Modern automated process plants call for the highest possible performance of many control loops engaged in control systems. Of vital importance is keeping the technological extents within the narrowest gauge possible. It is essential for quality and efficiency of any manufacturing, as well as for reliability of any plant. Among many varied industries the power industry is the most challenging for the devices' manufacturers. Power plants offer 24/7 service, thus of their highest priority are durability and action's reliability of installed devices. Power production employes media about extreme parameters, which demand round-the-clock and very precise control. Thus, the devices come to the fore, i.e. control valves, check valves, steam conditioning valves (or separate steam coolers and steam spargers), and dampers, among others.

This booklet presents the up-to-date offer of control devices made by INTEC-WAKMET consortium. Control and check valves, as well as their actuators have individual descriptions available on internet websites of both companies (www.intec.com.pl and www.wakmet.com.pl.). Industrial Automatics Enterprise INTEC Corp. (Wrocław, Poland) and WAKMET Industrial Valves Factory Ltd.Co.(Bodzanów, Poland) are parts of mentioned consortium. Both partners have come into business in the year of 1991. At the start, they had manufactured simple, low-pressure control valves and dampers. Today, after nearly 31 years, the consortium is a leading manufacturer, and its devices and fittings demonstrate world-quality standards, both in advanced, sophisticated construction and performance in extreme conditions. Forty percent of retail volume goes to foreign patrons. Valve's factory is located at Bodzanów. Its facilities are equipped with the state-of-the-art machinery and CNC centers. Thanks to these, the production is fast, repeating, and flexible. Finished goods, as well as design works and manufacture procedures, have got all necessary certificates.

The product line presented herein consist of: general purpose control valves, control valves for power industry, steam conditioning valves, coolers, and special purpose valves. Their design and construction are staunch and durable, they are easy to maintain and the maintenance itself if very limited. To achieve these, the heavy duty valves have forged bodies processed by means of EDM (electrical discharge machining) and self-sealing bonnets. We extensively use spring-loaded packings and do avoid internal soft seals. The valves dedicated to work in extreme conditions – such as cavitation, flashing, throttled flow, and wet steam – are design to handle them.

HCVKC5 steam conditioning valve during CNC metalworking.

Finished HCVKC5 steam conditioning valve.

Our main patron is power industry. The reference list is long and includes almost all national electric power plants and CHPs (combined heat and power plants). We are absolutely convinced that our devices and fittings meet high demands and expectations of power industry; and can effectively compete against any other ones. We do encourage to cooperation!

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Contents

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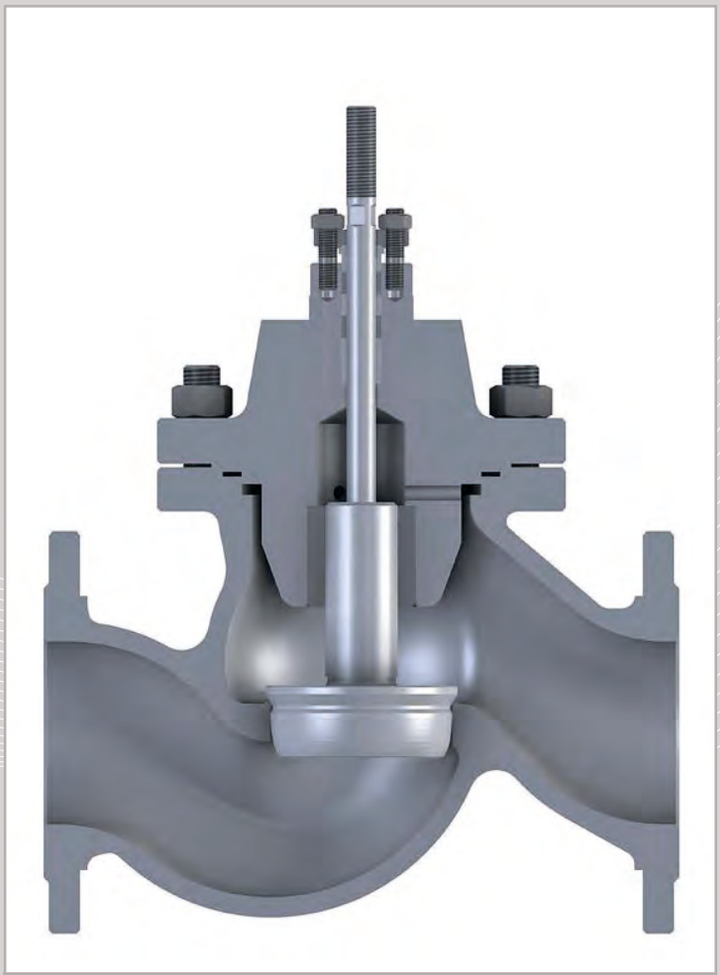
ECV Valve



Application

Control valve ECV type is basically intended for operation in non-critical conditions. It is suitable to control when rather small pressure drops appear. It also meets demands of the time limited work at critical conditions. Continuous heavy cavitation, flashing, or chocked flow demand external protection, such as an additional orifice or perforated pressure-drop plates. ECV valve is suitable to use as highly precise manual by-pass valve.

Description

ECV is straightwayglobe type valve. Basically, it consists of body with weld overly seat and a plug with a stem driven through guide bushing. The body is topped by the bonnet and sealed with a gasket. The single-stage expansion of the medium is controlled by linear shift of the plug. There are two types of plug available: contour or perforated. The valve should work with flow-to-open direction.

Technical data

Nominal diameter	DN15÷DN300			
Nominal pressure	PN10÷PN40			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	stellite			
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved); soft sealing (NBR or PTFE) – VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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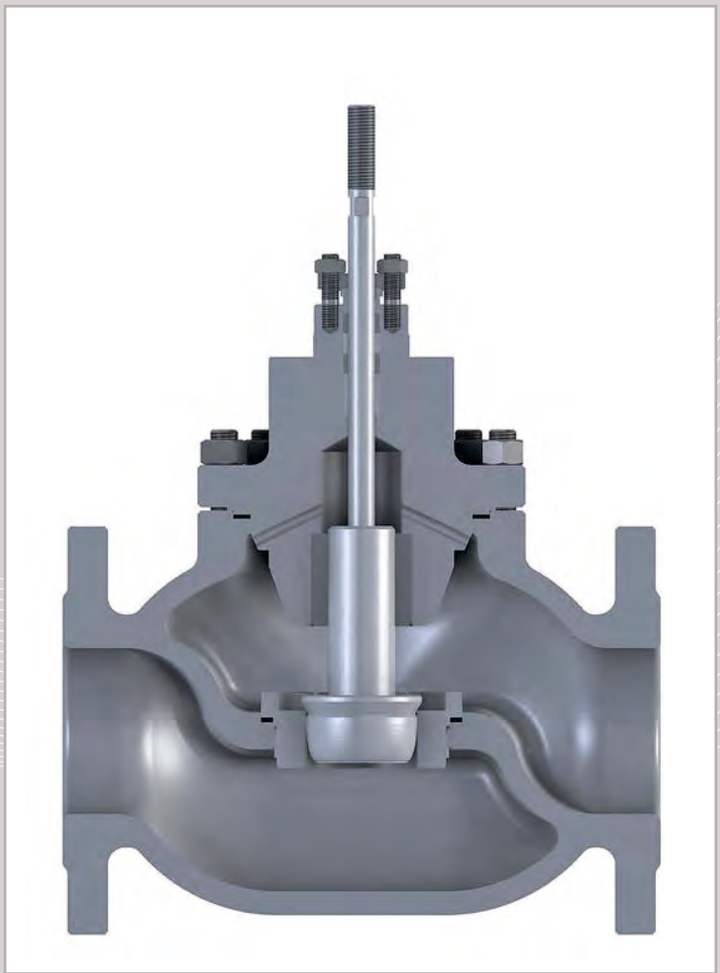
MCV Valve



Application

Control valve MCV type is basically intended for operation in non-critical conditions. It is suitable to control when rather small pressure drops appear. It also meets demands of the time limited work at critical conditions. Continuous heavy cavitation, flashing, or chocked flow demand external protection, such as an additional orifice or perforated pressure-drop plates. MCV valve is suitable to work in closed-loop automatic control systems.

Description

MCV is straightway globe type valve with casted body. Basically, it consists of body with screwed seat and a plug with a stem driven through guide bushing. The body is topped by the bonnet and sealed with a gasket. The single-stage expansion of the medium is controlled by linear shift of the plug. There are two types of plug available: contour or perforated. When by pneumatic actuator driven the valve should work with flow-to-open direction.

Technical data

Nominal diameter	DN15÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved); soft sealing (NBR or PTFE) – VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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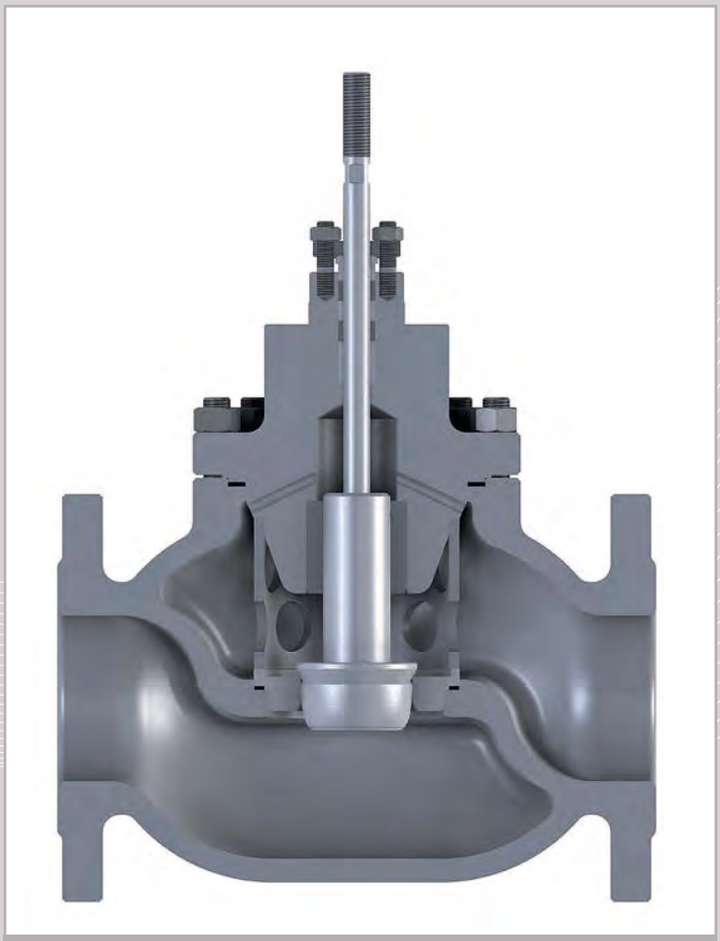
HCVA1 Valve



Application

HCVA1 control valve is intended for operation in non-critical or semi-critical conditions. It also meets demands of the time limited work at critical conditions. HCVA1 valve applies to control flow of any liquids, gases as well as a steam, when rather small or moderate pressure drops appear. Continuous heavy cavitation, flashing, or chocked flow conditions demand external protection, such as an additional downstream orifice or perforated pressure-drop plates. HCVA1 valve is suitable to work in closed-loop automatic control systems.

Description

HCVA1 is straightway globe type valve. Basically, it consists of body topped by the bonnet, a plug with a stem driven through guide bushing, and of the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets (placed in a fixed gap). Thus disassembly and assembly of the valve is easy and does not require any special tools. The single-stage expansion of the medium is controlled by linear shift of the plug. There are two types of plug available: contour or perforated. It is advisable that when media flow goes in flow-to-open direction, especially when pneumatic actuator is to drive the valve.

Technical data

Nominal diameter	DN15÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved); soft sealing (NBR or PTFE) – VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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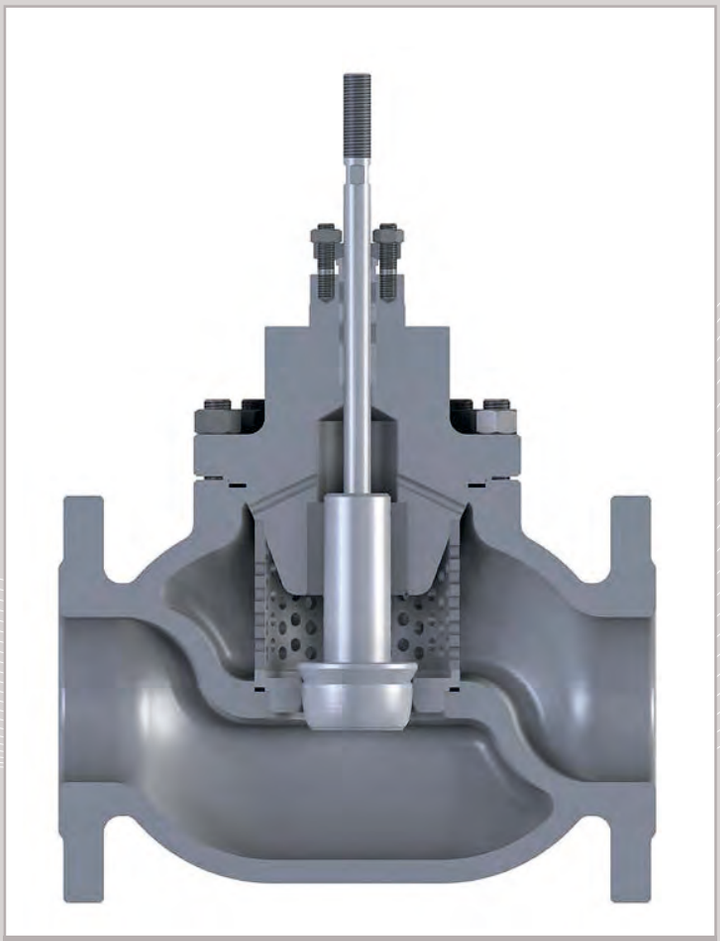
HCVA2 Valve



Application

HCVA2 control valve is intended for operation in semi-critical conditions such as continous partial cavitation or chocked flow. It also meets demands of the time limited work at full-critical conditions. HCVA2 valve applies to control flow of any liquids, gases as well as a steam, when moderate pressure drops appear. Continuous heavy cavitation or flashing conditions demand external protection, such as an additional downstream orifice or perforated pressure-drop plates. HCVA2 valve is suitable to work in closed-loop automatic control systems.

Description

HCVA2 is straightway globe type valve. Basically, it consists of body topped by the bonnet, a plug with a stem driven through guide bushing, and of the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets (placed in a fixed gap). Thus disassembly and assembly of the valve is easy and does not require any special tools. The expansion of the medium is divided into two stages. The first pressure active drop occurs in the plug-seat gap and the second (passive) – on the throttling stage. This way partial cavitation or chocked flow over the plug can be eliminated. There are two types of plug available: contour or perforated. It is advisable that when media flow goes in flow-to-open direction, especially when pneumatic actuator is to drive the valve.

Technical data

Nominal diameter	DN15÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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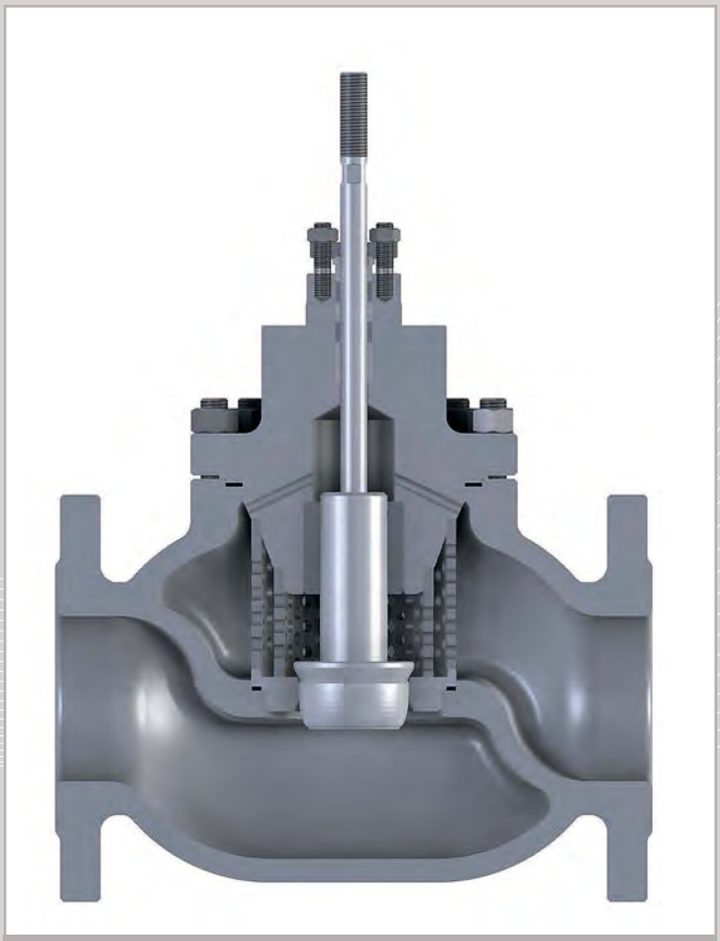
HCVA3 Valve



Application

HCVA3 control valve is intended for operation in critical conditions such as heavy cavitation or chocked flow. HCVA3 valve applies to control flow of any liquids, gases as well as a steam, when high pressure reduction is needed. HCVA3 valve is suitable to work in closed-loop automatic control systems.

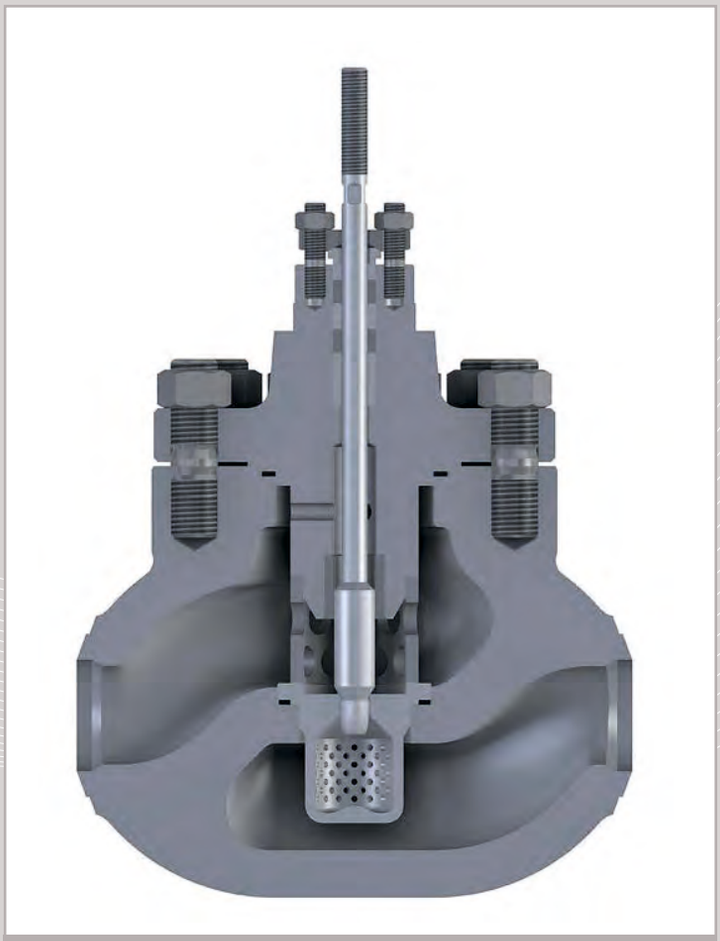
Description

HCVA3 is straightway globe type valve. It consists of body topped by the bonnet, a plug with a stem driven through guide bushing, and the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets (placed in a fixed gap). Thus disassembly and assembly of the valve is easy and does not require any special tools. The expansion of the medium is divided into three stages. The first pressure active drop occurs in the plug-seat gap and the second and third (passive) – on the throttling stage. This way cavitation or chocked flow over the plug can be eliminated. There are two types of plug available: contour or perforated. It is advisable that when media flow goes in flow-to-open direction, especially when pneumatic actuator is to drive the valve.

Technical data

Nominal diameter	DN15÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cages	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVA4 Valve



Application

HCVA4 control valve is intended for operation in full-flashing conditions. HCVA4 valve applies to control flow of condensate on the verge of evaporation. It is designed to use on high pressure drainage systems, boiler desalination or the drum water discharge. HCVA4 valve is suitable to work in closed-loop automatic control systems.

Description

HCVA4 is straightway globe type valve. It consists of body topped by the bonnet, a plug with a stem driven through guide bushing, and the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets (placed in a fixed gap). Thus disassembly and assembly of the valve is easy and does not require any special tools.The expansion of the medium is closed in isolated area of the cage, under the seat. This makes flashing harmless to the body of the valve. There are two types of plug available: contour or perforated. The valve works with flow-to-close direction thus electric or hydraulic actuator is recommended.

Technical data

Nominal diameter	DN15÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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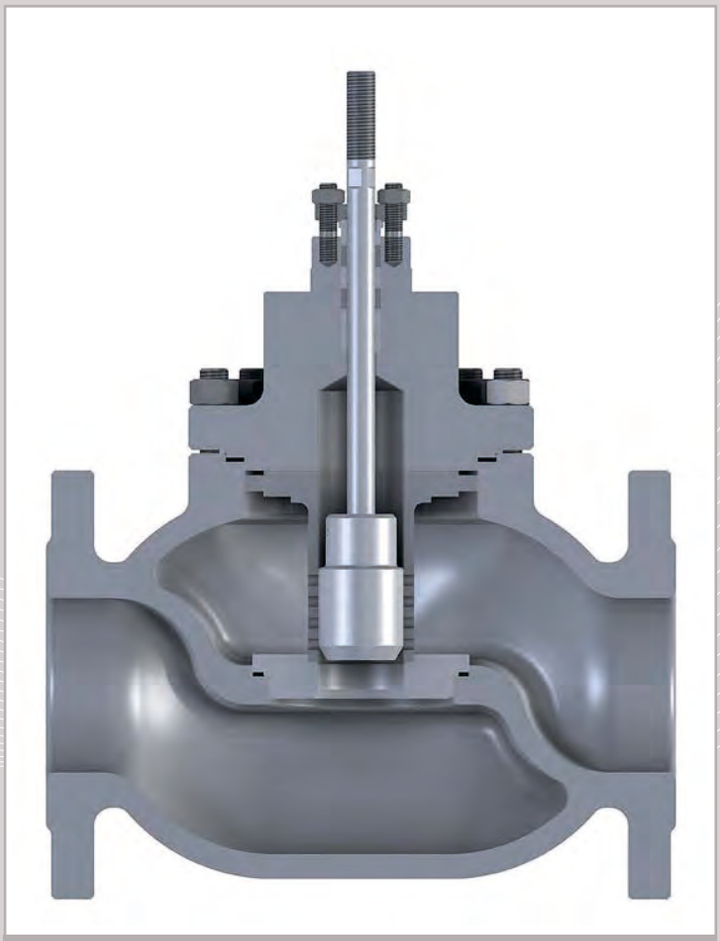
HCVB1 Valve



Application

HCVB1 control valve is designed for operation in non-critical or semi-critical conditions. It also meets demands of the time limited work at critical conditions. HCVB1 valve applies to control flow of any liquids, gases as well as a steam, when small or moderate pressure drops appear. Continuous heavy cavitation, flashing or chocked flow conditions demand external protection, such as an additional downstream orifice or perforated pressure-drop plates. HCVB1 valve is suitable to work in closed-loop automatic control systems.

