

## ABS

Pipe, Fittings & Valves  
for cooling, chilled  
water, chemicals and  
drinking water

Technical Information 2011

## Technical Information

---

For technical data including operating & control pressures, dimensions as well as the use of accessories, please refer to data sheets which are available in both printed and electronic (pdf) formats from the Coventry Sales Office (details on back cover).

For details of our range of plastic pipe, fittings, hand and actuated operated valves in PVC-U, PVC-C, PP, PVDF, PFA and PE as well as our INSTAFLEX PB and SIGNET measurement and control range, please request Price Lists from the Coventry Sales Office.

### **Important Note**

The technical data given in this catalogue is for preliminary information purposes only and is published without guarantee. All pictures and drawings are for illustrative purposes only and should not be regarded as wholly accurate in every detail. We reserve the right to withdraw or to alter the specification of any product without notice. Please consult our Terms and Conditions

**[www.georgefischer.co.uk](http://www.georgefischer.co.uk)**

# Application Knowledge

## GF ABS

Water, chilled water, cooling, drinking water & chemical conveyance

### Fields of Application:

- Water treatment
- Chemical industry
- Drinking water
- Swimming pools
- Marine industry
- Food and beverage production
- Building services

### Product Range

- Pipes
- Fittings
- Manual valves
- Actuated valves
- Jointing systems
- Flow, pH, conductivity, turbidity, level, pressure, chlorine and temperature measurement

Available in the widest standards available: BS Inch, EN/ISO metric

EN/ISO - d16 - d315mm

BS Inch - 3/8" - 8"

Application range:

- Resistant to bases, weak acids and salts, suitable for drinking water
- 40°C to 60°C

Jointing system:

- Tangit gap filling solvent cement

## Worldwide Approval

GF ABS is manufactured and tested to the highest quality. Our own compound and strict quality controls for each raw material delivery form the basis for our high quality products.

Our own independently accredited test laboratory for components of plastic piping systems according to EN ISO 45001 assures the highest quality.

Quality and environmental management systems according to ISO 9001 and 14001 are the basis for the continuous improvement of our performance.

Third party approvals for GF ABS offer peace of mind to customers using the products.



Approved for use within public water supplies and by the Secretary of State. GF ABS is listed in the "List of Approved Products" published by the DWI



RINA

## Distribution, Warehousing and Technical Support

The excellent location of the Distribution Centre in Coventry offers the latest in state of the art distribution and warehousing systems. An enhanced delivery system and 24 hour warehousing programme guarantees prompt delivery to GF customers nationwide.

Our Technical support staff are qualified to offer you advice and guide you through the wealth of products GF can supply. We make sure you feel confident that the product matches your requirements and leaving you fully assured that GF is your preferred supplier.



GF Fleet of delivery vehicles



Tracking delivery of your order

## Automation

GF manufacture a complete range of actuators and actuated valves which includes pneumatic as well as electric actuators. Thanks to their modular design, the actuators can be configured specifically to your application (eg. positioner, additional limit switches, fail-safe unit, AS-Interface connection, etc.) Housing material is robust and resistant PPGF. All actuators are sized specific to GF valves, resulting in an increased service life. Connections to third party valves are no problem due to EN ISO 5211 interface.

## SIGNET

The GF Signet range of flow control and measurement equipment is at the cutting edge of technology in this field.

Flow, pH, level, conductivity, temperature, turbidity, chlorine, pressure and ORP are all catered for within the range.



# Materials used for industrial pipe work

## The material acrylonitrile-butadiene-styrene (ABS)

### ABS properties (reference values)

Characteristics	Value	Units	Test Standard
Density	≥ 1.035	g/cm <sup>3</sup>	ISO 1183-1
Yield stress at 23 °C	≥ 40	N/mm <sup>2</sup>	EN ISO 527-1
Tensile e-modulus at 23 °C	≥ 1600	N/mm <sup>2</sup>	EN ISO 527-1
Charpy notched impact strength at 23 °C	42	kJ/m <sup>2</sup>	EN ISO 179-1/1eA
Charpy notched impact strength at -40 °C	≥ 10	kJ/m <sup>2</sup>	EN ISO 179-1/1eA
Ball indentation hardness (358N/30s)	87	MPa	EN ISO 2039-1
Heat distortion temperature HDT A 1.82 MPa	≥ 74	°C	EN ISO 75-2
Vicat-heat distortion temperature B/50N	≥ 94	°C	ISO 306
Thermal expansion coefficient	0.1	mm/m K	DIN 53752
Heat conductivity at 23 °C	0.17	W/m K	EN 12664
Water absorption at 23 °C	≤ 0.45	%	EN ISO 62
Colour	similar 7001	-	RAL
Limiting oxygen index (LOI)	19	%	ISO 4589-1

#### General

Acrylonitrile-Butadiene-Styrene (ABS) is a versatile standard polymer. In addition to its application in piping systems, ABS is mainly common in automotive applications and in high-quality household devices. The wide area of application relates to the versatile characteristic profile of ABS. It can be adapted to the application by varying the composition of its three components: acrylonitrile, styrene and polybutadiene. While acrylonitrile provides strength to the material and gives ABS an improved chemical resistance relative to polystyrene, the styrenic component provides both strength and a quality surface finish. The chemically bound polybutadiene-rubber particles, on the other hand, give the material its toughness and impact strength, even at very low temperatures. The ABS used by GF shows a good balance between toughness and strength, making it especially suitable for low temperature applications. Accordingly the areas of application are mainly refrigeration and air conditioning systems as well as water treatment.

The advantages of ABS include:

- high impact strength even at low temperatures
- corrosion resistance
- simple installation via solvent cement joints
- low heat conductivity
- halogen free
- non-toxic
- biologically inert; no support of microbial growth
- low weight
- low pressure losses due to smooth surfaces
- good abrasion resistance
- problem-free recycling

## Mechanical properties

In addition to the good strength and stiffness, ABS is especially characterised by a very high impact strength. Impact strength is a measure of impact energy that the material absorbs until it breaks. For this test, a specimen is weakened with a sharp notch and then struck. Without a notch, there is no breakage of the test specimen. The exceptionally high notched impact strength values, even at low temperatures, indicate the material's high robustness and tolerance against surface damage. GF ABS pipes are routinely tested for their toughness according to EN ISO 15493. In this test, a weight falling from a height of 2 metres hits the pipe that has been cooled to 0 °C. The mass of the falling weight varies, depending on the pipe dimensions, from 0.5 (dn = 20mm) to 9 kg (dn = 225 mm). The high load in the falling-weight test ensures that the excellent toughness of the material is not reduced as a result of processing into pipe. The internal pressure resistance is provided by the hydrostatic strength curve based on the EN ISO 15493 standard (also see the ABS Calculation and Long-Term Behaviour section). The application limits for pipes and fittings, as shown in the pressure-temperature diagram, can be derived from these curves.

## Chemical, weathering and abrasion resistance

ABS is characterised by its good resistance to various chemicals. In general, ABS is resistant to water, salt solutions and most dilute acids and bases. Its resistance to alcohols, aliphatic hydrocarbons, oils and greases is, however, to be regarded as limited. ABS is not resistant to concentrated mineral acids, organic acids and solvents such as esters, ketones and chlorinated and aromatic hydrocarbons. For detailed information, please refer to the detailed list of chemical resistance from GF or contact your local GF subsidiary. If the ABS piping system is exposed to direct sunlight over a long period, its surface loses its shine and the colour shifts to light grey. Due to the very high impact strength of ABS, the resulting loss of toughness generally causes no problems in moderate climate zones. For extreme weather conditions or very high loads on the piping system, we nevertheless recommend protecting the surface from direct sunlight. In addition to the excellent impact strength, the polybutadiene rubber particles in ABS cause an outstanding resistance against abrasion. Because of this, ABS piping systems have been used for a long time to transport solids and slurries, for example, in mining applications. Experience has shown that ABS, as well as PE,

offers considerable advantages over metal and other plastics for many such applications. Please contact GF if you are planning such an application. We would be glad to advise you about the suitability of our ABS, PE and other materials for your media.

## Thermal properties

The outstanding characteristics of ABS allow its application in a wide temperature range between - 40 °C and +60 °C. At higher temperatures, the tensile strength and stiffness of the material drop and at lower temperatures, they rise. Therefore, please consult the pressure-temperature diagram for your maximum working temperature. As all thermoplastics, ABS shows a higher thermal expansion than metals. This is not a problem if the thermal expansion is taken into account during the planning stage of the piping system. The expansion coefficient amounts to 0.1 mm/m K in the application temperature range. At 0.17 W/m K, the heat conductivity of ABS is very low. Because of the insulation properties of the material and the resulting savings in energy or insulation, an ABS piping system is notably more economical in comparison to a system made of copper (370 W/m K) or other metals. Should there be a need for additional insulation, e. g. in cooling applications, GF offers COOL-FIT, a system specially dedicated to this market. COOL-FIT is a preinsulated ABS system that has the advantage of quick and easy installation.

## Combustion behaviour

ABS self-ignites at temperatures exceeding 450 °C. ABS burns when exposed to an open flame. After removing the flame, the material continues burning. The oxygen index amounts to 19 %. [Materials that burn with less than 21 % of oxygen in the air are considered to be flammable]. According to UL-94, ABS has a HB (Horizontal Burning) flammability coefficient and falls into building material class B2 (conventional inflammable, non-dripping) according to DIN 4102-1. Basically, toxic substances are released by all burning processes. Carbon monoxide is generally the combustion product most dangerous to humans. 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. Nevertheless, the burning forms soot. Because of this, smoke develops during combustion. Water, foam and carbon dioxide are suitable fire-fighting agents.

**Electrical properties**

ABS has good electrical insulation capacity. The specific volume resistance is  $3.5 \times 10^{16} \Omega\text{cm}$  and the specific surface resistance is  $10^{13} \Omega$ . These figures have to be taken into account wherever there is a danger of fires or explosion.



# Design of metric and inch piping systems

## Application area of pipes and fittings

### Pressure/temperature diagram for ABS

The following pressure/temperature diagram for ABS pipes and fittings is valid for a lifetime of 25 years.

The design factor of 2.1 for inch-based systems and 1.8 for metric systems recommended by GF is incorporated.

It can be used for water or media resembling water, in other words, media which have no derating factor regarding the chemical resistance.

**Remark:** Please take into account the pressure/temperature diagrams for valves and special fittings. Because of the construction and/or sealing material used, differences are possible when compared with pipes and fittings. This information can be found in the planning fundamentals of the relevant types of valves, respectively special fittings.

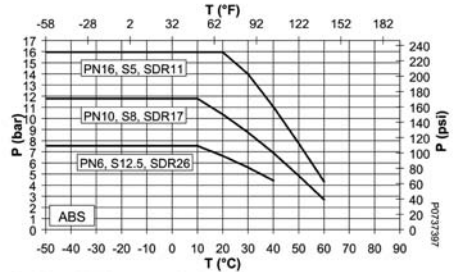
The influence of the anti-freeze compound has to be taken into account when calculating the allowable operating pressure. Please contact your GF representative for further information.

**Attention:** According to the 10 °C curve in the long-term diagram for ABS, the permissible pressure in the temperature range -50 ° to +10 °C can be

- 7.5 bar for the PN6 system.
- 11.8 bar for the PN10 system.

The maximum pressure for the PN16 system has been limited to 16 bar.

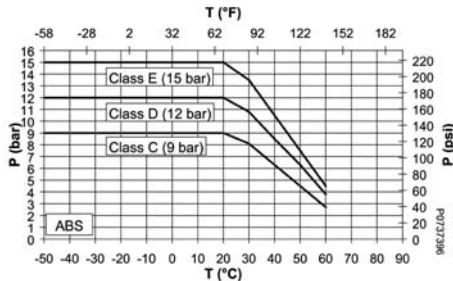
#### Metric-based systems



P Permissible pressure in bar, psi

T Temperature in °C, °F

#### Inch-based systems



P Permissible pressure in bar, psi

T Temperature in °C, °F

# Installation of metric industrial piping systems

## Change in length and flexible sections

### Introduction

#### General

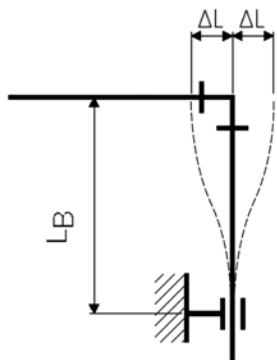
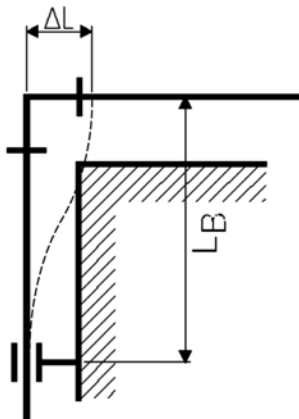
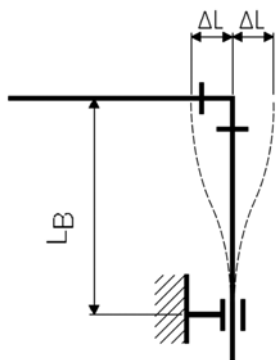
Thermoplastics are subject to greater thermal expansion and contraction than metals. Pipes installed above ground, against walls or in ducts, especially those exposed to temperature variations, require changes in length to be taken up in order to prevent extra strain on the pipes. Length changes can be taken up by:

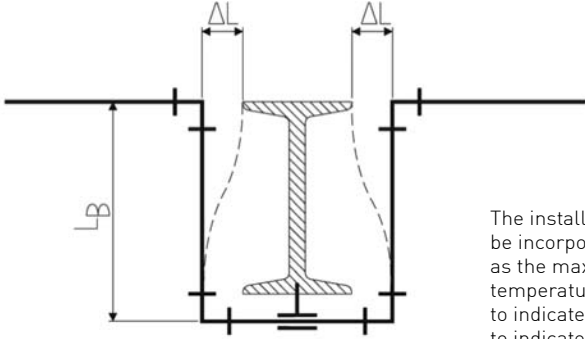
- a) flexible sections
- b) compensators

Flexible sections are the most common solution, being the simplest and the most economical. The calculations for and the positioning of flexible sections are therefore described in detail.

#### Fundamentals

The low modulus of elasticity of thermoplastics allows changes in length to be taken up by special pipe sections, where pipe supports are positioned so that they can take advantage of the natural flexibility of the material. The length of such sections is determined by the diameter of the pipeline and the extent of the thermal expansion to be compensated. Flexible sections arise naturally at any branching or change in direction of the pipeline. The movement  $LB$  of the flexible section as a result of a change  $\Delta L$  in the length must not be restrained by fixed pipe brackets, protrusions wall, girders or the like.





The installation temperature must therefore be incorporated into the calculations as well as the maximum and minimum operating temperatures. It is preferable to use "+" to indicate expansion of the pipe and "-" to indicate contraction. The larger change in length is the one to be used for determining the required length of the flexible section.

### Calculation of change in length

The **change in length caused by temperature** can be calculated using the following formula:

$$\Delta L = L \Delta T \alpha$$

with:

- $\Delta L$  = temperature-related change in length (mm)
- $L$  = length of the pipe section (m)
- $\Delta T$  = difference of temperature (K)
- $\alpha$  = coefficient of linear expansion (mm / m K)



$$L_B = \sqrt{\frac{3 d_a \Delta L E_{cm}}{\sigma_b}}$$

with:

- $d_a$  = pipe outside diameter (mm)
- $\Delta L$  = change in length (mm)
- $E_{cm}$  = average bending creep modulus for  $t = 25a$  (N/mm<sup>2</sup>)
- $\sigma_b$  = permitted bending stress for  $t = 25a$  (N/mm<sup>2</sup>)

### Coefficients of linear expansion of polymers:

Material	$\alpha$ in mm/m K
ABS	0.10
pre-insulated ABS	0.02 - 0.08*
PA	0.10
PB	0.13
PE	0.15 - 0.20
PP	0.16 - 0.18
PPS	0.15
PVC-U	0.07 - 0.08
PVC-C	0.06 - 0.07
PVDF	0.12 - 0.18

\* Exact values can be calculated using GF's online tool or ask your local GF representative.



**Tip:** If the operating temperature is higher than the installation temperature, then the pipe expands. If, on the other hand, the operating temperature is lower than the installation temperature, then the pipe contracts in length.

**Remark:** Because  $E_{cm}$  and  $\sigma_b$  are depending on time, temperature and stress, the calculation of  $L_B$  is very difficult. Therefore the following diagrams should be used instead of the formula.

### Boundary conditions for using the diagram

For easy determination of the required length of flexible section please use the following diagrams. Please take into account the given boundary conditions.

- Assembly temperature  $T_M = 20\text{ °C}$
- $T_B$  Operating temperature
- $\Delta T = T_B - T_M$
- allowable bending stress 15 % of  $\sigma_v$
- PN 6 .. 16
- Coefficient of friction of the pipe in the loose brackets  $\leq 0.5$

### Information:

The following diagrams show the required flexible sections for straight pipe lengths of 10 m or 70 m. Exceeding the maximally permissible straight pipe distance would lead to buckling of the pipe due to the too large friction in the pipe clamps. Therefore the maximally possible pipe length is to consider depending on the pipe diameter =>above the hatched range.

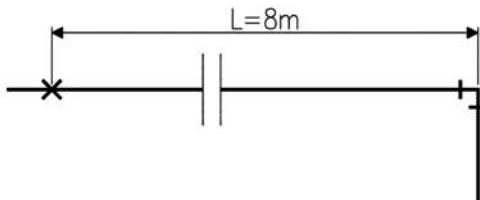
### Example: Determining the required flexible section

#### Calculating the relevant change in length

The example of an ABS process pipe serves to illustrate the procedure:

Length of piping from the fixed point to the branch point where the change in length is to be taken up:

- $L = 8\text{ m}$ .
- Installation temperature:  $T_M = 20\text{ °C}$
- Max. working temperature:  $T_1 = 35\text{ °C}$
- Min. working temperature:  $T_2 = -20\text{ °C}$



Expansion of the section during heating  
 $+\Delta L_1 = L \cdot \Delta T_1 \cdot \alpha = 8 \cdot 15 \cdot 0.10 = 12\text{ mm}$

Contraction during cooling  
 $-\Delta L_2 = L \cdot \Delta T_2 \cdot \alpha = 8 \cdot 40 \cdot 0.10 = 32\text{ mm}$

Temperature differences

$$\Delta T_1 = T_1 - T_M = 15\text{ °C}$$

$$\Delta T_2 = T_2 - T_M = -40\text{ °C}$$

Maximum change in temperature chosen  
 $\Delta T = 40\text{ °C}$

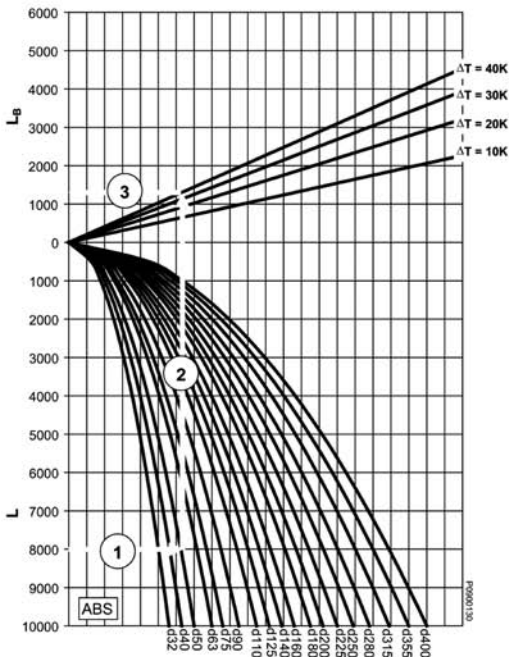
### Determining the length of the flexible section for ABS

The values needed to determine the necessary length are:

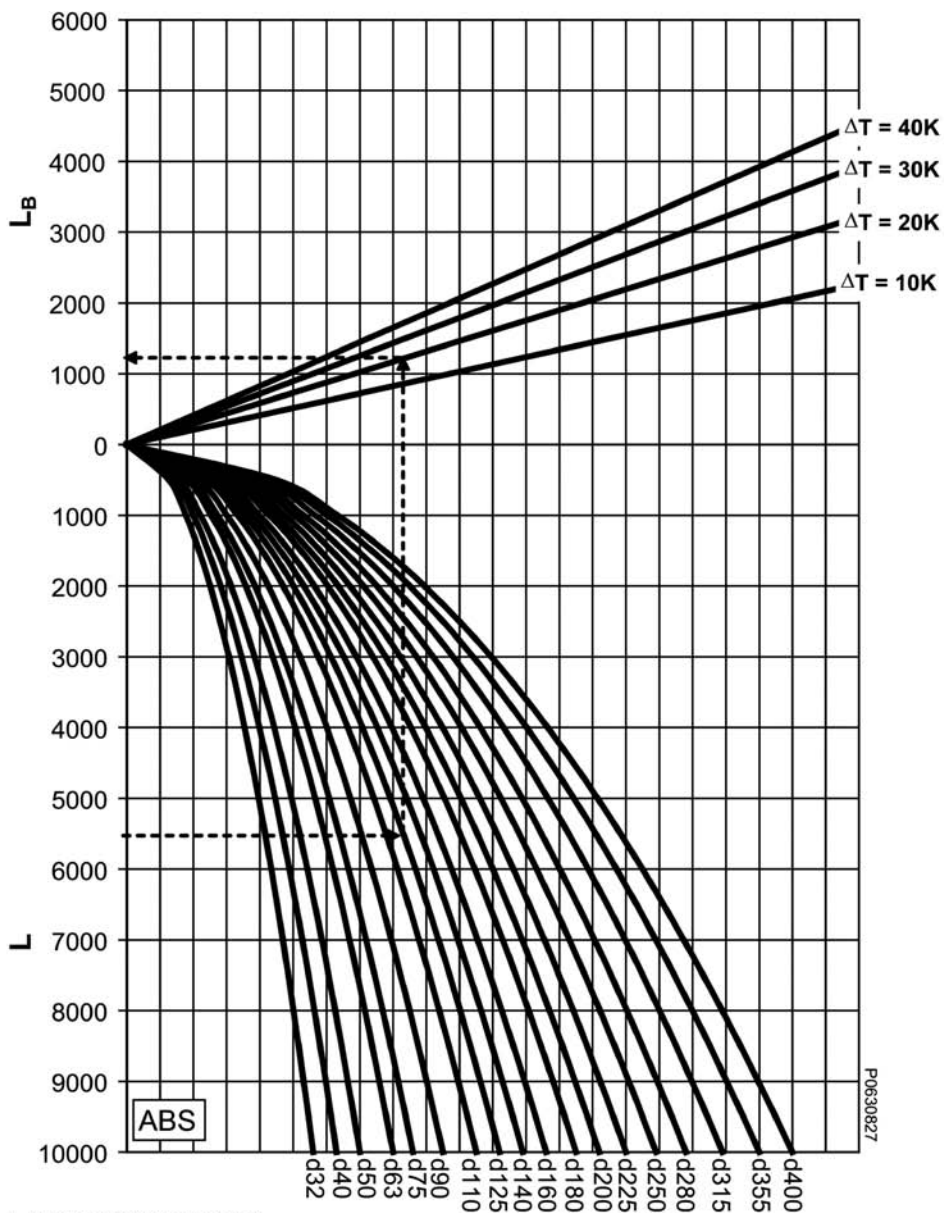
- The maximum change in temperature from the 0-position (i. e. from the position in which the pipe was installed). But remember that the pipe could just as well contract as expand.
- The pipe diameter  $d$ .
- The length of the pipe section  $L$ .

With these values the required length of the flexible section can be read off from the diagram for ABS.

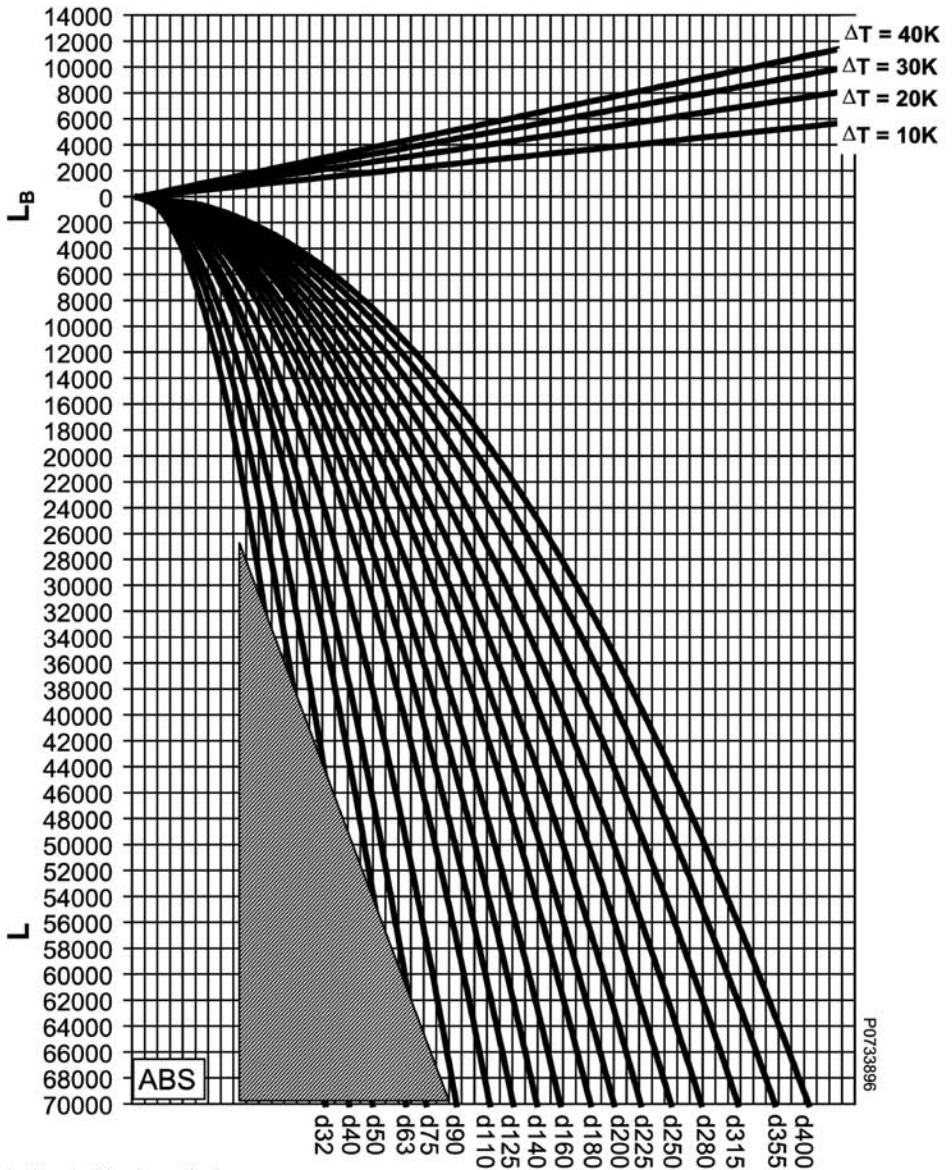
Continuing with the example introduced before and supposing that an ABS pipe with  $d = 50$  mm is installed, the maximum change in temperature being  $\Delta T = 40$  °C, the required length of the flexible section is seen directly from the diagram to be  $L_B = 1300$  mm.



The diagram can be used also the other way around, if a maximum flexible section caused by the building construction is given. Then the maximum straight length of the pipe can be determined.



L Length of the pipe section in mm  
 $L_B$  Required length of flexible section in mm



P0733896

L Length of the pipe section in mm

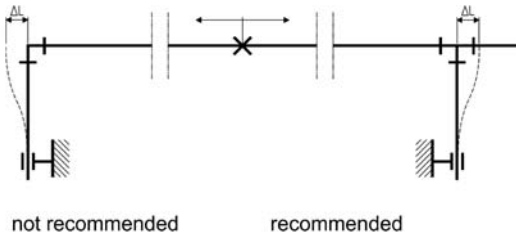
$L_B$  Required length of flexible section in mm

Remark: Please observe the explanations to the hatched area in the clause boundary conditions

# Installation of metric industrial piping systems

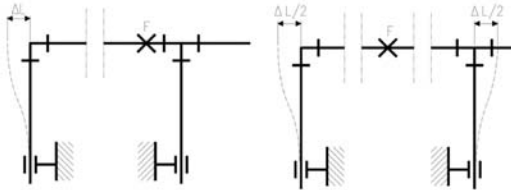
## Recommendations for installation

Length changes in pipe sections should always be accommodated through the arrangement of fixed brackets. The following examples show how the changes can be distributed in pipe sections by suitable positioning of fixed brackets.

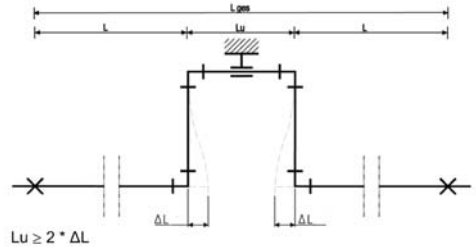


not recommended

recommended



Expansion loops can be installed to take up changes in length when flexible sections cannot be included at a change in direction or branch in the pipeline or if substantial changes in the length of a straight section need to be taken up. In such a case the compensation for changes in length is distributed over two flexible sections.



$$L_u \geq 2 * \Delta L$$

<b>NOTICE</b>
<p><b>Bending load at flexible sections</b></p> <p>Caused by the bending load leakages can occur at mechanical joints.</p> <ul style="list-style-type: none"> <li>• Within the range of flexible sections and/or expansion loops no screw connections or flange connections shall be used.</li> </ul>

## Pre-stress

Length changes in pipe sections should always be accommodated through the arrangement of fixed brackets.

The following examples show how the changes can be distributed in pipe sections by suitable positioning of fixed brackets.

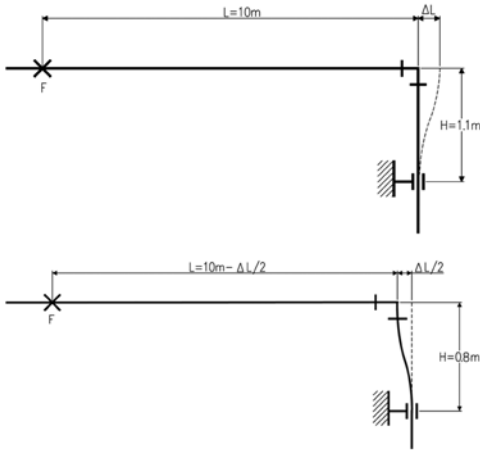
Installation data:	L = 10m d = 50mm
Installation temperature:	15 °C
Max. operating temperature:	40 °C
Material:	ABS

- Change in length  

$$+\Delta L = L * \Delta T * \alpha_{ABS} = 10 * 25 * 0.10 = 25 \text{ mm}$$
- A flexible section to take up a change in length of  $\Delta L = 25 \text{ mm}$  needs to be  $L_B = \text{approx. } 1150 \text{ mm}$  long according to the diagram.
- If the flexible section is pre-stressed to  $\Delta L/2$  then the required length of the flexible section is reduced to about 800 mm. The variation length from the 0 position is then  $\pm \Delta L/2 = 25/2 = 12.5 \text{ mm}$ .

Pre-stressing the flexible section makes it possible to reduce its required length in installations where space is restricted. Pre-stressing also reduces the bending of the flexible section in service, improving the appearance of the pipeline.





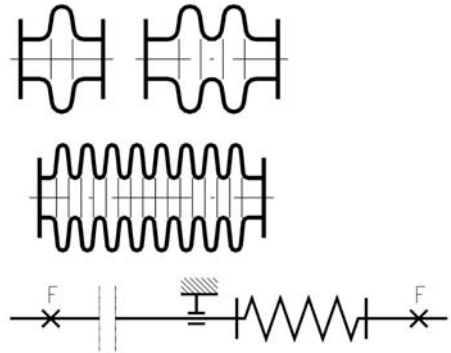
### Installing compensators

The low modulus of elasticity means that the reaction force of plastic pipes to thermal changes is low compared to metal pipes. This makes normal compensators designed for use with metal pipes unsuitable because of their high inherent resistance. Only freely moving compensators may be used in plastic pipe systems, i. e. those with a low resistance. The following compensators may be considered: rubber compensators, PTFE corrugated compensators or suitably selected metal multi-disc compensators.

Carefully placed fixed points should be used when fitting compensators for the regulation of the pipe in order to ensure their unhindered operation. The installation temperature provides the basis for the calculations to ensure this.



**Tip:** When using compensators, additional longitudinal forces are implemented into the pipeline. These forces have to be carried by guiding the pipeline. For example, threaded rods are not suitable. To estimate the lateral forces it can be assumed that they can reach about 15 % of the axial forces. Please contact the manufactures of compensators for further support designing such pipelines.



### Installing Valves

Valves should be secured as directly as possible, so that the actuation forces are transmitted directly and not via the pipeline. Valve brackets or valves from GF with an integrated fastening device are used to securely fasten plastic valves. These valve brackets are also used to bear the loads of the valve and filling weight of the pipeline. Any changes in length which arise can be prevented with the appropriate fixed points before or after the valve. You will find more information under the respective valve types.

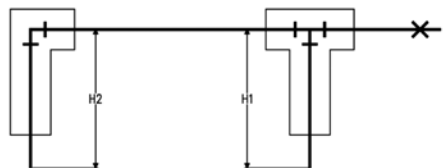
### Installing pipework under plaster or embedding it in concrete

#### Installing Valves

Installing pipework under plaster or embedding it in concrete

#### Padded pipework

Where pipework is installed under plaster or embedded into concrete, the flexible sections at bends and branches must be padded for the calculated distance H, as also must any branches and elbows included in the affected section. Use only flexible materials as padding, such as glass wool, mineral wool, foam or similar.



**Unpadded pipework**

Unpadded pipes can also be plastered or concreted in directly. Since the axial stress arising from internal pressure is half as great as the circumferential stress, pipelines can support limited additional axial stress without becoming overloaded. In such cases the level of stress expected must be calculated. The same is true of any section of pipe between two fixed points where no allowance has been made for changes in length. The load at the fixed points must be calculated and considered when planning the fixed points. The distance between pipe brackets in such cases may have to be reduced from the normal values in order to prevent bowing in the pipeline.

Care must be taken to avoid creating cavities when plastering or concreting in the pipeline, because under unfavourable conditions these can become areas of stress concentration. A rich plaster mixture (1 : 3 to 1 :4) should be used to allow the forces arising from temperature variations to be transmitted away without causing the plaster to crack.

# Installation of metric industrial piping systems

## Pipe bracket spacing and support of pipelines

### General

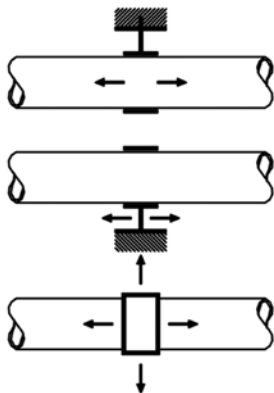
#### Pipe support for plastics pipes

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.

#### Arranging Loose Brackets

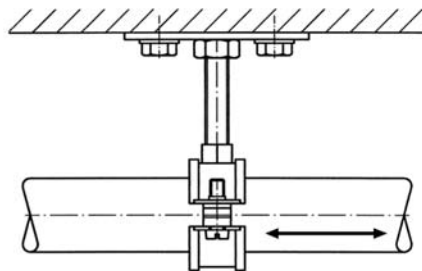
##### What is a loose pipe bracket?

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.



Spacer to avoid clamping

Axial movement of the pipeline must not be prevented by fittings placed next to pipe brackets or by any other component affecting the diameter of the pipe. Sliding brackets and hanging brackets permit the pipe to move in different directions. Attaching a sliding block to the base of the pipe bracket permits free movement of the pipe along a flat supporting surface. Sliding and hanging brackets are needed in situations where the pipeline changes direction and free movement of the pipe must be allowed.

#### Arranging fixed points

##### What is a fixed point?

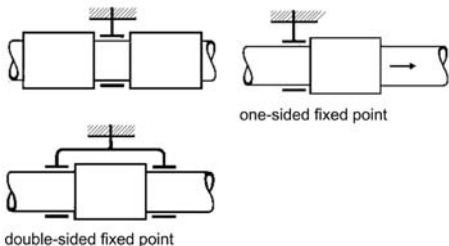
A fixed pipe bracket is a bracket which prevents the pipe from moving in any direction. The aim of which is to control system stresses caused by temperature changes.

### NOTICE

#### Construction of fix point

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 pipe brackets located between two fittings or a double bracket must be used. (double-sided fixed point).
- Placing a pipe bracket immediately adjacent to a fitting restricts movement due to changes in length to one direction (one-sided fixed point).



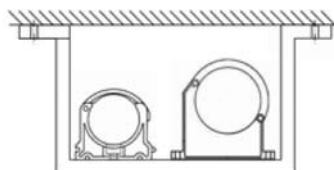
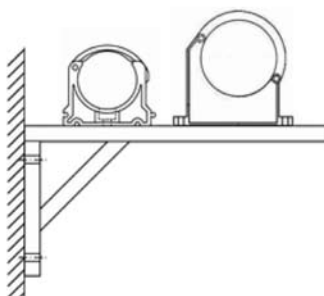
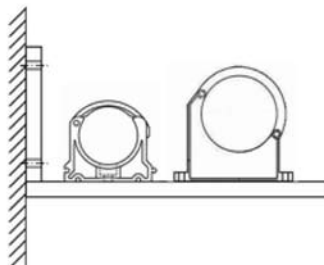
Starting from the dimension d90 the KLIP-IT brackets must be installed standing, like shown in the assembly examples. The support distances given in the following, specified for the KLIP-IT tubing clamps, apply only to this mounting method.

**Information:**

Pipe brackets must be robust and mounted firmly to be able to take up the forces arising from changes in length in the pipeline. Hanging brackets or KLIP-IT pipe brackets are unsuitable for use as fixed points.

**KLIP-IT pipe brackets**

These robust plastic pipe brackets can be used not only under rigorous operating conditions, but also where the pipework is subject to aggressive media or atmospheric conditions. They may be used for all materials of pipes. Don't use KLIP-IT pipe brackets as fixed points!



d 16 to d32

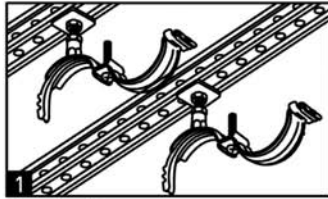


d 40 to d 160

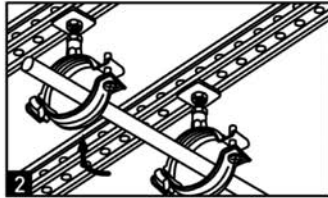


d 90 to d 400

## Pipe brackets for cold insulation (MIP)



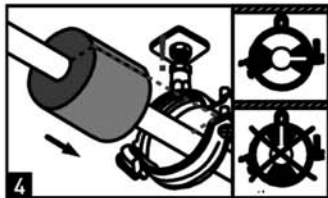
1 Open handle



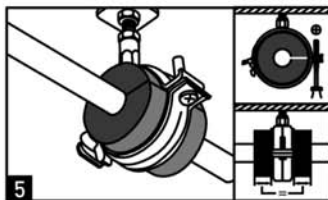
2 Insert pipe  
Close handle with quick-action clamp



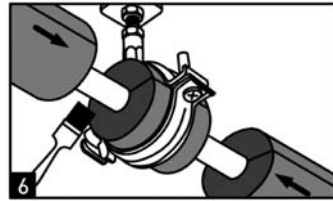
3 Assemble insulation  
1. Take off foil  
2. Press area of contact



4 Move insulation into the bracket. Attention!  
Make sure the insulator is positioned correctly.



5 Tighten the screw



6 Coat areas of contact with adhesive and bond them

### Using the tables for pipe bracket spacing

Plastic pipelines need to be supported at certain intervals depending on several factors: the material, the average pipe wall temperature, the density of the medium transported and the size and wall thickness of the pipe. Determining the spacing between pipe brackets is based on the permissible deflection of the pipe between consecutive brackets.

#### Information:

The values given in the tables apply only to pipelines which are freely movable in the axial direction.

Pipelines which are fastened tightly in the axial direction (fixed installations) must be checked for buckling. In most cases, this leads to a reduction of the maximum inner pressure and shorter distances between the support brackets. Furthermore, the forces that act on the fixed points must also be taken into consideration. For assistance, please contact your nearest GF representative.



# Joining technology

## Solvent cement jointing

### 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 / socket inside diameter d (mm)	Minimal cement length 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

#### Tools and equipment

Pipe cutter Type KRA	d10 - 63 d50 - 110 d110 - 160	790 109 001 790 109 002 790 109 003
Pipe cutter type KS 355	230 V / 50 - 60 Hz	790 202 001
Chamfering tool	d16-75 d32-200	799 495 145 799 495 146
Cleaner	1 litre tin	799 298 010
Tangit ABS solvent cement	0.65 kg tin	799 298 022
Brush sizes		
Pipe outside diameter in mm	Brush	
16-32	Round brush ø8 mm	799 299 002
40-63	Flat brush 1" 25 x 3 mm	799 299 003
75-225	Flat brush 2" 50 x 5 mm	799 299 004
Tin lid		799 298 028
White absorbent paper	commercially available	
Solvent resistant protecting gloves	commercially available	



Cutting the pipe to length



Chamfering the pipe



Solvent cementing equipment

### 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
16	0.25	260
20	0.35	186
25	0.40	163
32	0.45	144
40	0.60	108
50	0.90	72
63	1.10	59
75	1.25	52
90	1.70	38
110	2.50	26
140	5.00	13
160	6.50	10
200	10.0	6
225	12.5	5

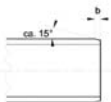
Pipe diameter d (mm)	Tangit cleaner amount per 100 joints (litre)	Tangit cleaner number of joints per tin 1 litre
16	0.2	500
20	0.3	333
25	0.4	250
32	0.5	200
40	0.7	143
50	0.9	111
63	1.1	91
75	1.3	77
90	1.4	71
110	1.7	59
140	2.1	48
160	2.5	40
200	3.5	29
225	4.5	22

**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



Pipe outside diameter	b
16 mm	1 - 2 mm
20 - 50 mm	2 - 3 mm
≥ 63 mm	3 - 6 mm



### Marking the jointing length

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.



Checking the cement

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 datasheets 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.



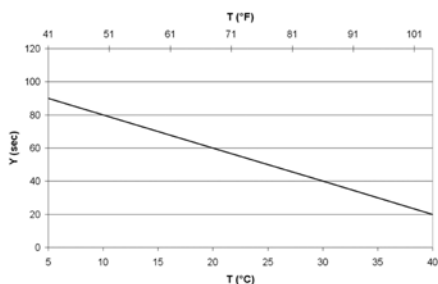
Cleaning the pipe and socket

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.



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 re-used (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 Chargenzeichnung 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

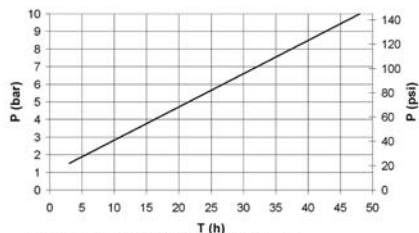
This pressure test shall be carried out according to the information given in the chapter "Internal pressure test with water or a similar incompressible fluid". The waiting time after the last joint until the pressure test is shown in the following table:

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

**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 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 time 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:

### Dimension d16 up to d140

#### Dimension d16 up to d140

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

#### Dimension d160 up to d225

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

## 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.

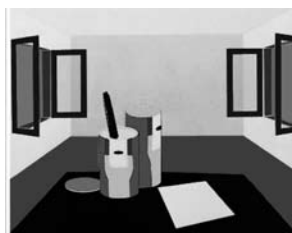
Cement and cleaner are inflammable. Extinguish open fires before commencing work. Switch off unprotected electrical apparatus, electric heaters, etc. Do not smoke!

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 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.

# 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 (1.5 x PN, or 1.3 x PN) 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  $TR = 20\text{ °C}$  is exceeded by more than  $5\text{ °C}$ .
- 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> (depends on the pipe wall temperature or the permissible test pressure of the built-in components, see clause "Determining the test pressure")	$\leq p_{p(\text{perm})}$	$\leq 0.85 p_{p(\text{perm})}$
<b>Test duration</b> (depends on the length of the pipeline, respectively the sections)	$L \leq 100\text{ m}$ : 3 h $100\text{ m} < L \leq 500\text{ m}$ : 6 h	$L \leq 100\text{ m}$ : 3 h $100\text{ m} < L \leq 500\text{ m}$ : 6 h
<b>Checks during the testing</b> (test pressure and temperature progression should be recorded)	At least 3 checks, distributed over the test duration with restoring the test pressure	At least 2 checks, distributed over the test duration without restoring the test pressure

#### Pre-test

The pre-test serves to prepare the piping system for the actual test (main test). 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 decrease in pipes are:

Material	Pressure drop
PVC-U	0.5 bar/h
PVC-C	0.5 bar/h
ABS	0.6 bar/h
PP	0.8 bar/h
PE	1.2 bar/h
PB	1.4 bar/h
PVDF	0.8 bar/h

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

### 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.

### Filling the pipeline

Before starting with the internal pressure test, the following points must be checked:

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?

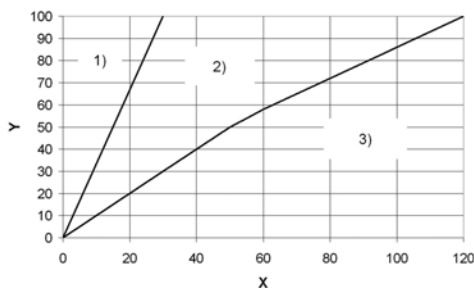
Now the pipeline can be filled from the geodetic lowest point. Special attention should be given to the air vent. If possible, vents should be provided at all the high points of the pipeline and these should be open when filling the system. Flushing velocity should be at least 1 m/sec.

Reference values for the filling volume are given in the following table.

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 - 12 h, 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 DN 100

2) = range of pressure increase rates >DN 100 - 400

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

### 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  $T_R$  (at  $t = 100$  h)

$S_p$  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

## NOTICE

### Diaphragm valves, types 514-519

Don't overload diaphragm valves!

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

Material	S <sub>p</sub> Minimum safety factor
ABS	1.6
PE80, PE100	1.25
PP-H	1.8
PP-R	1.4
PVC-U, PVC-C	2.5
PVDF	1.4

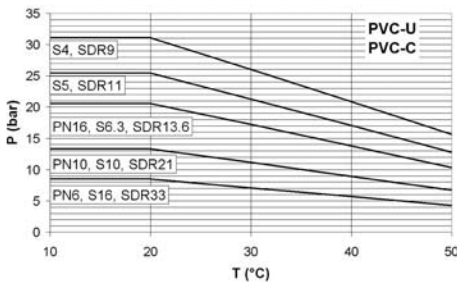
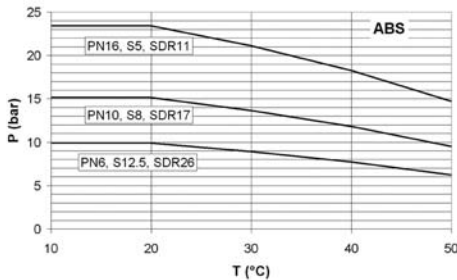
### General

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

Definitions:

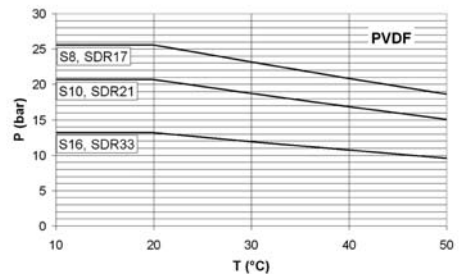
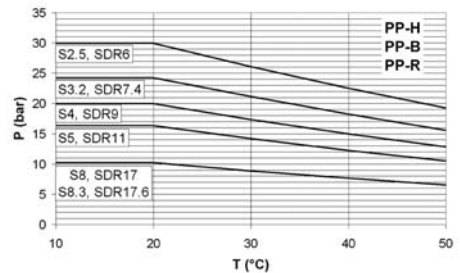
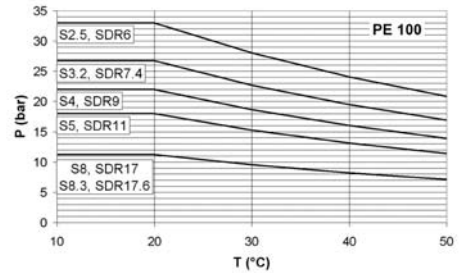
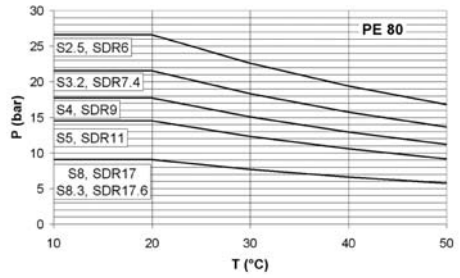
P = permissible test pressure in bar

T = pipe wall temperature in °C



### Checks during testing

The following measurement values must be recorded consistently during testing:



### General

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

# ABS Pressure Pipe Systems

## Standards

George Fischer metric fittings in ABS are generally in accordance with DIN 8063 and the pipe with DIN 16890/16891. George Fischer's inch range of fittings is generally in accordance with BS 5392 and the pipe with BS 5391.

## Sizes (Metric vs Inch)

For those unfamiliar with the difference between metric and inch sizes the following note may be helpful. In imperial systems, the sizes of pipe, fittings and other components such as valves are identified by reference to the nominal size of the bore of the pipe expressed in inches and fractions of an inch.

In metric systems, however, sizes are identified by references to the outside diameter of the pipe expressed in millimetres.

The table below shows the metric sizes which are regarded for practical purposes as being generally equivalent to imperial sizes up to 8 inches. It should, however, be understood that metric sizes are not simply inch sizes which have been converted into millimetres and called metric; their actual dimensions are slightly different and they are, with the exception of 2½" (75 mm) and 5" (140 mm) not interchangeable.

