

INGWESTAD

For engines, turbines, gearboxes and heat exchangers:

- For refineries, chemical plants and oil reproduction:**

- ## Key benefits

- Ease of integration - valve size matches pipe size, resulting in reduced installation time and installation costs
- Flexible design - ports can be configured to suit installation
- Low pressure drop - compared to other valve types
- Small physical size
- Hand wheel allows manual adjustment of valve (optional on pneumatic valve)
- Simplified set up and maintenance
- Low internal leakage over closed port: Class II (0,5%) ANSI/FCI 70-2 and IEC 60534-4
- Withstands high differential pressure across the closed valve port



The 2-way control valves consist of a heavy-duty ball valve and either a quarter turn electric or pneumatic actuator. The valves provide a high degree of accuracy and repeatability for accurate temperature control and are equally accurate in mixing or diverting service over a wide flow range. The heavy-duty rotor design provides tight temperature control without high maintenance requirements. The system is available in three standard control configurations: electric; pneumatic; and electro-pneumatic, offering flexibility for most requirements.

Some actuator options are designed and reinforced for vibration service and are qualified to Lloyd's Marine Requirements for shipboard service. Certain valve and actuator combinations can be directly mounted to reciprocating machinery such as diesel engines, without vibration isolation. Standard valves are suitable for a variety of fluids such as water, water/glycol, sea water, lubricating and hydraulic oils. Optional body materials are available for services involving synthetic or fire-resistant oils, deionized water and ammonia or freon in oil.

2-Way Control Ball Valve with Modulating Actuator

System Types



For the electrically operated valves, several actuator options are available, which use an electric motor that rotates in either direction in response to the control signals received. The motor drives a gearbox connected to the rotor shaft and turns the valve rotor clockwise or counterclockwise, normally 0 - 90 degrees. At the end of travel, limit switches are incorporated to isolate the electrical supply to the motor when the valve rotor has reached either end of the rotation. A feedback hall sensor is available on some actuators, providing position indication to the control system.



A typical electric valve system incorporates an electrically actuated three-way control valve with an electronic controller and temperature probe. AMOT's 8071D or 8072E PID Controller can be either panel or wall mounted. The system is completed with a temperature sensor type 8060.

The electric valve system is simple to install with standard multicore cable and provides more accurate measurement and control than typical pneumatically operated systems.

2-Way Control Ball Valve with Modulating Actuator



Valve Body: Assembly

Key features and benefits

Lightweight & compact | **Configurable ports** = flexibility on installation

Low pressure drop = savings on either valve or pump size | **High accuracy** = better temperature control

Valve Specification Overview

Flow to	2-1 550 m³/h	
Sizes	DN15 – DN200	
Body Materials	Stainless Steel	
	Stainless Steel w/nano polymer	
Temp. Range	Min: -40°C	Max: +150°C
Max Internal Valve Pressure	25 bar	
Seal Material	RPTFE	
Seal Compatibility	Water (Please contact us regarding seawater)	
	Ethylene/Propylene Glycol	
	Oils - Synthetic Based	
	Oils - Petroleum Based	
Applicable Standards		
Design Standard	DIN3357	
Face to Face Dimension	Factory standard	
Test Standard	END12266	
END Flange Dimensions	EN1092-1	
Internal Leakage	Class II (0,5%) ANSI/FCI / IEC 60534-4	
Property Specification		
Nominal Pressure Class	PN16 / PN25	
Air Seal Test	6 bar	
Hydraulic Seal Test	25 bar	
Pressure Equipment Compliance	Pressure Accessory - Sound Engineering Practices (SEP)	

Comment: In its design as a temperature control valve, the valve is defined as a Pressure Accessory under the terms of the EU Pressure Equipment Directive (PED) and the GB Pressure Equipment (Safety) Regulation (PE(S)R). When used within the temperature and pressure limitations given in this table, the valve range is designed for use in applications using non-hazardous liquids defined as Group 2 in the Directive/Regulation (such as water, water/glycol and lubricating oil). In these applications, the valves fall into the Sound Engineering Practice (SEP) category. Contact Ing Westad AS to discuss solutions if the application and/or specifications are outside of the above limitations, or if it is to use hazardous liquids (Group 1) or contain non-hazardous Group 2) or hazardous (Group 1) gases.

