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上海瓦特斯阀业有限公司

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控制阀系列
Control Valve



Watesi control equipment(Shanghai) co., Ltd.
Shanghai watesi valve co., Ltd



跨越 • 国界

Span Border

上海 SHANGHAI

意大利 ITALY

不同国家 • 共享相同品牌

自从我们的足迹印在世界每一个角落那一刻起，瓦特斯就不仅仅属于中国，而是世界人民共有。

一直以来，我们始终致力于为全球客户提供更为先进的控制系统，更为完善的售后服务。

到现在为止，已经有多个国家和地区体验着瓦特斯品质的魅力。

不同国家，相同的是对瓦特斯品牌的情感。

让我们用自动化成就工业之“美”！

DIFFERENT COUNTRIES • THE SAME BRAND

SINCE THE MOMENT WE SET FOOT ON EVERY CORMER OF THE WORLD, WATESI NO LONGER BELONGED TO CHINA ONLY, BUT HAS BEEN THE WEALTH OF THE PEOPLE THROUGHOUT THE WORLD.

WE ALWAYS STRIVE TO PROVIDE MORE ADVANCED CONTROL SYSTEMS AND EVEN BETTER AFTER-SALES SERVICE TO OUR CUSTOMERS ALL OVER THE WORLD; BY NOW, MANY COUNTRIES AND REGIONS ARE EXPERIENCING THE CHARM OF WATTS' PRODUCTS.

THE DIFFERENT COUNTRIES LOVE WATTS BRAND IN THE SAME WAY!

LET OUR AUTOMATION CREATE THE "BEAUTY" FOR INDUSTRY.



瓦特斯 · 掌控自在我芯

WATESI, PRODUCTION THE GONGYE

我们的优势

工业行业中的电子、石化、电力、轻工、冶金、医药、食品、纺织、煤炭等随着现代制造工艺的进步，对测控设备的高精准、宽量程、低功耗、低成本的要求也随之提高，大多数传统的测控设备往往功耗大，介质的特性对其测量影响无法消除，从而使其制造过程复杂，成本高昂，难以大规模在生产工艺中使用，瓦特斯WL系列控制阀为引进意大利先进工艺技术设计制造，该系列控制阀分为顶部导向(WL-20000)和套筒导向(WL-40000)两大类，以适应多种工况要求而设计，与传统调节阀相比最大的区别如下：

OUR ADVANTAGES

WITH THE ADVANCEMENTS IN THE MODERN MANUFACTURING PROCESSES, THE ELECTRONIC, PETROCHEMICAL, ELECTRIC POWER, LIGHT INDUSTRY, METALLURGY, MEDICINE, FOODSTUFF, TEXTILE, COAL AND OTHER INDUSTRIES HAVE RAISED THE REQUIREMENT FOR THE HIGH PRECISION, WIDE SPAN, LOW POWER AND LOW COST OF MONITORING AND CONTROL EQUIPMENT. SINCE MOST OF THE TRADITIONAL MOTORING AND CONTROL EQUIPMENTS WILL HAVE LARGE POWER CONSUMPTION, THE IMPACT BROUGHT BY THE CHARACTERISTICS OF MEDIUM ON THE MEASURING CANNOT BE ELIMINATED, WHICH MAKES THE MANUFACTURING PROCESS RELATIVELY COMPLEX AND EXPENSIVE, MAKING IT DIFFICULT TO BE WIDELY USED IN PRODUCTION PROCESSES. WATESI WL SERIES CONTROL VALVES ARE DESIGNED AND MANUFACTURED USING THE ADVANCED ROCESS TECHNOLOGY INTRODUCED FROM ITALY. THIS SERIES ARE DIVIDED INTO TOP-GUIDED (WL-20000) STYLE AND SLEEVE GUIDED STYLE (WL-40000), WHICH ARE DESIGNED TO ADAPT TO THE REQUIREMENTS OF A VARIETY OF OPERATING CONDITIONS. COMPARING TO TRADITIONAL ADJUSTING VALVES, THE MOST SIGNIFICANT DIFFERENCES ARE AS FOLLOWS:

- 1、引进意大利先进工艺技术设计制造，采用模块化设计，实现了同口径阀内件互换性。
- 2、先进的直压式阀座设计，无螺纹阀座连接，易于维修和装配，又实现了快速拆装。
- 3、具有多种阀内件密封形式，针对不同工况可快速更换阀内件组合，可满足不同的控制要求。
- 4、阀杆密封采用双层填料密封组合结构，填料压套采用螺纹压紧，解决了传统螺栓压紧致其压力不均匀而存在泄漏的风险。
- 5、填料压套采用螺纹压紧密封环设计，具有密封防尘和去污作用。
- 6、WL系列控制阀采用加粗型阀杆，刚性好，用抛光和滚压工艺提高表面光洁度和硬度，确保最低的泄漏和摩擦力。
- 7、阀芯采用双导向结构，解决了传统调节阀卡死现象，使其性能更稳定。
- 8、创新大容量阀体内腔设计，呈S流线型通道，增设流体平衡流动导流翼，降低了气蚀的产生和流体不平衡力，压降损失小，具有流量大，可调范围大，流量特性精度高等优点。

1. Introducing the advanced process technology form Italy for the designing and manufacturing, using modular design and implement the same caliber valve trim interchangeability.
2. Advanced direct pressure valve seat design and thread-free valve seat connection facilitate the repair and assembly, also implementing rapid assembling and disassembling.
3. Having several sealing types of valve trims, different combinations of valve trims can be rapidly alternated for different operating conditions to meet different requirements for control.
4. The sealing of valve rods uses the structure of double-layer stuffing sealing combinations, the stuffing packing bush uses screw-packing, eliminating the risk of leak due to unevenness of pressure caused by traditional screw-packing.
5. The stuffing packing bush uses the design of screw-packing sealing rings, which provide the function of sealing, dustproof and decontamination.
6. WL series of control valves use thick valve rods of good stiffness, and use the polishing and rolling process to improve the surface finish quality and stiffness for ensuring the minimum leakage and friction.
7. Valve cores adopt a dual-guide structure, which eliminates the seizure of traditional valves, offering stabler performance.
8. The product has an innovative design of large-capacity valve cavity, S-shaped streamline channels, and additional flow-deflecting wings for the balanced flow of fluid, decreasing the production of cavitations and the unbalanced force of fluid, with relatively little pressure drop losses, possessing the advantages of large flow and adjustable range, high precision of flow characteristics and others.

WL型系列控制阀

WL-20000 /WL-40000



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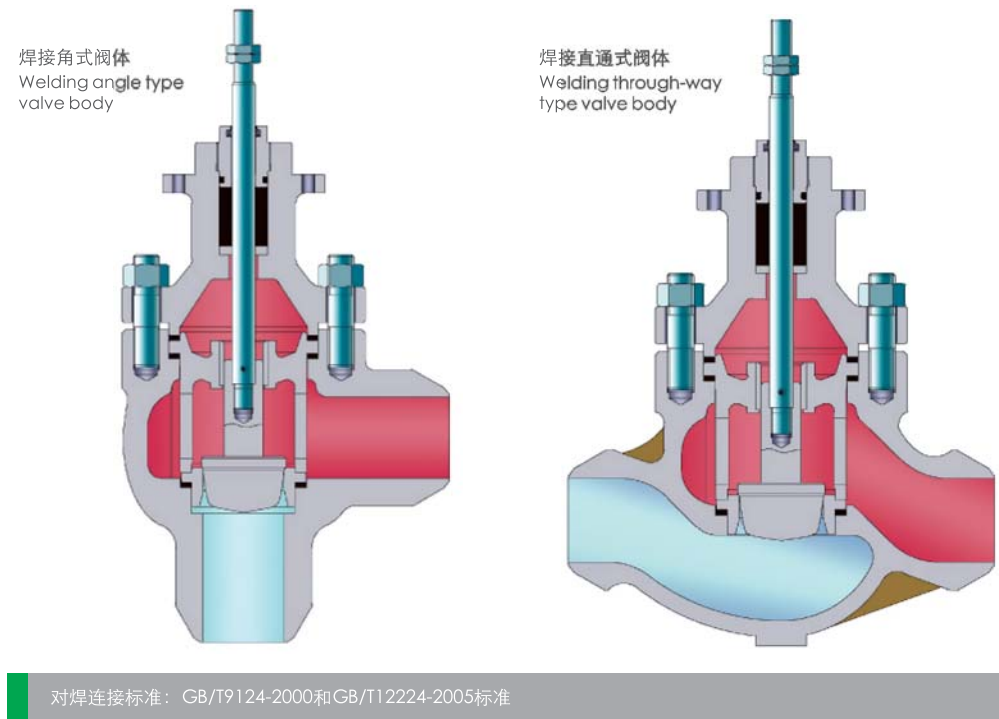
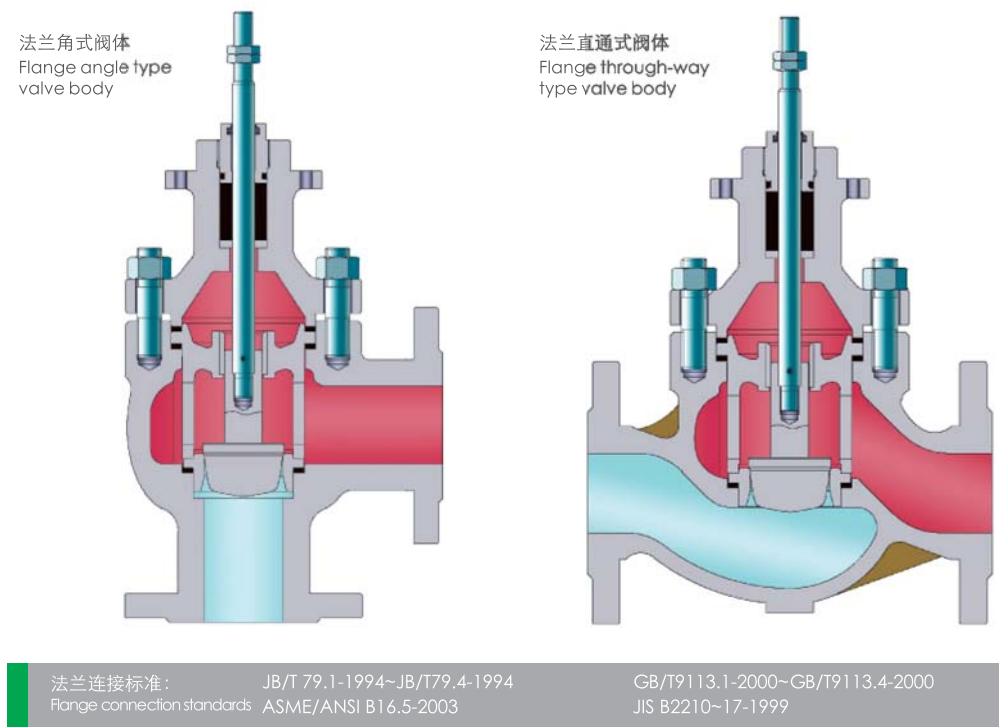
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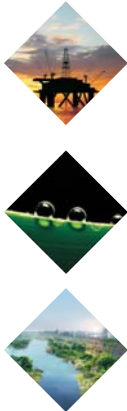
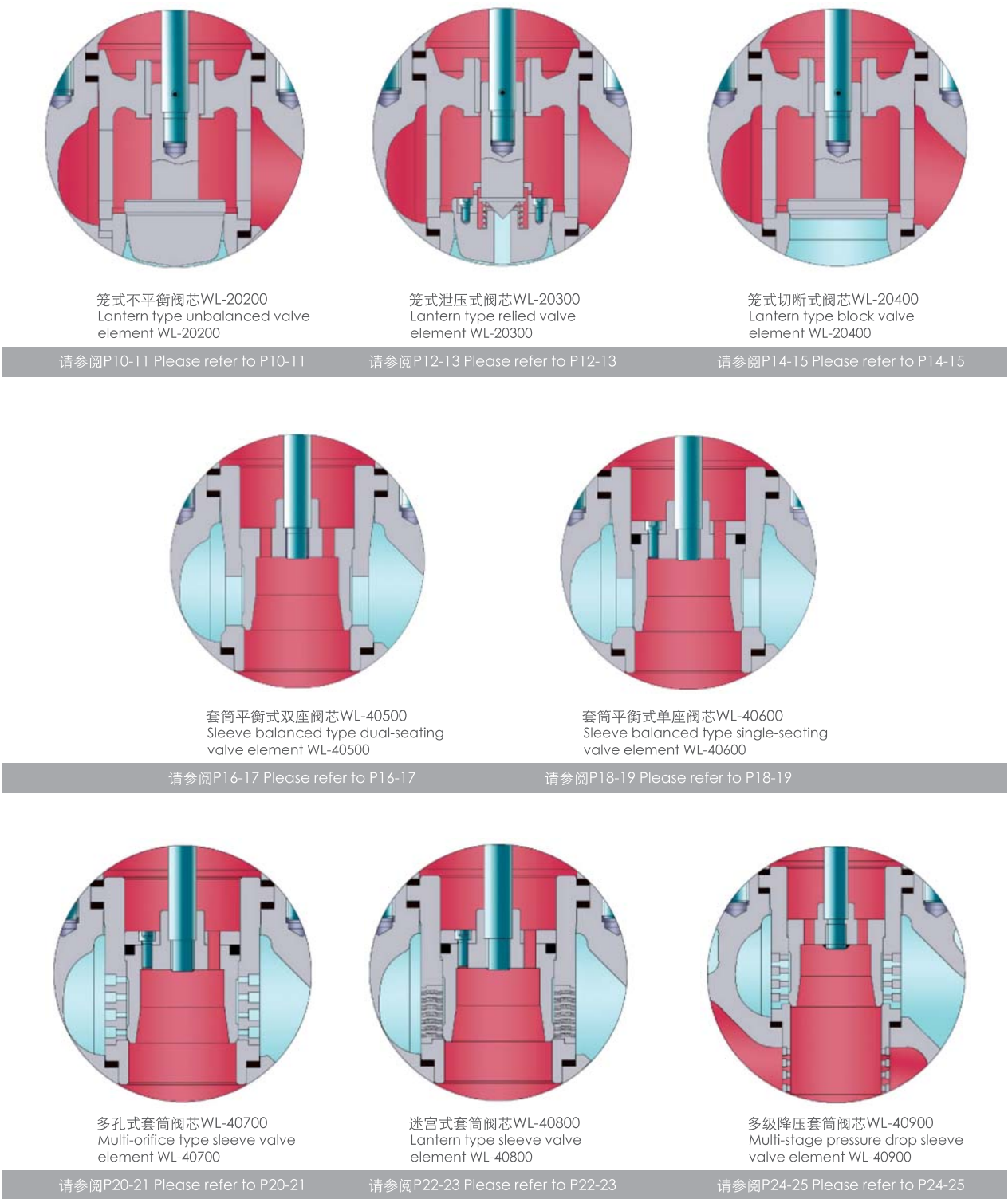
瓦特斯 • 阀体结构形式

WATESI, BODY STRUCTURE



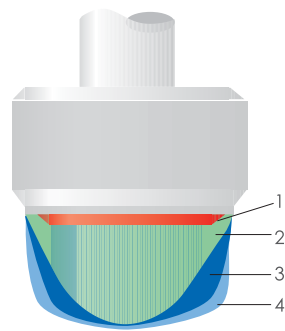
瓦特斯 • 内件结构形式

WATESI, THE STRUCTURE TYPE OF THE INNER PARTS

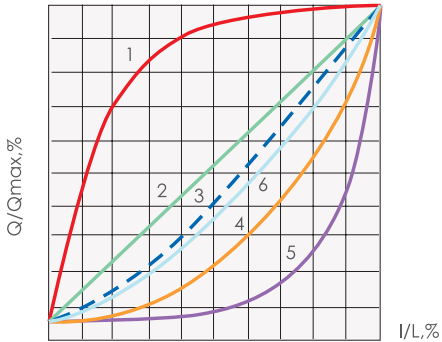


瓦特斯 • 流量特性

WATESI, CURVE OF FLOW FEATURES



不同流量特性的阀芯形状
1-快开; 2-直线;
3-抛物线; 4-等百分比



理想流量特性
1-快开; 2-直线; 3-抛物线;
4-等百分比; 5-双曲线;
6-修正抛物线

工作流量特性选择 working features

系统及被调参数	干 扰	流量特性	说 明
System and the adjusted parameters	Interference	Flow characteristics	Description
 流量控制系统 Capacity Control System	给定值Specified value	直线Direct linev	变送器带开方器 Transducer with square root extractor
	P ₁ , P ₂	等百分比Equal percentage	
	给定值Specified value	快开Quick	变送器不带开方器 Transducer without square root extractor
	P ₁ , P ₂	等百分比Equal percentage	
 温度控制系统 Temp Control System	给定值T ₁ Specified value T ₁	直线Direct linev	
	P ₁ , P ₂ , T ₃ , T ₄ , Q ₁	等百分比 Equal percentage	
 压力控制系统 Pressure Control System	给定值P ₁ , P ₃ , C ₀ Specified value P ₁ , P ₃ , C ₀	直线Direct linev	液体Liquid
	给定值P ₁ , C ₀ Specified value P ₁ , C ₀	等百分比Equal percentage	
	P ₃	快开Quick	气体Gas
 液位控制系统 Level Control System	给定值 Specified value	直线Direct linev	
	C ₀	直线Direct linev	
 液位控制系统 Level Control System	给定值 Specified value	等百分比Equal percentage	
	Q	直线Direct linev	

瓦特斯 • 阀座密封形式

WATESI, SEAT SEAL

WL-20000系列
WL-20000Series

硬密封阀座
Hard-sealing valve seat

WL-40000系列
WL-40000Series

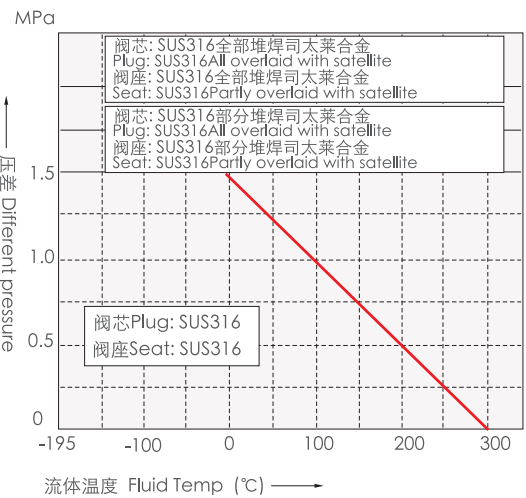
硬密封阀座
Hard-sealing valve seat

软密封阀座
Soft-sealing valve seat

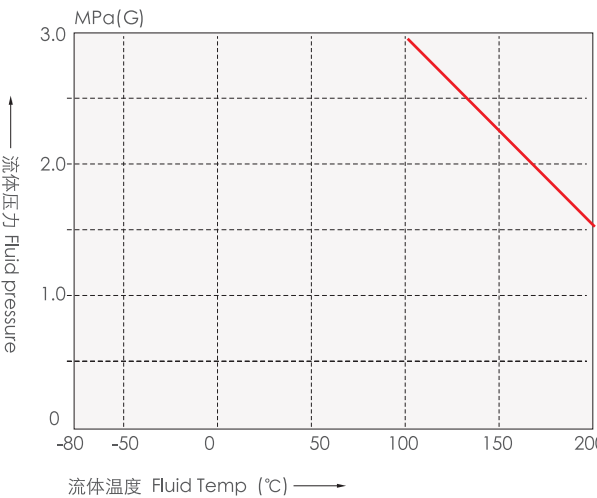
软密封阀座
Soft-sealing valve seat

阀内件材质 处理选定基准

MATERIAL OF THE PARTS IN VALVE: SELECTED TREATMENT BENCHMARK



金属密封
Metal seat

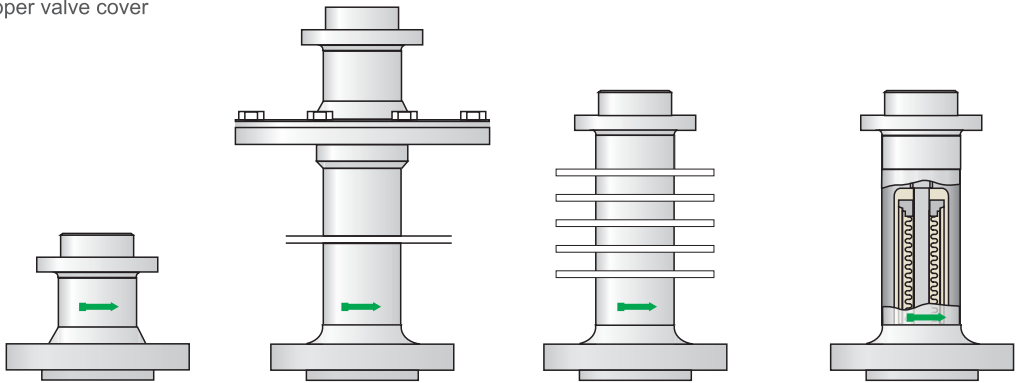


软密封(强化聚四氟乙烯)
Soft seat(reinforced tetlon)

