bonfix®

PRESS RED COPPER

UP TO 54 MM PRESS-FITTED WITH M OR V PROFILE!

SUPERIOR PRICING & QUALITY | 20 YEAR WARRANTY | 12MM-108 MM

PRODUCT CATALOGUE

UK 014

PRODUCT CATALOGUE

Press red copper

○ ○ ○  **Straight coupling** 2 x press	○ ○ ○  **Straight coupling with abutment** 2 x press	○ ○ ○  **Reduced coupling** 2 x press	○ ○ ○  **Reduced push-in coupling** press x push-in	○ ○ ○  **Straight coupling** press x conical male
○ ○ ○  **Straight coupling** press x long female	○ ○  **Push-in coupling** conical male x push-in	○ ○  **Push-in coupling** Long female x push-in	○ ○ ○  **Stop end** 1 x press	○ ○ ○  **Elbow 45°** 2 x press
○ ○ ○  **Elbow 90°** 2 x press	○ ○ ○  **Push-in elbow 45°** Push-in x press	○ ○ ○  **Push-in elbow 90°** push-in x press	○ ○ ○  **Elbow coupling 90°** conical male x press	○ ○ ○  **Elbow coupling 90°** long female x press
○ ○ ○  **Tee** 3 x press	○ ○ ○  **Tee, reduced** 3 x press	○  **Tee, extended** 3 x press	○ ○ ○  **T-coupling** press x long female x press	○ ○  **Wall flange** long female x press

○ Available with black EPDM ring ○ Available with yellow HNBR ring ○ Available with red FKM ring

Wall flange
long female x press

Wall flange bracket
long female x press

Wall mounting set
complete

Backplate flange coupling
1 x press

Turn buckle/ swivel coupling
flat seal press x female

3-piece coupling
flat seal press x female

3-piece coupling
flat seal press x conical male

3-piece coupling
2 x press

3-piece coupling
long female x press

Cross-over elbow
2 x press

Cross-over elbow
press x push-in

2-piece coupling
press x female
short version

2-piece coupling
press x female
long version

2-piece coupling
press x long female

3-piece coupling
conical sealing
press x long female

3-piece coupling
Conical sealing, press x conical male

3-piece coupling
conical sealing 2 x press

O Available with black EPDM ring O Available with yellow HNBR ring O Available with red FKM ring

GENERAL

BONFIX red copper press fittings are premium quality couplings designed for press-fitting copper pipe installations. BONFIX press fittings applied with original BONFIX M and V profile pressing jaws and DIN EN 1057 compliant copper pipe form the complete BONFIX press system. BONFIX red copper press fittings for water pipe systems have been tested to satisfy DVGW-Worksheet W 534 and DVGW and KIWA certification standards. BONFIX red copper press fittings for gas systems are developed and tested to conform to DVGW and GASTEC certification standards. These fittings carry the DVGW and GASTEC certification seal and are marked yellow.

BONFIX red copper press fittings, with respect to structural form, base material and surface finish, conform to industry norm DIN EN 1254-1 "Copper and copper alloys; couplings; part 1: Capillary soldered couplings for copper pipe connections (soft and hard soldering).

BONFIX red copper press fittings for threaded coupling connections are manufactured from silicon bronze CW72R-DW compliant with DIN EN 1982. The thread complies with industry norm DIN 2999, section 1, EN 10226 and ISO 7/1.

BONFIX Red copper press fittings are manufactured with the greatest precision. Manufacturing tolerances are identical to those applied in the manufacture of BONFIX compressed fittings which have proven their superior quality in the field for a good many years.

The consistent high quality of BONFIX red copper press fittings owing to rigorous production process quality checks and external, objective inspections by the authorised bodies, as attested by our DVGW, KIWA and GASTEC seals of certification.

Every BONFIX red copper press fitting is permanently imprinted with the brand name BONFIX (depending on coupling size), nominal diameter and DVGW, KIWA and/or GASTEC symbol, for accurate product identification even after many years of use.

BONFIX LEAK BEFORE PRESSED (LBP) FUNCTION

BONFIX red copper steel press fittings are supplied with a Leak Before Pressed (LBP) function when used in combination with BONFIX pipes. Fittings supplied with an LBP function always leak water during the prescribed pressure test BEFORE they are pressed. This way it can be quickly established if there are any unfinished pressings. After having been correctly fitted and pressed, the press fittings are air and watertight.