Description

HCVB1 is straightway globe type valve. It consists of body topped by the bonnet, a plug with a stem driven through guide bushing and the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets placed in a fixed gap. Thus disassembly and assembly of the valve is easy and does not require any special tools. The single-stage expansion of the medium is controlled by the plug moving in the cage. There are two types of plug available: piston or perforated. The plug can be balanced. The valve can work in both flow-to-close and flow-to-open directions.

Technical data

Nominal diameter	DN25÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	10÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved); soft sealing (NBR or PTFE) – VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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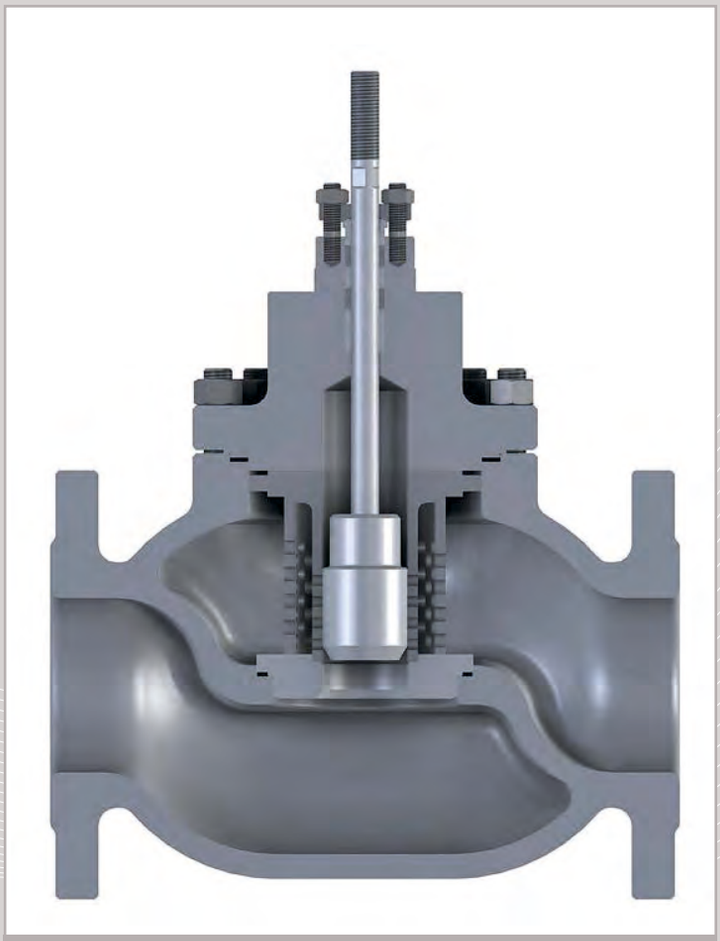
HCVB2 Valve



Application

HCVB2 control valve is designed for operation in semi-critical conditions, especially when chocked flow generates extensive noise during steam pressure reduction process. It also meets demands of the time limited work at critical conditions. HCVB2 valve applies to control flow of any liquids, gases as well as a steam, when moderate pressure drops appear. HCVB2 valve is suitable to work in closed-loop automatic control systems.

Description

HCVB2 is straightway globe type valve. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets placed in a fixed gap. Thus disassembly and assembly of the valve is easy and does not require any special tools. The two-stage expansion of the medium is controlled by the plug moving in the cage. The expansion of the medium is divided into two stages. The first active pressure drop occurs in the first cage holes, which are sequentially uncovered by a plug. The second (passive) – on the throttling stage. There are two types of plug available: piston or perforated. The plug can be balanced. The valve can work in only in flow-to-open direction.

Technical data

Nominal diameter	DN25÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	10÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cages	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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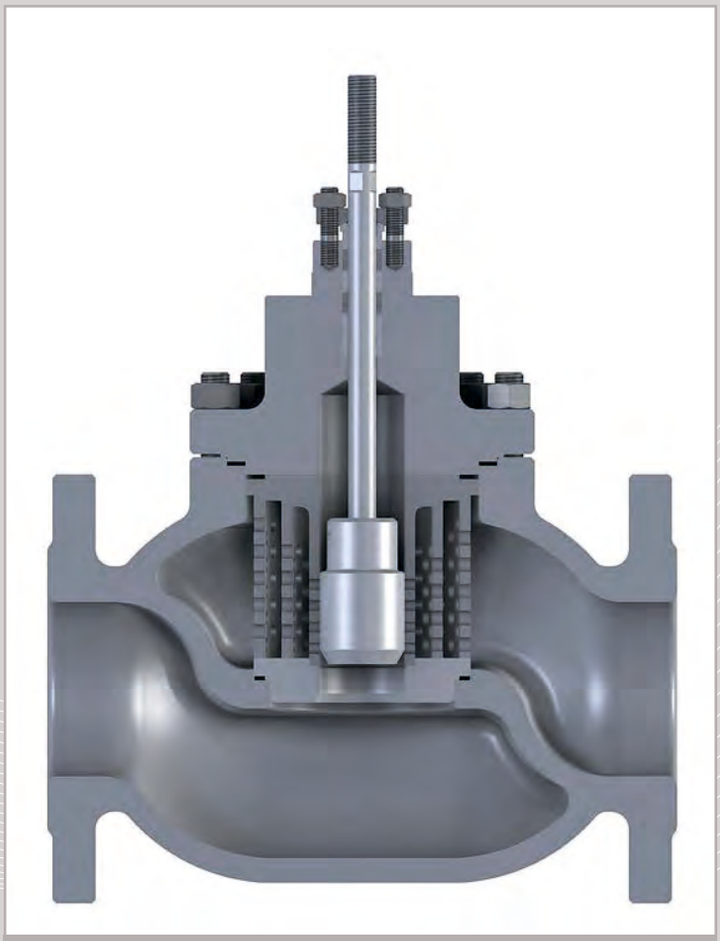
HCVB3 Valve



Application

HCVB3 control valve is designed for operation in critical conditions, especially when chocked flow generates extensive noise during steam pressure reduction proces due to high pressure reduction ratio. HCVB3 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVB3 valve is suitable to work in closed-loop automatic control systems.

Description

HCVB3 is straightway globe type valve. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets placed in a fixed gap. Thus disassembly and assembly of the valve is easy and does not require any special tools. The three-stage expansion of the medium is controlled by the plug moving in the cage. The expansion of the medium is divided into three stages. The first active pressure drop occurs in the first cage holes, which are sequentially uncovered by a plug. The second and third (passive) – on the next two throttling stage. There are two types of plug available: piston or perforated. The plug can be balanced. The valve can work in only in flow-to-open direction.

Technical data

Nominal diameter	DN25÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	10÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cages	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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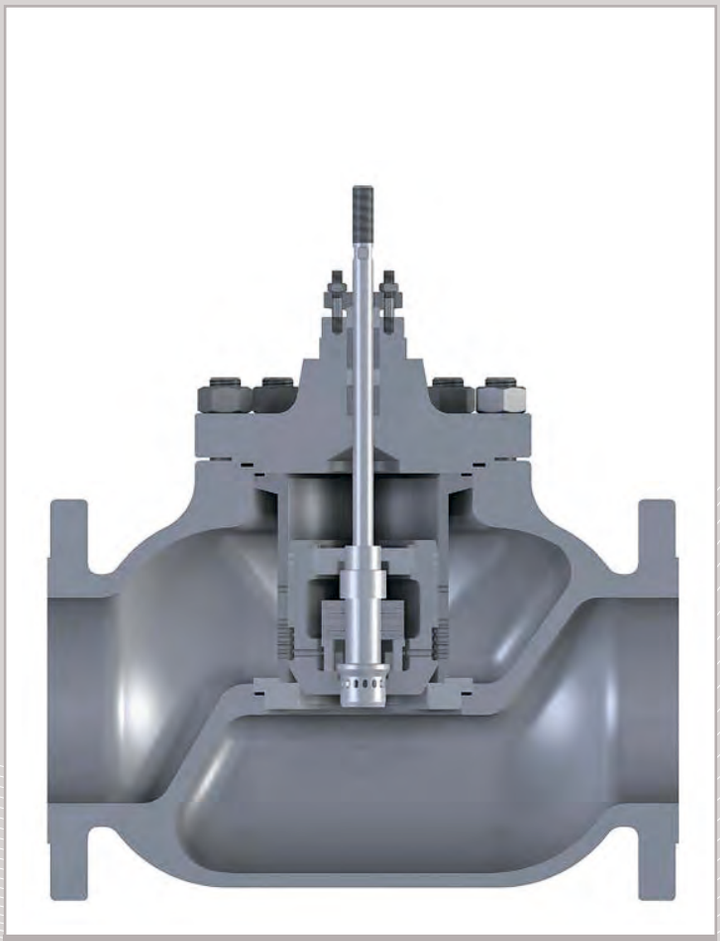
HCVB4 Valve



Application

HCVB4 control valve is designed for operation in critical conditions, especially where severe cavitation occurs during small flows. That makes the valve suitable for using as start-up or feed-water control device. HCVB4 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVB4 valve is designed to work in closed-loop automatic control systems.

Description

HCVB4 is straightway globe type valve. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets placed in a fixed gap. Thus disassembly and assembly of the valve are easy and does not require any special tools. The main plug is balanced with use of small perforated pilot plug placed inside the main one. The pilot has two functions. First is to cut off balancing holes when the valve is closed. The second is to regulate small flows when high control accuracy is needed. Owed to such solution the valve reaches 1:200 rangeability ratio as well as very high tightness class. There are two types of plug available: piston or perforated. The valve can work in only in flow-to-close direction.

Technical data

Nominal diameter	DN50÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	40÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	200:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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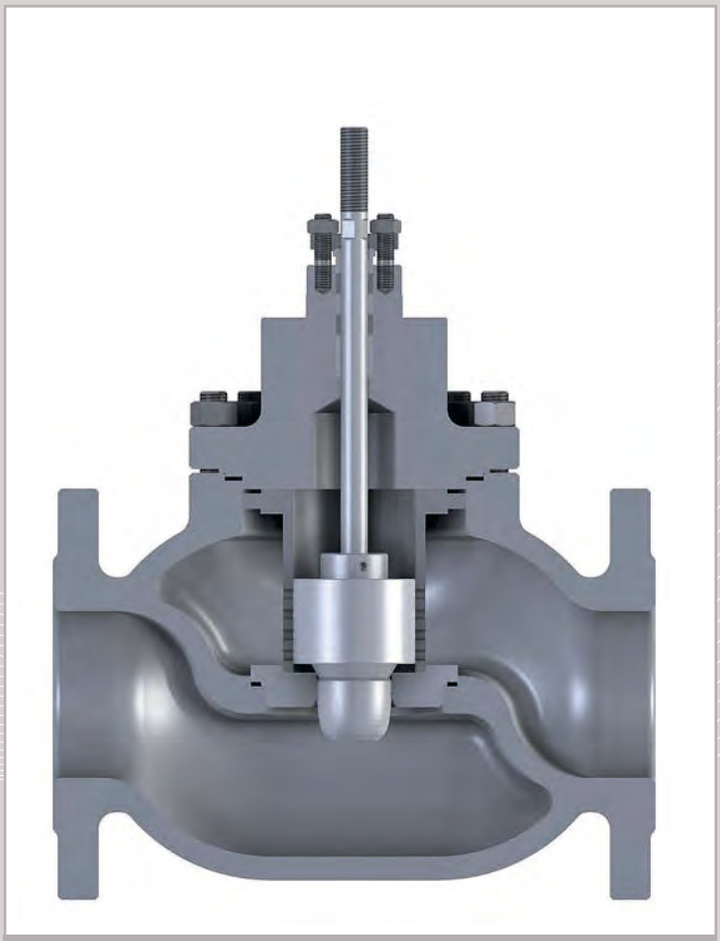
HCVB5 Valve



Application

HCVB5 control valve is designed for operation in critical conditions, especially where medium intensity cavitation occurs. That makes the valve suitable for using as hot condensate flow control device. HCVB5 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVB5 valve is designed to work in closed-loop automatic control systems.

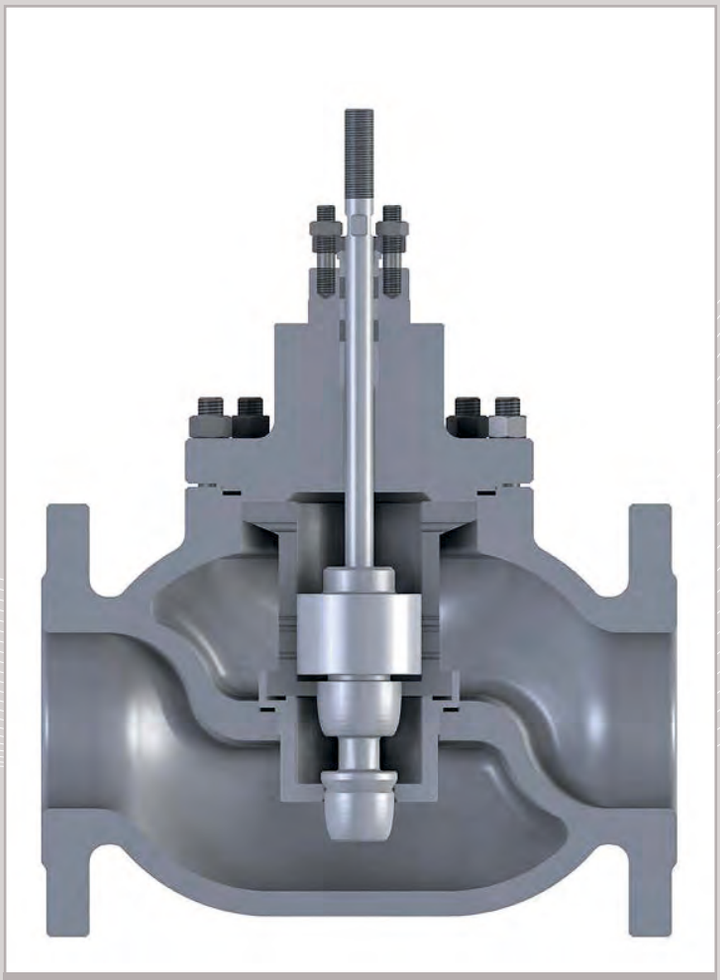
Description

HCVB5 is straightway globe type valve. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets placed in a fixed gap. Thus disassembly and assembly of the valve is easy and does not require any special tools. The plug is two-step. The first step is contour type whereas the second has piston shape. That way pressure reducing is two-stage and active, with pressure recovery between the stages. The plug can be balanced. The valve can work in only in flow-to-open direction.

Technical data

Nominal diameter	DN40÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	6,3÷800 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVB6 Valve



Application

HCVB6 control valve is designed for operation in critical conditions, especially where severe cavitation appears. That makes the valve suitable for using as HP water injection or pump by-pass control device. HCVB6 valve applies to control flow of any liquids, gases as well as a steam, when high pressure reduction ratio appear. HCVB6 valve is designed to work in closed-loop automatic control systems.

Description

HCVB6 is straightway globe type valve. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets placed in a fixed gap. Thus disassembly and assembly of the valve is easy and does not require any special tools. The plug is three-step. The first and the second step is contoure type whereas the third has piston shape. That way pressure reducing is three-stage and active, with pressure recovery between the stages. The plug can be semi-balanced. The valve can work in only in flow-to-open direction.

Technical data

Nominal diameter	DN15÷DN150			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷125 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

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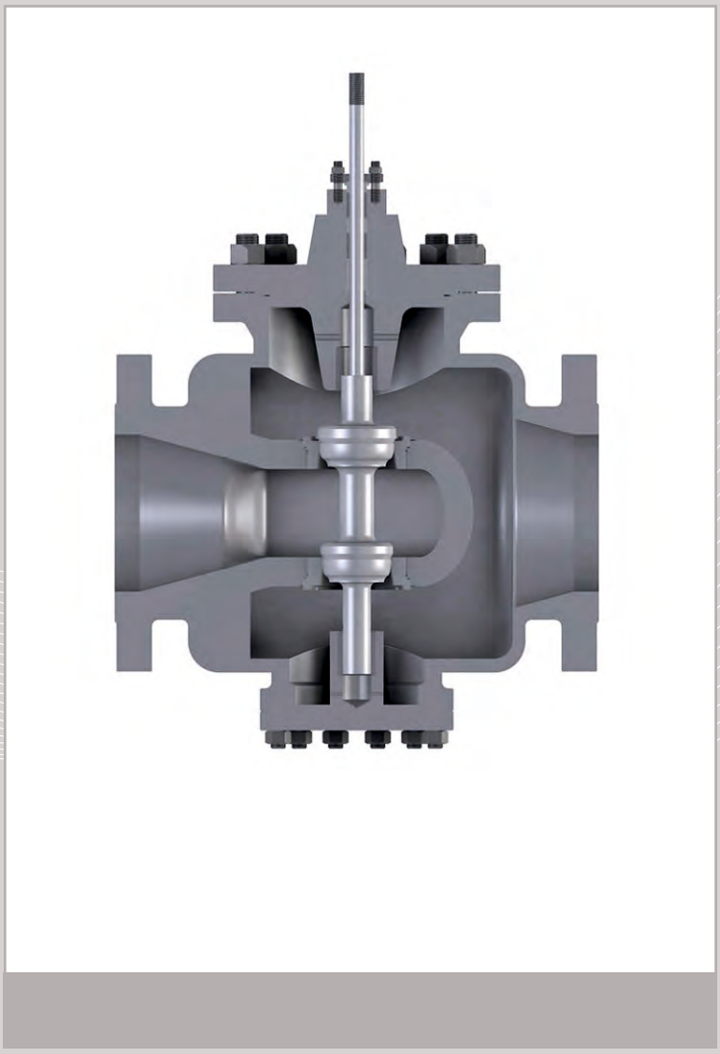
HCVC1 Valve



Application

Control valve HCVC1 type is basically intended for operation in non-critical conditions. It is suitable to control where small pressure reducing ratio appears. It also meets demands of the time limited work at critical conditions. Continuous heavy cavitation, flashing, or chocked flow demand external protection, such as an additional downstream orifice or perforated pressure-drop plates. HCVC1 valve is designed to work in closed-loop automatic control systems.

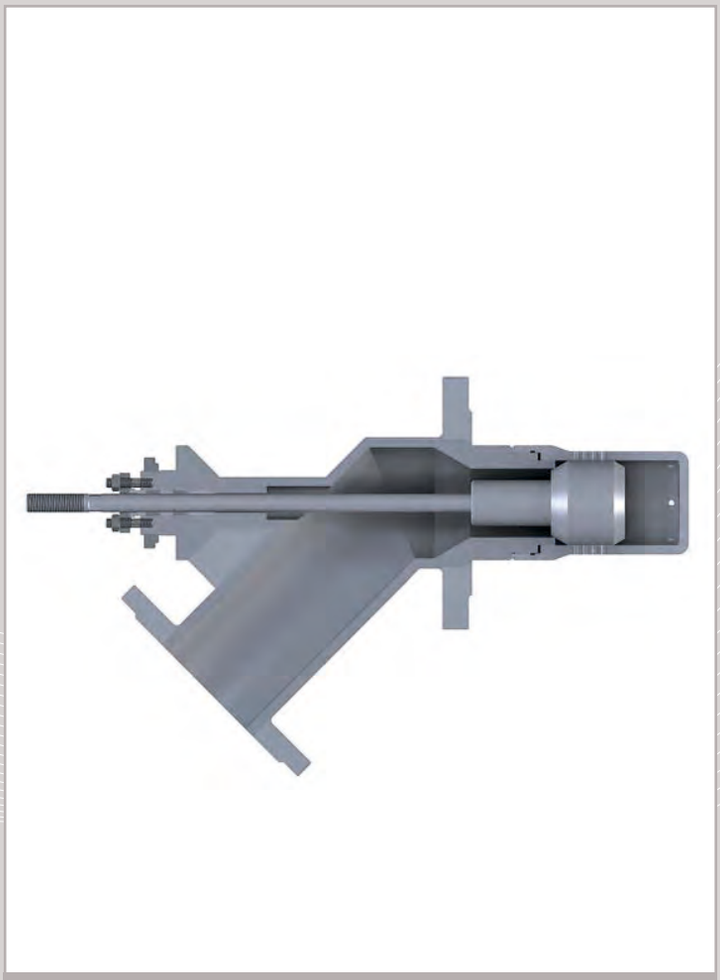
Description

HCVC1 is straightway globe type valve. Basically, it consists of body with screwed-in seats and doubled plug with a stem driven through guide bushing. The body is topped with the bonnet and sealed with graphite spiral wound gasket. The single-stage expansion of the medium is controlled by linear shift of the plug. Doubled seats and plug make 80% stem required force balancing, which allows using small actuator. There are two types of plug available: contour or perforated. The valve should work with flow-to-open of upper plug direction.

Technical data

Nominal diameter	DN50÷DN300			
Nominal pressure	PN10÷PN160			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	16÷1400 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	II, metal/metal sealing			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVD1 Valve



Application

HCVD1 control valve is designed for operation in critical conditions, especially where severe cavitation or full flashing appears. That makes the valve suitable for using as pump by-pass control device. HCVD1 valve applies to control flow of any liquids, gases as well as a steam, when high pressure reduction ratio appears. HCVD1 valve is designed to work in closed-loop automatic control systems.

Description

HCVD1 is intended for assembling on tank wall or bottom. It consists of body connected with the bonnet, a plug with a stem driven through guide bushing and the spraying cage screwed-in to the body. The plug is piston shape, moving inside the cage. The piston sequentially uncovers lines of holes then more medium is sprayed inside the tank. The valve can work in only in flow-to-close direction.

