ICV TOTAL CONTROL INSIDE BUILDINGS

MOTORIZED CONTROL VALVES FOR BUILDING SERVICES

MEMBER OF THE AVK GROUP

ICV™ - a proud member of the AVK Group

The AVK Group of Denmark is a privately owned industrial group that currently comprises 77 companies.

AVK's core business is the production of **valves, hydrants and accessories** for the water and gas distribution network, sewage treatment and fire protection. Furthermore, AVK has built up strong brands supplying valves and controls for water treatment, dams & reservoirs, buildings, HVAC, chemical processing, marine and other industrial sectors.

AVK best in class factories cast, machine, coat valves all over the world. AVK also produces its own sealing materials and other essential components in its own factories.

AVK products are designed to the major international standards and are sold in more than 80 countries worldwide. When dealing with the AVK Group expect quality, reliability, functionality and long lifetime in service.

ICV™ is a fully owned subsidiary of the AVK Group A/S.

ICV™ (Indoor Climate Valves) is the building solution department of the AVK Group. Originally under the AVK Water segment the ICV business area was established as a separate AVK subsidiary brand in 2006 to allow for even greater focus on buildings.

ICV develops, produces, and markets all over the world - total valve solutions for buildings with valves produced by AVK.
This includes heating ventilation and air-conditioning (HVAC), drinking and wastewater in buildings
- General and manual valves (photo below)
- Motorized control valves (photo below)
- Balancing solutions (next page)

ICV's balancing solutions include all balancing valves typically used for buildings with innovative solutions and durable materials.


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ICV motorized control valves

ICV 951 Flowmaster™ PICV has been sold worldwide for years to the benefit of investors, designers, installers and users alike.

It's an integral part of ICV's balancing solution and is the optimal choice for all coils – particularly air handling units and fancoils.

ICV's 951 Flowmaster™ satisfies the need for static balancing caused by the construction of pipes and coils in hydraulic systems, as well the need for dynamic differential pressure balancing which occurs when control valves modulate the flow of water to terminal coils to adjust the temperature in rooms and thereby impact the flow to other terminal coils.

The motorized control valve is also built into the 951 - that's why called a 3-in-1.

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951 Flowmaster™

Pressure independent control valve - PICV

Offers the combined benefits of optimal modulating flow control valve, differential dynamic pressure balancing control, and manual balancing valve – all in one – for air-handling units, fresh air units, fan coils and all other terminal equipment.

Design made fast and safe

- Simply and quickly chose the valve according to the designed flowrate
- The constant differential pressure control across the modulation control valve guarantees full valve authority at 100%.
- Security that the specified flow is also the actual flow
- Automatic adjustment if the system is modified after the initial installation – no rebalancing necessary
- Design pumps according the actual needs – no need to overdesign capacity

Investments made easy

- One 3-in-1 valve replaces three other valves reducing material cost and installation time, no other regulating valves required when installed at terminals

Installation made fast and easy

- Automatic balancing reduces the time required for debugging
- Minimized commissioning time due to automatic balancing of the system

Comfort made safe

- Precise temperature control gives users better comfort and eliminates over or under supply regardless of fluctuating pressure conditions in the system
- Correct balancing minimizes actuator action extending its service life
- Fast response pressure regulator reduces energy consumption and increases system stability

Highlights

Cost saving
A single 3-in-1 PICV replaces three other valves saving on investment and installation cost

Safe
Balancing made safe during design, installation and remodeling for designers and installers

Comfortable
Increased comfort for users due to ensured balancing and precise modulating temperature control

Energy saving
Inbuilt fast response balancing regulator reduces energy consumption and pump size

