



LPH21 High-pressure Single-seat Control Valve



Code	Actuator	Action	Air Fail Position	Control	Structure	Body Material	Sealing Material	Core Material	Connection	DN	PN
LPH21-	1 Pneumatic	S Single-acting	1 Normally Open	B Control	4 Low temperature type	A CF3M	P PTFE	A CF3M	1 Flange		
	2 Pneumatic & Handwheel	D Double-acting	2 Normally Closed	C Intelligent	5 Bellows type	B CF8M	Y FEP(F46)	B CF8M	5 Weld		
	4 Electric C220V	O Others	4 Held	O Others	6 High temperature type	C CF8	R BODY	C CF8	O Others		
	5 Electric AC380V		0 Others		7 Normal	D WCB	S Stellite	I CF3			
	0 Others				0 Others	I CF3	3 Gr	L CE3MN			
						L CE3MN	4 WC	2 Ti			
						2 Ti	0 Others	0 Others			
						5 WCC					
						0 Others					



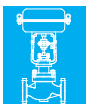
Overview

LPH21 high-pressure single seated control valves are design for high temperature, high pressure services. The compact valve body, habing a Sshade flow passage that features low pressure loss, allows a large flow capacity and rangeability. The valve plug is highly vibration-resistant as it is held by a top guide section which has a large slideing area. The flow shut-off performance complies with the ANSI Standard. The actuator integrated with simplest mechanisms utilizes a compact yet powerful diaphragm actuator loaded with multiple springs.

LPH21 v alves are widely applicable for reliable control of high temperature, high pressure process lines.

Specifications

Nominal size	25,40,50,65,80mm 1,1 1/2, 2, 2 1/2, 3 inch
Pressure rating	ANSI Class 900,1500,2500 JIS 63K
Connection	Flange:RF, RJ Flanged end:JIS B2201-1984, ANSI B16.5-1981, GB/T 9112-9124-2000 Weld:SW (25-80mm), BW (80mm)
Body material	WCB,304,316,304L,316L,CE3MN
Core material	304,316,304L,316L,CE3MN



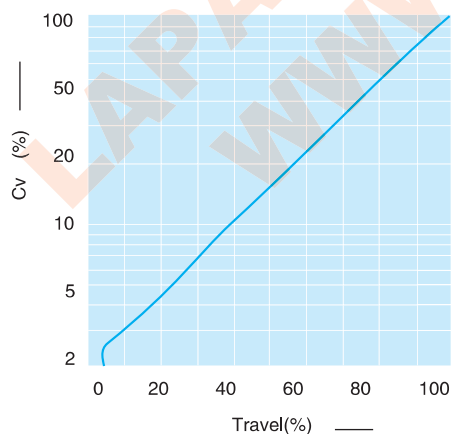
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High-pressure Single-seat Control Valve

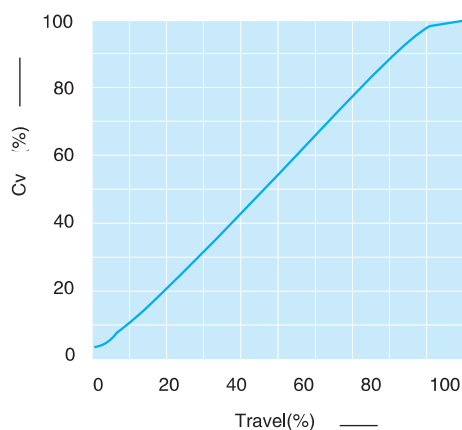


Bonnet	Plain bonnet (-17~230℃) Extension bonnet Type 1 (-45~-17℃和230~566℃)
Packing / Grease	Grease not provided: When V shaped PTFE packing or PTFE yarn packing is used. Grease provided: When graphite packing is used.
Gasket	Type: Flat type, serrated type Material: Carbon steel (S15C), stainless steel (SUS316, SUS316L, SUS329J1), copper, aluminum, titanium, ASTM B574 (Hastelloy C-276 equivalent), or Alloy 20
Flow characteristics	Equal percentage (%C), Linear (LC)
Actuator	Pneumatic, electric: refer to the attachment.
Performance	Inherent range ability 50 : 1 ANSI B16.104-1976 IV , Leakage less than 0.01% of maximum valve capacity. Hysteresis error: With positioner: Within 1% F.S. Linearity: With positioner: Within ± 1% F.S.

