

BEIER-04R. 01-018



GYR-71500

GYR-71600

Low Load Butterfly Valve

ZHEJIANG BEIER CONTROL VALVE CO.,LTD.

[Http://www.Controlvalves.cn](http://www.Controlvalves.cn)

Low Load Butterfly Valve

GYR-71500 Open style low load Butterfly valve

GYR-71600 Back seat type low load butterfly valve (Butterfly surface seal butterfly valve)

GYR-70000 series butterfly valve has the function of adjustment and cut-off performance, also is an economical, useful and automatic control valve. The volume is small, weight is light, the circulation is wide and is convenient to maintenance and so on. So the valve is used in control low-pressure fluid widely.

The perfect union of long-term precision and stable control

The valve contents, the disposition promote and renovate unceasingly

The long service life, maintains conveniently

GYR-71⁵₆00 SERIES BUTTERFLY VALVES

Trim type: Light low load Concentric type structure

Integrative style seal surface

GYR-71500 adopts normal seal structure

GYR-71600 adopts surface seal structure

Size range: 4" ~ 80"

Body type: GYR-71500 GYR-71600 (Selection of Control Valve Model See Page 10)

Pressure level range: 0.6Mpa 1.0Mpa 1.6Mpa

Standard close level: Allowed leakage is smaller than rated capability

multiply 2.0% (Normal seal structure)

Allowed leakage is smaller than rated capability

multiply 2.0% (Surface seal structure)

Application situation: Be suitable to control the flow rate and pressure of air and other fluids in

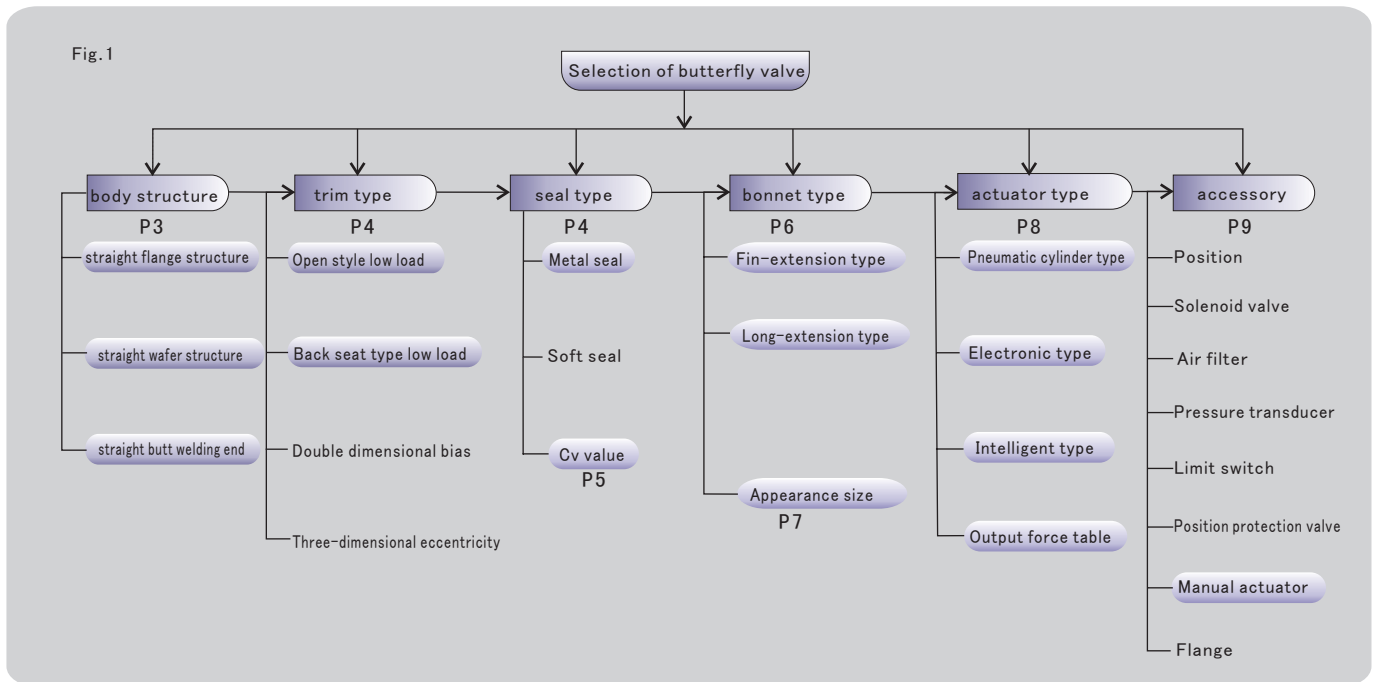
low pressure state, in addition is also suitable for high temperature fluid,

Suitable temperature range is -196~+800°C.

