蝶阀可选材料/Optional material for butterfly valve

主要零部件 Main components	材质 Material	适用规格 Applicable size	主要零部件 Main components	材质 Material	适用规格 Applicable size
阀体 Body	球墨铸铁 Ductile iron	50mm-1200mm	阀杆 Stem	不锈钢 416/316/304 Stainless steel 416/316/304	25mm-1200mm
	灰铸铁 Cast iron	50mm-1000mm			
	铝合金 Aluminum alloy	25mm-300mm			
	铸钢 Cast stell	50mm-600mm		碳钢电镀 Carbon steel electroplate	
	不锈钢 Stainless steel	25mm-600mm			
阀板 Disc	不锈钢 304/316 Stainless steel 304/316	25mm-1200mm	阀座 Seat	丁晴橡胶 NBR	50mm-500mm
	球墨铸铁镀镍磷 Ductile iron nicr phosphorus coated	50mm-1200mm		乙丙橡胶 EPDM	
				氟橡胶 VITON	
	球墨铸铁覆尼龙 Ductile iron nylon coated			硅橡胶 SEP	
				耐磨 EPDM Wear resistant EPDM	
	双相钢 Dual phase steel				
	铝青铜 Aluminum bronze	50mm-600mm		聚四氟乙烯 PTFE	

密封副适用介质，温度推荐表
Seal pair applicable medium and temperature recommended list

密封副材质 Seal pair material		适用温度 Applicable temperature	介质类型及适用程度 Mediums type and applicable degree													
			1	2	3	4	5	6	7	8	9	10	11	12	13	突出特性 Outstanding characteristic
阀座 Seat	丁晴 NBR	-12℃～+82℃	A	A	A	B	A	D	B	A	C	A	D	A	B	耐油 ① Oil resistance ①
	三元乙丙 EPDM	-35℃～+135℃	A	A	A	A	A	C	A	B	B	A	A	C	A	耐老化 ② Resistance to aging ②
	耐腐蚀三元乙丙 Corrosion resisting EPDM	-35℃～+160℃	A	A	A	A	A	A	A	B	B	A	A	C	A	耐腐蚀 ③、耐老化 ② Abrasion resistant ③ Resistance to aging②
	氟橡胶 FPM	-23℃～+135℃	A	A	A	C	A	C	A	A	C	A	A	A	A	耐高温④、耐腐蚀③ High temperature resistant④ Abrasion resistant ③
	聚四氟乙烯 PTFE	-10℃～+150℃	A	A	A	A	A	A	A	A	A	A	A	A	A	耐腐蚀③、耐高温 ④ Abrasion resistant ③ Temperature resistant ④
阀板 Disc	球铁电镀 Plated ductilelron	-30℃～+350℃	B	D	C	D	C	D	C	B	A	B	A	A	C	耐热 ⑤ Heat resistant ⑤
	球铁尼龙覆层 Ductile iron nylon coating	-30℃～+100℃	A	A	A	A	A	D	A	A	C	A	D	A	A	耐腐蚀③、耐磨 ⑥ Abrasion resistant ③ Wear-resisting ⑥
	铝青铜 Aluminum bronze	-273℃～+232℃	A	B	C	D	C	D	B	A	A	A	A	A	C	耐热 ⑤、耐腐蚀 ③ Heat resistant ⑤ Abrasion resistant ③
	不锈钢 Stainless steel	-268℃～+316℃	A	B	C	C	B	C	A	A	A	A	A	A	A	耐高温④、耐腐蚀 ③ Temperature resistant ④ Abrasion resistant ③

A-非常适用Very Suit B-适用Suitable C-有限适用Limted suit D-不适用Not Suit
1. 淡水Fresh Water 2. 海水Sea Water 3. 盐类Salt 4. 强碱Strong Alkali 5. 弱碱Thin Alkali 6. 强酸Strong Acid 7. 弱酸Thin Acid
8. 天然气Natural Gas 9. 醇类Alcoholic 10. 空气Air 11. 蒸汽Stem 12. 油类Oil 13. 食品Food
耐油Oil resistant 耐老化Age resistant 耐腐蚀Corrosion resistant 耐高温High temperature resistant 耐热Heat resistance
耐磨Wear resistant 减摩Anti-friction

蝶阀Cv值和计算方法

Cv(C)Value of Wafer Butterfly Valve

对夹式蝶阀Cv(C)值

Cv值定义 Definition of Cv Value

当阀门全开时，阀两端压差为1磅/英寸^2,流体用60° F的清水时,通过阀门的美加仑/分的流量数。

The value Cv is the flow rate (in US gal/min) of pure water at 60°F passing through the valve when the valve disc is fully opened and the pressure differential between the two ends of the valve is 1Lbf / in^2

$$CV=v\sqrt{\frac{G}{P1-P2}}$$

V:最大流量（美加仑/分）
G:比重(水=1)
P1:流入侧压力(磅/英寸^2)
P2:流出侧压力(磅/英寸^2)
Cv=1. 17C

V: Max. flow (in US gal/min)
G: Specific gravity (1 for water)
P1: Inlet side pressure (Lbf/in^2)
P2: Outlet side pressure (Lbf/in^2)
Cv=1. 17C

C值定义 Difinition of C Value

水流经阀门的两端压差为100kPa时，某给定行程所流过以m^3/h计，介质密度取kg/m^{3}的流量。

The value C,is the flow rate (m^3/h) of pure water at normal temperaturepassing through the valve when the valve disc is fully opened and the pressure differential between the two ends of the valve is (kg/m^3) 100kPa

$$C=Q\sqrt{\frac{P}{\triangle P}}$$

Q:最大流量(米^3/小时)
P:介质密度公斤/米^3(取P=1)
△P:阀门压损失，100kPa.
(公斤/厘米^2)

