Bänninger

>B< Press

>B< Press technical brochure and range

Conex | Bänninger

Contents

english

Introduction

Flame free
Flame free installation takes away risk of fire on site

Reliable simplicity
Simple, quick and reliable installation provides low installed cost

Fully certified
Extensive third party certification offers peace of mind to the client, specifier and installer

Performance and warranty
Corrosion resistant and with a design life of 50 years, >B< Press can be relied on to perform long after installation

Slimline profile
Slimline, unobtrusive design provides aesthetic finish

Electrical continuity
Maintains electrical continuity to meet requirements of national building regulations

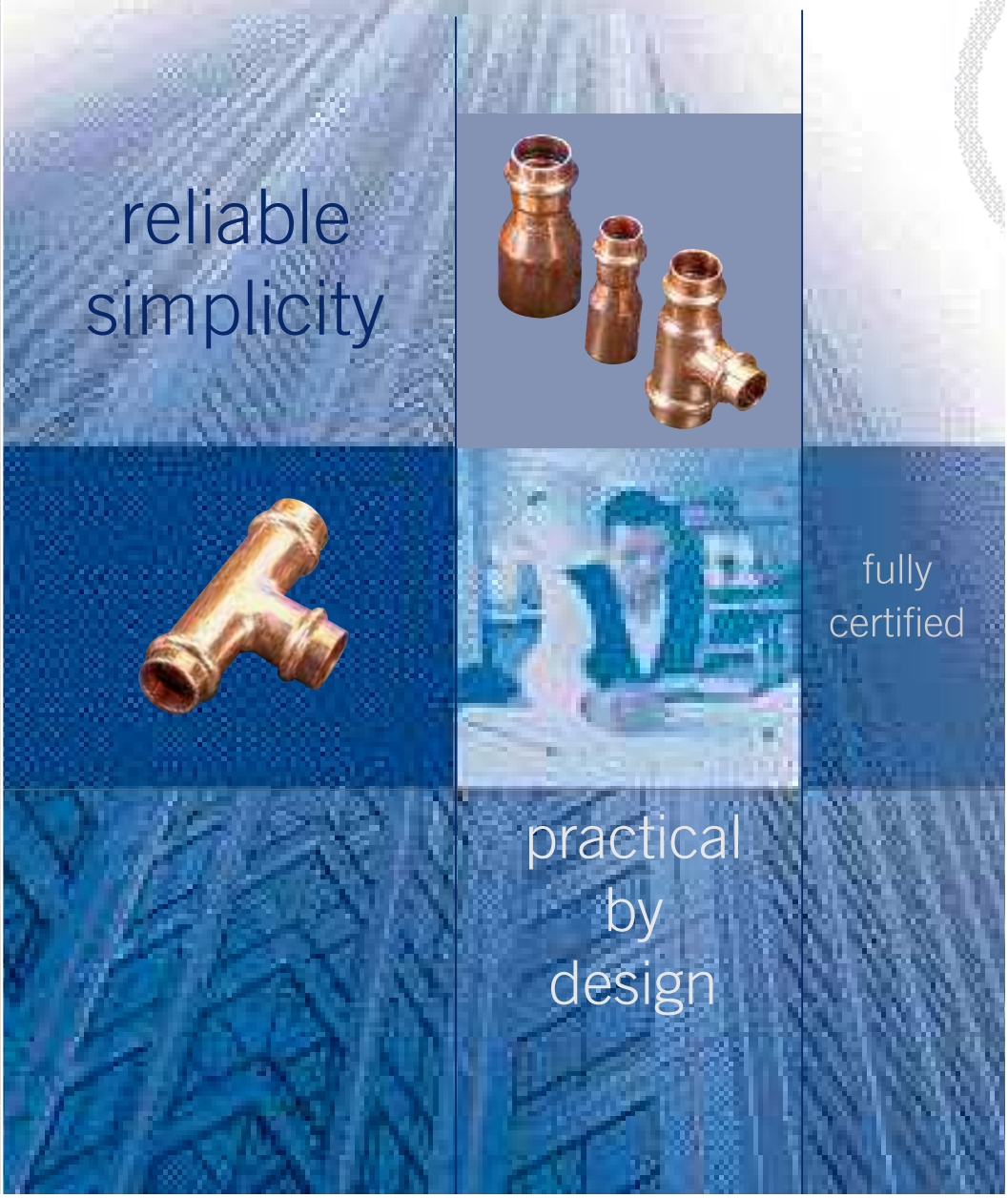
Permanent joint
Secure, permanent joint crimped both sides of deep set 'O' ring ensures fitting cannot be tampered with

Practical by design
Lead-in edge aids installation and helps protect 'O' ring from damage or displacement

IBP is an international manufacturer of fittings for domestic, commercial, industrial and shipbuilding environments. Our market-leading brands include Conex and Bänninger.

The Company operates manufacturing facilities in the UK, Spain and Poland; and has sales offices in these countries as well as France, Germany, Italy and Portugal. Through distributor and agency partnerships IBP is represented across Europe, the Middle East and the Far East.

IBP works closely with industry professionals at all stages of the building cycle. Partnerships with clients, building owners, specifiers and designers, merchants and contractors ensure that IBP products continue to provide highly cost-effective solutions to satisfy building requirements covering such applications as drinking water, heating, gas, solar heating, compressed air and liquid gas systems.



english

slimline profile

flame free

Product features

>B< Press offers a versatile press fitting system for use with hard, half-hard and soft copper tube and stainless steel tube (see Table 3 on page 9 for details), providing a secure, long-life, leak-proof joint. >B< Press is user friendly and very quick to install, leading to savings on labour costs. It also offers the advantage of flame free installation, therefore posing no fire risk.

To install >B< Press, a mechanical press tool with a compatible jaw to fit each size of fitting is required. When pressure is exerted through the press tool the joint is permanently made and the fitting cannot be disconnected or re-used. The >B< Press system eliminates the need for solder, adhesives or additional jointing materials. >B< Press has undergone extensive testing to international, national and industry standards. WRAS, DVGW, SVGW, KIWA, Lloyds Register, Bureau Veritas and Germanischer Lloyd approvals amongst others have been awarded. All fittings are manufactured in accordance with accredited EN ISO 9001:2000 Quality Management Procedures.

electrical continuity

Product structure and applications

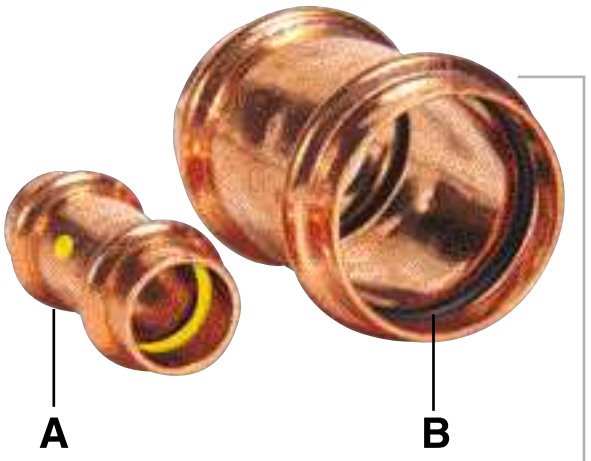
Drinking water

Heating

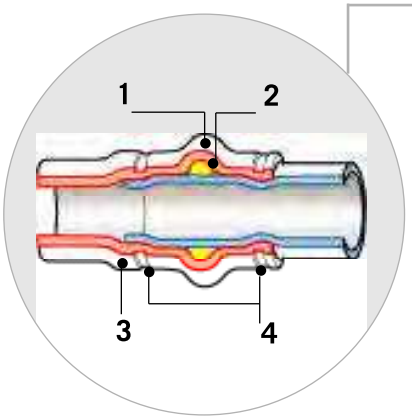
Compressed air

Natural gas/LPG

Domestic fire sprinkler systems



A. Copper, red brass or stainless steel body
B. Specialist 'O' ring



Section through >B< Press fitting

1. Bead
2. 'O' ring
3. Cylindrical sleeve (socket)
4. Pressing both sides of 'O' ring

Product

The >B< Press range is available in **Copper, Red Brass** and **Stainless Steel** materials. Copper and Red Brass fittings are suitable for use with copper tube to EN 1057; Stainless Steel fittings are suitable for use with stainless steel tube to EN 10312.

Tables 1 and 2 identify suitable applications for the range and give the minimum and maximum working pressures and temperatures.

>B< Press fittings for natural gas and LPG applications are identified by a yellow coloured 'O' ring and body mark as shown above.

Accelerated life tests show that >B< Press components have a life expectancy greater than 50 years.

Table 1
Drinking water, heating and air

Application	Pressure	Temperature	Medium
Drinking water installations to pr EN 806	16 bar	95°C	Drinking water to DWD
Chilled water	10 bar	5°C	Water
Water heating	6 bar	110°C	50/50 glycol/water mix
Solar heating	3 bar	-35°C to +130°C 200 °C 20 h/a 180°C 60 h/a	50/50 glycol/water mix
Long distance water heating	10 bar	130°C	50/50 glycol/water mix
Rainwater installations	10 bar	30°C	Rainwater
Compressed air installations (oil free)	10 bar	30°C	Compressed air to ISO 8573.1, Class 1-4 (oil free)
Shipbuilding	10 bar 16 bar	95°C 30°C	Water
Vacuum	-0.8 bar	Ambient	-
Domestic fire sprinkler systems	16 bar	Ambient	Water

Table 2
Gas

Application	Pressure	Temperature	Medium
Gas installations to DVGW - TRGI 1986/96	PN5/GT/1	-20°C to +70°C	Gases according to DVGW G260
Liquid gas installations (LPG)	PN5/GT/1	-20°C to +70°C	Gases according to DVGW G260
Fuel oil installations	PN5	-20°C to +40°C	-
Compressed air installations (with oil content)	10 bar	25°C	-

Standards & approvals

>B< Press Copper and Red Brass fittings have been assessed and approved by a wide number of approval bodies.

Clients, specifiers and installers can all take reassurance that >B< Press performs to the very highest standards.

Furthermore, the Company is a BSI Registered Firm of assessed capability, manufacturing in accordance with EN ISO 9001:2000.

For each geographic market, reference should be made to appropriate international, national or industry standards or approvals for a full understanding of the requirements of materials, products and systems in specific applications. Appendix 1 on page 23 provides a reference guide to many of these standards and approvals, which are met by >B< Press where applicable.

Design considerations

Tube compatibility

Copper and Red Brass fittings are suitable for use with copper tube to EN 1057; Stainless Steel fittings are suitable for use with stainless steel tube to EN 10312.

Table 3 identifies the range of tube diameters/wall thicknesses that have been tested with >B< Press.

For gas installations, the wall thickness of copper tube should be determined by national regulations.

Table 3

Tube sizes suitable for >B< Press

	Tube Wall Thickness (mm)						
Tube O/D	Soft Copper R220		Half Hard Copper R250		Hard Copper R290		Stainless Steel
12	0.6	-	0.8	-	1.0	-	1.0
14	1.0	-	-	-	1.0	-	-
15	1.0	-	0.7	-	1.0	-	1.0
16	1.0	-	-	-	1.0	-	-
18	1.0	-	0.8	-	1.0	-	1.0
22	1.0	-	0.9	1.1	1.0	1.5	1.2
28	-	-	0.9	1.2	1.0	1.5	1.2
35	-	-	1.2	-	1.0	1.5	1.5
42	-	-	1.2	-	1.0	1.5	1.5
54	-	-	1.2	-	1.2	2.0	1.5
64	-	-	1.2	-	2.0	-	-
66.7	-	-	1.2	-	-	-	-
76.1	-	-	1.5	-	1.5	2.0	-
88.9	-	-	-	-	-	2.0	-
108	-	-	1.5	-	-	2.5	-

Pipework support

All pipework should be supported by the use of appropriate clips, brackets or supports.

Table 4 provides details of the maximum intervals between supports generally recommended by tube manufacturers. However, please refer to manufacturers for specific details in relation to the particular application.

Additional support may be necessary when using soft copper tubes.

Table 4

Pipework support

Size (mm)	Vertical Intervals (mm)	Horizontal Intervals (mm)
10	1500	1000
12	1800	1200
14	1800	1200
15	1800	1200
16	1800	1200
18	2000	1500
22	2400	1800
28	2400	1800
35	3000	2400
42	3000	2400
54	3000	2700
64	3000	2700
66.7	3000	2700
76.1	3600	3000
88.9	3600	3000
108	3600	3000

Distance between fittings

Due to the reforming of the tube profile when pressed, it is advised that a minimum distance, shown as F in Table 5, is allowed between each fitting.