Low load butterfly valve

GYR-71500 Open style low load Butterfly valve

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※ Note:

You may configure the GYR-71500/GYR-71600 series valve according to the arrow to show by the Fig.1 of guidance chart.

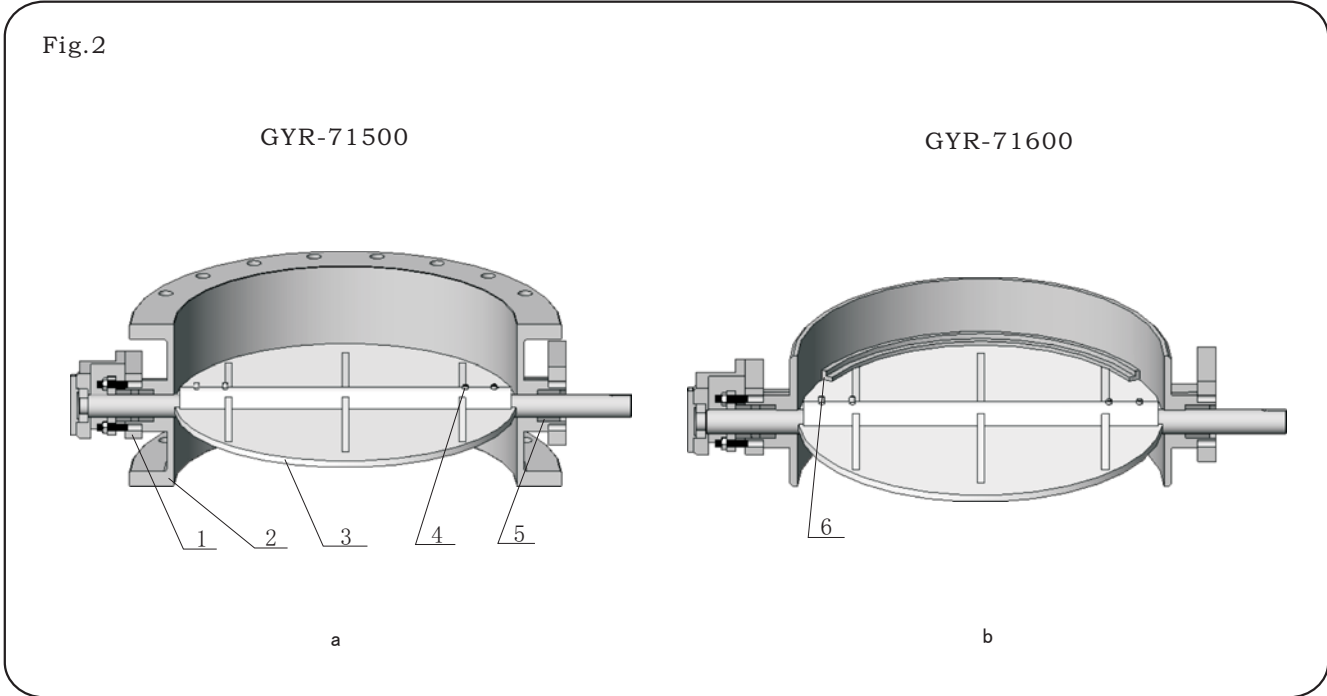
The shadowed content is addressed in this manual.

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.

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.

GYR-71⁵600 Body structure



◆ The valve body in Fig.2 (a) chart is the flange type; the (b) chart is butt welding type flange.

◆ The butterfly valve through a flat disc revolves in the fluid, forms the seal with the body, controlling the fluid. The body and disc are both made of steel, is one kind of the light weight, simple structure butterfly valve, is suitable to control the flow rate and pressure of air and other fluids in low pressure state, in addition is also suitable for high temperature fluid.