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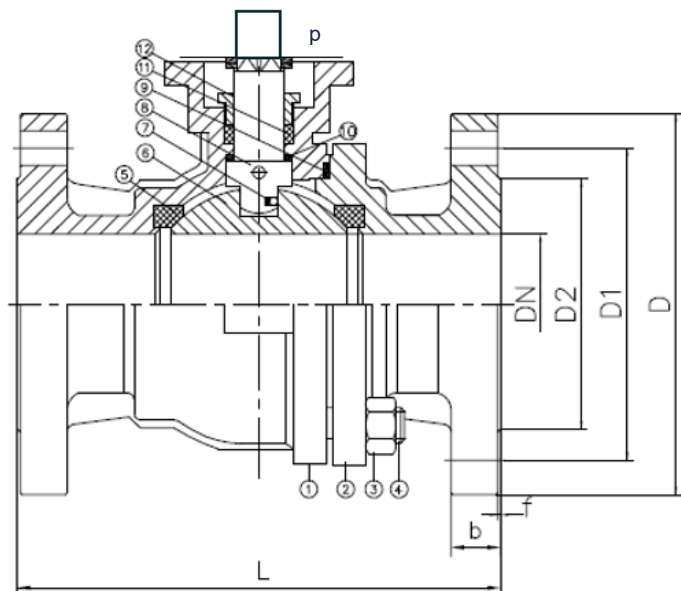


Valve Body: Flow

Flow Rate			Recommended flow rate in m ³ /h		
Size	Inches	Kv	Min	Ideal	Max
DN15	½"	18	2	8	10
DN20	¾"	36	4	16	20
DN25	1"	60	7	26	35
DN32	1¼"	82	9	36	45
DN40	1½"	126	14	55	70
DN50	2"	192	21	85	100
DN65	2½"	318	35	140	175
DN80	3"	480	53	200	265
DN100	4"	900	99	395	495
DN125	5"	1350	150	595	740
DN150	6"	1932	200	850	1 050
DN200	8"	3000	300	1250	1550

2-Way Control Ball Valve with Modulating Actuator

Valve Body: Dimensions



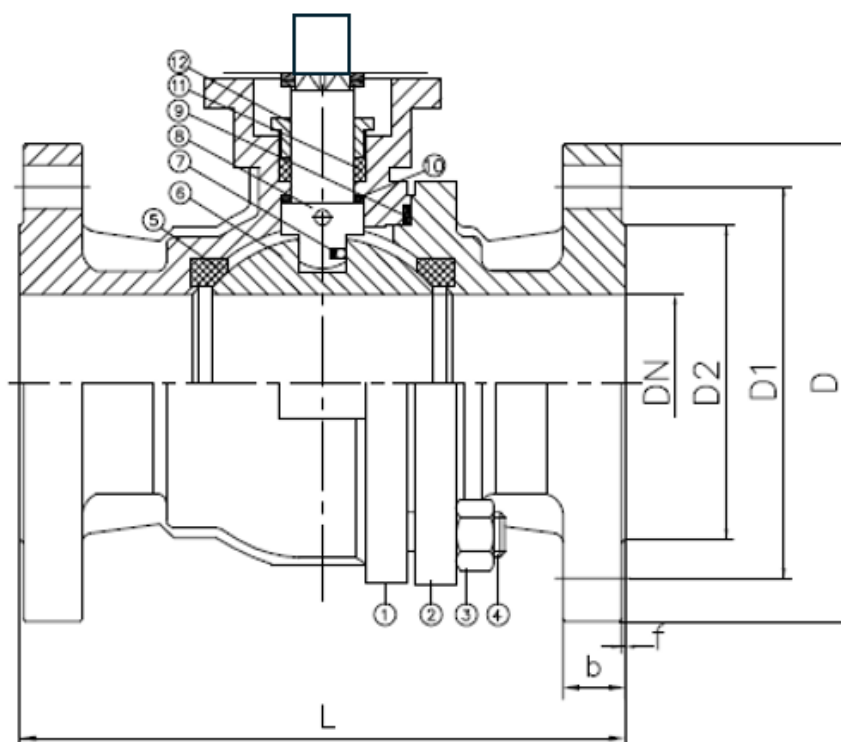
Size	L	D	D1	D2	b	f	N-Ød	B	P	Torque	Top flange
DN15	115	95	65	45	16	2	4-14	36	9x9	9	ISO5211 F05
DN20	120	105	75	58	18	2	4-14	36	9x9	10	ISO5211 F05
DN25	125	115	85	68	18	2	4-14	42	11x11	16	ISO5211 F05
DN32	130	140	100	78	18	2	4-18	42	11x11	35	ISO5211 F07
DN40	140	150	110	88	18	3	4-18	50	14x14	50	ISO5211 F07
DN50	150	165	125	102	18	3	4-18	50	14x14	80	ISO5211 F07
DN65	170	185	145	122	18	3	4-18	70	17x17	120	ISO5211 F07
DN80	180	200	160	138	20	3	8-18	70	17x17	120	ISO5211 F10
DN100	190	220	180	158	20	3	8-18	70	22x22	180	ISO5211 F10
DN125	325	250	210	188	22	3	8-18	102	22X22	280	ISO5211 F12
DN150	350	285	240	212	22	3	8-22	102	22X22	400	ISO5211 F12
DN200	400	340	295	268	24	3	12-22	125	22X22	720	ISO5211 F14