Characteristics



Equal percentage characteristics



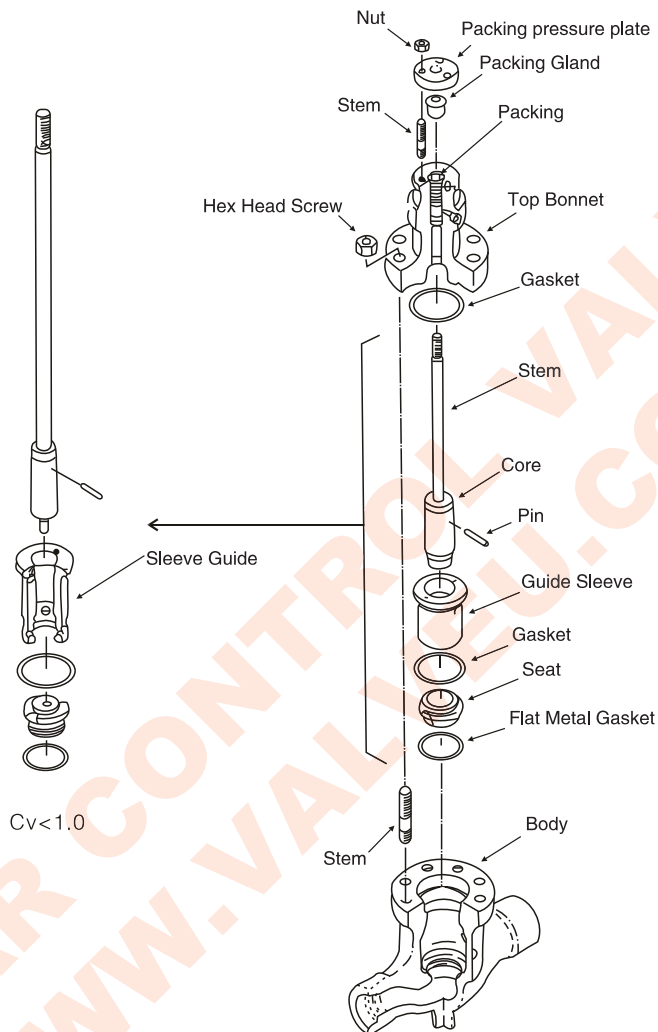
Linear characteristics



LPH21 High-pressure Single-seat Control Valve



Exploded View



High-pressure single-seat control valve

Cv Value and Travel

DN			25									40			50			80					
Diameter												25	32	40	32	40	50	50	65				
Cv	%C	JIS63K ANSI 900 ANSI 1500	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	12	12	17	25	17	25	47	47	75	110			
	LC	ANSI 2500										—	12	17	12	17	31	31	47				
Pressure Travel			14.3									25									38		

mm



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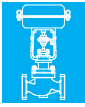
Allowable Differential Pressure

With ZHA or ZVA actuator

Air-to-close

100KPa

PN	Actuator	Supply pressure	Spring range	Allowable differential pressure								
				Diameter								
				Cv≤4.0	Cv=6.3	Cv=12	32	40	50	65	80	
ANSI 900	ZHA3D	2.8	0.4 ~ 2.0	163	161	102	50	32	18	10	7	
				152	149	92	42	27	14	7	4	
		3.0	0.4 ~ 2.0	207	205	130	64	42	24	14	9	
				196	192	120	57	36	19	10	6	
		3.5	0.4 ~ 2.0	264	264	200	100	66	38	23	16	
				264	264	190	92	60	34	19	13	
	4.0	0.4 ~ 2.0	—	—	264	135	91	53	32	22		
			—	—	260	128	85	48	28	19		
	ANSI 1500	ZHA4D	2.8	0.4 ~ 2.0	—	—	183	91	61	35	21	14
					—	—	173	84	55	30	17	11
	3.0		0.4 ~ 2.0	—	—	231	116	77	45	27	19	
				—	—	221	109	71	40	23	16	
3.5	0.4 ~ 2.0		—	—	264	177	119	70	42	30		
			—	—	264	170	113	65	39	27		
4.0	0.4 ~ 2.0	—	—	—	239	161	95	58	41			
		—	—	—	232	155	90	54	38			
JIS 63K	ZVA5D	2.6	0.2 ~ 1.0	—	—	—	263	177	104	63	45	
				—	—	—	255	171	100	60	42	
	2.8	0.2 ~ 1.0	—	—	—	264	200	118	72	51		
			—	—	—	264	194	114	68	48		
ANSI 2500	ZHA3D	2.8	0.4 ~ 2.0	163	161	102	102	50	25	18	10	
				152	149	92	92	42	20	14	7	
		3.0	0.4 ~ 2.0	207	205	130	130	64	33	24	14	
				196	192	120	120	57	28	19	10	
		3.5	0.4 ~ 2.0	316	314	200	200	100	52	38	23	
				305	301	190	190	92	47	34	19	
		4.0	0.4 ~ 2.0	425	423	270	270	135	72	53	32	
				414	410	260	260	128	67	48	28	
		ZHA4D	2.8	0.4 ~ 2.0	—	—	183	183	91	48	35	21
					—	—	173	173	84	43	30	17
	3.0		0.4 ~ 2.0	—	—	231	231	116	61	45	27	
				—	—	221	221	109	56	40	23	
	3.5		0.4 ~ 2.0	—	—	351	351	177	95	70	42	
				—	—	341	341	170	89	65	39	
	4.0	0.4 ~ 2.0	—	—	440	440	239	128	95	58		
			—	—	440	440	232	123	90	54		
	ZVA5D	2.6	0.2 ~ 1.0	—	—	—	—	263	141	104	63	
				—	—	—	—	255	136	100	60	
		2.8	0.2 ~ 1.0	—	—	—	—	296	159	118	72	
				—	—	—	—	289	154	114	68	



