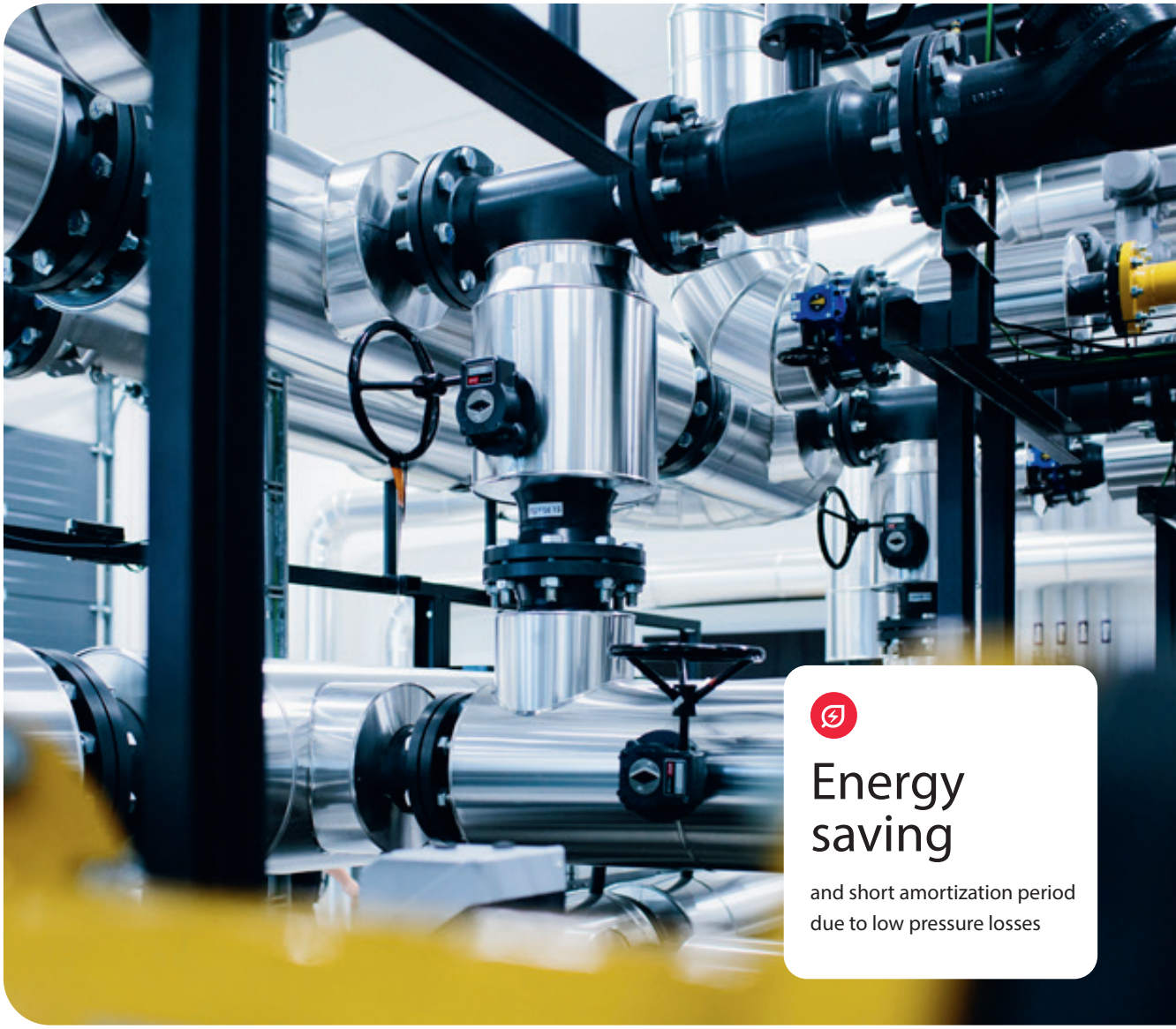
Shut off the pressure loss Open up for energy savings

