



GYR-50000 **Ball Valve**

ZHEJIANG BEIER CONTROL VALVE CO.,LTD.
[Http://www.Controlvalves.cn](http://www.Controlvalves.cn)

GYR-50000 SERIES BALL VALVE

The GYR-50000 series ball valve is one of the BEIER corporation researches & develops productions, the valve plug structure is a spherical surface. The valve uses the special modular design, the unique structure, fine shape, light weight, when the valve open maximal the flow channel nearly goes straight, the circulation ability is big. The valve is one kind of large capacity regulating valves and suitable to control the liquid which contain the fiber, the slurry, the high viscosity, the polymer, crystal and so on.

GYR-51100 SERIES ROTARY ECCENTRIC PLUG VALVE

GYR-51100 series rotary eccentric plug valve, the plug adopts eccentric structure, the movement nimble, open and shut torque is small, low abrasion and enhancement the service life, the seal property is outstanding, especially is suitable for controlling the fluid like the slurry, the high viscosity, etc.

GYR-51200 SERIES V-TYPE BALL VALVE

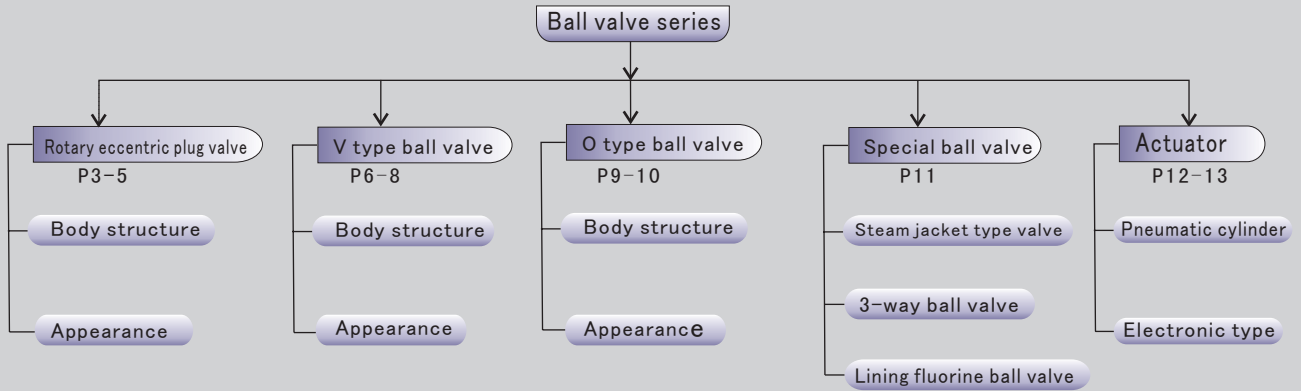
GYR-51200 series V type ball valve, is one kind of quarter turn structure high-quality control valve, the plug is the concentric partial spherical surface, with V margin, has the very big sharing force and from the clean performance, at the same time can control the fluid accurately when in small open Cv working, is suitable to control the fluid like contain the fiber, has the small solid particle and the solid state.

GYR-51300 SERIES V-TYPE BALL VALVE

GYR-51300 series O type ball valve, is one kind of quarter turn structure high-quality control valve, the plug is the concentric all spherical surface, the integral-type design, uses the bidirectional seal structure, the leakage is small, is especially suitable to control the fluid like contain the fiber, has the small solid particle and the solid state.

GYR-50000 Series ball valve

Fig.1



※ **Note:**

You may configure the GYL-50000 series valve according to the arrow to show by the Fig.1 of guidance chart.

The shadowed content is addressed in this manual.

Please see the corresponding page for the content you concern.

Some parts such as bonnet, actuator and accessory component are optional according to different operation conditions and specific requirements of customers, please consult BEIER engineers for detailed parameters.

Selection of Control Valve Model See Page14

The max pressure difference allowed when configuring actuators for control valves is not listed in this manual, and if necessary, please consult your BEIER engineers or calculate it with the control valve software of BEIER.

ROTARY ECCENTRIC PLUG VALVE

GYR-51100 series valve body has simply flow channel, outstanding performance, has wide adjustment range and the extremely high control precision, it selects the rotary motion work method, the eccentric plug approach or departure the seat ring, may reduce rubs and wears, and improve the control performance.

GYR-51100 series rotary eccentric plug valve is extreme to adapt to wash out, high abrasion duty services, the rigidity and the output force is big, can work reliably under the fixed differential pressure, realizes the precise flow control and ultra long working life, is one of the most advanced angle travel control valves at present international. Is widely used in the metallurgy, petrified, the refinement, the electric power, the paper pulp and the paper industry.