瓦特斯 • 上阀盖、填料形式

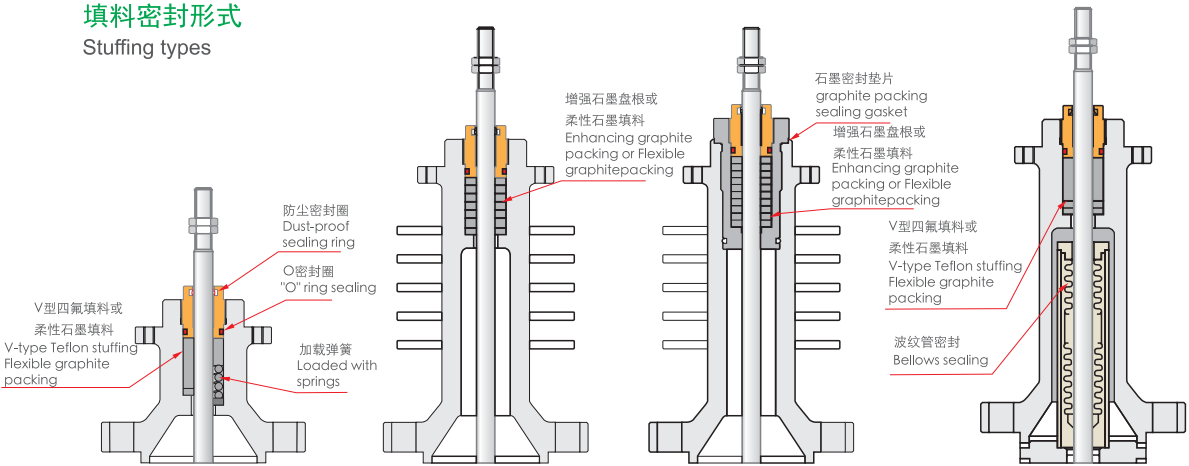
WATESI, UPPER VALVE COVER, STUFFING TYPES

上阀盖形式
Upper valve cover



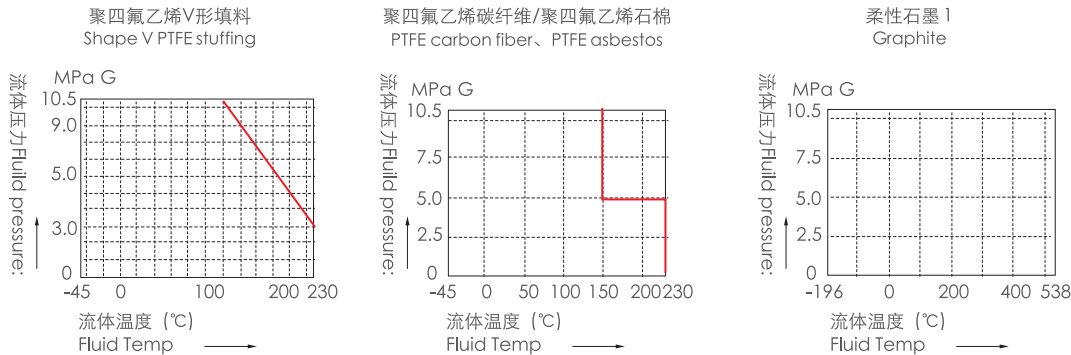
形式 Forms	标准型 Standard	伸长型 Extension type	散热型 Heat radiation type	波纹管型 Bellows type
适用场所 Applicable to places	-5~+230℃	-196~+45℃	-45~+538℃	适用于阀杆不允许泄漏场合 Suitable for the occasions that the valve rod is not allowed to be exposed

填料密封形式
Stuffing types



填料使用温度-压力范围

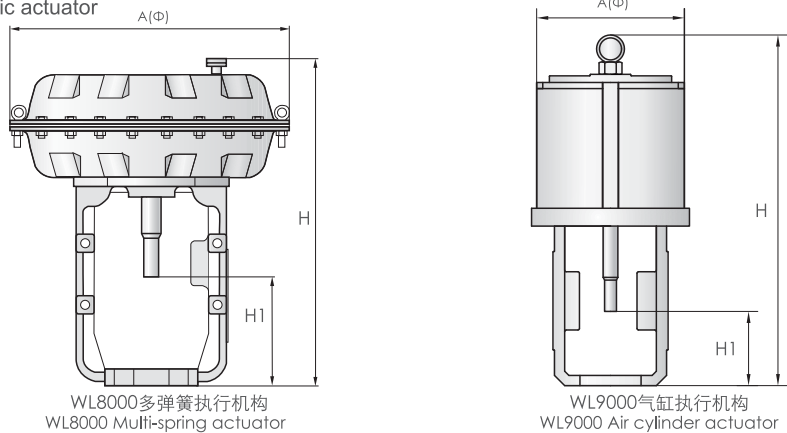
THE TEMPERATURE FOR USING STUFFING - PRESSURE RANGE



瓦特斯 • 执行机构形式

WATESI, ACTUATOR FORMS

气动执行机构
Pneumatic actuator



◆ WL8000多弹簧执行机构系列是一种重量轻、体积小、性能高、输出力大的气动薄膜式直行程执行机构。

△ = 最小气源压力 ▲ = 弹簧压力范围

WL8000 Multi-spring actuator series is a kind of pneumatic film type linear actuators with light weight, small volume, high performance and large output force. △ = Minimum air supply pressure ▲ = Spring pressure range

执行机构 Actuator	A(Φ)	H	输出力N(最小推力) Output force N (minimum thrust)			H1	
			△ 120KPa ▲ 20-100KPa	△ 240KPa ▲ 40-200KPa	△ 320KPa ▲ 80-240KPa	气开 Our rands	气闭 Close air
WL8020	285	350	628	1286	2512	110	126
WL8030	285	370	628	1256	2512	110	135
WL8040	360	435	981	1963	3925	140	180
WL8050	470	588	1710	3419	6839	168	228
WL8060	580	667	2512	5024	10049	175	275

注：最小推力为最低的弹簧预紧力，即反作用时不加外加气源的状态下弹簧产生的推力；正作用时外加气源压力所产生的推力。

Note: Minimum thrust is the lowest pre-tightening force, i.e. the thrust produced by the spring during the reaction under the condition of no addition air supply; the thrust during Positive reaction under the condition of additional air supply.

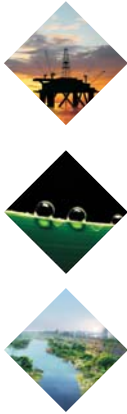
◆ WL9000新型气缸执行机构，分为单作用和双作用气缸，它的供气压力大于薄膜执行机构的供气压力，故输出力较大，通常使用在高压调节阀和切断阀上。

WL9000 New type of cylinder actuators divided into the types of single-acting and double-acting cylinders, their air supply pressures are large than those of thin film actuators, and therefore they have large output force, and are usually applied for high-pressure valves and block valves.

执行机构 Actuator	A(Φ)	H	输出力N Output force N		H1	
			单作用 Single	双作用 Dual role	气开 Our rands	气闭 Close air
WL9030	285	409	3393	14137	140	162
WL9040	360	509	6460	26922	141	178
WL9050	473	698	11300	47085	172	223
WL9060	580	908	17560	73168	175	275

注：上表中输出力为该执行机构在500KPa气源时的输出力。其中单作用的输出力正作用时为最低气源压力所产生的推力，如气源力大于此值时产生的推力大于表中的所示值。

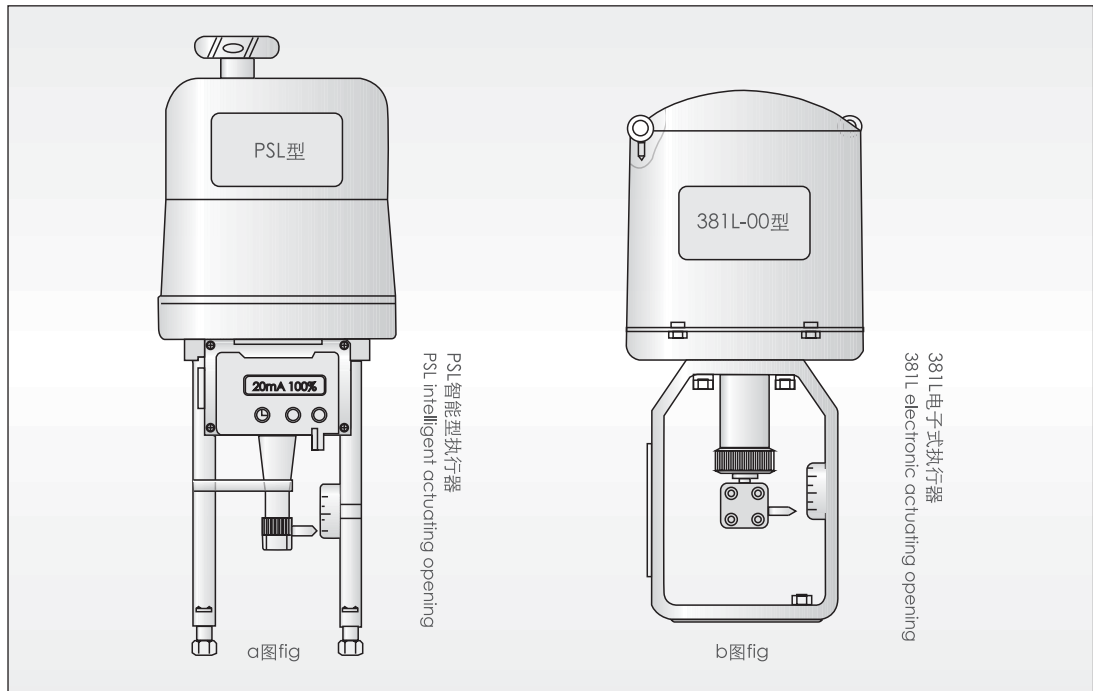
Note: The output force in the table above is the output force of the actuator under the condition of 500KPa air supply, where the sinlge-acting output force is the thrust produced by the lowest air suppl pressure when it's under Positive reaction, if the air supply pressure is larger than this value; the thrust produced is large than the value shown in the table.



瓦特斯 • 电动执行机构

WATESI, ELECTRIC ACTUATOR

电动执行机构 Electric actuator



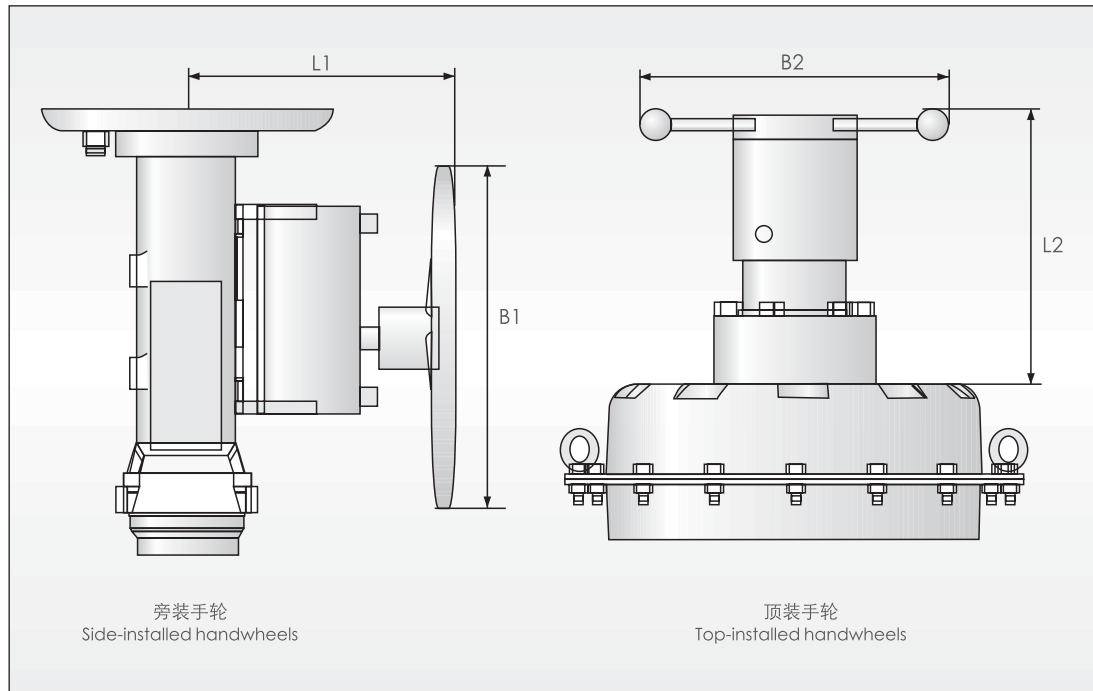
电动执行机构标准规格参数说明 The description of the specification parameters of electric actuator standard

名称 NO		智能型 Intelligent type	全电子式 Full-electric
型号 Type		PSL-AMS	3810L
用途 Use		调节 Regulation	调节 Regulation
供电电源控制信号 Repetitional precision		220V 50/60Hz 输入：4~20mADC	220V 50/60Hz 输入：4~20mADC
作用形式 Sensitivity		正作用：信号增加阀闭 Positive reaction: Signal increases valve closing 反作用：信号增加阀开 Negative reaction: Signal increases valve opening	
性能指标 Performance indicators	灵敏度 Lagged	± (0.5~5.0)%FS	± 1.0%FS
	滞后 Lag	50%灵敏度 Sensitivity	0.4~1.0%FS
	重复精度 Weight accuracy	± 1.0%FS	± 1.0%FS
允许环境温度 Allowed ambient temperature		-20~+70℃	-20~+60℃
选购配置 Optional configuration		特殊电压装置 Special voltage device 就地控制装置 Local control device 故障安全自保装置 Failure safety self-protection device	加热装置 Heating device 防爆型 Explosion-proof 过载装置等 Overload device

注：①FS代表阀的额定行程
Note: ① The trip rating of the FS on behalf of the valve

瓦特斯 • 手轮机构

WATESI, HANDWHEEL MECHANISM



◆ 作用：通过手动操作实现对阀的开关。

种类：旁装手轮

顶装手轮

WL系列控制阀可选配手轮机构，在系统停车维护时或气源执行机构出现故障时可通过手操机构来操作控制，WATESI公司推出了两款最新结构的手操机构，具有极强的可操作性与拆卸方便性，可根据控制阀安装空间或操作习惯来选择顶装式手操机构或旁式手操机构。

Effect: Implementing the valve opening by manual operation.

Type: Side-installed handwheels

Top-installed handwheels

WL series of control valves can be equipped with handwheels optionally; when the system is shut down for maintenance or failure occurs to the pneumatic actuator, the valves can be operated and controlled by the handwheel mechanism. WATESI Corp., Ltd. has produced 2 handwheel mechanisms of the most advanced structure, both of which have very high maneuverability and convenience of disassembly; usres can chose either top-installed or side-installed handwheel mechanism depending on the installation space of the control valve or operating habits.

旁装手轮外形尺寸 Side-installed handwheels outline dimension			顶装手轮外形尺寸 Top-installed handwheels outline dimension		
执行机构型号 Actuator type	L1	B1	执行机构型号 Actuator type	B2	L2
WL5020-P	135-151	Φ200	WL5020-D	Φ270	186
WL5030-P	135-160	Φ200	WL5030-D	Φ270	186
WL5040-P	138-163	Φ300	WL5040-D	Φ300	215
WL5050-P	158-198	Φ400	WL5050-D	Φ340	326

瓦特斯 • WL-20200型笼式单座控制阀

WATESI, WL-20200 LANTERN-TYPE SINGLE-SEATING CONTROL VALVE

概要 Summarize

WL-20200型笼式单座控制阀，采用顶部导向型不平衡式高强度、重荷载内件结构，笼压快拆式阀座、曲线球面阀芯，适用于各种不同压力和温度的流体或气体的控制，关闭严密；软密封座具有无泄漏的密封性能。

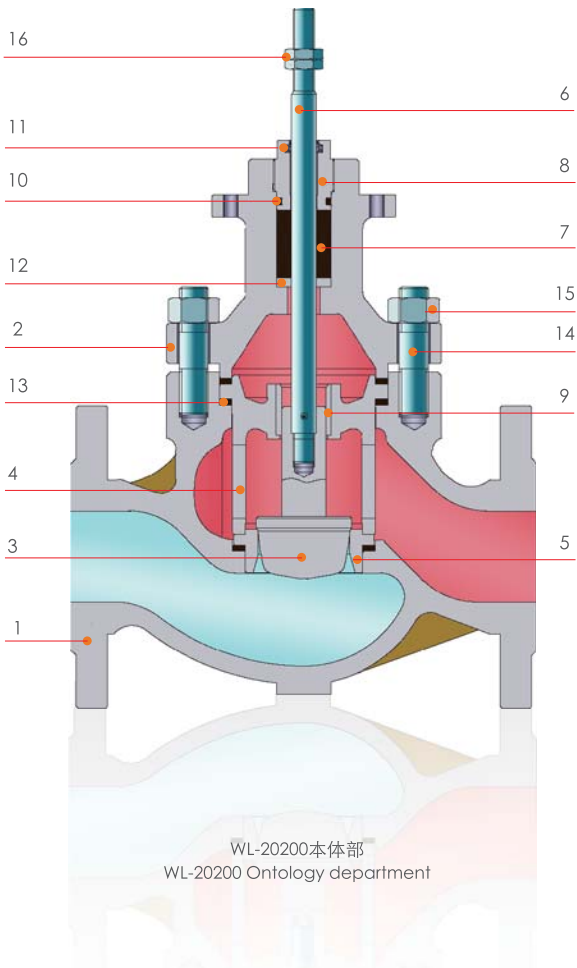
WL-20200Lantern type single-seating control valve, using top-guided type unbalanced trim structure with high intensity and heavy load, lantern-type quick-disassembling valve seating and curving spherical valve element, is applicable for the control of various fluid or gas of different pressure and temperature, with tight closing; the soft-sealing seat has the sealing performance without leak.

