Flamco

KE KELIT®
CLIMATE CONTROL SYSTEMS

MAKING BRANCHES

in existing piping systems

White paper

April 2017

This white paper covers the following:

The share of renovation projects in the construction world is growing steadily. A growth in the number of renovation jobs is also noticeable in the installation sector. And we see it in just about every renovation project: a branch in existing piping. This often concerns the extension of existing installations such as the addition of a new wing at a hospital, an extra production line at a factory, an extra bathroom in an attic or a radiator in an attic room.

This white paper takes a closer look at the phenomenon of making branches. What do you have to look out for? What techniques are available? What are the advantages and disadvantages of these techniques?

Flamco

Making branches in existing piping systems

A lot of time can be saved during renovation work if you put enough thought into piping branches. With the extension of existing installations you, as an installer, make the difference by saving time (cost optimisation), avoiding complications (no bad news) and preventing waste (environmentally friendly).

Being clever with branches

Avoid having to drain piping

Draining piping means:

- **Loss of time**: the time taken up by draining and refilling has to be invoiced to the customer and is paid in the form of a salary to your employees.
- **Work interruptions**: at installations in the industry stopping the installation causes inconvenience caused, as well as downtime costs. Without heating or running water many activitities in hospitals must be stopped with high costs as result. And that's not to mention all the inconvenience caused to patients during the interruption.
- **Wastage and contamination**: at installations where additives such as glycol are added, one must also remember the fact that these substances are discharged into the sewage water.
- **New oxygen-rich water in piping:** contrary to the human body, an installation consisting of metal parts is not well-served by fresh (oxygen-rich) water. The reintroduction of oxygen into the installation is likely to cause corrosion in the installation resulting in problems with noise and performance loss. In any event, topping up with fresh water again means time lost because initial heating and venting always has to take place before normal operations can resume.

An example to illustrate the danger of oxygen reintroduction

- We take a system with 2,000 litres of water. Such a quantity of fresh water contains approx. 20 g oxygen. One gram of oxygen reacts to cause 2.6 g of steel corrosion. So during full draining and refilling 20 g x 2.6 g = 52 g rust and dirt originating in the system.

Look for hidden time-savings

A shorter job turnaround time means an improved efficiency on labour hours. It also means you can offer keener prices when competing for tenders. Using intelligent solutions means you can avoid draining the installation and shorten the total installation time.

Get the most out of a positive customer experience

Your customer will undoubtedly be extremely happy if you offer to do the job without work interruption, along with a shorter turnaround time whilst causing less inconvenience. And good work always pays itself back in the form of more work.

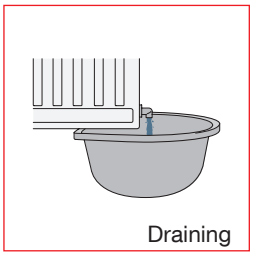
Work safely

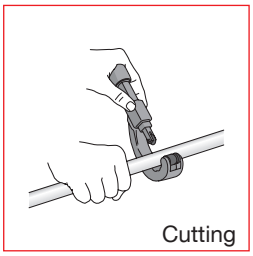
Obviously safe working conditions play a part in choosing the right solution.

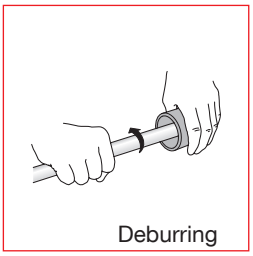
The different ways of making branches: advantages and disadvantages

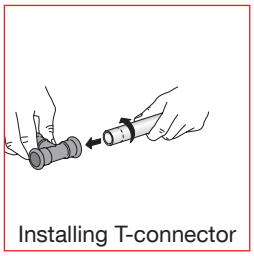
Draining and assembly of a conventional T connector

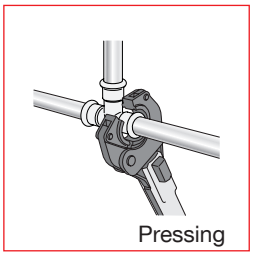
Whether you are going to weld or solder a T connector or assemble a compression-, press- or push fitting: you cannot get around having to drain the installation completely. Unless you are working on the very highest part of the installation, this is a major disadvantage.