GYR-50000 SERIES BUTTERFLY VALVES

Trim type: Concentric partial spherical surface

Size range: 1" ~ 12"

Body type: GYR-51100

Pressure level range: 1.6Mpa 2.5Mpa 4.0Mpa 6.4 Mpa

Standard close level: CALSS V (Standard Metal seat)
CALSS VI (Standard Soft seat)

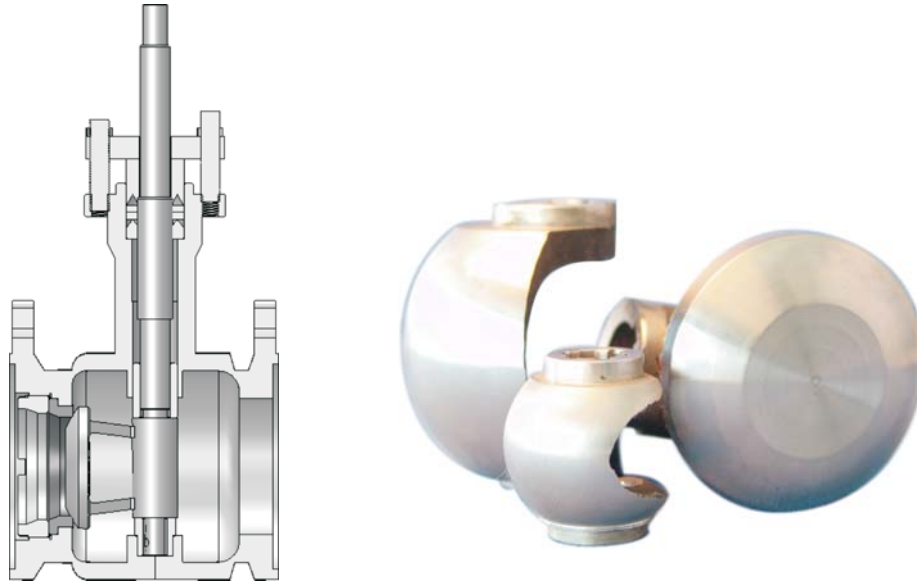
Actuator: Pneumatic type: Pneumatic cylinder actuator R6000 series

Electronic type: Electronic type 3810 series

Intelligent type: IQ series

GYL-51100 Body structure

Fig.2



GYR-51100 series rotary eccentric plug valve is composed of pneumatic cylinder and rotary eccentric plug valve body. The structure is special, the body approximate circle tubular, designs a eccentric throw between plug spherical surface and valve shaft, when the shaft impetus the plug revolving, the plug spherical surface makes the bias revolve regard to the center of valve body, its path assumes the cam shape curve, when the valve shuts down, the supple arm of plug has the elastic deformation, causes the plug spherical surface and the valve seat close fitting, has achieved the reliable seal, therefore this valve also called the cam tune valve.

Main characteristic:

- ◆ Good seal
- ◆ The greater fixed discharge coefficient
- ◆ High dynamic stability
- ◆ wide suitable temperature
- ◆ The compact structure, light weight and easy installment.
- ◆ The simple body flow channel, is suitable to medium which have big viscosity.

Table. 1

Part name	Material	Temperature range(°C)
Body	A216-WCB	-5~425
	A351-CF8	-196~538
	A351-CF8M	-196~538
	LF6	-196~-45
Plug	A351-CF8M	-196~538
	A351-CF8M+Reinforced Teflon	-45~200
	A351-CF8M+Partial satellite alloy	-196~538
Stem	A351-CF8M	-196~538
Bearing	A351-CF8M	-196~538
Clamping ring	A351-CF8M	-196~538
Soft seal	Reinforced Teflon	-45~200
	Reinforced Teflon +Carbon fiber	-196~538
Metal seal	SUS316+Partial satellite alloy	-196~538

