

BARNAUL BOILER PLANT

Product Catalogue 2015

- ❖ **Valves for Power-Generation Industry**
- ❖ **Pressure-Reducing Desuperheating Stations (PRDS)**
- ❖ **Steam Exhaust Silencers**



BARNAUL BOILER PLANT

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Introduction

This catalog presents product range, design, application, service characteristics and weight-size parameters of pipe fittings manufactured by Barnaul Boiler Plant. The primary intended use of the valves is to be mounted on steam and water pipes at thermal power plants; this largely determines valve design and selection of materials. By agreement with the manufacturing plant, pipe fittings may be mounted on other facilities as well.

Nominal pressure (PN) may be converted to operating pressure (PO), and operating pressure may be determined by nominal pressure for the set operating temperature according to GOST 356-80.

When ordering valves and fittings, or any technical documentation, please indicate product IDs as listed in this catalog, including climatic version and placement category according to GOST 15150, as well as specification ID.

By default, fittings for domestic delivery are designed for operation in macroclimate regions with mild and cold climate (MCC) of placement category 3 according to GOST 15150 and ambient type II.

Barnaul Boiler Plant is one of the largest suppliers of pipe fittings for steam and water pipeline for thermal power plants.

All its products comply with Technical Regulations of Customs Union (TR CU) 032/2013 and 010/2011 as acknowledged by the appropriate certificates.

Rigorous tests and control, accuracy and process discipline combined with high-tech modern equipment and technologies guarantee durability and long service life of the products.

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Terms and Abbreviations

Flow coefficient (μ): Ratio, at similar conditions, of mass flow rate through the safety valve to flow rate through an ideal nozzle of flow area equal to the narrowest area of valve seat.

Friction coefficient (ζ): Ratio of lost pressure to velocity (dynamic) pressure in nominal (accepted) flow area.

Note – Friction coefficient for stop valves is indicated for full-open position of valve gate (full travel to open valve), unless otherwise specified in the technical documentation.

Nominal diameter (DN, mm): Characteristic of valve-attachable parts used for piping systems.

Note – Nominal diameter approximately equals to inner diameter of a pipeline attached (expressed in millimetres), and corresponds to the closest value out of number sequence accepted according to the established procedure.

Seat area (F , cm²): The least flow area of seat flow path.

Valve travel (h, mm): Travel of blocking or control element calculated from closed position of valve gate.

Note – Travel for valves and gates is a linear (mm) motion; for disk valves and gates it is rotation angle of blocking or control element.

Capacity (K_v , m³/h): Value numerically equal to flow rate of working fluid of 1,000 kg/m³ density through valve at differential pressure of 0.1 MPa (1 kg/cm²).

Not – For safety valve this is mass flow of working fluid through safety valve.

Nominal pressure (PN, MPa): The highest operating manometric pressure of working fluid at temperature of 293K (20°C) that provides for the preset service life (resource) of valve body parts of certain size that is justified by strength analysis of the selected materials and strength properties at temperature of 293K (20°C).

Operating pressure (Pp, MPa): The highest operating manometric pressure that provides for long-term operation of valve at the selected materials and set temperature.

Maximum design temperature (Tmax, °C): Temperature of valve body wall equal to maximum arithmetic mean temperature of its outer and inner surface in a single section at normal operating conditions.

Spindle torque (Mtq, N*m): Internal moment arising in any spindle section at torsion, and rotating such section around longitudinal axis of spindle.

Response time (t, s): Period of time of valve response, i.e. time of movement of blocking element from one extreme position to another.

Stop Valve (Gate)

Stop valve (gate) is an on/off shut-off valve, i.e. it may only be used to open or shut-off pipelines by means of reciprocating motion of a shut-off valve. Working fluid: Group 2 fluids and Group 2 gases (water, steam vapor and media except for inflammable, oxidizing, flammable, explosive, toxic and highly toxic gases, fluids and single-phase vapors, including their mixtures). Stop valve (gate) is designed for outdoor and indoor installation. Connection to pipeline: by welding. Mounting position on pipeline: any position, in upper section against neck. Recommended flow direction: under seat.

Seat tightness: class A according to GOST R 54808-2011

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 1, 2, 3 according to GOST 15150-69

Manual override (by handwheel, handle) force: max. 300 N

Stop valve is operated by a handle or handwheel (H) using built-in electric drive (E) or pedestal drive (P). Valve design is adapted for use of electric drives produced by ABS ZEiM Automation (Cheboksary), GZ-Electroprivod (Moscow) and other manufacturing plants, with standard connection nodes.

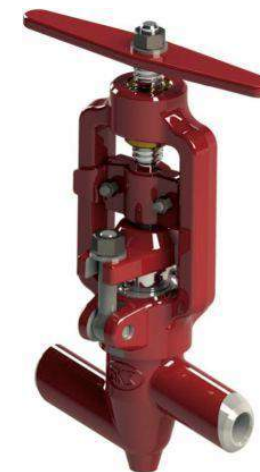
When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69. At customer's request, valves DN10-DN65 may be manufactured with a quick-replacement seat made of titanium or nickel alloy.

Valves are manufactured according to Specification 2913-001-15365247-2004.

Technical details of the valves manufactured by Barnaul Boiler Plant are shown in the table below.

Allowable operating pressure and temperature of the valves may differ from those specified in the table and shall be selected according to GOST 356-80, provided that these value do not fall outside the limit range set by the relevant rules and regulations of state supervision for such materials and operational conditions.

Products designed for max. pressure of PN10 MPa according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C; PN25 MPa: from 25 MPa, 200°C to 9 MPa, 455°C; PN6.3 MPa: from 6.3 MPa, 200°C to 2.3 MPa, 455°C.



Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ, max.	Max. Mtq, Nm	Travel, mm	No. of rev. of full travel	D, mm	DI, mm	L, mm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation	Figure																					
1213-6-0	6	10	450	30X13	Water-Steam	-	-	6	3	-	-	-	-	-	-	-	-	-	0.4	-	H	1																					
1c-17-2		13.7*	560	12X1MΦ	Steam	-	-	4	3	-	-	-	-	-	-	-	-	-	1.1	-	H	2																					
1093-10-0		13.7*	560	12X1MΦ	Steam	-	-	4	2	-	-	-	-	-	-	-	-	-	1.1	-	H	10																					
1c-11-1M		10	450	20	Water-Steam	3.8	15	15	3.5	10	16	110	150	226	198	-	-	-	3.1	-	H	3																					
1c-12-1		25	350	20	Water	3.8	15	15	3.5	10	16	110	150	226	198	-	-	-	3.1	-	H	3																					
1c-12-1ЭЧ													525	497	ΠЭМ-А12М	0.25	9	3.1	25	E	8																						
1c-12-1ЭН													472	444	ЭП-3-100-24-А1-06-В	0.45	9	3.1	17	E	8																						
1c-13-1													16.5*	560	12X1MΦ	Steam	3.8	15	15	3.5	10	16	110	150	226	198	-	-	3.1	-	H	3											
588-10-0													37.3*	280	20	Water	3.8	25	15	3.5	10	16	110	150	226	198	-	-	-	3.1	-	H	3										
1c-14-1ЭЧ																								525	497	ΠЭМ-А12М	0.46	9	3.1	25	E	8											
1c-14-1ЭН																								472	444	ЭП-3-100-24-А1-06-В	0.45	9	3.1	17	E	8											
589-10-0																								226	198	-	-	-	3.1	-	H	3											
1c-15-1ЭЧ																								25*	545	12X1MΦ	Steam	3.8	25	15	3.5	10	16	110	150	226	198	-	-	3.1	-	H	3
1c-15-1ЭН																								525	497	ΠЭМ-А12М	0.25	9	3.1	25	E	8											
1456-10-0		10	450	09Г2С	Water-Steam	3.8	5	6	4	10	16	70	80	100	81	-	-	1.3	-	H	11																						
1c-15-2		15	25*	545	12X1MΦ	Steam	5.0	80	20	5	16	28	160	200	310	260	-	-	5.4	-	H	4																					
1c-12-2			25	350	20	Water-Steam	5.0	80	20	5	16	25	160	200	310	260	-	-	5.4	-	H	4																					
1c-11-3M		20	10	425	20	Water-Steam	5.0	80	20	5	22	32	160	200	310	260	-	-	5.4	-	H	4																					
1c-11-3Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)														674	626	Г3-А.100/24	0.25	12.5	10.1	48.1	E	8																					
	823													775	ΠЭМ-А9М	0.25	12.5	10.1	32.6	E	8																						
	628													580	MODACT MON 52030.22E2N	0.37	12	10.1	37.1	E	8																						
	658													610	ЭП4Н-А-120-22-Э11-1-11111	0.37	14	10.1	53.1	E	8																						
	708													660	AUMA SA10.2-F10-380/50/3-22	0.25	14	10.1	32.1	E	8																						
	588													540	ЭП-3-100-24-А2-06-В	0.45	12.5	10.1	24.1	E	8																						
1c-12-3	25													350	20	Water	5.0	80	20	5	22	32	160	200	310	260	-	-	5.4	-	H	4											
1c-12-3Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)																								674	626	Г3-А.100/24	0.25	12.5	10.1	48.1	E	8											
																								823	775	ΠЭМ-А9М	0.25	12.5	10.1	32.6	E	8											
																								628	580	MODACT MON 52030.22E2N	0.37	12	10.1	37.1	E	8											
																								658	610	ЭП4Н-А-120-22-Э11-1-11111	0.37	14	10.1	53.1	E	8											
																								708	660	AUMA SA10.2-F10-380/50/3-22	0.25	14	10.1	32.1	E	8											
	588													540	ЭП-3-100-24-А2-06-В	0.45	12.5	10.1	24.1	E	8																						
1c-13-3	16.5*													560	12X1MΦ	Steam	5.0	80	20	5	22	32	160	200	310	260	-	-	5.4	-	H	4											
1c-13-3Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)																								674	626	Г3-А.100/24	0.25	12.5	10.1	48.1	E	8											
																								823	775	ΠЭМ-А9М	0.25	12.5	10.1	32.6	E	8											
																								628	580	MODACT MON 52030.22E2N	0.37	12	10.1	37.1	E	8											
																								658	610	ЭП4Н-А-120-22-Э11-1-11111	0.37	14	10.1	53.1	E	8											
		708	660	AUMA SA10.2-F10-380/50/3-22	0.25	14	10.1	32.1	E	8																																	
		588	540	ЭП-3-100-24-А2-06-В	0.45	12.5	10.1	24.1	E	8																																	
998-20-0		37.3*	280	20	Water	5.0	80	20	5	20	32	160	200											310	260	-	-	5.4	-	H	4												
998-20-Г													200											355	305	-	-	6.9	-	H	5												
998-20-Э(ЭА,ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)													568											522	821-Э0а	0.37	12.5	7	25	E	8												
													674											626	Г3-А.100/24	0.25	12.5	10.1	48	E	8												
													823											775	ΠЭМ-А9М	0.25	12.5	10.1	32.6	E	8												
													628											580	MODACT MON 52030.22E2N	0.37	12	10.1	37.1	E	8												
	658												610	ЭП4Н-А-120-22-Э11-1-11111	0.37	14	10.1	53.1	E	8																							
	708												660	AUMA SA10.2-F10-380/50/3-22	0.25	14	10.1	32.1	E	8																							
	588												540	ЭП-3-100-24-А2-06-В	0.45	12.5	10.1	24.1	E	8																							

* Operating pressure, Po.

Product ID	DN, mm	PN, MPa	Fluid T max, °C	Body material, steel	Working fluid	ζ max.	Max. Mtq, Nm	Travel, mm	No. of rev. of full travel	D, mm	DI, mm	L, mm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation	Figure										
999-20-0	25*	545	12X1MΦ	Steam	5.0	80	20	5	20	32	160	200	310	260	-	-	-	5.4	-	H	4											
999-20-Г												200	355	305	-	-	-	6.9	-	H	5											
999-20-Э(ЭА,ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												568	522	821-Э-0а	0.37	12.5	7	25	E	8												
												674	626	ГЗ-А.100/24	0.25	12.5	10.1	48	E	8												
												823	775	ПЭМ-А9М	0.25	12.5	10.1	32.6	E	8												
												628	580	MODACT MON 52030.22E2N	0.37	12	10.1	37.1	E	8												
												658	610	ЭП4Н-А-120-22-Э11-1-11111	0.37	14	10.1	53.1	E	8												
												708	660	AUMA SA10.2-F 10-380/50/3-22	0.25	14	10.1	32.1	E	8												
												588	540	ЭП-3-100-24-А2-06-В	0.45	12.5	10.1	24.1	E	8												
1456-20-0												25	450	09Г2С	Water-Steam	5.0	40	12.5	4	21	30	120	160	167	133	-	-	2.1	-	H	11	
1с-11-31	25	10	450	20	5.0	80	20	5	26	32	160	200	310	260	-	-	-	5.4	-	H	4											
1с-11-31Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												674	626	ГЗ-А.100/24	0.25	12.5	10.1	48	E	8												
												823	775	ПЭМ-А9М	0.25	12.5	10.1	32.6	E	8												
												628	580	MODACT MON 52030.22E2N	0.37	12	10.1	37.1	E	8												
												658	610	ЭП4Н-А-120-22-Э11-1-11111	0.37	14	10.1	53.1	E	8												
												708	660	AUMA SA10.2-F10-380/50/3-22	0.25	14	10.1	32.1	E	8												
												588	540	ЭП-3-100-24-А2-06-В	0.45	12.5	10.1	24.1	E	8												
												1456-25-М	25	450	09Г2С	Water-Steam	5.0	40	17	4	25	35	160	160	196	150	-	-	2.3	-	H	11
1с-12-4												32	10	450	20	6.4	80	25	6	32	38	230	260	331	284	-	-	-	6.1	-	H	4
1с-12-4Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)																							688	640	ГЗ-А.100/24	0.45	15	10.8	48.8	E	8	
	842	795	ПЭМ-А9М	0.25	15	10.8	33.3	E	8																							
	648	600	MODACT MON 52030.22E2N	0.37	14.5	10.8	37.8	E	8																							
	678	630	ЭП4Н-А-120-22-Э11-1-11111	0.37	16.5	10.8	53.8	E	8																							
	728	680	AUMA SA10.2-F10-380/50/3-22	0.25	16.5	10.8	32.8	E	8																							
	608	560	ЭП-3-100-24-А2-06-В	0.45	15	10.8	24.8	E	8																							
	1055-32-0	32	545	12X1MΦ	Steam	7.0	250	35	6	31	57												220	320	618	529	-	-	34	-	H	6
1055-32-ИЗ	320	735	650	-	-	-	60	-	P	7																						
1055-32-Э(ЭА,ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)	805	720	792-Э-0а-01	1.32	18	32	132	E	9																							
	928	838	ГЗ-Б.300/24	0.75	15	34	87	E	9																							
	1240	1150	ПЭМ-Б03	0.55	15	34	70	E	9																							
	970	880	MODACT MON 52032.12J2N	1.1	15	34	82	E	9																							
	930	840	ЭП4Н-Б-500-22-Э11-1-11111	1.6	17	34	104	E	9																							
	1070	980	AUM A SA14.6-F14-380/50/3-22	0.8	17	34	80	E	9																							
	900	810	ЭП-3-300-25-Б1-0-А	0.75	15	34	72	E	9																							
	1456-32-0	32	450	09Г2С	Water-Steam	7.7	40	17	4.5	34	40	160	160	196	150	-	-	2.3	-	H	11											
1054-40-0	40	37.3*	280	20	7.0	300	35	6	39	57	220	320	618	529	-	-	-	34	-	H	6											
1054-40-ИЗ												320	735	650	-	-	-	60	-	P	7											
1054-40-Э(ЭА,ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												805	720	792-Э-0а-01	1.32	18	32	132	E	9												
												928	838	ГЗ-Б.300/24	0.75	15	34	87	E	9												
												1240	1150	ПЭМ-Б0М	0.55	15	34	70	E	9												
												970	880	MODACT MON 52032.12J2N	1.1	15	34	82	E	9												
												930	840	ЭП4Н-Б-500-22-Э11-1-11111	1.6	17	34	104	E	9												
												1070	980	AUM A SA14.6-F14-380/50/3-22	0.8	17	34	80	E	9												
												900	810	ЭП-3-300-25-Б1-0-А	0.75	15	34	72	E	9												
1с-11-5												50	6.3	425	20	12.7	80	25	6	50	57	240	320	360	292	-	-	-	8.6	-	H	3
1с-11-5Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)	721	653	ГЗ-А.100/24	0.45	15	13.3	51.3	E	8																							
	873	807	ПЭМ-А9М	0.25	15	13.3	35.8	E	8																							
	675	607	MODACT MON 52030.22E2N	0.37	14.5	13.3	40.3	E	8																							
	705	637	ЭП4Н-А-120-22-Э11-1-11111	0.37	16.5	13.3	56.3	E	8																							
	755	687	AUMA SA10.2-F10-380/50/3-22	0.25	16.5	13.3	35.3	E	8																							
	635	567	ЭП-3-100-24-А2-06-В	0.45	15	13.3	27.3	E	8																							

* Operating pressure, Po.

Product ID equal for ordering	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ, max.	Max. Mtq, Nm	Travel, mm	No. of rev. of full travel	D, mm	D1, mm	L, mm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation	Figure											
1456-50-0	50	10	450	09Г2С	Water-Steam	12.7	70	20	4	51	62	220	200	278	211	-	-	-	5.2	-	H	11											
320													618	529	-	-	-	34	-	H	4												
-													735	650	-	-	-	60	-	P	7												
1c-12-5		25	350	20	Water	7.0	250	35	6	49	60	220	-	965	870	ГЗ-Б.300/24	0.75	15	42	95	E	8											
-													1240	1150	ПЭМ-Б03	0.55	15	34	70	E	8												
-													970	880	MODACT MON 52032.12J2N	1.1	15	34	82	E	8												
-													930	840	ЭП4Н-Б-500-22-Э11-1-11111	1.6	17	34	104	E	8												
-													1070	980	AUMASA14.6-F14-380/50/3-22	0.8	17	34	80	E	8												
-													900	810	ЭП-3-300-25-Б1-0-А	0.75	15	42	80	E	8												
1053-50-0													13.7*	560	12X1MΦ	Steam	7.0	250	35	6	50	76	250	320	634	539	-	-	-	42	-	H	6
-																								755	660	-	-	-	62	-	PS	7	
-																								825	730	792-Э-0a-01	1.32	18	35	135	E	9	
-																								965	870	ГЗ-Б.300/24	0.75	15	42	95	E	9	
-																								1255	1160	ПЭМ-Б0М	0.55	15	42	78	E	9	
-																								985	890	MODACT MON 52032.12J2N	1.1	15	42	90	E	9	
-	945	850	ЭП4Н-Б-500-22-Э11-1-11111	1.6	17	42	112	E	9																								
-	1085	990	AUM A SA14.6-F14-380/50/3-22	0.8	17	42	88	E	9																								
-	915	820	ЭП-3-300-25-Б1-0-А	0.75	15	42	80	E	9																								
1052-50-0	65	250	20	Water	7.0	300	35	6	58	76	250	320												634	539	-	-	-	42	-	H	6	
-												755												660	-	-	-	62	-	PS	7		
-												825												730	792-Э-0a-01	1.32	18	35	135	E	9		
-												965												870	ГЗ-Б.300/24	0.75	15	42	95	E	9		
-												1255												1160	ПЭМ-Б0М	0.55	15	42	78	E	9		
-												985												890	MODACT MON 52032.12J2N	1.1	15	42	90	E	9		
-												945	850	ЭП4Н-Б-500-22-Э11-1-11111	1.6	17	42	112	E	9													
-												1085	990	AUM A SA14.6-F14-380/50/3-22	0.8	17	42	88	E	9													
-												915	820	ЭП-3-300-25-Б1-0-А	0.75	15	42	80	E	9													
1052-65-0												9.8*	540	12X1 MΦ	Steam	7.0	250	35	6	62	76	250	320	634	539	-	-	-	42	-	H	6	
-																							755	660	-	-	-	62	-	PS	7		
-																							825	730	792-Э-0a-01	1.32	18	35	135	E	9		
-																							965	870	ГЗ-Б.300/24	0.75	15	42	95	E	9		
-																							1255	1160	ПЭМ-Б03	0.55	15	42	78	E	9		
-																							985	890	MODACT MON 52032.12J2N	1.1	15	42	90	E	9		
-	945	850	ЭП4Н-Б-500-22-Э11-1-11111	1.6	17	42	112	E	9																								
-	1085	990	AUM A SA14.6-F14-380/50/3-22	0.8	17	42	88	E	9																								
-	915	820	ЭП-3-300-25-Б1-0-А	0.75	15	42	80	E	9																								
1057-65-0	80	6.3	425	25Л	Water-Steam	6.4	290	72	12	81	93												380	320	550	460	-	-	-	52	-	H	12
-																								725	635	-	-	-	77	-	PS	13	
-																								924	834	ГЗ-Б.300/24	0.75	30	58	111	E	14	
1c-7-1		10	450	25Л	Water-Steam	6.4	250	72	12	77	93												380	-	1215	1125	ПЭМ-Б2М	0.55	29	58	98	E	14
1c-8-2																								-	945	855	MODACT MON 52032.12J2N	1.1	29	58	106	E	14
-																								945	855	ЭП4Н-Б-500-22-Э11-1-11111	1.6	33	58	128	E	14	
-												905	815	AUM A SA14.6-F14-380/50/3-22	0.8	33	58	104	E	14													
-												1045	955	ЭП-3-300-25-Б1-0-А	0.75	29	58	96	E	14													
-												875	785	-	-	-	80	-	P	15													
1c-8-2Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												10	450	25Л	Water-Steam	6.4	250	72	12	77	93	380		320	550	460	-	-	-	52	-	H	12
-																								725	635	-	-	-	77	-	PS	13	
-																								924	834	ГЗ-Б.300/24	0.75	30	58	111	E	14	
1c-9-2												10	450	25Л	Water-Steam	6.4	290	72	12	81	93	380		320	550	460	-	-	-	52	-	H	12

* Operating pressure, Po.

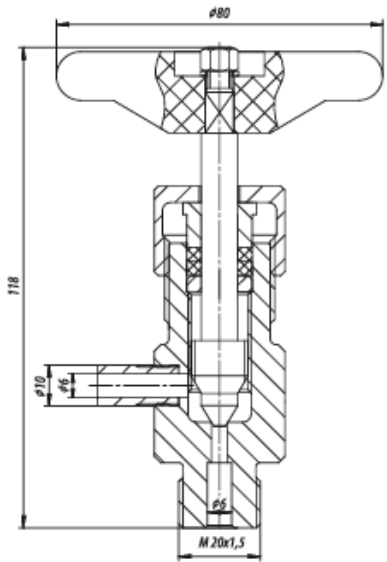


Figure 1. Air valve

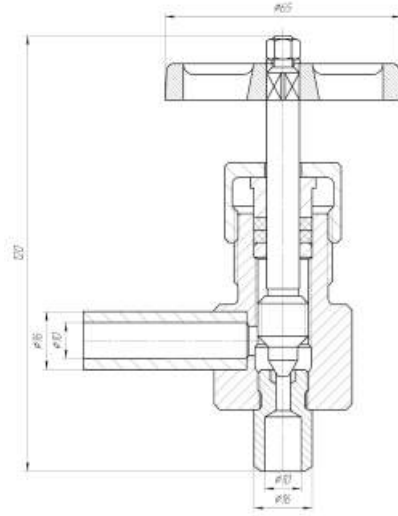


Figure 2. Drain valve

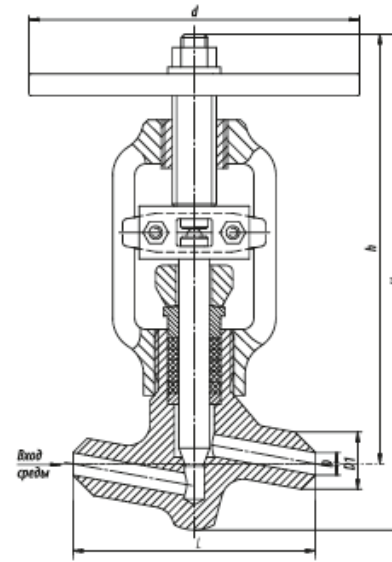


Figure 3. Stop valve DN10

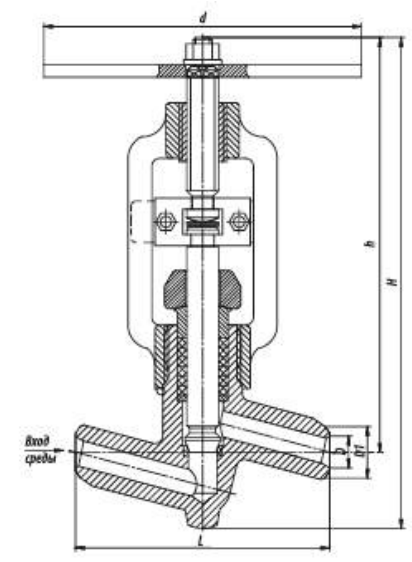


Figure 4. Stop valve DN20

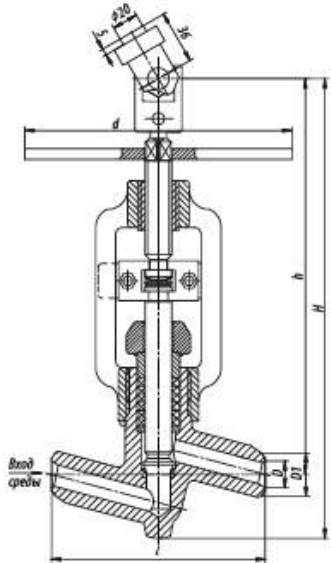


Figure 5. Stop valve with handwheel and ball joint

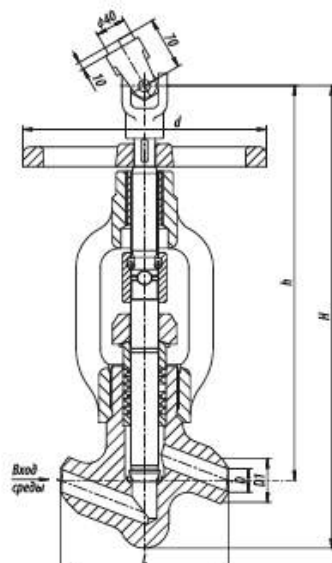


Figure 6. Stop valve DN32-65

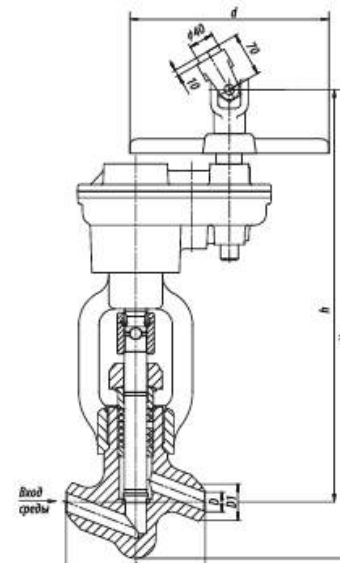


Figure 7. Stop valve DN32-65 with parallel-shaft reducer

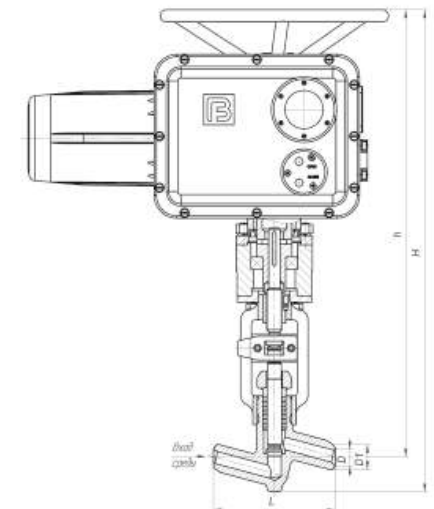


Figure 8. Stop valve DN10-50 with electric drive

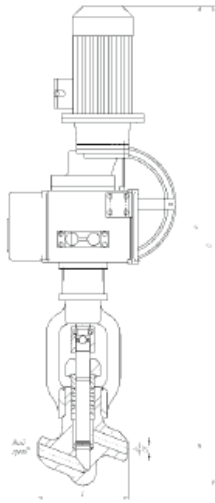


Figure 9. Stop valve DN32-65 with electric drive

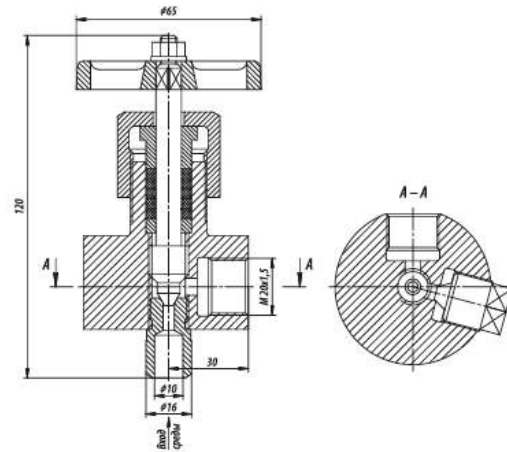


Figure 10. Three-way valve

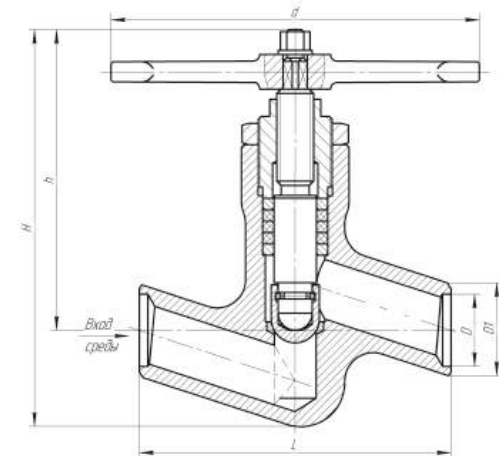


Figure 11. Stop valve with manual operation

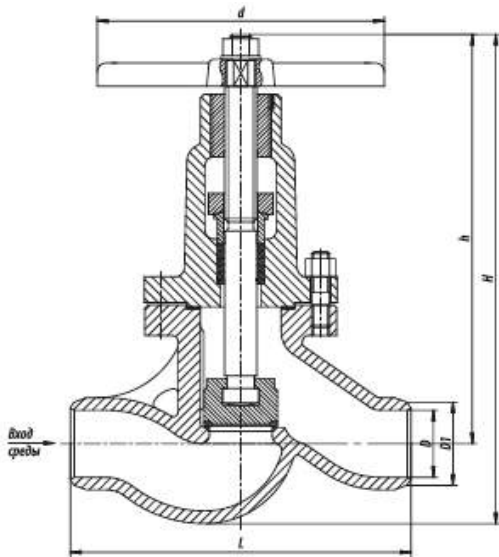


Figure 12. Stop valve DN80 1c-7

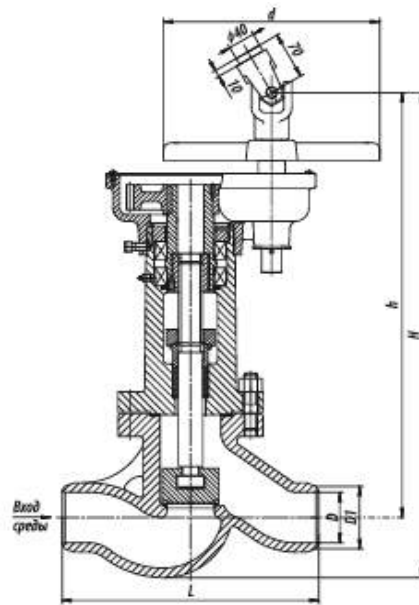


Figure 13. Stop valve DN80 1c-8

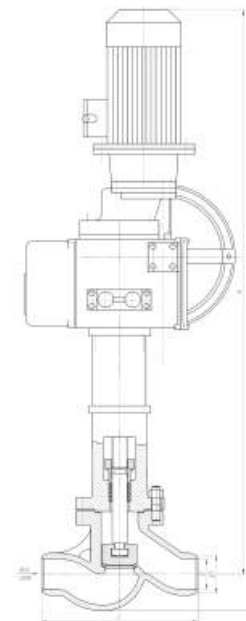


Figure 14. Stop valve DN80 with electric drive

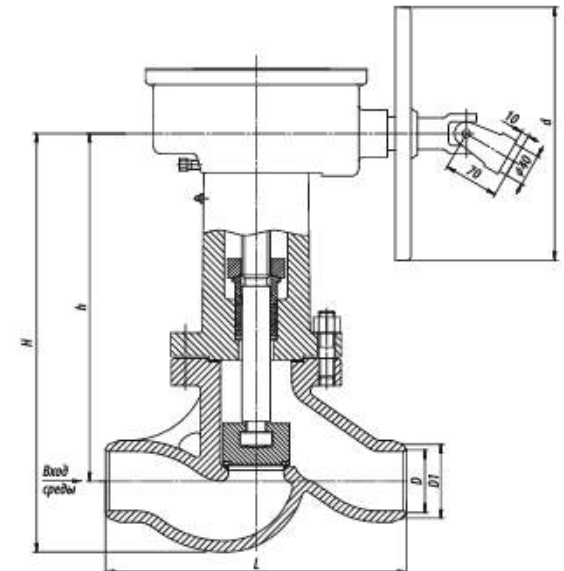


Figure 15. Stop valve DN80 1c-9

Gate Valve

Gate valve is designed for thermal power plants and process pipelines and used as a shut-off valve for leak-free shut-off of water and steam pipelines within main process systems of stations and plants. Group 2 fluids and Group 2 gases such as petroleum products, non-aggressive and mildly-aggressive liquids and gases may be used in pipelines. Such the gate valve may only be used to open or shut-off pipelines. Not to be used as a control valve. The gate valve may be mounted on pipeline sections regardless of pipeline angle of inclination. If an electric-driven gate valve is mounted on vertical section, an additional drive support is required to prevent yoke deformation. Flow direction: any. When using the gate valve in pipelines with a heating mode at gate closed and body cavity filled with water, such the gate valve shall be equipped with a relief valve. Such the relief valve may be designed as a tube connecting body cavity of the gate valve and pipeline on the part of fluid supply with gate DN20 mounted on it, or as a through bore of 5 mm dia. in the gate disc on the part of fluid supply. Connection to pipeline: by welding. Flow direction: any.

