

# 2012



## **Safety Regulation and Manual for Gastool® Hot Tap and Flow Stop Systems**

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## **Safety Regulations**

## **PART 1**

### **SECTION 1 – WORKING ON OR NEARBY GAS PIPELINES**

#### **Purpose**

The purpose of this GASTOOL Safety Instruction Natural Gas (G-SING) is to provide instructions and recommendations for a safe operation on and near gas pipelines when hot tapping and flow stopping with GASTOOL hot tap and flow stop equipment and MDS inflatable stoppers.

#### **Parts**

This G-SING consist of 3 parts :

**PART 1** contains general instructions and recommendations

**PART 2** contains the application manual for working on LP pipelines up to 500 mbar with POLSAFE valves and GASTOOL-P3 flow stop equipment

**PART 3** contains the application manual for working on HP pipelines up to 4 bar working pressure with GASTOOL ball valves and BZA-4 flow stop equipment

#### **Scope**

The scope for this G-SING are LP (< 500 mbar) and HP (< 4bar) gas supply systems up to a diameter of 16”.

#### **Terms**

- All hot tapping and flow stopping jobs on gas pipelines should be performed according to this G-SING. All chapters of this G-SING form an integral part of this instruction. No part should be read with the exclusion of any other part.
- In case of a suspected contradiction of one part with another part, the manufacturer should be consulted.
- In case of an uncontrolled flow of gas all workers should stay outside the danger zone and consult their foreman or section chief for further instructions.
- All measuring equipment that is used in the danger zone should be spark free and meet the ATEX-standard and have the EEx code.
- All hot tap tools, flow stop tools and MDS stoppers for LP pipelines should be GASTEC QA certified.
- All MDS stoppers should indicate the date of production, the inflation pressure and the intended pipeline working pressure .

#### **Risks and measurements**

- Uncontrolled flow of gas.  
*Ventilate the area, measure continuously, leave the danger area when necessary and consult your foreman or region chief.*
- Personal injury and suffocation.  
*Use your Personal Protection Device (PPD).*
- Presence of spectators and/or animals around the working place.  
*Fence the area and order spectators to leave.*
- External influences like weather and traffic.  
*Stop the work, use shielding.*
- Obstruction of escape routes.  
*Keep escape routes free from obstacles.*

- Fire and/or explosions.  
*Keep the working area free from sources of ignition and place shield with the sign NO OPEN FIRE.*
- Damage to cables or pipelines.  
*Consult your local utility company for the position of pipes and cables. Dig the trench spacious and gently.*

### Means and equipment

The required PPD's are :

- Antistatic, smooth and fire retardant working clothes whereby the sleeves are sealed and no gas can penetrate into the spaces between clothes and body.
- Safety helmet and safety boots.
- Safety glasses.
- Ear protection.
- Gloves.
- Reflecting clothes for working near public roads.
- Fire retardant head protection for jobs whereby there a flow out of gas, vents of pipelines excluded.
- Additional PPD's for specialised works are: Welding jobs : welding suits, welding glasses, welding helmets, welding shields, welding gloves.
- Jobs with condensate : polyvinylalcoholic or neoprene gloves, protective mask, safety glasses, fire retardant disposable overalls.
- Gas signaling equipment with acoustic or optic signal.
- Gas detection meter.
- Gas concentration meter , 100% natural gas.
- Oxygen meter.
- Fire extinguisher (Class A/B/C) minimum 2 kilos for indoor use.
- Fire extinguisher (Class A/B/C) minimum 6 kilos for outdoor use.
- Fire blankets.
- Warning shields NO OPEN FIRE.

### Definitions

#### *Gas signaling meter*

- To be used as personal warning device upon instruction of the utility company.
- The gas signaling meter measures the presence of gas.
- The gas signaling meter gives an optical as well as an acoustic signal when a value of 10% LEL is measured (0,5 vol % or 5000 ppm).

#### *Gas detection meter*

- To be used for the detection of gas leakages.
- The gas detection meter should be self-priming.
- The gas detection meter measures the amount of gas in the gas-air medium with the range of the instrument.
- The gas detection meter gives an acoustic as well as an optical signal when a gas-air medium is detected.

#### *Gas concentration meter*

- To be used when pipelines are evacuated.
- The gas concentration meter measures the concentration of gas in the gas-air medium, within the range of the instrument.
- The gas concentration meter should have a range up to 100% natural gas.

#### *Oxygen meter*

- To be used for the measurement of oxygen in closed spaces.
- The oxygen meter gives an acoustic as well as an optical signal when the concentration of oxygen falls below 19% O<sub>2</sub>.

#### **Procedures**

The use of Safety devices, tools and measuring equipment:

- The PPD's should be worn according to the safety working instructions.
- For all operations working clothes and safety shoes are mandatory.
- When there is a risk for eye injury, safety glasses should be worn.
- Use the appropriate fencing material to isolate the working area.
- All tools should be in a proper condition.
- Electrical tools and measuring equipment should be periodically tested.
- All GASTOOL flow stop equipment and hot tap equipment should be annually tested.
- MDS stoppers should be annually tested.

#### **Safety measurements**

- Works on gas pipelines can only be performed when there is no escape of gas.
- The escape of gas should be prevented as much as possible.
- During any operation whereby there is a potential risk for the escape of gas the continuous use of gas detecting equipment is mandatory. Gas detection equipment should be placed within arm's reach and towards the wind.
- Operations whereby there is a potential risk for the uncontrolled flow of gas should be carried out by minimum 2 workers. The possibility for visual contact at any instance is mandatory.
- Prior to any hot tapping and flow stopping job the presence of ignition sources should be checked and these should be de-activated. Also consider the presence of cellular phones, PDA's or laptops.
- In case moisture is found on or in HD gas pipelines than presume this as natural gas condensate and act in accordance with the instruction of your local utility company.
- In case moisture is found on or in LD gas pipelines than presume this as natural gas condensate and act in accordance with the instructions of your local utility company.
- Eventual illumination should be placed outside the danger zone.
- The subgrade should be stable and free of loose objects that may endanger the operation.
- The trench should be freely accessible from all sides and sufficiently illuminated.
- The trench should be fenced adequately and carry the necessary signs to the public.
- Fire extinguishers class A/B/C should be present and be placed towards the wind.
- Make sure there is a decent escape route that is free from any obstacles.
- This application manual should be present on the site.

#### **Remarks**

- A gas-air medium is considered as explosive within the range of 5%-15% natural gas.
- When the gas concentration is higher than 10% LEL (which equals 0,5 vol% or 5000 ppm), such condition is considered as a danger zone. Such condition can lead to fire, explosion or suffocation.
- Do not carry out any GASTOOL hot tap or flow stop operations within a danger zone.
- In order to determine whether there is a danger zone, measurements should be interpreted as follows:
  1. Determination of the gas concentration should be done 0,5 m above the ground level or 0,5 m above the subgrade.
  2. When the concentration of the measuring point remains lower than 10% LEL it should be considered that the level on ground level or above the subgrade is higher.
  3. There should be a continuous check that the concentration of gas is below 10% LEL.
  4. In case the concentration of gas reaches values higher than 10% LEL the hot tapping and flow stopping procedure should be stopped and the the section chief or foreman should be consulted.