主要技术参数 Main technical parameters

公称通径 Nominal diameter	mm	20	25	32	40	50	65	80	100	125	150	200	250	300
	inch	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		16		25			40			60			100	
压力等级 Pressure		ANSI class 150、300、600；JIS 10K、20K、30K、40K；PN 1.6、4.0、6.4、10.0MPa												
阀芯形状 Plug foun		不平衡阀芯 Unbalanced valve core												
流量特性 Characteristics		等百分比、线性（请参阅4页） Equal percentage、linearity (Please refer to page 4)												
可调比 Adjustable fran		50: 1 (CV≥1.0)；30: 1 (CV≤0.63)；												
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type (RF、RTJ、MFM)												
	焊接式 Weld ads	焊接型（DN50以下为SW，DN65以上为BW） Welding type (for those below DN50, it is SW, for those over DN65, it is BW)												
外形尺寸 Outline dimension		请参见32~36页 see page 32~36												
上阀盖形式 Bonnet type	标准型：-5~230℃ Standard type: -5~230℃													
	散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃													
	加长型：-196~-45℃ The lengthened: -196~-45℃													
	波纹管密封型（成形式或焊接式）、蒸汽夹套型 Bellow seal type (forming type or welding type)、steam jacket type													
	阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26													
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite												
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)												
泄漏率 Leakage	金属阀座 符合标准ANSI B16.104IV级，小于额定CV值的0.01%（请参阅43页） The metal valve seat complying with standard ANSI B16.104 IV less than the 0.01% of the rated CV value (See page 43)													
	PTFE阀座 符合标准ANSI B16.104VI级，小于额定CV值的10 ⁻⁷ （请参阅43页） PTFE valve seat complying with standard ANSI B16.104 VI less than the 10 ⁻⁷ of the rated CV value (See page 43)													
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31												
执行机构 Actuator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8												

主要部件 The main components

序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	阀芯Plug	304	304	316
4	阀笼Cage	304	304	316
5	阀座Seat	304	304	316
6	阀杆Stem	304	304	316
7	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
8	填料压套 Packing press-sleeve	304	304	316
9	导向套Gaide	304	316	316L
10	O型密封圈 "O"Ring sealing	NBR或FKM NBR or FKM		
11	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
12	填料座 Packing seat	304	304	316
13	垫圈Gasket	304或316+柔性石墨 304 or 316+Graphite		
14	压盖螺栓 Gasket bolt	35#	304	316
15	压盖螺母 Gasket nut	35#	304	316
16	阀杆螺母 Stem nut	304	304	304



流量系数CV值 Flow coefficient CV value

公称通径 Nominal diameter	mm	20												25	32
	inch	3/4"												1"	1 1/4"
阀芯尺寸 Plug size (mm)		3		4	5	6	8		10		12	15	20	25	32
额定CV值 Rated CV value	等百分比 Equal percentage					0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10	17
	线性 Linear	0.01	0.02	0.04	0.063	0.063	0.25	0.4	0.63	1.0	1.6	2.5	4.0	8	13
公称通径 Nominal diameter	mm	40	50	65	80	100		125		150		200		250	300
	inch	1 1/2"	2"	2 1/2"	3"	4"		5"		6"		8"		10"	12"
阀芯尺寸 Plug size (mm)		40	50	65	80	100		125		150		200		250	300
额定CV值 Rated CV value	等百分比 Equal percentage	24	44	68	99	175		275		360		640		1000	1450
	线性 Linear	32	51	80	115	205		320		513		805		1200	1600

瓦特斯 • WL-20300型笼式双阀芯泄压控制阀

WATESI, WL-20300 LANTERN-TYPE DUAL-ELEMENT PRESSURE-RELIEF CONTROL VALVE

概要 Summarize

WL-20300型笼式双阀芯泄压控制阀，采用高性能顶部导向，不平衡双阀芯双座泄压式内件结构，笼压快拆式阀座，曲线球面双阀芯，适用于重载荷，普通或较恶劣工况，关闭严密，特别针对较高压差，且需要大流量而小范围调节，精度要求高的不同压力和温度的流体或气体控制。

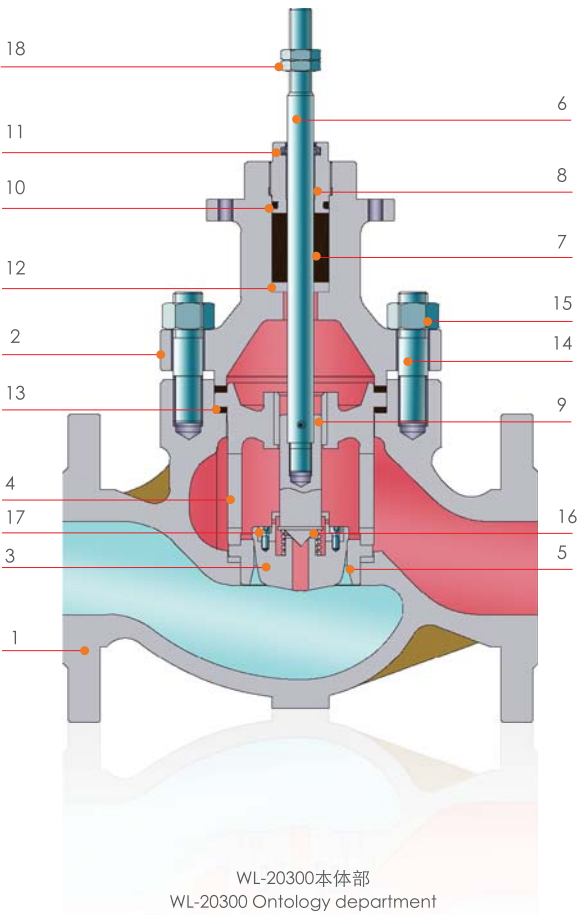
WL-20300 Lantern-type dual-element pressure-relief control valve, using high-performance top-guided unbalanced-type dual-element double-seating pressure-relief trim structure, lantern-pressure quick-disassemble valve seat, and curving spherical double-element, is applicable for heavy load, normal or tough operating condition, with tight closing, and is designed for relatively high pressure difference, requiring the adjustment of large flow but small range, as well as the control of the fluid or gas of different pressure and temperature.

主要技术参数 Main technical parameters

公称通径 Nominal diameter	mm	65	80	100	125	150	200	250	300
	inch	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		40			60			100	
压力等级 Pressure		ANSI class 150、300、600；JIS 10K、20K、30K、40K；PN 1.6、4.0、6.4、10.0MPa							
阀芯形状 Plug form		不平衡式单座泄压式双阀芯 Unbalanced single-seater dual pressure relief valve core							
流量特性 Characteristics		等百分比、线性（请参阅4页） Equal percentage、linearity (Please refer to page 4)							
可调比 Adjustable fran		50: 1							
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type（RF、RTJ、MFM）							
	焊接式 Weld ads	焊接型（DN50以下为SW，DN65以上为BW） Welding type (for those below DN50, it is SW, for those over DN65, it is BW)							
外形尺寸 Outline dimension		请参见32~36页 see page 32~36							
上阀盖形式 Bonnet type	标准型：-5~230℃ Standard type: -5~230℃								
	散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃								
	加长型：-196~-45℃ The lengthened: -196~-45℃								
	波纹管密封型（成形式或焊接式）、蒸汽夹套型 Bellow seal type (forming type or welding type)、steam jacket type								
	阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26								
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite							
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)							
泄漏率 Leakage	金属阀座 符合标准ANSI B16.104IV级（请参阅43页） The metal valve seat complying with standard ANSI B16.104 IV (See page 43)								
	STL堆焊阀座 小于额定CV值的0.01%（请参阅43页） STL valve base surfacing complying with less than 0.01% of the rated CV value (See page 43)								
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31							
执行机构 Actuator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8							

主要部件 The main components

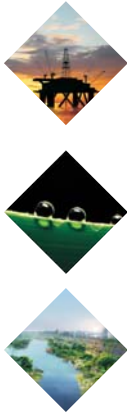
序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	阀芯Plug	304	304	316
4	阀笼Cage	304	304	316
5	阀座Seat	304	304	316
6	阀杆Stem	304	304	316
7	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
8	填料压套 Packing press-sleeve	304	304	316
9	导向套Gaide	304	316	316L
10	O型密封圈 "O"Ring sealing	NBR或FKM NBR or FKM		
11	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
12	填料座 Packing seat	304	304	316
13	垫圈Gasket	304或316+柔性石墨 304 or 316+ Graphite		
14	压盖螺栓 Gasket bolt	35#	304	316
15	压盖螺母 Gasket nut	35#	304	316
16	阀芯弹簧 Plug spring	17-4PHSS		
17	阀芯螺栓 Plug bolt	304	304	316
18	阀杆螺母 Stem nut	304	304	304



WL-20300本体部
WL-20300 Ontology department

流量系数CV值 Flow coefficient CV value

公称通径 Nominal diameter	mm	20												25	32	
	inch	3/4"												1"	1 1/4"	
阀芯尺寸 Plug size (mm)		3			4	5	6	8		10		12	15	20	25	32
额定CV值 Rated CV value	等百分比 Equal percentage						0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10	17
	线性 Linear	0.01	0.02	0.04	0.063	0.063	0.25	0.4	0.63	1.0	1.6	2.5	4.0	8	13	18
公称通径 Nominal diameter	mm	40	50	65	80	100	125	150	200	250	300					
	inch	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"					
阀芯尺寸 Plug size (mm)		40	50	65	80	100	125	150	200	250	300					
额定CV值 Rated CV value	等百分比 Equal percentage	24	44	68	99	175	275	360	640	1000	1450					
	线性 Linear	32	51	80	115	205	320	513	805	1200	1600					



瓦特斯 • WL-20400型笼式快开切断控制阀

WATESI, WL-20400 LANTERN-TYPE QUICK-OPENING BLOCK CONTROL VALVE

概要 Summarize

WL-20400型笼式快开切断控制阀，采用顶部导向型不平衡式，快开式阀芯，笼压快拆式阀座，切断式结构，适用于重负荷，普通或较恶劣工况，要求关闭严密的各种不同压力和温度的流体或气体的切断控制。

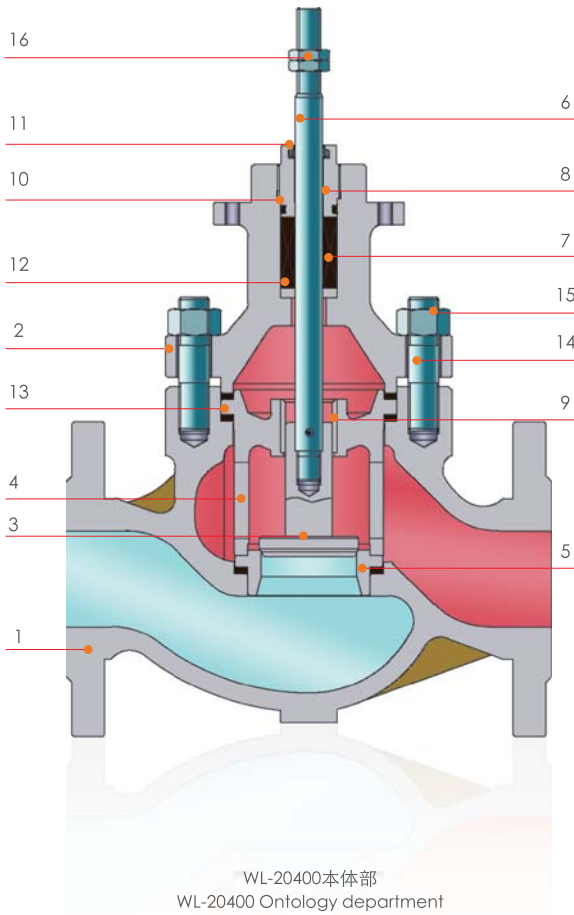
WL-20400 Lantern-type quick-opening block control valve, using top-guided unbalanced quick-opening valve element, lantern-pressure quick-assembly type valve seat and block type structure, is applicable for heavy load, normal or tough operating condition, and requires the block control of the fluid or gas of different pressure and temperature with tight closing.

主要技术参数 Main technical parameters

公称通径 Nominal diameter	mm	20	25	32	40	50	65	80	100	125	150	200	250	300
	inch	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		8			12		20		25	40		60		
压力等级 Pressure		ANSI class 150、300、600；JIS 10K、20K、30K、40K；PN 1.6、4.0、6.4、10.0MPa												
阀芯形状 Plug form		快开式活动结构，切断式阀芯 Events quickly open structure, cut-style spool												
流量特性 Characteristics		快开（请参阅4页） Quick running (Please refer to page 4)												
可调比 Adjustable fran		——												
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type (RF、RTJ、MFM)												
	焊接式 Weld ads	焊接型（DN50以下为SW，DN65以上为BW） Welding type (for those below DN50, it is SW, for those over DN65, it is BW)												
外形尺寸 Outline dimension		请参见32~36页 see page 32~36												
上阀盖形式 Bonnet type	标准型：-5~230℃ Standard type: -5~230℃													
	散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃													
	加长型：-196~-45℃ The lengthened: -196~-45℃													
	波纹管密封型（成形式或焊接式）、蒸汽夹套型 Bellow seal type (forming type or welding type)、steam jacket type													
	阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26													
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite												
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)												
泄漏率 Leakage	金属阀座 符合标准ANSI B16.104IV级（请参阅43页） The metal valve seat complying with standard ANSI B16.104 IV (See page 43)													
	STL阀座 小于额定CV值的10 ⁻⁷ （请参阅43页） STL valve seat less than the 10 ⁻⁷ of the rated CV value (See page 43)													
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31												
执行机构 Actuator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8												

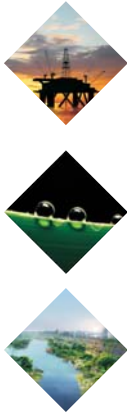
主要部件 The main components

序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	阀芯Plug	304	304	316
4	阀笼Cage	304	304	316
5	阀座Seat	304	304	316
6	阀杆Stem	304	304	316
7	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
8	填料压套 Packing press-sleeve	304	304	316
9	导向套Gaide	304	316	316L
10	O型密封圈 "O"Ring sealing	NBR或FKM NBR or FKM		
11	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
12	填料座 Packing seat	304	304	316
13	垫圈Gasket	304或316+柔性石墨 304 or 316+Graphite		
14	压盖螺栓 Gasket bolt	35#	304	316
15	压盖螺母 Gasket nut	35#	304	316
16	阀杆螺母 Stem nut	304	304	304



流量系数CV值 Flow coefficient CV value

公称通径 Nominal diameter	mm	20	25	32	40	50	65	80	100	125	150	200	250	300
	inch	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
阀芯尺寸 Plug size (mm)		20	25	32	40	50	65	80	100	125	150	200	250	300
额定CV值 Rated CV value		8	12	17	29	46	73	116	185	291	465	735	1000	1450



瓦特斯 • WL-40500型套筒双座控制阀

WATESI, WL-40500 SLEEVE DUAL-SEATING CONTROL VALVE

概要 Summarize

WL-40500型套筒双座控制阀采用套筒导向型平衡式双阀座内件，整体式标准阀笼，由阀笼窗口曲线确定阀的流量特性，允许压差大，流通能力强。适用于重负荷，普通或很恶劣工况，对泄漏量要求不严格的流体或气体在较高压差场合控制。

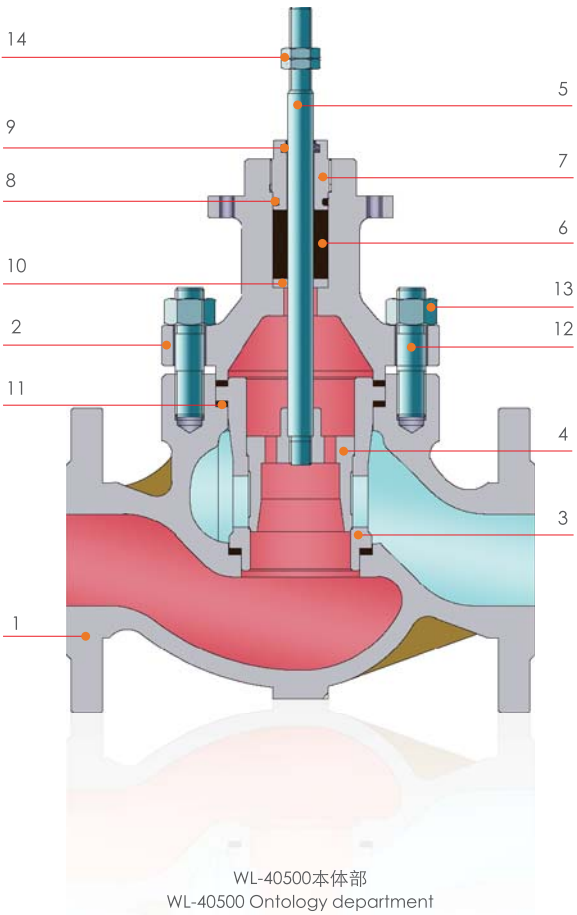
WL-40500 sleeve dual-seating control valve, using sleeve-guide type unbalanced dual-seating valve trims and integral standard valve coga, determines the flow characteristics according to the valve cage window curves, with large permitted pressure difference and large flow coefficient, and is applicable for heavy load, normal or very tough operating condition, the fluid or gas with lesser requirement of leakage shall be controlled in the occasions of relatively high differential pressure.

主要技术参数 Main technical parameters

公称通径 Nominal diameter		mm	20	25	32	40	50	65	80	100	125	150	200	250	300
		inch	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		16		25			40			60			100		
压力等级 Pressure		ANSI class 150、300、600；JIS 10K、20K、30K、40K；PN 1.6、4.0、6.4、10.0MPa													
阀芯形状 Plug founm		平衡式双座阀芯 Balanced two-seater spool													
流量特性 Characteristics		等百分比、直线（请参阅4页） Equal percentage、linearity (Please refer to page 4)													
可调比 Adjustable fran		50： 1													
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type（RF、RTJ、MFM）													
	焊接式 Weld ads	焊接型（DN50以下为SW，DN65以上为BW） Welding type（for those below DN50, it is SW, for those over DN65, it is BW）													
外形尺寸 Outline dimension		请参见32~36页 see page 32~36													
上阀盖形式 Bonnet type		标准型：-5~230℃ Standard type: -5~230℃													
		散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃													
		加长型：-196~-45℃ The lengthened: -196~-45℃													
		波纹管密封型（成形式或焊接式）、蒸汽夹套型 Bellow seal type (forming type or welding type)、steam jacket type													
		阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26													
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite													
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)													
泄漏率 Leakage		金属阀座 符合标准ANSI B16.104Ⅲ级，小于额定CV值的0.1%（请参阅43页） The metal valve seat complying with standard ANSI B16.104Ⅲ less than the 0.1% of the rated CV value (See page 43)													
		PTFE阀座 符合标准ANSI B16.104Ⅳ级，小于额定CV值的0.01%（请参阅43页） PTFE valve seat complying with standard ANSI B16.104Ⅳ less than the 0.01% of the rated CV value (See page 43)													
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31													
执行机构 Actuator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8													

主要部件 The main components

序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	套筒Jane sets	304	304	316
4	阀芯Plug	304	304	316
5	阀杆Stem	304	304	316
6	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
7	填料压套 Packing press-sleeve	304	304	316
8	O型密封圈 "O"Ring sealing	NBR或FKM NBR or FKM		
9	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
10	填料座 Packing seat	304	304	316
11	垫圈Gasket	304或316+柔性石墨 304 or 316+ Graphite		
12	压盖螺栓 Gasket bolt	35#	304	316
13	压盖螺母 Gasket nut	35#	304	316
14	阀杆螺母 Stem nut	304	304	316



流量系数CV值 Flow coefficient CV value

公称通径 Nominal diameter	mm	25	32	40	50	65	80	100	125	150	200	250	300
	inch	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
阀芯尺寸 Plug size (mm)		25	32	40	50	65	80	100	125	150	200	250	300
额定CV值 Rated CV value	等百分比 Equal percentage	10	17	24	44	68	99	175	275	360	640	1000	1450
	线性 Linear	13	18	32	51	80	115	205	320	513	805	1200	1600

瓦特斯 • WL-40600型套简单座控制阀

WATESI, WL-40600 SLEEVE SINGLE-SEATING CONTROL VALVE

概要 Summarize

WL-40600型套简单座控制阀采用套筒导向型平衡式单座阀内件，带活动平衡密封环，整体标准阀芯，由阀笼窗口曲线确定阀的流量特性，关闭严密。适用于重负荷，普通或很恶劣工况，对泄漏量要求较严格的流体或气体在较高压差场合控制。

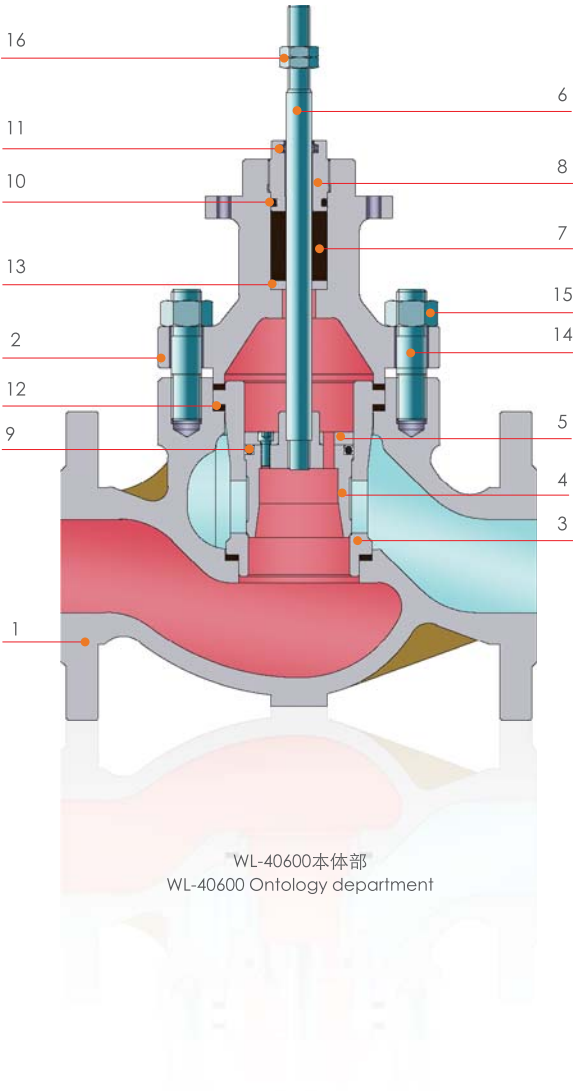
WL-40600 sleeve single-seating control valve, using the sleeve-guided type unbalanced single-seating valve trim, with movable balanced sealing ring and integral standard valve element, determines the flow characteristics of the valves according to the valve cage window curves, wigh tight closing, and is applicable for heavy load, normal or very tough operating conditions, the fluid or gas with lesser requirement of leakage shall be controlled in the occasions of relatively high differential pressure.