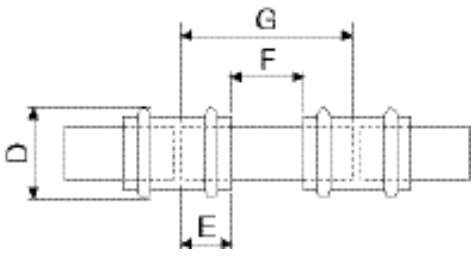


Table 5

Distance between fittings

	Minimum Distances			
Tube Size	D	E	F	G
12	19	18	10	46
14	21.7	22	10	64
15	22.6	22	10	54
16	23.7	22	10	64
18	25.6	22	15	59
22	31	23	20	66
28	37	24	20	68
35	44	26	25	77
42	53.4	36	30	102
54	65.4	40	35	115
64	71	52	30	132
66.7	71	52	30	132
76.1	81	52	40	142
88.9	94	52	50	142
108	114	60	50	170

D - Fitting OD
E - Socket depth
F - Clearance between fitting ends
G - Minimum length of tube

Design considerations

Pipework clearances

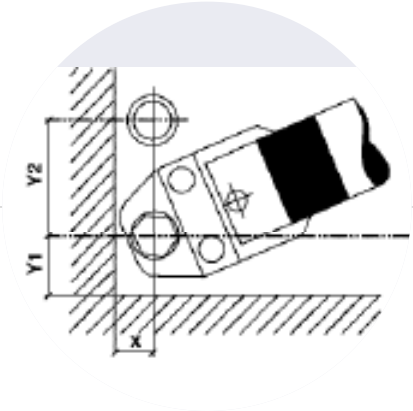
Where there is insufficient access to allow the press tool to function correctly, two alternative courses of action are possible. Either:

a. Pre-fabricate sections for areas of inaccessibility and connect where access allows, or

b. Utilise alternative flame free solutions such as Conex Compression Fittings or Cuprofit Push-fit Fittings (size dependent).

Please refer to relevant product literature or consult the IBP Technical Department.

Tables 6 and 7 provide dimensional data for clearance distances.



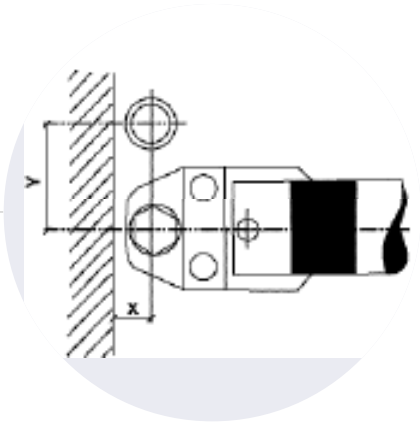


Table 6

Corner and pipe clearances

Size (mm)	X (mm)	Y1 (mm)	Y2 (mm)
12	31	45	71
14	31	45	73
15	31	45	73
16	31	45	73
18	31	45	74
22	31	45	76
28	38	55	80
35	38	55	85
42	75	75	115
54	85	85	140
64	100	100	145
66.7	100	100	145
76.1	115	115	165
88.9	125	125	185
108	135	135	200

Table 7

Wall and pipe clearances

Size (mm)	X (mm)	Y (mm)
12	26	51
14	26	53
15	26	53
16	26	53
18	26	54
22	26	56
28	33	69
35	33	73
42	75	115
54	85	120
64	100	145
66.7	100	145
76.1	115	165
88.9	125	185
108	135	200

Earth continuity

>B< Press fittings maintain earth continuity without the need for additional continuity straps.

Mixed material systems

When jointing a copper system to a stainless steel or carbon steel system it is recommended that red brass fittings are used as the intermediate connector. This will prevent the creation of a voltaic cell and electrolytic corrosion.

In systems that incorporate zinc coated steel tube and fittings, copper tube should be downstream of zinc coated steel.

Pipework protection

Copper has a high resistance against corrosion. However, in some cases external protection may be necessary against fluids that may contain ammonia or its derivatives. If in doubt, please consult your regional IBP Technical Department.

Localised annealing

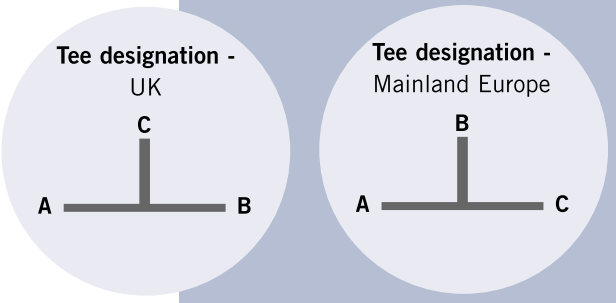
When designing and installing pipework systems that incorporate both press fitting and brazed joints you should note that the high temperature required for brazing anneals the copper tube, rendering it too soft for >B< Press jointing within 300mm of the brazed joint. Equally, do not incorporate brazed joints within 300mm of a >B< Press joint, as this may damage the 'O' ring.

Tee designation

When specifying tee fittings on drawings or tender documents and such like, you should note that tee fittings are specified differently between the UK and other European countries.

- UK specification - first quote the ends on the run (larger end first) and then the branch.
- European specification - quote the larger end first, then the branch, followed by the remaining end.

Sizes quoted in the product tables follow the European method of tee designation.



Terminal connections

In many pipework systems it is common to install products such as lever ball valves, radiator valves, gate valves, cylinder unions, tank connectors and manifolds. Connection of pipework into these products can be achieved with a traditional range of standard fittings, such as male and female straight union connectors. In addition, however, the >B< Terminal Connector is a unique product designed to connect any ISO 228 or ISO 7 female parallel threaded product.

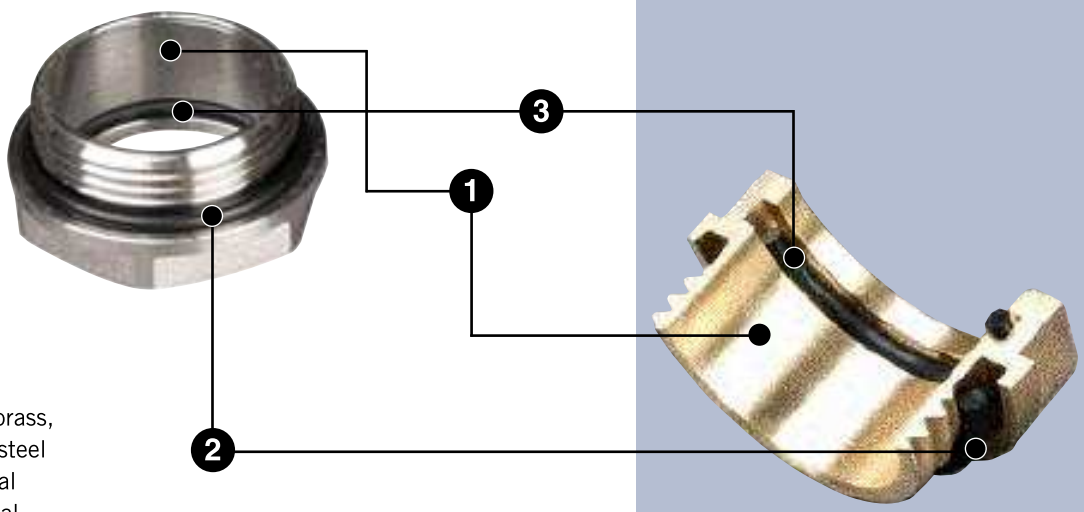
The fitting allows a connection to be made quickly and simply without the need for additional sealants such as PTFE. Sealing is achieved via two EPDM 'O' rings, one internal to seal on the tube, the other to make the fitting seal.

The >B< Terminal Connector can be used for drinking water, plus sanitary and heating installations, in domestic, industrial and commercial applications.

Other applications include chilled beams and a comprehensive range of OEM uses.

The >B< Terminal Connector is for use with water only, and must not be used on any gas installations. The product does not maintain earth continuity.

Installation guidelines are shown on page 20.

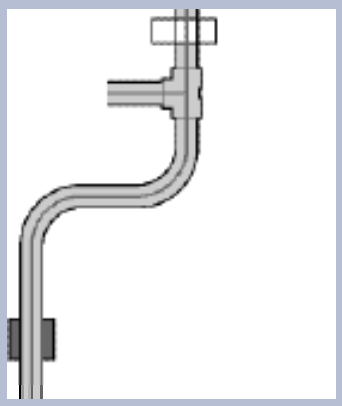


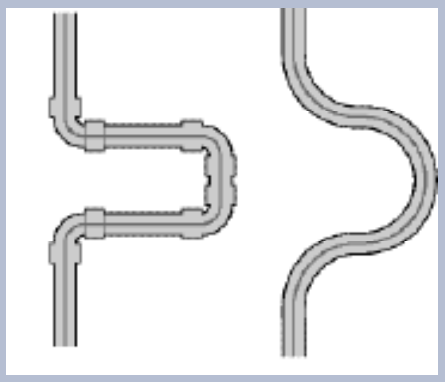
Product structure

1. Body in either yellow brass, red brass or stainless steel
2. EPDM 'O' ring face seal
3. EPDM 'O' ring tube seal

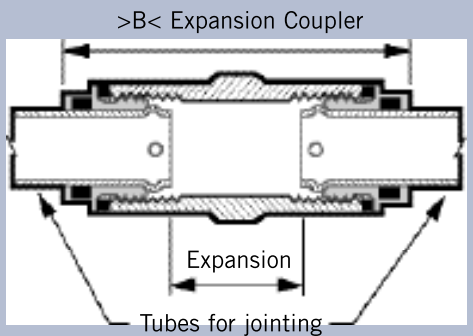
Design considerations

Expansion devices





'Horseshoe' or compensating bend



Expansion coupler

Bellows type expansion joint

Effects of expansion

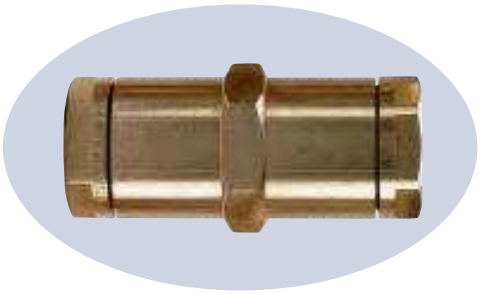
The coefficient of linear expansion of copper is 16.8 x 10^{-6} per °C and 16.0 x 10^{-6} per °C for stainless steel. For example, a 10m length of copper tube, irrespective of its size, wall thickness or temper, will increase in length by 10.80mm with a temperature rise of 60°C. Pipes installed on hot water services must be free to accommodate this expansion, otherwise stresses will build up in the pipework, which may lead to joints being pulled apart and/or tubes fracturing. Clearly the magnitude and frequency of such changes in length will determine the life of the joint or failure of the tube.

Table 8 shows the amount of pipe expansion for a given temperature rise.

In the case of tube in domestic hot water and heating installations the limited size of rooms and hence straight pipe runs, together with the many bends and offsets that normally occur, will result in thermal movement being accommodated automatically. However where long straight pipe runs, exceeding 10m, are encountered, allowance for expansion should be made.

A quick, economic and effective way of accommodating thermal expansion is to simply incorporate the >B< Expansion Coupler into the system design. Based on the unique >B< Terminal Connector product described on page 11, the coupler allows the pipework to move within the main body of the fitting whilst maintaining a perfect seal.

Installation of the >B< Expansion Coupler follows the same set of guidelines as the >B< Terminal Connector on page 20.



Where copper tubes pass through walls, floors and ceilings, they should be able to move as a result of expansion and contraction. This can be arranged by passing the tube through a sleeve or length of larger diameter pipe fixed through the whole thickness of the wall, floor or ceiling, or by means of flexible joints on either side of the wall.

Short stubs to and from radiators, connected to relatively long straight runs should also be avoided. This can usually be achieved by introducing an expansion loop, thereby increasing the length of pipework fixed between the flow/return legs and the radiator connection. However, expansion accommodation techniques such as the use of loops and horseshoes may not be sufficient to accommodate large expansions and in such cases the use of the >B< Expansion Coupler or bellows type couplers may be necessary.

Table 8

Thermal expansion (mm) of copper and stainless steel tube as a function of tube length and temperature difference

Table 8 shows the increase in length due to thermal expansion as a function of change in temperature **Δ** t and the length of the tube at the lower temperature, irrespective of temper or wall thickness.

Tube Length m	Temperature Difference Δt °C							
	Δt=30°	Δt=40°	Δt=50°	Δt=60°	Δt=70°	Δt=80°	Δt=90°	Δt=100°
0.1	0.05	0.07	0.08	0.10	0.12	0.13	0.15	0.17
0.2	0.10	0.13	0.17	0.20	0.24	0.27	0.30	0.34
0.3	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
0.4	0.20	0.27	0.34	0.40	0.47	0.54	0.60	0.67
0.5	0.25	0.34	0.42	0.50	0.59	0.67	0.76	0.84
0.6	0.30	0.40	0.50	0.60	0.71	0.81	0.91	1.01
0.7	0.35	0.47	0.59	0.71	0.82	0.94	1.06	1.18
0.8	0.40	0.54	0.67	0.81	0.94	1.08	1.21	1.34
0.9	0.45	0.60	0.76	0.91	1.06	1.21	1.36	1.51
1.0	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68
2.0	1.01	1.34	1.68	2.02	2.35	2.69	3.02	3.36
3.0	1.51	2.02	2.52	3.02	3.53	4.03	4.54	5.04
4.0	2.02	2.69	3.36	4.03	4.70	5.40	6.05	6.72
5.0	2.52	3.36	4.20	5.04	5.88	6.72	7.56	8.40
10.0	5.04	6.72	8.40	10.80	11.76	13.44	15.12	16.80
15.0	7.56	10.80	12.60	15.12	17.64	20.16	22.68	25.20
20.0	10.08	13.44	16.80	20.16	23.52	26.88	30.24	33.60
25.0	12.60	16.80	21.00	25.20	29.40	33.60	37.80	42.00

>B< Press tools

IBP has a close working relationship with two leading manufacturers of press tools - Klauke and Novopress. Klauke press tools are recommended for >B< Press fittings up to 54mm and the Novopress tool is recommended for >B< Press fittings 64mm to 108mm, both ranges being available from IBP.

A full listing of tools and jaws including technical details is provided on pages 186-189.