For district heating and
district cooling applications



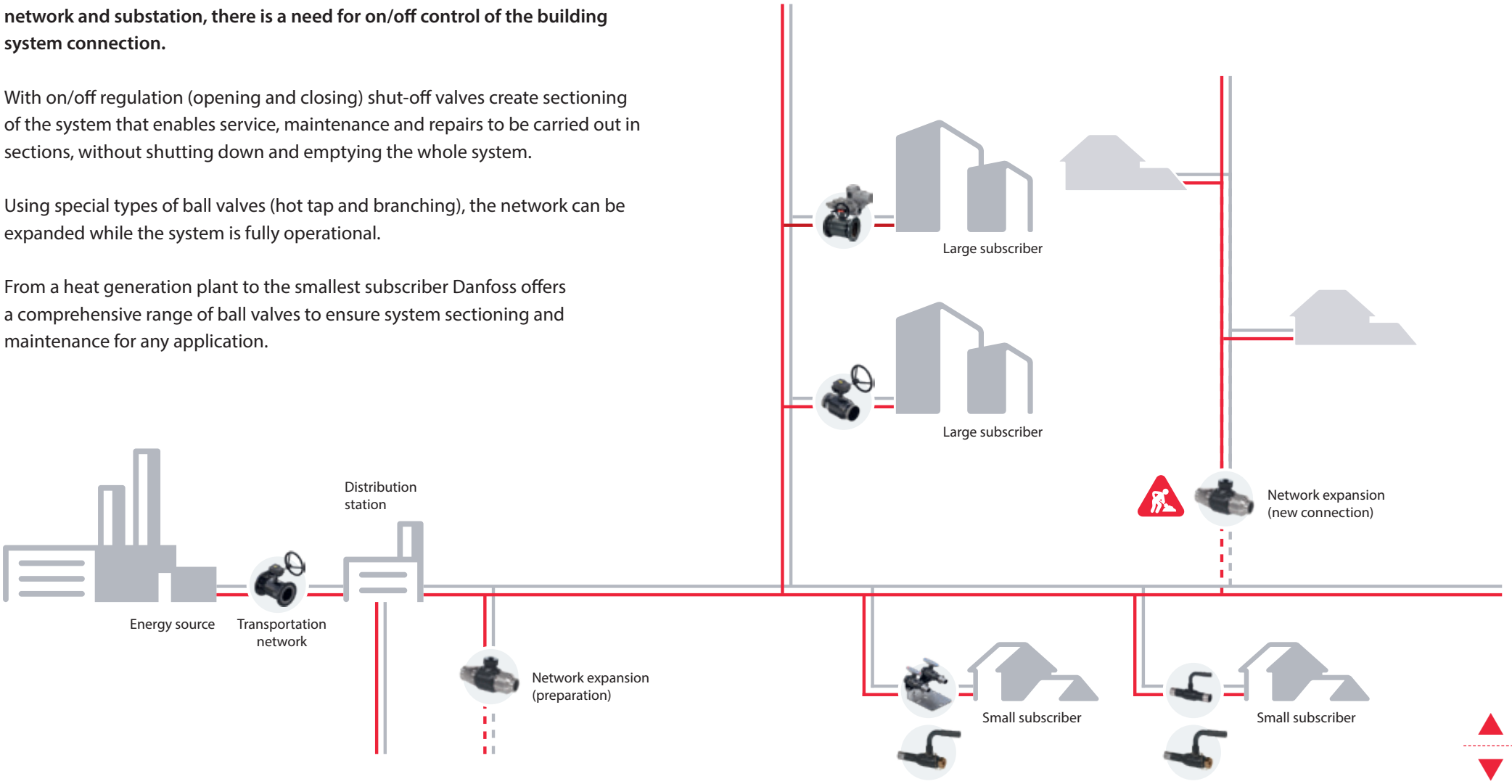
What is shut-off system control?