## **SECTION 2 – OPENING AND CLOSING OF THE TRENCH**

### **Purpose**

The safe opening and closing of the trenches for GASTOOL hot tapping and flow stop operations.

### **Application area**

Low Pressure and High Pressure pipelines up to 16" pipeline diameter.

### **Terms**

- Consult your local utility for the correct position of the pipeline section(s) to be operated.
- Make sure the proper location of the pipeline section(s) are present in writing.
- In case the depth of the trench is more than 1 meter, special measurements should be taken in order to prevent calving of the wall of the trench.

### **Risks and measurements**

- Personal injuries.  
*Use of PPD's.*
- Presence of spectators and/or animals.  
*Fencing of the working spot and ordering people to leave.*
- External influences like weather or traffic.  
*Temporarily cease of the operation.*
- Damage to pipeline and cables.  
*Excavate the trench gently and spacious.*
- Poluted ground.  
*Stop the operation and consult your region chief or foreman.*
- Calving of the talus.  
*Construct the proper talus and ensure a safe escape route.*

### **Performance**

- Ensure that tiles, stones, sections of the pavement are properly stored on a remote location from the trench.
- Store excavated distinguished soil apart from each other for a proper backfill.
- Backfill the trench in such way that distinguished soil parts are relocated to their original places.
- Backfill the trench equally from both sides.
- Increase the density of the soil by hand within a distance of 20 cm beside the pipeline and installed saddles and 40 cm above the pipeline and installed saddles. Pay special attention to the area where POLSAFE valves are installed. Never increase the density of the ground above the POLSAFE valve with a crane unless there is excessive dense soil above the valve of 40 cm.
- Perform the back fill operation in layers of about 30 cm.



### **SECTION 3 – INSERTION AND EXTRACTION OF MDS INFLATABLE STOPPERS**

#### **Purpose**

Safe insertion and retraction of MDS inflatable stoppers.

#### **Application area**

LP (< 500 mbar) and HP (< 4 bar) gas supply pipeline systems.

#### **Terms**

- The working area should be dry and clean.
- The working area should be properly ventilated.
- The gas concentration should not exceed 10% LEL.
- Inflatable stoppers should be inserted with a flow stop tool without the escape of gas.
- The inflatable body of the inflatable stoppers should be of a one-layer-type and not exist of a separate bladder and separate cover.
- The inflation pressure of an inflatable stopper should be the same for all pipeline diameters. In order to avoid the risk of any underpressure or overpressure in the inflatable stopper or potential leakages, the use of inflatable stoppers that have different inflation pressures for different sizes is prohibited.
- An eventual by-pass should be installed and removed gasless.
- Make sure that end caps, plugs and pipeline related devices are available within hand reach.
- Make sure that a spare inflatable stopper and spare flow stop tool is available and ready for use.
- Inflatable stoppers should carry the sign of the GASTEC QA certificate; the inflation pressure, the date of production and the intended pipeline working pressure are indicated.

#### **Risks and measurements**

- Uncontrolled flow of gas.  
*Ventilate the area, measure continuously, leave the danger area when necessary and consult your foreman or region chief.*
- Personal injury and suffocation.  
*Use your Personal Protection Device (PPD).*
- Presence of spectators and/or animals around the working place.  
*Fence the area and order spectators to leave.*
- External influences like weather and traffic.  
*Stop the work, use shielding.*
- Obstruction of escape routes.  
*Keep escape routes free from obstacles.*
- Fire and/or explosions.  
*Keep the working area free from sources of ignition and place shield with the sign NO OPEN FIRE*

## Means and equipment

The required PPD's are:

- Antistatic, smooth and fire retardant working clothes whereby the sleeves are sealed and no gas can penetrate into the spaces between clothes and body.
- Safety helmet and safety boots.
- Safety glasses.
- Ear protection.
- Gloves.
- Reflecting clothes for working near public roads.
- Fire retardant head protection for jobs whereby there a flow out of gas, vents of pipelines excluded.

## Working procedure

### Preparation

- Check the inflatable stoppers for eventual damages. Do this by inflating the stopper outside the pipeline till a pressure of maximum 0,3 bar.
- Check the gauges for a proper functioning.
- Check the inflation pressure of the inflatable stoppers.
- The inflation pressure should be the same for all sizes stoppers. If this is not the case, it is prohibited to use such type of stopper.
- Inflatable stoppers should have a pressure measuring device on the front, enabling the worker to measure the pressure in front of the stopper.

### Performance of flow stopping LP gas pipeline (< 500 mbar, POLSAFE system)

- For pipelines up to PE DN315/ 12" steel or Cast iron it is allowed to use one single inflatable stopper per side of the repair if the stopper carries the official GASTEC/QA sign.
- For pipelines above PE DN315/ 12" steel or cast iron two inflatable stoppers per side should be used.
- In the latter case the stoppers on the outside should be first inserted with the flow.
- Than the stoppers can be inserted.
- When retracting the inflatable stoppers, the stoppers on the outside should be last removed.
- Check the pipeline diameter and select the proper saddle, valve, cutter and inflatable stopper.
- Measure the direction of the flow prior to the installation of the first stopper.
- Install the first inflatable stopper.
- The first stopper is installed along with the flow (into the direction of the flow).
- Install the inflatable stopper on the other side and a third stopper in case of a T.
- Evacuate the section between the stoppers.
- The distance between the stoppers and the area of pipeline repair should be minimal 50 cm.
- Control the pressure in the pipeline and the inflatable stopper continuously.
- Always vent the section that is made pressureless.

### By-pass

In case of a by-pass, the by-pass should be installed prior to the insertion of the stoppers or any hot tap operation necessary for insertion of the stoppers.

