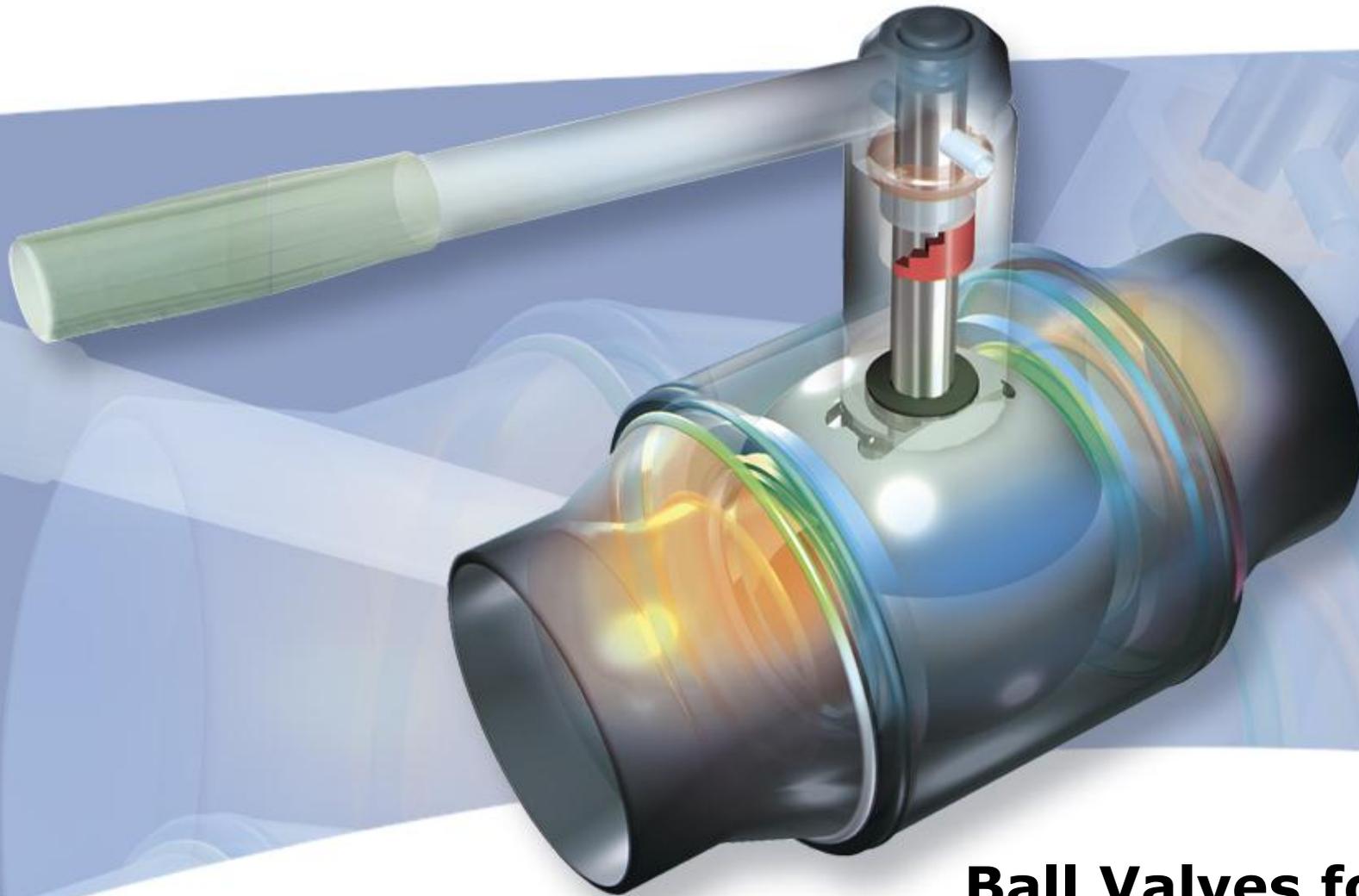


Danfoss



**Ball Valves for Heating
and District Heating**



Underground Ball Valves DN 20 – DN 600, PN25

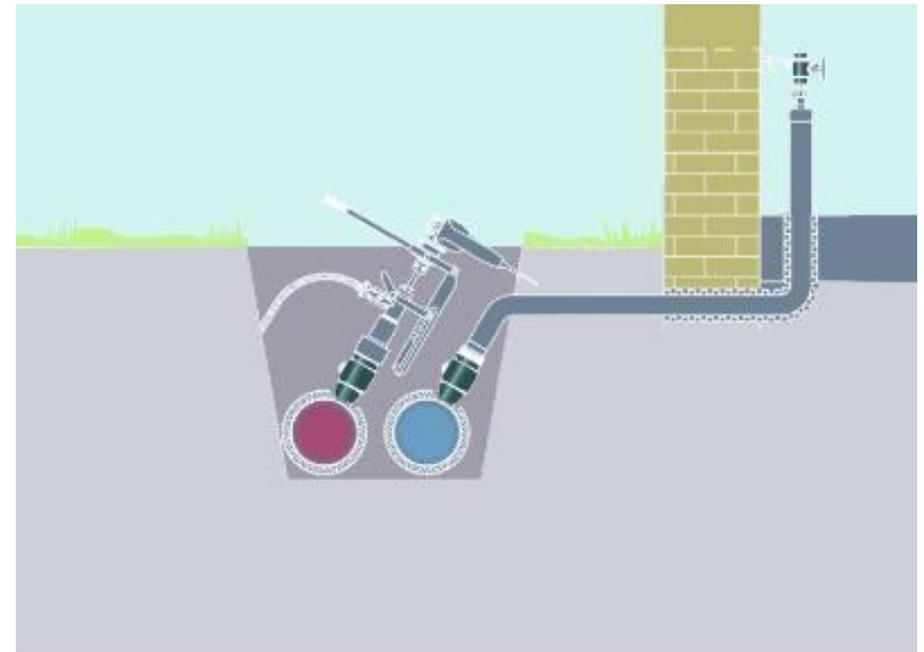
- Underground valves are installed in pre-insulated pipe systems, transporting hot water from production to end customer.
- The ball valves are supplied with a stainless steel stem suitable for insulation of the valve. This ensures that all steel above the end cap is corrosion free. *Customers do not have to worry about corrosion of the stem which could lead to a leakage.*
- Underground ball valves are delivered in building lengths and with stem heights according to customer wish.





Background

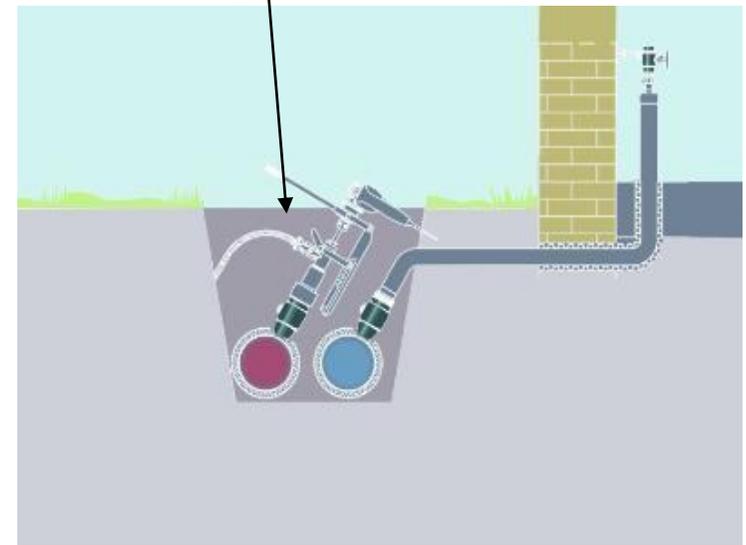
- The JiP hot tap principle was developed in 1982 in Denmark
- That means that the tool was one of the first industrial tools which was developed for district heating, enabling the connection of branches in operating systems.
- Type approval since 1996
 - AGFW requirements
 - Guideline FW 432
 - BGR 119





Hot tap valves DN 15 – DN 100, PN 25 and 40 (1/2)

- The hot tap system enables an easy, safe, environmental friendly and economic connection of a new customer without having to cut off the heat supply to other customers.
- This ensures better service towards the existing customers of the district heating net.
- Standard range
 - DN 20-100
 - L handle
 - Screwdriver / allenkey operation
 - Allen key plug for welding
- Can be delivered >DN100
 - Typically with as flange
 - Requires special tools for hot tap





