | 250        | 6  | C    | 748 400 321  | 0.103 | 328       | 250        | 350        | 22         | 5         | 240 - 260     |
| 280       | 250        | 6  | C    | 748 400 322  | 0.150 | 328       | 273        | 350        | 22         | 5         | 263 - 283     |
| 315       | 300        | 6  | C    | 748 400 323  | 0.230 | 378       | 305        | 400        | 22         | 5         | 295 - 315     |

PF 2 30 162 003

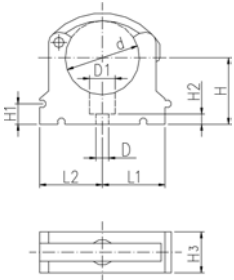
# Accessories

## Pipe Clips metric

### KLIP-IT Pipe Clips Type 061, PP metric

**Model:**

- For mm pipes
- Material: Clip and safety clip PP black, UV resistant
- d16 - d63: Height designed for Ball Valve Type 546
- **Minimum order quantity: standard packagings SP**



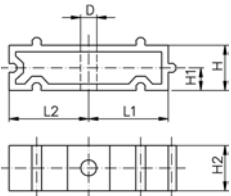
PF 2 30 162 023

| d    | d      | Code               | SP | GP  | D    | D1   | L1   | L2   | H    | H1   | H2   | H3   | SC |
|------|--------|--------------------|----|-----|------|------|------|------|------|------|------|------|----|
| [mm] | [inch] |                    |    |     | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |    |
| *16  |        | <b>167 061 035</b> | 10 | -   | 6    | 11   | 14   | 17   | 27   | 10   | 6    | 16   | M5 |
| *20  |        | <b>167 061 036</b> | 10 | -   | 6    | 11   | 17   | 19   | 27   | 10   | 6    | 16   | M5 |
| *25  |        | <b>167 061 037</b> | 10 | 200 | 6    | 11   | 19   | 22   | 30   | 10   | 6    | 16   | M5 |
| *32  |        | <b>167 061 038</b> | 10 | 150 | 6    | 11   | 24   | 27   | 36   | 10   | 6    | 16   | M5 |
| 40   |        | <b>167 061 039</b> | 10 | 140 | 7    | 14   | 34   | 34   | 44   | 10   | 7    | 22   | M6 |
| 50   |        | <b>167 061 040</b> | 10 | 100 | 7    | 14   | 37   | 37   | 51   | 10   | 7    | 22   | M6 |
| 63   |        | <b>167 061 041</b> | 10 | 80  | 9    | 17   | 45   | 45   | 64   | 10   | 10   | 25   | M8 |
| 75   | 2 ½    | <b>167 061 012</b> | 10 | 60  | 9    | 17   | 52   | 52   | 58   | 10   | 10   | 25   | M8 |
| 90   | 3      | <b>167 061 013</b> | 10 | 80  | 9    | 17   | 65   | 65   | 65   | 10   | 10   | 28   | M8 |
| 110  | 4      | <b>167 061 014</b> | 10 | 40  | 9    | 17   | 79   | 79   | 75   | 10   | 10   | 28   | M8 |
| 125  |        | <b>167 061 015</b> | 10 | 30  | 9    | 17   | 88   | 88   | 90   | 10   | 10   | 32   | M8 |
| 140  | 5      | <b>167 061 016</b> | 10 | 20  | 9    | 17   | 98   | 98   | 110  | 10   | 10   | 32   | M8 |
| 160  |        | <b>167 061 017</b> | 10 | 20  | 9    | 17   | 109  | 109  | 108  | 10   | 10   | 32   | M8 |

### KLIP-IT Spacer Type 061, PP

**Model:**

- For pipe clips Type 061/061H, PP black, UV resistant
- **Minimum order quantity: standard packaging SP**



PF 2 30 162 023

| d    | Inch   | Code               | SP | GP  | kg    | D    | L1   | L2   | H    | H1   | H2   | SC |
|------|--------|--------------------|----|-----|-------|------|------|------|------|------|------|----|
| [mm] | [inch] |                    |    |     |       | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |    |
| 16   | ¾      | <b>167 061 155</b> | 10 | 200 | 0.006 | 6    | 14   | 17   | 20   | 10   | 16   | M5 |
| 20   | ½      | <b>167 061 156</b> | 10 | 200 | 0.006 | 6    | 17   | 19   | 20   | 10   | 16   | M5 |
| 25   | ¾      | <b>167 061 157</b> | 10 | 200 | 0.007 | 6    | 19   | 22   | 20   | 10   | 16   | M5 |
| 32   | 1      | <b>167 061 158</b> | 10 | 200 | 0.008 | 6    | 24   | 27   | 20   | 10   | 16   | M5 |
| 40   | 1 ¼    | <b>167 061 159</b> | 10 | 150 | 0.016 | 7    | 34   | 34   | 20   | 10   | 22   | M6 |
| 50   | 1 ½    | <b>167 061 160</b> | 10 | 140 | 0.017 | 7    | 37   | 37   | 20   | 10   | 22   | M6 |
| 63   | 2      | <b>167 061 161</b> | 10 | 80  | 0.024 | 9    | 45   | 45   | 20   | 10   | 25   | M8 |
| 75   | 2 ½    | <b>167 061 162</b> | 10 | 60  | 0.027 | 9    | 52   | 52   | 20   | 10   | 25   | M8 |
| 90   | 3      | <b>167 061 163</b> | 10 | 140 | 0.040 | 9    | 65   | 65   | 20   | 10   | 28   | M8 |
| 110  | 4      | <b>167 061 164</b> | 10 | 100 | 0.048 | 9    | 79   | 79   | 20   | 10   | 28   | M8 |
| 125  | 4 ½    | <b>167 061 165</b> | 10 | 100 | 0.059 | 9    | 88   | 88   | 20   | 10   | 32   | M8 |
| 140  | 5      | <b>167 061 166</b> | 10 | 80  | 0.065 | 9    | 98   | 98   | 20   | 10   | 32   | M8 |
| 160  | 6      | <b>167 061 167</b> | 10 | 80  | 0.074 | 9    | 109  | 109  | 20   | 10   | 32   | M8 |

## Accessories

### Solvent Cement and Tools

#### Tangit ABS Solvent Cement

- 0,75 kg can (net)



PF 2 28 473 005

| Code        | kg    |
|-------------|-------|
| 799 298 022 | 0.650 |

#### Tangit Cleaner

Model:

- For PVC-U, PVC-C, ABS
- 1 litre tin



PF 2 28 473 002

| Code        | kg    |
|-------------|-------|
| 799 298 010 | 0.900 |

#### Cap for cement

- Cap prevents the evaporation of the solvent whilst using the Tangit cement



PF 2 28 473 009

| Code        | kg    |
|-------------|-------|
| 799 298 028 | 0.030 |

#### Round Brushes



PF 2 30 217 004

| d-d [mm] |                             | Code        | kg    |
|----------|-----------------------------|-------------|-------|
| 6 - 10   | 4 mm (for Fittings 6-10mm)  | 799 299 001 | 0.005 |
| 12 - 32  | 8 mm (for Fittings 12-32mm) | 799 299 002 | 0.009 |

#### Flat Brushes



| d-d [mm]  |                                  | Code        | SP | kg    |
|-----------|----------------------------------|-------------|----|-------|
| 40 - 63   | 25x3 mm (for Fittings 40-63mm)   | 799 299 003 | -  | 0.015 |
| 75 - 225  | 50x5 mm (for Fittings 75-225mm)  | 799 299 004 | -  | 0.026 |
| 250 - 400 | 75x6 mm (for Fittings 250-400mm) | 799 299 005 | -  | 0.045 |

#### Chamfering Tool



PF 2 35 268 001

| Size | d-d [mm] | Code        | kg    |
|------|----------|-------------|-------|
| 1    | 16 - 75  | 799 495 145 | 0.720 |
| 2    | 32 - 200 | 799 495 146 | 0.992 |

#### PPC Plastic pipe cutter

- For cutting plastic pipes d10 - d160



PF 3 25 117 309

| d-d [mm]  | Article                  | Code        | SP | kg    |
|-----------|--------------------------|-------------|----|-------|
| 10 - 63   | PPC 63, s max. = 7.2mm   | 790 109 001 | -  | 0.710 |
| 50 - 110  | PPC 110, s max. = 12.7mm | 790 109 002 | -  | 1.400 |
| 110 - 160 | PPC 160, s max. = 19.0mm | 790 109 003 | -  | 2.220 |



# ABS metric Valves

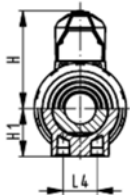
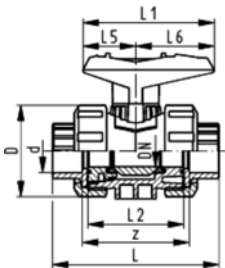
|   |                               | Page |
|---|-------------------------------|------|
|    | Ball valves                   | 90   |
|    | Butterfly valves              | 99   |
|    | Diaphragm valves              | 105  |
|    | Angle seat check valves       | 107  |
|    | Ball check (non-return) valve | 108  |
|   | Strainers                     | 109  |
|  | Ball valves electric          | 110  |
|  | Ball valves pneumatic         | 119  |
|  | Butterfly valves electric     | 130  |
|  | Butterfly valves pneumatic    | 136  |
|  | Diaphragm valves pneumatic    | 141  |

# ABS metric Valves

## Ball valves

### Ball valve type 546 ABS

#### With solvent cement sockets metric



#### Model:

- Image and drawing DN65-100 please see "New product ball valve DN65-100"
- For easy installation and removal
- z-dimension, valve end and union nut are **not compatible** with type 346 (DN10/15-50) resp. type 370 (DN65-100)
- Ball seals PTFE
- Without mounting inserts

#### Option:

- Individual configuration of the valve (see form)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+

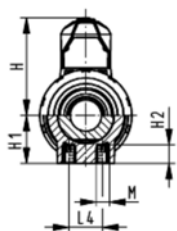
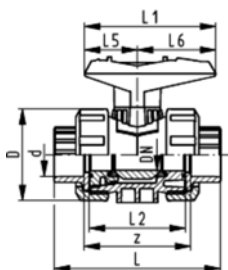
| d<br>[mm]      | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|----------------|------------|----|--|--------------------|-------|
| 16             | 10         | 10 | 71   | <b>169 546 001</b> | 0.112 |
| 20             | 15         | 10 | 185  | <b>169 546 002</b> | 0.114 |
| 25             | 20         | 10 | 350  | <b>169 546 003</b> | 0.178 |
| 32             | 25         | 10 | 700  | <b>169 546 004</b> | 0.258 |
| 40             | 32         | 10 | 1000                                       | <b>169 546 005</b> | 0.457 |
| 50             | 40         | 10 | 1600                                       | <b>169 546 006</b> | 0.642 |
| 63             | 50         | 10 | 3100                                       | <b>169 546 007</b> | 1.175 |
| <i>New</i> 75  | 65         | 10 | 5000                                       | <b>169 546 008</b> | 3.900 |
| <i>New</i> 90  | 80         | 10 | 7000                                       | <b>169 546 009</b> | 5.700 |
| <i>New</i> 110 | 100        | 10 | 11000                                      | <b>169 546 010</b> | 9.100 |

| d<br>[mm]      | D<br>[mm] | H<br>[mm] | H1<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | z<br>[mm] | closest<br>inch |
|----------------|-----------|-----------|------------|-----------|------------|------------|------------|------------|------------|-----------|-----------------|
| 16             | 50        | 57        | 27         | 92        | 77         | 56         | 25         | 32         | 45         | 64        | 3/8             |
| 20             | 50        | 57        | 27         | 95        | 77         | 56         | 25         | 32         | 45         | 64        | 1/2             |
| 25             | 58        | 67        | 30         | 110       | 97         | 65         | 25         | 39         | 58         | 72        | 3/4             |
| 32             | 68        | 73        | 36         | 123       | 97         | 71         | 25         | 39         | 58         | 79        | 1               |
| 40             | 84        | 90        | 44         | 146       | 128        | 85         | 45         | 54         | 74         | 94        | 1 1/4           |
| 50             | 97        | 97        | 51         | 157       | 128        | 89         | 45         | 54         | 74         | 95        | 1 1/2           |
| 63             | 124       | 116       | 64         | 183       | 152        | 101        | 45         | 66         | 87         | 107       | 2               |
| <i>New</i> 75  | 166       | 149       | 85         | 233       | 270        | 136        | 70         | 64         | 206        | 144       | 2 1/2           |
| <i>New</i> 90  | 200       | 161       | 105        | 254       | 270        | 141        | 70         | 64         | 206        | 151       | 3               |
| <i>New</i> 110 | 238       | 178       | 123        | 301       | 320        | 164        | 120        | 64         | 256        | 174       | 4               |

PF 2 33 542 801

# ABS metric Valves

## Ball valve type 546 ABS With mounting inserts With solvent cement sockets metric



### Model:

- For easy installation and removal
- Ball seals PTFE
- Integrated stainless steel mounting inserts
- Image and drawing DN65-100 please see **"New product ball valve DN65-100"**
- z-dimension, valve end and union nut are **not compatible** with type 346 (DN10/15-50) resp. type 370 (DN65-100)

### Option:

- Individual configuration of the valve (see form)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+

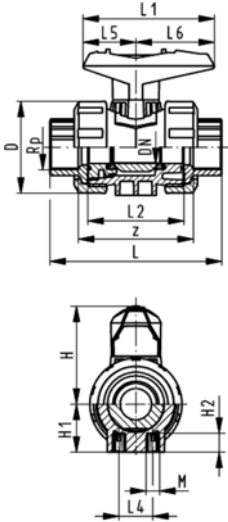
| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 71   | <b>169 546 061</b> | 0.112 |
| 20        | 15         | 10 | 185  | <b>169 546 062</b> | 0.114 |
| 25        | 20         | 10 | 350  | <b>169 546 063</b> | 0.178 |
| 32        | 25         | 10 | 700  | <b>169 546 064</b> | 0.258 |
| 40        | 32         | 10 | 1000                                       | <b>169 546 065</b> | 0.457 |
| 50        | 40         | 10 | 1600                                       | <b>169 546 066</b> | 0.642 |
| 63        | 50         | 10 | 3100                                       | <b>169 546 067</b> | 1.175 |
| 75        | 65         | 10 | 5000                                       | <b>169 546 068</b> | 3.900 |
| 90        | 80         | 10 | 7000                                       | <b>169 546 069</b> | 5.700 |
| 110       | 100        | 10 | 11000                                      | <b>169 546 070</b> | 9.100 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | M   | z<br>[mm] | closest<br>inch |
|-----------|-----------|-----------|------------|------------|-----------|------------|------------|------------|------------|------------|-----|-----------|-----------------|
| 16        | 50        | 57        | 27         | 12         | 92        | 77         | 56         | 25         | 32         | 45         | M6  | 64        | 3/8             |
| 20        | 50        | 57        | 27         | 12         | 95        | 77         | 56         | 25         | 32         | 45         | M6  | 64        | 1/2             |
| 25        | 58        | 67        | 30         | 12         | 110       | 97         | 65         | 25         | 39         | 58         | M6  | 72        | 3/4             |
| 32        | 68        | 73        | 36         | 12         | 123       | 97         | 71         | 25         | 39         | 58         | M6  | 79        | 1               |
| 40        | 84        | 90        | 44         | 15         | 146       | 128        | 85         | 45         | 54         | 74         | M8  | 94        | 1 1/4           |
| 50        | 97        | 97        | 51         | 15         | 157       | 128        | 89         | 45         | 54         | 74         | M8  | 95        | 1 1/2           |
| 63        | 124       | 116       | 64         | 15         | 183       | 152        | 101        | 45         | 66         | 87         | M8  | 107       | 2               |
| 75        | 166       | 149       | 85         | 15         | 233       | 270        | 136        | 70         | 64         | 206        | M8  | 144       | 2 1/2           |
| 90        | 200       | 161       | 105        | 15         | 254       | 270        | 141        | 70         | 64         | 206        | M8  | 151       | 3               |
| 110       | 238       | 178       | 123        | 22         | 301       | 320        | 164        | 120        | 64         | 256        | M12 | 174       | 4               |

PF 2 33 542 801

# ABS metric Valves

## Ball valve type 546 ABS With mounting inserts With threaded sockets Rp



### Model:

- For easy installation and removal
- Ball seals PTFE
- Integrated stainless steel mounting inserts
- z-dimension, valve end and union nut are not compatible with type 346

### Option:

- Individual configuration of the valve (see form)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+

| Rp<br>[inch] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|--------------|------------|----|--|--------------------|-------|
| 3/8          | 10         | 10 | 71   | <b>169 546 021</b> | 0.112 |
| 1/2          | 15         | 10 | 185  | <b>169 546 022</b> | 0.114 |
| 3/4          | 20         | 10 | 350  | <b>169 546 023</b> | 0.178 |
| 1            | 25         | 10 | 700  | <b>169 546 024</b> | 0.258 |
| 1 1/4        | 32         | 10 | 1000                                       | <b>169 546 025</b> | 0.457 |
| 1 1/2        | 40         | 10 | 1600                                       | <b>169 546 026</b> | 0.642 |
| 2            | 50         | 10 | 3100                                       | <b>169 546 027</b> | 1.175 |

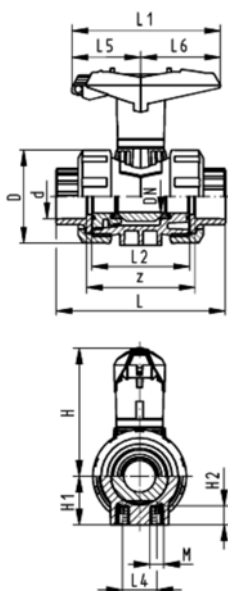
| Rp<br>[inch] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | M  | z<br>[mm] |
|--------------|-----------|-----------|------------|------------|-----------|------------|------------|------------|------------|------------|----|-----------|
| 3/8          | 50        | 57        | 27         | 12         | 95        | 77         | 56         | 25         | 32         | 45         | M6 | 69        |
| 1/2          | 50        | 57        | 27         | 12         | 100       | 77         | 56         | 25         | 32         | 45         | M6 | 67        |
| 3/4          | 58        | 67        | 30         | 12         | 114       | 97         | 65         | 25         | 39         | 58         | M6 | 78        |
| 1            | 68        | 73        | 36         | 12         | 127       | 97         | 71         | 25         | 39         | 58         | M6 | 85        |
| 1 1/4        | 84        | 90        | 44         | 15         | 146       | 128        | 85         | 45         | 54         | 74         | M8 | 100       |
| 1 1/2        | 97        | 97        | 51         | 15         | 152       | 128        | 89         | 45         | 54         | 74         | M8 | 106       |
| 2            | 124       | 116       | 64         | 15         | 177       | 152        | 101        | 45         | 66         | 87         | M8 | 121       |

PF 2 33 542 801



# ABS metric Valves

## Ball valve type 546 ABS With lockable handle With solvent cement sockets metric



### Model:

- Image and drawing DN65-100 please see **"New product ball valve DN65-100"**
- For easy installation and removal
- z-dimension, valve end and union nut are **not compatible** with type 346 (DN10/15-50) resp. type 370 (DN65-100)
- Ball seals PTFE
- Integrated stainless steel mounting inserts
- Lockable hand lever with ratchet settings

### Option:

- Individual configuration of the valve (see form)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+

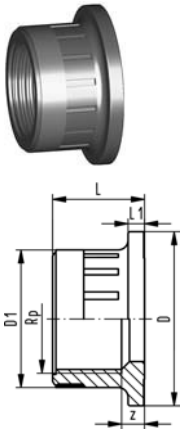
| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 71   | <b>169 546 081</b> | 0.121 |
| 20        | 15         | 10 | 185  | <b>169 546 082</b> | 0.123 |
| 25        | 20         | 10 | 350  | <b>169 546 083</b> | 0.193 |
| 32        | 25         | 10 | 700  | <b>169 546 084</b> | 0.273 |
| 40        | 32         | 10 | 1000                                       | <b>169 546 085</b> | 0.480 |
| 50        | 40         | 10 | 1600                                       | <b>169 546 086</b> | 0.665 |
| 63        | 50         | 10 | 3100                                       | <b>169 546 087</b> | 1.205 |
| 75        | 65         | 10 | 5000                                       | <b>169 546 088</b> | 4.200 |
| 90        | 80         | 10 | 7000                                       | <b>169 546 089</b> | 6.100 |
| 110       | 100        | 10 | 11000                                      | <b>169 546 090</b> | 9.400 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | M   | z<br>[mm] | closest<br>inch |
|-----------|-----------|-----------|------------|------------|-----------|------------|------------|------------|------------|------------|-----|-----------|-----------------|
| 16        | 50        | 79        | 27         | 12         | 92        | 87         | 56         | 25         | 42         | 45         | M6  | 64        | 3/8             |
| 20        | 50        | 79        | 27         | 12         | 95        | 87         | 56         | 25         | 42         | 45         | M6  | 64        | 1/2             |
| 25        | 58        | 88        | 30         | 12         | 110       | 108        | 65         | 25         | 50         | 58         | M6  | 72        | 3/4             |
| 32        | 68        | 94        | 36         | 12         | 123       | 108        | 71         | 25         | 50         | 58         | M6  | 79        | 1               |
| 40        | 84        | 113       | 44         | 15         | 146       | 140        | 85         | 45         | 66         | 75         | M8  | 94        | 1 1/4           |
| 50        | 97        | 119       | 51         | 15         | 157       | 140        | 89         | 45         | 66         | 75         | M8  | 95        | 1 1/2           |
| 63        | 124       | 141       | 64         | 15         | 183       | 165        | 101        | 45         | 78         | 87         | M8  | 107       | 2               |
| 75        | 166       | 224       | 85         | 15         | 233       | 270        | 136        | 70         | 64         | 206        | M8  | 144       | 2 1/2           |
| 90        | 200       | 235       | 105        | 15         | 254       | 270        | 141        | 70         | 64         | 206        | M8  | 151       | 3               |
| 110       | 238       | 245       | 123        | 22         | 301       | 320        | 164        | 120        | 64         | 256        | M12 | 174       | 4               |

PF 2 33 542 801

# ABS metric Valves

## Valve end 546 and 543 ABS (G23) With threaded socket Rp reinforced



PF 2 33 542 999

### Model:

- Connection to plastic or metal
- Reinforcing ring stainless (A2)
- Do not use thread sealing pastes that are harmful to ABS

| Rp<br>[inch] | PN | Code               | kg    | D<br>[mm] | D1<br>[mm] | L<br>[mm] | L1<br>[mm] | z<br>[mm] |  |
|--------------|----|--------------------|-------|-----------|------------|-----------|------------|-----------|--|
| 3/8          | 16 | <b>169 480 925</b> | 0.008 | 38        | 24         | 20        | 4          | 7         |  |
| 1/2          | 16 | <b>169 480 926</b> | 0.010 | 38        | 28         | 22        | 4          | 6         |  |
| 3/4          | 16 | <b>169 480 927</b> | 0.014 | 44        | 34         | 25        | 5          | 7         |  |
| 1            | 16 | <b>169 480 928</b> | 0.023 | 53        | 42         | 28        | 5          | 7         |  |
| 1 1/4        | 16 | <b>169 480 929</b> | 0.035 | 65        | 52         | 30        | 5          | 7         |  |
| 1 1/2        | 16 | <b>169 480 930</b> | 0.060 | 77        | 63         | 32        | 6          | 9         |  |
| 2            | 16 | <b>169 480 931</b> | 0.110 | 99        | 78         | 38        | 7          | 10        |  |



PF 2 33 542 999

## Valve end 546 and 543 brass With threaded spigot R

### Model:

- Connection to metal threads

| Inch | Code               | kg    | D<br>[mm] | D1<br>[mm] | D2<br>[mm] | z<br>[mm] | L<br>[mm] | L1<br>[mm] | s<br>[mm] |  |
|------|--------------------|-------|-----------|------------|------------|-----------|-----------|------------|-----------|--|
| 1/2  | <b>161 486 640</b> | 0.160 | 38        | 32         | 13         | 23        | 36        | 4          | 30        |  |
| 3/4  | <b>161 486 641</b> | 0.220 | 44        | 38         | 16         | 22        | 36        | 5          | 36        |  |
| 1    | <b>161 486 642</b> | 0.350 | 53        | 45         | 20         | 24        | 41        | 5          | 41        |  |



PF 2 33 542 999

## Valve end 546 and 543 brass With threaded socket Rp

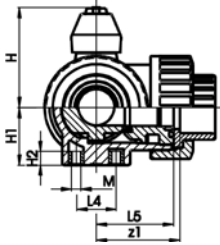
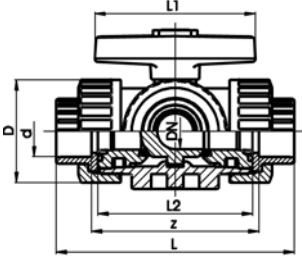
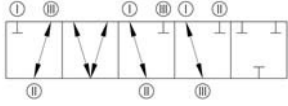
### Model:

- Connection to metal threads

| Inch | Code               | kg    | D<br>[mm] | D1<br>[mm] | D2<br>[mm] | z<br>[mm] | L<br>[mm] | L1<br>[mm] | s<br>[mm] |  |
|------|--------------------|-------|-----------|------------|------------|-----------|-----------|------------|-----------|--|
| 1/2  | <b>161 486 651</b> | 0.100 | 38        | 32         | 15         | 5         | 20        | 4          | 30        |  |
| 3/4  | <b>161 486 652</b> | 0.160 | 44        | 38         | 20         | 8         | 25        | 5          | 36        |  |
| 1    | <b>161 486 653</b> | 0.250 | 53        | 45         | 25         | 10        | 29        | 5          | 41        |  |