IMPERIAL SIZES Nominal Bore inches	METRIC SIZES	
	Pipe outside diameter (mm)	Nominal bore (mm)
¼	12	8
⅜	16	10
½	20	15
¾	25	20
1	32	25
1¼	40	32
1½	50	40
2	63	50
2½	75	65
3	90	80
4	110	100
5	140	125
6	160	150
8	225	200
10	250	250
	280	250
12	315	300

# ABS BS Inch Product Range

(for further details please contact your local George Fischer Supplier)

## Pipe

Class E	(15 bar, 217 lb/in <sup>2</sup> at 20°C)	3/8"–4"
Class D	(12 bar, 173 lb/in <sup>2</sup> at 20°C)	6"
Class C	(9 bar, 130 lb/in <sup>2</sup> at 20°C)	1"–8"
Class T	(12 bar, 173 lb/in <sup>2</sup> at 20°C)	1/2"–2"

## Fittings

Long Bends	Class E	1/2"–4"
Short Pattern Bend	Class C	8"
Elbows 90°	Class E	3/8"–4"
	Class C	6"
Tee 90°	Class E	3/8"–4"
	Class D	6"
	Class C	8"
Tee 90° Reduced	Class E	3/4"–1/2"–4"–3"
Tee 45°	Class E	1/2"–5"
Elbow 45°	Class E	3/8"–4"
	Class D	6"
	Class C	8"
Socket	Class E	3/8"–4"
	Class D	6"
	Class C	8"
Cap	Class E	3/8"–4"
Flange Adaptors (Serrated, O-ring groove, flat)	Class E	1/2"–4"
	Class D	6"
	Class C	8"
Full Faced Flanges (BS 10, BS 4504/ISO, ASA, undrilled)	Class E	1/2"–4"
	Class D	6"
Union (EPDM and FPM)	Class E	3/8"–2"
Short Reducing Bushes	Class E	3/8"–4"
	Class D	6"–8"
Long Reducing Bushes	Class E	3"–4"
	Class D	6"
Adaptor Sockets (Female Thread x Socket)		3/8"–2"
Adaptor (Nipple x Female Thread)		1/2"–2"
Adaptor Bush (Socket x Male Thread)		3/8"–2"
Adaptor Unions (Brass, PVC, Malleable Iron)		3/8"–2"
Accessories (Loose Flanges, Sets, Pipe Brackets etc.)		various



### Hand-operated and actuated valves

Ball Valve, Type 546, Class E (EPDM and FPM, Thread Socket Versions)	3/8"–4"
Diaphragm Valve, Type 514/515/317/517, Class D (EPDM and PTFE)	1/2"–4"
Butterfly Valves, Type 567/568 Class D (EPDM and FPM)	2"–8"
Ball Check Valve, Type 360, Class D	3/8"–2"
Angle Seat Check Valve Type 303, Class D	1/2"–2"
Electrically Actuated Ball Valves, Type 130 and Type 107	3/8"–4"
Pneumatically Actuated Ball Valves, Type 230	3/8"–4"
Pneumatically Actuated Diaphragm Valves, Type Diastar 16,10 and 6 and Type 018	1/2"–6"
Electronically Actuated Butterfly Valves, Type 140, 141	1/2"–6"
Electronically Actuated Butterfly Valves, Type 140, 141	2"–8"
Pneumatically Actuated Butterfly Valves, Type 240, 241	2"–8"



# ABS Metric Product Range

(for further details please contact your local George Fischer Supplier)

## Pipe

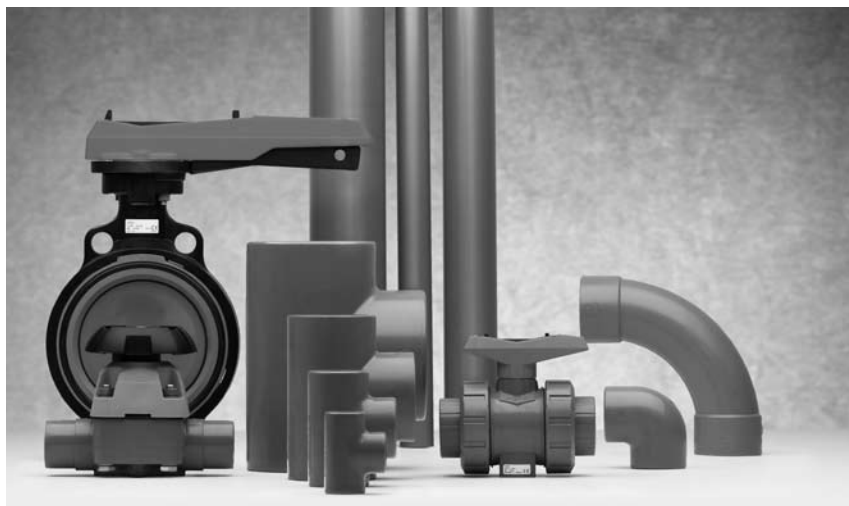
PN10	{10 bar at 20°C water}	d16 - d225
PN6	{6 bar at 20°C water}	d250 - d315

## Fittings

Long Bends	{10 bar at 20°C water}	d16 - d225
Short Pattern Bend	{10 bar at 20°C water} {6 bar at 20°C water}	d16 - d225 d250 - d315
Elbows 90°	{10 bar at 20°C water} {6 bar at 20°C water}	d20 - d225 d250
Tee 90°	{10 bar at 20°C water} {6 bar at 20°C water}	d20 - d225 d250
Tee 90° Reduced	{10 bar at 20°C water}	d20 - d225
Tee 45°	{10 bar at 20°C water} {6 bar at 20°C water}	d20 - d225 d75 - d140
Elbow 45°	{10 bar at 20°C water} {6 bar at 20°C water}	d20 - d225 d250 - d315
Cap	{10 bar at 20°C water}	d16 d160
Flange Adaptors (Serrated/flat)	{10 bar at 20°C water} {6 bar at 20°C water}	d20 - d225 d250 - d315
Union (EPDM and FPM)	{10 bar at 20°C water}	d16 - d110
Short Reducing Bushes	{10 bar at 20°C water} {6 bar at 20°C water}	d16 - d225 d250 - d315
Long Reducing Bushes	{10 bar at 20°C water}	d32 - d90
Adaptor Sockets (Female Thread x Socket)	{10 bar at 20°C water}	d20 - d63
Adaptor Sockets (Nipple x Female Thread)	{10 bar at 20°C water}	d16 - d63
Adaptor Bush (Socket x Male Thread)	{10 bar at 20°C water}	d16 - d63
Adaptor Unions (Brass, PVC-U, Malleable Iron)	{10 bar at 20°C water}	d16 - d110
Accessories (Loose Flanges, Sets, Pipe Brackets etc.)		various

### Hand-operated and actuated valves

Ball Valve, Type 546 (EPDM and FPM)	(10 bar at 20°C water)	d16 - d110
3 way Ball Valve, Type 543 (EPDM and FPM)	(10 bar at 20°C water)	d16 - d63
Diaphragm Valve, Type 515/514/317/517 (EPDM and PTFE)	(10 bar at 20°C water)	d16 - d63
Butterfly Valve, Type 567/568/037/038 (EPDM and PTFE)	(10 bar at 20°C water)	d63 - d315
Butterfly Valve, Type 037, 038	(10 bar at 20°C water)	d63 - d315
Ball Check Valve, Type 360 (EPDM and PTFE)	(10 bar at 20°C water)	d16 - d63
Angle Seat Check Valve Type 303	(10 bar at 20°C water)	d20 - d63
Electrically Actuated Ball Valves, Type 130 and Type 107	(10 bar at 20°C water)	d16 - d110
Pneumatically Actuated Diaphragm Valves (EPDM and FPM)	(10 bar at 20°C water) (6 bar at 20°C water)	d16 - d110
Electrically Actuated Butterfly Valves Type 140, 141	(10 bar at 20°C water)	d63 - d225
Pneumatically Actuated Butterfly Valves Type 240,241	(10 bar at 20°C water)	d63 - d225



## Abbreviations








AL	Number of bolt holes
ABS	Acrylonitrile Butadiene Styrene
ANSI	American National Standard Institute
CR	Chloroprene Rubber, e.g. Neopren
d	Pipe outside diameter
DIN	German standard
DN	Nominal bore
e	Wall thickness
EPDM	Ethylene Propylene Rubber
FM	Fusion Method
FPM	Fluorine Rubber, e.g. Viton®
kg	Weight in kilograms
G	Pipe thread, not pressure tight in the thread to ISO 288
HTR	High Temperature Resistant
ISO	International Standardization Organisation
Ms	Brass
NBR	Nitrile Rubber
NPT	Taper male thread pressure tight in the thread to ANSI B 1.20.1
PA	Polyamide
PBTP	Polybutylene terephthalate
PE	Polyethylene
PN	Nominal pressure at 20°C, water
PP	Polypropylene, heat stabilised
PTFE	Polytetrafluorethylene, e.g. Teflon®
PVC-C	Polyvinyl Chloride, chlorinated
PVC-U	Unplasticised Polyvinyl, chloride
PVDF	Polyvinylidene fluoride
R	Taper male thread, pressure tight in the thread to ISO 7
Rp	Parallel female thread, pressure tight in the thread to ISO 7
®	Registered trade-mark
s	Across flats
SAN	Styrene-acrylonitrile
SC	Size of hexagon bolts
SP	Standard pack. The figure given indicates the quantity of fittings contained in a standard pack
St	Steel
Tg	Malleable Iron
TM	Trade-mark
Tr	Trapezoid thread
PP-GF	Polypropylene, glassfibre reinforced

# Contents

	Page
ABS BS Inch	3
ABS metric	23
Accessories	139
Index	157



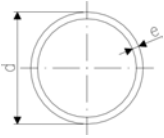
# ABS BS Inch

		Page
	Pipes	4
	Solvent Cement Fittings	6
	Adaptor Fittings ABS	12
	Flange adaptors	16
	Full Face Flange (drilled)	17
	Unions	19
	Adaptor Unions ABS	20

# Pipes

## Pipe ABS grey class E 15 bar at 20°C

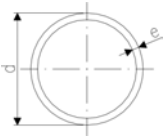
- Dimensions: BS 5391
- Pipe length: 6m with plain ends
- Minimum order quantity: 1 length



d [inch]	PN	Code	kg/m	e [mm]	di [mm]
3/8	15	<b>169 018 080</b>	0.090	1,7	6
1/2	15	<b>169 018 081</b>	0.001	2,0	8
3/4	15	<b>169 018 082</b>	0.210	2,5	14
1	15	<b>169 018 083</b>	0.330	3,1	19
1 1/4	15	<b>169 018 084</b>	0.001	3,9	24
1 1/2	15	<b>169 018 085</b>	0.680	4,5	29
2	15	<b>169 018 086</b>	1.060	5,6	39
3	15	<b>169 018 088</b>	2.280	8,3	59
4	15	<b>169 018 089</b>	0.300	10,6	80

## Pipe ABS grey class C 9 bar at 20°C

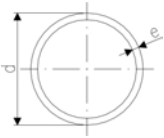
- Dimensions: BS 5391
- Pipe length: 6m with plain ends
- Minimum order quantity: 1 length



d [inch]	PN	Code	kg/m	e [mm]	di [mm]
6	12	<b>169 018 067</b>	6.330	12.8	125.8

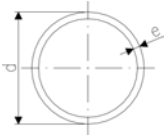
## Pipe ABS grey class C 9 bar at 20°C

- Dimensions: BS 5391
- Pipe length: 6m with plain ends
- Minimum order quantity: 1 length



d [inch]	PN	Code	kg/m	e [mm]	di [mm]
1	9	<b>169 018 033</b>	0.500	2.0	21.0
1 1/4	9	<b>169 018 034</b>	0.340	2.5	27.0
1 1/2	9	<b>169 018 035</b>	0.001	2.8	33.0
2	9	<b>169 018 036</b>	0.001	3.6	44.0
3	9	<b>169 018 038</b>	1.130	5.2	66.0
2 1/2	10	<b>169 017 087</b>	1.154	4.5	66.0
4	9	<b>169 018 039</b>	2.480	6.7	88.0
5	10	<b>169 017 091</b>	4.083	8.6	122.8
6	9	<b>169 018 042</b>	0.300	9.9	120.0
8	9	<b>169 018 045</b>	9.530	12.7	127.0





## Pipe ABS grey class 7 (T) 12 bar at 20°C

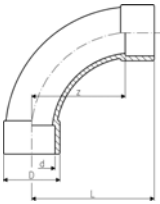
- Dimensions: BS 5391
- Pipe length: 6m with plain ends
- Minimum order quantity: 1 length
- Thick wall pipe to allow for threading

d [inch]	PN	Code	kg/m	e [mm]	di [mm]
½	12	<b>169 018 106</b>	0.220	3.6	5
¾	12	<b>169 018 107</b>	0.001	3.6	11
1	12	<b>169 018 108</b>	0.001	4.3	16
1 ¼	12	<b>169 018 109</b>	0.680	5.3	21
1 ½	12	<b>169 018 110</b>	0.870	6.0	26
2	12	<b>169 018 111</b>	1.310	7.2	36

# Solvent Cement Fittings

29 00 11

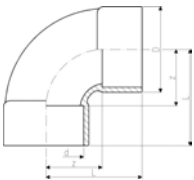
## Bend 90° ABS Inch BS



d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
1/2	15	<b>729 001 106</b>	0.021	40	29	58
3/4	15	<b>729 001 107</b>	0.035	50	35	71
1	15	<b>729 001 108</b>	0.049	64	43	88
1 1/4	15	<b>729 001 109</b>	0.155	80	54	109
1 1/2	15	<b>729 001 110</b>	0.262	100	64	131
2	15	<b>729 001 111</b>	0.388	126	76	163
2 1/2	10	<b>729 000 112</b>	0.585	150	90	194
3	15	<b>729 001 113</b>	1.532	180	113	231
4	15	<b>729 001 115</b>	2.720	220	137	284

29 01 11

## Bend 90°, short pattern, ABS BS Inch

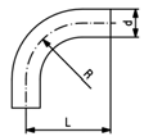


d [mm]	PN	Code	kg	z [mm]	D [mm]	L [mm]
8	9	<b>729 011 120</b>	6.800	168	256	287

29 00 16

## Long Radius Bend 90°, ABS BS Inch

Other angles and sizes are available on request

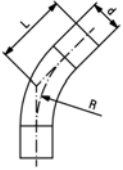


d [inch]	PN	Code	kg	R [mm]	L [mm]
1/2	15	<b>729 001 656</b>	0.017	51	71
3/4	15	<b>729 001 657</b>	0.032	76	108
1	15	<b>729 001 658</b>	0.051	102	133
1 1/4	15	<b>729 001 659</b>	0.103	127	170
1 1/2	15	<b>729 001 660</b>	0.152	152	201
2	15	<b>729 001 661</b>	0.328	203	272
2 1/2	15	<b>729 001 662</b>	1.444	255	340
3	15	<b>729 001 663</b>	1.125	305	402
4	15	<b>729 001 664</b>	2.202	406	544

29 15 11

**Long Radius Bend 45°, ABS BS Inch**

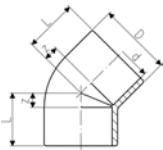
Other angles and sizes are available on request



d [inch]	PN	Code	kg	R [mm]	L [mm]
½	15	<b>729 151 176</b>	0.016	51	50
¾	15	<b>729 151 177</b>	0.023	76	63
1	15	<b>729 151 178</b>	0.038	102	75
1 ¼	15	<b>729 151 179</b>	0.077	127	100
1 ½	15	<b>729 151 180</b>	0.113	152	112
2	15	<b>729 151 181</b>	0.231	203	150
2 ½	15	<b>729 151 182</b>	1.444	255	200
3	15	<b>729 151 183</b>	0.844	305	238
4	15	<b>729 151 184</b>	1.694	406	301

29 15 11

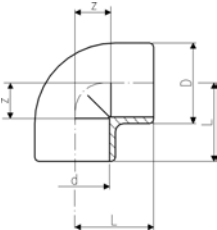
**Elbow 45° ABS Inch BS**



d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
¾	15	<b>729 151 105</b>	0.006	4	23	20
½	15	<b>729 151 106</b>	0.011	7	28	24
¾	15	<b>729 151 107</b>	0.019	8	33	29
1	15	<b>729 151 108</b>	0.026	10	41	33
1 ¼	15	<b>729 151 109</b>	0.046	11	51	40
1 ½	15	<b>729 151 110</b>	0.068	11	57	41
2	15	<b>729 151 111</b>	0.199	15	72	51
2 ½	10	<b>729 150 112</b>	0.228	17	89	61
3	15	<b>729 151 113</b>	0.405	21	109	72
4	15	<b>729 151 115</b>	0.866	26	135	89
5	10	<b>729 150 116</b>	1.190	32	162	108
6	15	<b>729 151 117</b>	1.865	38	198	129
8	9	<b>729 151 120</b>	3.900	49	250	168

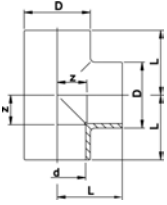
29 10 11

**Elbow 90° ABS Inch BS**



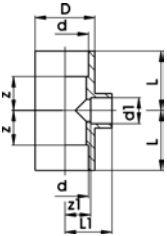
d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
¾	15	<b>729 101 105</b>	0.012	10	24	25
½	15	<b>729 101 106</b>	0.016	13	28	30
¾	15	<b>729 101 107</b>	0.026	16	34	37
1	15	<b>729 101 108</b>	0.038	19	40	42
1 ¼	15	<b>729 101 109</b>	0.058	22	52	51
1 ½	15	<b>729 101 110</b>	0.083	26	58	56
2	15	<b>729 101 111</b>	0.162	32	73	68
2 ½	10	<b>729 100 112</b>	0.308	40	90	84
3	15	<b>729 101 113</b>	0.480	46	107	97
4	15	<b>729 101 115</b>	0.980	59	137	122
5	10	<b>729 100 116</b>	1.470	70	162	146
6	15	<b>729 101 117</b>	2.960	86	201	176

29 20 11

**Tee 90° ABS Inch BS**

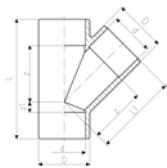
d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
3/8	15	<b>729 201 105</b>	0.018	10	25	25
1/2	15	<b>729 201 106</b>	0.029	13	30	30
3/4	15	<b>729 201 107</b>	0.040	16	35	37
1	15	<b>729 201 108</b>	0.055	19	43	43
1 1/4	15	<b>729 201 109</b>	0.076	22	53	51
1 1/2	15	<b>729 201 110</b>	0.146	26	58	56
2	15	<b>729 201 111</b>	0.296	32	73	68
2 1/2	10	<b>729 200 112</b>	0.421	40	90	84
3	15	<b>729 201 113</b>	0.700	46	107	97
4	15	<b>729 201 115</b>	1.181	59	138	122
5	10	<b>729 200 116</b>	2.500	71	169	147
6	15	<b>729 201 117</b>	4.470	86	202	176
8	9	<b>729 201 120</b>	7.680	114	256	233

29 20 11

**Tee 90° reducing ABS Inch BS**

d [inch]	d1 [inch]	PN	Code	kg	z [mm]	z1 [mm]	D [mm]	L [mm]	L1 [mm]
3/4	1/2	15	<b>729 201 134</b>	0.026	14	14	33	33	30
1	1/2	15	<b>729 201 141</b>	0.042	17	17	41	39	33
1	3/4	15	<b>729 201 138</b>	0.043	17	17	41	39	36
1 1/4	3/4	15	<b>729 201 151</b>	0.081	30	22	53	51	51
1 1/4	1	15	<b>729 201 147</b>	0.085	27	22	53	51	51
1 1/2	1/2	15	<b>729 201 009</b>	0.154	29	29	62	59	44
1 1/2	1	15	<b>729 201 164</b>	0.158	29	25	62	59	50
2	3/4	15	<b>729 201 011</b>	0.246	37	31	77	73	53
2	1	15	<b>729 201 178</b>	0.250	37	31	77	73	56
2	1 1/2	15	<b>729 201 170</b>	0.265	38	31	73	68	68
4	3	15	<b>729 201 137</b>	0.001	72	59	138	122	122

29 25 11

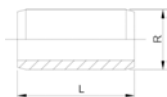
**Tee 45° ABS Inch BS**

d [inch]	PN	Code	kg	z [mm]	z1 [mm]	D [mm]	L [mm]	L1 [mm]
½	9	<b>729 251 106</b>	0.026	30	6	28	68	46
¾	9	<b>729 251 107</b>	0.039	36	9	33	83	55
1	9	<b>729 251 108</b>	0.068	45	10	41	99	67
1 ¼	9	<b>729 251 109</b>	0.109	55	9	50	118	82
1 ½	9	<b>729 251 110</b>	0.207	67	13	60	140	97
2	9	<b>729 251 111</b>	0.372	87	16	74	175	123
2 ½	6	<b>729 250 112</b>	0.637	101	18	91	207	145
5	6	<b>729 250 116</b>	4.315	190	34	168	376	266

29 90 19

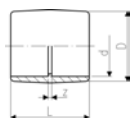
**Barrel nipple ABS Inch BS****Model:**

- With solvent cement spigots on both sides
- For quick connections between fittings
- For the shortest possible distance between fittings
- Overall length L = 2 x socket length



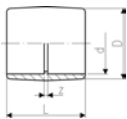
d [inch]	PN	Code	kg	L [mm]
¾	10	<b>729 901 905</b>	0.002	28
½	10	<b>729 901 906</b>	0.004	32
¾	10	<b>729 901 907</b>	0.008	38
1	10	<b>729 901 908</b>	0.015	44
1 ¼	10	<b>729 901 909</b>	0.027	52
1 ½	10	<b>729 901 910</b>	0.050	62
2	10	<b>729 901 911</b>	0.098	76
2 ½	10	<b>729 900 912</b>	0.102	88
3	10	<b>729 901 913</b>	0.266	102
4	10	<b>729 901 914</b>	0.476	122
5	10	<b>729 900 916</b>		152

29 91 11

**Socket ABS Inch BS**

d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
¾	15	<b>729 911 105</b>	0.006	3	23	35
½	15	<b>729 911 106</b>	0.008	3	27	38
¾	15	<b>729 911 107</b>	0.013	3	33	45
1	15	<b>729 911 108</b>	0.020	3	41	51
1 ¼	15	<b>729 911 109</b>	0.040	3	51	60
1 ½	15	<b>729 911 110</b>	0.048	3	58	64
2	15	<b>729 911 111</b>	0.090	5	72	78
2 ½	10	<b>729 910 112</b>	0.140	4	87	92
3	15	<b>729 911 113</b>	0.260	7	104	108
4	15	<b>729 911 115</b>	0.476	8	134	135

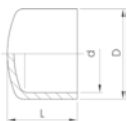
table continued next page



d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
5	10	<b>729 910 116</b>	0.760	7	162	159
6	15	<b>729 911 117</b>	1.310	11	197	192
8	15	<b>729 911 120</b>	3.700	10	253	248

29 96 11

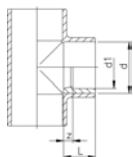
### Cap, ABS BS Inch



d [inch]	PN	Code	kg	D [mm]	l [mm]
3/8	15	<b>729 961 105</b>	0.004	26	33
1/2	15	<b>729 961 106</b>	0.007	30	25
3/4	15	<b>729 961 107</b>	0.011	37	30
1	15	<b>729 961 108</b>	0.019	44	34
1 1/4	15	<b>729 961 109</b>	0.033	55	41
1 1/2	15	<b>729 961 110</b>	0.038	62	44
2	15	<b>729 961 111</b>	0.097	78	54
2 1/2	15	<b>729 960 112</b>	0.115	87	65
3	15	<b>729 961 113</b>	0.222	112	77
4	15	<b>729 961 115</b>	0.570	145	101
5	15	<b>729 960 116</b>	0.880	163	114

29 90 13

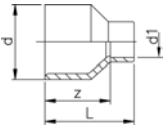
### Reducing bush short pattern ABS Inch BS



d-d [inch]	PN	Code	kg	z [mm]	l [mm]
1/2 - 3/8	15	<b>729 901 334</b>	0.002	2	18
3/4 - 1/2	15	<b>729 901 337</b>	0.004	3	21
1 - 1/2	15	<b>729 901 342</b>	0.015	6	24
1 - 3/4	15	<b>729 901 341</b>	0.008	3	24
1 1/4 - 1/2	15	<b>729 901 348</b>	0.019	11	29
1 1/4 - 3/4	15	<b>729 901 347</b>	0.019	8	29
1 1/4 - 1	15	<b>729 901 346</b>	0.015	5	29
1 1/2 - 1/2	15	<b>729 901 355</b>	0.026	13	30
1 1/2 - 3/4	15	<b>729 901 354</b>	0.027	10	30
1 1/2 - 1	15	<b>729 901 353</b>	0.013	6	30
1 1/2 - 1 1/4	15	<b>729 901 352</b>	0.010	2	30
2 - 3/4	15	<b>729 901 361</b>	0.046	16	37
2 - 1	15	<b>729 901 360</b>	0.060	13	37
2 - 1 1/4	15	<b>729 901 359</b>	0.053	8	37
2 - 1 1/2	15	<b>729 901 358</b>	0.038	6	37
2 1/2 - 2	15	<b>729 901 364</b>	0.710	8	44
3 - 1	15	<b>729 901 374</b>	0.064	27	51
3 - 1 1/2	15	<b>729 901 372</b>	0.133	21	51
3 - 2	15	<b>729 901 371</b>	0.131	14	51
3 - 2 1/2	15	<b>729 901 370</b>	0.095	6	51
4 - 3	15	<b>729 901 381</b>	0.259	13	64
5 - 4	15	<b>729 901 385</b>	0.511	13	76
8 - 6	15	<b>729 901 396</b>	1.230	33	119

29 91 13

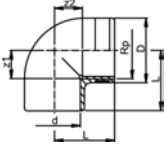
### Reducing bush long pattern ABS Inch BS



d-d [inch]	PN	Code	kg	z [mm]	l [mm]	
6 - 4	15	<b>729 911 389</b>	0.975	133	197	

# Adaptor Fittings ABS

29 10 12



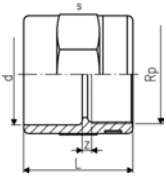
## Elbow 90°, ABS BS Inch Rp

### Model:

- With solvent cement socket BS Inch and parallel female thread Rp
- Reinforcing ring stainless (A2)
- Connection to plastic or metal threads
- Do not use thread sealing pastes that are harmful to ABS

d [inch]	Rp [inch]	PN	Code	kg	z1 [mm]	z2 [mm]	D [mm]	L [mm]
1/2	1/2	15	<b>729 101 206</b>	0.013	12	11	30	27
3/4	3/4	15	<b>729 101 207</b>	0.028	15	15	35	33
1	1	15	<b>729 101 208</b>	0.036	18	19	45	39

29 91 10



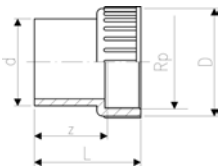
## Socket ABS Inch BS Rp

### Model:

- With solvent cement socket BS Inch and parallel female thread Rp
- Reinforcing ring stainless (A2)
- Connection to plastic or metal threads
- Do not use thread sealing pastes that are harmful to ABS

d [inch]	Rp [inch]	PN	Code	kg	z [mm]	s [mm]	l [mm]
3/8	3/8	15	<b>729 911 005</b>	0.010	4	27	31
1/2	1/2	15	<b>729 911 006</b>	0.015	4	32	35
3/4	3/4	15	<b>729 911 007</b>	0.020	3	36	40
1	1	15	<b>729 911 008</b>	0.044	3	36	45
1 1/4	1 1/4	15	<b>729 911 009</b>	0.055	3	55	51
1 1/2	1 1/2	15	<b>729 911 010</b>	0.106	8	65	69
2	2	15	<b>729 911 011</b>	0.138	8	8	69

29 90 14



## Adaptor ABS Inch BS Rp

### Model:

- With solvent cement socket BS Inch and parallel female thread Rp
- Connection to plastic threads only
- Do not use thread sealing pastes that are harmful to ABS

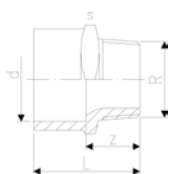
d [inch]	Rp [inch]	PN	Code	kg	z [mm]	s [mm]	l [mm]
1/2	1/2	15	<b>729 901 406</b>	0.010	21	28	37
3/4	3/4	15	<b>729 901 407</b>	0.025	23	34	41
1	1	15	<b>729 901 408</b>	0.037	27	42	48
1 1/4	1 1/4	15	<b>729 901 409</b>	0.059	33	52	56
1 1/2	1 1/2	15	<b>729 901 410</b>	0.073	38	62	61
2	2	15	<b>729 901 411</b>	0.153	47	77	74



29 91 17

**Adaptor Bush ABS BS Inch R****Model:**

- With solvent cement socket BS Inch and taper male thread R
- Connection to plastic threads only
- Do not use thread sealing pastes that are harmful to ABS

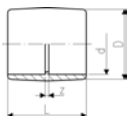


d [inch]	R [inch]	PN	Code	kg	z [mm]	s [mm]	l [mm]
3/8	3/8	15	<b>729 911 705</b>	0.010	20	27	34
1/2	1/2	15	<b>729 911 706</b>	0.015	24	32	40
3/4	3/4	15	<b>729 911 707</b>	0.019	25	36	44
1	1	15	<b>729 911 708</b>	0.031	28	46	50
1 1/4	1 1/4	15	<b>729 911 709</b>	0.048	31	55	57
1 1/2	1 1/2	15	<b>729 911 710</b>	0.073	32	65	63
2	2	15	<b>729 911 711</b>	0.133	38	80	76

29 91 31

**Adaptor socket ABS metric/Inch BS****Model:**

- with BS Inch and metric solvent cement sockets

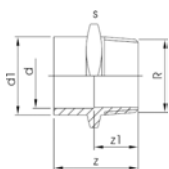


d [mm]	d [inch]	PN	Code	kg	z [mm]	L [mm]	D [mm]
16	3/8	10	<b>729 913 105</b>	0.007	5	35	23
20	1/2	10	<b>729 913 106</b>	0.010	5	38	27
25	3/4	10	<b>729 913 107</b>	0.016	5	45	33
32	1	10	<b>729 913 108</b>	0.025	5	51	41
40	1 1/4	10	<b>729 913 109</b>	0.045	5	60	51
50	1 1/2	10	<b>729 913 110</b>	0.070	4	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>	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 91 15

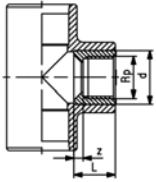
**Adaptor Socket Nipple, ABS BS Inch R****Model:**

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



d [inch]	d1 [inch]	R [inch]	PN	Code	kg	z [mm]	z1 [mm]	s [mm]
1/4	3/8	3/8	15	<b>729 911 555</b>	0.008	36	21	27
3/8	1/2	1/2	15	<b>729 911 556</b>	0.012	43	28	32
1/2	3/4	3/4	15	<b>729 911 557</b>	0.018	48	31	36
3/4	1	1	15	<b>729 911 558</b>	0.031	55	35	46

29 90 15



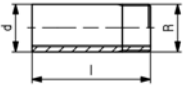
### Reducing Bush (short), ABS BS Inch - Rp

**Model:**

- With solvent cement spigot BS and parallel female thread Rp
- Connection to plastic threads only
- Do not use thread sealing pastes that are harmful to ABS

d [inch]	Rp [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
1/2	3/8	15	<b>729 901 534</b>	0.003	3	21	18
3/4	1/2	15	<b>729 901 537</b>	0.011	5	27	21
1	3/4	15	<b>729 901 541</b>	0.011	4	33	24
1	1/2	15	<b>729 901 542</b>	0.015	8	33	24

29 91 39



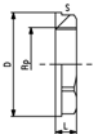
### Adaptor nipple ABS Inch BS R

**Model:**

- With solvent cement spigot BS Inch and taper male thread R
- Connection to plastic threads only
- Do not use thread sealing pastes that are harmful to ABS

d [inch]	R [inch]	PN	Code	kg	l [mm]
3/8	3/8	15	<b>729 913 905</b>	0.007	43
1/2	1/2	15	<b>729 913 906</b>	0.010	50
3/4	3/4	15	<b>729 913 907</b>	0.016	56
1	1	15	<b>729 913 908</b>	0.025	63
1 1/4	1 1/4	15	<b>729 913 909</b>	0.045	75
1 1/2	1 1/2	15	<b>729 913 910</b>	0.070	88
2	2	15	<b>729 913 911</b>	0.130	88
3	3	15	<b>729 913 913</b>	0.365	128
4	4	15	<b>729 913 915</b>	0.630	153

29 28 00



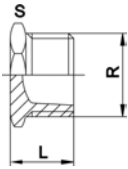
### Backnut ABS Inch BS

**Model:**

- Parallel female thread Rp

Rp [inch]	PN	Code	kg	D [mm]	s [mm]
1/2	15	<b>169 280 002</b>	0.010	37	31
3/4	15	<b>169 280 003</b>	0.021	42	36
1	15	<b>169 280 004</b>	0.024	55	46
1 1/4	15	<b>169 280 005</b>	0.025	59	50
1 1/2	15	<b>169 280 006</b>	0.034	70	60
2	15	<b>169 280 007</b>	0.065	94	79

29 96 19



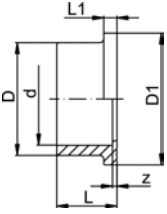
## Plug ABS R

### Model:

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

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

29 79 11



## Flange adaptors

### Flange adaptor ABS

#### Combined jointing face flat and serrated Inch BS

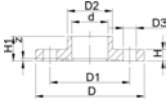
##### Model:

- Gasket: Flange Gasket EPDM No. 48 40 01, FPM No. 49 40 01

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

# Full Face Flange (drilled)

29 73 11



## Full face flange ABS Inch BS Drilled to BS 10 table D & E

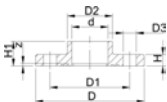
### Model:

- Jointing face serrated
- Solvent cement socket BS inch
- It is recommended to use backing flanges in conjunction with all Full Face Flanges
- For pressure ratings over 2 bar backing flanges must be used
- All Full Face Flanges are manufactured with outside diameter to BS 4504
- <sup>1</sup> connecting dimensions: BS 10 table E
- \* connecting dimensions: BS 10 table D

AL: number of holes

d [inch]	DN [mm]	Code	kg	D [mm]	D1 [mm]	D2 [mm]	D3 [mm]	H [mm]	H1 [mm]	AL	z [mm]
½	15	<b>729 731 106</b>	0.075	95	67	27	15	10	21	4	3
¾	20	<b>729 731 107</b>	0.083	105	73	33	15	10	24	4	8
1	25	<b>729 731 108</b>	0.097	115	83	41	15	10	27	4	3
1 ¼	32	<b>729 731 109</b>	0.149	140	88	50	15	10	32	4	3
1 ½	40	<b>729 731 110</b>	0.180	150	98	61	15	10	33	4	3
2	50	<b>729 731 111</b>	0.231	165	115	77	18	10	40	4	3
3	80	<b>729 731 113</b>	0.238	200	146	108	18	12	56	4	5
4	100	<b>729 731 114</b>	0.771	220	178	136	18	17	69	8	5
* 4	100	<b>729 731 164</b>	0.001	220	178	136	18	17	69	4	5
6	150	<b>729 731 117</b>	1.486	285	235	198	22	22	96	8	5

29 73 01  
29 73 11



## Full face flange ABS Inch BS Drilled to BS 4504 PN10/16

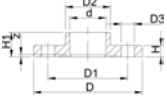
### Model:

- Jointing face serrated
- Solvent cement socket BS inch
- It is recommended to use backing flanges in conjunction with all Full Face Flanges
- For pressure ratings over 2 bar backing flanges must be used
- All Full Face Flanges are manufactured with outside diameter to BS 4504
- <sup>1</sup> connecting dimensions: BS 4504 and BS 10 table E

AL: number of holes

d [inch]	DN [mm]	Code	kg	D [mm]	D1 [mm]	D2 [mm]	D3 [mm]	H [mm]	H1 [mm]	AL	z [mm]
½	15	<b>729 731 106</b>	0.075	95	67	27	15	10	21	4	3
¾	20	<b>729 731 107</b>	0.083	105	73	33	15	10	24	4	8
1	25	<b>729 731 108</b>	0.097	115	83	41	15	10	27	4	3
1 ¼	32	<b>729 730 109</b>	0.150	140	100	50	14	10	32	4	3
1 ½	40	<b>729 730 110</b>	0.190	150	110	61	14	10	33	4	3
2	50	<b>729 730 111</b>	0.240	165	125	77	18	10	40	4	3
3	80	<b>729 730 113</b>	0.001	200	160	108	18	12	56	4	5
4	100	<b>729 731 114</b>	0.771	220	178	136	18	17	69	8	5
6	150	<b>729 730 117</b>	0.001	285	240	198	22	22	96	8	5

29 73 11  
29 73 21



## Full face flange ABS Inch BS Drilled to ANSI B 16.5 class 150

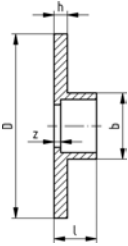
### Model:

- Jointing face serrated
- Solvent cement socket BS inch
- It is recommended to use backing flanges in conjunction with all Full Face Flanges
- For pressure ratings over 2 bar backing flanges must be used
- All Full Face Flanges are manufactured with outside diameter to BS 4504

AL: number of holes

d [inch]	DN [mm]	Code	kg	D [mm]	D1 [mm]	D2 [mm]	D3 [mm]	H [mm]	H1 [mm]	AL	z [mm]
1/2	15	<b>729 732 106</b>	0.070	95	60	27	16	10	21	4	3
3/4	20	<b>729 732 107</b>	0.090	105	70	33	16	10	24	4	8
1	25	<b>729 732 108</b>	0.097	115	79	41	16	10	27	4	3
1 1/4	32	<b>729 731 109</b>	0.149	140	88	50	15	10	32	4	3
1 1/2	40	<b>729 731 110</b>	0.180	150	98	61	15	10	33	4	3
2	50	<b>729 731 111</b>	0.231	165	115	77	18	10	40	4	3
3	80	<b>729 732 113</b>	0.238	200	152	108	19	12	56	4	5
4	100	<b>729 732 114</b>	0.690	220	190	136	19	17	69	8	5
6	150	<b>729 730 117</b>	0.001	285	240	198	22	22	96	8	5

29 73 00



## Full face flange ABS Inch BS Undrilled

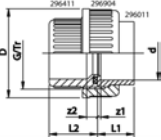
### Model:

- Jointing face serrated
- Solvent cement socket BS inch
- It is recommended to use backing flanges in conjunction with all Full Face Flanges
- For pressure ratings over 2 bar backing flanges must be used
- All Full Face Flanges are manufactured with outside diameter to BS 4504

d [inch]	DN [mm]	Code	kg	D [mm]	b [mm]	h [mm]	l [mm]	z [mm]
1/2	15	<b>729 730 006</b>	0.074	95	27	10	21	3
3/4	20	<b>729 730 007</b>	0.090	105	33	10	24	8
1	25	<b>729 730 008</b>	0.105	115	41	10	27	3
1 1/4	32	<b>729 730 009</b>	0.155	140	50	10	32	3
1 1/2	40	<b>729 730 010</b>	0.187	150	61	10	33	3
2	50	<b>729 730 011</b>	0.238	165	77	10	40	3
3	80	<b>729 730 013</b>	0.426	200	108	12	56	5
4	100	<b>729 730 014</b>	0.656	220	136	17	69	5
6	150	<b>729 730 017</b>	1.832	285	198	22	96	5

# Unions

29 51 11



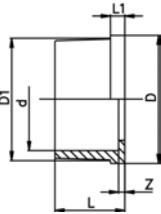
## Union ABS Inch BS

### Model:

- Union End: Solvent cement socket BS Inch
- Union Bush: Solvent cement socket BS inch
- Gasket: O-Ring EPDM No. 48 41 00, FPM No. 49 41 00

d [inch]	PN	Code	kg	z1 [mm]	z2 [mm]	D [mm]	L1 [mm]	L2 [mm]
3/8	15	<b>729 511 105</b>	0.019	3	8	35	19	24
1/2	15	<b>729 511 106</b>	0.035	3	9	43	21	26
3/4	15	<b>729 511 107</b>	0.049	3	9	53	24	29
1	15	<b>729 511 108</b>	0.070	3	9	60	27	33
1 1/4	15	<b>729 511 109</b>	0.127	3	10	74	32	39
1 1/2	15	<b>729 511 110</b>	0.220	3	10	83	33	41
2	15	<b>729 511 111</b>	0.402	3	10	103	40	48
2 1/2	10	<b>729 510 112</b>	0.461	3	18	135	47	62

29 60 11



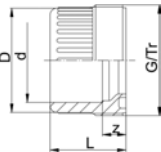
## Union end ABS Inch BS

### Model:

- Solvent cement socket BS inch

d [inch]	PN	Code	kg	z [mm]	D [mm]	D1 [mm]	L [mm]
3/8	15	<b>729 601 105</b>	0.004	3	24	22	19
1/2	15	<b>729 601 106</b>	0.007	3	30	27	21
3/4	15	<b>729 601 107</b>	0.011	3	38	36	24
1	15	<b>729 601 108</b>	0.015	3	44	41	27
1 1/4	15	<b>729 601 109</b>	0.022	3	56	53	32
1 1/2	15	<b>729 601 110</b>	0.033	3	62	59	33
2	15	<b>729 601 111</b>	0.060	3	78	74	40

29 64 11



## Union bush ABS Inch BS

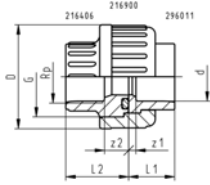
### Model:

- Solvent cement socket BS inch

d [inch]	PN	Code	kg	z [mm]	D [mm]	G/Tr	L [mm]
3/8	15	<b>729 641 105</b>	0.008	8	24	3/4	24
1/2	15	<b>729 641 106</b>	0.009	9	28	1	26
3/4	15	<b>729 641 107</b>	0.014	9	34	1 1/4	29
1	15	<b>729 641 108</b>	0.024	9	42	1 1/2	33
1 1/4	15	<b>729 641 109</b>	0.043	10	52	2	39
1 1/2	15	<b>729 641 110</b>	0.059	10	62	2 1/4	46
2	15	<b>729 641 111</b>	0.106	10	78	2 3/4	58

# Adaptor Unions ABS

29 51 12



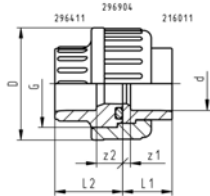
## Adaptor Union ABS/PVC-U BS Inch - Rp

### Model:

- Union Bush: PVC-U parallel female thread Rp
- Union End: Solvent cement socket ABS BS inch
- Union nut: PVC-U
- Gasket: O-Ring EPDM No. 48 41 00, FPM No. 49 41 00
- Connection to plastic threads only
- Do not use thread sealing pastes that are harmful to PVC-U

d [inch]	Rp [inch]	PN	Code	kg	z1 [mm]	z2 [mm]	D [mm]	L1 [mm]	L2 [mm]
3/8	3/8	15	<b>729 511 205</b>	0.025	3	13	35	19	24
1/2	1/2	15	<b>729 511 206</b>	0.041	3	13	43	21	26
3/4	3/4	15	<b>729 511 207</b>	0.100	3	14	53	24	29
1	1	15	<b>729 511 208</b>	0.172	3	15	60	27	32
1 1/4	1 1/4	15	<b>729 511 209</b>	0.200	3	19	74	32	38
1 1/2	1 1/2	15	<b>729 511 210</b>	0.277	3	26	83	33	40
2	2	15	<b>729 511 211</b>	0.430	3	33	103	40	46

29 52 11



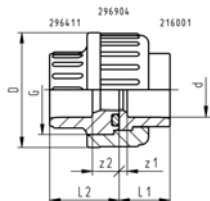
## Adaptor union ABS/PVC-U Inch BS

### Model:

- Union End: Solvent cement socket PVC-U BS Inch
- Union Bush: Solvent cement socket ABS BS inch
- Union Nut: ABS
- Gasket: O-Ring EPDM No. 48 41 00, FPM No. 49 41 00

d [inch]	PN	Code	kg	z1 [mm]	z2 [mm]	D [mm]	L1 [mm]	L2 [mm]
3/8	15	<b>729 521 105</b>	0.025	3	8	35	19	24
1/2	15	<b>729 521 106</b>	0.041	3	9	43	21	26
3/4	15	<b>729 521 107</b>	0.066	3	9	53	24	29
1	15	<b>729 521 108</b>	0.093	3	9	60	27	32
1 1/4	15	<b>729 521 109</b>	0.155	3	10	74	32	38
1 1/2	15	<b>729 521 110</b>	0.209	3	10	83	33	40
2	15	<b>729 521 111</b>	0.368	3	10	103	40	46

29 52 31



## Adaptor union ABS/PVC-U Inch BS/metric

### Model:

- Union End: Solvent cement socket PVC-U metric
- Union Bush: Solvent cement socket ABS BS inch
- Union Nut: ABS
- Gasket: O-Ring EPDM No. 48 41 00, FPM No. 49 41 00

d [inch]	d [mm]	PN	Code	kg	z1 [mm]	z2 [mm]	D [mm]	L1 [mm]	L2 [mm]
3/8	16	15	<b>729 523 105</b>	0.075	3	13	35	19	24
1/2	20	15	<b>729 523 106</b>	0.120	3	13	43	21	26
3/4	25	15	<b>729 523 107</b>	0.190	3	14	53	24	29
1	32	15	<b>729 523 108</b>	0.250	3	15	60	27	32
1 1/4	40	15	<b>729 523 109</b>	0.400	3	19	74	32	38
1 1/2	50	15	<b>729 523 110</b>	0.510	3	26	83	33	40
2	63	15	<b>729 523 111</b>	0.287	3	33	103	40	46

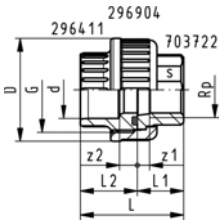


29 53 13

**Adaptor union ABS/malleable iron Inch BS Rp**

**Model:**

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



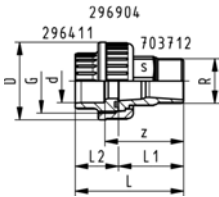
d	Rp	PN	Code	kg	D	L	L1	L2	z1	z2	G	s
[inch]	[inch]				[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[inch]	[mm]
1/2	1/2	15	<b>729 531 306</b>	0.132	43	48	22	26	9	10	1	25
3/4	3/4	15	<b>729 531 307</b>	0.226	51	51	22	29	7	10	1 1/4	31
1	1	15	<b>729 531 308</b>	0.282	58	58	26	33	9	10	1 1/2	38
1	1 1/4	15	<b>729 531 309</b>	0.476	72	69	31	39	12	12	2	48
1 1/2	1 1/2	15	<b>729 531 310</b>	0.498	83	78	33	46	14	14	2 1/4	54
2	2	15	<b>729 531 311</b>	0.795	100	91	35	58	11	18	2 3/4	67

29 53 18

**Adaptor union ABS/malleable iron Inch BS R**

**Model:**

- Union Nut: ABS
- Union Bush: Solvent cement socket BS Inch
- Union End: Malleable iron with taper male thread R
- Gasket: O-Ring EPDM No. 48 41 00



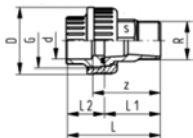
d	R	PN*	Code	kg	D	L	L1	L2	z	G	s
[inch]	[inch]	[bar]			[mm]	[mm]	[mm]	[mm]	[mm]	[inch]	[mm]
1/2	1/2	15	<b>729 531 806</b>	0.137	43	66	40	26	50	1	25
3/4	3/4	15	<b>729 531 807</b>	0.226	51	72	43	29	53	1 1/4	31
1	1	15	<b>729 531 808</b>	0.322	58	80	48	33	58	1 1/2	38
1 1/4	1 1/4	15	<b>729 531 809</b>	0.554	72	95	57	39	69	2	48
1 1/2	1 1/2	15	<b>729 531 810</b>	0.654	83	104	59	46	73	2 1/4	54
2	2	15	<b>729 531 811</b>	0.935	100	118	62	58	80	2 3/4	67



**Adaptor union R ABS/brass Inch BS**

**Model:**

- Union Nut: ABS
- Union Bush: Solvent cement socket ABS BS inch
- Union End: Brass with taper male thread R
- Gasket: O-Ring EPDM No. 48 41 00



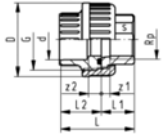
d	R	PN	Code	kg	D	L	L1	L2	z	G	s
[inch]	[inch]				[mm]	[mm]	[mm]	[mm]	[mm]	[inch]	[mm]
1/2	1/2	15	<b>729 551 906</b>	0.123	43	63	37	26	37	1	25
3/4	3/4	15	<b>729 551 907</b>	0.185	51	71	42	29	42	1 1/4	30
1	1	15	<b>729 551 908</b>	0.283	58	79	46	33	55	1 1/2	36
1 1/4	1 1/4	15	<b>729 551 909</b>	0.503	72	91	52	39	60	2	46
1 1/2	1 1/2	15	<b>729 551 910</b>	0.666	83	97	56	41	65	2 1/4	55
2	2	15	<b>729 551 911</b>	1.071	100	115	67	48	77	2 3/4	65



## Adaptor union Rp ABS/Brass Inch BS

### Model:

- Union Nut: ABS
- Union Bush: Solvent cement socket ABS BS inch
- Union End: Brass with parallel female thread Rp
- Gasket: O-Ring EPDM No. 48 41 00



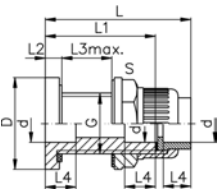
d	Rp	PN	Code	kg	D	L	L1	L2	z1	z2	G	s
[inch]	[inch]				[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[inch]	[mm]
1/2	1/2	15	<b>729 551 506</b>	0.084	43	48	22	26	7	9	1	25
3/4	3/4	15	<b>729 551 507</b>	0.134	51	54	25	29	9	8	1 1/4	30
1	1	15	<b>729 551 508</b>	0.179	58	60	27	33	8	9	1 1/2	36
1 1/4	1 1/4	15	<b>729 551 509</b>	0.327	72	70	31	39	10	11	2	46
1 1/2	1 1/2	15	<b>729 551 510</b>	0.452	83	75	35	41	13	11	2 1/4	55
2	2	15	<b>729 551 511</b>	0.722	100	88	40	48	14	12	2 3/4	65