◆ The axes of stem can not only vertical to pipeline, but also can incline the certain angle. The disc is usually fixed to the stem by pin, and the pin must be sealed. The pin locates at a higher position which approaches to the operation end, to reduce distortion, dead area and operation torque.

◆ The design of pin is reasonable, enables it to withstand a bigger load.

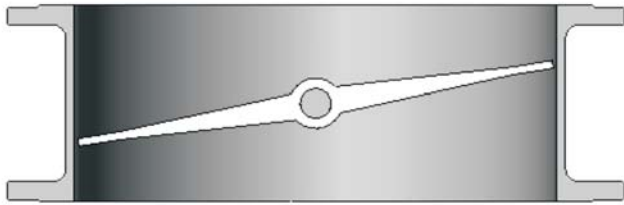
◆ In each kind of valve, the material of butterfly valve uses the least, the body has big space, the wafer type flange structure compared with the others, the length of double armed bolt is the shortest.

Table.1

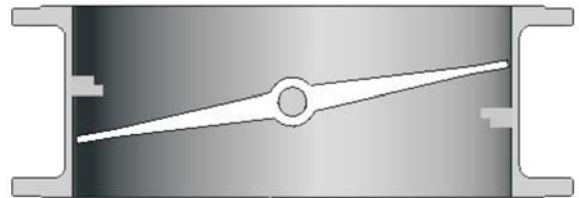
No.	Part name	Material	Temperature range
1	Back cover	WCB	-5~425
		A351-CF8	-196~538
		A351-CF8M	-196~538
2	Body	WCB	-5~425
		A351-CF8	-196~538
		A351-CF8M	-196~538
3	Disc	WCB	-5~425
		A351-CF8	-196~538
		A351-CF8M	-196~538
4	Packing	Reinforced Teflon	-40~232
		Flexible graphite	-196~538
5	Pin	A351-CF8M	-196~538
6	Metal seat	A351-CF8M	-196~538
		A351-CF8M+Partial satellite alloy	-196~538

GYR-71⁵₆00 Trim type, seal type

Fig.3



GYR-71500 control valve body

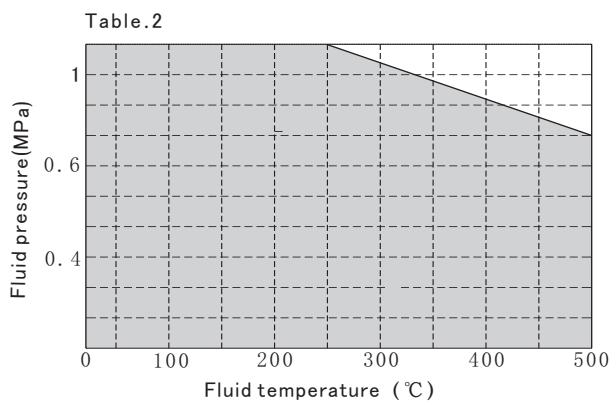


GYR-71600 control valve body

- ◆ GYR-71500 is normal seal type, is mainly used in normal duty services like clamp valve.

- ◆ GYR-71600 is surface seal type, is mainly used in heavy duty services like clamp valve and discharge valve

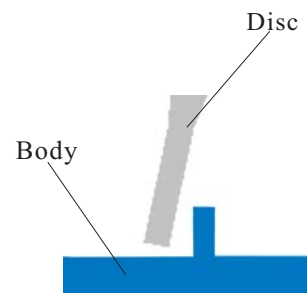
The temperature and pressure range of seal seat



- ◆ The temperature and pressure range of seal seat refer to shows.
- ◆ If needs higher temperature product, please conduct you BEIER engineer.