In every district heating utility, combined heat and power plant, distribution network and substation, there is a need for on/off control of the building system connection.

With on/off regulation (opening and closing) shut-off valves create sectioning of the system that enables service, maintenance and repairs to be carried out in sections, without shutting down and emptying the whole system.

Using special types of ball valves (hot tap and branching), the network can be expanded while the system is fully operational.

From a heat generation plant to the smallest subscriber Danfoss offers a comprehensive range of ball valves to ensure system sectioning and maintenance for any application.



>> What is shut-off system control?

Energy source and transportation network

The energy source and transportation network place the highest demands on equipment. This is because of the high demands of safety and reliability as well as the large volumes and pressures involved. Danfoss offers a full range of shut-off JIP® ball valves.

JIP® standard & full bore

Distribution network

The distribution network is the part of the primary network between the transportation network and consumption / subscriber stations. Operating conditions are not as tough as in the transportation network but demands placed on Danfoss products still are. This is because many smaller and mid-size systems are connected directly to the energy source. For distribution network Danfoss offers JIP® ball valves.

Expansion of the network

Both Transportation and Distribution network are often being expanded with new areas and users. Using Danfoss JIP® branching ball valves network can be prepared in the initial phase to allow for future expansion.
With Danfoss JIP® hot tap ball valves new connections to the network can be added while the system is fully operational. This saves time and eliminates interruptions for the users.

JIP® branching

JIP® hot tap

Large subscriber substation

Large subscriber substations (commercial and multi-family residential buildings) are either directly or indirectly connected to the distribution network where ball valves (JIP®) can be used.

JIP® standard & full bore

Small subscriber

Small subscribers (single family houses) can be connected to the system using small sized twin ball valves (flow/return) dedicated for single or double preinsulated pipes connection. Different connection options from internal thread, welding ends, to the press fit connection for PEX, AluPEX or Copper pipes.
Ideal solution for individual house connections in conversion projects from natural gas to district heating. Suitable for micro networks. In addition to twin ball valves Danfoss offers also small sized single ball valves in different connection options.

JIP® single or twin

What defines an optimum ball valve solution?

Long lifetime

An optimum ball valve is expected to have the same lifetime as the pipeline itself which is from 25 to 35 years, depending on the conditions.

Energy saving

Ball valves are not big contributors to total pressure drop in the system, but since each application contains several shut-off valves in different locations the effect is multiplied. An optimum ball valve has low pressure drop and adds minimum resistance to the system.

Reliable sealing

Optimum ball valves have sealing that is reliable and maintenance free during the lifetime.

What are the key challenges to overcome?

Achieving long lifetime

Ball valves can, if used in proper conditions (treated water, no sediments, etc.), last 25 to 30 years. But polymer sealing materials (f.e. EPDM) that are often used for stem sealing of valves, age over the years and lose the initial performance which can lead to leakage.

Enabling energy savings

Saving energy in a ball valve requires good knowledge in fluid dynamics in order to minimize the pressure loss.