Seat tightness: class A according to GOST R 54808-2011

Climatic version: mild, mild and cold, cold, tropical climate according to GOST 15150-69

Placement category: 1, 2, 3 according to GOST 15150-69

Manual override (by handwheel, handle) force: max. 300 N

At customer's request we provide specially-designed valves for specific operating conditions.

Gate valve is operated by means of the built-in electric drive (E), handwheel (H), parallel-shaft reducer (PS) or right-angle reducer (RA). Valve design is adapted for use of electric drives produced by GZ-Electroprivod (Moscow), ABS ZEiM Automation (Cheboksary) and other manufacturing plants, with standard connection nodes.

Allowable operating pressure and temperature of the valves may differ from those specified in the table and shall be selected according to GOST 356-80 provided that these values do not fall outside the limit range set by the relevant rules and regulations of state supervision for such materials and operational conditions operational condition.

Products designed for max. pressure of PN10 MPa according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C; PN25 MPa: from 25 MPa, 200°C to 9 MPa, 455°C; PN6.3 MPa: from 6.3 MPa, 200°C to 2.3 MPa, 455°C.

Valves are manufactured according to Specification 3740-002-15365247-2004.



Product ID	DN, mm	PN, MPa	Fluid T _{max} , °C	Body material, steel	Working fluid	ζ max.	Travel, mm	No. of rev. of full travel	D, mm	D1, mm	L, mm	Max. Mtq, Nm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure													
2c-32-1	80	10	450	25Л	Water-Steam	0.73	84	14	77	90	310	100	470	590	496	-	-	-	71	-	H	16													
2c-30-1												40	320	700	610	-	-	-	83	-	PS	18													
2c-31-1												40	320	516	428	-	-	-	85	-	RA	17													
2c-30-1 Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												100	-	938	848	ГЗ-Б.300/24	0.75	35	64	117	E	19													
														1350	1265	ПЭМ-Б2М	0.55	34	64	104	E	19													
														926	836	MODACT MON 52031.2222N	0.37	34	64	105	E	19													
														885	795	ЭП4Н-Б-500-22-Э11-1-11111	1.6	38	64	134	E	19													
														960	870	AU MA SA14.2-F14-380/50/3-22	0.45	38	64	108	E	19													
														820	735	ЭП-3-100-24-A2-05-B	0.45	35	64	80	E	19													
2c-35-1												80	6.3	425	25Л	Water-Steam	0.73	84	14	81	90	310	100	470	590	496	-	-	-	71	-	H	16		
2c-33-1																							40	320	700	610	-	-	-	83	-	PS	18		
2c-34-1																							40	320	516	428	-	-	-	85	-	RA	17		
2c-33-1Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭНЗ)	100	-	933	848	ГЗ-Б.300/24	0.75	35	64	117	E	19																								
			1350	1265	ПЭМ-Б2М	0.55	34	64	104	E	19																								
			926	836	MODACT MON 52031.2222N	0.37	34	64	105	E	19																								
			885	795	ЭП4Н-Б-500-22-Э11-1-11111	1.6	38	64	134	E	19																								
			960	870	AU MA SA14.2-F14-380/50/3-22	0.45	38	64	108	E	19																								
			820	735	ЭП-3-100-24-A2-05-B	0.45	35	64	80	E	19																								
1511-80-M	80	10	450	15ГС	Water-Steam	0.3	90	18	77	90	300												70	-	320	714	620	-	-	-	74	-	H	16	
1511-80-Ц3																									754	660	-	-	-	-	94	-	PS	18	
1511-80-K3																									724	630	-	-	-	-	82	-	RA	17	
1511-80-Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												-	915	821	ГЗ-А.100/24	0.25	45	71	103	E	19														
													1140	1046	ПЭМ-А9М	0.46	45	71	93.5	E	19														
													785	691	ЭП4Н-А-120-22-Э11-1-11111	0.37	49	71	117	E	19														
													852	758	AUMA SA10.2-F10-380/50/3-22	0.25	49	71	102	E	19														
													829	735	ЭП-3-100-24-A2-05-B	0.45	45	71	85	E	19														
													2c-32-2	100	10	450	25Л	Water-Steam	0.26	84	14	93			111	350	100	470	590	496	-	-	-	78	-
2c-30-2												40	320														700	610	-	-	-	86	-	PS	18
2c-31-2												40	320														516	428	-	-	-	90	-	RA	17
2c-30-2Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												100	-														933	848	ГЗ-Б.300/24	0.75	35	64	117	E	19
	1350	1265	ПЭМ-Б2М	0.55	34	90	130	E	19																										
	926	836	MODACT MON 52031.2222N	0.37	34	90	131	E	19																										
	885	795	ЭП4Н-Б-500-22-Э11-1-11111	1.6	38	90	160	E	19																										
	960	870	AUMA SA14.2-F14-380/50/3-22	0.45	38	90	134	E	19																										
	820	735	ЭП-3-100-24-A2-05-B	0.45	35	90	106	E	19																										
2c-35-2	100	6.3	425	25Л	Water-Steam	0.26	84	14	97	111	350	100	470										590	496			-	-	-	78	-	H	16		
2c-33-2												40	320										700	610			-	-	-	86	-	PS	18		
2c-34-2												40	320										516	428			-	-	-	90	-	RA	17		
2c-33-2Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												100	-	933	848	ГЗ-Б.300/24	0.75	35	64	117	E	19													
														1350	1265	ПЭМ-Б2М	0.55	34	90	130	E	19													
														926	836	MODACT MON 52031.2222N	0.37	34	90	131	E	19													
														885	795	ЭП4Н-Б-500-22-Э11-1-11111	1.6	38	90	160	E	19													
														960	870	AU MA SA14.2-F14-380/50/3-22	0.45	38	90	134	E	19													
														820	735	ЭП-3-100-24-A2-05-B	0.45	35	90	106	E	19													
1123-100-M-01												100	9.8*	540	15X1 M1Ф	Steam	0.6	110	18	112	146	400	190	470	990	830	-	-	-	195	-	H	25		
1123-100-Ц3-01																							70	320	810	970	-	-	-	212	-	PS	26		
1123-100-K3-01																							70	320	640	800	-	-	-	213	-	RA	27		
1123-100-Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)-01	190	-	1080	945	792-Э-0a	1.32	54	188	259	E	28																								
			1221	1086	ГЗ-Б.300/24	0.75	45	188	241	E	28																								
			1800	1652	ПЭМ-Б2М	0.55	43	188	228	E	28																								
			1186	1038	MODACT MON 52032.12J2N	1.1	43	188	236	E	28																								
			1188	1040	ЭП4Н-Б-500-22-Э11-1-11111	1.6	49	188	258	E	28																								
			1173	1025	AU MA SA14.6-F14-380/50/3-22	0.8	49	188	234	E	28																								
1195	1047	ЭП-3-300-25-Б1-0-А	0.75	43	188	226	E	28																											
1123-100-M	100	13.7*	560	15X1M1Ф	Steam	0.6	110	18	94	146	400												270	470	990	830	-	-	-	196	-	H	25		
1123-100-Ц3																							90	320	990	855	-	-	-	213	-	PS	26		
1123-100-K3												90	320	990	855	-	-	-	214	-	RA	27													
1123-100-Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)												270	-	1080	945	792-Э-0a	1.32	54	189	260	E	28													
														1221	1086	ГЗ-Б.300/24	0.75	45	189	242	E	28													
														1800	1652	ПЭМ-Б2М	0.55	43	189	229	E	28													
														1186	1038	MODACT MON 52032.12J2N	1.1	43	189	237	E	28													
														1188	1040	ЭП4Н-Б-500-22-Э11-1-11111	1.6	49	189	258	E	28													
														1173	1025	AU MA SA14.6-F14-380/50/3-22	0.8	49	189	235	E	28													
1195												1047	ЭП-3-300-25-Б1-0-А	0.75	43	189	227	E	28																

* Operating pressure, Po.

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ, max.	Travel, mm	No. of rev. of full travel	D, mm	D1, mm	L, mm	Max. Mtg. Nm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure																								
881-100-ПЗ	100	25*	545	15X1M1Ф	Steam	0.2	160	20	97	172	550	950	-	1194	1026	-	-	-	415	-	PS	26																								
881-100-КЗ														1205	1037	-	-	-	-	415	-	RA	27																							
881-100-Э(ЭГ,ЭЧ,ЭМ,ЭД,ЭН)														1331	1184	793-Э-0	3.2	55	360	468	E	28																								
														1257	1030	ГЗ-Г.2500/24	5.5	50	360	555	E	28																								
														1155	988	ПЭМ-В34-1000-25-36М	3.1	48	360	447	E	28																								
														1143	976	MODACT MON 52034.3272N	3.0	35	360	460	E	28																								
														1474	1296	ЭП4Н-В-1000-22-Э11-1-11111	3.5	55	360	463	E	28																								
														1141	974	AUMA SA16.2-F16-380/50/3-22	1.5	55	360	427	E	28																								
														1567	1400	ГИ ЮМ.303344.001-21	3.2	60	360	460	E	28																								
1120-100-М-01														23.5*	250	20	Water	0.6	110	18	109	146	400	290	470	990	830	-	-	-	195	-	H	25												
1120-100-ПЗ-01																										100	320	990	855	-	-	-	212	-	PS	26										
1120-100-КЗ-01																										100	320	990	855	-	-	-	213	-	RA	27										
1120-100-Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)-01																										995	860	792-Э-0а	1.32	55	188	246	E	28												
																										1221	1086	ГЗ-Б.300/24	0.75	45	188	241	E	28												
																										1800	1652	ПЭМ-Б2М	0.55	43	188	228	E	28												
	1155	1020	MODACT MON 52032.12J2N	1.1	43	188	242	E	28																																					
	1188	1040	ЭП4Н-Б-500-22-Э11-1-11111	1.6	49	188	258	E	28																																					
	1173	1025	AUMA SA14.6-F14-380/50/3-22	0.8	49	188	234	E	28																																					
	1141	1006	ЭП-3-300-25-Б1-0-А	0.75	44	188	226	E	28																																					
1120-100-М	37.3*	280	20	Water	0.6	110	18	98	146	400	290	470	~и~													830	-	-	-	196	-	H	25													
1120-100-ПЗ													160													320	990	855	-	-	-	216	-	PS	26											
1120-100-КЗ													160													320	990	855	-	-	-	217	-	RA	27											
1120-100-Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)													1010													875	792-Э-0а	1.32	55	191	262	E	28													
													1105													970	ГЗ-Б.900/24	2.2	90	191	311	E	28													
													1438	1290	ПЭМ-В2-630-25-36М	3.1	43	191	278	E	28																									
													1241	1093	MODACT MON 52034.3222N	2.2	31	191	288	E	28																									
													1308	1160	ЭП4Н-Б-630-22-Э11-1-11111	3.2	49	191	303	E	28																									
													1189	1041	AUMA SA16.2-F16-380/50/3-22	1.5	49	191	258	E	28																									
													1311	1163	ЭП-3-630-24-В-0-А	1.85	45	191	266	E	28																									
1511-100-МБ													10	450	15ГС	Water-Steam	0.8	90	18	93	114	300	70	-	714	620	-	-	-	74	-	H	16													
1511-100-ПЗА																									754	660	-	-	-	-	94	-	PS	18												
1511-100-КЗБ																									724	630	-	-	-	-	82	-	RA	17												
1511-100-Э(ЭГ,ЭЧ,ЭМА,ЭД,ЭН)																									915	821	ГЗ-А.100/24	0.25	45	71	103	E	19													
																									1140	1046	ПЭМ-А9М	0.46	45	71	93.5	E	19													
	7W	*63Г	ЭП4Н-А-120-22-Э11-1-11111	0.37	49	71	117	E	19																																					
	852	758	AUMA SA10.2-F10-380/50/3-22	0.25	49	71	102	E	19																																					
	829	735	ЭП-3-100-24-А2-05-В	0.45	45	71	85	E	19																																					
	1156-125-М	125	9.8*	540	15X1M1Ф	Steam	1	110	18	134	165	460													290	470	990	830	-	-	-	196	-	H	25											
	1156-125-ПЗ																										160	320	995	855	-	-	-	220	-	PS	26									
1156-125-КЗ	160																										320	812	672	-	-	-	218	-	RA	27										
1156-125-Э(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)	1000																										860	792-Э-0а	1.32	54	194	265	E	28												
	1192																										1052	ГЗ-Б.300/24	0.75	45	194	247	E	28												
	1605																										1465	ПЭМ-Б2М	0.55	43	194	234	E	28												
	1126																										986	MODACT MON 52032.1222N	0.75	44	194	239	E	28												
	1145												1005	ЭП4Н-Б-500-22-Э11-1-11111	1.1	49	194	264	E	28																										
	1130												990	AUMA SA14.6-F14-380/50/3-22	0.8	49	194	240	E	28																										
	1105												965	ЭП-3-300-25-Б1-0-А	0.75	45	194	232	E	28																										
2с-25-1Н	6.3												425	25Л	Water-Steam	0.45	140	23	147	160	450	250	470	830			680	-	-	-	148	-	H	20												
2с-26-1																								84			320	945	795	-	-	-	165	-	PS	21										
2с-27-1																								84			320	760	610	-	-	-	165	-	RA	22										
2с-25-1																								10			450	25Л	Water-Steam	0.45	140	23	142	160	450	250	470	830	680	-	-	-	148	-	H	20
2с-28-1																																						84	320	945	795	-	-	-	165	-
2с-29-1		84	320	760	610	-	-	-	165	-	RA	22																																		
2с-Э-1(ЭГ,ЭЧ,ЭК,ЭМ,ЭД,ЭН)		1232	1082	ГЗ-Б.300/24	0.75	55	145	198	E	23																																				
		1600	1450	ПЭМ-Б2М	0.55	55	145	185	E	23																																				
		1125	975	MODACT MON 52032.12J2N	1.1	55	145	193	E	23																																				
		1125	975	ЭП4Н-Б-500-22-Э11-1-11111	1.6	63	145	215	E	23																																				
		1205	1055	AUMA SA14.6-F14-380/50/3-22	0.8	63	145	191	E	23																																				
1092		943	ЭП-3-300-25-Б1-0-А	0.75	55	145	183	E	23																																					

* Operating pressure, Po.

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ max.	Travel, mm	No. of rev. of full travel	D, mm	D1, mm	L, mm	Max. Mtq, Nm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure												
1015-150-Ц3	150	9.8*	540	15X1M1Φ	Steam	0.5	160	20	163	194	490	380	-	1208	1026	-	-	-	363	-	PS	21												
973														791	-	-	-	355	-	RA	22													
1212														1030	793-Э-0-11	1.3	57	295	393	E	23													
1336														1154	Г3-Б.600/24	1.5	50	307	422	E	23													
1623														1443	ПЭМ-Б2-630-25-36М	3.1	48	307	394	E	23													
1312														1130	MODACT MON 52033.3212N	2.2	48	307	397	E	23													
1485														1303	ЭП4Н-Б-630-22-Э11-1-11111	3.2	55	307	419	E	23													
1305														1123	AUMA SA14.6-F14-380/50/3-22	0.8	55	307	353	E	23													
1503														1318	ЭП-3-630-24-Б-0-А	1.85	50	307	382	E	23													
881-150-Ц3														25*	545	15X1M1Φ	Steam	0.6	180	22.5	151	262	750	1600	-	1458	1240	-	-	-	868	-	PS	21
1312		1094	-	-	-	868	-	RA	22																									
1485		1260	795-Э-0	4.25	63	868	1105	E	23																									
1795		1570	Г3-Г.2500/24	5.5	56	915	1110	E	23																									
1915		1690	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	68	915	1018	E	23																									
1721		1496	S A14.6/G K2 5.2- F25-380/50/3-22	0.8	55	915	1061	E	73																									
1770		1545	ГНИОМ.303344.001-06	3.2	68	915	1010	E	73																									
1115		933	-	-	-	325	-	PS	21																									
988		806	-	-	-	333	-	RA	22																									
1012-150-Ц3		23.5*	250	15ГС	Water	0.5	160	20	161	194	490	700	-													1198	1030	793-Э-0	3.2	55	307	415	E	23
1252														1080	Г3-Б.900/24	2.2	50	307	427	E	23													
1627														1445	ПЭМ-Б34-1000-25-36М	3.1	48	307	394	E	23													
1428														1246	MODACT MON 52034.3272N	3.0	35	307	407	E	23													
1485														1303	ЭП4Н-Б-1000-22-Э11-1-11111	3.5	55	307	410	E	23													
1370	1188													AUMA SA16.2-F16-380/50/3-22	1.5	55	307	374	E	23														
1580	1398													ЭП-3-1000-24-Б-0-А	2.5	50	307	387	E	23														
1208	1026													-	-	-	450	-	PS	21														
973	791													-	-	-	442	-	RA	22														
880-150-Ц3	37.3*													280	15ГС	Water	0.5	160	20	144	200	550	950	-	1195	1027	793-Э-0	3.2	55	391	499	E	23	
1262		1090	Г3-Г.2500/24	5.5	50	391	586	E	23																									
1611		1443	ПЭМ-Б34-1000-25-36М	3.1	48	391	478	E	23																									
1428		1260	MODACT MON 52034.3272N	3.0	35	391	491	E	23																									
1471		1303	ЭП4Н-Б-1000-22-Э11-1-11111	3.5	55	391	494	E	23																									
1374		1206	AUMA SA16.2-F16-380/50/3-22	1.5	55	391	458	E	23																									
1566		1398	ЭП-3-1000-24-Б-0-А	2.5	50	391	471	E	23																									
1156-150-М		4.0*	545	15X1M1Φ	Steam	1.0	110	18	144	165	460	230	-												290	470	990	830	-	-	196	-	H	25
160																									320	995	855	-	-	220	-	PS	26	
160																									320	812	672	-	-	218	-	RA	27	
1000	860													792-Э-0a	1.32	54	194	265	E	28														
1192	1052													Г3-Б.300/24	0.75	45	194	247	E	28														
1605	1465													ПЭМ-Б2М	0.55	43	194	234	E	28														
1126	986													MODACT MON 52032.1222N	0.75	44	194	239	E	28														
1145	1005													ЭП4Н-Б-500-22-Э11-1-11111	1.1	49	194	264	E	28														
1130	990													AUMA SA14.6-F14-380/50/3-22	0.8	49	194	240	E	28														
1105	965													ЭП-3-300-25-Б1-0-А	0.75	45	194	232	E	28														
1511-150-МБ	10	450	15ГС	Water-Steam	0.9	112	22.4	142	165	400	100	-	810	705	-	-	-	105	-	H	16													
820													715	-	-	-	126	-	PS	18														
800													695	-	-	-	115	-	RA	17														
1011													906	Г3-Б.300/24	0.75	52	97	150	E	19														
1595													149С	ПЭМ-Б2М	0.55	52	97	137	E	19														
865													750	Э П4Н-Б-500-22-Э11-1-11111	1.1	61	97	167	E	19														
1018													913	AUMA SA14.6-FI 4-380/50/3-22	0.8	61	97	143	E	19														
895													790	ЭП-3-100-24-А2-05-В	0.45	52	97	111	E	19														
1472													1236	-	-	-	761	-	PS	21														
1240													1004	-	-	-	731	-	RA	22														
1013-175-Ц3-01	9.8*	540	15X1M1Φ	Steam	0.4	190	24	184	219	650	850	-	1494	1264	795-3-0-V	4.25	65	673	907	E	29													
1500													1270	Г3-Г.2500/24	5.5	60	703	898	E	29														
1952													1724	MODACT MON 52036.4202N	5.5	71	703	1000	E	29														
1725													1480	Э П4Н-Г-2000-22-Э11-1-11111	6.3	66	703	816	E	29														
1629													1398	SA14.6/GK25.2-F25-380/50/3-22	3.3	45	703	839	E	29														
1790													1545	ГНИОМ.303344.001-06	3.2	72	703	798	E	29														

* Operating pressure, Po

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Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ, max.	Travel, mm	No. of rev. of full travel	D, mm	DI, mm	L, mm	Max. Mtq, Nm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure
1013-175-ЦЗ	175	13.7*	560	15X1M1Φ	Steam	0.3	190	24	156	219	650	1150	-	1472	1236	-	-	-	769	-	PS	21
1240														1004	-	-	-	739	-	RA	22	
1494														1264	795-Э-0-М	6	34	683	936	E	29	
1500														1270	ГЗ-Г.2.500/24	5.5	60	708	903	E	29	
1952														1724	MODACT MON 52036.4202N	5.5	71	708	1010	E	29	
1725														1480	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	66	708	821	E	29	
1629														1398	SA14.6/GK25.2-F25-380/50/3-22	3.3	45	708	842	E	29	
1790														1545	ГИ ЮМ.303344.001-06	3.2	72	708	803	E	29	
1486														1250	-	-	-	769	-	PS	21	
1245														1009	-	-	-	739	-	RA	22	
1494														1264	795-3-0-V	4.25	65	668	902	E	29	
1500														1270	ГЗ-Г.2500/24	5.5	60	708	903	E	29	
1952														1724	MODACT MON 52036.4202N	5.5	71	708	1000	E	29	
1725														1480	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	66	708	821	E	29	
1629														1398	SA14.6/GK25.2-F25-380/50/3-22	3.3	45	708	842	E	29	
1790	1545	ГИ ЮМ.303344.001-06	3.2	72	708	803	E	29														
2с-25-2Н	200	6.3	425	25Л	Water-Steam	0.18	140	23	203	220	550	250	470	830	680	-	-	-	170	-	H	20
84												320	945	795	-	-	-	183	-	PS	21	
84												320	760	610	-	-	-	186	-	RA	22	
84												320	945	795	-	-	-	183	-	PS	21	
84												320	760	610	-	-	-	186	-	RA	22	
1346												1166	ГЗ-Б.300/24	0.75	58	165	-	E	23			
1600												1450	ПЭМ-Б2М	0.55	55	165	205	E	23			
1125												975	MODACT MON 52032.12J2N	1.1	55	165	213	E	23			
1125												975	ЭП4Н-Б-500-22-Э11-1-11111	1.6	63	165	235	E	23			
1205												1055	AUMA SA14.6-F14-380/50/3-22	0.8	63	165	211	E	23			
1092	943	ЭП-3-300-25-Б1-0-А	0.75	55	165	203	E	23														
1500	1245	-	-	-	817	-	PS	21														
1255	1000	-	-	-	785	-	RA	22														
1514	1264	795-3-0-V	4.25	65	701	878	E	29														
1518	1270	ГЗ-Г.2500/24	5.5	60	787	982	E	29														
1952	1724	MODACT MON 52036.4202N	5.5	71	787	1096	E	29														
1740	1480	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	66	787	900	E	29														
1646	1398	SA14.6/GK25.2-F25-380/50/3-22	3.3	45	787	866	E	29														
1805	1545	ГИ ЮМ.303344.001-06	3.2	72	787	882	E	29														
2052	1792	-	-	-	1838	-	PS	21														
1875	1665	-	-	-	1824	-	RA	22														
2087	1827	797-3-0	11.8	44	1490	1947	E	29														
1950	1990	ГЗ-Д.5000/12	5.5	123	1530	1790	E	29														
2137	1877	3 П4Н-Д-4000-22-Э11-1-11111	11.8	67	1530	1715	E	29														
2134	1874	SA16.2/GK30.2-F30-380/50/3-22	6.0	65	1530	1763	E	29														
1850	1630	-	-	-	1093	-	H	25														
1732	1509	795-3-0-V	3.2	82	1083	1260	E	29														
1687	1464	ГЗ-Г.2500/24	5.5	50	1095	1290	E	29														
1893	1670	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	79	1095	1215	E	29														
1817	1594	SA14.6/GK25.2-F25-380/50/3-22	3.3	54	1095	1231	E	29														
2040	1820	ГИ ЮМ.303344.001-06	3.2	37	1095	1195	E	29														
1482	1260	-	-	-	918	-	PS	26														
1237	1015	-	-	-	890	-	RA	27														
1285	1060	795-3-0	4.25	66	802	985	E	29														
1488	1266	ГЗ-Г.2500/24	5.5	60	898	1093	E	29														
1630	1415	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	33	898	1011	E	29														
1614	1396	SA14.6/GK25.2-F25-380/50/3-22	3.3	45	898	1034	E	29														
1790	1575	ГИ ЮМ.303344.001-06	3.2	72	898	993	E	29														
1168	1000	-	-	-	268	-	H	25														
1082	914	-	-	-	288	-	PS	26														
944	776	-	-	-	290	-	RA	27														
1200	1032	ГЗ-Б.600/24	1.5	73	299	414	E	19														
1546	1378	ПЭМ-Б2-630-25-36М	3.1	70	299	386	E	19														
1416	1248	ЭП4Н-Б-630-22-Э11-1-11111	3.2	79	299	407	E	19														
1266	1098	AUMA SA16.2-F16-380/50/3-22	1.0	79	299	422	E	19														
1321	1198	3 П-3-630-24-Б-0-А	1.85	73	299	374	E	19														

* Operating pressure, Po

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Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ, max.	Travel, mm	No. of rev. of full travel	D, mm	D1, mm	L, mm	Max. Mtq, Nm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure
885-225-Ц3	225	9.8*	540	15X1M1Φ	Steam	0.9	230	29	230	284	800	1100	-	1645	1399	-	-	-	848	-	PS	26
1400														1155	-	-	-	818	-	RA	27	
1649														1404	795-Э-0	4.25	79	732	915	E	29	
1660														1415	ГЗ-Г.2500/24	5.5	73	784	979	E	29	
1780														1560	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	79	784	897	E	29	
1789														1544	SA14.6/GK25.2-F25-380/50/3-22	3.3	54	784	920	E	29	
1945														1725	ГНЮМ.303344.001-06	3.2	87	784	884	E	29	
1645														1399	-	-	-	848	-	RA	26	
1400														1155	-	-	-	818	-	P	27	
1649														1404	795-Э-0	4.25	79	730	913	E	29	
1660	1415	ГЗ-Г.2500/24	5.5	73	782	977	E	29														
1875	1620	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	79	782	895	E	29														
1789	1544	SA14.6/GK25.2-F25-380/50/3-22	3.3	54	782	918	E	29														
1945	1690	ГНЮМ.303344.001-06	3.2	87	782	882	E	29														
1012-225-Ц3	225	23.5*	250	15ГC	Water	0.6	230	29	226	273	700	1600	-	1519	1275	-	-	-	604	-	PS	26
1283														1034	-	-	-	596	-	RA	27	
1473														1233	793-Э-0-М	1.32	86	512	610	E	29	
1560														1316	ГЗ-В.600/24	1.5	73	551	666	E	29	
1902														1662	ПЭМ-В2-630-25-36М	3.1	70	551	591	E	29	
1771														1531	ЭП4Н-В-1000-22-Э11-1-11111	3.5	79	551	654	E	29	
1610														1370	MODACT MON 52032.12J2N	0.75	70	551	616	E	29	
1598														1358	AUMA SA14.6-F14-380/50/3-22	3.3	54	551	597	E	29	
1822														1582	ЭП-3-1000-24-В-0-А	2.5	50	551	631	E	29	
2048														1790	-	-	-	1800	-	PS	26	
1750	1492	-	-	-	1785	-	RA	27														
1763	1705	797-Э-0	11.8	45	1553	1970	E	29														
2020	1760	ГЗ-Д.5000/12	5.5	145	1580	1840	E	29														
2340	2080	Э П4Н-Д-4000-22-Э11-1-11111	11.8	79	1580	1780	E	29														
2043	2301	SA16.2/GK30.2-F30-380/50/3-22	6.0	73	1580	1813	E	29														
2048	1790	-	-	-	1830	-	PS	26														
1750	1492	-	-	-	1820	-	RA	27														
1763	1705	797-Э-0	11.8	45	1563	1980	E	29														
2020	1760	ГЗ-Д.5000/12	5.5	145	1600	1860	E	29														
2340	2080	Э П4Н-Д-4000-22-Э11-1-11111	11.8	79	1600	1800	E	29														
2043	2301	SA16.2/G K30.2-F30-380/50/3-22	6.0	73	1600	1833	E	29														
1615	1395	-	-	-	1040	-	PS	26														
1370	1150	-	-	-	1011	-	RA	27														
1623	1405	795-Э-0	4.25	82	921	1104	E	29														
1674	1414	ГЗ-Г.2500/24	5.5	73	963	1158	E	29														
1880	1620	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	79	963	1128	E	29														
1763	1545	SA14.6/GK25.2-F25-380/50/3-22	3.3	79	963	1099	E	29														
1943	1725	ГНЮМ.303344.001-06	3.2	73	963	1063	E	29														
1850	1630	-	-	-	1088	-	H	25														
1752	1509	795-3-0-V	4.25	82	1050	1284	E	29														
1730	1510	ГЗ-Г.2500/24	5.5	73	1090	1285	E	29														
1936	1716	Э П4Н-Г-2000-22-Э11-1-11111	6.3	71	1090	1255	E	29														
1900	1678	SA14.6/GK25.2-F25-380/50/3-22	3.3	79	1090	1226	E	29														
2040	1820	ГНЮМ.303344.001-06	3.2	87	1090	1190	E	29														
1978	1720	-	-	-	1842	-	PS	26														
1678	1420	-	-	-	1830	-	RA	27														
1763	1705	797-Э-0	11.8	39	1565	1982	E	29														
1825	1567	ГЗ-Д.5000/12	5.5	130	1605	1863	E	29														
1996	1738	Э П4Н-Д-4000-22-Э11-1-11111	11.8	71	1605	1802	E	29														
1822	1564	SA16.2/GK40.2-F40-380/50/3-22	6.0	71	1605	1938	E	29														
1339	1126	-	-	-	578	-	PS	21														
1095	882	-	-	-	552	-	RA	22														
1245	1032	ГЗ-В.600/24	1.5	78	536	651	E	19														
1591	1378	ПЭМ-В2-630-25-36М	3.1	65	536	623	E	19														
1256	1088	ЭП4Н-В-500-22-Э11-1-11111	1.6	74	536	612	E	19														
1242	1074	AUMA SA14.6-F 14-380/50/3-22	0.8	74	536	612	E	19														
1366	1198	Э П-3-630-24-В-0-А	3.8	78	536	611	E	19														