69 25 02

## Tank connector ABS Inch BS

















### Model:

- End connection: Union with solvent cement socket BS Inch
- Gasket: flat gasket EPDM



d	PN	Code	kg	d1	L	L1	L2	L3	L4	G	s
[inch]				[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[inch]	[mm]
3/8	15	<b>169 250 225</b>	0.073	44	85	65	10	32	14	3/4	33
1/2	15	<b>169 250 226</b>	0.131	56	89	67	11	30	16	1	46
3/4	15	<b>169 250 227</b>	0.194	65	97	72	12	32	19	1 1/4	50
1	15	<b>169 250 228</b>	0.001	70	103	75	12	33	22	1 1/2	60
1 1/4	15	<b>169 250 229</b>	0.446	95	111	78	12	32	26	2	80
1 1/2	15	<b>169 250 230</b>	0.485	95	119	82	13	32	31	2 1/4	80
2	15	<b>169 250 231</b>	0.001	115	131	87	13	33	38	2 3/4	83

# ABS metric

		Page
	Metric pipe	25
	Pipe fittings for solvent cement jointing	26
	Adaptor fittings	33
	Threaded fittings	35
	Flange adaptor	37
	Unions	38
	Adaptor Unions	39
	Union spare parts	43
	Branch saddles	45
	Ball valves	49
	Spare parts ball valves	74
	Diaphragm valves	82
	Spare parts diaphragm valves new generation	85
	Spare parts diaphragm valves	92
	Butterfly valves	94
	Spare parts butterfly valves	108



Angle seat check valves

111



Ball check (non-return) valve

112



Spare parts ball check valves

114



Strainers

117



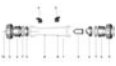
Spare parts line strainer

119



Variable area flow meters

123

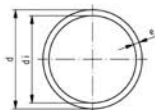


Spare parts variable area flow meters

132

## Metric pipe

69 01 70



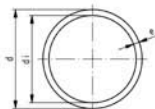
### Pipe ABS metric Nominal pressure PN10 (at 20°C)

Model:

- Colour: RAL 7001, gravel grey
- Pipe length: 5m, with plain ends
- Minimum order quantity: 1 length

d [mm]	PN	Code	kg/m	e [mm]	di [mm]	Copper size
16	16	<b>169 017 080</b>	0.095	1.5	13	1/2
20	16	<b>169 017 081</b>	0.148	1.65	16.7	5/8
25	16	<b>169 017 082</b>	0.191	1.95	21.1	7/8

69 01 70



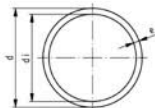
### Pipe ABS metric Nominal pressure PN10 (at 20°C)

Model:

- Colour: RAL 7001, gravel grey
- Pipe length: 5m, with plain ends
- Minimum order quantity: 1 length

d [mm]	PN	d [inch]	Code	kg/m	e [mm]	di [mm]	Copper size
32	10		<b>169 017 083</b>	0.213	1.9	28.2	1 1/8
40	10		<b>169 017 084</b>	0.336	2.4	35.2	1 3/8
50	10		<b>169 017 085</b>	0.516	3.0	44.0	1 5/8
63	10		<b>169 017 086</b>	0.819	3.8	55.4	2 1/8
75	10	2 1/2	<b>169 017 087</b>	1.154	4.5	66.0	2 5/8
90	10		<b>169 017 088</b>	1.657	5.4	79.2	3 1/8
110	10		<b>169 017 089</b>	2.495	6.6	96.8	4 1/8
140	10	5	<b>169 017 091</b>	4.083	8.6	122.8	
160	10		<b>169 017 092</b>	5.397	9.9	140.2	6
200	10		<b>169 017 093</b>	8.307	12.3	175.4	
225	10		<b>169 017 094</b>	10.522	13.9	197.2	

69 01 70



### Pipe ABS metric Nominal pressure PN6 (at 20°C)

Model:

- Colour: RAL 7001, gravel grey
- Pipe length: 5m, with plain ends
- Minimum order quantity: 1 length

d [mm]	PN	Code	kg/m	e [mm]	di [mm]
250	6	<b>169 017 095</b>	8.299	9.6	230.8
280	6	<b>169 017 096</b>	10.346	10.7	258.6
315	6	<b>169 017 097</b>	13.173	12.1	290.8

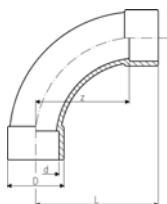
# Pipe fittings for solvent cement jointing

29 00 01

## Bend 90° ABS metric

- Radius = 2 d

\* Available as long as our stock will last

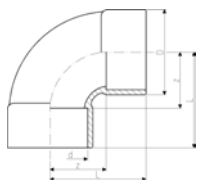


d [mm]	d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
20		16	<b>729 000 106</b>	0.027	40	27	58
25		16	<b>729 000 107</b>	0.038	50	35	69
32		10	<b>729 000 108</b>	0.051	64	38	86
40		10	<b>729 000 109</b>	0.102	80	54	109
50		10	<b>729 000 110</b>	0.206	100	61	131
63		10	<b>729 000 111</b>	0.387	126	76	164
75	2 ½	10	<b>729 000 112</b>	0.585	150	90	194
90		10	<b>729 000 113</b>	0.750	180	113	231
110		10	<b>729 000 114</b>	2.030	220	137	281
140		10	<b>729 000 116</b>	4.100	280	168	356
* 160		10	<b>729 000 117</b>	5.600	320	191	406

29 01 01

## Bend 90° short pattern ABS metric

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

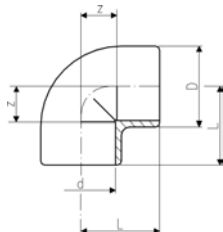


d [mm]	PN	Code	kg	z [mm]	D [mm]	L [mm]
225	10	<b>729 010 120</b>	5.650	168	256	287
280	6	<b>729 010 122</b>	16.000	210	318	357
315	6	<b>729 010 123</b>	21.000	237	356	401

29 10 01

**Elbow 90° ABS metric**

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

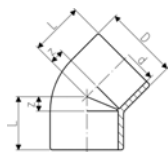


d [mm]	d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
16		16	<b>729 100 105</b>	0.007	9	21	23
20		16	<b>729 100 106</b>	0.010	11	26	27
25		16	<b>729 100 107</b>	0.017	14	31	33
32		10	<b>729 100 108</b>	0.032	17	40	39
40		10	<b>729 100 109</b>	0.051	21	49	47
50		10	<b>729 100 110</b>	0.103	26	61	57
63		10	<b>729 100 111</b>	0.196	33	76	72
75	2 ½	10	<b>729 100 112</b>	0.308	40	90	84
90		10	<b>729 100 113</b>	0.429	46	110	97
110		10	<b>729 100 114</b>	0.786	55	136	116
140	5	10	<b>729 100 116</b>	1.470	70	162	146
160		10	<b>729 100 117</b>	2.150	80	185	166
200		10	<b>729 100 119</b>	3.372	101	225	207
250		6	<b>729 100 121</b>	8.200	131	282	263

29 15 01

**Elbow 45° ABS metric**

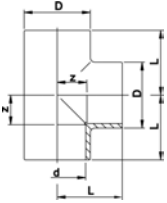
- >d225 - maximum operating temperature: +40°C



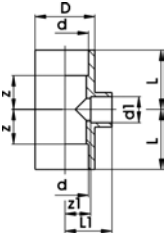
d [mm]	d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
20		16	<b>729 150 106</b>	0.008	5	25	21
25		16	<b>729 150 107</b>	0.013	6	31	25
32		10	<b>729 150 108</b>	0.046	8	40	30
40		10	<b>729 150 109</b>	0.082	10	49	36
50		10	<b>729 150 110</b>	0.121	12	61	43
63		10	<b>729 150 111</b>	0.144	14	76	52
75	2 ½	10	<b>729 150 112</b>	0.228	17	89	61
90		10	<b>729 150 113</b>	0.362	20	107	71
110		10	<b>729 150 114</b>	0.775	28	131	89
140	5	10	<b>729 150 116</b>	1.190	32	162	108
160		10	<b>729 150 117</b>	1.680	36	185	122
200		10	<b>729 150 119</b>	2.506	43	225	149
225		10	<b>729 150 120</b>	3.100	49	250	168
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

**Tee 90° ABS metric**

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



d [mm]	d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
16		16	<b>729 200 105</b>	0.010	9	21	23
20		16	<b>729 200 106</b>	0.014	11	25	27
25		16	<b>729 200 107</b>	0.024	14	31	33
32		10	<b>729 200 108</b>	0.042	17	40	39
40		10	<b>729 200 109</b>	0.074	21	49	47
50		10	<b>729 200 110</b>	0.131	26	61	57
63		10	<b>729 200 111</b>	0.250	34	76	72
75	2 ½	10	<b>729 200 112</b>	0.421	40	90	84
90		10	<b>729 200 113</b>	0.687	47	107	98
110		10	<b>729 200 114</b>	1.020	55	133	116
140	5	10	<b>729 200 116</b>	2.500	71	169	147
160		10	<b>729 200 117</b>	3.700	81	193	167
200		10	<b>729 200 119</b>	4.430	101	225	207
225		10	<b>729 200 120</b>	6.850	114	256	233
250		6	<b>729 200 121</b>	12.400	132	282	263
280		6	<b>729 200 122</b>	17.300	152	318	298
315		6	<b>729 200 123</b>	24.100	168	356	332

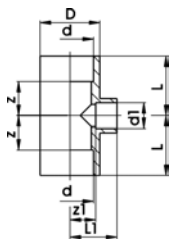
**Tee 90° reducing ABS metric**

d [mm]	d1 [mm]	PN	Code	kg
25	20	16	<b>729 200 134</b>	0.029
32	25	10	<b>729 200 138</b>	0.048
40	25	10	<b>729 200 151</b>	0.081
40	32	10	<b>729 200 147</b>	0.085
50	25	10	<b>729 200 010</b>	0.135
50	32	10	<b>729 200 164</b>	0.200
63	25	10	<b>729 200 011</b>	0.245
63	32	10	<b>729 200 178</b>	0.249
63	50	10	<b>729 200 170</b>	0.265
75	40	10	<b>729 200 182</b>	0.500
90	32	10	<b>729 200 143</b>	1.000
90	63	10	<b>729 200 146</b>	0.900
110	32	10	<b>729 200 144</b>	2.000
110	50	10	<b>729 200 136</b>	1.900
140	50	10	<b>729 200 148</b>	1.899
140	75	10	<b>729 200 149</b>	2.500
160	90	10	<b>729 200 158</b>	2.800
200	110	10	<b>729 200 153</b>	6.110
225	110	10	<b>729 200 156</b>	7.500
225	160	10	<b>729 200 157</b>	7.900

d [mm]	d1 [mm]	z [mm]	z1 [mm]	D [mm]	L [mm]	L1 [mm]	Closest inch run-branch-run
25	20	14	14	33	33	30	¾ - ½ - ¾
32	25	17	17	41	39	36	1 - ¾ - 1
40	25	23	23	50	49	42	1 ¼ - ¾ - 1 ¼
40	32	23	23	50	49	45	1 ¼ - 1 - 1 ¼
50	25	28	28	62	59	47	1 ½ - ¾ - 1 ½

table continued next page

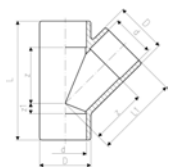




d [mm]	d1 [mm]	z [mm]	z1 [mm]	D [mm]	L [mm]	L1 [mm]	Closest inch run-branch-run
50	32	28	28	62	59	50	1 ½ - 1 - 1 ½
63	25	34	34	77	73	53	2 - ¾ - 2
63	32	35	34	77	73	56	2 - 1 - 2
63	50	35	34	77	73	65	2 - 1 ½ - 2
75	40	40	41	92	84	66	2 ½ - 1 ¼ - 2 ½
90	32	46	55	110	97	93	3 - 1 - 3
90	63	46	55	110	97	93	3 - 2 - 3
110	32	56	67	133	117	89	4 - 1 - 4
110	50	56	67	133	117	98	4 - 1 ½ - 4
140	50	72	82	172	148	113	5 - 1 ½ - 5
140	75	72	78	172	148	122	5 - 2 ½ - 5
160	90	81	91	192	167	142	6 - 3 - 6
200	110	106	131	232	213	192	7 - 4 - 7
225	110	119	143	257	239	204	8 - 4 - 8
225	160	119	119	257	239	205	8 - 6 - 8

29 25 01

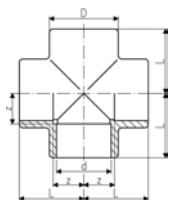
### Tee 45° ABS metric



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

29 30 01

### Cross ABS metric

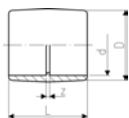


d [mm]	PN	Code	kg	z [mm]	D [mm]	L [mm]
32	10	<b>729 300 108</b>	0.070	17	43	39
63	10	<b>729 300 111</b>	0.361	34	79	72

29 91 01

**Socket ABS metric**

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

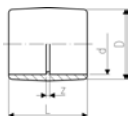


d [mm]	d [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
16		16	<b>729 910 105</b>	0.005	3	22	31
20		16	<b>729 910 106</b>	0.007	3	26	35
25		16	<b>729 910 107</b>	0.011	3	32	41
32		10	<b>729 910 108</b>	0.020	3	40	47
40		10	<b>729 910 109</b>	0.034	3	49	55
50		10	<b>729 910 110</b>	0.060	3	61	65
63		10	<b>729 910 111</b>	0.107	3	76	79
75	2 ½	10	<b>729 910 112</b>	0.140	4	87	92
90		10	<b>729 910 113</b>	0.242	5	104	107
110		10	<b>729 910 114</b>	0.570	5	131	132
140	5	10	<b>729 910 116</b>	0.760	7	162	159
160		10	<b>729 910 117</b>	1.176	8	183	180
200		10	<b>729 910 119</b>	1.480	9	221	221
225		10	<b>729 910 120</b>	2.500	10	253	248
250		6	<b>729 910 121</b>	5.400	16	284	284
280		6	<b>729 910 122</b>	6.600	16	321	314
315		6	<b>729 910 123</b>	8.100	16	356	348

29 91 31

**Adaptor socket ABS metric/Inch BS****Model:**

- with BS Inch and metric solvent cement sockets

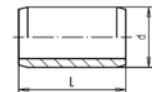


d [mm]	d [inch]	PN	Code	kg	z [mm]	L [mm]	D [mm]
16	¾	10	<b>729 913 105</b>	0.007	5	35	23
20	½	10	<b>729 913 106</b>	0.010	5	38	27
25	¾	10	<b>729 913 107</b>	0.016	5	45	33
32	1	10	<b>729 913 108</b>	0.025	5	51	41
40	1 ¼	10	<b>729 913 109</b>	0.045	5	60	51
50	1 ½	10	<b>729 913 110</b>	0.070	4	65	59
63	2	10	<b>729 913 111</b>	0.130	5	79	75
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

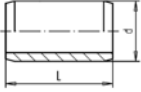
**Barrel nipple ABS metric****Model:**

- With solvent cement spigots on both sides
- For quick connections between fittings
- For the shortest possible distance between fittings
- Overall length L = 2 x socket length



d [mm]	d [inch]	PN	Code	kg	L [mm]
16		16	<b>729 900 905</b>	0.003	28
20		16	<b>729 900 906</b>	0.004	32
25		16	<b>729 900 907</b>	0.007	38
32		10	<b>729 900 908</b>	0.009	44
40		10	<b>729 900 909</b>	0.017	52
50		10	<b>729 900 910</b>	0.032	62
63		10	<b>729 900 911</b>	0.063	76

table continued next page



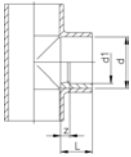
d [mm]	d [inch]	PN	Code	kg	L [mm]
75	2 ½	10	<b>729 900 912</b>	0.102	88
90		10	<b>729 900 913</b>	0.173	102
110		10	<b>729 900 914</b>	0.309	122

29 90 03

## Reducing bush ABS metric

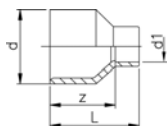
### Model:

- With solvent cement spigot and socket metric



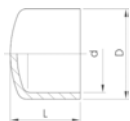
d [mm]	d1 [mm]	PN	Code	kg	z [mm]	L [mm]
20	16	16	<b>729 900 334</b>	0.003	2	16
25	20	16	<b>729 900 337</b>	0.005	3	19
32	20	10	<b>729 900 342</b>	0.012	6	22
32	25	10	<b>729 900 341</b>	0.009	4	22
40	20	10	<b>729 900 348</b>	0.016	10	26
40	25	10	<b>729 900 347</b>	0.016	7	26
40	32	10	<b>729 900 346</b>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

29 91 03

**Reducing bush long ABS metric**

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

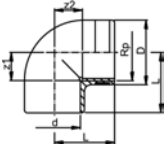
29 96 01

**Cap ABS metric**

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

# Adaptor fittings

29 10 02



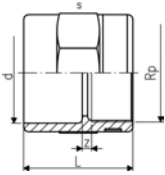
## Elbow 90° ABS metric Rp

### Model:

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

d [mm]	Rp [inch]	PN	Code	kg	z1 [mm]	z2 [mm]	D [mm]	L [mm]
20	1/2	10	<b>729 100 206</b>	0.018	11	14	30	27
25	3/4	10	<b>729 100 207</b>	0.028	14	17	35	33
32	1	10	<b>729 100 208</b>	0.047	17	22	45	39
40	1 1/4	10	<b>729 100 209</b>	0.088	23	27	55	50
50	1 1/2	10	<b>729 100 210</b>	0.128	27	36	62	58
63	2	10	<b>729 100 211</b>	0.233	33	46	75	73

29 91 02



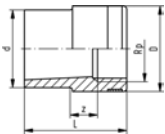
## Socket ABS metric Rp

### Model:

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

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

29 91 04



## Reducing bush ABS metric Rp

### Model:

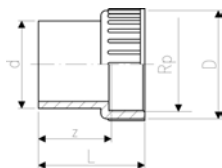
- With solvent cement spigot metric and parallel female thread Rp
- Reinforcing ring stainless (A2)
- Connection to plastic or metal threads
- Do not use thread sealing pastes that are harmful to ABS
- Install with low mechanical stress and avoid large cyclic temperature changes

d [mm]	Rp [inch]	PN	Code	kg	z [mm]	D [mm]	L [mm]
20	3/8	10	<b>729 910 434</b>	0.012	7	25	35
25	1/2	10	<b>729 910 437</b>	0.018	7	30	41
32	3/4	10	<b>729 910 441</b>	0.027	15	35	48
40	1	10	<b>729 910 446</b>	0.048	20	45	56
50	1 1/4	10	<b>729 910 452</b>	0.073	20	55	66
63	1 1/2	10	<b>729 910 458</b>	0.106	10	62	77

29 90 04

**Adaptor ABS metric Rp****Model:**

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

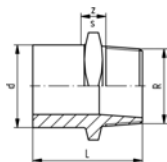


d [mm]	Rp [inch]	PN	Code	kg	z [mm]	L [mm]	D [mm]
20	½	10	<b>729 900 406</b>	0.009	21	37	28
25	¾	10	<b>729 900 407</b>	0.014	23	41	33
32	1	10	<b>729 900 408</b>	0.026	27	48	42
40	1 ¼	10	<b>729 900 409</b>	0.046	33	56	52
50	1 ½	10	<b>729 900 410</b>	0.073	38	61	62
63	2	10	<b>729 900 411</b>	0.127	47	74	77

29 91 05

**Adaptor spigot nipple ABS metric R****Model:**

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

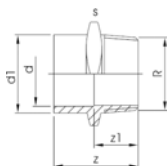


d [mm]	R [inch]	PN	Code	kg	z [mm]	s [mm]
16	¾	10	<b>729 910 505</b>	0.009	35	27

29 91 05

**Adaptor socket nipple ABS metric R****Model:**

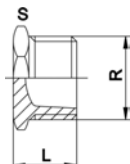
- With solvent cement spigot/socket metric and taper male thread R
- Connection for plastic threads
- Do not use thread sealing pastes that are harmful to ABS



d [mm]	d1 [mm]	R [inch]	PN	Code	kg	z [mm]	z1 [mm]	s [mm]
16	20	½	10	<b>729 910 556</b>	0.012	42	28	32
20	25	¾	10	<b>729 910 557</b>	0.020	47	31	36
25	32	1	10	<b>729 910 558</b>	0.031	54	35	46
32	40	1 ¼	10	<b>729 910 559</b>	0.050	60	38	55
40	50	1 ½	10	<b>729 910 560</b>	0.070	66	40	65
50	63	2	10	<b>729 910 561</b>	0.123	78	47	80

# Threaded fittings

29 96 19



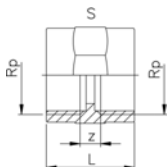
## Plug ABS R

### Model:

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

R [inch]	PN	Code	kg	s [mm]	L [mm]
½	10	<b>729 961 906</b>	0.008	27	25
¾	10	<b>729 961 907</b>	0.014	36	29
1	10	<b>729 961 908</b>	0.022	41	32

29 91 06



## Threaded socket ABS Rp

### Model:

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

Rp [inch]	PN	Code	kg	z [mm]	L [mm]	s [mm]
½	10	<b>729 910 606</b>	0.019	9	35	32
¾	10	<b>729 910 607</b>	0.022	9	39	36
1	10	<b>729 910 608</b>	0.041	11	45	46

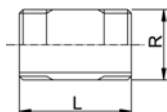
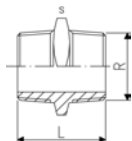
29 91 15

**Threaded nipple R ABS**

A



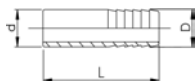
B

**Model:**

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

R [inch]	PN	Type	S [mm]	Code	kg	L [mm]
3/8	10	B		<b>729 911 505</b>	0.014	43
1/2	10	A	22	<b>729 911 906</b>	0.009	45
3/4	10	A	27	<b>729 911 907</b>	0.014	49
1	10	A	36	<b>729 911 908</b>	0.026	57
1 1/4	10	B		<b>729 911 509</b>	0.053	75
1 1/2	10	B		<b>729 911 510</b>	0.031	88
2	10	B		<b>729 911 511</b>	0.135	88
3	10	B		<b>729 911 513</b>	0.196	128
4	10	B		<b>729 911 515</b>	0.357	153

29 96 04

**Hose connector ABS metric**

d [mm]	PN	Code	kg	D [mm]	L [mm]
16	10	<b>729 960 405</b>	0.007	16	57
20	10	<b>729 960 406</b>	0.011	20	73
25	10	<b>729 960 407</b>	0.016	25	79
32	10	<b>729 960 408</b>	0.026	30	89



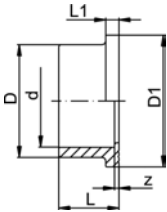
# Flange adaptor

29 79 01

## Flange adaptor ABS metric

### Model:

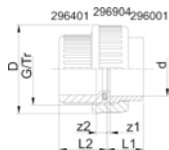
- Flat sealing faces/serrated
- Counter part: Same flange adaptor
- Gasket: Profile flange gasket EPDM No. 48 44 07, FPM No. 49 44 07
- Gasket: Flat gasket EPDM No. 48 40 03
- >d225 - maximum operating temperature: +40°C



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

# Unions

29 51 01



## Union ABS metric

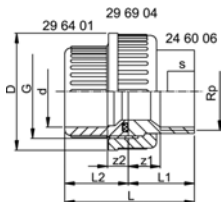
### Model:

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

d [mm]	d [inch]	PN	Code	kg	z1 [mm]	z2 [mm]	D [mm]	L1 [mm]	L2 [mm]	G/Tr	
16		10	<b>729 510 105</b>	0.025	5	10	35	19	24		3/4
20		10	<b>729 510 106</b>	0.035	4	10	43	21	26		1
25		10	<b>729 510 107</b>	0.050	5	10	53	24	29		1 1/4
32		10	<b>729 510 108</b>	0.070	5	10	60	27	33		1 1/2
40		10	<b>729 510 109</b>	0.130	3	12	74	31	39		2
50		10	<b>729 510 110</b>	0.170	3	14	83	33	46		2 1/4
63		10	<b>729 510 111</b>	0.340	3	18	103	40	58		2 3/4
75	2 1/2	10	<b>729 510 112</b>	0.461	3	18	135	47	62	Tr 108x5	
90		10	<b>729 510 313</b>	0.694	5	18	158	56	69	Tr 128x5	
110		10	<b>729 510 114</b>	1.069	5	11	158	66	72	Tr 154x5	

# Adaptor Unions

29 54 02



## Adaptor union ABS/stainless steel metric Rp

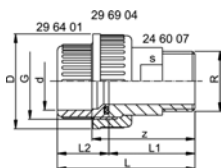
### Model:

- 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 [mm]	Rp [inch]	PN	EPDM Code	kg
16	3/8	10	<b>729 540 205</b>	0.053
20	1/2	10	<b>729 540 206</b>	0.096
25	3/4	10	<b>729 540 207</b>	0.154
32	1	10	<b>729 540 208</b>	0.212
40	1 1/4	10	<b>729 540 209</b>	0.356
50	1 1/2	10	<b>729 540 210</b>	0.455
63	2	10	<b>729 540 211</b>	0.721

d [mm]	z1 [mm]	z2 [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	G [inch]	s [mm]
16	9	10	35	43	19	24	3/4	19
20	11	10	43	50	24	26	1	24
25	11	10	51	55	26	29	1 1/4	29
32	12	10	58	61	29	33	1 1/2	36
40	14	12	74	71	33	39	2	45
50	15	14	83	79	34	46	2 1/4	54
63	15	18	100	95	39	58	2 3/4	63

29 54 07



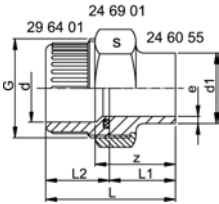
## Adaptor union ABS/stainless steel metric R

### 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 [mm]	R [inch]	PN	EPDM Code	kg	z [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	G [inch]	s [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

29 54 55



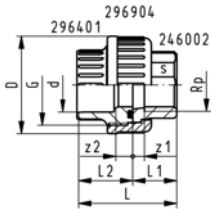
## Adaptor union ABS/stainless steel metric Welding end

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

29 53 03



## 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 [mm]	Rp [inch]	PN*	Code	kg
20	1/2	10	<b>729 530 306</b>	0.064
25	3/4	10	<b>729 530 307</b>	0.095
32	1	10	<b>729 530 308</b>	0.139
40	1 1/4	10	<b>729 530 309</b>	0.240
50	1 1/2	10	<b>729 530 310</b>	0.339
63	2	10	<b>729 530 311</b>	0.516

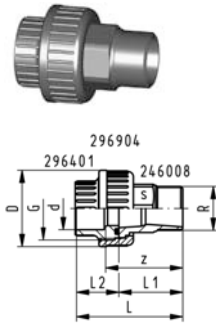
d [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	z1 [mm]	z2 [mm]	G [inch]	s [mm]
20	43	48	22	26	9	10	1	25
25	51	51	22	29	7	10	1 1/4	31
32	58	58	26	33	9	10	1 1/2	38
40	72	69	31	39	12	12	2	48
50	83	78	33	46	14	14	2 1/4	54
63	100	91	35	58	11	18	2 3/4	67

29 53 08

**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 [mm]	R [inch]	PN*	Code	kg	D [mm]	L [mm]	L1 [mm]	L2 [mm]	z [mm]	G [inch]	s [mm]
20	1/2	10	<b>729 530 806</b>	0.100	43	66	40	26	50	1	25
25	3/4	10	<b>729 530 807</b>	0.147	51	72	43	29	53	1 1/4	31
32	1	10	<b>729 530 808</b>	0.198	58	80	48	33	58	1 1/2	38
40	1 1/4	10	<b>729 530 809</b>	0.400	72	95	57	39	69	2	48
50	1 1/2	10	<b>729 530 810</b>	0.490	83	104	59	46	73	2 1/4	54
63	2	10	<b>729 530 811</b>	0.675	100	118	62	58	80	2 3/4	67

29 55 05

**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 [mm]	Rp [inch]	PN	Code	kg
20	1/2	10	<b>729 550 506</b>	0.084
25	3/4	10	<b>729 550 507</b>	0.134
32	1	10	<b>729 550 508</b>	0.179
40	1 1/4	10	<b>729 550 509</b>	0.327
50	1 1/2	10	<b>729 550 510</b>	0.452
63	2	10	<b>729 550 511</b>	0.722

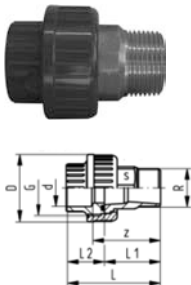
d [mm]	Rp [inch]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	z1 [mm]	z2 [mm]	G [inch]	s [mm]
20	1/2	43	48	22	26	7	10	1	25
25	3/4	51	54	25	29	9	11	1 1/4	30
32	1	58	60	27	33	8	11	1 1/2	36
40	1 1/4	72	70	31	39	10	13	2	48
50	1 1/2	83	81	35	46	14	21	2 1/4	55
63	2	100	98	40	58	14	21	2 3/4	65

29 55 09

**Adaptor union ABS/brass metric R**

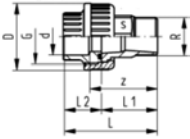
**Model:**

- 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 [mm]	R [inch]	PN	Code	kg	D [mm]	L [mm]	L1 [mm]	L2 [mm]	z [mm]	G [inch]	s [mm]
20	1/2	10	<b>729 550 906</b>	0.123	43	63	37	26	47	1	25
25	1/2	10	<b>729 550 957</b>	0.185	51	66	37	29	48	1 1/4	30
25	3/4	10	<b>729 550 907</b>	0.293	51	71	42	29	52	1 1/4	30
25	1	10	<b>729 550 967</b>	0.293	51	75	46	29	57	1 1/4	30
32	1/2	10	<b>729 550 958</b>	0.283	58	70	37	33	48	1 1/2	36

table continued next page



d	R	PN	Code	kg	D	L	L1	L2	z	G	s
[mm]	[inch]				[mm]	[mm]	[mm]	[mm]	[mm]	[inch]	[mm]
32	3/4	10	<b>729 550 968</b>	0.283	58	75	42	33	53	1 1/2	36
32	1	10	<b>729 550 908</b>	0.374	58	79	46	33	57	1 1/2	36
40	1 1/4	10	<b>729 550 909</b>	0.503	72	91	52	39	65	2	46
50	2 1/2	10	<b>729 550 910</b>	0.666	83	102	56	46	71	2 1/4	55
63	2	10	<b>729 550 911</b>	1.071	100	125	67	58	87	2 3/4	65

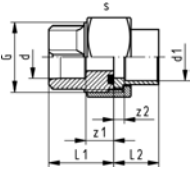
20 51 01



## Adaptor union ABS/copper for soldering metric

### Model:

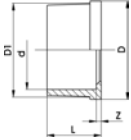
- Union End: Copper
- Union Bush: Solvent cement socket ABS metric
- Union Nut: brass
- Gasket: O-ring EPDM No. 48 41 00



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

# Union spare parts

29 60 01



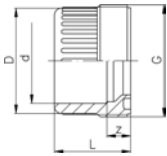
## Union end ABS metric

### 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 [mm]	PN	Code	kg	z [mm]	L [mm]	D [mm]	D1 [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

29 64 01



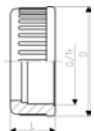
## Union bush ABS metric

### Model:

- Solvent cement socket metric
- For union 29 51 01
- Jointing face: With O-Ring groove

d [mm]	PN	Code	kg	z [mm]	D [mm]	L [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>729 640 123</b>	0.274	18	110	69	Tr128x5
110	10	<b>729 640 114</b>	0.330	11	133	72	Tr154x6

29 69 04



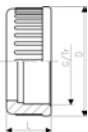
## Union nut ABS

### Model:

- For union 23 51 01

d [mm]	PN	Code	kg	D [mm]	L [mm]	d [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

table continued next page

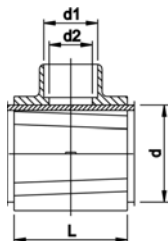


d [mm]	PN	Code	kg	D [mm]	L [mm]	d [mm]	G/Tr
75	10	<b>729 690 012</b>	0.188	135	40		Tr108x5
90	10	<b>729 690 013</b>	0.267	158	43		Tr128x5
110	10	<b>729 690 014</b>	0.423	188	48		Tr154x6



# Branch saddles

69 11 00



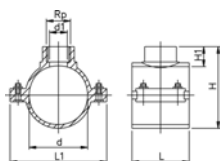
## Branch saddle ABS metric

### 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 [mm]	PN* [bar]	Code	kg	d1 [mm]	d2 [mm]	Tapping-Ø [mm]	L [mm]
90	10	<b>169 110 056</b>	0.786	50	40	39	105
110	10	<b>169 110 066</b>	0.864	50	40	39	105
160	10	<b>169 110 097</b>	1.185	63	49	48	120
225	10	<b>169 110 117</b>	1.483	63	49	48	120

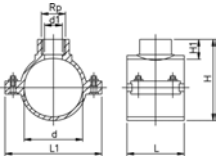
## 654 - Blue clamp saddles with stainless steel reinforcing ring, flat gasket and galvanized bolts and nuts (PN16-PN10)



- water PN16-10
- suitable for PE and PVC pipes
- female thread: ISO 7 (parallel)
- material: PP
- gasket: O-ring with flat lip (NBR)
- reinforcement ring: stainless steel AISI430
- bolts and nuts : galvanized
- colour: blue
- B= N° of bolts
- M= bolt type
- (\*) with O-ring gasket

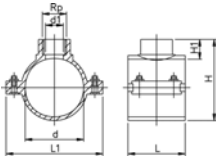
d [mm]	Rp [inch]	PN	B	M	Code	kg
* 20	½	16	2	M8X40	<b>158 001 041</b>	0.119
* 25	½	16	2	M8X30	<b>158 001 042</b>	0.110
* 25	¾	16	2	M8X30	<b>158 001 043</b>	0.123
* 32	½	16	2	M8X30	<b>158 001 044</b>	0.103
* 32	¾	16	2	M8X30	<b>158 001 045</b>	0.115
* 32	1	16	2	M8X40	<b>158 001 046</b>	0.162
40	½	16	2	M8X40	<b>158 001 047</b>	0.135
40	¾	16	2	M8X40	<b>158 001 048</b>	0.146
40	1	16	2	M8X40	<b>158 001 049</b>	0.153
50	½	16	4	M8X40	<b>158 001 050</b>	0.196
50	¾	16	4	M8X40	<b>158 001 051</b>	0.209
50	1	16	4	M8X40	<b>158 001 052</b>	0.217
50	1 ¼	16	4	M8X40	<b>158 001 053</b>	0.221
63	½	16	4	M8X40	<b>158 001 054</b>	0.212
63	¾	16	4	M8X40	<b>158 001 055</b>	0.222
63	1	16	4	M8X40	<b>158 001 056</b>	0.228
63	1 ¼	16	4	M8X40	<b>158 001 058</b>	0.268
63	1 ½	16	4	M8X40	<b>158 001 057</b>	0.275

table continued next page



d [mm]	Rp [inch]	PN	B	M	Code	kg
75	1/2	16	4	M8X60	<b>158 001 059</b>	0.364
75	3/4	16	4	M8X60	<b>158 001 060</b>	0.376
75	1	16	4	M8X60	<b>158 001 061</b>	0.384
75	1 1/4	16	4	M8X60	<b>158 001 063</b>	0.421
75	1 1/2	16	4	M8X60	<b>158 001 062</b>	0.428
75	2	16	4	M8X60	<b>158 001 064</b>	0.437
90	1/2	16	4	M8X60	<b>158 001 065</b>	0.412
90	3/4	16	4	M8X60	<b>158 001 066</b>	0.421
90	1	16	4	M8X60	<b>158 001 067</b>	0.432
90	1 1/4	16	4	M8X60	<b>158 001 069</b>	0.472
90	1 1/2	16	4	M8X60	<b>158 001 068</b>	0.474
90	2	16	4	M8X60	<b>158 001 070</b>	0.481
110	1/2	16	6	M8X50	<b>158 001 071</b>	0.511
110	3/4	16	6	M8X50	<b>158 001 072</b>	0.523
110	1	16	6	M8X50	<b>158 001 073</b>	0.533
110	1 1/4	16	6	M8X50	<b>158 001 075</b>	0.565
110	1 1/2	16	6	M8X50	<b>158 001 074</b>	0.566
110	2	16	6	M8X50	<b>158 001 076</b>	0.570
* 110	3	6	6	M8x70	<b>158 001 077</b>	1.108
125	1/2	16	6	M8X50	<b>158 001 078</b>	0.578
125	3/4	16	6	M8X50	<b>158 001 079</b>	0.590
125	1	16	6	M8X50	<b>158 001 080</b>	0.592
125	1 1/4	16	6	M8X50	<b>158 001 082</b>	0.629
125	1 1/2	16	6	M8X50	<b>158 001 081</b>	0.627
125	2	16	6	M8X50	<b>158 001 083</b>	0.640
* 125	3	6	6	M8X70	<b>158 001 084</b>	1.009
* 125	4	6	6	M8X70	<b>158 001 085</b>	1.051
140	1/2	16	6	M8X70	<b>158 001 086</b>	0.830
140	3/4	16	6	M8X70	<b>158 001 087</b>	0.843
140	1	16	6	M8X70	<b>158 001 088</b>	0.849
140	1 1/4	16	6	M8X70	<b>158 001 090</b>	0.880
140	1 1/2	16	6	M8X70	<b>158 001 089</b>	0.892
140	2	16	6	M8X70	<b>158 001 091</b>	0.898
* 140	3	10	6	M8X70	<b>158 001 092</b>	1.132
* 140	4	10	6	M8X70	<b>158 001 093</b>	1.196
160	1/2	16	6	M8X70	<b>158 001 094</b>	0.899
160	3/4	16	6	M8X70	<b>158 001 095</b>	0.908
160	1	16	6	M8X70	<b>158 001 096</b>	0.917
160	1 1/4	16	6	M8X70	<b>158 001 098</b>	0.950
160	1 1/2	16	6	M8X70	<b>158 001 097</b>	0.954
160	2	16	6	M8X70	<b>158 001 099</b>	0.956
* 160	3	10	6	M8X70	<b>158 001 100</b>	1.185
* 160	4	10	6	M8X70	<b>158 001 101</b>	1.262
* 180	1	10	6	M10X80	<b>158 001 102</b>	1.980
* 180	1 1/4	10	6	M10X80	<b>158 001 104</b>	2.013
* 180	1 1/2	10	6	M10X80	<b>158 001 103</b>	2.007
* 180	2	10	6	M10X80	<b>158 001 105</b>	2.018
* 180	3	10	6	M10X80	<b>158 001 106</b>	2.043
* 180	4	10	6	M10X80	<b>158 001 107</b>	2.092
* 200	1 1/2	10	6	M10X80	<b>158 001 108</b>	1.966
* 200	2	10	6	M10X80	<b>158 001 109</b>	1.946

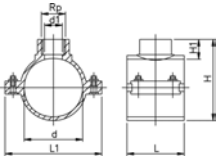
table continued next page



d [mm]	Rp [inch]	PN	B	M	Code	kg
* 200	3	10	6	M10X80	<b>158 001 110</b>	1.980
* 200	4	10	6	M10X80	<b>158 001 111</b>	2.020
* 225	1 ½	10	6	M10X80	<b>158 001 112</b>	2.049
* 225	2	10	6	M10X80	<b>158 001 113</b>	2.050
* 225	3	10	6	M10X80	<b>158 001 114</b>	2.150
* 225	4	10	6	M10X80	<b>158 001 115</b>	2.184
* 250	2	10	6	M10X80	<b>158 001 116</b>	2.472
* 250	3	10	6	M10X80	<b>158 001 117</b>	2.466
* 250	4	10	6	M10X80	<b>158 001 118</b>	2.478
280	2	10	6	M10X160	<b>158 001 119</b>	3.440
* 280	3	10	6	M10X160	<b>158 001 120</b>	3.543
* 280	4	10	6	M10X160	<b>158 001 121</b>	3.585
315	2	10	6	M10X110	<b>158 001 122</b>	4.156
* 315	3	10	6	M10X110	<b>158 001 123</b>	4.267
* 315	4	10	6	M10X110	<b>158 001 124</b>	4.279

d [mm]	Rp [inch]	d1 [mm]	L [mm]	L1 [mm]	H [mm]	H1 [mm]
* 20	½	12	46	77	59	26
* 25	½	13	49	79	58	15
* 25	¾	13	49	79	58	15
* 32	½	14	49	79	62	20
* 32	¾	14	49	79	62	20
* 32	1	14	62	87	70	20
40	½	21	62	86	71	20
40	¾	21	62	86	71	20
40	1	21	62	86	70	19
50	½	21	62	86	82	20
50	¾	21	62	86	82	20
50	1	21	62	86	82	20
50	1 ¼	21	62	86	82	20
63	½	18	62	101	96	21
63	¾	24	62	101	96	21
63	1	31	62	101	96	21
63	1 ¼	31	62	101	96	21
63	1 ½	31	62	101	96	21
75	½	16	79	123	102	14
75	¾	21	79	123	104	16
75	1	27	79	123	107	19
75	1 ¼	35	79	123	109	21
75	1 ½	42	79	123	109	21
75	2	53	79	123	112	24
90	½	16	87	138	116	14
90	¾	21	87	138	118	16
90	1	27	87	138	121	19
90	1 ¼	35	87	138	123	21
90	1 ½	42	87	138	123	21
90	2	53	87	138	126	24
110	½	15	99	152	150	23
110	¾	20	99	152	150	23
110	1	26	99	152	150	23
110	1 ¼	35	99	152	150	23

table continued next page



d [mm]	Rp [inch]	d1 [mm]	L [mm]	L1 [mm]	H [mm]	H1 [mm]
110	1 ½	41	99	152	150	23
110	2	51	99	152	150	23
* 110	3	85	99	152	150	23
125	½	15	101	166	169	24
125	¾	20	101	166	169	24
125	1	26	101	166	169	24
125	1 ¼	35	101	166	168	23
125	1 ½	41	101	166	168	23
125	2	50	101	166	168	23
* 125	3	85	139	178	180	37
* 125	4	90	139	178	181	38
140	½	18	114	207	191	25
140	¾	24	114	207	191	25
140	1	30	114	207	191	25
140	1 ¼	38	114	207	191	25
140	1 ½	45	114	207	191	24
140	2	50	114	207	191	24
* 140	3	85	142	208	201	38
* 140	4	90	142	208	201	38
160	½	18	114	226	215	24
160	¾	24	114	226	215	24
160	1	30	114	226	215	24
160	1 ¼	37	114	226	215	24
160	1 ½	45	114	226	215	24
160	2	51	114	226	215	24
* 160	3	84	142	228	222	38
* 160	4	90	142	228	222	38
* 180	1	30	169	262	265	38
* 180	1 ¼	36	169	262	265	38
* 180	1 ½	54	169	262	265	38
* 180	2	54	169	262	265	38
* 180	3	85	169	262	265	38
* 180	4	103	169	262	267	40
* 200	1 ½	45	169	262	265	38
* 200	2	54	169	262	265	38
* 200	3	85	169	262	265	38
* 200	4	103	169	262	267	40
* 225	1 ½	45	145	287	287	26
* 225	2	51	145	287	287	26
* 225	3	85	174	287	295	37
* 225	4	103	174	287	295	38
* 250	2	55	178	310	314	38
* 250	3	85	178	310	314	38
* 250	4	103	178	310	314	38
280	2	51	179	335	326	31
* 280	3	78	179	335	338	41
* 280	4	98	179	335	338	46
315	2	51	246	390	350	31
* 315	3	78	246	390	363	41
* 315	4	98	246	390	363	46

# Ball valves

## Ball valve type 546 ABS With solvent cement sockets BS Inch

### Model:

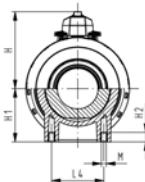
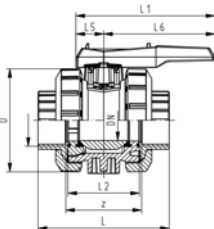
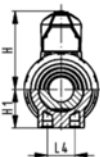
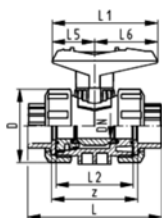
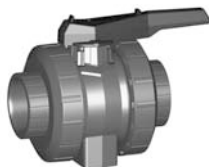
- For easy installation and removal
- z-dimension, valve end and union nut are **not compatible** with type 346 (DN10/15-50) resp. type 370 (DN65-100)
- Ball seals PTFE
- Without mounting inserts

### Option:

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



DN10/15 - 50



Inch	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
3/8	10	10	71	<b>169 546 201</b>	0.112
1/2	15	10	185	<b>169 546 202</b>	0.114
3/4	20	10	350	<b>169 546 203</b>	0.178
1	25	10	700	<b>169 546 204</b>	0.258
1 1/4	32	10	1000	<b>169 546 205</b>	0.457
1 1/2	40	10	1600	<b>169 546 206</b>	0.642
2	50	10	3100	<b>169 546 207</b>	1.175
	65	10	5000	<b>169 546 008</b>	3.900
3	80	10	7000	<b>169 546 209</b>	5.700
	100	10	11000	<b>169 546 210</b>	9.100

Inch	D [mm]	H [mm]	H1 [mm]	L [mm]	L1 [mm]	L2 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	z [mm]
3/8	50	57	27	92	77	56	25	32	45	60
1/2	50	57	27	95	77	56	25	32	45	60
3/4	58	67	30	110	97	65	25	39	58	69
1	68	73	36	123	97	71	25	39	58	75
1 1/4	84	90	44	146	128	85	45	54	74	89
1 1/2	97	97	51	157	128	89	45	54	74	97
	124	116	64	183	152	101	45	66	87	110
2	166	149	85	233	270	136	70	64	206	144
	200	161	105	254	270	141	70	64	206	151
3	238	178	123	301	320	164	120	64	256	174



DN10/15 - 50



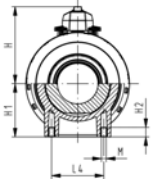
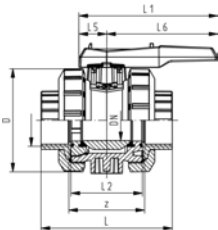
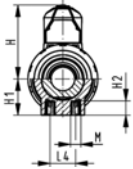
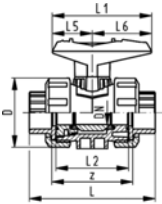
**Ball valve type 546 ABS**  
**With mounting inserts**  
**With solvent cement sockets BS Inch**

**Model:**

- 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

**Option:**

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



Inch	DN [mm]	PN	kv-value (Δp=1 bar) [l/min]	EPDM Code	kg
3/8	10	10	71	<b>169 546 241</b>	0.112
1/2	15	10	185	<b>169 546 242</b>	0.114
3/4	20	10	350	<b>169 546 243</b>	0.178
1	25	10	700	<b>169 546 244</b>	0.258
1 1/4	32	10	1000	<b>169 546 245</b>	0.457
1 1/2	40	10	1600	<b>169 546 246</b>	0.642
2	50	10	3100	<b>169 546 247</b>	1.175
	65	10	5000	<b>169 546 068</b>	3.900
3	80	10	7000	<b>169 546 249</b>	5.700
4	100	10	11000	<b>169 546 250</b>	9.100

Inch	D [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	L1 [mm]	L2 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	M	z [mm]
3/8	50	57	27	12	92	77	56	25	32	45	M6	60
1/2	50	57	27	12	95	77	56	25	32	45	M6	60
3/4	58	67	30	12	110	97	65	25	39	58	M6	69
1	68	73	36	12	123	97	71	25	39	58	M6	75
1 1/4	84	90	44	15	146	128	85	45	54	74	M8	89
1 1/2	97	97	51	15	157	128	89	45	54	74	M8	97
2	124	116	64	15	183	152	101	45	66	87	M8	110
	166	149	85	15	233	270	136	70	64	206	M8	144
3	200	161	105	15	254	270	141	70	64	206	M8	151
4	238	178	123	22	301	320	164	120	64	256	M12	174



DN10/15 - 50



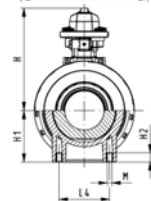
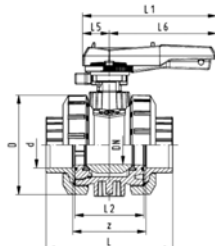
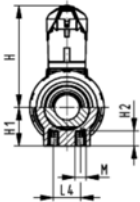
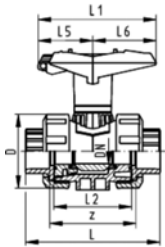
**Ball valve type 546 ABS**  
**With lockable handle**  
**With solvent cement sockets BS Inch**

**Model:**

- 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 diagram)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+



Inch	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
3/8	10	10	71	<b>169 546 221</b>	0.121
1/2	15	10	185	<b>169 546 222</b>	0.123
3/4	20	10	350	<b>169 546 223</b>	0.193
1	25	10	700	<b>169 546 224</b>	0.273
1 1/4	32	10	1000	<b>169 546 225</b>	0.480
1 1/2	40	10	1600	<b>169 546 226</b>	0.665
2	50	10	3100	<b>169 546 227</b>	1.205
	65	10	5000	<b>169 546 088</b>	4.200
3	80	10	7000	<b>169 546 229</b>	6.100
4	100		11000	<b>169 546 230</b>	9.400

Inch	D [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	L1 [mm]	L2 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	M	z [mm]
3/8	50	79	27	12	92	87	56	25	42	45	M6	60
1/2	50	79	27	12	95	87	56	25	42	45	M6	60
3/4	58	88	30	12	110	108	65	25	50	58	M6	69
1	68	94	36	12	123	108	71	25	50	58	M6	75
1 1/4	84	113	44	15	146	140	85	45	66	75	M8	89
1 1/2	97	119	51	15	157	140	89	45	66	75	M8	97
2	124	141	64	15	183	165	101	45	78	87	M8	110
	166	224	85	15	233	270	136	70	64	206	M8	144
3	200	235	105	15	254	270	141	70	64	206	M8	151
4	238	245	123	22	301	320	164	120	64	256	M12	174