GYL-51100 Body size

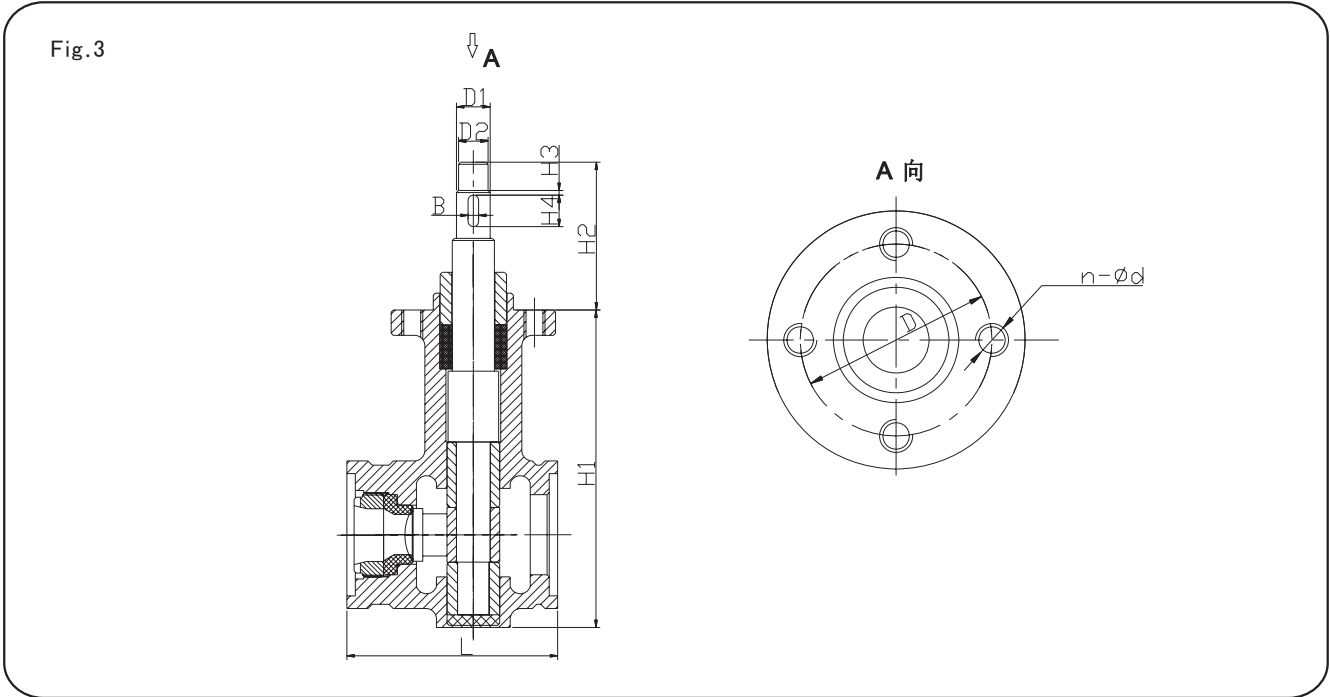


Table.2

Valve Size	L	H1	H2	H3	H4	B	D	n-φd	D1	D2
25	100	162	114	10	18	5	Φ58	4-M10	Φ16	Φ14
40	115	202	116	10	18	5	Φ58	4-M10	Φ16	Φ14
50	124	212	111	10	18	5	Φ58	4-M10	Φ16	Φ14
65	158	229.5	135	10	22	6	Φ80	4-M12	Φ18	Φ14
80	165	244	132	15	22	6	Φ80	4-M12	Φ18	Φ14
100	194	279	139	15	22	6	Φ80	4-M12	Φ18	Φ14
125	210	227	148	20	24	8	Φ90	4-M14	Φ18	Φ14
150	230	364	149	20	32	8	Φ90	4-M14	Φ28	Φ14
200	243	426	143	15	32	8	Φ90	4-M14	Φ28	Φ14
250	300	506	168	30	30	12	Φ108	4-M16	Φ38	Φ14
300	345	561	165	30	40	12	Φ108	4-M16	Φ38	Φ14

Pneumatic V-Type Ball Valve

The smart pneumatic V type ball valve is one kind of quarter turn sphere control valve, matches to position, realize proportional control, matches two position five-way solenoid valve, can realize open or close control. V type ball plug design has the special shape V gap, has the precise flow rate characteristic and control performance, is suitable to each kind of control situation, has good performance of big discharge coefficient, good seal, smart structure, etc. Is widely used in the petroleum, chemical industry, papermaking, chemical fiber, electric power, environmental protection, metallurgy, drugs manufacture automatic control system.

V type adjustment ball valve series parameter

Table.3

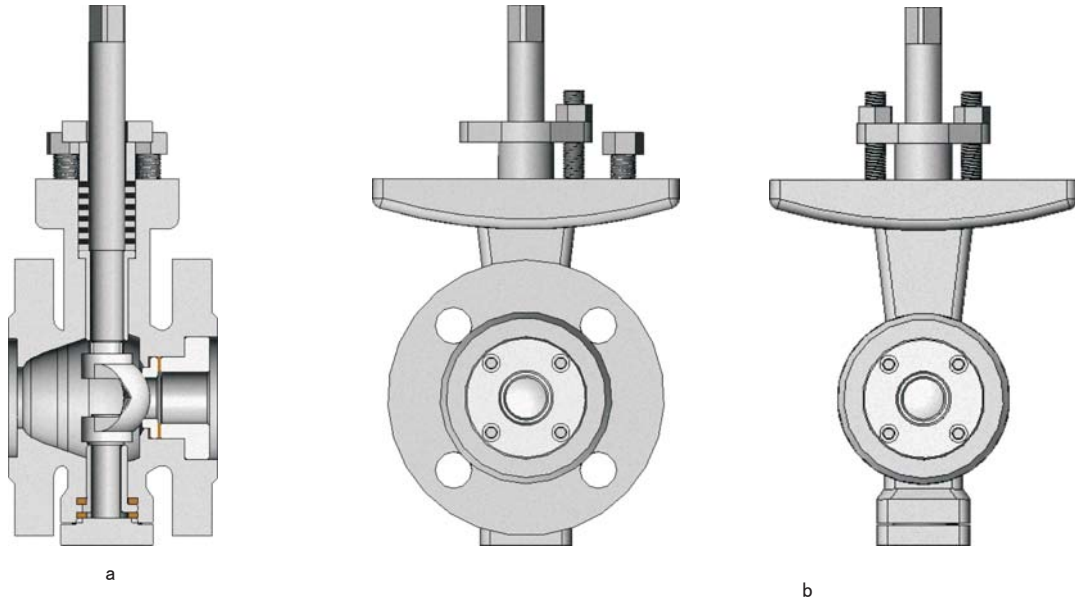
Hysteresis	≤ 1.5%
Dead area	≤ 0.6%
Air consumption	900L/h(Standard state)
Leakage	≤ 10 ⁻⁶ Rated discharge coefficient
Note	DN25~DN250Wafer Type、DN300~DN600Flange