# ABS metric Valves

## 3-Way ball valve type 343 ABS Horizontal/L-port With solvent cement sockets metric



### Model:

- L-port ball
- For easy installation and removal
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Minimum temperature: - 40°C

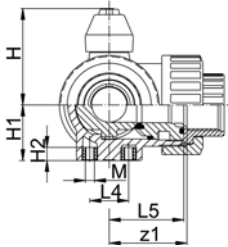
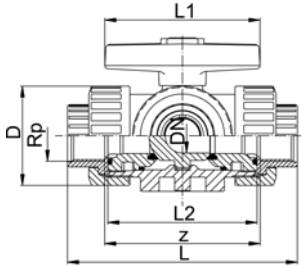
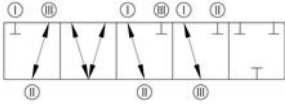
| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 50   | <b>169 343 001</b> | 0.213 |
| 20        | 15         | 10 | 75   | <b>169 343 002</b> | 0.156 |
| 25        | 20         | 10 | 150  | <b>169 343 003</b> | 0.285 |
| 32        | 25         | 10 | 280  | <b>169 343 004</b> | 0.388 |
| 40        | 32         | 10 | 480  | <b>169 343 005</b> | 0.639 |
| 50        | 40         | 10 | 620  | <b>169 343 006</b> | 1.036 |
| 63        | 50         | 10 | 1230                                       | <b>169 343 007</b> | 1.987 |

| d<br>[mm] | z<br>[mm] | z1<br>[mm] | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | M | closest<br>inch |
|-----------|-----------|------------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|---|-----------------|
| 16        | 80        | 40         | 45        | 108       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 | 3/8             |
| 20        | 80        | 40         | 45        | 111       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 | 1/2             |
| 25        | 94        | 47         | 52        | 131       | 92         | 86         | 25         | 43         | 60        | 33         | 8          | 6 | 3/4             |
| 32        | 104       | 52         | 65        | 148       | 100        | 96         | 25         | 48         | 68        | 36         | 8          | 6 | 1               |
| 40        | 126       | 63         | 78        | 176       | 110        | 116        | 45         | 58         | 79        | 44         | 9          | 8 | 1 1/4           |
| 50        | 144       | 72         | 92        | 206       | 120        | 137        | 45         | 69         | 90        | 49         | 9          | 8 | 1 1/2           |
| 63        | 186       | 93         | 116       | 262       | 146        | 179        | 45         | 90         | 109       | 61         | 9          | 8 | 2               |

PF 2 33 173 014

# ABS metric Valves

## 3-Way ball valve type 343 ABS Horizontal/L-port With threaded sockets Rp



### Model:

- L-port ball
- For easy installation and removal
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Minimum temperature: - 40°C

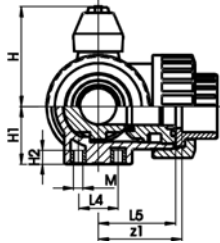
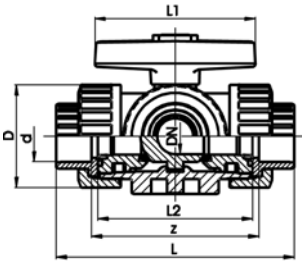
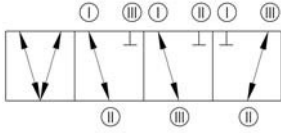
| Rp<br>[inch] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|--------------|------------|----|--|--------------------|-------|
| 3/8          | 10         | 10 | 50   | <b>169 343 041</b> | 0.156 |
| 1/2          | 15         | 10 | 75   | <b>169 343 042</b> | 0.156 |
| 3/4          | 20         | 10 | 150  | <b>169 343 043</b> | 0.285 |
| 1            | 25         | 10 | 280  | <b>169 343 044</b> | 0.388 |
| 1 1/4        | 32         | 10 | 480  | <b>169 343 045</b> | 0.639 |
| 1 1/2        | 40         | 10 | 620  | <b>169 343 046</b> | 1.036 |
| 2            | 50         | 10 | 1230                                       | <b>169 343 047</b> | 1.987 |

| Rp<br>[inch] | z<br>[mm] | z1<br>[mm] | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | M |
|--------------|-----------|------------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|---|
| 3/8          | 80        | 40         | 45        | 108       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 |
| 1/2          | 80        | 40         | 45        | 111       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 |
| 3/4          | 94        | 47         | 52        | 131       | 92         | 86         | 25         | 43         | 60        | 33         | 8          | 6 |
| 1            | 104       | 52         | 65        | 148       | 100        | 96         | 25         | 48         | 68        | 36         | 8          | 6 |
| 1 1/4        | 126       | 63         | 78        | 176       | 110        | 116        | 45         | 58         | 79        | 44         | 9          | 8 |
| 1 1/2        | 144       | 72         | 92        | 206       | 120        | 137        | 45         | 69         | 90        | 49         | 9          | 8 |
| 2            | 186       | 93         | 116       | 262       | 146        | 179        | 45         | 90         | 109       | 61         | 9          | 8 |

PF 2 33 173 014

# ABS metric Valves

## 3-Way ball valve type 343 ABS Horizontal/T-port With solvent cement sockets metric



### Model:

- T-port ball
- For easy installation and removal
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 90°, without turn limiter
- Minimum temperature: - 40°C

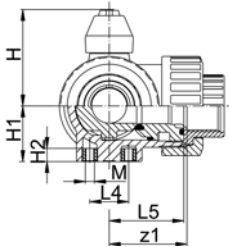
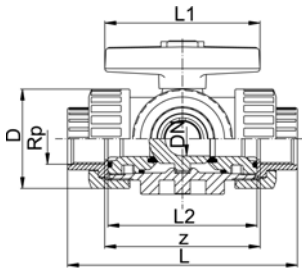
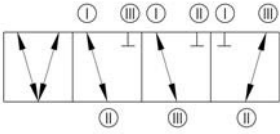
| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 140  | <b>169 343 201</b> | 0.156 |
| 20        | 15         | 10 | 200  | <b>169 343 202</b> | 0.156 |
| 25        | 20         | 10 | 470  | <b>169 343 203</b> | 0.285 |
| 32        | 25         | 10 | 793  | <b>169 343 204</b> | 0.388 |
| 40        | 32         | 10 | 1290                                       | <b>169 343 205</b> | 0.639 |
| 50        | 40         | 10 | 1910                                       | <b>169 343 206</b> | 1.036 |
| 63        | 50         | 10 | 3100                                       | <b>169 343 207</b> | 1.987 |

| d<br>[mm] | z<br>[mm] | z1<br>[mm] | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | M | closest<br>inch |
|-----------|-----------|------------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|---|-----------------|
| 16        | 80        | 40         | 45        | 108       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 | 3/8             |
| 20        | 80        | 40         | 45        | 111       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 | 1/2             |
| 25        | 94        | 47         | 52        | 131       | 92         | 86         | 25         | 43         | 60        | 33         | 8          | 6 | 3/4             |
| 32        | 104       | 52         | 65        | 148       | 100        | 96         | 25         | 48         | 68        | 36         | 8          | 6 | 1               |
| 40        | 126       | 63         | 78        | 176       | 110        | 116        | 45         | 58         | 79        | 44         | 9          | 8 | 1 1/4           |
| 50        | 144       | 72         | 92        | 206       | 120        | 137        | 45         | 69         | 90        | 49         | 9          | 8 | 1 1/2           |
| 63        | 186       | 93         | 116       | 262       | 146        | 179        | 45         | 90         | 109       | 61         | 9          | 8 | 2               |

PF 2 33 173 014

# ABS metric Valves

## 3-Way ball valve type 343 ABS Horizontal/T-port With threaded sockets Rp



### Model:

- T-port ball
- For easy installation and removal
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 90°, without turn limiter
- Minimum temperature: - 40°C

| Rp<br>[inch] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|--------------|------------|----|--|--------------------|-------|
| 3/8          | 10         | 10 | 140  | <b>169 343 241</b> | 0.156 |
| 1/2          | 15         | 10 | 200  | <b>169 343 242</b> | 0.156 |
| 3/4          | 20         | 10 | 470  | <b>169 343 243</b> | 0.285 |
| 1            | 25         | 10 | 793  | <b>169 343 244</b> | 0.388 |
| 1 1/4        | 32         | 10 | 1290                                       | <b>169 343 245</b> | 0.639 |
| 1 1/2        | 40         | 10 | 1910                                       | <b>169 343 246</b> | 1.036 |
| 2            | 50         | 10 | 3100                                       | <b>169 343 247</b> | 1.987 |

| Rp<br>[inch] | z<br>[mm] | z1<br>[mm] | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | M |
|--------------|-----------|------------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|---|
| 3/8          | 80        | 40         | 43        | 108       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 |
| 1/2          | 80        | 40         | 43        | 111       | 78         | 72         | 25         | 36         | 50        | 27         | 8          | 6 |
| 3/4          | 94        | 47         | 52        | 131       | 92         | 86         | 25         | 43         | 60        | 33         | 8          | 6 |
| 1            | 104       | 52         | 65        | 148       | 100        | 96         | 25         | 48         | 68        | 36         | 8          | 6 |
| 1 1/4        | 126       | 63         | 78        | 176       | 110        | 116        | 45         | 58         | 79        | 44         | 9          | 8 |
| 1 1/2        | 144       | 72         | 92        | 206       | 120        | 137        | 45         | 69         | 90        | 49         | 9          | 8 |
| 2            | 186       | 93         | 116       | 262       | 146        | 179        | 45         | 90         | 109       | 61         | 9          | 8 |

PF 2 33 173 014

# ABS metric Valves

## Butterfly valves

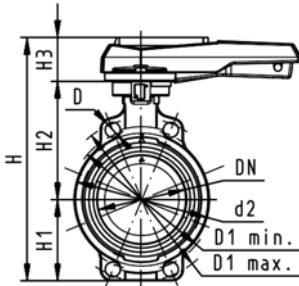
### Butterfly valve type 567 ABS Hand lever with ratchet settings



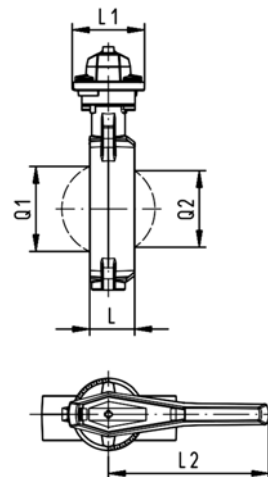
**Model:**

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|------|----|--|--------------------|-------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>169 567 002</b> | 1.400 |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>169 567 003</b> | 1.150 |
| 90        | 80         | 3    | 10 | 3000                                       | <b>169 567 004</b> | 1.221 |
| 110       | 100        | 4    | 10 | 6500                                       | <b>169 567 005</b> | 1.805 |
| *140      | 125        | 5    | 10 | 11500                                      | <b>169 567 006</b> | 2.536 |
| 160       | 150        | 6    | 10 | 16600                                      | <b>169 567 007</b> | 3.128 |
| 225       | 200        | 8    | 10 | 39600                                      | <b>169 567 008</b> | 4.936 |



| d<br>[mm] | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|-----------|------------|------------|------------|------------|
| *63       | 19        | 120.0              | 125.0              | 104        | 264       | 77         | 134        | 54         | 45        | 106        | 205        | 40         |            |
| *75       | 19        | 139.7              | 145.0              | 115        | 277       | 83         | 140        | 54         | 46        | 106        | 205        | 54         | 35         |
| 90        | 19        | 150.0              | 160.0              | 131        | 289       | 89         | 146        | 54         | 49        | 106        | 205        | 67         | 50         |
| 110       | 19        | 175.0              | 190.5              | 161        | 325       | 104        | 167        | 55         | 56        | 106        | 255        | 88         | 74         |
| *140      | 23        | 210.0              | 215.9              | 187        | 352       | 117        | 181        | 55         | 64        | 106        | 255        | 113        | 97         |
| 160       | 24        | 241.3              | 241.3              | 215        | 373       | 130        | 189        | 55         | 72        | 106        | 255        | 139        | 123        |
| 225       | 23        | 290.0              | 295.0              | 267        | 435       | 158        | 210        | 67         | 73        | 140        | 408        | 178        | 169        |

PF 2 33 564 001

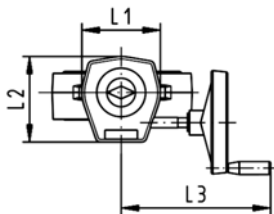
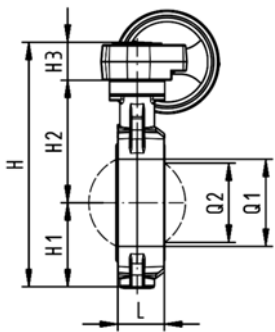
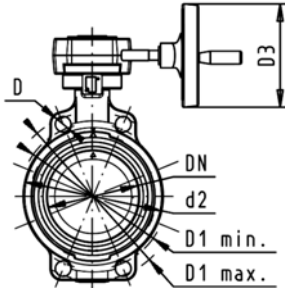
# ABS metric Valves

## Butterfly valve type 567 ABS Reduction gear with handwheel

### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|------|----|--|--------------------|-------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>169 567 022</b> |       |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>169 567 023</b> |       |
| 90        | 80         | 3    | 10 | 3000                                       | <b>169 567 024</b> | 3.259 |
| 110       | 100        | 4    | 10 | 6500                                       | <b>169 567 025</b> | 3.795 |
| *140      | 125        | 5    | 10 | 11500                                      | <b>169 567 026</b> | 4.526 |
| 160       | 150        | 6    | 10 | 16600                                      | <b>169 567 027</b> | 5.118 |
| 225       | 200        | 8    | 10 | 39600                                      | <b>169 567 028</b> | 6.389 |

| d<br>[mm] | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | D3<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] |
|-----------|-----------|--------------------|--------------------|------------|------------|-----------|------------|------------|------------|-----------|------------|------------|------------|
| *63       | 19        | 120.0              | 125.0              | 104        | 160        | 278       | 77         | 134        | 60         | 45        | 120        | 132        | 236        |
| *75       | 19        | 139.7              | 145.0              | 115        | 160        | 291       | 83         | 140        | 60         | 46        | 120        | 132        | 236        |
| 90        | 19        | 150.0              | 160.0              | 131        | 160        | 303       | 89         | 146        | 60         | 49        | 120        | 132        | 236        |
| 110       | 19        | 175.0              | 190.5              | 160        | 160        | 339       | 104        | 167        | 60         | 56        | 120        | 132        | 236        |
| *140      | 23        | 210.0              | 215.9              | 187        | 160        | 365       | 117        | 181        | 60         | 64        | 120        | 132        | 236        |
| 160       | 24        | 241.3              | 241.3              | 215        | 160        | 387       | 130        | 189        | 60         | 72        | 120        | 132        | 236        |
| 225       | 23        | 290.0              | 295.0              | 267        | 160        | 436       | 158        | 210        | 60         | 73        | 120        | 132        | 236        |

| d<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|
| *63       | 40         |            |
| *75       | 54         | 35         |
| 90        | 67         | 50         |
| 110       | 88         | 74         |
| *140      | 113        | 97         |
| 160       | 139        | 123        |
| 225       | 178        | 169        |

PF 2 33 564 001



# ABS metric Valves

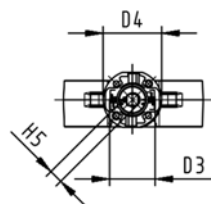
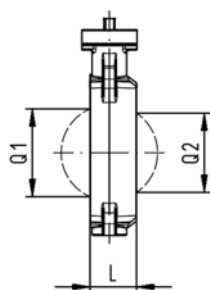
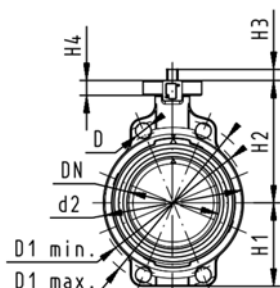
## Butterfly valve type 567 ABS Bare shaft



### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Interface F07 according to DIN/ISO 5211

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch  | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|-------|----|--|--------------------|-------|
| *63       | 50         | 2     | 10 | 1470                                       | <b>169 567 802</b> | 0.763 |
| *75       | 65         | 2 1/2 | 10 | 2200                                       | <b>169 567 803</b> | 0.859 |
| 90        | 80         | 3     | 10 | 3000                                       | <b>169 567 804</b> | 0.999 |
| 110       | 100        | 4     | 10 | 6500                                       | <b>169 567 805</b> | 1.535 |
| *140      | 125        | 5     | 10 | 11500                                      | <b>169 567 806</b> | 2.018 |
| 160       | 150        | 6     | 10 | 16600                                      | <b>169 567 807</b> | 2.858 |
| 225       | 200        | 8     | 10 | 39600                                      | <b>169 567 808</b> | 4.129 |

| d<br>[mm] | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | D3<br>[mm] | D4<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | Q1<br>[mm] |
|-----------|-----------|--------------------|--------------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|-----------|------------|
| *63       | 19        | 120.0              | 125.0              | 104        | 70         | 90         | 222       | 77         | 134        | 27         | 23         | 11         | 45        | 40         |
| *75       | 19        | 139.7              | 145.0              | 115        | 70         | 90         | 235       | 83         | 140        | 27         | 23         | 11         | 46        | 54         |
| 90        | 19        | 150.0              | 160.0              | 131        | 70         | 90         | 247       | 89         | 146        | 27         | 23         | 11         | 49        | 67         |
| 110       | 19        | 175.0              | 190.5              | 161        | 70         | 90         | 287       | 104        | 167        | 16         | 23         | 14         | 56        | 88         |
| *140      | 23        | 210.0              | 215.9              | 187        | 70         | 90         | 313       | 117        | 181        | 16         | 23         | 14         | 64        | 113        |
| 160       | 24        | 241.3              | 241.3              | 215        | 70         | 90         | 335       | 130        | 189        | 19         | 23         | 17         | 72        | 139        |
| 225       | 23        | 290.0              | 295.0              | 267        | 70         | 90         | 387       | 158        | 210        | 19         | 23         | 17         | 73        | 178        |

| d<br>[mm] | Q2<br>[mm] |
|-----------|------------|
| *63       |            |
| *75       | 35         |
| 90        | 50         |
| 110       | 74         |
| *140      | 97         |
| 160       | 123        |
| 225       | 169        |

PF 2 33 564 998

# ABS metric Valves

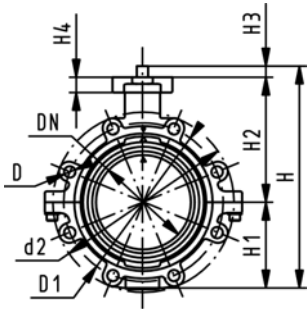
## Lugstyle butterfly valve type 568 ABS Bare shaft



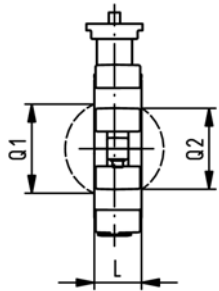
### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752
- Interface F07 according to DIN/ISO 5211

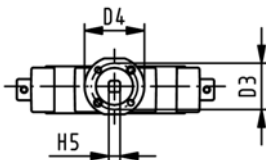
\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>169 568 802</b> | 2.853  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>169 568 803</b> | 3.200  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>169 568 804</b> | 4.217  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>169 568 805</b> | 5.633  |
| *140      | 125        | 5    | 10 | 11500                                      | <b>169 568 806</b> | 7.502  |
| 160       | 150        | 6    | 10 | 16600                                      | <b>169 568 807</b> | 9.341  |
| 225       | 200        | 8    | 10 | 39600                                      | <b>169 568 808</b> | 14.105 |



| d<br>[mm] | d2<br>[mm] | D   | D1<br>[mm] | D3<br>[mm] | D4<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | L<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|-----|------------|------------|------------|-----------|------------|------------|------------|------------|-----------|------------|------------|
| *63       | 150        | M16 | 125        | 70         | 90         | 222       | 77         | 134        | 27         | 23         | 45        | 40         |            |
| *75       | 170        | M16 | 145        | 70         | 90         | 235       | 83         | 140        | 27         | 23         | 46        | 54         | 35         |
| 90        | 184        | M16 | 160        | 70         | 90         | 247       | 89         | 146        | 27         | 23         | 49        | 67         | 50         |
| 110       | 216        | M16 | 180        | 70         | 90         | 287       | 104        | 167        | 16         | 23         | 56        | 88         | 74         |
| *140      | 246        | M16 | 210        | 70         | 90         | 313       | 117        | 181        | 16         | 23         | 64        | 113        | 97         |
| 160       | 273        | M20 | 240        | 70         | 90         | 335       | 130        | 189        | 19         | 23         | 72        | 139        | 123        |
| 225       | 334        | M20 | 295        | 70         | 90         | 387       | 158        | 210        | 19         | 23         | 73        | 178        | 169        |



PF 2 33 565 998

# ABS metric Valves

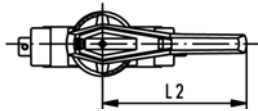
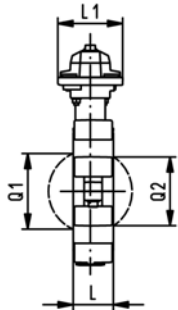
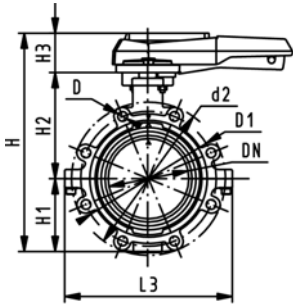
## Lugstyle butterfly valve type 568 ABS Hand lever with ratchet settings



### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch  | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|-------|----|--|--------------------|--------|
| *63       | 50         | 2     | 10 | 1470                                       | <b>169 568 002</b> | 3.075  |
| *75       | 65         | 2 1/2 | 10 | 2200                                       | <b>169 568 003</b> | 3.422  |
| 90        | 80         | 3     | 10 | 3000                                       | <b>169 568 004</b> | 4.439  |
| 110       | 100        | 4     | 10 | 6500                                       | <b>169 568 005</b> | 5.903  |
| *140      | 125        | 5     | 10 | 11500                                      | <b>169 568 006</b> | 7.772  |
| 160       | 150        | 6     | 10 | 16600                                      | <b>169 568 007</b> | 9.611  |
| 225       | 200        | 8     | 10 | 39600                                      | <b>169 568 008</b> | 14.912 |

| d<br>[mm] | d2<br>[mm] | D   | D1<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|-----|------------|-----------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|
| *63       | 150        | M16 | 125        | 265       | 77         | 134        | 54         | 45        | 106        | 205        | 150        | 40         |            |
| *75       | 170        | M16 | 145        | 277       | 83         | 140        | 54         | 46        | 106        | 205        | 160        | 54         | 35         |
| 90        | 184        | M16 | 160        | 289       | 89         | 146        | 54         | 49        | 106        | 205        | 205        | 67         | 50         |
| 110       | 216        | M16 | 180        | 326       | 104        | 167        | 55         | 56        | 106        | 255        | 244        | 88         | 74         |
| *140      | 246        | M16 | 210        | 353       | 117        | 181        | 55         | 64        | 106        | 255        | 272        | 113        | 97         |
| 160       | 273        | M20 | 240        | 374       | 130        | 189        | 55         | 72        | 106        | 255        | 297        | 139        | 123        |
| 225       | 334        | M20 | 295        | 435       | 158        | 210        | 67         | 73        | 140        | 408        | 360        | 178        | 169        |

PF 2 33 565 003

# ABS metric Valves

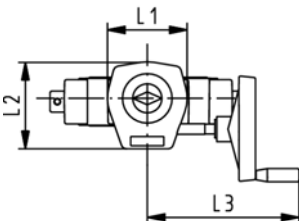
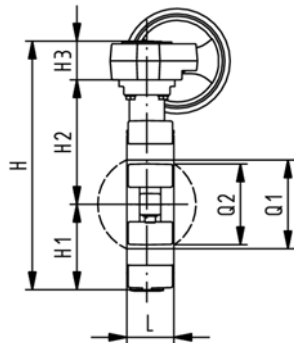
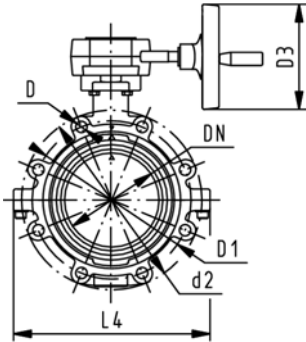
## Lugstyle butterfly valve type 568 ABS Reduction gear with handwheel



### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch  | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|-------|----|--|--------------------|--------|
| *63       | 50         | 2     | 10 | 1470                                       | <b>169 568 022</b> | 5.113  |
| *75       | 65         | 2 1/2 | 10 | 2200                                       | <b>169 568 023</b> | 5.460  |
| 90        | 80         | 3     | 10 | 3000                                       | <b>169 568 024</b> | 6.477  |
| 110       | 100        | 4     | 10 | 6500                                       | <b>169 568 025</b> | 7.893  |
| *140      | 125        | 5     | 10 | 11500                                      | <b>169 568 026</b> | 9.762  |
| 160       | 150        | 6     | 10 | 16600                                      | <b>169 568 027</b> | 11.601 |
| 225       | 200        | 8     | 10 | 39600                                      | <b>169 568 028</b> | 16.365 |

| d<br>[mm] | d2<br>[mm] | D   | D1<br>[mm] | D3<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | Q1<br>[mm] |
|-----------|------------|-----|------------|------------|-----------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|
| *63       | 150        | M16 | 125        | 160        | 279       | 77         | 134        | 60         | 45        | 120        | 132        | 236        | 150        | 40         |
| *75       | 170        | M16 | 145        | 160        | 291       | 83         | 140        | 60         | 46        | 120        | 132        | 236        | 160        | 54         |
| 90        | 184        | M16 | 160        | 160        | 303       | 89         | 146        | 60         | 49        | 120        | 132        | 236        | 205        | 67         |
| 110       | 216        | M16 | 180        | 160        | 339       | 104        | 167        | 60         | 56        | 120        | 132        | 236        | 244        | 88         |
| *140      | 246        | M16 | 210        | 160        | 366       | 117        | 181        | 60         | 64        | 120        | 132        | 236        | 272        | 113        |
| 160       | 273        | M20 | 240        | 160        | 387       | 130        | 189        | 60         | 72        | 120        | 132        | 236        | 297        | 139        |
| 225       | 334        | M20 | 295        | 160        | 436       | 158        | 210        | 60         | 73        | 120        | 132        | 236        | 360        | 178        |

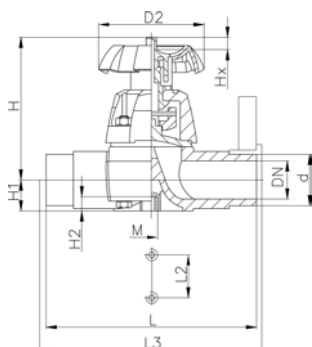
| d<br>[mm] | Q2<br>[mm] |
|-----------|------------|
| *63       |            |
| *75       | 35         |
| 90        | 50         |
| 110       | 74         |
| *140      | 97         |
| 160       | 123        |
| 225       | 169        |

PF 2 33 565 003

# ABS metric Valves

## Diaphragm valves

### Diaphragm valve type 315 ABS With solvent cement spigots metric



**Model:**

- Overall length EN 558
- Other dimensions available on request
- Minimum temperature: - 30°C

**Option:**

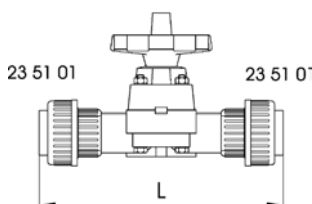
- Handwheel with built-in locking mechanism (standard version is nonlockable)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | PTFE with<br>EPDM<br>Code | kg    |
|-----------|------------|----|--|--------------------|---------------------------|-------|
| 20        | 15         | 10 | 72   | <b>169 315 417</b> | <b>169 315 432</b>        | 0.290 |
| 25        | 20         | 10 | 137  | <b>169 315 418</b> | <b>169 315 433</b>        | 0.440 |
| 32        | 25         | 10 | 207  | <b>169 315 419</b> | <b>169 315 434</b>        | 0.710 |
| 40        | 32         | 10 | 354  | <b>169 315 420</b> | <b>169 315 435</b>        | 1.000 |
| 50        | 40         | 10 | 517  | <b>169 315 421</b> | <b>169 315 436</b>        | 1.300 |
| 63        | 50         | 10 | 713  | <b>169 315 422</b> | <b>169 315 437</b>        | 2.300 |

| d<br>[mm] | D2<br>[mm] | L<br>[mm] | L2<br>[mm] | L3<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | M  | Lift =<br>Hx<br>[mm] | closest<br>inch |
|-----------|------------|-----------|------------|------------|-----------|------------|------------|----|----------------------|-----------------|
| 20        | 80         | 124       | 25         | 130        | 90        | 14         | 12         | M6 | 8                    | ½               |
| 25        | 80         | 144       | 25         | 150        | 102       | 18         | 12         | M6 | 11                   | ¾               |
| 32        | 94         | 154       | 25         | 160        | 119       | 21         | 12         | M6 | 13                   | 1               |
| 40        | 117        | 174       | 45         | 180        | 126       | 26         | 15         | M8 | 16                   | 1 ¼             |
| 50        | 117        | 194       | 45         | 200        | 139       | 33         | 15         | M8 | 21                   | 1 ½             |
| 63        | 152        | 224       | 45         | 230        | 172       | 39         | 15         | M8 | 28                   | 2               |

PF 2 33 174 010

### Diaphragm valve type 314 ABS With solvent cement socket metric



**Model:**

- Type 315 with two adhesive jointed unions
- Overall length not standard
- For easy installation and removal
- Minimum temperature: - 30°C

**Option:**

- Handwheel with built-in locking mechanism (standard version is nonlockable)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    | D2<br>[mm] | L<br>[mm] | Lift =<br>Hx<br>[mm] | closest<br>inch |
|-----------|------------|----|--|--------------------|-------|------------|-----------|----------------------|-----------------|
| 20        | 15         | 10 | 72   | <b>169 314 017</b> | 0.360 | 80         | 182       | 8                    | ½               |
| 25        | 20         | 10 | 137  | <b>169 314 018</b> | 0.540 | 80         | 208       | 11                   | ¾               |
| 32        | 25         | 10 | 207  | <b>169 314 019</b> | 0.850 | 94         | 224       | 13                   | 1               |
| 40        | 32         | 10 | 354  | <b>169 314 020</b> | 1.260 | 117        | 256       | 16                   | 1 ¼             |
| 50        | 40         | 10 | 517  | <b>169 314 021</b> | 1.640 | 117        | 290       | 21                   | 1 ½             |
| 63        | 50         | 10 | 713  | <b>169 314 022</b> | 2.980 | 152        | 342       | 28                   | 2               |

PF 2 33 174 010

# ABS metric Valves

## Diaphragm valve type 317 ABS With flanges metric

### Model:

- Overall length according to EN 558
- Jointing face flat
- Other dimensions available on request
- DN 80-150 with fixed flange
- Minimum temperature: - 30°C

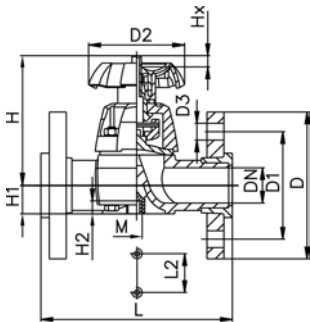
### Option:

- Handwheel lockable DN15-65 (basic version not lockable)

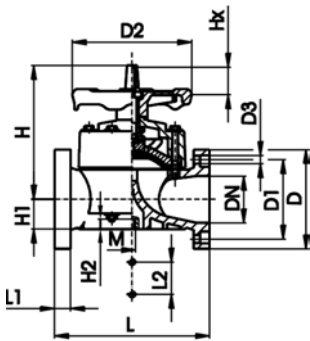
### \* DN80 and DN150 fixed flanges metric and Inch ANSI B16.5

| d<br>[mm] | DN<br>[mm] | Inch  | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | PTFE/EPDM<br>Code  | kg     |
|-----------|------------|-------|----|--|--------------------|--------------------|--------|
| 75        | 65         | 2 1/2 | 10 | 992  | <b>169 317 423</b> | <b>169 317 038</b> | 5.000  |
| *90       | 80         | 3     | 10 | 1700                                       | <b>169 317 024</b> | <b>169 317 039</b> | 8.350  |
| 110       | 100        | 4     | 10 | 2700                                       | <b>169 317 025</b> | <b>169 317 040</b> | 11.600 |

| d<br>[mm] | D<br>[mm] | D1<br>[mm] | D2<br>[mm] | D3<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | M   | AL | Lift =<br>Hx<br>[mm] |
|-----------|-----------|------------|------------|------------|-----------|------------|------------|-----------|------------|------------|-----|----|----------------------|
| 75        | 185       | 145        | 152        | 18         | 290       |            | 70         | 201       | 46         | 15         | M8  | 4  | 30                   |
| *90       | 200       | 160        | 270        | 18         | 310       | 35         | 120        | 265       | 57         | 23         | M12 | 8  | 40                   |
| 110       | 225       | 180        | 270        | 18         | 350       | 35         | 120        | 304       | 69         | 23         | M12 | 8  | 50                   |



DN 15-65



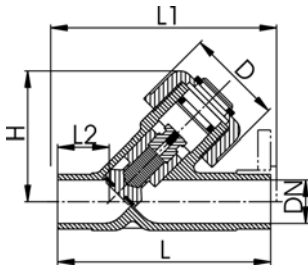
DN 80-100

PF 2 33 174 020

# ABS metric Valves

## Angle seat check valves

### Angle seat check valve type 303 ABS With solvent cement spigots metric



**Model:**

- For horizontal or vertical installation
- Leakproof from: EPDM 2m, FPM 3m water column
- Specific gravity of piston approx. 2 kg/dm<sup>3</sup>
- Overall length EN 558

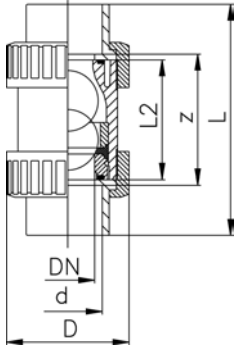
PF 2 33 199 005

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | H<br>[mm] | closest<br>inch |
|-----------|------------|----|--|--------------------|-------|-----------|-----------|------------|------------|-----------|-----------------|
| 20        | 15         | 10 | 95   | <b>169 303 006</b> | 0.090 | 43        | 124       | 130        | 28         | 65        | 1/2             |
| 25        | 20         | 10 | 180  | <b>169 303 007</b> | 0.137 | 47        | 144       | 150        | 37         | 75        | 3/4             |
| 32        | 25         | 10 | 327  | <b>169 303 008</b> | 0.228 | 56        | 154       | 160        | 37         | 90        | 1               |
| 40        | 32         | 10 | 484  | <b>169 303 009</b> | 0.348 | 64        | 174       | 180        | 44         | 102       | 1 1/4           |
| 50        | 40         | 10 | 725  | <b>169 303 010</b> | 0.624 | 82        | 194       | 200        | 48         | 123       | 1 1/2           |
| 63        | 50         | 10 | 1130                                       | <b>169 303 011</b> | 1.108 | 95        | 224       | 230        | 60         | 144       | 2               |

# ABS metric Valves

## Ball check (non-return) valve

### Ball check (non-return) valve type 360 ABS With solvent cement sockets metric



PF 2 33 199 001

**Model:**

- For easy installation and removal
- Ball is sealing at a minimum water column of 2 m
- Vibration free even at high flow velocity
- Other dimensions available on request
- Minimum temperature: - 40°C
- Installation position horizontal or vertical

| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    | z<br>[mm] | D<br>[mm] | L<br>[mm] | L2<br>[mm] | closest<br>inch |
|-----------|------------|------|----|--|--------------------|-------|-----------|-----------|-----------|------------|-----------------|
| 16        | 10         | 3/8  | 10 | 170  | <b>169 360 401</b> | 0.105 | 71        | 45        | 99        | 63         | 3/8             |
| 20        | 15         | 1/2  | 10 | 150  | <b>169 360 402</b> | 0.105 | 70        | 45        | 102       | 63         | 1/2             |
| 25        | 20         | 3/4  | 10 | 330  | <b>169 360 403</b> | 0.175 | 82        | 56        | 120       | 75         | 3/4             |
| 32        | 25         |      | 10 | 390  | <b>169 360 404</b> | 0.271 | 87        | 67        | 131       | 79         | 1               |
| 40        | 32         |      | 10 | 710  | <b>169 360 405</b> | 0.445 | 98        | 82        | 150       | 89         | 1 1/4           |
| 50        | 40         |      | 10 | 900  | <b>169 360 406</b> | 0.715 | 101       | 92        | 163       | 95         | 1 1/2           |
| 63        | 50         |      | 10 | 1390                                       | <b>169 360 407</b> | 1.271 | 121       | 120       | 197       | 115        | 2               |



# ABS metric Valves

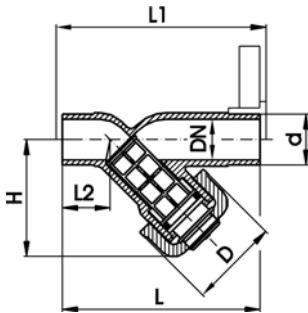
## Strainers



### Line strainer type 305 ABS With solvent cement spigots metric

**Model:**

- Protects valves, pumps, etc. from becoming soiled
- Easy dismantling for cleaning the screens
- Cylindrical screen must be ordered separately
- Overall length EN 558
- Screen in stainless steel operable temperature range up -40°C to +60°C
- Screen in PVC-U operable temperature range up 0°C to +60°C



PF 2 33 199 005

| d<br>[mm] | DN<br>[mm] | PN | EPDM<br>Code       | kg    | D<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | H<br>[mm] | closest<br>inch |
|-----------|------------|----|--------------------|-------|-----------|-----------|------------|------------|-----------|-----------------|
| 20        | 15         | 10 | <b>169 305 302</b> | 0.080 | 48        | 124       | 130        | 28         | 65        | 1/2             |
| 25        | 20         | 10 | <b>169 305 303</b> | 0.120 | 54        | 144       | 150        | 37         | 76        | 3/4             |
| 32        | 25         | 10 | <b>169 305 304</b> | 0.180 | 62        | 154       | 160        | 37         | 90        | 1               |
| 40        | 32         | 10 | <b>169 305 305</b> | 0.280 | 71        | 174       | 180        | 44         | 104       | 1 1/4           |
| 50        | 40         | 10 | <b>169 305 306</b> | 0.470 | 88        | 194       | 200        | 48         | 124       | 1 1/2           |
| 63        | 50         | 10 | <b>169 305 307</b> | 0.780 | 103       | 224       | 230        | 60         | 148       | 2               |

### Screen stainless steel Screen perforation 0.5 mm

- For line strainers Type 305



| d<br>[mm] | DN<br>[mm] | Inch  | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | Code               | kg    | D<br>[mm] | L<br>[mm] |
|-----------|------------|-------|--|--------------------|-------|-----------|-----------|
| 20        | 15         | 1/2   | 35   | <b>161 486 100</b> | 0.002 | 14        | 39        |
| 25        | 20         | 3/4   | 60   | <b>161 486 101</b> | 0.004 | 18        | 48        |
| 32        | 40         | 1     | 85   | <b>161 486 102</b> | 0.006 | 24        | 60        |
| 40        | 32         | 1 1/4 | 130  | <b>161 486 103</b> | 0.009 | 30        | 71        |
| 50        | 40         | 1 1/2 | 200  | <b>161 486 104</b> | 0.014 | 38        | 87        |
| 63        | 50         | 2     | 330  | <b>161 486 105</b> | 0.022 | 48        | 106       |
| 75        | 65         | 2 1/2 | 460  | <b>161 486 106</b> | 0.026 | 61        | 100       |
| 90        | 80         | 3     | 665  | <b>161 486 107</b> | 0.036 | 73        | 118       |

PF 2 32 200 999

# ABS metric Valves

## Ball valves electric

### Ball valve type 107 ABS 100-230V With manual emergency override With solvent cement sockets metric



#### Model:

- Built on with electric actuator EA11
- Voltage 100-230 V, 50-60 Hz
- Control range 90°<
- Control time 5 s/90°<
- For easy installation and removal
- Integrated stainless steel mounting inserts

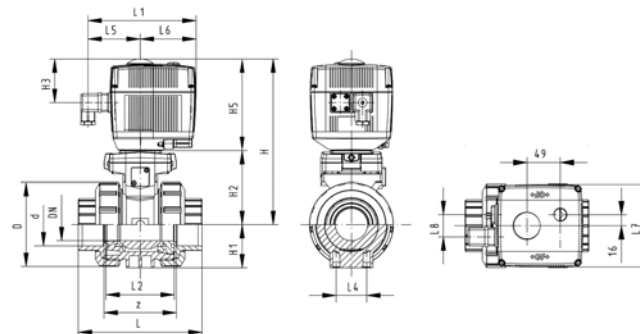
#### Option:

- Individual configuration of the valve (see form)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 70   | <b>199 107 082</b> | 2.072 |
| 20        | 15         | 10 | 185  | <b>199 107 083</b> | 2.072 |
| 25        | 20         | 10 | 350  | <b>199 107 084</b> | 2.189 |
| 32        | 25         | 10 | 700  | <b>199 107 085</b> | 2.189 |
| 40        | 32         | 10 | 1000                                       | <b>199 107 086</b> | 2.592 |
| 50        | 40         | 10 | 1600                                       | <b>199 107 087</b> | 2.914 |
| 63        | 50         | 10 | 3100                                       | <b>199 107 088</b> | 3.772 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | L8<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 200       | 27         | 64         | 64         | 137        | 92        | 161        | 56         | 25         | 77         | 83         | 122        | 33         | 64        |
| 20        | 50        | 200       | 27         | 64         | 64         | 137        | 95        | 161        | 56         | 25         | 77         | 83         | 122        | 33         | 64        |
| 25        | 58        | 209       | 30         | 73         | 64         | 137        | 110       | 161        | 65         | 25         | 77         | 83         | 122        | 33         | 72        |
| 32        | 68        | 209       | 36         | 73         | 64         | 137        | 123       | 161        | 71         | 25         | 77         | 83         | 122        | 33         | 79        |
| 40        | 84        | 220       | 44         | 84         | 64         | 137        | 146       | 161        | 85         | 45         | 77         | 83         | 122        | 33         | 94        |
| 50        | 97        | 220       | 51         | 84         | 64         | 137        | 157       | 161        | 89         | 45         | 77         | 83         | 122        | 33         | 95        |
| 63        | 124       | 243       | 64         | 106        | 64         | 137        | 183       | 161        | 101        | 45         | 77         | 83         | 122        | 33         | 107       |

| d<br>[mm] | closest<br>inch |
|-----------|-----------------|
| 16        | 3/8             |
| 20        | 1/2             |
| 25        | 3/4             |
| 32        | 1               |
| 40        | 1 1/4           |
| 50        | 1 1/2           |
| 63        | 2               |



PF 3 39 695 033

# ABS metric Valves

## Ball valve type 107 ABS 24V With manual emergency override With solvent cement sockets metric



### Model:

- Built on with electric actuator EA11
- For easy installation and removal
- Integrated stainless steel mounting inserts
- Voltage 24 V AC/DC
- Control range 90°<
- Control time 5 s/90°<

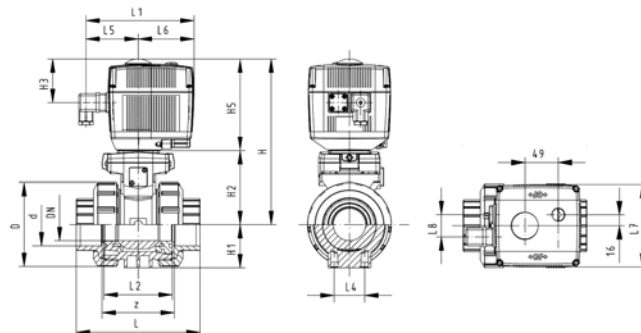
### Option:

- Individual configuration of the valve (see form)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 70   | <b>199 107 092</b> | 2.072 |
| 20        | 15         | 10 | 185  | <b>199 107 093</b> | 2.072 |
| 25        | 20         | 10 | 350  | <b>199 107 094</b> | 2.189 |
| 32        | 25         | 10 | 700  | <b>199 107 095</b> | 2.189 |
| 40        | 32         | 10 | 1000                                       | <b>199 107 096</b> | 2.592 |
| 50        | 40         | 10 | 1600                                       | <b>199 107 097</b> | 2.914 |
| 63        | 50         | 10 | 3100                                       | <b>199 107 098</b> | 3.772 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | L8<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 200       | 27         | 64         | 64         | 137        | 92        | 161        | 56         | 25         | 77         | 83         | 122        | 33         | 64        |
| 20        | 50        | 200       | 27         | 64         | 64         | 137        | 95        | 161        | 56         | 25         | 77         | 83         | 122        | 33         | 64        |
| 25        | 58        | 209       | 30         | 73         | 64         | 137        | 110       | 161        | 65         | 25         | 77         | 83         | 122        | 33         | 72        |
| 32        | 68        | 209       | 36         | 73         | 64         | 137        | 123       | 161        | 71         | 25         | 77         | 83         | 122        | 33         | 79        |
| 40        | 84        | 220       | 44         | 84         | 64         | 137        | 146       | 161        | 85         | 45         | 77         | 83         | 122        | 33         | 94        |
| 50        | 97        | 220       | 51         | 84         | 64         | 137        | 157       | 161        | 89         | 45         | 77         | 83         | 122        | 33         | 95        |
| 63        | 124       | 243       | 64         | 106        | 64         | 137        | 183       | 161        | 101        | 45         | 77         | 83         | 122        | 33         | 107       |

| d<br>[mm] | closest<br>inch |
|-----------|-----------------|
| 16        | $\frac{3}{8}$   |
| 20        | $\frac{1}{2}$   |
| 25        | $\frac{3}{4}$   |
| 32        | 1               |
| 40        | 1 $\frac{1}{4}$ |
| 50        | 1 $\frac{1}{2}$ |
| 63        | 2               |



PF 3 39 695 033

# ABS metric Valves



## Ball valve type 130 ABS 100-230V With manual emergency override With solvent cement sockets metric

### Model:

- For easy installation and removal
- Integrated stainless steel mounting inserts
- Voltage 100-230 V, 50-60 Hz
- Control range 90°<
- Assignment of actuators: EA21 (DN10/15-50), EA31 (DN65-100 if available)
- Image and drawing DN65-100 please see **"New product ball valve DN65-100"**
- Control time: EA21: 5s/90°<, EA31: 15s/90°<

### Option:

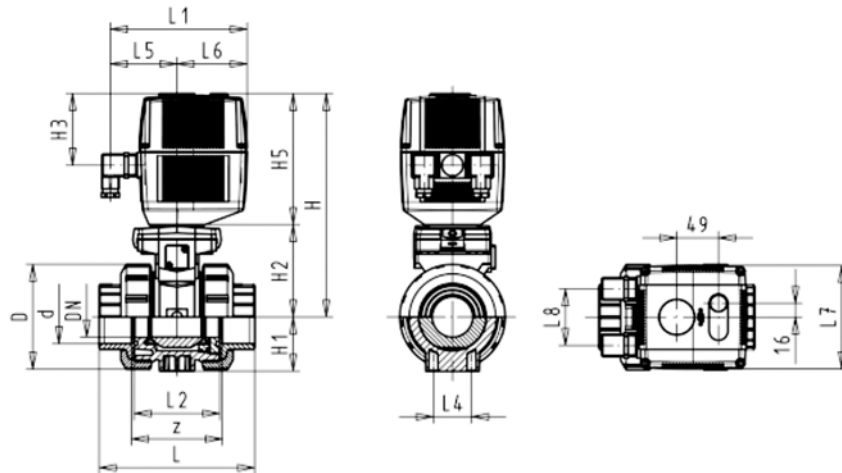
- Individual configuration of the valve (see form)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 70   | <b>199 130 702</b> | 2.100 |
| 20        | 15         | 10 | 185  | <b>199 130 703</b> | 2.100 |
| 25        | 20         | 10 | 350  | <b>199 130 704</b> | 2.200 |
| 32        | 25         | 10 | 700  | <b>199 130 705</b> | 2.300 |
| 40        | 32         | 10 | 1000                                       | <b>199 130 706</b> | 2.600 |
| 50        | 40         | 10 | 1600                                       | <b>199 130 707</b> | 3.000 |
| 63        | 50         | 10 | 3100                                       | <b>199 130 708</b> | 3.800 |
| 75        | 65         | 10 | 5000                                       | <b>199 130 709</b> | 3.500 |
| 90        | 80         | 10 | 7000                                       | <b>199 130 710</b> | 4.300 |
| 110       | 100        | 10 | 11000                                      | <b>199 130 711</b> | 5.400 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 231       | 27         | 64         | 94         | 167        | 92        | 180        | 56         | 25         | 97         | 83         | 122        | 64        |
| 20        | 50        | 231       | 27         | 64         | 94         | 167        | 95        | 180        | 56         | 25         | 97         | 83         | 122        | 64        |
| 25        | 58        | 240       | 30         | 73         | 94         | 167        | 110       | 180        | 65         | 25         | 97         | 83         | 122        | 72        |
| 32        | 68        | 240       | 36         | 73         | 94         | 167        | 123       | 180        | 71         | 25         | 97         | 83         | 122        | 79        |
| 40        | 84        | 251       | 44         | 84         | 94         | 167        | 146       | 180        | 85         | 45         | 97         | 83         | 122        | 94        |
| 50        | 97        | 251       | 51         | 84         | 94         | 167        | 157       | 180        | 89         | 45         | 97         | 83         | 122        | 95        |
| 63        | 124       | 273       | 64         | 106        | 94         | 167        | 183       | 180        | 101        | 45         | 97         | 83         | 122        | 107       |
| 75        | 166       | 346       | 85         | 156        | 94         | 190        | 233       | 180        | 136        | 70         | 98         | 83         | 122        | 144       |
| 90        | 200       | 358       | 105        | 168        | 94         | 190        | 254       | 180        | 141        | 70         | 98         | 83         | 122        | 151       |
| 110       | 238       | 365       | 123        | 175        | 94         | 190        | 301       | 180        | 164        | 120        | 98         | 83         | 122        | 174       |

| d<br>[mm] | closest<br>inch |
|-----------|-----------------|
| 16        | 3/8             |
| 20        | 1/2             |
| 25        | 3/4             |
| 32        | 1               |
| 40        | 1 1/4           |
| 50        | 1 1/2           |
| 63        | 2               |
| 75        | 2 1/2           |
| 90        | 3               |
| 110       | 4               |