DN10/15 - 50



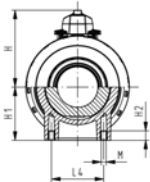
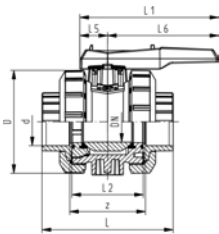
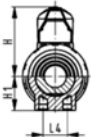
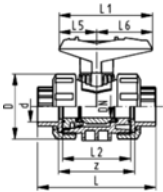
## Ball valve type 546 ABS With solvent cement sockets metric

### Model:

- 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 diagram)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM 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
75	65	10	5000	<b>169 546 008</b>	3.900
90	80	10	7000	<b>169 546 009</b>	5.700
110	100	10	11000	<b>169 546 010</b>	9.100

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





DN10/15 - 50



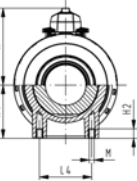
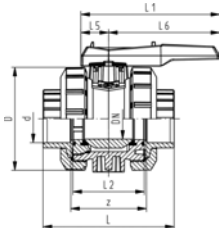
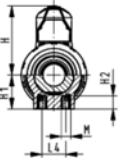
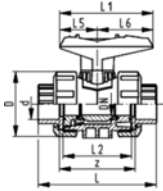
**Ball valve type 546 ABS**  
**With mounting inserts**  
**With solvent cement sockets metric**

**Model:**

- For easy installation and removal
- Ball seals PTFE
- Integrated stainless steel mounting inserts
- 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 diagram)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+

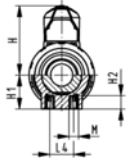
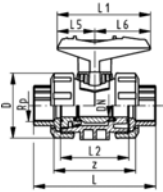


d [mm]	DN [mm]	PN	kv-value (Δp=1 bar) [l/min]	EPDM Code	kg
16	10	10	71	<b>169 546 061</b>	0.112
20	15	10	185	<b>169 546 062</b>	0.114
25	20	10	350	<b>169 546 063</b>	0.178
32	25	10	700	<b>169 546 064</b>	0.258
40	32	10	1000	<b>169 546 065</b>	0.457
50	40	10	1600	<b>169 546 066</b>	0.642
63	50	10	3100	<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 [mm]	D [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	L1 [mm]	L2 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	M	z [mm]
16	50	57	27	12	92	77	56	25	32	45	M6	64
20	50	57	27	12	95	77	56	25	32	45	M6	64
25	58	67	30	12	110	97	65	25	39	58	M6	72
32	68	73	36	12	123	97	71	25	39	58	M6	79
40	84	90	44	15	146	128	85	45	54	74	M8	94
50	97	97	51	15	157	128	89	45	54	74	M8	95
63	124	116	64	15	183	152	101	45	66	87	M8	107
75	166	149	85	15	233	270	136	70	64	206	M8	144
90	200	161	105	15	254	270	141	70	64	206	M8	151
110	238	178	123	22	301	320	164	120	64	256	M12	174



DN10/15 - 50



## 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:

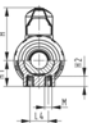
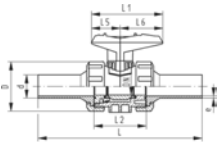
- Individual configuration of the valve (see diagram)
- Multifunctional module with integrated limit switches
- Pneumatic or electric actuators from +GF+

Rp [inch]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM 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 [inch]	D [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	L1 [mm]	L2 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	M	z [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



DN10/15 - 50



## Ball valve type 546 ABS With mounting inserts With butt fusion spigots long PE100 SDR11 metric

### Model:

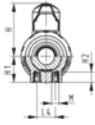
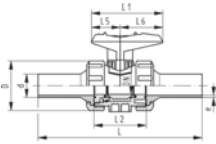
- For easy installation and removal
- Ball seals PTFE
- Integrated stainless steel mounting inserts
- z-dimension, valve end and union nut are **not compatible** with type 346 (DN10/15-50) resp. type 370 (DN65-100)

### Option:

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

d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
20	15	10	185	<b>800 024 832</b>	0.150
25	20	10	350	<b>800 024 834</b>	0.220
32	25	10	700	<b>800 015 141</b>	0.310

table continued next page



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
40	32	10	1000	<b>800 015 142</b>	0.530
50	40	10	1600	<b>800 015 179</b>	0.740
63	50	10	3100	<b>800 015 143</b>	1.370

d [mm]	D [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	L1 [mm]	L2 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	M	e [mm]
20	50	57	27	12	193	77	56	25	32	45	M6	2,25
25	58	67	30	12	216	97	65	25	39	58	M6	2,3
32	68	73	36	12	223	97	71	25	39	58	M6	2,9
40	84	90	44	15	249	128	85	45	54	74	M8	3,7
50	97	97	51	15	271	128	89	45	54	74	M8	4,6
63	124	116	64	15	321	152	101	45	66	87	M8	5,8



DN10/15 - 50



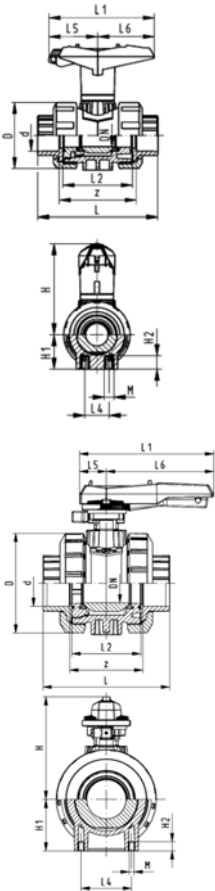
## Ball valve type 546 ABS With lockable handle With solvent cement sockets metric

### 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 (DN10/15-50) resp. type 370 (DN65-100)
- Lockable hand lever with ratchet settings

### Option:

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

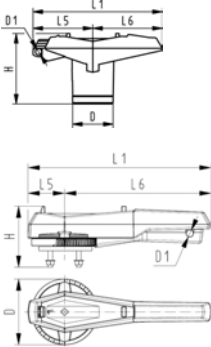


d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
16	10	10	71	<b>169 546 081</b>	0.121
20	15	10	185	<b>169 546 082</b>	0.123
25	20	10	350	<b>169 546 083</b>	0.193
32	25	10	700	<b>169 546 084</b>	0.273
40	32	10	1000	<b>169 546 085</b>	0.480
50	40	10	1600	<b>169 546 086</b>	0.665
63	50	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 [mm]	D [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	L1 [mm]	L2 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	M	z [mm]
16	50	79	27	12	92	87	56	25	42	45	M6	64
20	50	79	27	12	95	87	56	25	42	45	M6	64
25	58	88	30	12	110	108	65	25	50	58	M6	72
32	68	94	36	12	123	108	71	25	50	58	M6	79
40	84	113	44	15	146	140	85	45	66	75	M8	94
50	97	119	51	15	157	140	89	45	66	75	M8	95
63	124	141	64	15	183	165	101	45	78	87	M8	107
75	166	224	85	15	233	270	136	70	64	206	M8	144
90	200	235	105	15	254	270	141	70	64	206	M8	151
110	238	245	123	22	301	320	164	120	64	256	M12	174



DN10/15 - 50



## Multifunctional handle 546 red (K11) With ratchet settings lockable

### Note:

To retrofit the ball valve 546 with the multifunctional handle a multifunction module is necessary in the dimensions DN65-100

d-d [mm]	DN-DN [mm]	Code	kg	D [mm]	D1 [mm]	H [mm]	L1 [mm]	L5 [mm]	L6 [mm]
16 - 20	10 - 15	<b>167 484 100</b>	0.026	26	5	53	87	42	45
- 25	- 20	<b>167 484 101</b>	0.045	34	5	59	108	50	58
- 32	- 25	<b>167 484 102</b>	0.045	34	5	59	108	50	58
- 40	- 32	<b>167 484 103</b>	0.082	40	5	69	140	66	75
- 50	- 40	<b>167 484 104</b>	0.082	40	5	69	140	66	75
- 63	- 50	<b>167 484 105</b>	0.104	44	5	80	165	78	87
- 75	- 65	<b>161 486 689</b>	0.480	115	12	105	270	64	206
- 90	- 80	<b>161 486 690</b>	0.480	115	12	105	270	64	206
110 - 140	100 - 125	<b>161 486 691</b>	0.480	115	12	107	320	64	256

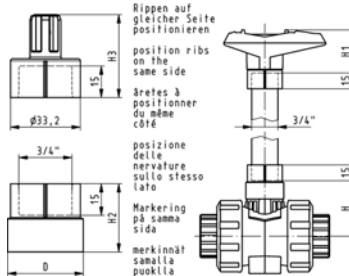
## Handle extension 546 PVC-U inch BS/ASTM

### Model:

- For Ball Valve Type 546



DN-DN [mm]	Inch	Code	kg	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	D [mm]
10 - 15	3/8-1/2	<b>161 486 443</b>	0.032	41	52	29	36	26
20 - 25	3/4-1	<b>161 486 444</b>	0.037	50	62	32	39	36
32 - 40	1 1/4-1 1/2	<b>161 486 445</b>	0.047	65	76	34	44	40
50 -	2	<b>161 486 446</b>	0.058	84	87	37	48	44

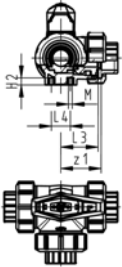
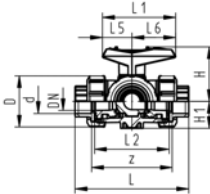
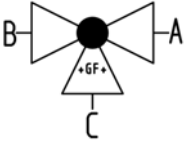




### 3-Way ball valve type 543 ABS Horizontal/L-port With solvent cement sockets metric

#### Model:

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-C opened, see flow scheme



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
16	10	10	50	<b>169 543 001</b>	0.187
20	15	10	75	<b>169 543 002</b>	0.192
25	20	10	150	<b>169 543 003</b>	0.276
32	25	10	280	<b>169 543 004</b>	0.420
40	32	10	480	<b>169 543 005</b>	0.716
50	40	10	620	<b>169 543 006</b>	1.061
63	50	10	1230	<b>169 543 007</b>	2.064

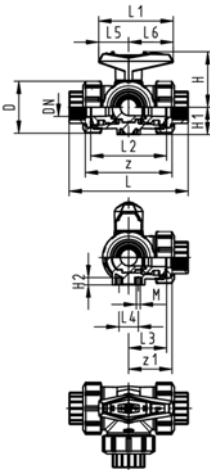
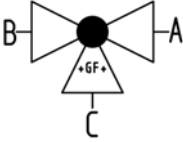
d [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	z1 [mm]
16	50	109	77	73	36	25	32	45	57	28	8	6	81	40
20	50	112	77	73	36	25	32	45	57	28	8	6	81	40
25	58	131	97	86	43	25	39	58	67	32	8	6	94	47
32	68	151	97	99	50	25	39	58	73	36	8	6	107	54
40	84	181	128	120	60	45	54	74	90	45	9	8	130	65
50	97	205	128	137	69	45	54	74	97	51	9	8	143	72
63	124	261	152	179	89	45	66	87	116	65	9	8	185	92



### 3-Way ball valve type 543 ABS Horizontal/L-port With threaded sockets Rp

#### Model:

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-C opened, see flow scheme



Rp [inch]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
3/8	10	10	50	<b>169 543 041</b>	0.187
1/2	15	10	75	<b>169 543 042</b>	0.192
3/4	20	10	150	<b>169 543 043</b>	0.276
1	25	10	280	<b>169 543 044</b>	0.420
1 1/4	32	10	480	<b>169 543 045</b>	0.716
1 1/2	40	10	620	<b>169 543 046</b>	1.061
2	50	10	1230	<b>169 543 047</b>	2.064

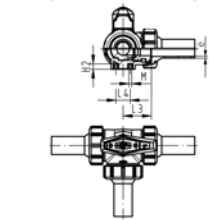
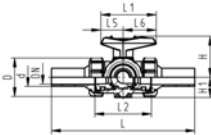
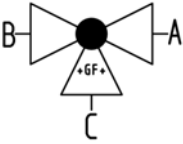
Rp [inch]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	z1 [mm]
3/8	50	113	77	73	36	25	32	45	57	28	8	6	87	43
1/2	50	117	77	73	36	25	32	45	57	28	8	6	85	42
3/4	58	135	97	86	43	25	39	58	67	32	8	6	100	50
1	68	155	97	99	50	25	39	58	73	36	8	6	113	57
1 1/4	84	179	128	120	60	45	54	74	90	45	9	8	134	67
1 1/2	97	201	128	137	69	45	54	74	97	51	9	8	155	78
2	124	255	152	179	89	45	66	87	116	65	9	8	199	99



**3-Way ball valve type 543 ABS**  
**Horizontal/L-port**  
**With butt fusion spigots long**  
**PE100 SDR11 metric**

**Model:**

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-C opened, see flow scheme



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
20	15	10	75	<b>169 543 302</b>	0.203
25	20	10	150	<b>169 543 303</b>	0.296
32	25	10	280	<b>169 543 304</b>	0.450
40	32	10	480	<b>169 543 305</b>	0.762
50	40	10	620	<b>169 543 306</b>	1.161
63	50	10	1230	<b>169 543 307</b>	2.509

d [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	e [mm]
20	50	210	77	73	36	25	32	45	57	28	8	6	2.3
25	58	237	97	86	43	25	39	58	67	32	8	6	2.3
32	68	251	97	99	50	25	39	58	73	36	8	6	2.9
40	84	283	128	120	60	45	54	74	90	45	9	8	3.7
50	97	319	128	137	69	45	54	74	97	51	9	8	4.6
63	124	399	152	179	89	45	66	87	116	65	9	8	5.8

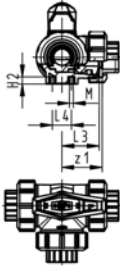
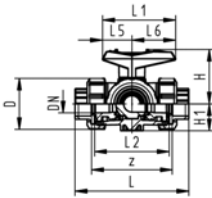
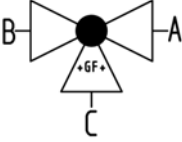




### 3-Way ball valve type 543 ABS Horizontal/L-port With solvent cement sockets BS

#### Model:

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-C opened, see flow scheme



Inch	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
3/8	10	10	50	<b>169 543 061</b>	0.187
1/2	15	10	75	<b>169 543 062</b>	0.192
3/4	20	10	150	<b>169 543 063</b>	0.276
1	25	10	280	<b>169 543 064</b>	0.420
1 1/4	32	10	480	<b>169 543 065</b>	0.716
1 1/2	40	10	620	<b>169 543 066</b>	1.061
2	50	10	1230	<b>169 543 067</b>	2.064

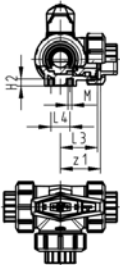
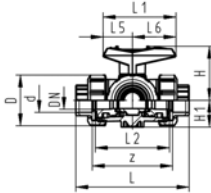
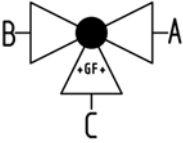
Inch	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	z1 [mm]
3/8	50	109	77	73	36	25	32	45	57	28	8	6	77	38
1/2	50	112	77	73	36	25	32	45	57	28	8	6	77	38
3/4	58	131	97	86	43	25	39	58	67	32	8	6	90	45
1	68	151	97	99	50	25	39	58	73	36	8	6	103	52
1 1/4	84	181	128	120	60	45	54	74	90	45	9	8	124	62
1 1/2	97	205	128	137	69	45	54	74	97	51	9	8	145	73
2	124	261	152	179	89	45	66	87	116	65	9	8	189	94



### 3-Way ball valve type 543 ABS Horizontal/T-port With solvent cement sockets metric

#### Model:

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-B-C opened, see flow scheme



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
16	10	10	140	<b>169 543 201</b>	0.186
20	15	10	200	<b>169 543 202</b>	0.191
25	20	10	470	<b>169 543 203</b>	0.274
32	25	10	793	<b>169 543 204</b>	0.415
40	32	10	1290	<b>169 543 205</b>	0.708
50	40	10	1910	<b>169 543 206</b>	1.045
63	50	10	3100	<b>169 543 207</b>	2.030

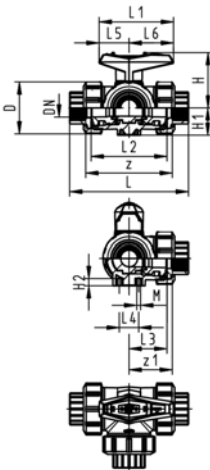
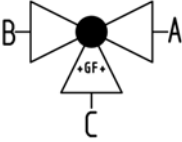
d [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	z1 [mm]
16	50	109	77	73	36	25	32	45	57	28	8	6	81	40
20	50	112	77	73	36	25	32	45	57	28	8	6	81	40
25	58	131	97	86	43	25	39	58	67	32	8	6	94	47
32	68	151	97	99	50	25	39	58	73	36	8	6	107	54
40	84	181	128	120	60	45	54	74	90	45	9	8	130	65
50	97	205	128	137	69	45	54	74	97	51	9	8	143	72
63	124	261	152	179	89	45	66	87	116	65	9	8	185	92



### 3-Way ball valve type 543 ABS Horizontal/T-port With threaded sockets Rp

#### Model:

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-B-C opened, see flow scheme



Rp [inch]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
3/8	10	10	140	<b>169 543 241</b>	0.186
1/2	15	10	200	<b>169 543 242</b>	0.191
3/4	20	10	470	<b>169 543 243</b>	0.274
1	25	10	793	<b>169 543 244</b>	0.415
1 1/4	32	10	1290	<b>169 543 245</b>	0.708
1 1/2	40	10	1910	<b>169 543 246</b>	1.045
2	50	10	3100	<b>169 543 247</b>	2.030

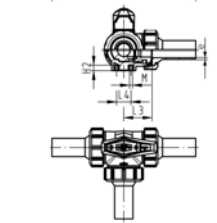
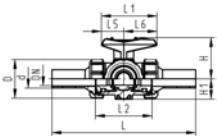
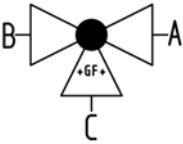
Rp [inch]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	z1 [mm]
3/8	50	113	77	73	36	25	32	45	57	28	8	6	87	43
1/2	50	117	77	73	36	25	32	45	57	28	8	6	85	42
3/4	58	135	97	86	43	25	39	58	67	32	8	6	100	50
1	68	155	97	99	50	25	39	58	73	36	8	6	113	57
1 1/4	84	179	128	120	60	45	54	74	90	45	9	8	134	67
1 1/2	97	201	128	137	69	45	54	74	97	51	9	8	155	78
2	124	255	152	179	89	45	66	87	116	65	9	8	199	99



**3-Way ball valve type 543 ABS**  
**Horizontal/T-port**  
**With butt fusion spigots long**  
**PE100 SDR11 metric**

**Model:**

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-B-C opened, see flow scheme



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
20	15	10	200	<b>169 543 322</b>	0.203
25	20	10	470	<b>169 543 323</b>	0.296
32	25	10	793	<b>169 543 324</b>	0.450
40	32	10	1290	<b>169 543 325</b>	0.762
50	40	10	1910	<b>169 543 326</b>	1.161
63	50	10	3100	<b>169 543 327</b>	2.509

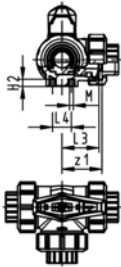
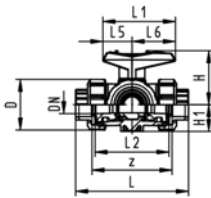
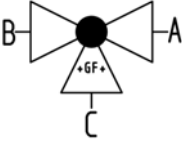
d [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M [mm]	e [mm]
20	50	210	77	73	36	25	32	45	57	28	8	6	2.3
25	58	237	97	86	43	25	39	58	67	32	8	6	2.3
32	68	251	97	99	50	25	39	58	73	36	8	6	2.9
40	84	283	128	120	60	45	54	74	90	45	9	8	3.7
50	97	319	128	137	69	45	54	74	97	51	9	8	4.6
63	124	399	152	179	89	45	66	87	116	65	9	8	5.8



### 3-Way ball valve type 543 ABS Horizontal/T-port With solvent cement sockets BS

#### Model:

- For easy installation and removal (valve end and union nut are compatible with type 546)
- Ball seals PTFE
- Pneumatic or electric actuator available separately
- Angle of operation 360° without turn limiter
- Turn limiter 90° enclosed, in different positions usable as a clip-on ring
- Integrated stainless steel mounting inserts
- Delivery status A-B-C opened, see flow scheme



Inch	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
3/8	10	10	140	<b>169 543 261</b>	0.186
1/2	15	10	200	<b>169 543 262</b>	0.191
3/4	20	10	470	<b>169 543 263</b>	0.274
1	25	10	793	<b>169 543 264</b>	0.415
1 1/4	32	10	1290	<b>169 543 265</b>	0.708
1 1/2	40	10	1910	<b>169 543 266</b>	1.045
2	50	10	3100	<b>169 543 267</b>	2.030

Inch	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]	L6 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	z1 [mm]
3/8	50	109	77	73	36	25	32	45	57	28	8	6	77	38
1/2	50	112	77	73	36	25	32	45	57	28	8	6	77	38
3/4	58	131	97	86	43	25	39	58	67	32	8	6	90	45
1	68	151	97	99	50	25	39	58	73	36	8	6	103	52
1 1/4	84	181	128	120	60	45	54	74	90	45	9	8	124	62
1 1/2	97	205	128	137	69	45	54	74	97	51	9	8	145	73
2	124	261	152	179	89	45	66	87	116	65	9	8	189	94



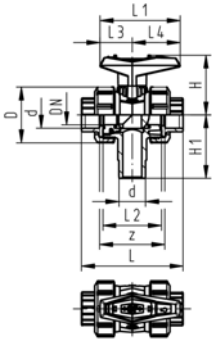
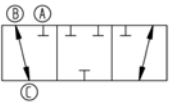
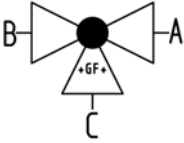
### 3-Way ball valve type 543 ABS Vertical/L-port With solvent cement sockets metric

#### Model:

- Vertical inlet solvent cement spigot metric
- Easy installation and removal using union on third outlet
- Ball seals PTFE
- Electric actuator available separately
- Angle of operation 360° without turn limiter
- Delivery status B-C opened, see flow scheme

#### Mode of action:

- For interconnection of two inputs



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
16	10	10	49	<b>169 543 401</b>	0.124
20	15	10	77	<b>169 543 402</b>	0.127
25	20	10	146	<b>169 543 403</b>	0.194
32	25	10	260	<b>169 543 404</b>	0.284
40	32	10	437	<b>169 543 405</b>	0.475
50	40	10	667	<b>169 543 406</b>	0.676
63	50	10	1293	<b>169 543 407</b>	1.234

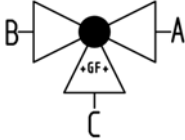
d [mm]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	H [mm]	H1 [mm]	z [mm]
16	50	92	77	56	32	45	57	62	64
20	50	95	77	56	32	45	57	62	64
25	58	111	97	66	39	58	67	72	74
32	68	123	97	71	39	58	73	77	79
40	84	146	128	85	54	74	90	87	95
50	97	157	128	89	54	74	97	97	95
63	124	183	152	101	66	87	116	112	107



### 3-Way ball valve type 543 ABS Vertical/L-port With threaded sockets Rp

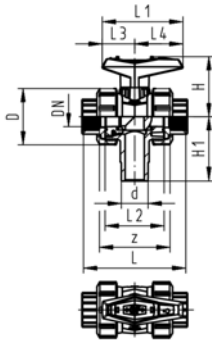
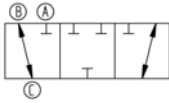
#### Model:

- Vertical inlet solvent cement spigot metric
- Easy installation and removal using union on third outlet
- Ball seals PTFE
- Electric actuator available separately
- Angle of operation 360° without turn limiter
- Delivery status B-C opened, see flow scheme



#### Mode of action:

- For interconnection of two inputs



Rp [inch]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
3/8	10	10	49	<b>169 543 421</b>	0.124
1/2	15	10	77	<b>169 543 422</b>	0.127
3/4	20	10	146	<b>169 543 423</b>	0.194
1	25	10	260	<b>169 543 424</b>	0.284
1 1/4	32	10	437	<b>169 543 425</b>	0.475
1 1/2	40	10	667	<b>169 543 426</b>	0.676
2	50	10	1293	<b>169 543 427</b>	1.234

Rp [inch]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	H [mm]	H1 [mm]	z [mm]
3/8	50	96	77	56	32	45	57	62	69
1/2	50	99	77	56	32	45	57	62	67
3/4	58	115	97	66	39	58	67	72	78
1	68	127	97	71	39	58	73	77	85
1 1/4	84	144	128	85	54	74	90	87	100
1 1/2	97	153	128	89	54	74	97	97	106
2	124	177	152	101	66	87	116	112	121

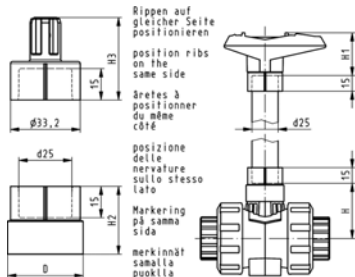


## Handle extension 546 and 543 PVC-U metric

### Model:

- For ball valve type 546 and 543
- Composed of adapter sockets for handle connection and stem connection
- PVC-U pipe in suitable length has to be obtained on site

d-d [mm]	DN-DN [mm]	Code	kg	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	D [mm]
16 - 20	10 - 15	<b>161 486 435</b>	0.032	41	52	29	36	26
25 - 32	20 - 25	<b>161 486 436</b>	0.037	50	62	32	39	36
40 - 50	32 - 40	<b>161 486 437</b>	0.047	65	76	34	44	40
- 63	- 50	<b>161 486 438</b>	0.058	84	87	37	48	44

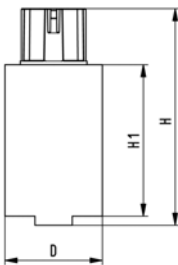


## Handle extension for ball valve type 546 PVC-U DN65 - DN100

### Model:

- Multiple use in succession possible
- Height variable

d-d [mm]	DN-DN [mm]	Code	kg	D [mm]	H [mm]	H1 [mm]
75 - 90	65 - 80	<b>161 490 920</b>	0.345	58	143	100
- 110	- 100	<b>161 490 921</b>	0.418	64	143	100

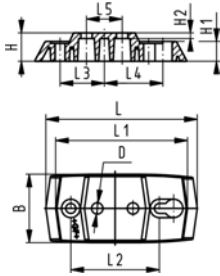






## Mounting plate 546 and 543 PP-GF (L02)

- 2 mounting screws inclusive



d-d [mm]	Inch [inch]	DN-DN [mm]	Code	kg
16 - 32	3/8 - 1	10 - 25	<b>167 484 110</b>	0.055
40 - 63	1 1/4 - 2	32 - 50	<b>167 484 111</b>	0.086

d-d [mm]	B [mm]	D [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	L5 [mm]
16 - 32	48	8	20	14	4	106	92	62	31	41	25
40 - 63	54	9	20	14	4	149	134	104	52	62	45



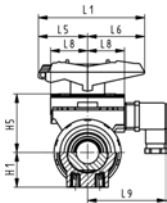
DN10/15 - 50



## Multifunctional module (I03) PP-GF With mechanical limit switches Ag Ni

### Model:

- Accessory to Ball Valve Type 546
- Multifunctional module acts as an intermediate element for actuators
- For operation with handle, multifunctional handle has to be ordered separately.
- Including Plug 3P+E / Protection: IP65
- Including screws to mount the module and stainless steel coupling piece (V2A) for dimension DN65-100

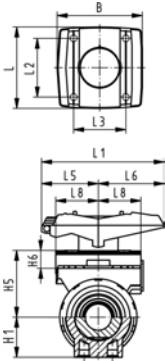


d-d [mm]	Inch [inch]	DN-DN [mm]	Code	kg
16 - 20	3/8 - 1/2	10 - 15	<b>167 482 626</b>	0.110
25 - 32	3/4 - 1	20 - 25	<b>167 482 627</b>	0.120
40 - 50	1 1/4 - 1 1/2	32 - 40	<b>167 482 628</b>	0.135
- 63	2	- 50	<b>167 482 629</b>	0.175
75 - 90	2 1/2 - 3	65 - 80	<b>167 482 630</b>	0.460
- 110	4	- 100	<b>167 482 631</b>	0.480

d-d [mm]	H1 [mm]	H5 [mm]	L1 [mm]	L5 [mm]	L6 [mm]	L8 [mm]	L9 [mm]
16 - 20	27	50	87	42	45	34	73
25 - 32	30	53	108	50	58	38	77
40 - 50	44	72	140	66	75	41	80
- 63	64	94	165	78	87	46	85
75 - 90	85	157	270	64	206		
- 110	123	175	320	64	256		



DN10/15 - 50



## Multifunctional module (I02) PP-GF Module empty

### Model:

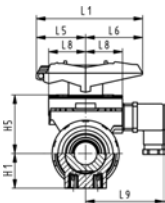
- Accessory to Ball Valve Type 546
- Multifunctional module acts as an intermediate element for actuators
- For operation with handle, multifunctional handle has to be ordered separately.
- Including screws to mount the module and stainless steel coupling piece (V2A) for dimension DN65-100
- The multifunctional module from d75 - d110 has a master gauge F07 according to EN ISO 5211.

d-d [mm]	Inch [inch]	DN-DN [mm]	Code	kg
16 - 20	$\frac{3}{8}$ - $\frac{1}{2}$	10 - 15	<b>167 482 680</b>	0.055
25 - 32	$\frac{3}{4}$ - 1	20 - 25	<b>167 482 681</b>	0.070
40 - 50	1 $\frac{1}{4}$ - 1 $\frac{1}{2}$	32 - 40	<b>167 482 682</b>	0.080
- 63	2	- 50	<b>167 482 683</b>	0.120
75 - 90	2 $\frac{1}{2}$ - 3	65 - 80	<b>167 482 684</b>	0.135
- 110	4	- 100	<b>167 482 685</b>	0.175

d-d [mm]	B [mm]	H1 [mm]	H5 [mm]	H6 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L5 [mm]	L6 [mm]	L8 [mm]
16 - 20	67	27	50	17	72	87	54	40	42	45	34
25 - 32	75	30	53	16	72	108	52	46	50	58	38
40 - 50	81	44	72	16	80	140	60	50	66	75	41
- 63	91	64	94	19	93	165	68	65	78	87	46
75 - 90	90	85	157	23	85	270			64	206	
- 110	106	123	175	23	97	320			64	256	



DN10/15 - 50



## Multifunctional module (I04) PP-GF With mechanical limit switches Au

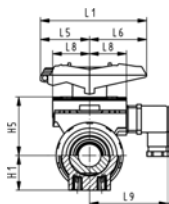
### Model:

- Accessory to Ball Valve Type 546
- Multifunctional module acts as an intermediate element for actuators
- For operation with handle, multifunctional handle has to be ordered separately.
- Including Plug 3P+E / Protection: IP65
- Including screws to mount the module and stainless steel coupling piece (V2A) for dimension DN65-100

d-d [mm]	Inch [inch]	DN-DN [mm]	Code	kg
16 - 20	$\frac{3}{8}$ - $\frac{1}{2}$	10 - 15	<b>167 482 635</b>	0.110
25 - 32	$\frac{3}{4}$ - 1	20 - 25	<b>167 482 636</b>	0.120
40 - 50	1 $\frac{1}{4}$ - 1 $\frac{1}{2}$	32 - 40	<b>167 482 637</b>	0.135
- 63	2	- 50	<b>167 482 638</b>	0.175
75 - 90	2 $\frac{1}{2}$ - 3	65 - 80	<b>167 482 639</b>	0.460
- 110	4	- 100	<b>167 482 640</b>	0.480

d-d [mm]	H1 [mm]	H5 [mm]	L1 [mm]	L5 [mm]	L6 [mm]	L8 [mm]	L9 [mm]
16 - 20	27	50	87	42	45	34	73
25 - 32	30	53	108	50	58	38	77
40 - 50	44	72	140	66	75	41	80

table continued next page



d-d [mm]	H1 [mm]	H5 [mm]	L1 [mm]	L5 [mm]	L6 [mm]	L8 [mm]	L9 [mm]
- 63	64	94	165	78	87	46	85
75 - 90	85	157	270	64	206		
- 110	123	175	320	64	256		



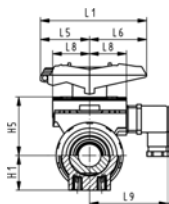
DN10/15 - 50



### Multifunctional module (105) PP-GF With inductive limit switches Namur

#### Model:

- Accessory to Ball Valve Type 546
- Multifunctional module acts as an intermediate element for actuators
- For operation with handle, multifunctional handle has to be ordered separately.
- Including Plug 3P+E / Protection: IP65
- Including screws to mount the module and stainless steel coupling piece (V2A) for dimension DN65-100

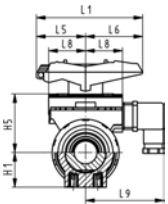


d-d [mm]	Inch [inch]	DN-DN [mm]	Code	kg
16 - 20	3/8 - 1/2	10 - 15	<b>167 482 671</b>	0.110
25 - 32	3/4 - 1	20 - 25	<b>167 482 672</b>	0.120
40 - 50	1 1/4 - 1 1/2	32 - 40	<b>167 482 673</b>	0.135
- 63	2	- 50	<b>167 482 674</b>	0.175
75 - 90	2 1/2 - 3	65 - 80	<b>167 482 675</b>	0.460
- 110	4	- 100	<b>167 482 676</b>	0.480

d-d [mm]	H1 [mm]	H5 [mm]	L1 [mm]	L5 [mm]	L6 [mm]	L8 [mm]	L9 [mm]
16 - 20	27	50	87	42	45	34	73
25 - 32	30	53	108	50	58	38	77
40 - 50	44	72	140	66	75	41	80
- 63	64	94	165	78	87	46	85
75 - 90	85	157	270	64	206		
- 110	123	175	320	64	256		



DN10/15 - 50



## Multifunctional module (I06) PP-GF With inductive limit switches PNP

### Model:

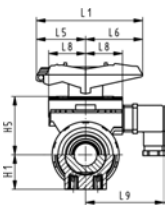
- Accessory to Ball Valve Type 546
- Multifunctional module acts as an intermediate element for actuators
- For operation with handle, multifunctional handle has to be ordered separately.
- Including Plug 3P+E / Protection: IP65
- Including screws to mount the module and stainless steel coupling piece (V2A) for dimension DN65-100

d-d [mm]	Inch [inch]	DN-DN [mm]	Code	kg
16 - 20	3/8 - 1/2	10 - 15	<b>167 482 662</b>	0.110
25 - 32	3/4 - 1	20 - 25	<b>167 482 663</b>	0.120
40 - 50	1 1/4 - 1 1/2	32 - 40	<b>167 482 664</b>	0.135
- 63	2	- 50	<b>167 482 665</b>	0.175
75 - 90	2 1/2 - 3	65 - 80	<b>167 482 666</b>	0.460
- 110	4	- 100	<b>167 482 667</b>	0.480

d-d [mm]	H1 [mm]	H5 [mm]	L1 [mm]	L5 [mm]	L6 [mm]	L8 [mm]	L9 [mm]
16 - 20	27	50	87	42	45	34	73
25 - 32	30	53	108	50	58	38	77
40 - 50	44	72	140	66	75	41	80
- 63	64	94	165	78	87	46	85
75 - 90	85	157	270	64	206		
- 110	123	175	320	64	256		



DN10/15 - 50



## Multifunctional module (I07) PP-GF With inductive limit switches NPN

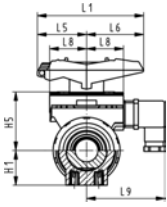
### Model:

- Accessory to Ball Valve Type 546
- Multifunctional module acts as an intermediate element for actuators
- For operation with handle, multifunctional handle has to be ordered separately.
- Including Plug 3P+E / Protection: IP65
- Including screws to mount the module and stainless steel coupling piece (V2A) for dimension DN65-100

d-d [mm]	Inch [inch]	DN-DN [mm]	Code	kg
16 - 20	3/8 - 1/2	10 - 15	<b>167 482 653</b>	0.110
25 - 32	3/4 - 1	20 - 25	<b>167 482 654</b>	0.120
40 - 50	1 1/4 - 1 1/2	32 - 40	<b>167 482 655</b>	0.135
- 63	2	- 50	<b>167 482 656</b>	0.175
75 - 90	2 1/2 - 3	65 - 80	<b>167 482 657</b>	0.460
- 110	4	- 100	<b>167 482 658</b>	0.480

d-d [mm]	H1 [mm]	H5 [mm]	L1 [mm]	L5 [mm]	L6 [mm]	L8 [mm]	L9 [mm]
16 - 20	27	50	87	42	45	34	73
25 - 32	30	53	108	50	58	38	77
40 - 50	44	72	140	66	75	41	80

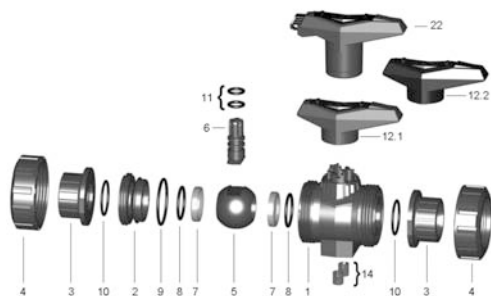
table continued next page



d-d [mm]	H1 [mm]	H5 [mm]	L1 [mm]	L5 [mm]	L6 [mm]	L8 [mm]	L9 [mm]
- 63	64	94	165	78	87	46	85
75 - 90	85	157	270	64	206		
- 110	123	175	320	64	256		

# Spare parts ball valves

## Spare parts ball valve type 546



### Central part

#### Model:

- Every connecting pieces and union nuts are listed on product range industry valves
- Ball seals standard in PTFE
- Central part consisting of: body (1), union bush (2), ball (5), stem (6), ball-, backing-, body-, face- and stem seal (7-11), standard lever (12) and threaded inserts stainless steel (14)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 480 751</b>	0.075
20	1/2	15	<b>169 480 751</b>	0.075
25	3/4	20	<b>169 480 752</b>	0.120
32	1	25	<b>169 480 753</b>	0.175
40	1 1/4	32	<b>169 480 754</b>	0.310
50	1 1/2	40	<b>169 480 755</b>	0.405
63	2	50	<b>169 480 756</b>	0.700
75	2 1/2	65	<b>169 480 757</b>	2.660
90	3	80	<b>169 480 758</b>	3.780
110	4	100	<b>169 480 759</b>	5.990



### Ball set

#### Model:

- Ball seals standard in PTFE
- Ball set consisting of: ball (5), stem (6), ball-, backing-, body- and stem seal (7-9,11)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 480 900</b>	0.013
20	1/2	15	<b>169 480 900</b>	0.013
25	3/4	20	<b>169 480 901</b>	0.020
32	1	25	<b>169 480 902</b>	0.035
40	1 1/4	32	<b>169 480 903</b>	0.065
50	1 1/2	40	<b>169 480 904</b>	0.100
63	2	50	<b>169 480 905</b>	0.195

table continued next page

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
75	2 ½	65	<b>169 480 906</b>	0.388
90	3	80	<b>169 480 907</b>	0.610
110	4	100	<b>169 480 908</b>	1.014

## Lever



d [mm]	Inch	DN [mm]	Standard lever red Code	Standard lever black Code	Multifunctional lever Code	kg
16	¾	10	<b>167 484 088</b>	<b>167 484 076</b>	<b>167 484 100</b>	0.026
20	½	15	<b>167 484 088</b>	<b>167 484 076</b>	<b>167 484 100</b>	0.026
25	¾	20	<b>167 484 089</b>	<b>167 484 077</b>	<b>167 484 101</b>	0.045
32	1	25	<b>167 484 090</b>	<b>167 484 078</b>	<b>167 484 102</b>	0.045
40	1 ¼	32	<b>167 484 091</b>	<b>167 484 079</b>	<b>167 484 103</b>	0.082
50	1 ½	40	<b>167 484 092</b>	<b>167 484 080</b>	<b>167 484 104</b>	0.082
63	2	50	<b>167 484 093</b>	<b>167 484 081</b>	<b>167 484 105</b>	0.104
75	2 ½	65	<b>167 484 094</b>	<b>167 484 082</b>	<b>161 486 689</b>	0.480
90	3	80	<b>167 484 095</b>	<b>167 484 083</b>	<b>161 486 690</b>	0.480
110	4	100	<b>167 484 096</b>	<b>167 484 084</b>	<b>161 486 691</b>	0.480

## Face seal



### Model:

- Face seal no. 10

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	¾	10	<b>748 410 059</b>	0.004
20	½	15	<b>748 410 059</b>	0.004
25	¾	20	<b>748 410 106</b>	0.002
32	1	25	<b>748 410 151</b>	0.002
40	1 ¼	32	<b>748 410 062</b>	0.002
50	1 ½	40	<b>748 410 003</b>	0.004
63	2	50	<b>748 410 231</b>	0.010
75	2 ½	65	<b>748 410 119</b>	0.006
90	3	80	<b>748 410 023</b>	0.010
110	4	100	<b>748 410 254</b>	0.020

## Seal set

### Model:

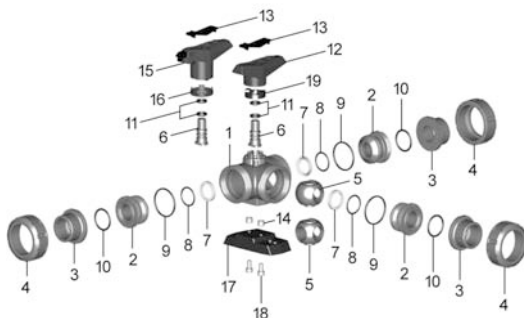
- Seal set consisting of: backing-, body-, face- and stem seal (8-11)

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	¾	10	<b>161 486 400</b>	0.002
20	½	15	<b>161 486 400</b>	0.002
25	¾	20	<b>161 486 401</b>	0.002
32	1	25	<b>161 486 402</b>	0.003
40	1 ¼	32	<b>161 486 403</b>	0.005
50	1 ½	40	<b>161 486 404</b>	0.012
63	2	50	<b>161 486 405</b>	0.016

table continued next page

d [mm]	Inch	DN [mm]	EPDM Code	kg
75	2 ½	65	<b>161 486 406</b>	0.018
90	3	80	<b>161 486 407</b>	0.024
110	4	100	<b>161 486 408</b>	0.039

### Spare parts ball valve type 543 horizontal



### Central part L-port

#### Model:

- Every connecting pieces and union nuts are listed on product range industry valves
- Ball seals standard in PTFE
- Central part consisting of: body (1), union bush (2), ball (5), stem (6), ball-, backing-, body-, face- and stem seal (7-11), standard lever (12) and threaded inserts stainless steel (14)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	¾	10	<b>169 481 202</b>	0.120
20	½	15	<b>169 481 202</b>	0.120
25	¾	20	<b>169 481 203</b>	0.177
32	1	25	<b>169 481 204</b>	0.267
40	1 ¼	32	<b>169 481 205</b>	0.471
50	1 ½	40	<b>169 481 206</b>	0.699
63	2	50	<b>169 481 207</b>	1.340



### Central part T-port

#### Model:

- Ball seals standard in PTFE
- Central part consisting of: body (1), union bush (2), ball (5), stem (6), ball-, backing-, body-, face- and stem seal (7-11), standard lever (12) and threaded inserts stainless steel (14)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	¾	10	<b>169 481 212</b>	0.120
20	½	15	<b>169 481 212</b>	0.120
25	¾	20	<b>169 481 213</b>	0.175
32	1	25	<b>169 481 214</b>	0.262
40	1 ¼	32	<b>169 481 215</b>	0.462
50	1 ½	40	<b>169 481 216</b>	0.683
63	2	50	<b>169 481 217</b>	1.306





## Ball set L-port

### Model:

- Ball seals standard in PTFE
- Ball set consisting of: lever (12), ball (5), stem (6), ball-, backing-, body- and stem seal (7-9,11)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 481 282</b>	0.026
20	1/2	15	<b>169 481 282</b>	0.026
25	3/4	20	<b>169 481 283</b>	0.049
32	1	25	<b>169 481 284</b>	0.066
40	1 1/4	32	<b>169 481 285</b>	0.114
50	1 1/2	40	<b>169 481 286</b>	0.170
63	2	50	<b>169 481 287</b>	0.282



## Ball set T-port

### Model:

- Ball seals standard in PTFE
- Ball set consisting of: lever (12), ball (5), stem (6), ball-, backing-, body- and stem seal (7-9,11)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 481 292</b>	0.025
20	1/2	15	<b>169 481 292</b>	0.025
25	3/4	20	<b>169 481 293</b>	0.048
32	1	25	<b>169 481 294</b>	0.060
40	1 1/4	32	<b>169 481 295</b>	0.105
50	1 1/2	40	<b>169 481 296</b>	0.154
63	2	50	<b>169 481 297</b>	0.247



## Lever

d [mm]	Inch	DN [mm]	Standard lever L- port red Code	Standard lever L- port black Code	Standard lever T- port red Code	kg
16	3/8	10	<b>167 484 488</b>	<b>167 484 376</b>	<b>167 484 588</b>	
20	1/2	15	<b>167 484 488</b>	<b>167 484 376</b>	<b>167 484 588</b>	
25	3/4	20	<b>167 484 489</b>	<b>167 484 377</b>	<b>167 484 589</b>	
32	1	25	<b>167 484 490</b>	<b>167 484 378</b>	<b>167 484 590</b>	
40	1 1/4	32	<b>167 484 491</b>	<b>167 484 379</b>	<b>167 484 591</b>	
50	1 1/2	40	<b>167 484 492</b>	<b>167 484 380</b>	<b>167 484 592</b>	
63	2	50	<b>167 484 493</b>	<b>167 484 381</b>	<b>167 484 593</b>	

d [mm]	Inch	DN [mm]	Standard lever T- port black Code	Multifunctional- lever L-port red Code	Multifunctional- lever T-port red Code	kg
16	3/8	10	<b>167 484 576</b>	<b>167 484 442</b>	<b>167 484 542</b>	0.026
20	1/2	15	<b>167 484 576</b>	<b>167 484 442</b>	<b>167 484 542</b>	0.026
25	3/4	20	<b>167 484 577</b>	<b>167 484 443</b>	<b>167 484 543</b>	0.045
32	1	25	<b>167 484 578</b>	<b>167 484 444</b>	<b>167 484 544</b>	0.045
40	1 1/4	32	<b>167 484 579</b>	<b>167 484 445</b>	<b>167 484 545</b>	0.082
50	1 1/2	40	<b>167 484 580</b>	<b>167 484 446</b>	<b>167 484 546</b>	0.082
63	2	50	<b>167 484 581</b>	<b>167 484 447</b>	<b>167 484 547</b>	0.104



## Face seal

### Model:

- Face seal no. 10

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	3/8	10	<b>748 410 059</b>	0.004
20	1/2	15	<b>748 410 059</b>	0.004
25	3/4	20	<b>748 410 106</b>	0.002
32	1	25	<b>748 410 151</b>	0.002
40	1 1/4	32	<b>748 410 062</b>	0.002
50	1 1/2	40	<b>748 410 003</b>	0.004
63	2	50	<b>748 410 231</b>	0.010



## Seal set

### Model:

- Seal set consisting of: backing-, body-, face- and stem seal (8-11)

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	3/8	10	<b>161 488 242</b>	0.011
20	1/2	15	<b>161 488 242</b>	0.011
25	3/4	20	<b>161 488 243</b>	0.011
32	1	25	<b>161 488 244</b>	0.014
40	1 1/4	32	<b>161 488 245</b>	0.014
50	1 1/2	40	<b>161 488 246</b>	0.026
63	2	50	<b>161 488 247</b>	0.032



## Turn limiter 90°

d [mm]	Inch	DN [mm]	Code	kg
16	3/8	10	<b>167 482 479</b>	0.001
20	1/2	15	<b>167 482 479</b>	0.001
25	3/4	20	<b>167 482 480</b>	0.002
32	1	25	<b>167 482 480</b>	0.002
40	1 1/4	32	<b>167 482 481</b>	0.004
50	1 1/2	40	<b>167 482 481</b>	0.004
63	2	50	<b>167 482 482</b>	0.004



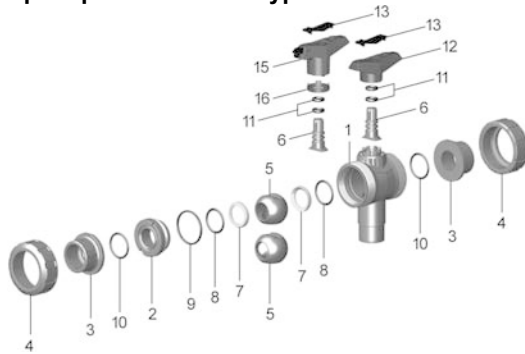
## Assembly kit

### Model:

- Intermediate element for ball valve type 543 horizontal and electric or pneumatic actuators EA21; PA11/21
- Including screws and position indicator for actuators

d [mm]	Inch [inch]	DN [mm]	Code	kg
16 - 20	3/8 - 1/2	10 - 15	<b>167 484 941</b>	0.156
25 - 32	3/4 - 1	20 - 25	<b>167 484 942</b>	0.181
40 - 50	1 1/4 - 1 1/2	32 - 40	<b>167 484 943</b>	0.197
63	2	50	<b>167 484 944</b>	0.236