Technical data

Nominal diameter	DN50÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges			
Flow coefficient Kvs	10÷800 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	stellite			
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Seal bushing	graphite; PTFE			

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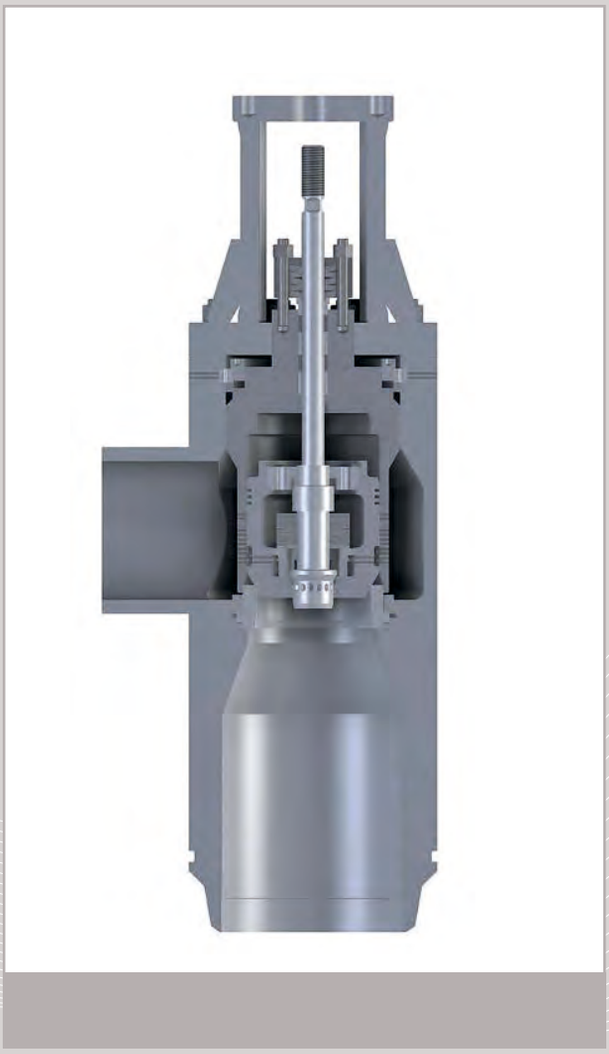
HCVK1 Valve



Application

HCVK1 control valve is designed for operation in critical conditions, especially where severe cavitation occurs during small flows. That makes the valve suitable for using as start-up or feed-water control device. HCVK1 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVK1 valve is designed to work in closed-loop automatic control systems.

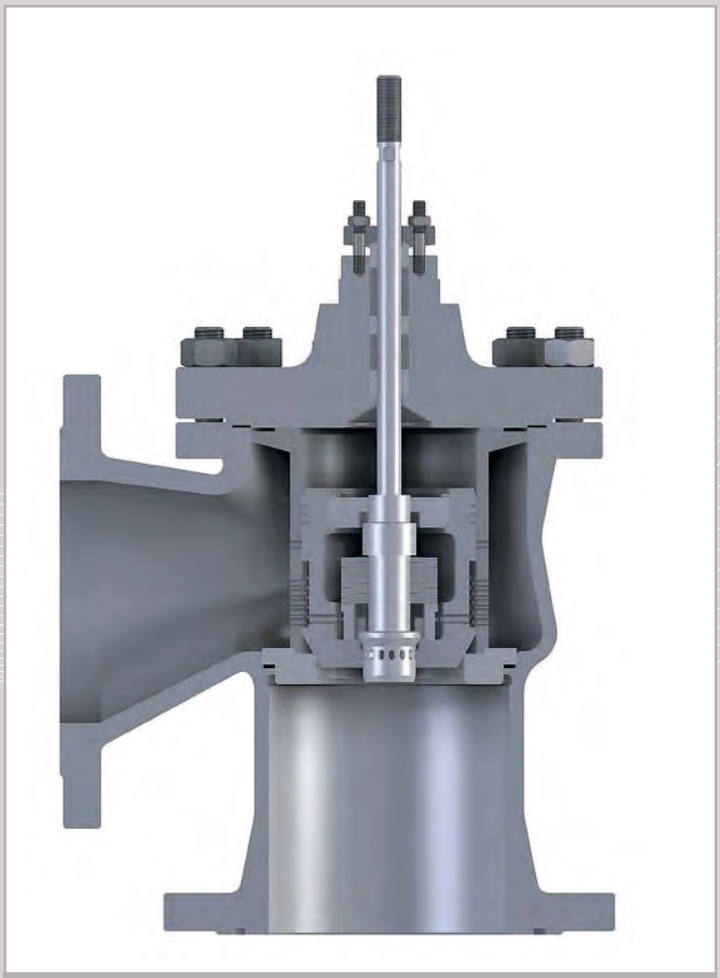
Description

HCVK1 is an angle-body type valve. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. The bonnet is self-sealing construction with trapezoidal graphite gasket. Thus disassembly and assembly of the valve are easy and does not require any special tools. The main plug is balanced with use of small perforated pilot plug placed inside the main one. The pilot has two functions. First is to cut off balancing holes when the valve is closed. The second is to regulate small flows when high control accuracy is needed. Owed to such solution the valve reaches 1:200 rangeability ratio as well as very high tightness class. There are two types of plug available: piston or perforated. Each can be unbalanced or balanced with pilot plug. The valve can work in only in flow-to-close direction.

Technical data

Inlet's nominal diameter	DN50÷DN300			
Outlet's nominal diameter	according to patron's demand			
Nominal pressure	PN40÷PN800			
Connections	welding ready			
Flow coefficient Kvs	10÷1300 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	200:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite; PTFE			

HCVK2 Valve



Application

HCVK2 control valve is designed for operation in critical conditions, especially where severe cavitation occures during small flows. That makes the valve suitable for using as LP start-up or feed-water control device. HCVK2 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVK2 valve is designed to work in closed-loop automatic control systems.

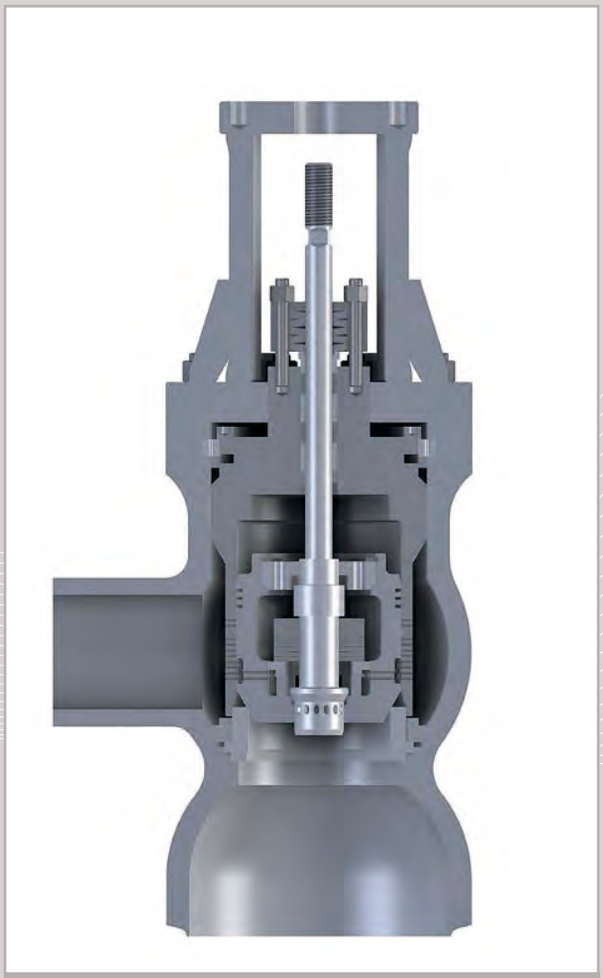
Description

HCVK2 is an angle-body type valve. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. The bonnet is self-sealing construction with trapezoidal graphite gasket. Thus disassembly and assembly of the valve are easy and does not require any special tools. The main plug is balanced with use of small perforated pilot plug placed inside the main one. The pilot has two functions. First is to cut off balancing holes when the valve is closed. The second is to regulate small flows when high control accuracy is needed. Owed to such solution the valve reaches 1:200 rangeability ratio as well as very high tightness class. There are two types of plug available: piston or perforated. Each can be unbalanced or balanced with pilot plug. The valve can work in only in flow-to-close direction.

Technical data

Nominal diameter	DN80÷DN250			
Nominal pressure	PN10÷PN40			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	40÷800 m^3/h			
Body	1.0619 (GP240GH) 1.5419 (G20Mo5)	1.7357 (G17CrMo5-5) 1.4308 (GX5CrNi19-10)	1.4408 (GX5CrNiMo19-11-2)	1.7379 (G17CrMo9-10
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	200:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVK3 Valve



Application

HCVK3 control valve is designed for operation in critical conditions, especially where severe cavitation occurs during small flows. That makes the valve suitable for using as start-up or feed-water control device as well as heavy-duty steam pressure reduction. HCVK3 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVK3 valve is designed to work in closed-loop automatic control systems.

Description

HCVK3 is an angle-body type valve with constant-gradient shape, which means high thermal shock resistance. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. The bonnet is self-sealing construction with trapezoidal graphite gasket. Thus disassembly and assembly of the valve are easy and does not require any special tools. The main plug is balanced with use of small perforated pilot plug placed inside the main one. The pilot has two functions. First is to cut off balancing holes when the valve is closed. The second is to regulate small flows when high control accuracy is needed. Owed to such solution the valve reaches 1:200 rangeability ratio as well as very high tightness class. There are two types of plug available: piston or perforated. Each can be unbalanced or balanced with pilot plug. The valve can work in only in flow-to-close direction.

Technical data

Inlet's nominal diameter	DN50÷DN300			
Outlet's nominal diameter	according to patron's demand			
Nominal pressure	PN40÷PN800			
Connections	welding ready			
Flow coefficient Kvs	10÷1300 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	200:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite; PTFE			

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HCVK4 Valve

Application

HCVK4 control valve is designed for operation in critical conditions, especially where full flashing occurs. That makes the valve suitable for using as HP drainage control device. HCVK4 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVK4 valve is designed to work in closed-loop automatic control systems.

Description

HCVK4 is an angle body valve with constant-gradient shape, which means high thermal shock resistance. It consists of: self-sealing inner bonnet, the plug and the seat with anti-flashing bushing downstream. Two types of plug are available: contour or perforated. Liquid medium flows over the plug, then evaporates in anti-flashing bushing downstream the seat. Thanks to dispersion of kinetic energy of the water-steam mixture the valve's body does not suffer any erosion. Bushing lenticular outlet helps to eliminate the pipe-line erosion behind the valve. HCVK4 can work with flow-to-close direction.

Technical data

Inlet's nominal diameter	DN25÷DN100			
Outlet's nominal diameter	according to patron's demand			
Nominal pressure	PN40÷PN800			
Connections	welding ready			
Flow coefficient Kvs	0,1÷160 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing – IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite; PTFE			

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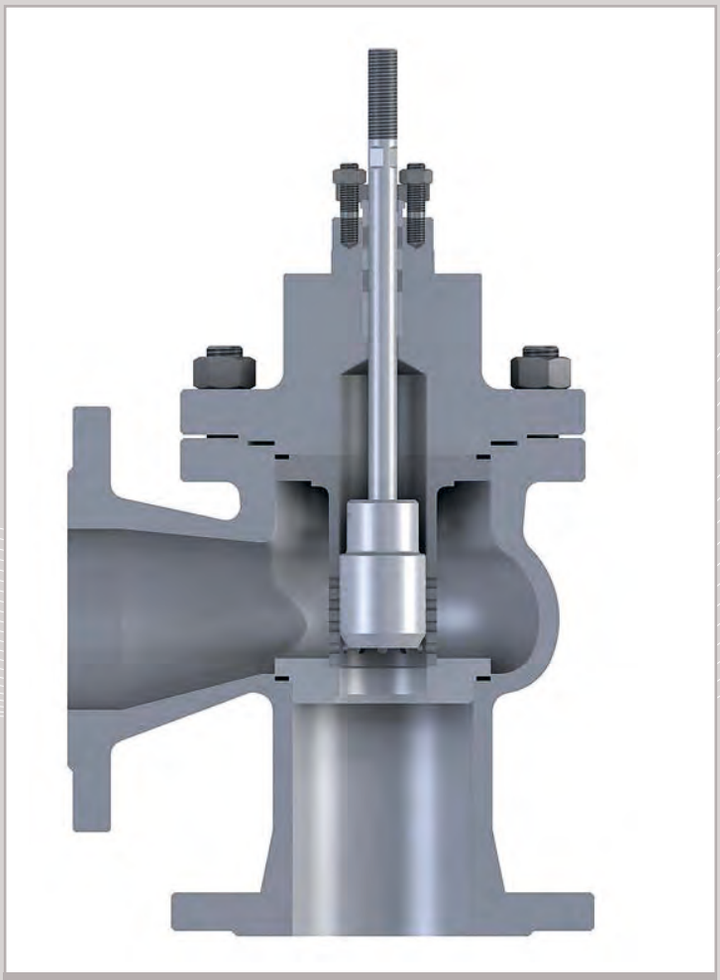
HCVK5 Valve



Application

HCVK5 control valve is designed for operation in non-critical or semi-critical conditions. It also meets demands of the time limited work at critical conditions. HCVK5 valve applies to control flow of any liquids, gases as well as a steam, when small or moderate pressure drops appear. Continuous heavy cavitation, flashing or chocked flow conditions demand external protection, such as an additional downstream orifice or perforated pressure-drop plates. HCVK5 valve is designed to work in closed-loop automatic control systems.

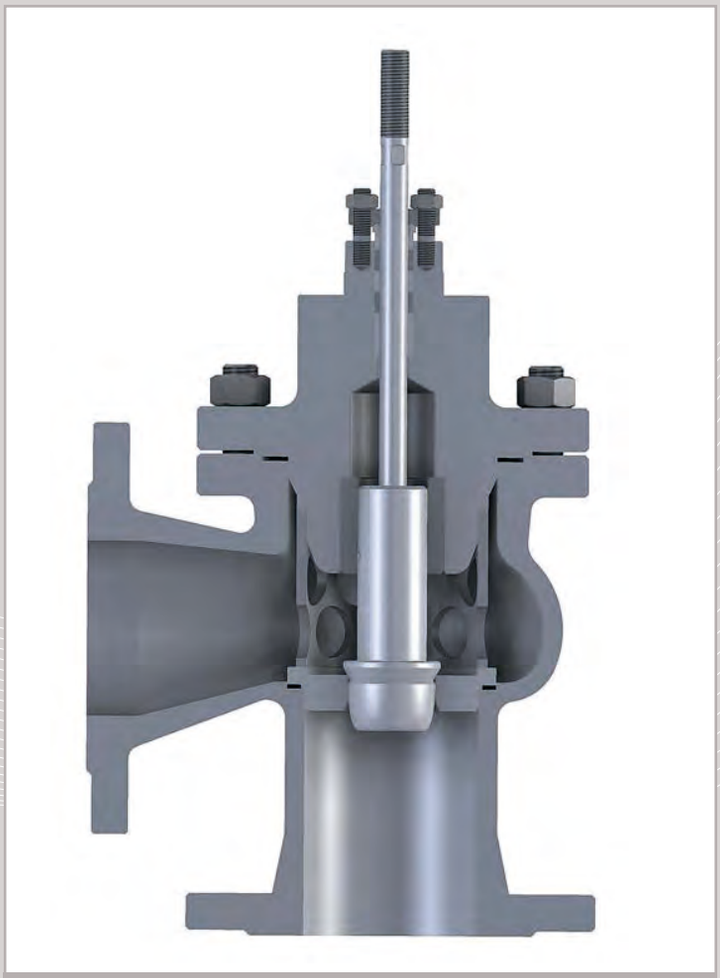
Description

HCVK5 is angle body type valve. It consists of body topped by the bonnet, a plug with a stem driven through guide bushing and the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets placed in a fixed gap. Thus disassembly and assembly of the valve are easy and does not require any special tools. The single-stage expansion of the medium is controlled by the plug moving in the cage. There are two types of plug available: piston or perforated. The plug can be balanced. The valve can work in both flow-to-close and flow-to-open directions.

Technical data

Nominal diameter	DN825÷DN250			
Nominal pressure	PN10÷PN40			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	10÷800 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.0619 (GP240GH) 1.5419 (G20Mo5)	1.7357 (G17CrMo5-5) 1.4308 (GX5CrNi19-10)	1.4408 (GX5CrNiMo19-11-2) 1.7379 (G17CrMo9-10)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved); soft sealing (NBR or PTFE)–VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVK6 Valve



Application

HCVK6 control valve is intended for operation in non-critical or semi-critical conditions. It also meets demands of the time limited work at critical conditions. HCVK6 valve applies to control flow of any liquids, gases as well as a steam, when rather small or moderate pressure reduction ratio appears. Continuous heavy cavitation, flashing, or chocked flow conditions demand external protection, such as an additional downstream orifice or perforated pressure-drop plates. HCVK6 valve is designed to work in closed-loop automatic control systems.

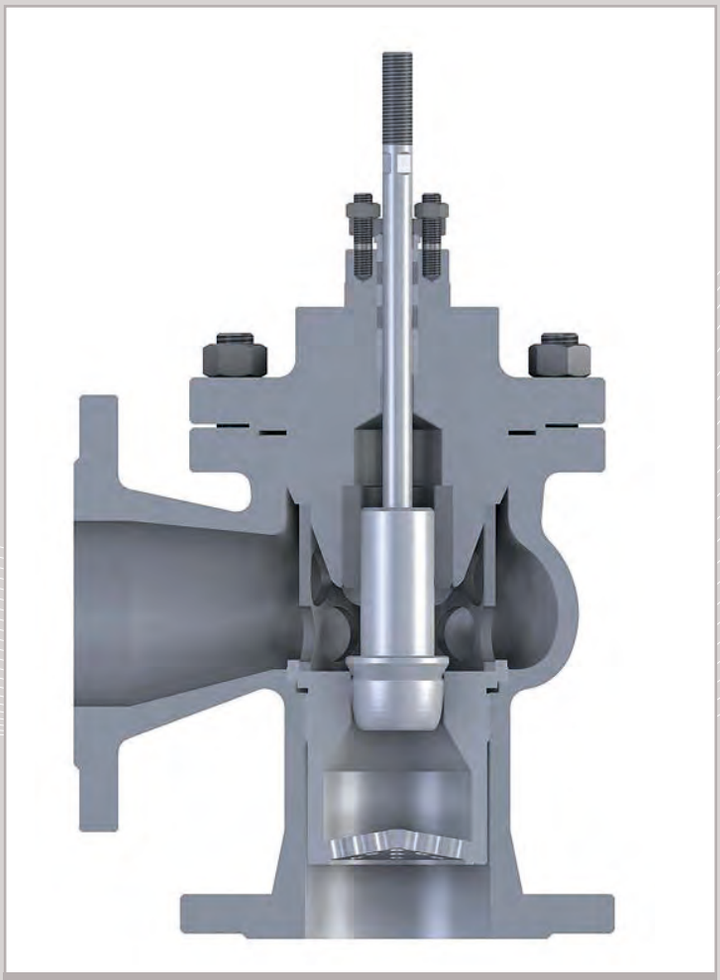
Description

HCVK6 is angle body type valve. It consists of body topped by the bonnet, a plug with a stem driven through guide bushing, and of the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets (placed in a fixed gap). Thus, disassembly and assembly of the valve are easy and does not require any special tools. The single-stage expansion of the medium is controlled by linear shift of the plug. There are two types of plug available: contour or perforated. It is advisable that when media flow goes in flow-to-open direction, especially when pneumatic actuator is to drive the valve.

Technical data

Nominal diameter	DN15÷DN250			
Nominal pressure	PN10÷PN40			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	0,1÷800 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.0619 (GP240GH) 1.5419 (G20Mo5)	1.7357 (G17CrMo5-5) 1.4308 (GX5CrNi19-10)	1.4408 (GX5CrNiMo19-11-2) 1.7379 (G17CrMo9-10)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved); soft sealing (NBR or PTFE)–VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVK7 Valve



Application

HCVK7 control valve is designed for operation in critical conditions, especially where full flashing occurs. That makes the valve suitable for using as LP drainage control device. HCVK7 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVK7 valve is designed to work in closed-loop automatic control systems.

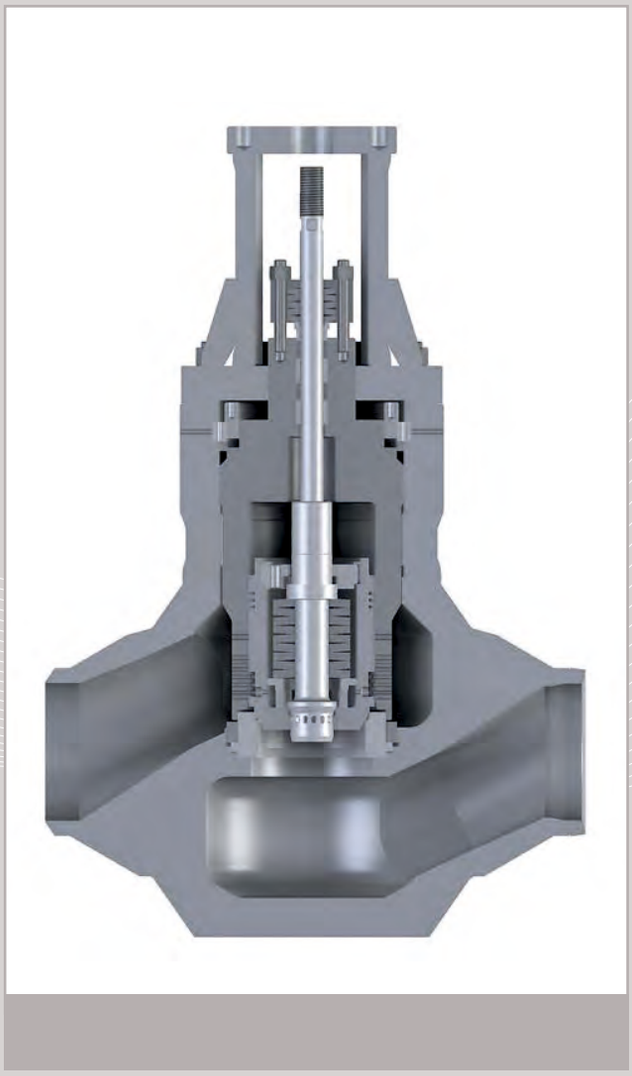
Description

HCVK7 is an angle body valve. It consists of body topped by the bonnet, a plug with a stem driven through guide bushing, and the seat pressed and fixed by the cage. Both the bonnet and the seat are sealed with graphite spiral wound gaskets (placed in a fixed gap). Thus, disassembly and assembly of the valve are easy and does not require any special tools. The expansion of the medium is closed in isolated area of the cage, under the seat. This makes flashing harmless to the body of the valve. There are two types of plug available: contour or perforated. The valve works with flow-to-close direction thus electric or hydraulic actuator is recommended.