# ABS metric Valves



PF 3 39 696 033






## Ball valve type 130 ABS 24V With manual emergency override With solvent cement sockets metric

### Model:

- For easy installation and removal
- Integrated stainless steel mounting inserts
- Voltage 24 V AC/DC
- Control range 90°<
- Assignment of actuators: EA21 (DN10/15-50), EA31 (DN65-100 if available)
- Image and drawing DN65-100 please see **"New product ball valve DN65-100"**
- Control time: EA21: 5s/90°<, EA31: 15s/90°<




### Option:

- Individual configuration of the valve (see form)

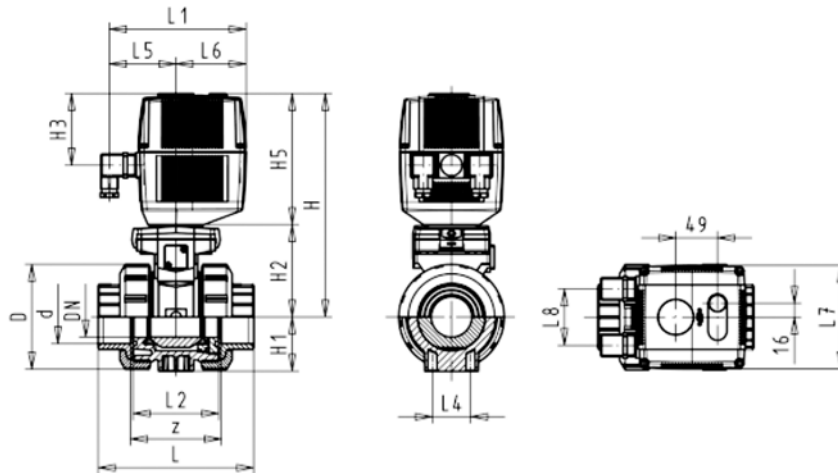
| d<br>[mm]   | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|---|------------|----|--|--------------------|-------|
| 16  | 10         | 10 | 70   | <b>199 130 742</b> | 2.100 |
| 20  | 15         | 10 | 185  | <b>199 130 743</b> | 2.100 |
| 25  | 20         | 10 | 350  | <b>199 130 744</b> | 2.200 |
| 32  | 25         | 10 | 700  | <b>199 130 745</b> | 2.300 |
| 40  | 32         | 10 | 1000                                       | <b>199 130 746</b> | 2.600 |
| 50  | 40         | 10 | 1600                                       | <b>199 130 747</b> | 3.000 |
| 63  | 50         | 10 | 3100                                       | <b>199 130 748</b> | 3.800 |
|  75  | 65         | 10 | 5000                                       | <b>199 130 749</b> | 3.500 |
|  90  | 80         | 10 | 7000                                       | <b>199 130 750</b> | 4.300 |
|  110 | 100        | 10 | 11000                                      | <b>199 130 751</b> | 5.400 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 231       | 27         | 64         | 94         | 167        | 92        | 180        | 56         | 25         | 97         | 83         | 122        | 64        |
| 20        | 50        | 231       | 27         | 64         | 94         | 167        | 95        | 180        | 56         | 25         | 97         | 83         | 122        | 64        |
| 25        | 58        | 240       | 30         | 73         | 94         | 167        | 110       | 180        | 65         | 25         | 97         | 83         | 122        | 72        |
| 32        | 68        | 240       | 36         | 73         | 94         | 167        | 123       | 180        | 71         | 25         | 97         | 83         | 122        | 79        |
| 40        | 84        | 251       | 44         | 84         | 94         | 167        | 146       | 180        | 85         | 45         | 97         | 83         | 122        | 94        |

# ABS metric Valves

| d<br>[mm]   | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|---|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 50  | 97        | 251       | 51         | 84         | 94         | 167        | 157       | 180        | 89         | 45         | 97         | 83         | 122        | 95        |
| 63  | 124       | 273       | 64         | 106        | 94         | 167        | 183       | 180        | 101        | 45         | 97         | 83         | 122        | 107       |
|  75  | 166       | 346       | 85         | 156        | 94         | 190        | 233       | 180        | 136        | 70         | 98         | 83         | 122        | 144       |
|  90  | 200       | 358       | 105        | 168        | 94         | 190        | 254       | 180        | 141        | 70         | 98         | 83         | 122        | 151       |
|  110 | 238       | 365       | 123        | 175        | 94         | 190        | 301       | 180        | 164        | 120        | 98         | 83         | 122        | 174       |

| d<br>[mm]   | closest<br>inch |
|---|-----------------|
| 16  | 3/8             |
| 20  | 1/2             |
| 25  | 3/4             |
| 32  | 1               |
| 40  | 1 1/4           |
| 50  | 1 1/2           |
| 63  | 2               |
|  75  | 2 1/2           |
|  90  | 3               |
|  110 | 4               |



PF 3 39 695 033



## 3-Way ball valve type 175 ABS Horizontal/L-port 100-230V With manual emergency override With solvent cement sockets metric

### Model:

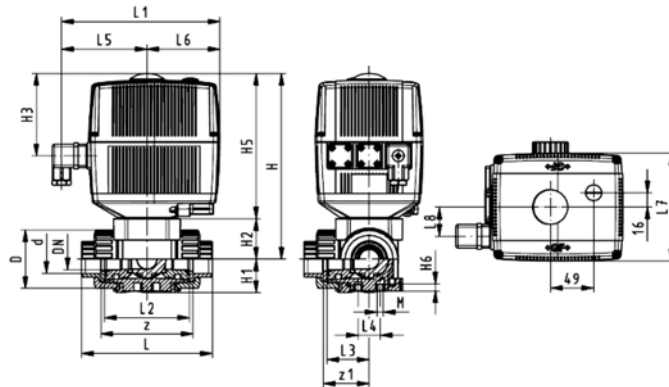
- Assignment of actuators: EA21 (DN10/15-50), EA31 (DN65-100 if available)
- Voltage 100-230 V, 50-60 Hz
- For easy installation and removal
- Control range 90°<
- Integrated stainless steel mounting inserts
- Control time 5 s/90°<

# ABS metric Valves

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 50   | <b>199 175 162</b> | 2.073 |
| 20        | 15         | 10 | 75   | <b>199 175 163</b> | 2.121 |
| 25        | 20         | 10 | 150  | <b>199 175 164</b> | 2.303 |
| 32        | 25         | 10 | 280  | <b>199 175 165</b> | 2.352 |
| 40        | 32         | 10 | 480  | <b>199 175 166</b> | 2.614 |
| 50        | 40         | 10 | 620  | <b>199 175 167</b> | 3.359 |
| 63        | 50         | 10 | 1230                                       | <b>199 175 168</b> | 4.728 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 108       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 20        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 111       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 25        | 52        | 205       | 33         | 39         | 93         | 166        | 8          | 131       | 182        | 86         | 43         | 25         | 99         | 83         | 122        |
| 32        | 65        | 210       | 38         | 44         | 93         | 166        | 8          | 148       | 182        | 96         | 48         | 25         | 99         | 83         | 122        |
| 40        | 78        | 216       | 44         | 50         | 93         | 166        | 9          | 176       | 182        | 116        | 58         | 45         | 99         | 83         | 122        |
| 50        | 92        | 229       | 50         | 63         | 93         | 166        | 9          | 206       | 182        | 137        | 69         | 45         | 99         | 83         | 122        |
| 63        | 116       | 242       | 61         | 76         | 93         | 166        | 9          | 262       | 182        | 179        | 90         | 45         | 99         | 83         | 122        |

| d<br>[mm] | L8<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 33         | 6 | 80        | 40         | 3/8             |
| 20        | 33         | 6 | 80        | 40         | 1/2             |
| 25        | 33         | 6 | 94        | 47         | 3/4             |
| 32        | 33         | 6 | 104       | 52         | 1               |
| 40        | 33         | 8 | 126       | 63         | 1 1/4           |
| 50        | 33         | 8 | 144       | 72         | 1 1/2           |
| 63        | 33         | 8 | 186       | 93         | 2               |



PF 3 39 749 200

# ABS metric Valves



## 3-Way ball valve type 175 ABS

### Horizontal/L-port 24V

### With manual emergency override

### With solvent cement sockets metric

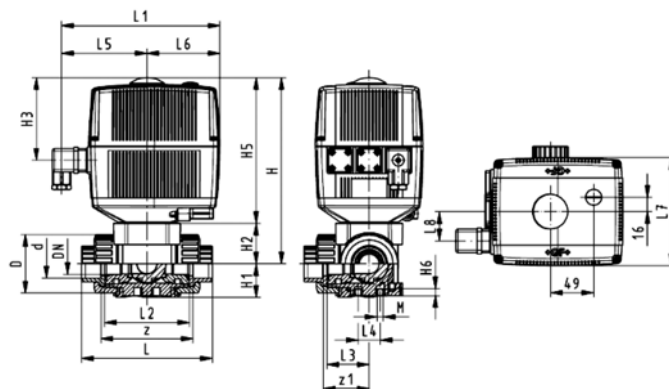
#### Model:

- Assignment of actuators: EA21 (DN10/15-50), EA31 (DN65-100 if available)
- Voltage 24 V AC/DC
- For easy installation and removal
- Control range 90°<
- Integrated stainless steel mounting inserts
- Control time 5 s/90°<

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 50   | <b>199 175 342</b> | 2.073 |
| 20        | 15         | 10 | 75   | <b>199 175 343</b> | 2.073 |
| 25        | 20         | 10 | 150  | <b>199 175 344</b> | 2.303 |
| 32        | 25         | 10 | 280  | <b>199 175 345</b> | 2.352 |
| 40        | 32         | 10 | 480  | <b>199 175 346</b> | 2.815 |
| 50        | 40         | 10 | 620  | <b>199 175 347</b> | 3.359 |
| 63        | 50         | 10 | 1230                                       | <b>199 175 348</b> | 4.728 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 108       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 20        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 111       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 25        | 52        | 205       | 33         | 39         | 93         | 166        | 8          | 131       | 182        | 86         | 43         | 25         | 99         | 83         | 122        |
| 32        | 65        | 210       | 38         | 44         | 93         | 166        | 8          | 148       | 182        | 96         | 48         | 25         | 99         | 83         | 122        |
| 40        | 78        | 216       | 44         | 50         | 93         | 166        | 9          | 176       | 182        | 116        | 58         | 45         | 99         | 83         | 122        |
| 50        | 92        | 229       | 50         | 63         | 93         | 166        | 9          | 206       | 182        | 137        | 69         | 45         | 99         | 83         | 122        |
| 63        | 116       | 242       | 61         | 76         | 93         | 166        | 9          | 262       | 182        | 179        | 90         | 45         | 99         | 83         | 122        |

| d<br>[mm] | L8<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 33         | 6 | 80        | 40         | $\frac{3}{8}$   |
| 20        | 33         | 6 | 80        | 40         | $\frac{1}{2}$   |
| 25        | 33         | 6 | 94        | 47         | $\frac{3}{4}$   |
| 32        | 33         | 6 | 104       | 52         | 1               |
| 40        | 33         | 8 | 126       | 63         | $1 \frac{1}{4}$ |
| 50        | 33         | 8 | 144       | 72         | $1 \frac{1}{2}$ |
| 63        | 33         | 8 | 186       | 93         | 2               |



PF 3 39 749 250



# ABS metric Valves



## 3-Way ball valve type 175 ABS Horizontal/T-port 100-230V With manual emergency override With solvent cement sockets metric

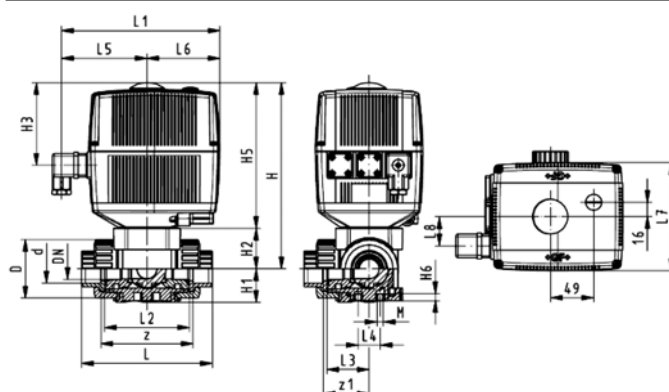
### Model:

- Assignment of actuators: EA21 (DN10/15-50), EA31 (DN65-100 if available)
- Voltage 100-230 V, 50-60 Hz
- For easy installation and removal
- Control range 90°<
- Integrated stainless steel mounting inserts
- Control time 5 s/90°<

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 140  | <b>199 175 172</b> | 2.073 |
| 20        | 15         | 10 | 200  | <b>199 175 173</b> | 2.121 |
| 25        | 20         | 10 | 470  | <b>199 175 174</b> | 2.303 |
| 32        | 25         | 10 | 793  | <b>199 175 175</b> | 2.801 |
| 40        | 32         | 10 | 1290                                       | <b>199 175 176</b> | 2.815 |
| 50        | 40         | 10 | 1910                                       | <b>199 175 177</b> | 3.359 |
| 63        | 50         | 10 | 3100                                       | <b>199 175 178</b> | 4.728 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 108       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 20        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 111       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 25        | 52        | 205       | 33         | 39         | 93         | 166        | 8          | 131       | 182        | 86         | 43         | 25         | 99         | 83         | 122        |
| 32        | 65        | 210       | 38         | 44         | 93         | 166        | 8          | 148       | 182        | 96         | 48         | 25         | 99         | 83         | 122        |
| 40        | 78        | 216       | 44         | 50         | 93         | 166        | 9          | 176       | 182        | 116        | 58         | 45         | 99         | 83         | 122        |
| 50        | 92        | 229       | 50         | 63         | 93         | 166        | 9          | 206       | 182        | 137        | 69         | 45         | 99         | 83         | 122        |
| 63        | 116       | 242       | 61         | 76         | 93         | 166        | 9          | 262       | 182        | 179        | 90         | 45         | 99         | 83         | 122        |

| d<br>[mm] | L8<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 33         | 6 | 80        | 40         | 3/8             |
| 20        | 33         | 6 | 80        | 40         | 1/2             |
| 25        | 33         | 6 | 94        | 47         | 3/4             |
| 32        | 33         | 6 | 104       | 52         | 1               |
| 40        | 33         | 8 | 126       | 63         | 1 1/4           |
| 50        | 33         | 8 | 144       | 72         | 1 1/2           |
| 63        | 33         | 8 | 186       | 93         | 2               |



PF 3 39 749 200

# ABS metric Valves



## 3-Way ball valve type 175 ABS

### Horizontal/T-port 24V

### With manual emergency override

### With solvent cement sockets metric

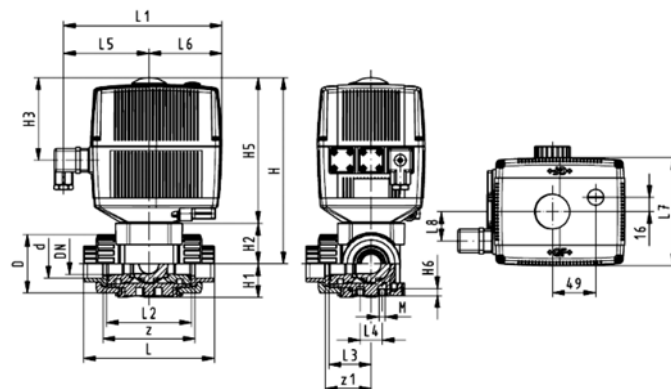
#### Model:

- Assignment of actuators: EA21 (DN10/15-50), EA31 (DN65-100 if available)
- Voltage 24 V AC/DC
- Control range 90°<
- Control time 5 s/90°<
- For easy installation and removal
- Integrated stainless steel mounting inserts

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 140  | <b>199 175 352</b> | 2.073 |
| 20        | 15         | 10 | 200  | <b>199 175 353</b> | 2.121 |
| 25        | 20         | 10 | 470  | <b>199 175 354</b> | 2.303 |
| 32        | 25         | 10 | 793  | <b>199 175 355</b> | 2.350 |
| 40        | 32         | 10 | 1290                                       | <b>199 175 356</b> | 2.815 |
| 50        | 40         | 10 | 1910                                       | <b>199 175 357</b> | 3.680 |
| 63        | 50         | 10 | 3100                                       | <b>199 175 358</b> | 5.052 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 108       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 20        | 45        | 197       | 29         | 31         | 93         | 166        | 8          | 111       | 182        | 72         | 36         | 25         | 99         | 83         | 122        |
| 25        | 52        | 205       | 33         | 39         | 93         | 166        | 8          | 131       | 182        | 86         | 43         | 25         | 99         | 83         | 122        |
| 32        | 65        | 210       | 38         | 44         | 93         | 166        | 8          | 148       | 182        | 96         | 48         | 25         | 99         | 83         | 122        |
| 40        | 78        | 216       | 44         | 50         | 93         | 166        | 9          | 176       | 182        | 116        | 58         | 45         | 99         | 83         | 122        |
| 50        | 92        | 229       | 50         | 63         | 93         | 166        | 9          | 206       | 182        | 137        | 69         | 45         | 99         | 83         | 122        |
| 63        | 116       | 242       | 61         | 76         | 93         | 166        | 9          | 262       | 182        | 179        | 90         | 45         | 99         | 83         | 122        |

| d<br>[mm] | L8<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 33         | 6 | 80        | 40         | $\frac{3}{8}$   |
| 20        | 33         | 6 | 80        | 40         | $\frac{1}{2}$   |
| 25        | 33         | 6 | 94        | 47         | $\frac{3}{4}$   |
| 32        | 33         | 6 | 104       | 52         | 1               |
| 40        | 33         | 8 | 126       | 63         | $1 \frac{1}{4}$ |
| 50        | 33         | 8 | 144       | 72         | $1 \frac{1}{2}$ |
| 63        | 33         | 8 | 186       | 93         | 2               |



PF 3 39 749 250

# ABS metric Valves

## Ball valves pneumatic

### Ball valve type 230 ABS FC (Fail safe to close)

#### With manual override

#### With solvent cement sockets metric



#### Model:

- Built on with pneumatic actuator PA11 (DN10/15-25), PA21 (DN32-50)
- Control time 90° < 1-2 s
- For easy installation and removal
- Integrated stainless steel mounting inserts

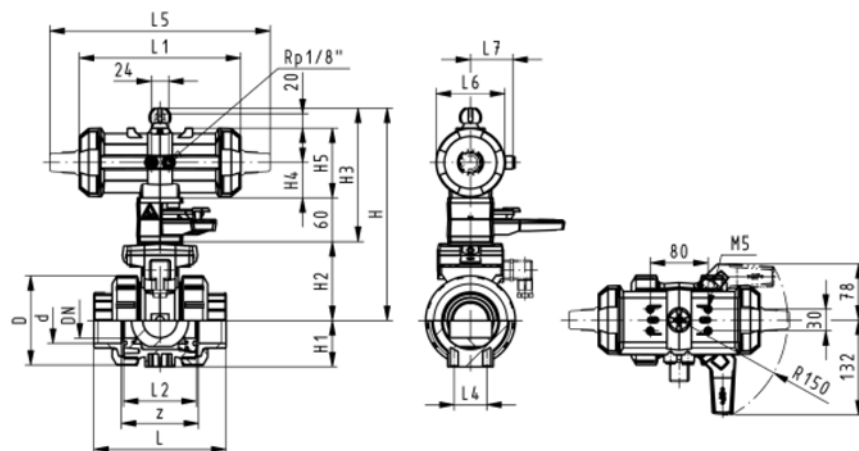
#### Option:

- Individual configuration of the valve (see form)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 70   | <b>199 230 702</b> | 1.459 |
| 20        | 15         | 10 | 185  | <b>199 230 703</b> | 1.459 |
| 25        | 20         | 10 | 350  | <b>199 230 704</b> | 1.576 |
| 32        | 25         | 10 | 700  | <b>199 230 705</b> | 1.700 |
| 40        | 32         | 10 | 1000                                       | <b>199 230 706</b> | 2.751 |
| 50        | 40         | 10 | 1600                                       | <b>199 230 707</b> | 3.073 |
| 63        | 50         | 10 | 3100                                       | <b>199 230 708</b> | 3.931 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 230       | 27         | 62         | 168        | 40         | 97         | 92        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 20        | 50        | 230       | 27         | 62         | 168        | 40         | 97         | 95        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 25        | 58        | 239       | 30         | 71         | 168        | 40         | 97         | 110       | 194        | 65         | 25         | 261        | 76         | 48         | 72        |
| 32        | 68        | 239       | 36         | 71         | 168        | 40         | 97         | 123       | 194        | 71         | 25         | 261        | 76         | 48         | 79        |
| 40        | 84        | 271       | 44         | 84         | 187        | 51         | 115        | 146       | 224        | 85         | 45         | 305        | 95         | 59         | 94        |
| 50        | 97        | 271       | 51         | 84         | 187        | 51         | 115        | 157       | 224        | 89         | 45         | 305        | 95         | 59         | 95        |
| 63        | 124       | 293       | 64         | 106        | 187        | 51         | 115        | 183       | 224        | 101        | 45         | 305        | 95         | 59         | 107       |

| d<br>[mm] | closest<br>inch |
|-----------|-----------------|
| 16        | $\frac{3}{8}$   |
| 20        | $\frac{1}{2}$   |
| 25        | $\frac{3}{4}$   |
| 32        | 1               |
| 40        | 1 $\frac{1}{4}$ |
| 50        | 1 $\frac{1}{2}$ |
| 63        | 2               |



PF 3 39 696 033

# ABS metric Valves

## Ball valve type 230 ABS FO (Fail safe to open) With manual override With solvent cement sockets metric



### Model:

- Built on with pneumatic actuator PA11 (DN10/15-25), PA21 (DN32-50)
- Control time 90° < 1-2 s
- For easy installation and removal
- Integrated stainless steel mounting inserts

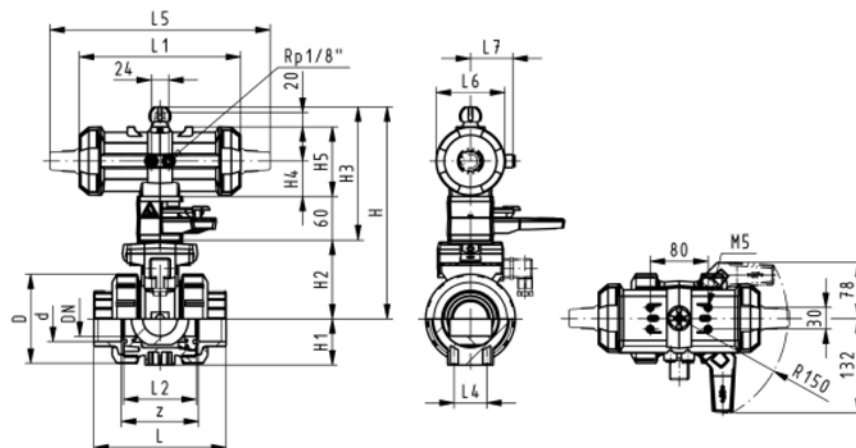
### Option:

- Individual configuration of the valve (see form)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 70   | <b>199 230 742</b> | 1.459 |
| 20        | 15         | 10 | 185  | <b>199 230 743</b> | 1.459 |
| 25        | 20         | 10 | 350  | <b>199 230 744</b> | 1.576 |
| 32        | 25         | 10 | 700  | <b>199 230 745</b> | 1.700 |
| 40        | 32         | 10 | 1000                                       | <b>199 230 746</b> | 2.751 |
| 50        | 40         | 10 | 1600                                       | <b>199 230 747</b> | 3.073 |
| 63        | 50         | 10 | 3100                                       | <b>199 230 748</b> | 3.931 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 230       | 27         | 62         | 168        | 40         | 97         | 92        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 20        | 50        | 230       | 27         | 62         | 168        | 40         | 97         | 95        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 25        | 58        | 239       | 30         | 71         | 168        | 40         | 97         | 110       | 194        | 65         | 25         | 261        | 76         | 48         | 72        |
| 32        | 68        | 239       | 36         | 71         | 168        | 40         | 97         | 123       | 194        | 71         | 25         | 261        | 76         | 48         | 79        |
| 40        | 84        | 271       | 44         | 84         | 187        | 51         | 115        | 146       | 224        | 85         | 45         | 305        | 95         | 59         | 94        |
| 50        | 97        | 271       | 51         | 84         | 187        | 51         | 115        | 157       | 224        | 89         | 45         | 305        | 95         | 59         | 95        |
| 63        | 124       | 293       | 64         | 106        | 187        | 51         | 115        | 183       | 224        | 101        | 45         | 305        | 95         | 59         | 107       |

| d<br>[mm] | closest<br>inch |
|-----------|-----------------|
| 16        | 3/8             |
| 20        | 1/2             |
| 25        | 3/4             |
| 32        | 1               |
| 40        | 1 1/4           |
| 50        | 1 1/2           |
| 63        | 2               |



PF 3 39 696 033

# ABS metric Valves



## Ball valve type 230 ABS DA (Double acting) With manual override With solvent cement sockets metric

### Model:

- Built on with pneumatic actuator PA11 (DN10/15-25), PA21 (DN32-50)
- Control time 90° < 1-2 s
- For easy installation and removal
- Integrated stainless steel mounting inserts