## Spare parts ball valve type 543 vertical



### Central part L-port

#### Model:

- Every connecting pieces and union nuts are listed on product range industry valves
- Ball seals standard in PTFE
- Central part consisting of: body (1), union bush (2), ball (5), stem (6), ball-backing-, body-, face- and stem seal (7-11) and standard lever (12)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 481 221</b>	0.079
20	3/8	15	<b>169 481 222</b>	0.079
25	3/4	20	<b>169 481 223</b>	0.129
32	1	25	<b>169 481 224</b>	0.181
40	1 1/4	32	<b>169 481 225</b>	0.311
50	1 1/2	40	<b>169 481 226</b>	0.435
63	2	50	<b>169 481 227</b>	0.751



### Central part diverter ball

#### Model:

- Ball seals standard in PTFE
- Central part consisting of: body (1), union bush (2), ball (5), stem (6), ball-backing-, body-, face- and stem seal (7-11) and standard lever (12)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 481 231</b>	0.079
20	1/2	15	<b>169 481 232</b>	0.079
25	3/4	20	<b>169 481 233</b>	0.127
32	1	25	<b>169 481 234</b>	0.176
40	1 1/4	32	<b>169 481 235</b>	0.303
50	1 1/2	40	<b>169 481 236</b>	0.419
63	2	50	<b>169 481 237</b>	0.717

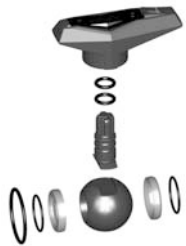


## Ball set L-port

### Model:

- Ball seals standard in PTFE
- Ball set consisting of: lever (12), ball (5), stem (6), ball-, backing-, body- and stem seal (7-9,11)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 481 302</b>	0.026
20	1/2	15	<b>169 481 302</b>	0.026
25	3/4	20	<b>169 481 303</b>	0.049
32	1	25	<b>169 481 304</b>	0.063
40	1 1/4	32	<b>169 481 305</b>	0.111
50	1 1/2	40	<b>169 481 306</b>	0.155
63	2	50	<b>169 481 307</b>	0.298



## Ball set diverter ball

### Model:

- Ball seals standard in PTFE
- Ball set consisting of: lever (12), ball (5), stem (6), ball-, backing-, body- and stem seal (7-9,11)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
16	3/8	10	<b>169 481 312</b>	0.020
20	1/2	15	<b>169 481 312</b>	0.020
25	3/4	20	<b>169 481 313</b>	0.037
32	1	25	<b>169 481 314</b>	0.041
40	1 1/4	32	<b>169 481 315</b>	0.070
50	1 1/2	40	<b>169 481 316</b>	0.083
63	2	50	<b>169 481 317</b>	0.122



## Lever

d [mm]	Inch	DN [mm]	Standard lever L- port red Code	Standard lever di- verter ball red Code	Multifunctional- lever L-port red Code
16	3/8	10	<b>167 484 688</b>	<b>167 484 788</b>	<b>167 484 642</b>
20	1/2	15	<b>167 484 688</b>	<b>167 484 788</b>	<b>167 484 642</b>
25	3/4	20	<b>167 484 689</b>	<b>167 484 789</b>	<b>167 484 643</b>
32	1	25	<b>167 484 690</b>	<b>167 484 790</b>	<b>167 484 644</b>
40	1 1/4	32	<b>167 484 691</b>	<b>167 484 791</b>	<b>167 484 645</b>
50	1 1/2	40	<b>167 484 692</b>	<b>167 484 792</b>	<b>167 484 646</b>
63	2	50	<b>167 484 693</b>	<b>167 484 793</b>	<b>167 484 647</b>

d [mm]	Inch	DN [mm]	Multifunctional- lever diverter ball red Code	kg
16	3/8	10	<b>167 484 742</b>	0.026
20	1/2	15	<b>167 484 742</b>	0.026
25	3/4	20	<b>167 484 743</b>	0.045
32	1	25	<b>167 484 744</b>	0.045
40	1 1/4	32	<b>167 484 745</b>	0.082
50	1 1/2	40	<b>167 484 746</b>	0.082
63	2	50	<b>167 484 747</b>	0.104



## Face seal

### Model:

- Face seal no. 10

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	3/8	10	<b>748 410 059</b>	0.004
20	1/2	15	<b>748 410 059</b>	0.004
25	3/4	20	<b>748 410 106</b>	0.002
32	1	25	<b>748 410 151</b>	0.002
40	1 1/4	32	<b>748 410 062</b>	0.002
50	1 1/2	40	<b>748 410 003</b>	0.004
63	2	50	<b>748 410 231</b>	0.010



## Seal set

### Model:

- Seal set consisting of: backing-, body-, face- and stem seal (8-11)

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	3/8	10	<b>161 486 400</b>	0.002
20	1/2	15	<b>161 486 400</b>	0.002
25	3/4	20	<b>161 486 401</b>	0.002
32	1	25	<b>161 486 402</b>	0.003
40	1 1/4	32	<b>161 486 403</b>	0.005
50	1 1/2	40	<b>161 486 404</b>	0.012
63	2	50	<b>161 486 405</b>	0.016



## Assembly kit

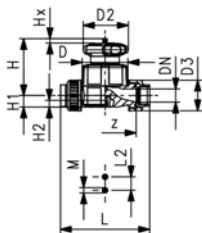
### Model:

- Intermediate element for ball valve type 543 vertical and electric or pneumatic actuators EA21; PA11/21
- Including screws and position indicator for actuators

d [mm]	Inch [inch]	DN [mm]	Code	kg
16 - 20	3/8 - 1/2	10 - 15	<b>167 484 945</b>	0.156
25 - 32	3/4 - 1	20 - 25	<b>167 484 946</b>	0.181
40 - 50	1 1/4 - 1 1/2	32 - 40	<b>167 484 947</b>	0.197
63	2	50	<b>167 484 948</b>	0.236

# Diaphragm valves

## Diaphragm valve type 514 ABS With solvent cement sockets BS



### Model:

- Double flow rate compared to predecessor
- One housing nut replaces four screws
- Handwheel with built-in locking mechanism
- For easy installation and removal
- Short overall length

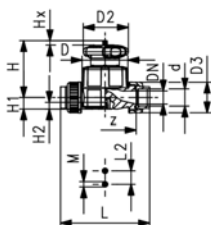
### Option:

- Individual configuration of the valve (see diagram)
- Self adjusting multifunctional module with integrated limit switches

Inch	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	PTFE/EPDM Code	kg
1/2	15	10	125	<b>169 514 512</b>	<b>169 514 532</b>	0.364
3/4	20	10	271	<b>169 514 513</b>	<b>169 514 533</b>	0.476
1	25	10	481	<b>169 514 514</b>	<b>169 514 534</b>	1.079
1 1/4	32	10	759	<b>169 514 515</b>	<b>169 514 535</b>	1.317
1 1/2	40	10	1263	<b>169 514 516</b>	<b>169 514 536</b>	2.350
2	50	10	1728	<b>169 514 517</b>	<b>169 514 537</b>	3.063

Inch	D [mm]	D2 [mm]	D3 [mm]	L [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	Lift = Hx [mm]
1/2	65	65	43	128	25	73	14	12	M6	96	7
3/4	80	65	51	152	25	81	18	12	M6	114	10
1	88	87	58	166	25	107	22	12	M6	122	13
1 1/4	101	87	72	192	45	115	26	15	M8	140	15
1 1/2	117	135	83	222	45	148	32	15	M8	160	19
2	144	135	100	266	45	166	39	15	M8	190	25

## Diaphragm valve type 514 ABS With solvent cement sockets metric



### Model:

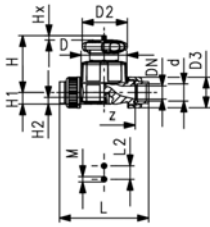
- Double flow rate compared to predecessor
- One housing nut replaces four screws
- Handwheel with built-in locking mechanism
- For easy installation and removal
- Short overall length

### Option:

- Individual configuration of the valve (see diagram)
- Self adjusting multifunctional module with integrated limit switches

d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	PTFE/EPDM Code	kg
20	15	10	125	<b>169 514 012</b>	<b>169 514 032</b>	0.364
25	20	10	271	<b>169 514 013</b>	<b>169 514 033</b>	0.478
32	25	10	481	<b>169 514 014</b>	<b>169 514 034</b>	1.081
40	32	10	759	<b>169 514 015</b>	<b>169 514 035</b>	1.357
50	40	10	1263	<b>169 514 016</b>	<b>169 514 036</b>	2.374
63	50	10	1728	<b>169 514 017</b>	<b>169 514 037</b>	3.111

table continued next page



d [mm]	D [mm]	D2 [mm]	D3 [mm]	L [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	z [mm]	Lift = Hx [mm]
20	65	65	43	128	25	73	14	12	M6	96	7
25	80	65	51	152	25	81	18	12	M6	114	10
32	88	87	58	166	25	107	22	12	M6	122	13
40	101	87	72	192	45	115	26	15	M8	140	15
50	117	135	83	222	45	148	32	15	M8	160	19
63	144	135	100	266	45	166	39	15	M8	190	25



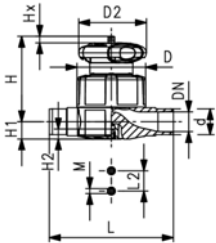
## Diaphragm valve type 515 ABS With solvent cement spigots metric

### Model:

- Double flow rate compared to predecessor
- One housing nut replaces four screws
- Handwheel with built-in locking mechanism
- Overall length EN 558

### Option:

- Individual configuration of the valve (see diagram)
- Self adjusting multifunctional module with integrated limit switches



d [mm]	DN [mm]	PN	kv-value (Δp=1 bar) [l/min]	EPDM Code	PTFE/EPDM Code	kg
20	15	10	125	<b>169 515 012</b>	<b>169 515 032</b>	0.318
25	20	10	271	<b>169 515 013</b>	<b>169 515 033</b>	0.412
32	25	10	481	<b>169 515 014</b>	<b>169 515 034</b>	0.992
40	32	10	759	<b>169 515 015</b>	<b>169 515 035</b>	1.164
50	40	10	1263	<b>169 515 016</b>	<b>169 515 036</b>	2.141
63	50	10	1728	<b>169 515 017</b>	<b>169 515 037</b>	2.726

d [mm]	D [mm]	D2 [mm]	L [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	Lift = Hx [mm]
20	65	65	124	25	73	14	12	M6	7
25	80	65	144	25	81	18	12	M6	10
32	88	87	154	25	107	22	12	M6	13
40	101	87	174	45	115	26	15	M8	15
50	117	135	194	45	148	32	15	M8	19
63	144	135	224	45	166	39	15	M8	25



## Diaphragm valve type 317 ABS With flanges metric

### Model:

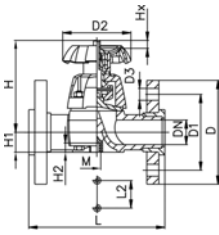
- Overall length according to EN 558
- Flat sealing faces
- Other dimensions available on request
- DN 80-150 with fixed flange
- Minimum temperature: - 30°C

### Option:

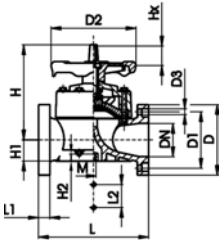
- Handwheel lockable DN15-65 (basic version not lockable)

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

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



DN 15-65



DN 80-100

d [mm]	D [mm]	D1 [mm]	D2 [mm]	D3 [mm]	L [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	M	AL	Lift = Hx [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



# Spare parts diaphragm valves new generation

## Spare parts for hand-operated valves Type 514/515/517/519



### Bonnet complete

d [mm]	Inch	DN [mm]	Standard configuration PN10 Code	For pressure tight housing PN10 Code	Standard configuration PN16 Code	
20	1/2	15	<b>198 151 742</b>	<b>198 151 752</b>	<b>198 151 842</b>	
25	3/4	20	<b>198 151 743</b>	<b>198 151 753</b>	<b>198 151 843</b>	
32	1	25	<b>198 151 744</b>	<b>198 151 754</b>	<b>198 151 844</b>	
40	1 1/4	32	<b>198 151 745</b>	<b>198 151 755</b>	<b>198 151 845</b>	
50	1 1/2	40	<b>198 151 746</b>	<b>198 151 756</b>	<b>198 151 846</b>	
63	2	50	<b>198 151 747</b>	<b>198 151 757</b>	<b>198 151 847</b>	

d [mm]	Inch	DN [mm]	For pressure tight housing PN16 Code	kg	
20	1/2	15	<b>198 151 852</b>	0.137	
25	3/4	20	<b>198 151 853</b>	0.177	
32	1	25	<b>198 151 854</b>	0.366	
40	1 1/4	32	<b>198 151 855</b>	0.390	
50	1 1/2	40	<b>198 151 856</b>	0.746	
63	2	50	<b>198 151 857</b>	1.016	

### Hand wheel

#### Model:

- Without position indicator



DN [mm]	Code	kg	
15 - 20	<b>198 204 162</b>	0.035	
25 - 32	<b>198 204 164</b>	0.068	
40 - 50	<b>198 104 166</b>	0.190	

## Position indicator



d [mm]	Inch	DN [mm]	Code	kg
20	½	15	<b>167 484 992</b>	0.011
25	¾	20	<b>167 484 993</b>	0.011
32	1	25	<b>167 484 994</b>	0.013
40	1 ¼	32	<b>167 484 995</b>	0.012
50	1 ½	40	<b>167 484 996</b>	0.014
63	2	50	<b>167 484 997</b>	0.015

## Spindle assembly

### Model:

- Incl. position indicator and compressor



DN-DN [mm]	Code	kg
15 - 20	<b>198 204 327</b>	0.049
25 - 32	<b>198 204 328</b>	0.135
40 - 50	<b>198 204 329</b>	0.251

## Seal set

### Model:

- For manual valve - pressure tight housing
- Incl. position indicator



d [mm]	Inch	DN [mm]	EPDM Code	kg
20	½	15	<b>198 000 892</b>	0.004
25	¾	20	<b>198 000 893</b>	0.004
32	1	25	<b>198 000 894</b>	0.007
40	1 ¼	32	<b>198 000 895</b>	0.006
50	1 ½	40	<b>198 000 896</b>	0.008
63	2	50	<b>198 000 897</b>	0.009

## Spare parts for automatic valves Diastar Six/Ten/Sixteen



### Actuators



d [mm]	Inch	DN [mm]	Diastar Six Code	Diastar Ten Code	Diastar Sixteen FC Code	Diastar Ten FO Code
20	½	15	<b>198 151 762</b>	<b>198 151 772</b>	<b>198 151 782</b>	<b>198 151 792</b>
25	¾	20	<b>198 151 763</b>	<b>198 151 773</b>	<b>198 151 783</b>	<b>198 151 793</b>
32	1	25	<b>198 151 764</b>	<b>198 151 774</b>	<b>198 151 784</b>	<b>198 151 794</b>
40	1 ¼	32	<b>198 151 765</b>	<b>198 151 775</b>	<b>198 151 785</b>	<b>198 151 795</b>
50	1 ½	40	<b>198 151 766</b>	<b>198 151 776</b>	<b>198 151 786</b>	<b>198 151 796</b>
63	2	50	<b>198 151 767</b>	<b>198 151 777</b>	<b>198 151 787</b>	<b>198 151 797</b>

d [mm]	Inch	DN [mm]	Diastar Ten DA Code	kg
20	½	15	<b>198 151 802</b>	0.427
25	¾	20	<b>198 151 803</b>	0.718
32	1	25	<b>198 151 804</b>	0.823
40	1 ¼	32	<b>198 151 805</b>	1.269
50	1 ½	40	<b>198 151 806</b>	2.141
63	2	50	<b>198 151 807</b>	2.364

### Indicator cap



Size	Code	kg
1-2	<b>198 806 639</b>	0.002
3-5	<b>198 806 640</b>	0.004



## Compressor set

### Model:

- Incl. diaphragm holder

d [mm]	Inch	DN [mm]	Code	kg
20	1/2	15	<b>198 000 872</b>	0.032
25	3/4	20	<b>198 000 873</b>	0.035
32	1	25	<b>198 000 874</b>	0.073
40	1 1/4	32	<b>198 000 875</b>	0.084
50	1 1/2	40	<b>198 000 876</b>	0.122
63	2	50	<b>198 000 877</b>	0.146

## Seal set

### Model:

- Spindle seal and piston seal



Size	Diastar Six/Ten/ Sixteen Code	Only for Diastar Six DN40/DN50 Code	kg
Gr. 1	<b>198 000 881</b>	-	0.006
Gr. 2	<b>198 000 882</b>	-	0.008
Gr. 3	<b>198 000 883</b>	<b>198 000 886</b>	0.006
Gr. 4	<b>198 000 884</b>	-	0.010
Gr. 5	<b>198 000 885</b>	-	0.072

## Spare parts diaphragm

### For type 514/515/517/519



d [mm]	Inch	DN [mm]	NBR Code	EPDM Code	FPM Code	PTFE/EPDM Code
20	1/2	15	<b>745 500 012</b>	<b>748 500 012</b>	<b>749 500 012</b>	<b>747 502 012</b>
25	3/4	20	<b>745 500 013</b>	<b>748 500 013</b>	<b>749 500 013</b>	<b>747 502 013</b>
32	1	25	<b>745 500 014</b>	<b>748 500 014</b>	<b>749 500 014</b>	<b>747 502 014</b>
40	1 1/4	32	<b>745 500 015</b>	<b>748 500 015</b>	<b>749 500 015</b>	<b>747 502 015</b>
50	1 1/2	40	<b>745 500 016</b>	<b>748 500 016</b>	<b>749 500 016</b>	<b>747 502 016</b>
63	2	50	<b>745 500 017</b>	<b>748 500 017</b>	<b>749 500 017</b>	<b>747 502 017</b>

d [mm]	Inch	DN [mm]	PTFE/EPDM HP Code	PTFE/FPM Code	kg
20	1/2	15	<b>747 502 032</b>	<b>747 503 012</b>	0.013
25	3/4	20	<b>747 502 033</b>	<b>747 503 013</b>	0.021
32	1	25	<b>747 502 034</b>	<b>747 503 014</b>	0.031
40	1 1/4	32	<b>747 502 035</b>	<b>747 503 015</b>	0.045
50	1 1/2	40	<b>747 502 036</b>	<b>747 503 016</b>	0.069
63	2	50	<b>747 502 037</b>	<b>747 503 017</b>	0.118

## Spare parts for valve body type 514

### Valve body with true union

#### Model:

- Without connection parts



d [mm]	Inch	DN [mm]	ABS Code	kg	
20	1/2	15	<b>169 481 322</b>	0.086	
25	3/4	20	<b>169 481 323</b>	0.137	
32	1	25	<b>169 481 324</b>	0.181	
40	1 1/4	32	<b>169 481 325</b>	0.295	
50	1 1/2	40	<b>169 481 326</b>	0.435	
63	2	50	<b>169 481 327</b>	0.782	

#### Union nut



d [mm]	Inch	DN [mm]	ABS Code	kg	
20	1/2	15	<b>729 690 406</b>	0.014	
25	3/4	20	<b>729 690 407</b>	0.018	
32	1	25	<b>729 690 408</b>	0.024	
40	1 1/4	32	<b>729 690 409</b>	0.049	
50	1 1/2	40	<b>729 690 410</b>	0.070	
63	2	50	<b>729 690 411</b>	0.101	

#### O-ring



d [mm]	Inch	DN [mm]	EPDM Code	FPM Code	kg	
20	1/2	15	<b>748 410 006</b>	<b>749 410 006</b>	0.002	
25	3/4	20	<b>748 410 007</b>	<b>749 410 007</b>	0.002	
32	1	25	<b>748 410 008</b>	<b>749 410 008</b>	0.002	
40	1 1/4	32	<b>748 410 009</b>	<b>749 410 009</b>	0.006	
50	1 1/2	40	<b>748 410 010</b>	<b>749 410 010</b>	0.007	
63	2	50	<b>748 410 011</b>	<b>749 410 011</b>	0.010	

## Spare parts for valve body type 515

### Valve body with spigot ends



d [mm]	Inch	DN [mm]	ABS solvent ce- ment spigot Code	kg
20	½	15	<b>169 481 862</b>	0.089
25	¾	20	<b>169 481 863</b>	0.140
32	1	25	<b>169 481 864</b>	0.187
40	1 ¼	32	<b>169 481 865</b>	0.287
50	1 ½	40	<b>169 481 866</b>	0.455
63	2	50	<b>169 481 867</b>	0.793

## Spare parts for valve body type 517

### Flange adaptor flat



d [mm]	Inch	DN [mm]	ABS metric Code	kg
20	½	15	<b>729 790 106</b>	0.008
25	¾	20	<b>729 790 107</b>	0.012
32	1	25	<b>729 790 108</b>	0.020
40	1 ¼	32	<b>729 790 109</b>	0.058
50	1 ½	40	<b>729 790 110</b>	0.058
63	2	50	<b>729 790 111</b>	0.074

## Flange



d [mm]	Inch	DN [mm]	PVC-U metric Code	LVI	PVC-U ASTM Code	LVI
20	½	15	<b>721 700 006</b>		<b>721 702 206</b>	
25	¾	20	<b>721 700 007</b>		<b>721 702 207</b>	
32	1	25	<b>721 700 008</b>		<b>721 702 208</b>	
40	1 ¼	32	<b>721 700 009</b>		<b>721 702 209</b>	
50	1 ½	40	<b>721 700 010</b>		<b>721 702 210</b>	
63	2	50	<b>721 700 011</b>		<b>721 702 211</b>	

table continued next page

d [mm]	Inch	DN [mm]	PP-V metric Code	LVI	PP-V ASTM Code	LVI	PP-ST metric Code	LVI
20	½	15	<b>727 700 406</b>	<b>183 38 09</b>	<b>727 701 406</b>		<b>727 700 206</b>	
25	¾	20	<b>727 700 407</b>	<b>183 38 10</b>	<b>727 701 407</b>		<b>727 700 207</b>	
32	1	25	<b>727 700 408</b>	<b>183 38 11</b>	<b>727 701 408</b>		<b>727 700 208</b>	
40	1 ¼	32	<b>727 700 409</b>	<b>183 38 12</b>	<b>727 701 409</b>		<b>727 700 209</b>	
50	1 ½	40	<b>727 700 410</b>	<b>183 38 13</b>	<b>727 701 410</b>		<b>727 700 210</b>	
63	2	50	<b>727 700 411</b>	<b>183 38 14</b>	<b>727 701 411</b>		<b>727 700 211</b>	

d [mm]	Inch	DN [mm]	PP-ST ASTM Code	LVI	kg
20	½	15	<b>727 701 206</b>		0.210
25	¾	20	<b>727 701 207</b>		0.250
32	1	25	<b>727 701 208</b>		0.420
40	1 ¼	32	<b>727 701 209</b>		0.670
50	1 ½	40	<b>727 701 210</b>		0.860
63	2	50	<b>727 701 211</b>		0.930

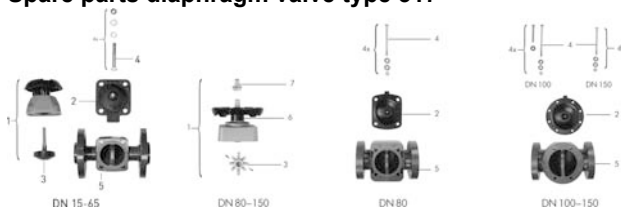
### Flat gasket



d [mm]	Inch	DN [mm]	EPDM Code	kg
20	½	15	<b>748 400 006</b>	0.003
25	¾	20	<b>748 400 007</b>	0.004
32	1	25	<b>748 400 008</b>	0.002
40	1 ¼	32	<b>748 400 009</b>	0.003
50	1 ½	40	<b>748 400 010</b>	0.004
63	2	50	<b>748 400 011</b>	0.006

# Spare parts diaphragm valves

## Spare parts diaphragm valve type 317



### Bonnet complete

Model:

- Without diaphragm (1, 3)



d [mm]	Inch	DN [mm]	elastomer diaphragm Code	PTFE diaphragm Code	kg
75	2 ½	65	<b>161 484 631</b>	<b>161 484 638</b>	1.526
90	3	80	<b>161 482 514</b>	<b>161 482 516</b>	3.967
110	4	100	<b>161 482 515</b>	<b>161 482 517</b>	5.700

### Diaphragm (2)



d [mm]	Inch	DN [mm]	NBR Code	EPDM Code	FPM Code	PTFE/EPDM Code
75	2 ½	65	<b>161 480 231</b>	<b>161 481 028</b>	<b>161 481 098</b>	<b>161 480 240</b>
90	3	80	<b>161 480 232</b>	<b>161 481 029</b>	<b>161 481 099</b>	<b>161 480 241</b>
110	4	100	<b>161 480 233</b>	<b>161 481 030</b>	<b>161 481 100</b>	<b>161 480 242</b>

d [mm]	Inch	DN [mm]	PTFE/FPM Code	PTFE/EPDM HP Code	CSM Code	kg
75	2 ½	65	<b>161 481 932</b>	<b>161 484 458</b>	<b>161 480 237</b>	0.230
90	3	80	-	<b>161 484 459</b>	<b>161 480 238</b>	0.300
110	4	100	-	<b>161 484 460</b>	<b>161 480 239</b>	0.450

### Pressure spindle (3)



d [mm]	Inch	DN [mm]	elastomer diaphragm Code	PTFE diaphragm Code	kg
75	2 ½	65	<b>161 484 694</b>	<b>161 484 702</b>	0.134
90	3	80	<b>161 483 008</b>	<b>161 483 020</b>	0.335
110	4	100	<b>161 483 009</b>	<b>161 483 021</b>	0.495





### Fastening set (4)

Model:

- \* with support plate

d [mm]	Inch	DN [mm]	for PVC-U PVC-C ABS Code	kg
75	2 ½	65	<b>161 483 032</b>	0.679
90	3	80	<b>161 483 033</b>	0.845
110	4	100	<b>161 483 034</b>	1.440



### Valve body with backing/fixed flange (5)

Inch	d [mm]	DN [mm]	ABS ANSI Code	kg
3	90	80	<b>169 480 282</b>	3.210
4	110	100	<b>169 480 283</b>	4.900



### O-ring seal (6)

d [mm]	Inch	DN [mm]	NBR Code	kg
90	3	80	<b>745 410 107</b>	0.007
110	4	100	<b>745 410 107</b>	0.007

### Indicator cap (7)

d [mm]	Inch	DN [mm]	PVC-U SAN Code	kg
90	3	80	<b>161 481 759</b>	0.032
110	4	100	<b>161 481 760</b>	0.035

# Butterfly valves

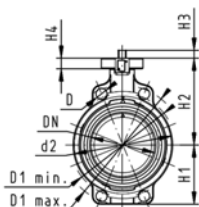
## Butterfly valve type 567 ABS

### Bare shaft

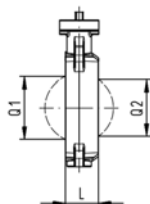


#### Model:

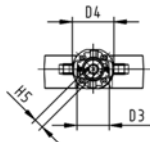
- Connecting dimension: ISO 7005 PN 10, EN 1092 PN 10, DIN 2501 PN 10, ANSI/ASME B 16.5 Class 150, BS 1560: 1989, BS 4504, JIS B 2220
- Overall length according to EN 558, ISO 5752
- Interface F07 according to DIN/ISO 5211



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



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



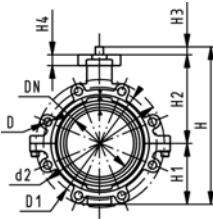
d [mm]	Q1 [mm]	Q2 [mm]
63	40	
75	54	35
90	67	50
110	88	74
140	113	97
160	139	123
225	178	169



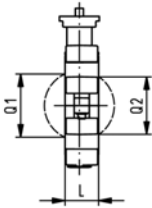
## Lugstyle butterfly valve type 568 ABS Bare shaft

### Model:

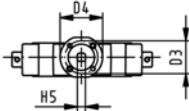
- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752
- Interface F07 according to DIN/ISO 5211



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



d [mm]	d2 [mm]	D	D1 [mm]	D3 [mm]	D4 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	L [mm]	Q1 [mm]	Q2 [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

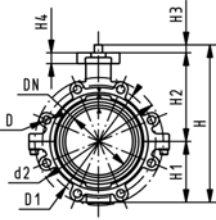




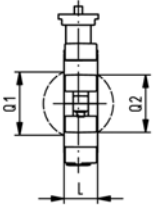
## Lugstyle butterfly valve type 568 ABS Bare shaft

### Model:

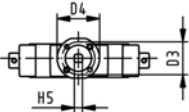
- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension ANSI/ASME B 16.5 Class 150
- Overall length according to EN 558, ISO 5752
- Interface F07 according to DIN/ISO 5211



Inch	d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
2	63	50	10	1470	<b>169 568 902</b>	2.853
2 ½	75	65	10	2200	<b>169 568 903</b>	3.200
3	90	80	10	3000	<b>169 568 904</b>	3.588
4	110	100	10	6500	<b>169 568 905</b>	5.633
5	140	125	10	11500	<b>169 568 906</b>	7.502
6	160	150	10	16600	<b>169 568 907</b>	9.341
8	225	200	10	39600	<b>169 568 908</b>	14.105



Inch	d2 [mm]	D	D1 [mm]	D3 [mm]	D4 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	L [mm]	Q1 [mm]
2	150	UNC 5/8	121	70	90	222	77	134	27	23	45	40
2 ½	170	UNC 5/8	138	70	90	235	83	140	27	23	46	54
3	177	UNC 5/8	152	70	90	247	89	146	27	23	49	67
4	216	UNC 5/8	191	70	90	287	104	167	16	23	56	88
5	246	UNC 3/4	216	70	90	313	117	181	16	23	64	113
6	273	UNC 3/4	241	70	90	335	130	189	19	23	72	139
8	334	UNC 3/4	298	70	90	387	158	210	19	23	73	178



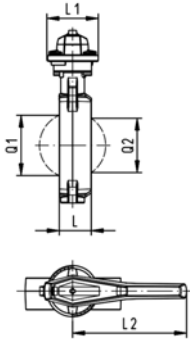
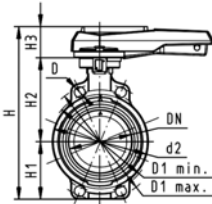
Inch	Q2 [mm]
2	
2 ½	35
3	50
4	74
5	97
6	123
8	169



## 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



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

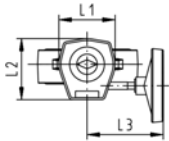
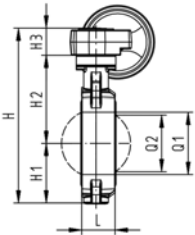
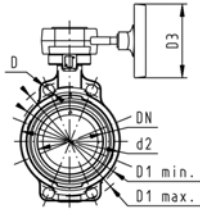
d [mm]	D [mm]	D1 min. [mm]	D1 max. [mm]	d2 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	L [mm]	L1 [mm]	L2 [mm]	Q1 [mm]	Q2 [mm]
63	19	120.0	125.0	104	264	77	134	54	45	106	205	40	
75	19	139.7	145.0	115	277	83	140	54	46	106	205	54	35
90	19	150.0	160.0	131	289	89	146	54	49	106	205	67	50
110	19	175.0	190.5	161	325	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



## 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



d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
63	50	10	1470	<b>169 567 022</b>	3.078
75	65	10	2200	<b>169 567 023</b>	3.201
90	80	10	3000	<b>169 567 024</b>	3.259
110	100	10	6500	<b>169 567 025</b>	3.795
140	125	10	11500	<b>169 567 026</b>	4.526
160	150	10	16600	<b>169 567 027</b>	5.118
225	200	10	39600	<b>169 567 028</b>	6.389

d [mm]	D [mm]	D1 min. [mm]	D1 max. [mm]	d2 [mm]	D3 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	L [mm]	L1 [mm]	L2 [mm]
63	19	120.0	125.0	104	150	278	77	134	50	45	110	120
75	19	139.7	145.0	115	150	291	83	140	50	46	110	120
90	19	150.0	160.0	131	150	303	89	146	50	49	110	120
110	19	175.0	190.5	160	150	339	104	167	50	56	110	120
140	23	210.0	215.9	187	150	365	117	181	50	64	110	120
160	24	241.3	241.3	215	150	387	130	189	50	72	110	120
225	23	290.0	295.0	267	150	436	158	210	50	73	110	120

d [mm]	L3 [mm]	Q1 [mm]	Q2 [mm]
63	155	40	
75	155	54	35
90	155	67	50
110	155	88	74
140	155	113	97
160	155	139	123
225	155	178	169

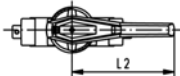
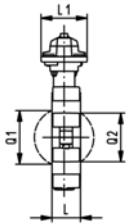
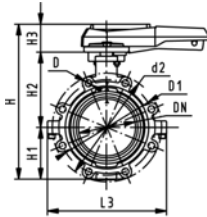


## Lugstyle butterfly valve type 568 ABS

### Hand lever with ratchet settings

#### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension ANSI/ASME B 16.5 Class 150
- Overall length according to EN 558, ISO 5752



Inch	d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
2	63	50	10	1470	<b>169 568 102</b>	3.075
2 ½	75	65	10	2200	<b>169 568 103</b>	3.422
3	90	80	10	3000	<b>169 568 104</b>	3.810
4	110	100	10	6500	<b>169 568 105</b>	5.903
5	140	125	10	11500	<b>169 568 106</b>	7.772
6	160	150	10	16600	<b>169 568 107</b>	9.611
8	225	200	10	39600	<b>169 568 108</b>	14.912

Inch	d2 [mm]	D	D1 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Q1 [mm]
2	150	UNC 5/8	121	265	77	134	54	45	106	205	150	40
2 ½	170	UNC 5/8	138	277	83	140	54	46	106	205	160	54
3	177	UNC 5/8	152	289	89	146	54	49	106	205	175	67
4	216	UNC 5/8	191	326	104	167	55	56	106	255	244	88
5	246	UNC 3/4	216	353	117	181	55	64	106	255	272	113
6	273	UNC 3/4	241	374	130	189	55	72	106	255	297	139
8	334	UNC 3/4	298	435	158	210	67	73	140	408	360	178

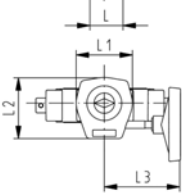
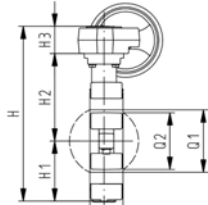
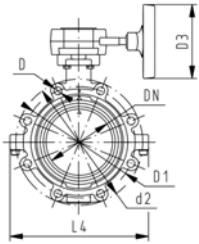
Inch	Q2 [mm]
2	
2 ½	35
3	50
4	74
5	97
6	123
8	169



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

### Model:

- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension ANSI/ASME B 16.5 Class 150
- Overall length according to EN 558, ISO 5752



Inch	d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg
2	63	50	10	1470	<b>169 568 122</b>	5.113
2 ½	75	65	10	2200	<b>169 568 123</b>	5.460
3	90	80	10	3000	<b>169 568 124</b>	5.848
4	110	100	10	6500	<b>169 568 125</b>	7.893
5	140	125	10	11500	<b>169 568 126</b>	9.762
6	160	150	10	16600	<b>169 568 127</b>	11.601
8	225	200	10	39600	<b>169 568 128</b>	16.365

Inch	d2 [mm]	D	D1 [mm]	D3 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]
2	150	UNC 5/8	121	150	279	77	134	50	45	110	120	155
2 ½	170	UNC 5/8	138	150	291	83	140	50	46	110	120	155
3	177	UNC 5/8	152	150	303	89	146	50	49	110	120	155
4	216	UNC 5/8	191	150	339	104	167	50	56	110	120	155
5	246	UNC 3/4	216	150	366	117	181	50	64	110	120	155
6	273	UNC 3/4	241	150	387	130	189	50	72	110	120	155
8	334	UNC 3/4	298	150	436	158	210	50	73	110	120	155

Inch	L4 [mm]	Q1 [mm]	Q2 [mm]
2	150	40	
2 ½	160	54	35
3	175	67	50
4	244	88	74
5	272	113	97
6	297	139	123
8	360	178	169

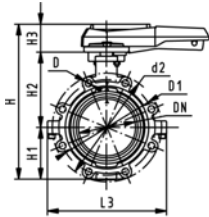




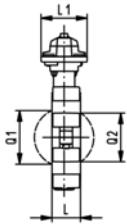
## Lugstyle butterfly valve type 568 ABS Hand lever with ratchet settings

### Model:

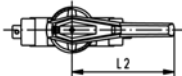
- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752



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



d [mm]	d2 [mm]	D	D1 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Q1 [mm]	Q2 [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

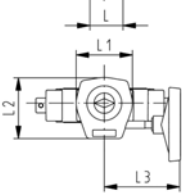
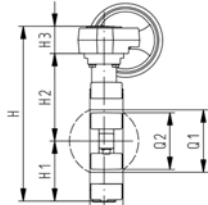
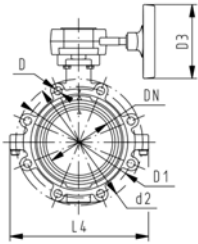




## Lugstyle butterfly valve type 568 ABS Reduction gear with handwheel

### Model:

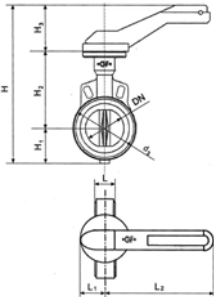
- Outer body in GGG-40.3 epoxy-coated
- Connecting dimension: ISO 7005 PN10, EN 1092 PN10, DIN 2501 PN10
- Overall length according to EN 558, ISO 5752



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

d [mm]	d2 [mm]	D	D1 [mm]	D3 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]
63	150	M16	125	150	279	77	134	50	45	110	120	155	150
75	170	M16	145	150	291	83	140	50	46	110	120	155	160
90	184	M16	160	150	303	89	146	50	49	110	120	155	205
110	216	M16	180	150	339	104	167	50	56	110	120	155	244
140	246	M16	210	150	366	117	181	50	64	110	120	155	272
160	273	M20	240	150	387	130	189	50	72	110	120	155	297
225	334	M20	295	150	436	158	210	50	73	110	120	155	360

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



## Metal - butterfly valve type 037M With hand lever

### Model:

- Housing: Aluminium ASTM S 12A, Rilsan® coated
- Seatliner available in EPDM and FPM

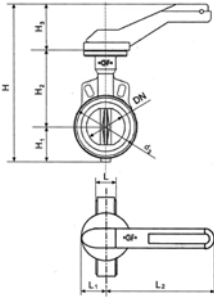
d [mm]	DN [mm]	Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	Cv value ( $\Delta p=1$ psi) [gal (US) / min]	Disc: ductile iron/ Rilsan® coated EPDM Code	Disc: ductile iron/ Rilsan® coated FPM Code
63	50	2	10	3140	220	<b>199 037 000</b>	<b>199 037 013</b>
75	65	2 ½	10	4570	320	<b>199 037 001</b>	<b>199 037 014</b>
90	80	3	10	7140	500	<b>199 037 002</b>	<b>199 037 015</b>
110	100	4	10	11710	800	<b>199 037 003</b>	<b>199 037 016</b>
140	125	5	10	18570	1300	<b>199 037 004</b>	<b>199 037 017</b>
160	150	6	10	27130	1900	<b>199 037 005</b>	<b>199 037 018</b>
225	200	8	10	47130	3330	<b>199 037 006</b>	<b>199 037 019</b>
280	250	10	10	77110	5400	<b>199 037 007</b>	<b>199 037 020</b>
315	300	12	10	114240	8000	<b>199 037 008</b>	<b>199 037 021</b>

d [mm]	DN [mm]	Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	Cv value ( $\Delta p=1$ psi) [gal (US) / min]	Disc: stainless steel EPDM Code	Disc: stainless steel FPM Code
63	50	2	10	3140	220	<b>199 037 200</b>	<b>199 037 213</b>
75	65	2 ½	10	4570	320	<b>199 037 201</b>	<b>199 037 214</b>
90	80	3	10	7140	500	<b>199 037 202</b>	<b>199 037 215</b>
110	100	4	10	11710	800	<b>199 037 203</b>	<b>199 037 216</b>
140	125	5	10	18570	1300	<b>199 037 204</b>	<b>199 037 217</b>
160	150	6	10	27130	1900	<b>199 037 205</b>	<b>199 037 218</b>
225	200	8	10	47130	3330	<b>199 037 206</b>	<b>199 037 219</b>
280	250	10	10	77110	5400	<b>199 037 207</b>	<b>199 037 220</b>
315	300	12	10	114240	8000	<b>199 037 208</b>	<b>199 037 221</b>

d [mm]	DN [mm]	Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	Cv value ( $\Delta p=1$ psi) [gal (US) / min]	Disc: Alu-bronze EPDM Code	Disc: Alu-bronze FPM Code
63	50	2	10	3140	220	<b>199 037 400</b>	<b>199 037 413</b>
75	65	2 ½	10	4570	320	<b>199 037 401</b>	<b>199 037 414</b>
90	80	3	10	7140	500	<b>199 037 402</b>	<b>199 037 415</b>
110	100	4	10	11710	800	<b>199 037 403</b>	<b>199 037 416</b>
140	125	5	10	18570	1300	<b>199 037 404</b>	<b>199 037 417</b>
160	150	6	10	27130	1900	<b>199 037 405</b>	<b>199 037 418</b>
225	200	8	10	47130	3330	<b>199 037 406</b>	<b>199 037 419</b>
280	250	10	10	77110	5400	<b>199 037 407</b>	<b>199 037 420</b>
315	300	12	10	114240	8000	<b>199 037 408</b>	<b>199 037 421</b>

d [mm]	DN [mm]	d3 [mm]	L [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]
63	50	95	43	45	220	290	53	140	95
75	65	114	46	45	220	312	63	152	95
90	80	131	46	45	220	327	71	159	95
110	100	152	52	45	220	360	87	178	95
140	125	182	56	45	320	388	102	191	95
160	150	209	56	45	320	416	118	203	95

table continued next page



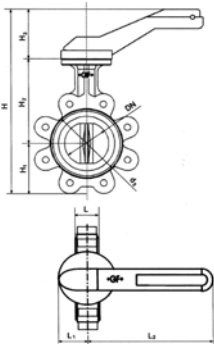
d	DN	d3	L	L1	L2	H	H1	H2	H3
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
225	200	262	60	45	320	489	149	245	95
280	250	331	68	63	560	525	200	275	50
315	300	380	78	63	560	592	227	315	50



## Metal - butterfly valve type 038M With hand lever

### Model:

- Seatliner available in EPDM and FPM
- Housing: ductile iron GGG-40/ASTM A536, Rilsan® coated
- Available in ANSI standard upon request
- In case this valve is used at the end of the line, the following pressures must not be exceeded: DN50 to DN150 5,6bar and >DN200 3,5bar

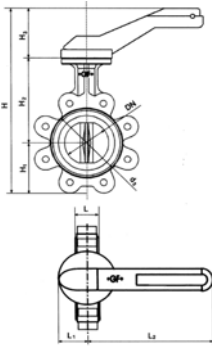


d	DN	Inch	PN	kv-value (Δp=1 bar)	Cv value (Δp=1 psi)	Disc: ductile iron/ Rilsan® coated EPDM Code	Disc: ductile iron/ Rilsan® coated FPM Code
[mm]	[mm]			[l/min]	[gal (US) / min]		
63	50	2	10	3140	220	<b>199 038 000</b>	<b>199 038 013</b>
75	65	2 ½	10	4570	320	<b>199 038 001</b>	<b>199 038 014</b>
90	80	3	10	7140	500	<b>199 038 002</b>	<b>199 038 015</b>
110	100	4	10	11710	820	<b>199 038 003</b>	<b>199 038 016</b>
140	125	5	10	18570	1300	<b>199 038 004</b>	<b>199 038 017</b>
160	150	6	10	27130	1900	<b>199 038 005</b>	<b>199 038 018</b>
225	200	8	10	47130	3330	<b>199 038 006</b>	<b>199 038 019</b>
280	250	10	10	77110	5400	<b>199 038 007</b>	<b>199 038 020</b>
315	300	12	10	114240	8000	<b>199 038 008</b>	<b>199 038 021</b>

d	DN	Inch	PN	kv-value (Δp=1 bar)	Cv value (Δp=1 psi)	Disc: stainless steel EPDM Code	Disc: stainless steel FPM Code
[mm]	[mm]			[l/min]	[gal (US) / min]		
63	50	2	10	3140	220	<b>199 038 200</b>	<b>199 038 213</b>
75	65	2 ½	10	4570	320	<b>199 038 201</b>	<b>199 038 214</b>
90	80	3	10	7140	500	<b>199 038 202</b>	<b>199 038 215</b>
110	100	4	10	11710	820	<b>199 038 203</b>	<b>199 038 216</b>
140	125	5	10	18570	1300	<b>199 038 204</b>	<b>199 038 217</b>
160	150	6	10	27130	1900	<b>199 038 205</b>	<b>199 038 218</b>
225	200	8	10	47130	3330	<b>199 038 206</b>	<b>199 038 219</b>
280	250	10	10	77110	5400	<b>199 038 207</b>	<b>199 038 220</b>
315	300	12	10	114240	8000	<b>199 038 208</b>	<b>199 038 221</b>

d	DN	Inch	PN	kv-value (Δp=1 bar)	Cv value (Δp=1 psi)	Disc: Alu-bronze EPDM Code
[mm]	[mm]			[l/min]	[gal (US) / min]	
63	50	2	10	3140	220	<b>199 038 400</b>
75	65	2 ½	10	4570	320	<b>199 038 401</b>
90	80	3	10	7140	500	<b>199 038 402</b>

table continued next page



d [mm]	DN [mm]	Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	Cv value ( $\Delta p=1$ psi) [gal (US) / min]	Disc: Alu-bronze EPDM Code
110	100	4	10	11710	820	<b>199 038 403</b>
140	125	5	10	18570	1300	<b>199 038 404</b>
160	150	6	10	27130	1900	<b>199 038 405</b>
225	200	8	10	47130	3330	<b>199 038 406</b>
280	250	10	10	77110	5400	<b>199 038 407</b>
315	300	12	10	114240	8000	<b>199 038 408</b>

d [mm]	DN [mm]	Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	Cv value ( $\Delta p=1$ psi) [gal (US) / min]	Disc: Alu-bronze FPM Code	kg
63	50	2	10	3140	220	<b>199 038 413</b>	3.800
75	65	2 ½	10	4570	320	<b>199 038 414</b>	4.900
90	80	3	10	7140	500	<b>199 038 415</b>	5.400
110	100	4	10	11710	820	<b>199 038 416</b>	9.100
140	125	5	10	18570	1300	<b>199 038 417</b>	11.000
160	150	6	10	27130	1900	<b>199 038 418</b>	12.800
225	200	8	10	47130	3330	<b>199 038 419</b>	19.300
280	250	10	10	77110	5400	<b>199 038 420</b>	35.000
315	300	12	10	114240	8000	<b>199 038 421</b>	49.000

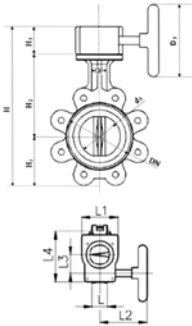
d [mm]	d3 [mm]	L [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]
63	95	43	45	220	298	63	95	152
75	114	46	45	220	320	73	95	178
90	131	46	45	220	335	81	95	200
110	152	52	45	220	370	97	95	229
140	182	56	45	320	398	112	95	254
160	209	56	45	320	420	122	95	280
225	262	60	45	320	489	149	95	343
280	331	68	63	560	573	203	95	406
315	380	78	63	560	651	241	95	483



## Metal - butterfly valve type 038G Reduction gear with handwheel

### Model:

- Seatliner available in EPDM and FPM
- Housing: ductile iron GGG-40/ASTM A536, Rilsan® coated
- Available in ANSI standard upon request
- In case this valve is used at the end of the line, the following pressures must not be exceeded: DN50 to DN150 5,6bar and >DN200 3,5bar