Novopress for fittings 64 -108mm

PRESSMAX ECO3

Electro-mechanical

- Easy to operate, yet provides max pressing power despite its small s
- Microprocessor control ensures consistent force over the entire press cycle
- Electronic monitoring of the jaw's locking bolt ensures proper install
- Automatic return stroke is standar
- A short cycle time of about 12 se is all it takes to make a perfect jo regardless of the dimension
- Weight only 4.7 kg (without adapt and collar)
- Power consumption of 400 W
- Piston force - maximum 45 kN

Klauke for fittings 12-54mm

UAP2
Battery-hydraulic

- Lightweight, compact design and construction - only 3.9 kg including battery
- Ergonomic design (one hand operation)
- Reliable, constant thrust of at least 32 kN
- Short pressing time of about 6 seconds
- Automatic piston retraction after reaching operating pressure
- Maintenance and malfunction warnings are microprocessor-controlled
- 360° moveable jaw holder

UNP2
Electro-hydraulic

- Combines all the advantages of the battery pressing tool UAP2
- Without micro-processor control
- The hydraulic low-price alternative to UAP2
- Weight only 3.5 kg (without jaw)
- 360° moveable jaw holder
- Automatic piston retraction after reaching operating pressure

UP2EL-14
Electro-mechanical

- Tried and tested technology, reliable and fast
- With knurled pressing jaw holder and second retaining ring for improved safety
- Constant thrust of at least 32 kN
- Power consumption - 750 W
- Short pressing time of just 4 seconds
- Weight only 4.6 kg (without jaw)

MAP1 Mini
Battery-hydraulic

- Small machine - lightweight and easy to handle
- Suitable for fittings 12-28mm
- Ergonomic handling
- Constant thrust of 15 kN
- Short pressing time of 6 seconds
- Automatic piston return and motor cut off
- 360° moveable jaw holder
- Weight including pressing jaw, only 2.5 kg
- Approximately 65 pressings per battery charge (DN20)
- Charging time of approximately 40 minutes

Installation guidelines

12mm - 54mm

>B< Press fittings are simple to install, just follow these straightforward guidelines.

Getting started

We recommend you keep the fitting in its packaging until you are ready to begin installation. This is important to keep the fitting free of any dust or dirt and to ensure the 'O' ring stays lubricated and protected from damage.
Select the correct size of tube and fitting for the job. Ensure that both are clean and free from damage and imperfections.

Preparation

1 We recommend you use a rotary pipe cutter to cut the tube square. If you use a hacksaw, a fine toothed blade should be used and care taken to ensure the tube is cut square. Grinding machines and wheels are not suitable. If tube ends have become distorted or damaged, the ends should be restored to the outside diameter dimensions specified in EN 1057 or cut back. Tube ends should be clean and free from scratches not less than the socket length. When using plastic coated tube to EN 13349, the plastic coating should be cut back to the minimum socket length without scoring the tube.

2 Make sure that the internal and external tube end are free from burrs or sharp edges by using a deburring tool. Then wipe the tube end clean to avoid damaging the 'O' ring on tube insertion.

3 The tube must be fully inserted into the fitting until it reaches the tube stop in order to make a perfect joint. Use a rule to mark the socket depth of the fitting onto the tube (see Table 9). This will ensure that any tube movement is detected, which is especially important if the joints are to be pressed at a later time.

4 Visually check that the 'O' ring is seated correctly within the fitting socket.

Jointing

1 To assemble the joint, the tube must be inserted into the fitting up to the tube stop. (Use the mark on the tube which was made earlier as reference.) The pressing operation should only be undertaken when the tube reaches the tube stop.

2 Using the correct sized jaws in the press tool, place them over the bead at the mouth of the fitting. Maintain a 90° angle between tube and jaws to ensure a sound joint is made.

3 Depress the trigger/button to begin the compression cycle of the tool. This is complete when the mouth of the fitting is fully enclosed by the jaws. Now release the jaws from around the fitting. (For further information refer to tool manufacturer's instructions.)

Spacing

Make sure enough clearance is left around each fitting to attach the jaws without obstruction. The critical dimensions can be found in Tables 6 and 7 on page 10.

Table 9

Fitting socket depths

	Socket depth (mm)	
Size (mm)	Coupler	Other fittings
14	20	22
15	20	20
16	20	22
22	21	21
28	23	23
35	26	26
42	30	30
54	35	35
64	57	52
67	53	53
76	51.5	51.5
89	51.5	51.5
108	60	60

Installation guidelines

64mm - 108mm

We recommend the use of press collars rather than two-piece jaws when jointing larger size fittings. The collars provide an equally distributed pull around the circumference of the fitting. For 108mm red brass fittings a secondary press is undertaken to ensure a sound joint.

Lubrication

Pivot points and collar slides should be regularly lubricated to prolong the life of the collar.

Getting started and preparation

The same care and attention should be taken with tube preparation and socket depth marking when jointing 64mm to 108mm fittings as outlined in the "Getting Started" and "Preparation" sections for 12mm to 54mm fittings on page 16.

Jointing

1 To assemble the joint, the tube must be inserted into the fitting up to the tube stop. (Use the mark on the tube which was made earlier as reference.) The pressing operation should only be undertaken when the tube reaches the tube stop.

2 Select the appropriate collar and open by depressing the spring loaded pin. Pull apart and position over the fitting.

3 Ensure that the groove in the collar corresponds to the bead on the fitting and that the support plate on the collar fits over the tube side of the joint.

4 Turn the catch mechanism towards the locking pin, press down the locking pin and push the catch into the pin until it locks. Revolve the collar around the fitting to the desired pressing position.

5 Take the appropriate adaptor and attach to the press tool, then close the breach bolt. To attach the collar, depress the jaw levers and attach the claws as far as you can into the grooves of the collar. Unless the adaptor is correctly connected to the press collar pressing will not be possible.

6 Depress the button on the press tool and begin the pressing operation.

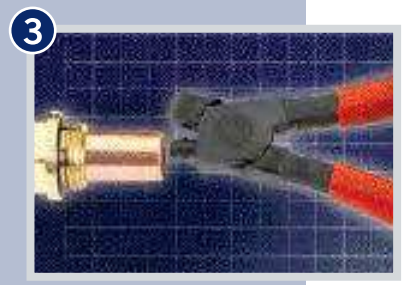
7 On completion of the pressing operation an audible bleep will be heard; disengage the adaptor by depressing the jaw levers and remove the collar from the fitting. See below for 108mm fitting.

8 **108mm fitting**
Leave the press collar in place and attach the secondary adaptor as detailed in point 5, then repeat the pressing operation as described in steps 6 and 7. The fitting must go through two pressing operations to complete the 108mm joint.

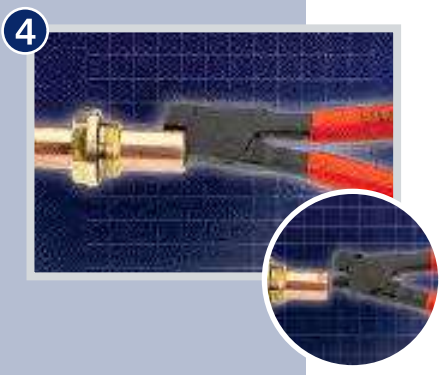
>B< Terminal Connector installation

1 Cut the tube using a tube cutter, de-burr tube end and, for soft copper, re-round.

2 Insert the tube through the >B< Terminal Connector. If installing on to soft copper do not force the >B< Terminal Connector onto any tube where ovality has occurred. The soft copper tube must be re-rounded before the >B< Terminal Connector is installed.



3 Taking the pliers, put the jaw with the pin inside the tube, ensuring that the tube is pushed tight up to the pliers.



4 Squeeze the pliers to form a dimple projecting outward from the tube. Turn the tool and repeat the dimpling operation so that the appropriate number of equi-spaced dimples are produced as follows:
up to 16mm - 3 dimples
18mm to 42mm - 4 dimples
54mm - 6 dimples

5 The face of the mating product should be examined prior to installation to ensure that there is no visible damage or burrs that may affect the seal.

6 Slide the >B< Terminal Connector to the end of the tube, tight against the dimples.

7 Screw into the mating product until finger tight, then with a suitable spanner tighten until metal to metal contact is achieved between the flange of the >B< Terminal Connector and the mating product. Then further tighten by 1/8 turn.

Tool requirements

Only >B< Terminal Connector pliers and either open-ended spanners or an adjustable spanner are required.

Standard pliers

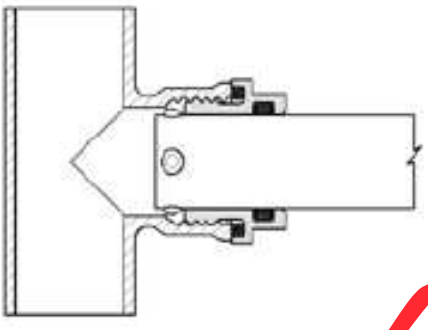
Standard pliers can be used to form the required number of retaining dimples in the following tube materials and sizes:
copper - 12mm to 28mm

Ratchet pliers

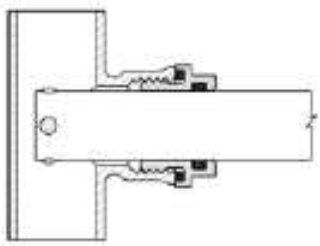
Ratchet pliers can be used to form the required number of retaining dimples in the following tube materials and sizes:
copper - 12mm to 54mm
stainless steel - 15mm to 54mm

Final installation positioning

Ensure tube retention dimples are engaged against >B< Press fitting.

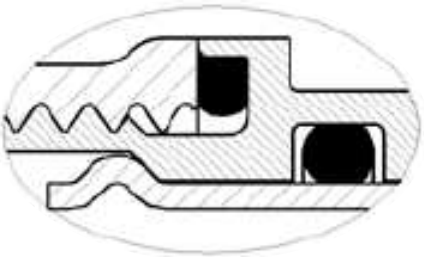


CORRECT - no flow restriction

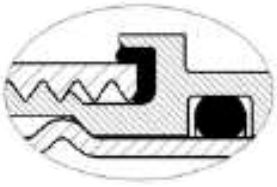


INCORRECT - potential flow restriction

Mating female part minimum diameters



CORRECT - metal flange contact of both parts



INCORRECT - female part screws inside flange

Testing and commissioning

Flushing of water installations

When the installation is complete, flushing with drinking water is essential before use to remove dust, debris and flux residues, in accordance with national regulations and guidelines.
When the piping system is not used immediately after commissioning, and has not been flushed at regular intervals (of up to thirty days, depending on the characteristics of the water), it must be disinfected before use.

Testing and commissioning drinking water installations

When the installation is complete, and after flushing, it should be slowly filled with water at ambient temperature, with the highest draw-off point open to allow air to be expelled from the system.
The installation should then be inspected for leaks and remedial action taken if necessary.

Water softening

Hard water may be softened to avoid excessive deposits of scale in hot water services. However, a degree of scale is necessary to form the protective patina on copper tube.
When a new copper tube installation has a water softener fitted from day one, it is good practice to run the system for approximately three months with the softener by-pass open to allow untreated water into the system, and allow the patina to form.

Testing and commissioning gas installations

Testing and commissioning of gas installation should be in accordance with the requirements specified in EN 1775 or national regulations.

Appendix 1

english

Standards and approvals reference guide

For each geographic market and application reference should be made to the appropriate international, national or industry standard or Approval body.

International

EN 1057	Copper and copper alloys - seamless, round copper tubes for water and gas in sanitary and heating applications.
pr EN 1254-7	Copper and copper alloy fittings with press ends for metallic tubes.
ISO 228-1	Pipe threads where pressure tight joints are not made on the threads. Dimensions, tolerances and designation (metric dimensions).
ISO7-1	Pipe threads where pressure tight joints are made on the threads (metric dimensions).
EN 10312	Welded stainless steel tubes for the conveyance of aqueous liquids including water for human consumption.
pr EN 14905	Copper and copper alloy - plumbing fittings - recommended practice for the installation of copper and copper alloy plumbing fittings.
EN 1775	Gas pipework for buildings - maximum operating pressures upto and including 5 bar - functional recommendations.

UK

BS 1306:1975	Specification for copper and copper alloy pressure piping systems.
BS 6700:1997	Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtileges.
WRAS	Water Regulations Advisory Scheme test codes for fittings for use with tube and pipe.