Technical data

Nominal diameter	DN15÷DN250			
Nominal pressure	PN10÷PN40			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	01÷800 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.0619 (GP240GH) 1.5419 (G20Mo5)	1.7357 (G17CrMo5-5) 1.4308 (GX5CrNi19-10)	1.4408 (GX5CrNiMo19-11-2) 1.7379 (G17CrMo9-10)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVS2 Valve



Application

HCVS2 control valve is multi-purpose control valve designed for heavy-duty operations. Robust construction as well as high resistance for critical work circumstances makes the valve suitable for using as start-up or feed-water control valves, HP steam reducers or hot condensate flow control devices . HCVS2 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVS2 valve is designed to work in closed-loop automatic control systems.

Description

HCVS2 is straight body type valve. The body is forged monolithic shape. The bonnet has self-sealing construction with trapezoidal graphite gasket. Thus disassembly and assembly of the valve is easy and does not require any special tools. The main plug is balanced with use of small perforated pilot plug placed inside the main one. The pilot has two functions. First is to cut off balancing holes when the valve is closed. The second is to regulate small flows when high control accuracy is needed. Owed to such solution the valve reaches 1:200 rangeability ratio as well as very high tightness class. There are two types of plug available: piston or perforated. Each can be unbalanced or balanced with pilot plug. The valve can work in only in flow-to-close direction.

Technical data

Nominal diameter	DN50÷DN300			
Nominal pressure	PN250÷PN800			
Connections	welding ready			
Flow coefficient Kvs	40÷1300 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	200:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite; PTFE			

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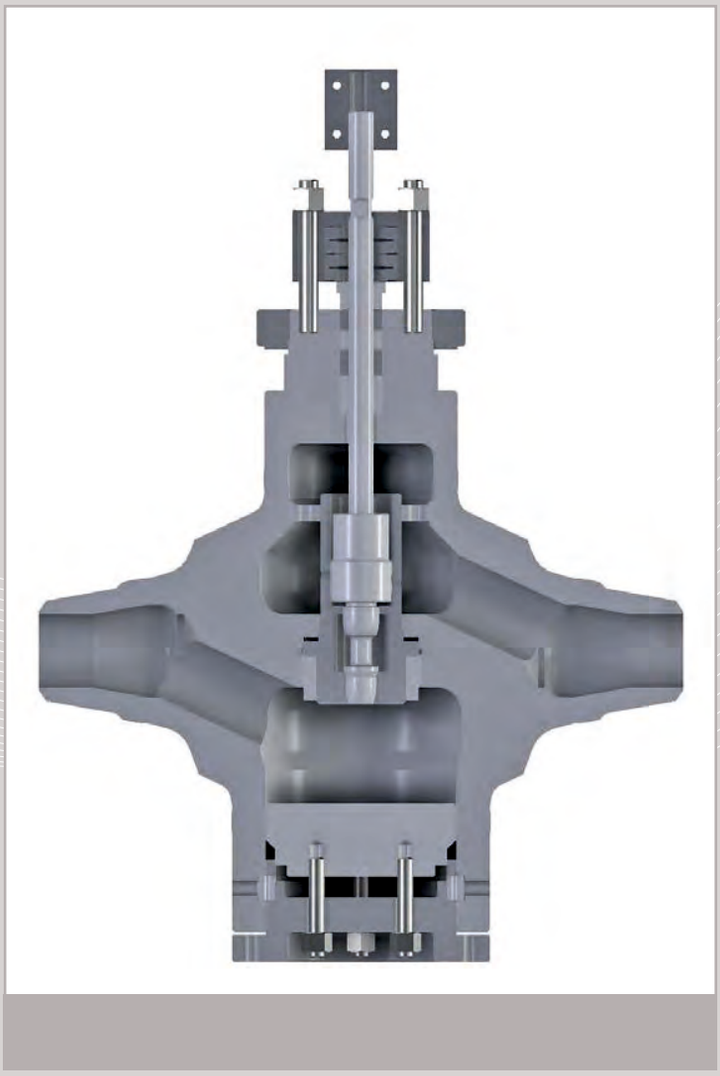
HCVS6 Valve



Application

HCVS6 control valve is designed for operation in critical conditions, especially where severe cavitation appears. That makes the valve suitable for using as HP water injection or pump by-pass control device. HCVS6 valve applies to control flow of any liquids, gases as well as a steam, when high pressure reduction ratio appear. HCVS6 valve is designed to work in closed-loop automatic control systems.

Description

HCVS6 valve is manufactured with forged straight-way globe body. The characteristic element of the valve is the three-stage seat as well as plug assembly. On the bottom of the body there is a hatch sealed with a trapezoidal gasket. It is used for trim elements assembling. The seat is inserted and tightened with a screw. The pressure drop is divided into three stages with the effective pressure recovery between them. The first two stages of the plug are made as contoured profiles, whereas the third is piston-shaped. The valve works with the flow-to-open direction.

Technical data

Nominal diameter	DN25÷DN150			
Nominal pressure	PN40÷PN700			
Connections	welding ready			
Flow coefficient Kvs	0,1÷125 m^3/h			
Body	1.0460 (P250GH) 1.4404 (X2CrNiMo17-12-2) 1.4901 (X10CrWMoVNb9-2)	1.5415 (16Mo3); 1.7380 (10CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)	1.7335 (13CrMo4-5) 1.7715 (14MoV6-3) 1.4901 (X10CrWMoVNb9-2)	1.4541 (X6CrNiTi18-10) 1.4903 (X10CrMoVNb9-1)
Plug	1.4541(X6CrNiTi18-10) 1.4122 (X39CrMo17)	1.4057(X17CrNi16-2) 1.4903 (X10CrMoVNb9-1)	1.4034 (X46Cr13) 1.4404 (X2CrNiMo17-12-2)	1.4923 (X22CrMoV12-1) titanium BT-9
Seat	1.4541(X6CrNiTi18-10) titanium BT-9	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	1.4404 (X2CrNiMo17-12-2)
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)	1.4980 (X6NiCrTiMoVB25-15-2)	
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			

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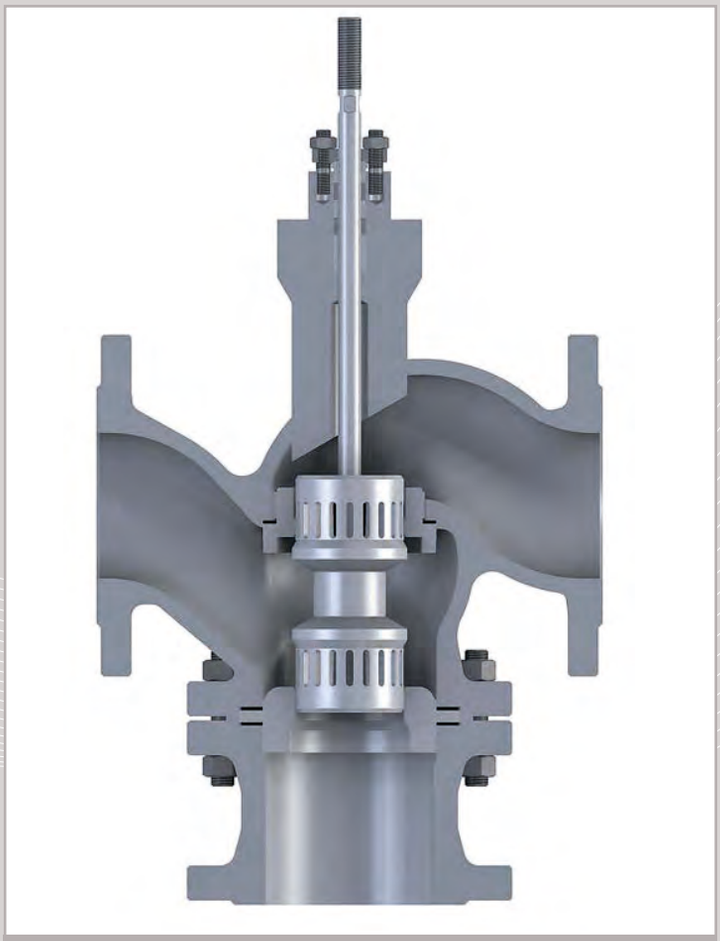
HCVT1 Valve



Application

Three-way control valve of HCVT1 type is designed for work in non-critical conditions. It provides general converging (flow-mixing) or diverging (flow-splitting)service. HCVT1 valve applies to flow adjustment of any liquid, as well as steam and any other gas when rather small or moderate pressure reduction appears. HCVT1 valve is designed to work in closed-loop automatic control systems.

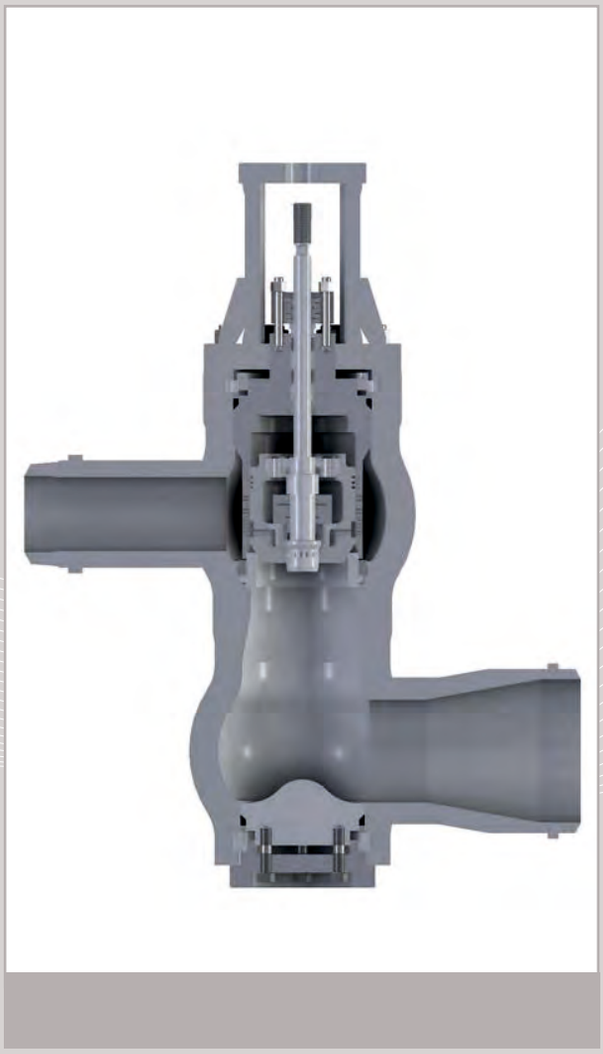
Description

The body of three-way HCVT1 valve has two seats: upper (of screw in type) and lower (fixed by the valve's body and pipe and sealed with graphite spiral wound gaskets). Flow--mixing or flow-splitting service is possible thanks to plug perforated on both sides, traveling between seats.

Technical data

Nominal diameter	DN15÷DN300			
Nominal pressure	PN10÷PN400			
Connections	bolted flanges; welding ready			
Flow coefficient Kvs	1,6÷1300 m^3/h			
Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.5419 (G20Mo5) 1.7357 (G17CrMo5-5) 1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4308 (GX5CrNi19-10) 1.4408 (GX5CrNiMo19-11-2) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3)	1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10) 1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved); soft sealing (NBR or PTFE)–VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

HCVZ1 Valve



Application

HCVZ1control valve is designed for operation in critical conditions, especially where severe cavitation occurs during small flows. That makes the valve suitable for using as start-up or feed-water control device as well as heavy-duty steam pressure reduction. HCVZ1 valve applies to control flow of any liquids, gases as well as a steam, when high pressure drops appear. HCVZ1 valve is designed to work in closed-loop automatic control systems.

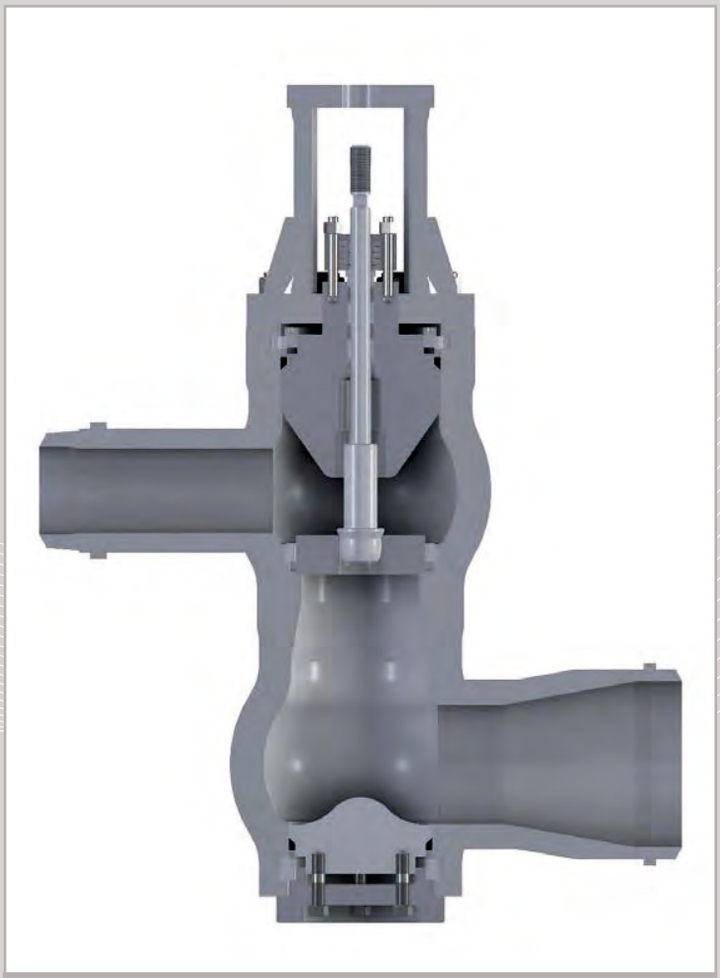
Description

HCVZ1 is an „Z" body type valve with constant-gradient shape, which means high thermal shock resistance. It consists of body topped with the bonnet, a plug with a stem driven through guide bushing and the replaceable seat pressed and fixed by the cage. The bonnet is self-sealing construction with trapezoidal graphite gasket. Thus disassembly and assembly of the valve are easy and does not require any special tools. The main plug is balanced with use of small perforated pilot plug placed inside the main one. The pilot has two functions. First is to cut off balancing holes when the valve is closed. The second is to regulate small flows when high control accuracy is needed. Owed to such solution the valve reaches 1:200 rangeability ratio as well as very high tightness class. There are two types of plug available: piston or perforated. Each can be unbalanced or balanced with pilot plug. The valve can work in only in flow-to-close direction.

Technical data

Średnica nominalna na wlocie	DN50÷DN300			
Średnica nominalna na wylocie	according to patron's demand			
Nominal pressure	PN40÷PN800			
Connections	welding ready			
Flow coefficient Kvs	10÷1300 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	200:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite; PTFE			

HCVZ2 Valve



Application

Control valve HCVZ2 type is basically intended for operation in non-critical conditions. It is suitable to control when rather small pressure drops appear. It also meets demands of the time limited work at critical conditions. Continuous heavy cavitation, flashing, or chocked flow demand external protection, such as an additional orifice or perforated pressure-drop plates. HCVZ2 valve is suitable to work in closed-loop automatic control systems.

Description

HCVZ2 „Z" body valve (outlet and inlet connection pipes are not in line, but parallel to each other). It consists of: forged body, self-sealing inner bonnet, main plug (piston-type or perforated) with a stem driven through guide bushing, and a seat (screw-in or slip-in; the latter is fixed by screw plug). The single-stage expansion of the medium is controlled by linear shift of the plug. HCVZ2 construction allows to increase the number of expansion's steps (additional appliances are assembled on the outlet connection pipe). The valve should work with flow-to-open direction when contour plug. If perforated plug the valve can work with any direction.

Technical data

Nominal diameter	DN25÷DN300			
Nominal pressure	PN40÷PN800			
Connections	welding ready			
Flow coefficient Kvs	0,1÷1300 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5)	1.4541 (X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	titanium BT-9
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	titanium BT-9
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved); soft sealing (NBR or PTFE)–VI (special)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite; PTFE			

ASD Desuperheater

Application

ASD desuperheater has a steam atomizing design. It is suitable for the installations, where precise temperature control is needed, as well as precise tuning and adequate spray of the cooling medium if low velocity of the steam in the pipeline happens.

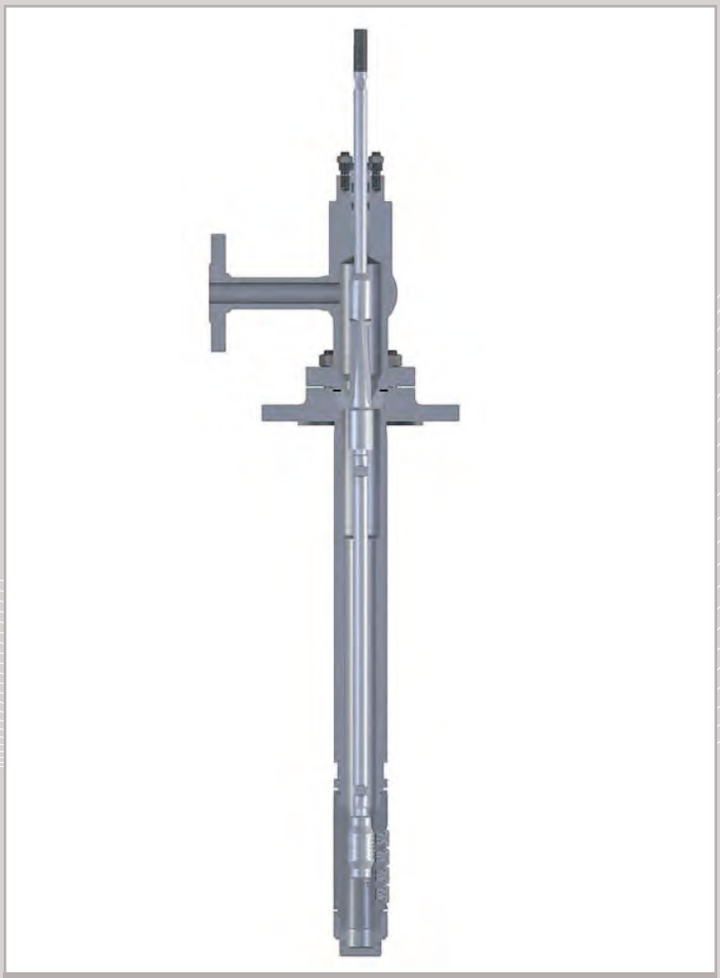
Description

ASD desuperheater uses of high-pressure steam for rapid and complete atomization of the spray-water. The atomization undergoes in steam assisted nozzle placed on the head. The atomizing steam (supplied through upper connection pipe), usually of supercritical velocity, is used to atomize the water into the very small droplets. These smaller droplets are perfectly dragged by steam even if very low steam flow occurs. ASD handles applications requiring very high load changes (rangeability up to 50:1). Fed with cooling water externally (through separate side connection pipe) maintenance-free ASD desuperheater has not any moving or quick wearing parts. It is assembled to the flanged connection pipe to the steam pipeline.

Technical data

	steam pipeline	pipeline of injected water	pipeline of the atomizing steam
Nominal diameter	DN200÷DN600	DN15÷DN50	DN15÷DN50
Nominal pressure	PN10÷PN400	PN25÷PN400	PN25÷PN400
Connections	bolted flanges	bolted flanges; welding ready	bolted flanges; welding ready
Flow coefficient Kvs	≥ 1 m^3/h		
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-2)	1.4901 (X10CrWMoVNb9-2)
Injection nozzle	1.4541(X6CrNiTi18-10) + stellite		
Rangeability	50:1		
Orientation of water's inlet connection pipe towards direction of steam's flow	0^0; 90^0; 180^0; 270^0;		

PSD Desuperheater



Application

PSD desuperheater has a piston design. It is suitable for the installations with very high load changes, where high rangeability is required.

Description

PSD desuperheater consists of: sets of highly efficient nozzles, piston, and tight system of water cut-off. The cooling water is injected straight into the steam pipeline. Traveling stem-controlled piston opens nozzles sequentially. This regulates the volume of the cooling water. The upper part of cooler body has attached the system of water cut-off. It is to protect the nozzles against non-controlled increase of the pressure and appearance of a „bubble" after the water flow is shut-down through hot pipeline. PSD steam cooler is reverse-acting appliance (push-down-to-open action) and does not need any injection valves. It is assembled to the flanged connection pipe to the steam pipeline, and handles applications requiring load changes (rangeability) up to 40:1.

Technical data

		steam pipeline	pipeline of injected water
Nominal diameter		DN200÷DN1000	DN15÷DN50
Nominal pressure		PN40÷PN400	PN25÷PN400
Connections		bolted flanges	bolted flanges; welding ready
Flow coefficient Kvs		≥ 0,16 m^3/h	
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Injection nozzles	1.4305 (X8CrNiS18-9)	1.4571 (X6CrNiMoTi17-12-2)		
Piston	1.4057(X17CrNi16-2)			
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Rangeability		40:1		
Leakage class		V (improved), metal/metal sealing		
Body's gland		spiral, metal+graphite		
Seal bushing		graphite or PTFE		
Orientation of water's inlet connection pipe towards direction of steam's flow		0^0; 90^0; 180^0; 270^0;		

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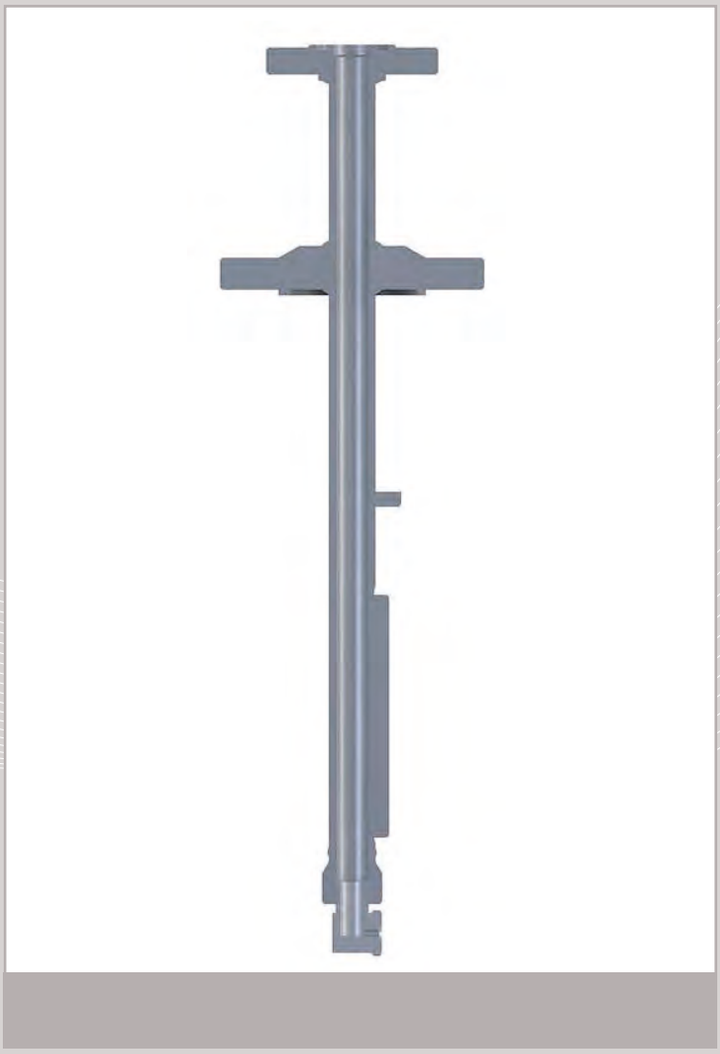
LSD Desuperheater



Application

LSD desuperheater is lance type design with fixed nozzle. It is suitable for temperature control when steam flow changes are not very high.