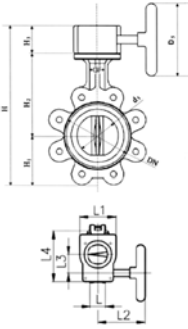
d [mm]	DN [mm]	Inch	PN	kv-value (Δp=1 bar) [l/min]	Cv value (Δp=1 psi) [gal (US) / min]	Disc: ductile iron/ Rilsan® coated EPDM Code	Disc: ductile iron/ Rilsan® coated FPM Code
63	50	2	10	3140	220	<b>199 038 026</b>	<b>199 038 039</b>
75	65	2 ½	10	4570	320	<b>199 038 027</b>	<b>199 038 040</b>
90	80	3	10	7140	500	<b>199 038 028</b>	<b>199 038 041</b>
110	100	4	10	11710	820	<b>199 038 029</b>	<b>199 038 042</b>
140	125	5	10	18570	1300	<b>199 038 030</b>	<b>199 038 043</b>
160	150	6	10	27130	1900	<b>199 038 031</b>	<b>199 038 044</b>
225	200	8	10	47130	3330	<b>199 038 032</b>	<b>199 038 045</b>
280	250	10	10	77110	5400	<b>199 038 033</b>	<b>199 038 046</b>
315	300	12	10	114240	8000	<b>199 038 034</b>	<b>199 038 047</b>

d [mm]	DN [mm]	Inch	PN	kv-value (Δp=1 bar) [l/min]	Cv value (Δp=1 psi) [gal (US) / min]	Disc: stainless steel EPDM Code	Disc: stainless steel FPM Code
63	50	2	10	3140	220	<b>199 038 226</b>	<b>199 038 239</b>
75	65	2 ½	10	4570	320	<b>199 038 227</b>	<b>199 038 240</b>
90	80	3	10	7140	500	<b>199 038 228</b>	<b>199 038 241</b>
110	100	4	10	11710	820	<b>199 038 229</b>	<b>199 038 242</b>
140	125	5	10	18570	1300	<b>199 038 230</b>	<b>199 038 243</b>
160	150	6	10	27130	1900	<b>199 038 231</b>	<b>199 038 244</b>
225	200	8	10	47130	3330	<b>199 038 232</b>	<b>199 038 245</b>
280	250	10	10	77110	5400	<b>199 038 233</b>	<b>199 038 246</b>
315	300	12	10	114240	8000	<b>199 038 234</b>	<b>199 038 247</b>

d [mm]	DN [mm]	Inch	PN	kv-value (Δp=1 bar) [l/min]	Cv value (Δp=1 psi) [gal (US) / min]	Disc: Alu-bronze EPDM Code
63	50	2	10	3140	220	<b>199 038 426</b>
75	65	2 ½	10	4570	320	<b>199 038 427</b>
90	80	3	10	7140	500	<b>199 038 428</b>
110	100	4	10	11710	820	<b>199 038 429</b>
140	125	5	10	18570	1300	<b>199 038 430</b>
160	150	6	10	27130	1900	<b>199 038 431</b>
225	200	8	10	47130	3330	<b>199 038 432</b>
280	250	10	10	77110	5400	<b>199 038 433</b>
315	300	12	10	114240	8000	<b>199 038 434</b>

d [mm]	DN [mm]	Inch	PN	kv-value (Δp=1 bar) [l/min]	Cv value (Δp=1 psi) [gal (US) / min]	Disc: Alu-bronze FPM Code	kg
63	50	2	10	3140	220	<b>199 038 439</b>	5.300
75	65	2 ½	10	4570	320	<b>199 038 440</b>	6.400
90	80	3	10	7140	500	<b>199 038 441</b>	6.900

table continued next page

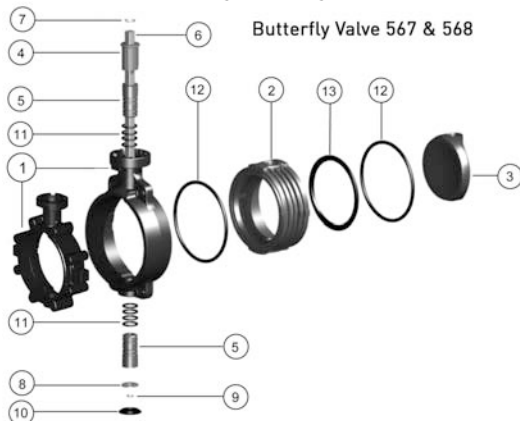


d [mm]	DN [mm]	Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	Cv value ( $\Delta p=1$ psi) [gal (US) / min]	Disc: Alu-bronze FPM Code	kg
110	100	4	10	11710	820	<b>199 038 442</b>	10.400
140	125	5	10	18570	1300	<b>199 038 443</b>	12.300
160	150	6	10	27130	1900	<b>199 038 444</b>	14.100
225	200	8	10	47130	3330	<b>199 038 445</b>	20.400
280	250	10	10	77110	5400	<b>199 038 446</b>	37.000
315	300	12	10	114240	8000	<b>199 038 447</b>	51.000

d [mm]	d3 [mm]	D5 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]
63	95	125	43	84	152	38	107	261	63	140	58
75	114	125	46	84	152	38	107	283	73	152	58
90	131	125	46	84	152	38	107	298	81	159	58
110	152	125	52	84	152	38	107	333	97	178	58
140	182	125	56	84	152	38	107	361	112	191	58
160	209	125	56	84	152	38	107	383	122	203	58
225	262	125	60	84	152	38	107	452	149	245	58
280	331	250	68	106	152	52	141	545	203	275	67
315	380	250	78	106	152	52	141	623	241	315	67

# Spare parts butterfly valves

## Spare parts butterfly valve type 567/568



### Inner body

#### Model:

- Inner body consisting of: inner body (2) and profile seal (13)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg
63	2	50	<b>169 481 067</b>	0.113
75	2 ½	65	<b>169 481 068</b>	0.137
90	3	80	<b>169 481 069</b>	0.194
110	4	100	<b>169 481 070</b>	0.346
140	5	125	<b>169 481 071</b>	0.510
160	6	150	<b>169 481 072</b>	0.632
225	8	200	<b>169 481 073</b>	1.085

### Flange seal (12)

#### Model:

- included in delivery 1 pcs.

d [mm]	Inch	DN [mm]	EPDM Code	kg
63	2	50	<b>161 486 959</b>	0.007
75	2 ½	65	<b>161 486 960</b>	0.008
90	3	80	<b>161 486 961</b>	0.009
110	4	100	<b>161 486 962</b>	0.021
125	5	125	<b>161 486 963</b>	0.025
160	6	150	<b>161 486 964</b>	0.030
225	8	200	<b>161 486 965</b>	0.037
280	10	250	<b>161 486 966</b>	0.053
315	12	300	<b>161 486 967</b>	0.061
355	14	350	<b>748 410 318</b>	0.001
400	16	400	<b>748 410 319</b>	0.002
450	18	450	<b>748 410 320</b>	0.002
500	20	500	<b>748 410 321</b>	0.002
630	24	600	<b>748 410 322</b>	0.002





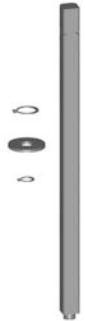
### Disc (3)

d [mm]	Inch	DN [mm]	ABS Code	kg
63	2	50	<b>169 480 951</b>	0.027
75	2 ½	65	<b>169 480 952</b>	0.046
90	3	80	<b>169 480 953</b>	0.078
110	4	100	<b>169 480 954</b>	0.151
140	5	125	<b>169 480 955</b>	0.272
160	6	150	<b>169 480 956</b>	0.475
225	8	200	<b>169 480 957</b>	0.590



### End stop PP glassfiber reinforced (4)

d [mm]	Inch	DN [mm]	Code	kg
63	2	50	<b>167 483 251</b>	0.023
75	2 ½	65	<b>167 483 251</b>	0.023
90	3	80	<b>167 483 251</b>	0.023
110	4	100	<b>167 483 252</b>	0.033
140	5	125	<b>167 483 252</b>	0.033
160	6	150	<b>167 483 253</b>	0.049
225	8	200	<b>167 483 253</b>	0.049
280	10	250	<b>167 483 254</b>	0.096
315	12	300	<b>167 483 254</b>	0.096



### Shaft set

#### Model:

- Shaft set consisting of: shaft chrom steel 1.4301 AISI 304 (6), retention ring (7, 9) and washer (8)

d [mm]	Inch	DN [mm]	Code	kg
63	2	50	<b>161 486 899</b>	0.225
75	2 ½	65	<b>161 486 900</b>	0.237
90	3	80	<b>161 486 901</b>	0.249
110	4	100	<b>161 486 902</b>	0.429
140	5	125	<b>161 486 903</b>	0.469
160	6	150	<b>161 486 904</b>	0.749
225	8	200	<b>161 486 905</b>	0.844
280	10	250	<b>161 486 906</b>	2.335
315	12	300	<b>161 486 907</b>	2.536
355	14	350	<b>161 486 908</b>	7.600
400	16	400	<b>161 486 909</b>	8.900
450	18	450	<b>161 486 926</b>	11.800
500	20	500	<b>161 486 927</b>	14.400
630	24	600	<b>161 486 928</b>	26.000



### Hand lever

d [mm]	Inch	DN [mm]	with index plate Code	with fine adjust- ment Code	kg
63	2	50	<b>161 486 690</b>	<b>161 486 325</b>	0.485
75	2 ½	65	<b>161 486 690</b>	<b>161 486 325</b>	0.485
90	3	80	<b>161 486 690</b>	<b>161 486 325</b>	0.485

table continued next page

d [mm]	Inch	DN [mm]	with index plate Code	with fine adjust- ment Code	kg
110	4	100	<b>161 486 691</b>	<b>161 486 326</b>	0.540
140	5	125	<b>161 486 691</b>	<b>161 486 326</b>	0.540
160	6	150	<b>161 486 694</b>	<b>161 486 327</b>	0.537
225	8	200	<b>161 486 695</b>	<b>161 486 328</b>	1.375
280	10	250	<b>161 486 697</b>		0.330
315	12	300	<b>161 486 697</b>		0.330

### Profile seal (13) DN350-600

d [mm]	Inch	DN [mm]	EPDM Code	kg
355	14	350	<b>748 440 018</b>	0.261
400	16	400	<b>748 440 019</b>	0.297
450	18	450	<b>748 440 020</b>	0.430
500	20	500	<b>748 440 021</b>	0.480
630	24	600	<b>748 440 022</b>	0.686

### Intermediate element

#### Gear operated with handwheel 567 / 568

d [mm]	DN [mm]	Code	kg
63	50	<b>198 000 621</b>	0.150
75	65	<b>198 000 621</b>	0.150
90	80	<b>198 000 621</b>	0.150
110	100	<b>198 000 622</b>	0.150
140	125	<b>198 000 622</b>	0.150
160	150	<b>198 000 599</b>	0.100
225	200	<b>198 000 599</b>	0.100
280	250	<b>198 000 880</b>	0.750
315	300	<b>198 000 880</b>	0.750

### Reduction gear with handwheel



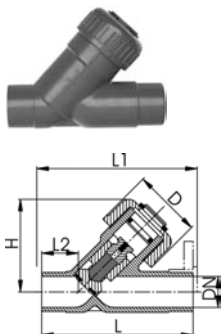
d [mm]	Inch	DN [mm]	Code	kg
75	2 ½	65	<b>161 482 408</b>	2.260
90	3	80	<b>161 482 408</b>	2.260
110	4	100	<b>161 482 408</b>	2.260
125	4 ½	125	<b>161 482 408</b>	2.260
160	6	150	<b>161 482 408</b>	2.260
225	8	200	<b>161 482 408</b>	2.260
280	10	250	<b>161 483 462</b>	2.840
315	12	300	<b>161 483 462</b>	2.840

# Angle seat check valves

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

### Model:

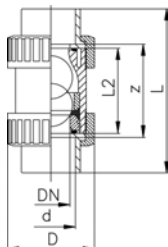
- For horizontal or vertical installation
- Leakproof from: EPDM 2m, FPM 3m water column
- Specific gravity of piston approx. 2 kg/dm<sup>3</sup>
- Overall length EN 558



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

## Ball check (non-return) valve

### Ball check (non return) valve type 360 ABS With solvent cement sockets Inch BS

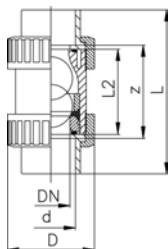


Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	FPM Code	kg
3/8	16	170	<b>169 360 521</b>	<b>169 360 531</b>	0.105
1/2	16	150	<b>169 360 522</b>	<b>169 360 532</b>	0.105
3/4	16	330	<b>169 360 523</b>	<b>169 360 533</b>	0.174
1	16	390	<b>169 360 524</b>	<b>169 360 534</b>	0.269
1 1/4	16	710	<b>169 360 525</b>	<b>169 360 535</b>	0.442
1 1/2	16	900	<b>169 360 526</b>	<b>169 360 536</b>	0.727
2	16	1390	<b>169 360 527</b>	<b>169 360 537</b>	1.315

Inch	z [mm]	D [mm]	L [mm]	L2 [mm]
3/8	71	46	99	63
1/2	70	46	102	63
3/4	82	56	120	75
1	87	67	131	79
1 1/4	98	82	150	89
1 1/2	101	92	163	95
2	121	120	197	115

### Ball check (non return) valve type 360 ABS With threaded sockets Rp Inch



Inch	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	FPM Code	kg
3/8	16	170	<b>169 360 421</b>	<b>169 360 431</b>	0.105
1/2	16	150	<b>169 360 422</b>	<b>169 360 432</b>	0.105
3/4	16	330	<b>169 360 423</b>	<b>169 360 433</b>	0.174
1	16	390	<b>169 360 424</b>	<b>169 360 434</b>	0.269
1 1/4	16	710	<b>169 360 425</b>	<b>169 360 435</b>	0.442
1 1/2	16	900	<b>169 360 426</b>	<b>169 360 436</b>	0.727
2	16	1390	<b>169 360 427</b>	<b>169 360 437</b>	1.315

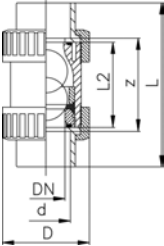
Inch	z [mm]	D [mm]	L [mm]	L2 [mm]
3/8	71	46	99	63
1/2	70	46	102	63
3/4	82	56	120	75
1	87	67	131	79
1 1/4	98	82	150	89
1 1/2	101	92	163	95
2	121	120	197	115



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

### Model:

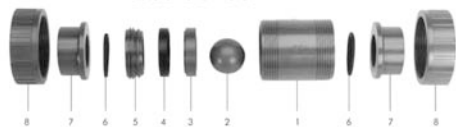
- For easy installation and removal
- The ball seals at a minimum water column of 2 m
- Vibration free even at high flow velocity
- Minimum temperature: - 40°C
- For horizontal or vertical installation



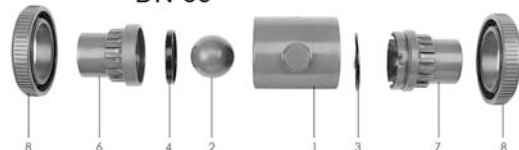
d [mm]	DN [mm]	PN	kv-value ( $\Delta p=1$ bar) [l/min]	EPDM Code	kg	z [mm]	D [mm]	L [mm]	L2 [mm]
16	10	10	170	<b>169 360 401</b>	0.105	71	45	99	63
20	15	10	150	<b>169 360 402</b>	0.105	70	45	102	63
25	20	10	330	<b>169 360 403</b>	0.175	82	56	120	75
32	25	10	390	<b>169 360 404</b>	0.271	87	67	131	79
40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

# Spare parts ball check valves

## Spare parts ball check valve type 360 DN 10-50



## DN 80



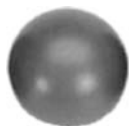
### Central part

#### Model:

- Central part consisting of: body (1), ball (2), support ring (3), sealing ring (4) and union bush (5)

d [mm]	Inch	DN [mm]	ABS EPDM Code	kg	
16	3/8	10	<b>169 480 250</b>	0.063	
20	1/2	15	<b>169 480 251</b>	0.063	
25	3/4	20	<b>169 480 252</b>	0.105	
32	1	25	<b>169 480 253</b>	0.170	
40	1 1/4	32	<b>169 480 254</b>	0.274	
50	1 1/2	40	<b>169 480 255</b>	0.422	
63	2	50	<b>169 480 256</b>	0.799	

### Ball (2)



d [mm]	Inch	DN [mm]	PVC-U Code	PP-H with talc density 1.24 Code	PP-H 100% Code	
16	3/8	10	<b>161 330 304</b>	<b>167 481 165</b>	<b>167 480 024</b>	
20	1/2	15	<b>161 330 304</b>	<b>167 481 165</b>	<b>167 480 024</b>	
25	3/4	20	<b>161 330 354</b>	<b>167 481 166</b>	<b>167 480 025</b>	
32	1	25	<b>161 330 404</b>	<b>167 481 167</b>	<b>167 480 026</b>	
40	1 1/4	32	<b>161 330 454</b>	<b>167 481 168</b>	<b>167 480 027</b>	
50	1 1/2	40	<b>161 330 504</b>	<b>167 481 169</b>	<b>167 480 028</b>	
63	2	50	<b>161 330 554</b>	<b>167 481 170</b>	<b>167 480 029</b>	
90	3	80	<b>161 330 654</b>			

d [mm]	Inch	DN [mm]	PVDF Code	kg	
16	3/8	10	<b>175 480 153</b>	0.010	
20	1/2	15	<b>175 480 153</b>	0.010	
25	3/4	20	<b>175 480 154</b>	0.014	
32	1	25	<b>175 480 155</b>	0.028	
40	1 1/4	32	<b>175 480 156</b>	0.064	
50	1 1/2	40	<b>175 480 157</b>	0.093	
63	2	50	<b>175 480 158</b>	0.214	
90	3	80		0.475	



### Sealing ring (4)

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	3/8	10	<b>161 483 259</b>	0.005
20	1/2	15	<b>161 483 259</b>	0.005
25	3/4	20	<b>161 483 260</b>	0.003
32	1	25	<b>161 483 261</b>	0.005
40	1 1/4	32	<b>161 483 262</b>	0.004
50	1 1/2	40	<b>161 483 263</b>	0.012
63	2	50	<b>161 483 264</b>	0.025
90	3	80	<b>161 480 141</b>	0.046



### Face seal (6)

d [mm]	Inch	DN [mm]	EPDM Code	kg
16	3/8	10	<b>748 410 042</b>	0.002
20	1/2	15	<b>748 410 042</b>	0.002
25	3/4	20	<b>748 410 116</b>	0.002
32	1	25	<b>748 410 103</b>	0.003
40	1 1/4	32	<b>748 410 027</b>	0.005
50	1 1/2	40	<b>748 410 010</b>	0.004
63	2	50	<b>748 410 011</b>	0.005
90	3	80	<b>748 410 099</b>	0.009



### Union nut (8)

d [mm]	Inch	DN [mm]	ABS Code	kg
16	3/8	10	<b>169 480 101</b>	0.013
20	1/2	15	<b>169 480 101</b>	0.013
25	3/4	20	<b>169 480 102</b>	0.030
32	1	25	<b>169 480 103</b>	0.004
40	1 1/4	32	<b>169 480 104</b>	0.063
50	1 1/2	40	<b>169 480 105</b>	0.085
63	2	50	<b>169 480 106</b>	0.160



### Valve end with socket (7)

d [mm]	Inch	DN [mm]	ABS metric Code	kg
16	3/8	10	<b>169 480 152</b>	0.007
20	1/2	15	<b>169 480 153</b>	0.007
25	3/4	20	<b>169 480 154</b>	0.010
32	1	25	<b>169 480 155</b>	0.016
40	1 1/4	32	<b>169 480 156</b>	0.032
50	1 1/2	40	<b>169 480 157</b>	0.052
63	2	50	<b>169 480 158</b>	0.087



### Seal set (4, 6)

d [mm]	Inch	DN [mm]	EPDM Code	kg	
16	$\frac{3}{8}$	10	<b>161 482 910</b>	0.003	
20	$\frac{1}{2}$	15	<b>161 482 910</b>	0.003	
25	$\frac{3}{4}$	20	<b>161 482 911</b>	0.007	
32	1	25	<b>161 482 912</b>	0.011	
40	1 $\frac{1}{4}$	32	<b>161 482 913</b>	0.016	
50	1 $\frac{1}{2}$	40	<b>161 482 914</b>	0.032	
63	2	50	<b>161 482 915</b>	0.065	



### Body (1)

d [mm]	Inch	DN [mm]	PVC-U Code	kg	
90	3	80	<b>161 480 158</b>	1.790	



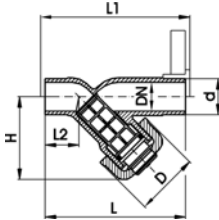
# Strainers



## 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



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



## Cylindrical screen type 305 PVC-U Screen perforations 0.5 mm

- For line strainers Type 305

d [mm]	Inch	DN [mm]	kv-value ( $\Delta p=1$ bar) [l/min]	Code	kg	D [mm]	L [mm]
20	½	15	35	<b>161 305 339</b>	0.005	14	39
25	¾	20	65	<b>161 305 389</b>	0.007	18	48
32	1	25	90	<b>161 305 439</b>	0.003	24	60
40	1 ¼	32	155	<b>161 305 489</b>	0.004	30	71
50	1 ½	40	225	<b>161 305 539</b>	0.007	38	87
63	2	50	370	<b>161 305 589</b>	0.010	48	106
75	2 ½	65	575	<b>161 305 639</b>	0.012	61	100
90	3	80	955	<b>161 305 689</b>	0.017	73	118



## Cylindrical screen type 305 PVC-U Screen perforations 0.8 mm

- For line strainers Type 305

d [mm]	DN [mm]	kv-value ( $\Delta p=1$ bar) [l/min]	Code	kg	D [mm]	L [mm]
20	15	35	<b>161 305 338</b>	0.005	14	39
25	20	65	<b>161 305 388</b>	0.007	18	48
32	25	90	<b>161 305 438</b>	0.003	24	60
40	32	155	<b>161 305 488</b>	0.004	30	71
50	40	225	<b>161 305 538</b>	0.006	38	87
63	50	370	<b>161 305 588</b>	0.009	48	106
75	65	575	<b>161 305 638</b>	0.012	61	100
90	80	955	<b>161 305 688</b>	0.010	73	118



### Cylindrical screen type 305 PVC-U Screen perforations 1.4 mm

d [mm]	DN [mm]	kv-value ( $\Delta p=1$ bar) [l/min]	Code	kg	D [mm]	L [mm]
20	15	35	<b>161 305 337</b>	0.005	14	39
25	20	65	<b>161 305 387</b>	0.003	18	48
32	25	90	<b>161 305 437</b>	0.003	24	60
40	32	155	<b>161 305 487</b>	0.004	30	71
50	40	225	<b>161 305 537</b>	0.006	38	87
63	50	370	<b>161 305 587</b>	0.008	48	106
75	65	575	<b>161 305 637</b>	0.011	61	100
90	80	955	<b>161 305 687</b>	0.015	73	118



### Cylindrical screen type 305 PVC-U Screen perforations 2.2 mm

d [mm]	DN [mm]	kv-value ( $\Delta p=1$ bar) [l/min]	Code	kg	D [mm]	L [mm]
20	15	35	<b>161 305 336</b>	0.005	14	39
25	20	65	<b>161 305 386</b>	0.003	18	48
32	25	90	<b>161 305 436</b>	0.003	24	60
40	32	155	<b>161 305 486</b>	0.003	30	71
50	40	225	<b>161 305 536</b>	0.005	38	87
63	50	370	<b>161 305 586</b>	0.008	48	106
75	65	575	<b>161 305 636</b>	0.010	61	100
90	80	955	<b>161 305 686</b>	0.013	73	118



### Screen stainless steel Screen perforation 0.5 mm

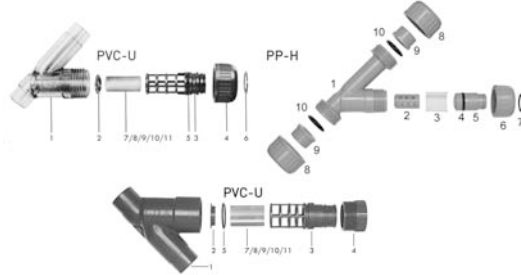
#### Model:

- Stainless Steel A4 Quality (AISI 316)
- For line strainers Type 305

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

# Spare parts line strainer

## Spare parts line strainer type 305/306



### Screen set

#### Model:

- Screen set PVC-U DN10-DN50 consisting of: screen (3), screen support ring (2) and circlip (6), PVC-U DN65-DN80: screen (3) and screen support ring (2).  
PP-H DN15-DN50: screen basket compl. without screen (2) and circlip (7)

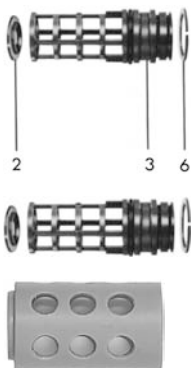


d [mm]	Inch	DN [mm]	PVC-U Code	PP-H Code	kg
20	1/2	15	<b>161 483 126</b>	<b>167 305 001</b>	0.110
25	3/4	20	<b>161 483 127</b>	<b>167 305 002</b>	0.070
32	1	25	<b>161 483 128</b>	<b>167 305 003</b>	0.255
40	1 1/4	32	<b>161 483 129</b>	<b>167 305 004</b>	0.135
50	1 1/2	40	<b>161 483 130</b>	<b>167 305 005</b>	0.140
63	2	50	<b>161 483 131</b>	<b>167 305 006</b>	0.140
75	2 1/2	65	<b>161 483 132</b>		0.490
90	3	80	<b>161 483 133</b>		0.390

### Body (1)



d [mm]	Inch	DN [mm]	ABS Code
20	1/2	15	<b>169 480 600</b>
25	3/4	20	<b>169 480 601</b>
32	1	25	<b>169 480 602</b>
40	1 1/4	32	<b>169 480 603</b>
50	1 1/2	40	<b>169 480 604</b>
63	2	50	<b>169 480 605</b>



## Screen cage

### Model:

- Screen cage in PVC-U (3) and PP-H (2)

d [mm]	Inch	DN [mm]	PVC-U Code	PVC-C Code	PP-H Code	kg	
20	1/2	15	<b>161 305 303</b>	<b>163 481 102</b>	<b>167 305 020</b>	0.005	
25	3/4	20	<b>161 305 353</b>	<b>163 481 103</b>	<b>167 305 021</b>	0.007	
32	1	25	<b>161 305 403</b>	<b>163 481 104</b>	<b>167 305 022</b>	0.003	
40	1 1/4	32	<b>161 305 453</b>	<b>163 481 105</b>	<b>167 305 023</b>	0.004	
50	1 1/2	40	<b>161 305 503</b>	<b>163 481 106</b>	<b>167 305 024</b>	0.005	
63	2	50	<b>161 305 553</b>	<b>163 481 107</b>	<b>167 305 025</b>	0.010	
75	2 1/2	65	<b>161 305 603</b>			0.309	
90	3	80	<b>161 305 653</b>			0.372	



## Screen cage bracket

### Model:

- Only for the version in PP-H available

d [mm]	Inch	DN [mm]	PP-H Code	kg	
20	1/2	15	<b>167 305 040</b>	0.018	
25	3/4	20	<b>167 305 041</b>	0.024	
32	1	25	<b>167 305 042</b>	0.035	
40	1 1/4	32	<b>167 305 043</b>	0.055	
50	1 1/2	40	<b>167 305 044</b>	0.088	
63	2	50	<b>167 305 045</b>	0.132	



## Valve end metric

### Model:

- Only for the version in PP-H available

d [mm]	Inch	DN [mm]	fusion socket PP-H Code	butt fusion spigot IR PP-H SDR11 Code	kg	
20	1/2	15	<b>727 600 106</b>	<b>727 608 506</b>	0.010	
25	3/4	20	<b>727 600 107</b>	<b>727 608 507</b>	0.017	
32	1	25	<b>727 600 108</b>	<b>727 608 508</b>	0.024	
40	1 1/4	32	<b>727 600 109</b>	<b>727 608 509</b>	0.041	
50	1 1/2	40	<b>727 600 110</b>	<b>727 608 510</b>	0.054	
63	2	50	<b>727 600 111</b>	<b>727 608 511</b>	0.092	



## Valve nut

### Model:

- Union nut PVC-U DN10-DN50 (4), PP-H (6, 8)

d [mm]	Inch	DN [mm]	Cap nut ABS Code	kg	
20	1/2	15	<b>169 480 609</b>	0.025	
25	3/4	20	<b>169 480 610</b>	0.018	
32	1	25	<b>169 480 611</b>	0.030	
40	1 1/4	32	<b>169 480 612</b>	0.035	
50	1 1/2	40	<b>169 480 613</b>	0.064	
63	2	50	<b>169 480 614</b>	0.110	



## Body seal

### Model:

- Body seal vor PVC-U (5), PP-H (10)

d [mm]	Inch	DN [mm]	EPDM Code	kg
20	1/2	15	<b>748 410 006</b>	0.001
25	3/4	20	<b>748 410 001</b>	0.002
32	1	25	<b>748 410 007</b>	0.002
40	1 1/4	32	<b>748 410 002</b>	0.003
50	1 1/2	40	<b>748 410 003</b>	0.004
63	2	50	<b>748 410 012</b>	0.004
75	2 1/2	65	<b>748 410 013</b>	0.006
90	3	80	<b>748 410 014</b>	0.007



## Screen perforation

### Model:

- For PVC-U (7), PP-H (3)
- Stainless Steel A4 Quality (AISI 316)

d [mm]	Inch	DN [mm]	PVC-U 0.5mm Code	PVC-U 0.8mm Code	PVC-U 1.4mm Code	PVC-U 2.2mm Code
20	1/2	15	<b>161 305 339</b>	<b>161 305 338</b>	<b>161 305 337</b>	<b>161 305 336</b>
25	3/4	20	<b>161 305 389</b>	<b>161 305 388</b>	<b>161 305 387</b>	<b>161 305 386</b>
32	1	25	<b>161 305 439</b>	<b>161 305 438</b>	<b>161 305 437</b>	<b>161 305 436</b>
40	1 1/4	32	<b>161 305 489</b>	<b>161 305 488</b>	<b>161 305 487</b>	<b>161 305 486</b>
50	1 1/2	40	<b>161 305 539</b>	<b>161 305 538</b>	<b>161 305 537</b>	<b>161 305 536</b>
63	2	50	<b>161 305 589</b>	<b>161 305 588</b>	<b>161 305 587</b>	<b>161 305 586</b>
75	2 1/2	65	<b>161 305 639</b>	<b>161 305 638</b>	<b>161 305 637</b>	<b>161 305 636</b>
90	3	80	<b>161 305 689</b>	<b>161 305 688</b>	<b>161 305 687</b>	<b>161 305 686</b>

d [mm]	Inch	DN [mm]	PP-H Code	stainless steel 0.5mm Code	kg
20	1/2	15	<b>167 305 030</b>	<b>161 486 100</b>	0.002
25	3/4	20	<b>167 305 031</b>	<b>161 486 101</b>	0.004
32	1	25	<b>167 305 032</b>	<b>161 486 102</b>	0.006
40	1 1/4	32	<b>167 305 033</b>	<b>161 486 103</b>	0.009
50	1 1/2	40	<b>167 305 034</b>	<b>161 486 104</b>	0.014
63	2	50	<b>167 305 035</b>	<b>161 486 105</b>	0.022
75	2 1/2	65		<b>161 486 106</b>	0.026
90	3	80		<b>161 486 107</b>	0.036



## Plug (4)

### Model:

- Only for PVC-U DN65-DN80

d [mm]	Inch	DN [mm]	PVC-U Code	kg
75	2 1/2	65	<b>161 305 604</b>	0.200
90	3	80	<b>161 305 654</b>	0.265



## Circlip (7)

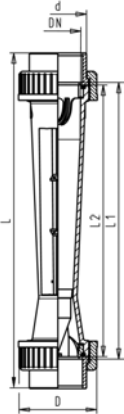
### Model:

- Only for the version in PP-H available

d [mm]	Inch	DN [mm]	PP-H Code	kg	
20	1/2	15	<b>161 482 017</b>	0.003	
25	3/4	20	<b>161 482 018</b>	0.003	
32	1	25	<b>161 482 019</b>	0.005	
40	1 1/4	32	<b>161 482 020</b>	0.003	
50	1 1/2	40	<b>161 482 021</b>	0.003	
63	2	50	<b>161 482 022</b>	0.004	

# Variable area flow meters

**Variable area flow meters**  
**Float in PVDF without magnet**  
**With solvent cement sockets ABS BS Inch**



Scale range [l/h]	d [inch]	DN [mm]	Taper tube in Polyamid O-rings in EPDM Code	Taper tube in Polysulfone O- rings in EPDM Code
50 - 500	1	25	<b>198 802 814</b>	<b>198 802 815</b>
100 - 1000	1	25	<b>198 802 816</b>	<b>198 802 817</b>
300 - 3000	1 ½	40	<b>198 802 818</b>	<b>198 802 819</b>
600 - 6000	1 ½	40	<b>198 802 820</b>	<b>198 802 821</b>
1000 - 10000	2	50	<b>198 802 822</b>	<b>198 802 823</b>
1500 - 15000	2	50	<b>198 802 824</b>	<b>198 802 825</b>

Scale range [l/h]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	G [inch]
50 - 500	58	385	341	335	1 ½
100 - 1000	58	385	341	335	1 ½
300 - 3000	83	403	341	335	2 ¼
600 - 6000	83	403	341	335	2 ¼
1000 - 10000	101	417	341	335	2 ¾
1500 - 15000	101	417	341	335	2 ¾

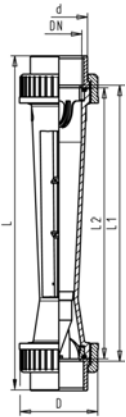


**Variable area flow meters**  
**Float in PVDF with magnet**  
**With solvent cement sockets ABS BS Inch**

**Model:**

- Suitable limit switches see accessories for variable area flow meters

Scale range [l/h]	d [inch]	DN [mm]	Taper tube in Polyamid O-rings in EPDM Code	Taper tube in Polysulfone O- rings in EPDM Code
50 - 500	1	25	<b>198 802 826</b>	<b>198 802 827</b>
100 - 1000	1	25	<b>198 802 828</b>	<b>198 802 829</b>
300 - 3000	1 ½	40	<b>198 802 830</b>	<b>198 802 831</b>
600 - 6000	1 ½	40	<b>198 802 832</b>	<b>198 802 833</b>
1000 - 10000	2	50	<b>198 802 834</b>	<b>198 802 835</b>
1500 - 15000	2	50	<b>198 802 836</b>	<b>198 802 837</b>



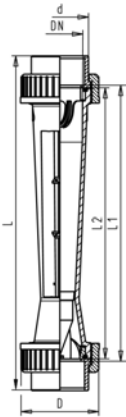
Scale range [l/h]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	G [inch]
50 - 500	58	385	341	335	1 ½
100 - 1000	58	385	341	335	1 ½
300 - 3000	83	403	341	335	2 ¼
600 - 6000	83	403	341	335	2 ¼
1000 - 10000	101	417	341	335	2 ¾
1500 - 15000	101	417	341	335	2 ¾





**Variable area flow meters**  
**Float in PVDF without magnet**  
**With solvent cement sockets ABS metric**

Scale range [l/h]	d [mm]	DN [mm]	Taper tube in Polyamid O-rings in EPDM Code	Taper tube in Polysulfone O- rings in EPDM Code
50 - 500	32	25	<b>198 807 120</b>	<b>198 807 126</b>
100 - 1000	32	25	<b>198 807 121</b>	<b>198 807 127</b>
300 - 3000	50	40	<b>198 807 122</b>	<b>198 807 128</b>
600 - 6000	50	40	<b>198 807 123</b>	<b>198 807 129</b>
1000 - 10000	63	50	<b>198 807 124</b>	<b>198 807 130</b>
1500 - 15000	63	50	<b>198 807 125</b>	<b>198 807 131</b>



Scale range [l/h]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	G [inch]
50 - 500	58	385	341	335	1 ½
100 - 1000	58	385	341	335	1 ½
300 - 3000	83	403	341	335	2 ¼
600 - 6000	83	403	341	335	2 ¼
1000 - 10000	101	417	341	335	2 ¾
1500 - 15000	101	417	341	335	2 ¾

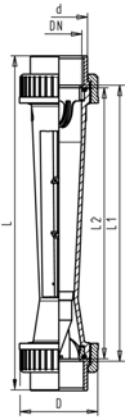


**Variable area flow meters**  
**Float in PVDF with magnet**  
**With solvent cement sockets ABS metric**

**Model:**

- Suitable limit switches see accessories for variable area flow meters

Scale range [l/h]	d [mm]	DN [mm]	Taper tube in Polyamid O-rings in EPDM Code	Taper tube in Polysulfone O- rings in EPDM Code
50 - 500	32	25	<b>198 807 132</b>	<b>198 807 138</b>
100 - 1000	32	25	<b>198 807 133</b>	<b>198 807 139</b>
300 - 3000	50	40	<b>198 807 134</b>	<b>198 807 140</b>
600 - 6000	50	40	<b>198 807 135</b>	<b>198 807 141</b>
1000 - 10000	63	50	<b>198 807 136</b>	<b>198 807 142</b>
1500 - 15000	63	50	<b>198 807 137</b>	<b>198 807 143</b>

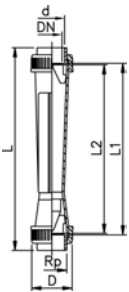


Scale range [l/h]	D [mm]	L [mm]	L1 [mm]	L2 [mm]	G [inch]
50 - 500	58	385	341	335	1 ½
100 - 1000	58	385	341	335	1 ½
300 - 3000	83	403	341	335	2 ¼
600 - 6000	83	403	341	335	2 ¼
1000 - 10000	101	417	341	335	2 ¾
1500 - 15000	101	417	341	335	2 ¾

**Short Version**  
**Float in PVDF without magnet**  
**With solvent cement sockets ABS BS Inch**

**Model:**

- Union nuts and valve ends in other materials on request



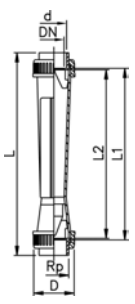
Type	d [inch]	DN [mm]	Scale range [l/h]	Taper tube in Polysulfone O- rings in EPDM Code	D [mm]	L [mm]	L1 [mm]	L2 [mm]
SK50	3/8	10	2.5 - 25	<b>198 807 040</b>	35	199	171	165
SK51	3/8	10	5 - 50	<b>198 807 041</b>	35	199	171	165
SK52	3/8	10	10 - 100	<b>198 807 042</b>	35	199	171	165
SK60	1/2	15	8 - 80	<b>198 807 043</b>	43	223	191	185
SK61	1/2	15	15 - 150	<b>198 807 044</b>	43	223	191	185
SK62	1/2	15	20 - 200	<b>198 807 045</b>	43	223	191	185
SK70	1	25	15 - 150	<b>198 807 046</b>	60	250	206	200
SK71	1	25	30 - 300	<b>198 807 047</b>	60	250	206	200
SK72	1	25	50 - 500	<b>198 807 048</b>	60	250	206	200
SK73	1	25	100 - 1000	<b>198 807 049</b>	60	250	206	200



**Short Version  
Float in PVDF with magnet  
With solvent cement sockets ABS BS Inch**

**Model:**

- Suitable limit switches see accessories for variable area flow meters
- Union nuts and valve ends in other materials on request

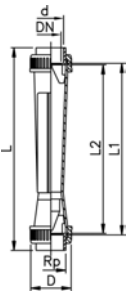


Type	d [inch]	DN [mm]	Scale range [l/h]	Taper tube in Polysulfone O- rings in EPDM Code	D [mm]	L [mm]	L1 [mm]	L2 [mm]
SK500	3/8	10	2.5 - 25	<b>198 807 050</b>	35	199	171	165
SK510	3/8	10	5 - 50	<b>198 807 051</b>	35	199	171	165
SK520	3/8	10	10 - 100	<b>198 807 052</b>	35	199	171	165
SK600	1/2	15	8 - 80	<b>198 807 053</b>	43	223	191	185
SK610	1/2	15	15 - 150	<b>198 807 054</b>	43	223	191	185
SK620	1/2	15	20 - 200	<b>198 807 055</b>	43	223	191	185
SK700	1	25	15 - 150	<b>198 807 056</b>	60	250	206	200
SK710	1	25	30 - 300	<b>198 807 057</b>	60	250	206	200
SK720	1	25	50 - 500	<b>198 807 058</b>	60	250	206	200
SK730	1	25	100 - 1000	<b>198 807 059</b>	60	250	206	200

**Short Version**  
**Float in PVDF without magnet**  
**With solvent cement sockets ABS metric**

**Model:**

- Union nuts and valve ends in other materials on request



Type	d [mm]	DN [mm]	Scale range [l/h]	Taper tube in Polysulfone O- rings in EPDM Code	D [mm]	L [mm]	L1 [mm]	L2 [mm]
SK50	16	10	2.5 - 25	<b>198 807 144</b>	35	199	171	165
SK51	16	10	5 - 50	<b>198 807 145</b>	35	199	171	165
SK52	16	10	10 - 100	<b>198 807 146</b>	35	199	171	165
SK60	20	15	8 - 80	<b>198 807 147</b>	43	223	191	185
SK61	20	15	15 - 150	<b>198 807 148</b>	43	223	191	185
SK62	20	15	20 - 200	<b>198 807 149</b>	43	223	191	185
SK70	32	25	15 - 150	<b>198 807 150</b>	60	250	206	200
SK71	32	25	30 - 300	<b>198 807 151</b>	60	250	206	200
SK72	32	25	50 - 500	<b>198 807 152</b>	60	250	206	200
SK73	32	25	100 - 1000	<b>198 807 153</b>	60	250	206	200

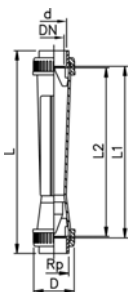


## Short Version Float in PVDF with magnet With solvent cement sockets ABS metric

### Model:

- Suitable limit switches see accessories for variable area flow meters
- Union nuts and valve ends in other materials on request

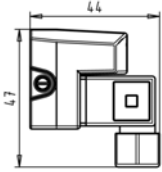
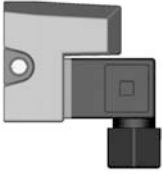
Type	d [mm]	DN [mm]	Scale range [l/h]	Taper tube in Polysulfone O- rings in EPDM Code	D [mm]	L [mm]	L1 [mm]	L2 [mm]
SK500	16	10	2.5 - 25	<b>198 807 154</b>	35	199	171	165
SK510	16	10	5 - 50	<b>198 807 155</b>	35	199	171	165
SK520	16	10	10 - 100	<b>198 807 156</b>	35	199	171	165
SK600	20	15	8 - 80	<b>198 807 157</b>	43	223	191	185
SK610	20	15	15 - 150	<b>198 807 158</b>	43	223	191	185
SK620	20	15	20 - 200	<b>198 807 159</b>	43	223	191	185
SK700	32	25	15 - 150	<b>198 807 160</b>	60	250	206	200
SK710	32	25	30 - 300	<b>198 807 161</b>	60	250	206	200
SK720	32	25	50 - 500	<b>198 807 162</b>	60	250	206	200
SK730	32	25	100 - 1000	<b>198 807 163</b>	60	250	206	200



## Accessories 4-20 mA sensor For type 335 and type 350

Type	d [mm]	DN [mm]	Corresponds to water scale [l/h]	Code	kg
GK 15	32	25	50-500	<b>198 335 962</b>	0.150
GK 15	32	25	100-1000	<b>198 335 963</b>	0.150
GK 15	40	32	150-1500	<b>198 335 964</b>	0.150
GK 15	40	32	250-2500	<b>198 335 965</b>	0.150
GK 15	50	40	200-2000	<b>198 335 966</b>	0.150
GK 15	50	40	300-3000	<b>198 335 967</b>	0.150
GK 15	50	40	600-6000	<b>198 335 968</b>	0.150
GK 15	63	50	600-6000	<b>198 335 969</b>	0.150
GK 15	63	50	1000-10000	<b>198 335 991</b>	0.150
GK 15	63	50	1500-15000	<b>198 335 992</b>	0.150
GK 15	75	65	2000-20000	<b>198 335 993</b>	0.150
GK 15	75	65	3000-30000	<b>198 335 994</b>	0.150
GK 15	75	65	8000-60000	<b>198 335 995</b>	0.150



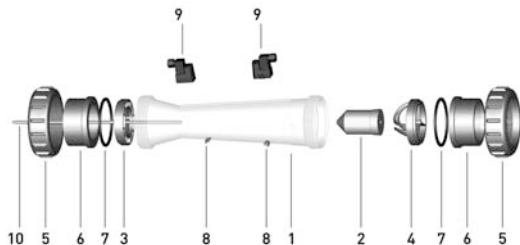


**Accessories**  
**Limit contacts GK10/GK11**  
**For type 335/350 and short version**

Type	Code	kg	
GK10 (min.)	<b>198 335 960</b>	0.033	
GK11 (max.)	<b>198 335 961</b>	0.033	

# Spare parts variable area flow meters

## Variable area flow meter type 335



### Taper tube with water scale (1)

- PVC-U transparent



Scale range [l/h]	d [mm]	Inch	DN [mm]	PVC-U transpar- ent Code	Polyamid Code
50 - 500	32	1	25	<b>198 335 055</b>	<b>198 335 070</b>
100 - 1000	32	1	25	<b>198 335 056</b>	<b>198 335 071</b>
150 - 1500	40	1 ¼	32	<b>198 335 057</b>	<b>198 335 072</b>
250 - 2500	40	1 ¼	32	<b>198 335 058</b>	<b>198 335 073</b>
200 - 2000	50	1 ½	40	<b>198 335 059</b>	<b>198 335 074</b>
300 - 3000	50	1 ½	40	<b>198 335 060</b>	<b>198 335 075</b>
600 - 6000	50	1 ½	40	<b>198 335 061</b>	<b>198 335 076</b>
600 - 6000	63	2	50	<b>198335062*</b>	<b>198 335 077</b>
1000 - 10000	63	2	50	<b>198335063*</b>	<b>198 335 078</b>
1500 - 15000	63	2	50	<b>198335064*</b>	<b>198 335 079</b>
2000 - 20000	75	2 ½	65	<b>198335065*</b>	<b>198 335 080</b>
3000 - 30000	75	2 ½	65	<b>198335066*</b>	<b>198 335 081</b>
8000 - 60000	75	2 ½	65	<b>198335067*</b>	<b>198 335 082</b>

Scale range [l/h]	d [mm]	Inch	DN [mm]	Polysulfon Code	kg
50 - 500	32	1	25	<b>198 335 085</b>	0.214
100 - 1000	32	1	25	<b>198 335 086</b>	0.214
150 - 1500	40	1 ¼	32	<b>198 335 087</b>	0.290
250 - 2500	40	1 ¼	32	<b>198 335 088</b>	0.290
200 - 2000	50	1 ½	40	<b>198 335 089</b>	0.350
300 - 3000	50	1 ½	40	<b>198 335 090</b>	0.350
600 - 6000	50	1 ½	40	<b>198 335 091</b>	0.350
600 - 6000	63	2	50	<b>198 335 092</b>	0.453
1000 - 10000	63	2	50	<b>198 335 093</b>	0.453
1500 - 15000	63	2	50	<b>198 335 094</b>	0.453
2000 - 20000	75	2 ½	65	<b>198 335 095</b>	0.622
3000 - 30000	75	2 ½	65	<b>198 335 096</b>	0.622
8000 - 60000	75	2 ½	65	<b>198 335 097</b>	0.622





## Taper tube without scale (1)

- PVC-U transparent

Scale range [l/h]	d [mm]	Inch	DN [mm]	PVC-U transpar- ent Code	Polyamid Code
50 - 500	32	1	25	<b>198 335 255</b>	<b>198 335 270</b>
100 - 1000	32	1	25	<b>198 335 256</b>	<b>198 335 271</b>
150 - 1500	40	1 ¼	32	<b>198 335 257</b>	<b>198 335 272</b>
250 - 2500	40	1 ¼	32	<b>198 335 258</b>	<b>198 335 273</b>
200 - 2000	50	1 ½	40	<b>198 335 259</b>	<b>198 335 274</b>
300 - 3000	50	1 ½	40	<b>198 335 260</b>	<b>198 335 275</b>
600 - 6000	50	1 ½	40	<b>198 335 261</b>	<b>198 335 276</b>
600 - 6000	63	2	50	<b>198335262*</b>	<b>198 335 277</b>
1000 - 10000	63	2	50	<b>198335263*</b>	<b>198 335 278</b>
1500 - 15000	63	2	50	<b>198335264*</b>	<b>198 335 279</b>
2000 - 20000	75	2 ½	65	<b>198335265*</b>	<b>198 335 280</b>
3000 - 30000	75	2 ½	65	<b>198335266*</b>	<b>198 335 281</b>
8000 - 60000	75	2 ½	65	<b>198335267*</b>	<b>198 335 282</b>

Scale range [l/h]	d [mm]	Inch	DN [mm]	Polysulfon Code	kg
50 - 500	32	1	25	<b>198 335 285</b>	0.214
100 - 1000	32	1	25	<b>198 335 286</b>	0.214
150 - 1500	40	1 ¼	32	<b>198 335 287</b>	0.290
250 - 2500	40	1 ¼	32	<b>198 335 288</b>	0.290
200 - 2000	50	1 ½	40	<b>198 335 289</b>	0.350
300 - 3000	50	1 ½	40	<b>198 335 290</b>	0.350
600 - 6000	50	1 ½	40	<b>198 335 291</b>	0.350
600 - 6000	63	2	50	<b>198 335 292</b>	0.453
1000 - 10000	63	2	50	<b>198 335 293</b>	0.453
1500 - 15000	63	2	50	<b>198 335 294</b>	0.453
2000 - 20000	75	2 ½	65	<b>198 335 295</b>	0.622
3000 - 30000	75	2 ½	65	<b>198 335 296</b>	0.622
8000 - 60000	75	2 ½	65	<b>198 335 297</b>	0.622

## Insert PVDF (3,4)



Scale range [l/h]	d [mm]	Inch	DN [mm]	top (4) Code	bottom (3) Code	kg
50 - 500	32	1	25	<b>198 335 970</b>	<b>198 335 977</b>	0.012
100 - 1000	32	1	25	<b>198 335 970</b>	<b>198 335 977</b>	0.012
150 - 1500	40	1 ¼	32	<b>198 335 971</b>	<b>198 335 978</b>	0.019
250 - 2500	40	1 ¼	32	<b>198 335 971</b>	<b>198 335 978</b>	0.019
200 - 2000	50	1 ½	40	<b>198 335 972</b>	<b>198 335 979</b>	0.024
300 - 3000	50	1 ½	40	<b>198 335 972</b>	<b>198 335 979</b>	0.024
600 - 6000	50	1 ½	40	<b>198 335 972</b>	<b>198 335 979</b>	0.024
600 - 6000	63	2	50	<b>198 335 973</b>	<b>198 335 980</b>	0.042
1000 - 10000	63	2	50	<b>198 335 973</b>	<b>198 335 980</b>	0.042
1500 - 15000	63	2	50	<b>198 335 974</b>	<b>198 335 982</b>	0.042
2000 - 20000	75	2 ½	65	<b>198 335 975</b>	<b>198 335 981</b>	0.059
3000 - 30000	75	2 ½	65	<b>198 335 975</b>	<b>198 335 981</b>	0.059
8000 - 60000	75	2 ½	65	<b>198 335 975</b>	<b>198 335 981</b>	0.059