Hot Tap System (2/2)

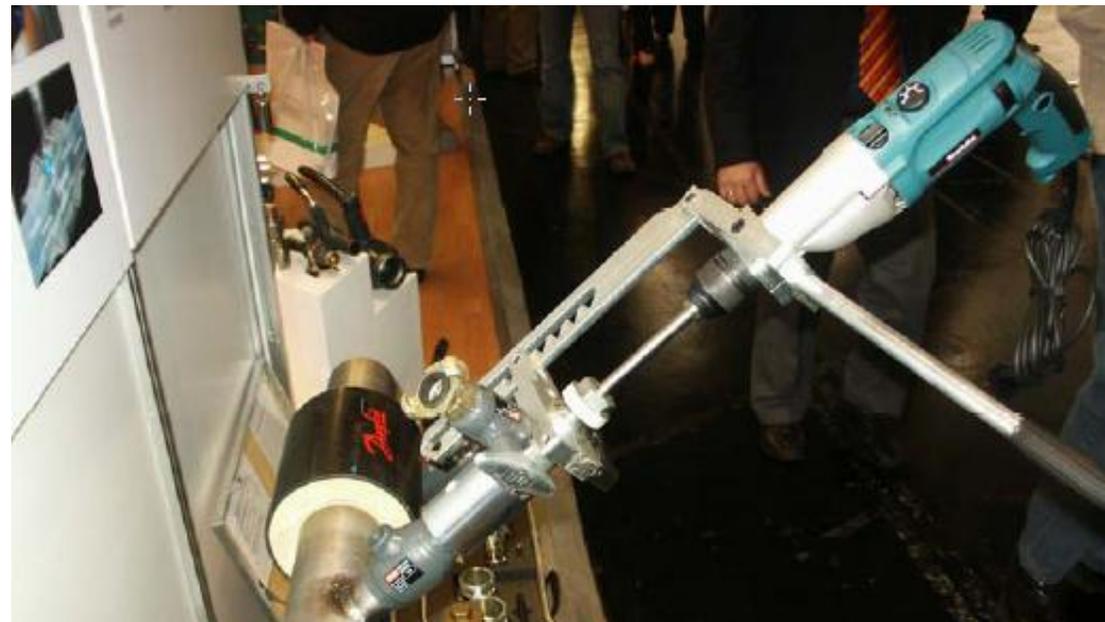
- The hot tap tools are available in a basic tool box for DN 15 – DN 50.
- For DN 65 – DN 100 a tool box is available with additional hot tap tools.
- The system is TÜV type approved.





Contents/set up DN15-50

- Drilling shaft with drill or lock saw
- Adapter
- Hot tap tool with ball valve for flushing
- Feed tool
 - control of the drilling shaft
 - control of drilling pressure
 - control of withdrawal of drilling shaft
- Reduction gear can be applied