Description

LSD desuperheater basically consists of hydraulic fine atomizing nozzle (or set of nozzles). It injects amount of water into a steam stream to reduce temperature of the steam. Highly efficient nozzle (or nozzles) with fixed diameter sprays uniformly within the whole range of cooling. Effective atomization appears if pressure difference is higher than 0,3 bar. Sprayed water forms full or hollow cone (with different spray angles). LSD handles applications requiring load changes (rangeability) up to 6:1. Maintenance-free LSD desuperheater has not any moving or quick wearing parts, but it does need the injection valve to control the coolant flow. It is assembled to the flanged connection pipe to the steam pipeline.

Technical data

	steam pipeline	pipeline of injected water
Nominal diameter	DN150÷DN1000	DN15÷DN50
Nominal pressure	PN10÷PN400	PN25÷PN400
Connections	bolted flanges	bolted flanges; welding ready
Flow coefficient Kvs	≥ 0,16 m^3/h	
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Injection nozzles	1.4305 (X8CrNiS18-9)	1.4571 (X6CrNiMoTi17-12-2)		
Rangeability	6:1			

RSD Desuperheater

Application

RSD desuperheater has a ring design. It is suitable for reduction of the temperature when steam undergoes moderate load changes.

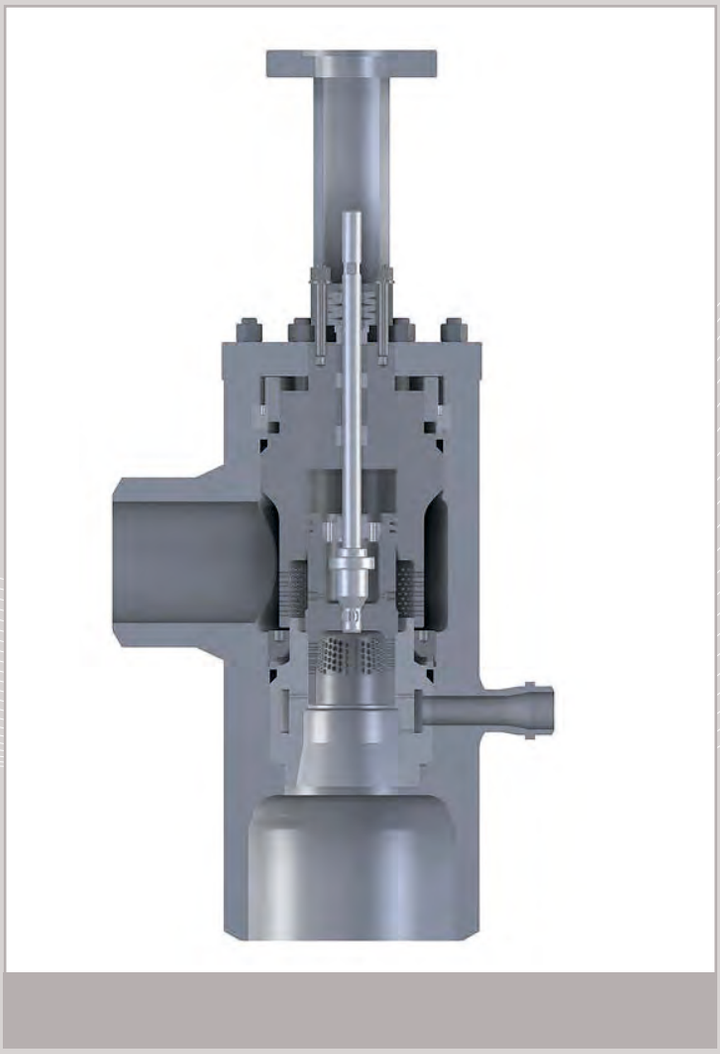
Description

RSD desuperheater basically consists of hydraulic fine atomizing nozzles. It injects amount of water into a steam stream to reduce temperature of the steam. Highly efficient nozzles spray water at the outlet of the convergent pipe purposely profiled to accelerate the steam to be cooled and initialize its turbulent flow. Both increase rangeability of the desuperheater–RSD handles applications requiring load changes up to 20:1. Maintenance-free desuperheater has not any moving or quick wearing parts, but it does need the injection valve to control the coolant flow. Usually RSD is assembled between two flanges on the steam pipeline. Welded connections are also available.

Technical data

	steam pipeline	pipeline of injected water
Nominal diameter	DN25÷DN250	DN15÷DN40
Nominal pressure	PN10÷PN400	PN25÷PN400
Connections	between bolted flanges; welding ready	bolted flanges; welding ready
Flow coefficient Kvs	≥ 0,08 m^3/h	
Body	1.0460 (P250GH) 1.5415 (16Mo3) 1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10) 1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1) 1.4901 (X10CrWMoVNb9-2)	
Injection nozzles	1.4305 (X8CrNiS18-9)	
Rangeability	20:1	

HCVKC1 Valve



Application

HCVKC1 steam conditioning valve combines pressure and temperature control in a single valve. High pressure water (e.g. feed-water) is used to reduce steam temperature. HCVKC1 type is commonly used as turbine start-up and by-pass valve. It can also provide process supplying steam of various parameters.

Description

HCVKC1 is an angle body valve. The Coolant is injected under the plug. The valve consists of: forged body, self-sealing inner bonnet integrated with cage, and main plug (perforated, pressure balanced by inner plug–so called pilot plug). Slip-in seat (pressed by screw plug) has nozzles responsible to deliver effectively sprayed water, supplied to the body through one or two connection pipes. In case of perforated plug only its perforation is responsible for pressure reduction. The inlet cage works as a strainer. The main plug opens water nozzles sequentially, but to control steam temperature external injection valve is needed. HCVKC1 valve works with flow-to-close direction. The construction allows to increase the number of expansion steps (additional appliances can be assembled in the outlet diffuser).

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN15÷DN50
Nominal pressure	PN40÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		welding ready
Flow coefficient Kvs	10÷1300 m^3/h		
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite			

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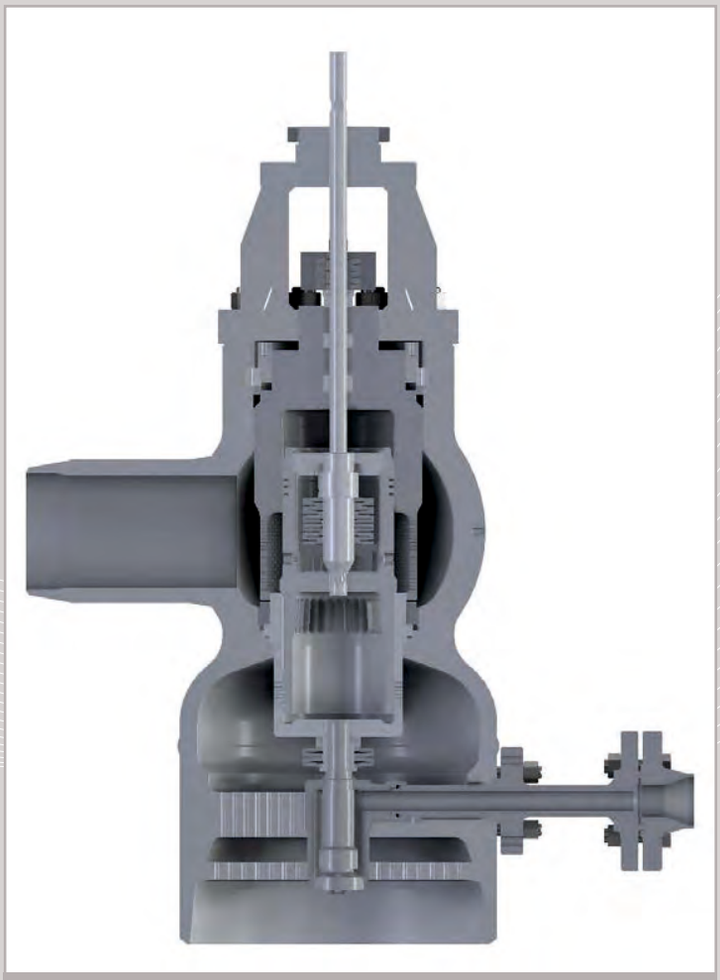
HCVKC2 Valve



Application

HCVKC2 steam conditioning valve combines pressure and temperature control in a single body. Low pressure water (e.g. condensate) is used to reduce steam temperature. HCVKC2 type is commonly used as turbine start-up and by-pass valve. It can also provide process supplying steam of various parameters.

Description

HCVKC2 is an angle body valve. The Coolant is injected into low pressure valve outlet . The valve consists of: forged body, self-sealing inner bonnet integrated with a cage and main plug balanced with inner pilot plug. Slip-in seat is fixed with the screw. There are two cages inside the body. Inlet cage works as a strainer. Downstream the seat there is throttling control cage, from where high pressure steam is taken into the atomizing nozzle. The nozzle is fixed to the last pressure reducing plate. Cooling water is supplied to the nozzle through an external spigot and then atomized with high pressure steam. To control steam temperature external injection control valve is required.

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN15÷DN50
Nominal pressure	PN40÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		bolted flanges; welding ready
Flow coefficient Kvs	10÷1300 m^3/h		

Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Injection nozzle	1.4541(X6CrNiTi18-10) + stellite			

Hardening of the inner parts	stelliting; nitriding; hardening
Rangeability	50:1
Leakage class	metal/metal sealing–IV (standard); V (improved)
Body's gland	trapezoid, graphite
Seal bushing	graphite

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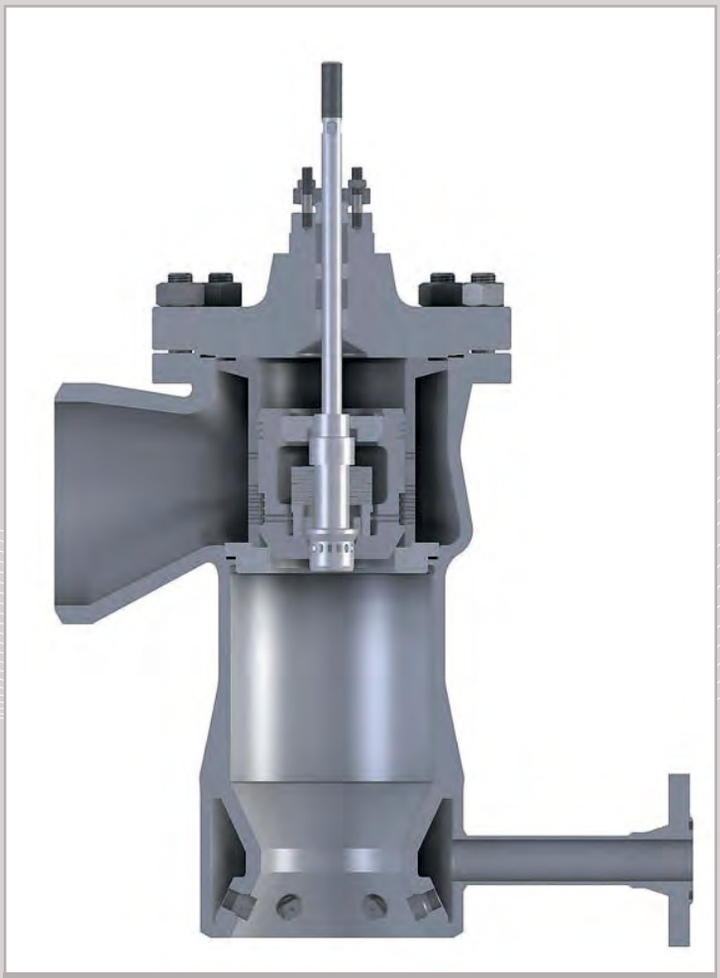
HCVKC3 Valve



Application

HCVKC3 steam conditioning valve combines pressure and temperature control in a single body. It is commonly used in process steam supply of low and medium parameters.

Description

HCVKC3 is angle body type valve. The coolant is injected into low pressure valve outlet . The valve consists of: forged body, a bonnet sealed with spiral wounded graphite gasket, a cage and main plug balanced with inner pilot plug. Slip-in seat is fixed with the cage and also sealed with spiral gasket. That makes the valve easy to maintenance without any special tools. Inlet cage works as a strainer. Downstream the seat there is throttling orifice with a set of high-efficient nozzles. Cooling water is supplied to the nozzles through an external spigot and then hydraulically atomized. To control steam temperature external injection control valve is required.

Technical data

	inlet/outlet		connection pipe of injected water	
Nominal diameter	DN80÷DN250		DN15÷DN40	
Nominal pressure	PN10÷PN40		PN25÷PN100	
Connections	bolted flanges; welding ready		bolted flanges; welding ready	
Flow coefficient Kvs	40÷800 m^3/h			
Body	1.0619 (GP240GH)	1.5419 (G20Mo5)	1.7357 (G17CrMo5-5)	1.7379 (G17CrMo9-10)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Injection nozzles	1.4305 (X8CrNiS18-9)			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	20:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	spiral, metal+graphite			
Seal bushing	graphite			

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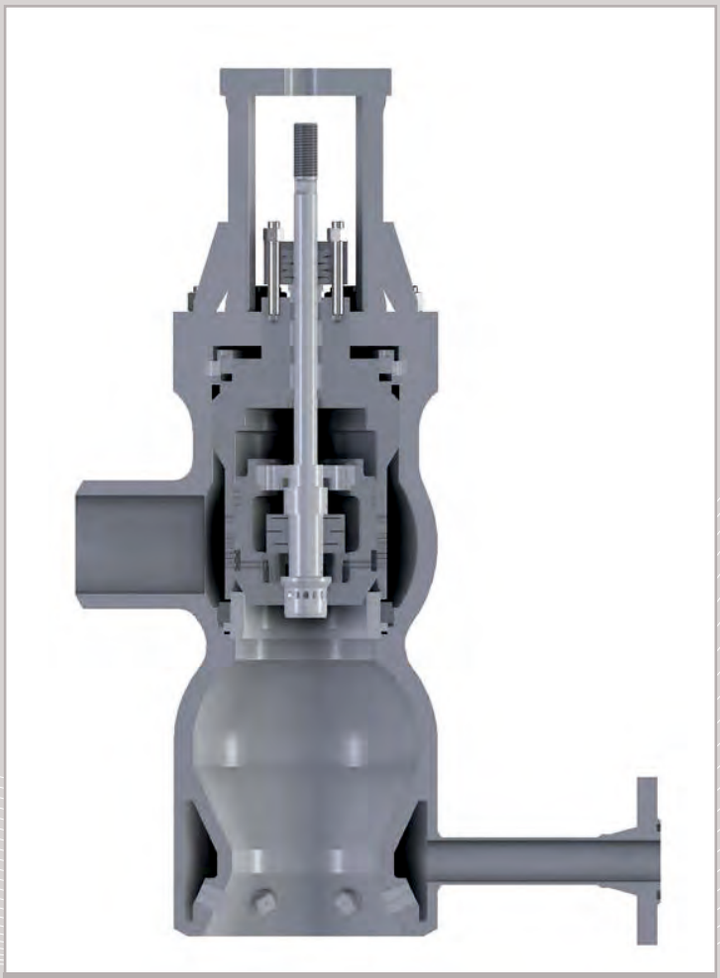
HCVKC4 Valve



Application

HCVKC4 steam conditioning valve combines pressure and temperature control in a single body. It is commonly used in process steam supply of high and medium parameters.

Description

HCVKC4 is angle body type valve. The coolant is injected into low pressure valve outlet . The valve consists of: forged body, self-sealing bonnet, a cage and main plug balanced with inner pilot plug. Slip-in seat is fixed with the nut. That makes the valve easy to maintenance without any special tools. Inlet cage works as a strainer. Downstream the seat there is throttling orifice with a set of high-efficient nozzles. Cooling water is supplied to the nozzles through an external spigot and then hydraulically atomized. To control steam temperature external injection control valve is required.

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN250	DN50÷DN250	DN15÷DN40
Nominal pressure	PN63÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		bolted flanges; welding ready
Flow coefficient Kvs	40÷800 m^3/h		

Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Injection nozzle	1.4305 (X8CrNiS18-9)			

Hardening of the inner parts	stelliting; nitriding; hardening
Rangeability	20:1
Leakage class	metal/metal sealing–IV (standard); V (improved)
Body's gland	spiral, metal+graphite
Seal bushing	graphite

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HCVKC5 Valve

Application

HCVKC5 steam conditioning valve combines pressure and temperature control in a single valve. High pressure water (e.g. feed-water) is used to reduce steam temperature. HCVKC5 type is commonly used as turbine start-up and by-pass valve. It can also provide process supplying steam of various parameters.

Description

HCVKC5 is an angle body valve with constant-gradient shape, which means high thermal shock resistance. The coolant is injected under the plug. The valve consists of: forged body, self-sealing inner bonnet integrated with cage, and main plug balanced by inner pilot plug. Slip-in seat, fixed with the nut, has downstream nozzles responsible to deliver effectively sprayed water, supplied to the body through one or two connection pipes. In case of perforated plug only its perforation is responsible for pressure reduction. The inlet cage works as a strainer. The main plug opens water nozzles sequentially, but to control steam temperature external injection valve is needed. HCVKC5 valve works with flow-to-close direction. The construction allows to increase the number of expansion steps (additional appliances can be assembled in the outlet diffuser).

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN15÷DN50
Nominal pressure	PN40÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		welding ready
Flow coefficient Kvs	10÷1300 m^3/h		
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite			

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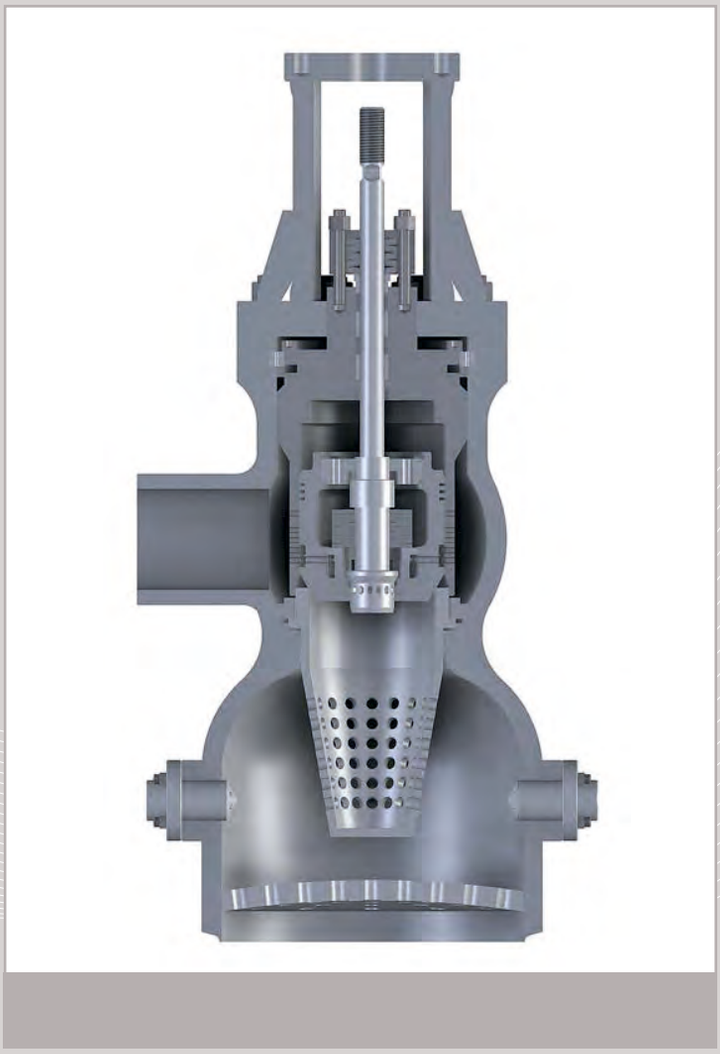
HCVKC6 Valve



Application

HCVKC6 steam conditioning valve combines pressure and temperature control in a single valve. High pressure water (e.g. feed-water) is used to reduce steam temperature. HCVKC6 type is used as turbine start-up and by-pass valve.

Description

HCVKC6 is an angle body valve with constant-gradient shape, which means high thermal shock resistance. The coolant is injected under the plug. The valve consists of: forged body, self-sealing inner bonnet integrated with cage, and main plug balanced by inner pilot plug. Slip-in seat fixed with the nut. In case of perforated plug only the perforation is responsible for pressure reduction. The inlet cage works as a strainer. Downstream the seat the set of nozzles is assembled to the body. The nozzles can be supplied with water by one collector or can be supplied individually by some external injection valves. The nozzles spray water hydraulically. HCVKC6 valve works with flow-to-close direction. The construction allows to increase the number of expansion steps (additional appliances can be assembled in the outlet diffuser).