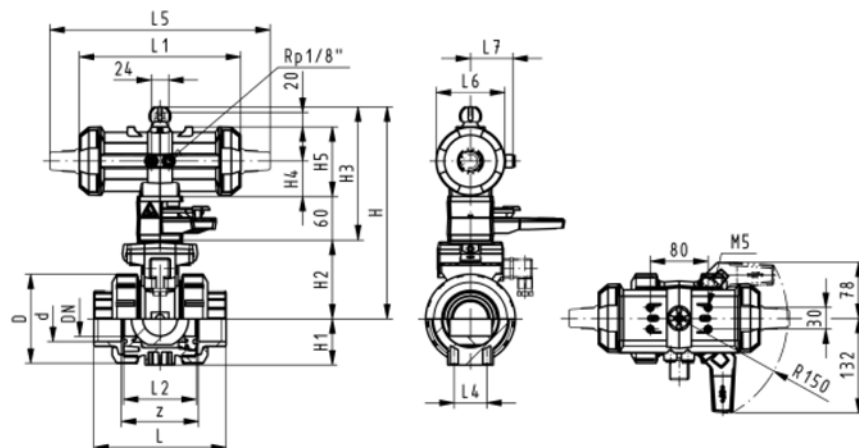
### Option:

- Individual configuration of the valve (see form)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 70   | <b>199 230 782</b> | 1.459 |
| 20        | 15         | 10 | 185  | <b>199 230 783</b> | 1.459 |
| 25        | 20         | 10 | 350  | <b>199 230 784</b> | 1.576 |
| 32        | 25         | 10 | 700  | <b>199 230 785</b> | 1.700 |
| 40        | 32         | 10 | 1000                                       | <b>199 230 786</b> | 2.751 |
| 50        | 40         | 10 | 1600                                       | <b>199 230 787</b> | 3.073 |
| 63        | 50         | 10 | 3100                                       | <b>199 230 788</b> | 3.931 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 230       | 27         | 62         | 168        | 40         | 97         | 92        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 20        | 50        | 230       | 27         | 62         | 168        | 40         | 97         | 95        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 25        | 58        | 239       | 30         | 71         | 168        | 40         | 97         | 110       | 194        | 65         | 25         | 261        | 76         | 48         | 72        |
| 32        | 68        | 239       | 36         | 71         | 168        | 40         | 97         | 123       | 194        | 71         | 25         | 261        | 76         | 48         | 79        |
| 40        | 84        | 271       | 44         | 84         | 187        | 51         | 115        | 146       | 224        | 85         | 45         | 305        | 95         | 59         | 94        |
| 50        | 97        | 271       | 51         | 84         | 187        | 51         | 115        | 157       | 224        | 89         | 45         | 305        | 95         | 59         | 95        |
| 63        | 124       | 293       | 64         | 106        | 187        | 51         | 115        | 183       | 224        | 101        | 45         | 305        | 95         | 59         | 107       |

| d<br>[mm] | closest<br>inch |
|-----------|-----------------|
| 16        | 3/8             |
| 20        | 1/2             |
| 25        | 3/4             |
| 32        | 1               |
| 40        | 1 1/4           |
| 50        | 1 1/2           |
| 63        | 2               |



PF 3 39 696 033

# ABS metric Valves



## Ball valve type 230 ABS FC (Fail safe to close) Without manual override With solvent cement sockets metric

### Model:

- For easy installation and removal
- Integrated stainless steel mounting inserts
- Control time 90° < 1-2 s
- Image and drawing DN65-100 please see "**New product ball valve DN65-100**"
- Assignment of actuators: PA11 (DN10/15-25), PA21 (DN32-50), PA30 (DN65), PA35 (DN80), PA40 (DN100)

### Option:

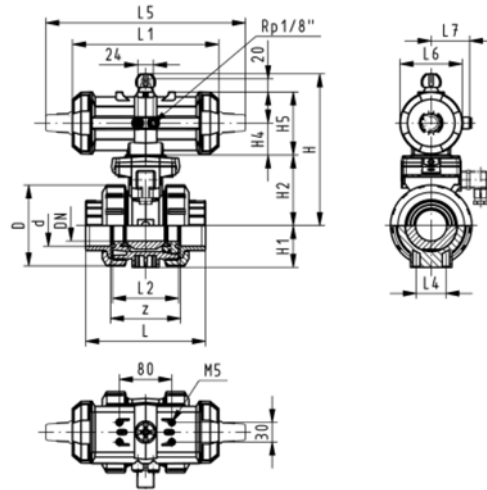
- Individual configuration of the valve (see form)

| d<br>[mm]      | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|----------------|------------|----|--|--------------------|-------|
| 16             | 10         | 10 | 70   | <b>199 230 822</b> | 1.459 |
| 20             | 15         | 10 | 185  | <b>199 230 823</b> | 1.459 |
| 25             | 20         | 10 | 350  | <b>199 230 824</b> | 1.576 |
| 32             | 25         | 10 | 700  | <b>199 230 825</b> | 1.700 |
| 40             | 32         | 10 | 1000                                       | <b>199 230 826</b> | 2.751 |
| 50             | 40         | 10 | 1600                                       | <b>199 230 827</b> | 3.073 |
| 63             | 50         | 10 | 3100                                       | <b>199 230 828</b> | 3.931 |
| <i>New</i> 75  | 65         | 10 | 5000                                       | <b>199 230 829</b> | 3.900 |
| <i>New</i> 90  | 80         | 10 | 7000                                       | <b>199 230 830</b> | 4.700 |
| <i>New</i> 110 | 100        | 10 | 11000                                      | <b>199 230 831</b> | 6.800 |

| d<br>[mm]      | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|----------------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 16             | 50        | 167       | 27         | 62         | 40         | 97         | 92        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 20             | 50        | 167       | 27         | 62         | 40         | 97         | 95        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 25             | 58        | 176       | 30         | 71         | 40         | 97         | 110       | 194        | 65         | 25         | 261        | 76         | 48         | 72        |
| 32             | 68        | 176       | 36         | 71         | 40         | 97         | 123       | 194        | 71         | 25         | 261        | 76         | 48         | 79        |
| 40             | 84        | 210       | 44         | 84         | 51         | 115        | 146       | 224        | 85         | 45         | 305        | 95         | 59         | 94        |
| 50             | 97        | 210       | 51         | 84         | 51         | 115        | 157       | 224        | 89         | 45         | 305        | 95         | 59         | 95        |
| 63             | 124       | 232       | 64         | 106        | 51         | 115        | 183       | 224        | 101        | 45         | 305        | 95         | 59         | 107       |
| <i>New</i> 75  | 166       | 262       | 85         | 156        |            | 70         | 233       | 218        | 136        | 70         | 276        | 65         |            | 144       |
| <i>New</i> 90  | 200       | 281       | 105        | 168        |            | 78         | 254       | 259        | 141        | 70         | 341        | 72         |            | 151       |
| <i>New</i> 110 | 238       | 292       | 123        | 175        |            | 86         | 301       | 287        | 164        | 120        | 369        | 80         |            | 174       |

| d<br>[mm]      | closest<br>inch |
|----------------|-----------------|
| 16             | 3/8             |
| 20             | 1/2             |
| 25             | 3/4             |
| 32             | 1               |
| 40             | 1 1/4           |
| 50             | 1 1/2           |
| 63             | 2               |
| <i>New</i> 75  | 2 1/2           |
| <i>New</i> 90  | 3               |
| <i>New</i> 110 | 4               |

# ABS metric Valves



PF 3 39 696 633



## Ball valve type 230 ABS FO (Fail safe to open) Without manual override With solvent cement sockets metric

### Model:

- For easy installation and removal
- Integrated stainless steel mounting inserts
- Control time 90° < 1-2 s
- Image and drawing DN65-100 please see **"New product ball valve DN65-100"**
- Assignment of actuators: PA11 (DN10/15-25), PA21 (DN32-50), PA30 (DN65), PA35 (DN80), PA40 (DN100)

### Option:

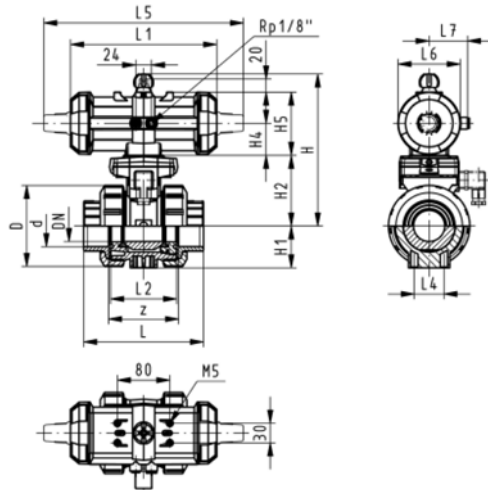
- Individual configuration of the valve (see form)

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 70   | <b>199 230 862</b> | 1.459 |
| 20        | 15         | 10 | 185  | <b>199 230 863</b> | 1.459 |
| 25        | 20         | 10 | 350  | <b>199 230 864</b> | 1.576 |
| 32        | 25         | 10 | 700  | <b>199 230 865</b> | 1.700 |
| 40        | 32         | 10 | 1000                                       | <b>199 230 866</b> | 2.751 |
| 50        | 40         | 10 | 1600                                       | <b>199 230 867</b> | 3.073 |
| 63        | 50         | 10 | 3100                                       | <b>199 230 868</b> | 3.931 |
| 75        | 65         | 10 | 5000                                       | <b>199 230 869</b> | 3.900 |
| 90        | 80         | 10 | 7000                                       | <b>199 230 870</b> | 4.700 |
| 110       | 100        | 10 | 11000                                      | <b>199 230 871</b> | 6.800 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] | L7<br>[mm] | z<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|-----------|
| 16        | 50        | 167       | 27         | 62         | 40         | 97         | 92        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 20        | 50        | 167       | 27         | 62         | 40         | 97         | 95        | 194        | 56         | 25         | 261        | 76         | 48         | 64        |
| 25        | 58        | 176       | 30         | 71         | 40         | 97         | 110       | 194        | 65         | 25         | 261        | 76         | 48         | 72        |
| 32        | 68        | 176       | 36         | 71         | 40         | 97         | 123       | 194        | 71         | 25         | 261        | 76         | 48         | 79        |
| 40        | 84        | 210       | 44         | 84         | 51         | 115        | 146       | 224        | 85         | 45         | 305        | 95         | 59         | 94        |
| 50        | 97        | 210       | 51         | 84         | 51         | 115        | 157       | 224        | 89         | 45         | 305        | 95         | 59         | 95        |
| 63        | 124       | 232       | 64         | 106        | 51         | 115        | 183       | 224        | 101        | 45         | 305        | 95         | 59         | 107       |
| 75        | 166       | 262       | 85         | 156        |            | 70         | 233       | 218        | 136        | 70         | 276        | 65         |            | 144       |
| 90        | 200       | 281       | 105        | 168        |            | 78         | 254       | 259        | 141        | 70         | 341        | 72         |            | 151       |
| 110       | 238       | 292       | 123        | 175        |            | 86         | 301       | 287        | 164        | 120        | 369        | 80         |            | 174       |

# ABS metric Valves

| d<br>[mm]   | closest<br>inch |
|---|-----------------|
| 16  | 3/8             |
| 20  | 1/2             |
| 25  | 3/4             |
| 32  | 1               |
| 40  | 1 1/4           |
| 50  | 1 1/2           |
| 63  | 2               |
|  75  | 2 1/2           |
|  90  | 3               |
|  110 | 4               |



PF 3 39 696 633






## Ball valve type 230 ABS DA (Double acting) Without manual override With solvent cement sockets metric

### Model:

- For easy installation and removal
- Integrated stainless steel mounting inserts
- Control time 90° < 1-2 s
- Image and drawing DN65-100 please see **"New product ball valve DN65-100"**
- Assignment of actuators: PA11 (DN10/15-25), PA21 (DN32-50), PA35 (DN65), PA40 (DN80), PA45 (DN100)




### Option:

- Individual configuration of the valve (see form)

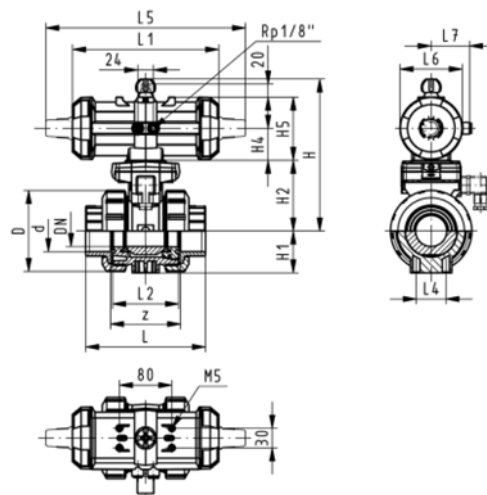
| d<br>[mm]   | DN<br>[mm] | PN | kv-value<br>(Δp=1 bar)<br>[l/min] | EPDM<br>Code       | kg    |
|---|------------|----|-----------------------------------|--------------------|-------|
| 16  | 10         | 10 | 70                                | <b>199 230 902</b> | 1.459 |
| 20  | 15         | 10 | 185                               | <b>199 230 903</b> | 1.459 |
| 25  | 20         | 10 | 350                               | <b>199 230 904</b> | 1.576 |
| 32  | 25         | 10 | 700                               | <b>199 230 905</b> | 1.700 |
| 40  | 32         | 10 | 1000                              | <b>199 230 906</b> | 2.751 |
| 50  | 40         | 10 | 1600                              | <b>199 230 907</b> | 3.073 |
| 63  | 50         | 10 | 3100                              | <b>199 230 908</b> | 3.931 |
|  75  | 65         | 10 | 5000                              | <b>199 230 909</b> | 2.800 |
|  90  | 80         | 10 | 7000                              | <b>199 230 910</b> | 4.000 |
|  110 | 100        | 10 | 11000                             | <b>199 230 911</b> | 5.000 |



# ABS metric Valves

| d   | D    | H    | H1   | H2   | H4   | H5   | L    | L1   | L2   | L4   | L5   | L6   | L7   | z    |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| [mm]  | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] |
| 16  | 50   | 167  | 27   | 62   | 40   | 97   | 92   | 194  | 56   | 25   | 261  | 76   | 48   | 64   |
| 20  | 50   | 167  | 27   | 62   | 40   | 97   | 95   | 194  | 56   | 25   | 261  | 76   | 48   | 64   |
| 25  | 58   | 176  | 30   | 71   | 40   | 97   | 110  | 194  | 65   | 25   | 261  | 76   | 48   | 72   |
| 32  | 68   | 176  | 36   | 71   | 40   | 97   | 123  | 194  | 71   | 25   | 261  | 76   | 48   | 79   |
| 40  | 84   | 210  | 44   | 84   | 51   | 115  | 146  | 224  | 85   | 45   | 305  | 95   | 59   | 94   |
| 50  | 97   | 210  | 51   | 84   | 51   | 115  | 157  | 224  | 89   | 45   | 305  | 95   | 59   | 95   |
| 63  | 124  | 232  | 64   | 106  | 51   | 115  | 183  | 224  | 101  | 45   | 305  | 95   | 59   | 107  |
|  75  | 166  | 257  | 85   | 156  |      | 66   | 233  | 144  | 136  | 70   | 190  | 60   |      | 144  |
|  90  | 200  | 274  | 105  | 168  |      | 70   | 254  | 152  | 141  | 70   | 198  | 65   |      | 151  |
|  110 | 238  | 273  | 123  | 175  |      | 78   | 301  | 169  | 164  | 120  | 235  | 72   |      | 174  |

| d   | closest inch |
|---|--------------|
| [mm]  |              |
| 16  | 3/8          |
| 20  | 1/2          |
| 25  | 3/4          |
| 32  | 1            |
| 40  | 1 1/4        |
| 50  | 1 1/2        |
| 63  | 2            |
|  75  | 2 1/2        |
|  90  | 3            |
|  110 | 4            |



PF 3 39 696 033

# ABS metric Valves



## 3-Way ball valve type 275 ABS

Horizontal/L-port

Without manual override

With solvent cement sockets metric

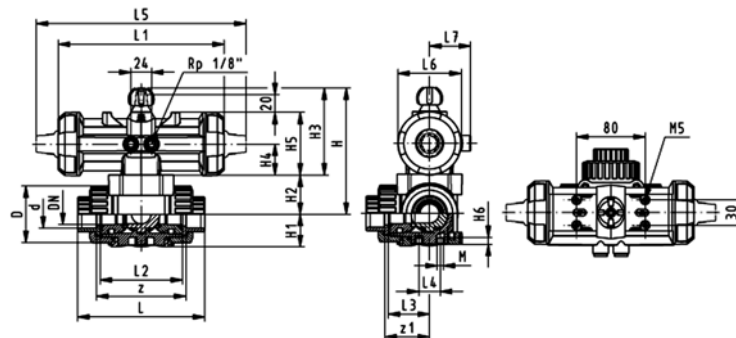
### Model:

- Built on with pneumatic actuator PA11 (DN10/15-25), PA21 (DN32-50)
- Actuator fails safe to the closed position FC
- Control time  $90^\circ <$  1-3 s
- For easy installation and removal
- Integrated stainless steel mounting inserts

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 50   | <b>199 275 162</b> | 1.066 |
| 20        | 15         | 10 | 75   | <b>199 275 163</b> | 1.337 |
| 25        | 20         | 10 | 150  | <b>199 275 164</b> | 1.207 |
| 32        | 25         | 10 | 280  | <b>199 275 165</b> | 2.474 |
| 40        | 32         | 10 | 480  | <b>199 275 166</b> | 2.283 |
| 50        | 40         | 10 | 620  | <b>199 275 167</b> | 2.703 |
| 63        | 50         | 10 | 1230                                       | <b>199 275 168</b> | 3.771 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 108       | 194        | 72         | 36         | 25         | 261        | 73         |
| 20        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 111       | 194        | 72         | 36         | 25         | 261        | 73         |
| 25        | 52        | 144       | 33         | 39         | 105        | 40         | 77         | 8          | 131       | 194        | 86         | 43         | 25         | 261        | 73         |
| 32        | 65        | 149       | 38         | 44         | 105        | 40         | 77         | 8          | 148       | 194        | 96         | 48         | 25         | 261        | 73         |
| 40        | 78        | 177       | 44         | 50         | 127        | 51         | 99         | 9          | 176       | 224        | 116        | 58         | 45         | 305        | 94         |
| 50        | 92        | 190       | 50         | 63         | 127        | 51         | 99         | 9          | 206       | 224        | 137        | 69         | 45         | 305        | 94         |
| 63        | 116       | 203       | 61         | 76         | 127        | 51         | 99         | 9          | 262       | 224        | 179        | 90         | 45         | 305        | 94         |

| d<br>[mm] | L7<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 48         | 6 | 80        | 40         | $\frac{3}{8}$   |
| 20        | 48         | 6 | 80        | 40         | $\frac{1}{2}$   |
| 25        | 48         | 6 | 94        | 47         | $\frac{3}{4}$   |
| 32        | 48         | 6 | 104       | 52         | 1               |
| 40        | 59         | 8 | 126       | 63         | $1 \frac{1}{4}$ |
| 50        | 59         | 8 | 144       | 72         | $1 \frac{1}{2}$ |
| 63        | 59         | 8 | 186       | 93         | 2               |



PF 3 39 749 200

# ABS metric Valves



## 3-Way ball valve type 275 ABS Horizontal/L-port DA (Double acting) Without manual override With solvent cement sockets metric

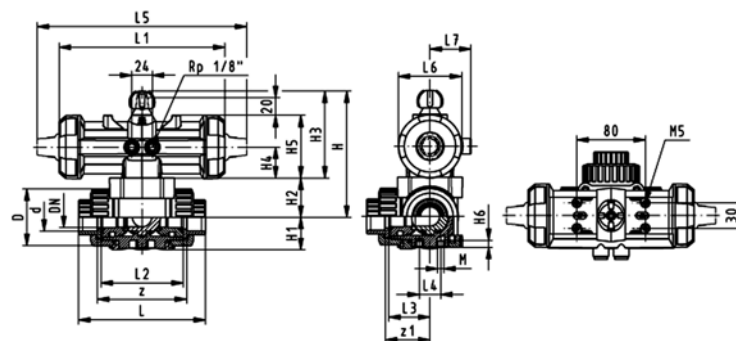
### Model:

- Built on with pneumatic actuator PA11 (DN10/15-25), PA21 (DN32-50)
- Control time 90°<) 1-3 s
- For easy installation and removal
- Integrated stainless steel mounting inserts

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 50   | <b>199 275 342</b> | 0.876 |
| 20        | 15         | 10 | 75   | <b>199 275 343</b> | 0.876 |
| 25        | 20         | 10 | 150  | <b>199 275 344</b> | 1.017 |
| 32        | 25         | 10 | 280  | <b>199 275 345</b> | 1.155 |
| 40        | 32         | 10 | 480  | <b>199 275 346</b> | 2.060 |
| 50        | 40         | 10 | 620  | <b>199 275 347</b> | 2.279 |
| 63        | 50         | 10 | 1230                                       | <b>199 275 348</b> | 3.347 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 108       | 194        | 72         | 36         | 25         | 261        | 73         |
| 20        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 111       | 194        | 72         | 36         | 25         | 261        | 73         |
| 25        | 52        | 144       | 33         | 39         | 105        | 40         | 77         | 8          | 131       | 194        | 86         | 43         | 25         | 261        | 73         |
| 32        | 65        | 149       | 38         | 44         | 105        | 40         | 77         | 8          | 148       | 194        | 96         | 48         | 25         | 261        | 73         |
| 40        | 78        | 177       | 44         | 50         | 127        | 51         | 99         | 9          | 176       | 224        | 116        | 58         | 45         | 305        | 94         |
| 50        | 92        | 190       | 50         | 63         | 127        | 51         | 99         | 9          | 206       | 224        | 137        | 69         | 45         | 305        | 94         |
| 63        | 116       | 203       | 61         | 76         | 127        | 51         | 99         | 9          | 262       | 224        | 179        | 90         | 45         | 305        | 94         |

| d<br>[mm] | L7<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 48         | 6 | 80        | 40         | 3/8             |
| 20        | 48         | 6 | 80        | 40         | 1/2             |
| 25        | 48         | 6 | 94        | 47         | 3/4             |
| 32        | 48         | 6 | 104       | 52         | 1               |
| 40        | 59         | 8 | 126       | 63         | 1 1/4           |
| 50        | 59         | 8 | 144       | 72         | 1 1/2           |
| 63        | 59         | 8 | 186       | 93         | 2               |



PF 3 39 750 250

# ABS metric Valves



## 3-Way ball valve type 275 ABS

Horizontal/T-port

Without manual override

With solvent cement sockets metric

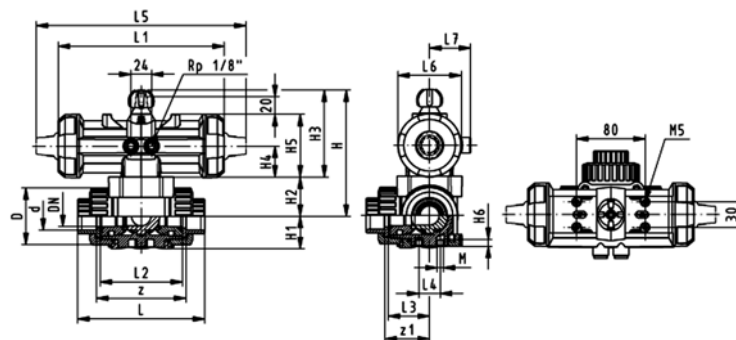
### Model:

- Built on with pneumatic actuator PA11 (DN10/15-25), PA21 (DN32-50)
- Actuator fails safe to the closed position FC
- For easy installation and removal
- Integrated stainless steel mounting inserts
- Control time  $90^\circ <$  1-3 s

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 140  | <b>199 275 172</b> | 1.066 |
| 20        | 15         | 10 | 200  | <b>199 275 173</b> | 1.066 |
| 25        | 20         | 10 | 470  | <b>199 275 174</b> | 1.296 |
| 32        | 25         | 10 | 793  | <b>199 275 175</b> | 1.345 |
| 40        | 32         | 10 | 1290                                       | <b>199 275 176</b> | 2.283 |
| 50        | 40         | 10 | 1910                                       | <b>199 275 177</b> | 2.703 |
| 63        | 50         | 10 | 3100                                       | <b>199 275 178</b> | 4.397 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 108       | 194        | 72         | 36         | 25         | 261        | 73         |
| 20        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 111       | 194        | 72         | 36         | 25         | 261        | 73         |
| 25        | 52        | 144       | 33         | 39         | 105        | 40         | 77         | 8          | 131       | 194        | 86         | 43         | 25         | 261        | 73         |
| 32        | 65        | 149       | 38         | 44         | 105        | 40         | 77         | 8          | 148       | 194        | 96         | 48         | 25         | 261        | 73         |
| 40        | 78        | 177       | 44         | 50         | 127        | 51         | 99         | 9          | 176       | 224        | 116        | 58         | 45         | 305        | 94         |
| 50        | 92        | 190       | 50         | 63         | 127        | 51         | 99         | 9          | 206       | 224        | 137        | 69         | 45         | 305        | 94         |
| 63        | 116       | 203       | 61         | 76         | 127        | 51         | 99         | 9          | 262       | 224        | 179        | 90         | 45         | 305        | 94         |

| d<br>[mm] | L7<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 48         | 6 | 80        | 40         | $\frac{3}{8}$   |
| 20        | 48         | 6 | 80        | 40         | $\frac{1}{2}$   |
| 25        | 48         | 6 | 94        | 47         | $\frac{3}{4}$   |
| 32        | 48         | 6 | 104       | 52         | 1               |
| 40        | 59         | 8 | 126       | 63         | $1 \frac{1}{4}$ |
| 50        | 59         | 8 | 144       | 72         | $1 \frac{1}{2}$ |
| 63        | 59         | 8 | 186       | 93         | 2               |