Optimizing flow design

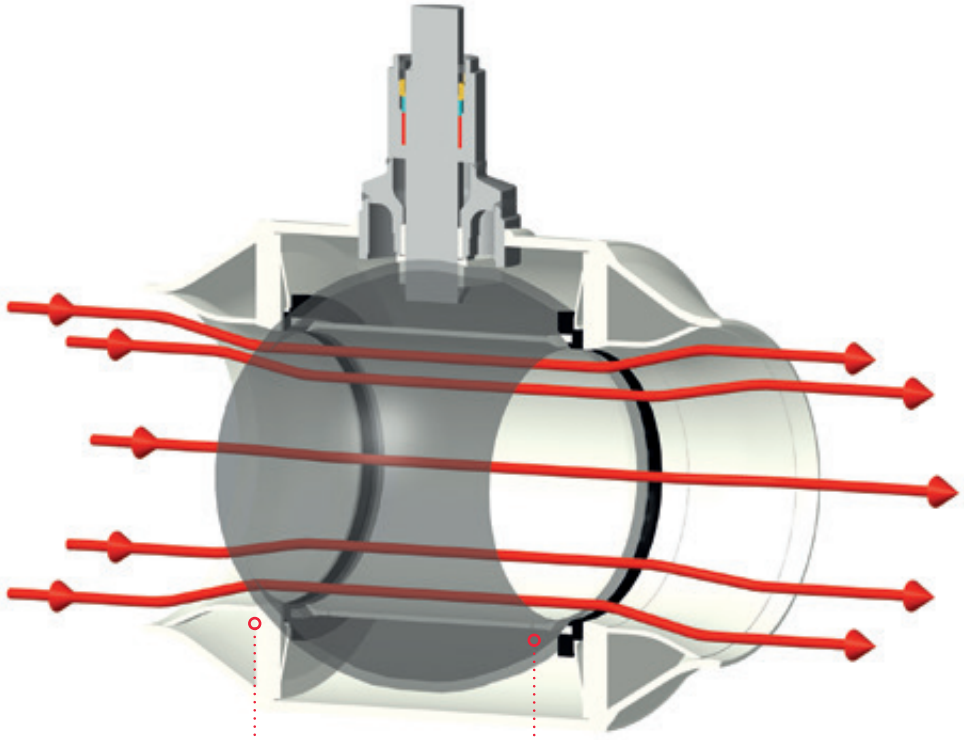
ensures lower pressure loss and therefore lower operating costs in the pumping stations. The lower energy consumption of the pumps leads to reduced CO_2 emissions.

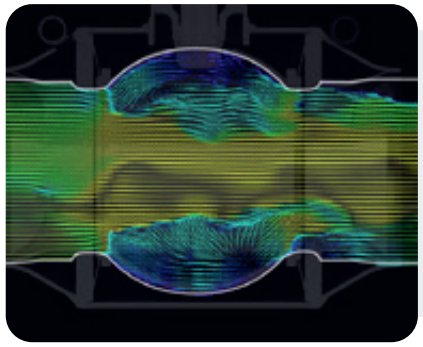
Danfoss JIP® – The advanced ball valve with optimum flow design

Ball valves are expected to be maintenance free. They create sections in the system and are used during maintenance on other products. Larger sections of the system need to be closed down for maintenance on a ball valve.
Danfoss JIP® steel ball valves with their features, present the leading and unique solution on the market of ball valves.

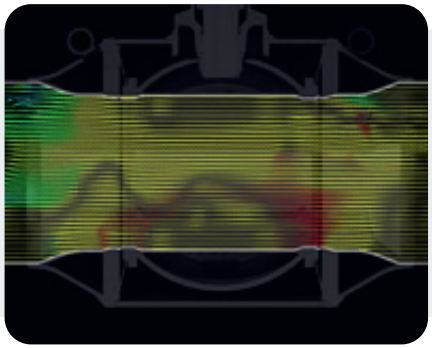
What makes JIP® special?

The unique flow design is represented by guiding pipes and pipe insert in the ball which ensures smooth flow through the ball eliminating cavitation and achieving a lower pressure drop.





Conventional ball valve creating disrupted flow.

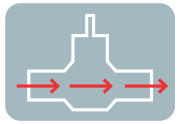


Danfoss JIP® with optimum flow design.

Guiding pipes
Danfoss ball valves have cylindrical inlets and outlets that ensure smooth transition of the flow in and out of the ball valve.

Ball with pipe insert
Ball design with pipe insert ensures smooth flow through the ball and eliminates cavitation.

The unique flow design enables a chain of events leading to benefits



Optimum flow design

Optimum flow design reduces pressure drop through the ball valve.