Flowmaster™

								
Heating Cooling Source Ventilation	ICV No.				951-000-9804	951-000-9806	9200420248	9200420249
	Force (Nm)				250N	400N	1200N	5000N
	Running time (50/60Hz)				75	140	114/95	240/175
	IP Class				IP44	IP54	IP54	IP54
	24VAC	Control signal			Modulating 0-10V, 0..20mA, 2-10V/4..20mA, 2P on/off			
		Feedback (position) signal			0-10V, 2-10V			
PN25 0..120°C	**ICV No.**	**DN**	**Δps [kPa] Range**	**Kvs (m³/h)**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**
	951-015-2011	15 low	16-400	0.075 -.0625	400			
	951-020-2011	20 low	16 -400	0.131 –1.05	400			
	951-025-2011	25 low	16 -400	0.231 –1.722	300			
	951-015-2012	15	18 -400	0.244 –1.724	400			
	951-020-2012	20	22 -400	0.292 –2.039	300			
	951-025-2012	25	22 -400	0.292 –2.039	300			
	951-032-2012	32	18 –400	0.465 –3.056	300			
	951-040-2012	40	16 –400	2.022 –7.105		300		
	951-050-2012	50	16 -400	2.204 –8.586		300		
PN16/25 -5…95°C	**ICV No.**	**DN**	**Δps [kPa] Range**	**Kvs (m³/h)**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**
	951-0040-15012X	40	30-400	1.0 –7.7			500	
	951-0050-15012X	50	30–400	2.0 –12.1			400	
	951-0065-15012X	65	30–400	3.0 –20.4			300	
	951-0080-15012X	80	30–400	5.0 –40.0			300	
	951-0100-15170X	100	30–400	10.0 –45.3				300
	951-0125-15170X	125	30–400	15.0 –70.7				300
	951-0150-15170X	150	30–400	20.0 –101.8				300
	951-0200-15-70X	200	30–400	50.0 –360.0				150

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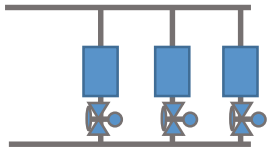
Stroke modulation is ensured through large stroke size
Commissioning and flushing enabled without actuator
Designed to resist build-up of dirt
High quality materials ensures no corrosion



Recommended application:
The 951 PICV is installed on the return pipe of any terminal coil offering the combined benefits of optimal modulating flow control valve, differential dynamic pressure balancing control, and manual balancing valve – all in one – for air-handling units, fresh air units, fan coils and all other terminal equipment.

Full stroke modulation is ensured regardless of the presetting.
"First open" cap to allow for installation and commissioning before actuator is installed.
Removable pressure regulator cartridge makes small-pipe flushing and pipe cleaning easy
High quality DZR brass ensures no corrosion

Body: DZR Brass EN CW602N
Regulator: PPS with 40% glass
Flow limiter: PPO
Spring: Stainless steel
O-ring: EPDM
Body: 89/336/EEC, 93/68/EEC

Body: ductile GG25
Stem: AISI 304
Diaphragm: EPDM
Internals:
Standards: BS EN 12266, 1092-2

Innovative solution

The preset and volumetric flow control functions in one component (left), and pressure regulator (right) –replaceable, compact and innovative

Maximum flow limiter

Simple presetting of maxium volumeric flow by inbuilt dial in brass valve

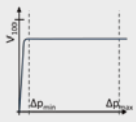
P/T Ports - Pressure testing ports

Safe and easy calibration of volumetric flow (Δp) using the ICV PFM Bluetooth commissioning instrument

High grade materials

High grade materials: corrosion resistant brass, AVK rubber sealing, GG25 ductile iron ensures longevity

Inbuilt pressure regulator



Very wide differential pressure control ranges 30-400kpa (dp_{min} – dp_{max})
Very high constant flow precision at +/-5% of flowrate.

Volumetric control valve

Precise volumetric flow control valve using ICV's 24V modulating actuators
100 valve authority ensured
Ensures temperature control and comfort to coil

Motorized control valves are at the heart of all climate control in buildings.

Motorized control valves are installed on the return pipe of all heating and cooling coils and the stroke of the actuator is controlled by either thermostats or electronic building controllers.

Correct on-demand flow of energy to coils ensures a comfortable indoor climate by avoiding underflow or incorrect flow-rates, and minimizes energy cost as overflow through coil is avoided.

ICV 920/3 and 920/4 are stroke (globe) valves which offer high precision in flow control.

A motorized control valve constantly changes the flow of energy through its coil throughout the day and will thereby also influence the flow of energy to other coils. ICV recommends the use of dynamic balancing valves (i.e. 908/3 or 951) to ensure that the flow through valves and coils elsewhere in the system are not negatively influenced by this (see ICV balancing offering).