Q: Max. fiow (m^3/h)
P: Medium density (kg/m^3)
△P: Pressure loss in valve 100kPa (kg/cm^3)

流阻系数与Cv值得换算关系
Conwersion of flow resistance coefficient and Cv value

$$Cv=29.9\frac{d}{\sqrt{\zeta}}$$

d:阀门内径或阀座口径in(英寸)
ζ:流阻系数(无量纲)
d: Valve bore size or valve seat bore size (in)
ζ:Flow resistance coefficient(no unit)

规格 Size		阀门开启角度流量CV值 Flow in Gpm@ 1PSI P @Various Disc Angles								90° 开启时 Cv值 Full 90 ° Open
(mm)	(inch)	10°	20°	30°	40°	50°	60°	70°	80°	
50	2"	0.1	5	12	24	45	64	90	125	135
65	2.5"	0.2	8	20	37	65	98	144	204	220
80	3"	0.3	12	22	39	70	116	183	275	302
100	4"	0.5	17	36	78	139	230	364	546	600
125	5"	0.8	29	61	133	237	392	620	930	1022
150	6"	2	45	95	205	366	605	958	1437	1579
200	8"	3	89	188	408	727	1202	1903	2854	3136
250	10"	4	151	320	694	1237	2047	3240	4859	5340
300	12"	5	234	495	1072	1911	3162	5005	7507	8250
350	14"	6	338	715	1549	2761	4568	7230	10844	11917
400	16"	8	464	983	2130	3797	6282	9942	14913	16388
450	18"	11	615	1302	2822	5028	8320	13168	19752	21705
500	20"	14	791	1647	3628	6465	10698	16931	25396	27908
600	24"	22	1222	2587	5605	9989	16528	26157	39236	43116
700	28"	36	1813	3639	6636	10000	14949	22769	34898	46500
800	32"	45	2387	4791	8736	13788	20613	31395	48117	68250
900	36"	60	3021	6063	11055	17449	26086	39731	60895	86375
1000	40"	84	1483	8395	15307	24159	36166	55084	84425	119750

（美制及英制单位换算成SI单位）

长度单位

1 in = 25.4 mm
1 ft = 0.3048 m
1 micron = 10^{-3} mm

面积单位

1 in^2 = 6.45 cm^2
1 ft^2 = 0.093 m^2

体积单位

1 litre = 0.001 m^3
1 cu.ft. = 0.0283 m^3
1 cu.in. = 16.39 m^3
1 fluid oz. (imp) = 28.41 mL
1 fluid oz. (us) = 29.57 mL
1 gal (imp) = 4.546 L
1 gal (us) = 3.79 L

温度单位

(°F-32) × 5/9 = ℃
K-273.15 = ℃

功及能量单位

1 Nm = 1 J
1 kgm = 9.807 J
1 kW/hr = 3.6 MJ
1 lbft = 1.356 J

功率单位（功/时间）

1 Nm/sec = 1 W
1 lbft/sec = 1.356 W
1 kgm/sec = 9.807 W
1 joule/sec = 1 W
1 H.P. (imp) = 745.7 W

质量单位

1 lb = 453.6 g
1 tonne = 1000 kg
1 ton (imp) = 1016 kg
1 ton (us) = 907.2 kg

压力单位

1 psi = 6.89 kPa
1 kgf / cm^2 = 98.07 kPa
1 bar = 100 kPa
1 bar = 14.5 psi
1 mm mercury = 133.3 Pa
1 in mercury = 3.39 kPa
1 Torr = 133.3 Pa
1 ft water = 0.0298 bar
1 bar = 33.33ft water
1 atmosphere = 101.3 kPa
1 cmwater = 97.89 Pa
1 in water = 248.64 Pa

力单位

1 kgf = 9.81 N
1 lbf = 4.45 N
1 kp (kilopound) = 9.81 N
1 poundal = 138.3 Mn
1 ton force = 9.964 kM

力矩单位

1 kgm = 9.807 Nm
1 ftpoundal = 0.0421 Nm
1 in lb = 0.113 Nm
1 ftlb = 1.356 Nm

流量

Cv值 = 水流量（US gal/min）於60°F下，流经差压为1psi之阀门而所得出之流量定值。
Kv值 = 水流量（L/min）於20℃下，流经差压为1kgf/cm^2之阀门而所得出之流量定值。
So = 有效截面积（mm^2）
Q = 流量（N /min）
S.T.P. = 标准温度及压力（0℃及101.3KPa绝对压力）
N.T.P. = 正常温度及压力（20℃及101.3KPa绝对压力）
M.S.C. = 公制标准情况（15℃及101.3KPa绝对压力）
AMR = 温度：20℃及相对湿度：65%

流量计算公式

Q = Cv 值 × 984
= Kv 值 × 1100
Cv = So ÷ 18

换算表

1 psi = 6.895 kPa = 0.07 kg/cm^2 = 0.06895 bar = 0.0703 atm
1 standard atmosphere = 14.7 psi = 101.3kPa = 101325 bar
1 kg/cm^2 = 98.07 kPa = 14.22 psi = 28.96 ins mercury
1 m^3 = 106 cm^3
1 cu f t/ min = 28.3 l / min
1 Pa = 1 N/m^2
1 ft lb = 0.13826 kgm = 1.356 Nm
1 L= 1000 cm^3 = 1.7598 pint = 106 mm^3
1 tonne = 1000 kg = 0.984 ton = 2204.6 lb