### Performance of flow stopping HP gas pipelines (< 4 bar BZA system)

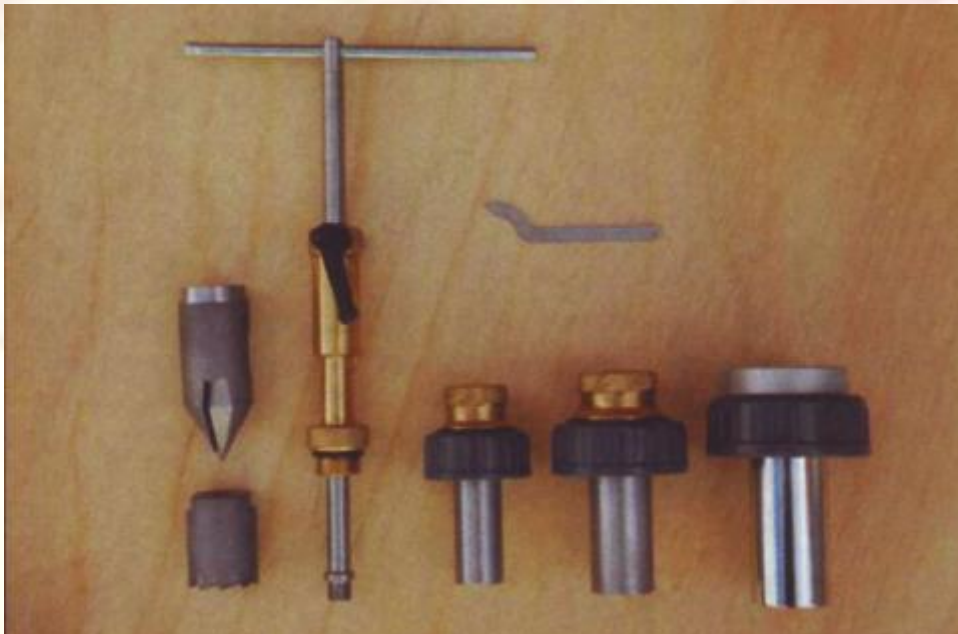
- For HP pipelines the use of two inflatable stoppers per side is advised.
- Inflatable stoppers for HP gas pipelines should have the official GASTEC/QA sign.
- Check the pipeline diameter and select the proper saddle, valve, cutter and inflatable stopper.
- The first stopper should be inserted with the flow.
- Hence always first measure the direction of the flow with a GASTOOL flow direction meter.
- Consequently the other stoppers can be inserted : at the end there should be two stoppers on both sides of the repair side of the pipe.
- The pressure in the pipeline is as follows : working pressure in front of the stopper; between stopper 1 and 2 = 0 bar; behind stopper 2 = 0 bar.
- A vent should be installed on the release valve of the flow stop tool on the outside and connected to a vent valve that is installed on ground level. Eventual leaking gas between stopper 1 and 2 is hence removed from the pipeline.
- When retracting the inflatable stoppers, the stoppers on the outside should be last removed.
- The distance between the stoppers and the area of pipeline repair should be minimal 50 cm.
- Control the pressure in the pipeline and the inflatable stopper continuously.
- Always vent the section the is made pressureless.

*DRAWINGS FOR BY-PASS, LP OPERATION AND HP OPERATION ARE INSERTED WITH THE MANUAL.*

## **Manual GASTOOL P-3 Hot Tap and Flow Stop System**



## Hot Tapping PVC and PE pipelines with the P-900



In case you use the LB-493 tool for cutting PE, you may skip this chapter and move to the next chapter



Select and install the proper PVC or PE saddle and the proper POLSAFE vale.

Test the saddle for about 30 seconds on 200 mbar with a DIGITEQ tester. There should be no loss of pressure. Hence  $\Delta p=0$ mbar.



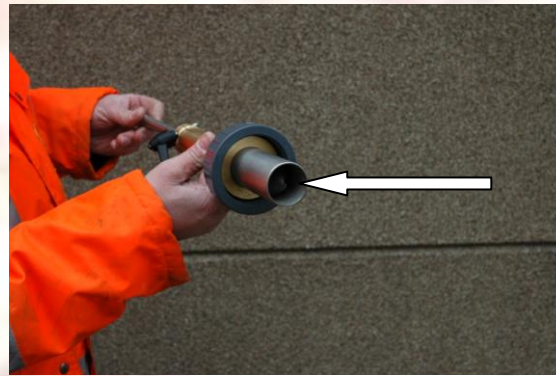
Select the proper cutter or bore and install this onto the drilling spindle.

Use the Apple bore for PVC and the PE cutter for PE pipelines.



Take the hot tap dome out of the box.

Untighten the lever and turn the bushing upwards until you see about 3-4 mm of thread.



Insert the spindle into the bottom of the drilling dome until the cutter adapter completely fits the adapter. Tighten the lever.

This is important because the rubber POLSAFE valve otherwise might be damaged.



Select the proper adapter and install this onto the hot tapping dome. Check the selection table for selecting the proper adapter.



Install the tool onto the Polsafe valve.

You do so by pushing the adapter down into the rubber valve.



Tighten the adapter onto the Polsafe valve.

Make sure that you screw the adapter fully till the end onto the valve.



Install the wrench into the spindle.



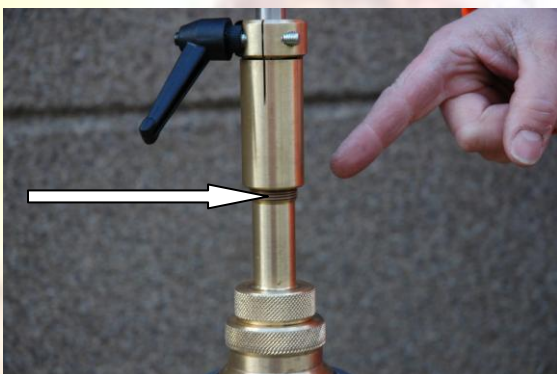
Untighten the lever.

By doing so it is possible to correct an eventual malpositioning of the bushing. Hold the spindle with your other hand..



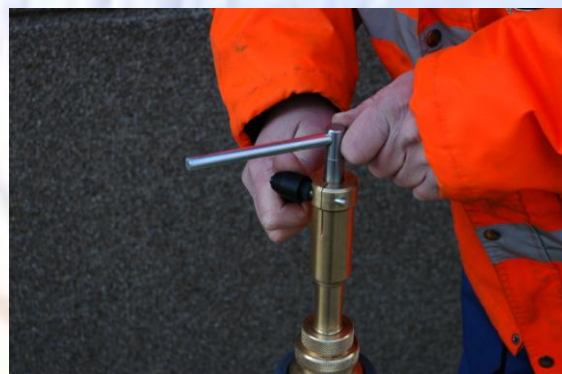
Push the spindle down till the cutter or drill touches the pipe wall.

It is important that you do this gentle in order to avoid damage of the cutter or drill.



Check whether the bushing is in the correct position.

Do this by turning the bushing in such way until you see appearing a 3-4 mm thread on the bottom of the bushing.



Consequently lock the bushing.

You do this by tightening again the lever.



Start the hot tapping operation.

The cutter penetrated the pipe wall when you experience a considerable reduction in friction during the hot tapping operation.



And this is the Apple cutter for PVC pipes.

Never tap PE pipes using the Apple drill as this will block the compartment of the Apple drill with excessive chipped material.



Uptighten the lever and pull the spindle upwards

**ATTENTION :** When pulling the spindle upwards, never turn the spindle to the left as the chipped material will come out and the cutter can untighten. Tighten again the lever and remove the hot tap tool.



### Important

1. First install the adapter on the hot tapping tool.
2. Consequently screw the cutter onto the spindle and only
3. Then insert the spindle from the bottom into the drilling dome
4. NEVER forget to secure the spindle by means of the lever as otherwise the spindle could drop downwards and this could damage the cutter.



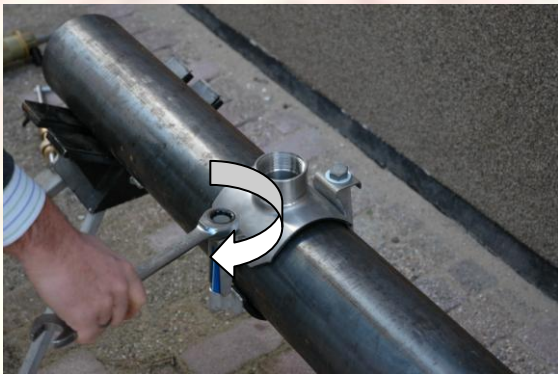
Always use the correct cutter when hot tapping.

This is the cutter for PE pipes.



## **Hot tapping PE, Steel, Cast Iron and AC pipelines with the LB-493**





Clean the pipeline and remove eventual. Install the proper saddle onto the pipe.