主要技术参数 Main technical parameters

公称通径 Nominal diameter	mm	25	32	40	50	65	80	100	125	150	200	250	300
	inch	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		16	25			40			60			100	
压力等级 Pressure		ANSI class 150、300、600；JIS 10K、20K、30K、40K；PN 1.6、4.0、6.4、10.0MPa											
阀芯形状 Plug foun		平衡式单座阀阀芯 Balanced single-seater valve spool											
流量特性 Characteristics		等百分比、直线（请参阅4页） Equal percentage、linearity (Please refer to page 4)											
可调比 Adjustable fran		50：1											
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type（RF、RTJ、MFM）											
	焊接式 Weld ads	焊接型（DN50以下为\$W\$，DN65以上为\$B\$W\$） Welding type (for those below DN50, it is \$W\$, for those over DN65, it is \$B\$W)											
外形尺寸 Outline dimension		请参见32~36页 see page 32~36											
上阀盖形式 Bonnet type	标准型：-5~230℃ Standard type: -5~230℃												
	散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃												
	加长型：-196~-45℃ The lengthened: -196~-45℃												
	波纹管密封型（成形式或焊接式）、蒸汽夹套型 Bellow seal type (forming type or welding type)、steam jacket type												
	阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26												
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite											
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)											
泄漏率 Leakage	金属阀座 符合标准ANSI B16.104IV级，小于额定CV值的0.01%（请参阅43页） The metal valve seat complying with standard ANSI B16.104 IV less than the 10 ⁻² of the rated CV value (See page 43)												
	PTFE阀座 符合标准ANSI B16.104 V级（请参阅43页） PTFE PTFE seat accord with a standard ANSI B16.104 V (See page 43)												
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31											
执行机构 Actuator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8											

主要部件 The main components

序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	套筒Jane sets	304	304	316
4	阀芯Plug	304	304	316
5	密封轴套 Sealing sleeve	304	304	316
6	阀杆Stem	304	304	316
7	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
8	填料压套 Packing press-sleeve	304	304	316
9	平衡密封环 Balanced seal ring	H461#		
10	O型密封圈 "O"Ring sealing	NBR或FKM NBR or FKM		
11	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
12	垫圈Gasket	304	304	316
13	填料座 Packing seat	304或316+柔性石墨 304 or 316+Graphite		
14	压盖螺栓 Gasket bolt	35#	304	316
15	压盖螺母 Gasket nut	35#	304	316
16	阀杆螺母 Stem nut	304	304	304



流量系数CV值 Flow coefficient CV value

公称通径 Nominal dimeter	mm	25	32	40	50	65	80	100	125	150	200	250	300
	inch	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
阀芯尺寸 Plug size (mm)		25	32	40	50	65	80	100	125	150	200	250	300
额定CV值 Rated CV value	等百分比 Equal percentage	10	17	24	44	68	99	175	275	360	640	1000	1450
	线性 Linear	13	18	32	51	80	115	205	320	513	805	1200	1600

瓦特斯 • WL-40700型低噪音套筒控制阀

WATESI, WL-40700 LOW-NOISE SLEEVE CONTROL VALVE

概要 Summarize

WL-40700型低噪音套筒控制阀采用套筒导向平衡式阀内件，分体式阀笼组合，套筒上设有许多对称小孔来降低压力，适应气体节流扩散与膨胀，有效的达到降低噪音和防空化破坏的目的，抗气蚀能力强，适合于负重荷，特别针对高压差各种流体的控制，可用于普通或恶劣工况。

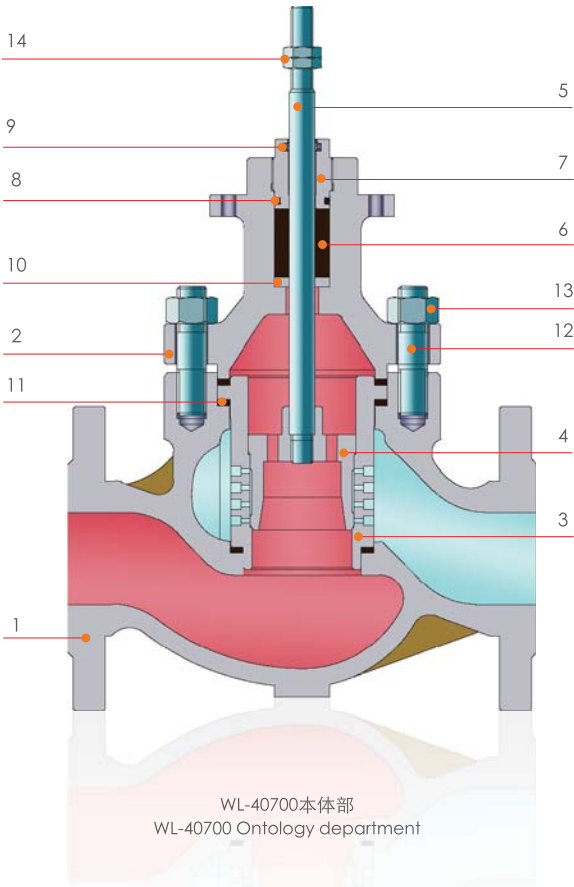
WL-40700 low-noise sleeve control valve uses sleeve-guided balanced valve trims, and split-type valve cage combination; the sleeve is equipped with many symmetrical pinholes for reducing pressure and adapting to the diffusion and inflation of gas throttling, thereby effectively achieving the goal of reducing noise and avoiding cavitation damage, with strong cavitation-resistance ability, and is capable for heavy load, especially, the control of various fluids of high differential pressure can be used under normal or tough operating conditions.

主要技术参数 Main technical parameters

公称通径 Nominal diameter		mm	20	25	32	40	50	65	80	100	125	150	200	250	300
		inch	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		16		25			40			60			100		
压力等级 Pressure		ANSI class 150、300、600、900; JIS 10K、20K、30K、40K; PN 1.6、4.0、6.4、10.0MPa													
阀芯形状 Plug form		平衡式分体多孔阀笼 Balanced split porous valve cage													
流量特性 Characteristics		改良等百分比、直线、改良直线（请参阅4页） Equal percentage、linearity (Please refer to page 4)													
可调比 Adjustable fran		25: 1													
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type（RF、RTJ、MFM）													
	焊接式 Weld ads	焊接型（DN50以下为SW，DN65以上为BW） Welding type (for those below DN50, it is SW, for those over DN65, it is BW)													
外形尺寸 Outline dimension		请参见32~36页 see page 32~36													
上阀盖形式 Bonnet type		标准型：-5~230℃ Standard type: -5~230℃													
		散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃													
		加长型：-196~45℃ The lengthened: -196~45℃													
		波纹管密封型（成形式或焊接式）、蒸汽夹套型 Bellow seal type (forming type or welding type)、steam jacket type													
		阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26													
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite													
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)													
泄漏率 Leakage		金属阀座 符合标准ANSI B16.104Ⅲ级，小于额定CV值的0.1%（请参阅43页） The metal valve seat complying with standard ANSI B16.104Ⅲ less than the 0.1% of the rated CV value (See page 43)													
		STL堆焊阀座 符合标准ANSI B16.104Ⅳ级，小于额定CV值的0.01%（请参阅43页） STL valve base surfacing complying with standard ANSI B16.104Ⅳ less than the 0.01% of the rated CV value (See page 43)													
		PTFE阀座 符合标准ANSI B16.104Ⅴ级，小于额定CV值的10 ⁻⁵ （请参阅43页） PTFE valve seat complying with standard ANSI B16.104Ⅴ less than the 10 ⁻⁵ of the rated CV value (See page 43)													
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31													
执行机构 Actaator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8													

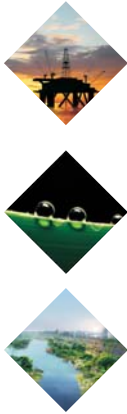
主要部件 The main components

序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	多孔阀笼 Porous cage	304	304	316
4	阀芯Plug	304	304	316
5	阀杆Stem	304	304	316
6	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
7	填料压套 Packing press-sleeve	304	304	316
8	O型密封圈 "O" Ring sealing	NBR或FKM NBR or FKM		
9	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
10	填料座 Packing seat	304	304	316
11	垫圈Gasket	304或316+柔性石墨 304 or 316+ Graphite		
12	压盖螺栓 Gasket bolt	35#	304	316
13	压盖螺母 Gasket nut	35#	304	316
14	阀杆螺母 Stem nut	304	304	304



流量系数CV值 Flow coefficient CV value

公称通径 Nominal diameter	mm	25	32	40	50	65	80	100	125	150	200	250	300
	inch	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
阀芯尺寸 Plug size (mm)		25	32	40	50	65	80	100	125	150	200	250	300
等百分比 Equal percentage		10	17	24	44	68	99	175	275	360	640	1000	1450
线性 Linear		13	18	32	51	80	115	205	320	513	805	1200	1600
多孔式 Many cohni		5.8	9.6	16	40.2	51	70	138	177	256	464	761	1090
二级 2 class		4.7	7.1	10.8	18.3	29.2	49	85	104	143	224	410	492
四级 4 class		3.8	5.8	8.3	15.2	24.3	40.5	68	83	114	180	326	367
六级 6 class		3.2	4.8	6.7	12.2	19.6	33	58	70	94	142	273	290
八级 8 class		2.4	3.4	4.6	9.2	14.5	23.9	43	54	75	109	214	238



瓦特斯 • WL-40800型迷宫式套筒控制阀

WATESI, WL-40800 LABYRINTH-TYPE SLEEVE CONTROL VALVE

概要 Summarize

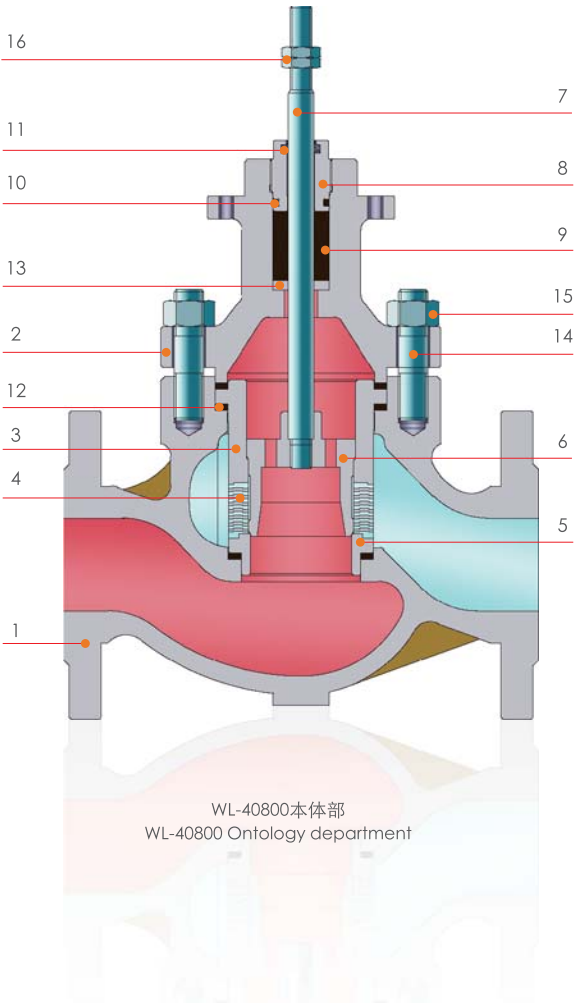
WL-40800型迷宫式套筒控制阀采用套筒导向平衡式阀内件，分体式阀笼组合，可选普通双座或单密封阀座配活动密封环，采用迷宫式多层垫片阀笼结构，有效达到降低噪音，多级降压和防空化破坏的目的，抗气蚀能力强，适合于负重荷，特别针对高压差流体的控制，可用于很恶劣工况。
WL-40800 labyrinth-type sleeve control valve uses sleeve-guided balanced valve trims and split-type valve cage combination, normal dual-seating or single-sealing valve seat with movable sealing ring are optional, and uses balyrinth-type multi-layer gasket valve cage structure, for effectively achieving the goal of noise reduction, multi-stage pressure drop and avoiding cavitation damage, with strong cavitation-resistance ability, and is capable for heavy load, especially, the control of the fluids of high differential pressure can be used under very tough operating conditions.

主要技术参数 Main technical parameters

公称通径 Nominal dimeter		mm	20	25	32	40	50	65	80	100	125	150	200	250	300
		inch	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		16		25			40			60			100		
压力等级 Pressure		ANSI class 150、300、600、900、1500、2500；PN 1.6、4.0、6.4、10.0、16.0、25.0、32.0、45.0MPa													
阀芯形状 Plug founm		平衡式迷宫垫片阀笼 Balanced maze cage valve gasket													
流量特性 Characteristics		改良等百分比、直线、改良直线（请参阅4页） Equal percentage、linearity (Please refer to page 4)													
可调比 Adjustable fran		50：1													
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type（RF、RTJ、MFM）													
	焊接式 Weld ads	焊接型（DN50以下为SW，DN65以上为BW） Welding type（for those below DN50, it is SW, for those over DN65, it is BW）													
外形尺寸 Outline dimension		请参见32~36页 see page 32~36													
上阀盖形式 Bonnet type		标准型：-5~230℃ Standard type: -5~230℃													
		散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃													
		加长型：-196~-45℃ The lengthened: -196~-45℃													
		波纹管密封型（成形式或焊接式）、蒸汽夹套型 Below seal type (forming type or welding type)、steam jacket type													
		阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26													
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite													
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)													
泄漏率 Leakage		金属阀座 符合标准ANSI B16.104Ⅲ级，小于额定CV值的0.1%（请参阅43页） The metal valve seat complying with standard ANSI B16.104Ⅲ less than the 0.1% of the rated CV value (See page 43)													
		STL堆焊阀座 符合标准ANSI B16.104Ⅳ级，小于额定CV值的0.01%（请参阅43页） STL valve base surfacing complying with standard ANSI B16.104Ⅳ less than the 0.01% of the rated CV value (See page 43)													
		PTFE阀座 符合标准ANSI B16.104Ⅴ级，小于额定CV值的10 ⁻⁵ （请参阅43页） PTFE valve seat complying with standard ANSI B16.104Ⅴ less than the 10 ⁻⁵ of the rated CV value (See page 43)													
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31													
执行机构 Actuator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8													

主要部件 The main components

序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	上阀笼 Upper valve cage	304	304	316
4	迷宫垫片 Maze gasket	304	304	316
5	下阀座 Under valve base	304	304	316
6	阀芯Plug	304	304	316
7	阀杆Stem	304	304	316
8	填料压套 Packing press-sleeve	304	304	316
9	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
10	O型密封圈 "O"Ring sealing	NBR或FKM NBR or FKM		
11	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
12	填料座 Packing seat	304	304	316
13	垫圈Gasket	304或316+柔性石墨 304 or 316+Graphite		
14	压盖螺栓 Gasket bolt	35#	304	316
15	压盖螺母 Gasket nut	35#	304	316
16	阀杆螺母 Stem nut	304	304	304



流量系数CV值 Flow coefficient CV value

公称通径 Nominal dimeter	mm	25	32	40	50	65	80	100	125	150	200	250	300
	inch	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
阀芯尺寸 Plug size (mm)		25	32	40	50	65	80	100	125	150	200	250	300
改良等百分比 Improved equal percentage		10	17	24	44	68	99	175	275	360	640	1000	1450
直线性 Linear		13	18	32	51	80	115	205	320	513	805	1200	1600
二级 2 class		4.7	7.1	10.8	18.3	29.2	49	85	104	143	224	410	492
四级 4 class		3.8	5.8	8.3	15.2	24.3	40.5	68	83	114	180	326	367
六级 6 class		3.2	4.8	6.7	12.2	19.6	33	58	70	94	142	273	290
八级 8 class		2.4	3.4	4.6	9.2	14.5	23.9	43	54	75	109	214	238

瓦特斯 • WL-40900型多级降压式套筒控制阀

WATESI, WL-40900 MULTI-GRADE PRESSURE-DROP TYPE SLEEVE CONTROL VALVE

概要 Summarize

WL-40900型多级降压式套筒控制阀采用套筒导向平衡式阀内件，多级降压阀内件组合，可选用普通双座式或平衡密封环单座，按不同工况要求可采用多种组合形式，最大可达到八级降压作用，特别针对高压差各种不同工况实现多种方案组合，有效达到降低噪音和防空化破坏及多级降压的目的，抗气蚀能力强。

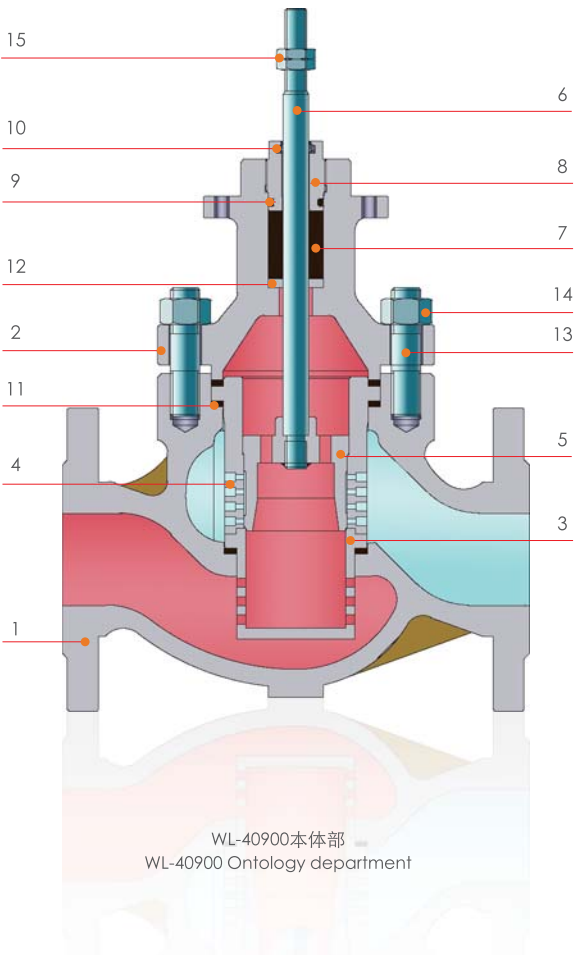
WL-40900 multi-grade pressure-drop type sleeve control valve uses the combinations of sleeve-guided balanced valve trims and multi-stage pressure drop valve trims, normal dual-seating or single-sealing valve seat with movable sealing ring are optional, and can adopt various combination forms according to requirements of different operating conditions, stage-8 pressure drop effect can be achieved at maximum, implementing various scheme combinations for different operating conditions under high differential pressure, effectively achieving the goal of noise reduction, avoiding cavitation damage and multi-stage pressure drop, with strong cavitation-resistance ability.