GYR-71600 series

Fig.4

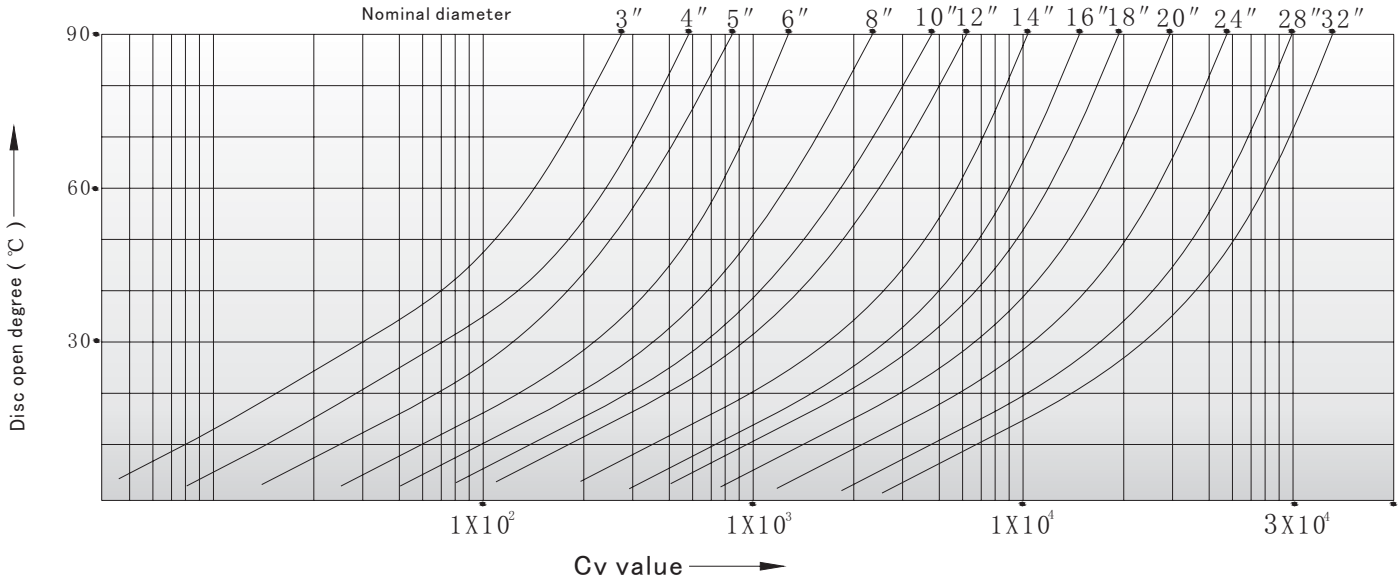


- ◆ The seal seat material is consistent with the valve body, may surfacing stainless steel or alloy according to the duty services and the temperature.

GYR-71⁵₆₀₀ Flow rate characteristic

Flow rate characteristic

Table.3



The conversion of Kv and Cv as follows: $Cv = 1.167 Kv$

◆ The Cv definition is: when the valve all opens, with the 40-60° F water, keep valve beginnings and ends differential pressure is 1 psi, under this condition has flowed the flux(unit: gallon) of the water per minute. (A gallon is a unit of measure for liquid.1 US gallon=3.785 liter)

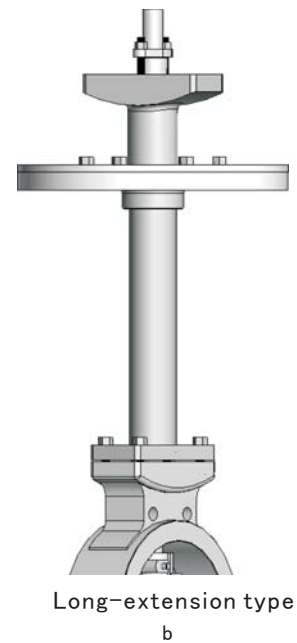
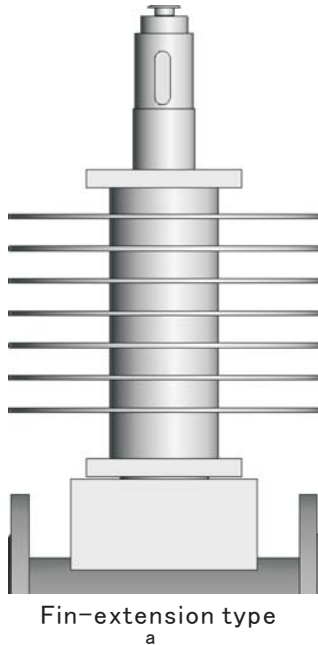
◆ The Cv value, is an important parameter of control valve, it reflected that the ability the fluid passes the control valve, also is the control valve capacity. According to the control valve circulation ability Cv value computation, may determine the diameter of the control valve, in order to choose the size of the control valve correctly, must calculate the rated flow rate coefficient Cv value of the control valve accurately.