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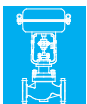


Air-to-open

100KPa

PN	Actuator	Supply pressure	Spring range	Allowable differential pressure							
				Diameter							
				Cv≤4.0	Cv=6.3	Cv=12	32	40	50	65	80
ANSI 900 ANSI 1500	ZHA3R	2.6 ~ 4.0 (4*)	0.8 ~ 2.4	163	161	102	50	32	18	10	7
				152	149	92	42	27	14	7	4
	ZHA4R	2.6 ~ 4.0 (4*)	0.8 ~ 2.4	187	185	183	91	61	35	21	14
				180	177	173	84	55	30	17	11
	ZVA5R	2.6 ~ 4.0 (4*)	0.8 ~ 2.4	—	—	—	127	85	50	30	21
				—	—	—	120	79	45	26	18
—				—	—	—	—	—	—	—	—
ZVA6R	3.0 (1*)	1.9 ~ 2.5	264	264	264	258	174	102	62	44	
	3.5 (2*)	1.9 ~ 3.0									
	4.0 (3*)	1.9 ~ 3.5									
ANSI 2500	ZHA3R	2.6 ~ 4.0 (4*)	0.8 ~ 2.4	163	161	102	102	50	25	18	10
				152	149	92	92	42	20	14	7
	ZHA4R	2.6 ~ 4.0 (4*)	0.8 ~ 2.4	187	185	183	183	91	48	35	21
				180	177	173	173	84	43	30	17
	ZVA5R	2.6 ~ 4.0 (4*)	0.8 ~ 2.4	—	—	—	—	127	68	50	30
				—	—	—	—	120	62	45	26
	ZVA6R	3.0 (1*)	1.9 ~ 2.5	329	328	327	327	258	138	102	62
		3.5 (2*)	1.9 ~ 3.0								
		4.0 (3*)	1.9 ~ 3.5								

1. Column bordered with bold lines denote types provided with standard-type actuator.
2. Take care not to cause the maximum allowable differential pressure to exceed the maximum operating pressure designated by ANSI B 16. 34-1981.
3. Inlet pressure P1 is not allowed to exceed the maximum permissible differential pressure when the valve is closed.
4. Allowable differential pressure limit differs depending on valve seat leakage volume. Figures in the upper portion of the column denote pressure under a leakage rate of 0.01%. Those on the lower side denote pressure under a leakage rate of 0.001%.
5. 1*: Applicable to valve sizes of 25mm, Cv=0.25-0.63.
 2*: Applicable to valve sizes of 25mm, Cv=1.0-12 and valve sizes of 40-50mm.
 3*: Applicable to valve sizes of 80mm.
 4*: Supply pressure is configurable.



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High-pressure Single-seat Control Valve