Use a GASTOOL stainless steel saddle for AC and cast iron, a GASTOOL welding socket for steel pipe and a POLSAFE PE saddle for PE pipe.



Install the BG adapter onto the nose adapter.

Make sure all parts are free of sands and mud. This will lengthen the life time of your tool.



Take the LB 493 hot tap tool out of the case and untighten the lever.

It is important to untighten the lever otherwise you can't move the hot tap spindle. Turn the bushing till you see 3-4 mm of thread.



Connect the right cutter onto the spindle.

It is very important to select the right type of cutter otherwise you will experience problems with hot tapping. The blue plastic cutter holder mentions the pipe material.



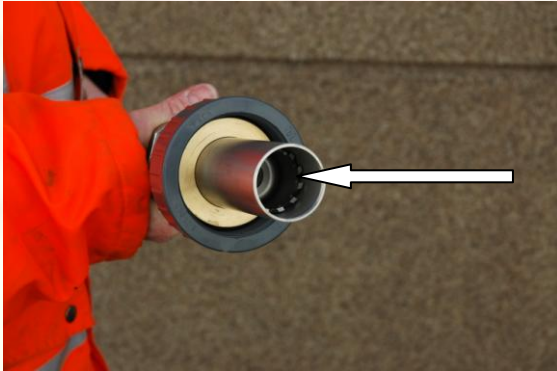
Install the nose adapter onto the drilling dome

Tight the nose adapter very good otherwise you can't install the adapter.



Insert the hot tap spindle into the bottom of the drilling dome.

Make sure that the lever is in loose position.



Make sure that the adapter completely embodies the cutter.

This is VERY important as the rubber could otherwise be damaged.



Secure the adapter onto the yellow valve.

You do this by turning the adapter as far as possible onto the valve.

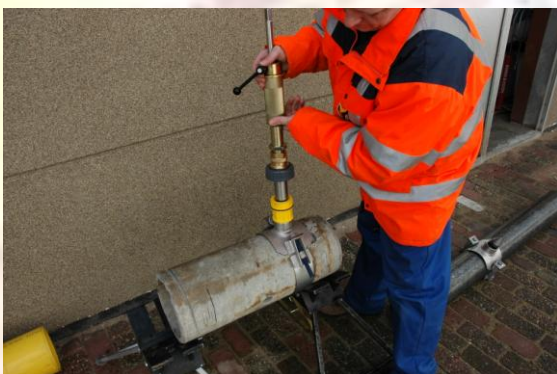


Untighten the lever.

This is important as the spindle could otherwise fall out of the tool and the cutter could be damaged.

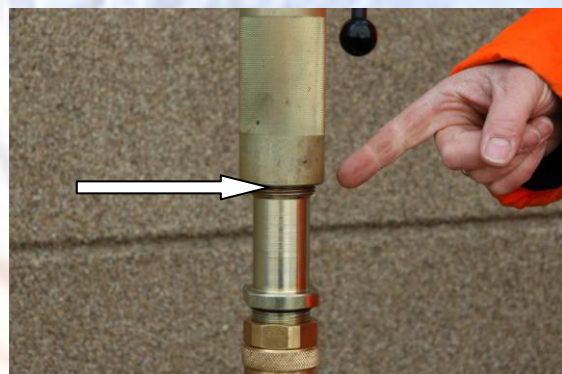


Untighten the lever and secure the spindle with your hands.



Install the adapter onto the yellow POLSAFE valve.

Do this gentle and make sure that the adapter is completely into the valve.



Check whether the spindle is in the proper position.

This is the case if 3-4 mm of thread is visible.



Tighten the lever again.



Push the spindle downwards.

You do this by putting pressure on the head of the ratchet whereby you hold the ratchet with your other hand. DO this operation always gentle and without force and never let the cutter fall down onto the pipe.



Install the ratchet onto the the drilling spindle.

Pushing the spindle downwards is more easy when the spindle is already installed.



Tighten the lever again.

Don't forget to do this otherwise you will turn the bushing idle.



Untighten the lever again.



Grasp the bushing...



Start hot tapping the pipeline.



Retrieve the drilling spindle

### VERY IMPORTANT

1. Always drill gentle and let the cutter do the work
2. Switch between several with the bushing and several strokes with the ratchet.
3. Never tension the bushing too much. This may damage the cutter.
4. When drilling thick wall pipe it may be necessary to turn the bushing the bushing upwards again till 3-4 mm thread is visible. Then continue the hot tap operation.

Be aware the cast iron or ductile can be very tough and that the hot tapping operation may take more time

You can do this by initially retrieving by means of the spindle and consequently use your hands, depending on the situation and the pipe material.



After you retrieved the spindle completely, lock the lever again.

By doing this you prevent the spindle falling down.



You finished the hot tap operation.

You notice this due to the absence of any resistance. Now unlock the lever.



Remove the ratchet.



Untighten the adapter.



The use of chalk grease.

In some situations, e.g. when hot tapping steel, the use of chalk grease may lengthen the lifetime of your cutter.



Remove the entire hot tap tool from the yellow POLSAFE valve.

TIP: when disassembling the tool it is advised to reposition the bushing again in the proper position (3-4 mm) for the next hot tap operation.



This is the cutter that you use for AC.

The plastic holder of this cutter also lists clearly the pipeline material.

#### **And than this :**

1. Always clean your hot tap materials after any operations. Especially remove sand as sand may harm the thread of your tool. Always store the tool in a dry condition. Store all used part immediately in the case.
2. Avoid storage of your hot tap tool with the bushing threaded down as you may need the tool ready-to-operate in case of emergency.

## Flow Stopping with the P-3 System





Select the proper type of MDS stopper for your situation by checking the selection schedule. Always control visually the year of production, the year of last annual test check for and irregularities (do this by inflating the balloon outside the pipeline till 0,3 bar pressure) and the spring mechanism. If your stopper does not pass all the checks, don't use it !!!



Push the gauge destined for the inflation of the MDS stopper into the quick connection coupling that is on the bended connection.



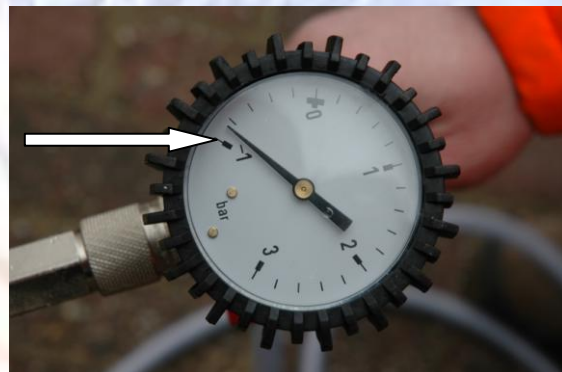
Take the dome and the gauge rod out of the case. Install the gauge rod into the dome so that the proper MDS stopper can be connected to the gauge rod.



When you use MDS stoppers with pressure measuring it is necessary to also push the other gauge into straight connection.