* Operating pressure, Po

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ, max.	Travel, mm	No. of rev. of full travel	D, mm	D1, mm	L, mm	Max. Mfg. Nm	d, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure																																
2c-26-3H	300	6.3	425	25Л	Water-Steam	0.3	224	28	254	275	650	340	470	1206	1017	-	-	-	380	-	PS	21																																
1045														856	-	-	-	367	-	RA	22																																	
348														470	1206	1017	-	-	-	380	-	PS	21																															
348														470	1045	856	-	-	-	367	-	RA	22																															
2c-27-3H		300	10	450	25Л	Water-Steam	0.3	224	28	244	275	650	1040	-	1209	1109	ГЗ-Г.2500/24	5.5	70	337	532	E	24																															
1470															1280	МОДАКТ MON 52035.42O2N	5.5	37	337	548	E	24																																
1512															1322	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	77	337	450	E	24																																
1335															1145	AУМА SA25.1-F25-380/50/3-22	4.0	76	337	472	E	24																																
2c-28-3H			300	6.3	425	25Л	Water-Steam	0.24	224	28	303	325	750	340	470	1206	1017	-	-	-	425	-	PS	21																														
1045																856	-	-	-	411	-	RA	22																															
348																470	1206	1017	-	-	-	425	-	PS	21																													
348																470	1045	856	-	-	-	411	-	RA	22																													
2c-29-3H				300	10	450	25Л	Water-Steam	0.24	224	28	290	325	750	1040	-	1209	1109	ГЗ-Г.2500/24	5.5	70	380	575	E	24																													
1470																	1280	МОДАКТ MON 52035.42O2N	5.5	37	380	591	E	24																														
1512																	1322	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	77	380	493	E	24																														
1335																	1145	AУМА SA25.1-F25-380/50/3-22	4.0	76	380	515	E	24																														
2c-26-4H	300				6.3	425	25Л	Water-Steam	0.24	224	28	303	325	750	340	470	1206	1017	-	-	-	425	-	PS	21																													
1045																	856	-	-	-	411	-	RA	22																														
348																	470	1206	1017	-	-	-	425	-	PS	21																												
348																	470	1045	856	-	-	-	411	-	RA	22																												
2c-27-4H		300			10	450	25Л	Water-Steam	0.24	224	28	290	325	750	1040	-	1209	1109	ГЗ-Г.2500/24	5.5	70	380	575	E	24																													
1470																	1280	МОДАКТ MON 52035.42O2N	5.5	37	380	591	E	24																														
1512																	1322	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	77	380	493	E	24																														
1335																	1145	AУМА SA25.1-F25-380/50/3-22	4.0	76	380	515	E	24																														
2c-28-4H			300		13.7*	560	15X1M1Φ	Steam	0.65	290	29	281	400	1000	2900	-	2048	1790	-	-	-	1955	-	PS	26																													
1750																	1492	-	-	-	1945	-	RA	27																														
2156																	1896	797-Э-0	11.8	44	1730	2147	E	29																														
1950																	1690	ГЗ-Д.5000/12	5.5	14	1730	1990	E	29																														
2c-29-4H				300	23.5*	250	15ГC	Water	2.8	230	29	316	390	1000	1600	-	2340	2080	ЭП4Н-Д-4000-22-Э11-1-11111	11.8	79	1730	1930	E	29																													
2204																	1944	SA16.2/GK30.2-F30-380/50/3-22	6.0	79	1730	1963	E	29																														
1615																	1385	-	-	-	1040	-	PS	26																														
1370																	1150	-	-	-	1011	-	RA	27																														
883-300-ЦЗП	300				37.3*	280	15ГC	Water	2.5	245	24.5	281	400	1000	3900	-	1657	1409	795-Э-0	4.25	82	1337	1573	E	29																													
1662																	1414	ГЗ-Г.2500/24	5.5	73	1093	1288	E	29																														
1880																	1620	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	79	1093	1258	E	29																														
1763																	1545	SA14.6/GK25.2-F25-380/50/3-22	3.3	79	1093	1229	E	29																														
883-300-КЗП		300			10	450	15ГC	Water-Steam	0.8	237	34	290	328	650	850	-	1943	1725	ГИЮМ.303344.001-06	3.2	73	1093	1193	E	29																													
1988																	1730	-	-	-	2010	-	PS	26																														
1675																	1417	-	-	-	2306	-	RA	27																														
2090																	1832	797-Э-0	11.8	37	1593	2010	E	29																														
882-300-ЦЗ			300		6.3	425	25Л	Water-Steam	0.43	266	33	354	386	850	960	-	1958	1700	ГЗ-Д.5000/12	5.5	12	1593	1851	E	29																													
1958																	1700	ЭП4Н-Д-4000-22-Э11-1-11111	11.8	67	1593	1790	E	29																														
2062																	1804	SA16.2/GK30.2-F30-380/50/3-22	6.0	67	1593	1826	E	29																														
1489																	1294	-	-	-	613	-	PS	21																														
882-300-КЗ				300	10	450	15ГC	Water-Steam	0.8	237	34	290	328	650	850	-	1249	1054	-	-	-	585	-	RA	22																													
1499																	1304	ГЗ-Г.2500/24	5.5	78	500	695	E	24																														
1835																	1640	ПЭМ-В34-1000-25-36M	3.1	65	500	587	E	24																														
1859																	1664	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	74	500	620	E	24																														
880-300-Л13	300				6.3	425	25Л	Water-Steam	0.43	266	33	354	386	850	960	-	1869	1674	AУМА SA25.1-F25-380/50/3-22	4.0	74	500	623	E	24																													
1809																	1614	ГИЮМ.303344.001-06	3.2	89	500	600	E	24																														
322																	470	1365	1140	-	-	-	550	-	PS	21																												
322																	470	1205	980	-	-	-	540	-	RA	22																												
880-300-Э(ЭГ,ЭМ,ЭД)		300			10	450	15ГC	Water	2.5	245	24.5	281	400	1000	3900	-	1459	1234	ГЗ-Г.2500/24	5.5	83	509	704	E	24																													
1625																	1400	МОДАКТ MON 52035.42O2N	5.5	44	509	720	E	24																														
1675																	1450	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	90	509	622	E	24																														
1495																	1270	AУМА SA25.1-F25-380/50/3-22	4.0	90	509	644	E	24																														
1511-300-ЦЗ			300		10	450	15ГC	Water-Steam	0.8	237	34	290	328	650	850	-	1776	1545	ГИЮМ.303344.001-06	3.2	99	509	604	E	24																													
1511-300-КЗ																	300	6.3	425	25Л	Water-Steam	0.43	266	33	354	386	850	960	-	348	470	1365	1140	-	-	603	-	PS	21															
348																														470	1205	980	-	-	-	602	-	RA	22															
348																														470	1365	1140	-	-	-	603	-	PS	21															
348				470	1205	980	-	-	-	602	-	RA	22																																									
1511-300-Э(ЭГ,ЭЧ,ЭМ,ЭД,ЭН)				300	10	450	15ГC	Water-Steam	0.8	237	34	290	328	650	850	-		1450	1234	ГЗ-Г.2500/24	5.5	83	560	755	E	24																												
1525																		1400	МОДАКТ MON 52035.42O2N	5.5	44	560	771	E	24																													
1675																		1450	ЭП4Н-Г-2000-22-Э11-1-11111	6.3	90	560	673	E	24																													
1495	1270																	AУМА SA25.1-F25-380/50/3-22	4.0	90	560	695	E	24																														
2c-26-5H	350				6.3	425	25Л	Water-Steam	0.43	266	33	354	386	850	960	-		1776	1545	ГИЮМ.303344.001-06	3.2	99	509	604	E	24																												
2c-27-5H																		350	10	450	25Л	Water-Steam	0.15	266	33	390	426	950	1040	-	348	470	1365	1140	-	-	603	-	PS	21														
2c-26-6																															350	6.3	425	25Л	Water-Steam	0.43	266	33	354	386	850	960	-	348	470	1205	980	-	-	602	-	RA	22	
2c-27-6		350																																										10	450	25Л	Water-Steam	0.15	266	33	390	426	950	1040
2c-28-6					350	6.3	425	25Л	Water-Steam	0.43	266	33	354	386	850	960																																						
2c-29-6																			350	10	450	25Л	Water-Steam	0.15	266	33	390	426	950	1040																								
2c-25-6Э(ЭГ,ЭК,ЭМ,ЭД,ЭН)																																350	6.3	425	25Л	Water-Steam	0.43	266	33	354	386	850	960											
1675			1450																																									ЭП4Н-Г-2000-22-Э11-1-11111	6.3	90	560	673	E	24				
1495			1270			AУМА SA25.1-F25-380/50/3-22	4.0	90	560	695	E	24																																										
1776			1545			ГИЮМ.303344.001-06	3.2	99	560	655	E	24																																										

* Operating pressure, Po

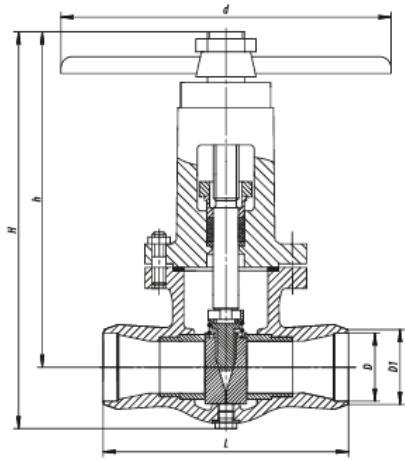


Figure 16. Gate valve DN80-100 with handwheel

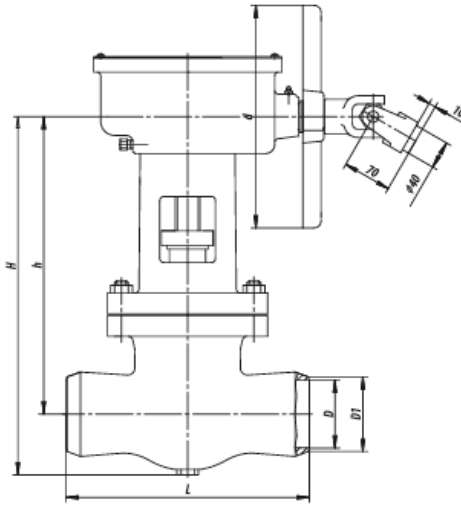


Figure 17. Gate valve DN80-100 with right-angle reducer

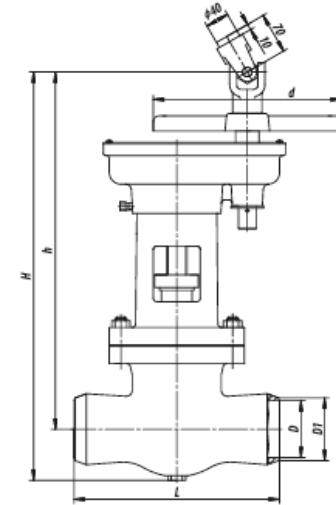


Figure 18. Gate valve DN80-100 with parallel-shaft reducer

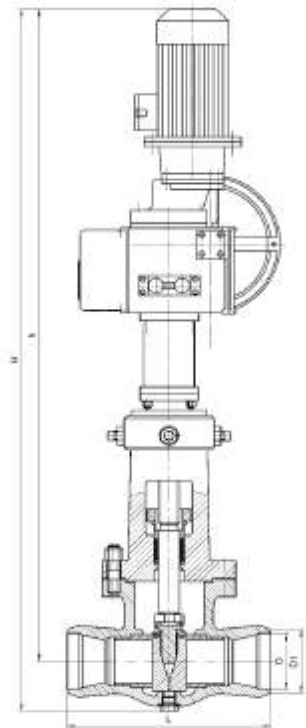


Figure 19. Gate valve DN80-100 with electric drive

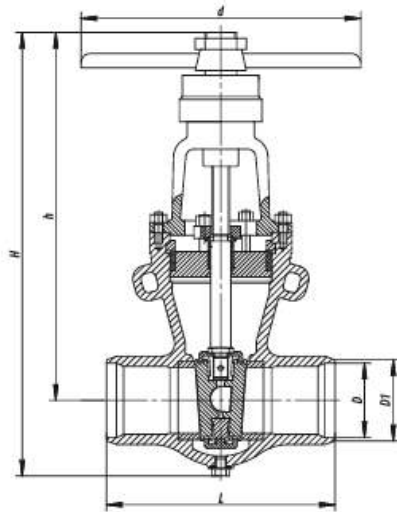


Figure 20. Gate valve DN150-200 with handwheel

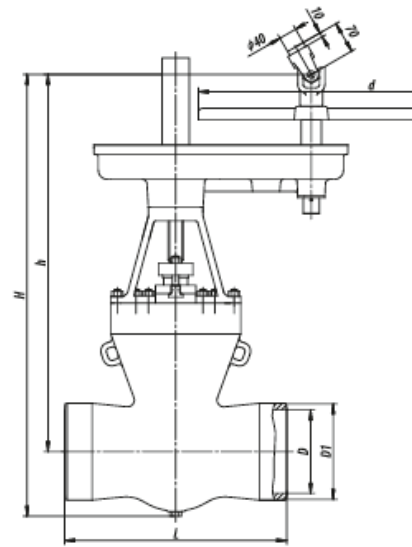


Figure 21. Gate valve DN150-400 with right-angle reducer

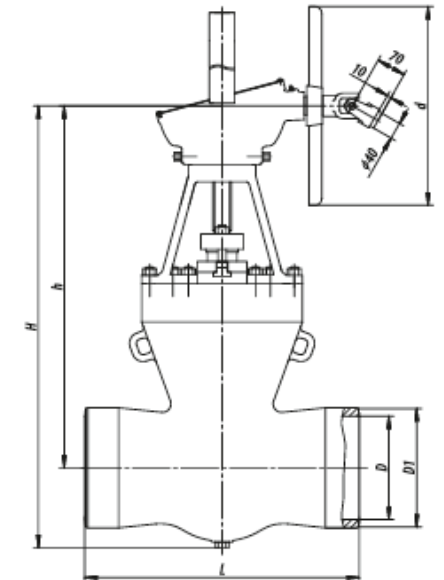


Figure 22. Gate valve DN150-400 with parallel-shaft reducer

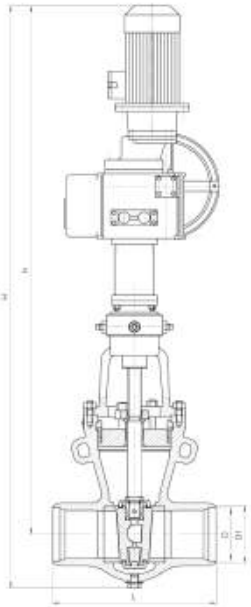


Figure 23. Gate valve DN150-200 with electric drive

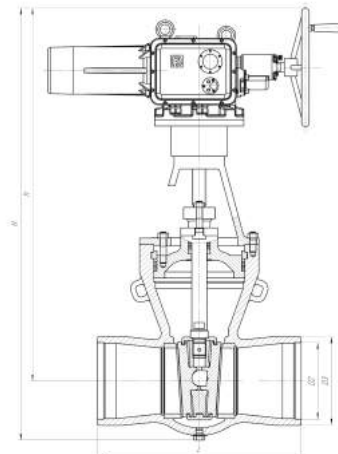


Figure 24. Gate valve DN250-400 with electric drive

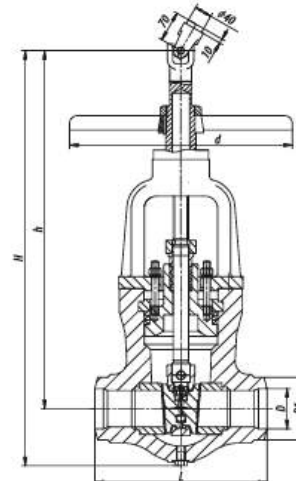


Figure 25. Gate valve DN100 with handwheel

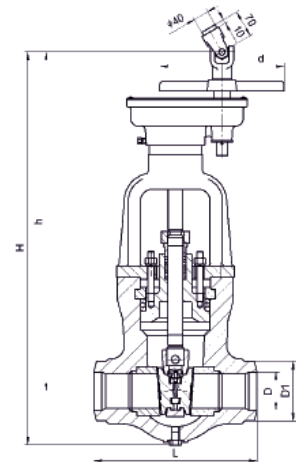


Figure 26. Gate valve DN100 with parallel-shaft reducer

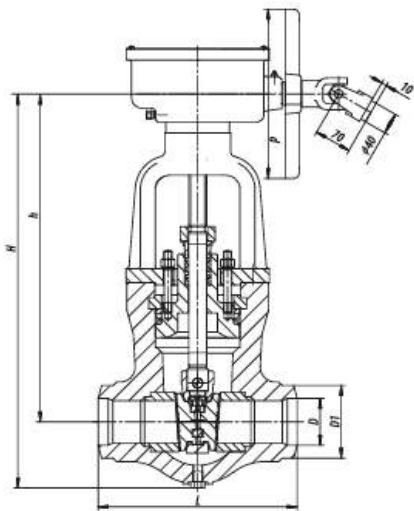


Figure 27. Gate valve DN100 with right-angle reducer

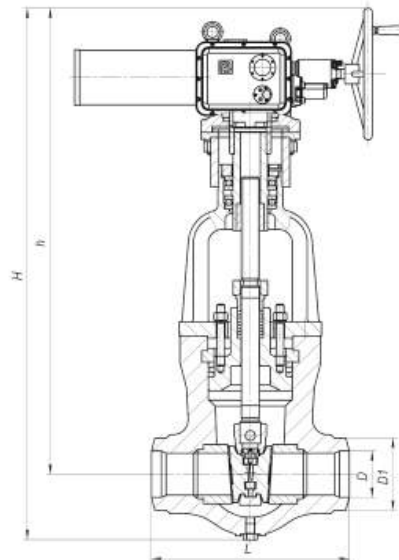


Figure 28. Gate valve DN100 with electric drive

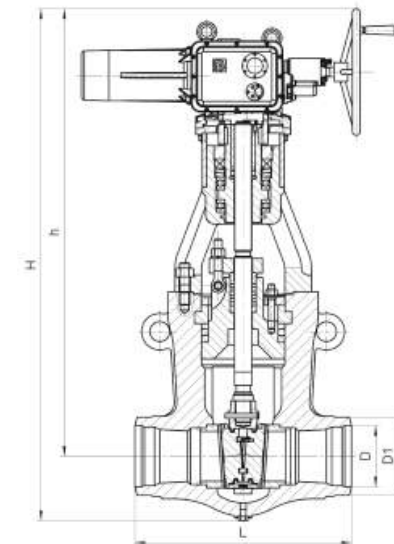


Figure 29. Gate valve DN175-225 with electric drive

Float Steam Trap

Float steam trap is designed for automatic condensate removal from steam pipeline or other vessels. Working fluid: Group 2 fluids and its steams (water, steam vapor and media except for inflammable, oxidizing, flammable, explosive, toxic and highly toxic gases, fluids and single-phase vapors, including their mixtures).

The blocking element of the steam trap is closed or opened automatically by floating due to difference in density of steam vapor and condensate (Group 2 fluids and its steams). Connection to pipeline: by pipe with 1:10 inclination towards trap.

Basic parts are made of:
Bonnet, body - Steel 20.

Float steam trap is designed for outdoor and indoor installation. Mounting position: on pipeline with bonnet up.

Seat tightness: class A according to GOST R 54808-2011

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.

Products designed for max. pressure of PN10 MPa according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C.

Float steam traps are manufactured according to Specification 3740-002-15365247-2004.

Technical details are shown in the table below.

Product ID	DN, mm	PN, MPa	Working fluid	Fluid Tmax, °C	Body material, steel	Weight, kg	Figure
5c-1-2	25	10.0	Steam-water mixture	450	20	52	33

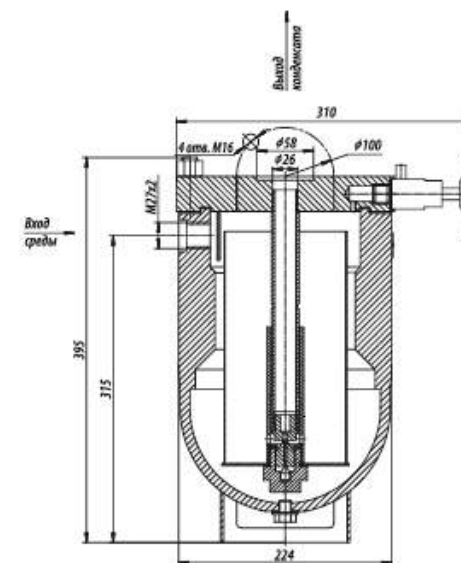


Figure 33. Float Steam Trap

Return Valve (Gate)

Return valve (gate) is used in piping systems as an uncontrollable and automatic safety device to prevent back flow of working fluid in emergencies. 2 types of design: lifting valve and rotating valve.

In operating mode, return valve is open under the action of flow. The valve closes in absence of flow, or under the action of back flow. Working fluid: Group 2 fluids and Group 2 gases (water, steam vapor, petroleum products, non-aggressive and mildly aggressive fluids and gases).

Return valve is designed for outdoor and indoor installation at ambient temperature from -40°C to $+70^{\circ}\text{C}$.

Return valve shall be mounted only on horizontal pipelines with flow direction “under disk”, so that flow direction shall match the arrow marked on the valve body, whereby direction of valve nut (bonnet) shall be upwards only. Return valve may be mounted on horizontal sections of pipeline with bonnet up, or on vertical sections of pipeline with flow direction from bottom upwards “under disk”. Connection to pipeline: by welding.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 1, 2, 3 according to GOST 15150-69

Return gates are manufactured according to Specification 3740-002-15365247-2004.

Return valves are manufactured according to Specification 2913-001-15365247-2004.

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.

Products designed for max. pressure of PN100 according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C ; PN63: from 6.3 MPa, 200°C to 2.3 MPa, 455°C .



Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ , max.	Travel, mm	L, mm	d, mm	H, mm	D, mm	D1, mm	Weight, kg	Figure
3c-6-1-01	10	10	350	20	Water-Steam	7.0	7	110	103	75	10	23	1.7	30
3c-7-1-01		37.3*	280	20	Water	7.0	8	110	110	82	10	23	2	31
3c-6-1	20	10	350	20	Water-Steam	5.0	15	160	143	95	22	32	2.4	30
720-20-OA		37.3*	280	20	Water	5.0	11	160	152	104	20	32	2.9	31
720-20-OA-01		25*	545	12X1MΦ	Steam	5.0	11	160	152	104	20	32	2.7	31
3c-6-3	32	10	350	20	Water-Steam	6.4	20	230	162	115	32	38	3.0	30
843-40-0 ^a -01		25*	545	12X1MΦ	Steam	7.0	20	220	279	190	31	57	15.1	31
843-40-0 ^a -02	40	37.3*	280	20	Water	7.0	20	220	279	190	39	57	14.1	31
3c-6-4	50	10	350	20	Water-Steam	12.7	22	240	190	122	50	57	5.6	30
3c-7-4		25	350	20	Water	7.0	20	220	279	190	49	60	14.1	31
843-40-0 ^a -03	65	23.5*	250	20	Water	7.0	25	250	295	200	58	76	17.4	31
843-40-0 ^a -04		9.8*	540	12X1MΦ	Steam	7.0	25	250	295	200	62	76	17.7	31

* Operating pressure, Po.

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	ζ , max.	L, mm	d, mm	H, mm	D, mm	D1, mm	Weight, kg	Figure
4c-3-1	80	10	450	25Л	Water-Steam	1.1	380	281	200	77	90	35	32
4c-3-2	100	10	250	25Л	Water-Steam	1.1	430	370	268	93	108	65	32
912-100-0A		37.3*	280	20	Water	2.0	400	500	375	98	146	105	32a
935-100-0A		23.5*	250	20	Water	2.0	400	500	375	109	146	105	32a
935-100-0A-01		18.1*	215	20	Water	2.0	400	500	375	109	146	105	32a
935-100-0AM		9.8*	540	15X1M1Φ	Steam	2.0	400	500	375	112	146	105	32a
4c-3-3	150	10	250	25Л	Water-Steam	0.9	550	435	310	142	159	109	32
912-150-0		37.3*	280	25Л	Water	2.0	470	470	348	144	205	160	32a
935-150-0		18.1*	215	25Л	Water	2.0	470	470	348	166	205	160	32a
935-150-0AM		9.8*	540	15X1M1ΦЛ	Steam	2.0	470	470	348	163	205	160	32a
935-175-0	175	18.1*	215	25Л	Water	2.0	550	545	400	188	230	250	32a
4c-3-4	200	10	250	25Л	Water-Steam	1.0	650	535	370	195	219	184	32
912-200-06		37.3*	280	25Л	Water	1.0	840	755	525	203	345	1078	32a
935-225-06	225	23.5*	250	25Л	Water	1.2	840	730	515	226	285	816	32a
4c-3-5	250	6.3	250	25Л	Water-Steam	0.7	775	585	395	254	274	236	32
935-250-06		23.5*	250	25Л	Water	1.5	840	735	520	271	340	826	32a
912-250-06		37.3*	280	25Л	Water	1.5	840	735	525	245	345	1078	32a
912-250-06M		30.4*	510	15X1M1ΦЛ	Steam	1.5	840	735	525	249	345	1078	32a

* Operating pressure, Po.

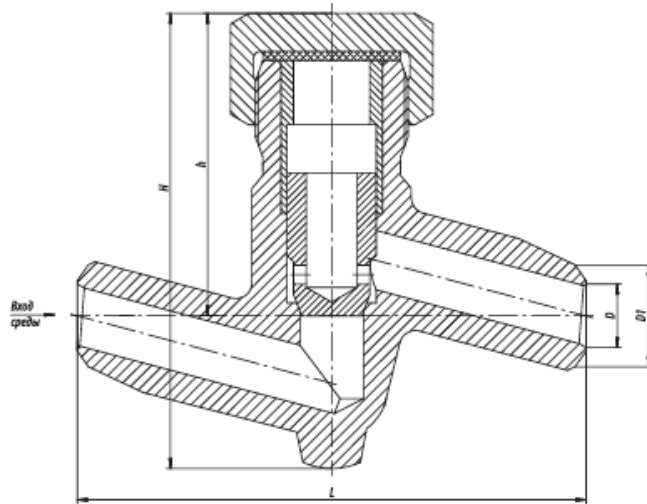


Figure 30. Return valve

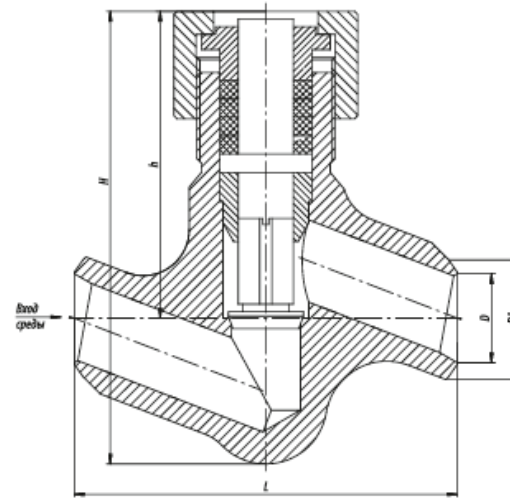


Figure 31. Return valve

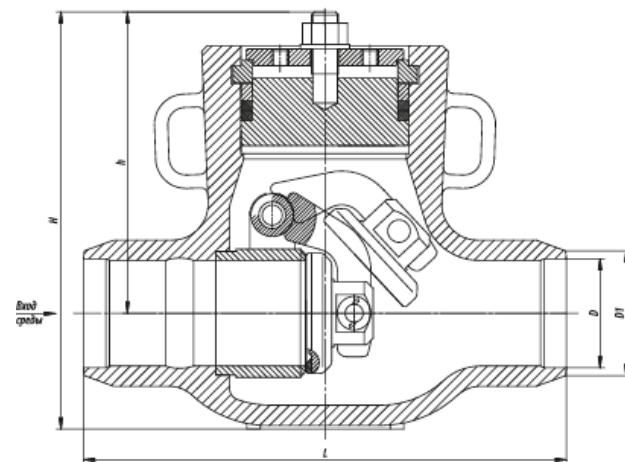


Figure 32. Return gate

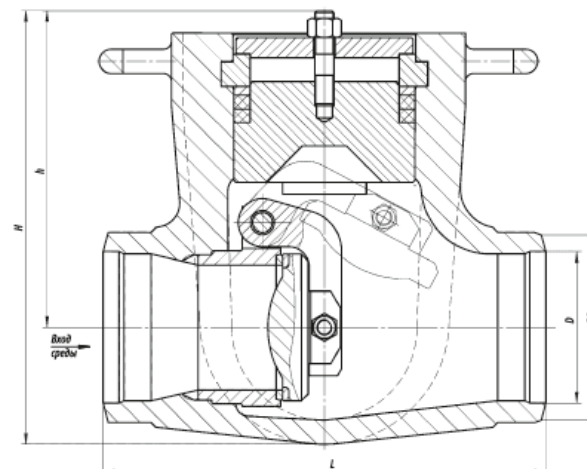


Figure 31a. Return gate

Pilot Safety Valve (as part of Pilot Safety System)

Pilot Safety System (PSS) refers to a safety valve, and includes a safety valve and a pilot valve. It is designed to ensure safe operation of equipment and systems of electric power plants by protecting them from overpressure of working fluid (Group 2 gases: saturated or overheated steam vapor). Safety device is actuated automatically, and when opened it exhausts overflow of working fluid to the atmosphere from the vessel or system under protection. This valve shall be installed vertically in the highest section of the unit under protection.

The major difference between HP PSSs, series 1202, 1203, 875, 392, 530, is that pilot valve DN20, series 586, is equipped with an electromagnetic drive and backup lever-loaded drive (that is actuated at power failure). Such electromagnetic drive is made of 2 solenoids or 1 double-acting electromagnet and provides for high accuracy and timely opening and closing of the main safety valve according to the pressure set at the electric contact manometer. In backup mode, pilot valve may be set for opening pressure only by adjusting location of the load on the lever.

Main safety valve for MP and LP, series 7c, 111, 694, are designed for mounting on pipelines of reduced steam, vessels and boilers. Main safety valve 7c is equipped with pilot valve 8c, and has high-performance flow-through section (Patent No. 2413111 of Barnaul Boiler Plant) that allows for the required flow at significantly less weight and size, and therefore almost at half cost; moreover on the customer's request it may be equipped with a special damping system allowing for changing speed of valve closing in order to protect turbine bearings against dynamic loads, if valves are installed in turbine shop (Patent No. 2285181 of Barnaul Boiler Plant). Main safety valve, series 111 and 694, is used with pilot valve, series 586 and 112, depending on the desired characteristics of the working fluid.

Pilot Safety System shall be selected based on product ID indicated in this catalog depending on working fluid characteristics in the vessel or system under protection, as well as required capacity, i.e. steam flow through the valve per unit of time. Number of safety valves and their capacity for general-purpose power plants shall be selected based on calculations according to the technical documentation agreed with the Federal Service for Environmental, Technological, and Nuclear Supervision of Russian Federation.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

Pilot safety valves as part of Pilot Safety System are manufactured according to Specification 3740-002-15365247-2004.

Products designed for max. pressure of PN10 MPa according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C; PN25 MPa: from 25 MPa, 200°C to 9 MPa, 455°C; PN6.3 MPa: from 6.3 MPa, 200°C to 2.3 MPa, 455°C.