SEALING ELEMENT FOR WATER APPLICATIONS

The BONFIX sealing ring (fibre) is manufactured of ethylene-propylene rubber (EPDM), a long-life polymer. This material satisfies KIWA requirements with respect to drinking water hygiene. To avoid mix-ups, these sealing rings are coloured black.

The exceptional chemical resistance of EPDM in different environments enables BONFIX red copper press fittings to be used in a wide range of situations. Where contact is anticipated with other liquids than drinking water, water contained in heating systems, or water containing similar properties, we recommend that you contact us for advice, prior to installation, via: PH: 088 - 460 07 94 or e-mail: verkoop@bonfix.nl. NOTE: EPDM is not resistant to grease. Contact with oil, fat or any other fatty or oily substance should be avoided.
For this reason, do not use the black sealing rings for gas fittings!

BONFIX red copper press fittings with black EPDM sealing ring			
Application range	**Size/pressure/marking**	**Sealing ring**	**Tools**
• Drinking water • Heating • Treated water • Cooling water • Dry compressed air • Industry • Sprinkler* • Fire extinguishing systems • Ship building	d = 12 – 108 mm maximum pressure 16 bar	EPDM Colour: black Max. permanent temperature: -30 °C to +120 °C	d = 12 – 54 mm Free choice of press tools, tongs or chains d = 64 – 108 mm press-fitted with M-profile only
Thread type: Connecting thread: R/Rp thread as per EN 10226, Fixing thread (lock nut): G tread as per ISO 228			

** Contact BONFIX for assembly / installation instructions.*

FIBRE SEALING RING FOR GAS APPLICATIONS

The yellow sealing ring is manufactured of hydrated acrylnitril butadiene rubber (HNBR), a long-life elastomer. These sealing rings comply with the applicable EN 549 and DIN 3535F norms and are coloured yellow to avoid product mixing.

The high chemical resistance of HNBR in different environments enables BONFIX red copper press fittings to be used in a wide range of applications. Where contact is anticipated with other gases or possibly fluids, we recommend that you contact us for advice via the following channels: PH: 088 - 460 07 94 or e-mail: sales@bonfix.eu.

Overview of BONFIX red copper press fittings with yellow HNBR ring			
Application range	**Dimension/pressure/ marking**	**Sealing ring**	**Tools**
• Natural gas • LPG	d = 12 - 54 mm maximum 16 bar for technical gases (not toxic, non-flammable) maximum 5 bar for flammable gases	HNBR Colour: yellow Max. permanent temperature: -20 °C to +70 °C	d = 12 – 54 mm Choice of pressing devices, jaws or chains
Thread type: Connecting thread: R/Rp thread as per EN 10226, Fixing thread (lock nut): G thread as per ISO 228			

BONFIX red copper press fittings with red FKM ring			
Application range	**Size/pressure/ marking**	**Sealing ring**	**Tools**
• Solar installations • Compressed air • Inert gases • Cooling water pipes • Low-pressure steam installations • Community* heating systems • Fuel oil • Diesel fuel	d = 12 – 64 mm maximum 16 bar	FKM Colour: red Max. permanent temperature: -20 °C to +200 °C	d = 12 – 54 mm Choice of press tools, tongs and chains d = 64 mm Press-fitted with M-profile only
Thread type: Connecting thread: R/Rp thread as per EN 10226, Fixing thread (lock nut): G thread as per ISO 228			

BENEFITS

- Can be pressed with M or V jaw profile (up to 54 mm). Larger diameters pressed with M profile only
- High-precision, passivated surfaces for maximum corrosion resistance and hygiene
- Leak detection
- Push & Stay function: pipe and fitting instantly secured, no risk of fitting sliding over pipe. Very practical solution, especially with vertical installations
- Quick, fire-safe installation. Fast, time-efficient and safe installation by cold pressing.
- Wide range: 12 mm - 108 mm.
- Always a strong, safe and secure copper pipe connection that meets industry norm EN 1057 or GW 392.