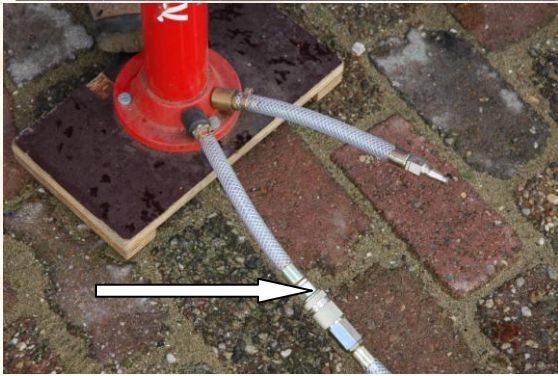


Connect the proper MDS stopper onto the gauge rod by means of two proper wrenches.



Evacuate the MDS stopper till -1 bar.





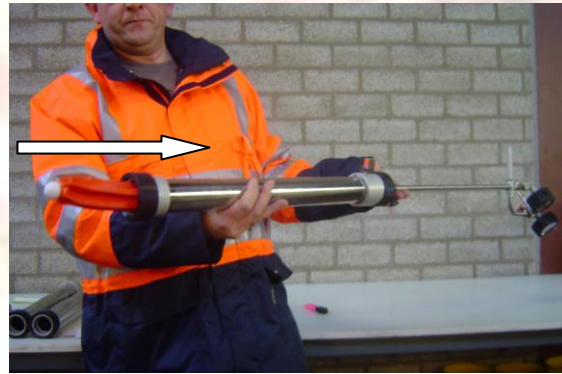
You do this by connecting the inflation hose onto the right vent after which you start pumping.



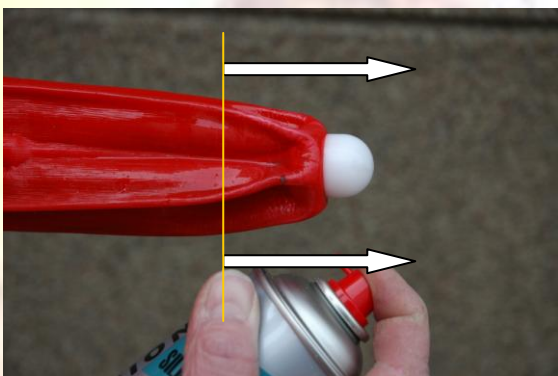
Bend **ONLY** the HOSE of the MDS stopper into the direction of the handle on the gauge rod. Later you can position the handle and the release valve in the same direction. The valve indicates the direction of insertion.



This is how an evacuated MDS stopper looks like. Leave the stopper in an evacuated condition for about 10 minutes. Check after 10 minutes whether the gauge still indicates the -1 bar pressure (this is a security control). Tip : you can start hot tapping during this security check.



Retrieve the evacuated stopper into the dome.



Spray lightly both heads of the MDS stopper with the GASTOOL silicon spray. **NEVER SPRAY THE whole stopper** and never use a class B or C spray.

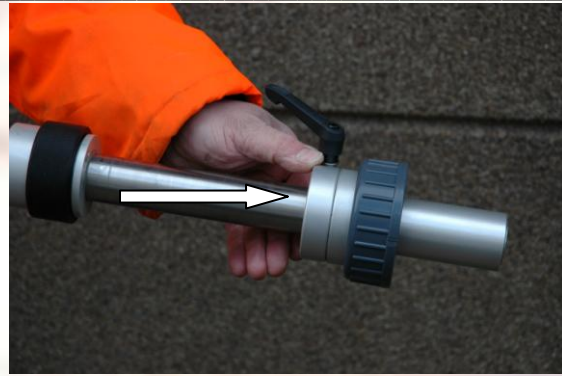


Tighten the locking screw.



Select the proper shoe and connect the shoe onto the dome (male/female connection).

Read the selection schedule carefully.



Make sure the gauge rod and MDS stopper is completely inside the dome, secure the gauge rod en push the bushing of the shoe completely downwards.



Turn up the black bushing till the end and do this by preference in a vertical position.



Secure the shoe by tightening the lever.



Spray the opening of the shoe lightly with siliconspray and make sure the spray is divided regularly over the surface.



Close the release valve on the dome en lay the complete unit apart, by preference in the transportation case.



Take the flow direction meter out of the case.



Install the flow direction meter into the yellow POLSAFE valve and secure the meter by turning down the bushing completely.



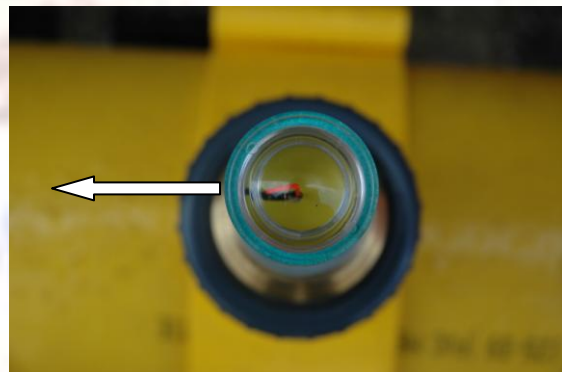
Mount the flow direction meter onto the proper adapter.



Push the flow direction meter completely downwards.

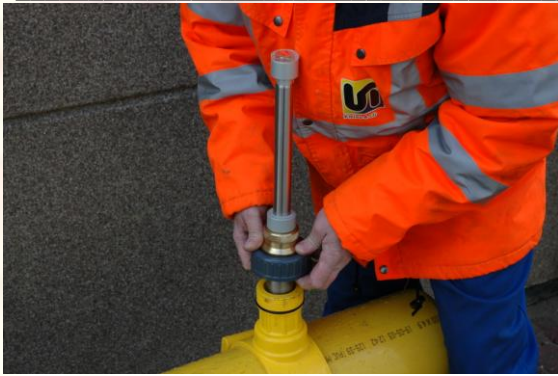


Make sure you're using the right adapter!



Make sure the black arrow is in line with the pipeline. After a while the orange arrow will indicate the direction of the current.

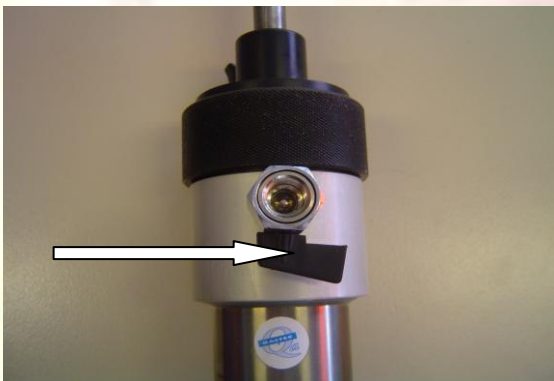
The velocity in which this will happen depends on the velocity of the flow.



Mark the direction of the flow with a marker en remove the gas flow direction meter.



Check whether the gauge rod is in complete upwards position and is secured by means of the screw. Otherwise the gauge rod may fall down..



Make sure the release valve is closed and is into the direction of the flow.



Push the dome downwards and secure the down by means of the lever.

This namely is the INSERTION direction and the first MDS stopper should be inserted with the flow.



Install the dome onto the yellow valve.



Untighten the locking screw of the gauge rod.

Make sure the release valve is in the direction of the flow. Tighten the grey bushing very good.

