



User and fitting instructions
SET MANUAL EXPANDER



AC-FIX
PLASTIC RING

2014/10

User instructions for set manual expander

General

- The tool must be used only for the purpose that it has been designed; this is, to repeatedly expand the PE-Xa pipe together with an AC-FIX plastic ring fitted to its outside, so that the pipe can be fitted onto the fitting nipple in order to achieve a sealed joint when the pipe and plastic ring narrow back.

Special instructions

- Apply only hand effort to the tool handles.
- Don't change the properties or form of the expanding tool.
- It is especially important not to change the shape or size of the cone by machining it or by altering its original properties (hardness, strength, etc.) by heating the tool or keeping it close to high-temperature sources.
- Use the tool only for its intended purpose. Don't expand other pipe types (including other plastic pipes) than PE-Xa pipe.
- Use the expanding tool correctly. Especially when screwing the expanding head right down onto the tool in order to achieve full expansion. Make sure that the expanding head jaws are introduced straight into the pipe.
- Use only correct tool components. Keep the pipe surfaces clean and without oil/grease.
- Keep good equilibrium when working. Don't use the tool to steady yourself.
- Use only official expanding heads for the tool.
- Regularly clean the cone of the expanding tool and the inside of the expanding head, also apply a thin coat of grease to the cone. **Use only grease supplied or recommended by us.** This is important to the duration of the tool and for reducing the friction, so the effort needed at the handles is less.

Safety instructions

- It must be easy to access to the connection point.
- Contact with live electrical points must be avoided.
- Children must be kept away from the work area.
- Use appropriate working clothes and shoes.
- The expanding tool must always be carried, used or put away with the expanding head fitted, never without it. This is intended to avoid:
 - * Injuring someone.
 - * Damaging the cone if the tool is dropped.
 - * Accumulation of dust between the cone and the inside of the expanding head, which would cause abnormal corrosion or incorrect expansion.

Colloidal graphite paste (The lubricant supplied)

- Company, health and safety information:

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- Harmful properties

Long-duration contact may lead to skin irritation.

- First aid

- * Skin: (-)

- * Eyes: Clean with water. If irritation continues, consult a doctor.

- * Inhaling: (-)

- * Swallowing: Don't induce vomiting. Consult a doctor.

- In the event of fire

- * Extinguishing medium: Carbon dioxide, foam, powder or fine water mist.

- * Special action during fire-fighting: A full mask must be used.

- Action in the event of spillage or inadvertent discharge

- * Personal protective measures: Consider the risk of slipping.

- * Clearance methods: Scrape together, collect and dispose of the spillage in accordance with the regulations.

- Handling and storage

- * Preventive measures during use: Good ventilation. Avoid contact with the skin and eyes. Use protective gloves.

- * Storage: No special measures are needed.

WARNING!

Not following the using instructions above when working with the AC-FIX expanding tool may cause injuries to the user and to people near the working area, and/or may lead to incorrect fitting. The supplier disclaims all liability if these instructions are not followed.

Fitting instructions

AC-FIX PLASTIC RING is a fitting designed only for PE-Xa pipe. The joint is made by gradually expanding, in cold condition, the pipe with the plastic ring fitted to its outside, and then allowing it to narrow onto the fitting nipple. Only official AC-FIX fittings, rings and expanding tools must be used. Assembly of the fitting may be carried out at temperatures down to -15°C.

Remark: It is possible to use AC-FIX fittings with Uponor Quick & Easy ® system's rings. It is also possible to do the assembly with Uponor Quick and Easy ® system's tools.

Expanding tool

The expanding tool consists of the handles and expanding heads for different pipe sizes.

Use

- Take great care when using the expanding tool, especially with the cone and the expanding heads of it. Keep the tool clean.
- Always keep the cone clean and covered with a thin coat of grease. **Use only grease supplied or recommended by us.** The necessary force to expand the pipe with the handles will otherwise increase and the duration of the tool will be reduced.
- Fit the head by completely opening the handles of the expanding tool. Then carefully fit the head over the cone and tighten clockwise by hand as far as possible.
- The jaws of the head must be clean and dry when they are used.

Storage

- The cone of the tool must always be protected by a head fitted to it.
- Back off the head of few turns so that the handles can be brought together. Store the tool and heads in a protected location in their case.

Functional check

- Measure the diameter of the flat part of the jaws in the expanded position (when the handles of the tool are together). The correct diameter can be checked in the table on next page.



* Uponor Quick & Easy ® trademark(s) is (are) not affiliated with Global Piping Systems, S.L.

- Open the handles fully and check that the edges of the jaws fit firmly and uniformly together. Move the handles together, while checking that the jaws expand uniformly.
- If the diameter is not correct and/or if the expanding head performs incorrectly the tool and/or the head must be changed.

Tightness testing

- The fitting joint can be pressurized after 30 minutes at temperatures down to +5°C. At lower temperatures, a longer time is needed before pressurizing the joint, as shown in the table below. The maximum test pressure, which must not be exceeded, is 20 bar (2,0 MPa). At room temperature, the joint will be as strong as the pipe itself after six hours.