主要技术参数 Main technical parameters

公称通径 Nominal diameter	mm	20	25	32	40	50	65	80	100	125	150	200	250	300
	inch	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
行程Itinerary (mm)		16		25			40			60			100	
压力等级 Pressure		ANSI class 150、300、600、900、1500、2500；PN 1.6、4.0、6.4、10.0、16.0、25.0、32.0、45.0MPa												
阀芯形状 Plug form		平衡式多孔多级降压阀笼 Balancmultistage depressed porous valve cage												
流量特性 Characteristics		改良等百分比、直线特性、改良直线特性（请参阅4页） Equal percentage、linearity (Please refer to page 4)												
可调比 Adjustable fran		50: 1												
连接型式 Connection form	法兰式 Flange	法兰型（RF、RTJ、MFM） Flange type（RF、RTJ、MFM）												
	焊接式 Weld ads	焊接型（DN50以下为SW，DN65以上为BW） Welding type (for those below DN50, it is SW, for those over DN65, it is BW)												
外形尺寸 Outline dimension		请参见32~36页 see page 32~36												
上阀盖形式 Bonnet type	标准型：-5~230℃ Standard type: -5~230℃													
	散热型：-45~5℃或是大于230℃ Heat dispersing type: -45~5℃ or higher 230℃													
	加长型：-196~-45℃ The lengthened: -196~-45℃													
	波纹管密封型（成形式或焊接式）、蒸汽夹套型 Below seal type (forming type or welding type)、steam jacket type													
	阀体、阀内组件材料的配套及工作温度范围，请参见26页 Valve body、for the axially material for the parts in valve and the range of working temperature, see page 26													
填料 Packing		聚四氟乙烯V形填料、聚四氟乙烯碳纤维、聚四氟乙烯石棉及柔性石墨 Shape V PTFE stuffing、PTFE carbon fiber、PTFE asbestos and flexible graphite												
垫圈 Gasket		锯齿形垫圈（极软碳钢、SUS316、其它合金钢） Hackle washer (extreme soft carbon steel、SUS316、other alloy steel)												
泄漏率 Leakage	金属阀座 符合标准ANSI B16.104Ⅲ级，小于额定CV值的0.1%（请参阅43页） The metal valve seat complying with standard ANSI B16.104Ⅲ less than the 0.1% of the rated CV value (See page 43)													
	STL堆焊阀座 符合标准ANSI B16.104Ⅳ级，小于额定CV值的0.01%（请参阅43页） STL valve base surfacing complying with standard ANSI B16.104Ⅳ less than the 0.01% of the rated CV value (See page 43)													
	PTFE阀座 符合标准ANSI B16.104Ⅴ级，小于额定CV值的10 ⁻⁵ （请参阅43页） PTFE valve seat complying with standard ANSI B16.104Ⅴ less than the 10 ⁻⁵ of the rated CV value (See page 43)													
最大允许压差 Max allowable pressure drops		请参见27~31页 see page 27~31												
执行机构 Actuator		气动请参见7页，电动请参见8页 For pneumatic parts, see page 7; for electrical parts, see page 8												

主要部件 The main components

序号 No.	零件 Part	材 质 Material		
1	阀体Body	WCB	CF8	CF8M
2	阀盖Bonnet	WCB	CF8	CF8M
3	上阀笼 Upper valve cage	304	304	316
4	下阀笼 Lower valve cage	304	304	316
5	阀芯Plug	304	304	316
6	阀杆Stem	304	304	316
7	填料压套 Packing press-sleeve	304	304	316
8	填料Packing	PTFE或柔性石墨 PTFE or Graphite		
9	O型密封圈 "O"Ring sealing	NBR或FKM NBR or FKM		
10	防尘密封圈 Wiper sealing	NBR或FKM NBR or FKM		
11	填料座 Packing seat	304	304	316
12	垫圈Gasket	304或316+柔性石墨 304 or 316+ Graphite		
13	压盖螺栓 Gasket bolt	35#	304	316
14	压盖螺母 Gasket nut	35#	304	316
15	阀杆螺母 Stem nut	304	304	304



流量系数CV值 Flow coefficient CV value

公称通径 Nominal diameter	mm	25	32	40	50	65	80	100	125	150	200	250	300
	inch	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
阀芯尺寸 Plug size (mm)		25	32	40	50	65	80	100	125	150	200	250	300
等百分比 Improved equal percentage		8	17	24	44	68	99	175	275	360	640	1000	1450
直线性 Linear		13	18	32	51	80	205	205	320	513	805	1200	1600
多孔式 Many cohnil		5.8	9.6	16	40.2	51	70	138	177	256	464	761	1090
二级 2 class		4.7	7.1	10.8	18.3	29.2	49	85	104	143	224	410	492
四级 4 class		3.8	5.8	8.3	15.2	24.3	40.5	68	83	114	180	326	367
六级 6 class		3.2	4.8	6.7	12.2	19.6	33	58	70	94	142	273	290
八级 8 class		2.4	3.4	4.6	9.2	14.5	23.9	43	54	75	109	214	238

阀体、阀内组件材料的配套及工作温度范围(°C)

WATESI, THE MATCHING AND WORKING TEMPERATURE RANGE OF COMPONENT MATERIALS OF VALVE BODY AND VALVE CAVITY (°C)

阀体、阀内组件材料的配套及工作温度范围(°C)

The matching and working temperature range of component materials of valve body and valve cavity (°C)

阀内组件材料 Valve components materials	阀体材料 Body material	GB	WCB		CF8	CF8M	CF3	CF3M	哈斯 Haas C	钛 Titanium	Alloy20
		ASTM	WCB	C5	CF8	CF8M	CF3	CF3M			
GB	1Cr13		-5~+300		-196~+300						
AISI	410										
GB	1Cr17Ni2		-5~+300		-196~+300						
AISI	431										
GB	0Cr18Ni9		-5~+300		-196~+300						
AISI	304										
GB	0Cr17Ni12Mo2		-5~+300		-196~+300	-196~+300					
AISI	316										
GB	00Cr19Ni10				-196~+300		-196~+300				
AISI	304L										
GB	00Cr17Ni14Mo2				-196~+300	-196~+300	-196~+300	-196~+300			
AISI	316L										
GB	9Cr18		-5~+425	-5~+425							
AISI	440C										
GB	0Cr18Ni9堆焊司太利 0Cr18Ni9 Deposited stellite		-5~+425	-5~+566	-196~+550						
AISI	304堆焊司太利 304 Deposited stellite										
GB	0Cr17Ni12Mo2堆焊司太利 0Cr17Ni12Mo2 Deposited stellite		-5~+425	-5~+566	-196~+550	-196~+550					
AISI	316堆焊司太利 316 Deposited stellite										
GB	00Cr19Ni10堆焊司太利 00Cr19Ni10 Deposited stellite				-196~+450		-196~+450				
AISI	304L堆焊司太利 304L Deposited stellite										
GB	00Cr17Ni14Mo2堆焊司太利 00Cr17Ni14Mo2 Deposited stellite				-196~+450	-196~+450	-196~+450	-196~+450			
AISI	316L堆焊司太利 316L Deposited stellite										
GB	0Cr18Ni9软密封 0Cr18Ni9 Soft sealing		-5~+230		-80~+230						
AISI	304软密封 304 Soft sealing										
GB	0Cr17Ni12Mo2软密封 0Cr17Ni12Mo2 Soft sealing		-5~+230		-80~+230	-80~+230					
AISI	316软密封 316 Soft sealing										
GB	00Cr17Ni14Mo2软密封 00Cr17Ni14Mo2 Soft sealing				-80~+230	-80~+230	-80~+230	-80~+230			
AISI	316L软密封 316L Soft sealing										
GB	钛合金 Titanium alloy									-196~+315	
GB	钛 Titanium									-196~+315	
	哈斯C Haas C								-196~+450		
	Alloy20										-196~+300
	蒙乃尔 Monel		-5~+230		-196~+300	-196~+300	-196~+300	-196~+300			

1.黑线框内为阀体材料与阀内组件材料的标准配置。Those in the black line box are the standard components of the materials for valve body and the parts in valve.
2.其它材料配置请与WATESI技术部门联系确认。For other material components, please contact the technical department of WATESI.

最大允许压差表1

WATESI, THE MAXIMUM ALLOWABLE PRESSURE IN TABLE 1

- ◆ WL-20000系列控制阀最大允许压差以各种控制阀本体部与标准（常用配置）执行机构规格的组合所得出。
- ◆ 如果表中的控制阀最大允许压差值不能满足工况要求时，请与WATESI技术部工程师联系。

The maximum allowed diferential pressure of WL-20000 Series control valves is obtained from combining the bodies of various control valves with the specifications of standard (common configuration) actuatros.
If the maximum allowed differential pressure of the control valves in the table can not meet the requirement of operating conditions, please contact the engineers of Technology Department of WATESI.

最大允许压差表1（单位MPa）

The maximum allowable pressure in Table 1 (Units MPa)

阀门尺寸 Valve size inch (mm)	阀芯相对 尺寸 Valve element aligned size (inch)	气源压力 Gas source pressure (Kpa)	弹簧范围 Spring range (Kpa)	单作用气缸式执行机构规格 Single-action air cylinder-type actuator specifications				双作用气缸式执行机构规格 Double-action air cylinder-type actuator specifications			
				WL9530/ WL9630	WL9540/ WL9640	WL9550/ WL9650	WL9560/ WL9660	WL9930	WL9940	WL9950	WL9960
3/4"(20)	3/8"	450	120~360	28.5				42.75			
3/4"(20)	1/2"	450	120~360	18.26				27.4			
3/4"(20)~1"(25)	3/4"	450	120~360	12.1				18.15			
1"(25)~ 1 1/2" (40)	1"	450	120~360	7.75				11.6			
1 1/2" (40)~2"(50)	1 1/4"	450	120~360	4.6				6.8			
1 1/2"~2 1/2"(40~65)	1 1/2"	450	120~360	2.17	3.58			4.34	7.16		
2"~3"(50~80)	2"	450	120~360	1.39	2.17			2.78	4.54		
2 1/2"~4"(65~100)	2 1/2"	450	120~360		1.46				2.92		
3"~5"(80~125)	3"	450	120~360		0.96	1.55			1.92	3.1	
4"~6"(100~150)	4"	450	120~360		0.61	0.99			1.22	1.98	
5"~8"(125~200)	5"	450	120~360			0.67				1.34	
6"~10"(150~250)	6"	450	120~360			0.46	0.68			0.92	1.36
8"~12"(200~300)	8"	450	120~360			0.25	0.37			0.5	0.74
10"(250) 12"(300)	10"	450	120~360				0.25				0.5
12"(300)	12"	450	120~360				0.14				0.28

最大允许压差表2

WATESI, THE MAXIMUM ALLOWABLE PRESSURE IN TABLE 2

最大允许压差表2（单位MPa）
The maximum allowable pressure in Table 2 (Units MPa)

阀门尺寸 Valve size inch (mm)	阀芯相对尺寸 Valve element aligned size (inch)	气源压力 Gas source pressure (Kpa)	弹簧范围 Spring range (Kpa)	多弹簧薄膜式执行机构规格 Multi-spring thin-film type actuator specifications							
				WL8620/WL8520		WL8630/WL8530		WL8640/WL8540		WL8650/WL8550	
				内件形式 With pieces of the form							
				金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat
3/4"~1" (20~25)	3/4"	140	20~100	0.94	0.75	1.31	1.05	--	--	--	--
		240	40~200	2.18	1.81	3.01	2.53	--	--	--	--
		300	80~240	4.68	3.94	6.56	5.50	--	--	--	--
1"~1 1/2" (25~40)	1"	140	20~100	0.60	0.48	0.84	0.67	--	--	--	--
		240	40~200	1.40	1.16	1.96	1.62	--	--	--	--
		300	80~240	3.00	2.52	4.19	3.53	--	--	--	--
1 1/2"~2" (40~50)	1 1/4"	140	20~100	--	--	0.50	0.41	0.82	0.65	--	--
		240	40~200	--	--	1.19	0.98	1.90	1.58	--	--
		300	80~240	--	--	2.56	2.14	4.10	3.44	--	--
1 1/2" ~ 2 1/2" (40~65)	1 1/2"	140	20~100	--	--	0.32	0.26	0.53	0.42	--	--
		240	40~200	--	--	0.77	0.63	1.22	1.01	--	--
		300	80~240	--	--	1.64	1.38	1.90	2.20	--	--
2"~3" (50~80)	2"	140	20~100	--	--	0.21	0.16	0.34	0.24	--	--
		240	40~200	--	--	0.49	0.41	0.78	0.65	--	--
		300	80~240	--	--	1.05	0.88	1.68	1.41	--	--
3"~5" (80~125)	2 1/2"	140	20~100	--	--	--	--	0.94	0.16	0.32	0.26
		240	40~200	--	--	--	--	0.46	0.38	0.74	0.62
		300	80~240	--	--	--	--	0.99	0.81	1.58	1.34
2 1/2"~4" (65~100)	3"	140	20~100	--	--	--	--	0.13	0.10	0.21	0.17
		240	40~200	--	--	--	--	0.30	0.25	0.49	0.41
		300	80~240	--	--	--	--	0.66	0.55	1.23	0.88
4"~6" (100~150)	4"	140	20~100	--	--	--	--	0.08	0.06	0.14	0.10
		240	40~200	--	--	--	--	0.19	0.16	0.31	0.26
		300	80~240	--	--	--	--	0.42	0.35	0.67	0.56
5"~8" (125~200)	5"	140	20~100	--	--	--	--	--	--	0.09	0.06
		240	40~200	--	--	--	--	--	--	0.20	0.16
		300	80~240	--	--	--	--	--	--	0.43	0.36
6"~8" (150~200)	6"	140	20~100	--	--	--	--	--	--	0.06	0.04
		240	40~200	--	--	--	--	--	--	0.14	0.11
		300	80~240	--	--	--	--	--	--	0.30	0.25
8" (200)	8"	140	20~100	--	--	--	--	--	--	0.02	0.01
		240	40~200	--	--	--	--	--	--	0.06	0.04
		300	80~240	--	--	--	--	--	--	0.13	0.10

最大允许压差表3、4

WATESI, THE MAXIMUM ALLOWABLE PRESSURE IN TABLE 3、4

最大允许压差表3（单位MPa）
The maximum allowable pressure in Table 3 (Units MPa)

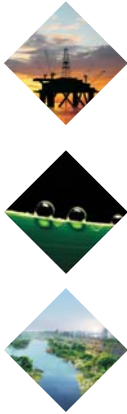
△=最大输出推力
△=Maximum output thrust

阀门尺寸 Valve size inch (mm)	阀芯相对尺寸 Valve element aligned size (inch)	电子式执行机构PSL系列 Electronic actuator of PSL series																	
		PSL201		PSL202		PSL204		PSL208		PSL210		PSL312		PSL314		PSL320		PSL325	
		△1.0KN		△2.0KN		△4.0KN		△8.0KN		△10.0KN		△12.0KN		△14.0KN		△20.0KN		△25.0KN	
		金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat
3/4"(20)~1"(25)	3/4"	2.38	1.91	4.77	3.82	9.55	7.64												
1"(25)~1 1/2" (40)	1"	1.52	1.22	3.05	2.44	6.11	4.89												
1 1/2" (40)~2"(50)	1 1/4"	0.93	0.74	1.86	1.49	3.73	2.98	7.49	5.97	9.33	7.46								
1 1/2" ~ 2 1/2"(40~65)	1 1/2"	0.59	0.74	1.19	0.95	2.38	1.91	4.47	3.82	5.97	4.77								
2"~3"[50~80]	2"	0.38	0.30	0.76	0.61	1.52	1.22	3.05	2.44	3.82	3.05								
2 1/2"~4"(65~100)	2 1/2"			0.45	0.36	0.90	0.72	1.80	1.44	2.26	1.80	2.71	2.17	3.16	2.53				
3"~5"(80~125)	3"			0.29	0.23	0.59	0.47	1.19	0.95	1.49	1.19	1.79	1.43	2.08	1.67				
4"~6"(100~150)	4"			0.19	0.15	0.38	0.30	0.73	0.61	0.95	0.76	1.14	0.91	1.33	1.07				
5"~8"(125~200)	5"					0.24	0.19	0.48	0.39	0.61	0.48	0.73	0.58	0.85	0.68	1.22	0.97	1.52	1.22
6"~8"(150~200)	6"					0.16	0.13	0.33	0.27	0.42	0.33	0.50	0.40	0.59	0.47	0.84	0.67	1.06	0.84
8"(200)	8"					0.06	0.04	0.15	0.12	0.20	0.15	0.25	0.19	0.30	0.23	0.44	0.35	0.36	0.44

最大允许压差表4（单位MPa）
The maximum allowable pressure in Table 4 (Units MPa)

△=最大输出推力
△=Maximum output thrust

阀门尺寸 Valve size inch (mm)	阀芯相对尺寸 Valve element aligned size (inch)	电子式执行机构3810L系列 Electronic actuator of 3810L series															
		3810LSA-08		3810LSA-20		3810LSA-30		3810LSA-50		3810LSA-65		3810LSA-99		3810LSA-160			
		3810LXA-08		3810LXA-20		3810LXA-30		3810LXA-50		3810LXA-65		3810LXA-99		3810LXA-160			
		△1.0KN		△2.0KN		△3.0KN		△5.0KN		△6.0KN		△10.0KN		△16.0KN			
		金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat
3/4"(20)~1"(25)	3/4"	2.38	1.91	4.77	3.82												
1"(25)~1 1/2" (40)	1"	1.52	1.22	3.05	2.44												
1 1/2" (40)~2"(50)	1 1/4"	0.93	0.74	1.86	1.49	2.79	2.23	4.66	3.73								
1 1/2" ~ 2 1/2"(40~65)	1 1/2"	0.59	0.74	1.19	0.95	1.79	1.43	2.98	2.38								
2"~3"(50~80)	2"	0.38	0.30	0.76	0.61	1.14	0.91	1.91	1.52								
2 1/2"~4"(65~100)	2 1/2"			0.45	0.36	0.67	0.54	1.13	0.90	1.35	1.08	2.26	1.80				
3"~5"(80~125)	3"			0.29	0.23	0.44	0.35	0.74	0.59	0.89	0.71	1.49	1.19				
4"~6"(100~150)	4"			0.19	0.15	0.28	0.22	0.47	0.38	0.57	0.45	0.95	0.76				
5"~8"(125~200)	5"					0.18	0.14	0.30	0.24	0.36	0.29	0.61	0.48	0.97	0.78		
6"~8"(150~200)	6"					0.12	0.10	0.21	0.16	0.25	0.20	0.42	0.33	0.67	0.54		



最大允许压差表5

WATESI, THE MAXIMUM ALLOWABLE PRESSURE IN TABLE 5

- ◆ WL-40000系列控制阀最大允许压差以各种控制阀本体部与标准（常用配置）执行机构规格的组合所得出。
- ◆ 如果表中的控制阀最大允许压差值不能满足工况要求时，请与WATESI技术部工程师联系。

The maximum allowed differential pressure of WL-40000 Series control valves is obtained from combining the bodies of various control valves with the specifications of standard (common configuration) actuators.
If the maximum allowed differential pressure of the control valves in the table can not meet the requirement of operating conditions, please contact the engineers of Technology Department of WATESI.