PF 3 39 750 200

# ABS metric Valves



## 3-Way ball valve type 275 ABS Horizontal/T-port DA (Double acting) Without manual override With solvent cement sockets metric

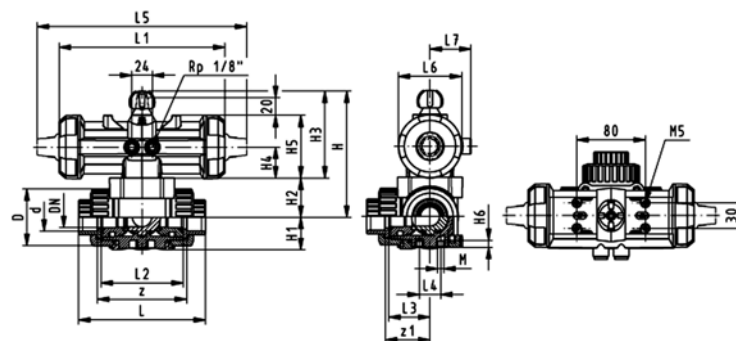
### Model:

- Built on with pneumatic actuator PA11 (DN10/15-25), PA21 (DN32-50)
- Control time 90°<) 1-3 s
- For easy installation and removal
- Integrated stainless steel mounting inserts

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 16        | 10         | 10 | 140  | <b>199 275 352</b> | 0.876 |
| 20        | 15         | 10 | 200  | <b>199 275 353</b> | 0.876 |
| 25        | 20         | 10 | 470  | <b>199 275 354</b> | 1.017 |
| 32        | 25         | 10 | 793  | <b>199 275 355</b> | 1.155 |
| 40        | 32         | 10 | 1290                                       | <b>199 275 356</b> | 2.060 |
| 50        | 40         | 10 | 1910                                       | <b>199 275 357</b> | 2.279 |
| 63        | 50         | 10 | 3100                                       | <b>199 275 358</b> | 3.347 |

| d<br>[mm] | D<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] | L4<br>[mm] | L5<br>[mm] | L6<br>[mm] |
|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|
| 16        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 108       | 194        | 72         | 36         | 25         | 261        | 73         |
| 20        | 45        | 136       | 29         | 31         | 105        | 40         | 77         | 8          | 111       | 194        | 72         | 36         | 25         | 261        | 73         |
| 25        | 52        | 144       | 33         | 39         | 105        | 40         | 77         | 8          | 131       | 194        | 86         | 43         | 25         | 261        | 73         |
| 32        | 65        | 149       | 38         | 44         | 105        | 40         | 77         | 8          | 148       | 194        | 96         | 48         | 25         | 261        | 73         |
| 40        | 78        | 177       | 44         | 50         | 127        | 51         | 99         | 9          | 176       | 224        | 116        | 58         | 45         | 305        | 94         |
| 50        | 92        | 190       | 50         | 63         | 127        | 51         | 99         | 9          | 206       | 224        | 137        | 69         | 45         | 305        | 94         |
| 63        | 116       | 203       | 61         | 76         | 127        | 51         | 99         | 9          | 262       | 224        | 179        | 90         | 45         | 305        | 94         |

| d<br>[mm] | L7<br>[mm] | M | z<br>[mm] | z1<br>[mm] | closest<br>inch |
|-----------|------------|---|-----------|------------|-----------------|
| 16        | 48         | 6 | 80        | 40         | 3/8             |
| 20        | 48         | 6 | 80        | 40         | 1/2             |
| 25        | 48         | 6 | 94        | 47         | 3/4             |
| 32        | 48         | 6 | 104       | 52         | 1               |
| 40        | 59         | 8 | 126       | 63         | 1 1/4           |
| 50        | 59         | 8 | 144       | 72         | 1 1/2           |
| 63        | 59         | 8 | 186       | 93         | 2               |



PF 3 39 750 250

# ABS metric Valves

## Butterfly valves electric

### Butterfly valve type 140 ABS 100-230V Without manual override

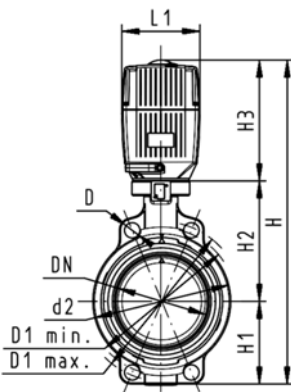


#### Model:

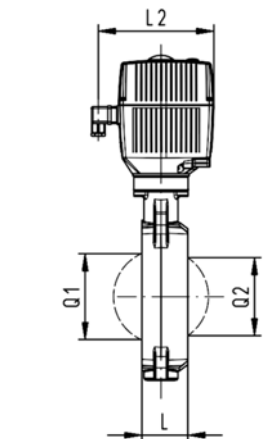
- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Voltage 100-230 V, 50-60 Hz
- Control time 15 s/90°<) EA31
- Control time 25s/90°<) EA42
- Control range 90°<)
- Actuator with integrated emergency manual override standard

\* Available on request

| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 140 502</b> |        |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 140 503</b> | 4.281  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 140 504</b> | 4.359  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 140 505</b> | 4.895  |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 140 506</b> |        |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 140 507</b> | 6.218  |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 140 508</b> | 12.029 |



| d<br>[mm] | Actuator<br>unit type | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] |
|-----------|-----------------------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|-----------|------------|------------|
| *63       | EA-31                 | 19        | 120.0              | 125.0              | 104        | 400       | 77         | 134        | 188        | 45        | 122        | 180        |
| *75       | EA-31                 | 19        | 139.7              | 145.0              | 115        | 413       | 83         | 140        | 188        | 46        | 122        | 180        |
| 90        | EA-31                 | 19        | 150.0              | 160.0              | 131        | 428       | 89         | 146        | 188        | 49        | 122        | 180        |
| 110       | EA-31                 | 19        | 175.0              | 190.5              | 161        | 460       | 104        | 167        | 188        | 56        | 122        | 180        |
| *140      | EA-31                 | 23        | 210.0              | 215.9              | 187        | 487       | 117        | 181        | 188        | 64        | 122        | 180        |
| 160       | EA-31                 | 24        | 241.3              | 241.3              | 215        | 508       | 130        | 189        | 188        | 72        | 122        | 180        |
| 225       | EA-42                 | 23        | 290.0              | 295.0              | 267        | 575       | 158        | 210        | 208        | 73        | 122        | 180        |



| d<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|
| *63       | 40         |            |
| *75       | 54         | 35         |
| 90        | 67         | 50         |
| 110       | 88         | 74         |
| *140      | 113        | 97         |
| 160       | 139        | 123        |
| 225       | 178        | 169        |

PF 3 39 643 035

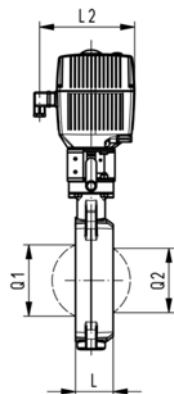
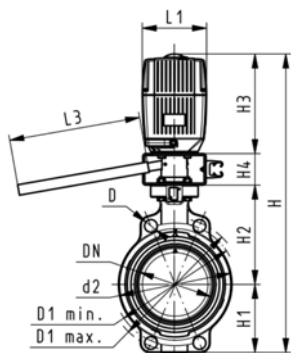
# ABS metric Valves

## Butterfly valve type 140 ABS 100-230V With manual override

### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Voltage 100-230 V, 50-60 Hz
- Control time 15 s/90°<) EA31
- Control time 25s/90°<) EA42
- Control range 90°<)
- Actuator with integrated emergency manual override standard

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 140 482</b> | 5.678  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 140 483</b> | 5.781  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 140 484</b> | 5.859  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 140 485</b> | 6.395  |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 140 486</b> |        |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 140 487</b> | 7.718  |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 140 488</b> | 13.529 |

| d<br>[mm] | Actuator<br>unit type | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | L<br>[mm] | L1<br>[mm] |
|-----------|-----------------------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|------------|-----------|------------|
| *63       | EA-31                 | 19        | 120.0              | 125.0              | 104        | 460       | 77         | 134        | 188        | 60         | 45        | 122        |
| *75       | EA-31                 | 19        | 139.7              | 145.0              | 115        | 473       | 83         | 140        | 188        | 60         | 46        | 122        |
| 90        | EA-31                 | 19        | 150.0              | 160.0              | 131        | 488       | 89         | 146        | 188        | 60         | 49        | 122        |
| 110       | EA-31                 | 19        | 175.0              | 190.5              | 161        | 520       | 104        | 167        | 188        | 60         | 56        | 122        |
| *140      | EA-31                 | 23        | 210.0              | 215.9              | 187        | 547       | 117        | 181        | 188        | 60         | 64        | 122        |
| 160       | EA-31                 | 24        | 241.3              | 241.3              | 215        | 568       | 130        | 189        | 188        | 60         | 72        | 122        |
| 225       | EA-42                 | 23        | 290.0              | 295.0              | 267        | 635       | 158        | 210        | 208        | 60         | 73        | 122        |

| d<br>[mm] | L2<br>[mm] | L3<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|------------|
| *63       | 180        | 250        | 40         |            |
| *75       | 180        | 250        | 54         | 35         |
| 90        | 180        | 250        | 67         | 50         |
| 110       | 180        | 250        | 88         | 74         |
| *140      | 180        | 250        | 113        | 97         |
| 160       | 180        | 250        | 139        | 123        |
| 225       | 180        | 250        | 178        | 169        |

PF 3 39 643 035

# ABS metric Valves

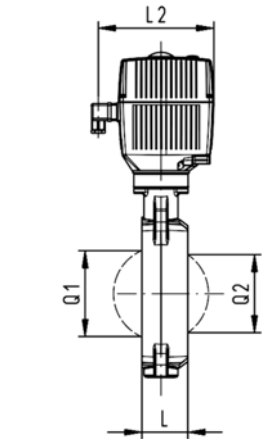
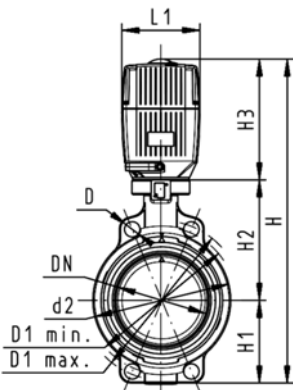
## Butterfly valve type 140 ABS 24V Without manual override



### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Voltage 24 V AC/DC
- Control time 15 s/90°<) EA31
- Control time 25s/90°<) EA42
- Control range 90°<)
- Actuator with integrated emergency manual override standard

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 140 542</b> | 4.178  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 140 543</b> |        |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 140 544</b> | 4.359  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 140 545</b> | 4.895  |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 140 546</b> |        |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 140 547</b> | 6.218  |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 140 548</b> | 12.029 |

| d<br>[mm] | Actuator<br>unit type | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] |
|-----------|-----------------------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|-----------|------------|------------|
| *63       | EA-31                 | 19        | 120.0              | 125.0              | 104        | 400       | 77         | 134        | 188        | 45        | 122        | 180        |
| *75       | EA-31                 | 19        | 139.7              | 145.0              | 115        | 413       | 83         | 140        | 188        | 46        | 122        | 180        |
| 90        | EA-31                 | 19        | 150.0              | 160.0              | 131        | 428       | 89         | 146        | 188        | 49        | 122        | 180        |
| 110       | EA-31                 | 19        | 175.0              | 190.5              | 161        | 460       | 104        | 167        | 188        | 56        | 122        | 180        |
| *140      | EA-31                 | 23        | 210.0              | 215.9              | 187        | 487       | 117        | 181        | 188        | 64        | 122        | 180        |
| 160       | EA-31                 | 24        | 241.3              | 241.3              | 215        | 508       | 130        | 189        | 188        | 72        | 122        | 180        |
| 225       | EA-42                 | 23        | 290.0              | 295.0              | 267        | 575       | 158        | 210        | 208        | 73        | 122        | 180        |

| d<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|
| *63       | 40         |            |
| *75       | 54         | 35         |
| 90        | 67         | 50         |
| 110       | 88         | 74         |
| *140      | 113        | 97         |
| 160       | 139        | 123        |
| 225       | 178        | 169        |

PF 3 39 643 035



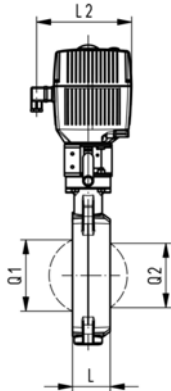
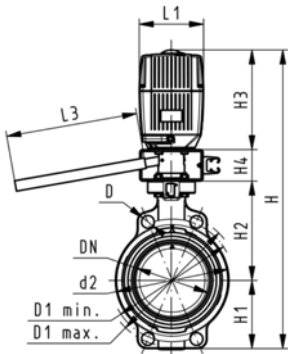
# ABS metric Valves

## Butterfly valve type 140 ABS 24V With manual override

### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Voltage 24 V AC/DC
- Control time 15 s/90°<) EA31
- Control time 25s/90°<) EA42
- Control range 90°<)
- Actuator with integrated emergency manual override standard

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg              |
|-----------|------------|------|----|--|--------------------|-----------------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 140 522</b> | 5.859<br>6.395  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 140 523</b> |                 |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 140 524</b> |                 |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 140 525</b> |                 |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 140 526</b> | 7.718<br>13.529 |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 140 527</b> |                 |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 140 528</b> |                 |

| d<br>[mm] | Actuator<br>unit type | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | L<br>[mm] | L1<br>[mm] |
|-----------|-----------------------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|------------|-----------|------------|
| *63       | EA-31                 | 19        | 120.0              | 125.0              | 104        | 460       | 77         | 134        | 188        | 60         | 45        | 122        |
| *75       | EA-31                 | 19        | 139.7              | 145.0              | 115        | 473       | 83         | 140        | 188        | 60         | 46        | 122        |
| 90        | EA-31                 | 19        | 150.0              | 160.0              | 131        | 488       | 89         | 146        | 188        | 60         | 49        | 122        |
| 110       | EA-31                 | 19        | 175.0              | 190.5              | 161        | 520       | 104        | 167        | 188        | 60         | 56        | 122        |
| *140      | EA-31                 | 23        | 210.0              | 215.9              | 187        | 547       | 117        | 181        | 188        | 60         | 64        | 122        |
| 160       | EA-31                 | 24        | 241.3              | 241.3              | 215        | 568       | 130        | 189        | 188        | 60         | 72        | 122        |
| 225       | EA-42                 | 23        | 290.0              | 295.0              | 267        | 635       | 158        | 210        | 208        | 60         | 73        | 122        |

| d<br>[mm] | L2<br>[mm] | L3<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|------------|
| *63       | 180        | 250        | 40         |            |
| *75       | 180        | 250        | 54         | 35         |
| 90        | 180        | 250        | 67         | 50         |
| 110       | 180        | 250        | 88         | 74         |
| *140      | 180        | 250        | 113        | 97         |
| 160       | 180        | 250        | 139        | 123        |
| 225       | 180        | 250        | 178        | 169        |

PF 3 39 643 035

# ABS metric Valves

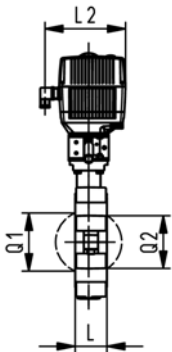
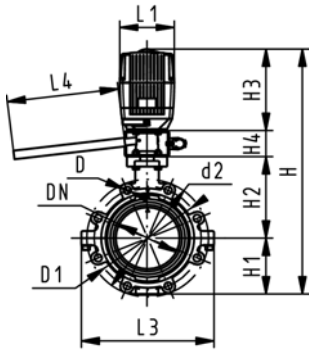
## Lugstyle butterfly valve type 141 ABS 100-230V With manual override



### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752
- Voltage 100-230 V, 50-60 Hz
- Control time 15 s/90°<) EA31
- Control time 25s/90°<) EA42
- Control range 90°<)
- Actuator with integrated emergency manual override standard

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 141 482</b> | 7.713  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 141 483</b> | 8.060  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 141 484</b> | 9.077  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 141 485</b> | 10.493 |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 141 486</b> | 12.362 |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 141 487</b> | 14.201 |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 141 488</b> | 23.505 |

| d<br>[mm] | Actuator<br>unit type | D   | D1<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] |
|-----------|-----------------------|-----|------------|------------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|
| *63       | EA-31                 | M16 | 125        | 150        | 459       | 77         | 134        | 188        | 60         | 45        | 122        | 180        | 150        |
| *75       | EA-31                 | M16 | 145        | 170        | 471       | 83         | 140        | 188        | 60         | 46        | 122        | 180        | 160        |
| 90        | EA-31                 | M16 | 160        | 184        | 483       | 89         | 146        | 188        | 60         | 49        | 122        | 180        | 205        |
| 110       | EA-31                 | M16 | 180        | 216        | 519       | 104        | 167        | 188        | 60         | 56        | 122        | 180        | 244        |
| *140      | EA-31                 | M16 | 210        | 246        | 546       | 117        | 181        | 188        | 60         | 64        | 122        | 180        | 272        |
| 160       | EA-31                 | M20 | 240        | 273        | 567       | 130        | 189        | 188        | 60         | 72        | 122        | 180        | 297        |
| 225       | EA-42                 | M20 | 295        | 334        | 636       | 158        | 210        | 208        | 60         | 73        | 122        | 180        | 360        |

| d<br>[mm] | L4<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|
| *63       | 200        | 40         |            |
| *75       | 200        | 54         | 35         |
| 90        | 200        | 67         | 50         |
| 110       | 250        | 88         | 74         |
| *140      | 250        | 113        | 97         |
| 160       | 250        | 139        | 123        |
| 225       | 250        | 178        | 169        |

PF 3 39 643 036

# ABS metric Valves

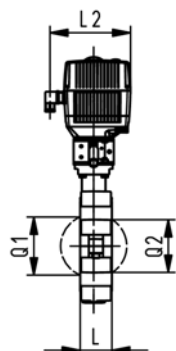
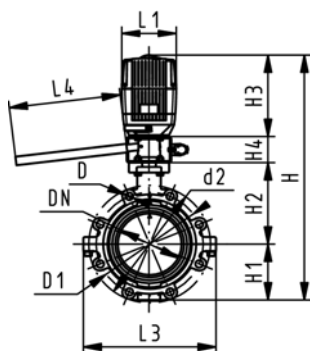
## Lugstyle butterfly valve type 141 ABS 24V With manual override



### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752
- Voltage 24 V AC/DC
- Control time 15 s/90°<) EA31
- Control time 25s/90°<) EA42
- Control range 90°<)
- Actuator with integrated emergency manual override standard

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 141 522</b> | 7.713  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 141 523</b> | 8.060  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 141 524</b> | 9.077  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 141 525</b> | 10.493 |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 141 526</b> | 12.362 |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 141 527</b> | 14.201 |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 141 528</b> | 23.505 |

| d<br>[mm] | Actuator<br>unit type | D   | D1<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | L3<br>[mm] |
|-----------|-----------------------|-----|------------|------------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|
| *63       | EA-31                 | M16 | 125        | 150        | 459       | 77         | 134        | 188        | 60         | 45        | 122        | 180        | 150        |
| *75       | EA-31                 | M16 | 145        | 170        | 471       | 83         | 140        | 188        | 60         | 46        | 122        | 180        | 160        |
| 90        | EA-31                 | M16 | 160        | 184        | 483       | 89         | 146        | 188        | 60         | 49        | 122        | 180        | 205        |
| 110       | EA-31                 | M16 | 180        | 216        | 519       | 104        | 167        | 188        | 60         | 56        | 122        | 180        | 244        |
| *140      | EA-31                 | M16 | 210        | 246        | 546       | 117        | 181        | 188        | 60         | 64        | 122        | 180        | 272        |
| 160       | EA-31                 | M20 | 240        | 273        | 567       | 130        | 189        | 188        | 60         | 72        | 122        | 180        | 297        |
| 225       | EA-42                 | M20 | 295        | 334        | 636       | 158        | 210        | 208        | 60         | 73        | 122        | 180        | 360        |

| d<br>[mm] | L4<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|
| *63       | 200        | 40         |            |
| *75       | 200        | 54         | 35         |
| 90        | 200        | 67         | 50         |
| 110       | 250        | 88         | 74         |
| *140      | 250        | 113        | 97         |
| 160       | 250        | 139        | 123        |
| 225       | 250        | 178        | 169        |

PF 3 39 643 036

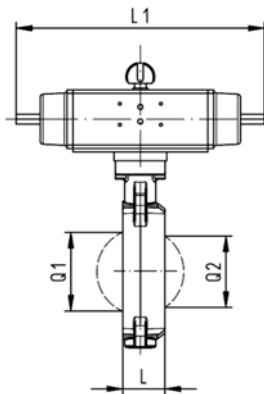
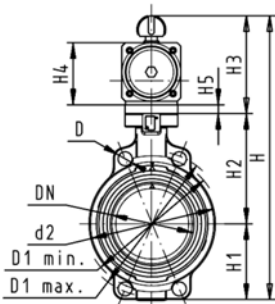
# ABS metric Valves

## Butterfly valves pneumatic

### Butterfly valve type 240 ABS

#### FC (Fail safe to close)

#### Without manual override



#### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Control range 90°<

\* Available on request

| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 240 402</b> |        |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 240 403</b> | 3.100  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 240 404</b> | 3.399  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 240 405</b> | 5.133  |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 240 406</b> |        |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 240 407</b> | 9.779  |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 240 408</b> | 13.529 |

| d<br>[mm] | Actuator<br>unit type | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] |
|-----------|-----------------------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|------------|------------|-----------|
| *63       | PA-30 FC              | 19        | 120.0              | 125.0              | 104        | 327       | 77         | 134        | 117        | 70         | 15         | 45        |
| *75       | PA-30 FC              | 19        | 139.7              | 145.0              | 115        | 340       | 83         | 140        | 117        | 70         | 15         | 46        |
| 90        | PA-35 FC              | 19        | 150.0              | 160.0              | 131        | 361       | 89         | 146        | 126        | 78         | 15         | 49        |
| 110       | PA-40 FC              | 19        | 175.0              | 190.5              | 161        | 400       | 104        | 167        | 129        | 86         |            | 56        |
| *140      | PA-45 FC              | 23        | 210.0              | 215.9              | 187        | 436       | 117        | 181        | 139        | 96         |            | 64        |
| 160       | PA-50 FC              | 24        | 241.3              | 241.3              | 215        | 468       | 130        | 189        | 149        | 106        |            | 72        |
| 225       | PA-55 FC              | 23        | 290.0              | 295.0              | 267        | 529       | 158        | 210        | 161        | 118        |            | 73        |

| d<br>[mm] | L1<br>[mm] | L2<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|------------|
| *63       | 276        | 65         | 40         |            |
| *75       | 276        | 65         | 54         | 35         |
| 90        | 326        | 72         | 67         | 50         |
| 110       | 370        | 80         | 88         | 74         |
| *140      | 411        | 90         | 113        | 97         |
| 160       | 423        | 100        | 139        | 123        |
| 225       | 452        | 112        | 178        | 169        |

PF 3 39 644 035

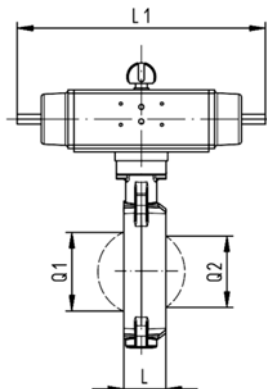
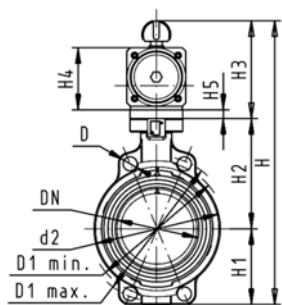
# ABS metric Valves

## Butterfly valve type 240 ABS FO (Fail safe to open) Without manual override

### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Control range 90°<

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg             |
|-----------|------------|------|----|--|--------------------|----------------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 240 422</b> | 3.399<br>5.133 |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 240 423</b> |                |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 240 424</b> |                |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 240 425</b> |                |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 240 426</b> |                |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 240 427</b> | 9.779          |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 240 428</b> | 13.529         |

| d<br>[mm] | Actuator<br>unit type | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] |
|-----------|-----------------------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|------------|------------|-----------|
| *63       | PA-30 FO              | 19        | 120.0              | 125.0              | 104        | 327       | 77         | 134        | 117        | 70         | 15         | 45        |
| *75       | PA-30 FO              | 19        | 139.7              | 145.0              | 115        | 340       | 83         | 140        | 117        | 70         | 15         | 46        |
| 90        | PA-35 FO              | 19        | 150.0              | 160.0              | 131        | 361       | 89         | 146        | 126        | 78         | 15         | 49        |
| 110       | PA-40 FO              | 19        | 175.0              | 190.5              | 161        | 400       | 104        | 167        | 129        | 86         |            | 56        |
| *140      | PA-45 FO              | 23        | 210.0              | 215.9              | 187        | 436       | 117        | 181        | 139        | 96         |            | 64        |
| 160       | PA-50 FO              | 24        | 241.3              | 241.3              | 215        | 468       | 130        | 189        | 149        | 106        |            | 72        |
| 225       | PA-55 FO              | 23        | 290.0              | 295.0              | 267        | 529       | 158        | 210        | 161        | 118        |            | 73        |

| d<br>[mm] | L1<br>[mm] | L2<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|------------|
| *63       | 276        | 65         | 40         |            |
| *75       | 276        | 65         | 54         | 35         |
| 90        | 326        | 72         | 67         | 50         |
| 110       | 370        | 80         | 88         | 74         |
| *140      | 411        | 90         | 113        | 97         |
| 160       | 423        | 100        | 139        | 123        |
| 225       | 452        | 112        | 178        | 169        |