Table.4 Cv valve

Nominal diameter in h(cm)	150#									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
3(80)	34.45	60.07	85.68	111.3	136.92	162.53	188.15	213.77	139.38	265
4(100)	62.4	108.8	155.2	201.6	248	294.4	340.8	387.2	433.6	480
5(125)	97.5	170	242.5	315	387.5	460	532.5	605	677.5	750
6(150)	152.1	265.2	378.3	491.4	604.5	717.6	830.7	943.8	1056.9	1170
8(200)	300.3	523.6	746.9	970.2	1193.5	1416.8	1640.1	1863.4	2086.7	2310
10(250)	448.5	782	1115.5	1449	1782.5	2116	2449.5	2783	3116.5	3450
12(300)	764.4	1332.8	1901.2	2469.6	3038	3606.4	4174.8	4743.2	5311.6	5880
14(350)	989.3	1724.9	2460.6	3196.2	3931.8	4667.5	5403.1	6138.7	6874.4	7610
16(400)	1399	2334.7	3330.3	4326	5321.7	6317.3	7313	8308.7	9304.3	10300
18(450)	1781	3105.3	4429.3	5754	7078.3	8402.7	9227	11051.3	12375.7	13700
20(500)	2288	3989.3	5690.7	7392	9093.3	10794.7	12496	14197.3	15898.7	17600
24(600)	3393	5916	8439	10962	13485	16008	18531	21054	23577	26100
28(700)	4953	8636	12319	16002	19685	23368	27051	30734	34417	38100
32(800)	6266	10925.3	15584.7	20244	24903.3	29562.7	34222	38881.3	43540.7	48200
36(900)	6890	12013.3	17136.7	22260	27383.3	32506.7	37630	42753.3	47876.7	53000
40(1000)	7436	12965.3	18494.7	24024	29553.3	35082.7	40612	46141.3	51670.7	57200

Bonnet type

Fig.5



◆ Fin-extension type Bonnet

Fig.5.c chart is a fin-extension bonnet type, design for high temperature service, chooses special material, the maximum temperature can bear 750°C.

BEIER high temperature butterfly valve characteristic

- ◆ The long stem can keep the packing cooling effectively.
- ◆ The trim after the surface carburizing, strengthen the intensity in very heavy duty services.
- ◆ To prevent movement and guarantee no leakage, uses welding in high temperature.
- ◆ Outstanding achievement about high temperature duty services.

◆ Long-extension type Bonnet

Fig.5.b chart is a long-extension bonnet type, design for cryogenic service, which suitable temperature is $-196\sim 538^{\circ}\text{C}$, according to the different of the valve size, the strengthen range is 400mm~900mm, this kind bonnet can protect the packing and actuator effectively, adopts the low temperature material which can bear impact and suitable for different temperature requirement.

BEIER low temperature butterfly valve characteristic:

- ◆ Air bubble strict level seal under low temperature;
- ◆ The Smallest hotly consumes;
- ◆ The smallest cooling gathers;
- ◆ Change structure quickly;
- ◆ Simple structure;
- ◆ The material can bear the appropriate impact intensity under the low temperature and has the different temperature contraction coefficient.