最大允许压差表5（单位MPa）

The maximum allowable pressure in Table 5 (Units MPa)

阀门尺寸 Valve size inch (mm)	阀芯相对尺寸 Valve element aligned size (inch)	气源压力 Gas source pressure (Kpa)	弹簧范围 Spring range (Kpa)	多弹簧薄膜式执行机构规格 Multi-spring thin-film type actuator specifications							
				WL8620/WL8520		WL8630/WL8530		WL8640/WL8540		WL8650/WL8550	
				内件形式 With pieces of the form							
				金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat
1"~1½" (25~40)	1"	140	20~100	2.21	1.10	3.09	1.54	--	--	--	--
		240	40~200	5.16	2.06	7.22	2.16	--	--	--	--
		300	80~240	9.89	2.21	9.89	2.36	--	--	--	--
1½"~2" (40~50)	1¼"	140	20~100	--	--	2.78	2.01	--	--	--	--
		240	40~200	--	--	5.68	2.45	--	--	--	--
		300	80~240	--	--	8.54	2.89	--	--	--	--
1½"~2½" (40~65)	1½"	140	20~100	--	--	1.81	0.88	2.90	1.16	--	--
		240	40~200	--	--	4.24	1.69	6.78	1.83	--	--
		300	80~240	--	--	9.08	1.81	9.89	1.97	--	--
2"~3" (50~80)	2"	140	20~100	--	--	1.49	0.68	2.38	0.95	--	--
		240	40~200	--	--	3.48	1.21	3.34	1.67	--	--
		300	80~240	--	--	7.46	1.49	9.89	1.78	--	--
3"~5" (80~125)	2½"	140	20~100	--	--	--	--	1.85	0.70	2.98	1.19
		240	40~200	--	--	--	--	2.59	1.58	6.96	2.08
		300	80~240	--	--	--	--	9.28	1.67	9.89	2.01
2½"~4" (65~100)	3"	140	20~100	--	--	--	--	1.51	0.55	2.44	0.73
		240	40~200	--	--	--	--	3.54	1.23	5.69	1.47
		300	80~240	--	--	--	--	7.59	1.51	9.89	1.97
4"~6" (100~150)	4"	140	20~100	--	--	--	--	1.23	0.39	1.99	0.69
		240	40~200	--	--	--	--	2.88	0.86	4.64	1.29
		300	80~240	--	--	--	--	6.19	1.23	9.89	1.71
5"~8" (125~200)	5"	140	20~100	--	--	--	--	--	--	1.62	0.64
		240	40~200	--	--	--	--	--	--	3.79	0.75
		300	80~240	--	--	--	--	--	--	8.14	1.62
6"~8" (150~200)	6"	140	20~100	--	--	--	--	--	--	1.34	0.53
		240	40~200	--	--	--	--	--	--	3.13	0.93
		300	80~240	--	--	--	--	--	--	6.71	1.42
8" (200)	8"	140	20~100	--	--	--	--	--	--	0.25	0.04
		240	40~200	--	--	--	--	--	--	1.61	0.64
		300	80~240	--	--	--	--	--	--	4.34	1.30

最大允许压差表6、7

WATESI, THE MAXIMUM ALLOWABLE PRESSURE IN TABLE 6、7

最大允许压差表6（单位MPa）

The maximum allowable pressure in Table 6 (Units MPa)

△=最大输出推力

△=Maximum output thrust

阀门尺寸 Valve size inch (mm)	阀芯相对尺寸 Valve element aligned size (inch)	电子式执行机构PSL系列 Electronic actuator of PSL series																	
		PSL201		PSL202		PSL204		PSL208		PSL210		PSL312		PSL314		PSL320		PSL325	
		△1.0KN		△2.0KN		△4.0KN		△8.0KN		△10.0KN		△12.0KN		△14.0KN		△20.0KN		△25.0KN	
		金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat
1"〔25〕~1½"〔40〕	1"	4.42	1.76	8.84	2.21	9.89	2.57												
1½"〔40〕~2"〔50〕	1¼"	3.57	1.56	6.89	1.89	8.59	2.35												
1½"~2½"〔40~65〕	1½"	9.89	2.08	9.89	2.51	9.89	2.64	9.89	2.73										
2"~3"〔50~80〕	2"	9.89	1.84	9.89	2.37	9.89	2.52	9.89	2.63										
2½"~4"〔65~100〕	2½"					9.89	2.09	9.89	2.26	9.89	2.30	9.89	2.34						
3"~5"〔80~125〕	3"					9.89	2.01	9.89	2.14	9.89	2.14	9.89	2.29						
4"~6"〔100~150〕	4"					9.00	1.97	9.89	2.09	9.89	2.05	9.89	2.14						
5"~8"〔125~200〕	5"									9.00	1.97	9.89	2.14	9.89	2.05	9.89	2.14		
6"~8"〔150~200〕	6"									9.89	1.62	9.89	1.98	9.89	2.01	9.89	2.06		
8"〔200〕	8"									8.17	1.05	9.89	1.64	9.89	1.86	9.89	2.00		

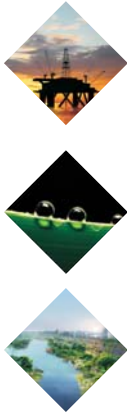
最大允许压差表7（单位MPa）

The maximum allowable pressure in Table 4 (Units MPa)

△=最大输出推力

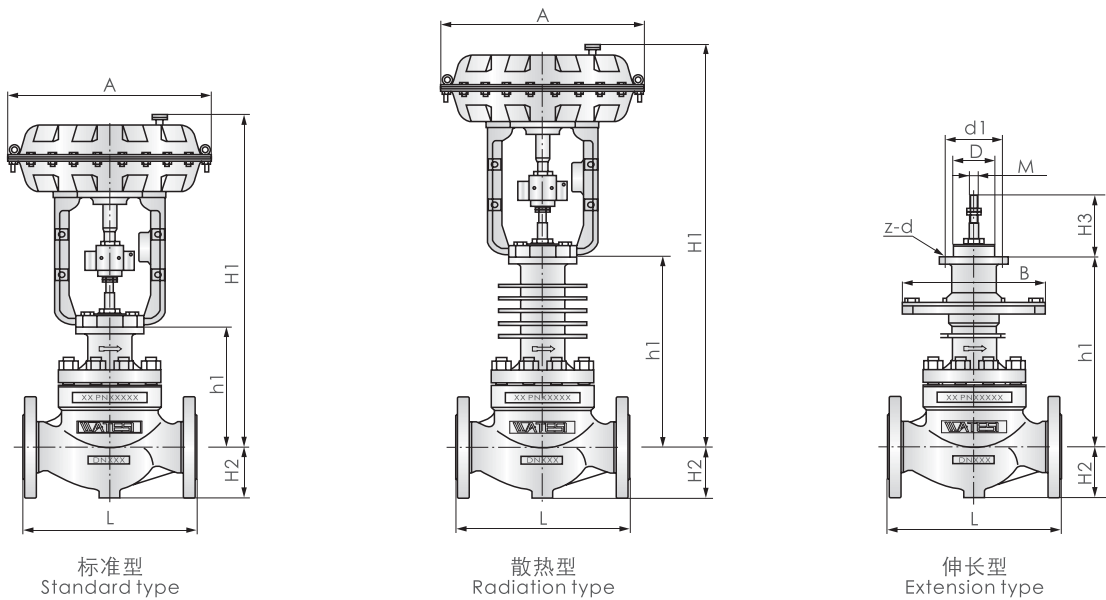
△=Maximum output thrust

阀门尺寸 Valve size inch (mm)	阀芯相对尺寸 Valve element aligned size inch	电子式执行机构3810L系列 Electronic actuator of 3810L series															
		3810LSA-08		3810LSA-20		3810LSA-30		3810LSA-50		3810LSA-65		3810LSA-99		3810LSA-160			
		3810LXA-08		3810LXA-20		3810LXA-30		3810LXA-50		3810LXA-65		3810LXA-99		3810LXA-160			
		△1.0KN		△2.0KN		△3.0KN		△5.0KN		△6.0KN		△10.0KN		△16.0KN			
		金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat	金属座 Metal seat	软座 Soft seat
1"(25)~1 1/2" (40)	1"	4.42	1.76	8.84	2.21												
1 1/2" (40)~2"(50)	1 1/4"	3.68	1.58	6.89	2.10												
1 1/2"~2 1/2"(40~65)	1 1/2"	2.59	0.85	5.19	2.07	7.78	2.17	9.89	2.31								
2"~3"(50~80)	2"	2.14	0.85	4.26	1.91	6.39	1.97	9.89	2.11								
2 1/2"~4"(65~100)	2 1/2"			3.31	1.65	4.97	1.65	8.29	1.88	9.89	1.97	9.89	2.15				
3"~5"(80~125)	3"			2.71	1.08	4.07	1.48	6.78	1.75	8.14	1.84	9.89	1.95				
4"~6"(100~150)	4"			2.21	0.77	3.31	1.33	5.52	1.61	6.63	1.71	9.89	1.84				
5"~8"(125~200)	5"					2.71	0.97	4.52	1.51	5.42	1.64	9.04	1.72	9.89	1.98		
6"~8"(150~200)	6"					2.23	0.64	3.73	1.44	4.47	1.47	7.46	1.61	9.89	1.84		
8"(200)	8"					0.94	0.35	2.08	0.67	2.65	0.88	4.92	1.37	8.34	1.72		



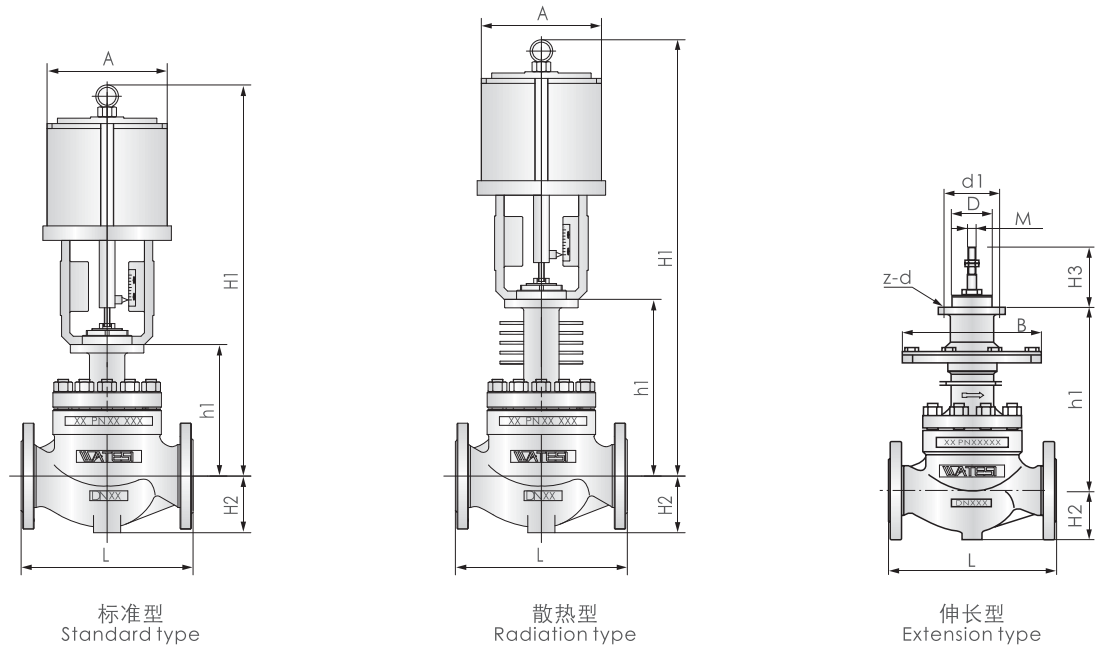
瓦特斯 • 直通式配气动薄膜执行机构

WATESI, THROUGH-WAY TYPE, WITH PNEUMATIC THIN FILM ACTUATOR



瓦特斯 • 直通式配气缸执行机构

WATESI, THROUGH-WAY TYPE WITH PNEUMATIC THE FILM ACTUATOR



单位 Units: (mm)

阀门 尺寸 Valve size (inch)	L			H ₂	A (Φ)	标准型 Standard type		散热型 Radiation type		伸长型 Extension type		执行机构连接尺寸 Connection size of actuators				
	ANSI150 PN1.6 JIS10K	ANSI300 PN4.0 JIS30K	ANSI600 PN6.4 JIS40K			h ₁	H ₁	h ₁	H ₁	H ₁	B (Φ)	H ₃	M	D (Φ)	d ₁ (Φ)	z-d
										h ₁ =800						
3/4"	184	194	206	52	285	132	482	282	632	1226	290	105	M12×1.25	60	80	4-M8
1"	184	197	210	52	285	132	482	282	632	1226	290	105	M12×1.25	60	80	4-M8
1 1/2"	222	235	251	68	285	170	520	339	689	1246	335	105	M12×1.25	60	80	4-M8
					360		606		775	1330	335	135	M16×1.5	80	105	4-M10
2"	254	267	286	83	285	179	529	349	699	1246	370	105	M12×1.25	60	80	4-M8
					360		615		785	1330	370	135	M16×1.5	80	105	4-M10
2 1/2"	276	292	311	93	360	214	650	414	850	1367	410	135	M16×1.5	80	105	4-M10
					470		802		1002	1519	410	160	M20×1.5	95	118	4-M12
3"	298	317	337	98	360	221	657	421	857	1367	440	135	M16×1.5	80	105	4-M10
					470		809		1009	1519	440	160	M20×1.5	95	118	4-M12
4"	352	368	394	117	360	234	670	434	870	1367	490	135	M16×1.5	80	105	4-M10
					470		822		1022	1519	490	160	M20×1.5	95	118	4-M12
5"	403	425	460	133	470	270	858	527	1115	1536	560	160	M20×1.5	95	118	4-M12
6"	451	473	508	150	470	294	882	554	1142	1536	630	160	M20×1.5	95	118	4-M12
8"	543	568	610	186	470	331	919	591	1179	1536	760	160	M20×1.5	95	118	4-M12
10"	673	700	770	245	580	387	1054	637	1305	--	--	178	M20×1.5	100	130	4-M16
12"	737	775	819	248	580	465	1132	715	1382	--	--	178	M20×1.5	100	130	4-M16

注：阀体法兰连接标准请参阅（37~40）页。Note: For the valve body flange connection criterial, please refer to Page 37-40.

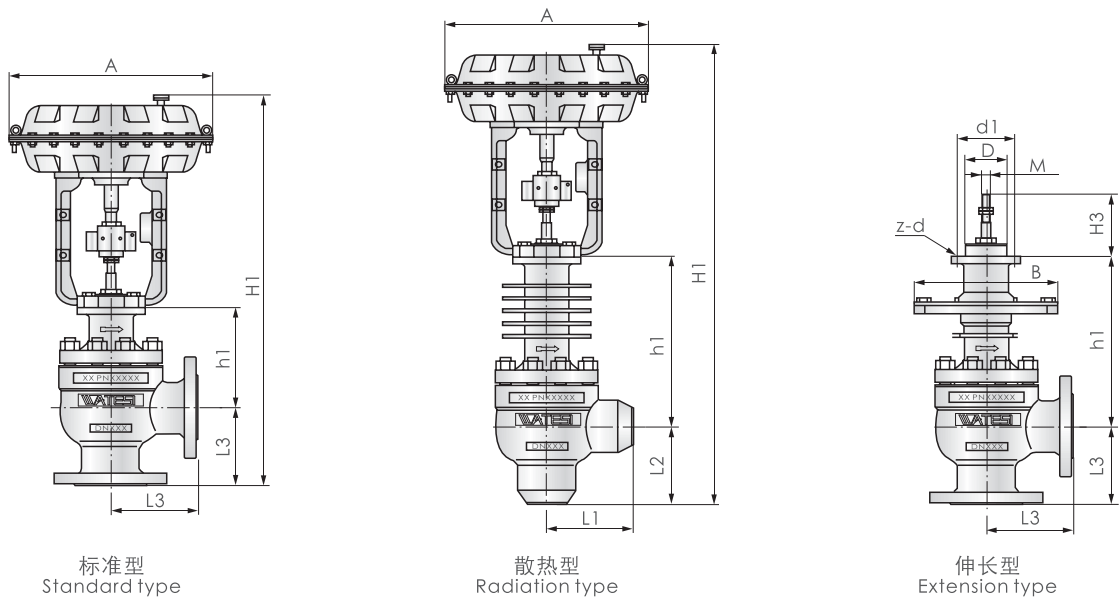
单位 Units: (mm)

阀门 尺寸 Valve size (inch)	L			H ₂	A (Φ)	标准型 Standard type		散热型 Radiation type		伸长型 Extension type		执行机构连接尺寸 Connection size of actuators					
	ANSI150 PN1.6 JIS10K	ANSI300 PN4.0 JIS30K	ANSI600 PN6.4 JIS40K			h ₁	H ₁	h ₁	H ₁	H ₁	B (Φ)	H ₃	M	D (Φ)	d ₁ (Φ)	z-d	
										h ₁ =800							
3/4"	184	194	206	52	165	132	621	282	771	1306	290	105	M12×1.25	60	80	4-M8	
1"	184	197	210	52	165	132	621	282	712	1306	290	105	M12×1.25	60	80	4-M8	
1 1/2"	222	235	251	68	165	170	659	339	828	1324	335	105	M12×1.25	60	80	4-M8	
2"	254	267	286	83	165	179	668	349	838	1324	370	105	M12×1.25	60	80	4-M8	
2 1/2"	276	292	311	93	232	214	781	414	981	1439	410	135	M16×1.5	80	105	4-M10	
3"	298	317	337	98	232	221	803	421	1003	1439	440	135	M16×1.5	80	105	4-M10	
4"	352	368	394	117	232	234	816	434	1016	1439	490	135	M16×1.5	80	105	4-M10	
5"	403	425	460	133	318	270	1047	527	1307	1615	560	160	M20×1.5	95	118	4-M12	
6"	451	473	508	150	318	294	1071	554	1334	1615	630	160	M20×1.5	95	118	4-M12	
8"	543	568	610	186	318	331	1108	591	1371	1615	760	160	M20×1.5	95	118	4-M12	
10"	673	700	770	245	318	387	1540	637	1790	--	--	178	M20×1.5	100	130	4-M16	
12"	737	775	819	248	318	465	162	715	1871	--	--	178	M20×1.5	100	130	4-M16	

注：阀体法兰连接标准请参阅（37~40）页。Note: For the valve body flange connection criterial, please refer to Page 37-40.

瓦特斯 • 角式配气动薄膜执行机构

WATESI, ANGLE TYPE, WITH PNEUMATIC THIN FILM ACTUATOR



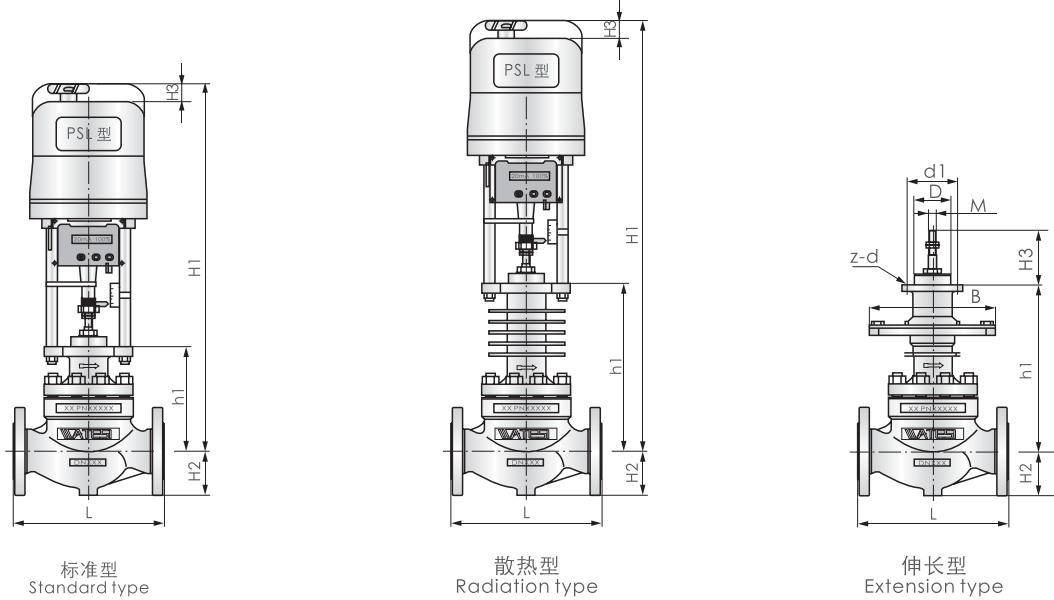
单位 Units: (mm)

阀门 尺寸 Valve size (inch)	ANSI150 300 PN1.6 4.0 JIS10K 30K		L3			A (Φ)	标准型 Standard type		散热型 Radiation type		伸长型 Extension type		执行机构连接尺寸 Connection size of actuators				
			ANSI150 PN1.6 JIS10K	ANSI300 PN4.0 JIS30K	ANSI600 PN6.4 JIS40K		h ₁	H ₁	h ₁	H ₁	H ₁ h ₁ =800	B (Φ)	H ₃	M	D (Φ)	d ₁ (Φ)	z-d
3/4"	75	75	--	--	--	285	--	--	--	--	1301	290	105	M12×1.25	60	80	4-M8
1"	75	75	--	--	--	285	--	--	--	--	1301	290	105	M12×1.25	60	80	4-M8
1 1/2"	85	85	111	117	125	285	149	616	319	786	1329	335	105	M12×1.25	60	80	4-M8
						360		702		872	1415	335	135	M16×1.5	80	105	4-M10
2"	110	110	127	133	143	285	159	639	326	809	1354	370	105	M12×1.25	60	80	4-M8
						360		725		895	1440	370	135	M16×1.5	80	105	4-M10
2 1/2"	140	140	138	146	156	360	188	780	388	980	1517	410	135	M16×1.5	80	105	4-M10
						470		922		1122	1669	410	160	M20×1.5	95	118	4-M12
3"	160	150	149	159	168	360	194	789	394	898	1517	440	135	M16×1.5	80	105	4-M10
						470		941		1141	1669	440	160	M20×1.5	95	118	4-M12
4"	170	160	176	184	197	360	234	854	413	1033	1517	560	135	M16×1.5	80	105	4-M10
						470		1006		1185	1669	560	160	M20×1.5	95	118	4-M12
5"	--	--	200	--	--	470	270	1047	527	1307	1615	560	160	M20×1.5	95	118	4-M12
6"	--	--	240	--	--	470	294	1071	554	1334	1615	630	160	M20×1.5	95	118	4-M12
8"	--	--	300	--	--	470	331	1108	591	1371	1615	760	160	M20×1.5	95	118	4-M12

注：阀体法兰连接标准请参阅（37~40）页。Note: For the valve body flange connection criterial, please refer to Page 37-40.