GYL-50000 series ball valve

Trim type:	V type partial spherical surface
Size range:	1" ~ 18"
Body type:	GYR-51200
Pressure level range:	1.6Mpa 2.5Mpa 4.0Mpa 6.4 Mpa
Standard close level:	CALSS V (Standard Metal seat) CALSS VI (Standard Soft seat)
Actuator:	Pneumatic type: Pneumatic cylinder actuator R6000 series Electronic type: Electronic type 3810 series Intelligent type: IQ series
Characteristic:	The service life of V type ball valve is long, The adjustment precision is high, The suitable temperature range is -196~+250 °C.

GYL-51200 Body structure

Fig. 4



◆ Excellent adjustment characteristic:

V type valve has approximate equal percentage inherent flow rate characteristic and can reach as high as 300: 1 adjustment ratio, therefore the V type valve may provide the precise control in the broad range of variation.

◆ The biggest flow volume: As the reason for its streamline outlook as well as the full quarter turn control, the maximum value of the volume is special high, the circulation ability is special big, the circulation resistance is special small, therefore may use smaller nominal diameter valve.

◆ V type valve uses the double bearing structure, the stability high organization, the small start torque, guarantees the valve has good sensitivity and induced velocity.

◆ Most reliable (safe) performance:

The valve body is an integer type structure, the pressure has no influence on working, no leakage.

◆ Superior leak-proof quality of metal seat:

V type valve uses movement metal valve seat, has the automatic compensation function, superior sealing property and the ultra long service life. The leakage is smaller than rated flow rate coefficient multiply 10⁻⁶.

Table. 4

Part name	Material	Temperature range(°C)
Body	A216-WCB	-5~425
	A351-CF8	-196~538
	A351-CF8M	-196~538
	LF6	-196~-45
Plug	A351-CF8M	-196~538
	A351-CF8M+Reinforced Teflon A351-CF8M+Partial satellite alloy	-45~200 -196~538
Stem	A351-CF8M	-196~538
Bearing	A351-CF8M	-196~538
Clamping ring	A351-CF8M	-196~538
Soft seal	Reinforced Teflon	-45~200
	Reinforced Teflon +Carbon fiber	-196~538
Metal seal	SUS316+Partial satellite alloy	-196~538

GYL-51200 Appearance

Fig.5

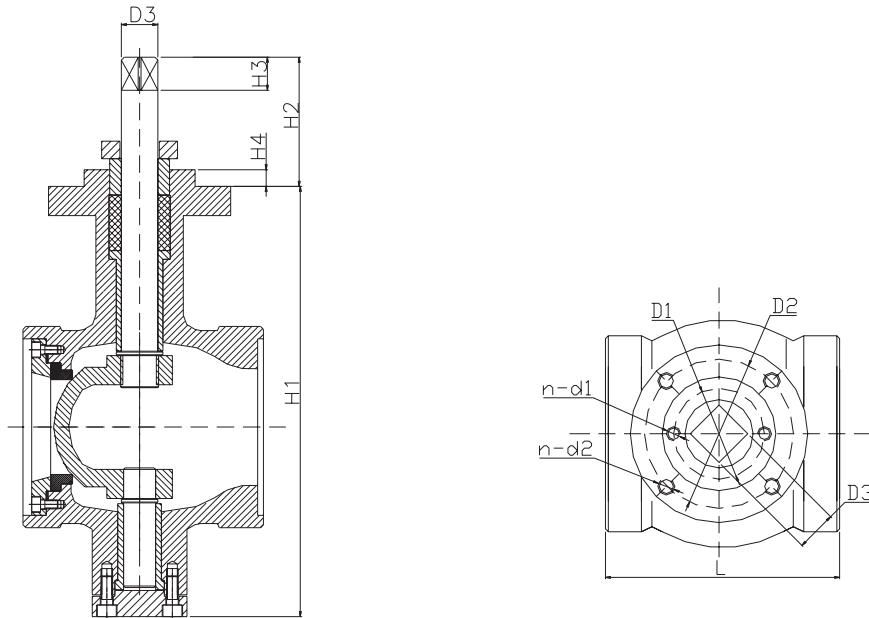
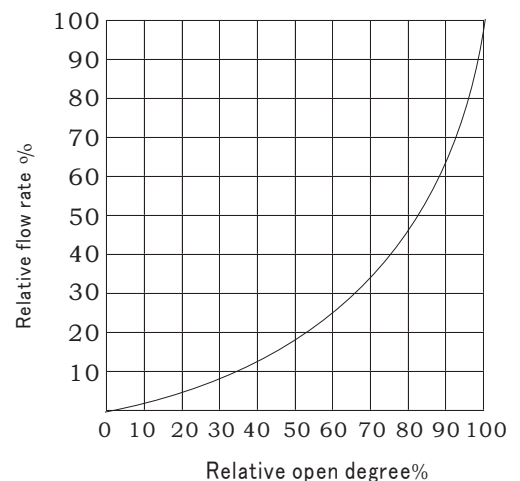