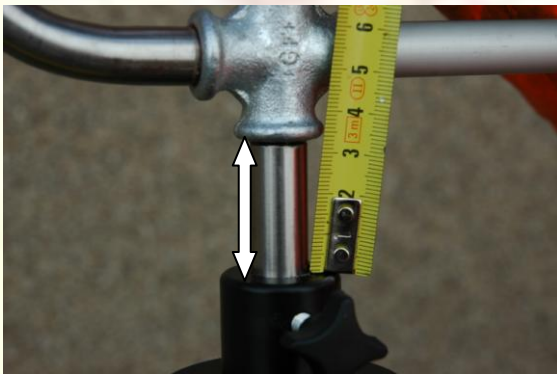


Check again whether the value on the gauge is unchanged. Push the gauge rod downwards. If you experience difficulty inserting the MDS stopper than disassemble the whole unit and start again.

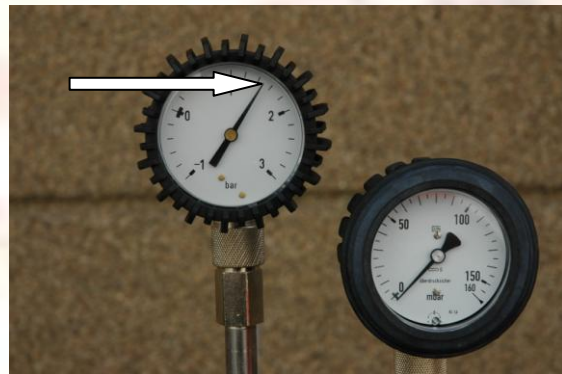


Connect the inflation hose to the quick connection coupling of the inflation gauge.

The other gauge indicates the pressure inside the pipeline.



Make sure that in this situation the cross of the gauge rod is 3-4 cm above the dome. (this is not valid for shoe no 0 and 1). You need this tolerance for a proper positioning of the MDS stopper in the pipeline. Don't tighten the screw.



Inflate the MDS stopper till 1,5 bar.

**ATTENTION:** the inflation pressure is the same for all stopper sizes : 1,5 bar !

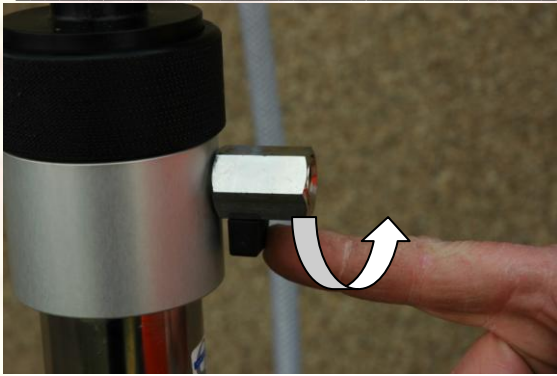


The release valve is closed so no gas can escape.

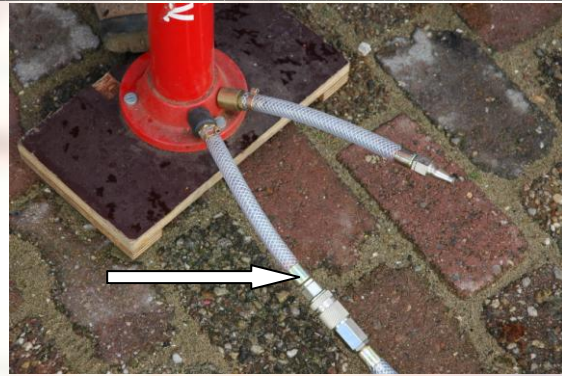


As soon as all MDS stoppers have been inserted you can open the pressure release valve.

This valve ensures that the pipe section between the MDS stoppers is evacuated. When this is the case you can start the work.



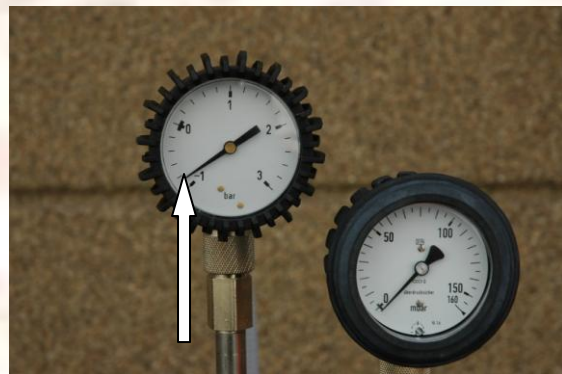
When you finished the work, close the release valve. This valve must be closed prior the deflating the balloons !!



Connect the inflation hose to the inflation gauge and the evacuation vent of the pump.



Untighten the locking screw on the gauge rod.



Evacuate the MDS stopper till -1 bar.



Gently open the inflation valve of the stopper. Don't open the valve in one turn as this may cause turbulence in the pipeline.



Close the valve, disconnect the hose and pull the gauge rod upwards.

Pull the gauge upwards in a gentle way without excessive force.



If you experience too much resistance when you pull the gauge rod upwards, then turn the gauge rod 90 degrees to the right when pulling it up.

**NEVER DO THIS TO THE LEFT !**



Untighten the lever.

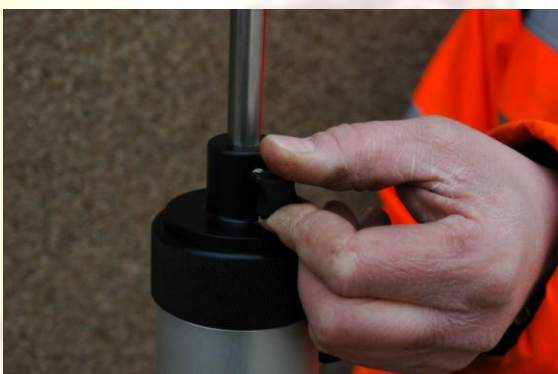


Under certain conditions it may help to open the valve when retrieving the MDS stopper.

This can enhance the positioning of the MDS stopper into the shoe.



Pull the dome completely upwards.



Secure the gauge rod after you pulled this up completely.

**ATTENTION:** make sure that you pulled the gauge rod completely as the MDS stopper may otherwise stay stuck in the shoe.



Secure the dome with the lever after you pulled it upwards.



Unlock the grey bushing and remove the complete set from the yellow POLSAFE valve.



Check all materials and store them clean and dry in the proper transportation cases.

Check already the MDS stoppers for the next job.

Never leave materials unattended as they may damage.



## Do's and Don't's





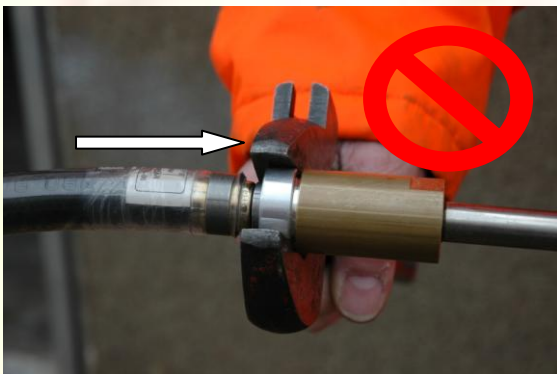
**Never do this!**

Installing the saddle and only tightening the bolts on one side.



**Never do this!**

To bend the body of the stopper.  
Only bend the hose.