Temperature range	Time before pressure testing
+5°C to +1°C	1,5 hours
±0°C to -4°C	3 hours
-5°C to -9°C	4 hours
-10°C to -15°C	10 hours

Tightness testing in accordance with the relevant standards must be carried out before the system is taken into operation. Tightness testing can also be carried out as follows:

Vent all air from the system and pressurize the system to 1.5 operating pressure. Maintain this pressure for 30 minutes and inspect the joints visually. Quickly drain off water to reduce the pressure to 0.5 x operating pressure and close the drain valve. If the pressure rises to a constant value which is higher than 0.5 x operating pressure, this means that the system is tight. Leave the system pressurized for 90 minutes and inspect it during this time. If the pressure dropped during this period, this means leakage in the system.

	PE-Xa S.3,2			PE-Xa S.5			
	16x2,2	20x2,8	25x3,5	16x1,8/2,0	20x1,9/2,0	25x2,3	32x2,9
Pipe size (mm)	16x2,2	20x2,8	25x3,5	16x1,8/2,0	20x1,9/2,0	25x2,3	32x2,9
Marking Head	16	20	25	16	20	25	32
Fitting	16	20	25	16	20	25	32
Max. No. of expansions	5	8	13	4	5	7	13
Diameter of expanded jaws (mm)	18,2±0,1	23,2±0,1	T.B.D.	18,2±0,1	23,2±0,1	28,2±0,1	35,5±0,1

Assembly

See the illustrations attached to the installations instructions. Chose the right fitting, plastic ring and expanding head. The markings of the components can be checked in the above table.

1. Cut the pipe as clean and perpendicular as possible to its axis.

The pipe ends should be dry and without grease, so that the plastic ring will not slide on the pipe during expansion.

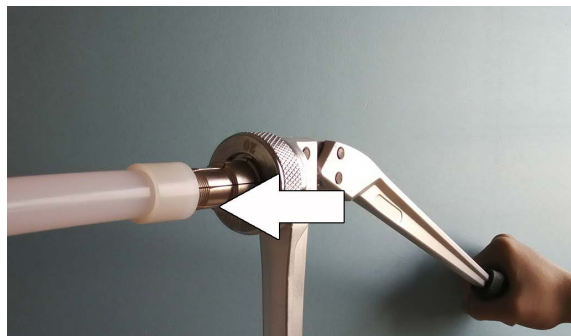


2. Fit the plastic ring into the pipe so that a very small part of it (max. 1mm) is outside the pipe end.

The plastic ring should be firmly fitted on the pipe. If the plastic ring fits loosely, expand the pipe end slightly without the plastic ring. Then push the plastic ring back into its correct position.



3. Open the expander tool handles fully and insert the expanding head straight into the pipe as far as possible.



4. Gradually press the handles together fully. On 20mm and larger pipe sizes, keep the handles together for around 3 seconds.

Open the handles entirely again while withdrawing the expander tool slightly, so that the jaws will be clear of the pipe wall. Spin the tool lightly (up to 45°) and insert the jaws back into the pipe as far as possible.

Repeat these steps until the flat parts of the jaws are all the way inside the pipe, i.e. the edge at the end of the flat part strikes the pipe when the jaws are pushed into the pipe. Expand the pipe by pressing the handles together, one last time.



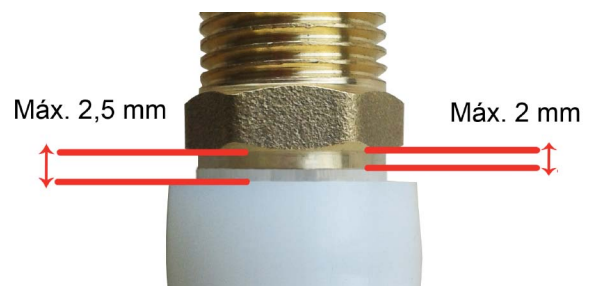
The maximum number of expansions, which must not be exceeded, is shown in the table previously mentioned. At low temperatures the pipe will narrow back more slowly, which means that, depending in the pipe size, the necessary number of expansions will be less than usual for the flat part of the jaws to be all the way inside the pipe.

5. Open the handles, remove the expander tool and directly push the pipe onto the fitting nipple. The plastic ring on the pipe end must reach entirely the shoulder.

Hold the pipe in place for a few seconds, so that it will shrink firmly onto the nipple. If more time is needed for assembly operation (for example due to inaccessibility of the fitting location), expand once again before removing the tool so the available assembly time will be increased.



6. The plastic ring AC-FIX does not include any stop edge in its borders. Thanks to the absence of these stop edges, the mentioned plastic ring can slide lightly on the pipe while expanding it. This allows checking visually that the pipe end has reached the shoulder of the union fitting.



- The distance between the pipe end and the shoulder of the union fitting must not be longer than 2mm.
- The distance between the ring end and the shoulder of the union fitting must not be longer than 2,5 mm.