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN15÷DN40
Nominal pressure	PN40÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		welding ready
Flow coefficient Kvs	40÷1300 m^3/h		
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Injection nozzles	1.4305 (X8CrNiS18-9)	1.4571 (X6CrNiMoTi17-12-2)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	20:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite			

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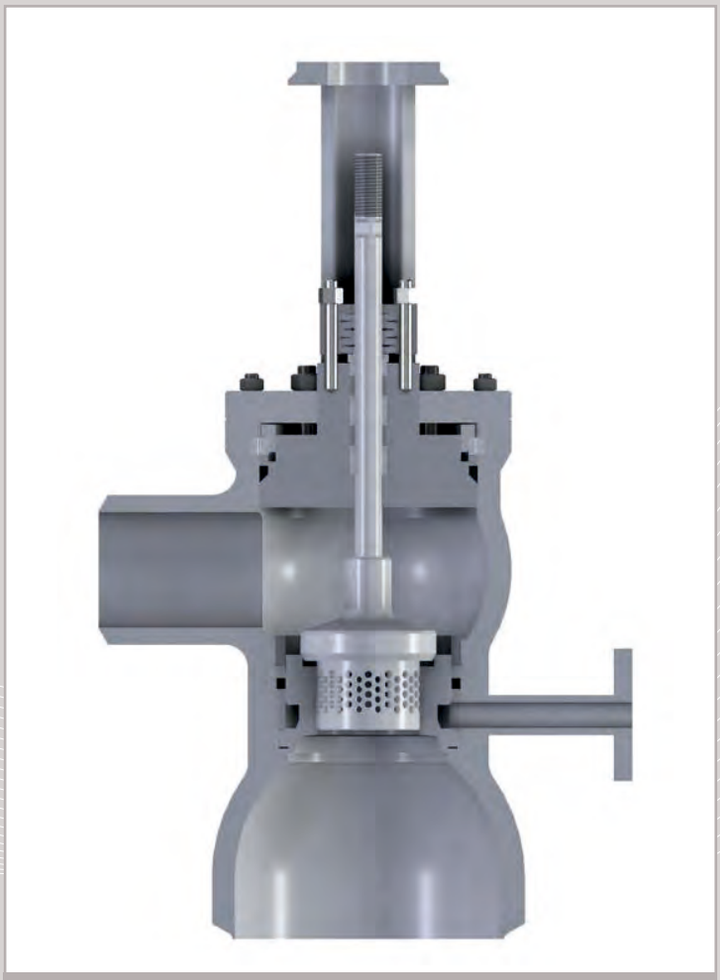
HCVKC7 Valve



Application

HCVKC7 steam conditioning valve combines pressure and temperature control in a single valve. High pressure water (e.g. feed-water) is used to reduce steam temperature. HCVKC7 type is commonly used as turbine start-up and by-pass valve. It can also provide process supplying steam of various parameters.

Description

HCVKC7is an angle body valve with constant-gradient shape, which means high thermal shock resistance. The coolant is injected under the plug. The valve consists of: forged body, the bonnet integrated, and perforated plug. Slip-in seat, fixed with the nut has doenstream nozzles responsible to deliver effectively sprayed water, supplied with cooling water through one or two connection spigots. The plug opens water nozzles sequentially, but to control steam temperature external injection valve is needed. HCVKC7 valve works with flow-to-close direction. The construction allows to increase the number of expansion steps (additional appliances can be assembled in the outlet diffuser).

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN15÷DN50
Nominal pressure	PN40÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		bolted flanges; welding ready
Flow coefficient Kvs	10÷500 m^3/h		
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite			

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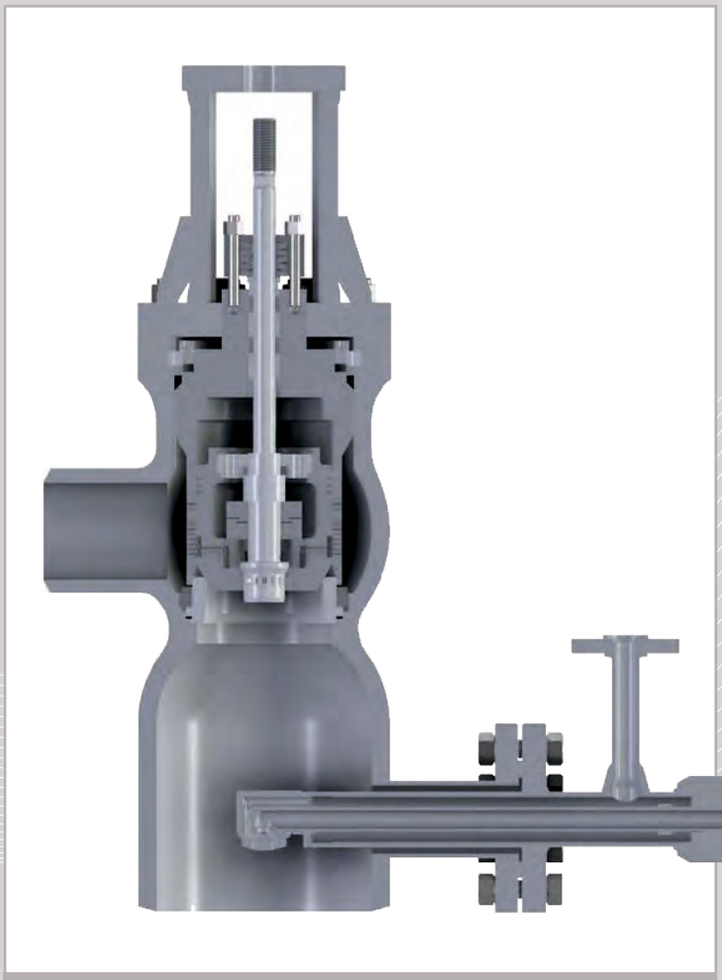
HCVKC8 Valve



Application

HCVKC8 steam conditioning valve combines pressure and temperature control in a single body. It is commonly used in process steam supply of high and medium parameters. HCVKC8 was designed especially for solutions in which steam pressure drop in the valve is to small at provide satisfactory water atomization and water also pressure is to small to use it in hydraulically spraying nozzles. In such case external source of atomizing steam is needed.

Description

HCVKC8 is angle body type valve. The valve consists of: forged body, self-sealing bonnet, a cage and main plug balanced with inner pilot plug. Slip-in seat is fixed with the nut. That makes the valve easy to maintenance without any special tools. Inlet cage works as a strainer. Downstream the seat there is complete ASD steam atomizing desuperheater fixed to the valve body outlet. ASD is supplied with water and with steam from external source. To control steam temperature external injection control valve is required.

Technical data

	inlet	outlet	pipeline of injected water	pipeline of the atomizing steam
Nominal diameter	DN50÷DN300	according to patron's demand	DN15÷DN50	DN15÷DN50
Nominal pressure	PN40÷PN800	PN16÷PN800	PN25÷PN800	PN25÷PN800
Connections	welding ready		bolted flanges; welding ready	bolted flanges; welding ready
Flow coefficient Kvs	40÷1300 m^3/h			
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Injection nozzle	1.4541(X6CrNiTi18-10) + stellite			
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite			

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HCVKC9 Valve

Application

HCVKC9 steam conditioning valve combines pressure and temperature control in a single body. Low pressure water (e.g. condensate) is used to reduce steam temperature. HCVKC9 type is commonly used as turbine start-up and by--pass valve. It can also provide process supplying steam of various parameters. HCVKC9 is specially suitable in cases where there is not additional steam cooling in dump tubes into condenser. That type of station is able to provide steam ready to dump to condenser without additional cooling and with very low pressure drop.

Description

HCVKC9 is an angle body valve. The valve consists of: forged body, self-sealing inner bonnet integrated with a cage-strainer and main plug balanced with inner pilot plug. Slip-in seat is fixed with the nut. Downstream the seat there is the set of pressure reducing perforated structures. In the valve outlet the set of steam atomizing nozzles is assembled to the wall. Cooling water is supplied to the nozzles from external collector. Each nozzle is fed with high pressure steam taken from under the seat. Thad makes perfect water atomization even when very small steam flow. To control steam temperature external injection control valve is required.

Technical data

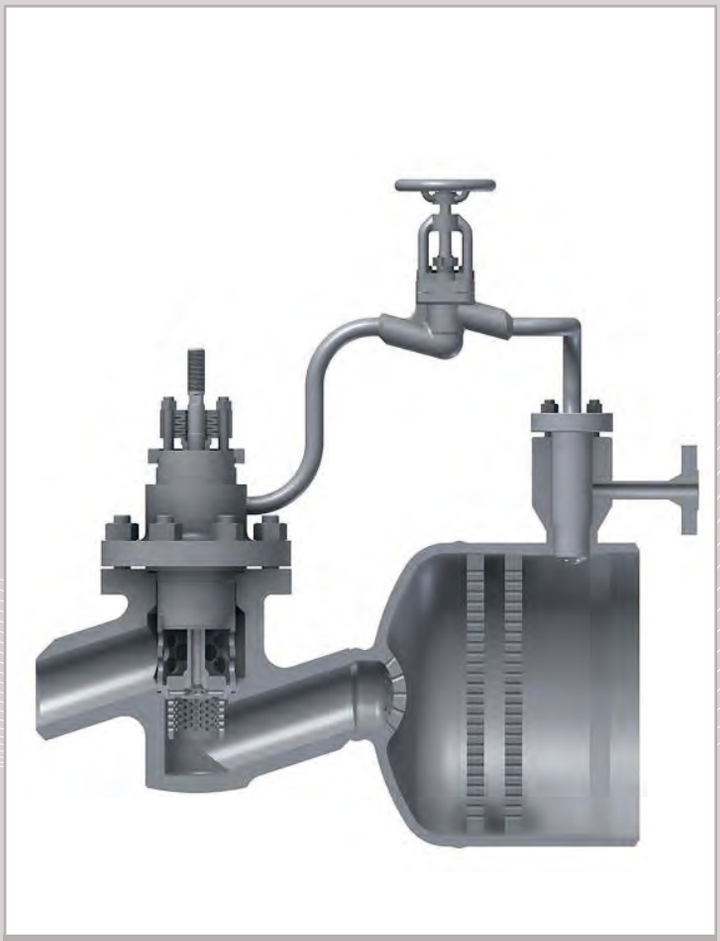
	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN40÷DN100
Nominal pressure	PN40÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		bolted flanges; welding ready
Flow coefficient Kvs	10÷1300 m^3/h		

Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		

Hardening of the inner parts	stelliting; nitriding; hardening
Rangeability	50:1
Leakage class	metal/metal sealing–IV (standard); V (improved)
Body's gland	trapezoid, graphite
Seal bushing	graphite

INTEC-WAKMET Consortium: INTEC Corp. Address: Wroclawska Street 33D Dlugoleka, 55095 Mirkow, Poland. Phone: +48 71 348 18 18, www.intec.com.pl

HCVAC1 Valve



Application

HCVKAC1 steam conditioning valve combines pressure and temperature control in a single body. Low pressure water (e.g. condensate) is used to reduce steam temperature. HCVKC1 type is used as process supplying steam of various parameters.

Description

HCVAC1 is an angle body valve. The valve consists of: forged body, bonnet a cage-strainer and perforated plug. Slip-in seat is fixed with the cage and sealed with a spiral gasket. Downstream the seat there is the set of pressure reducing perforated structures. In the valve outlet diffuser the set of steam atomizing nozzles is assembled to the wall. Cooling water is supplied to the nozzles from external collector. Each nozzle is fed with high pressure steam taken from the valve bonnet. That makes perfect water atomization even when very small steam flow. To control steam temperature external injection control valve is required.

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN25÷DN300	according to patron's demand	DN15÷DN50
Nominal pressure	PN40÷PN400	PN16÷PN400	PN40÷PN400
Connections	welding ready		bolted flanges; welding ready
Flow coefficient Kvs	10÷1000 m^3/h		

Body	1.0460 (P250GH) 1.0619 (GP240GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.5419 (G20Mo5) 1.7357 (G17CrMo5-5)	1.7380 (10CrMo9-10) 1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2) 1.7379 (G17CrMo9-10)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Cage	1.4057 (X17CrNi16-2)			

Hardening of the inner parts	stelliting; nitriding; hardening
Rangeability	50:1
Leakage class	metal/metal sealing–IV (standard); V (improved)
Body's gland	trapezoid, graphite
Seal bushing	graphite

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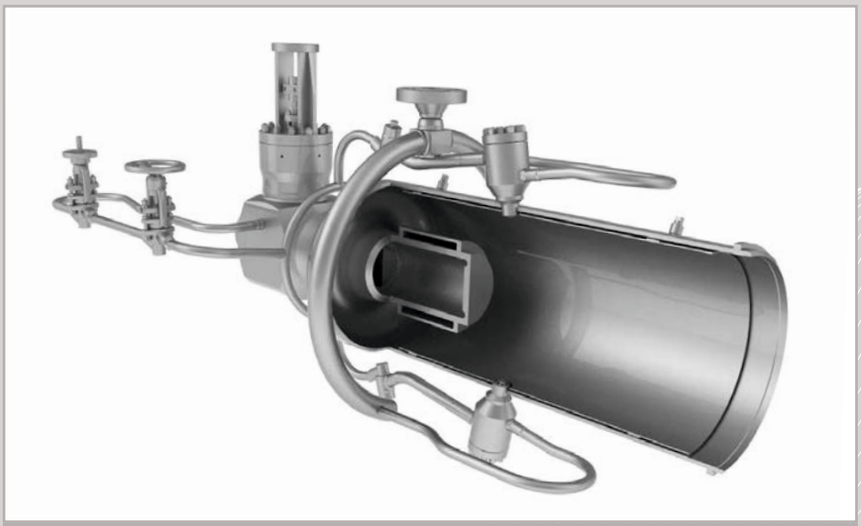
HCVSC2 Valve



Application

Steam conditioning valves type HCVSC2 are used for control pressure and temperature of steam. They can use low pressure cooling water, for example condensate. They are used as turbine start-up and by-pass valves as well as steam process-supply stations. Valves type HCVSC2 are able to make outlet steam ready to dump to the condenser, without additional cooling in dump-tubes.

Description

The HCVSC2 steam conditioning valves have a straight-way body with water injection on low pressure side and steam cooler atomization system. Forged body is closed with a self-sealing bonnet and sealed with a trapezoidal gasket. the bonnet is integrated with the inlet cage working as the strainer. A perforated multi-hole plug moves inside the cage. The valve seat is made as removable, and pressed with a screw on the gasket. HCVSC2 valves are made with balanced trim by means of the pilot plug working in the main plug. The valves can also be manufactured without balancing. Valves work with the flow directed to close the plug. The medium is expanded in a multistage trim. The first pressure drop occurs in the gradually opened holes of the perforated plug. The next steps are the perforated plates placed in the valve outlet throat. The number of plates is selected for valve operation parameters. Injection nozzles are located on outlet. Water injection takes place after the steam has fully expanded. The steam for water atomizing is taken from the high-pressure part of the body. The supply of steam to the nozzles is controlled by a shut-off valve. The effect of atomization is the generation of water mist and the almost instant absorption of water droplets by the steam stream. To control the cooling water flow, separate injection valve is required.

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN40÷DN100
Nominal pressure	PN40÷PN700	PN16÷PN700	PN40÷PN700
Connections	welding ready		bolted flanges; welding ready
Flow coefficient Kvs	10÷1300 m^3/h		

Body	1.0460 (P250GH) 1.7715 (14MoV6-3)	1.5415 (16Mo3) 1.4903 (X10CrMoVNb9-1)	1.7335 (13CrMo4-5) 1.4901 (X10CrWMoVNb9-2)	1.7380 (10CrMo9-10)
Plug	1.4541(X6CrNiTi18-10) 1.4122 (X39CrMo17)	1.4057(X17CrNi16-2) 1.4903 (X10CrMoVNb9-1)	1.4034 (X46Cr13) 1.4404 (X2CrNiMo17-12-2)	1.4923 (X22CrMoV12-1) tytan BT-9
Seat	1.4541(X6CrNiTi18-10) 1.4404 (X2CrNiMo17-12-2)	1.4057(X17CrNi16-2) tytan BT-9	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)	1.4980 (X6NiCrTiMoVB25-15-2)	

Hardening of the inner parts	stelliting; nitriding; hardening
Rangeability	50:1
Leakage class	metal/metal sealing–IV (standard); V (improved)
Body's gland	trapezoid, graphite

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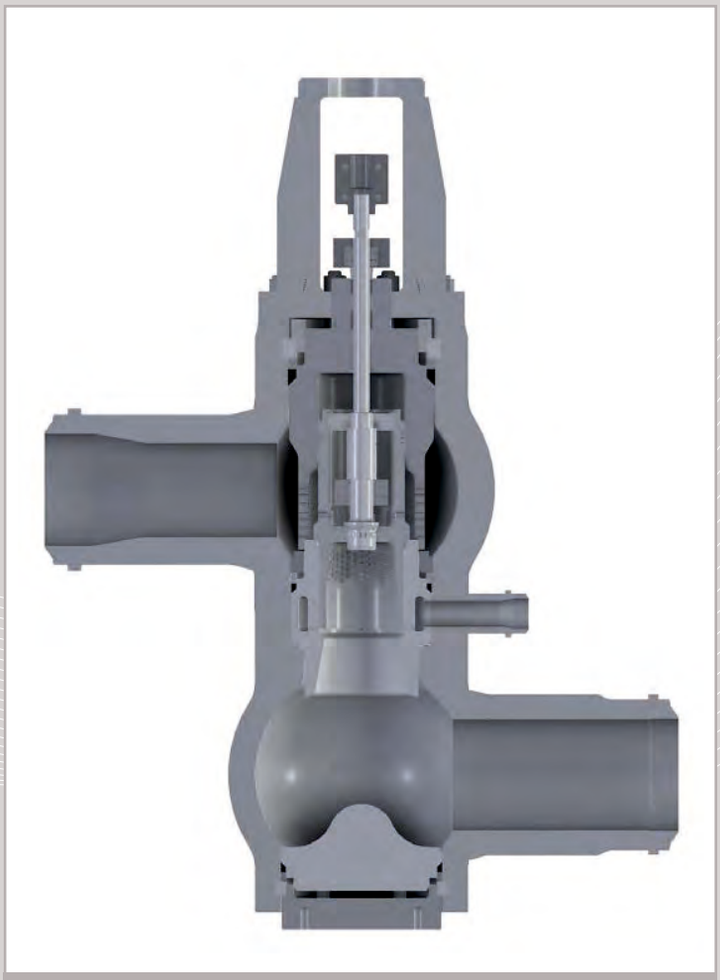
HCVZC1 Valve



Application

HCVZC1 steam conditioning valve combines pressure and temperature control in a single body. High pressure water (e.g. feed-water) is used to reduce steam temperature. HCVZC1 type is commonly used as turbine start-up and by-pass valve. It can also provide process supplying steam of various parameters.

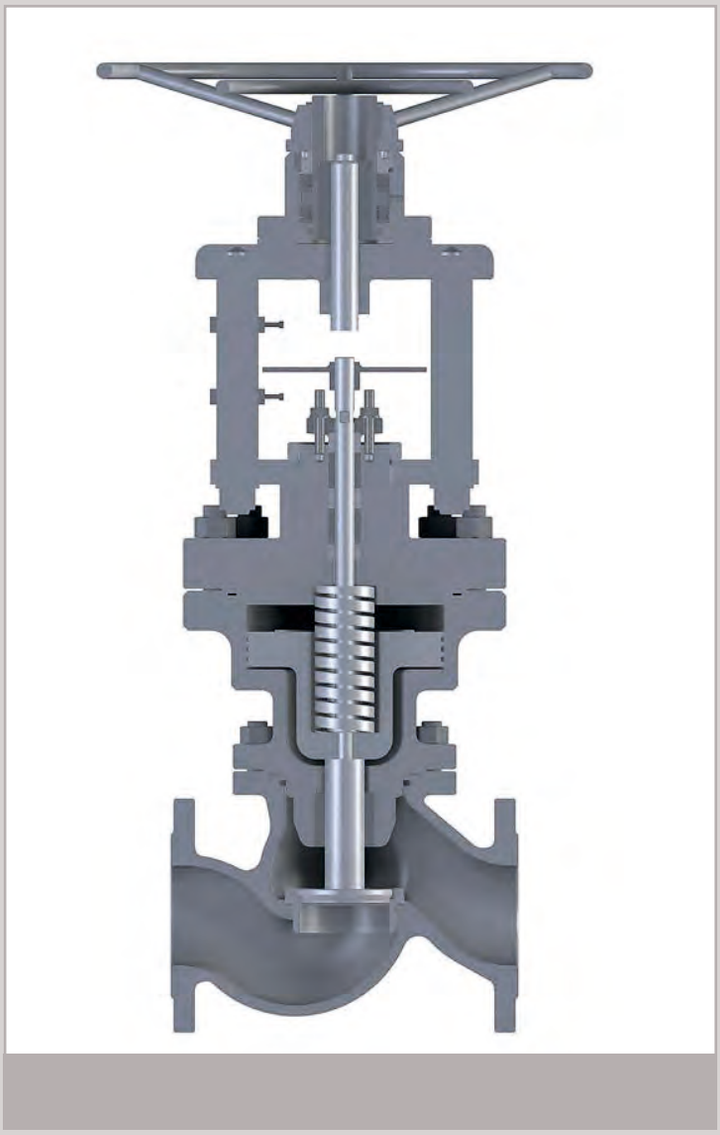
Description

HCVKZC1 is an „Z" type body valve with constant-gradient shape, which means high thermal shock resistance. The coolant is injected under the plug. The valve consists of: forged body, self-sealing inner bonnet integrated with cage, and main plug balanced by inner pilot plug. Slip-in seat, fixed with the nut, has downstream nozzles responsible to deliver effectively sprayed water, supplied to the body through one or two connection pipes. In case of perforated plug only its perforation is responsible for pressure reduction. The inlet cage works as a strainer. The main plug opens water nozzles sequentially, but to control steam temperature external injection valve is needed. HCVZC1 valve works with flow-to-close direction. The construction allows to increase the number of expansion steps (additional appliances can be assembled in the outlet diffuser).

Technical data

	inlet	outlet	connection pipe of injected water
Nominal diameter	DN50÷DN300	according to patron's demand	DN15÷DN50
Nominal pressure	PN40÷PN800	PN16÷PN800	PN40÷PN800
Connections	welding ready		welding ready
Flow coefficient Kvs	40÷1300 m^3/h		
Body	1.0460 (P250GH) 1.5415 (16Mo3)	1.7335 (13CrMo4-5) 1.7380 (10CrMo9-10)	1.7715 (14MoV6-3) 1.4903 (X10CrMoVNb9-1)	1.4901 (X10CrWMoVNb9-2)
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4923 (X22CrMoV12-1)	
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.7715 (14MoV6-3)	
Stem	1.4057 (X17CrNi16-2)	1.4923 (X22CrMoV12-1)		
Hardening of the inner parts	stelliting; nitriding; hardening			
Rangeability	50:1			
Leakage class	metal/metal sealing–IV (standard); V (improved)			
Body's gland	trapezoid, graphite			
Seal bushing	graphite			

MCVQ1 Valve



Application

MCVQ1 represents a special purpose valves. It supports quick inflow of condensate to condenser's dump tubes.