## Float PVDF (2)

Scale range [l/h]	d [mm]	Inch	DN [mm]	Without magnet Code	With magnet (bistabil) Code	kg
50 - 500	32	1	25	<b>198 335 455</b>	<b>198 335 470</b>	0.150
100 - 1000	32	1	25	<b>198 335 455</b>	<b>198 335 470</b>	0.150
150 - 1500	40	1 ¼	32	<b>198 335 455</b>	<b>198 335 470</b>	0.150
250 - 2500	40	1 ¼	32	<b>198 335 455</b>	<b>198 335 470</b>	0.150
200 - 2000	50	1 ½	40	<b>198 335 456</b>	<b>198 335 471</b>	0.328
300 - 3000	50	1 ½	40	<b>198 335 457</b>	<b>198 335 471</b>	0.328
600 - 6000	50	1 ½	40	<b>198 335 457</b>	<b>198 335 471</b>	0.328
600 - 6000	63	2	50	<b>198 335 457</b>	<b>198 335 471</b>	0.328
1000 - 10000	63	2	50	<b>198 335 457</b>	<b>198 335 471</b>	0.328
1500 - 15000	63	2	50	<b>198 335 458</b>	<b>198 335 472</b>	0.328
2000 - 20000	75	2 ½	65	<b>198 335 459</b>	<b>198 335 473</b>	0.920
3000 - 30000	75	2 ½	65	<b>198 335 459</b>	<b>198 335 473</b>	0.920
8000 - 60000	75	2 ½	65	<b>198 335 460</b>	<b>198 335 474</b>	0.746



## Guiding rod (10)

Model:

- Only for DN50 (1'500 - 15'000 l/h) and DN65 (all metering ranges)

Scale range [l/h]	d [mm]	Inch	DN [mm]	Peek Code	Stainless steel Code	kg
1500 - 15000	63	2	50	<b>198 335 985</b>	<b>198 335 098</b>	0.013
2000 - 20000	75	2 ½	65	<b>198 335 985</b>	<b>198 335 098</b>	0.013
3000 - 30000	75	2 ½	65	<b>198 335 985</b>	<b>198 335 098</b>	0.013
8000 - 80000	75	2 ½	65	<b>198 335 985</b>	<b>198 335 098</b>	0.013

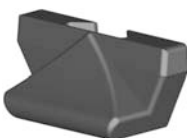


## Insert guiding rod PVDF (for 10)

Model:

- Only for DN50 (1'500 - 15'000 l/h) and DN65 (all metering ranges)

Scale range [l/h]	d [mm]	Inch	DN [mm]	Insert guiding rod Code	kg
1500 - 15000	63	2	50	<b>198 335 986</b>	0.020
2000 - 20000	75	2 ½	65	<b>198 335 987</b>	0.020
3000 - 30000	75	2 ½	65	<b>198 335 987</b>	0.020
8000 - 80000	75	2 ½	65	<b>198 335 987</b>	0.020



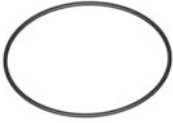
## Flow value indicator PS (8)

Model:

- For all dimensions type 335/350

d [mm]	Inch	DN [mm]	Flow value indica- tor Code	kg
32	1	25	<b>198 335 990</b>	0.001
40	1 ¼	32	<b>198 335 990</b>	0.001
50	1 ½	40	<b>198 335 990</b>	0.001
63	2	50	<b>198 335 990</b>	0.001
75	2 ½	65	<b>198 335 990</b>	0.001

## O-rings (7)



d [mm]	Inch	DN [mm]	EPDM Code	kg	
32	1	25	<b>748 410 008</b>	0.001	
40	1 ¼	32	<b>748 410 009</b>	0.003	
50	1 ½	40	<b>748 410 010</b>	0.004	
63	2	50	<b>748 410 011</b>	0.005	
75	2 ½	65	<b>748 410 014</b>	0.007	

## Union nut (5)

Union nut not useable for the special version with taper tube in PVDF



d [mm]	Inch	DN [mm]	ABS Code	kg	
32	1	25	<b>729 690 408</b>	0.024	
40	1 ¼	32	<b>729 690 409</b>	0.049	
50	1 ½	40	<b>729 690 410</b>	0.070	
63	2	50	<b>729 690 411</b>	0.101	
75	2 ½	65	-		

## Union end / Socket (6)

For DN65 PVDF only spigot



d [mm]	Inch	DN [mm]	ABS Code	kg	
32	1	25	<b>729 600 108</b>	0.016	
40	1 ¼	32	<b>729 600 109</b>	0.042	
50	1 ½	40	<b>729 600 110</b>	0.045	
63	2	50	<b>729 600 111</b>	0.084	
75	2 ½	65	<b>700 246 112</b>	0.155	

**Spare part for variable area flow meter  
SK50-SK73/SK500-SK730**

**Short version taper tube Polysulfone**

Type	d [mm]	DN [mm]	Code	kg
SK 50 / 500	16	10	<b>198 801 341</b>	0.150
SK 51 / 510	16	10	<b>198 801 342</b>	0.150
SK 52 / 520	16	10	<b>198 801 343</b>	0.150
SK 60 / 600	20	15	<b>198 801 449</b>	0.150
SK 61 / 610	20	15	<b>198 801 450</b>	0.150
SK 62 / 620	20	15	<b>198 801 451</b>	0.150
SK 70 / 700	32	25	<b>198 801 445</b>	0.150
SK 71 / 710	32	25	<b>198 801 338</b>	0.150
SK 72 / 720	32	25	<b>198 801 339</b>	0.150
SK 73 / 730	32	25	<b>198 801 340</b>	0.150

**Short version taper tube PVC-U transparent**

Type	d [mm]	DN [mm]	Code	kg
SK 50 / 500	16	10	<b>198 803 790</b>	0.040
SK 51 / 510	16	10	<b>198 803 791</b>	0.150
SK 52 / 520	16	10	<b>198 803 792</b>	0.150
SK 60 / 600	20	15	<b>198 803 793</b>	0.060
SK 61 / 610	20	15	<b>198 803 794</b>	0.060
SK 62 / 620	20	15	<b>198 803 795</b>	0.300
SK 70 / 700	32	25	<b>198 803 796</b>	0.127
SK 71 / 710	32	25	<b>198 803 797</b>	0.150
SK 72 / 720	32	25	<b>198 803 798</b>	0.120
SK 73 / 730	32	25	<b>198 803 799</b>	0.120

**Short version float PVDF  
Without magnet**

Type	d [mm]	DN [mm]	Code	kg
SK 50 / 51 / 52	16	10	<b>198 806 219</b>	0.005
SK 60 / 61 / 62	20	15	<b>198 806 220</b>	0.010
SK 70 / 71 / 72 / 73	32	25	<b>198 806 221</b>	0.032

**Short version float PVDF  
With magnet bistable**

Type	d [mm]	DN [mm]	Code	kg
SK 500 / 510 / 520	16	10	<b>198 806 222</b>	0.005
SK 600 / 610 / 620	20	15	<b>198 806 223</b>	0.010
SK 700 / 710 / 720 / 730	32	25	<b>198 806 224</b>	0.032

**Short version float PTFE  
Without magnet**

Type	d [mm]	DN [mm]	Code	kg
SK 73	32	25	<b>198 807 166</b>	0.019

## Short version top insert PVDF

Type	d [mm]	DN [mm]	Code	kg	
SK 50 / 500; 51 / 510; 52 / 520	16	10	<b>198 807 188</b>	0.010	
SK 60 / 600; 61 / 610; 62 / 620	20	15	<b>198 807 187</b>	0.010	
SK 70 / 700; 71 / 710; 72 / 720; 73 / 730	32	25	<b>198 807 182</b>	0.010	



# Accessories

Page



Brackets

140



Solvent and Tools

144



Backing Flanges & Gaskets

145

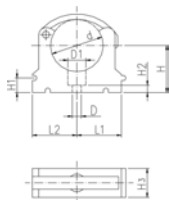
# Brackets

670610

## KLIP-IT pipe clip type 061 PP BS

Model:

- 3/8" - 2": height designed for Ball Valve Type 546 and 543
- Material: Clip and safety clip PP black, UV resistant, bolts galvanized
- **Minimum order quantity: standard packaging SP**



d [inch]	Code	kg	kg/m
¼	<b>167 061 054</b>	0.003	0.003
⅜	<b>167 061 055</b>	0.007	0.007
½	<b>167 061 056</b>	0.007	0.007
¾	<b>167 061 057</b>	0.008	0.008
1	<b>167 061 058</b>	0.009	0.009
1	<b>167 061 059</b>	0.012	0.012
1 ½	<b>167 061 060</b>	0.022	0.022
2	<b>167 061 061</b>	0.030	0.030
2 ½	<b>167 061 012</b>	0.058	0.058
3	<b>167 061 013</b>	0.090	0.090
4	<b>167 061 114</b>	0.114	0.114
5	<b>167 061 016</b>	0.217	0.217

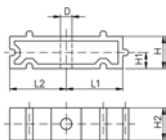
d [inch]	D [mm]	D1 [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	SC
¼	5	8	11	14	21	10	6	12	M5
⅜	6	10	14	17	23	10	6	16	M5
½	6	10	17	19	25	10	6	16	M5
¾	6	10	19	22	28	10	6	16	M5
1	6	10	24	27	31	10	6	16	M5
1	7	14	34	34	35	10	7	22	M6
1 ½	7	14	37	37	40	10	7	22	M6
2	9	17	45	45	52	10	10	25	M8
2 ½	9	17	52	52	58	10	10	25	M8
3	9	17	65	65	65	10	10	28	M8
4	9	17	79	79	81	10	10	28	M8
5	9	17	98	98	110	10	10	32	M8



## KLIP-IT spacer type 061 PP

Model:

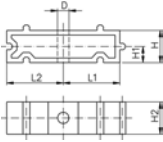
- For pipe clips Type 061/061H, PP black, UV resistant
- **Minimum order quantity: standard packaging SP**



d [mm]	Inch [inch]	Code	kg	D [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	SC
10 - 12	¼ - ½	<b>167 061 153</b>	0.003	5	11	14	20	10	12	M4
16	⅜	<b>167 061 155</b>	0.006	6	14	17	20	10	16	M5
20	½	<b>167 061 156</b>	0.006	6	17	19	20	10	16	M5
25	¾	<b>167 061 157</b>	0.007	6	19	22	20	10	16	M5
32	1	<b>167 061 158</b>	0.008	6	24	27	20	10	16	M5
40	1 ¼	<b>167 061 159</b>	0.016	7	34	34	20	10	22	M6
50	1 ½	<b>167 061 160</b>	0.017	7	37	37	20	10	22	M6
63	2	<b>167 061 161</b>	0.024	9	45	45	20	10	25	M8
75	2 ½	<b>167 061 162</b>	0.027	9	52	52	20	10	25	M8
90	3	<b>167 061 163</b>	0.040	9	65	65	20	10	28	M8

table continued next page



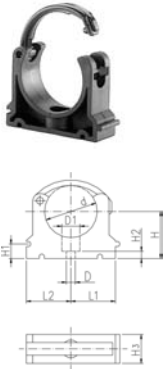


d [mm]	Inch [inch]	Code	kg	D [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	SC
110	4	<b>167 061 164</b>	0.048	9	79	79	20	10	28	M8
125	4 ½	<b>167 061 165</b>	0.059	9	88	88	20	10	32	M8
140	5	<b>167 061 166</b>	0.065	9	98	98	20	10	32	M8
160	6	<b>167 061 167</b>	0.074	9	109	109	20	10	32	M8

## KLIP-IT pipe clip type 061 PP metric

### Model:

- Material: Clip and safety clip PP black, UV resistant, bolts galvanized
- d16 - d63: Height designed for Ball Valve Type 546 and 543
- **Minimum order quantity: standard packagings SP**



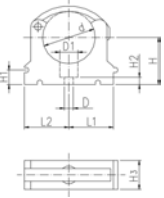
d [mm]	d [inch]	Code	kg
* 10		<b>167 061 003</b>	0.003
* 12		<b>167 061 004</b>	0.003
* 16		<b>167 061 035</b>	0.006
* 20		<b>167 061 036</b>	0.008
* 25		<b>167 061 037</b>	0.009
* 32		<b>167 061 038</b>	0.012
40		<b>167 061 039</b>	0.027
50		<b>167 061 040</b>	0.031
63		<b>167 061 041</b>	0.054
75	2 ½	<b>167 061 012</b>	0.058
90	3	<b>167 061 013</b>	0.090
110	4	<b>167 061 014</b>	0.114
125		<b>167 061 015</b>	0.174
140	5	<b>167 061 016</b>	0.217
160		<b>167 061 017</b>	0.237

d [mm]	D [mm]	D1 [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	SC
* 10	5	8	11	14	20	10	6	12	M4
* 12	5	8	11	14	21	10	6	12	M5
* 16	6	11	14	17	27	10	6	16	M5
* 20	6	11	17	19	27	10	6	16	M5
* 25	6	11	19	22	30	10	6	16	M5
* 32	6	11	24	27	36	10	6	16	M5
40	7	14	34	34	44	10	7	22	M6
50	7	14	37	37	51	10	7	22	M6
63	9	17	45	45	64	10	10	25	M8
75	9	17	52	52	58	10	10	25	M8
90	9	17	65	65	65	10	10	28	M8
110	9	17	79	79	75	10	10	28	M8
125	9	17	88	88	90	10	10	32	M8
140	9	17	98	98	110	10	10	32	M8
160	9	17	109	109	108	10	10	32	M8

## KLIP-IT pipe clip type 061 PE metric

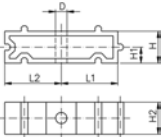
### Model:

- Material: Clip PE and safety clip PP black, bolts galvanized
- **Minimum order quantity: standard packaging SP**
- Height not designed for ball valve 546 and 543. Please use spacer 73 06 11.



d [mm]	Code	kg	D [mm]	D1 [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	H3 [mm]	SC
* 10	<b>173 061 003</b>	0.003	5	8	11	14	20	10	6	12	M4
* 12	<b>173 061 004</b>	0.006	5	8	11	14	21	10	6	12	M5
* 16	<b>173 061 005</b>	0.007	6	11	14	17	23	10	6	16	M5
* 20	<b>173 061 006</b>	0.008	6	11	17	19	25	10	6	16	M5
* 25	<b>173 061 007</b>	0.009	6	11	19	22	28	10	6	16	M5
* 32	<b>173 061 008</b>	0.012	6	11	24	27	31	10	6	16	M5
40	<b>173 061 009</b>	0.022	7	14	34	34	35	10	7	22	M6
50	<b>173 061 010</b>	0.030	7	14	37	37	40	10	7	22	M6
63	<b>173 061 011</b>	0.044	9	17	45	45	52	10	10	25	M8
75	<b>173 061 012</b>	0.062	9	17	52	52	58	10	10	25	M8
90	<b>173 061 013</b>	0.090	9	17	65	65	65	10	10	28	M8
110	<b>173 061 014</b>	0.114	9	17	79	79	75	10	10	28	M8
125	<b>173 061 015</b>	0.174	9	17	88	88	90	10	10	32	M8
140	<b>173 061 016</b>	0.217	9	17	98	98	110	10	10	32	M8
160	<b>173 061 017</b>	0.237	9	17	109	109	108	10	10	32	M8

73 06 11



## KLIP-IT spacer type 061 PE

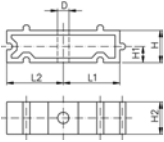
### Model:

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

d [mm]	Inch	Code	kg	kg/m
	1/8-1/4	<b>173 061 153</b>	0.003	0.003
16	3/8	<b>173 061 155</b>	0.005	0.005
20	1/2	<b>173 061 156</b>	0.006	0.006
25	3/4	<b>173 061 157</b>	0.007	0.007
32	1	<b>173 061 158</b>	0.008	0.008
40	1 1/4	<b>173 061 159</b>	0.016	0.016
50	1 1/2	<b>173 061 160</b>	0.017	0.017
63	2	<b>173 061 161</b>	0.025	0.025
75	2 1/2	<b>173 061 162</b>	0.027	0.027
90	3	<b>173 061 163</b>	0.040	0.040
110	4	<b>173 061 164</b>	0.048	0.048
125	4 1/2	<b>173 061 165</b>	0.059	0.059
140	5	<b>173 061 166</b>	0.065	0.065
160	6	<b>173 061 167</b>	0.074	0.074

d [mm]	D [mm]	L1 [mm]	L2 [mm]	H [mm]	H1 [mm]	H2 [mm]	SC
	5	11	14	20	10	12	M4
16	6	14	17	20	10	16	M5
20	6	17	19	20	10	16	M5
25	6	19	22	20	10	16	M5
32	6	24	27	20	10	16	M5
40	7	34	34	20	10	22	M6

table continued next page

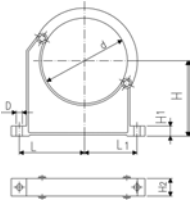


d	D	L1	L2	H	H1	H2	SC
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
50	7	37	37	20	10	22	M6
63	9	45	45	20	10	25	M8
75	9	52	52	20	10	25	M8
90	9	65	65	20	10	28	M8
110	9	79	79	20	10	28	M8
125	9	88	88	20	10	32	M8
140	9	98	98	20	10	32	M8
160	9	109	109	20	10	32	M8

## Pipe clip type 060 PP metric

### Model:

- Material: Clip and safety clip PP black, UV resistant, bolts galvanized
- Accidental opening of the safety clip is not possible
- **Minimum order quantity: standard packaging SP or gross packaging GP**
- Clip and safety clip are not assembled in the packaging.
- Pipes with flanges can be installed directly

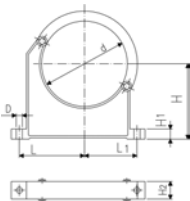


d	d	Code	kg	D	L	L1	H	H1	H2	SC
[mm]	[inch]			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
90	3	<b>167 060 038</b>	0.163	9	89	71	105	15	33	M 8
110		<b>167 060 039</b>	0.179	9	94	80	115	15	33	M 8
125		<b>167 060 040</b>	0.300	11	116	91	130	20	35	M10
140	5	<b>167 060 041</b>	0.309	11	121	98	130	20	35	M10
160		<b>167 060 042</b>	0.348	11	131	107	148	20	35	M10
180		<b>167 060 043</b>	0.378	11	143	115	163	20	35	M10
200		<b>167 060 019</b>	0.582	13	152	120	175	25	39	M12
225		<b>167 060 020</b>	0.612	13	165	132	175	25	39	M12
250		<b>167 060 021</b>	0.698	13	183	143	200	25	39	M12
280		<b>167 060 022</b>	0.722	13	198	156	200	25	39	M12
315		<b>167 060 023</b>	0.842	13	219	172	225	25	39	M12
355		<b>167 060 024</b>	1.250	17	275	209	258	30	50	M16
400		<b>167 060 025</b>	1.450	17	300	228	288	30	50	M16

## Pipe clip type 060 PP BS

### Model:

- Material: Clip and safety clip PP black, UV resistant, bolts galvanized
- Accidental opening of the safety clip is not possible
- **Minimum order quantity: standard packaging SP or gross packaging GP**
- Clip and safety clip are not assembled in the packaging.



d	d	Code	kg	kg/m	D	L	L1	H	H1	H2	SC
[inch]	[mm]				[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
3	90	<b>167 060 038</b>	0.163	0.163	9	89	71	105	15	33	M 8
4		<b>167 060 064</b>	0.179	0.179	9	100	82	120	15	33	M 8
5	140	<b>167 060 041</b>	0.309	0.309	11	121	98	130	20	35	M10
6		<b>167 060 067</b>	0.348	0.348	11	136	111	148	25	35	M 10
8		<b>167 060 070</b>	0.612	0.612	13	165	132	175	25	39	M 12

## Solvent and Tools

99 29 80



### Tangit ABS solvent cement

- 0,65 kg can (net)

Code	kg	Description	
799 298 022	0.751	tin: 0.65 kg	



### Tangit cleaner

Model:

- 1 litre tin

Code	kg	kg/m	
799 298 010	0.868	0.868	

90 10 90



### PPC Plastic pipe cutter

- For cutting plastic pipes d10 - d160

d-d [mm]	Article	Code	kg	kg/m	
10 - 63	PPC 63, s max. = 7.2mm	790 109 001	0.710	0.710	
50 - 110	PPC 110, s max. = 12.7mm	790 109 002	1.400	1.400	
110 - 160	PPC 160, s max. = 19.0mm	790 109 003	1.880	1.880	

90 30 90



### Chamfering tools

- Chamfering tool (15° bevel) for plastic pipes (PVC, ABS, PB, PP, PE). Coated prism surface suitable for clean room applications. Fast and reliable adjustment to the different pipe diameters and wall thickness.

d-d [mm]	Code	kg	kg/m	
16 - 200	790 309 003	1.100	1.100	
63 - 400	790 309 004	2.500	2.500	



### Round brush

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

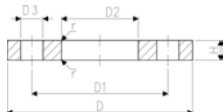


### Flat brush

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

# Backing Flanges & Gaskets

24 70 14



## Backing Flange, Galvanised Steel for Socket Systems

### Model:

- Galvanised steel, suitable for laying underground
- Connecting dimensions: BS10:1962
- Bolt circle Table D & E

AL: number of holes

\* Table D

\*\* Table E

d [mm]	DN [mm]	d [inch]	PN	Code	kg
20	15	½	16	<b>724 701 406</b>	0.220
25	20	¾	16	<b>724 701 407</b>	0.320
32	25	1	16	<b>724 701 408</b>	0.410
40	32	1 ¼	16	<b>724 701 409</b>	0.820
50	40	1 ½	16	<b>724 701 410</b>	1.040
63	50	2	16	<b>724 701 411</b>	1.220
75	65	2 ½	16	<b>724 701 412</b>	1.200
90	80	3	16	<b>724 701 413</b>	1.530
** 110	100		16	<b>724 703 414</b>	1.840
*	100	4	16	<b>724 701 414</b>	1.840
**	100	4	16	<b>724 701 415</b>	1.840
140	125	5	16	<b>724 701 416</b>	2.070
	160	6	16	<b>724 701 417</b>	2.330
225	200	8	6	<b>724 701 419</b>	2.750

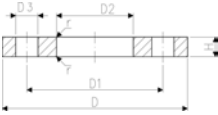
d [mm]	DN [mm]	d [inch]	D [mm]	D1 [mm]	D2 [mm]	D3 [mm]	H [mm]	AL	SC
20	15	½	96	67	28	15	7	4	M12x55
25	20	¾	102	73	34	15	7	4	M12x60
32	25	1	115	83	42	15	7	4	M12x60
40	32	1 ¼	121	88	51	15	8	4	M12x70
50	40	1 ½	134	99	62	15	8	4	M12x75
63	50	2	153	115	78	18	8	4	M16x80
75	65	2 ½	165	127	92	18	8	4	M16x85
90	80	3	184	146	110	18	8	4	M16x90
** 110	100		216	178	133	18	8	8	M16x95
*	100	4	216	178	138	18	8	4	M16x95
**	100	4	216	178	138	18	8	8	M16x95
140	125	5	254	210	167	18	8	8	M16x110
	160	6	280	235	200	22	8	8	M20x120
225	200	8	337	292	250	22	8	8	M20x150

**Backing Flanges for socket systems - all materials****Model:**

- Galvanised steel, suitable for laying underground
- Connecting dimension: ISO 7005, EN 1092, BS 4504, DIN 2501
- Bolt circle PN10/16

AL: number of holes

\*Bolt circle PN16



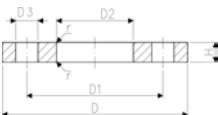
d [mm]	DN [mm]	d [inch]	PN	Code	kg
20	15	½	16	<b>724 701 606</b>	0.220
25	20	¾	16	<b>724 701 607</b>	0.320
32	25	1	16	<b>724 701 608</b>	0.410
40	32	1 ¼	16	<b>724 701 609</b>	0.820
50	40	1 ½	16	<b>724 701 610</b>	1.040
63	50	2	16	<b>724 701 611</b>	1.220
75	65	2 ½	16	<b>724 701 612</b>	1.440
90	80	3	16	<b>724 701 613</b>	1.530
110	100		16	<b>724 700 014</b>	1.840
	100	4	16	<b>724 701 615</b>	1.620
140	125	5	16	<b>724 701 616</b>	2.250
	150	6	16	<b>724 701 617</b>	2.510
* 225	200	8	6	<b>724 701 720</b>	3.000

d [mm]	DN [mm]	d [inch]	D	D1	D2	D3	H	AL	SC
20	15	½	95	65	28	14	7	4	M12x55
25	20	¾	105	75	34	14	7	4	M12x60
32	25	1	115	85	42	14	7	4	M12x60
40	32	1 ¼	140	100	51	18	8	4	M16x70
50	40	1 ½	150	110	62	18	8	4	M16x75
63	50	2	165	125	78	18	8	4	M16x80
75	65	2 ½	185	145	92	18	8	4	M16x85
90	80	3	200	160	110	18	8	4	M16x90
110	100		220	180	133	18	8	8	M16x95
	100	4	220	180	138	18	8	8	M16x95
140	125	5	250	210	167	18	8	8	M16x110
	150	6	285	240	200	22	8	8	M20x120
* 225	200	8	340	295	250	22	8	12	M20x150

**Backing Flanges for socket systems - all materials****Model:**

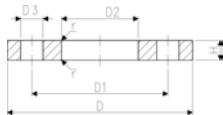
- Galvanised steel, suitable for laying underground
- Connecting dimension: ANSI/ASME B 16.5 class 150, ASTM D 4024, BS 1560, BS EN 1759
- Bolt circle Class 150

AL: number of holes



d [mm]	DN [mm]	d [inch]	PN	Code	kg
20	15	½	16	<b>724 701 806</b>	0.230
25	20	¾	16	<b>724 701 807</b>	0.300
32	25	1	16	<b>724 701 808</b>	0.350
40	32	1 ¼	16	<b>724 701 809</b>	0.480

table continued next page



d	DN	d	PN	Code	kg
[mm]	[mm]	[inch]			
50	40	1 ½	16	<b>724 701 810</b>	0.650
63	50	2	16	<b>724 701 811</b>	0.990
75	65	2 ½	16	<b>724 701 812</b>	1.200
90	80	3	16	<b>724 701 813</b>	1.310
110	100	4	16	<b>724 703 814</b>	2.011
	100	4	16	<b>724 701 815</b>	1.890
140	125	5	16	<b>724 701 816</b>	2.000
	150	6	16	<b>724 701 817</b>	1.950
225	200	8	6	<b>724 701 820</b>	3.160

d	DN	d	D	D1	D2	D3	H	AL	SC
[mm]	[mm]	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]		
20	15	½	89	60	28	16	7	4	M12x55
25	20	¾	98	70	34	16	7	4	M12x60
32	25	1	108	79	42	16	7	4	M12x60
40	32	1 ¼	117	89	51	16	8	4	M12x70
50	40	1 ½	127	98	62	16	8	4	M12x75
63	50	2	152	121	78	19	8	4	M16x80
75	65	2 ½	178	140	92	19	8	4	M16x85
90	80	3	190	152	110	19	8	4	M16x90
110	100	4	229	190	133	19	8	8	M16x95
	100	4	229	190	138	19	8	8	M16x95
140	125	5	254	216	167	22	8	8	M20x120
	150	6	279	241	200	22	8	8	M20x120
225	200	8	343	298	250	22	8	8	M20x150

27 70 04  
27 70 05

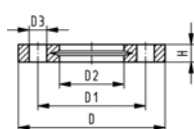
## Backing Flanges, PP-V For socket systems metric

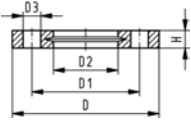
### Model:

- 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
- UV-resistant. Applicable for outside applications
- Connecting dimension: ISO 7005, EN 1092, BS 4504, DIN 2501
- **Bolt circle PN 10**

AL: number of holes

d	Inch	DN	PN	Code	LVI	kg
[mm]		[mm]				
20		15	16	<b>727 700 406</b>	<b>183 38 09</b>	0.080
25		20	16	<b>727 700 407</b>	<b>183 38 10</b>	0.100
32		25	16	<b>727 700 408</b>	<b>183 38 11</b>	0.140
40		32	16	<b>727 700 409</b>	<b>183 38 12</b>	0.220
50		40	16	<b>727 700 410</b>	<b>183 38 13</b>	0.210
63		50	16	<b>727 700 411</b>	<b>183 38 14</b>	0.380
75		65	16	<b>727 700 412</b>	<b>183 38 15</b>	0.480
90		80	16	<b>727 700 413</b>	<b>183 38 16</b>	0.520
110		100	16	<b>727 700 414</b>	<b>183 38 17</b>	0.680
140		125	16	<b>727 700 416</b>	<b>183 38 18</b>	0.800
160	6	150	16	<b>727 700 417</b>	<b>183 38 19</b>	1.200
200		200	16	<b>727 700 419</b>	<b>183 38 20</b>	1.500
225	8	200	16	<b>727 700 420</b>	<b>183 38 21</b>	1.400

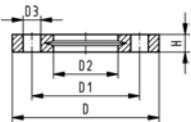




d	Inch	DN	PN	Code	LVI	kg
[mm]		[mm]				
250		250	16	<b>727 700 421</b>	<b>183 38 22</b>	1.700
280		250	16	<b>727 700 422</b>	<b>183 38 23</b>	1.700
315		300	16	<b>727 700 423</b>	<b>183 38 24</b>	2.400

d	D	D1	D2	D3	H	AL	SC
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
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

27 70 14  
27 70 15



## Backing Flanges, PP-V For socket systems Inch ANSI

### Model:

- Modern full-plastic flange PP-GF (30 % glass-fibre reinforced)
- With V-groove which applies force evenly on collar
- With integrated bolt-fixing as an assembly aid
- UV-resistant. Applicable for outside applications
- Connecting dimension: ANSI/ASME B 16.5 class 150, ASTM D 4024, BS 1560, BS EN 1759
- **Bolt circle class 150**

- DN100 and DN150: only for use with original metric flange adaptors

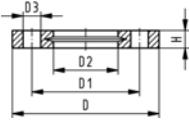
\*) Suitable for socket- and butt fusion systems (no pictograph on flange)

AL: number of holes

Inch	DN	PN	Code	LVI	kg	kg/m
	[mm]					
1 ½	15	16	<b>727 701 406</b>		0.080	0.080
1 ¾	20	16	<b>727 701 407</b>		0.100	0.100
1	25	16	<b>727 701 408</b>		0.140	0.140
1 ¼	32	16	<b>727 701 409</b>		0.220	0.220
1 ½	40	16	<b>727 701 410</b>		0.210	0.210
2	50	16	<b>727 701 411</b>		0.380	0.380
2 ½	65	16	<b>727 701 412</b>		0.480	0.480
3	80	16	<b>727 701 413</b>		0.520	0.520
4	100	16	<b>727 701 414</b>		0.680	0.680
6	150	16	<b>727 700 417</b>	<b>183 38 19</b>	1.200	1.200
10	250	16	<b>727 701 422</b>		1.700	1.700
12	300	16	<b>727 701 423</b>		2.400	2.400

table continued next page





Inch	D [mm]	D1 [mm]	D2 [mm]	D3 [mm]	H [mm]	AL	SC	
1 1/2	95	60	28	16	16	4	M12	
1 3/4	105	70	34	16	17	4	M12	
1	115	79	42	16	18	4	M12	
1 1/4	140	89	51	16	20	4	M16	
1 1/2	150	98	62	16	22	4	M16	
1 2	165	121	78	19	24	4	M16	
1 2 1/2	185	140	92	19	26	4	M16	
3	200	152	110	19	27	4	M16	
4	229	190	133	19	28	8	M16	
6	285	241	190	22	32	8	M20	
10	406	362	310	26	38	12	M20	
12	483	432	348	26	42	12	M20	

27 70 02



### Backing flange PP-Steel For socket systems metric

#### Model:

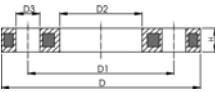
- PP-GF (30% glass-fibre reinforced) with steel ring
- UV-resistant. Applicable for outside applications
- Connecting dimension: ISO 7005, EN 1092, BS 4504, DIN 2501
- **Bolt circle PN 10**



<sup>1</sup> Connecting dimension: ISO 2536, bolt circle acc. DN125, suitable for flange adaptor d125/DN100

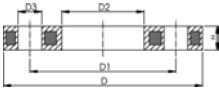
<sup>2</sup> Connecting dimension: ISO 2536, bolt circle acc. DN225, suitable for flange adaptor d250/DN250

AL: number of holes



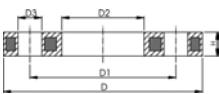
d [mm]	d [inch]	DN [mm]	PN	Code	kg	
20		15	16	<b>727 700 206</b>	0.220	
25		20	16	<b>727 700 207</b>	0.260	
32		25	16	<b>727 700 208</b>	0.430	
40		32	16	<b>727 700 209</b>	0.650	
50		40	16	<b>727 700 210</b>	0.820	
63		50	16	<b>727 700 211</b>	0.940	
75		65	16	<b>727 700 212</b>	1.300	
90		80	16	<b>727 700 213</b>	1.400	
110		100	16	<b>727 700 214</b>	1.560	
<sup>1</sup> 125		125	16	<b>727 700 215</b>	2.590	
140		125	16	<b>727 700 216</b>	2.120	
160	6	150	16	<b>727 700 217</b>	3.390	
200		200	16	<b>727 700 219</b>	5.850	
225		200	16	<b>727 700 220</b>	4.410	
<sup>2</sup> 250		225	16	<b>727 700 221</b>	8.340	
280		250	16	<b>727 700 222</b>	5.520	
315		300	16	<b>727 700 223</b>	7.600	
355		350	16	<b>727 700 224</b>	13.960	
400		400	16	<b>727 700 225</b>	17.380	

table continued next page



d	D	D1	D2	D3	H	AL	SC
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
20	95	65	28	14	12	4	M12
25	105	75	34	14	12	4	M12
32	115	85	42	14	16	4	M12
40	140	100	51	18	16	4	M16
50	150	110	62	18	20	4	M16
63	165	125	78	18	20	4	M16
75	185	145	92	18	20	4	M16
90	200	160	110	18	20	8	M16
110	220	180	133	18	20	8	M16
125	250	210	150	18	24	8	M16
140	250	210	167	18	24	8	M16
160	285	240	190	22	24	8	M20
200	340	295	226	22	27	8	M20
225	340	295	250	22	27	8	M20
250	395	325	277	22	30	8	M20
280	395	350	310	22	30	12	M20
315	445	400	348	22	34	12	M20
355	515	460	388	23	40	16	M20
400	574	515	442	26	40	16	M24

27 70 12



## Backing flange PP-Steel For socket systems Inch/ANSI

### Model:

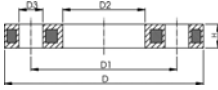
- For Flange Adaptors BS/ANSI
- Material: PP (30 % glass-fibre reinforced) with steel ring
- UV-resistant. Applicable for outside applications
- Connecting dimension: ANSI/ASME B 16.5 class 150, ASTM D 4024, BS 1560, BS EN 1759
- **Bolt circle class 150**
- DN100 and DN150: only for use with original metric flange adaptors

AL: number of holes

d	DN	d	PN	Code	kg	kg/m
[inch]	[mm]	[mm]				
½	15	20	16	<b>727 701 206</b>	0.210	0.210
¾	20	25	16	<b>727 701 207</b>	0.250	0.250
1	25	32	16	<b>727 701 208</b>	0.420	0.420
1 ¼	32	40	16	<b>727 701 209</b>	0.670	0.670
1 ½	40	50	16	<b>727 701 210</b>	0.860	0.860
2	50	63	16	<b>727 701 211</b>	0.930	0.930
2 ½	65	75	16	<b>727 701 212</b>	1.340	1.340
3	80	90	16	<b>727 701 213</b>	1.550	1.550
4	100	110	16	<b>727 701 214</b>	1.810	1.810
6	150	160	16	<b>727 700 217</b>	3.390	3.390
8	200	200	16	<b>727 701 220</b>	4.410	4.410

d	D1	D2	D3	D	H	AL
[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	
½	60	28	16	95	12	4
¾	70	34	16	105	12	4
1	79	42	16	115	16	4
1 ¼	89	51	16	140	16	4

table continued next page



d	D1	D2	D3	D	H	AL
[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	
1 ½	98	62	16	150	18	4
2	121	78	19	165	18	4
2 ½	140	92	19	185	18	4
3	152	110	19	200	20	4
4	190	133	19	229	20	8
6	240	190	22	285	24	8
8	298	250	22	340	27	8

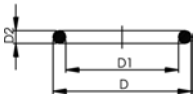
EPDM 48 41 00  
FPM 49 41 00

## O-Ring gasket

### Model:

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

\* for unions PVC-U, PVC-C and ABS: 21 51 01, 21 51 11, 21 53 03, 21 53 08, 21 55 04, 21 55 13, 21 55 18, 23 51 01 and 29 51 01 only



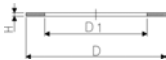
d	DN	EPDM Code	FPM Code	kg	kg/m	D	D1	D2
[mm]	[mm]					[mm]	[mm]	[mm]
10 - 12	8	<b>748 410 004</b>	<b>749 410 004</b>	0.002	0.002	18	12	2.62
16	10	<b>748 410 005</b>	<b>749 410 005</b>	0.002	0.002	21	16	2.62
20	15	<b>748 410 006</b>	<b>749 410 006</b>	0.002	0.002	27	20	3.53
25	20	<b>748 410 007</b>	<b>749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

EPDM 48 40 00  
FPM 49 40 00

## Flat gasket

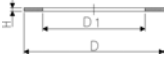
### Model:

- Hardness approx. 65° Shore
- For adaptor unions



d	Inch	EPDM Code	FPM Code	kg	kg/m	D	D1	H
[mm]						[mm]	[mm]	[mm]
12	¼	<b>748 400 004</b>	-	0.002	0.002	20	13	2
16	⅜	<b>748 400 005</b>	<b>749 400 005</b>	0.002	0.002	24	17	2
20	½	<b>748 400 006</b>	<b>749 400 006</b>	0.003	0.003	30	21	3
25	¾	<b>748 400 007</b>	<b>749 400 007</b>	0.004	0.004	38	27	3
32	1	<b>748 400 008</b>	<b>749 400 008</b>	0.002	0.002	44	32	3
40	1 ¼	<b>748 400 009</b>	<b>749 400 009</b>	0.003	0.003	55	42	3
50	1 ½	<b>748 400 010</b>	<b>749 400 010</b>	0.004	0.004	62	46	3
63	2	<b>748 400 011</b>	<b>749 400 011</b>	0.006	0.006	78	60	3
75	2 ½	<b>748 400 012</b>	<b>749 400 012</b>	0.009	0.009	97	75	3
90	3	<b>748 400 013</b>	<b>749 400 013</b>	0.011	0.011	109	88	3

EPDM 48 40 00  
FPM 49 40 00



## Flat Gaskets

### Model:

- For Flange Adaptors 21 79 01/21 80 01
- Hardness: 70° Shore **EPDM**, 75° Shore **FPM**

d [mm]	DN [mm]	Inch	PN	EPDM Code	FPM Code	kg	kg/m
16	10	3/8	10	<b>748 400 014</b>		0.002	0.002
20	15	1/2	10	<b>748 400 015</b>	<b>749 400 015</b>	0.003	0.003
25	20	3/4	10	<b>748 400 016</b>	<b>749 400 016</b>	0.003	0.003
32	25	1	10	<b>748 400 017</b>	<b>749 400 017</b>	0.004	0.004
40	32	1 1/4	10	<b>748 400 018</b>	<b>749 400 018</b>	0.008	0.008
63	50	2	10	<b>748 400 020</b>	<b>749 400 020</b>	0.017	0.017
75	65	2 1/2	10	<b>748 400 021</b>	<b>749 400 021</b>	0.024	0.024
90	80	3	10	<b>748 400 022</b>	<b>749 400 022</b>	0.032	0.032
110	100	4	10	<b>748 400 023</b>		0.015	0.048
140	125	5	10	<b>748 400 025</b>	<b>749 400 025</b>	0.058	0.058
160	150	6	10	<b>748 400 026</b>	<b>749 400 026</b>	0.063	0.063
225	200	8	6	<b>748 400 027</b>	<b>749 400 027</b>	0.103	0.103

d [mm]	D [mm]	D1 [mm]	H [mm]
16	27	16	2
20	32	20	2
25	39	25	2
32	48	32	2
40	59	40	3
63	88	63	3
75	104	75	3
90	123	90	3
110	148	110	4
140	186	140	4
160	211	160	4
225	272	220	5

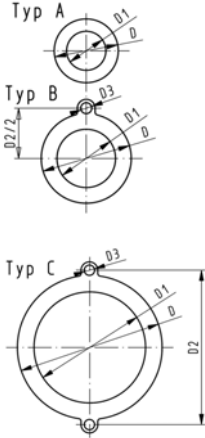


**Flat gasket**

**Model:**

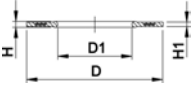
- For all metric GF Flange Adaptors
- Hardness approx. 65° Shore
- Integrated fixation aids from d110
- Centering on the inner diameter of the screw crown

di FA are the suitable inner diameters of flange adaptors



d [mm]	DN [mm]	PN	Type	EPDM Code	kg	kg/m
16	10	10	A	<b>748 400 305</b>	0.005	0.005
20	15	10	A	<b>748 400 306</b>	0.010	0.010
25	20	10	A	<b>748 400 307</b>	0.020	0.020
32	25	10	A	<b>748 400 308</b>	0.025	0.025
40	32	10	A	<b>748 400 309</b>	0.030	0.030
50	40	10	A	<b>748 400 310</b>	0.035	0.035
63	50	10	A	<b>748 400 311</b>	0.040	0.040
75	65	10	A	<b>748 400 312</b>	0.045	0.045
90	80	10	A	<b>748 400 313</b>	0.050	0.050
110	100	10	B	<b>748 400 314</b>	0.032	0.032
125	100	10	B	<b>748 400 315</b>	0.058	0.058
140	125	10	B	<b>748 400 316</b>	0.062	0.062
160 / 180	150	10	B	<b>748 400 317</b>	0.068	0.068
200	200	6	C	<b>748 400 319</b>	0.075	0.075
225	200	6	C	<b>748 400 320</b>	0.079	0.079
250	250	6	C	<b>748 400 321</b>	0.103	0.103
280	250	6	C	<b>748 400 322</b>	0.150	0.150
315	300	6	C	<b>748 400 323</b>	0.230	0.230

d [mm]	DN [mm]	D [mm]	D1 [mm]	D2 [mm]	D3 [mm]	H [mm]	di FA [mm]
16	10	46	16			2	6 - 26
20	15	51	20			2	10 - 30
25	20	61	25			2	15 - 35
32	25	71	32			2	22 - 42
40	32	82	40			3	30 - 50
50	40	92	50			3	40 - 60
63	50	107	63			3	53 - 73
75	65	127	71			3	61 - 81
90	80	142	84			3	74 - 94
110	100	162	104	180	18	4	94 - 114
125	100	162	119	180	18	4	109 - 129
140	125	192	134	210	18	4	124 - 144
160 / 180	150	218	155	241	22	4	145 - 165
200	200	273	195	295	22	5	185 - 205
225	200	273	216	295	22	5	206 - 226
250	250	328	250	350	22	5	240 - 260
280	250	328	273	350	22	5	263 - 283
315	300	378	305	400	22	5	295 - 315



## Profile flange gasket metric

### Model:

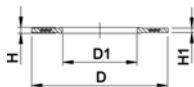
- For all metric GF Flange Adaptors
- Profile Gasket with steel insert (type G-ST-P/K)
- Hardness: 70° Shore **EPDM**, 75° Shore **FPM**
- **EPDM**: approved acc. to DVGW W 270, KTW recommendation
- Centering on the inner diameter of the screw crown
- material steel insert: carbon steel

di FA are the suitable inner diameters of flange adaptors

d [mm]	DN [mm]	PN	EPDM Code	FPM Code	kg
16	10	16	<b>748 440 705</b>	<b>749 440 705</b>	0.007
20	15	16	<b>748 440 706</b>	<b>749 440 706</b>	0.008
25	20	16	<b>748 440 707</b>	<b>749 440 707</b>	0.011
32	25	16	<b>748 440 708</b>	<b>749 440 708</b>	0.014
40	32	16	<b>748 440 709</b>	<b>749 440 709</b>	0.021
50	40	16	<b>748 440 710</b>	<b>749 440 710</b>	0.022
63	50	16	<b>748 440 711</b>	<b>749 440 711</b>	0.041
75	65	16	<b>748 440 712</b>	<b>749 440 712</b>	0.055
90	80	16	<b>748 440 713</b>	<b>749 440 713</b>	0.062
110	100	16	<b>748 440 714</b>	<b>749 440 714</b>	0.085
125	100	16	<b>748 440 715</b>	<b>749 440 715</b>	0.158
140	125	16	<b>748 440 716</b>	<b>749 440 716</b>	0.118
160 / 180	150	16	<b>748 440 717</b>	<b>749 440 717</b>	0.153
200	200	16	<b>748 440 719</b>	<b>749 440 719</b>	0.263
225	200	16	<b>748 440 720</b>	<b>749 440 720</b>	0.181
250	250	16	<b>748 440 721</b>	<b>749 440 721</b>	0.410
280	250	16	<b>748 440 722</b>	<b>749 440 722</b>	0.226
315	300	16	<b>748 440 723</b>	<b>749 440 723</b>	0.334
355	350	16	<b>748 440 724</b>	<b>749 440 724</b>	0.410
400	400	16	<b>748 440 725</b>	<b>749 440 725</b>	0.513
450	500	16	<b>748 440 726</b>	<b>749 440 726</b>	0.718
500	500	16	<b>748 440 727</b>	<b>749 440 727</b>	0.718
560	600	16	<b>748 440 728</b>	<b>749 440 728</b>	0.923
630	600	16	<b>748 440 729</b>	<b>749 440 729</b>	0.923

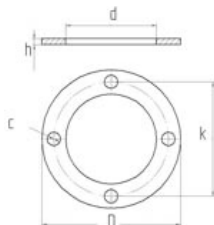
d [mm]	DN [mm]	D [mm]	D1 [mm]	H [mm]	H1 [mm]	di FA [mm]
16	10	46	16	4	3	6 - 16
20	15	51	20	4	3	10 - 20
25	20	61	22	4	3	12 - 22
32	25	71	28	4	3	18 - 28
40	32	82	40	4	3	30 - 40
50	40	92	46	4	3	36 - 46
63	50	107	58	5	4	48 - 58
75	65	127	69	5	4	59 - 69
90	80	142	84	5	4	73 - 84
110	100	162	104	6	5	94 - 104
125	100	162	123	6	5	113 - 123
140	125	192	137	6	5	127 - 137
160 / 180	150	218	160	8	6	150 - 160
200	200	273	203	8	6	192 - 203
225	200	273	220	8	6	207 - 220

table continued next page



d [mm]	DN [mm]	D [mm]	D1 [mm]	H [mm]	H1 [mm]	di FA [mm]	
250	250	328	252	8	6	238 - 252	
280	250	328	274	8	6	264 - 274	
315	300	378	306	8	6	296 - 306	
355	350	438	355	10	7	340 - 355	
400	400	489	400	10	7	385 - 400	
450	500	594	403	10	7	393 - 403	
500	500	594	447	10	7	437 - 447	
560	600	695	494	10	7	484 - 494	
630	600	695	555	10	7	545 - 555	

48 40 10



### Flat Gaskets for Full Face Flanges Drilled to BS4504 PN10/16

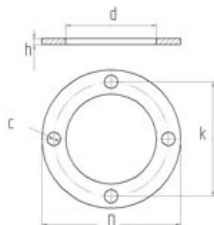
**Model:**

- For Flange Adaptors
- Hardness approx. 65° Shore

Inch	EPDM Code	FPM Code	kg	
½	<b>748 401 006</b>		0.031	
¾	<b>748 401 007</b>		0.037	
1	<b>748 401 008</b>		0.037	
1 ¼	<b>748 401 109</b>	<b>749 401 109</b>		
1 ½	<b>748 401 110</b>	<b>749 401 110</b>		
2	<b>748 401 111</b>	<b>749 401 111</b>		
3	<b>748 401 113</b>	<b>749 401 113</b>		
4	<b>748 401 014</b>		0.112	
6	<b>748 401 117</b>	<b>749 401 117</b>		

Inch	D [mm]	d [mm]	k [mm]	c [mm]	no. of holes	h [mm]
½	95	17	67	15	4	3
¾	105	22	73	15	4	3
1	115	28	83	15	4	3
1 ¼	140	36	100	18	4	3
1 ½	150	45	110	18	4	3
2	165	58	125	18	4	3
3	200	83	160	18	8	3
4	220	109	178	18	8	3
6	285	161	240	22	8	3

48 40 10



### Flat Gaskets for Full Face Flanges Drilled to BS10 tables D and E

**Model:**

- For Flange Adaptors
- Hardness approx. 65° Shore

Inch	EPDM Code	FPM Code	kg	kg/m	
½	<b>748 401 006</b>	<b>749 401 006</b>	0.003	0.003	
¾	<b>748 401 007</b>	<b>749 401 007</b>	0.004	0.004	
1	<b>748 401 008</b>	<b>749 401 008</b>	0.004	0.004	
1 ¼	<b>748 401 009</b>	<b>749 401 009</b>	0.003	0.003	
1 ½	<b>748 401 010</b>	<b>749 401 010</b>	0.004	0.004	

table continued next page

Inch		EPDM Code	FPM Code	kg	kg/m	
2		<b>748 401 011</b>	<b>749 401 011</b>	0.105	0.105	
3		<b>748 401 013</b>	<b>749 401 013</b>	0.011	0.011	
4	Table E	<b>748 401 014</b>	<b>749 401 014</b>	0.015	0.015	
* 4	Table D	<b>748 401 064</b>	<b>749 401 064</b>	0.112		
6		<b>748 401 017</b>	<b>749 401 017</b>	0.020	0.020	

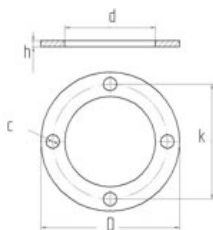
Inch		D [mm]	d [mm]	k [mm]	c [mm]	no. of holes	h [mm]
½		95	17	67	15	4	3
¾		105	22	73	15	4	3
1		115	28	83	15	4	3
1 ¼		140	36	88	15	4	3
1 ½		150	45	98	15	4	3
2		165	58	115	18	4	3
3		200	83	146	18	4	3
4	Table E	220	109	178	18	8	3
* 4	Table D	220	109	178	18	4	3
6		285	161	235	22	8	3