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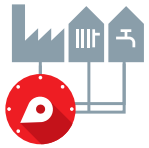

Low pressure drop

Lower pressure drop equals higher kv value of the valve

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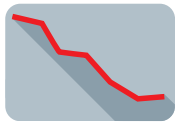


Low pump power consumption

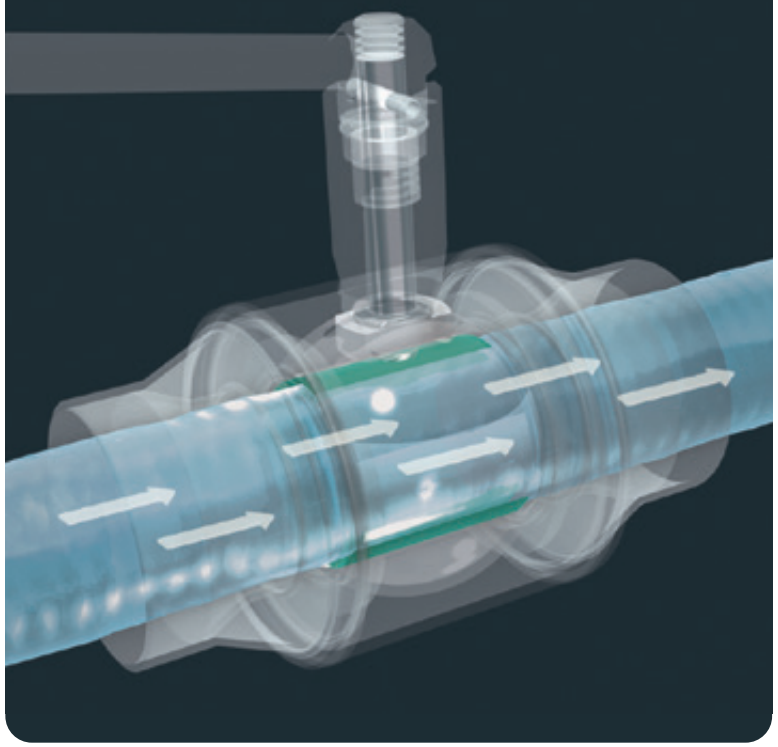
With reduced pressure drop through ball valves in the system, pumping power can be decreased which leads to lower operating costs.

With low pressure drop due to the unique flow design we achieve lower pump consumption. Lower pump consumption contributes to lower operating costs and leads to energy saving. This means, that when using Danfoss JIP® less energy is needed to pump working media through a ball valve.

Outcome 1: **Lower operating costs**

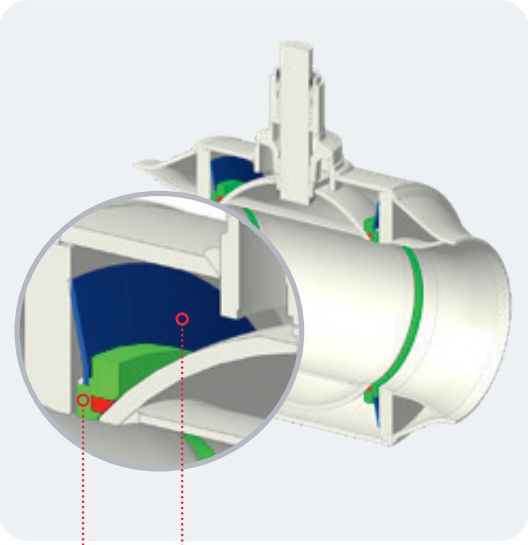
Outcome 2: **Lower CO_2 emissions**

Outcome 3: **Energy savings**



Distinctive design elements

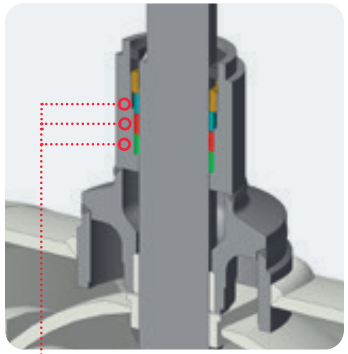
The ball valves are designed with a fully welded body and incorporate an improved break loose mechanism along with a spring configuration, providing extended durability and reliable sealing performance.