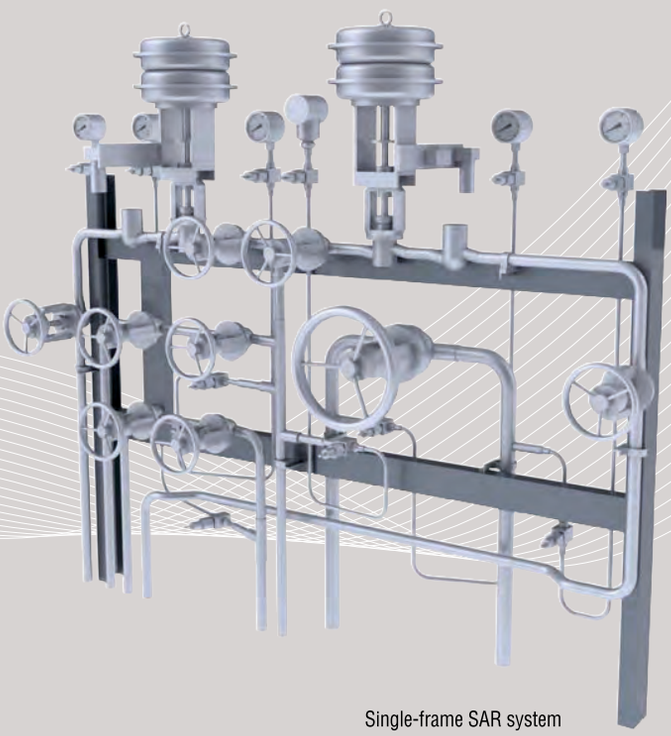
Description

MCVQ1 is straightway valve. Its seat is of screw-in type, guide bushing drives the plug coupled with control piston. The steering solenoid valve receives direct hydraulic support from the medium. Thanks to self-flushing ability, the whole set avoids contaminants' sedimentation. The MCVQ1 has a manual drive, which allows blocking in shut-down position. The valve works with media flow directed over the plug and is proofed against hydraulic stroke in the condensate pipeline.

Technical data

Nominal diameter	DN50÷DN200		
Nominal pressure	PN40		
Connections	bolted flanges; welding ready		
Body	1.0619 (GP240GH)		
Plug	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4034 (X46Cr13)
Seat	1.4541(X6CrNiTi18-10)	1.4057(X17CrNi16-2)	1.4125 (X105CrMo17)
Stem	1.4057 (X17CrNi16-2)		
Hardening of the inner parts	stelliting; nitriding; hardening		
Leakage class	V (improved), metal/metal sealing		
Body's gland	spiral, metal+graphite		
Seal bushing	graphite; PTFE		

HSTV Bypass System of High Pressure Feed-Water Exchangers



Single-frame SAR system

Application

It is design to protect high pressure feed-water exchangers in case of tube system failure or sudden cutoff of condensate from the heater (if condensate level in any heater exceeds given maximum, the protection system will shut off the feed-water supply).

Description

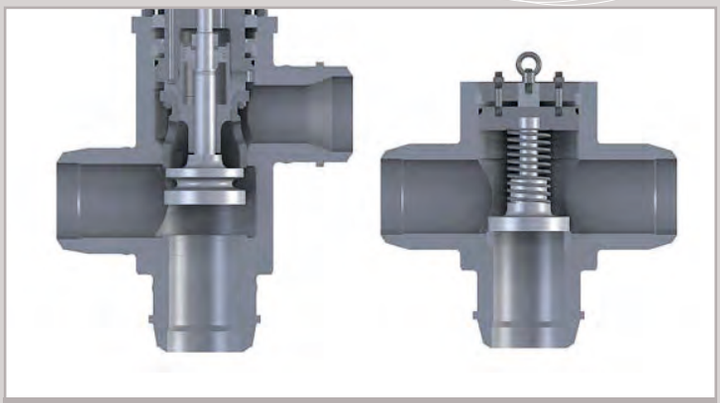
WP security system of high pressure feed-water exchangers consists of: SAR (bypass system of high pressure feed-water exchangers), HSVT1 three-way quick closing valve, and three-way quick closing check valve. The latter can be SAR controlled (HSVT2 type) or work as typical check valve controlled by pressure differences which affect the main plug (T482 model).

■ SAR (Description)

The whole system (i.e., drain valves and the controls) is assembled on single frame, except three-way valves. Drain valves may have any actuators, in standard version they are pneumatic ones.

HSTV Bypass System of High Pressure Feed-Water Exchangers

HSVT1 HSVT2



HSVT1 T482

■ Operation of HSVT1 Valve

In normal operation the plug of the valve is safely hold by its stem in upper position (open, i.e., standby). Feed-water flows from valve's inlet toward the exchangers. The opening of drain valves of SAR system causes stem and its plug to move into closing position. Feed-water flow passes the by-pass pipeline. The manual drive allows blocking valve's stem in lower position (feed-water is responsible for hydraulic control of the valve).

■ Operation of HSVT2 Valve

In normal operation the plug of the valve is safely hold by its stem in upper position (open, i.e., standby). Feed-water flows from the exchangers toward valve's outlet. Bypass pipeline is also open, but remains cut off the HSVT1 valve. The opening of drain valves of SAR system causes stem and its plug to move into closing position, thus stopping feed--water's flow from the exchangers. The manual drive allows blocking valve's stem in lower position (feed-water is responsible for hydraulic control of the valve).

■ Operation of T482 Valve

During normal operation of HSVT1 valve (open, i.e., standby), feed-water from the heaters flows under the plug of T482 valve. Safely holds it in open position and flows toward the valve's outlet connection pipe. Bypass pipeline remains open, but is cut off the HSVT1 valve. If the latter valve closes, feed-water flow passes the bypass pipeline. It causes the pressure drop in high pressure feed-water pipelines and the plug of T482 valve automatically prevents any inflow from the heaters.

■ Purpose

The system has to provide an alternate flow path and isolate high pressure feed water exchangers if condensate level in any single heater exceeds given maximum. It is achieved by quick automatic switching of three-way valves.

Technical data of the HSVT1, HCVT2 and T482 valves

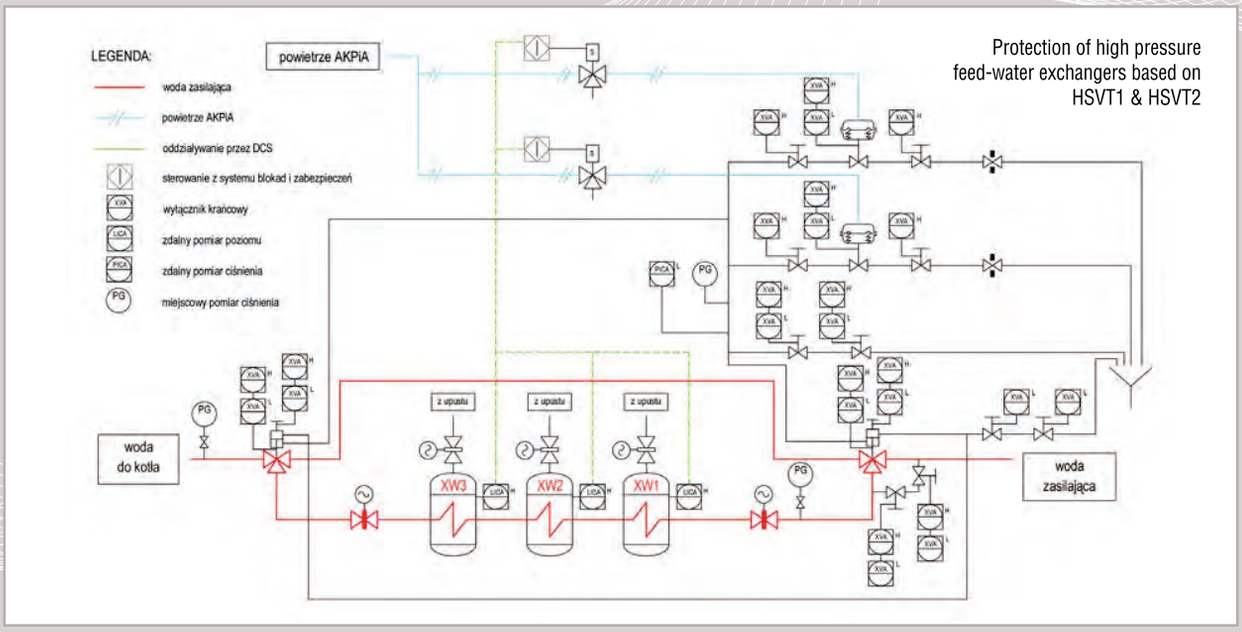
Nominal diameter	DN80÷DN500			
Nominal pressure	PN250÷PN400			
Connections	welding ready			
Body	1.0460 (P250GH)	1.5415 (16Mo3)	1.7335 (13CrMo4-5)	1.6368 (15NiCuMoNb5-6-4)
Plug	1.0460 (P250GH)	1.5415 (16Mo3)	1.7335 (13CrMo4-5)	1.6368 (15NiCuMoNb5-6-4)
Seat	1.0460 (P250GH)	1.5415 (16Mo3)	1.7335 (13CrMo4-5)	1.6368 (15NiCuMoNb5-6-4)
Plug and seat faces	stellite			
Leakage class	V (improved), metal/metal sealing			
Body's gland	trapezoid, graphite			
Seal bushing	graphite			

■ System activation

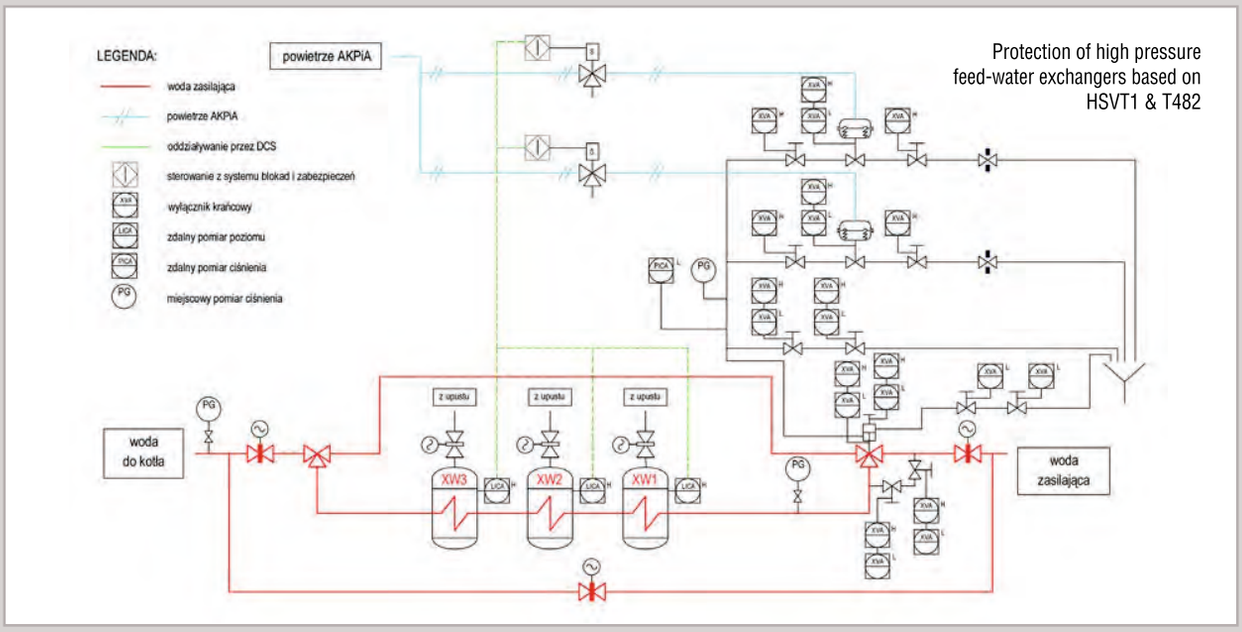
It is simply the result of drain valves' shutdown upstream of the feed-water. Tubing of the high pressure water heater fills up thanks to bypass of the HSVT1 three-way valve. On heater's side the pressure over and under the plugs of HSVT1 i HSVT2 valves becomes even. Water leakage between piston and bushing results in filling the space under actuator's piston. Pressure under and above becomes even. Because actuator's plug and stem are directly influenced by the atmospheric pressure, appears the force shifting upward the plug of HSVT1 valve, and thus its opening. Feed-water flows toward outlet valve (HSVT2), which remains open (thanks to the same phenomena as HSVT1). In case of T482 three-way valve its opening is up to increased pressure in the tubing of a feed water heater.

■ System deactivation

If condensate level exceeds given maximum in any single heater, the protection system automatically will open the drain valves and empty spaces under the pistons of actuators controlling HSVT1 and HSVT2 three-way valves. The resulted pressure differences would push the pistons down. Both three-way valves shut down, simultaneously opening the bypass tubings. T482 valve adjusts automatically, following HSVT1shifting into the bypass mode. Drain valves coupled with pneumatic actuators, and orifice valves with replaceable nozzle allow to adjust open/close response time of three-way valves between 2 and 15 seconds.



Protection of high pressure feed-water exchangers based on HSVT1 & HSVT2



Protection of high pressure feed-water exchangers based on HSVT1 & T482

DTI DUMP TUBE

Application

DTI dump tubes are used to dump steam to condenser from turbine by-pass.

Description

DTI dump tubes are designed for installation on the wall of a condenser or turbine outlet. The steam is gradually expanded using perforated structures. The tubes can be equipped with injection nozzles for additional cooling of the steam before it is dumped into the condenser. The last structure ensures optimal steam distribution in the condenser space. The design of injection nozzles allows their easy disassembly and replacement.

Technical data

Nominal diameter	DN200÷DN1500		
Nominal pressure	PN10÷PN25		
Connections	welding ready		
Body	1.0425 (P265GH)	1.5415 (16Mo3)	1.7335 (13CrMo4-5)
Injection nozzle	1.4305 (X8CrNiS18-9)	1.4571 (X6CrNiMoTi17-12-2)	

DSD CHAMBER DESUPERHEATER

Application

DSD chambers are used for temperature control where there is a high demand for injection water. They are used in turbine start-up and by-pass systems as well as in process steam supply.

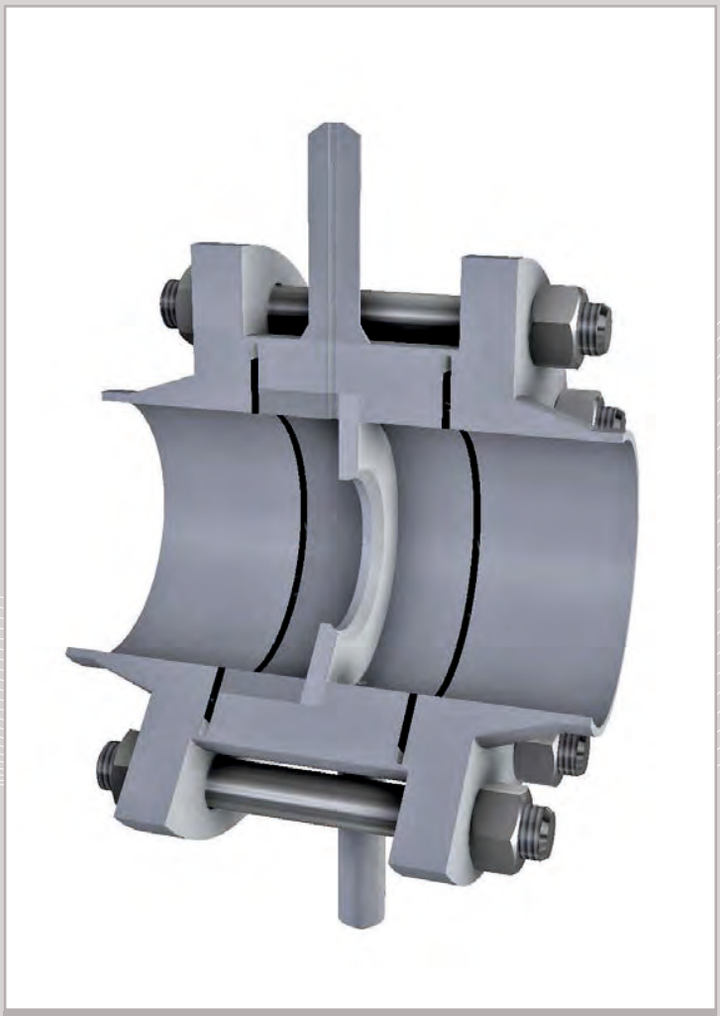
Description

DSD chillers are equipped with hydraulic spraying nozzles. Cooling is carried out by direct injection of cooling water into the cooler chamber. High efficiency nozzles ensure optimal spraying and homogenous stream distribution in the full range of the desuperheater operation. Depending on the parameters of the cooling process, the desuperheater can be equipped with one or two sets of nozzles. Each nozzle set can be supplied with water by separate injection valve. Such solution increases desuperheater rangeability. In DSD coolers, the steam pressure can be constant or reduced on perforated plates. These devices are maintenance-free and do not have any moving parts. The nozzle sets design allows their easy disassembly and replacement.

Technical data

Nominal diameter	DN200÷DN1500			
Nominal pressure	PN10÷PN800			
Connections	bolted flanges; welding ready			
Body	1.0425 (P265GH) 1.7715 (14MoV6-3)	1.5415 (16Mo3) 1.4903 (X10CrMoVNb9-1)	1.7335 (13CrMo4-5) 1.4901 (X10CrWMoVNb9-2)	1.7380 (10CrMo9-10)
Injection nozzle	1.4305 (X8CrNiS18-9)	1.4571 (X6CrNiMoTi17-12-2)		
Rangeability	10:1			

ORIFICE FLOWMETER



Application

The measuring orifices are intended for measuring the value of the flow in a completely filled circular-section pipeline. They are used for single-phase media such as liquids and gases of various ranges of pressure and temperature.

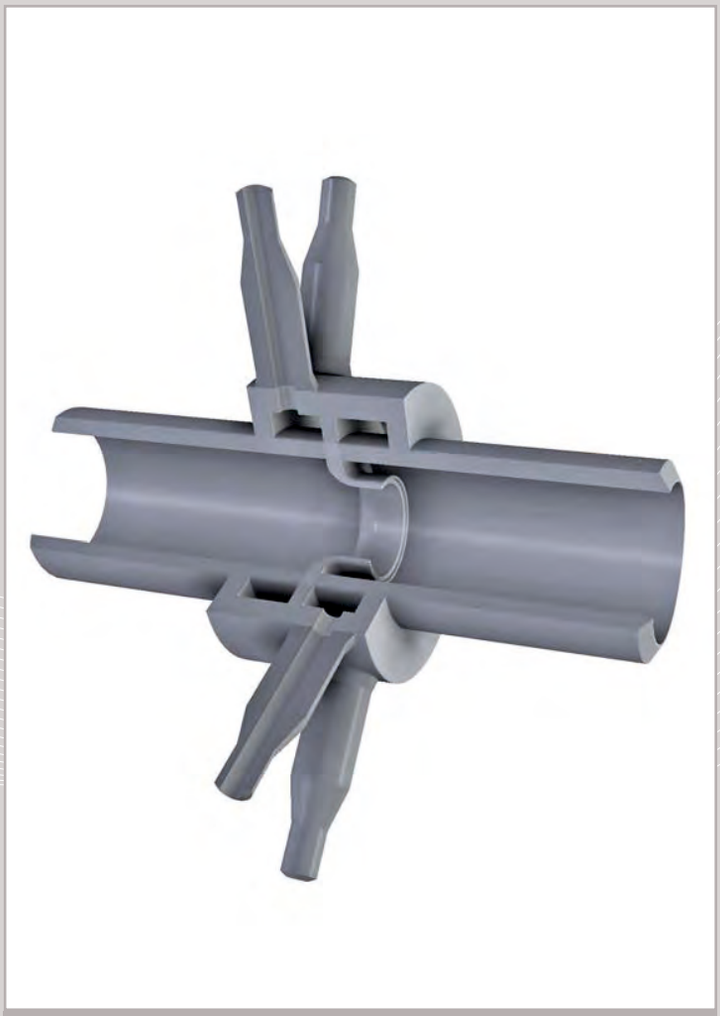
Description

The orifices are made in accordance with the EN ISO 5167-2 standard. The part of the orifice inside the pipeline has the shape of a coaxial wheel with the pipeline. Depending on the method of pressure collection, the measuring orifices may be manufactured with corner taps, flange taps or D and D / 2 taps. The orifice creates a static pressure difference between the inflow and outflow part of the orifice. The fluid flow is determined on the basis of the measured pressure difference and the characteristics of the flowing fluid.

Technical data

Nominal diameter	DN50÷DN1000			
Nominal pressure	PN10÷PN800			
Connections	bolted flanges; welding ready			
Orifice chamber	1.0425 (P265GH) 1.7715 (14MoV6-3)	1.5415 (16Mo3) 1.4903 (X10CrMoVNb9-1)	1.7335 (13CrMo4-5) 1.4901 (X10CrWMoVNb9-2)	1.7380 (10CrMo9-10)
Orifice	1.4541 (X6CrNiTi18-10)	1.4571 (X6CrNiMoTi17-12-2)		

ISA 1932 NOZZLE



Application

The ISA 1932 nozzles are intended for measuring the value of the flow in a completely filled circular-section pipeline. They are used for single-phase media such as liquids and gases of various ranges of pressure and temperature.

Description

The ISA 1932 nozzles are made in accordance with the EN ISO 5167-3 standard. The part of the nozzle inside the pipeline is circular. The nozzle consists of a inlet part with a rounded shape and a cylindrical throttle. The nozzle creates a static pressure difference between the inflow and outflow part of the nozzle. The fluid flow is determined on the basis of the measured pressure difference and the characteristics of the flowing fluid.

Technical data

Nominal diameter	DN50÷DN600			
Nominal pressure	PN10÷PN800			
Connections	bolted flanges; welding ready			
Nozzle chamber	1.0425 (P265GH) 1.7715 (14MoV6-3)	1.5415 (16Mo3) 1.4903 (X10CrMoVNb9-1)	1.7335 (13CrMo4-5) 1.4901 (X10CrWMoVNb9-2)	1.7380 (10CrMo9-10)
Nozzle	1.4541 (X6CrNiTi18-10)	1.4571 (X6CrNiMoTi17-12-2)		

ZV-300-WNI VENTURI TUBE

Triple T impulse Venturi Tube

Application

Venturi tubes are intended for measuring the value of the flow in a completely filled circular-section pipeline. They are used for single-phase media such as liquids and gases of various ranges of pressure and temperature.