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920/3 & 920/4

Motorized control stroke valves

Offers precise and adjustable flow control for all cooling and heating plants ensuring comfort and energy saving for on-demand heating and cooling

Design made fast and safe
- A very wide range from one supplier makes design and selection easy
- ICV actuators offer all standard control signals and work perfectly with any building controller from any producer
- Designed according to international standards making simple replacement during refurbishments possible

Investments made easy
- Wide offering of actuators makes the most economical choice available

Installation made fast and easy
- Easy mounting of actuator saves time
- Self calibration and status lights makes installation and commissioning safe

Comfort made safe
- Precise temperature control gives users better comfort and eliminates over or under supply – it also saves you money

Highlights

Comfortable and energy saving
Stroke design control concept offers the most precise control characteristics of the control valve types

Safe
All standard control signals offered befitting all control manufacturers ensures perfect integration of building automation systems

Easy
Very wide offering of both threaded brass valves and the flanged cast ductile iron version

920/3&4

920/3 Motorized threaded control stroke valve
920/4 Motorized flanged control stroke valve




Air handling units Fresh air units Heating equipment Energy distribution	ICV No.						9201061/3	9202102/4	9202122/4	9202182/
	Force (N)						600N	1000N	1200N	1800N
	Positioning time （50/60Hz）						92/76	105/90	114/95	210/175
	IP Class						IP54	IP54	IP54	IP54
	24VAC		Control signal					0-10V-0..20mA, 2-10V/4..20mA, on/off		
			Positioning feedback signal				0-10V, 2-10V	0-10V, 2-10V, on/off		
PN16 -5…95 °C	**ICV No. 2-way MOD/ONOFF**	**ICV No. 3-way MOD/ONOFF**	**DN**	**Stroke**	**Kvs (m3/h)**		**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa**
	920-03-1-0015-11061/2	920-03-1-0015-12061/2	15	15	3.1		600			
	920-03-1-0020-11061/2	920-03-1-0020-12061/2	20	15	5		600			
	920-03-1-0025-11061/2	920-03-1-0025-12061/2	25	20	7.4		600			
	920-03-1-0032-11061/2	920-03-1-0032-12061/2	32	20	11.5		550			
	920-03-1-0040-11061/2	920-03-1-0040-12061/2	40	20	14		450			
	920-03-1-0050-11061/2	920-03-1-0050-12061/2	50	20	45		300			
	920-03-2-0065-11101/2	920-03-2-0065-12101/2	65	20	63			300		
	920-03-2-0080-110101/2	920-03-2-0080-12101/2	80	20	78			250		
	920-042-0065-13121/3	920-042-0065-14121/3	65	20	75				500	
	920-042-0080-13121/3	920-042-0080-14121/3	80	20	100				500	
	920-042-0100-13181/3	920-042-0100-14181/3	100	38	125					300
	920-042-0125-13181/3	920-042-0125-14181/3	125	38	200					300
	920-042-0150-13181/3	920-042-0150-14181/3	150	38	285					300
	920-043-0200-13701/3	920-043-0200-14701/3	200	38	400					

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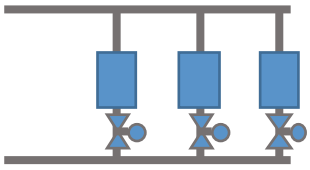
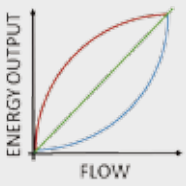


Recommended application:
The 920/3 and 920/4 motorized control stroke valves are installed on the return pipe of all coils requiring modulating flow control:
Air handling units and fresh air units
Chillers and cooling towers
Heating plants
Energy distribution

		
/4	9203702/4	Housing: ABS Gear: POM, Nylon Bracket: die casting aluminum alloy
	5000N	
	240/175	
	IP54	
a]	Δps [kPa]	
		Body: brass H62 Stem: stainless steel Disc/seat: brass H62 Packing: PTFE+NBR
		Body: cast iron GG25 Stem: stainless steel AISI 302 Disc/seat: brass Packing: PTFE+fluororubber
	200	

EQ% equal percentage control curve



Equal percentage control characteristics (blue) combines with the energy flow/yield curve of the coil (red) to produce the required energy output in the room(green)

Valves

- Wide range of 2-way and 3-way valves available from DN32-200
- Triple sealing packing box of PTFE+Fluororubber (flanged) and PTFE+NBR (brass) ensures no neck leakage
- Pressure compensated design of flanged valves ensures high close-off pressures with minimum wear on the actuator
- Designed according to BS EN 1092-2 and hydraulically tested according to BS EN 12266. Ensures correction functionality (i.e. EQ) and strength
- DZR corrosion resistant brass body and seat ensures that valve is resistant longivety and functionality

Actuator

- Wide range 600N, 1000N, 1200N, 1800N, 5000N ensures economical fit for different valves sizes
- Easy to use manual override on the actuator
- Control signals 0-10V/0..20mA and 2-10/4..20mA available. Position feedback signals 0-10V and 2-10V selectable on the actuator
- Self-calibration ensures correct alignment of the control signal and the stroke position
- Normally open or normally closed can be selected on the actuator
- Work status light indicator makes it easier to realize functional issues after installation and commissioning
- Easy mounting saves time for the installer

Motorized control valves are at the heart of all climate control in buildings.