Germany

DIN 50930-6/2001	Corrosion of metals - corrosion of metallic materials under corrosion load by water inside of tubes, tanks and apparatus - Part 6: Influence of the composition of drinking water.
DVGW W541	Stainless steel and titan pipes for drinking water installation, requirements and testing.
DVGW VP614/2001	Permanent tube connections for metallic gas pipes; pressed joints.
DVGW GW 392/2002	Seamless drawn copper tubes for gas and drinking water installation, requirements and testing.
DVGW W270/1999	The growth of micro-organisms on materials intended for use in drinking water systems - examination and assessment.
DVGW W534/2004	Connecting pipe elements and pipe connections for pipes in the drinking water installation, requirements and testing.
DIN VDE 0100	Potential equalization

How to use this section

Benutzerhinweise
Comment utiliser cette section
Cómo usar esta sección
Come usare questa sezione
Jak korzystać z tego rozdziału

1

Use the colour-coded table headings to identify which metal(s) the product is available in:

Die Farbcodes in der Tabelle geben an, in welcher Materialausführung die einzelnen Produkte erhältlich sind:

Utiliser les en-têtes à code couleur des tableaux pour identifier dans quel métal le produit est disponible :

Utilice los códigos de colores en la tabla, para identificar en que materiales está disponible el producto:

Usare le intestazioni delle tabelle codificate a colori per identificare in che metallo(i) è disponibile il prodotto:

Barwne kody w nagłówkach tabeli informują, dla jakich metali jest dostępne oprzyrządowanie:

- Copper / Kupfer / Cuivre / Cobre / Rame / Miedź
- Red Brass / Rotguß / Bronze / Bronce / Bronzo / Brąz
- Stainless Steel / Edelstahl / Acier inoxidable / Acero inoxidable / Acciaio Inossidabile (Inox) / Stal nierdzewna
- Yellow Brass / Messing / Laiton / Latón / Ottone / Mosiądz
- >B< Press tools / >B< Presswerkzeuge / Outils >B< Press / Herramientas >B<Press / Attrezzature per >B< Press / Narzędzia montażowe do złączy >B< Press

2

The symbols in the tables represent key information on the product:

Die Zeichen in der Tabelle bezeichnen die wichtigsten Parameter der einzelnen Produkte:

Les symboles dans les tableaux représentent les informations clés concernant le produit :

Los símbolos de las tablas representan información clave sobre el producto:

I simboli nelle tabelle rappresentano informazioni chiave sul prodotto:

Symbole w tabelach oznaczają główne informacje na temat produktu:

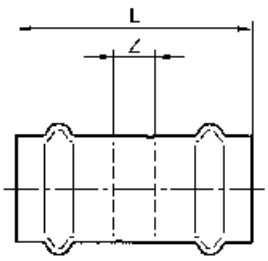
- ▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu
- ● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary
- ■ Flange diameter / Nennweite der flange / Diametre de la bride / Diámetro brida (Dia) / Diametro flangia (Dia) / średnica kołnierza
- † Pitch circle diameter / Teilkreisdurchmesser / Entraxe des trous de part et d'autre du centre / Diametro de conexión brida / Diametro del foro di fissaggio / średnica otworu
- ✤ Size/No. of holes / Bohrungsdurchmesser / Anzahl der Bohrungen / Diametre des trous / Diámetro / número de agujeros / Dimensione dei fori / Numero dei fori / Wielkość otworów
- ★ Length / Länge / Longueur / Longitud / Lunghezza / Długość
- ✷ Description / Beschreibung / Description / Descripción / Descrizione / Opis

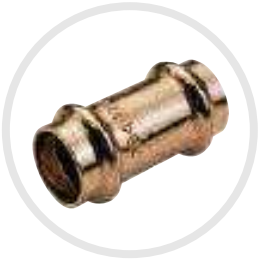
Quick reference guide

Material	Product	Product code	Size	Page
copper copper copper copper copper copper copper	90° street bend	P5001	12-54mm	152
	90° bend	P5002	12-54mm	151
	45° obtuse street elbow	P5040	12-54mm	153
	45° obtuse elbow	P5041	12-54mm	153
	Crossover coupler	P5085	15-22mm	150
	45° crossover coupler	P5086	12-22mm	150
	Equal tee	P5130	12-54mm	158
	Reduced tee - branch	P5130	14-54mm	160
	Reduced tee - end and branch	P5130	14-54mm	161
	Reduced tee - end	P5130	15-28mm	162
	Reduced tee - both ends	P5130	12-22mm	162
	Reduced straight coupler	P5240	14-54mm	143
	Fitting reducer	P5243	14-54mm	144
	Straight coupler	P5270	12-54mm	142
	Fitting stop end	P5290	12-54mm	163
	Fitting stop end	P5290	15-54mm	185
	Tube stop end	P5301	12-54mm	163
	90° street bend	PG5001	15-54mm	180
	90° bend	PG5002	15-54mm	179
	45° obtuse street elbow	PG5040	15-54mm	181
	45° obtuse elbow	PG5041	15-54mm	180
	Equal tee	PG5130	15-54mm	183
	Reduced tee - branch	PG5130	18-54mm	184
	Reduced tee - end and branch	PG5130	22mm	184
	Reduced tee - end	PG5130	22mm	184
	Fitting reducer	PG5243	18-54mm	177
	Straight coupler	PG5270	15-54mm	176
	Tube stop end	PG5301	15-54mm	185
stainless steel stainless steel stainless steel	90° bend with male thread	PS4001G	15-54mm	171
	90° bend with female thread	PS4002G	15-54mm	169
	90° elbow with female thread	PS4090G	15-35mm	172
	Tee with female threaded branch	PS4130G	15-54mm	173
	Female straight connector	PS4270G	15-54mm	168
	Male straight connector	PS4273G	15-54mm	168
	Slip coupler	PS4275	15-54mm	167
	Wallplate elbow with female thread	PS4471G	15-28mm	172
	90° street bend	PS5001	15-108mm	170
	90° bend	PS5002	15-108mm	169
	Male 90° street bend	PS5030	15-54mm	170
	45° obtuse street elbow	PS5040	15-108mm	171
	45° obtuse elbow	PS5041	15-108mm	171
	Crossover coupler (short)	PS5087	15-28mm	168
	Crossover coupler (long)	PS5088	15-28mm	169
	Equal tee	PS5130	15-108mm	173
	Reduced tee - branch	PS5130	18-108mm	174
	Fitting reducer	PS5243	18-108mm	167
	Straight coupler	PS5270	15-108mm	166
	PN16 flange (4/8 hole)	PS5270F	76.1-108mm	166
	Expansion joint	PS5500	15-54mm	175
	>B< Terminal Connector	Y7243G	15-54mm	175
yellow brass	90° bend with male thread (ISO 7 R)	P4001G	14-16mm	154
	90° elbow with female thread (ISO 7 Rp)	P4090G	14-16mm	155
	Tee with female threaded branch	P4130G	16mm	159
	Male straight connector (ISO 7 R)	P4243G	14-16mm	145
	Female straight connector (ISO 7 Rp)	P4270G	14-16mm	146
	>B< Terminal Connector	Y8243G Y8243V	12-28mm 12-22mm	165 165

Material	Product	Product code	Size	Page
red brass red brass red brass red brass red brass red brass red brass red brass red brass	Female union adaptor (ISO 7 Rp)	4332G	15-28mm	149
	Male union adaptor (ISO 7 R)	4333G	15-28mm	151
	90° bend with male thread (ISO 7 R)	P4001G	12-54mm	154
	45° obtuse street elbow	P4040	66.7-108mm	153
	45° obtuse elbow	P4041	66.7-108mm	153
	90° elbow	P4090	66.7-108mm	152
	90° elbow with female thread (ISO 7 Rp)	P4090G	12-54mm	155
	90° street elbow	P4092	66.7-108mm	152
	Wallplate tank connector elbow	P4093G	15mm	155
	90° bend with female thread (ISO 7 Rp) and threaded union	P4096G	12-54mm	154
	Reduced tee - branch	P4130	66.7-108mm	160
	Equal tee	P4130	66.7-108mm	158
	Tee with female threaded branch (ISO 7 Rp)	P4130G	12-108mm	159
	Tee with male threaded branch	P4132G	15-54mm	158
	PN16 flange (4/8 hole)	P4230B P4230D	66.7-108mm 76.1-108mm	164 164
	Fitting reducer	P4243	66.7-108mm	144
	Male straight connector (ISO 7 R)	P4243G	12-108mm	145
	Straight tank connector	P4244G	15mm	164
	Straight coupler	P4270	66.7-108mm	142
	Female straight connector (ISO 7 Rp)	P4270G	12-54mm	146
	Slip coupler	P4275	12-108mm	142
	Male adaptor with male thread (ISO 7 R)	P4280G	15-54mm	178
	Male adaptor with male thread (ISO 7 R)	P4280G	12-54mm	148
	Male adaptor with female thread (ISO Rp)	P4281G	15-54mm	179
	Male adaptor with female thread (ISO 7 Rp)	P4281G	12-54mm	148
	Tube stop end	P4301	66.7-108mm	163
	Straight connector with threaded union	P4330	12-54mm	149
	Female straight union connector	P4330G	12-54mm	147
	Male straight union connector	P4331G	12-54mm	147
	Connector with flat sealing face (ISO 7 Rp)	P4355	15-89mm	150
	Wallplate elbow (3 hole) with female thread (ISO 7 Rp)	P4471G	12-22mm	156
	Twin wallplate elbow with female thread (ISO 7 Rp) with stepped fixing bracket	P4976	15mm	157
	Twin wallplate elbow with female thread (ISO 7 Rp) with straight fixing bracket	P4977	15mm	157
	Union joint flat sealing washer	P4991	3/4 -2 3/8mm	156
	90° bend with male thread (ISO 7 R)	PG4001G	15-54mm	181
	90° elbow with female thread (ISO 7 Rp)	PG4090G	15-54mm	182
	Tee with female threaded branch (ISO 7 Rp)	PG4130G	15-54mm	183
	Male straight connector	PG4243G	15-54mm	177
	Female straight connector	PG4270G	15-54mm	178
	Slip coupler	PG4275	15-54mm	176
	Wallplate elbow with female thread	PG4471G	15-22mm	182
	>B< Expansion Coupler	Y3270	12-54mm	165
	>B< Terminal Connector	Y4243G	12-54mm	165
>B< Press tools >B< Press tools	Klauke UAP2 12 volt battery-hydraulic press machine in steel case (charger and spare battery included)	P77265	-	186
	Press jaws: Klauke UAP2, UNP2, UP2EL-14	P77267	12-54mm	188
	Press jaws set in steel case: Klauke UAP2, UNP2, UP2EL-14	P77267	42, 54mm	188
	Press jaws set in steel case: Klauke UAP2, UNP2, UP2EL-14	P77268	12,15,18,22, 28, 35mm	188
	Klauke UP2EL-14 Electro-mechanical press machine (230 volt) in steel case (jaws included - 15, 18, 22, 28)	P77280	-	187
	Klauke UNP2 Hydraulic press machine (230 volt or 110 volt) in steel case	P77281	-	186
	Klauke MAP1 Mini 9.6 volt battery-hydraulic press machine in plastic case (charger, spare battery and jaws included - 15, 22, 28mm)	P77282	-	186
	Press jaws: Klauke MAP1 Mini	P77282	-	187
	Novopress Pressmax ECO3 press machine (230 volt or 110 volt) in steel case	P77300	-	187
	Press collars: Novopress ECO3	P77300	66.7-108mm	189
	Press adaptors: Novopress ECO3	P77300	66.7-108mm	189
	Press collar and adaptor set: Novopress ECO3	P77300	66.7-108mm	189
	Ratchet pliers	Y77266	-	164
	Standard pliers	Y77267	-	164

Copper tube systems | **Sistemas con tubo de cobre**
Kupferrohr-Systeme | **Sistema con tubi di rame**
Syteme en tube cuivre | **Instalacja z rur miedzianych**



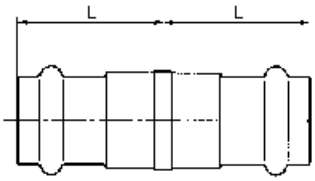


Straight coupler

Muffe | Manchon FF | Manguito HH | Manicotto con battuta F/F | Mufa

Product code ▲	Size ●	L	Z			
P5270 01200000	12	42	6			
P5270 01400000	14	48	4			
P5270 01500000	15	50	6			
P5270 01600000	16	49	5			
P5270 01800000	18	54	10			
P5270 02200000	22	56	10			
P5270 02800000	28	58	10			
P5270 03500000	35	62	10			
P5270 04200000	42	84	12			
P5270 05400000	54	92	12			

Product code ▲	Size ●	L	Z			
P4270 06400000	64	107	1			
P4270 06700000	66.7	107	1			
P4270 07600000	76.1	113	1			
P4270 08900000	88.9	113	1			
P4270 10800000	108	130	1			



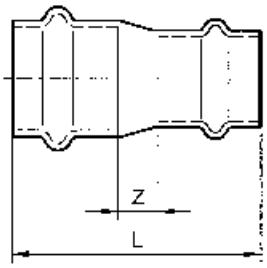
Slip coupler

Schiebemuffe | Manchon coulissant | Manguito deslizante | Manicotto passante F/F | Mufa - nasuwka (naprawcza)

Product code ▲	Size ●	L				
P4275 01200000	12	32				
P4275 01500000	15	40				
P4275 01800000	18	40				
P4275 02200000	22	42.5				
P4275 02800000	28	47.5				
P4275 03500000	35	52.5				
P4275 04200000	42	60				
P4275 05400000	54	67.5				
P4275 06400000	64	107				
P4275 06700000	66.7	107				
P4275 07600000	76.1	113				
P4275 08900000	88.9	113				
P4275 10800000	108	130				

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

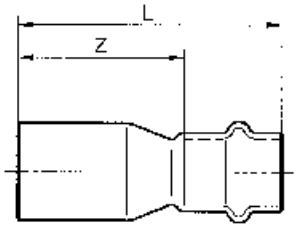
● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary



Reduced straight coupler

Reduziermuffe | Réduction FF | Manguito de reducción HH | Manicotto ridotto F/F | Mufa redukcyjna

Product code ▲	Size ●	L	Z			
P5240 01412000	14 x 12	45	5			
P5240 01512000	15 x 12	48	8			
P5240 01614000	16 x 14	47	3			
P5240 01815000	18 x 15	53	9			
P5240 02215000	22 x 15	55	10			
P5240 02218000	22 x 18	54	9			
P5240 02822000	28 x 22	58	11			
P5240 03528000	35 x 28	63	13			
P5240 04235000	42 x 35	77	15			
P5240 05442000	54 x 42	96	20			