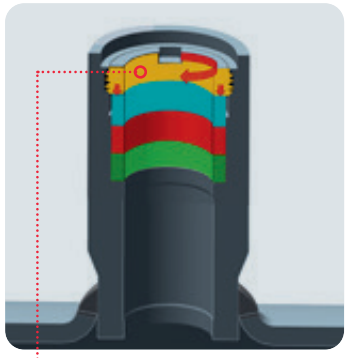
Spring for ball balancing
Ensures that the seals always will be pressed against the ball with a controlled operating force, independent of the axial forces.

Carbon reinforced PTFE ball sealing ring
Ensure complete tightness.

Packing box design
To guarantee a secure closure, we developed a packing box stem design that incorporates stem sealing along with an adjustable nut, effectively preventing any external leakage.



Graphite sealing
Stem sealing is achieved using graphite sealing rings, which resist deterioration over time, even under high temperatures and temperature fluctuations, unlike polymer-based o-rings.



Adjustable external thread nut
Throughout its service life, the stem seal does not require replacement. It can be easily re-tightened by rotating the adjustable nut clockwise within the packing box. This action compresses and secures the sealing rings, restoring the seal's effectiveness.

Ergonomically designed L-shaped handle
Provides a secure grip while allowing additional room for thicker valve insulation.

The advanced body design benefit summary

Extended lifetime of the product with no maintenance

- Danfoss has developed a unique body design for ball valves
- This unique design consists of sophisticated packing box and ball balanced by the spring*
- Materials used for stem sealing (graphite) does not age and extend the lifetime of the product
- With extended product lifetime we can achieve lower operating costs

Energy savings

- Danfoss has developed a unique body design for ball valves
- These unique design features include optimized inlets and outlets (guiding pipes) and ball (pipe insert).
- Optimized flow design minimizes the pressure loss over the ball valve which reduces operating costs and saves on energy and CO_2 emissions

* depend on valve DN size

Danfoss JIP® ball valves for building installations

Danfoss JIP® reduced bore valves




Operation	L-Handle			Worm Gear / Actuator		L-Handle		Worm Gear / Actuator
Type	Flange (FF)					Welding (WW)		
DN	15-50	65-200		65-500		15-50	65-200	65-600
PN	40	16	25	16	25	40	25	25





Operation	L-Handle			T-Handle	L-Handle	T-Handle	L-Handle
Type	Flange / Welding (FW)			Internal thread (II)		Internal thread / Welding (IW)	
DN	15-50	65-200		15-25	15-50	15-25	15-50
PN	40	16	25	40	40	40	40

Find all reduced bore valves

Watch video

>> Danfoss JIP® ball valves for building installations

Danfoss JIP® full bore valves





Operation	L-Handle			Worm Gear / Actuator		L-Handle		Worm Gear / Actuator	L-Handle		
Type	Full Bore Flange (FF)					Full Bore Welding (WW)			Flange / Welding (FW)		
DN	15-50	65-150		150-400		15-50	65-150	50-400	15-50	65-150	
PN	40	16	25	16	25	40	25	25	40	16	25

Find all full bore valves

Danfoss JIP® draining valves


Operation	Hexagon	L-Handle
Type	Welding / External thread + closing cap (WE)	Welding / External thread + closing cap (WE)
DN	15-50	15-25
PN	40	40