Safety Valve (included into Pilot Safety System), Specification 3740-002-15365247-200

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Working fluid	Body material, steel	Inlet/outlet diameter, mm	Travel, mm	μ , min.	F, cm ²	L, mm	H, mm	h, mm	D, mm	D1, mm	d1, mm	d2, mm	d3, mm	d4, mm	d5, mm	d6, mm	d7, mm	d8, mm	n	n1	Weight, kg	Figure	
530-150/150-0B	150	9.8*	540	Steam	15X1M1ΦJI	150/150	20	0.7	42.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	424	40	
392-175/95-0r		13.7*	560	Steam	15X1M1ΦJI	150/200	20	0.7	42.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	446	39
392-175/95-0r-01		9.8*	540	Steam	15X1M1ΦJI	150/200	20	0.7	42.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	446	39
7c-6-1		4	450	Steam	25JI	150/200	65	0.8	52	240	800	260	310	360	300	278	200	250	204	150	27	27	8	12	117	36	
7c-8-1		4.5*	450	Steam	25JI	150/200	65	0.8	52	240	850	260	310	360	350	278	200	290	204	150	33	27	12	12	120	36	
1202-150/150-0		9.8*	540	Steam	15X1M1ΦJI	150/150	25	0.5	54.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	415	37
1203-150/200-0A		13.7*	560	Steam	15X1M1ΦJI	150/200	25	0.5	54.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	345	38
1203-150/200-0A-01		9.8*	540	Steam	15X1M1ΦJI	150/200	25	0.5	54.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	345	38
7c-6-2		200	4	450	Steam	25JI	200/250	75	0.8	127	290	964	350	370	425	375	335	250	320	260	200	30	30	12	12	212	36
7c-8-2	4.5*		450	Steam	25JI	200/250	75	0.8	127	290	1075	461	370	425	405	335	250	345	260	198	33	30	12	12	270	36	
7c-6-3	2.5		450	Steam	25JI	250/300	100	0.8	253	330	1136	420	410	460	425	370	300	370		250	30	27	12	12	338	36	
7c-8-3	250	4.5*	450	Steam	25JI	250/400	100	0.8	253	370	1097	430	550	610	500	505	400	430	313	240	39	33	12	16	466	36	
111-250/400-06		0.8-1.2*	450	Steam	20ГCJI	250/400	40	0.65	193	760	1109	846	-	-	-	-	-	-	-	-	-	-	-	-	658	41	
111-250/400-06-01		1.3-4.3*	450	Steam	20ГCJI	250/400	40	0.65	193	760	1441	1178	-	-	-	-	-	-	-	-	-	-	-	-	665	41	
694-250/400-06	300	4*	545	Steam	15X1M1ΦJI	250/400	40	0.65	193	760	1441	1178	-	-	-	-	-	-	-	-	-	-	-	-	717	42	
7c-4-4		1	350	Steam	25JI	300/450	100	0.6	495	325	1241	425	550	590	440	520	450	400	-	300	23	23	12	16	371	36	

* Operating pressure, Po.

Pilot Valve (included into Pilot Safety System), Specification 3740-002-15365247-200

Product ID	DN, mm	Working fluid	Inlet/outlet diameter, mm	PN, MPa	Fluid Tmax, °C	Travel, mm	Actuating pressure		PN set range, MPa	Body material, steel	Weight, kg	Figure
							from electromagnet, MPa (kg/cm ²)	from load, MPa (kg/cm ²)				
8c-3-1-1	20	Steam	19/19	4	450	3			0.1-0.6	20	4.5	43
8c-3-1		Steam	19/19	4	450	3			0.25-1.2	20	4.5	43
8c-3-2		Steam	19/19	4	450	3			1.2-2.2	20	4.5	43
8c-3-3		Steam	19/19	4	450	3			2.2-2.8	20	4.5	43
8c-3-4		Steam	19/19	4	450	3			2.8-3.6	20	4.5	43
8c-4-1		Steam	19/19	4.5*	450	3			3.6-4.5	20	7.2	44
586-20-ЭM-01		Steam	20/20	25*	545	5	28.0(2801)	28±1(280±10)		12X1MΦ	226	45
586-20-ЭM-02		Steam	20/20	13.7*	560	5	15.1(151)	15.1±0.5(151±5)	-	12X1MΦ	206	45
586-20-ЭM-03		Steam	20/20	9.8*	540	5	10.5(105)	10.5±0.5(105±5)	-	12X1MΦ	191	45
586-20-ЭMΦ-03		Steam	20/20	3.9*	285	5	4.4(44)	4.4±0.5(44±5)	-	20	198	46
586-20-ЭMΦ-04	Steam	20/20	4.0*	545	5	4.4(44)	4.4±0.5(44±5)	-	12X1MΦ	198	46	
112-25x1-0	25	Steam	25/25	1.2*	450	6			-	20	31	47
112-25x1-0-01		Steam	25/25	3.0*	450	6			-	20	40	47
112-25x1-0-02		Steam	25/25	4.3*	450	6			-	20	45	47
112-25x1-0M		Steam	25/25	4.0*	545	6			-	12X1MΦ	45	47

* Operating pressure, Po.

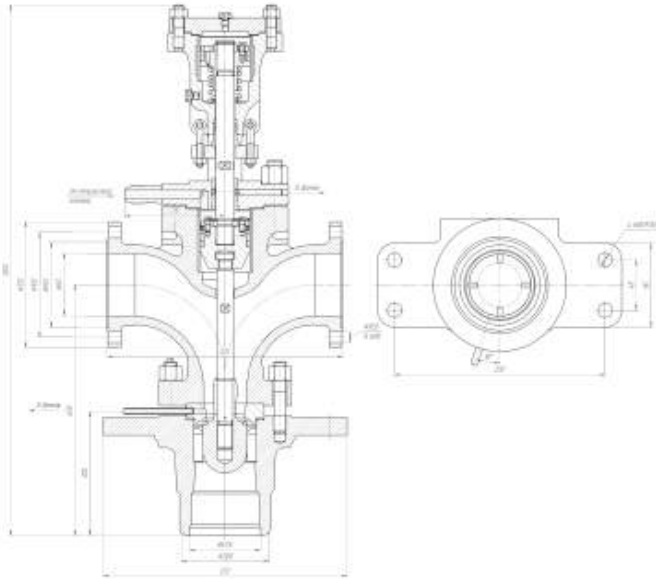


Figure 40. Safety valve

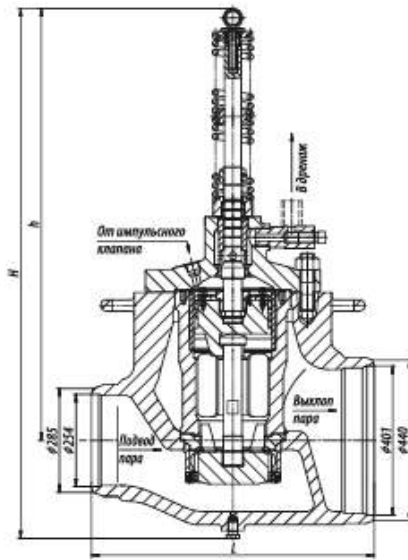


Figure 41. Safety valve

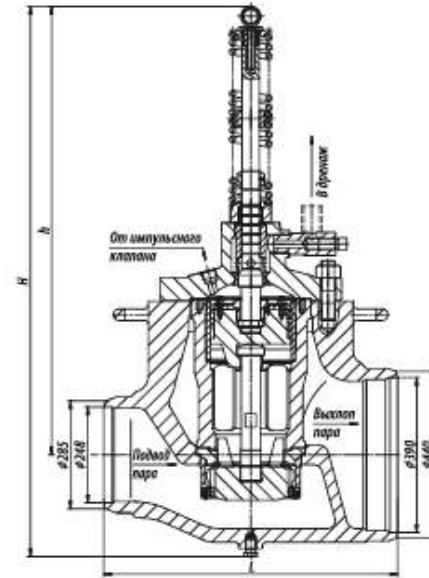


Figure 42. Safety valve

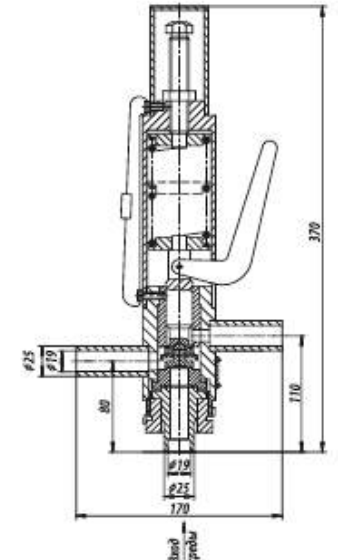


Figure 43. Safety valve

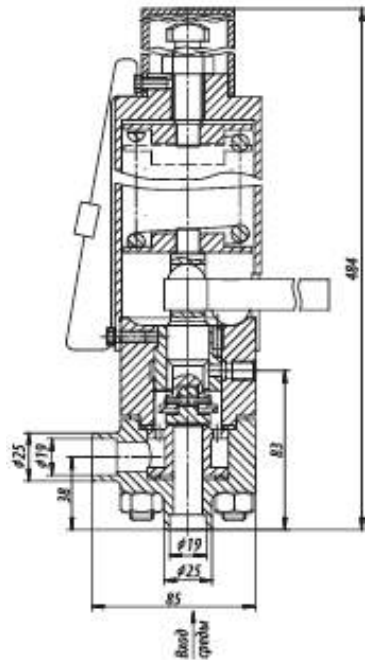


Figure 44. Pilot valve

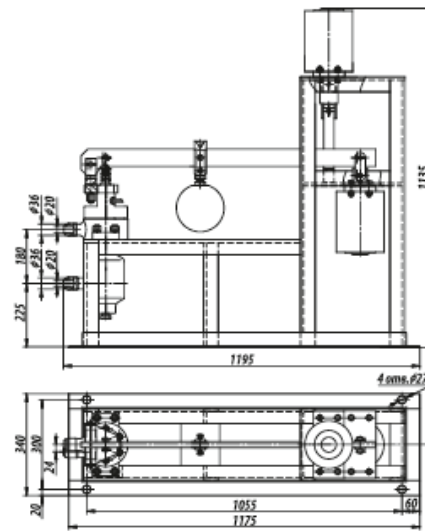


Figure 45. Pilot valve

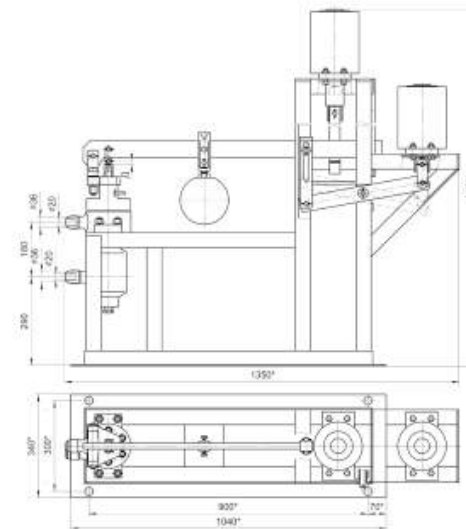


Figure 46. Pilot valve

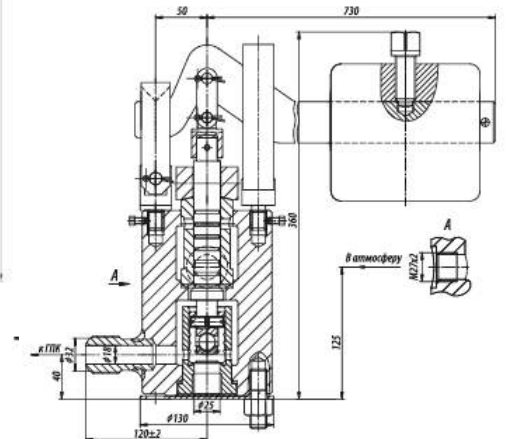


Figure 47. Pilot valve

Direct-Operating Safety Valve

Direct-operating safety valve is designed to ensure safe operation of equipment and systems of electric power plants by protecting them from overpressure of working fluid (Group 2 gases: saturated or overheated steam vapor). The valve closes automatically upon reduction of steam pressure in the unit under protection to the set operating pressure. Direct-operating safety valve for medium and low steam parameters, series 15c, 17c, T-31MC, T-32MC, T-131MC, T-132MC, is spring-loaded. This valve shall be mounted vertically in the highest section of the unit under protection. Connection to pipeline: by coupling or flanged; designed for loads from valve weight, and reaction forces arising during its actuation.

Direct-operating safety valve shall be selected based on product ID indicated in this catalog depending on working fluid characteristics within the vessel or system under protection, as well as required capacity, i.e. steam flow through the valve per unit of time. Number of safety valves and their capacity for power plants of general purpose shall be selected based on calculations according to the technical documentation agreed with the Federal Service for Environmental, Technological, and Nuclear Supervision of Russian Federation.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

Part	15x-1-1, 17x-1-2, 17x-1-3	15x-2-2	T-31MC, T-32MC, T-131MC, T-132MC
Body	Steel 20	Steel 20	Steel 20
Bonnet	Cr3кп2	Cr4кп2	Steel 3кп
Spindle	Steel 20X13	Steel 20X13	38X2MIOA
Seat	Steel 20X13	Steel 20 with built-up welding ЦН-6Л	Steel 20 with built-up welding ЦН-6Л



Direct-Operating Valve, Specification 2913-001-15365247-2004

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	PN set range, MPa	Body material, steel	Working fluid	Travel, mm	μ , min.	F, cm ²	L, mm	H, mm	h, mm	h1, mm	D1, mm	D2, mm	Inlet/outlet diameter, mm	d1, mm	d2, mm	d3, mm	d4, mm	d5, mm	d6, mm	d7, mm	d8, mm	n	n1	Weight, kg	Figure
15c-1-1	25	1	200	0.8-1.0	20	Steam	6±1.5	0.7	2.5	126	302	50	70	M39x2	M48x2	25/40	27	36	-	-	-	-	-	-	-	-	3.1	65
17c-1-2	32	1	250	0.6±0.15	20	Steam	8+1.5	0.6	6.1	220	339	60	100	M48x2	M60x2	32/50	36	48	-	-	-	-	-	-	-	-	4.5	67
15c-2-2		1.6	250	1.1-1.5	20	Steam	8+1.5	0.7	6.1	260	349	100	100	135	140	32/50	32	50	100	110	-	-	18	14	4	4	6.6	66
17c-1-3	40	1	250	0.6±0.15	20	Steam	8+1.5	0.7	6.1	220	339	60	100	M52x2	M60x2	40/50	40	48	-	-	-	-	-	-	-	-	4.9	68
17c-2-3		1	250	0.6±0.15	20	Steam	8+1.5	0.7	6.1	225	343	65	100	145	140	40/50	40	48	110	110	-	-	18	14	4	4	7.8	69
T-31MC-1	50	6.3	425	3.5-4.5	20	Steam	12+3	0.65	18.1	366	686	150	130	175	215	50/100	50	98	135	180	102	88	23	18	4	8	48	70
T-31MC-2		6.3	425	1.8-2.8	20	Steam	12+3	0.65	18.1	366	686	150	130	175	215	50/100	50	98	135	180	102	88	23	18	4	8	47	70
T-31MC-3		6.3	425	0.7-1.5	20	Steam	12+3	0.65	18.1	366	686	150	130	175	215	50/100	50	98	135	180	102	88	23	18	4	8	44	70
T-131MC	50	10	450	3.5-4.5	20	Steam	12+3	0.65	18.1	366	686	150	130	195	215	50/100	50	98	145	180	102	88	26	18	4	8	48	70
T-32MC-1	80	6.3	425	3.5-4.5	20	Steam	15+3	0.65	30.2	416	740	200	160	210	280	80/150	80	147	170	240	133	121	23	23	8	8	76	70
T-32MC-2		φ3	425	1.8-2.8	20	Steam	15+3	0.65	30.2	416	740	200	160	210	280	80/150	80	147	170	240	133	121	23	23	8	8	72	70
T-32MC-3		6.3	425	0.7-1.5	20	Steam	15+3	0.65	30.2	416	740	200	160	210	280	80/150	80	147	170	240	133	121	23	23	8	8	71	70
T-132MC	80	10	450	3.5-4.5	20	Steam	15+3	0.65	30.2	416	740	200	160	230	280	80/150	80	147	180	240	133	121	26	23	8	8	76	70

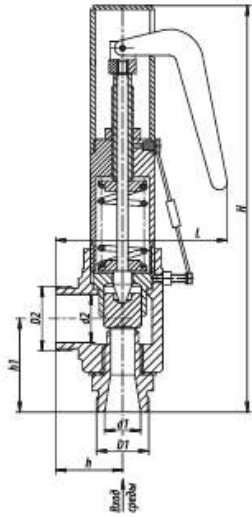


Figure 65. Direct-operating safety valve

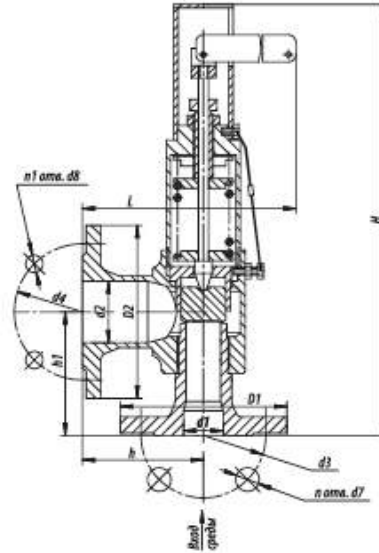


Figure 66. Direct-operating safety valve

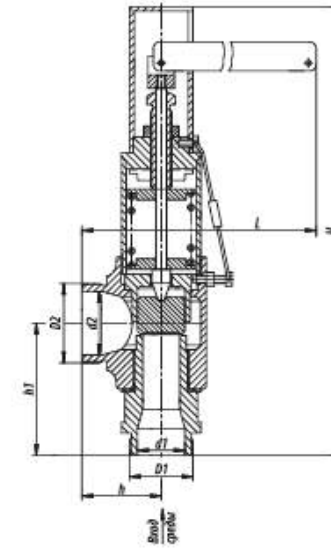


Figure 67. Direct-operating safety valve

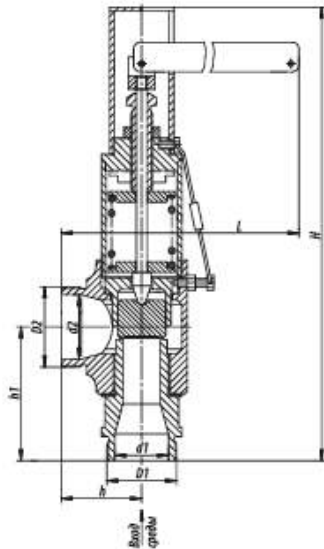


Figure 68. Direct-operating safety valve

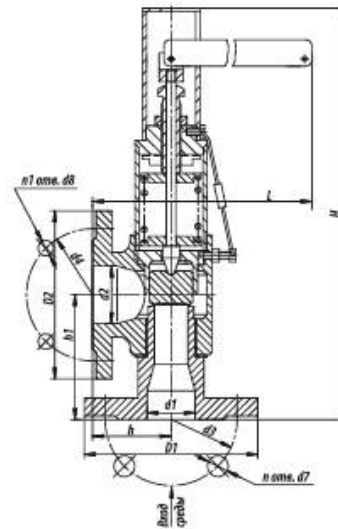


Figure 69. Direct-operating safety valve

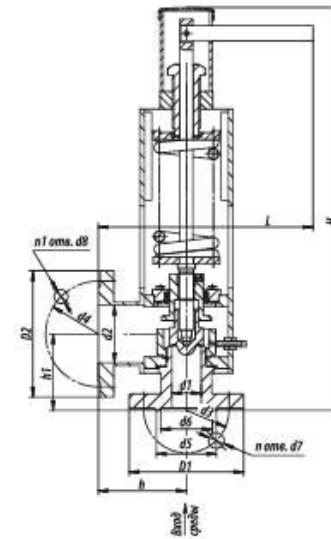


Figure 70. Direct-operating safety valve

Rotary Control Valve 6c

Valve 6c is designed to control flow and pressure of working fluid. Not to be used as a shut-off valve. Working fluid: Group 2 fluids and Group 2 gas (water, steam vapor and media except for inflammable, oxidizing, flammable, explosive, toxic and highly toxic gases, fluids and single-phase vapors, including their mixtures). Flow through the valve is regulated by changing flow area by means of rotating valve spindle against valve sleeve (seat). Operation by: built-in electric drive kind of flanged electric single-turn actuator or single-turn electric actuator manufactured by ABS ZEiM Automation (Cheboksary). Maximum rotation angle of valve spindle: 90°. Adjustable flow sections have the shape of the rectangular window in valve spindle and sleeve. Mounting position: on horizontal and vertical sections of pipeline in easy accessible areas for service and repair operations; spindle position for flanged electric single-turn actuator – horizontal; for single-turn electric actuator – vertical with drive upwards. Connection to pipeline: by welding. Depending on flow direction, fittings are mounted according to the arrow marked on the valve body.

Estimated water flow through the valve based on its capacity is determined by the formula:

$$G = 100 \cdot K_v \cdot \sqrt{\Delta P \cdot \rho}, \text{ t/h,} \quad \text{where:}$$

K_v – capacity, t/h

ΔP – pressure drop in control element, MPa

ρ – fluid density, kg/m³

Capacity against spindle rotation angle is shown in the graphs.

Products designed for max. pressure of PN100 according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C; PN63: from 6.3 MPa, 200°C to 2.3 MPa, 455°C.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 1, 2, 3 according to GOST 15150-69

Rotary control valves 6c are manufactured according to Specification 3740-002-15365247-2004.

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.



Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	Max. Mtq, Nm	Rev. of full travel	μ, min.	Max. Kv, m³/h	F, cm²	Inlet/outlet diameter, mm	D, mm	D1, mm	D2, mm	D3, mm	L, mm	H, mm	h, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure
6c-12-1-1	50	6.3	425	25JI	Water- Steam	100	0.25	0.46	42	18	50/50	50	50	60	60	350	560	396	МЭО-100/25-0,25Y-99K	0.17	25	67	94.5	34	1
6c-12-1-1Э		6.3	425	25JI		100	0.25	0.46	42	18	50/50	50	50	60	60	350	820	665	МЭОФ-100/25-0,25Y-99K	0.17	25	67	93	35	1
6c-12-1-2		6.3	425	25JI		100	0.25	0.46	25.5	11	50/50	50	50	60	60	350	560	396	МЭО-100/25-0,25Y-99K	0.17	25	67	94.5	34	1
6c-12-1-2Э		6.3	425	25JI		100	0.25	0.46	25.5	11	50/50	50	50	60	60	350	820	665	МЭОФ-100/25-0,25Y-99K	0.17	25	67	93	35	1
6c-13-1	80	10	450	25JI	Water- Steam	100	0.25	0.8	54.8	13.6	80/80	77	77	90	90	430	645	435	МЭО-100/25-0,25Y-99K	0.17	25	123	150.5	34	2
6c-13-1Э		10	450	25JI		100	0.25	0.8	54.8	13.6	80/80	77	77	90	90	430	910	700	МЭОФ-100/25-0,25Y-99K	0.17	25	123	149	35	2
6c-13-2	100	10	450	25JI	Water- Steam	100	0.25	0.74	71	19.5	100/100	93	93	108	108	430	635	345	МЭО-100/25-0,25Y-99K	0.17	25	112	139.5	34	2
6c-13-2Э		10	450	25JI		100	0.25	0.74	71	19.5	100/100	93	93	108	108	430	900	700	МЭОФ-100/25-0,25Y-99K	0.17	25	113	139	35	2
6c-13-3	150	10	450	25JI	Water- Steam	150	0.25	0.64	175	54.9	150/200	142	203	159	224	450	715	464	МЭО-250/25-0,25Y-99K	0.25	25	147	174.5	34	3
6c-13-3Э		10	450	25JI		150	0.25	0.64	175	54.9	150/200	142	203	159	224	450	980	730	МЭОФ-250/25-0,25Y-99K	0.25	25	145	173	35	3
6c-13-4	200	10	450	25JI	Water- Steam	150	0.25	0.48	198	82.4	200/250	195	2M	219	280	500	730	488	МЭО-250/25-0,25Y-99K	0.25	25	162	189.5	34	3
6c-13-4Э		10	450	25JI		150	0.25	0.48	198	82.4	200/250	195	254	219	280	500	1005	755	МЭОФ-250/25-0,25Y-99K	0.25	25	163	191	35	3
6c-13-5	250	10	450	25JI	Water- Steam	150	0.25	0.5	370	147.1	250/300	244	303	273	333	600	800	528	МЭО-250/25-0,25Y-99K	0.25	25	232	259.5	34	4
6c-13-5Э		10	450	25JI		150	0.25	0.5	370	147.1	250/300	244	303	273	333	600	1055	793	МЭОФ-250/25-0,25Y-99K	0.25	25	234	262	35	4
6c-12-4	300	6.3	425	25JI	Steam	150	0.25	0.45	388	170.6	300/350	303	354	333	386	590	820	532	МЭО-250/25-0,25Y-99K	0.25	25	261	288.5	34	5
6c-12-4Э		6.3	425	25JI		150	0.25	0.45	388	170.6	300/350	303	354	333	386	590	1090	805	МЭОФ-250/25-0,25Y-99K	0.25	25	260	288	35	5
6c-12-4-1		6.3	425	25JI		150	0.25	0.5	545	218	300/400	303	401	333	430	590	800	528	МЭО-250/25-0,25Y-99K	0.25	25	240	267.5	34	4
6c-12-4-1Э		6.3	425	25JI		150	0.25	0.5	545	218	300/400	303	401	333	430	590	1074	793	МЭОФ-250/25-0,25Y-99K	0.25	25	233	261	35	4

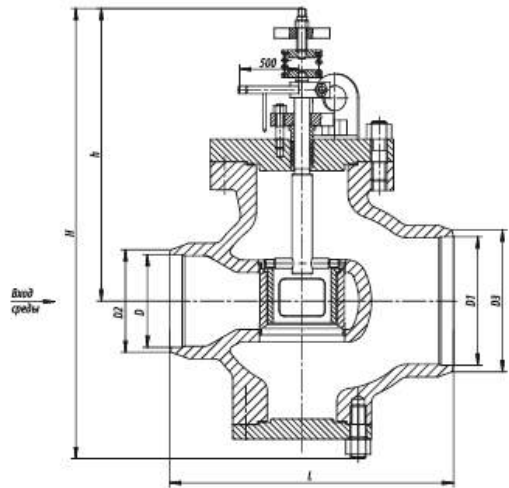


Figure 34. Control valve

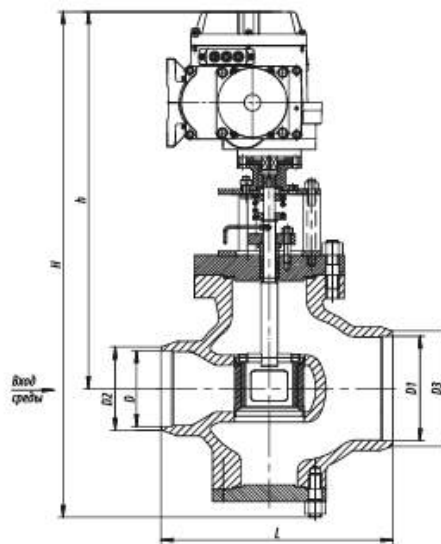
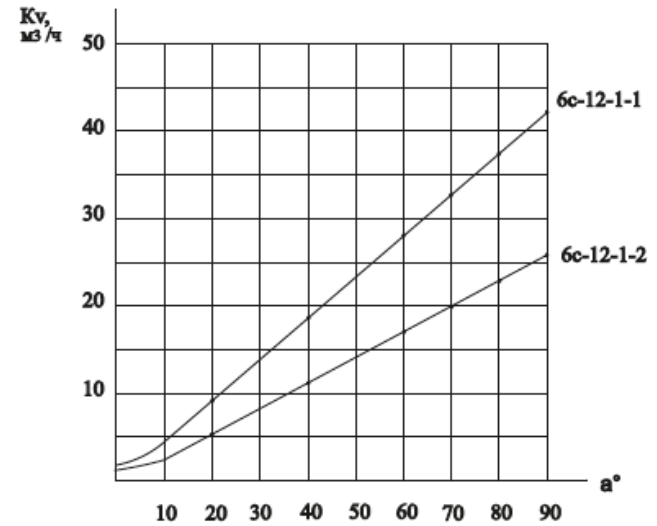
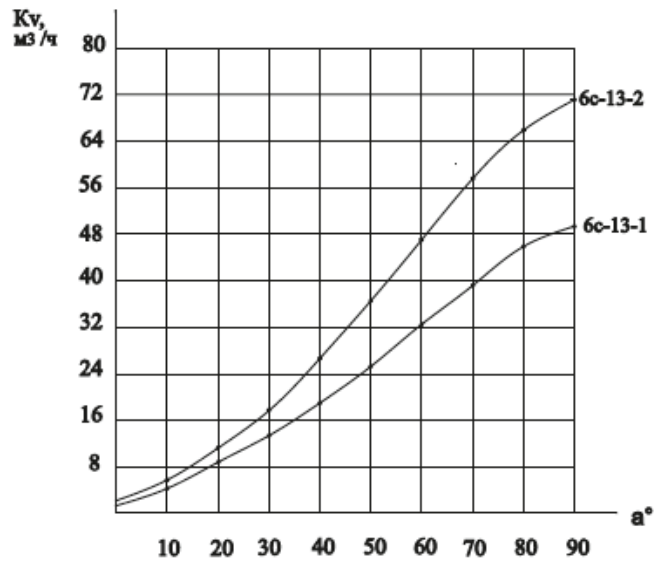


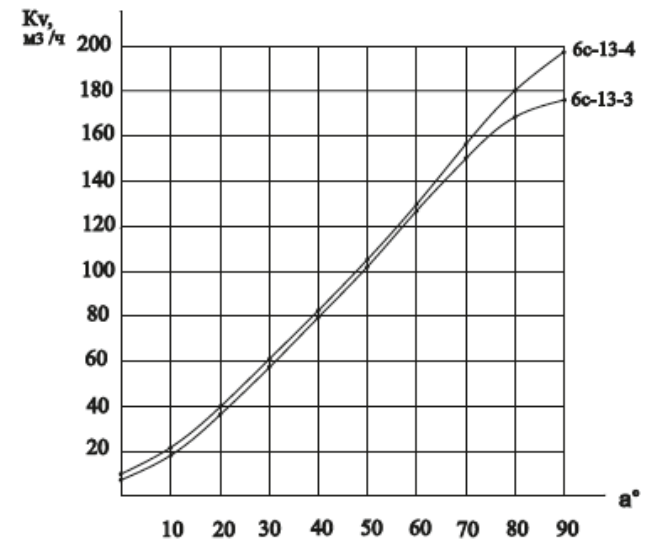
Figure 35. Control valve with built-in electric drive



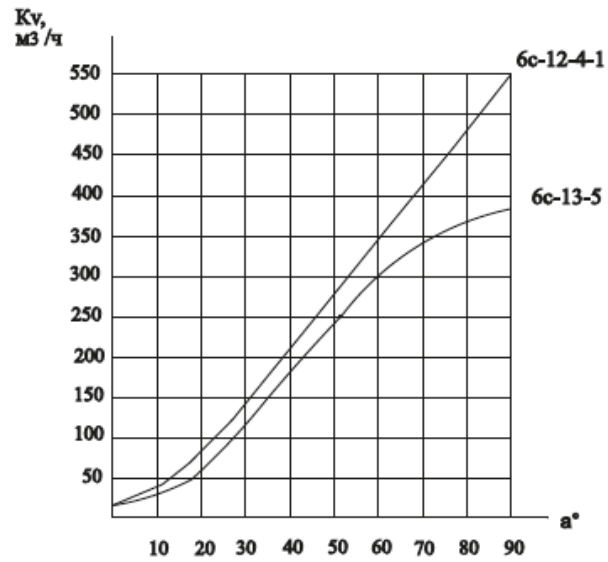
Graph 1



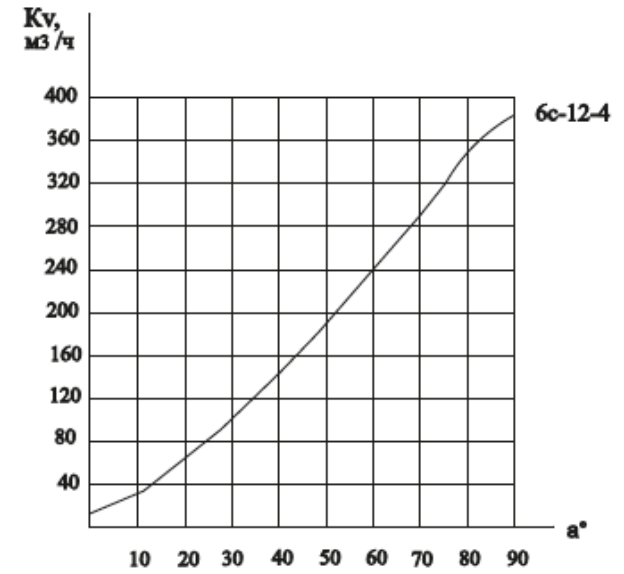
Graph 2



Graph 3



Graph 4



Graph 5

Needle Control Valve

By type of actuating drive and connection to pipeline, needle control valves are divided into:

- Lever-driven needle control valve. Operation: remote (automatically) by lever with flanged electric single-turn actuator through. Allowable pressure drop across the valve shall not exceed 1 MPa;
- Needle control valve (gate). Operation by: handwheel or drive with current proximity sensor of PEM type (by ABS ZEiM Automation), SAR type (by AUMA) or linear pneumatic drives produced by FESTO, VALBIA, AIR Torque, ROTORK, etc., and selected based on pressure of working fluid and air. The valve equipped with the drive shall be installed only on horizontal sections of pipelines with drive up;
- Angle control valve. Operation by: multi-turn built-in electric drive with current proximity sensor of PEM/MEM type (by ABS ZEiM Automation), SAR type (by AUMA), etc., or linear pneumatic drives of such brands as MEP (by ABS ZEiM Automation), REGADA, etc., selected based on working fluid pressure. The valve equipped with the drive shall be installed only on horizontal sections of pipelines with drive up.