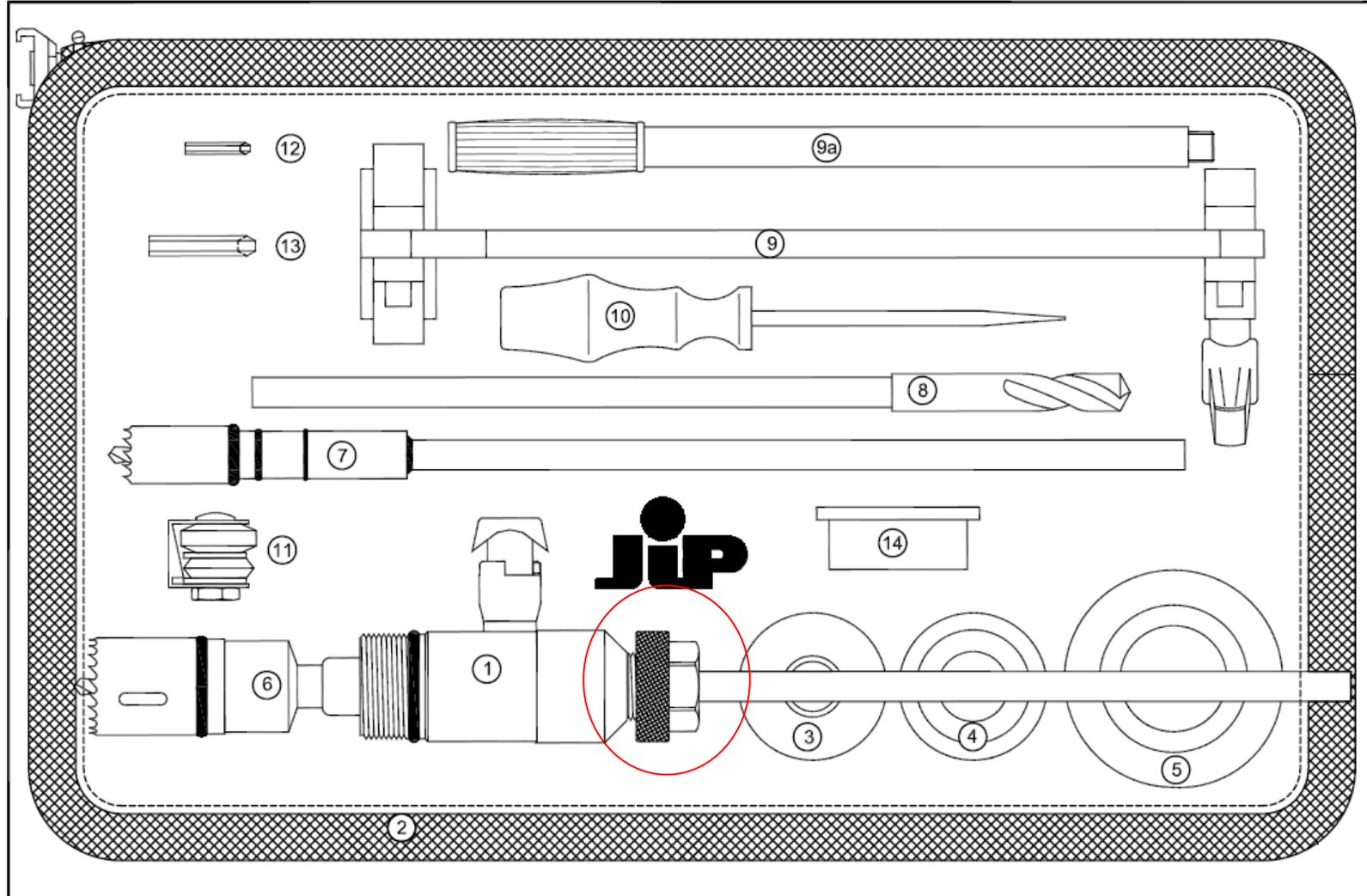
Contents/set up DN65-100

- Drilling shaft with hole saw
- Adapter
- Hot tap feed tool
 - control of the drilling shaft
 - control of drilling pressure
 - control of withdrawal of drilling shaft
 - tap tool with ball valve for flushing
- Reduction gear
 - turns ration 1:7
 - facilitates down to 120-200 r/min
 - protects the drilling machine from overheating