Table.5

Valvw size	L	H1	H2	H3	H4	D1	n-Φd1	D2	n-Φd2	D3
25	60	168	48	18	10	47	2-M8	Φ95	4-M10	14 14
40	60	186	63	18	10	47	2-M8	Φ95	4-M10	16 16
50	75	196	63	18	12	47	2-M8	Φ95	4-M10	16 16
65	85	242	63	18	12	47	2-M8	Φ95	4-M10	16 16
80	100	262	63	18	12	54	2-M8	Φ95	4-M10	20 20
100	115	281	62	18	12	54	2-M8	Φ95	4-M10	20 20
125	150	342	63	22	12	62	2-M10	Φ105	4-M12	24 24
150	160	386	62	25	12	62	2-M10	Φ105	4-M12	24 24
200	200	467	85	30	18	62	2-M10	Φ108	4-M14	24 24

- ◆ The fixed flow rate characteristic of V type adjustment ball valve is approximate equal percentage, the characteristic curve as the chart shows.
- ◆ Ultra strong cut-off ability: V type valve uses the metal seal structure, V type plug and the metal valve seat in the rotation structure, the V gap and the valve seat have a formidable shearing force to be able to shut off impurity and has from the clean function, avoids the valve locking to occurrence.
- ◆ Pneumatic V type ball valve has compact structure, the installment and maintain is convenient.



O-TYPE BALL VALVE

Pneumatic O type ball valve is one kind of pneumatic quarter turn cut-off valve, matches to solenoid valve and limited switch box, may realize long-distance shut-off control. O type fixed ball valve adopts the design for fixing the plug by front and back stem and movement seal seat to achieve the performance on small open or close torque, stably working, and automatic compensation function, is suitable to control the fiber and the small solid particle. The actuator adopts crank transform structure, has the performance on small output torque, smart volume, etc. the body of cylinder uses the mirror surface tube, the surface is smooth, no-oil lubrication, long service life, thus is widely applied to industry like papermaking, petrification, chemical industry, metallurgy, electric power, environmental protection, petroleum, light industry, etc.

Smart floated O type ball valve (floated ball)

Smart pneumatic O type ball valve use the ultra width rack, is composed of O type ball valve and aluminum alloy pneumatic actuator which adopts pinion drive double-piston technology, is one kind of quarter turn type cut-off ball valve, has the performance on small volume, simple structure, light weight, small open or close torque, big cut off ability and good seal, etc. and suitable to match to each kind of original installation import actuator, is widely applies to control gas, solid and fluid, etc.

GYR-51300 SERIES O-TYPE BALL VALVE

Trim type: O type concentric all spherical surface

Size range: 1" ~ 18"

Body type: GYR-51200

Pressure level range: 1.6Mpa 2.5Mpa 4.0Mpa 6.4 Mpa

Standard close level: CALSS V (Standard Metal seat)
CALSS VI (Standard Soft seat)

Actuator: Pneumatic type: Pneumatic cylinder actuator R6000 series

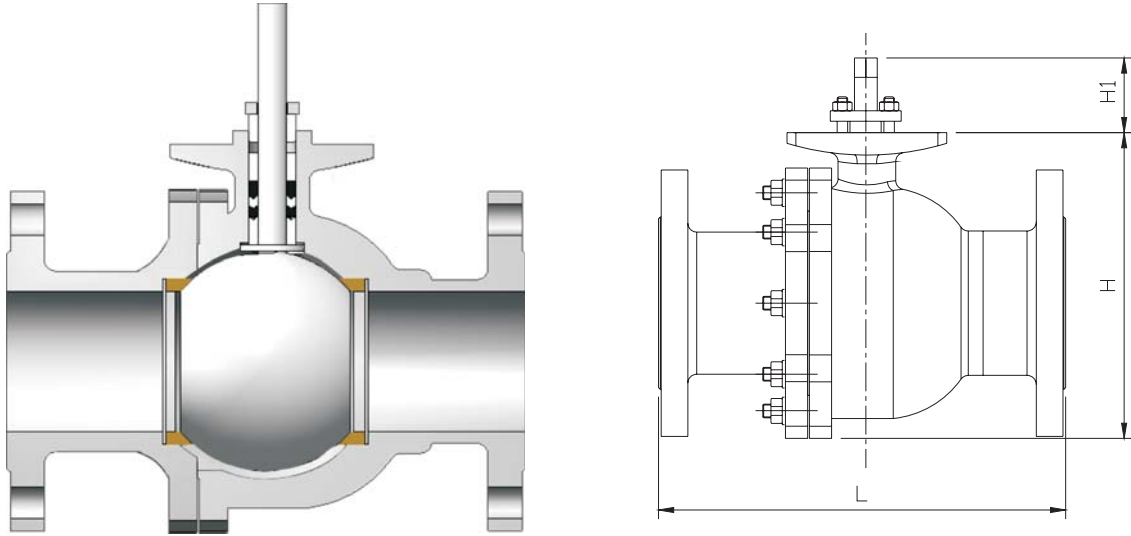
Electronic type: Electronic type 3810 series

Intelligent type: IQ series

Characteristic: Pneumatic cylinder O type ball valve is one kind of pneumatic quarter turn type valves, matches to solenoid valve and limited switch box, may realize long-distance shut-off control, the suitable temperature range is $-196^{\circ}\text{C} \sim +350^{\circ}\text{C}$.