Fitting reducer

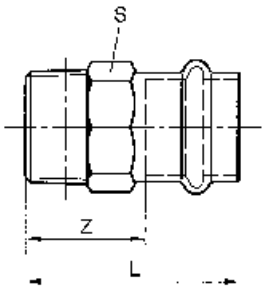
Reduzierstück | Réduction MF | Manguito de reducción MH | Manicotto ridotto M/F | łącznik redukcyjny

Product code ▲	Size ●	L	Z			
P5243 01412000	14 x 12	42.75	24.75			
P5243 01512000	15 x 12	50	32			
P5243 01612000	16 x 12	42.25	24.25			
P5243 01614000	16 x 14	46.5	24.5			
P5243 01812000	18 x 12	53	35			
P5243 01815000	18 x 15	54	32			
P5243 02215000	22 x 15	60	38			
P5243 02218000	22 x 18	57	35			
P5243 02815000	28 x 15	68	46			
P5243 02818000	28 x 18	63	41			
P5243 02822000	28 x 22	61	38			
P5243 03522000	35 x 22	71	48			
P5243 03528000	35 x 28	67	43			
P5243 04222000	42 x 22	89	66			
P5243 04228000	42 x 28	82	58			
P5243 04235000	42 x 35	79	53			
P5243 05435000	54 x 35	95	69			
P5243 05442000	54 x 42	99	63			

Product code ▲	Size ●	L	Z		
P4243 06435000	64 x 35	136	119		
P4243 06442000	64 x 42	148	117		
P4243 06454000	64 x 54	148	112		
P4243 06728000	66.7 x 28	137	113		
P4243 06735000	66.7 x 35	137	111		
P4243 06742000	66.7 x 42	149	108		
P4243 06754000	66.7 x 54	149	103		
P4243 07664000	76.1 x 64	156	105		
P4243 07635000	76.1 x 35	137	109		
P4243 07642000	76.1 x 42	150	109		
P4243 07654000	76.1 x 54	150	104		
P4243 07667000	76.1 x 66.7	155	102		
P4243 08954000	88.9 x 54	157	111		
P4243 08976000	88.9 x 76.1	159	107		
P4243 08964000	88.9 x 64	163	111		
P4243 10854000	108 x 54	178	134		
P4243 10867000	108 x 66.7	183	130		
P4243 10876000	108 x 76.1	173	121		
P4243 10889000	108 x 88.9	173	121		

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary



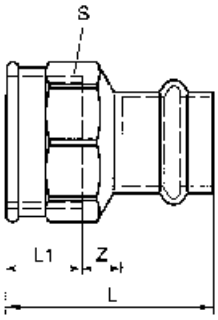
Male straight connector (ISO 7 R)

Übergangsnippel mit Außengewinde | Mamelon FM |
Manguito con rosca macho | Manicotto F/filetto M | Nypel przejsciowy (GZ)

Product code ▲	Size ●	L	S	Z	
P4243G01203000	12 x 3/8	35	17	17	
P4243G01204000	12 x 1/2	39	22	21	
P4243G01503000	15 x 3/8	39	19	15	
P4243G01504000	15 x 1/2	44	22	20	
P4243G01506000	15 x 3/4	50	28	26	
P4243G01804000	18 x 1/2	44	22	20	
P4243G01806000	18 x 3/4	48	28	24	
P4243G02204000	22 x 1/2	45	27	21	
P4243G02206000	22 x 3/4	50	28	26	
P4243G02208000	22 x 1	55	35	31	
P4243G02806000	28 x 3/4	52	33	28	
P4243G02808000	28 x 1	55	36	31	
P4243G02810000	28 x 1 1/4	62	42	38	
P4243G03508000	35 x 1	52	40	26	
P4243G03510000	35 x 1 1/4	61	43	35	
P4243G03512000	35 x 1 1/2	61	50	35	
P4243G04210000	42 x 1 1/4	68	48	27	
P4243G04212000	42 x 1 1/2	68	50	27	
P4243G05412000	54 x 1 1/2	77.5	68	31.5	
P4243G05416000	54 x 2	80	68	34	
P4243G06416000	64 x 2	95	75	39	
P4243G06420000	64 x 2 1/2	95	75	42	
P4243G06720000	66.7 x 2 1/2	95	77	42	
P4243G07624000	76.1 x 3	106	88.5	51	
P4243G08924000	88.9 x 3	107	92	56	
P4243G10832000	108 x 4	127	116	66	

Product code ▲	Size ●	L	S	Z	
P4243G01403000	14 x 3/8	40	18.5	16	
P4243G01404000	14 x 1/2	45	21.5	21	
P4243G01406000	14 x 3/4	49	27.5	25	
P4243G01604000	16 x 1/2	45	21.5	21	
P4243G01606000	16 x 3/4	49	27.5	25	

Copper tube systems | Sistemas con tubo de cobre
Kupferrohr-Systeme | Sistema con tubi di rame
Syteme en tube cuivre | Instalacja z rur miedzianych



Female straight connector (ISO 7 Rp)

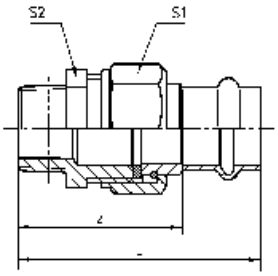
Übergangsmuffe mit Innengewinde | Manchon FF | Manguito con rosca hembra | Manicotto F/filetto F | Nypel przejsciowy (GW)

Product code ▲	Size ●	L	S	Z	L1
P4270G01203000	12 x 3/8	32	20.5	2.5	11.4
P4270G01204000	12 x 1/2	39	26	6	15
P4270G01503000	15 x 3/8	37	20.5	1.5	11.4
P4270G01504000	15 x 1/2	44	26	5	15
P4270G01506000	15 x 3/4	45	30.5	4.5	16.3
P4270G01804000	18 x 1/2	44	26	5	15
P4270G01806000	18 x 3/4	45	30.5	4.5	16.3
P4270G02204000	22 x 1/2	44	26	5	15
P4270G02206000	22 x 3/4	47	30.5	6.5	16.3
P4270G02208000	22 x 1	52	37.5	9	19.1
P4270G02806000	28 x 3/4	47	33	6.5	16.3
P4270G02808000	28 x 1	52	37.5	9	19.1
P4270G02810000	28 x 1 1/4	56	47	10.5	21.4
P4270G03508000	35 x 1	48	40	2	19.1
P4270G03510000	35 x 1 1/4	54	47	6.5	21.4
P4270G04210000	42 x 1 1/4	65	47	2.5	21.4
P4270G04212000	42 x 1 1/2	68	55	5.5	21.4
P4270G05416000	54 x 2	80	70	8.5	25.7

Product code ▲	Size ●	L	S	Z	L1
P4270G01403000	14 x 3/8	36	21.5	2	10
P4270G01404000	14 x 1/2	41	25.5	4	13
P4270G01406000	14 x 3/4	44.5	30.5	4.5	16
P4270G01604000	16 x 1/2	41	25.5	4	13
P4270G01606000	16 x 3/4	44.5	30.5	4.5	16

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

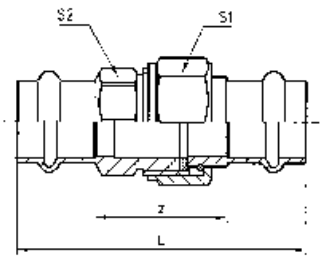
● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary



Male straight union connector (ISO 7 R)

Rohrverschraubung mit Außengewinde flach dichtend | Union droit FM | Unión roscada con rosca macho | Bocchettone F/filetto M, con Guarnizione | śrubunek z uszczelnieniem płaskim i gwintem (GZ)

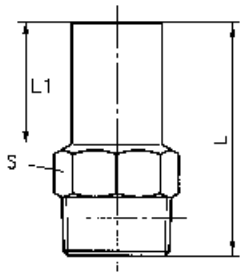
Product code ▲	Size ●	L	S1	S2	Z
P4331G01203000	12 x 3/8	55	29	27	38
P4331G01204000	12 x 1/2	58	29	27	41
P4331G01504000	15 x 1/2	65.5	29	27	41.5
P4331G01506000	15 x 3/4	69	29	27	45
P4331G01804000	18 x 1/2	65.5	29	27	41.5
P4331G01806000	18 x 3/4	69	29	28	45
P4331G02204000	22 x 1/2	73	36.5	33.5	49
P4331G02206000	22 x 3/4	74	36.5	33.5	50
P4331G02208000	22 x 1	77	36.5	33.5	53
P4331G02808000	28 x 1	80	45.5	44	56.5
P4331G03510000	35 x 1 1/4	86.5	52	50	59.5
P4331G04212000	42 x 1 1/2	94.5	58.5	55	53.5
P4331G05416000	54 x 2	117	75	72	71



Female straight union connector (ISO 7 Rp)

Rohrverschraubung mit Innengewinde flach dichtend | Union droit FF | Unión roscada con rosca hembra | Bocchettone F/filetto F, con Guarnizione | śrubunek z gwintem (GW) i uszczelnieniem płaskim

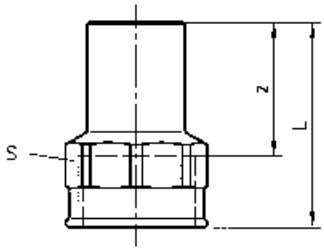
Product code ▲	Size ●	L	S1	S2	Z
P4330G01204000	12 x 1/2	55.5	29	27	23.5
P4330G01504000	15 x 1/2	63	29	27	24
P4330G01506000	15 x 3/4	66	29	30.5	25.5
P4330G01804000	18 x 1/2	63	29	27	24
P4330G01806000	18 x 3/4	66	29	30.5	25.5
P4330G02206000	22 x 3/4	71.5	36.5	36	31
P4330G02208000	22 x 1	81	36.5	40	34
P4330G02808000	28 x 1	77.5	45.5	42	30.5
P4330G03510000	35 x 1 1/4	82	52	50	30
P4330G04212000	42 x 1 1/2	89.5	58.5	55	23.5
P4330G05416000	54 x 2	95	75	70	20



Male adaptor with male thread (ISO 7 R)

Doppelnippel mit AG | Mamelon MM | Adaptador macho con rosca macho | Manicotto M/filetto M | Mufa przejściowa wtykowa z gwintem (GZ)

Product code ▲	Size ●	L	S	L1		
P4280G01204000	12 x 1/2	43	22	20		
P4280G01504000	15 x 1/2	49	22	26		
P4280G01804000	18 x 1/2	48	22	26		
P4280G01806000	18 x 3/4	54	28	26		
P4280G02204000	22 x 1/2	49	22	26		
P4280G02206000	22 x 3/4	53.5	28	26		
P4280G02808000	28 x 1	57.5	35	26		
P4280G03510000	35 x 1 1/4	59.5	43	28		
P4280G04212000	42 x 1 1/2	75	50	43		
P4280G05416000	54 x 2	96.5	68	48		



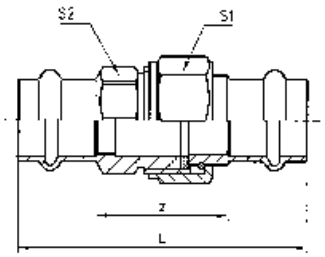
Male adaptor with female thread (ISO 7 Rp)

Übergangsmuffennippel mit IG | Manchon MF | Adaptador macho con rosca hembra | Manicotto M/filetto F | Mufa przejściowa wtykowa z gwintem (GW)

Product code ▲	Size ●	L	S	Z		
P4281G01204000	12 x 1/2	41	25	26		
P4281G01504000	15 x 1/2	46.5	25	31.5		
P4281G01804000	18 x 1/2	45.5	25	30.5		
P4281G01806000	18 x 3/4	49	30.5	33		
P4281G02204000	22 x 1/2	44	25	29		
P4281G02206000	22 x 3/4	48	30.5	32		
P4281G02806000	28 x 3/4	46	30.5	30		
P4281G02808000	28 x 1	51	37.5	32		
P4281G03508000	35 x 1	51	37.5	32		
P4281G03510000	35 x 1 1/4	55.5	50	34		
P4281G04212000	42 x 1 1/2	71	58	49.5		
P4281G05416000	54 x 2	80.5	70	55		

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

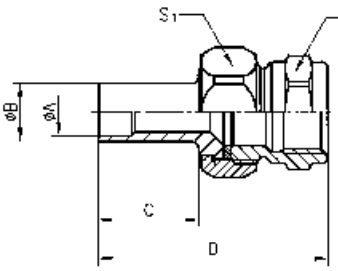
● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary



Straight connector with threaded union

Rohrverschraubung flach dichtend | Union droit FF | Unión roscada | Bocchettone F/F, con Guarnizione | śrubunek z uszczelnieniem płaskim

Product code ▲	Size ●	L	S1	S2	Z
P4330 01200000	12	65	29	25	31
P4330 01500000	15	78.5	29	25	30.5
P4330 01800000	18	78.5	29	25	30.5
P4330 02200000	22	89	36.5	31	41
P4330 02800000	28	96.5	45.5	39	48.5
P4330 03500000	35	99.5	52	45	45.5
P4330 04200000	42	119.5	58.5	50	37.5
P4330 05400000	54	143	75	70	51



Female union adaptor (ISO 7 Rp)