Motorized control valves are installed on the return pipe of all heating and cooling coils and the stroke of the actuator is controlled by either thermostats or electronic building controllers.

Correct on-demand flow of energy to coils ensures a comfortable indoor climate by avoiding underflow or incorrect flow-rates, and minimizes energy cost as overflow through coil is avoided.

ICV 920/2 series are control ball valves with adequate control characteristics thanks to the V-shaped flow control component for larger sizes.

A motorized control valve constantly changes the flow of energy through its coil throughout the day and will thereby also influence the flow of energy to other coils. ICV recommends the use of dynamic balancing valves (i.e. 908/3 or 951) to ensure that the flow through valves and coils elsewhere in the system are not negatively influenced by this (see ICV balancing offering)

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920/2
Motorized control ball valves

Offers precise and adjustable flow control for all cooling and heating plants ensuring comfort and energy saving for on-demand heating and cooling

Design made fast and safe
- A very wide range from one supplier makes design and selection easy
- ICV actuators offer all standard control signals and works perfectly with any building controller from any producer
- Designed according to international standards making simple replacement during refurbishments possible

Investments made easy
- Wide offering of actuators makes the most economical choice available

Installation made fast and easy
- Easy mounting of actuator saves time
- Self calibration and status lights makes installation and commissioning safe

Comfort made safe
- Adequate flow control gives users better comfort and eliminates over or under supply – it also saves you money

Highlights

Cost effective
Control ball valves offer adequate control characteristics for affordable price

Easy
Easy mounting saves time during installation.

Safe
Wide portfolio from the same supplier makes design and product selection easy and safe

920/2

920/2 motorized control ball valve									
Air handling units Fresh air units Heating equipment Energy distribution	ICV No. modulating control					-	9202101	9202101	9203301
	ICV No. on/off control					9201023	9202103	9202103	9203303
	Force					2	10	10	30
	Positioning time（50/60Hz）					40/50	95/105	95/105	120/130
	IP Class					54	54	54	54
	220 VAC	Control signal				2P	-	-	-
		Position feedback					-	-	-
	24 VAC	Control signal				-	0-10V/0..20mA,2-10V/4..20mA		
		Position feedback				-	0-10V, 2-10V		
PN16'0…90 °C	**ICV No.**		**DN**	**PN**	**Kvs (m3/h)**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**
	920-02-1-220-00015-1D		15	20	4	300			
	920-02-1-220-00020-1D		20	20	4	300			
	920-02-1-220-00025-1D		25	20	10	300			
	920-02-B-CCC-00032-1D		32	20	16		300		
	920-02-B-CCC-00040-1D		40	20	25		300		
	920-02-B-CCC-00050-1D		50	20	40		300		
	920-02-B-CCC2-0065-125		65	16	63			300	
	920-02-B-CCC2-0080-125		80	16	100			300	
	920-02-B-CCC2-0100-125		100	16	140				300
	920-02-B-CCC2-0125-125		125	16	230				300
	920-02-B-CCC2-0150-125		150	16	320				300

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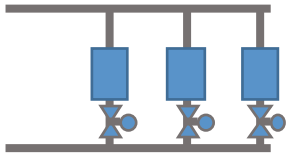

Recommended application:
The 920/2 motorized control ball valves are installed on the return pipe of all coils requiring modulating flow control:
Air handling units and fresh air units
Chillers and cooling towers
Heating plants
Energy distribution

Actuator: ABS

Body: Brass
Seat/gasket: PTFE
Ball: chromed brass CW617N
Stem: stainless steel AISI 304
O-ring: EPDM

Body: ductile cast iron
Seat/gasket: PTFE
Ball: chromed brass CW617N
Stem: stainless steel AISI 304
O-ring EPDM

Actuators

Ni-Ch coated brass ball CW617N and the characterized PTFE seat ensures EQ flow characteristics and durability.