瓦特斯 • 直通式配PSL系列执行机构

WATESI, THROUGH-WAY TYPE WITH PSL SERIES OF ACTUATORS



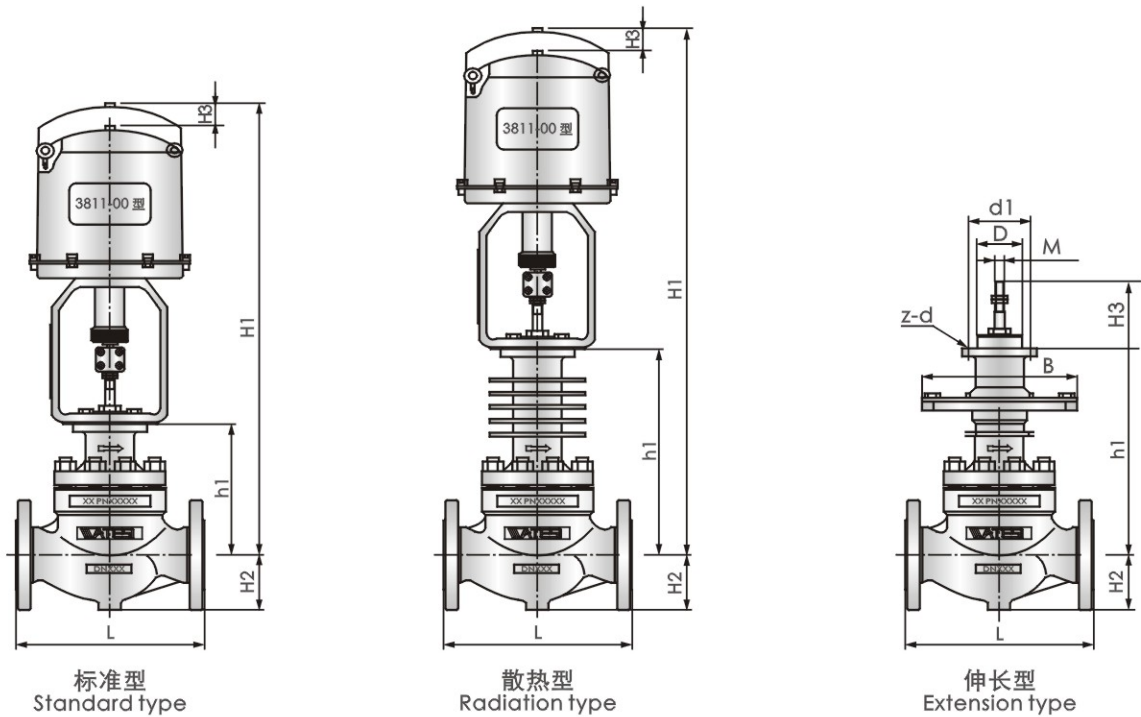
单位 Units: (mm)

阀门 尺寸 Valve size (inch)	L			H ₂	A (Φ)	标准型 Standard type		散热型 Radiation type		伸长型 Extension type		H ₃	执行机构连接尺寸 Connection size of actuators				
	ANSI150 PN1.6 JIS10K	ANSI300 PN4.0 JIS30K	ANSI600 PN6.4 JIS40K			h ₁	H ₁	h ₁	H ₁	B			H ₃	M	D (Φ)	d ₁ (Φ)	z-d
										h ₁ =800	B (Φ)						
3/4"	184	194	206	52	177	132	591	282	741	1335	290	100	105	M12×1.25	60	80	4-M8
1"	184	197	210	52	177	132	591	282	741	1335	290	100	105	M12×1.25	60	80	4-M8
1 1/2"	222	235	251	68	177	170	629	339	798	1453	335	100	105	M12×1.25	60	80	4-M8
2"	254	267	286	83	177	179	638	349	808	1453	370	100	105	M12×1.25	60	80	4-M8
2 1/2"	276	292	311	93	177	214	704	414	904	1421	410	100	135	M16×1.5	80	105	4-M10
3"	298	317	337	98	177	221	711	421	911	1421	440	100	135	M16×1.5	80	105	4-M10
4"	352	368	394	117	177	234	724	434	924	1421	490	100	135	M16×1.5	80	105	4-M10
5"	403	425	460	133	226	270	840	527	1027	1518	560	230	160	M20×1.5	95	118	4-M12
6"	451	473	508	150	226	294	864	554	1124	1518	630	230	160	M20×1.5	95	118	4-M12
8"	543	568	610	186	226	331	901	591	1161	1518	760	230	160	M20×1.5	95	118	4-M12
10"	673	700	770	245	226	387	1108	637	1371	1608	--	--	178	M20×1.5	100	130	4-M16
12"	737	775	819	248	226	465	1540	715	1790	1745	--	--	178	M20×1.5	100	130	4-M16

注：阀体法兰连接标准请参阅（37~40）页。Note: For the valve body flange connection criterial, please refer to Page 37-40.

瓦特斯 • 直通式配3810L系列执行机构

WATESI, THROUGH-WAY TYPE WITH 3810L SERIES OF ACTUATORS



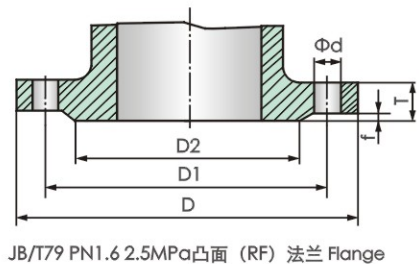
单位 Units: (mm)

阀门 尺寸 Valve size (inch)	L			H ₂	A (Φ)	标准型 Standard type		散热型 Radiation type		伸长型 Extension type		H ₃	执行机构连接尺寸 Connection size of actuators					
	ANSI150 PN1.6 JIS10K	ANSI300 PN4.0 JIS30K	ANSI600 PN6.4 JIS40K			h ₁	H ₁	h ₁	H ₁	H ₁			B (Φ)	H ₃	M	D (Φ)	d ₁ (Φ)	z-d
										h ₁ =800								
3/4"	184	194	206	52	225	132	505	282	655	1249	290	205	105	M12×1.25	60	80	4-M8	
1"	184	197	210	52	225	132	505	282	655	1249	290	205	105	M12×1.25	60	80	4-M8	
1 1/2"	222	235	251	68	225	170	543	339	712	1267	335	205	105	M12×1.25	60	80	4-M8	
2"	254	267	286	83	225	179	552	349	722	1267	370	205	105	M12×1.25	60	80	4-M8	
2 1/2"	276	292	311	93	255	214	749	414	949	1466	410	260	135	M16×1.5	80	105	4-M10	
3"	298	317	337	98	255	221	756	421	956	1466	440	260	135	M16×1.5	80	105	4-M10	
4"	352	368	394	117	255	234	769	434	969	1466	490	260	135	M16×1.5	80	105	4-M10	
5"	403	425	460	133	310	270	995	527	1252	1673	560	380	160	M20×1.5	95	118	4-M12	
6"	451	473	508	150	310	294	1019	554	1279	1673	630	380	160	M20×1.5	95	118	4-M12	
8"	543	568	610	186	310	331	1056	591	1316	1673	760	380	160	M20×1.5	95	118	4-M12	
10"	673	700	770	245	470	331	1108	591	1371	1708	—	—	178	M20×1.5	100	130	4-M16	
12"	737	775	819	248	580	331	1540	637	1790	1840	—	—	178	M20×1.5	100	130	4-M16	

注：阀体法兰连接标准请参阅（37~40）页。Note: For the valve body flange connection criterion, please refer to Page 37-40.

瓦特斯 • 国标钢制管法兰 JB/T79.1-94

WATESI, GB STEEL PIPE FLANGE JB/T79.1-94



PN1.6MPa法兰尺寸 Flange deminsion

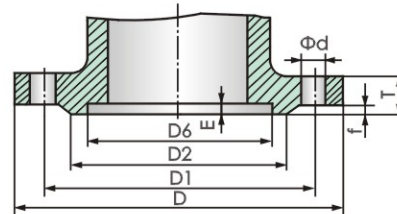
口径 NPS	D	D1	D2	f	T	Φd	z-d
20	105	75	55	2	14	14	4-M12
25	115	85	65	2	14	14	4-M12
32	135	100	78	2	16	18	4-M12
40	145	110	85	3	16	18	4-M16
50	160	125	100	3	16	18	4-M16
65	180	145	120	3	18	18	4-M16
80	195	160	135	3	20	18	8-M16
100	215	180	155	3	20	18	8-M16
125	245	210	185	3	22	18	8-M16
150	280	240	210	3	24	23	8-M20
200	335	295	265	3	26	23	12-M20
250	405	355	320	3	30	25	12-M22
300	460	410	375	4	30	25	12-M22
350	520	470	435	4	34	25	16-M27
400	580	525	485	4	36	30	16-M27
450	640	585	545	4	40	30	20-M27
500	705	650	608	5	44	34	20-M30
600	840	770	718	5	48	41	20-M36
700	910	840	788	5	50	41	24-M36
800	1020	950	898	5	52	41	24-M36

PN2.5MPa法兰尺寸 Flange deminsion

口径 NPS	D	D1	D2	f	T	Φd	z-d
20	105	75	55	2	16	14	4-M12
25	115	85	65	2	16	14	4-M12
32	135	100	78	2	18	18	4-M16
40	145	1120	85	3	18	18	4-M16
50	160	125	100	3	20	18	4-M16
65	180	145	120	3	22	18	4-M16
80	195	160	135	3	22	18	8-M16
100	230	190	160	3	24	23	8-M20
125	270	220	188	3	28	25	12-M22
150	300	250	218	3	30	25	12-M22
200	360	310	278	3	34	25	12-M22
250	425	370	332	3	36	30	16-M27
300	485	430	390	4	40	30	16-M27
350	550	490	448	4	44	34	20-M30
400	610	550	505	4	48	34	20-M30
450	660	600	555	4	50	34	20-M30
500	730	660	610	4	52	41	20M-36
600	840	770	718	5	56	41	24-M36
700	955	875	815	5	60	48	24-M42
800	1070	990	930	5	64	48	24-M42

瓦特斯 • 国标钢制管法兰 JB/T79.2-94

WATESI, GB STEEL PIPE FLANGE JB/T79.2-94



JB/T79 PN4.0 6.4 10.0MPa凹面 (FM) 法兰 Flange

PN4.0MPa法兰尺寸 Flange deminsion

口径 NPS	D	D1	D2	D6	f	E	T	Φd	螺栓 Bolt
20	105	75	55	51	2	4	16	14	4-M12
25	115	85	65	58	2	4	16	14	4-M12
32	135	100	78	66	2	4	18	16	4-M16
40	145	110	85	76	3	4	18	18	4-M16
50	160	125	100	88	3	4	20	18	4-M16
65	180	145	120	110	3	4	22	18	8-M16
80	195	160	135	121	3	4	22	18	8-M16
100	230	190	160	150	3	4.5	24	23	8-M20
125	270	220	188	176	3	4.5	28	26	8-M22
150	300	250	218	204	3	4.5	30	26	8-M22
200	375	320	282	260	3	4.5	38	30	12-M27
250	445	385	345	313	3	4.5	42	34	12-M30
300	510	430	408	364	4	4.5	46	34	16-M30
350	570	510	465	422	4	5	52	34	16-M30
400	655	585	535	474	4	5	58	41	16-M36

PN6.4MPa法兰尺寸 Flange deminsion

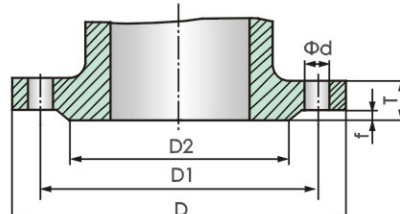
口径 NPS	D	D1	D2	D6	f	E	T	Φd	螺栓 Bolt
20	125	90	68	51	2	4	20	18	4-M16
25	135	100	78	58	2	4	22	18	4-M16
32	160	110	82	66	2	4	24	23	4-M20
40	165	125	95	76	3	4	24	23	4-M20
50	175	135	105	88	3	4	26	23	4-M20
65	200	160	130	110	3	4	28	23	4-M20
80	210	170	140	121	3	4	30	23	8-M20
100	250	200	168	150	3	4.5	32	25	8-M22
125	285	240	202	176	3	4.5	36	30	8-M27
150	340	280	240	201	3	4.5	38	34	8-M30
200	405	345	300	260	3	4.5	44	34	12-M30
250	470	400	352	313	3	4.5	48	41	12-M30
300	530	460	412	364	4	4.5	54	41	16-M36
350	595	525	475	422	4	5	60	41	16-M36
400	670	585	525	474	4	5	66	48	16-M42

PN10.0MPa法兰尺寸 Flange deminsion

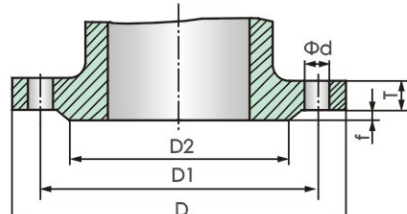
口径 NPS	D	D1	D2	D6	f	E	T	Φd	螺栓 Bolt
20	125	90	68	51	2	4	22	18	4-M16
25	135	100	78	58	2	4	24	18	4-M16
32	150	110	82	66	2	4	24	23	4-M20
40	165	125	95	76	3	4	26	23	4-M20
50	195	145	112	88	3	4	28	25	4-M22
65	220	170	138	110	3	4	32	25	8-M22
80	230	180	148	121	3	4	34	25	8-M22
100	265	210	172	150	3	4.5	38	30	8-M27
125	310	250	210	176	3	4.5	42	34	8-M30
150	350	290	250	204	3	4.5	46	34	12-M30
200	430	360	312	260	3	4.5	54	41	12-M36
250	500	430	382	313	3	4.5	60	41	12-M36
300	585	500	442	364	4	4.5	70	48	16-M42
350	655	560	498	422	4	5	76	54	16-M48
400	715	620	558	474	4	5	80	54	16-M48

瓦特斯 • 美标钢制管法兰 ANSI B16.5

WATESI, ANSI STEEL PIPE FLANGE ANSI B16.5



Class150/300Lb凸面 (RF) 法兰 Flange



Class600Lb凸面 (RF) 法兰 Flange

Class150法兰尺寸 Flange deminsion

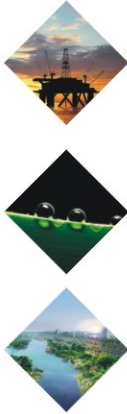
口径 NPS		D		D1		D2		f		T		Φd		螺栓 Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	数量Amount	直径Dia.
3/4"	20	3.875	98	2.75	70	1.688	43	0.06	1.6	0.44	11.2	0.625	15	4	1/2
1"	25	4.25	108	3.12	79.5	2	51	0.06	1.6	0.56	14.2	0.62	16	4	1/2
1 1/4"	32	4.62	117	3.5	89	5.5	63.5	0.06	1.6	0.62	15.7	0.62	16	4	1/2
1 1/2"	40	5	127	3.875	98.5	2.875	73	0.06	1.6	0.56	15	0.625	15	4	1/2
2"	50	6	152	4.75	120.5	3.62	92	0.06	1.6	0.62	15.9	0.75	19	4	5/8
2 1/2"	65	7	178	5.5	139.5	4.12	105	0.06	1.6	0.69	17.5	0.75	19	4	5/8
3"	80	7.5	190	6	152.5	5	127	0.06	1.6	0.75	19.1	0.75	19	4	5/8
4"	100	9	229	7.5	190.5	6.19	157	0.06	1.6	0.94	23.9	0.75	19	8	5/8
5"	125	10	254	8.5	216.5	7.31	186	0.06	1.6	0.94	23.9	0.88	22	8	3/4
6"	150	11	279	9.5	241.5	8.5	216	0.06	1.6	1	25.4	0.88	22	8	3/4
8"	200	13.5	343	11.75	298.5	10.62	270	0.06	1.6	1.12	28.6	0.88	22	8	3/4
10"	250	16	406	14.25	362	12.75	324	0.06	1.6	1.19	30.2	1	25	12	7/8
12"	300	19	483	17	432	15	381	0.06	1.6	1.25	31.8	1	25	12	7/8

Class300法兰尺寸 Flange deminsion

口径 NPS		D		D1		D2		f		T		Φd		螺栓 Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	数量Amount	直径Dia.
3/4"	20	4.63	117	3.25	82.5	1.69	43	0.06	1.6	0.63	16	0.75	19	4	5/8
1"	25	4.88	124	3.5	89	2	51	0.06	1.6	0.69	18	0.75	19	4	5/8
1 1/4"	32	5.25	133	3.88	98.5	2.5	63.5	0.06	1.6	0.75	19	0.75	19	4	5/8
1 1/2"	40	6.13	156	4.5	114.5	3.38	73	0.06	1.6	0.81	21	0.88	22	4	5/8
2"	50	6.5	165	5	127	3.62	92	0.06	1.6	0.88	22.3	0.75	19	8	3/4
2 1/2"	65	7.5	190	5.88	149	4.12	105	0.06	1.6	1	25.4	0.88	22	8	5/8
3"	80	8.25	210	6.62	168	5	127	0.06	1.6	1.12	28.6	0.88	22	8	3/4
4"	100	10	254	7.88	200	6.19	157	0.06	1.6	1.25	31.8	0.88	22	8	3/4
5"	125	11	279	9.25	235	7.31	186	0.06	1.6	1.38	35	0.88	22	8	3/4
6"	150	12.5	318	10.62	270	8.5	216	0.06	1.6	1.44	36.6	0.88	22	12	3/4
8"	200	15	381	13	330	10.62	270	0.06	1.6	1.62	41.3	1	25	12	7/8
10"	250	17.5	444	15.25	387.5	12.75	324	0.06	1.6	1.88	47.7	1.12	29	16	1
12"	300	20.5	521	17.75	451	15	381	0.06	1.6	2	50.8	1.25	32	16	1 1/8