Verschraubung flach dichtend mit Innengewinde und Rohrstutzen | Adaptateur femelle union | Unión roscada con rosca hembra | Adattatore M/filetto F | śrubunek z uszczelnieniem płaskim (GW)

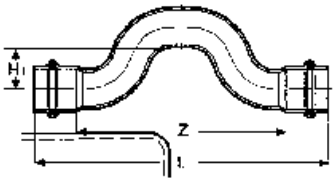
Product code ▲	Size ●	øA	øB	S1	S2	C	D
4332G015004000	15 x 1/2	12	15	30	26	26	59.5
4332G018004000	18 x 1/2	15	18	30	26	27	60.5
4332G022006000	22 x 3/4	18	22	37	32	30.5	68.5
4332G028008000	28 x 1	22	28	46	39	37	76.5

Drinking water, heating and air

Trinkwasser, Heizung und Luft

Eau potable, chauffage et air

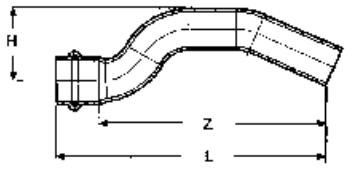
Copper tube systems | **Sistemas con tubo de cobre**
Kupferrohr-Systeme | **Sistema con tubi di rame**
Syteme en tube cuivre | **Instalacja z rur miedzianych**



Crossover coupler

Überspringbogen | Chapeau de gendarme FF | Salto puente HH | Sorpasso F/F | łącznik obejściowy dwukielichowy

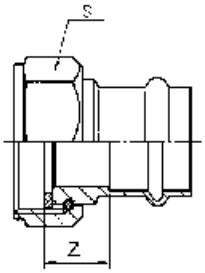
Product code ▲	Size ●	L	Z	H1		
P5085 01500000	15	134	90	20		
P5085 01800000	18	144	100	20		
P5085 02200000	22	161	115	23		



45° crossover coupler

Überspringbogen I/A | Chapeau de gendarme MF | Salto 45° MH | Sorpasso M/F | łącznik obejściowy jednokielichowy

Product code ▲	Size ●	L	Z	H		
P5086 01200000	12	111	82	40		
P5086 01500000	15	123	100	31		
P5086 01800000	18	123	100	28		
P5086 02200000	22	145	122	24		



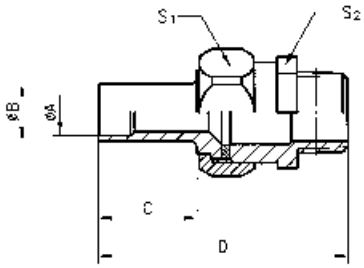
Connector with flat sealing face (ISO 7 Rp)

Übergangsadapter für INSY-UNI Freistromventile | Union FF | Racor loco recto | Codulo F, con dado folle | łącznik z uszczelnieniem płaskim

Product code ▲	Size ●	Z	S		
P4355 01506000	15 x G 3/4	10.5	29		
P4355 01806000	18 x G 3/4	10.5	29		
P4355 02208000	22 x G 1	15	36.5		
P4355 02810000	28 x G 1 1/4	19	45.5		
P4355 03512000	35 x G 1 1/2	16	52		
P4355 04214000	42 x G 1 3/4	15.5	58.5		
P4355 05419000	54 x G 2 3/8	17	75		
P4355 06422000	64 x 2 3/4	17	87		
P4355 07602400	76.1 x 3	22	98		
P4355 08902800	88.9 x 3 1/2	22	110		

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

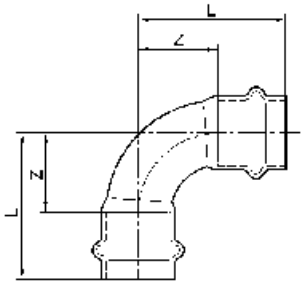
● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary



Male union adaptor (ISO 7 R)

Verschraubung flach dichtend mit Außengewinde und Rohrstutzen | Adapatateur union male | Unión roscada con rosca macho | Adattatore M/filetto M | śrubunek z uszczelnieniem płaskim (GZ)

Product code ▲	Size ●	øA	øB	S1	S2	C	D
4333G015004000	15 x 1/2	12	15	30	27	26	65.5
4333G018004000	18 x 1/2	15	18	30	27	27	66.5
4333G022006000	22 x 3/4	18	22	37	33.5	30.5	74.5
4333G028008000	28 x 1	22	28	46	44	37	83

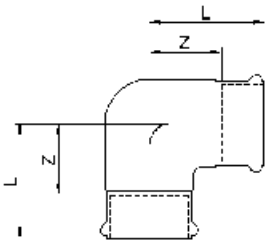


90° bend

Bogen 90° | Courbe 90° FF | Curva 90° HH | Curva a 90° F/F | łuk dwukielichowy 90°

Product code ▲	Size ●	L	Z			
P5002 01200000	12	33	15			
P5002 01400000	14	39.5	17.5			
P5002 01500000	15	40	18			
P5002 01600000	16	40.5	18.5			
P5002 01800000	18	44	22			
P5002 02200000	22	50	27			
P5002 02800000	28	58	34			
P5002 03500000	35	68	42			
P5002 04200000	42	87	51			
P5002 05400000	54	105	65			

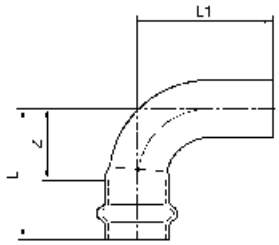
Copper tube systems | Sistemas con tubo de cobre
Kupferrohr-Systeme | Sistema con tubi di rame
Syteme en tube cuivre | Instalacja z rur miedzianych



90° elbow

Winkel 90° | Coude 90° | Codo 90° HH | Gomito a 90° F/F | Kolano 90°

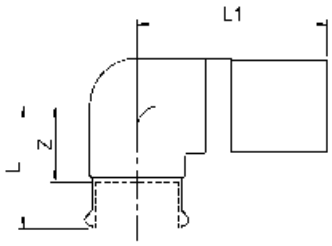
Product code ▲	Size ●	L	Z		
P4090 06400000	64	94	51		
P4090 06700000	66.7	94	51		
P4090 07600000	76.1	104	64		
P4090 08900000	88.9	123	72		
P4090 10800000	108	161	105		



90° street bend

Bogen 90° I/A | Courbe 90° MF | Curva 90° MH | Curva a 90° M/F | łuk jednokielichowy 90°

Product code ▲	Size ●	L	L1	Z	
P5001 01200000	12	33	35	15	
P5001 01400000	14	39.5	17.5	41	
P5001 01500000	15	40	42	18	
P5001 01600000	16	40.5	18.5	43	
P5001 01800000	18	44	46	22	
P5001 02200000	22	50	52	27	
P5001 02800000	28	58	60	34	
P5001 03500000	35	68	70	42	
P5001 04200000	42	87	89	51	
P5001 05400000	54	105	107	65	



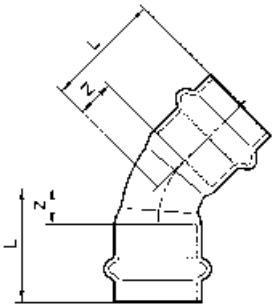
90° street elbow

Winkel 90° | Coude 90 MF | Codo 90° MH | Gomito a 90° M/F | Kolano 90° jednokielichowe

Product code ▲	Size ●	L1	L	Z	
P4092 06400000	64	133	94	51	
P4092 06700000	66.7	133	94	51	
P4092 07600000	76.1	143	104	64	
P4092 08900000	88.9	151	123	72	
P4092 10800000	108	200	161	105	

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary

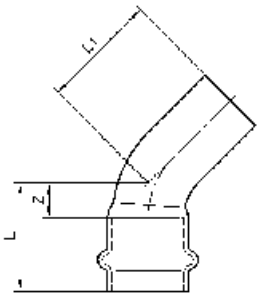


45° obtuse elbow

Bogen 45° | Courbe 45° FF | Curva 45° HH | Curva a 45° F/F | łuk dwukielichowy 45°

Product code ▲	Size ●	L	Z			
P5041 01200000	12	24	6			
P5041 01400000	14	29.5	7.5			
P5041 01500000	15	30	8			
P5041 01600000	16	30.5	8.5			
P5041 01800000	18	31	9			
P5041 02200000	22	34	11			
P5041 02800000	28	38	14			
P5041 03500000	35	44	18			
P5041 04200000	42	57	21			
P5041 05400000	54	67	27			

Product code ▲	Size ●	L	Z			
P4041 06400000	64	87	35			
P4041 06700000	66.7	87	35			
P4041 07600000	76.1	98	48			
P4041 08900000	88.9	103	53			
P4041 10800000	108	131	71			



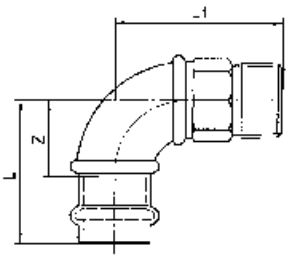
45° obtuse street elbow

Bogen 45° I/A | Courbe 45° MF | Curva 45° MH | Curva a 45° M/F | łuk jednokielichowy 45°

Product code ▲	Size ●	L	L1	Z		
P5040 01200000	12	24	26	6		
P5040 01400000	14	29.5	31.5	7.5		
P5040 01500000	15	30	32	8		
P5040 01600000	16	30.5	32.5	8.5		
P5040 01800000	18	31	33	9		
P5040 02200000	22	34	36	11		
P5040 02800000	28	38	40	14		
P5040 03500000	35	44	46	18		
P5040 04200000	42	57	59	21		
P5040 05400000	54	67	69	27		

Product code ▲	Size ●	L	L1	Z		
P4040 06400000	64	87	117	35		
P4040 06700000	66.7	87	117	35		
P4040 07600000	76.1	98	127	48		
P4040 08900000	88.9	103	132	53		
P4040 10800000	108	131	171	71		

Copper tube systems | Sistemas con tubo de cobre
Kupferrohr-Systeme | Sistema con tubi di rame
Syteme en tube cuivre | Instalacja z rur miedzianych

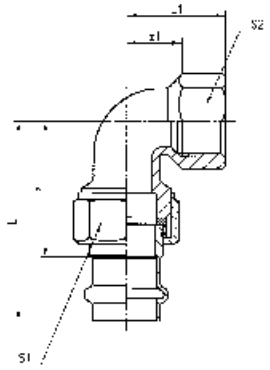


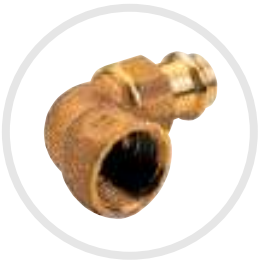
90° bend with male thread (ISO 7 R)

Einschraubbogen 90° mit Außengewinde | Courbe 90° FM | Curva 90° rosca macho | Curva a 90° F/filetto M | łuk 90° z jednostronnym gwintem (GZ)

Product code ▲	Size ●	L	L1	Z	S	
P4001G01203000	12 x 3/8	38	40	20	15	
P4001G01204000	12 x 1/2	37	44	19	17	
P4001G01503000	15 x 3/8	46	48	22	17	
P4001G01504000	15 x 1/2	45	48	21	21	
P4001G01804000	18 x 1/2	46	50	22	21	
P4001G01806000	18 x 3/4	47	56	23	27	
P4001G02206000	22 x 3/4	51	59	27	27	
P4001G02808000	28 x 1	58	72	34	36	
P4001G03510000	35 x 1 1/4	73	89	47	44	
P4001G04212000	42 x 1 1/2	93	97	52	52	
P4001G05416000	54 x 2	110	130	64	60	

Product code ▲	Size ●	L	L1	Z		
P4001G01403000	14 x 3/8	43.5	34	19.5		
P4001G01404000	14 x 1/2	43.5	37	19.5		
P4001G01604000	16 x 1/2	43.5	37	19.5		





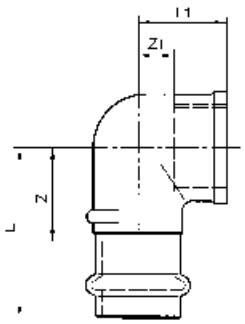
90° bend with female thread (ISO 7 Rp) and threaded union

Winkelverschraubung 90° mit Innengewinde flach dichtend | Coude union FF | Codo 90° con rosca hembra y unión roscada | Bocchettone 90° F/filetto F | 90° z uszczelnieniem płaskim (GW)

Product code ▲	Size ●	L	L1	S1	S2	Z	Z1
P4096G01204000	12 x 1/2	56	33	29	27	39	18
P4096G01504000	15 x 1/2	63.5	33	29	27	39.5	18
P4096G01804000	18 x 1/2	74	33	29	27	50	18
P4096G01806000	18 x 3/4	74	37	36.5	33	50	20.5
P4096G02206000	22 x 3/4	75	37	36.5	33	51	20.5
P4096G02208000	22 x 1	77	45	36.5	40	53	26
P4096G02808000	28 x 1	83	47	45.5	40	59	28
P4096G03510000	35 x 1 1/4	87	55	52	48	60	33.5
P4096G04212000	42 x 1 1/2	101.5	59	58.5	55	60.5	37.5
P4096G05416000	54 x 2	125	68	75	69	79	42.5

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary

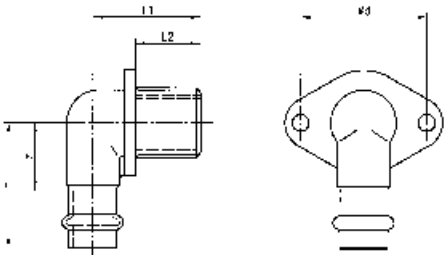


90° elbow with female thread (ISO 7 Rp)