With ZVP actuator

100KPa

PN	Actuator	Supply pressure	Allowable differential pressure							
			Diameter							
			Cv≤4.0	Cv≤6.3	Cv=12	32	40	50	65	80
ANSI 900 ANSI 1500	ZVP5	3	188	187	186	184	142	83	50	36
			185	184	182	177	136	79	47	33
		4	251	251	250	247	191	113	69	49
			248	247	245	241	185	108	65	46
		5	264	264	264	264	240	142	87	62
			264	264	264	264	234	138	83	59
	ZVP6	3	—	—	—	—	179	146	89	64
			—	—	—	—	175	142	86	61
		4	—	—	—	—	240	197	121	86
			—	—	—	—	236	192	117	86
		5	—	—	—	—	264	248	152	109
			—	—	—	—	264	243	148	106
ZVP7	3	—	—	—	—	—	175	138	99	
		—	—	—	—	—	171	135	96	
	4	—	—	—	—	—	234	186	133	
		—	—	—	—	—	231	182	130	
	5	—	—	—	—	—	264	233	167	
		—	—	—	—	—	264	229	164	
ANSI 2500	ZVP5	3	188	187	186	186	184	113	83	50
			185	184	182	182	177	107	79	47
		4	251	251	250	250	247	152	113	69
			248	247	245	245	241	147	108	65
		5	315	314	313	313	310	192	142	87
			312	311	309	309	304	186	138	83
	ZVP6	3	—	—	—	—	—	178	146	89
			—	—	—	—	—	173	142	86
		4	—	—	—	—	—	239	197	121
			—	—	—	—	—	235	192	117
		5	—	—	—	—	—	300	248	152
			—	—	—	—	—	296	243	148
	ZVP7	3	—	—	—	—	—	—	175	138
			—	—	—	—	—	—	171	135
		4	—	—	—	—	—	—	234	186
			—	—	—	—	—	—	231	182
		5	—	—	—	—	—	—	294	233
			—	—	—	—	—	—	290	229

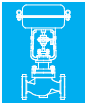
1. If the actuator has auxiliary air supply, a smaller one of the two supply gas pressures should be chose to calculate the allowable differential pressure.
2. Take care not to cause the maximum allowable differential pressure to exceed the maximum operating pressure designated by ANSI B 16. 34–1981.
3. Inlet pressure P1 is not allowed to exceed the maximum permissible differential pressure when the valve is closed.
4. Allowable differential pressure limit differs depending on valve seat leakage volume. Figures in the upper portion of the column denote pressure under a leakage rate of 0.01%. Those on the lower side denote pressure under a leakage rate of 0.001%.

Dimensions

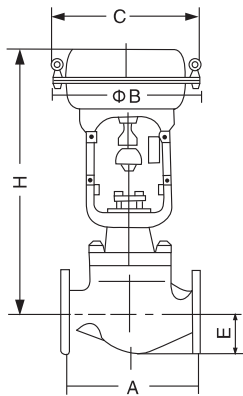
mm

DN	A						
	JIS63K	ANSI 900		ANSI 1500		ANSI 2500	
	RF	RF(SW,BW)	RJ	RF(SW,BW)	RJ	RF(SW,BW)	RJ
25	276	292	292	292	292	318	318
40	323	333	333	333	333	358	361
50	354	375	378	375	378	400	403
80	431	440	443	460	463	498	504

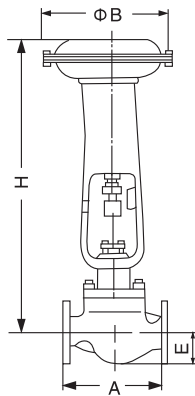




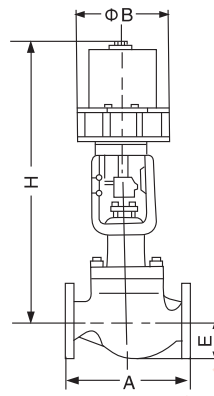
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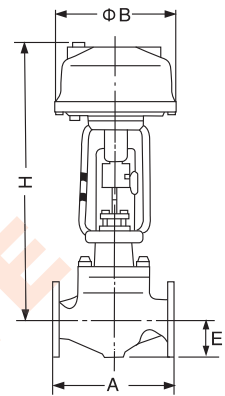
ZHA actuator