Needle control valve is used as a flow regulator for Group 2 fluids or a throttle regulator for Group 2 gases (water, steam vapor and media except for inflammable, oxidizing, flammable, explosive, toxic and highly toxic gases, fluids and single-phase vapors, including their mixtures). Smooth control within the estimated capacity range is provided by needle form of the valve. Seat has a reinforcing built-up welding for enhanced hardness, erosion and corrosion resistance. Usually, the valve is mounted on cooling water injection pipelines in desuperheating stations, pressure-reducing desuperheating stations, fast-response pressure-reducing desuperheating stations, and process pipelines.

Valves are designed for outdoor and indoor installation at ambient temperature up to +70°C.

Connection to pipeline: by welding. Not to be used as shut-off valve.

Capacity against lifting height of valve needle is shown in the graphs below.

Products designed for max. pressure of PN 10 MPa according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C; PN63: from 6.3 MPa, 200°C to 2.3 MPa, 455°C; PN25 MPa: from 25 MPa, 200°C to 9 MPa, 455°C.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 1, 2, 3 according to GOST 15150-69

Needle control valves are manufactured according to Specification 2913-001-15365247-2004.

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.

At customer's request, valves DN10-DN65 may be manufactured with a quick-replacement seat made of titanium or nickel alloy.



Lever-Driven Needle Valve, Specification 2913-15365247-2004

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	Max. pressure drop, MPa	Max. Mtq, Nm	Travel, mm	Max. Kv, m³/h	Max. Q, m³/h, at critical differential	F, cm²	D, mm	D1, mm	L, mm	H, mm	h, mm	h1, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure
9c-5-1	10	10	350	20	Water-Steam	1.0	54	10	0.4	-	0.085	10	16	110	214	184	280	MЭO-100/25-0,25Y-99K	0.17	25	3.0	31	48	6
9c-5-1-2		10	350	20	Water-Steam	1.0	54	15	1.5	-	0.6	10	16	110	219	189	280	MЭO-100/25-0,25Y-99K	0.17	25	3.0	31	48	6
9c-5-2	20	10	350	20	Water-Steam	1.0	157	20	2.1	-	0.3	22	32	160	281	235	300	MЭO-250/25-0,25Y-99K	0.25	25	6.2	34	48	6
9c-5-2-2		10	350	20	Water-Steam	1.0	157	22	4.4	-	1.5	22	32	160	293	247	300	MЭO-250/25-0,25Y-99K	0.25	25	6.2	34	48	6
9c-5-2-2M		25	350	20	Water-Steam	1.0	340	22	4.4	-	1.5	22	32	160	293	247	300	MЭO-630/25-0,25Y-92K	0.20	25	6.2	80	48	6
9c-4-2	32	10	425	20	Water-Steam	1.0	117	22	3.8	-	0.67	32	38	230	316	269	300	MЭO-250/25-0,25Y-99K	0.25	25	7.2	35	48	6
1193-32-P		25*	545	12X1MΦ	Steam	-	4078**	25	-	39.8	75	60	31	220	575	490	420	MЭO-630/25-0,25Y-92K	0.20	10.0	32	106	48	8
815-40-PB	40	25*	545	12X1MΦ	Steam	-	2350**	44	-	25.0	3.2	31	60	190	497	440	455	MЭO-630/25-0,25Y-92K	0.20	12.4	19.5	94	51	9a
815-40-PB-01		15.7*	545	12X1MΦ	Steam	-	2350**	44	-	30.0	6.5	31	60	190	497	440	455	MЭO-630/25-0,25Y-92K	0.20	12.4	19.5	94	51	9a
1195-50-P	50	13.7*	560	12X1MΦ	Steam	-	2222**	25	-	32.9	7.5	50	78	250	595	500	455	MЭO-1600/25-0,25Y-92K	0.20	12.4	34.1	169	51	8
811-50-PB		13.7*	560	12X1MΦ	Steam	-	1350**	44	-	15.0	4	50	75	190	440	88	455	MЭO-630/25-0,25Y-92K	0.20	22	18.0	92	51	9a
9c-3-3-2		6.3	425	20	Water-Steam	1.0	82	30	5.75	-	0.9	50	57	240	264	196	300	MЭO-100/25-0,25Y-99K	0.17	25	7.0	35	49	7
9c-3-3-4		6.3	425	20	Water-Steam	1.0	82	30	10.25	-	2.39	50	57	240	264	196	300	MЭO-100/25-0,25Y-99K	0.17	25	7.0	35	49	7
808-65-PB		65	9.8*	540	12X1MΦ	Steam	-	2200**	48	-	28.5	10	62	76	190	520	450	455	MЭO-630/25-0,25Y-92K	0.20	22	21.4	95.4	51
808-65-PB-01	9.8*		540	12X1MΦ	Steam	-	2200**	48	-	12.0	4.76	62	76	190	520	450	455	MЭO-630/25-0,25Y-92K	0.20	22	21.4	95.4	51	96
9c-5-5-2	25		350	20	Water	1.0	630	30	10.25	-	2.4	58	76	250	595	500	460	MЭO-630/25-0,25Y-92K	0.20	25	40.0	114	50	9
1197-65-P	9.8*		540	12X1MΦ	Steam	-	630	30	-	23.77	7.5	62	76	250	595	500	460	MЭO-630/25-0,25Y-92K	0.20	25	40.0	114	50	8
1198-65-P	23.5*		250	20	Water	1.0	630	30	30	-	7.5	58	76	250	595	500	460	MЭO-630/25-0,25Y-92K	0.20	25	40.0	114	50	8

* Operating pressure, Po.

** Lever force, N.

Needle Control Valve, Specification 2913-001-15365247-2004

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	Max. pressure drop, MPa	Max. Mtq, Nm	Travel, mm	Max. Kv, m³/h	Max. Q, m³/h, at critical differential	F, cm²	D, mm	D1, mm	L, mm	H, mm	h, mm	h1, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure
10c-1M	10	10	450	20	Water-Steam	80	1.0	10	2.5	0.4	0.09	110	230	202	150	10	16	-	-	-	3.1	-	52	10
10c-5-1		25	350	20	Water-Steam	80	1.0	10	2.5	0.4	0.09	110	230	202	150	10	16	-	-	-	3.1	-	52	10
10c-5-1Э		25	350	20	Water-Steam	80	1.0	10	2.5	0.4	0.09	110	472	444	-	10	16	ПЭM-A32Y	0.18	25	3.1	25.6	53	10
10c-5-1-2		25	350	20	Water-Steam	80	1.0	15	3.5	1.5	0.6	110	230	202	150	10	16	-	-	-	3.1	-	52	10
10c-6-1		50	560	12X1MΦ	Steam	80	-	15	3.5	1.5	0.6	110	230	202	150	10	16	-	-	-	3.1	-	52	10
584-10-0		37.3*	280	20	Water	80	1.0	15	3.5	1.5	0.6	110	230	202	150	10	16	-	-	-	3.1	-	52	10
597-10-0a		25*	545	12X1MΦ	Steam	80	-	15	3.5	1.5	0.6	110	230	202	150	10	16	-	-	-	3.1	-	52	10
10c-5-2		25	350	20	Water-Steam	80	1.0	20	5	2.1	0.3	160	309	263	200	22	32	-	-	-	5.3	-	52	11
10c-5-2Э		25	350	20	Water-Steam	80	1.0	20	5	2.1	0.3	160	821	775	-	22	32	ПЭM-A29Y	0.18	25	5.6	27.6	53	11
10c-5-2-2		25	350	20	Water-Steam	80	1.0	22	5.5	4.4	1.75	160	309	263	200	22	32	-	-	-	5.3	-	52	11
10c-5-2-2Э	25	350	20	Water-Steam	80	1.0	22	5.5	4.4	1.75	160	821	775	-	22	32	ПЭM-A29Y	0.18	77	5.6	27.6	53	11	
1032-20-0	37.3*	280	20	Water	80	1.0	22	5.5	4.4	1.75	160	309	263	200	20	32	-	-	-	5.3	-	52	12	
10c-7-3Э	37.3*	280	20	Water	80	1.0	22	5.5	4.4	1.75	160	821	775	-	20	32	ПЭM-A29Y	0.18	77	5.6	27.6	53	12	
1031-20-0	25*	545	12X1MΦ	Steam	80	-	22	5.5	4.4	1.75	160	309	263	700	20	37	-	-	-	5.3	-	52	12	
10c-8-3Э	25*	545	12X1MΦ	Steam	80	-	22	5.5	4.4	1.75	160	821	775	-	20	32	ПЭM-A29Y	0.18	27	5.6	27.6	53	12	
10c-6-2	16.5*	560	12X1MΦ	Steam	80	-	22	5.5	4.4	1.75	160	309	263	200	22	32	-	-	-	5.3	-	52	11	
10c-6-23	16.5*	560	12X1MΦ	Steam	80	-	22	5.5	4.4	1.75	160	821	775	-	22	32	ПЭM-A29Y	0.18	27	5.6	27.6	53	11	
10c-5-2-1	25	10	450	20	Water-Steam	80	1.0	22	5.5	4.4	1.75	160	309	263	200	22	32	-	-	-	5.3	-	52	11
10c-5-2-1Э		10	450	20	Water-Steam	80	1.0	22	5.5	4.4	1.75	160	821	775	-	26	32	ПЭM-A29Y	0.18	27	5.6	27.6	53	11
10c-5-3	10	450	20	Water-Steam	80	1.0	22	5.5	3.8	0.67	230	320	273	200	32	38	-	-	-	6.0	-	52	11	

* Operating pressure, Po.

Needle Control Valve, Specification 2913-001-15365247-2004

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	Max. Mtq, Nm	Max. pressure drop, MPa	Travel, mm	No. of rev. of full travel	Max. Kv, m³/h	F, cm²	L, mm	H, mm	h, mm	d, mm	D, mm	D1, mm	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure	
10c-5-3Э	32	10	450	20	Water-Steam	80	1.0	22	5.5	3.8	0.67	230	821	775	-	32	38	ПЭМ-A29У	0.18	27	6.1	28.1	53	11	
10c-8-4		25*	545	12X1MΦ	Steam	250	-	33	5.5	3.8	0.67	220	557	468	320	31	57	-	-	-	40.0	-	52	13	
1193-32-Э		25*	545	12X1MΦ	Steam	250	-	33	5.5	3.8	0.67	220	1277	1188	-	31	57	ПЭМ-БОУ	0.55	12	31.0	72.0	53	13	
10c-5-4-1	50	25	350	20	Water-Steam	250	1.0	30	5	5.75	0.9	220	557	468	320	49	60	-	-	-	40.0	-	52	12	
10c-5-4-1Э		25	350	20	Water-Steam	250	1.0	30	5	5.75	0.9	220	1277	1188	-	49	60	ПЭМ-БОУ	0.55	12	38.0	79.0	53	12	
10c-5-4-2		25	350	20	Water-Steam	250	1.0	30	5	10.25	2.39	220	557	468	320	49	60	-	-	-	40.0	-	52	12	
10c-5-4-23		25	350	20	Water-Steam	250	1.0	30	5	10.25	2.39	220	1277	1188	-	49	60	ПЭМ-БОУ	0.55	12	38.0	79.0	53	12	
10c-3-3		6.3	425	20	Water-Steam	80	1.0	25	6.25	5.75	0.9	240	348	280	200	50	57	-	-	-	8.0	-	52	12	
10c-3-3Э		6.3	425	20	Water-Steam	80	1.0	25	6.25	5.75	0.9	240	821	775	-	50	57	ПЭМ-A29У	0.18	15	9.0	31.0	53	12	
10c-3-3-4		6.3	425	20	Water-Steam	80	1.0	25	6.25	10.25	2.39	240	348	280	200	50	57	-	-	-	8.0	-	52	12	
10c-3-3-4Э		6.3	425	20	Water-Steam	80	1.0	25	6.25	10.25	2.39	240	821	775	-	50	57	ПЭМ-A29У	0.18	15	9.0	31.0	53	12	
10c-5-4-3		17*	350	20	Water	250	1.0	30	5	29.6	8.4	220	1277	1188	-	49	57	ПЭМ-БОУ	0.55	12	38.0	79.0	53	16	
1195-50-3		13.7*	560	12X1MΦ	Steam	250	-	30	5	29.6	8.4	250	1277	1188	-	50	76	ПЭМ-БОУ	0.55	12	38.0	79.0	53	16	
976-65-M		65	23.5*	250	20	Water	250	1.0	35	6	22.6	6.4	250	628	533	320	58	76	-	-	-	44.0	-	52	15
976-65-3			10	350	20	Water	250	1.0	35	6	44.5	12.6	250	1287	1198	-	58	76	ПЭМ-БОУ	0.55	14.4	40.0	81.0	53	14
1197-65-3			9.8*	540	12X1MΦ	Steam	250	-	30	5	30	7.5	250	1287	1198	-	62	76	ПЭМ-БОУ	0.55	12	40.0	81.0	53	17
1198-65-3	23.5*		250	20	Water	250	1.0	30	5	30	7.5	250	1287	1198	-	58	76	ПЭМ-БОУ	0.55	12	40.0	81.0	53	16	

* Operating pressure, Po.

Angle Control Valve, Specification 2913-001-15365247-2004

Product ID	DN, mm	Working fluid	Pp, MPa	Fluid Tmax, °C	Max. pressure drop, MPa	Max. Mtq, Nm	Travel, mm	Max. Kv, m³/h	F, cm²	H, mm	h, mm	h1, mm	d, mm	D, mm	D1, mm	d1, mm	Body material, steel	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure		
1438-20-Э	20	Water	37.3	280	4	20kN*	29	2.9	0.58	905	115	70	20	32	45	28	20	МЭП-25000/100-50-У-99	0.3	58	10	35	54	18		
1438-20-Э-01		Water																							2.7	0.51
1438-20-Э-02		Water																							2.0	0.41
1438-20-Э-03		Water																							1.8	0.38
1438-20-Э-04		Water																							1.4	0.3
1438-20-Э-05		Water																							0.8	0.17
1438-20-Э-06		Water			2.9	1.33																				
1438-20-Э-07		Water			2.7	1.27																				
1438-20-Э-08		Water			2.0	0.84																				
1438-20-Э-09		Water			1.8	0.78																				
1438-20-Э-10		Water			1.4	0.64																				
1438-20-Э-11		Water			0.8	0.39																				
1438-20-Э-12		Water			0.5	0.25																				
1438-20-Э-13	Water	0.3	0.15																							
1464-40-Э	40	Water	37.3	280	4	25kN*	49	22.0	3.78	970	150	100	39	60	60	39	20	МЭП-25000/100-50-У-99	0.3	98	22	47	54	19		
1464-40-Э-01		Water																							12.0	2.38
1464-40-Э-02		Water																							9.0	1.78
1464-40-Э-03		Water																							8.0	1.59
1464-40-Э-04		Water																							5.5	1.09
1464-40-Э-05	Water	4.5	0.89																							
1436-65-Э	65	Water	23.5	250	4	20kN*	49	22.0	3.78	970	150	100	58	76	76	58	20	МЭП-25000/100-50-У-99	0.3	98	22	47	54	19		
1436-65-Э-01		Water																							12.0	2.38
1436-65-Э-02		Water																							9.0	1.78
1436-65-Э-03		Water																							8.0	1.59

* Operating pressure, Po.

** Lever force, N.

Product ID	DN, mm	Working fluid	Pp, MPa	Fluid Tmax, °C	Mix. Pressure drop, MPa	Max. Mtq, Nm	Travel, mm	Max. Kv, m³/h	F, cm²	H, mm	h, mm	h1, mm	d, mm	D, mm	D1, mm	d1, mm	Body material, steel	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure		
1436-65-Э-04	65	Water	23.5	250	4	20kN*	49	5.5	1.09	970	150	100	58	76	76	58	20	МЭП-25000/100-50-У-99	0.3	98	22	52	54	19		
1436-65-Э-05		Water						4.5	0.89																	
1438-20-P	20	Water	37.3	280	4	1.9kN**	29	2.9	0.58	502	115	70	20	32	45	28	20	МЭО-630/25-0,25У-92К	0.2	8	15.9	90	54a	18		
1438-20-P-01		Water						2.7	0.51																	
1438-20-P-02		Water						2.0	0.41																	
1438-20-P-03		Water						1.8	0.38																	
1438-20-P-04		Water						1.4	0.3																	
1438-20-P-05		Water						0.8	0.17																	
1438-20-P-06		4			Water	16	1.9kN**	16	115	70	20	32	45	28	20	МЭО-630/25-0,25У-92К	0.2	8	15.9	90	54a	18				
1438-20-P-07					Water																		2.9	1.33		
1438-20-P-08					Water																		2.7	1.27		
1438-20-P-09					Water																		2.0	0.84		
1438-20-P-10					Water																		1.8	0.78		
1438-20-P-11					Water																		1.4	0.64		
1438-20-P-12					Water																		0.8	0.39		
1438-20-P-13	Water	0.5	0.25																							
11c-7-2Э	20	Water	37.3	280	4	80	29	2.9	0.58	1174	115	70	20	32	45	28	20	ПЭМ-А32У	0.18	37	7.6	29.6	55	18		
11c-7-2Э-01		Water						2.7	0.51																	
11c-7-2Э-02		Water						2.0	0.41																	
11c-7-2Э-03		Water						1.8	0.38																	
11c-7-2Э-04		Water						1.4	0.3																	
11c-7-2Э-05		Water						0.8	0.17																	
11c-7-2Э-06		12			Water	16	80	16	1174	115	70	20	32	45	28	20	ПЭМ-А32У	0.18	20	7.6	29.6	55	18			
11c-7-2Э-07					Water																			2.9	1.33	
11c-7-2Э-08					Water																			2.7	1.27	
11c-7-2Э-09					Water																			2.0	0.84	
11c-7-2Э-10					Water																			1.8	0.78	
11c-7-23-11					Water																			1.4	0.64	
110-7-23-12					Water																			0.8	0.39	
11c-7-23-13	Water	0.5	0.25																							
11c-7-43	40	Water	37.3	1260	150	100	39	60	60	39	20	ПЭМ-Б2У	0.55	41	37	78	55	19								
11c-7-4Э-01		Water																	22.0	3.78						
11c-7-4Э-02		Water																	12.0	2.38						
11c-7-4Э-03		Water																	9.0	1.78						
11c-7-4Э-04		Water																	8.0	1.59						
11c-7-4Э-05		Water																	5.5	1.09						
11c-7-63	65	Water	23.5	250	4	300	49	22.0	3.78	126C	150	100	58	76	76	58	20	ПЭМ-Б2У	0.55	41	37	78	55	19		
11c-7-63-01		Water																							12.0	2.38
11c-7-63-02		Water																							9.0	1.78
11c-7-63-03		Water																							8.0	1.59
11c-7-63-04		Water																							5.5	1.09
11c-7-63-05		Water																							4.5	0.89
879-65-Pa	23.5	Water	250	15.7	1580**	24	2.1	0.78	-	-	-	-	-	-	-	20	МЭО-630/25-0,25У-92К	0.2	20	40	114	56	19a			
879-65-Pa -01		Water																						2.8	1	
879-65-Pa -02		Water																						4.3	1.55	
879-65-Pa -03		Water																						5.6	2	
879-65-Pa -04		Water																								

* Stem force.

** Lever force, N.

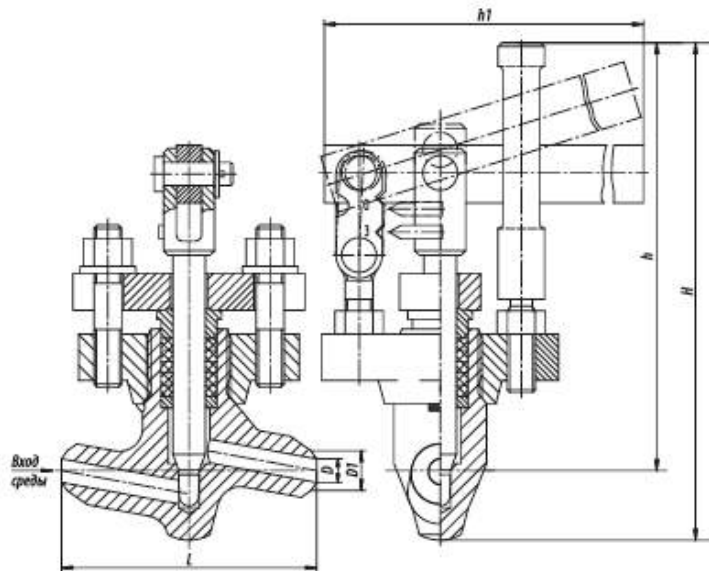


Figure 48. Control valve

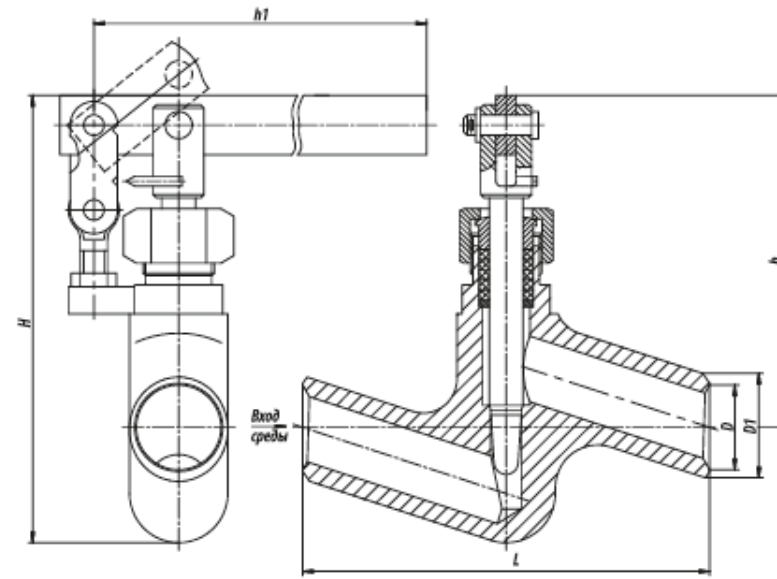


Figure 49. Control valve

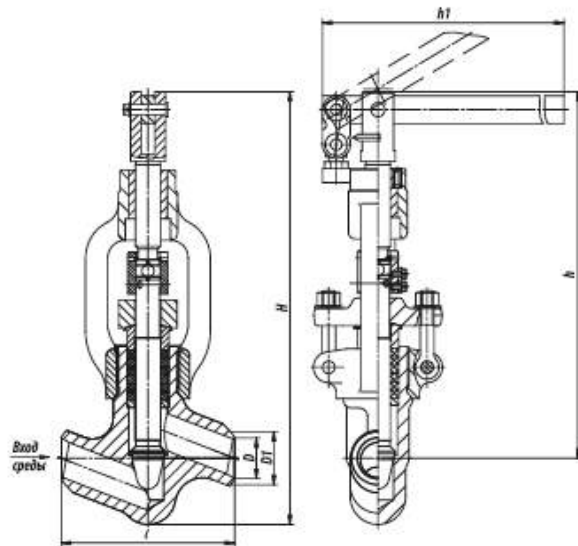


Figure 50. Control valve

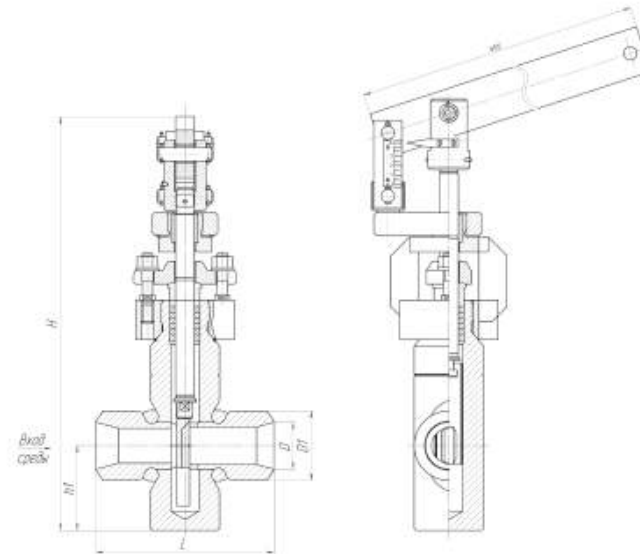


Figure 51. Control valve

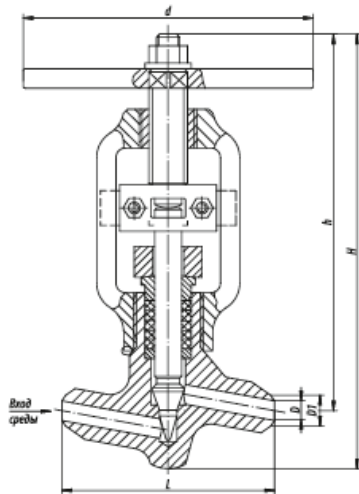


Figure 52. Control valve with handwheel

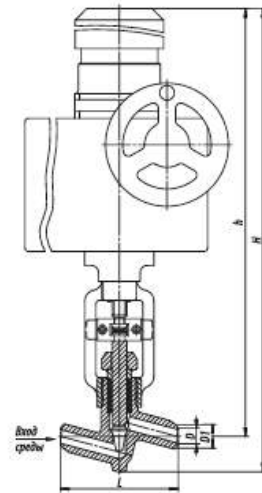


Figure 53. Control valve with built-in electric drive

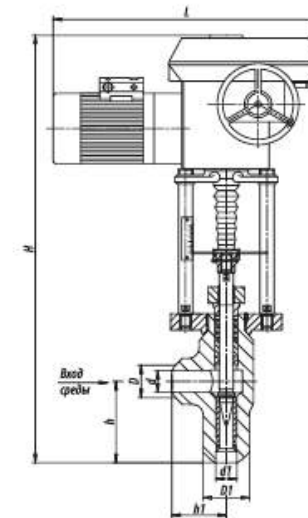


Figure 54. Control valve

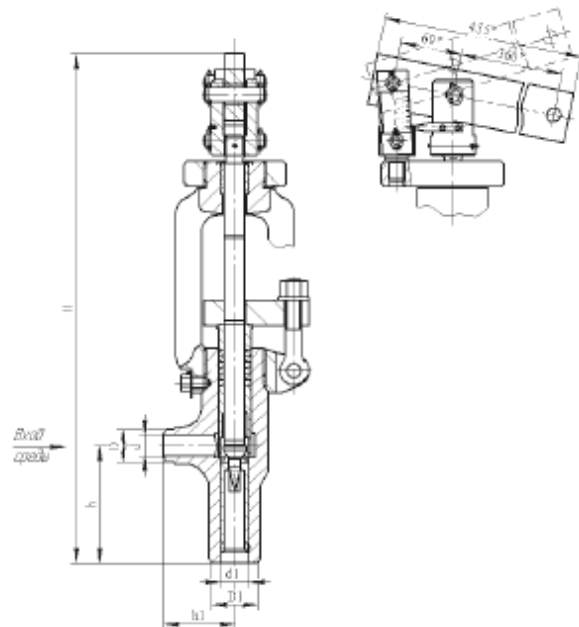


Figure 54a. Control valve

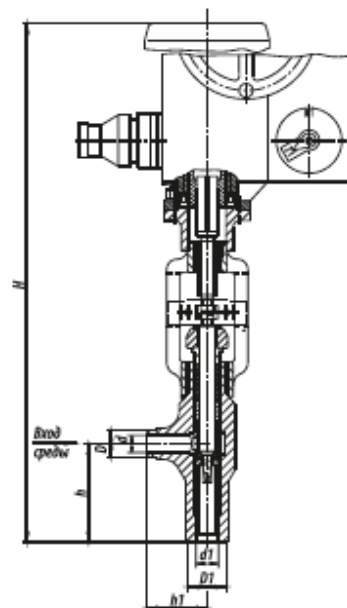


Figure 55. Control valve

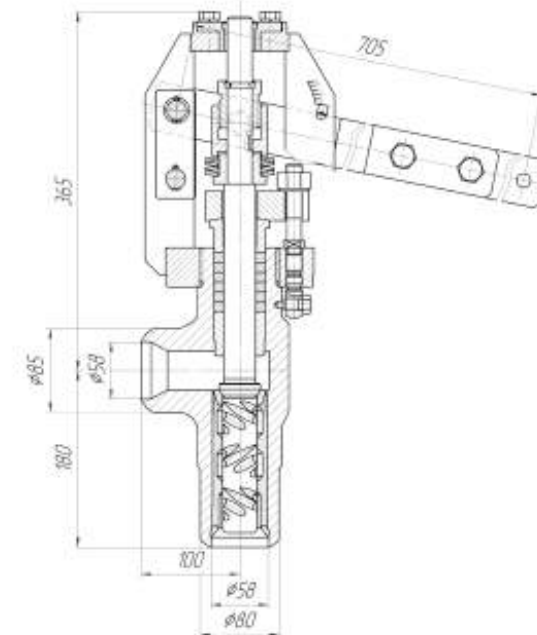
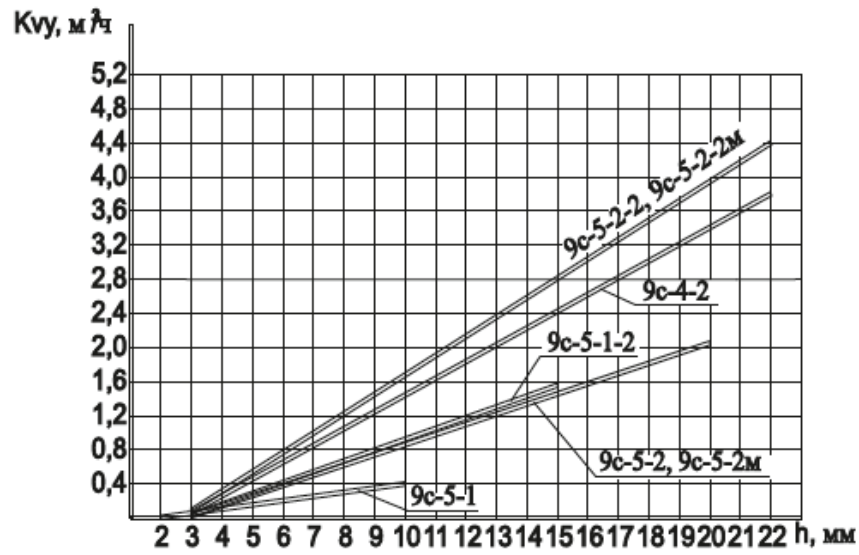
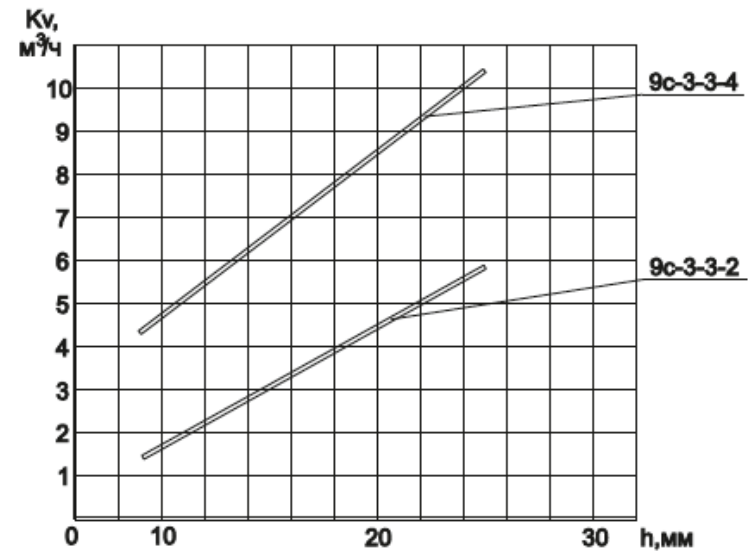