Description

ZV-300-WNI Venturi tubes are made in accordance with the EN ISO 5167-4 standard. The part of the nozzle inside the pipeline is circular. The nozzle consists of an inlet part with a rounded shape and a cylindrical throttle. The nozzle creates a static pressure difference between the inflow and outflow part of the nozzle. The fluid flow is determined on the basis of the measured pressure difference and the characteristics of the flowing fluid.

Technical data

Nominal diameter	DN50÷DN1200			
Nominal pressure	PN10÷PN800			
Connections	bolted flanges; welding ready			
Tube material	1.0425 (P265GH) 1.7715 (14MoV6-3)	1.5415 (16Mo3) 1.4903 (X10CrMoVNb9-1)	1.7335 (13CrMo4-5) 1.4901 (X10CrWMoVNb9-2)	1.7380 (10CrMo9-10)

Pneumatic actuators

A single-acting pneumatic membrane actuators are designated to power the control valves. The controlled pressure applies needed force to the restricted element. This loading is provided by a membrane (diaphragm) in combination with a spring. Diaphragm is a sheet of a semi-flexible material anchored at its periphery. It moves slightly up or down (depending on differences in pressure), and the attached stiff ring transmits shifts to a spring. The latter acts with force proportional to membrane's bend. The spring attachment defines types of pneumatic actuator. Fail-open (NO) means that spring is to pull the stem into actuator, thus opens the valve, when the actuating energy source fails. Fail-close (NZ) means that spring is to push the stem out of the actuator and the valve closes, when the actuating energy source fails.

Pneumatic actuators are: simple and efficient, overload- and vibration-proof, fast (a stem velocity is up to 1 m/s), and able to adopt pressure 5–6 bar. They may by employed in corrosive environs, as well as in zones running the risk of explosion.

Pressure input	5÷6 bar
Stroke	20, 25, 40 and 60 mm
Restoring force	1,7÷63,6 kN
Air consumption	8÷60 dm^3/stroke

Figure 1.

Figure 1. HCVB4 valve controlled by pneumatic actuator.

Figure 2. HCVAC1 steam conditioning valve coupled with pneumatic actuator.

Figure 2.

Plugs (with Stems) of Control Valves

The figures below (and on next two pages) present plugs applied in rudimentary types of control valves. Each one has many versions, which differ in: flow coefficient (Kvs), features, stroke, and material applied. The scope of available plugs widens along with demands of modern, contemporary industrial installations.

Figure a1

Figure a2

Figure a3

Figure a4

Figure a5

Single stage plugs with guide bushing.

Figure b1

Figure b2

Figure b3

Figure b4

Single stage plugs, cage guided: Figures b1-b2 – unbalanced, Figures b3-b4 – seal balanced.

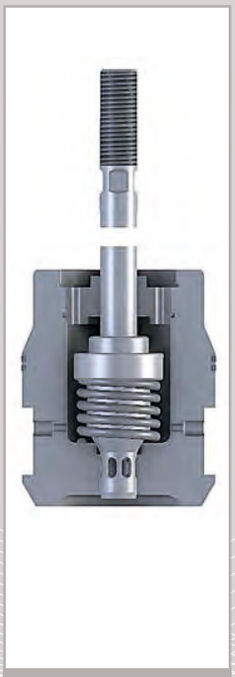


Figure c1

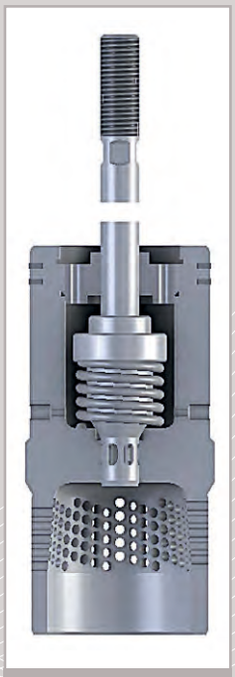


Figure c2

Figure c3

Figure c4

Single stage plugs, cage guided and balanced with pilot plug.

Figure d1

Figure d2

Figure d3

Multi stage plugs, cage guided: Figures d1-d3 – two-step, unbalanced.

Figure d4

Figure d5

Figure d6

Figure d7

Multi stage plugs, cage guided: Figures d4-d5 – two-sep, balanced, Figures d6-d7 – three-step.

Figure e1

Figure e2

Figure e3

Other models available: Figures e1-e2 – two-seat ready, Figure e3 – plug of three-way valve

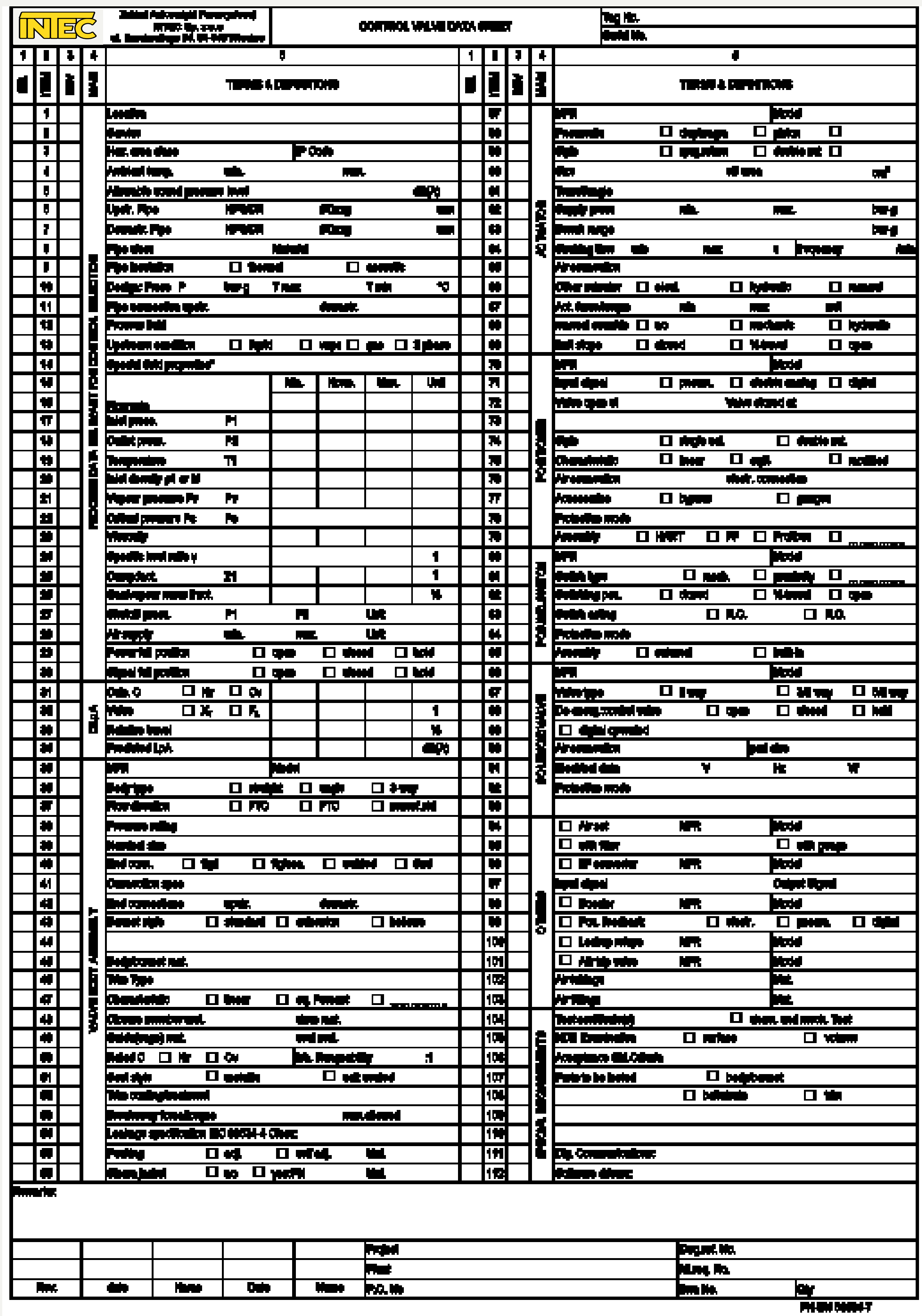
Typ-X1-X2-X3-X4-X5-X6-X7-X8-X9-X10-X11

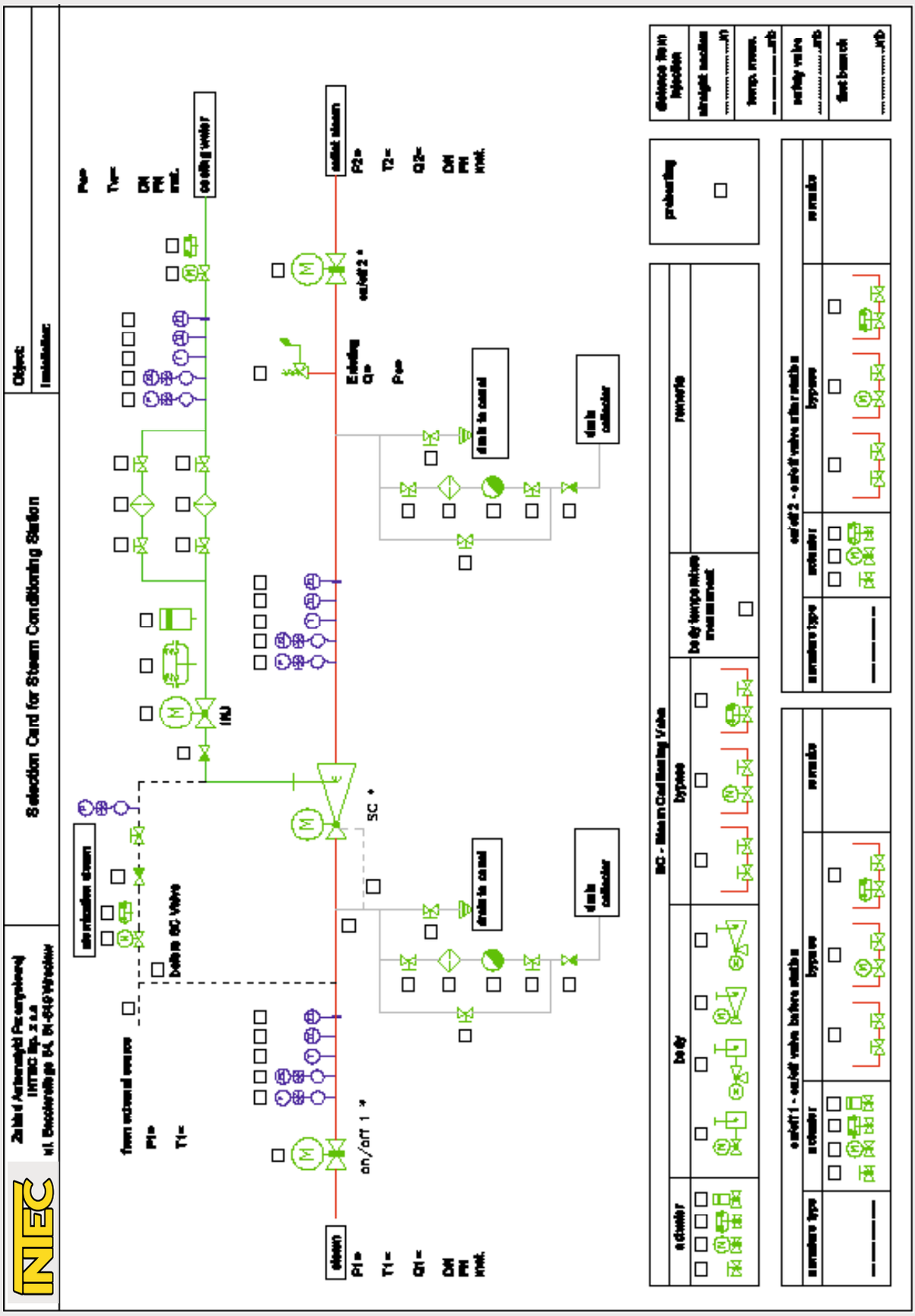
TYP
ECV
MCV
HCVA1
HCVA2
HCVA3
HCVA4
HCVB1
HCVB2
HCVB3
HCVB4
HCVB5
HCVB6
HCVC1
HCVD1
HCVK1
HCVK2
HCVK3
HCVK4
HCVK5
HCVK6
HCVK7
HCVS2
HCVS6
HCVT1
HCVZ1
HCVZ2
HCVKC1
HCVKC2
HCVKC3
HCVKC4
HCVKC5
HCVKC6
HCVKC7
HCVKC8
HCVKC9
HCVAC1
HCVSC2
HCVZC1

X1 - PLUG TYPE	
Contoured	C
Perforated	P
X2 - BALANCE	
Non-balanced	U
Balanced	B
X3 - PLUG MATERIAL	
1.4541	1
1.4541+stellite	2
1.7380+nitrogen	3
1.4057 35HRC	4
1.4125 55HRC	5
1.4541+NBR	10
1.4541+PTFE	11
Tytan WT-9	15
Tytan WT-9+nitrogen	16
Ceramic	20
Other	33
X4 - FLOW CHARACTERISTIC	
Linear	L
Equal percentage	P
Modified	M
Other	S
X5 - SEAT MATERIAL	
1.4541	1
1.4541+stellite	2
1.7380+nitrogen	3
1.4057 35HRC	4
1.4125 55HRC	5
1.4541+NBR	10
1.4541+PTFE	11
Tytan WT-9	15
Tytan WT-9+anitrogen	16
Ceramic	20
Other	33
X6 - LEAKAGE CLASS	
IV	1
V	2
VI	3

X7 - FLOW DIRECTION	
FTO	FO
FTC	FC
Flow splitting	D
Flow mixing	M
X8 - CONNECTIONS	
Flange DIN/PN	1
Flange ANSI	2
BW	3
Other	4
X9 - MBODY MATERIAL	
1.0460	1
1.0619	2
1.5415	3
1.7335	4
1.5419	5
1.7357	6
1.4541	7
1.4404	8
1.4308	9
1.4408	10
1.7380	11
1.7715	12
1.4903	13
1.4901	14
1.7379	15
1.6368	16
inny	33
X10 - BONNET TYPE	
standard	1
Spring strained packing	2
TA-LUFT	3
Bellows	4
X11 - BUSHING	
PTFE	1
PTFE V	2
PTFE for Oxygen	3
Graphite braid	4
Graphite expanded	5
Graphite V	6

Complete specification of the valve consists of:
full code, nominal diameter DN, nominal pressure PN and catalogue flow coefficient Kvs.
Example:
The valve: HCVA1-C-U-5-P-2-1-FO-1-2-2-5 DN80 PN250 Kvs=63




Selection Card for Steam Conditioning Station
Object:
Installation:
INTEC
Zakład Automatyki Przemysłowej
INTEC Sp. z o.o.
ul. Bezpieczna 64, 64-640 Wrocław
steam
from external source
P1=
T1=
P1=
T1=
Q1=
DN
PN
kvs
on/off 1 *
IRU
SC *
Pw=
Tw=
DN
PN
mat.
cooling water
outlet steam
P2=
T2=
Q2=
DN
PN
kvs
Edukaj
Qs=
Pw=
on/off 2 *
drain to canal
drain collector
drain to canal
drain collector
SC - Steam Conditioning Valve
actuator
body
bypass
body temperature measurement
remarks
on/off 1 - on/off valve before station
actuator type
actuator
bypass
remarks
on/off 2 - on/off valve after station
actuator type
actuator
bypass
remarks
protecting
distance from injection
straight section
temp. meas.
safety valve
fast branch

INTEC in power industry

Product	Company or Enterprise
Control Valves with Actuators	Veolia Energia Łódź S.A. Veolia Energia Poznań - ZEC S.A. PGE GiEK S.A. – Oddział Elektrociepłownia Gorzów Elektrociepłownia Mielec Sp. z o.o. Tauron Ciepło Sp. z o.o. - Zakład Wytwarzania Tychy PGNiG TERMIKA S.A. (Elektrociepłownia Żerań) TAURON Wytwarzanie S.A. Oddział Elektrownia Jaworzno III ENEA Wytwarzanie S.A. (dawniej Elektrownia „Kozienice" S.A.) TAURON Wytwarzanie S.A. - Oddział Elektrownia Łaziska Elektrownia Skawina S.A. TAURON Wytwarzanie S.A. - Oddział Elektrownia Stalowa Wola Energetyka Sp. z o.o. EDF Polska S.A. - Zespół Elektrociepłowni Wrocławskich „Kogeneracja" PGE GiEK S.A. – Oddział Elektrownia Opole Energa Elektrownie Ostrołęka S.A. TAURON Wytwarzanie S.A. - Oddział Zespół Elektrociepłowni Bielsko-Biała PGE GiEK S.A. – Oddział Zespół Elektrociepłowni Bydgoszcz EDF Polska S.A. Oddział I w Krakowie PCC Rokita S.A. TAURON Wytwarzanie S.A. – Oddział Elektrownia Blachownia Elektrociepłownia Białystok S.A. TAURON Wytwarzanie S.A. - Oddział Elektrownia Siersza PGE GiEK S.A. – Oddział Elektrociepłownia Zgierz ISD Huta Częstochowa Sp. z o.o. TAURON Wytwarzanie S.A. - Oddział Elektrownia Łagisza KGHM Polska Miedź S.A. Oddział Huta Miedzi Legnica ArcelorMittal Poland S.A. Oddział w Zdzieszowicach (Z.K. Zdzieszowice) Saturn Management Sp. z o.o. i Wspólnicy, Sp. Komandytowa PGE GiEK S.A. – Oddział Zespół Elektrowni Dolna Odra Fortum Power and Heat Polska Sp. z o.o. Oddział w Zabrzu S.A. TAURON Ciepło Sp. z o.o. - Zakład Wytwarzania NOWA KGHM Polska Miedź S.A Cukrownia Ropczyce CEZ Skawina S.A. EDF Polska S.A. Oddział w Gdyni EDF Polska S.A. Oddział w Rybniku Elektrociepłownia BĘDZIN Sp. z o.o. Ciech Soda Polka S.A. Grupa LOTOS S.A. Tameh Polska Sp. z o.o. JSW KOKS S.A. Mondi Świecie S.A. PGE GiEK Oddział Elektrownia Turów PGE GiEK Oddział Elektrownia Bełchatów Zespół Elektrowni Pątnów-Adamów-Konin Zespół Elektrociepłowni Wrocławskich. Elektrociepłownia Czechnica
Steam Conditioning Valves	PGE GiEK S.A. – Oddział Zespół Elektrowni Dolna Odra Energa Elektrownie Ostrołęka S.A. TAURON Wytwarzanie Spółka Akcyjna Oddział Elektrownia Jaworzno III TAURON Ciepło Sp. z o.o. - Zakład Wytwarzania NOWA PGNiG TERMIKA S.A. (Elektrociepłownia Siekierki) Energetyka Cieplna Opolszczyzny S.A. (ECO Opole) TAURON Wytwarzanie S.A. - Oddział Elektrownia Łaziska Zakład Energetyki Cieplnej w Łowiczu Sp. z o.o. JSW KOKS S.A. (Koksownia Przyjaźń) EDF Polska S.A. - Zespół Elektrociepłowni Wrocławskich „Kogeneracja" TAURON Wytwarzanie S.A. - Oddział Elektrownia Łagisza PGE GiEK S.A. – Oddział Elektrociepłownia Gorzów

	ArcelorMittal Poland S.A. Veolia Energia Łódź S.A. Veolia Energia Poznań - ZEC S.A. TAURON Wytwarzanie S.A. - Oddział Elektrownia Łaziska Synthos Dwory 7 Sp. z o.o. s.j. Elektrociepłownia Mielec Sp. z o.o. TAURON Wytwarzanie S.A. - Oddział Elektrownia Stalowa Wola PGE GiEK S.A. – Oddział Elektrownia Opole JSW KOKS S.A. EDF Polska S.A. – Oddział I w Krakowie Przedsiębiorstwo Serwisu Automatyki i Urządzeń Elektrycznych EL PAK Sp. z o.o. EDF Polska S.A. Elektrociepłownia Zofiówka, SEJ S.A. Zespół Elektrowni Pątnów-Adamów-Konin PGE GiEK S.A. Oddział Zespół Elektrociepłowni Bydgoszcz Zakłady Azotowe Kędzierzyn S.A.
Control Actuators and Check Valve Actuators	PGE GiEK S.A. – Oddział Elektrownia Bełchatów PGE GiEK S.A. – Oddział Elektrownia Opole PGE GiEK S.A. – Oddział Elektrownia Turów Veolia Energia Łódź S.A. Elektrociepłownia „Będzin" Sp. z o.o. Elektrociepłownia Białystok S.A PGE GiEK S.A. – Oddział Elektrociepłownia Gorzów EDF Polska S.A. Oddział I w Krakowie PGE GiEK S.A. – Oddział Elektrociepłownia Lublin-Wrotków TAURON Ciepło Sp. z o.o. - Zakład Wytwarzania NOWA PGE GiEK S.A. – Oddział Elektrociepłownia Rzeszów PGNiG TERMIKA S.A. (Elektrociepłownia Siekierki) EDF Polska S.A. Oddział Wybrzeże Spółka Energetyczna „Jastrzębie" S.A. Elektrociepłownia „Zofiówka" TAURON Wytwarzanie S.A. – Oddział Elektrownia Blachownia TAURON Wytwarzanie S.A. - Oddział Elektrownia Halemba ENEA Wytwarzanie S.A. (dawniej Elektrownia „Kozienice" S.A.) TAURON Wytwarzanie S.A. - Oddział Elektrownia Łagisza TAURON Wytwarzanie S.A. - Oddział Elektrownia Łaziska GDF SUEZ Energia Polska S.A. (Elektrownia Połaniec) EDF Polska S.A – Oddział w Rybniku TAURON Wytwarzanie S.A. - Oddział Elektrownia Siersza Elektrownia Skawina S.A. EDF Polska S.A. - Zespół Elektrociepłowni Wrocławskich „Kogeneracja" PGNiG TERMIKA S.A. (Elektrociepłownia Żerań) Przedsiębiorstwo Energetyki Cieplnej - Gliwice Sp. z o.o. (PEC Gliwice) PEC Sp. z o.o. w Bełchatowie KPEC Bydgoszcz Sp. z o.o. Fortum Power and Heat Polska Sp. z o.o. Oddział w Częstochowie PGE GiEK S.A. – Oddział Elektrociepłownia Zgierz PGNiG S.A. CEZ Skawina S.A. EDF POLSKA S.A. Zespół Elektrociepłowni Wrocławskich. Elektrociepłownia Czechnica Energa Elektrownie Ostrołęka S.A. ENERGA Serwis Sp. z o.o. TAMEH POLSKA Sp. z o.o.