PF 3 39 644 035

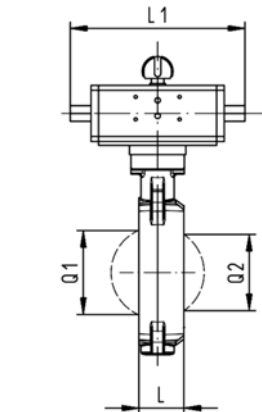
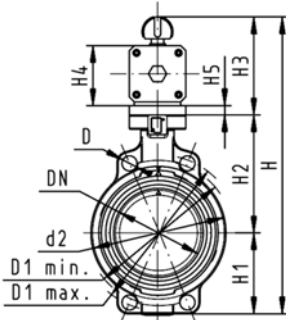
# ABS metric Valves

## Butterfly valve type 240 ABS DA (Double acting) Without manual override

### Model:

- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Control range 90°<

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|------|----|--|--------------------|-------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 240 442</b> | 2.730 |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 240 443</b> |       |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 240 444</b> | 3.385 |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 240 445</b> |       |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 240 446</b> | 6.258 |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 240 447</b> |       |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 240 448</b> |       |

| d<br>[mm] | Actuator<br>unit type | D<br>[mm] | D1<br>min.<br>[mm] | D1<br>max.<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] |
|-----------|-----------------------|-----------|--------------------|--------------------|------------|-----------|------------|------------|------------|------------|------------|-----------|
| *63       | PA-35 DA              | 19        | 120.0              | 125.0              | 104        | 317       | 77         | 134        | 107        | 60         | 15         | 45        |
| *75       | PA-35 DA              | 19        | 139.7              | 145.0              | 115        | 330       | 83         | 140        | 107        | 60         | 15         | 46        |
| 90        | PA-40 DA              | 19        | 150.0              | 160.0              | 131        | 348       | 89         | 146        | 113        | 66         | 15         | 49        |
| 110       | PA-45 DA              | 19        | 175.0              | 190.5              | 161        | 372       | 104        | 167        | 102        | 71         |            | 56        |
| *140      | PA-45 DA              | 23        | 210.0              | 215.9              | 187        | 408       | 117        | 181        | 111        | 78         |            | 64        |
| 160       | PA-55 DA              | 24        | 241.3              | 241.3              | 215        | 448       | 130        | 189        | 129        | 86         |            | 72        |
| 225       | PA-55 DA              | 23        | 290.0              | 295.0              | 267        | 507       | 158        | 210        | 139        | 96         |            | 73        |

| d<br>[mm] | L1<br>[mm] | L2<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|------------|
| *63       | 177        | 55         | 40         |            |
| *75       | 177        | 55         | 54         | 35         |
| 90        | 190        | 60         | 67         | 50         |
| 110       | 235        | 65         | 88         | 74         |
| *140      | 235        | 72         | 113        | 97         |
| 160       | 279        | 80         | 139        | 123        |
| 225       | 279        | 90         | 178        | 169        |

PF 3 39 644 035

# ABS metric Valves

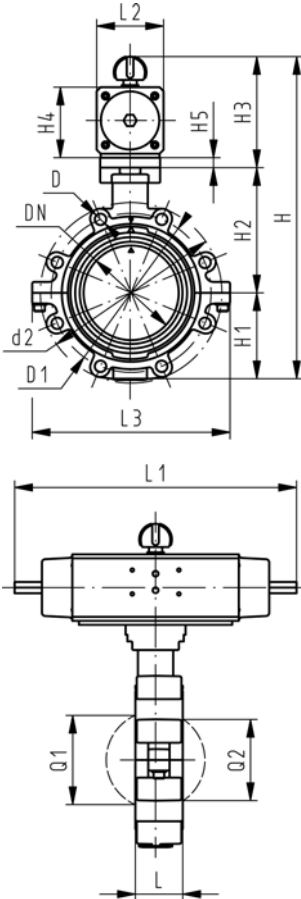
## Lugstyle butterfly valve type 241 ABS FO (Fail safe to open) Without manual override



### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752
- Control range 90°<)

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 241 422</b> | 5.253  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 241 423</b> | 5.600  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 241 424</b> | 6.617  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 241 425</b> | 5.231  |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 241 426</b> | 12.102 |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 241 427</b> | 16.262 |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 241 428</b> | 23.505 |

| d<br>[mm] | Actuator<br>unit type | D   | D1<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] |
|-----------|-----------------------|-----|------------|------------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|
| *63       | PA-30 FO              | M16 | 125        | 150        | 328       | 77         | 134        | 117        | 70         | 15         | 45        | 276        | 65         |
| *75       | PA-30 FO              | M16 | 145        | 170        | 340       | 83         | 140        | 117        | 70         | 15         | 46        | 276        | 65         |
| 90        | PA-35 FO              | M16 | 160        | 184        | 361       | 89         | 146        | 126        | 78         | 15         | 49        | 326        | 72         |
| 110       | PA-40 FO              | M16 | 180        | 216        | 400       | 104        | 167        | 129        | 86         |            | 56        | 370        | 80         |
| *140      | PA-45 FO              | M16 | 210        | 246        | 437       | 117        | 181        | 139        | 96         |            | 64        | 411        | 90         |
| 160       | PA-50 FO              | M20 | 240        | 273        | 468       | 130        | 189        | 149        | 106        |            | 72        | 423        | 100        |
| 225       | PA-55 FO              | M20 | 295        | 334        | 529       | 158        | 210        | 161        | 118        |            | 73        | 452        | 112        |

| d<br>[mm] | L3<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|
| *63       | 150        | 40         |            |
| *75       | 160        | 54         | 35         |
| 90        | 205        | 67         | 50         |
| 110       | 244        | 88         | 74         |
| *140      | 272        | 113        | 97         |
| 160       | 297        | 139        | 123        |
| 225       | 360        | 178        | 169        |

PF 3 39 644 036

# ABS metric Valves

## Lugstyle butterfly valve type 241 ABS

### DA (Double acting)

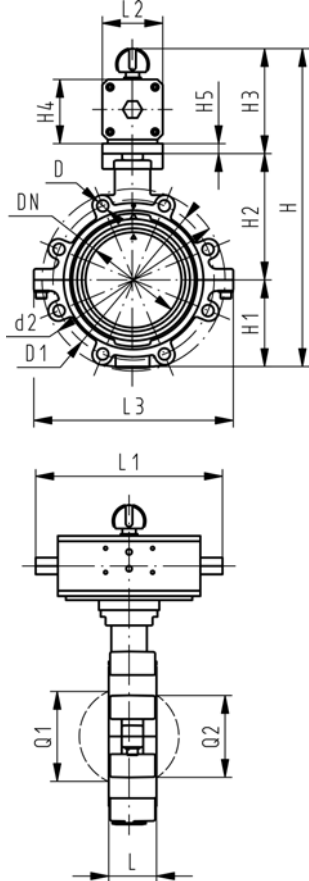
### Without manual override



#### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752
- Control range 90°<

\* Available on request



| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |
|-----------|------------|------|----|--|--------------------|--------|
| *63       | 50         | 2    | 10 | 1470                                       | <b>199 241 442</b> | 4.103  |
| *75       | 65         | 2 ½  | 10 | 2200                                       | <b>199 241 443</b> | 4.450  |
| 90        | 80         | 3    | 10 | 3000                                       | <b>199 241 444</b> | 5.948  |
| 110       | 100        | 4    | 10 | 6500                                       | <b>199 241 445</b> | 7.483  |
| *140      | 125        | 5    | 10 | 11500                                      | <b>199 241 446</b> | 9.352  |
| 160       | 150        | 6    | 10 | 16600                                      | <b>199 241 447</b> | 12.741 |
| 225       | 200        | 8    | 10 | 39600                                      | <b>199 241 448</b> | 17.505 |

| d<br>[mm] | Actuator<br>unit type | D   | D1<br>[mm] | d2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] |
|-----------|-----------------------|-----|------------|------------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|
| *63       | PA-35 DA              | M16 | 125        | 150        | 318       | 77         | 134        | 107        | 60         | 15         | 45        | 177        | 55         |
| *75       | PA-35 DA              | M16 | 145        | 170        | 330       | 83         | 140        | 107        | 60         | 15         | 46        | 177        | 55         |
| 90        | PA-40 DA              | M16 | 160        | 184        | 348       | 89         | 146        | 113        | 66         | 15         | 49        | 190        | 60         |
| 110       | PA-45 DA              | M16 | 180        | 216        | 373       | 104        | 167        | 102        | 71         |            | 56        | 235        | 65         |
| *140      | PA-45 DA              | M16 | 210        | 246        | 409       | 117        | 181        | 111        | 78         |            | 64        | 235        | 72         |
| 160       | PA-55 DA              | M20 | 240        | 273        | 448       | 130        | 189        | 129        | 86         |            | 72        | 279        | 80         |
| 225       | PA-55 DA              | M20 | 295        | 334        | 507       | 158        | 210        | 139        | 96         |            | 73        | 279        | 90         |

| d<br>[mm] | L3<br>[mm] | Q1<br>[mm] | Q2<br>[mm] |
|-----------|------------|------------|------------|
| *63       | 150        | 40         |            |
| *75       | 160        | 54         | 35         |
| 90        | 205        | 67         | 50         |
| 110       | 244        | 88         | 74         |
| *140      | 272        | 113        | 97         |
| 160       | 297        | 139        | 123        |
| 225       | 360        | 178        | 169        |

PF 3 39 644 036

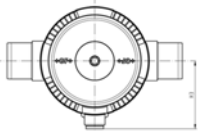
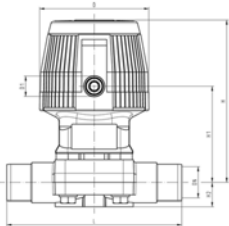


# ABS metric Valves

## Diaphragm valves pneumatic

Diaphragm valve type **DIASTAR Eco ABS FC (Fail safe to close)**

With solvent cement spigots metric



Model:

- Working pressure 6 bar one side

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |  |  |  |  |  |  |  |
|-----------|------------|----|--|--------------------|-------|--|--|--|--|--|--|--|
| 20        | 15         | 6  | 72   | <b>199 024 181</b> | 0.510 |  |  |  |  |  |  |  |
| 25        | 20         | 6  | 120  | <b>199 024 182</b> | 1.033 |  |  |  |  |  |  |  |
| 32        | 25         | 6  | 238  | <b>199 024 183</b> | 1.291 |  |  |  |  |  |  |  |
| 40        | 32         | 6  | 341  | <b>199 024 184</b> | 1.909 |  |  |  |  |  |  |  |
| 50        | 40         | 6  | 460  | <b>199 024 185</b> | 2.477 |  |  |  |  |  |  |  |
| 63        | 50         | 6  | 685  | <b>199 024 186</b> | 3.103 |  |  |  |  |  |  |  |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D2 (M) | L<br>[mm] | L1<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | Lift =<br>Hx<br>[mm] | closest<br>inch |
|-----------|-----------|----------------|--------|-----------|------------|-----------|------------|------------|------------|----------------------|-----------------|
| 20        | 68        | 1/8            | M6     | 124       | 25         | 99        | 59         | 14         | 44         | 8                    | 1/2             |
| 25        | 96        | 1/8            | M6     | 144       | 25         | 130       | 71         | 18         | 56         | 10                   | 3/4             |
| 32        | 96        | 1/8            | M6     | 154       | 25         | 143       | 85         | 21         | 56         | 12                   | 1               |
| 40        | 120       | 1/8            | M8     | 174       | 45         | 170       | 97         | 26         | 68         | 14                   | 1 1/4           |
| 50        | 120       | 1/8            | M8     | 194       | 45         | 182       | 109        | 33         | 68         | 16                   | 1 1/2           |
| 63        | 120       | 1/8            | M8     | 224       | 45         | 199       | 126        | 39         | 68         | 16                   | 2               |

PF 3 39 212 252

# ABS metric Valves

## Diaphragm valve type DIASTAR ABS Series 028 FC (Fail safe to close) With solvent cement spigots metric

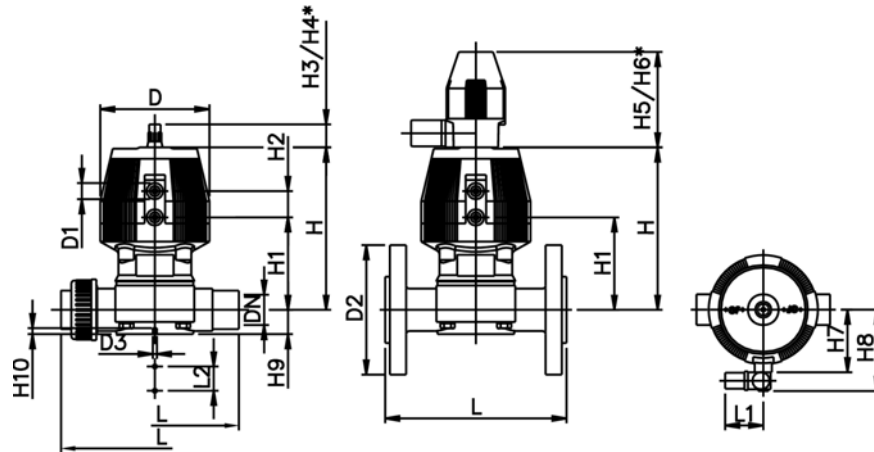


- With position indicator / Working pressure: **one side**

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 20        | 15         | 10 | 72   | <b>199 028 941</b> | 0.470 |
| 25        | 20         | 10 | 120  | <b>199 028 942</b> | 0.900 |
| 32        | 25         | 10 | 238  | <b>199 028 943</b> | 1.190 |
| 40        | 32         | 10 | 341  | <b>199 028 944</b> | 1.650 |
| 50        | 40         | 10 | 460  | <b>199 028 945</b> | 3.050 |
| 63        | 50         | 10 | 685  | <b>199 028 946</b> | 5.200 |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D3[M]<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | H7<br>[mm] |
|-----------|-----------|----------------|---------------|-----------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 20        | 68        | 1/8            | 6             | 124       | 60         | 25         | 99        | 59         | 24         | 23         | 44         | 100        | 155        | 44         |
| 25        | 96        | 1/8            | 6             | 144       | 60         | 25         | 130       | 71         | 25         | 23         | 44         | 100        | 155        | 56         |
| 32        | 96        | 1/8            | 6             | 154       | 60         | 25         | 143       | 85         | 25         | 23         | 44         | 100        | 155        | 56         |
| 40        | 120       | 1/8            | 8             | 174       | 60         | 45         | 170       | 97         | 26         | 36         | 64         | 100        | 160        | 68         |
| 50        | 150       | 1/4            | 8             | 194       | 60         | 45         | 203       | 108        | 36         | 36         | 64         | 100        | 170        | 85         |
| 63        | 150       | 1/4            | 8             | 224       | 60         | 45         | 220       | 126        | 36         | 36         | 64         | 100        | 170        | 85         |

| d<br>[mm] | H8<br>[mm] | H9<br>[mm] | H10<br>[mm] | Lift =<br>Hx<br>[mm] | closest<br>inch |
|-----------|------------|------------|-------------|----------------------|-----------------|
| 20        | 76         | 14         | 12          | 8                    | 1/2             |
| 25        | 88         | 18         | 12          | 10                   | 3/4             |
| 32        | 88         | 21         | 12          | 12                   | 1               |
| 40        | 100        | 26         | 15          | 14                   | 1 1/4           |
| 50        | 117        | 33         | 15          | 18                   | 1 1/2           |
| 63        | 117        | 39         | 15          | 22                   | 2               |



PF 3 39 212 138

# ABS metric Valves

## Diaphragm valve type DIASTAR ABS Series 025 FC (Fail safe to close) With solvent cement spigots metric

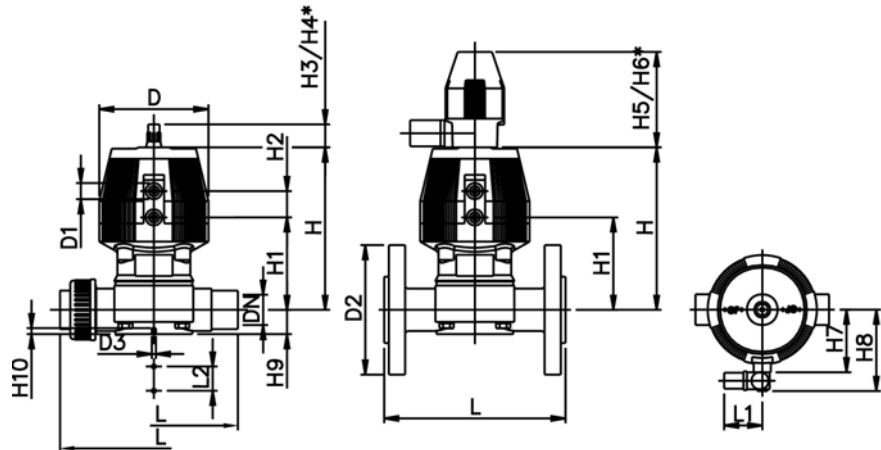


- With position indicator / Working pressure: **both sides**

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 20        | 15         | 10 | 72   | <b>199 025 941</b> | 0.607 |
| 25        | 20         | 10 | 120  | <b>199 025 942</b> | 0.766 |
| 32        | 25         | 10 | 238  | <b>199 025 943</b> | 1.320 |
| 40        | 32         | 10 | 341  | <b>199 025 944</b> | 2.562 |
| 50        | 40         | 10 | 460  | <b>199 025 945</b> | 3.500 |
| 63        | 50         | 10 | 685  | <b>199 025 946</b> | 4.351 |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D3[M]<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | H7<br>[mm] |
|-----------|-----------|----------------|---------------|-----------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 20        | 96        | 1/8            | 6             | 124       | 60         | 25         | 128       | 69         | 25         | 23         | 44         | 100        | 155        | 56         |
| 25        | 96        | 1/8            | 6             | 144       | 60         | 25         | 130       | 71         | 25         | 23         | 44         | 100        | 155        | 56         |
| 32        | 120       | 1/8            | 6             | 154       | 60         | 25         | 166       | 93         | 26         | 36         | 64         | 100        | 155        | 68         |
| 40        | 150       | 1/4            | 8             | 174       | 60         | 45         | 201       | 106        | 36         | 36         | 64         | 100        | 160        | 85         |
| 50        | 180       | 1/4            | 8             | 194       | 60         | 45         | 233       | 119        | 37         | 36         | 64         | 100        | 170        | 101        |
| 63        | 180       | 1/4            | 8             | 224       | 60         | 45         | 247       | 133        | 37         | 36         | 64         | 100        | 170        | 101        |

| d<br>[mm] | H8<br>[mm] | H9<br>[mm] | H10<br>[mm] | Lift =<br>Hx<br>[mm] | closest<br>inch |
|-----------|------------|------------|-------------|----------------------|-----------------|
| 20        | 86         | 14         | 12          | 8                    | 1/2             |
| 25        | 88         | 18         | 12          | 10                   | 3/4             |
| 32        | 100        | 21         | 12          | 12                   | 1               |
| 40        | 117        | 26         | 15          | 14                   | 1 1/4           |
| 50        | 133        | 33         | 15          | 18                   | 1 1/2           |
| 63        | 133        | 39         | 15          | 22                   | 2               |



PF 3 39 212 051

# ABS metric Valves

## Diaphragm valve type DIASTAR ABS Series 025 FC (Fail safe to close) With fixed flanges ABS metric



### Model:

- Connecting dimensions: ISO 7005 / EN 1092 / DIN 2501 PN10 / BS4504
- With position indicator / Working pressure: **one side**

\* with backing flanges PP-V metric

\*\* Connecting dimensions DN80 and DN150 metric and Inch ANSI B16.5

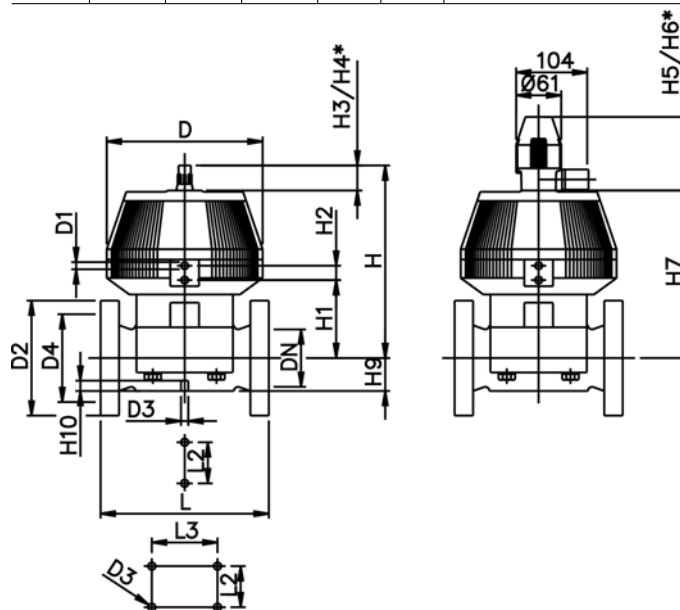
| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |  |  |  |  |  |  |  |
|-----------|------------|------|----|--|--------------------|--------|--|--|--|--|--|--|--|
| *75       | 65         | 2 ½  | 10 | 992  | <b>199 025 947</b> | 13.600 |  |  |  |  |  |  |  |
| **90      | 80         | 3    | 10 | 1700                                       | <b>199 025 948</b> | 17.400 |  |  |  |  |  |  |  |
| 110       | 100        | 4    | 8  | 2700                                       | <b>199 025 949</b> | 24.700 |  |  |  |  |  |  |  |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D2<br>[mm] | D3[M]<br>[mm] | D4<br>[mm] | L<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] |
|-----------|-----------|----------------|------------|---------------|------------|-----------|------------|-----------|------------|------------|------------|------------|
| *75       | 280       | ¼              | 185        | 8             | 145        | 290       | 70         | 344       | 148        | 24         | 46         | 100        |
| **90      | 280       | ¼              | 200        | 12            | 160        | 310       | 120        | 348       | 150        | 24         | 46         | 100        |
| 110       | 335       | ¼              | 225        | 12            | 180        | 350       | 120        | 395       | 176        | 24         | 46         | 100        |

| d<br>[mm] | H5<br>[mm] | H6<br>[mm] | H7<br>[mm] | H9<br>[mm] | H10<br>[mm] |
|-----------|------------|------------|------------|------------|-------------|
| *75       | 129        | 195        | 298        | 46         | 15          |
| **90      | 129        | 195        | 302        | 57         | 15          |
| 110       | 129        | 195        | 349        | 69         | 20          |



PF 3 39 212 051

# ABS metric Valves

## Diaphragm valve type DIASTAR ABS Series 025 FO (Fail safe to open) With solvent cement spigots metric

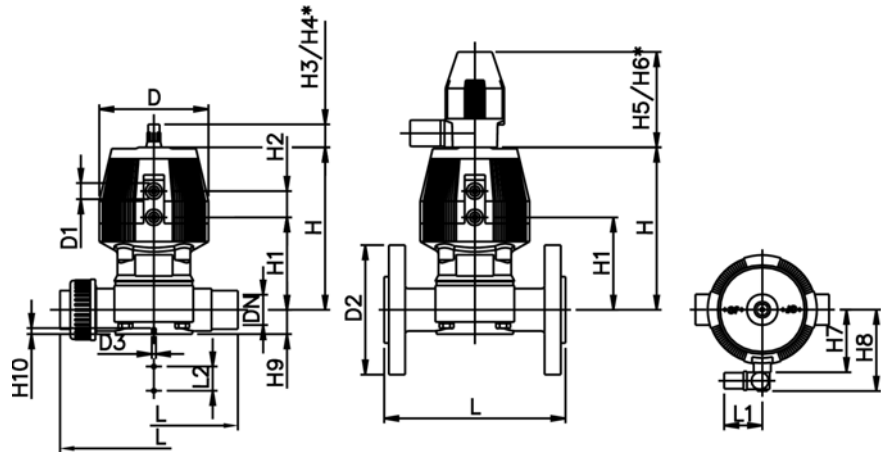


- With position indicator / Working pressure: **both sides**

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 20        | 15         | 10 | 72   | <b>199 025 951</b> | 0.404 |
| 25        | 20         | 10 | 120  | <b>199 025 952</b> | 0.690 |
| 32        | 25         | 10 | 238  | <b>199 025 953</b> | 0.980 |
| 40        | 32         | 10 | 341  | <b>199 025 954</b> | 1.230 |
| 50        | 40         | 10 | 460  | <b>199 025 955</b> | 2.210 |
| 63        | 50         | 10 | 685  | <b>199 025 956</b> | 4.360 |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D3[M]<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | H7<br>[mm] |
|-----------|-----------|----------------|---------------|-----------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 20        | 68        | 1/8            | 6             | 124       | 60         | 25         | 99        | 59         | 24         | 23         | 44         | 100        | 155        | 44         |
| 25        | 96        | 1/8            | 6             | 144       | 60         | 25         | 130       | 71         | 25         | 23         | 44         | 100        | 155        | 56         |
| 32        | 96        | 1/8            | 6             | 154       | 60         | 25         | 143       | 85         | 25         | 23         | 44         | 100        | 155        | 56         |
| 40        | 120       | 1/8            | 8             | 174       | 60         | 45         | 170       | 97         | 26         | 36         | 64         | 100        | 160        | 68         |
| 50        | 150       | 1/4            | 8             | 194       | 60         | 45         | 203       | 108        | 36         | 36         | 64         | 100        | 170        | 85         |
| 63        | 150       | 1/4            | 8             | 224       | 60         | 45         | 220       | 126        | 36         | 36         | 64         | 100        | 170        | 85         |

| d<br>[mm] | H8<br>[mm] | H9<br>[mm] | H10<br>[mm] | Lift =<br>Hx<br>[mm] | closest<br>inch |
|-----------|------------|------------|-------------|----------------------|-----------------|
| 20        | 76         | 14         | 12          | 8                    | 1/2             |
| 25        | 88         | 18         | 12          | 10                   | 3/4             |
| 32        | 88         | 21         | 12          | 12                   | 1               |
| 40        | 100        | 26         | 15          | 14                   | 1 1/4           |
| 50        | 117        | 33         | 15          | 18                   | 1 1/2           |
| 63        | 117        | 39         | 15          | 22                   | 2               |