Cast iron ball valves

- Designed according to BS EN 1092-2 and hydraulically tested to BS EN 12266 (PN16)
- EPDM sealing ensures no leakage from neck
- DN65-150 (ductile iron) for higher durability
- High flow rates up to 320 m³/h
- Leakage rate and safe opening-closing of the valve is ensured at 3bar – 300kpa

Threaded brass ball valves

- Designed according to BS 21 and hydraulically tested to BS EN 12266 (PN16)
- EPDM sealing ensures no leakage from neck
- DN15-50 brass available both as 2-way and 3-way valves
- High flow rates up to 40 m³/h
- Leakage rate and safe opening-closing of the valve is ensured at 3bar – 300kpa

Actuators

- 220VAC 2P on/off control
- 24VAC 0-10V (0-20mA) or 2-10V (4..20mA) control and 0-10V and 2-10V feedback signals available
- Rotation direction / normally open or normally closed selectable
- Self calibration function ensures that correct mounting of the actuator and that the correct flow and function is achieved
- Functional light indicating “normal”, “self-calibration”, and “fault” makes commissioning and fault finding easier
- IP54 housing sufficient for all standard installations
- Manual override for easy and proper mounting
- Running times below 130s (105/130)

The 925 motorized control valves from ICV offer lightweight and reliable flow control for large size applications – chillers, cooling towers and other distribution requirements.

Typically, modulating flow control butterfly valves are used on the return pipe of chillers, cooling towers but also suitable for a range of flow distribution applications.

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925/6
Motorized control butterfly valves

925/76
Light motorized control butterfly valves

ICV 925 actuators mounted on ICV 76 series butterfly valves

Offers precise and adjustable flow control for all cooling and heating plants ensuring comfort and energy saving for on-demand heating and cooling

Design made fast and safe
- A very wide range from one supplier makes design and selection easy
- ICV actuators offer all standard control signals and works perfectly with any building controller from any producer
- Designed according to international standards making simple replacement during refurbishments possible

Investments made easy
- Wide offering of actuators makes the most economical choice available

Installation made fast and easy
- Readymade pre-mounted actuators saves time and ensures that calibration is done correctly
- Self calibration and status indicator makes installation and commissioning safe

Comfort made safe
- Acceptable flow control gives users better comfort and eliminates over or under supply – it also saves you money

Highlights

Safe
The actuators are pre-mounted from factory avoiding positioning errors

Easy
Very wide range makes design and selection easy from one supplier

Energy saving
Adequate flow control helps avoid oversupply and the wide offering ensures an economical fit

925/6

925/06 Motorized control butterfly 925/01 wafer type butterfly valves														
Air handling units Fresh air units Heating equipment Energy distribution	ICV No. 925/06			-00040-5XY	-00060-7XY	-00090-7XY	-00150-7XY	-00281-0XY	-00381-2XY	-00601-2XY	-01001-2XY	-02001-4XY	-03001-6XY	-04001-6XY
	Force Nm			40	60	90	150	280	380	600	1000	2000	3000	4000
	Positioning time（50/60Hz）			14/17	14/17	14/17	17/20	22/26	22/26	24/29	24/29	75/90	75/90	60
	IP Class			IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67
	220 VAC	Control signal		2P										
		Position feedback		Dry contact										
	380 VAC	Control signal		0-10V, 2-10V/4..20mA										
		Position feedback		0-10V, 2-10V										
PN16 to 110°C	**ICV No.**	**mm**	**Kvs (m3/h)**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**
	925-02-0050-X1YY	50	135	1600										
	925-02-0065-X1YY	65	220	1600										
	925-02-0080-X1YY	80	302	1600										
	925-02-0100-X1YY	100	600		1600									
	925-02-0125-X1YY	125	1022			1600								
	925-02-0150-X1YY	150	1579				1600							
	925-02-0200-X1YY	200	3136					1600						
	925-02-0250-X1YY	250	5340						1600					
	925-02-0300-X1YY	300	8250							1600				
	925-02-0350-X1YY	350	11917								1600			
	925-02-0400-X1YY	400	16388									1600		
	925-02-0450-X1YY	450	21705									1600		
	925-02-0500-X1YY	500	27908										1600	
	925-02-0600-X1YY	600	43116											1600

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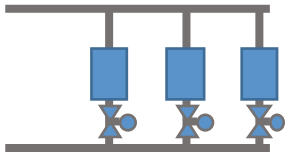

Recommended application:
The butterfly valves are recommended as modulating control or on/off control of all coils, chillers, cooling towers, and distribution for large diameters.
Air handling units and fresh air units
Chillers and cooling towers
Heating plants
Energy distribution