**Never do this!**

Connecting the MDS by means of only one wrench or other tools than a wrench..



**Never do this!**

To not tighten screws and bushes.  
Always follow exactly the indications.



**Never do this!**

Wetting the complete stopper with silicon spray.  
Only spray the heads of the MDS stopper.



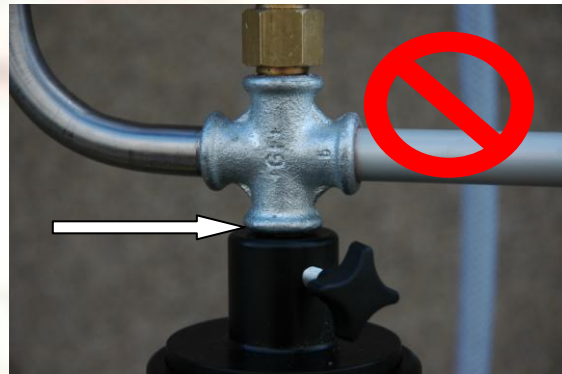
**Never do this!**

To Insert a MDS stopper and not checking the direction of the flow.



**Never do this!**

To have the release open when inserting the MDS stoppers.



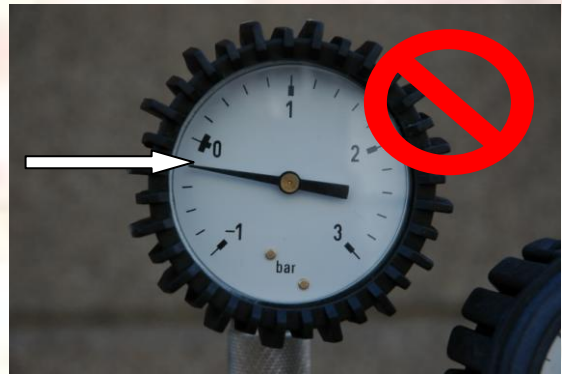
**Never do this!**

To push the gauge rod completely down prior to insertion.



**Never do this!**

To insert a MDS stoppers that has not been evacuated.



**Never do this!**

Not to evacuate MDS stoppers prior to insertion or extraction. This is only possible when retrieving the MDS stopper.



**Never do this!**

To drop tools and parts in litters and not into the appropriate cases.



**Never do this!**

To leave tools and parts on the ground.



**Never do this!**

To store a hot tap tool with the bushing down.



**Never do this!**

To use an inappropriate cutter.  
Double check the selection schedule.



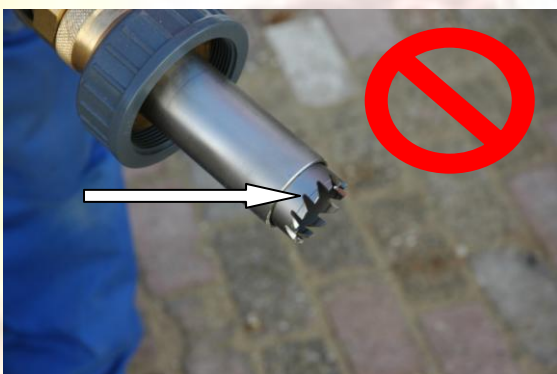
**Never do this!**

To insert MDS stoppers when the dome has not been pushed fully downwards.



**Never do this!**

To tighten the lever of the hot tap dome when the spindle is not installed.



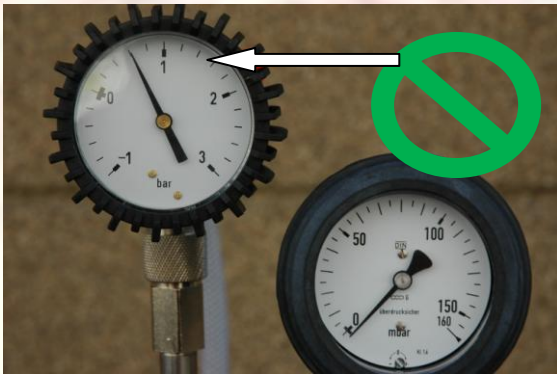
**Never do this!**

To install the hot tap tool onto the yellow POLSAFE valve when the cutter is not fully embodied in the adapter.



**Never forget!**

To check the adapters and Shoes for chips or unroundness.



**Never do this!**

To not inflate the MDS stopper adequate. Always inflate till 1,5 bar.



**Never do this!**

To stand on MDS stoppers.



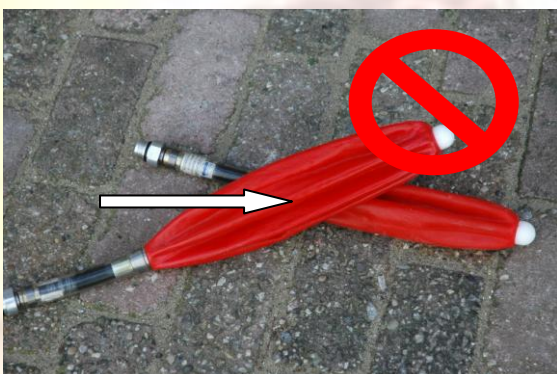
**Never do this!**

To store the hot tap tool in the case disassembled.



**Always do this!**

Check the selection for the correct saddle, valve, cutter combination.



**Never do this!**

To leave MDS stoppers on the ground.



**Always do this!**

Follow the instructions of your local energy company.

## Tips and Hints




**Cold stoppers**

At cold temperatures the MDS stopper might be a little bit stiff. Warm the stopper with your hands or store for a while in the cabin of your car.


**Removal of cutted coupon**

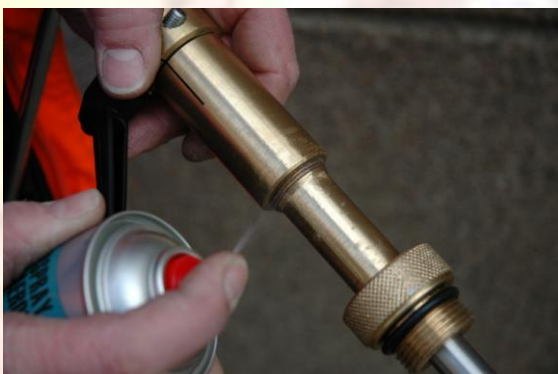
Best to remove the cutted coupon with the coupon wrench.


**Chalk grease**

The use of chalk grease facilitates hot tapping steel and cast iron and it lengthens the life time of your cutter.


**Coupon key**

Using the coupon key makes removal of the coupon even easier.


**Siliconspray**

Regularly spray all moving parts of your tools.


**Cleaning of threads**

Always clean the threads of your tools and stoppers after any operation. This lengthens the lifetime of your tools and prevents leaking.

**Gauges**

Also clean the couplings of gauges. Dirty couplings are a cause of leakages.

**By-Pass**

It is possible to make a by pass in order to secure the gas supply in a certain area. Please contact us for more information.

**Cleaning MDS stopper**

Always clean the MDS stopper after usage. Store them dry and clean.

**Testing of hot tap tools**

All hot tap tools are tested separately prior to delivery.

**Storage of your equipment**

Always store your equipment properly in the flight cases. Never leave tools and parts loose in the car.

**Testing MDS stoppers**

All MDS stoppers are tested overnight.