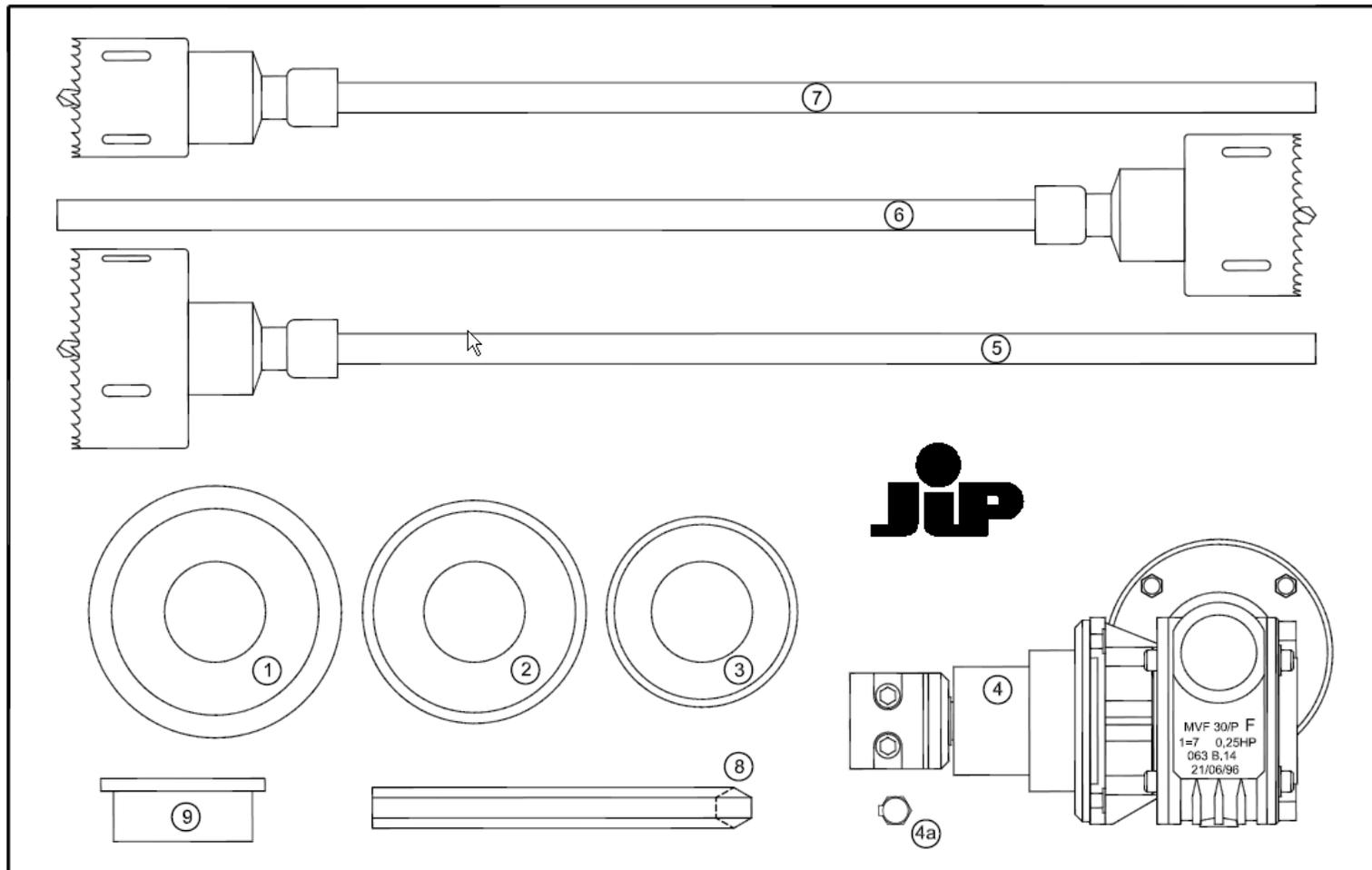


Hot tap tool set DN15-50





Hot tap tool box DN65-100





Before starting

- Inspect the tool box
 - Inspect holesaws and drills,
 - especially the drill with barb
 - Inspect gaskets and O-rings
 - Order original spareparts if needed
- Note where to shut off the DH system in case problems occur
- Note where there is acces to first aid (cold water)
- Note system parameters, pressure and temperature

- Read the instruction
- Observe if there is local legislation and regulation



Preparation

- Prepare the hot tap valve for the actual pipe:
 - Remove insulation, clean the pipe
 - Welding notch
 - DIN 2559
 - avoid grinding particles in the valve
 - Adapt to the pipe curve
 - Avoid splatter and welding seam inside the valve
 - Avoid damaging the thread
 - adapter must run freely to insure tight sealing
 - Weld on to main pipe
 - El. arc welding
 - Ensure enough working space around the main pipes