Draining


Cutting


Deburring


Installing T-connector


Pressing

If you still opt to use conventional connectors, choose fast and clean high quality press fittings such as those from VSH. Do remember that this type of fitting requires a minimum insertion depth so it will not always fit easily in the sawn out piping. Two slip couplings can be an answer here.

Advantages:

- Low material costs.

Disadvantages:

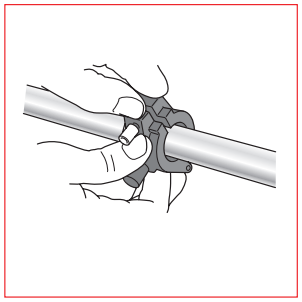
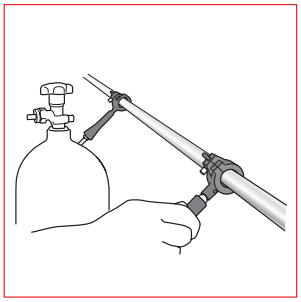
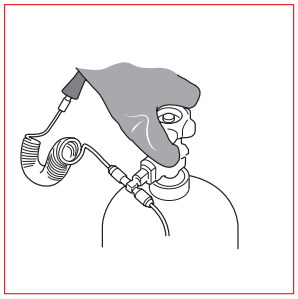
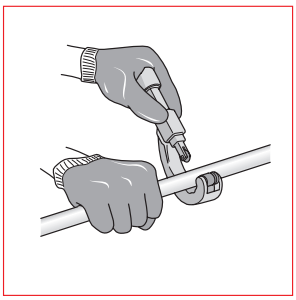
- Draining required.
- Decomissioning needed.

Points for attention:

- Slip couplings may be required when using press fittings.
- Where in the installation must the branch be made? If it must be made right at the bottom and there are no shut-off options, reconsider your approach and opt for one of the alternatives below.

Freezing piping parts

Temporarily freezing the piping to the left and right of the position of the new branch means you can temporarily stop the system at that point. There are two different systems for freezing pipe sections. The one uses a closed refrigerant circuit driven by a compressor/decompressor. The other involves a liquefied gas that you allow to evaporate. Carbon dioxide or nitrogen are usually used here. The latter method is not fully without risk. Evaporated carbon dioxide or nitrogen is invisible and odourless and, in poorly ventilated spaces, can displace all the oxygen leading to danger of suffocation. The freezing times are relatively short but with a 1” pipe it can take as long as 7-10 minutes. You will need more patience for a 2” pipe as this usually involves a freezing time of about half an hour.

Advantages:

- Draining not necessary.

Disadvantages:

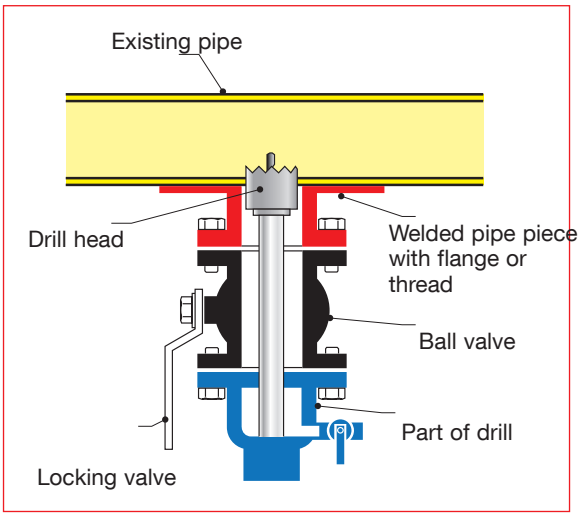
- Not suitable for large sizes.
- Decomissioning needed (blocked section).
- Not suitable for compressed air or other gas installations.
- Moderate time-savings.
- Safety risk (installation gas evaporation).
- Frozen fluids expand causing material stress. Risk of pipework damage is present.

Points for attention:

- Freezing pipework causes blockages. Make sure that this does not cause operating complications.
- Freezing piping will take longer than specified in the documentation with hot installations.
- The hot water in riser pipes in a heating system can impede freezing if it runs too close along the required point of freezing.
- See working conditions law and include the work in the compulsory Risk-Inventory and Evaluation analysis (RI&E) for preventing suffocation when using nitrogen or carbon dioxide.