Smart floated O type ball valve (fixed type)

Fig.6



Characteristic:

- ◆ The O type ball valve adopts ball-full design. The circulation resistance may ignore.
- ◆ The O type ball valve adopts the bidirectional metal seal structure, have good seal, wide suitable temperature range, strong cut-off ability, etc. the leakage is smaller than rated flow rate coefficient multiply 10⁻⁶.
- ◆ The O type ball valve plug, stem use overall casting, no machinery dead area, the valve stem will not fray forever, the service life is 5-10 times than normal ball valve.
- ◆ Pneumatic cylinder O type ball valve is composed of pneumatic piston type actuator and O type ball valve. The pneumatic piston actuator is the device of the O type ball valve. When the air supply enters one end of cylinder, the piston will movement from one end to another end, drives the crank and the rotation axis, thus make plug revolve 90 degree. Causes the valve open or close to control the medium.

Table.6

Part name	Material	Temperature range (°C)
Body	A216-WCB	-5~425
	A351-CF8	-196~538
	A351-CF8M	-196~538
	LF6	-196~-45
Plug	A351-CF8M	-196~538
	A351-CF8M+Reinforced Teflon	-45~200
Stem	A351-CF8M	-196~538
	A351-CF8M+Partial satellite alloy	-196~538
Bearing	A351-CF8M	-196~538
Clamping ring	A351-CF8M	-196~538
Soft seal	Reinforced Teflon	-45~200
	Reinforced Teflon +Carbon fiber	-196~538
Metal seal	SUS316+Partial satellite alloy	-196~538

Table.7

Valve size(mm)	L		H	H1
	PN1.6 4.0	PN6.4		
25	150	240	88	48
40	180	250	118	63
50	200	280	132	63
65	220	300	184	63
80	250	310	202	63
100	280	370	264	62
125	320	395	330	63
150	360	500	367	62
200	450	630	466	85

Pneumatic cylinder steam jacket type ball valve

Pneumatic cylinder steam jacket type ball valve

Use and characteristic

Pneumatic cylinder steam jacket type ball valve is suitable to each kind of pipelines on PN10-25 pressure. Cut or put through the medium in the pipeline like the steam, the oil quality, the liquid gas, the natural gas, the coal gas, the nitric acid, the acetic acid, the urea by selecting the different material, and it can keep warm and prevent the medium crystal. It has the compact structure, small volume, light weight, good performance on keeping warm, is convenient to installment, open and close, etc.

Main part material

Body: ZG230-450.Stainless steel 304、316、316L

Plug: Stainless steel 304、316、316L

Seat: Metal seal seat304、316、316L,Soft seal PTFE

Pneumatic O type 3-way ball valve

Pneumatic O type 3-way ball valve

Pneumatic O type 3-way ball valve is one kind of three channels rotation control ball valves, enable a control valve to have the functions of two control valves. It is composed of pneumatic cylinder actuator,O type 3-way ball valve and two position five-way solenoid valve. The plug has L and T types, satisfy with each kind of product craft requirement.

All pipelines may take the entrance or the exportation according to actual requirement.

Pneumatic lining fluorine O type ball valve

Pneumatic lining fluorine O type ball valve

Use and characteristic

According to the market demand, we develop the pneumatic lining fluorine O type ball valve, the valve body has used the inside lining fluorine plastic, and matches plug with stem, in addition its unique elastic lip type seal seat structure, enable it to have the higher seal strength and the corrosion resistance ability.

The pneumatic lining fluorine O type ball valve is not only suitable for transporting each kind of the liquid and the gas (including steam) in pipeline, but also suitable to each kind of strong corrosive medium like acid, the alkali, the salt and so on.

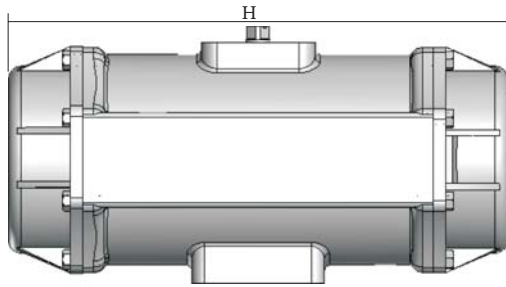
Connection type: Flange type

Suitable temperature: -80~200℃

Drive: Handle、Gear drive、Electric motor type、Pneumatic cylinder

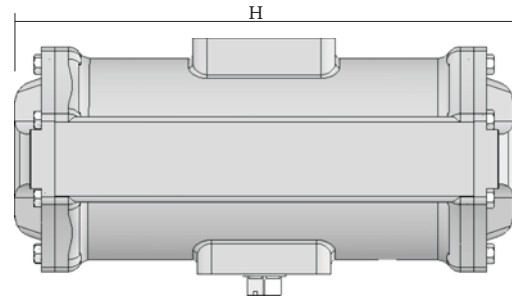
Actuator type

Fig.7



R6000 Single action cylinder actuator

a



R6000 Double action cylinder actuator

b

- ◆ Model R6900 Double action type
R6500 R6600 Single action type

- ◆ This series is one kind of the small size, high performance actuator, divides into the double action and single action, combination with the angle stroke control valve, adjusts and shuts off the valve.