Preparation

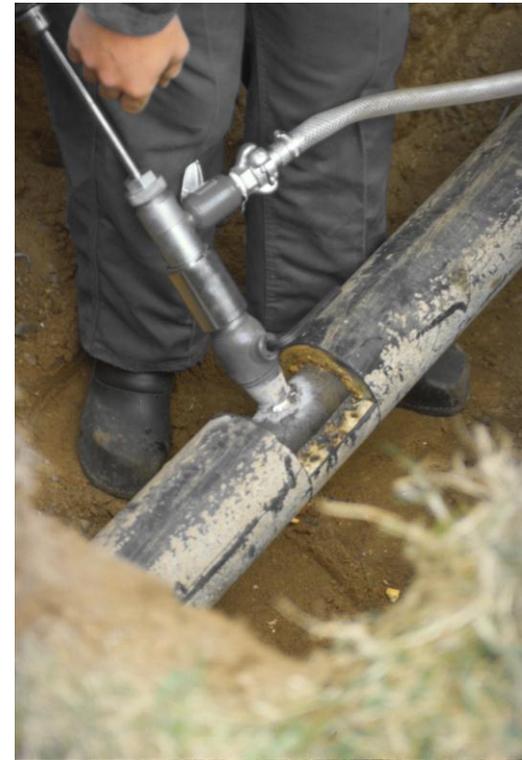
- Operate the ball valve to ensure it runs freely (Seal "sticks" on the ball)
 - Ensure that the valve is fully opened again
 - Drill / hole saw damage the ball
- Drilling machine connected
 - using transformer / generator
- Inspect the hot tap tool
 - Hole saw mounted correctly
 - Drill with barb mounted correctly (space for the pipe thickness)
 - Ensure barb is intact and sticks out further than the drill circumference
- Mount
 - Adapter
 - Hot tap tool/
 - Hose (obs high pressure and temp)
 - Hose to be fixed at the outlet end.





Preparation

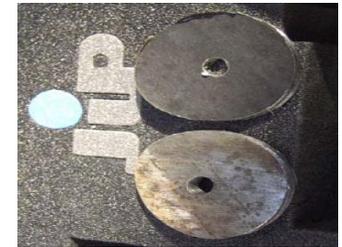
- Possibly pull back the holesaw / drill and check if the ball valve closes.
- Inspect that everything is in the right place
 - No risk of leakage
- Pressure test the welding, sealings
- Set the drilling mashine to the right speed (see separate table)
- Dependent on the system pressure, set the ball valve on the hose connection
 - To ensure flow that flushes chips out of the network
 - Not too high flow
- Apply appropriate safety clothing and protection equipment.





When drilling

- When started, **point of no return**
 - Don't pull back again, it will damage/destroy the barb, and you will lose the cut out disc.
 - Look out for reflex pulling back when the centre drill is through the main pipe wall
 - Apply only moderate pressure on the feed tool handle
 - smaller drilling and sawing chips
 - less burrs on the cut out disc, less risk of losing the disc.
 - **If hole saw gets stuck,**
 - **do not pull back, reverse the drilling machine**
 - Adapt flushing ball valve to the situation
 - flow through during the hose during the hole process.
 - Avoid immersing the hole saw too deeply into the water flow in the main pipe.
- When drilling large DN under high pressure
 - Look out for forces on the drilling shaft, pushing drilling machine, feed tool and gear against yourself.





After drilling

- Pull back the hot tap drill
 - Don't let it fall back
- Close the hot tap ball valve
 - Check if flow in hose stops
 - As no stop on ball, the ball may have to be adjusted
- Close the hose ball valve
 - Wait and see if pressure builds up
 - Open hose ball valve, if no flow
- Dismount the hose carefully
 - Be aware of hot water flowing back
- Dismount the hot tap tool carefully
 - Look out for the cut out disc
 - Remove the cut out disc
 - do not damage the barb



After drilling

- Weld the branch pipe onto the valve.
- Open the ball valve
 - Ensure that it is fully open (Marking on the stem)
- Mount the conical allen key plug
 - Weld around the plug
- If not branch is not ready for connection
 - the valve can be blanked off
 - the plug can be sealed with packing twine and past or teflon tape.
- Before removing the hole saw/drill shaft from the hot tap tools, remove burrs from the drilling machine if any.



After use of the tools

- Clean the tools
- See to all parts on the list are in the box, and not lost on site
- Inspect holesaws and drills,
 - especially the drill with barb
- Inspect gaskets and O-rings
- Leave the box open if wet inside
- Order original spareparts if needed
 - measures of the parts must be correct
 - quality of the hole saws and drills