Find all draining valves

>> Danfoss JIP® ball valves for building installations

Danfoss JIP® twin valves

Twin single pipe							Accessoiries
Operation	T-Handle	L-Handle	T-Handle	L-Handle	T-Handle	L-Handle	EPP valve insulation covers for twin single pipe valves
Type	Welding (WW)		Internal thread (II)		Internal thread / Welding (IW)		
DN	15-25	32	15-25	32	15-25	32	
PN	40	40	40	40	40	40	

Twin double pipe			Accessoiries
Operation	T – Griff 45°	T – Griff 45°	EPP valve insulation cover for twin double pipe valves
Type	Internal thread (II)	Internal thread / Welding (IW)	
DN	15-25	15-25	
PN	40	40	

Find all twin valves

Watch video

>> Danfoss JIP® ball valves for building installations

Danfoss JIP® twin valves for quick & easy press-fit connection

	Designed for single pipe systems 	Designed for double pipe systems 	Accessoiries
Operation	T-Handle	T-Handle	EPP valve insulation covers
Type	TWIN single pipe (JIP IP-TWS)	TWIN double pipe (JIP IP-TWD)	
DN	15-25		For twin single pipe valves 
PN	25/40		
Connection Type	Rp Int. thread /Press fit*		For twin double pipe valves 
Fit to pipe Type	AluPEX, PEX, & Copper preinsulated pipes by Logstor/Isoplus*		

Find all press-fit valves

Danfoss JIP® valves for copper pipe connections

		
Operation	L-Handle	L-Handle
Type	Copper (CC)	Internal thread / Copper (IC)
DN	15-25	15-25
PN	16	16

Find all copper connection valves

*For subscribers connection in low duty DH systems with AluPEX , PEXFlex or Copper pre-insulated twin/single pipes by Logstor/Isoplus

Danfoss JIP® ball valves for extension of pre-insulated systems

Danfoss JIP® branching valves

Branching ball valves

Branching ball valves are the solution for preparing the network for future extension. The valves are welded in place and the connection is added in the future when needed. When the extension is done, valves can be secured in the open position and easily insulated.

Operation	External hexagon		External hexagon		External hexagon		External hexagon
Type	Branching reduced bore (WW)		Branching Full bore (WW)		Branching reduced bore (CC)		Branching welding/ press-fit* (WP)
DN	15-50	65-200	20-50	65-100	15-40	50-80	20-25
PN	40	25	40	25	16	10	40

* For connection to AluPEX & PEX preinsulated pipes by Logstor/Isoplus.

Find all branching valves

>> Danfoss JIP® ball valves for extension of pre-insulated systems

Danfoss JIP® hot tap valves

The hot tap system enables an easy, safe, environmental friendly and economical connection of a new customer - without having to cut off the heating supply to other district heating customers. This ensures better service towards existing customers of the district heating net.

Operation	External hexagon
Type	Hot Tap (WW)
DN	15/20-100
PN	40

Hot tap-drilling machine driven tool
For valve DN 15/20-100

Hot tapping tool with drilling machine

Hot tapping machinetoolbox DN15/20-100

Adapter toolbox DN15/20-100

Operation	Sechskant
Type	Hot Tap (WW)
DN	15/20-32
PN	40

Hot tap-manual ratchet driven tool
For valve DN15/20-32

Hot tapping manual ratchet machine

Hot tapping machinetoolbox DN15/20-32 with included adapters

Find all hot tap valves

Find all hot tap tools

Watch video

Long lasting quality to the core
Danfoss valves in fact

System reliability, building and occupant safety are crucial when it comes to district heating and cooling applications. This is why we pay special attention to design and material selection used in our products.

Valve bodies are made of high quality materials. Critical internal parts are made of well-proven stainless steel material, that in combination with a specially designed internal components ensures resistance to cavitation and corrosion. Danfoss products will ensure trouble free operation, low maintenance and operational costs.

About Danfoss

For more than 90 years Danfoss has been supplying innovative heating solutions that cover everything from individual components to complete district heating systems. Danfoss engineers technologies that enable the world of tomorrow to do more with less.

For more information visit:
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