## And then this...

- Always hot tap in a gentle way.
- Never overtighten the bushing during hot tapping. Make a few strokes with the bushing and consequently a few strokes with the ratchet.
- Never use extension tubes over the ratchet. It will not accelerate the hot tap operation.
- Be aware that cast iron and ductile sometimes can be tough. Allow for time when cutting these materials.
- Always check for the right cutter/pipe materials combination.
- You can adapt the bushing prior to assembling the hot tap tool.
- Although the World wide patented MDS stopper is a big improvement of conventional stoppers it is still an inflatable device sensitive to wear and tear. Make therefore use of the annual inspection that KLEISS offers.
  - Never inflate MDS stoppers above 0,3 bar when not installed in the appropriate pipe size
  - Never leave MDS stoppers exposed to the sun or a humid environment
  - Never use excessive force when inserting MDS stoppers. If insertion does not happen smoothly, start again with the operation
  - Hot tap and flow stop equipment is dynamic and not static equipment. It is important that your tools are always in good condition. Therefore we advise you to have your equipment annually inspected by KLEISS.

# Hoofdstuk 7

## SELECTIETABEL AANBOREN & BLAZENZETTEN

AANBOORAPPARATUUR EN HULPMIDDELEN				
Leiding	Opzet stuk	Aanboortoestel	Frees/boor	Art.nr.
Staal DN 50-100	1.1/2"	LB 493 B	Frees 1004 HM <b>29,5 mm</b> x 3/8"	13200110
Gietijzer DN 50-100	1.1/2"	LB 493 B	Frees 1004 HM <b>29,5 mm</b> x 3/8"	
AC DN 50-125	1.1/2"	LB 493 B	Frees 1006 HM AC <b>29,5 mm</b> x 3/8"	13300110
PVC DN 50-125	1.1/2"	P 900	Schilboor 1.1/2" PVC <b>29,5 mm</b> x 3/8"	14700030
PE DN 50-125	1.1/2"	P 900	Holfrees 1003 PE <b>29,5mm</b> x 3/8"	13100030
Staal DN 125-200	2"	LB 493 B	Frees 1004 HM <b>39,0 mm</b> x 3/8"	13200120
Gietijzer DN 125-200	2"	LB 493 B	Frees 1004 HM <b>39,0 mm</b> x 3/8"	
AC DN 150-200	2"	LB 493 B	Frees 1006 HM AC <b>39,0 mm</b> x 3/8"	13300120
PVC DN 150-200	2"	P 900	Schilboor 2" PVC <b>39,0 mm</b> x 3/8"	14700040
PE DN 150-200	2"	P 900	Holfrees 1003 PE <b>39,0 mm</b> x 3/8"	13100050
Staal DN 250-300	2.1/2"	LB 493 B	Frees 1004 HM <b>49,0 mm</b> x 3/8"	13200130
Gietijzer DN 250-300	2.1/2"	LB 493 B	Frees 1004 HM <b>49,0 mm</b> x 3/8"	
AC DN 250-300	2.1/2"	LB 493 B	Frees 1006 HM AC <b>49,0 mm</b> x 3/8"	13300130
PVC DN 250-300	2.1/2"	P 900	Schilboor 2.1/2" PVC <b>49,0 mm</b> x 3/8"	14700050
PE DN 250-300	2.1/2"	P 900	Holfrees 1003 PE <b>49 mm</b> x 3/8"	13100070

BLAZENZETAPPARATUUR <u>MET VOORDRUKMETING</u> EN HULPMIDDELEN					
Leiding	Opzet stuk	Zakpijp nr.	Afbeelding zakpijp	MDS blaas	Art.nr.
Staal DN 50	1.1/2"	0		MDS-500 nr. 0 ( <b>50</b> )	23000095 ( <b>50</b> )
Gietijzer DN 50	1.1/2"			MDS-500 nr. 0 ( <b>50</b> )	
AC DN 50	1.1/2"			MDS-500 nr. 0 ( <b>50</b> )	
PVC DN 50	1.1/2"			MDS-500 nr. 0 ( <b>50</b> )	
PE DN 50	1.1/2"			MDS-500 nr. 0 ( <b>50</b> )	
Staal DN 60-100	1.1/2"	1		MDS-500 nr. 1 ( <b>60-80</b> ) of nr. 2 ( <b>80-120</b> )	23000100 ( <b>60 - 80</b> ) 23000110 ( <b>80 - 120</b> )
Gietijzer DN 60-100	1.1/2"			MDS-500 nr. 1 ( <b>60-80</b> ) of nr. 2 ( <b>80-120</b> )	
AC DN 60-125	1.1/2"			MDS-500 nr. 1 ( <b>60-80</b> ) of nr. 2 ( <b>80-120</b> )	
PVC DN 63-125	1.1/2"			MDS-500 nr. 1 ( <b>60-80</b> ) of nr. 2 ( <b>80-120</b> )	
PE DN 63-125	1.1/2"			MDS-500 nr. 1 ( <b>60-80</b> ) of nr. 2 ( <b>80-120</b> )	
Staal DN 125-200	2"	2		MDS-500 nr. 3 ( <b>120-170</b> ) of nr. 4 ( <b>140-215</b> )	23000120 ( <b>120 - 170</b> ) 23000130 ( <b>140 - 215</b> )
Gietijzer DN 125-200	2"			MDS-500 nr. 3 ( <b>120-170</b> ) of nr. 4 ( <b>140-215</b> )	
AC DN 150-200	2"			MDS-500 nr. 3 ( <b>120-170</b> ) of nr. 4 ( <b>140-215</b> )	
PVC DN 150-200	2"			MDS-500 nr. 3 ( <b>120-170</b> ) of nr. 4 ( <b>140-215</b> )	
PE DN 150-200	2"			MDS-500 nr. 3 ( <b>120-170</b> ) of nr. 4 ( <b>140-215</b> )	
Staal DN 250-300	2.1/2"	3		MDS-500 nr. 5 ( <b>190-270</b> ) of nr. 6 ( <b>240-315</b> )	23000140 ( <b>190 - 270</b> ) 23000150 ( <b>240 - 315</b> )
Gietijzer DN 250-300	2.1/2"			MDS-500 nr. 5 ( <b>190-270</b> ) of nr. 6 ( <b>240-315</b> )	
AC DN 250-300	2.1/2"			MDS-500 nr. 5 ( <b>190-270</b> ) of nr. 6 ( <b>240-315</b> )	
PVC DN 250-300	2.1/2"			MDS-500 nr. 5 ( <b>190-270</b> ) of nr. 6 ( <b>240-315</b> )	
PE DN 250-300	2.1/2"			MDS-500 nr. 5 ( <b>190-270</b> ) of nr. 6 ( <b>240-315</b> )	

### LET OP:

\* Het testen of afpersen van de MDS-blaas geschiedt altijd **IN** een buisstuk van bijpassende maat.

\* Pomp u de blaas buiten de leiding op doe dit dan met **max. 0,3 bar!!**

\* Wanneer u de MDS blaas toch verder oppompt kan het telescopsysteem in de blaas onherstelbaar beschadigen.



Frees 1004 HM St./GY



Frees 1006 HM AC



Holfrees 1003 PE



Schilboor PVC