Drilled connections

The pressurised drilling of pipework takes place as follows:
A piece of piping with flange is welded on the pipe. A ball valve with flange is assembled on top. The drill is assembled on the ball valve flange. The drill bores a hole in the pipe with a drill head. The drill head is withdrawn and the ball valve is shut. The branch has been made and work may continue on the installation from the ball valve flange.



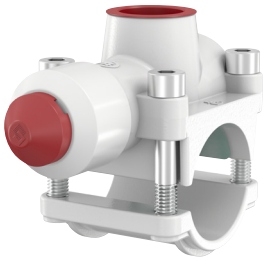
Advantages:

- No decomissioning.
- Draining not necessary

Disadvantages:

- A special company with such a drill has to be hired.
- Welding is necessary.
- Space is needed for the drill installation.
- You must always fit a ball valve with flange and a piece of piping.
- Drilling can cause metal particles to enter the installation which may damage moving parts elsewhere in the installation.

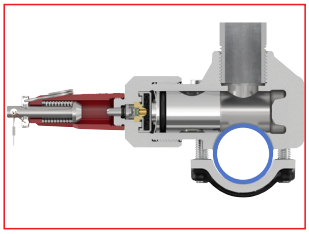
Flamco T-plus



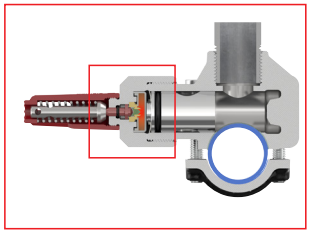
T-plus brass

T-plus cast iron

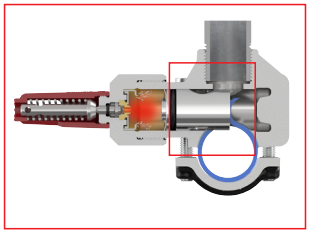
The Flamco T-plus allows you to make a branch while the system is and remains in operation. The T-plus consists of two scales that you clamp around the pipe. With the removal of a firing pin you activate a primer that starts a cutting plunger movement. The cutting plunger cuts a part of the pipe wall that remains as a whole in a fully sealed chamber. No drill chippings, no oxygen-rich water in the pipework, no safety risk and no waiting times.



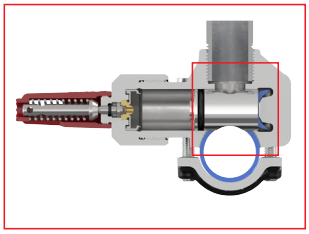
Plunger
There is a plunger in the housing of the T-plus.



Ignition
Once the pin has been removed, the striking pin ignites the charge.



Cutting open the pipe
This builds up gas pressure which pushes the plunger and partially cuts open the pipe.



Removed section of pipe
The Flamco T-plus housing retains the removed section of pipe, so it cannot get back into the pipe.

Advantages:

- Draining not necessary.
- No work interruption.
- No waiting times.
- Quick to assemble and for use in places hard to get to.
- No drill chippings.
- No safety risk.
- No oxygen-rich water in the pipework.

Disadvantages:

- Not suitable for gas installations.

Flamco is your reliable partner around the world

Flamco is a unit of Aalberts Industries N.V. and engaged in the development, production and sale of high-quality products for heating, ventilation, hot domestic water, air conditioning and cooling systems. All these products are available from technology wholesalers. With 60 years of experience and approximately 650 employees, Flamco is a world leader in its field. Flamco has seven production locations and supplies successful and innovative products to the installation industry in more than 60 countries. Our three basic principles always come first: high quality, excellent service and sound advice.

Australia
Bahrain
Belgium
Chile
Cyprus
Denmark
Germany
Estonia
Finland
France
Greece
Hungary
India
Iceland
Italy
Japan
Jordan
Kuwait
Latvia
Lebanon
Lithuania
The Netherlands
New Zealand
Norway
Ukraine
Oman
Austria
Poland
Portugal
Romania
Russia
Qatar
Saudi Arabia
Singapore
Slovakia
Slovenia
Spain
Syria
Taiwan
Turkey
Czech Republic
UAE
United States
United Kingdom
People's Republic of China
South Africa
Sweden
Switzerland

KE KELIT®
CLIMATE CONTROL SYSTEMS

KE KELIT NZ Ltd.
0800 4 KE KELIT
0800 4 5353548
climatecontrol@kekelit.co.nz
www.kekelit.co.nz