QUALITY MANAGEMENT SYSTEM: PRODUCTION MONITORING AND QUALITY GUARANTEE AS PER DIN EN ISO 9001/9002

The BONFIX quality assurance system is DIN EN ISO 9001 certified. This assures an effective, ongoing quality monitoring program from the base material through to delivery of the finished article to the end user. An important part of this process is committed to the traceability of each individual coupling, from the fitter all the way back to the cast used at the manufacturing plant. BONFIX uses the services of DIN EN ISO 9002/9001 certified suppliers only.

INSTALLATION PIPE

The BONFIX press system is a suitable connection system for fitting copper installation pipes, independent of manufacture, provided the copper pipe satisfies the industry norm EN 1057. Generally, pipes used in drinking water systems will be required to meet KIWA/GASTEC certification standards and satisfy the quality hallmark of the registered German Association for Quality Copper Piping. (Gütegemeinschaft Kupferrohr e.V.).

Any copper pipe that complies with EN 1057 industry standard can be used, provided the material satisfies the specifications set out below.

Copper pipe compliant with EN 1057 and used with BONFIX red copper press fittings

External diameter/wall thickness (mm)	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,5	2,0	2,5
12	■	■	■		■					
14			■		■					
15		■	■		■					
16					■					
18			■		■					
22				■	■	■	■	■		
28				■	■		■	■		
35					■		■	■		
42					■		■	■		
54							■	■	■	
64									■	
66,7							■		■	
76,1								■	■	
88,9									■	
108										■

National norms and guidelines must be adhered to as provided. Where dimensions vary from the above, please contact BONFIX prior to installation work via: sales@bonfix.eu or (PH) 088 46 00 794.

⚠ Note: for gas installations constructed of 35 mm and 42 mm pipe, a minimum wall thickness of 1.2 mm is required as per installation standard, NBN 51-003.

LENGTHWISE EXPANSION OF PIPES

Heat-conducting pipes expand at different rates, depending on the construction material and temperature variations. Where a pipe is constrained from expanding under thermal influence the resultant mechanical stresses may exceed specified tolerances, causing damage to the pipe (usually fractures due to metal fatigue). This can be prevented by allowing the pipe sufficient room to expand.

Base material	Heat-expansion coefficient α[10^{-6} K^{-1}] 20 bis 100 °C	Δℓ [mm] für ℓ_0 = 10m ΔT = 50 K
Stainless steel	16,5	8,3
Copper	16,6	8,3
Steel pipe, galvanised	12,0	6,0
Layered pipe	23,0	11,0

Heat expansion rate in various materials. $\Delta\ell = \alpha \cdot \ell_0 \cdot \Delta T$

To compensate for heat-induced variation in pipe length as specified above per construction material, the flexibility in the pipe system can be used. This is achieved by installing a sufficient number of soft-yielding bends at the corners in the pipe system. Holding brackets must be installed in such places as to allow for a sufficient rate of expansion.

Basic principle: always leave sufficient room for expansion between two fixed points.

If the pipe system does not have sufficient room to allow for expansion, a provision must be installed with the aid of special components, e.g. flexible metal compensators. Where sufficient space is available a U-pipe compensator can be installed.

With built-in installation work heat expansion must be freely allowed by wrapping pipes with a sufficiently thick chloride-free, elastic insulation material. Unless a fixed point has been prepared, ceiling ducts especially must be padded with care and precision.

ASSEMBLY INSTRUCTIONS

The minimum spacing and clearance with respect to walls, corners and wall recesses when installing pipes, can be determined on the basis of the sketches and tables below.

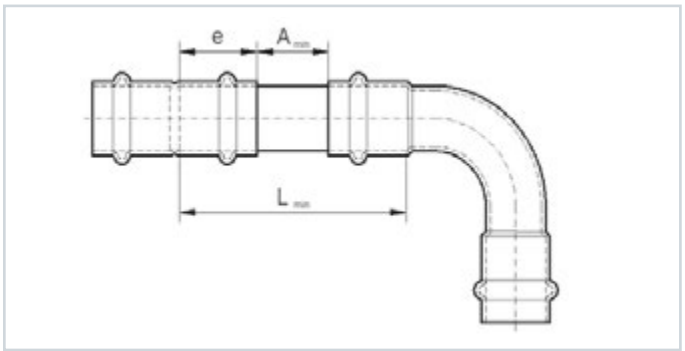

figure 1:
Minimum spacing between two press points (see next table)