Winkel 90° mit Innengewinde | Coude 90° FF | Codo 90° rosca hembra | Gomito 90° F/filettoF | Kolano 90° (GW)

Product code ▲	Size ●	L	L_1	Z	Z_1	
P4090G01203000	12 x 3/8	39	19	21	7.5	
P4090G01204000	12 x 1/2	40	22.5	22	7.5	
P4090G01503000	15 x 3/8	46	19	22	7.5	
P4090G01504000	15 x 1/2	40	22.5	22	7.5	
P4090G01506000	15 x 3/4	50	26	26	9.5	
P4090G01804000	18 x 1/2	45	23.5	21	8.5	
P4090G01806000	18 x 3/4	50	26	26	9.5	
P4090G02204000	22 x 1/2	51	26	27	11	
P4090G02206000	22 x 3/4	52	27	28	10.5	
P4090G02208000	22 x 1	59	30	35	11	
P4090G02808000	28 x 1	59	34	35	15	
P4090G03510000	35 x 1 1/4	66	40	40	18.5	
P4090G04212000	42 x 1 1/2	77	44	36	22.5	
P4090G05416000	54 x 2	98	55	53	29.5	

Product code ▲	Size ●	L	L_1	Z	Z_1	
P4090G01403000	14 x 3/8	43.5	22	19.5	12	
P4090G01404000	14 x 1/2	43.5	22	19.5	9	
P4090G01604000	16 x 1/2	43.5	22	19.5	9	
P4090G01606000	16 x 3/4	46.5	26	22.5	10	

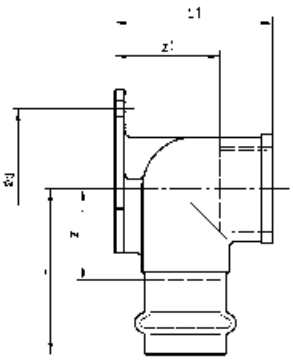


Wallplate tank connector elbow

Wanddurchführung winklig | Passage de cloison coudé à 90° | Codo 90° pasamuros | Gomito 90° F/filetto M (passamuro) | łuk do monażu na zbiornikach

Product code ▲	Size ●	L	L_1	L_2	Z	ød
P4093G01504025	15 x 1/2IG x 3/4AG x 25	48	41	25	24	48
P4093G01504035	15 x 1/2IG x 3/4AG x 35	48	51	35	24	48

Copper tube systems | Sistemas con tubo de cobre
Kupferrohr-Systeme | Sistema con tubi di rame
Syteme en tube cuivre | Instalacja z rur miedzianych



Wallplate elbow (3 hole) with female thread (ISO 7 Rp)

Deckenwinkel mit 3 Lochflansch | Coude applique FF 3 attaches | Codo de fijación (3 agujeros) con rosca hembra | Gomito a 90° F/filetto F, con flangia a 3 fori di fissaggio | Kolano z 3 łapami i gwintem (GW)

Product code ▲	Size ●	L	L1	ød	Z	Z1	
P4471G01204000	12 x 1/2	40	34.5	40	22	19.5	
P4471G01404000	14 x 1/2	43.5	34.5	35	19.5	21.5	
P4471G01504000	15 x 1/2	46	34	40	22	21	
P4471G01604000	16 x 1/2	43.5	34.5	35	19.5	21.5	
P4471G01804000	18 x 1/2	45	37.5	40	21	22.5	
P4471G02206000	22 x 3/4	52	49	50	28	32.5	

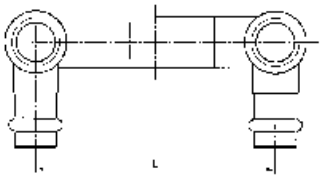
Union joint flat sealing washer

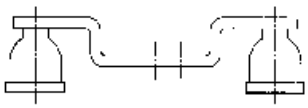
Dichtung für Rotgussverschraubung >B< Press | Rondelle pour raccord union | Junta | Guarnizione piatta per Bocchettoni e Codulo F, con dado folle | Uczczelka >B<Press do łączników z brązu

Product code ▲	Size ●				
P4991 00600000	3/4				
P4991 00800000	1				
P4991 01000000	1 1/4				
P4991 01200000	1 1/2				
P4991 01400000	1 3/4				
P4991 01900000	2 3/8				

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary

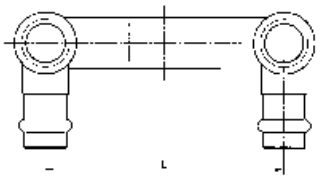


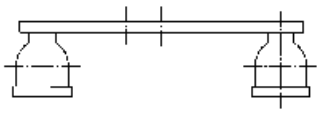


Twin wallplate elbow with female thread (ISO 7 Rp) with stepped fixing bracket

Montageeinheit gekröpft | Unité de montage décalé | Unidad de montaje con doble codo de fijación rosca hembra | Blocco di montaggio sagomato con n°2 gomiti a 90° F/filetto F | Listwa do baterii 150 mm (gięta)

Product code ▲	Size ●	L			
P4976 01504150	15 x 1/2 x 150	150			





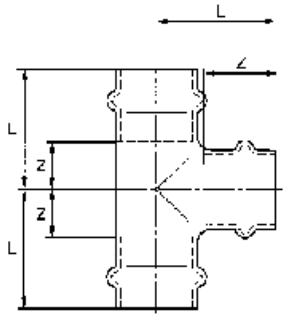
Twin wallplate elbow with female thread (ISO 7 Rp) with straight fixing bracket

Montageeinheit gerade | Unité de montage droite | Unidad de montaje recta con doble codo de fijación rosca hembra | Blocco di montaggio sagomato con n°2 gomiti a 90° F/filetto F | Listwa do baterii płaska 150 mm

Product code ▲	Size ●	L			
P4977 01504150	15 x 1/2 x 150	150			

Copper tube systems
Kupferrohr-Systeme
Syteme en tube cuivre

Sistemas con tubo de cobre
Sistema con tubi di rame
Instalacja z rur miedzianych

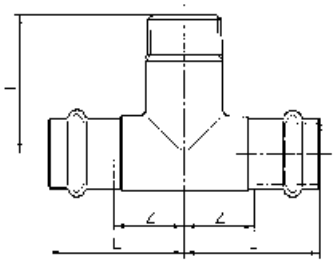


Equal tee

T-Stück | Té réduit | Te HHH | Tee F/F/F | Trójnik równoprzelotowy

Product code ▲	Size ●	L	Z			
P5130 01212012	12	38	18			
P5130 01414014	14	40	18			
P5130 01515015	15	41	19			
P5130 01616016	16	41	19			
P5130 01818018	18	42	17			
P5130 02222022	22	45	20			
P5130 02828028	28	48	24			
P5130 03535035	35	52	26			
P5130 04242042	42	65	29			
P5130 05454054	54	75	35			

Product code ▲	Size ●	L	Z			
P4130 06464064	64	104	51			
P4130 06767067	66.7	104	51			
P4130 07676076	76.1	114	52			
P4130 08989089	88.9	122	71			
P4130 108108108	108	161	101			



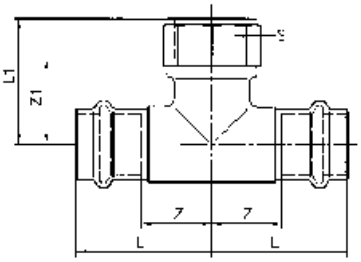
Tee with male threaded branch (ISO 7 R)

T-Stück mit Außengewinde | Té réduit | Te con rosca macho | Tee F/F/filetto M | Trójnik z gwintem (GZ)

Product code ▲	Size ●	L	L_1	Z	
P4132G01504015	15 x 1/2 x 15	45	40	21	
P4132G01806018	18 x 3/4 x 18	45	40	21	
P4132G02206022	22 x 3/4 x 22	48.5	50	24.5	
P4132G02806028	28 x 3/4 x 28	50	45	26	
P4132G03506035	35 x 3/4 x 35	50	50	24	
P4132G04206042	42 x 3/4 x 42	55	50	14	
P4132G05408054	54 x 1 x 54	69	64	23	
P4132G05410054	54 x 1 1/4 x 54	72	66	27	

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary



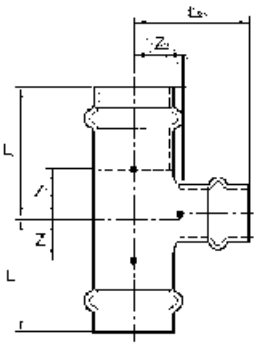
Tee with female threaded branch (ISO 7 Rp)

T-Stück mit Innengewinde | Té réduit | Te con rosca hembra | Tee F/F/filetto F | Trójnik z gwintem (GW)

Product code ▲	Size ●	L	L1	Z	Z1	S
P4130G01204012	12 x 1/2 x 12	40	20	22	35	26
P4130G01503015	15 x 3/8 x 15	42.5	23.5	18.5	35	22
P4130G01504015	15 x 1/2 x 15	45	23	21	38	26
P4130G01804018	18 x 1/2 x 18	45	25	21	40	26
P4130G02204022	22 x 1/2 x 22	48.5	27	24.5	42	26
P4130G02206022	22 x 3/4 x 22	48.5	28.5	24.5	45	32
P4130G02804028	28 x 1/2 x 28	48.5	30	24.5	45	26
P4130G02806028	28 x 3/4 x 28	52.5	33.5	28.5	50	32
P4130G03504035	35 x 1/2 x 35	50	33	24	48	26
P4130G04204042	42 x 1/2 x 42	55	35	14	50	26
P4130G05404054	54 x 1/2 x 54	66	40	20	55	26
P4130G06406064	64 x 3/4 x 64	84	43	30	58	N/A
P4130G06416064	64 x 2 x 64	95	42	42	66	N/A
P4130G06706067	66.7 x 3/4 x 66.7	84	43	30	58	N/A
P4130G06716067	66.7 x 2 x 66.7	95	42	42	66	N/A
P4130G07606076	76.1 x 3/4 x 76.1	93	58	43	41.5	N/A
P4130G07616076	76.1 x 2 x 76.1	105	66	42	54	N/A
P4130G08906089	88.9 x 3/4 x 88.9	97	64	49	45	N/A
P4130G08916089	88.9 x 2 x 88.9	105	73	49	57	N/A
P4130G10806108	108 x 3/4 x 108	120	77	62	60	N/A
P4130G10816108	108 x 2 x 108	135	85	62	75	N/A

Product code ▲	Size ●	L	L1	Z	Z1	
P4130G01604016	16 x 1/2 x 16	43.5	22	19.5	9	

Copper tube systems | Sistemas con tubo de cobre
Kupferrohr-Systeme | Sistema con tubi di rame
Syteme en tube cuivre | Instalacja z rur miedzianych



Reduced tee - branch

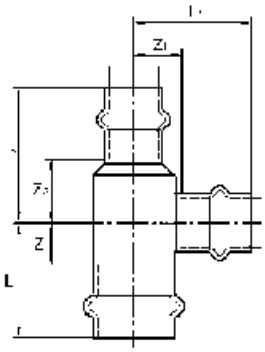
T-Stück reduziert | Té réduit | Te reducida HHH (en boca central) | Tee ridotto F/F/F (in derivazione) | Trójnik redukcyjny

Product code ▲	Size ●	L	Z	L_2	Z_2
P5130 01412014	14 x 12 x 14	38.5	16.5	37.5	19.5
P5130 01512015	15 x 12 x 15	39	17	29	11
P5130 01612016	16 x 12 x 16	38.5	16.5	39	21
P5130 01614016	16 x 14 x 16	41	19	41	19
P5130 01812018	18 x 12 x 18	32	10	31	13
P5130 01815018	18 x 15 x 18	41	15	35	13
P5130 02212022	22 x 12 x 22	33	10	33	15
P5130 02215022	22 x 15 x 22	41	19	37	15
P5130 02218022	22 x 18 x 22	42	17	37	16
P5130 02815028	28 x 15 x 28	41	17	42	20
P5130 02818028	28 x 18 x 28	42	18	41	17
P5130 02822028	28 x 22 x 28	45	19	42	19
P5130 03515035	35 x 15 x 35	37	11	44	22
P5130 03518035	35 x 18 x 35	39	13	44	22
P5130 03522035	35 x 22 x 35	41	15	45	22
P5130 03528035	35 x 28 x 35	45	19	46	22
P5130 04222042	42 x 22 x 42	51	15	52	29
P5130 04228042	42 x 28 x 42	55	19	53	29
P5130 04235042	42 x 35 x 42	58	22	55	29
P5130 05422054	54 x 22 x 54	55	15	58	35
P5130 05428054	54 x 28 x 54	59	19	59	35
P5130 05435054	54 x 35 x 54	62	22	61	35
P5130 05442054	54 x 42 x 54	69	29	71	35