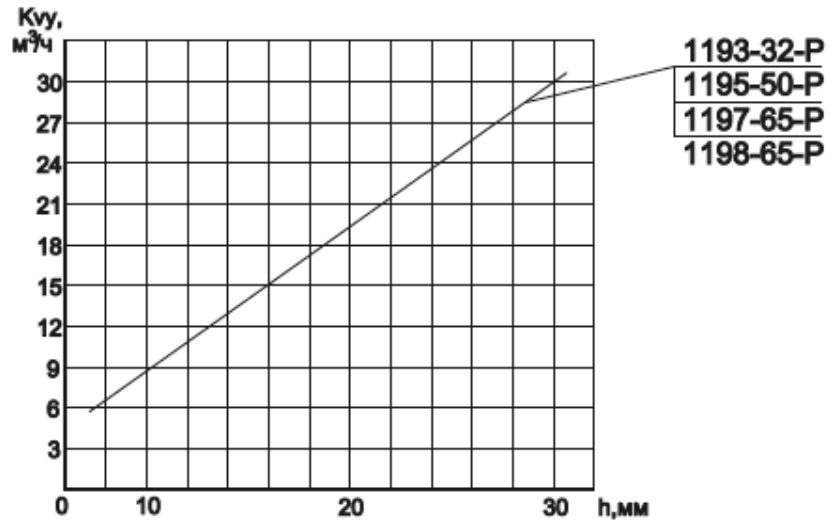
Figure 56. Cascade control valve



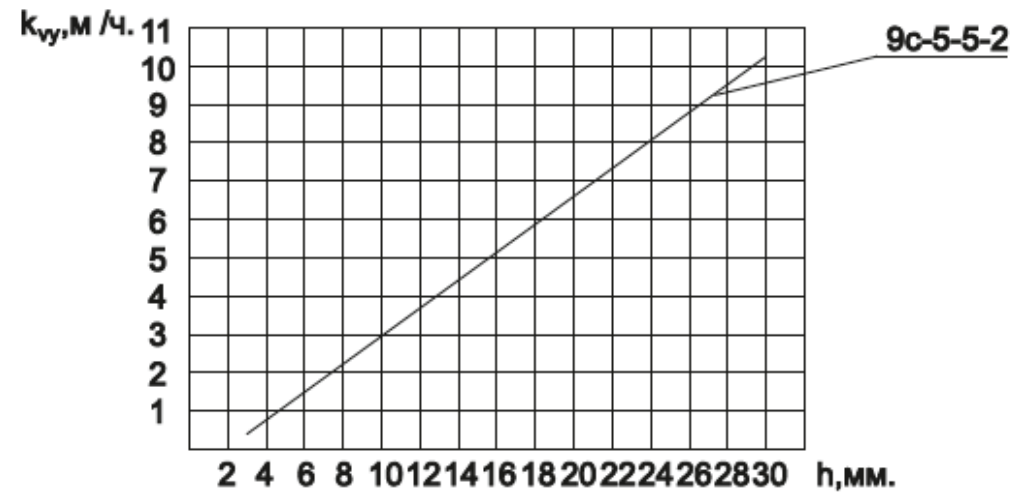
Graph 6



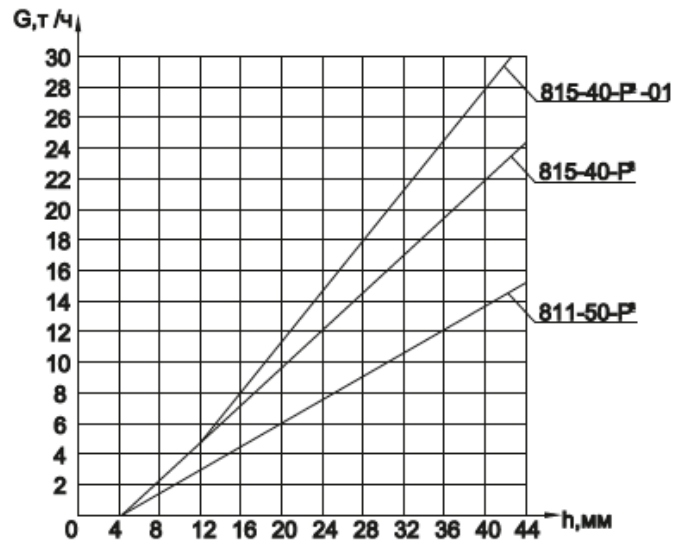
Graph 7



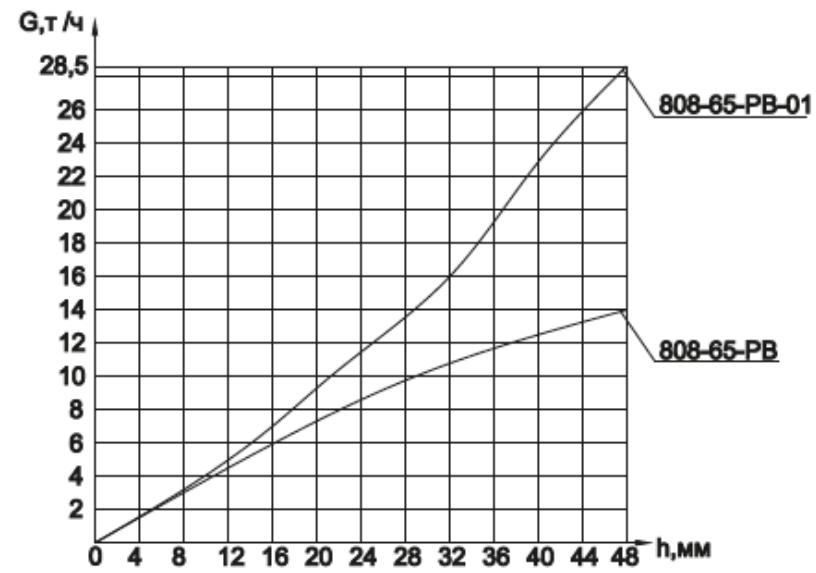
Graph 8



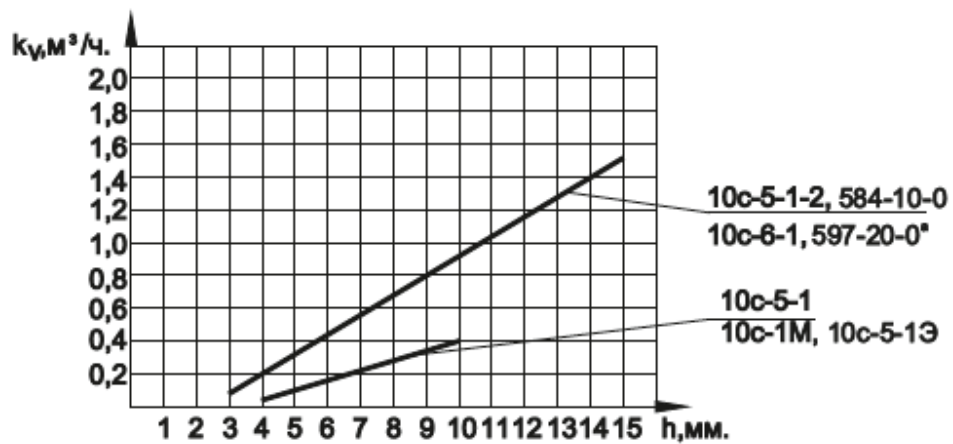
Graph 9



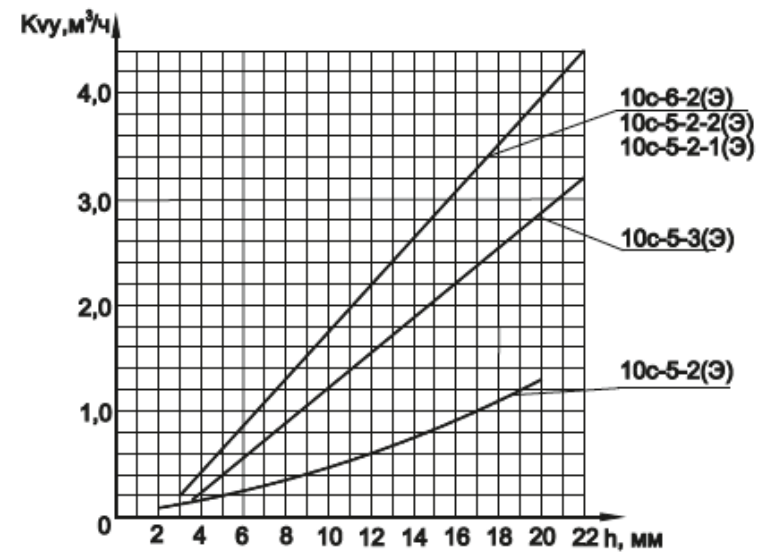
Graph 9a



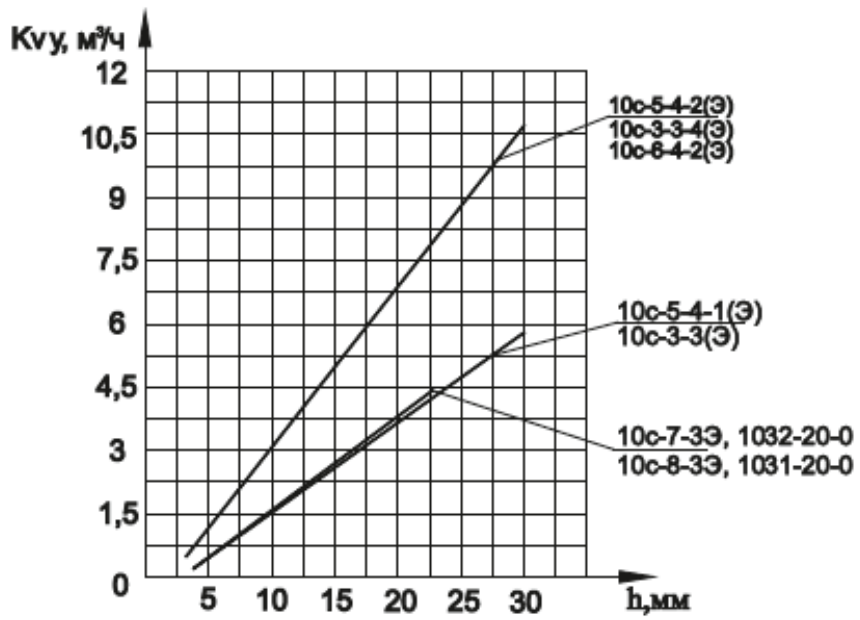
Graph 9b



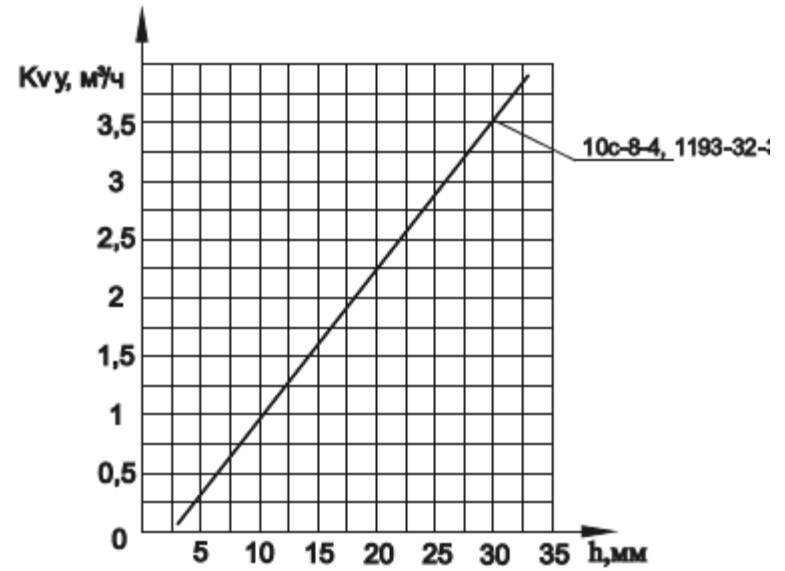
Graph 10



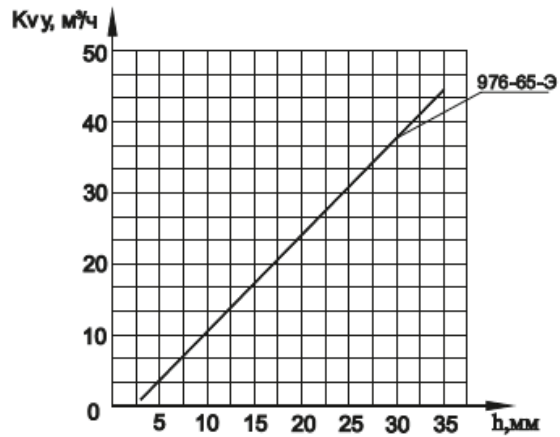
Graph 11



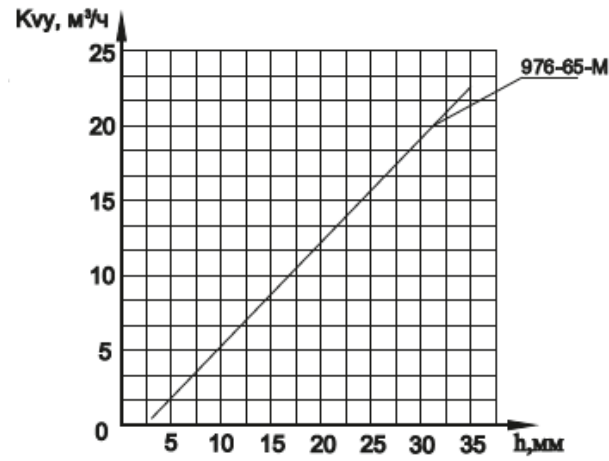
Graph 12



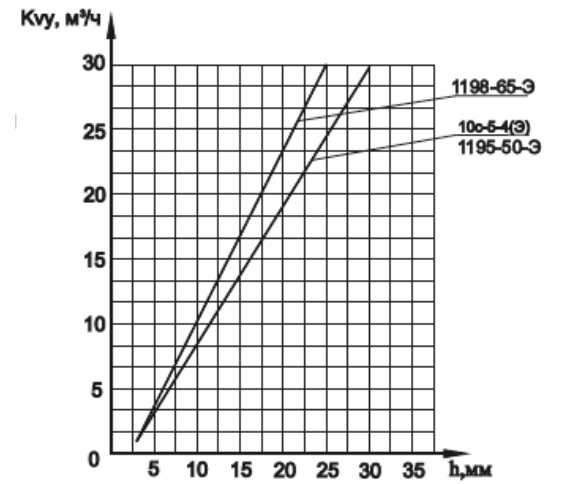
Graph 13



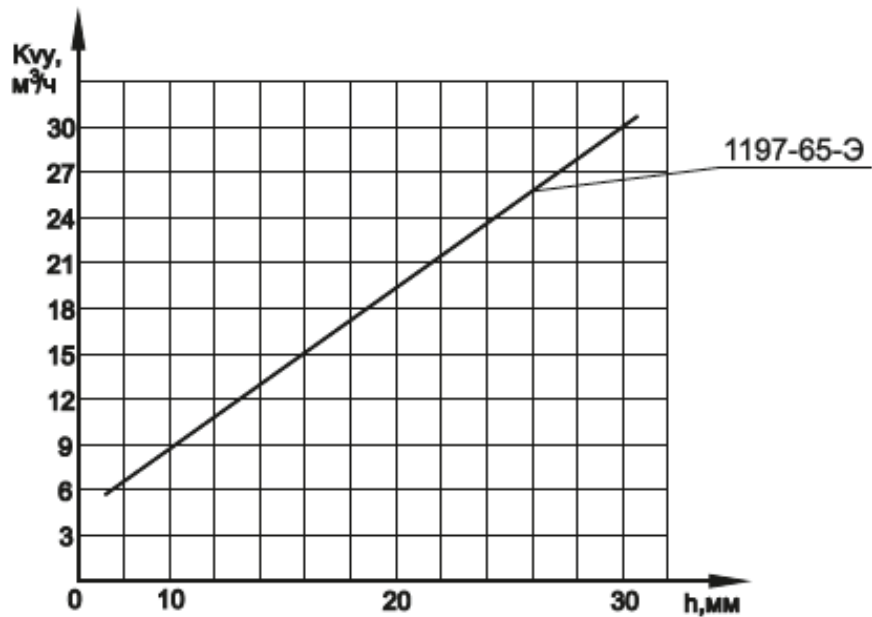
Graph 14



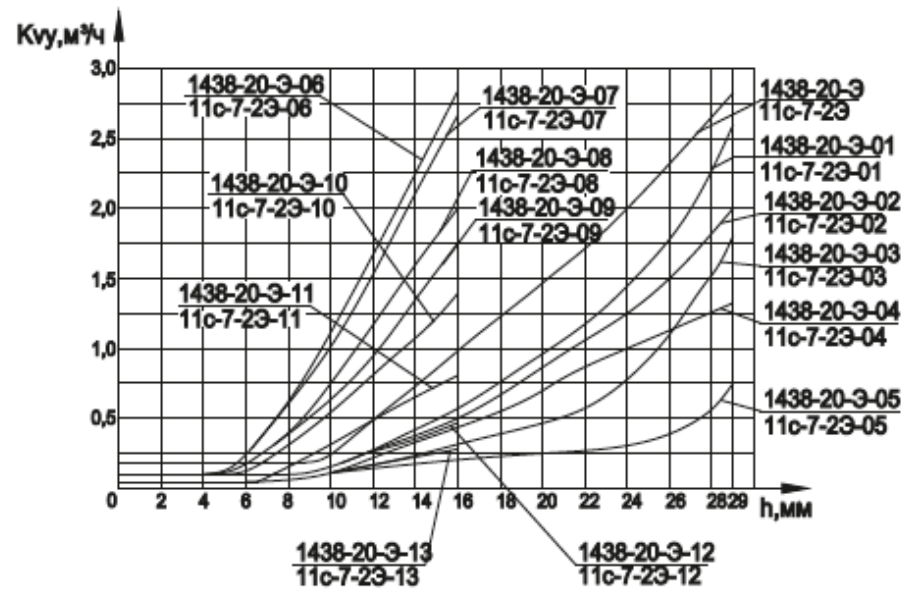
Graph 15



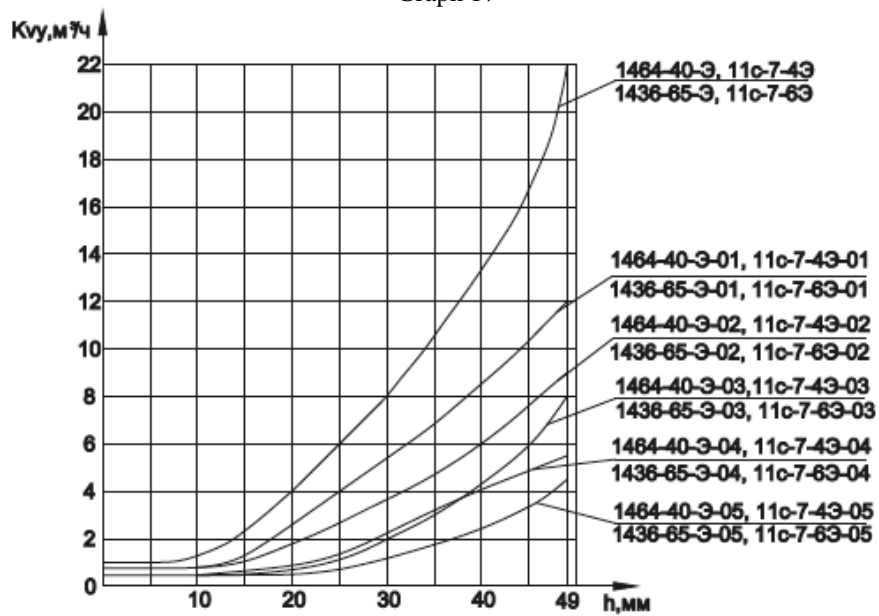
Graph 16



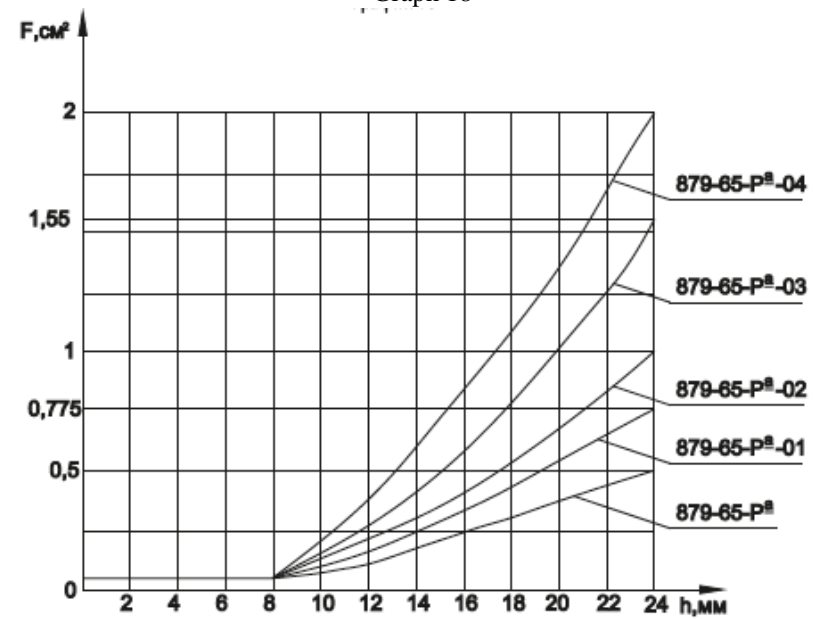
Graph 17



Graph 18



Graph 19



Graph 19a

Double-Seated Control Valve 14c

Valve 14c is designed to control flow or pressure of working fluid. Not to be used as a shut-off device. Working fluid: Group 2 fluids and Group 2 gases (water, steam vapor and media except for inflammable, oxidizing, flammable, explosive, toxic and highly toxic gases, fluids and single-phase vapors, including their mixtures). Control is performed by changing flow area by means of translational motion of a double-seated valve spindle. Operation by: multi-turn built-in electric drive with current proximity sensor of ПЕМ-Б2У type (by ABS ZEiM Automation), SAR type (by AUMA), etc.

Capacity against lifting height of valve spindle is shown in the graphs.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.

Double-Seated Control Valve, Specification 3740-002-15365247-2004

Product ID	DN, mm	Working fluid	Inlet/outlet diameter, mm	PN, MPa	Fluid T _{max} , °C	Max. Mtq, Nm	Travel, mm	No. of rev. of full travel	Max. Kv, m ³ /h	F, cm ²	L, mm	H, mm	h, mm	D, mm	D1, mm	Body material, steel	Electric drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Figure	Graph
14C-73-25Э	300	Water-Steam	300/300	2.5	425	250	120	20	1585	450	800	2042	1626	303	325	20	ПЭМ-Б2У	0.55	48	626	667	64	26
14C-73-25-1Э	300	Water-Steam	300/300	2.5	425	250	120	20	660	192	800	2042	1626	303	325	20	ПЭМ-Б2У	0.55	48	617	658	64	26
14C-73-25-3Э	300	Water-Steam	300/300	2.5	425	250	120	20	915	260	800	2042	1626	303	325	20	ПЭМ-Б2У	0.55	48	619	660	64	26
14C-76-25Э	400	Water-Steam	400/400	2.5	425	250	120	20	1900	540	800	2093	1651	401	426	20	ПЭМ-Б2У	0.55	48	664	705	64	26

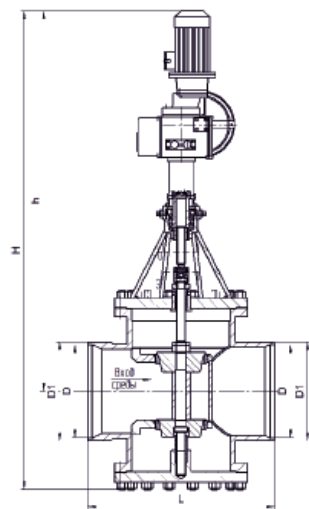
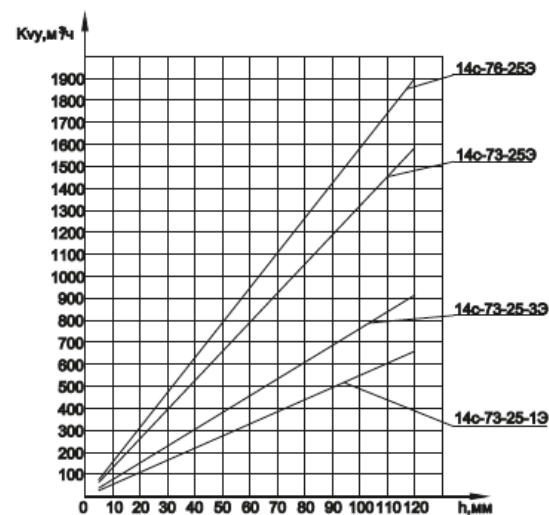


Figure 64. Double-seated control valve



Graph 26

Special Control Valve

Special control valve is a custom-designed valve according to specific customer's requirements. Valve design: shut-off control valve and control valve. This valve is used as a throttle valve for fast-response pressure-reducing desuperheating stations and pressure-reducing desuperheating stations designed for steam exhaust at shutdowns and start-ups of power units, sharp decrease in turbine load, and overpressure in pipelines. Operation by: lever with single-turn electric actuator, as well as by multi-turn built-in electric drive with current proximity sensor of PEM type (by ABS ZEiM Automation), SAR type (by AUMA), etc. Connection to pipeline: by welding.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 1, 2, 3 according to GOST 15150-69

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.



Special Control Valve, Specification 2913-001-15365247-2004

Product ID	DN, mm	PN, MPa	Fluid T _{max} , °C	Body material, steel	Working fluid	Body type	Max. Mtq, Nm	Travel, mm	No. of rev. of full travel	Max. Kv, m ³ /h	F, cm ²	L, mm	H, mm	h, mm	Inlet/outlet diameter, mm	D1, mm	D2, mm	D3, mm	D4, mm	Electric drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Figure	Graph
18c-2-2	80	2.5*	450	20	Water-Steam	Full-flow	96	-	0.25	63	20	430	524	338	80/80	79	95	79	95	МЭО-100/25-0.25Y-99K	0.17	25	96	123.5	71	28
18c-2-3	100	2.5*	450	20	Water-Steam	Full-flow	96	-	0.25	100	33	430	524	338	100/100	97	108	97	108	МЭО-100/25-0.25Y-99K	0.17	25	100	127.5	71	28
18c-2-4-1	150	2.5*	450	20	Water-Steam	Full-flow	130	-	0.25	160	40	500	650	385	150/200	142	159	203	219	МЭО-250/25-0.25Y-99K	0.25	25	202	229.5	71	29
18c-2-4-2		2.5*	450	20	Water-Steam	Full-flow	130	-	0.25	200	50	500	650	385	150/200	142	159	203	219	МЭО-250/25-0.25Y-99K	0.25	25	202	229.5	71	29
18c-2-9	400	1.6	350	20	Water-Steam	Full-flow	580	-	0.25	1064	264	900	1050	560	400/400	410	426	410	426	МЭО-630/25-0.25Y-92K	0.20	25	680	754	71	31
18c-8-2-01Э	150	13.7*	560	12X1MΦ	Steam	Angle	300	12	2	250	100	305	1717	1406	150/250	156	219	248	273	ПЭМ-Б2У	0.55	5	462	503	74	32
18c-4-4-1Э	150	13.7*	560	12X1MΦ	Steam	Full-flow	300	50	8	245	97	500	1690	1406	150/225	156	230	219	273	ПЭМ-Б5У	1.1	10	437	478	72	30
18c-2-6Э	250	10	450	20	Steam	Full-flow	300	50	8	250	100	500	1588	1328	250/300	244	303	273	325	ПЭМ-Б5У	1.1	10	397	438	72	30
18c-5-4Э	250	6.3	425	25J1	Water-Steam	Full-flow	600	190	32	1585	254	650	1490	1280	250/250	254	275	254	275	ПЭМ-Б3-630-25-36У	3.1	77	312	400	73	27
18c-5-4Э-01		6.3	425	25J1	Water-Steam	Full-flow	600	190	32	915	179	650	1490	1280	250/250	254	275	254	275	ПЭМ-Б3-630-25-36У	3.1	77	312	400	73	27
18c-5-4Э-02		6.3	425	25J1	Water-Steam	Full-flow	600	190	32	660	136	650	1490	1280	250/250	254	275	254	275	ПЭМ-Б3-630-25-36У	3.1	77	312	400	73	27
18c-6-4Э		10	450	25J1	Water-Steam	Full-flow	1000	190	32	1585	254	650	1490	1280	250/250	244	275	254	275	ПЭМ-Б35-1000-25-36У	3.1	77	312	400	73	27
18c-6-4Э-01	250	10	450	25J1	Water-Steam	Full-flow	1000	190	32	915	179	650	1490	1280	250/250	244	275	254	275	ПЭМ-Б35-1000-25-36У	3.1	77	312	400	73	27
18c-6-4Э-02		10	450	25J1	Water-Steam	Full-flow	1000	190	32	660	136	650	1490	1280	250/250	244	275	254	275	ПЭМ-Б35-1000-25-36У	3.1	77	312	400	73	27
18c-5-5Э		6.3	425	25J1	Water-Steam	Full-flow	600	190	32	1585	254	750	1490	1280	300/300	303	325	303	325	ПЭМ-Б3-630-25-36У	3.1	77	357	445	73	27
18c-5-5Э-01	300	6.3	425	25J1	Water-Steam	Full-flow	600	190	32	915	179	750	1490	1280	300/300	303	325	303	325	ПЭМ-Б3-630-25-36У	3.1	77	357	445	73	27
18c-5-5Э-02		6.3	425	25J1	Water-Steam	Full-flow	600	190	32	660	136	750	1490	1280	300/300	303	325	303	325	ПЭМ-Б3-630-25-36У	3.1	77	357	445	73	27
18c-6-5Э	300	10	450	25J1	Water-Steam	Full-flow	1000	190	32	1585	254	750	1490	1280	300/300	290	331	290	331	ПЭМ-Б35-1000-25-36У	3.1	77	357	445	73	27
18c-6-5Э-01		10	450	25J1	Water-Steam	Full-flow	1000	190	32	915	179	750	1490	1280	300/300	290	331	290	331	ПЭМ-Б35-1000-25-36У	3.1	77	357	445	73	27
18c-6-5Э-02		10	450	25J1	Water-Steam	Full-flow	1000	190	32	660	136	750	1490	1280	300/300	290	331	290	331	ПЭМ-Б35-1000-25-36У	3.1	77	357	445	73	27

* Operating pressure, Po.