Appearance

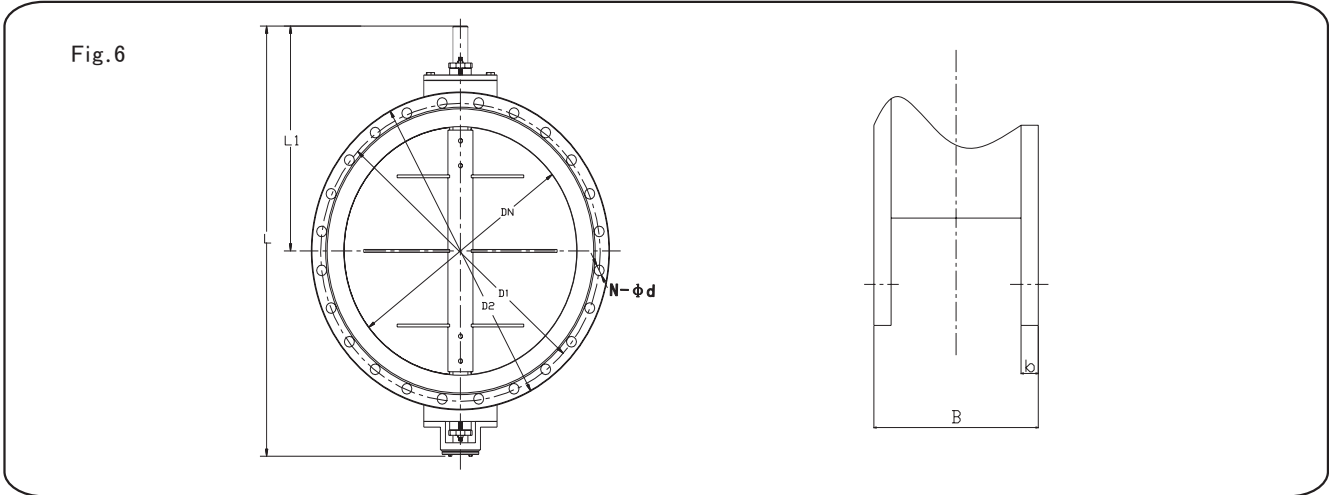


Table.5

DN	D2	D1	B	b	N-φd	L1	L
PN 0.6MPa							
6" (150)	265	225	200	16	8-φ18	141	330
8" (200)	320	280			8-φ18	170	390
10" (250)	375	335	200	16	12-φ18	197	440
12" (300)	440	395			12-φ22	220	515
14" (350)	490	445			12-φ22	250	565
16" (400)	540	495	200	16	16-φ22	270	630
18" (450)	595	550			16-φ22	300	680
20" (500)	645	600			20-φ22	325	730
24" (600)	755	705	250	20	20-φ26	510	1006
28" (700)	860	810			24-φ26	560	1118
32" (800)	975	920	300	20	24-φ18	618	1300
36" (900)	1075	1020			24-φ18	668	1400
40" (1000)	1175	1120	400	20	28-φ18	718	1500
48" (1200)	1375	1320			32-φ30	818	1720
56" (1400)	1575	1520	450	20	36-φ30	918	1920
60" (1500)	1690	1630			38-φ30	1000	2010
64" (1600)	1790	1730	500	24	40-φ30	1050	2110
72" (1800)	1990	1930			44-φ30	1150	2410
80" (2000)	2190	2130			48-φ30	1250	2610

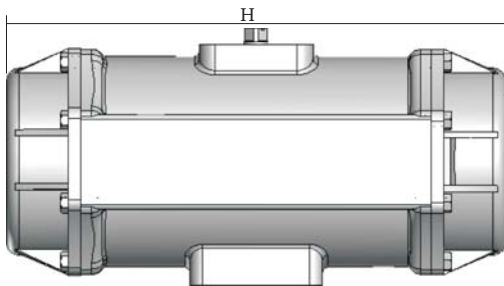
◆ The left form shows corresponding data

- The executive standard is:
- Design standard: GB12238-89
- Face-to-face dimension: GB12221-89
- Body sign: GB.12220-89
- Valve flange: GB/T.9113.1-2000
- Pressure test: GB/T.4213-92

◆ If needs disposes other standard valve, please indicates when provides the parameter, if has any question, please consult your BEIER engineer.

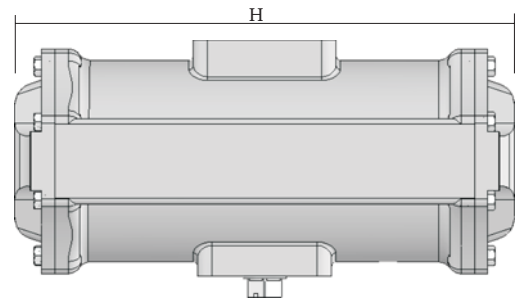
Actuator type

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 hysteric: 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