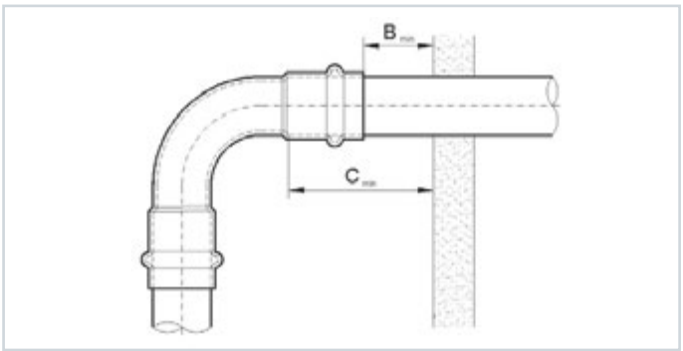

figure 2:
Minimum clearance from wall (see next table)

External pipe diameter in mm	Nominal width DN*	Inserting depth in mm e	Minimum distance in mm			
			A_{min}	L_{min}	B_{min}	C_{min}
15	12	25	10	60	60	85
18	15	25	10	60	60	85
22	20	28	10	66	60	88
28	25	29	10	68	60	89
35	32	30	20	70	60	90
42	40	38	20	96	60	98
54	50	44	30	108	60	103
76,1	65	50	30	130	60	110
88,9	80	56	30	142	60	116
108	100	70	30	170	60	130

table 1:
Minimum distance between two press points and from wall to press point

TOLERATED BEND RADIUS

Stainless steel, copper and steel galvanised pipe can be cold-bent within specified limits using the appropriate bending equipment. The bend radius measured in the neutral fibre of the elbow, for pipe systems constructed of rustproof steel and steel galvanised pipe, must not be less than r = 3.5 x d. For copper pipe a bend radius of at least r = 3 x d must be adhered to. Important: a cylindrical pipe section of sufficient length should be available for completing the pipe system after bending.
Where the dimensions provided in the table above are exceeded, the responsibility for a perfect bending result rests with the manufacturer of the bending device. Pipe systems can be cold-bent up to a maximum pipe diameter of 28mm.

ATTACHING THE PIPE

Pipe abutments serve two purposes:
1. sealing the pipe;
2. controlling pipe expansion due to temperature fluctuation.

There are two types of collars or attachment points:
1. fixed collars to fasten the pipe without movement;
2. sliding collars to allow for axial friction.

Determining the attachment points

A pipe with no change of direction or expansion compensation device must be attached at a single point only. With long pipes, we recommend installing the collar piece in the centre, to enable expansion in both directions. This is also a very effective solution with vertical pipes running through multiple floor levels, as it provides leeway for bi-directional expansion and reduces stress on the arms.
No fixed points (anchors) must be attached to fittings. Axially shifting collars can be used to avoid hazardous, fixed points.

Minimum spacing

For correct installation of pipes, minimum spacing and clearances must be observed, depending on various factors:

1. **Spacing between anchor points**
   Anchor points must be chosen at appropriate distances. Where anchor points are too closely spaced this may impede the ability of the pipe to absorb expansion. On the other hand, where anchor points are too far apart this may result in increased vibration and or excessive noise. The table below provides recommended spacing applicable in most situations:

Horizontal:

Pipe	12	15	18	22	28	35	42	54	64	66,7	76,1	88,9	108
Spacing (m)	1,0	1,2		1,8		2,4		2,7	3,0				

Vertical:

Pipe	12	15	18	22	28	35	42	54	64	66,7	76,1	88,9	108
Spacing (m)	1,5	1,8		2,4		3,0		3,6					

2. **Clearance for operating press tool**
   Sufficient clearing space must be allowed for operating the press tool and avoiding obstacles, depending on the size of the press tool. The table above (see previous page) provides instructions for minimum required clearing space.

3. **Spacing between fittings**
   Where two press fittings are installed too close together, it may be difficult to achieve a perfectly tight connection. The table (see previous page) shows the minimum required spacing between fittings.