Housing: aluminum alloy/Cast iron
Hand wheel: cast iron
Open/Close indicator
Stainless steel AISI 304

Body: ductile iron GGG40
Disc: Epoxy coated ductile iron
Seat: EPDM
Stem: stainless steel AISI 420/2Cr13
Coating: epoxy coating RAL7011 > 100µm
BS EN 1074-1

(Disc, seat, stem – other materials available)

Actuator

- Very wide range available from 40 Nm to 4000 Nm ensures economical fit of valve and actuator
- Produced according to JB/T8528-97
- IP67 high protection class suitable for outdoors installations
- Auto-calibration ensure correct position feedback and correct functional integration of the valve and actuator
- Internal heating element ensures that condensation doesn't damage the circuits
- Easy to use clutch and large handwheel for manual override during commissioning
- Self-locking gear train for stable torques and long life

Butterfly valve

- Extremely wide range of butterfly valves avilable from ICV (76, 925, 756)
- Connection: wafer, lug, double flanged,
- Disc: concentric, eccentric, iron epoxy, stainless steel AISI 304/316
- Liner: many types of EPDM, NBR etc
- Designed with a long neck to limit heat and cold transfer from valve to actuator and allow space for insulation
- Large disc ensures reliable and high close-off pressure

Also available: lug type

Also available: double flanged

Air handling units and fresh air units (AHU and FAU)
Chilled and cooling water from chillers
Cooling towers
District cooling systems Temperature range -10 - 130C

On/off actuator		**925/76–**			**0005**	**0010**	**0016**	**0025**	**0050**	**0060**	**0100**	**0200**
	Operating voltage / tolerance	AC24V +10/-15%			05D2FGH	07D2FGH						
		AC220V +10/-15%			05D0FGH	07D0FGH	07D0FGHI	10D0FGHI	10D0FGHI	10D0FGHI	1D20FGHI	14D0FGHI
		AC380V /3 phase			05D1FGH	07D1FGH	07D1FGHI	10D1FGHI	10D1FGHI	10D1FGHI	12D1FGHI	14D1FGHI
		Starting current			0.25A	0.58A	0.72A	0.69A	1.38A	1.38A	1.38A	1.38A
		Working current			0.25A	0.5A	0.68A	0.6A	1.2A	1.2A	1.2A	1.2A
Modulating actuator		**925/76–**	**Position**	**Feedback**	**0005**	**0010**	**0016**	**0025**	**0050**	**0060**	**0100**	**0200**
	Operating voltage / tolerance	AC24V +10/-15%	0-10V	0-10V	0532FGHI	0732FGHI						
			4..20mA	4..20mA	0562FGHI	0762FGHI						
		AC220V +10/-15%	0-10V	0-10V	0530FGHI	0730FGHI	0730FGHI	1030FGHI	1030FGHI	1030FGHI	1230FGHI	1430FGHI
			4..20mA	4..20mA	0560FGHI	0760FGHI	0760FGHI	1060FGHI	1060FGHI	1060FGHI	1260FGHI	1460FGHI
		AC380V /3 phase			-	-	-	-	-	-	-	-
General	Operating data	Nominal torque			50	100	160	250	500	600	1000	2000
		Positioning time 90° at 50Hz (sec)			30	30	30	30	30	30	30	30
		Angle of rotation			90° (max +/-5°)							
	Power	Power consumption in/out (W)			30/10	80/23	80/23	300/90	300/90	300/90	300/90	300/90
	Environmental	Max. medium temperature			-10..80°C							
		Ambient temperature			-20…55°C							
		Humidity			0..95% r.h.							
	Degree of protection	Housing upright to horizontal			IP68							
		Insulation class			NEMA F							
	Standards	JB/T8219-1999			JB/T8219-1999							
		CE			EN60730-2-14							

Wafer type epoxy coated DI butterfly valves	**ICV No.**	**DN (mm)**	**kvs [m3/h]**	**PN class**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**
	76-0050-72-8175026900	50	91	16	1400							
	76-0065-72-8175026900	65	206	16	1400							
	76-0080-72-8175026900	80	436	16	1400							
	76-0100-72-8175026900	100	660	16		1400						
	76-0125-72-8175026900	125	1,300	16		1400						
	76-0150-72-8175026900	150	2,100	16			1400					
	76-0200-72-817502690014	200	4,100	16				1400				
	76-0250-72-817502690015	250	6,090	16					1400			
	76-0300-72-817502690015	300	9,570	16						1400		
	76-0350-72-817502690015	350	12,958	16							1400	
	76-0400-72-817502690015	400	17,244	16								1400