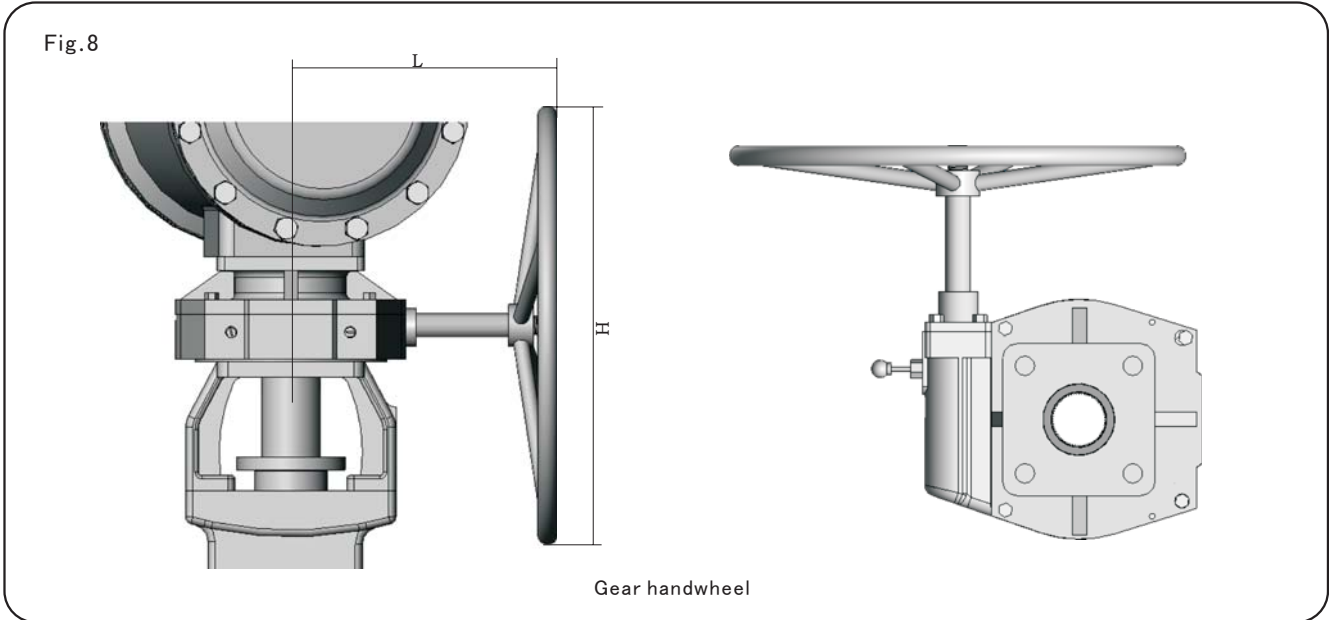
the diameter of cylinder: A(Φ)

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

Table.6

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

GYR-71⁵600 Valve accessory



◆ Handwheel

Action: Open or close the valve by handwheel

Type: Gear handwheel

◆ Position

Function: Control the valve according to input signal from regulator quickly and high accurately, and can change direct or reverse action, characteristic.

◆ Air filter

Function: adjust the air supply and filtrate pollutants.

◆ solenoid valve

Function: Open or close the valve by electrical signal provided by solenoid valve.

◆ Limited switch

Function: Transform the open or close position of control valve to electrical signal.

◆ Pneumatic accelerator

Function: Improves the control valve movement speed.

◆ keep position valve

Function: keep control valve open degree when the gas signal or air supply has the undulation.

Table.7

valve size inch (mm)	Handwheel	
	L	H(Φ)
4" (100)	225	250
6" (150)	225	250
8" (200)	225	250
10" (250)	233	300
12" (300)	233	300
14" (350)	233	300
16" (400)	277	400
18" (450)	277	400
20" (500)	277	400
24" (600)	271	400
28" (700)	277	400
32" (800)	277	400

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 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#	
16 CodeNo. Action type			19 CodeNo.	Manual operation	4	—	130	4#
5	Single action Air-open type	P			Side	5	250	160
6	Single action Air-close type	D	Top	6	320	200	6#	
7	Double action with emergency cut-off	W	Worm wheel	7	350	250		
8	Double action with emergency open			8	—	300		
9	Double action			9	—	350		



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Low Load

Butterfly Valve

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