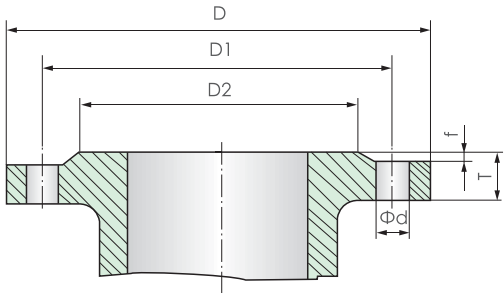
Class600法兰尺寸 Flange deminsion

口径 NPS		D		D1		D2		f		T		Φd		螺栓 Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	数量Amount	直径Dia.
3/4"	20	4.63	117	3.25	82.5	1.69	43	0.25	6.4	0.63	16	0.75	19	4	5/8
1"	25	4.88	124	3.5	89	2	51	0.25	6.4	0.69	18	0.75	19	4	5/8
1 1/4"	32	5.25	133	3.88	98.5	2.5	63.5	0.25	6.4	0.81	21	0.75	19	4	5/8
1 1/2"	40	6.13	156	4.5	114.5	3.38	73	0.25	6.4	0.88	23	0.88	22	4	3/4
2"	50	6.5	165	5	127	3.62	92	0.25	6.4	1	25.4	0.75	19	8	5/8
2 1/2"	65	7.5	190	5.88	149	4.12	105	0.25	6.4	1.12	28.6	0.88	22	8	3/4
3"	80	8.25	210	6.62	168	5	127	0.25	6.4	1.25	31.8	0.88	22	8	3/4
4"	100	10.75	273	8.5	216	6.19	157	0.25	6.4	1.5	38.1	1	25	8	7/8
5"	125	13	330	10.5	266.5	7.31	186	0.25	6.4	1.75	44.5	1.12	29	8	1
6"	150	14	356	11.5	292	8.5	216	0.25	6.4	1.88	47.7	1.12	29	12	1
8"	200	16.5	419	13.75	349	10.62	270	0.25	6.4	2.19	55.6	1.25	32	12	1 1/8
10"	250	20	508	17	432	12.75	324	0.25	6.4	2.5	63.5	1.38	35	16	1 1/4
12"	300	22	559	19.25	489	15	381	0.25	6.4	2.62	66.7	1.38	35	20	1 1/4



瓦特斯 • 日标钢制管法兰 JIS B2238

WATESI, JIS STEEL PIPE FLANGE JIS B2238



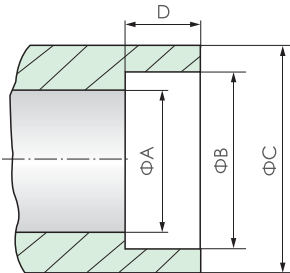
JIS10K、20K、40K凸面 (RF) 法兰 Flange

JIS10K、20K、40K法兰尺寸 Flange demision

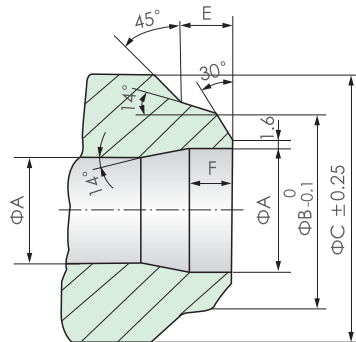
	口径DN	D	D1	D2	f	T	φd	螺栓 Bolt	
		mm	mm	mm	mm	mm	mm	数量Amount	直径Dia.
JIS 10KRF	20	100	75	56	1	14	15	4	M12
	25	125	90	67	1	14	19	4	M16
	32	135	100	76	2	16	19	4	M16
	40	140	105	81	2	16	19	4	M16
	50	155	120	96	2	16	19	4	M16
	65	175	140	116	2	18	19	4	M16
	80	185	150	126	2	18	19	8	M16
	100	210	175	151	2	18	19	8	M16
	125	250	210	182	2	20	23	8	M20
	150	280	240	212	2	22	23	8	M20
JIS 20KRF	200	330	290	262	2	22	23	12	M20
	250	400	355	324	2	24	25	12	M22
	300	445	400	368	3	24	25	16	M22
	20	100	75	56	1	16	15	4	M12
	25	125	90	67	1	16	19	4	M16
	32	135	100	76	2	18	19	4	M16
	40	140	105	81	2	18	19	4	M16
	50	155	120	96	2	18	19	8	M16
	65	175	140	116	2	20	19	8	M16
	80	200	160	132	2	22	23	8	M20
JIS 40KRF	100	225	185	160	2	24	23	8	M20
	125	270	225	195	2	26	25	8	M22
	150	305	260	230	2	28	25	12	M22
	200	350	305	275	2	30	25	12	M22
	250	430	380	345	2	34	27	12	M24
	300	480	430	395	3	36	27	16	M24
	20	120	85	60	1	18	19	4	M16
	25	130	95	70	1	20	19	4	M16
	40	160	120	90	2	22	23	4	M20
	50	165	130	105	2	22	19	8	M16
JIS 40KRF	65	200	160	130	2	26	23	8	M20
	80	210	170	140	2	28	23	8	M20
	100	250	205	165	2	32	25	8	M22
	125	300	250	200	2	36	27	8	M24
	150	355	295	240	2	38	33	12	M30
	200	405	345	290	2	42	33	12	M30
	250	475	440	355	2	48	33	12	M30
	300	540	475	440	3	52	39	16	M36

瓦特斯 • 阀体焊接连接端 (ANSI900、1500、2500)

WATESI, VALVE BODY WELDING JOINT (ANSI900、1500、2500)



SW型焊接 Welding type



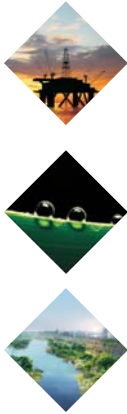
BW型焊接 Welding type

SW型焊接连接端尺寸表1 Size of welding side joint table 1

公称通径 DN(mm)	公称压力 PN(MPa)	A	B	C	D
40	ANSI 900	35	49.1	74	30
	ANSI 1500	34.4	49.1	74	21
	ANSI 2500	34.4	49.1	84	21
50	ANSI 900	48	61.1	92	24
	ANSI 1500	48	61.1	92	24
	ANSI 2500	38	61.1	103	25
80	ANSI 900	67	90	118	30
	ANSI 1500	67	90	130	30
	ANSI 2500	52	90	133	20

BW型焊接连接端尺寸表2 Size of welding side joint table 2

公称通径 DN(mm)	公称压力 PN(MPa)	A	B	C	D	E	F
80	ANSI 900	63	-	-	103	-	9
	ANSI 1500	63	66.9	89.1	120	20	9
	ANSI 2500	52	-	-	133	-	15
100	ANSI 900	84	-	-	134	-	9
	ANSI 1500	84	87.3	114.3	152	25	9
	ANSI 2500	73	-	-	177	-	15
150	ANSI 900	126	128.8	165.2	194	33	9
	ANSI 1500	126	128.8	165.2	218	33	9
	ANSI 2500	110	120	200	260	35	30
200	ANSI 900	190	192	-	260	-	-
	ANSI 1500	178	192	260	290	30	20
	ANSI 2500	146	150	220	322	50	-



瓦特斯 • 附件

WATESI, FITTINGS

为了提高调节阀的性能，或扩大使用范围，备有各种附件，可根据不同的条件合理选。

定位器

一、下列情况必须装定位器：

- 1、增大执行机构的输出力。
- 2、当气源发生故障时，调节阀动作方向不符合，控制系统安全性要求。
- 3、要求改变调节阀的流量特性。
- 4、调节仪表为电信号。
- 5、双作用执行机构。

二、下列情况最好带定位器：

- 1、要求阀正确控制。
- 2、填料函部摩擦力大。
- 3、流体中含有泥浆颗粒或流体粘度大。
- 4、执行机构的滑动摩擦力大。
- 5、调节仪表与调节阀之间输入气信号管线较长。

电磁阀

选择电磁阀时，除考虑交、直流电源，及电压、频率、灌封线圈等要求外，必须充分注意电磁阀与调节阀作用型式的关系，调节阀可配用“常开型”或“常闭型”电磁阀。

行程开关

若显示阀芯一个终端点位置，行程开关可以安装在阀的全开位置上或者装在全关位置上；若显示两终端位置，两个行程开关应分别安装在全开和全关位置上。

气动截止阀

气动截止阀的弹簧根据管线的供气压力和截止阀的给定压力来选择。

三通先导阀、三通截止阀

调节阀带上三通先导阀或三通截止阀，可作开——关两位动作，也可以根据管道的要求使用。

In order to improve the performance of the regulating valve or expand the application, we offer various fittings, which can be selected according to the different conditions.

Localizer

- 1. Localizer is a must for the situations below!
- 2. To increase the output power of the actuator, control system security requirements.
- 3. The direction of the regulating valve movement is incorrect when there is gas source failure.
- 4. It is required to change the flow features of the regulating valve.
- 5. The electric signal is used in the adjusting meters.

With dual function actuators

- 1. Localizer is preferred for the situations below.
- 2. Valve needs the correct controlling.
- 3. The abrasion in the filler letter the departments of is heavy 3.
- 4. There is slurry grain in the fluid or the fluid is too viscous.
- 5. The input signal line between the adjusting meter and regulating valve is long.

Solenoid

When selecting the solenoid, the relation ship between the solenoid and the function mode of the regulating valve must be considered in addition to looking at the requirement of AC/DC power supply and the voltage, frequency and coil potting; the "constant open" or "constant close" solenoid valve can be equipped to the regulating valve.

Travel switch

If one termination location of valve core is displayed, the travel switc can be mounted at the full-opening or full closing location of the valve together, if two termination locations are displayed, the travel swithc should be mounted at the full-opening of full closing locations of the valve respectively.

Pneumatic chech valve

The spring of the pneumatic check valve shall be selected according to the air supply pressure and the given pressure of the check valve.

Tee pilot valve/Tee check valve

The regulaing valve equipped with Tee pilot valve/Tee check valve can open and close and it can be used according to the requirement of the pipes.

瓦特斯 • 调节阀泄漏量标准

WATESI, ADJUSTING VALVE LEAKAGE CRITERIA

GB/T4213 《气动调节阀》 Pneumatic control valve

泄漏等级Leakage level	实验介质Test medium	试验压力Test pressure	最大阀座泄漏量l/h Maximum valve seat leakage l/h
I	由用户与WATESI商定 Agreed upon by the user and WATESI		
II	水、空气或氮气 Water, air or nitrogen	A	5×10 ⁻³ ×阀额定容量 Rated capacity of valves
III			10 ⁻³ ×阀额定容量 Rated capacity of valves
IV	水 Water	A或orB	10 ⁻⁴ ×阀额定容量 Rated capacity of valves
	空气或氮气 Air or nitrogen	A	
IV-S1	水 Water	A或orB	5×10 ⁻⁴ ×阀额定容量 Rated capacity of valves
	空气或氮气 Air or nitrogen	A	
IV-S2	空气或氮气 Air or nitrogen	A	2×10 ⁻⁴ ×△P×D
V	水 Water	B	1.8×10 ⁻² ×△P×D
VI	空气或氮气 Air or nitrogen	A	3×10 ⁻³ ×△P(续表泄漏量) Continued table leakage

续表 Continued table

阀座直径 Valve base diameter		20	25	40	50	65	80	100	150	200	250	300	350	400
泄漏量 Leakage	ml/min	0.1	0.15	0.3	0.45	0.6	0.9	1.7	4	6.75	11.1	16.0	21.6	28.4
	气泡数/min Few bubbles	-	1	2	3	4	6	11	27	45	-	-	-	-

A: 试验压力=0.35MPa, 当阀的允许压差小于0.35MPa时用设计规定的允许压差
Test pressure=0.35MPa, when the allowed differential pressure is less than 0.35MPa, use the allowed differential pressure stipulated in design.
B: 试验压力为阀的最大工作压力
The test pressure is the maximum work differential pressure of the valve

美国 ANSI B16.104

泄漏等级 Leakage level	最大阀座泄漏量 Maximum valve seat leakage				试验介质 Test medium	试验压力 Test pressure
II	0.5%Cv				10-25℃的空气或水 10-25℃ water or air	最大工作压差ΔP或501b/in ² (3.5巴) 压差，取其较低者 Maximum work differential pressure ΔP or 501b/in ² (3.5 bar) differential pressure, choose the lower one
III	0.1%Cv					
IV	0.01%Cv					最大工作压差ΔP Maximum work differential pressure ΔP
V	每英寸公称通径和每磅/平方英寸压差时，允许有0.0005ml/min的漏水 For the nominal diameter each inch and each pound/square inch differential pressure, the leakage of 0.0005ml/min is allowed					
VI	阀门口径Valve diameter		ml/min	气泡数/min Few bubbles		最大工作压差ΔP或501b/in ² (3.5巴) 压差，取其较低者 Maximum work differential pressure ΔP or 501b/in ² (3.5 bar) differential pressure, choose the lower one
	in	mm				
	1"	25	0.15	1		
	1 1/2"	38	0.30	2		
	2"	51	0.45	3		
	2 1/2"	64	0.60	4		
	3"	76	0.90	6		
	4"	102	1.70	11		
	6"	152	4.00	27		
	8"	203	6.75	45		
	10"	250	11.1	--		
	12"	300	16.0	--		

控制阀订货须知

ORDERING INSTRUCTION OF CONTROL VALVE

在签订产品合同时，请按下表中的内容，说明具体要求

While signing product contracts, please specify the requirements according to the contents in the table below

阀体 Body	气动调节阀		电动调节阀	
	Pneumatic adjusting valve		Electric adjusting valve	
	位号 Position NO.		位号 Position NO.	
产品型号、名称 Product model and name		产品型号、名称 Product model and name		
阀部件 Valve parts	公称通径DN Nominal diameter DN		公称通径DN Nominal diameter DN	
	阀座直径dN Valve seat diameter dN		阀座直径dN Valve seat diameter dN	
	额定流量系数(KV) Rated flow coefficient (KV)		额定流量系数(KV) Rated flow coefficient (KV)	
	公称压力(PN) Nominal pressure (PN)		公称压力(PN) Nominal pressure (PN)	
	阀体材料 Valve body materials		阀体材料 Valve body materials	
	阀内件材料 Trim materials		阀内件材料 Trim materials	
	固有流量特性 Inherent flow characteristics		固有流量特性 Inherent flow characteristics	
	工作温度范围 Working temperature range		工作温度范围 Working temperature range	
	泄漏等级 Leaking grade		泄漏等级 Leaking grade	
作用方式 Mode	气开或气关 Electric open or close		电开或电关 Electric open or close	
执行机构 Actuator	气动执行机构型号 Pneumatic actuator model		电动执行机构型号 Electric actuator model	
	弹簧压力范围 Spring pressure		电源电压：220V、380V Supply voltage: 220V、380V	
	输入信号范围 Input signal range	气信号：标准20~100KPa Gas signal: standard 20~10KPa		输入信号范围：0~10mA或4~20mA Input signal range: 0~10mA or 4~20mA
电信号：0~10mA或4~20mA ECG: 0~10mA or 4~20mA				
配用附件 Wearing attachment	阀门定位器、手轮、保位阀、电磁阀、空气过滤减压器、行程开关、其他 Valve positioner, handwheel, lock-up valve, solenoid valve, air filter regulator limit switch, other		伺服放大器 操作器 He served amplifier operation	
特殊要求 Special requirements	是否防爆、禁油、禁铜、紧急动作等 Is the anti-explosion, oil/copper resisting or emergency action, etc available			
工艺参数 Process parameters	介质名称：温度、比重、流量、正常工作流量时的阀前压力、阀后压力，关闭时的压差，不干净介质的说明，强腐蚀介质的说明，颗粒介质，造成严重冲蚀的说明。 Medium name: the temperature, specific gravity, flow, the pressure difference at the normal working flow, the pressure difference during closing, the notes about the impure medium, the noted about the strongl corrosive medium, particle medium, the notes about the heavy erosion.			

引进型控制阀型号编制说明

INTRODUCED-TYPE CONTROL VALVE MODEL DESIGNATION DESCRIPTION

引进型控制阀型号编制说明

Introduced-type control valve model designation description

1	2	3	4	5	6	7	8	9	10	11	12
本体部A Ontology department of A						规格参数B Specification parameters B			执行机构C Actuator C		

A、本体部编制说明 Body part designating description

1 代号 Code	控制阀大类 Control valve categories	2 代号 Code	控制阀类别 Control valve types	3 代号 Code	阀体流通型式 Body flow pattern
WL	直行程控制阀 Linear motion control valve	2	顶部导向型系列 Top-guided type series	1	直通式结构 Through-way type structure
		4	套筒导向型系列 Sleeve-guided type series	2	角式结构 Angle type structure
WR	角行程控制阀 Angle motion control valve	5	球面型系列 Spherical-type series	3	三通式结构 Three-way type structure
		7	蝶阀型系列 Butterfly valve-type series	4	"Z"形式结构 "Z-shaped" structure

4 代号 Code	WL系列阀内件 WL series valve trims	WR系列阀内件 WR series valve trims
1	经济型 螺纹拧入式阀座 Economic type screw-in type valve seat	偏心部分球面型 Eccentric partly spherical-type
2	高负载型 笼套压入式阀座 High load type cage press-in valve seat	同心部分球面型 Concentric partly spherical-type
3	高性能型 双阀芯泄压式 High performance type dual-element pressure relief type	同心全部球面型 Concentric all spherical-type
4	切断式 Block type	--
5	经济型 套筒双阀座 Economic type sleeve dual-seated	普通密封型 Normal seal type
6	套筒单座式 Sleeve single-seated type	端面密封型 End surface seal type
7	多孔式阀笼结构 Multi-hole type valve cage structure	高性能偏心型结构 High-performance eccentric type structure
8	迷宫式阀笼结构 Labyrinth type valve cage structure	三维偏心多层次结构 3-Dimensional eccentric multi-level structure
9	多级降压式结构 Multi-stage pressure drop structure	--

5 代号 Code	连接形式 Connection form	6代号 Code	上阀盖形式 Upper valve cover forms
4	法兰式 Flange type	O	标准型 Standard type
7	对夹式 Wafer type	G	散热型(高温型) Radiation type (high temperature type)
6	焊接式 Welding type	D	伸长型(低温型) Extension type (low temperature type)
1	螺纹式 Screw type	W	波纹管密封型 Corrugated tube seal type
		B	夹套型(保温型) Jacket type (heat preservation type)

B、规格参数的编制说明

Designating description of specifications and parameters

7代号 Code	公称压力代号	9代号 Code	阀体材料代号 Valve body materials code
	150、300、600、900、1500、2500LB	T	铜合金 Copper alloy
	10K、20K、30K、40K	C	碳钢(WCB) Carbon steel (WCB)
	16、25、40、64、100、160、250、320、420	K	可锻铸铁 Malleable cast iron
8代号 Code	公称通径 DN(mm)	I	1Cr5Mo、铬钼钢 Chromium-molybdenum steel
		P	1Cr18Ni9Ti、铬钼不锈钢 Chromium-molybdenum stainless steel
		R	1Cr18Ni12MoTi、铬钼不锈钢 Chromium-molybdenum stainless steel
		V	12Cr1Mo1V、铬钼钒钢 Chromium-molybdenum-vanadium steel

C、执行机构的编制 Designating of actuators

10代号Code	执行机构类别 Types of implementing agencies	11代号Code	作用形式 Effect forms
4	多弹簧薄膜式 Multi-spring thin film type	K	气开式、电开式 Pneumatic open type, electric open type
5	单弹簧薄膜式 Single-spring thin film type	B	气闭式、电闭式 Pneumatic close type, electric close type
6	气缸式 Air cylinder type	12代号Code	手操机构 Manual operating mechanism
7	全电子式 Full-electronic type	P	
8	电动式 Electric type	D	
		W	
		省略	不带手操机构 No manual operating mechanism

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来自意大利的技术

TECHNOLOGY FROM ITALY

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在WATESI尖端的控制阀世界里，“营运中不间断”是我们对客户的终身承诺。不同的国家，共享相同的品牌！不断挑战，超越自我，瓦特斯的足迹已遍布世界的每一片土地！

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WATESI用自动化成就世界工业之“美”！

Proficiency in "disks" is the strategic concept of control valve research & development of our technical center. WATESI, through consistent close cooperation with the control equipment manufacturers well known in Italy for absorption and innovation, has been engaged in the research & development and production of high-quality control valves. The adoption of EC (Easy Control) modular design in product trims makes rapid disassembly & assembly, replacement and combination of valve disks possible. Relying on the regional and industrial advantages, WATESI provides customers with well-rounded industrial process control solutions with unique WATESI features.

Professionalism assures the quality, innovation leads the future. WATESI's vision on a product comes before all else. The company utilizes new technologies, new processes and new materials to research & develop new products according to the standards and specifications of UNI, API, ANSI, JIS, DIN, GB, HG and others through the application of the newest standard design concepts globally. WATESI has passed the ISO9001-2000 international quality system certification, IQENT international management system certification and TS national pressure pipeline manufacturing license, etc. successively. Our quality management system is under supervision and inspection both internally and externally so as to guarantee the company's quality management system to keep updating and ensure the company's high standard to be maintained and improved consistently.

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