ZVA5 actuator



ZVA6 actuator



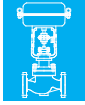
ZVP actuator

mm

DN	Actuator	H						E			C	φ B
		ANSI 900 JIS 63K		ANSI 1500		ANSI 2500		ANSI 900	ANSI 1500	ANSI 2500		
		Plain bonnet	Extension bonnet	Plain bonnet	Extension bonnet	Plain bonnet	Extension bonnet					
25	ZHA3D、R	710	840	710	840	740	860	90	90	95	363	350
	ZHA4D、R	870	1000	870	1000	900	1020				520	470
	ZVA6R	1115	1245	1115	1245	1145	1265				—	445
	ZVP5	895	1025	895	1025	925	1045				—	345
40	ZHA3D、R	735	875	735	875	780	925	100	105	120	363	350
	ZHA4D、R	890	1030	890	1030	935	1080				520	470
	ZVA5D	1280	1420	1280	1420	1325	1470				—	620
	ZVA5R	1390	1530	1390	1530	1435	1580				—	620
	ZVA6R	1140	1280	1140	1280	1185	1350				—	445
	ZVP5	920	1060	920	1060	965	1110				—	345
	ZVP6	1140	1280	1140	1280	1185	1380				—	445
50	ZHA3D、R	765	925	765	925	800	960	110	120	130	363	350
	ZHA4D、R	925	1085	925	1085	960	1120				520	470
	ZVA5D	1315	1475	1315	1475	1350	1510				—	620
	ZVA5R	1425	1585	1425	1585	1460	1620				—	620
	ZVA6R	1175	1335	1175	1335	1210	1370				—	445
	ZVP5	955	1115	955	1115	990	1150				—	345
	ZVP6	1175	1335	1175	1335	1210	1370				—	445
	ZVP7	1270	1420	1270	1420	1305	1465				—	545
80	ZHA3D、R	800	980	800	980	835	1005	140	150	165	363	350
	ZHA4D、R	960	1140	960	1140	995	1165				520	470
	ZVA5D	1345	1525	1345	1525	1380	1550				—	620
	ZVA5R	1455	1635	1455	1635	1490	1660				—	620
	ZVA6R	1205	1385	1205	1385	1240	1410				—	445
	ZVP5	985	1165	985	1165	1020	1190				—	345
	ZVP6	1205	11385	1205	1385	1240	1410				—	445
	ZVP7	1295	1475	1295	1475	1330	1500				—	545

"H" dimensions are applicable when a hand wheel is not provided. When top-mounted hand wheel actuators or side-mounted hand wheel are used, add the hand wheel dimensions.





LPH21

High-pressure Single-seat Control Valve



Weight

kg

DN	Actuator	Flange						Weld					
		ANSI 900 JIS63K		ANSI 150		ANSI 2500		ANSI 900 JIS63K		ANSI 150		ANSI 2500	
		Plain bonnet	Extension bonnet	Plain bonnet	Extension bonnet	Plain bonnet	Extension bonnet	Plain bonnet	Extension bonnet	Plain bonnet	Extension bonnet	Plain bonnet	Extension bonnet
25	ZHA3D、R	55(52)	60(57)	60	65	85	90	45	50	50	55	70	75
	ZHA4D、R	85(83)	90(88)	90	95	115	120	80	85	85	90	100	105
	ZVA6R	230(225)	235(230)	230	235	255	260	220	225	225	230	240	245
	ZVP5	105(100)	110(105)	105	110	130	135	95	100	100	105	115	120
40	ZHA3D、R	60(55)	65(60)	65	70	90	95	50	55	55	60	75	80
	ZHA4D、R	90(86)	95(91)	95	100	125	130	80	85	85	90	105	110
	ZVA5D	190(188)	195(193)	195	200	225	230	180	185	185	190	205	210
	ZVA5R	215(213)	220(218)	220	225	250	255	205	210	210	215	230	235
	ZVA6R	230(228)	235(233)	235	240	265	270	220	225	225	230	245	250
	ZVP5	105(103)	110(108)	110	115	140	145	95	100	100	105	120	125
	ZVP6	180(178)	185(183)	185	190	215	220	170	175	175	180	195	200
50	ZHA3D、R	90(61)	80(71)	75	85	110	120	55	65	60	70	85	95
	ZHA4D、R	100(92)	110(102)	105	115	140	150	85	95	90	100	115	125
	ZVA5D	200(194)	210(204)	205	215	240	250	185	195	190	200	215	225
	ZVA5R	225(219)	235(229)	230	240	265	275	210	220	215	225	240	250
	ZVA6R	240(234)	250(244)	245	255	280	290	225	235	230	240	255	265
	ZVP5	115(109)	125(119)	120	130	155	165	100	110	105	115	130	140
	ZVP6	190(184)	200(194)	195	205	230	240	175	185	180	190	205	215
	ZVP7	300(294)	310(304)	305	315	340	350	285	295	290	300	315	325
80	ZHA3D、R	105(97)	115(107)	140	160	225	245	85	95	110	130	170	190
	ZHA4D、R	135(128)	145(138)	170	190	255	275	115	125	140	160	200	220
	ZVA5D	235(230)	245(240)	270	290	355	375	215	225	240	260	300	320
	ZVA5R	260(255)	270(265)	295	315	380	400	240	250	265	285	325	345
	ZVA6R	275(270)	285(280)	310	330	395	415	255	265	280	300	340	360
	ZVP5	150(145)	160(155)	185	205	270	290	130	140	155	175	215	235
	ZVP6	225(220)	235(230)	260	280	345	365	205	215	230	250	290	310
	ZVP7	335(330)	345(340)	370	390	455	475	315	325	340	360	400	420

The numbers in brackets are the weight of the nominal pressure JIS63K valve.