Product code ▲	Size ●	L	Z	L_2	Z_2
P4130 06435064	64 x 35 x 64	94	41	90	64
P4130 06442064	64 x 42 x 64	94	41	103	61
P4130 06454064	64 x 54 x 64	95	42	107	61
P4130 06728067	66.7 x 28 x 66.7	98	41	85	59
P4130 06735067	66.7 x 35 x 66.7	94	41	90	64
P4130 06742067	66.7 x 42 x 66.7	94	41	103	61
P4130 06754067	66.7 x 54 x 66.7	95	42	107	61
P4130 07664076	76 x 64 x 76	104	51	104	51
P4130 07628076	76.1 x 28 x 76.1	94	53	85	59
P4130 07635076	76.1 x 35 x 76.1	94	53	90	64
P4130 07642076	76.1 x 42 x 76.1	94	53	103	61
P4130 07654076	76.1 x 54 x 76.1	95	54	107	61
P4130 08954089	88.9 x 54 x 88.9	118	67	114	68
P4130 08976089	88.9 x 76.1 x 88.9	122	72	129	59
P4130 08964089	88.9 x 64 x 88.9	122	72	129	59
P4130 10854108	108 x 54 x 108	135	75	127	81
P4130 10864108	108 x 64 x 108	143	83	133	81
P4130 10876108	108 x 76.1 x 108	143	83	133	81
P4130 10889108	108 x 88.9 x 108	155	95	142	92

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

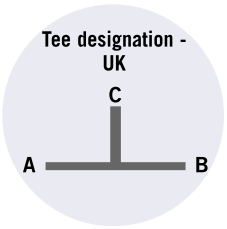
● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary

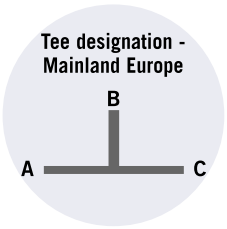


Reduced tee - end and branch

T-Stück reduziert | Té réduit | Te reducida HHH (en boca lateral y central) | Tee ridotto F/F/F (in derivazione e da una estremità) | Trójnik redukcyjny

Product code ▲	Size ●	L	Z	L_1	Z_1	L_2	Z_2
P5130 01412012	14 x 12 x 12	38.5	16.5	37.5	19.5	37.5	19.5
P5130 01512012	15 x 12 x 12	32	10	29	11	32	14
P5130 01614014	16 x 14 x 14	41	19	41	19	41	19
P5130 01815015	18 x 15 x 15	41	18	35	13	41	18
P5130 02215015	22 x 15 x 15	34	11	37	15	40	18
P5130 02215018	22 x 15 x 18	34	11	37	15	38	16
P5130 02218015	22 x 18 x 15	36	13	37	15	42	20
P5130 02218018	22 x 18 x 18	36	13	37	15	40	18
P5130 02815022	28 x 15 x 22	35	11	41	19	40	17
P5130 02818022	28 x 18 x 22	37	13	41	19	42	19
P5130 02822022	28 x 22 x 22	39	15	42	19	44	21
P5130 03522028	35 x 22 x 28	41	15	45	22	47	23
P5130 03528028	35 x 28 x 28	45	19	46	22	51	27
P5130 04235035	42 x 35 x 35	58	22	55	29	56	30
P5130 05442042	54 x 42 x 42	69	29	71	35	76	40





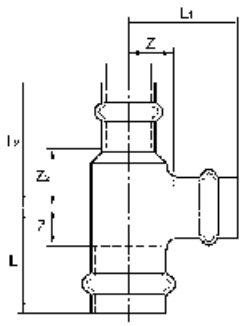
See page 11 for explanation of Tee designations.
Erklärung der Vezeichnung von T-Stücken siehe Seite 33.
Voir page 55 pour la désignation des tés.
Ver en página 77 la forma de designación de tes.
Vedere pag 99 per Identificazione dei raccordi a tee.
Oznaczenie wymiarów trójnika patrz strona 121.

Bezeichnung von T-Stücken in UK
Designations des té UK
Designación de las tes - UK
Designazione tee - UK
Trójnik - opis brytyjski

Bezeichnung von T-Stücken in Europa außer UK
Designation des té Europe continentale
Designación de las tes - Europa
Designazione tee - Europa
Trójnik - opis europejski

Drinking water, heating and air
Trinkwasser, Heizung und Luft
Eau potable, chauffage et air

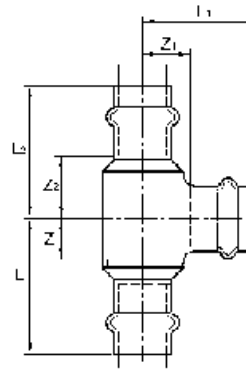
Copper tube systems | **Sistemas con tubo de cobre**
Kupferrohr-Systeme | **Sistema con tubi di rame**
Syteme en tube cuivre | **Instalacja z rur miedzianych**



Reduced tee - end

T-Stück reduziert | Té réduit | Te reducida HHH (en boca lateral) | Tee ridotto F/F/F (da una estremità) | Trójnik redukcyjny

Product code ▲	Size ●	L	Z	L1	Z1	L2	Z2
P5130 01515012	15 x 15 x 12	33	11	33	11	33	15
P5130 01616014	16 x 16 x 14	41	19	41	19	41	19
P5130 01818015	18 x 18 x 15	42	18	36	14	42	17
P5130 02222015	22 x 22 x 15	45	23	39	16	45	21
P5130 02222018	22 x 22 x 18	38	15	38	15	42	20
P5130 02828015	28 x 28 x 15	43	19	43	19	51	29
P5130 02828018	28 x 28 x 18	43	19	43	19	49	27
P5130 02828022	28 x 28 x 22	43	19	43	19	48	25

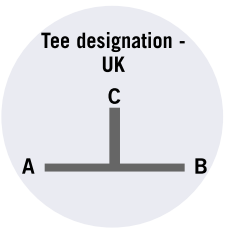


Reduced tee - both ends

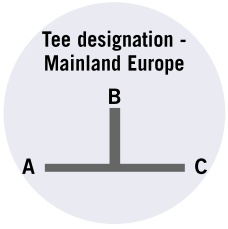
T-stück reduziert | Té réduit | Te reducida HHH (en ambos laterales) | Tee ridotto F/F/F (da entrambe le estremità) | Trójnik redukcyjny

Product code ▲	Size ●	L	Z	L1	Z1	L2	Z2
P5130 01215012	12 x 15 x 12	32	14	32	10	32	14
P5130 01518015	15 x 18 x 15	38	16	33	11	38	16
P5130 01522015	15 x 22 x 15	41	19	34	11	41	19
P5130 01822018	18 x 22 x 18	40	18	36	13	40	18
P5130 02228022	22 x 28 x 22	45	22	39	15	45	22

See page 11 for explanation of Tee designations.
Erklärung der Vezeichnung von T-Stücken siehe Seite 33.
Voir page 55 pour la désignation des tés.
Ver en página 77 la forma de designación de tes.
Vedere pag 99 per Identificazione dei raccordi a tee.
Oznaczenie wymiarów trójnika patrz strona 121.



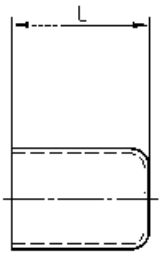
Bezeichnung von T-Stücken in UK
Designations des té UK
Designación de las tes - UK
Designazione tee - UK
Trójnik - opis brytyjski



Bezeichnung von T-Stücken in Europa außer UK
Designation des té Europe continentale
Designación de las tes - Europa
Designazione tee - Europa
Trójnik - opis europejski

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

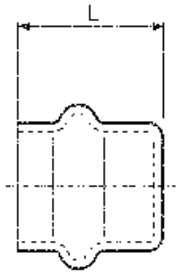
● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary



Fitting stop end

Stopfen | Bouchon M | Tapón | Tappo di chiusura M | Korek

Product code ▲	Size ●	L				
P5290 01200000	12	25				
P5290 01500000	15	29				
P5290 01800000	18	29				
P5290 02200000	22	30				
P5290 02800000	28	31				
P5290 03500000	35	34				
P5290 04200000	42	45				
P5290 05400000	54	49				



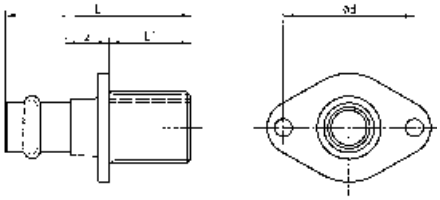
Tube stop end

Kappe | Bouchon F | Tapón | Tappo di chiusura F | Zaślepka

Product code ▲	Size ●	L				
P5301 01200000	12	23				
P5301 01400000	14	27				
P5301 01500000	15	27				
P5301 01600000	16	27				
P5301 01800000	18	27				
P5301 02200000	22	28				
P5301 02800000	28	29				
P5301 03500000	35	32				
P5301 04200000	42	42				
P5301 05400000	54	46				

Product code ▲	Size ●	L				
P4301 06400000	64	46.8				
P4301 06700000	66.7	46.8				
P4301 07600000	76.1	52.1				
P4301 08900000	88.9	52.2				
P4301 10800000	108	62.6				

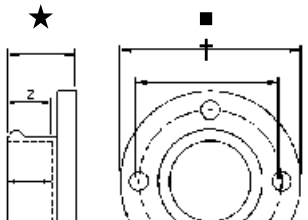
Copper tube systems | **Sistemas con tubo de cobre**
Kupferrohr-Systeme | **Sistema con tubi di rame**
Syteme en tube cuivre | **Instalacja z rur miedzianych**



Straight tank connector

Wanddurchführung gerade | Traversée de cloison à 90° | Manguito pasamuros recto | Manicotto F/filetto M (passamuro) | Przejście przez ściankę

Product code ▲	Size ●	L	Z	L1	ød
P4244G01504030	15 x 1/2IG x 3/4AG x 30	68	14	30	48



PN16 flange (4/8 hole)

Flansch PN16 | Bride PN16 | Brida PN16 | Manicotto con battuta F, con flangia a 4/8 fori di fissaggio | Kołnierz PN16

Product code ▲	Size ●	Flange dia ■	Pitch circle dia†	Size/No. of holes ✤	Length ★	Z
P4230B06720000	66.7	185	145	18/4	96	53
P4230B07620000	76.1	200	160	18/8	106	51.5
P4230B10811500	108	220	180	18/8	103	60

BS4504

Product code ▲	Size ●	Flange dia ■	Pitch circle dia†	Size/No. of holes ✤	Length ★	Z
P4230D06420000	64	185	145	18/4	106	53
P4230D07620000	76.1	185	145	18/4	106	51.5
P4230D08924000	88.9	200	160	18/8	108	86.5
P4230D10811500	108	220	180	18/8	103	60

DIN2566

>B< Tools - for use with >B< Terminal Connectors

>B< Markierzange | Pince >B< | Herramientas de uso con accesorios >B< para terminaciones roscadas | >B< pinze normali ed a cricchetto | Szczypce do >B<

Product code ▲	Description ✷
Y77266 0000000	Ratchet pliers / Markierzange Y77266S / Pince à cliquet / Alicates >B< de trinquete / Pinza a cricchetto / Szczyce z mechanizmem zapadkowym
Y77267 0000000	Standard pliers / Markierzange Y77267S / Pince standard / Alicates >B< estándar / Pinza normale / Standardowe szczypce

▲ Product code / Artikelnr. / Code article / Código / Codice articolo / Kod produktu

● Size / Abmessung / Dimension / Medida / Dimensione / Wymiary

■ Flange diameter / Nennweite der flange / Diametre de la bride / Diámetro brida (Dia) / Diametro flangia (Dia) / średnica kołnierza

† Pitch circle diameter / Teilkreisdurchmesser / Entraxe des trous de part et d'autre du centre / Diametro de conexión brida / Diametro del foro di fissaggio / średnica otworu

✤ Size/No. of holes / Bohrungsdurchmesser/Anzahl der Bohrungen / Diametre des trous / Diámetro/número de agujeros / Dimensione dei fori/Numero dei fori / Wielkość otworów

★ Length / Länge / Longueur / Longitud / Lunghezza / Długość

✸ Description / Beschreibung / Description / Descripción / Descrizione / Opis

NP Nickel plate / Vernickelt / Plaque de nickel / Niquelado / Nichelato / Niklowany

>B< Terminal Connector

>B< Übergangskupplung | >B< Terminal Connector | Accesorio >B< para terminaciones roscadas | >B< - Manicotto F/filetto M | łącznik przejściowy >B<

Product code ▲	Size ●				
Y8243G01203000	12 x 3/8				
Y8243G01204000	12 x 1/2				
Y8243G01504000	15 x 1/2				
Y8243G01806000	18 x 3/4				
Y8243G02206000	22 x 3/4				
Y8243G02208000	22 x 1				
Y8243G02808000	28 x 1				
Y8243V01204000	12 x 1/2 NP				
Y8243V01504000	15 x 1/2 NP				
Y8243V01806000	18 x 3/4 NP				
Y8243V02206000	22 x 3/4 NP				

Product code ▲	Size ●				
Y4243G01203000	12 x 3/8				
Y4243G01204000	12 x 1/2				
Y4243G01504000	15 x 1/2				
Y4243G01806000	18 x 3/4				
Y4243G02206000	22 x 3/4				
Y4243G02208000	22 x 1				
Y4243G02808000	28 x 1				
Y4243G03510000	35 x 1 1/4				
Y4243G04242000	42 x 1 1/2				
Y4243G05416000	54 x 2				

>B< Expansion Coupler

>B< Kompensator | Compensateur de dilatation pour >B< | Manguito de dilatación >B< | >B< Compensatore di dilatazione | Mufa kompensatorowa >B< z brązu

Product code ▲	Size ●				
Y3270 00400000	12				
Y3270 00400000	15				
Y3270 00600000	18				
Y3270 00600000	22				
Y3270 00800000	22				
Y3270 00800000	28				
Y3270 01000000	35				
Y3270 01200000	42				
Y3270 01600000	54				