Lug type epoxy coated DI butterfly valves	**ICV No.**	**DN (mm)**	**Kvs (m3/h)**	**PN class**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**	**Δps [kPa]**
	76-0050-73-8175026905	50	91	16	1400							
	76-0065-73-8175026905	65	206	16	1400							
	76-0080-73-8175026905	80	436	16	1400							
	76-0100-73-8175026905	100	660	16		1400						
	76-0125-73-8175026905	125	1,300	16		1400						
	76-0150-73-8175026905	150	2,100	16			1400					
	76-0200-73-817502690514	200	4,100	16				1400				
	76-0250-73-817502690515	250	6,090	16					1400			
	76-0300-73-817502690515	300	9,570	16						1400		
	76-0350-73-817502690515	350	12,958	16							1400	
	76-0400-73-817502690515	400	17,244	16								1400

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Description

D - Actuator type
1 - on/off
2 - on/off dry point
3 - 0-10V / 0-10V
4 - 2-10V / 2-10V
5 - 2-10V / 4-20mA
6 - 4-20mA / 4-20mA

E - Power
0 - 22VAC
1 - 380VAC (on/off)
2 - 24VAC*
3 - 24VDC**

F - Optional features
0 - Standard Hexagon Allen wrench
1 - Hand wheel

G - Optional features
0 - Standard
1 - Potentiometer

H - Optional features
0 - Standard
1 - Electrical heater

I - Optional features
0 - Standard
1 - Dual torque limiter

Housing: epoxy coated aluminum alloy
Open close indicator
High IP protection class
High NEMA motor protection class
Pre-mounted from factory
Lightweight and reliable

Description

Disc: Epoxy coated DI EN-GJS-500/7
Body: DI ductile iron EN-GJS-500/7
GSK approved fusion bonded epoxy coating DIN30677-2
WRAS approved loose concentric EPDM liner
Stem AISI 420 (1.4021)
Flange drilling EN1092-2
Design EN593
Hydraulic test to EN1074-1, 2/EN12266
Optional: SS316 Disk, NBR or high °C EPDM liner
Medium temperature range -10°C - 80°C
Standard AC220V

Actuator

- Light weight and small fits into small spaces. Actuator heaight only between 141 – 186 mm
- Wide range available from 50 Nm to 2000 Nm ensures economical fit of valve and actuator
- Produced according to JB and CE standards
- IP68 extra high protection class suitable for outdoors installations
- Auto-calibration ensure correct position feedback and correct functional integration of the valve and actuator
- Optional internal heating element ensures that condensation doesn't damage the circuits
- Optional easy to use large handwheel for manual override during commissioning
- Self-locking gear train for stable torques and long life
- Dew barrier disc DN50-300

ICV 76 butterfly valves

- Premium butterfly valve designed for HVAC, supply drainage and drinking water systems
- Long neck for temperature insulation. Mounted with dew barrier disc between valve and actuator for better anti-condensation protection
- Reinforced seating area at shaft. Shaft holes dimensioned to create compression around the shaft
- Integrated, profiled flange gasket
- Pin less and two stub shaft design
- PPOM bearings and an EPDM O-ring as backup sealing for no leakage
- PTFE coated bearings at the top and bottom of the disc for low friction
- The rubber ensures minimum biofilm formation which prevents contamination of the drinking water
- The rubber is approved for drinking water applications

920/1

Most commercial buildings apply fan coils for cooling purposes in rooms.

ICV 920/1 is a simple on/off valve and actuator combination with two wires. The set is available in 2-way and 3-way for fancoils and other low temperature applications.

920/1 offers flow rates up to 3m³/h and close-off pressure up to 180 kPa which is suitable for most room cooling and heating using fan coils.

For higher requirements we recommend ICV premium offering the 955 Flowmaster™ FC which includes dynamic balancing with close-off pressure of 380 kPa and flowrates up to 2.45m³/h.