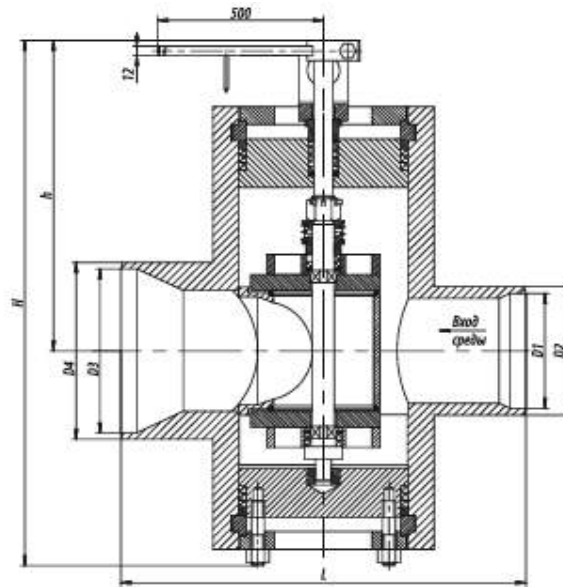


Figure 71. Control valve

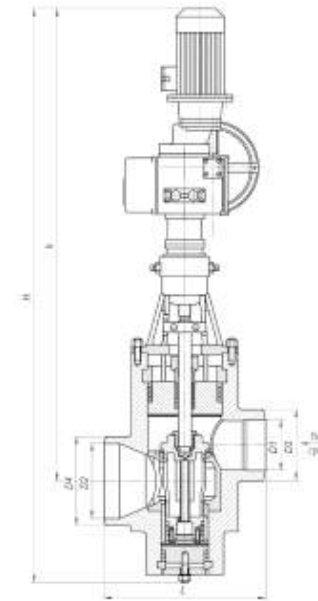


Figure 72. Control valve

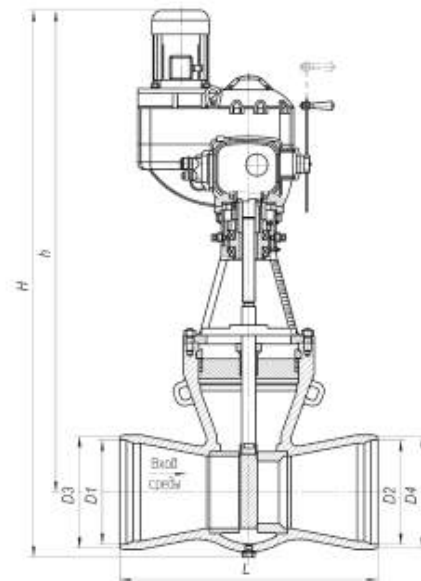


Figure 73. Control valve

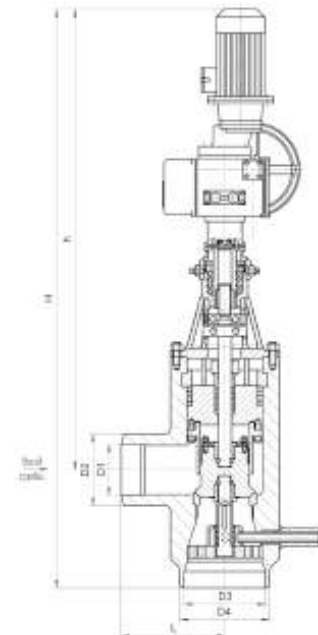
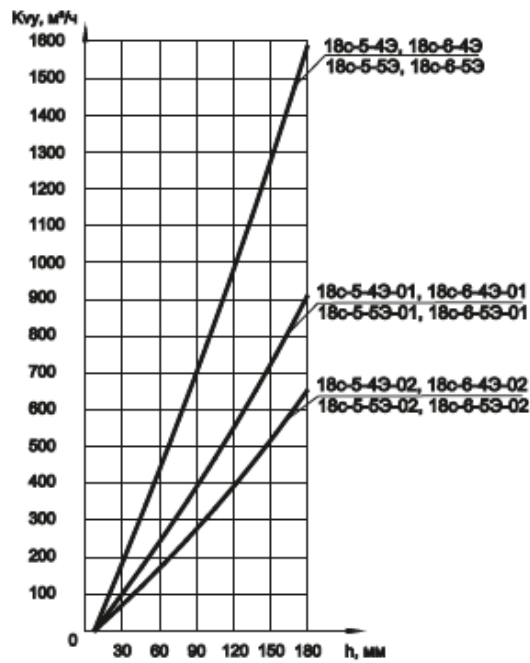
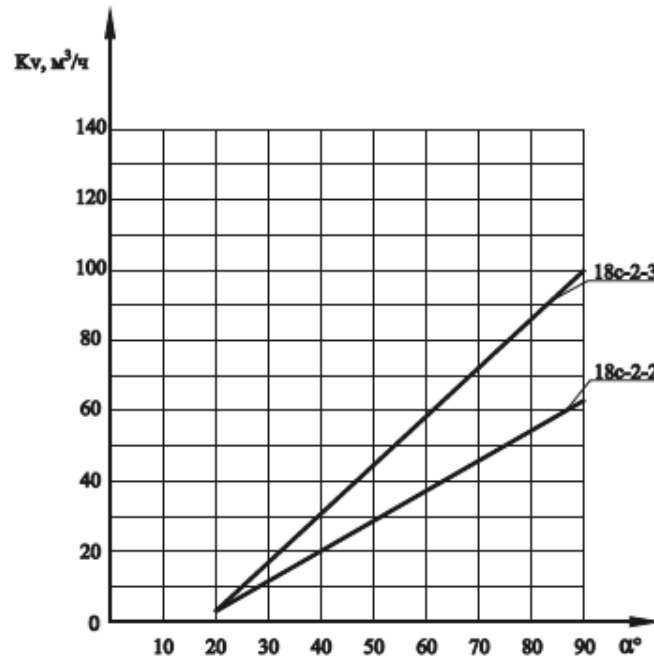


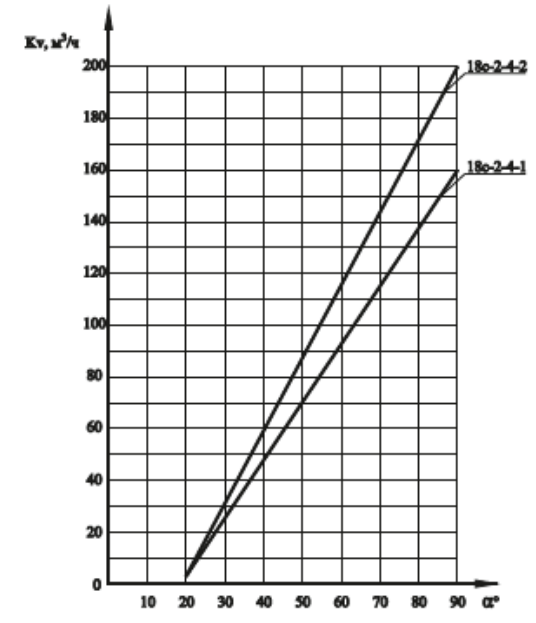
Figure 74. Control valve



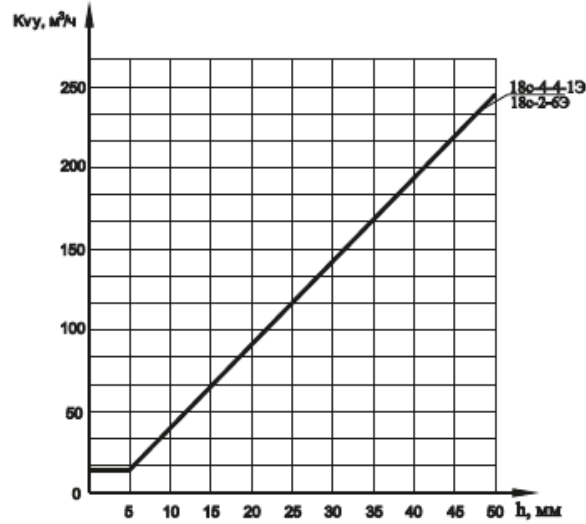
Graph 27



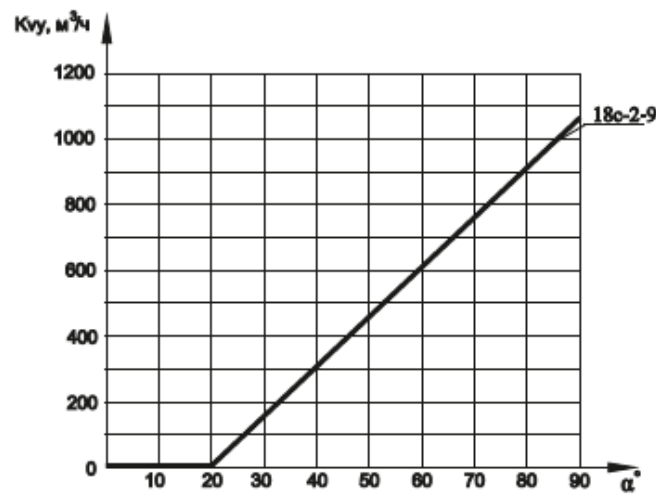
Graph 28



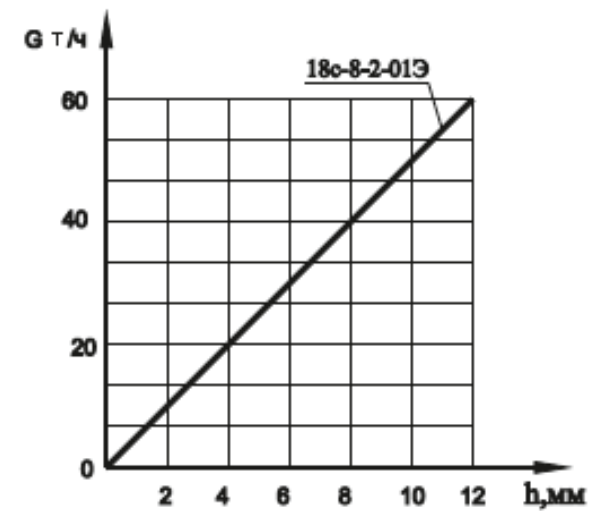
Graph 29



Graph 30



Graph 31



Graph 32

Slide Control Valve

Slide control valve is designed to control flow and pressure of Group 2 fluids and Group 2 gases (water, steam vapour) by changing flow area through translational motion of the slide gate. Operation by: multi-turn built-in electric drive with current proximity sensor of PEM type (by ABS ZEiM Automation), SAR type (by AUMA), etc. Connection to pipeline: by welding. Maximum pressure drop across the valve is limited. Mounting position: on horizontal and vertical sections of pipeline with upstream flow direction.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.



Slide Control Valve, Specification 3740-002-15365247-2004

Product ID	DN, mm	Pp, MPa	Fluid Tmax, °C	Max. steam flow at critical pressure drop, t/h	Max. Kv, m³/h	F, cm²	Body material, steel	Working fluid	Max. Mtq, Nm	Travel, mm	No. of rev. of full travel	Max. pressure differential, MPa	L, mm	H, mm	h, mm	D, mm	D1, mm	Electric drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Figure	Graph	
1085-100-Э	100	9.8	540	71.5	-	24	15X1M1Φ	Steam	153	60	10	-	400	1604	1454	112	146	ΠЭМ-Б2У	0.55	24	192	233	75	34	
1087-100-Э				92.5	-	24																			
1087-100-Э-01		13.7	560	60	-	15.5	15X1M1Φ	Steam	208	60	10	-	400	1604	1454	94	146	ΠЭМ-Б2У	0.55	24	192	233	75	34	
1087-100-Э-02				35	-	9.5																			
1086-100-Э		23.5	250	-	36.3	9.5	20	Water	217	60	10	7	400	1604	1454	109	146	ΠЭМ-Б2У	0.55	24	192	233	75	33	
1086-100-Э-01				-	96.7	24																			
1084-100-Э ^а				-	15.7	4																			
1084-100-Э ^а -01		37.3	280	-	24.2	6	20	Water	356.7	60	10	7	400	1217	1067	98	146	ΠЭМ-Б35-1000-25-36У	2.2	24	192	279	75	33	
1084-100-Э ^а -02				-	36.3	9.5																			
1084-100-Э ^а -03				-	97.8	24																			
995-150-Э ^а	250			-	78.5																				
995-150-Э ^а -01	150	9.8	540	102	-	37.8	15X1M1ΦЛ	Steam	370	140	17.5	-	600	1715	1425	163	210	ΠЭМ-Б35-1000-25-36У	2.2	42	484	571	75	35	
995-150-Э ^а -02				170	-	53.4																			
977-175-Э ^а				302.6	-	78.5																			
977-175-Э ^а -01	175	13.7	560	148	-	37.8	15X1M1ΦЛ	Steam	507	140	17.5	-	600	1715	1425	156	235	ΠЭМ-Б35-1000-25-36У	2.2	42	484	571	75	35	
977-175-Э ^а -02				940	-	53.4																			
976-175-Э ^б				23.5	250	-																			96.7
976-175-Э ^б -01			-	217.7	53.4																				
870-200-Э ^м	200	37.3	280	-	84.7	20.5	25Л	Water	240	100	12.5	4	700	1405	1245	203	290	ΠЭМ-Б35-1000-25-36У	2.2	30	368	455	75	37	

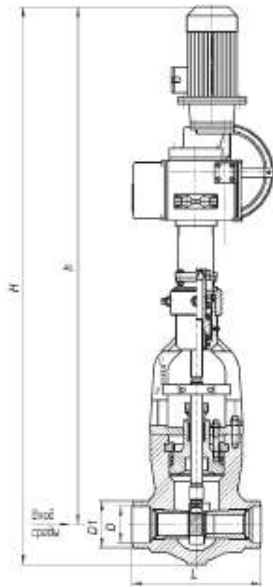
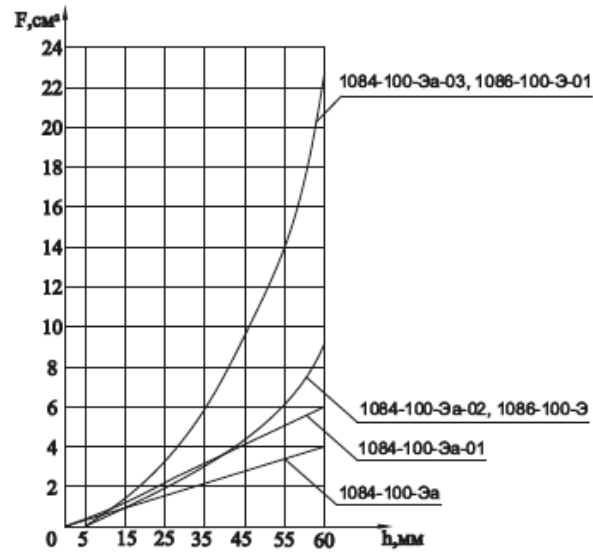
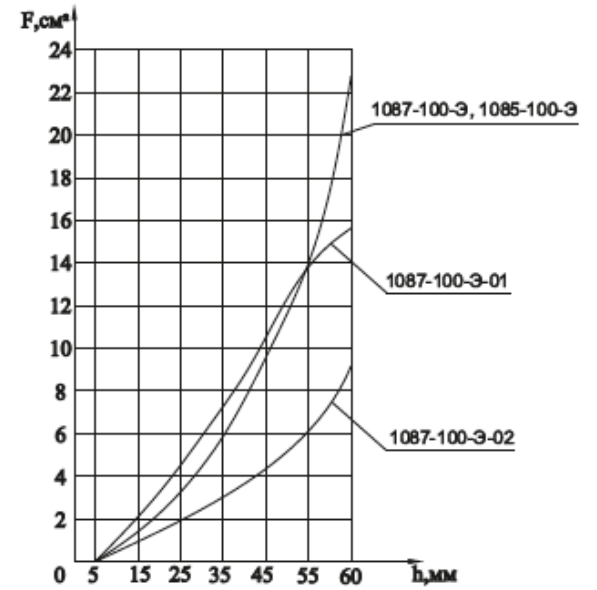


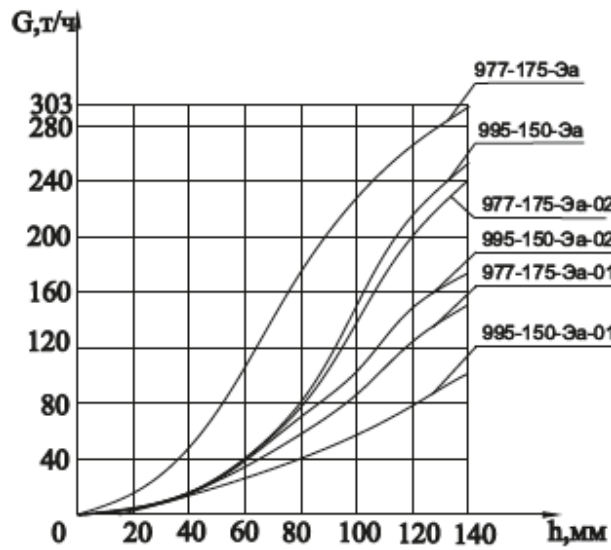
Figure 75. Slide control valve



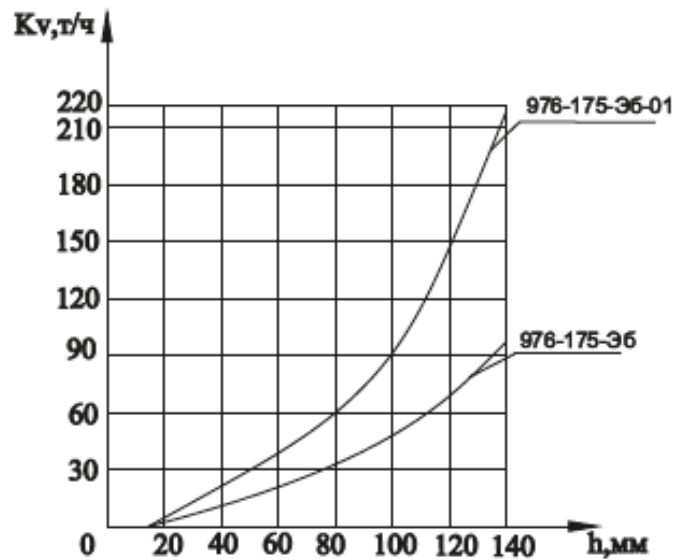
Graph 33



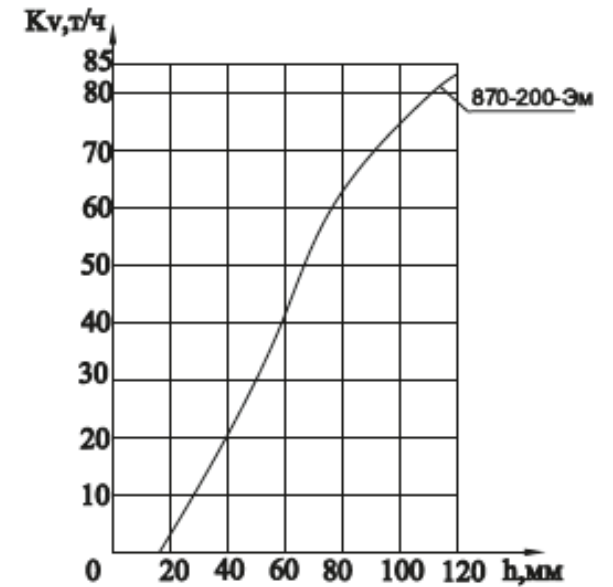
Graph 34



Graph 35



Graph 36



Graph 37

Shut-Off Throttle Valve

Shut-off throttle valve serves as a controllable throttle valve for fast-response pressure-reducing desuperheating stations to reduce flow pressure in combination with throttle valves mounted successive to shut-off valves. This valve is designed to exhaust open steam at start-ups and shutdowns of power unit when required steam volume for the turbine is less than steam capacity of the steam generator, as well as at steam overpressure within the system, and sudden decrease in turbine load.

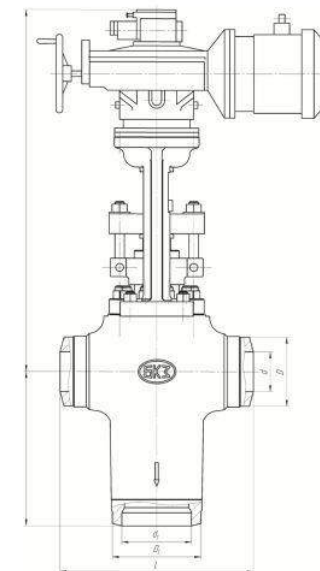
Operation by: multi-turn built-in electric drive. Connection to pipeline: by welding. Maximum pressure drop across the valve shall not exceed 24.0 MPa. Mounting position: on horizontal sections of pipeline with flow direction towards spindle through side nozzles.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

Shut-off throttle valves are manufactured according to Specification 2913-001-15365247-2004.

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.



Shut-off Throttle Valve, Specification 2913-001-15365247-2004

Product ID	DN, mm	PN, MPa	Fluid Tmax, °C	Body material, steel	Working fluid	Inlet/ outlet diameter, mm	Capacity, Kv, m ³ /N	Steam flow at operating parameters, t/h	Travel, mm	Max. Mtq, Nm	Revolutions	Operation by	Electric drive ID	N, kW	Travel time, s	d, mm	D, mm	d1, mm	D1, mm	L, mm	H, mm	A, mm	Weight, kg	Figure
950-100/150-Э	100	25	545	Steel	15X1M1ΦII	100/150	95	150	40	1110	5	E	794-Э-0a	3.2	14	97	172	170	255	600	1320	450	700	76
950-100/150-Э-01		25				100/150	55	115	40	1110	5	E	794-Э-0a	3.2	14	97	172	170	255	600	1320	450	701	76
950-150/250-Э	150	25				150/250	220	370	80	2000	8	E	876-Э-0-02	6	23	151	262	263	335	730	1415	585	1412	76
950-150/250-Э-01		25				150/250	220	370	80	2000	8	E	876-Э-0	11.8	11.5	151	262	263	335	730	1415	585	1457	76
950-150/250-Э-02	200	25				150/250	170	286	80	2000	8	E	876-Э-0-02	6	23	151	262	263	335	730	1415	585	1413	76
950-200/250-Э		25				200/250	455	900	80	3096	8	E	797-ЭP-0	11.8	12	208	345	251	345	850	1485	600	2361	76

Figure 76. Shut-off throttle valve

Counterbalanced Control Valve

Counterbalanced control valve is designed to control flow of feedwater and be mounted in source points of steam generators. May be used as all-mode control element. Designed for operating pressure differential up to 17.6 MPa.

Operation by: lever with single-turn electric actuator or flanged electric single-turn actuator.

Connection to pipeline: by welding. Mounting position: on horizontal and vertical sections of pipeline.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.

Counterbalanced control valves are manufactured according to Specification 2913-001-15365247-2004.



Counterbalanced Control Valve, Specification 2913-001-15365247-2004

Product ID	DN, mm	Pp, MPa	Fluid Tmax, °C	Working fluid	Body material, steel	Capacity Kv, m ³ /h	Max. Mtq, Nm	Max. pressure differential, MPa	Operation by	Electric drive ID	N, kW	Travel time, s	L, mm	D, mm	DI, mm	H, mm	A, mm	Weight w/o drive, kg	Total weight with drive, kg	Figure	Graph	
1416-100-P	100	23.5	250	Water	15°C	95	630	17.6	H	МЭО-630/10-0,25Y-92K	0.3	10	400	109	146	780	125	183	318	77	38	
1416-100-P-01		23.5	250			68.3	630	17.6	H	МЭО-630/10-0 25Y-92K	0.3	10	400	109	146	780	125			77	38	
1416-100-P-02		23.5	250			38.5	630	17.6	H	МЭО-630/10-0,25Y-92K	0.3	10	400	109	146	780	125			77	38	
1416-175-P	175	23.5	250			134	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	630	182	230	1244	205	614	749	77	39	
1416-175-P-01		23.5	250			99	1600	17.6	H	МЭО-1600/25-0 25Y-96K	0.49	25	630	182	230	1244	205			77	39	
1416-175-P-02		23.5	250			77	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	630	182	230	1244	205			77	39	
1416-225-P	225	23.5	250			217	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	650	226	285	1396	210	953	1088	77	40	
1416-225-P-01		23.5	250			146	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	650	226	285	1396	210			77	40	
1416-225-P-02		23.5	250			125	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	650	226	285	1396	210			77	40	
1416-225-P-03		23.5	250			77	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	650	226	285	1396	210			77	40	
1416-225-P-04		23.5	250			95	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	650	226	285	1396	210			77	40	
1416-225-Э		23.5	250			217	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	650	226	285	1952	210			968	1092	78
1416-225-Э-01		23.5	250			146	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	650	226	285	1952	210	78	40			
1416-225-Э-02		23.5	250			125	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	650	226	285	1952	210	78	40			
1416-225-Э-03		23.5	250			77	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	650	226	285	1952	210	78	40			
1416-225-Э-04		23.5	250			95	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	650	226	285	1952	210	78	40			
1416-250-P		250	23.5			250	233	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	900	271	340	1396	210	963			1098
1416-250-P-01			23.5			250	167	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	900	271	340	1396	210		77	41	
1416-250-P-02	23.5		250			146	1600	17.6	H	МЭО-1600/25-0,25Y-96K	0.49	25	900	271	340	1396	210	77		41		
1416-250-Э	23.5		250			233	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	900	271	340	1686	210	1040		1164	78	
1416-250-Э-01	23.5		250			167	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	900	271	340	1686	210		78		41	
1416-250-Э-02	23.5		250			146	1600	17.6	E	МЭОФ-1600/25-0,25Y-96K	0.3	25	900	271	340	1686	210		78		41	

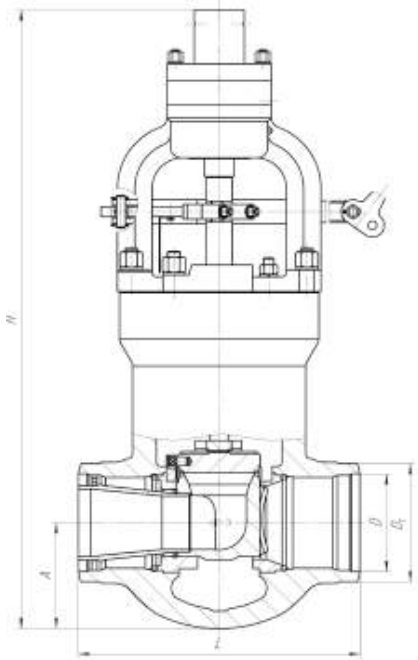


Figure 77. Counterbalanced control valve

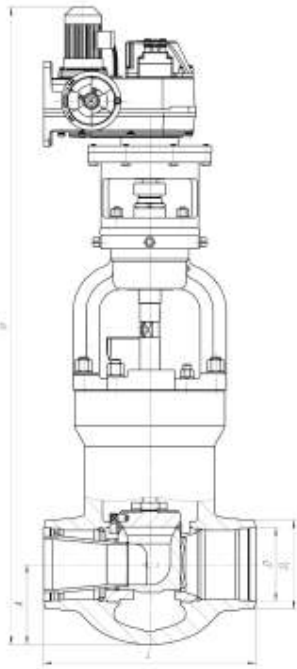
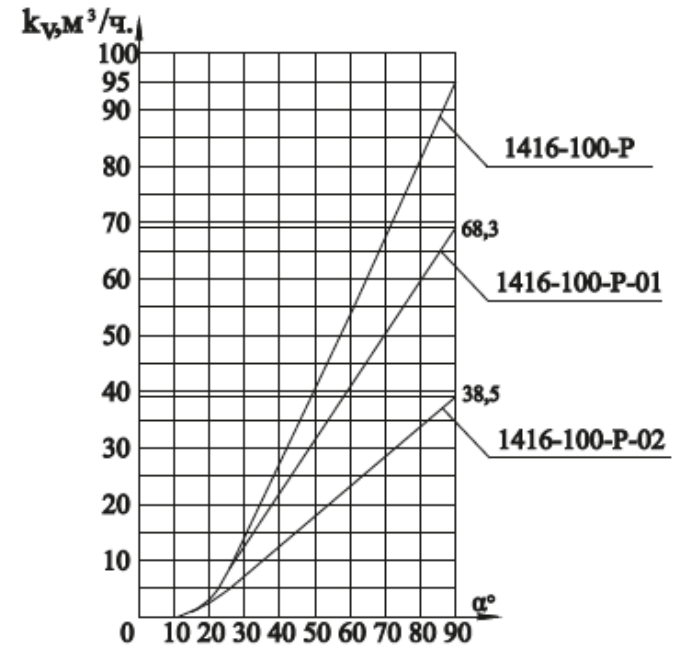
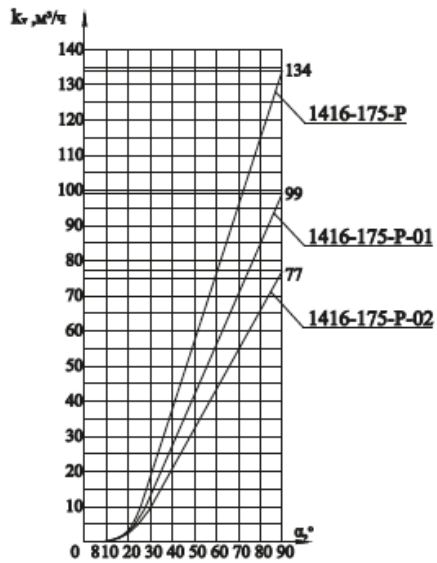


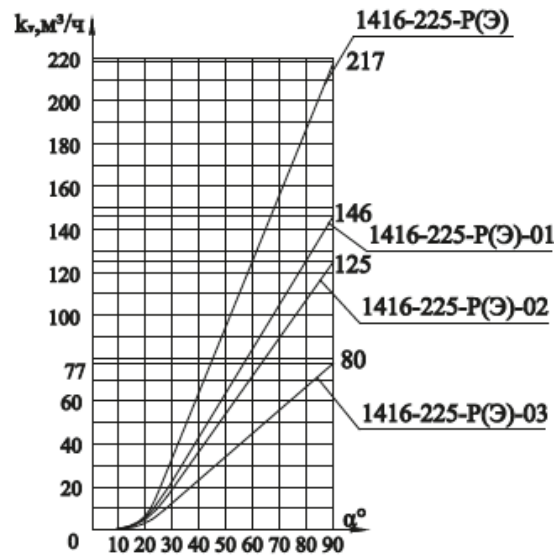
Figure 78. Counterbalanced control valve



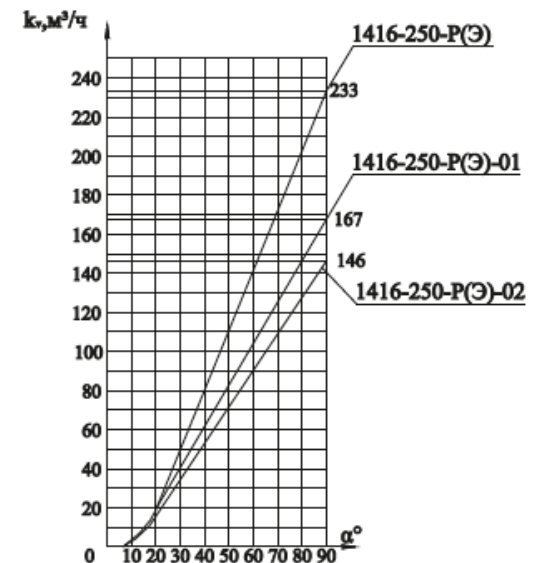
Graph 38



Graph 39



Graph 40



Graph 41

Butterfly Control Valve

Butterfly control valve 12c is designed to control flow of steam vapor (Group 2 gases) by changing flow area between valve body and butterfly during its rotation. Full opening of the butterfly corresponds to lever rotation to 75° from closed position. Operation by: quarter-turn actuator with current proximity sensor of single-turn electric actuator or flanged electric single-turn actuator type (by ABS ZEM Automation) and other manufacturers. Not to be used as a shut-off valve.