48 40 10

### Flat Gaskets for Full Face Flanges Drilled to ANSI B16.5 Class 150

**Model:**

- For Flange Adaptors
- Hardness approx. 65° Shore



Inch	EPDM Code	FPM Code	kg	kg/m	
½	<b>748 401 206</b>	<b>749 401 206</b>			
¾	<b>748 401 207</b>	<b>749 401 207</b>			
1	<b>748 401 208</b>	<b>749 401 208</b>			
1 ¼	<b>748 401 009</b>		0.041		
1 ½	<b>748 401 010</b>		0.055		
2	<b>748 401 211</b>	<b>749 401 211</b>			
3	<b>748 401 213</b>	<b>749 401 213</b>			
4	<b>748 401 214</b>	<b>749 401 214</b>	0.112	0.112	

Inch	D [mm]	d [mm]	k [mm]	c [mm]	no. of holes	h [mm]
½	95	17	60	16	4	3
¾	105	22	70	16	4	3
1	115	28	79	16	4	3
1 ¼	140	36	88	15	4	3
1 ½	150	45	98	15	4	3
2	165	58	121	19	4	3
3	200	83	152	19	4	3
4	220	109	190	19	8	3



# Index

Code	Page
-	88
158 001 041	45
158 001 042	45
158 001 043	45
158 001 044	45
158 001 045	45
158 001 046	45
158 001 047	45
158 001 048	45
158 001 049	45
158 001 050	45
158 001 051	45
158 001 052	45
158 001 053	45
158 001 054	45
158 001 055	45
158 001 056	45
158 001 057	45
158 001 058	45
158 001 059	46
158 001 060	46
158 001 061	46
158 001 062	46
158 001 063	46
158 001 064	46
158 001 065	46
158 001 066	46
158 001 067	46
158 001 068	46
158 001 069	46
158 001 070	46
158 001 071	46
158 001 072	46
158 001 073	46
158 001 074	46
158 001 075	46
158 001 076	46
158 001 077	46
158 001 078	46
158 001 079	46
158 001 080	46
158 001 081	46
158 001 082	46
158 001 083	46
158 001 084	46
158 001 085	46
158 001 086	46
158 001 087	46
158 001 088	46
158 001 089	46
158 001 090	46
158 001 091	46

Code	Page
158 001 092	46
158 001 093	46
158 001 094	46
158 001 095	46
158 001 096	46
158 001 097	46
158 001 098	46
158 001 099	46
158 001 100	46
158 001 101	46
158 001 102	46
158 001 103	46
158 001 104	46
158 001 105	46
158 001 106	46
158 001 107	46
158 001 108	46
158 001 109	46
158 001 110	47
158 001 111	47
158 001 112	47
158 001 113	47
158 001 114	47
158 001 115	47
158 001 116	47
158 001 117	47
158 001 118	47
158 001 119	47
158 001 120	47
158 001 121	47
158 001 122	47
158 001 123	47
158 001 124	47
161 305 303	120
161 305 336	118
161 305 337	118
161 305 338	117
161 305 339	117
161 305 353	120
161 305 386	118
161 305 387	118
161 305 388	117
161 305 389	117
161 305 403	120
161 305 436	118
161 305 437	118
161 305 438	117
161 305 439	117
161 305 453	120
161 305 486	118
161 305 487	118
161 305 488	117

Code	Page
161 305 489	117
161 305 503	120
161 305 536	118
161 305 537	118
161 305 538	117
161 305 539	117
161 305 553	120
161 305 586	118
161 305 587	118
161 305 588	117
161 305 589	117
161 305 603	120
161 305 604	121
161 305 636	118
161 305 637	118
161 305 638	117
161 305 639	117
161 305 653	120
161 305 654	121
161 305 686	118
161 305 687	118
161 305 688	117
161 305 689	117
161 330 304	114
161 330 354	114
161 330 404	114
161 330 454	114
161 330 504	114
161 330 554	114
161 330 654	114
161 480 141	115
161 480 158	116
161 480 231	92
161 480 232	92
161 480 233	92
161 480 237	92
161 480 238	92
161 480 239	92
161 480 240	92
161 480 241	92
161 480 242	92
161 481 028	92
161 481 029	92
161 481 030	92
161 481 098	92
161 481 099	92
161 481 100	92
161 481 759	93
161 481 760	93
161 481 932	92
161 482 017	122
161 482 018	122

# Index

Code	Page
161 482 019	122
161 482 020	122
161 482 021	122
161 482 022	122
161 482 408	110
161 482 514	92
161 482 515	92
161 482 516	92
161 482 517	92
161 482 910	116
161 482 911	116
161 482 912	116
161 482 913	116
161 482 914	116
161 482 915	116
161 483 008	92
161 483 009	92
161 483 020	92
161 483 021	92
161 483 032	93
161 483 033	93
161 483 034	93
161 483 126	119
161 483 127	119
161 483 128	119
161 483 129	119
161 483 130	119
161 483 131	119
161 483 132	119
161 483 133	119
161 483 259	115
161 483 260	115
161 483 261	115
161 483 262	115
161 483 263	115
161 483 264	115
161 483 462	110
161 484 458	92
161 484 459	92
161 484 460	92
161 484 631	92
161 484 638	92
161 484 694	92
161 484 702	92
161 486 100	118
161 486 101	118
161 486 102	118
161 486 103	118
161 486 104	118
161 486 105	118
161 486 106	118
161 486 107	118

Code	Page
161 486 325	109
161 486 326	110
161 486 327	110
161 486 328	110
161 486 400	75
161 486 401	75
161 486 402	75
161 486 403	75
161 486 404	75
161 486 405	75
161 486 406	76
161 486 407	76
161 486 408	76
161 486 435	68
161 486 436	68
161 486 437	68
161 486 438	68
161 486 443	57
161 486 444	57
161 486 445	57
161 486 446	57
161 486 689	57
161 486 690	57
161 486 691	57
161 486 694	110
161 486 695	110
161 486 697	110
161 486 899	109
161 486 900	109
161 486 901	109
161 486 902	109
161 486 903	109
161 486 904	109
161 486 905	109
161 486 906	109
161 486 907	109
161 486 908	109
161 486 909	109
161 486 926	109
161 486 927	109
161 486 928	109
161 486 959	108
161 486 960	108
161 486 961	108
161 486 962	108
161 486 963	108
161 486 964	108
161 486 965	108
161 486 966	108
161 486 967	108
161 488 242	78
161 488 243	78

Code	Page
161 488 244	78
161 488 245	78
161 488 246	78
161 488 247	78
161 490 920	68
161 490 921	68
163 481 102	120
163 481 103	120
163 481 104	120
163 481 105	120
163 481 106	120
163 481 107	120
167 060 019	143
167 060 020	143
167 060 021	143
167 060 022	143
167 060 023	143
167 060 024	143
167 060 025	143
167 060 038	143
167 060 039	143
167 060 040	143
167 060 041	143
167 060 042	143
167 060 043	143
167 060 064	143
167 060 067	143
167 060 070	143
167 061 003	141
167 061 004	141
167 061 012	140
167 061 013	140
167 061 014	141
167 061 015	141
167 061 016	140
167 061 017	141
167 061 035	141
167 061 036	141
167 061 037	141
167 061 038	141
167 061 039	141
167 061 040	141
167 061 041	141
167 061 054	140
167 061 055	140
167 061 056	140
167 061 057	140
167 061 058	140
167 061 059	140
167 061 060	140
167 061 061	140
167 061 114	140

# Index

Code	Page
167 061 153	140
167 061 155	140
167 061 156	140
167 061 157	140
167 061 158	140
167 061 159	140
167 061 160	140
167 061 161	140
167 061 162	140
167 061 163	140
167 061 164	141
167 061 165	141
167 061 166	141
167 061 167	141
167 305 001	119
167 305 002	119
167 305 003	119
167 305 004	119
167 305 005	119
167 305 006	119
167 305 020	120
167 305 021	120
167 305 022	120
167 305 023	120
167 305 024	120
167 305 025	120
167 305 030	121
167 305 031	121
167 305 032	121
167 305 033	121
167 305 034	121
167 305 035	121
167 305 040	120
167 305 041	120
167 305 042	120
167 305 043	120
167 305 044	120
167 305 045	120
167 480 024	114
167 480 025	114
167 480 026	114
167 480 027	114
167 480 028	114
167 480 029	114
167 481 165	114
167 481 166	114
167 481 167	114
167 481 168	114
167 481 169	114
167 481 170	114
167 482 479	78
167 482 480	78

Code	Page
167 482 481	78
167 482 482	78
167 482 626	69
167 482 627	69
167 482 628	69
167 482 629	69
167 482 630	69
167 482 631	69
167 482 635	70
167 482 636	70
167 482 637	70
167 482 638	70
167 482 639	70
167 482 640	70
167 482 653	72
167 482 654	72
167 482 655	72
167 482 656	72
167 482 657	72
167 482 658	72
167 482 662	72
167 482 663	72
167 482 664	72
167 482 665	72
167 482 666	72
167 482 667	72
167 482 671	71
167 482 672	71
167 482 673	71
167 482 674	71
167 482 675	71
167 482 676	71
167 482 680	70
167 482 681	70
167 482 682	70
167 482 683	70
167 482 684	70
167 482 685	70
167 483 251	109
167 483 252	109
167 483 253	109
167 483 254	109
167 484 076	75
167 484 077	75
167 484 078	75
167 484 079	75
167 484 080	75
167 484 081	75
167 484 082	75
167 484 083	75
167 484 084	75
167 484 088	75

Code	Page
167 484 089	75
167 484 090	75
167 484 091	75
167 484 092	75
167 484 093	75
167 484 094	75
167 484 095	75
167 484 096	75
167 484 100	57
167 484 101	57
167 484 102	57
167 484 103	57
167 484 104	57
167 484 105	57
167 484 110	69
167 484 111	69
167 484 376	77
167 484 377	77
167 484 378	77
167 484 379	77
167 484 380	77
167 484 381	77
167 484 442	77
167 484 443	77
167 484 444	77
167 484 445	77
167 484 446	77
167 484 447	77
167 484 488	77
167 484 489	77
167 484 490	77
167 484 491	77
167 484 492	77
167 484 493	77
167 484 542	77
167 484 543	77
167 484 544	77
167 484 545	77
167 484 546	77
167 484 547	77
167 484 576	77
167 484 577	77
167 484 578	77
167 484 579	77
167 484 580	77
167 484 581	77
167 484 588	77
167 484 589	77
167 484 590	77
167 484 591	77
167 484 592	77
167 484 593	77

# Index

Code	Page
167 484 642	80
167 484 643	80
167 484 644	80
167 484 645	80
167 484 646	80
167 484 647	80
167 484 688	80
167 484 689	80
167 484 690	80
167 484 691	80
167 484 692	80
167 484 693	80
167 484 742	80
167 484 743	80
167 484 744	80
167 484 745	80
167 484 746	80
167 484 747	80
167 484 788	80
167 484 789	80
167 484 790	80
167 484 791	80
167 484 792	80
167 484 793	80
167 484 941	78
167 484 942	78
167 484 943	78
167 484 944	78
167 484 945	81
167 484 946	81
167 484 947	81
167 484 948	81
167 484 992	86
167 484 993	86
167 484 994	86
167 484 995	86
167 484 996	86
167 484 997	86
169 017 080	25
169 017 081	25
169 017 082	25
169 017 083	25
169 017 084	25
169 017 085	25
169 017 086	25
169 017 087	4
169 017 088	25
169 017 089	25
169 017 091	4
169 017 092	25
169 017 093	25
169 017 094	25

Code	Page
169 017 095	25
169 017 096	25
169 017 097	25
169 018 033	4
169 018 034	4
169 018 035	4
169 018 036	4
169 018 038	4
169 018 039	4
169 018 042	4
169 018 045	4
169 018 067	4
169 018 080	4
169 018 081	4
169 018 082	4
169 018 083	4
169 018 084	4
169 018 085	4
169 018 086	4
169 018 088	4
169 018 089	4
169 018 106	5
169 018 107	5
169 018 108	5
169 018 109	5
169 018 110	5
169 018 111	5
169 110 056	45
169 110 066	45
169 110 097	45
169 110 117	45
169 250 225	22
169 250 226	22
169 250 227	22
169 250 228	22
169 250 229	22
169 250 230	22
169 250 231	22
169 280 002	14
169 280 003	14
169 280 004	14
169 280 005	14
169 280 006	14
169 280 007	14
169 303 006	111
169 303 007	111
169 303 008	111
169 303 009	111
169 303 010	111
169 303 011	111
169 305 302	117
169 305 303	117

Code	Page
169 305 304	117
169 305 305	117
169 305 306	117
169 305 307	117
169 317 024	84
169 317 025	84
169 317 423	84
169 360 401	113
169 360 402	113
169 360 403	113
169 360 404	113
169 360 405	113
169 360 406	113
169 360 407	113
169 360 421	112
169 360 422	112
169 360 423	112
169 360 424	112
169 360 425	112
169 360 426	112
169 360 427	112
169 360 431	112
169 360 432	112
169 360 433	112
169 360 434	112
169 360 435	112
169 360 436	112
169 360 437	112
169 360 521	112
169 360 522	112
169 360 523	112
169 360 524	112
169 360 525	112
169 360 526	112
169 360 527	112
169 360 531	112
169 360 532	112
169 360 533	112
169 360 534	112
169 360 535	112
169 360 536	112
169 360 537	112
169 480 101	115
169 480 102	115
169 480 103	115
169 480 104	115
169 480 105	115
169 480 106	115
169 480 152	115
169 480 153	115
169 480 154	115
169 480 155	115

# Index

Code	Page
169 480 156	115
169 480 157	115
169 480 158	115
169 480 250	114
169 480 251	114
169 480 252	114
169 480 253	114
169 480 254	114
169 480 255	114
169 480 256	114
169 480 282	93
169 480 283	93
169 480 600	119
169 480 601	119
169 480 602	119
169 480 603	119
169 480 604	119
169 480 605	119
169 480 609	120
169 480 610	120
169 480 611	120
169 480 612	120
169 480 613	120
169 480 614	120
169 480 751	74
169 480 752	74
169 480 753	74
169 480 754	74
169 480 755	74
169 480 756	74
169 480 757	74
169 480 758	74
169 480 759	74
169 480 900	74
169 480 901	74
169 480 902	74
169 480 903	74
169 480 904	74
169 480 905	74
169 480 906	75
169 480 907	75
169 480 908	75
169 480 951	109
169 480 952	109
169 480 953	109
169 480 954	109
169 480 955	109
169 480 956	109
169 480 957	109
169 481 067	108
169 481 068	108
169 481 069	108

Code	Page
169 481 070	108
169 481 071	108
169 481 072	108
169 481 073	108
169 481 202	76
169 481 203	76
169 481 204	76
169 481 205	76
169 481 206	76
169 481 207	76
169 481 212	76
169 481 213	76
169 481 214	76
169 481 215	76
169 481 216	76
169 481 217	76
169 481 221	79
169 481 222	79
169 481 223	79
169 481 224	79
169 481 225	79
169 481 226	79
169 481 227	79
169 481 231	79
169 481 232	79
169 481 233	79
169 481 234	79
169 481 235	79
169 481 236	79
169 481 237	79
169 481 282	77
169 481 283	77
169 481 284	77
169 481 285	77
169 481 286	77
169 481 287	77
169 481 292	77
169 481 293	77
169 481 294	77
169 481 295	77
169 481 296	77
169 481 297	77
169 481 302	80
169 481 303	80
169 481 304	80
169 481 305	80
169 481 306	80
169 481 307	80
169 481 312	80
169 481 313	80
169 481 314	80
169 481 315	80

Code	Page
169 481 316	80
169 481 317	80
169 481 862	90
169 481 863	90
169 481 864	90
169 481 865	90
169 481 866	90
169 481 867	90
169 514 012	82
169 514 013	82
169 514 014	82
169 514 015	82
169 514 016	82
169 514 017	82
169 514 032	82
169 514 033	82
169 514 034	82
169 514 035	82
169 514 036	82
169 514 037	82
169 514 512	82
169 514 513	82
169 514 514	82
169 514 515	82
169 514 516	82
169 514 517	82
169 514 532	82
169 514 533	82
169 514 534	82
169 514 535	82
169 514 536	82
169 514 537	82
169 515 012	83
169 515 013	83
169 515 014	83
169 515 015	83
169 515 016	83
169 515 017	83
169 515 032	83
169 515 033	83
169 515 034	83
169 515 035	83
169 515 036	83
169 515 037	83
169 543 001	58
169 543 002	58
169 543 003	58
169 543 004	58
169 543 005	58
169 543 006	58
169 543 007	58
169 543 041	59

# Index

Code	Page
169 543 042	59
169 543 043	59
169 543 044	59
169 543 045	59
169 543 046	59
169 543 047	59
169 543 061	61
169 543 062	61
169 543 063	61
169 543 064	61
169 543 065	61
169 543 066	61
169 543 067	61
169 543 201	62
169 543 202	62
169 543 203	62
169 543 204	62
169 543 205	62
169 543 206	62
169 543 207	62
169 543 241	63
169 543 242	63
169 543 243	63
169 543 244	63
169 543 245	63
169 543 246	63
169 543 247	63
169 543 261	65
169 543 262	65
169 543 263	65
169 543 264	65
169 543 265	65
169 543 266	65
169 543 267	65
169 543 302	60
169 543 303	60
169 543 304	60
169 543 305	60
169 543 306	60
169 543 307	60
169 543 322	64
169 543 323	64
169 543 324	64
169 543 325	64
169 543 326	64
169 543 327	64
169 543 401	66
169 543 402	66
169 543 403	66
169 543 404	66
169 543 405	66
169 543 406	66

Code	Page
169 543 407	66
169 543 421	67
169 543 422	67
169 543 423	67
169 543 424	67
169 543 425	67
169 543 426	67
169 543 427	67
169 546 001	52
169 546 002	52
169 546 003	52
169 546 004	52
169 546 005	52
169 546 006	52
169 546 007	52
169 546 008	49
169 546 009	52
169 546 010	52
169 546 021	54
169 546 022	54
169 546 023	54
169 546 024	54
169 546 025	54
169 546 026	54
169 546 027	54
169 546 061	53
169 546 062	53
169 546 063	53
169 546 064	53
169 546 065	53
169 546 066	53
169 546 067	53
169 546 068	50
169 546 069	53
169 546 070	53
169 546 081	56
169 546 082	56
169 546 083	56
169 546 084	56
169 546 085	56
169 546 086	56
169 546 087	56
169 546 088	51
169 546 089	56
169 546 090	56
169 546 201	49
169 546 202	49
169 546 203	49
169 546 204	49
169 546 205	49
169 546 206	49
169 546 207	49

Code	Page
169 546 209	49
169 546 210	49
169 546 221	51
169 546 222	51
169 546 223	51
169 546 224	51
169 546 225	51
169 546 226	51
169 546 227	51
169 546 229	51
169 546 230	51
169 546 241	50
169 546 242	50
169 546 243	50
169 546 244	50
169 546 245	50
169 546 246	50
169 546 247	50
169 546 249	50
169 546 250	50
169 567 002	97
169 567 003	97
169 567 004	97
169 567 005	97
169 567 006	97
169 567 007	97
169 567 008	97
169 567 022	98
169 567 023	98
169 567 024	98
169 567 025	98
169 567 026	98
169 567 027	98
169 567 028	98
169 567 802	94
169 567 803	94
169 567 804	94
169 567 805	94
169 567 806	94
169 567 807	94
169 567 808	94
169 568 002	101
169 568 003	101
169 568 004	101
169 568 005	101
169 568 006	101
169 568 007	101
169 568 008	101
169 568 022	102
169 568 023	102
169 568 024	102
169 568 025	102

# Index

Code	Page
169 568 026	102
169 568 027	102
169 568 028	102
169 568 102	99
169 568 103	99
169 568 104	99
169 568 105	99
169 568 106	99
169 568 107	99
169 568 108	99
169 568 122	100
169 568 123	100
169 568 124	100
169 568 125	100
169 568 126	100
169 568 127	100
169 568 128	100
169 568 802	95
169 568 803	95
169 568 804	95
169 568 805	95
169 568 806	95
169 568 807	95
169 568 808	95
169 568 902	96
169 568 903	96
169 568 904	96
169 568 905	96
169 568 906	96
169 568 907	96
169 568 908	96
173 061 003	142
173 061 004	142
173 061 005	142
173 061 006	142
173 061 007	142
173 061 008	142
173 061 009	142
173 061 010	142
173 061 011	142
173 061 012	142
173 061 013	142
173 061 014	142
173 061 015	142
173 061 016	142
173 061 017	142
173 061 153	142
173 061 155	142
173 061 156	142
173 061 157	142
173 061 158	142
173 061 159	142

Code	Page
173 061 160	142
173 061 161	142
173 061 162	142
173 061 163	142
173 061 164	142
173 061 165	142
173 061 166	142
173 061 167	142
175 480 153	114
175 480 154	114
175 480 155	114
175 480 156	114
175 480 157	114
175 480 158	114
198 000 599	110
198 000 621	110
198 000 622	110
198 000 872	88
198 000 873	88
198 000 874	88
198 000 875	88
198 000 876	88
198 000 877	88
198 000 880	110
198 000 881	88
198 000 882	88
198 000 883	88
198 000 884	88
198 000 885	88
198 000 886	88
198 000 892	86
198 000 893	86
198 000 894	86
198 000 895	86
198 000 896	86
198 000 897	86
198 104 166	85
198 151 742	85
198 151 743	85
198 151 744	85
198 151 745	85
198 151 746	85
198 151 747	85
198 151 752	85
198 151 753	85
198 151 754	85
198 151 755	85
198 151 756	85
198 151 757	85
198 151 762	87
198 151 763	87
198 151 764	87

Code	Page
198 151 765	87
198 151 766	87
198 151 767	87
198 151 772	87
198 151 773	87
198 151 774	87
198 151 775	87
198 151 776	87
198 151 777	87
198 151 782	87
198 151 783	87
198 151 784	87
198 151 785	87
198 151 786	87
198 151 787	87
198 151 792	87
198 151 793	87
198 151 794	87
198 151 795	87
198 151 796	87
198 151 797	87
198 151 802	87
198 151 803	87
198 151 804	87
198 151 805	87
198 151 806	87
198 151 807	87
198 151 842	85
198 151 843	85
198 151 844	85
198 151 845	85
198 151 846	85
198 151 847	85
198 151 852	85
198 151 853	85
198 151 854	85
198 151 855	85
198 151 856	85
198 151 857	85
198 204 162	85
198 204 164	85
198 204 327	86
198 204 328	86
198 204 329	86
198 335 055	132
198 335 056	132
198 335 057	132
198 335 058	132
198 335 059	132
198 335 060	132
198 335 061	132
198 335 070	132

# Index

Code	Page
198 335 071	132
198 335 072	132
198 335 073	132
198 335 074	132
198 335 075	132
198 335 076	132
198 335 077	132
198 335 078	132
198 335 079	132
198 335 080	132
198 335 081	132
198 335 082	132
198 335 085	132
198 335 086	132
198 335 087	132
198 335 088	132
198 335 089	132
198 335 090	132
198 335 091	132
198 335 092	132
198 335 093	132
198 335 094	132
198 335 095	132
198 335 096	132
198 335 097	132
198 335 098	134
198 335 255	133
198 335 256	133
198 335 257	133
198 335 258	133
198 335 259	133
198 335 260	133
198 335 261	133
198 335 270	133
198 335 271	133
198 335 272	133
198 335 273	133
198 335 274	133
198 335 275	133
198 335 276	133
198 335 277	133
198 335 278	133
198 335 279	133
198 335 280	133
198 335 281	133
198 335 282	133
198 335 285	133
198 335 286	133
198 335 287	133
198 335 288	133
198 335 289	133
198 335 290	133

Code	Page
198 335 291	133
198 335 292	133
198 335 293	133
198 335 294	133
198 335 295	133
198 335 296	133
198 335 297	133
198 335 455	134
198 335 456	134
198 335 457	134
198 335 458	134
198 335 459	134
198 335 460	134
198 335 470	134
198 335 471	134
198 335 472	134
198 335 473	134
198 335 474	134
198 335 960	131
198 335 961	131
198 335 962	130
198 335 963	130
198 335 964	130
198 335 965	130
198 335 966	130
198 335 967	130
198 335 968	130
198 335 969	130
198 335 970	133
198 335 971	133
198 335 972	133
198 335 973	133
198 335 974	133
198 335 975	133
198 335 977	133
198 335 978	133
198 335 979	133
198 335 980	133
198 335 981	133
198 335 982	133
198 335 985	134
198 335 986	134
198 335 987	134
198 335 990	134
198 335 991	130
198 335 992	130
198 335 993	130
198 335 994	130
198 335 995	130
198 801 338	136
198 801 339	136
198 801 340	136

Code	Page
198 801 341	136
198 801 342	136
198 801 343	136
198 801 445	136
198 801 449	136
198 801 450	136
198 801 451	136
198 802 814	123
198 802 815	123
198 802 816	123
198 802 817	123
198 802 818	123
198 802 819	123
198 802 820	123
198 802 821	123
198 802 822	123
198 802 823	123
198 802 824	123
198 802 825	123
198 802 826	124
198 802 827	124
198 802 828	124
198 802 829	124
198 802 830	124
198 802 831	124
198 802 832	124
198 802 833	124
198 802 834	124
198 802 835	124
198 802 836	124
198 802 837	124
198 803 790	136
198 803 791	136
198 803 792	136
198 803 793	136
198 803 794	136
198 803 795	136
198 803 796	136
198 803 797	136
198 803 798	136
198 803 799	136
198 806 219	136
198 806 220	136
198 806 221	136
198 806 222	136
198 806 223	136
198 806 224	136
198 806 639	87
198 806 640	87
198 807 040	127
198 807 041	127
198 807 042	127



# Index

Code	Page
198 807 043	127
198 807 044	127
198 807 045	127
198 807 046	127
198 807 047	127
198 807 048	127
198 807 049	127
198 807 050	128
198 807 051	128
198 807 052	128
198 807 053	128
198 807 054	128
198 807 055	128
198 807 056	128
198 807 057	128
198 807 058	128
198 807 059	128
198 807 120	125
198 807 121	125
198 807 122	125
198 807 123	125
198 807 124	125
198 807 125	125
198 807 126	125
198 807 127	125
198 807 128	125
198 807 129	125
198 807 130	125
198 807 131	125
198 807 132	126
198 807 133	126
198 807 134	126
198 807 135	126
198 807 136	126
198 807 137	126
198 807 138	126
198 807 139	126
198 807 140	126
198 807 141	126
198 807 142	126
198 807 143	126
198 807 144	129
198 807 145	129
198 807 146	129
198 807 147	129
198 807 148	129
198 807 149	129
198 807 150	129
198 807 151	129
198 807 152	129
198 807 153	129
198 807 154	130

Code	Page
198 807 155	130
198 807 156	130
198 807 157	130
198 807 158	130
198 807 159	130
198 807 160	130
198 807 161	130
198 807 162	130
198 807 163	130
198 807 166	136
198 807 182	137
198 807 187	137
198 807 188	137
198335062*	132
198335063*	132
198335064*	132
198335065*	132
198335066*	132
198335067*	132
198335262*	133
198335263*	133
198335264*	133
198335265*	133
198335266*	133
198335267*	133
199 037 000	103
199 037 001	103
199 037 002	103
199 037 003	103
199 037 004	103
199 037 005	103
199 037 006	103
199 037 007	103
199 037 008	103
199 037 013	103
199 037 014	103
199 037 015	103
199 037 016	103
199 037 017	103
199 037 018	103
199 037 019	103
199 037 020	103
199 037 021	103
199 037 200	103
199 037 201	103
199 037 202	103
199 037 203	103
199 037 204	103
199 037 205	103
199 037 206	103
199 037 207	103
199 037 208	103

Code	Page
199 037 213	103
199 037 214	103
199 037 215	103
199 037 216	103
199 037 217	103
199 037 218	103
199 037 219	103
199 037 220	103
199 037 221	103
199 037 400	103
199 037 401	103
199 037 402	103
199 037 403	103
199 037 404	103
199 037 405	103
199 037 406	103
199 037 407	103
199 037 408	103
199 037 413	103
199 037 414	103
199 037 415	103
199 037 416	103
199 037 417	103
199 037 418	103
199 037 419	103
199 037 420	103
199 037 421	103
199 038 000	104
199 038 001	104
199 038 002	104
199 038 003	104
199 038 004	104
199 038 005	104
199 038 006	104
199 038 007	104
199 038 008	104
199 038 013	104
199 038 014	104
199 038 015	104
199 038 016	104
199 038 017	104
199 038 018	104
199 038 019	104
199 038 020	104
199 038 021	104
199 038 026	106
199 038 027	106
199 038 028	106
199 038 029	106
199 038 030	106
199 038 031	106
199 038 032	106

# Index

Code	Page
199 038 033	106
199 038 034	106
199 038 039	106
199 038 040	106
199 038 041	106
199 038 042	106
199 038 043	106
199 038 044	106
199 038 045	106
199 038 046	106
199 038 047	106
199 038 200	104
199 038 201	104
199 038 202	104
199 038 203	104
199 038 204	104
199 038 205	104
199 038 206	104
199 038 207	104
199 038 208	104
199 038 213	104
199 038 214	104
199 038 215	104
199 038 216	104
199 038 217	104
199 038 218	104
199 038 219	104
199 038 220	104
199 038 221	104
199 038 226	106
199 038 227	106
199 038 228	106
199 038 229	106
199 038 230	106
199 038 231	106
199 038 232	106
199 038 233	106
199 038 234	106
199 038 239	106
199 038 240	106
199 038 241	106
199 038 242	106
199 038 243	106
199 038 244	106
199 038 245	106
199 038 246	106
199 038 247	106
199 038 400	104
199 038 401	104
199 038 402	104
199 038 403	105
199 038 404	105

Code	Page
199 038 405	105
199 038 406	105
199 038 407	105
199 038 408	105
199 038 413	105
199 038 414	105
199 038 415	105
199 038 416	105
199 038 417	105
199 038 418	105
199 038 419	105
199 038 420	105
199 038 421	105
199 038 426	106
199 038 427	106
199 038 428	106
199 038 429	106
199 038 430	106
199 038 431	106
199 038 432	106
199 038 433	106
199 038 434	106
199 038 439	106
199 038 440	106
199 038 441	106
199 038 442	107
199 038 443	107
199 038 444	107
199 038 445	107
199 038 446	107
199 038 447	107
700 244 660	31
700 246 112	135
720 510 105	42
720 510 106	42
720 510 107	42
720 510 108	42
720 510 109	42
720 510 110	42
721 700 006	90
721 700 007	90
721 700 008	90
721 700 009	90
721 700 010	90
721 700 011	90
721 702 206	90
721 702 207	90
721 702 208	90
721 702 209	90
721 702 210	90
721 702 211	90
724 700 014	146

Code	Page
724 701 406	145
724 701 407	145
724 701 408	145
724 701 409	145
724 701 410	145
724 701 411	145
724 701 412	145
724 701 413	145
724 701 414	145
724 701 415	145
724 701 416	145
724 701 417	145
724 701 419	145
724 701 606	146
724 701 607	146
724 701 608	146
724 701 609	146
724 701 610	146
724 701 611	146
724 701 612	146
724 701 613	146
724 701 615	146
724 701 616	146
724 701 617	146
724 701 720	146
724 701 806	146
724 701 807	146
724 701 808	146
724 701 809	146
724 701 810	147
724 701 811	147
724 701 812	147
724 701 813	147
724 701 815	147
724 701 816	147
724 701 817	147
724 701 820	147
724 703 414	145
724 703 814	147
727 600 106	120
727 600 107	120
727 600 108	120
727 600 109	120
727 600 110	120
727 600 111	120
727 608 506	120
727 608 507	120
727 608 508	120
727 608 509	120
727 608 510	120
727 608 511	120
727 700 206	91

# Index

Code	Page
727 700 207	91
727 700 208	91
727 700 209	91
727 700 210	91
727 700 211	91
727 700 212	149
727 700 213	149
727 700 214	149
727 700 215	149
727 700 216	149
727 700 217	149
727 700 219	149
727 700 220	149
727 700 221	149
727 700 222	149
727 700 223	149
727 700 224	149
727 700 225	149
727 700 406	91
727 700 407	91
727 700 408	91
727 700 409	91
727 700 410	91
727 700 411	91
727 700 412	147
727 700 413	147
727 700 414	147
727 700 416	147
727 700 417	147
727 700 419	147
727 700 420	147
727 700 421	148
727 700 422	148
727 700 423	148
727 701 206	91
727 701 207	91
727 701 208	91
727 701 209	91
727 701 210	91
727 701 211	91
727 701 212	150
727 701 213	150
727 701 214	150
727 701 220	150
727 701 406	91
727 701 407	91
727 701 408	91
727 701 409	91
727 701 410	91
727 701 411	91
727 701 412	148
727 701 413	148

Code	Page
727 701 414	148
727 701 422	148
727 701 423	148
729 000 106	26
729 000 107	26
729 000 108	26
729 000 109	26
729 000 110	26
729 000 111	26
729 000 112	6
729 000 113	26
729 000 114	26
729 000 116	26
729 000 117	26
729 001 106	6
729 001 107	6
729 001 108	6
729 001 109	6
729 001 110	6
729 001 111	6
729 001 113	6
729 001 115	6
729 001 656	6
729 001 657	6
729 001 658	6
729 001 659	6
729 001 660	6
729 001 661	6
729 001 662	6
729 001 663	6
729 001 664	6
729 010 120	26
729 010 122	26
729 010 123	26
729 011 120	6
729 100 105	27
729 100 106	27
729 100 107	27
729 100 108	27
729 100 109	27
729 100 110	27
729 100 111	27
729 100 112	7
729 100 113	27
729 100 114	27
729 100 116	7
729 100 117	27
729 100 119	27
729 100 121	27
729 100 206	33
729 100 207	33
729 100 208	33

Code	Page
729 100 209	33
729 100 210	33
729 100 211	33
729 101 105	7
729 101 106	7
729 101 107	7
729 101 108	7
729 101 109	7
729 101 110	7
729 101 111	7
729 101 113	7
729 101 115	7
729 101 117	7
729 101 206	12
729 101 207	12
729 101 208	12
729 150 106	27
729 150 107	27
729 150 108	27
729 150 109	27
729 150 110	27
729 150 111	27
729 150 112	7
729 150 113	27
729 150 114	27
729 150 116	7
729 150 117	27
729 150 119	27
729 150 120	27
729 150 121	27
729 150 122	27
729 150 123	27
729 151 105	7
729 151 106	7
729 151 107	7
729 151 108	7
729 151 109	7
729 151 110	7
729 151 111	7
729 151 113	7
729 151 115	7
729 151 117	7
729 151 120	7
729 151 176	7
729 151 177	7
729 151 178	7
729 151 179	7
729 151 180	7
729 151 181	7
729 151 182	7
729 151 183	7
729 151 184	7

# Index

Code	Page
729 200 010	28
729 200 011	28
729 200 105	28
729 200 106	28
729 200 107	28
729 200 108	28
729 200 109	28
729 200 110	28
729 200 111	28
729 200 112	8
729 200 113	28
729 200 114	28
729 200 116	8
729 200 117	28
729 200 119	28
729 200 120	28
729 200 121	28
729 200 122	28
729 200 123	28
729 200 134	28
729 200 136	28
729 200 138	28
729 200 143	28
729 200 144	28
729 200 146	28
729 200 147	28
729 200 148	28
729 200 149	28
729 200 151	28
729 200 153	28
729 200 156	28
729 200 157	28
729 200 158	28
729 200 164	28
729 200 170	28
729 200 178	28
729 200 182	28
729 201 009	8
729 201 011	8
729 201 105	8
729 201 106	8
729 201 107	8
729 201 108	8
729 201 109	8
729 201 110	8
729 201 111	8
729 201 113	8
729 201 115	8
729 201 117	8
729 201 120	8
729 201 134	8
729 201 137	8

Code	Page
729 201 138	8
729 201 141	8
729 201 147	8
729 201 151	8
729 201 164	8
729 201 170	8
729 201 178	8
729 250 106	29
729 250 107	29
729 250 108	29
729 250 109	29
729 250 110	29
729 250 111	29
729 250 112	9
729 250 113	29
729 250 114	29
729 250 116	9
729 251 106	9
729 251 107	9
729 251 108	9
729 251 109	9
729 251 110	9
729 251 111	9
729 300 108	29
729 300 111	29
729 510 105	38
729 510 106	38
729 510 107	38
729 510 108	38
729 510 109	38
729 510 110	38
729 510 111	38
729 510 112	19
729 510 114	38
729 510 313	38
729 511 105	19
729 511 106	19
729 511 107	19
729 511 108	19
729 511 109	19
729 511 110	19
729 511 111	19
729 511 205	20
729 511 206	20
729 511 207	20
729 511 208	20
729 511 209	20
729 511 210	20
729 511 211	20
729 521 105	20
729 521 106	20
729 521 107	20

Code	Page
729 521 108	20
729 521 109	20
729 521 110	20
729 521 111	20
729 523 105	20
729 523 106	20
729 523 107	20
729 523 108	20
729 523 109	20
729 523 110	20
729 523 111	20
729 530 306	40
729 530 307	40
729 530 308	40
729 530 309	40
729 530 310	40
729 530 311	40
729 530 806	41
729 530 807	41
729 530 808	41
729 530 809	41
729 530 810	41
729 530 811	41
729 531 306	21
729 531 307	21
729 531 308	21
729 531 309	21
729 531 310	21
729 531 311	21
729 531 806	21
729 531 807	21
729 531 808	21
729 531 809	21
729 531 810	21
729 531 811	21
729 540 205	39
729 540 206	39
729 540 207	39
729 540 208	39
729 540 209	39
729 540 210	39
729 540 211	39
729 540 705	39
729 540 706	39
729 540 707	39
729 540 708	39
729 540 709	39
729 540 710	39
729 540 711	39
729 545 505	40
729 545 506	40
729 545 507	40

# Index

Code	Page
729 545 508	40
729 545 509	40
729 545 510	40
729 545 511	40
729 550 506	41
729 550 507	41
729 550 508	41
729 550 509	41
729 550 510	41
729 550 511	41
729 550 906	41
729 550 907	41
729 550 908	42
729 550 909	42
729 550 910	42
729 550 911	42
729 550 957	41
729 550 958	41
729 550 967	41
729 550 968	42
729 551 506	22
729 551 507	22
729 551 508	22
729 551 509	22
729 551 510	22
729 551 511	22
729 551 906	21
729 551 907	21
729 551 908	21
729 551 909	21
729 551 910	21
729 551 911	21
729 600 105	43
729 600 106	43
729 600 107	43
729 600 108	43
729 600 109	43
729 600 110	43
729 600 111	43
729 600 162	43
729 600 163	43
729 600 164	43
729 601 105	19
729 601 106	19
729 601 107	19
729 601 108	19
729 601 109	19
729 601 110	19
729 601 111	19
729 640 105	43
729 640 106	43
729 640 107	43

Code	Page
729 640 108	43
729 640 109	43
729 640 110	43
729 640 111	43
729 640 112	43
729 640 114	43
729 640 123	43
729 641 105	19
729 641 106	19
729 641 107	19
729 641 108	19
729 641 109	19
729 641 110	19
729 641 111	19
729 690 012	44
729 690 013	44
729 690 014	44
729 690 405	43
729 690 406	43
729 690 407	43
729 690 408	43
729 690 409	43
729 690 410	43
729 690 411	43
729 730 006	18
729 730 007	18
729 730 008	18
729 730 009	18
729 730 010	18
729 730 011	18
729 730 013	18
729 730 014	18
729 730 017	18
729 730 109	17
729 730 110	17
729 730 111	17
729 730 113	17
729 730 117	17
729 731 106	17
729 731 107	17
729 731 108	17
729 731 109	17
729 731 110	17
729 731 111	17
729 731 113	17
729 731 114	17
729 731 117	17
729 731 164	17
729 732 106	18
729 732 107	18
729 732 108	18
729 732 113	18

Code	Page
729 732 114	18
729 790 106	37
729 790 107	37
729 790 108	37
729 790 109	37
729 790 110	37
729 790 111	37
729 790 112	16
729 790 113	37
729 790 114	37
729 790 116	16
729 790 117	37
729 790 119	37
729 790 120	37
729 790 121	37
729 790 122	37
729 790 123	37
729 791 106	16
729 791 107	16
729 791 108	16
729 791 109	16
729 791 110	16
729 791 111	16
729 791 113	16
729 791 115	16
729 791 117	16
729 791 120	16
729 900 181	31
729 900 303	31
729 900 306	31
729 900 312	31
729 900 334	31
729 900 337	31
729 900 341	31
729 900 342	31
729 900 346	31
729 900 347	31
729 900 348	31
729 900 352	31
729 900 353	31
729 900 354	31
729 900 355	31
729 900 358	31
729 900 359	31
729 900 360	31
729 900 364	31
729 900 365	31
729 900 370	31
729 900 371	31
729 900 372	31
729 900 376	31
729 900 378	31

# Index

Code	Page
729 900 385	31
729 900 388	31
729 900 390	31
729 900 392	31
729 900 396	31
729 900 406	34
729 900 407	34
729 900 408	34
729 900 409	34
729 900 410	34
729 900 411	34
729 900 905	30
729 900 906	30
729 900 907	30
729 900 908	30
729 900 909	30
729 900 910	30
729 900 911	30
729 900 912	9
729 900 913	31
729 900 914	31
729 900 916	9
729 901 334	10
729 901 337	10
729 901 341	10
729 901 342	10
729 901 346	10
729 901 347	10
729 901 348	10
729 901 352	10
729 901 353	10
729 901 354	10
729 901 355	10
729 901 358	10
729 901 359	10
729 901 360	10
729 901 361	10
729 901 364	10
729 901 370	10
729 901 371	10
729 901 372	10
729 901 374	10
729 901 381	10
729 901 385	10
729 901 396	10
729 901 406	12
729 901 407	12
729 901 408	12
729 901 409	12
729 901 410	12
729 901 411	12
729 901 534	14

Code	Page
729 901 537	14
729 901 541	14
729 901 542	14
729 901 905	9
729 901 906	9
729 901 907	9
729 901 908	9
729 901 909	9
729 901 910	9
729 901 911	9
729 901 913	9
729 901 914	9
729 910 105	30
729 910 106	30
729 910 107	30
729 910 108	30
729 910 109	30
729 910 110	30
729 910 111	30
729 910 112	9
729 910 113	30
729 910 114	30
729 910 116	10
729 910 117	30
729 910 119	30
729 910 120	30
729 910 121	30
729 910 122	30
729 910 123	30
729 910 206	33
729 910 207	33
729 910 208	33
729 910 209	33
729 910 210	33
729 910 211	33
729 910 342	32
729 910 347	32
729 910 354	32
729 910 360	32
729 910 366	32
729 910 371	32
729 910 434	33
729 910 437	33
729 910 441	33
729 910 446	33
729 910 452	33
729 910 458	33
729 910 505	34
729 910 556	34
729 910 557	34
729 910 558	34
729 910 559	34

Code	Page
729 910 560	34
729 910 561	34
729 910 606	35
729 910 607	35
729 910 608	35
729 911 005	12
729 911 006	12
729 911 007	12
729 911 008	12
729 911 009	12
729 911 010	12
729 911 011	12
729 911 105	9
729 911 106	9
729 911 107	9
729 911 108	9
729 911 109	9
729 911 110	9
729 911 111	9
729 911 113	9
729 911 115	9
729 911 117	10
729 911 120	10
729 911 389	11
729 911 505	36
729 911 509	36
729 911 510	36
729 911 511	36
729 911 513	36
729 911 515	36
729 911 555	13
729 911 556	13
729 911 557	13
729 911 558	13
729 911 705	13
729 911 706	13
729 911 707	13
729 911 708	13
729 911 709	13
729 911 710	13
729 911 711	13
729 911 906	36
729 911 907	36
729 911 908	36
729 913 105	13
729 913 106	13
729 913 107	13
729 913 108	13
729 913 109	13
729 913 110	13
729 913 111	13
729 913 113	13

# Index

Code	Page
729 913 115	13
729 913 905	14
729 913 906	14
729 913 907	14
729 913 908	14
729 913 909	14
729 913 910	14
729 913 911	14
729 913 913	14
729 913 915	14
729 960 105	32
729 960 106	32
729 960 107	32
729 960 108	32
729 960 109	32
729 960 110	32
729 960 111	32
729 960 112	10
729 960 113	32
729 960 114	32
729 960 116	10
729 960 117	32
729 960 405	36
729 960 406	36
729 960 407	36
729 960 408	36
729 961 105	10
729 961 106	10
729 961 107	10
729 961 108	10
729 961 109	10
729 961 110	10
729 961 111	10
729 961 113	10
729 961 115	10
729 961 906	15
729 961 907	15
729 961 908	15
745 410 107	93
745 500 012	88
745 500 013	88
745 500 014	88
745 500 015	88
745 500 016	88
745 500 017	88
747 502 012	88
747 502 013	88
747 502 014	88
747 502 015	88
747 502 016	88
747 502 017	88
747 502 032	88

Code	Page
747 502 033	88
747 502 034	88
747 502 035	88
747 502 036	88
747 502 037	88
747 503 012	88
747 503 013	88
747 503 014	88
747 503 015	88
747 503 016	88
747 503 017	88
748 400 004	151
748 400 005	151
748 400 006	91
748 400 007	91
748 400 008	91
748 400 009	91
748 400 010	91
748 400 011	91
748 400 012	151
748 400 013	151
748 400 014	152
748 400 015	152
748 400 016	152
748 400 017	152
748 400 018	152
748 400 020	152
748 400 021	152
748 400 022	152
748 400 023	152
748 400 025	152
748 400 026	152
748 400 027	152
748 400 305	153
748 400 306	153
748 400 307	153
748 400 308	153
748 400 309	153
748 400 310	153
748 400 311	153
748 400 312	153
748 400 313	153
748 400 314	153
748 400 315	153
748 400 316	153
748 400 317	153
748 400 319	153
748 400 320	153
748 400 321	153
748 400 322	153
748 400 323	153
748 401 006	155

Code	Page
748 401 007	155
748 401 008	155
748 401 009	155
748 401 010	155
748 401 011	156
748 401 013	156
748 401 014	155
748 401 017	156
748 401 064	156
748 401 109	155
748 401 110	155
748 401 111	155
748 401 113	155
748 401 117	155
748 401 206	156
748 401 207	156
748 401 208	156
748 401 211	156
748 401 213	156
748 401 214	156
748 410 001	121
748 410 002	121
748 410 003	75
748 410 004	151
748 410 005	151
748 410 006	89
748 410 007	89
748 410 008	89
748 410 009	89
748 410 010	89
748 410 011	89
748 410 012	121
748 410 013	121
748 410 014	121
748 410 015	151
748 410 016	151
748 410 023	75
748 410 027	115
748 410 042	115
748 410 059	75
748 410 062	75
748 410 099	115
748 410 103	115
748 410 106	75
748 410 116	115
748 410 119	75
748 410 151	75
748 410 231	75
748 410 254	75
748 410 318	108
748 410 319	108
748 410 320	108

# Index

Code	Page
748 410 321	108
748 410 322	108
748 440 018	110
748 440 019	110
748 440 020	110
748 440 021	110
748 440 022	110
748 440 705	154
748 440 706	154
748 440 707	154
748 440 708	154
748 440 709	154
748 440 710	154
748 440 711	154
748 440 712	154
748 440 713	154
748 440 714	154
748 440 715	154
748 440 716	154
748 440 717	154
748 440 719	154
748 440 720	154
748 440 721	154
748 440 722	154
748 440 723	154
748 440 724	154
748 440 725	154
748 440 726	154
748 440 727	154
748 440 728	154
748 440 729	154
748 500 012	88
748 500 013	88
748 500 014	88
748 500 015	88
748 500 016	88
748 500 017	88
749 400 005	151
749 400 006	151
749 400 007	151
749 400 008	151
749 400 009	151
749 400 010	151
749 400 011	151
749 400 012	151
749 400 013	151
749 400 015	152
749 400 016	152
749 400 017	152
749 400 018	152
749 400 020	152
749 400 021	152

Code	Page
749 400 022	152
749 400 025	152
749 400 026	152
749 400 027	152
749 401 006	155
749 401 007	155
749 401 008	155
749 401 009	155
749 401 010	155
749 401 011	156
749 401 013	156
749 401 014	156
749 401 017	156
749 401 064	156
749 401 109	155
749 401 110	155
749 401 111	155
749 401 113	155
749 401 117	155
749 401 206	156
749 401 207	156
749 401 208	156
749 401 211	156
749 401 213	156
749 401 214	156
749 410 004	151
749 410 005	151
749 410 006	89
749 410 007	89
749 410 008	89
749 410 009	89
749 410 010	89
749 410 011	89
749 410 014	151
749 410 015	151
749 410 016	151
749 440 705	154
749 440 706	154
749 440 707	154
749 440 708	154
749 440 709	154
749 440 710	154
749 440 711	154
749 440 712	154
749 440 713	154
749 440 714	154
749 440 715	154
749 440 716	154
749 440 717	154
749 440 719	154
749 440 720	154
749 440 721	154

Code	Page
749 440 722	154
749 440 723	154
749 440 724	154
749 440 725	154
749 440 726	154
749 440 727	154
749 440 728	154
749 440 729	154
749 500 012	88
749 500 013	88
749 500 014	88
749 500 015	88
749 500 016	88
749 500 017	88
790 109 001	144
790 109 002	144
790 109 003	144
790 309 003	144
790 309 004	144
799 298 010	144
799 298 022	144
799 299 001	144
799 299 002	144
799 299 003	144
799 299 004	144
799 299 005	144
800 015 141	54
800 015 142	55
800 015 143	55
800 015 179	55
800 024 832	54
800 024 834	54



## Stockist



**George Fischer Sales Limited**  
**Paradise Way, Coventry CV2 2ST**  
**Tel. 024 7653 5535, Fax. 024 7653 0450**  
**email** [uk.ps@georgefischer.com](mailto:uk.ps@georgefischer.com)  
**website** [www.georgefischer.co.uk](http://www.georgefischer.co.uk)