INSTALLATION INSTRUCTIONS

- **Cutting the pipe**
  Cut the pipe at a perfectly square angle using a pipe cutter, cutting machine, or fine-toothed saw. Allow sufficient depth for the fitting to be fed into the connecting pipe.

- **Deburring and calibrating the pipe**
  When cut to the right length the pipe must be carefully deburred inside and out with an electric or hand-operate deburrer, calibrating device or file. It is essential to avoid damaging the sealing ring when the pipe is inserted into the fitting as this could result in a leaking connection. All burrs must be **removed absolutely.**

- **Checking position of sealing ring**
  Prior to installing the fittings the position of the sealing rings in their toroidal seats must be checked. If necessary, rinse with water to facilitate leading the pipe into the fitting. Also, both pipe and fitting must be checked for any metal or dirt particles. Remove any remaining metal or dirt particles.

- **Inserting pipe into fitting and marking**
  Lead pipe into fitting with a slight rotating movement until abutting the stop. To assure a perfect and secure connection mark the pipe with a felt pad at the point where it meets the fitting. This will tell you if the pipe has shifted before or after pressing. Templates are available for marking. Contact BONFIX via sales@bonfix.eu or (PH) 088 46 00 794.

⚠ *Important: oil, fat, glue or any such substance are not be used, in any circumstance!*

- **Fitting jaws in the press tool**
  The press machine must be fitted with either M-shaped or V-shaped jaws, corresponding with the diameter of the fitting to be installed. Refer to the manufacturer's instructions for use of the appliance and fitting directions.

- **Pressing large diameters using a clamp**
  When pressing large diameter pipe (67, 76.1, 88.9, 108 mm) we recommend securing the pipe in place with a clamp to make sure the correct positioning is achieved.

- **Pressing**
  For a successful, reliable press connection, make sure the insides of the jaws of the clamping device perfectly fit the toroidal grip of the fitting.

  The fitting is pressed by clenching the jaws of the device. This must occur in a single motion to avoid damaging the seal. **Do not** interrupt the press operation; finish the press in a smooth, single motion.

⚠ Press tools must be regularly cleaned and well maintained. The tools must be calibrated once yearly to qualify for warranty on the system.

CORROSION RESISTANCE

In water containing oxygen, the ability of copper pipe and fittings to resist corrosion is determined by the quality of the interior surface. To protect the material from leak-causing corrosion, industry norm DIN EN 1254-1 requires that the interior surface be free of harmful carbon film. Additionally, the above mentioned norm encourages compliance with maximum tolerated carbon content on the interior surface of a fitting, of 1 mg/dm². This value has been reduced –respectively halved- to 0.5 mg/dm² in the DVGW-Worksheet GW 8, "Capillary fittings made of copper pipe; requirements and testing provisions".

Red copper press fittings are currently being produced that contain even lower carbon values than specified in the aforementioned regulations, making them exceptionally effective in protecting the system from leak-causing corrosion. Moreover, thanks to cold clamping technology, the risk of corrosion in drinking water installations can be prevented. In particularly adverse situations, where temperatures exceed 400 °C (inevitable with brazing) the risk of corrosion is substantially higher (refer DIN 50930 norm and DVGW-Worksheet GW 2). Using the BONFIX press system such high temperatures and associated side effects are avoided.

NOTE

Due to ongoing technological development the diagrams, dimensions and references provided in this catalogue may change without notice and are therefore not binding to the manufacturer. We are not liable for any technical advice save for the recommendations provided in these instructions and specifically preclude liability with respect to other products.

THE RED COPPER PRESS FITTINGS

Material

Red copper press fittings in copper:

Cu-DHP, material number CW024A, compliant with industry norm DIN EN 12449.

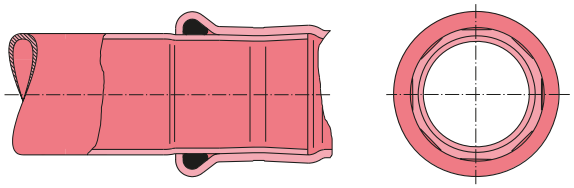

figure 1
Cross section of pressed connection using BONFIX red copper press fitting

INTERIOR SURFACE

Red copper press fittings in copper:

Carbon-free and free of oily residues, the BONFIX red cooper press fitting complies with industry norm DIN EN 1254-1 and the special regulations of DVGW-Worksheet GW 8.