Connection to pipeline: by welding. Maximum pressure drop across the valve is limited. Mounting position: on horizontal and vertical sections of pipeline.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.



Butterfly Valve

Butterfly valve 12c is designed to control flow of air and non-aggressive purified gases in air and gas pipelines of the boiler by changing flow area during disk rotation with flanged electric single-turn actuator mounted on head pivot or single-turn electric actuator type through the lever. Full opening of the butterfly corresponds to disk rotation to 95° from closed position.

Connection to pipeline: by welding. Mounting position: on horizontal and vertical sections of pipeline.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 2, 3 according to GOST 15150-69

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.



Butterfly Control Valve, Specification 3740-002-15365247-2004

Product ID	DN, mm	Working fluid	PN, MPa	Fluid Tmax, °C	Max. pressure differential, MPa	Max. Mlq, Nm	No. of rev. of full travel	Max. Kv, m³/h	F, cm²	L, mm	H, mm	h, mm	d, mm	D, mm	D1, mm	D2, mm	n	Body material, steel	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Operation by	Figure
12c-1	400	Steam	6.3	425	0.25	630	0.25	8750	965	400	880	-	-	380	401	426	-	20	МЭО-630/25-0,25Y-92K	0.2	25	135	209	57	20
12c-1-1	450	Steam	2,75*	340	0.25	630	0.25	10400	1290	400	920	-	-	430	437	465	-	20	МЭО-630/25-0,25Y-92K	0.2	25	126	200	57	21
12c-2-5	400	Steam	2.5	425	0.25	630	0.25	1965	390	400	830	-	-	350	401	426	-	20	МЭО-630/25-0,25Y-92K	0.2	25	181	255	57	22
12c-5-5	700	Steam	2.5	300	0.4	1600	0.25	28500	3150	600	1148	-	-	700	704	720	-	09Г2С	МЭО-Ю000/63-0,25Y-97K	0.59	63	295	875	57	24
12c-3-1	50	Air, gases	0.1	400	-	50	0.25	95	12	38	-	-	-	-	-	-	-	09Г2С	МЭО-40/25-0,25Y-99K	0.095	25	4.5	12.5	58	25
12c-3-2	100	Air, gases	0.1	400	-	50	0.25	350	54.5	58	356	206	18	100	170	152	2	09Г2С	МЭО-40/25-0,25Y-99K	0.095	25	10	18	59	23
12c-3-3	200	Air, gases	0.1	400	-	140	0.25	1920	250	58	507	293	18	200	280	252	2	09Г2С	МЭО-100/25-0,25Y-99K	0.17	25	17.6	45	59	23
12c-3-4	300	Air, gases	0.1	400	-	140	0.25	4300	615	58	617	353	22	300	395	365	2	09Г2С	МЭО-100/25-0,25Y-99K	0.17	25	29	56.5	59	23
12c-4-2Э	100	Air, gases	0.063	400	-	20	0.25	350	54.5	58	586	438	18	100	170	152	2	09Г2С	МЭОФ-40/25-0,25Y-96K	0.11	25	13	21	60	23
12c-4-3Э	200	Air, gases	0.063	400	-	30	0.25	1920	250	58	714	500	18	200	280	252	2	09Г2С	МЭОФ-40/25-0,25Y-96K	0.11	25	21	29	60	23
12c-4-4Э	300	Air, gases	0.063	400	-	30	0.25	4300	615	58	802	559	22	300	395	365	2	09Г2С	МЭОФ-40/25-0,25Y-96K	0.11	25	32.5	41	60	23

* Operating pressure, Po.

Butterfly Valve, Specification 3740-002-15365247-2004

Product ID	DN, mm	Working fluid	PN, MPa	Fluid Tmax, °C	Max. Mlq, Nm	Travel, mm	Max. Kv, m³/h	F, cm²	L, mm	H, mm	d, mm	D, mm	D1, mm	D2, mm	d1, mm	n	Body material, steel	Electric Drive ID	N, kW	Travel time, s	Weight w/o drive, kg	Total weight with drive, kg	Figure
12c-8-4	300	Air, gases	0.1	400	100	0.25	4700	640	180	568	18	310	385	430	30	10	09Г2С	МЭО-100/25-0,25Y-99K	0.17	25	55	82.5	61
12c-8-4Э	300	Air, gases	0.1	400	100	0.25	4700	640	180	874	18	310	385	430		10	09Г2С	МЭОФ-250/25-0,25Y-99K	0.25	25	90	118	62
12c-8-5	400	Air, gases	0.1	400	100	0.25	8200	1146	180	668	18	410	490	535	30	12	09Г2С	МЭО-100/25-0,25Y-99K	0.17	25	70	97.5	61
12c-8-5Э	400	Air, gases	0.1	400	100	0.25	8200	1146	180	977	18	410	490	535		12	09Г2С	МЭОФ-250/25-0,25Y-99K	0.25	25	105	133	62
12c-8-6	500	Air, gases	0.1	400	250	0.25	12800	1800	180	768	18	510	600	645	30	16	09Г2С	МЭО-250/25-0,25Y-99K	0.25	25	90	117.5	61
12c-8-6Э	500	Air, gases	0.1	400	250	0.25	12800	1800	180	1084	18	510	600	645		16	09Г2С	МЭОФ-250/25-0,25Y-99K	0.25	25	125	153	62
12c-8-7	600	Air, gases	0.1	400	250	0.25	22500	2640	180	868	18	610	700	745	30	16	09Г2С	МЭО-250/25-0,25Y-99K	0.25	25	105	132.5	61
12c-8-7Э	600	Air, gases	0.1	400	250	0.25	22500	2640	180	1180	18	610	700	745		16	09Г2С	МЭОФ-250/25-0,25Y-99K	0.25	25	140	168	62
12c-8-8	700	Air, gases	0.1	400	630	0.25	31000	3630	220	983	22	710	800	850	40	16	09Г2С	МЭО-630/25-0,25Y-92K	0.20	25	135	209	61
12c-8-8Э	700	Air, gases	0.1	400	630	0.25	31000	3630	220	1483	22	710	800	850		16	09Г2С	МЭОФ-630/15-0,25Y-97K	0.20	15	215	282	62
12c-8-9	800	Air, gases	0.1	400	630	0.25	40000	4780	220	1083	22	810	900	950	40	18	09Г2С	МЭО-630/25-0,25Y-92K	0.20	25	165	239	61
12c-8-9Э	800	Air, gases	0.1	400	630	0.25	40000	4780	220	1585	22	810	900	950		18	09Г2С	МЭОФ-630/15-0,25Y-97K	0.20	15	245	312	62
12c-8-10	900	AIR, GASES	0.1	400	630	0.25	51500	6080	220	1183	22	910	1000	1050	40	20	09Г2С	МЭО-630/25-0,25Y-92K	0.20	25	190	264	61
12c-8-10Э	900	AIR, GASES	0.1	400	630	0.25	51500	6080	220	1685	22	910	1000	1050		20	09Г2С	МЭОФ-630/15-0,25Y-97K	0.20	15	270	337	62
12c-8-11	1000	Air, gases	0.1	400	630	0.25	63000	7540	220	1283	22	1010	1100	1150	40	22	09Г2С	МЭО-630/25-0,25Y-92K	0.20	25	215	289	61
12c-8-11Э	1000	Air, gases	0.1	400	630	0.25	63000	7540	220	1785	22	1010	1100	1150		22	09Г2С	МЭОФ-630/15-0,25Y-97K	0.20	15	300	367	62
12c-8-12	1100	Air, gases	0.1	400	1600	0.25	81500	9160	240	1383	22	1110	1200	1250	50	24	09Г2С	МЭО-1600/25-0,25Y-92K	0.30	25	250	385	61
12c-8-12Э	1100	Air, gases	0.1	400	1600	0.25	81500	9160	240	1932	22	1110	1200	1250		24	09Г2С	МЭОФ-1600/25-0,25Y-96K	0.30	25	390	514	62
12c-8-13	1200	Air, gases	0.1	400	1600	0.25	100000	10940	260	1483	22	1210	1300	1350	50	26	09Г2С	МЭО-1600/25-0,25Y-92K	0.30	25	270	405	61
12c-8-13Э	1200	Air, gases	0.1	400	1600	0.25	100000	10940	260	2032	22	1210	1300	1350		26	09Г2С	МЭОФ-1600/25-0,25Y-96K	0.30	25	410	534	62
12c-8-14	1300	AIR, GASES	0.1	400	1600	0.25	112500	12870	280	1583	22	1310	1400	1450	50	28	09Г2С	МЭО-1600/25-0,25Y-92K	0.30	25	300	435	61
12c-8-14Э	1300	Air, gases	0.1	400	1600	0.25	112500	12870	280	2132	22	1310	1400	1450		28	09Г2С	МЭОФ-1600/25-0,25Y-96K	0.30	25	440	564	62
12c-8-15	1400	Air, gases	0.1	400	1600	0.25	125000	14960	300	1683	22	1410	1500	1550	50	30	09Г2С	МЭО-1600/25-0,25Y-92K	0.30	25	365	500	61
12c-8-15Э	1400	Air, gases	0.1	400	1600	0.25	125000	14960	300	2232	22	1410	1500	1550		30	09Г2С	МЭОФ-1600/25-0,25Y-96K	0.30	25	505	629	62

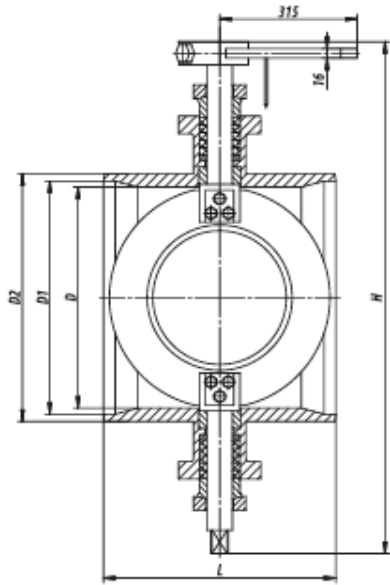


Figure 57. Butterfly control valve

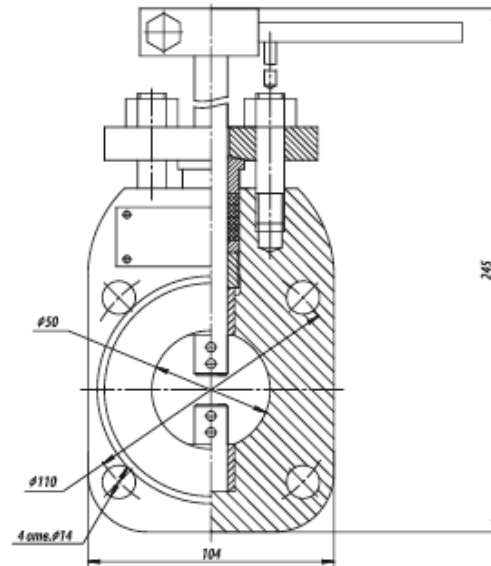


Figure 58. Butterfly control valve

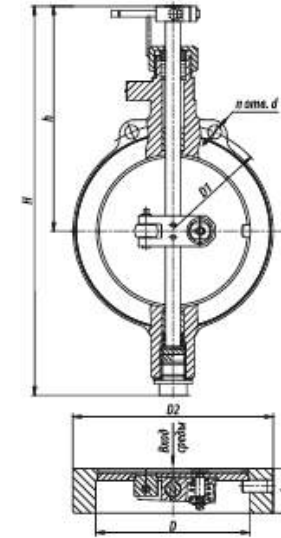


Figure 59. Butterfly control valve

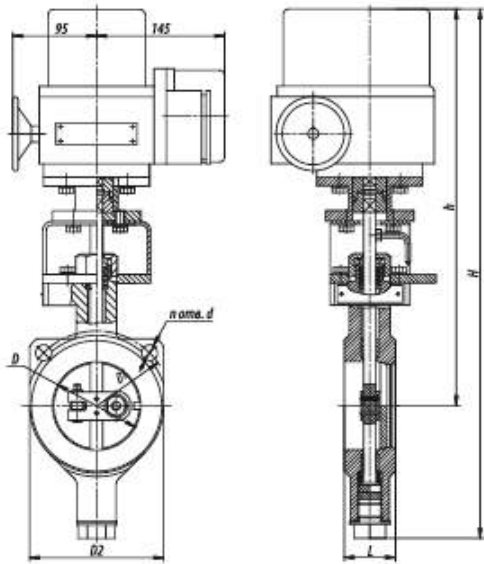


Figure 60. Butterfly control valve with built-in electric drive

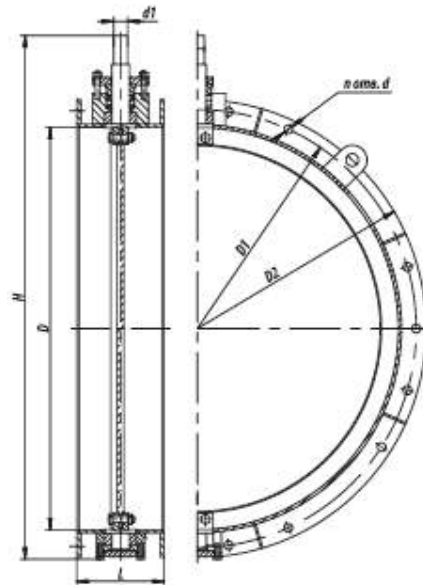


Figure 61. Butterfly valve

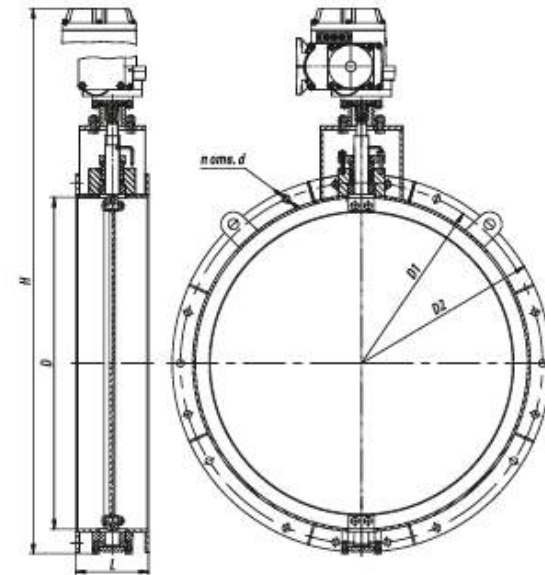
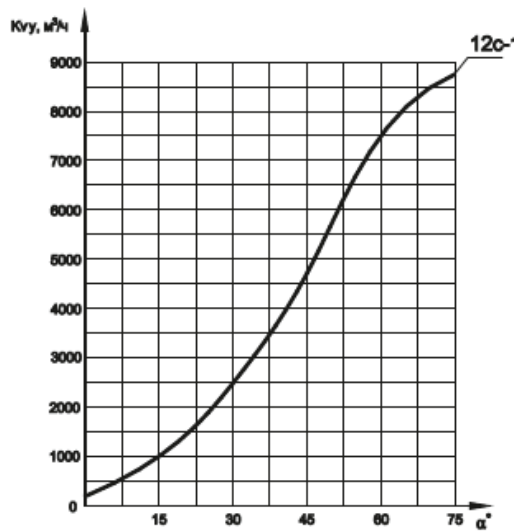
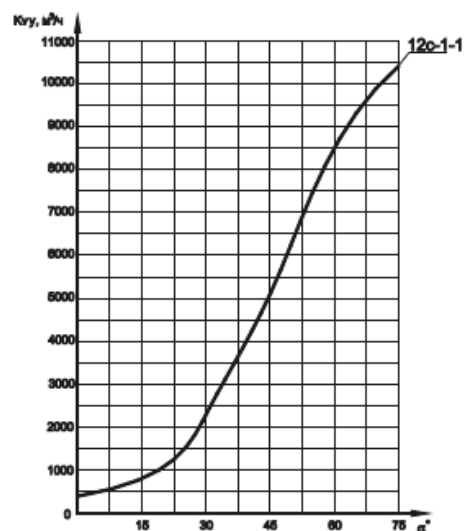


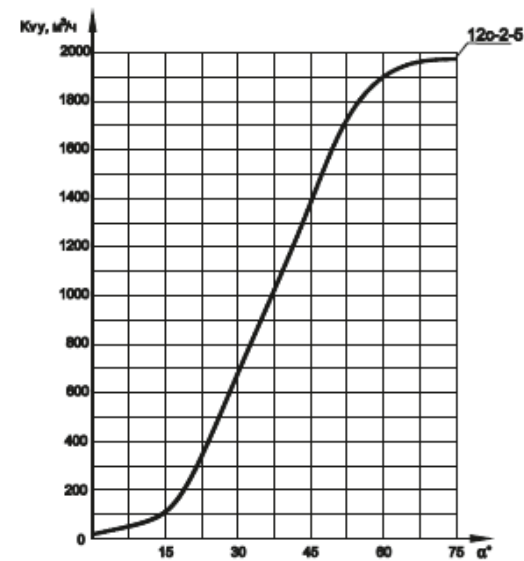
Figure 62. Butterfly valve with built-in electric drive



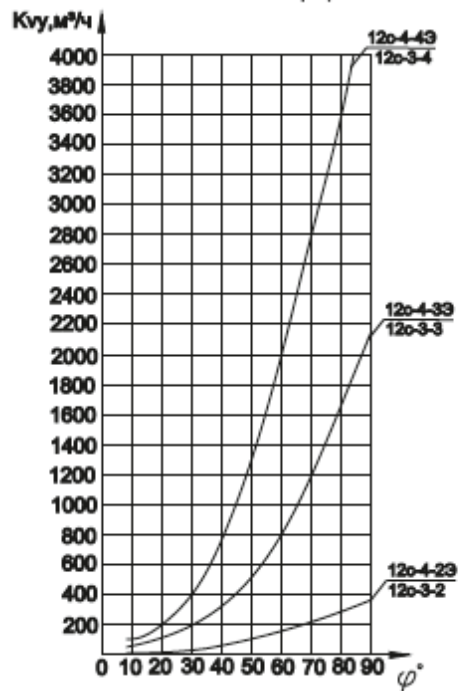
Graph 20



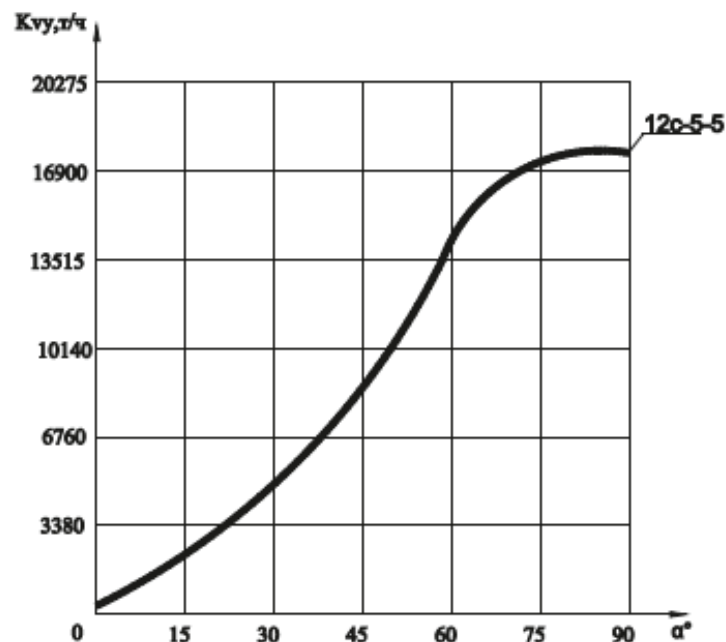
Graph 21



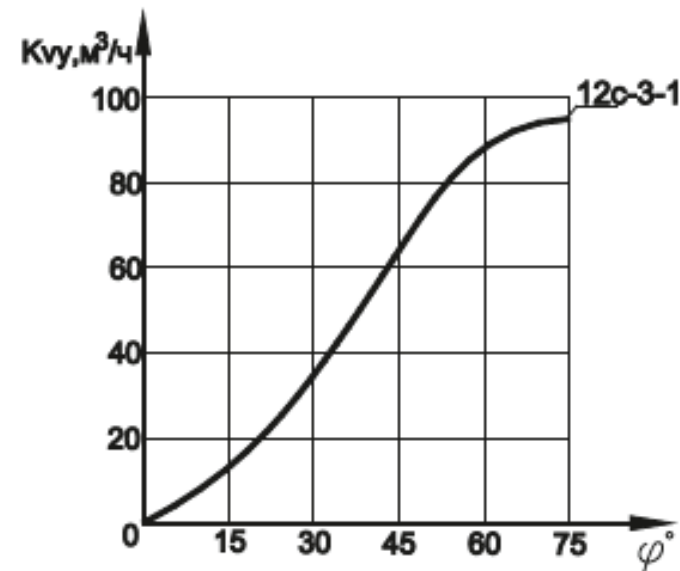
Graph 22



Graph 23



Graph 24



Graph 25

Filters

Water and steam filters are pipeline elements designed for operation under manometrical pressure. Working fluid: Group 2 fluids and Group 2 gases (water, steam vapor and media except for inflammable, oxidizing, flammable, explosive, toxic and highly toxic gases, fluids and single-phase vapors, including their mixtures). For outdoor and indoor installation. Connection to pipeline: by welding. Mounting position: any, in lower semi-sphere against neck. Flow direction: under filter element.

Climatic version: mild, mild and cold, tropical climate according to GOST 15150-69

Placement category: 1, 2, 3 according to GOST 15150-69

Primary intended use: to prevent clogging of water and steam nozzle passages in steam reducers of pressure-reducing desuperheating stations as particles (scum, slag, etc.) may get into pipelines of thermal power plants during operation or repair works, and clog them.

Filters are manufactured according to Specification 3113-003-15365247-2009.

When ordering, please indicate product name and ID, its climatic version and placement category according to GOST 15150-69.

Technical details of filters manufactured by Barnaul Boiler Plant are shown in the table.

Allowable operating pressure and temperature of the valves may differ from those specified in the table and shall be selected according to GOST 356-80 provided that these values do not fall outside the limit range set by the relevant rules and regulations of state supervision for such materials and operational conditions operational condition.

Products designed for max. pressure of PN 10 MPa according to GOST 356-80 allow for their use within the operating range from 10 MPa, 200°C to 3.6 MPa, 455°C; PN25 MPa: from 25 MPa, 200°C to 9 MPa, 455°C; PN63: from 6.3 MPa, 200°C to 2.3 MPa, 455°C.



Filters, Specification 3113-003-15365247-2009

Product ID	DN, MM	PN, MPa	Fluid Tmax, °C	Working fluid	Body material, steel	D, mm	DI, mm	L, mm	H, mm	h, mm	Figure
13c-1-1	10	10	450	Water	20	10	16	110	123	95	63
13c-2-1		37.3*	280	Water	20	10	16	110	123	95	63
13c-3-1		25*	545	Steam	12X1MΦ	10	16	110	123	95	63
13c-1-2	15	25	350	Water	20	16	25	160	165	119	63
13c-1-3		10	425	Water	20	22	32	160	165	119	63
13c-2-3	20	37.3*	280	Water	20	20	32	160	165	119	63
13c-3-3		25*	545	Steam	12X1MΦ	20	32	160	165	119	63
13c-1-4	25	10	450	Water	20	26	32	160	165	119	63
13c-1-5		10	450	Water	20	32	38	230	162	115	63
13c-3-5	40	25*	545	Steam	12X1MΦ	31	57	220	279	190	63
13c-2-6		37.3*	280	Water	20	39	57	220	279	190	63
13c-1-7	50	6.3	425	Water	20	50	57	240	162	115	63
13c-2-7		25	350	Water	20	49	60	220	279	190	63
13c-3-7		13.7*	560	Steam	12X1MΦ	50	76	250	295	200	63
13c-2-8	65	23.5	250	Water	20	58	76	250	295	200	63
13c-3-8		9.8*	540	Steam	12X1MΦ	62	76	250	295	200	63

* Operating pressure, Po.

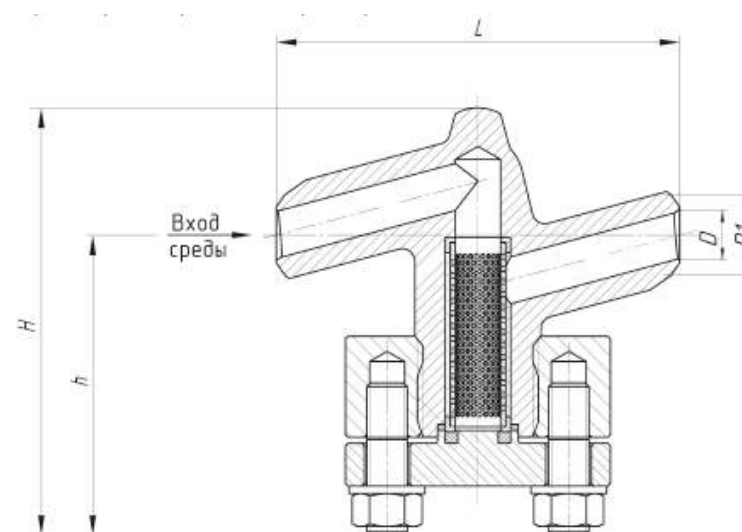


Figure 63. Filter

Pressure-Reducing Desuperheating Stations (PRDS)

CALCULATIONS DESIGN MANUFACTURING DELIVERY

Pressure-reducing desuperheating station (PRDS) and fast-response pressure-reducing desuperheating station (FRPRDS) are used within power unit pipelines to reduce steam pressure and temperature to the pre-set values. Desuperheating station (DS) reduces steam temperature only, and pressure-reducing station reduces pressure only.

PRDS are used to start boiler, to backup turbine process bleeding within power unit pipelines of medium and low pressure, to deliver steam to process bleeding units, to meet in-house needs of power stations, and in absence of other steam sources of the required parameters.

FRPRDS are designed to exhaust steam generated by the boiler or steam generator, but instead of being consumed by the turbine at start and variable duty of the unit, it enters steam receiver of condensing unit or auxiliary header to backup power-driven turbines of feed pumps and fan blowers, as well as to supply steam for heating of intermediate heating pipelines.

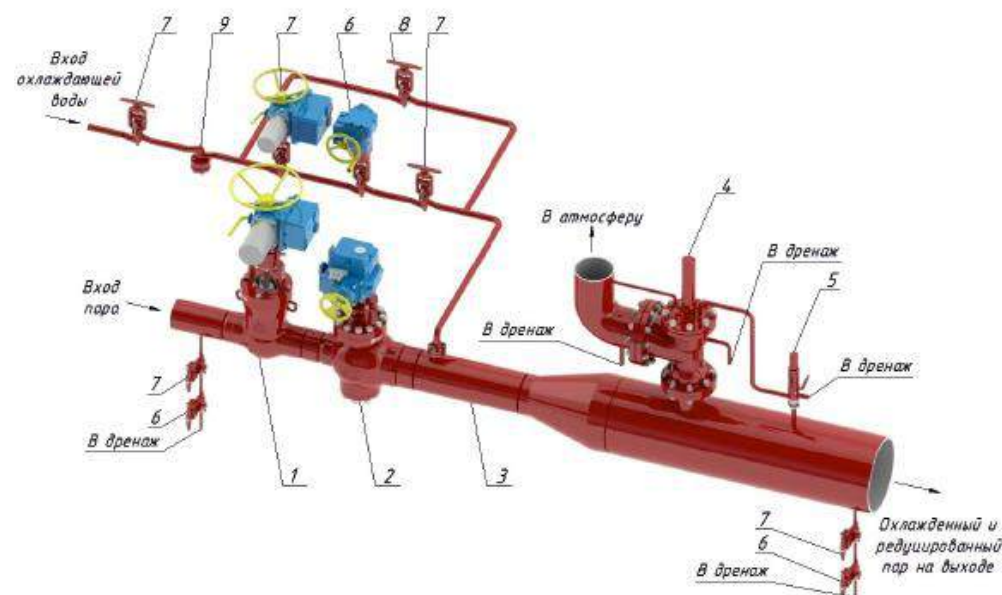
The station may include:

- Stop gate (on open steam pipeline),
- Control valve (on open steam pipeline) or control valve with combined functions of reduction and cooling (on open steam pipeline),
- Steam cooling unit with nozzles,
- Throttling valve,
- Shut-off, control or check valves, and filters mounted on cooling water injection pipeline,
- Valves of drain pipelines,
- Safety valve or pilot safety system (on reduced or cooled steam pipeline),
- Piping elements to integrate all devices into a single unit.

Specific list of piping elements shall be determined by the design organization as agreed with the customer.

PRDS are manufactured and delivered according to Specification 3113-003-15365247-2009.

1. Gate valve.
2. Control valve (steam).
3. Steam cooling unit or silencer with throttle cooling grid.
4. Pilot valve.
5. Safety valve.
6. Control valve (water).
7. Stop gate.
8. Needle valve.
9. Filter.



Steam Exhaust Silencer mounted after Silencing Safety Valve

Silencers are designed to reduce acoustic power of steam exhaust to atmosphere.

Working fluid: steam vapor of max. operating temperature $T_o = 570^{\circ}\text{C}$ and max. operating pressure $P_o = 14 \text{ MPa}$.

Hydraulic resistance of silencer shall not exceed 10% of operating pressure.

Silencer is made of multiple grids that are successively reinforced within the cone, whereby flow section of every successive grid increases by certain value.

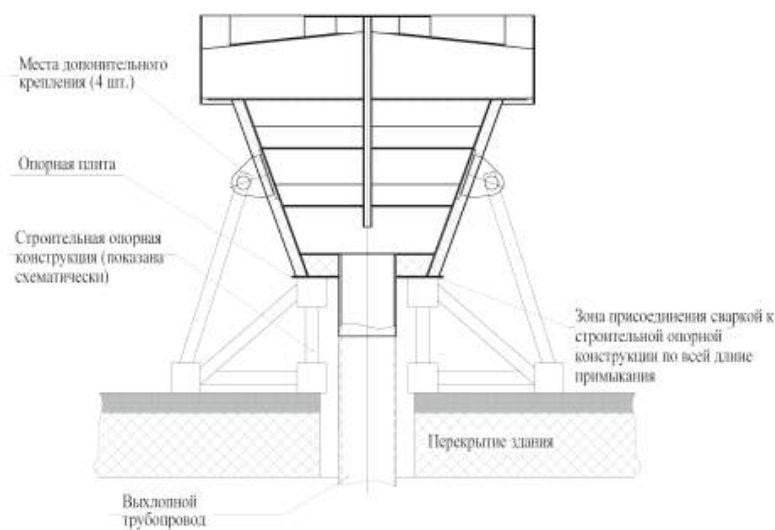
Flow section is calculated based on multiple reduction of fluid velocity at silencer outlet against velocity in flow area of exhaust pipeline, balanced distribution of fluid velocity within the flow according to flow area, and reaching of close-to-atmospheric static pressure within the flow.

Silencer provides for reduction of noise level to the standard rates set by SN2.2.4/2.1.8.562-96 or according to the customer's requirements.

Silencer is a custom-designed item based on specifications or customer requirements set in the data sheet.



LAYOUT OF SILENCER FOR EXHAUST PIPELINE



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