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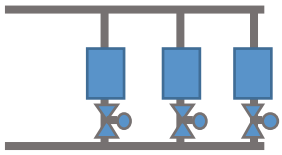
ICV 920-1

Motorized on/off valve for fancoils

Offers on/off control of fan coils



Recommended application:
For on/off control of fan coils

220VAC		On/off			
PN16‘ to 90°C	ICV No. 2-way	mm	Δps [kPa]	Kvs m³/h	
	920-01-0015-2	15	180	2	Body: DZR brass Disc: NBR Stem: stainless steel Actuator housing Aluminium alloy and ABS Thread to BS 21 Hydraulic tested to EN 12266
	920-01-0020-2	20	180	3	
	920-01-0025-2	25	180	3	
	920-01-0015-21	15	180	2	
	920-01-0020-21	20	180	3	
	920-01-0025-21	25	180	3	

Highlights

Simple
Simple installation and usage

Suitable
Normally closed suitable for most cooling applications

Easy
Manual override used during installation and maintenance, with only two wires for easy wiring.

Safe
Spring return ensures actuator returns to closed position in case of power failure

ICV Flowmaster™ FC is a premium offering for on/off control as well as dynamic flow balancing.

The ICV Flowmaster™ FC is designed for the balancing of cooling and heating units. With its simple on/off control the valve can be used for many different applications, and at the same time advantage is derived from the dynamic control principles.

By means of ICV Flowmaster™ FC the optimum flow rate is ensured in each control area. This flow rate is maintained in spite of pressure fluctuations in the system. A control area may be two fan coils for a hotel room or a calorifier for a sports centre. Energy savings due to automatic flow control, lower flow and pump pressure. Maximized ΔT due to faster response and increased system stability is also achieved.

Member of the AVK Group

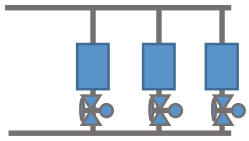
955 Flowmaster™ FC

Motorized 2-way on/off dynamic balancing valve

Offers dynamic flow balancing and on/off control of fan coils – all in one – ensuring that the correct flow is maintained across all units

Fan coils						
Δps 380 kPa	Force (N)	Stroke	IP	955-000-9901	955-000-9902	955-000-9903
Δpmax 230 kPa	130N	4mm	IP40/44	24 VAC	110 VAC	220 VAC

PN25 -10° to 120°C	ICV No.(L/H)	Flow (l/s)	Min Δp (kPa)	ICV No. (L/H)	Flow (l/s)	Min Δp (kPa)
	952-10 1 1150	0.007	7	952-11 1/2 1725	0.171	14
	952-10 1 1170	0.01	7	952-11 1/2 1730	0.186	14
	952-10 1 1190	0.012	7	952-11 1/2 1735	0.204	14
	952-10 1/2 1210	0.015	7	952-11 1/2 1740	0.222	16
	952-10 1/2 1230	0.021	8	952-11 1/2 1745	0.242	19
	952-10 1/2 1260	0.024	9	952-11 1/2 1750	0.26	21
	952-10 1/2 1290	0.029	10	**AVK. No. (L/H)**	**Flow (l/s)**	**Min Δp (kPa)**
955-015-20-1 955-020-20-1 955-025-20-1	952-10 1/2 1300	0.032	10	952-20 1/2 2070	0.283	22
	952-10 1/2 1320	0.036	11	952-20 1/2 2074	0.3	22
	952-10 1/2 1350	0.043	11	952-20 1/2 2077	0.332	22
	952-10 1/2 1370	0.049	12	952-20 1/2 2082	0.371	23
	952-10 1/2 1400	0.057	12	952-20 1/2 2086	0.412	23
	952-10 1/2 1430	0.067	12	952-20 1/2 2088	0.439	23
	952-10 1/2 1460	0.078	12	952-20 1/2 2092	0.493	24
	952-10 1/2 1490	0.089	13	952-20 1/2 2094	0.509	24
	952-10 1/2 1510	0.097	13	952-20 1/2 2099	0.578	25
	952-10 1/2 1540	0.111	13	952-20 1/2 2103	0.625	26
	952-10 1/2 1570	0.132	14	952-20 1/2 2106	0.644	27
	952-10 1/2 1620	0.151	14	952-20 1/2 2109	0.68	28



Recommended application:
The 955 Flowmaster™ FC is installed on the return pipe of any fancoil. The correct flow cartridge is chosen based on flow requirements.

Highlights

To in one
Two in one on/off control valve and dynamic flow balancing valve

Exchange cartridge
Exchangeable cartridges for high/low flow and variable flow rates

Silent
ICVthermic actuator and internal diaphragm ensures silent operation preferred for hotels and homes

Materials
Cap DZR Brass CW602N
Body DZR Brass CW602N
Cartridge DZR Brass CW602N
Stem:Stainless steel
Actuator housing ABS

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