The specified torque values do not include any safety factor.

2-Way Control Ball Valve with Modulating Actuator

Valve Body: Material

No.	Part Name	Material
1	Body	ASTM A351 CF8M
2	Bonnet	ASTM A351 CF8M
3	Bonnet Bolt	ASTM A193 B8M
4	Bonnet Nut	ASTM A194 8M
5	Seat	PRTFE
6	Ball	ASTM A182 F316
7	Anti-Static Spring	SS316
8	Stem	ASTM A182 F316
9	Gasket	PTFE
10	Thrust Gasket	PTFE
11	Packing	PTFE
12	Gland	ASTM A351 CF8M



2-Way Control Ball Valve with Modulating Actuator



Valve Model Code Designation

Valve model code designation	Code	Code Description
Valve Size	15	DN15 = 1/2"
	20	DN20 = 3/4"
	25	DN25 = 1"
	32	DN32 = 1 1/4"
	40	DN40 = 1 1/2"
	50	DN50 = 2"
	80	DN80 = 3"
	100	DN100 = 4"
	125	DN125 = 5"
	150	DN150 = 6"
Valve Model	W2	2-way control valve
	W3	3-way control valve
Valve Flow Type	L	Low flow
	S	Standard flow
	H	High flow
Valve Body / Seal Material	S	216 Steel
	R	316 Stainless Steel
	N	316 Stainless Steel treaded with Nano polymer
Valve Flange Connection	B	PN10 RF (Raised flanges)
	C	PN16 RF (Raised flanges)
	D	PN25 RF (Raised flanges)
	U	Female Parallel Threads (BSPP/G) EN ISO 228 1
Ball-Rotor Type	S	Class I «no test»
	H	Class II (0,5 %) ANSI/FCI 70 2 and IEC 60534 4.
	K	Class IV (0,01 %) ANSI/FCI 70 2 and IEC 60534 4.
Mode of Operation	OC	OPEN-CLOSE only 2-way
	13	Mode 13: Start position Port 1 closed@signal 4mA.
	31	Mode 31: Start position Port 1 closed@signal 4mA.
	CL	Configuration L
	CT	Configuration T
	MM	360 degrees rotation - multi mode
Valve Actuation Type	E / F / G	AMOT Electric Actuator (E: EB, F: EA, G: EC)
	A	AUMA Electric Actuator
	H	HKC Electric Actuator
	V	Valpes EL actuator
	P	Pneumatic
Actuator Power Supply	1	12 VDC
	2	24 VDC
	A	110 VAC 1 phase
	B	230 VAC 1 phase
	C	400 VAC 3 phase
	M	Pneumatic with manual override
Actuator Control Signal Input	A	Switched live supply or OPEN-CLOSE for 2-way
	B	4-20mA: signal increases as temp rises
	K	0-10V: signal increases as temp rises
	P	Pneu with pos 4-20mA signal increases as temp rises
	B	BUS - Specify which kind
Actuator Feedback Signal	A	End pos signal, no feedback or pot meter
	B	4-20mA
	K	0-10V
	P	Pneu 4-20mA
	T	BUS - Specify which kind