Air supply: 500Kpa

Angle rotation: 90

Performance hysteretic: with position, within 1.5%FS

Ambient temperature: -20~80°C

Material: Cylinder WCB/ Aluminum alloy
Piston Lf2
Output shaft Stainless steel
Piston ring O-type ring
Cylinder cover WCB

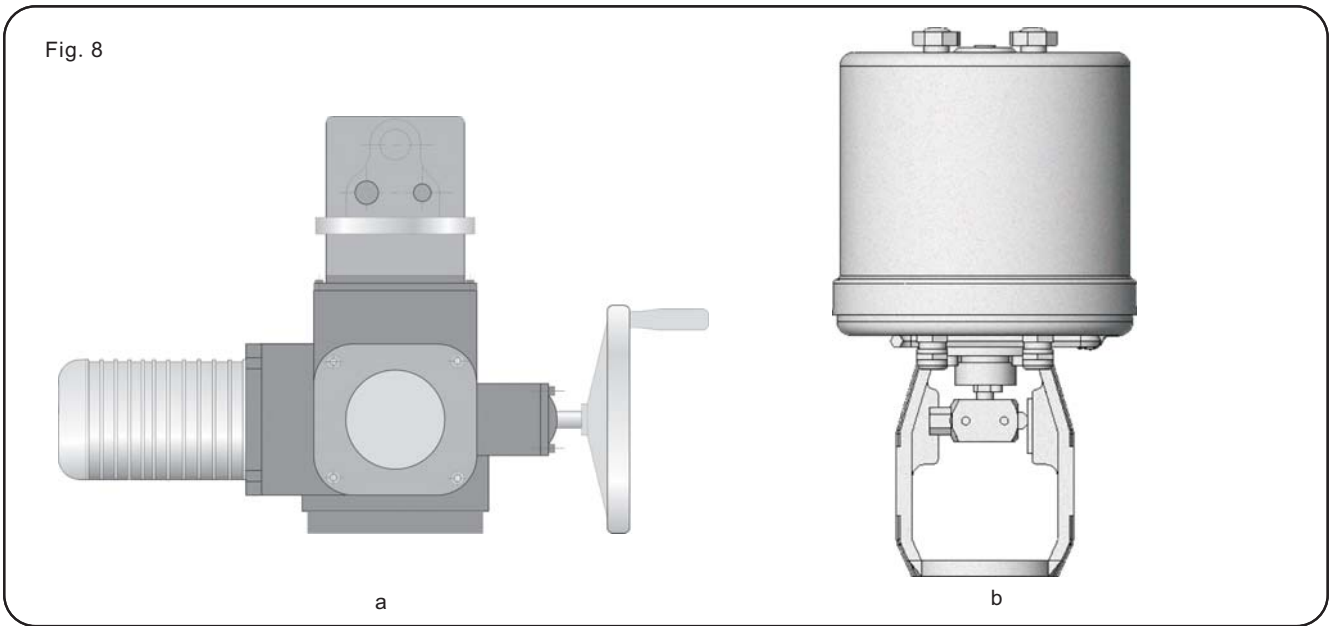
the diameter of cylinder: A(Φ)

Accessory: Position, Air filter, Speed increaser,
Air bells controlled valve, Limited switch,
Solenoid valve, Handwheel

Table.8

Actuator model and appearance	Output torque					
	Single action type			Double action type		
	H	A	Output forceN	H	A	Output forceN
R6030	175	364	130	175	472	180
R6040	215	466	206	215	568	346
R6050	255	540	300	255	640	600
R6060	315	616	604	315	770	1092
R6070	375	645	1116	375	805	2056
R6080	435	896	1607	435	1182	3140
R6090	490	990	2310	490	1314	6000

Electronic actuator



Intelligent type electric actuator (Fig. 10. a)

- ◆ The liquid crystal display(LCD),the liquid crystal screen can display the open degree of valve by digital lively, and can give an alarm according to the working condition, instructs the valve open or close by the high brightness LCD diode.
- ◆ The long-distance control, the switch signal can be controlled (optional 4~20mA current signal control), can regulate the valve position by change the input signal.
- ◆ Debugging without opening the cover
- ◆ High Intellectualization
- ◆ Aluminum alloy shell, high strength protection
- ◆ Effective and low noise
- ◆ The coupling can reset automatically
- ◆ Connection is convenient and fast
- ◆ Absolute code the position transducer

Intelligent type electric actuator is a main scene control device in automatic control system, is widely matched to ball valve, butterfly valve, plug valve and air door, etc. Used in pipeline, dumps pollutants, paper pulp, shipbuilding and so on and which is serviced for the power plant, metallurgy, petroleum, chemical industry, water conservation, machinery, light industry, fire prevention and environmental protection, it can also provides the most reasonable solution in the scope of output torque in 60NM~2500NM.