PF 3 39 212 053

# ABS metric Valves

## Diaphragm valve type DIASTAR ABS Series 025 FO (Fail safe to open) With fixed flanges ABS metric



### Model:

- Connecting dimensions: ISO 7005 / EN 1092 / DIN 2501 PN10 / BS4504
- With position indicator / Working pressure: **one side**

\* with backing flanges PP-V metric

\*\* Connecting dimensions DN80 and DN150 metric and Inch ANSI B16.5

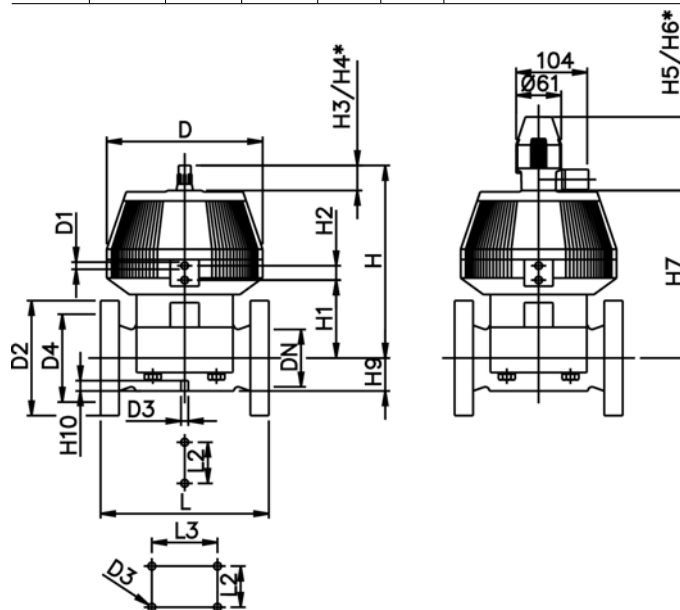
| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |  |  |  |  |  |  |  |
|-----------|------------|------|----|--|--------------------|--------|--|--|--|--|--|--|--|
| *75       | 65         | 2 ½  | 10 | 992  | <b>199 025 957</b> | 13.600 |  |  |  |  |  |  |  |
| **90      | 80         | 3    | 10 | 1700                                       | <b>199 025 958</b> | 13.800 |  |  |  |  |  |  |  |
| 110       | 100        | 4    | 8  | 2700                                       | <b>199 025 959</b> |        |  |  |  |  |  |  |  |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D2<br>[mm] | D3[M]<br>[mm] | D4<br>[mm] | L<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] |
|-----------|-----------|----------------|------------|---------------|------------|-----------|------------|-----------|------------|------------|------------|------------|
| *75       | 280       | ¼              | 185        | 8             | 145        | 290       | 70         | 344       | 148        | 24         | 46         | 100        |
| **90      | 280       | ¼              | 200        | 12            | 160        | 310       | 120        | 348       | 150        | 24         | 46         | 100        |
| 110       | 335       | ¼              | 225        | 12            | 180        | 350       | 120        | 395       | 176        | 24         | 46         | 100        |

| d<br>[mm] | H5<br>[mm] | H6<br>[mm] | H7<br>[mm] | H9<br>[mm] | H10<br>[mm] |
|-----------|------------|------------|------------|------------|-------------|
| *75       | 129        | 195        | 298        | 46         | 15          |
| **90      | 129        | 195        | 302        | 57         | 15          |
| 110       | 129        | 195        | 349        | 69         | 20          |



PF 3 39 212 053

# ABS metric Valves

## Diaphragm valve type DIASTAR ABS Series 025 DA (Double acting) With solvent cement spigots metric

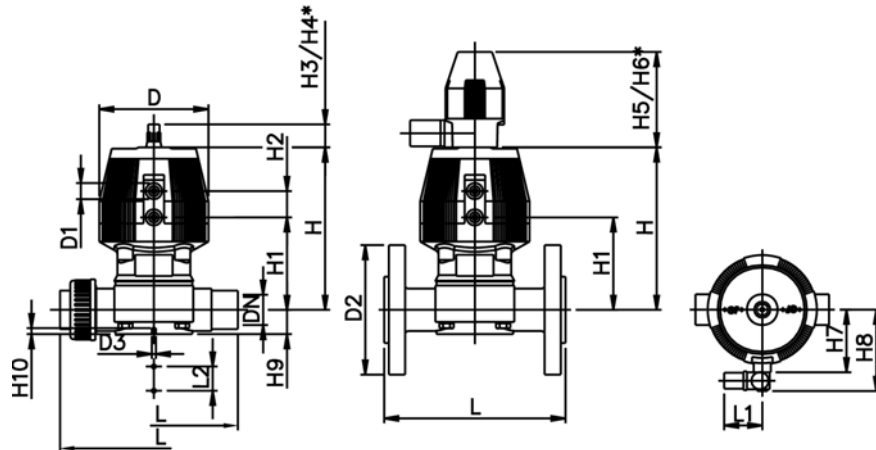


- With position indicator / Working pressure: **both sides**

| d<br>[mm] | DN<br>[mm] | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg    |
|-----------|------------|----|--|--------------------|-------|
| 20        | 15         | 10 | 72   | <b>199 025 961</b> | 0.404 |
| 25        | 20         | 10 | 120  | <b>199 025 962</b> | 0.690 |
| 32        | 25         | 10 | 238  | <b>199 025 963</b> | 1.260 |
| 40        | 32         | 10 | 341  | <b>199 025 964</b> | 1.230 |
| 50        | 40         | 10 | 460  | <b>199 025 965</b> | 2.210 |
| 63        | 50         | 10 | 685  | <b>199 025 966</b> | 4.360 |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D3[M]<br>[mm] | L<br>[mm] | L1<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] | H5<br>[mm] | H6<br>[mm] | H7<br>[mm] |
|-----------|-----------|----------------|---------------|-----------|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| 20        | 68        | 1/8            | 6             | 124       | 60         | 25         | 99        | 59         | 24         | 23         | 44         | 100        | 155        | 44         |
| 25        | 96        | 1/8            | 6             | 144       | 60         | 25         | 130       | 71         | 25         | 23         | 44         | 100        | 155        | 56         |
| 32        | 96        | 1/8            | 6             | 154       | 60         | 25         | 143       | 85         | 25         | 23         | 44         | 100        | 155        | 56         |
| 40        | 120       | 1/8            | 8             | 174       | 60         | 45         | 170       | 97         | 26         | 36         | 64         | 100        | 160        | 68         |
| 50        | 150       | 1/4            | 8             | 194       | 60         | 45         | 203       | 108        | 36         | 36         | 64         | 100        | 170        | 85         |
| 63        | 150       | 1/4            | 8             | 224       | 60         | 45         | 220       | 126        | 36         | 36         | 64         | 100        | 170        | 85         |

| d<br>[mm] | H8<br>[mm] | H9<br>[mm] | H10<br>[mm] | Lift =<br>Hx<br>[mm] | closest<br>inch |
|-----------|------------|------------|-------------|----------------------|-----------------|
| 20        | 76         | 14         | 12          | 8                    | 1/2             |
| 25        | 88         | 18         | 12          | 10                   | 3/4             |
| 32        | 88         | 21         | 12          | 12                   | 1               |
| 40        | 100        | 26         | 15          | 14                   | 1 1/4           |
| 50        | 117        | 33         | 15          | 18                   | 1 1/2           |
| 63        | 117        | 39         | 15          | 22                   | 2               |



PF 3 39 212 055

# ABS metric Valves

## Diaphragm valve type DIASTAR ABS Series 025 DA (Double acting) With fixed flanges ABS metric



### Model:

- Connecting dimensions: ISO 7005 / EN 1092 / DIN 2501 PN10 / BS4504
- With position indicator / Working pressure: **one side**

\* with backing flanges PP-V metric

\*\* Connecting dimensions DN80 and DN150 metric and Inch ANSI B16.5

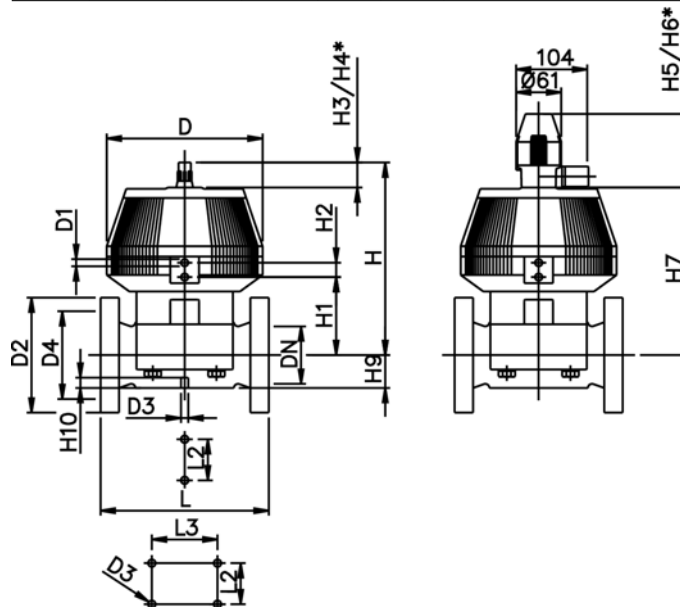
| d<br>[mm] | DN<br>[mm] | Inch | PN | kv-value<br>( $\Delta p=1$ bar)<br>[l/min] | EPDM<br>Code       | kg     |  |  |  |  |  |  |  |
|-----------|------------|------|----|--|--------------------|--------|--|--|--|--|--|--|--|
| *75       | 65         | 2 ½  | 10 | 992  | <b>199 025 967</b> | 17.400 |  |  |  |  |  |  |  |
| **90      | 80         | 3    | 10 | 1700                                       | <b>199 025 968</b> |        |  |  |  |  |  |  |  |
| 110       | 100        | 4    | 8  | 2700                                       | <b>199 025 969</b> |        |  |  |  |  |  |  |  |

| d<br>[mm] | D<br>[mm] | D1_G<br>[inch] | D2<br>[mm] | D3[M]<br>[mm] | D4<br>[mm] | L<br>[mm] | L2<br>[mm] | H<br>[mm] | H1<br>[mm] | H2<br>[mm] | H3<br>[mm] | H4<br>[mm] |
|-----------|-----------|----------------|------------|---------------|------------|-----------|------------|-----------|------------|------------|------------|------------|
| *75       | 280       | ¼              | 185        | 8             | 145        | 290       | 70         | 344       | 148        | 24         | 46         | 100        |
| **90      | 280       | ¼              | 200        | 12            | 160        | 310       | 120        | 348       | 150        | 24         | 46         | 100        |
| 110       | 335       | ¼              | 225        | 12            | 180        | 350       | 120        | 395       | 176        | 24         | 46         | 100        |

| d<br>[mm] | H5<br>[mm] | H6<br>[mm] | H7<br>[mm] | H9<br>[mm] | H10<br>[mm] |
|-----------|------------|------------|------------|------------|-------------|
| *75       | 129        | 195        | 298        | 46         | 15          |
| **90      | 129        | 195        | 302        | 57         | 15          |
| 110       | 129        | 195        | 349        | 69         | 20          |



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# General Condition of Supply of Georg Fischer Piping Systems Limited, Schaffhausen

## 1 General

- 1.1 These General Conditions shall apply to all Products supplied by Georg Fischer to the Purchaser. They shall also apply to all future business even when no express reference is made to them.
- 1.2 Any deviating or supplementary conditions especially Purchaser's general conditions of purchase and verbal agreements shall only be applicable if accepted in writing by Georg Fischer.
- 1.3 The written form shall be deemed to be fulfilled by all forms of transmission, evidenced in the form of text, such as telefax, e-mail, etc.

## 2 Tenders

- 2.1 Tenders shall only be binding if they contain a specifically stated period for acceptance.

## 3 Scope of Delivery

- 3.1 Georg Fischer's product range is subject to change.
- 3.2 The confirmation of order shall govern the scope and execution of the contract.

## 4 Data and Documents

- 4.1 Technical documents such as drawings, descriptions, illustrations and data on dimensions, performance and weight as well as the reference to standards are for information purposes only. They are not warranted characteristics and are subject to change.
- 4.2 All technical documents shall remain the exclusive property of Georg Fischer and may only be used for the agreed purposes or as Georg Fischer may consent.

## 5 Confidentiality, Protection of Personal Data

- 5.1 Each party shall keep in strict confidence all commercial or technical information relating to the business of the other party, of which it has gained knowledge in the course of its dealing with the other party. Such information shall neither be disclosed to third parties nor used for other purposes than those for which the information has been supplied.
- 5.2 In the context of the contractual relation with the Purchaser personal data may be processed. The Purchaser agrees to the disclosure of said data to third parties such as foreign subcontractors and suppliers etc.

## 6 Local Laws and Regulations, Export Controls

- 6.1 The Purchaser shall bring to the attention of Georg Fischer all local laws and regulations at the place of destination which bear connection with the execution of the contract and the adherence to relevant safety regulations and approval procedures.
- 6.2 In case of re-exports, Purchaser shall be responsible for compliance with pertinent export control regulations.

## 7 Price

- 7.1 Unless agreed otherwise, the prices shall be deemed quoted net ex works (according to Incoterms of the ICC, latest version) including standard packing. All supplementary costs such as the cost of carriage, insurance, export-, transit- and import duties etc. shall be borne by the Purchaser. The Purchaser shall also bear the costs of all taxes, fees, duties etc. connected with the contract.
- 7.2 If the costs of packing, carriage, insurance, fees and other supplementary costs are included in the tender price or contract price or are referred to specifically in the tender or confirmation of order, Georg Fischer reserve the right to revise their prices accordingly should any change occur in the relevant tariffs.

## 8 Terms of Payment

- 8.1 The Purchaser shall make payment in the manner agreed by the parties without any deductions such as discounts, costs, taxes or dues.
- 8.2 The Purchaser may only withhold or off-set payments due against counter claims which are either expressly acknowledged by Georg Fischer or finally awarded to the Purchaser. In particular, payment shall still be made when unessential items are still out-standing provided that the Products already delivered are not rendered unusable as a result.

## 9 Retention of Title

- 9.1 The Products shall remain the property of Georg Fischer until the Purchaser shall have settled all claims, present and future, which Georg Fischer may have against him.
- 9.2 Should the Purchaser resell Products to which title is reserved, in the ordinary course of business, he shall hereby be deemed to have tacitly assigned to Georg Fischer the proceeds deriving from their sale together with all collateral rights, securities and reservations of title until all claims held by Georg Fischer shall have been settled. Until revoked by Georg Fischer, this assignment shall not preclude Purchaser's right to collect the assigned receivables.
- 9.3 To the extent the value of the Products to which title is reserved together with collateral securities exceeds Georg Fischer's claims against the Purchaser by more than 20%, Georg Fischer shall re-assign the above proceeds to Purchaser at his request.

## 10 Delivery

- 10.1 The term of delivery shall commence as soon as the contract has been entered into, all official formalities such as import and payment permits have been obtained and all essential technical issues have been settled. The term of delivery shall be deemed duly observed when, upon its expiry, the Products are ready for despatch.
- 10.2 Delivery is subject to the following conditions, i.e. the term of delivery shall be reasonably extended:
  - a) if Georg Fischer are not supplied in time with the information necessary for the execution of the contract or if subsequent changes causing delays are made by the Purchaser.
  - b) if Georg Fischer are prevented from performing the contract by force majeure. Force majeure shall equally be deemed to be any unforeseeable event beyond Georg Fischer's control which renders Georg Fischer's performance commercially unpractical or impossible, such as delayed or defective supplies from sub contractors labour disputes, governmental orders or regulations, shortages in materials or energy, serious disturbances in Georg Fischer's works, such as the total or partial destruction of plant and equipment or the breakdown of essential facilities, serious disruptions in transport facilities, e.g. impassable roads.  
Should the effect of force majeure exceed a period of six months, either party may cancel the contract forthwith.  
Georg Fischer shall not be liable for any damage or loss of any kind whatsoever resulting therefrom, any suspension or cancellation being without prejudice to Georg Fischer's right to recover all sums due in respect of consignments delivered and costs incurred to date.
  - c) if the Purchaser is in delay with the fulfilment of his obligations under the contract, in particular, if he does not adhere to the agreed conditions of payment or if he has failed to timely provide the agreed securities.
- 10.3 If for reasons attributable to Georg Fischer the agreed term of delivery or a reasonable extension thereof is exceeded, Georg Fischer shall not be deemed in default until the Purchaser has granted to Georg Fischer in writing a reasonable extension thereof of not less than one month which equally is not met.  
The Purchaser shall then be entitled to the remedies provided at law, it being however understood that, subject to limitations of Art. 16, damage claims shall be limited to max. 10% of the price of the delayed delivery.
- 10.4 Part shipments shall be allowed and Georg Fischer shall be entitled to invoice for such partial deliveries.
- 10.5 If the Purchaser fails to take delivery within a reasonable time of Products notified as ready for despatch, Georg Fischer shall be entitled to store the Products at the Purchaser's expense and risk and to invoice them as delivered. If Purchaser fails to effect payment, Georg Fischer shall be entitled to dispose of the Products.
- 10.6 Should Purchaser cancel an order without justification and should Georg Fischer not insist on the performance of the contract, Georg Fischer shall be entitled to liquidated damages in the amount of 10% of the contract price, Georg Fischer's right to prove and claim higher damages remaining reserved. Purchaser shall be entitled to prove, that Georg Fischer has suffered no or a considerably lower damage.

## 11 Packing

- 11.1 If the Products are provided with additional packing over and above the standard packing, such packing shall be charged additionally.

## 12 Passing of Risk

- 12.1 The risk in the Products shall pass to the Purchaser as soon as they have left Georg Fischer's works (EX WORKS, Incoterms ICC, latest version), even if delivery is made carriage-paid, under similar clauses or including installation or when carriage is organized and managed by Georg Fischer.
- 12.2 If delivery is delayed for reasons beyond Georg Fischer's control, the risk shall pass to the Purchaser when he is notified that the Products are ready for despatch.

## 13 Carriage and Insurance

- 13.1 Unless agreed otherwise, the Purchaser shall bear the cost of carriage.
- 13.2 The Purchaser shall be responsible for transport insurance against damage of whatever kind. Even when such insurance is arranged by Georg Fischer it shall be deemed taken out by the order of and for the account of the Purchaser and at his risk.
- 13.3 Special requests regarding carriage and insurance shall be communicated to Georg Fischer in due time. Otherwise carriage shall be arranged by Georg Fischer at their discretion, but without responsibility, by the quickest and cheapest method possible.  
In case of carriage-paid delivery transport arrangements shall be made by Georg Fischer. If the Purchaser specifies particular requirements, any extra costs involved shall be borne by him.
- 13.4 In the event of damage or loss of the Products during carriage the Purchaser shall mark the delivery documents accordingly and immediately have the damage ascertained by the carrier. Not readily ascertainable damages sustained during carriage shall be notified to the carrier within six days after receipt of the Products.

## 14 Inspection, Notification of Defects and Damages

- 14.1 The Products will be subject to normal inspection by Georg Fischer during manufacture. Additional tests required by the Purchaser shall be agreed upon in writing and shall be charged to the Purchaser.
- 14.2 It shall be a condition of Georg Fischer's obligation under the warranties stated hereinafter that Georg Fischer be notified in writing by the Purchaser of any purported defect immediately upon discovery. Notice concerning weight, numbers or apparent defects is to be given latest within 30 days from receipt of the Products, notice of other defects immediately latest within 7 working days after discovery, in any event within the agreed warranty period.
- 14.3 Purchaser shall not dispose of allegedly defective Products until all warranty and/or damage claims are finally settled. At its request, defective Products are to be placed at Georg Fischer's disposal.
- 14.4 At its request, Georg Fischer shall be given the opportunity to inspect the defect and/or damage, prior to commencement of remedial work, either itself or by third party experts.

## 15 Warranty

- 15.1 At the written request of the Purchaser, Georg Fischer undertake to repair or replace at their discretion, as quickly as possible and free of charge all Products supplied which demonstrably suffer from faulty design, materials or workman-ship or from faulty operating or installation instructions.  
In order to protect employees from toxic or radioactive substances which may have been transported through defective parts returned to Georg Fischer's sales organisation, said parts must be accompanied by a Material Safety Disclosure Form. The form may be obtained from Georg Fischer's local sales company or via [www.piping.georgfischer.com](http://www.piping.georgfischer.com).  
Replaced parts shall become property of Georg Fischer.
- 15.2 For Products which are manufactured to specifications, drawings or patterns supplied by the Purchaser, Georg Fischer's warranty shall be restricted to proper materials and workmanship.
- 15.3 The Purchaser shall be entitled to cancel the contract or to demand a reduction in the contract price if also a second attempt to repair or replace the Products has failed.
- 15.4 For Products or essential components manufactured by a third party and supplied by Georg Fischer under this contract, Georg Fischer's warranty is limited to the warranty provided by said third party.
- 15.5 This warranty shall not apply to damage resulting from normal wear and tear, improper storage and maintenance, failure to observe the operating instructions, overstressing or overloading, unsuitable operating media, unsuitable construction work or unsuitable building ground, improper repairs or alterations by the Purchaser or third parties, the use of other than original spare parts and other reasons beyond Georg Fischer's control.
- 15.6 No action or claim may be brought by the Purchaser on account of any alleged breach of warranty or any other obligation of Georg Fischer after the expiration of twelve (12) months from receipt of the Products by the end user or at the latest within eighteen (18) months of the Products being despatched by Georg Fischer.
- 15.7 In case of Products for use in domestic installations or in utilities
  - Georg Fischer will assume the costs of dismantling the defective Product and restoring the damaged object as well as, in case of negligence, all other direct damages caused by the defective Product (damage to property and injury to or death of persons) up to CHF 1 000 000 per occurrence.
  - the statute of limitations for warranty or damage claims - contrary to Section 15.6 - will be 5 years from the date of installation.

## 16 Limitation of Liability

- 16.1 All cases of breach of contract and the relevant consequences as well as all rights and claims on the part of the customer, irrespective of what ground they are based, are exhaustively covered by these general conditions of supply. In particular, any claims not expressly mentioned for damages, reduction of price, termination of or withdrawal from the contract are excluded. In no case whatsoever shall the customer be entitled to claim damages other than compensation for costs of remedying defects in the supplies. This in particular refers, but shall not be limited, to loss of production, loss of use, loss of orders, loss of profit and other direct or indirect or consequential damage. This exclusion of liability, however, does not apply to unlawful intent or gross negligence on the part of Georg Fischer and in case of strict liability under applicable product liability statutes, but does apply to unlawful intent or gross negligence of persons employed or appointed by Georg Fischer to perform any of its obligations.

## 17 Severability

- 17.1 Should any term or clause of these General Conditions in whole or in part be found to be unenforceable or void, all other provisions shall remain in full force and effect and the unenforceable or void provision shall be replaced by a valid provision, which comes closest to the original intention of the unenforceable or invalid provision.

## 18 Place of Performance and Jurisdiction

- 18.1 Place of performance for the Products shall be the Georg Fischer works from which the Products are despatched.
- 18.2 Any civil action based upon any alleged breach of this contract shall be filed and prosecuted exclusively in the courts of Schaffhausen, Switzerland.  
Georg Fischer however reserves the right to file actions in any court having jurisdiction over controversies arising out of or in connection with the present contract.
- 18.3 The contract shall be governed by Swiss law without regard to conflict of law provisions that would require the application of another law.

# GF Piping Systems → worldwide at home

Our sales companies and representatives ensure local customer support in over 100 countries.

[www.piping.georgfischer.com](http://www.piping.georgfischer.com)



The technical data is not binding. They neither constitute expressly warranted characteristics nor guaranteed properties nor a guaranteed durability. They are subject to modification. Our General Terms of Sale apply.

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