CONNECTION TOLERANCES

The interior and exterior press fitting butts comply with the tolerances for soldered butts, as specified under industry norm DIN EN 1254-1 and special regulations of DVGW-Worksheet GW 8 (Copper) resp. GW 6 (Bronze).

WALL THICKNESS

Wall thickness of fittings compliant with table below:

Nominal diameter (mm)	Nominal wall thickness (mm)	Minimum wall thickness (mm)
12	1,3	1,0
15	1,5	1,1
18	1,5	1,1
22	1,5	1,2
28	1,5	1,2
35	1,6	1,5
42	1,6	1,5
54	1,6	1,5

table 1:
Wall thickness of red copper press fittings
(*) Required minimal wall thickness S-min applies to almost all parts of the fitting (excepting the bent section of an elbow drawn from copper pipe) and for all auxiliary components present in the chamber in which the sealing ring is placed.

IDENTIFYING RED COPPER PRESS FITTINGS

All fittings are distinctively identified by the following information:

1. Type name: e.g. elbow, Tee, reduced coupling, etc.. and/or article number as shown in the product catalogue.
2. Nominal diameter = external diameter of corresponding pipe or thread (threaded couplings).
3. Fittings with yellow sealing ring for gas pipe systems contain yellow marking on outside.
4. Fittings with red sealing ring for water pipe systems exposed to high temperatures (hot water systems, e.g. solar energy) carry a red notification mark «HT».
5. Fittings with black sealing ring for water pipe systems are marked blue.

Fittings attached to connections of identical diameter are identified by the common diameter.

Where reduced couplings are attached to connections of varying diameter the nominal diameter or thread gauge determines the identification sequence as shown in figure 2.

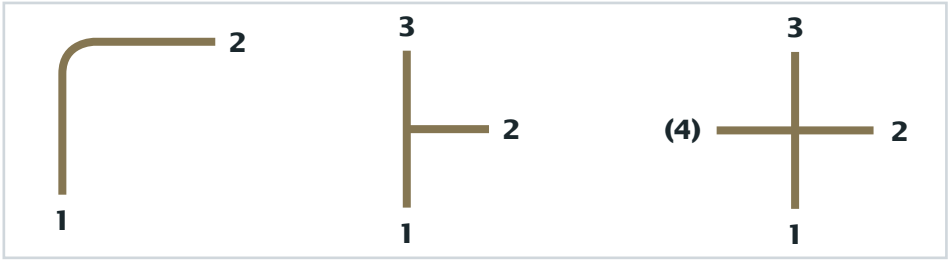

figure 2:
Diagram for identifying fittings

GENERAL REQUIREMENTS

Testing the connections
When the system has been installed it must be tested for leakages. Drinking water systems and hot water systems are routinely tested by running water through the system at a pressure not less than 1.5 x normal operational pressure. If no leaks are established during the test run, we recommend cleaning the pipes thoroughly before filling the system with water. Gas systems are tested by importing air or gas into the system at a minimum pressure of 10 bar.

Sound insulation
Pipes are capable of transferring sound and noise from a variety of sources (pumps, valves, etc.). For this reason, they must be insulated with an elastic material to prevent direct contact with collars, walls etc.

Heat insulation
Hot water pipe systems must be insulated as per regulations for energy efficiency of hot water installations. The insulation material as well protects from incidental physical contact.

Cold insulation
In order to prevent condensation and dripping, cold water pipes must be insulated also. Stainless steel systems must not be insulated with a material containing chloride compounds.

Frost protection
If the pipe system is exposed to the risk of freezing, the pipes must be wrapped with a sufficiently thick insulating material or protected using an anti-freeze agent to prevent leakage due to loose connections, swollen pipes and / or fractured pipes.

GUARANTEE
The use of original BONFIX press fittings together with an appropriate quality pipe and approved press tool are your guarantee of a long-life system, provided these technical instructions for design and constructing of the system are observed.

Damage and / or loss resulting from a material or manufacturing fault are fully recoverable under insurance.

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