Electronic actuator (Fig. 8. b)

3810L Electric performer of straight stroke&Electric-type				Table. 9
Model specifications	Output force(N)	Operating Speed (mm/s)	MAX TRAVEL (mm)	
381LSA-08	800	4.2	30	
381LXA-08				
381LSA-20	2000	2.1	60	
381LXA-20				
381LSB-30	3000	3.5	100	
381LXB-30				
381LSB-50	5000	1.7	100	
381LXB-50				
381LSC-65	6500	2.8	100	
381LXC-65				
381LSC-99	10000	2.0	100	
381LXC-99				
381LSC-160	16000	1.0	100	
381LXC-160				
381LSC-260	26000		100	
381LXC-260				

Electronic actuator is divided into straight stroke and angle stroke series, GYR-50000 series control valve is matched to straight stroke electronic actuator, uses AC 220V as drive power, accepts the control single from the regulate (DC4-20mA or DC1-5V),realize scheduled to-and-for movement. This series actuator,nearly has all functions like movement transformation, valve open degree signal and the manual function, therefore is widely used in generate electricity, metallurgy, petrification, light industry and environmental protection.

BEIER Control Valve

Product Code Model

GY

1	2	3	4	5	6	7	8	9	10	×	11	·	12	·	13	·	14	15	16	17	18
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Body

Specification

Actuator

1. Code of the valve body

1 CodeNo.	Type	2 CodeNo.	Type	3 CodeNo.	Circulate type	6 CodeNo.	Connection type
L	Straight stroke	2	Unbalance trim series	1	Straight structure	1	Flange
		4	Balance trim series	2	Angle structure	2	Wafer
R	Angle stroke	5	Spherical series	3	Three way structure	3	Butt welding End
		7	Butterfly series	4	“z” structure	4	Thread

4 CodeNo.	GYL series trim	GYR series trim	5 CodeNo.	Bonnet type	8 Code No.	Multistage pressure reducing level		
1	Economic type thread screw-in type seat	Eccentric partial spherical	1	Standard	II	II level		
2	High performance type cage embed type seat	Concentric partial spherical	2	Fin-Extension	III	III level		
3	High performance type double plug relief type	Concentric total spherical	3	Long-Extension	IV	IV level		
4	Cut-off type	—	4	Corrugated pipe seal	V	V level		
5	Economic type sleeve double valve seat	Normal seal type	5	Clamp cover	VI	VI level		
6	Sleeve single seat	End-face seal type	7 CodeNo.	Trim supplement explanation	VII	VII level		
7	Multi-hole type cage structure	High performance eccentric type			R	Soft seal	VIII	VIII level
8	Labyrinth type cage structure	Triple eccentric multi-layers structure			Y	Metal seal	9 CodeNo. Special request	
9	Multi-stage pressure reducing type	—			S	Seat guided type		
			C	Lining structure type	18 CodeNo. Spring range			
					A	20—100KPa		
					B	40—200KPa		
					C	80—240KPa		
					D	120—360KPa		
					E	160—480KPa		

2. Code of the Specification parameter

10 Code No.	11 Code No.	12 Code No.	13 Code No.	Flow characteristics
Nominal Diameter	Plug size	Nominal pressure	Z	linearity
The code number above may be filled in directly according to the concrete number.			D	Equal-percentage
			X	Special request

3. Code of the actuator

14 CodeNo.	Actuator type	15 CodeNo.	Actuator type	17 CodeNo.	Pneumatic type Specification	Piston size	Diaphragm type specification		
L	Straight stroke	4	Multi-Spring diaphragm type	1	Straight stroke	Angle stroke			
		5	Single-Spring diaphragm type						
R	Angle stroke	6	Cylinder type	2	—	65			
		7	Solid state electronic type	3	180	100	2#		
		8	Electrical type	4	—	130	3#		
		19 CodeNo.	Manual operation	5	250	160	4#		
				P	Side	6	320	200	5#
				D	Top	7	350	250	6#
				W	Worm wheel	8	—	300	
16 CodeNo.	Action type			9	—	350			
5	Single action Air-open type								
6	Single action Air-close type								
7	Double action with emergency cut-off								
8	Double action with emergency open								
9	Double action								



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Ball Valve

Zhejiang BEIER Control Valve Co.,Ltd.
Add: XiaoNanShan Industrial district of
TangXia Town,Ruian,Zhejiang China.
Tel: 0086-577-56763781, 56763782
65360522
Fax: 0086-577-65360522
PC: 325204
Email: info@controlvalves.cn
beier@controlvalves.cn
beiercontrolvalve@gmail.com
Web: Http://www.controlvalves.cn