Diaphragm Type 3-Way Control Valves

WYECO

Version 2023.05

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如何選擇控制閥 How to Select Control Valve

訂購時，請按以下步驟說明規格：

Please following the specification illustrate below during ordering:

1. 驅動部型號 Actuator Type
2. 閥蓋型號 Bonnet Type
3. 閥塞特性 Plug Characteristics
4. 閥體類型 Valve Body Type
5. 閥體材質 Body Material
6. 閥作用 Valve Action
7. 閥門組合材質 Trim Material
8. 密封墊材質 Packing Material
9. 連接方式 Connection Rating
10. 閥體尺寸 Body Size
11. 運行條件 Operating Condition
12. 附件 Accessories

(1).流體介質
Fluid Medium
(2). 流量(最大/ 正常)
Flow Rate & Unit (Max./ Nor.)
(3).進口和出口壓力（最大/ 正常）
Inlet & Outlet Pressure (Max./ Nor.)
(4). 差壓（關斷壓力/ 尺寸）
Differential Pressure (Shut-Off Pressure / dimensions)
(5). 溫度和比重
Temperature & Specific Gravity
(6). 流體黏度
Viscosity of Flow Medium
(7). 蒸氣壓力&臨界壓力
Vapor pressure & critical pressure.
(8). 臨界溫度
Critical Temperature

(1). 定位器
Positioner
(2). 空氣調節器
Air Set
(3). 極限開關
Limit Switch
(4). 空氣增幅器
Booster Relay
(5). 鎖閥
Lock-Up Valve
(6). 電磁閥
Solenoid Valve

型號代碼 Model Numbers

驅動部 Actuator	閥蓋 Bonnet	閥塞 Plug Form	閥體類型 Body Type	閥體材質 Body Material	常態作用 Nor. Action	閥功能 Valve Service	閥門組件材質 Trim Material	中座襯墊 Gland Packing	密封墊片 Gasket	閥體尺寸 Body Size	連接方式 Connection Rating

代號 Code	驅動部 Actuator
D	隔膜式 Diaphragm
C	氣缸式 Cylinder
E	電動式 Electric Motor

代號 Code	閥蓋 Bonnet
0	標準式 Standard
1	加長式 Extension
2	散熱片式 Radiator Fin
3	伸縮囊管式 Bellows Seal

代號 Code	閥塞型式 Plug Form
4	P-線性 P-port Linear
8	全開全關 On-Off

代號 Code	閥體類型 Body Type
TM	混流型 Mixing Type
TD	分流型 Diverting Type

代號 Code	閥體材質 Body Material
FC	Cast Iron FC250
SC	Cast Carbon Steel SCPH2
S3	304 Stainless Steel, Cast SCS13A
S4	316 Stainless Steel, Cast SCS14A
S6	316L Stainless Steel, Cast SCS16A
HC	Cast Hastelloy C

代號 Code	常態作用 Nor. Action
A	直角 Angle
D	水平 Horizontal

代號 Code	閥門組件材質 Trim Material
SO	SUS304
S1	SUS316
SL	SUS316L
S4	SUS440C
HC	Hastelloy C

代號 Code	中座襯墊 Gland Packing
T	V – 特氟隆 V – Teflon
G	石墨 Graphite
A	TFM4215

代號 Code	密封墊片 Gasket
P	聚四氟乙烯 PTFE
Y	Gylon Gylon
S	SUS316 /石墨 SUS316 / Graphite

代號 Code	閥體尺寸 Body Size		
15	1/2″	65	2-1/2″
20	3/4″	80	3″
25	1″	04	4″
40	1-1/2″	05	5″
50	2″	06	6″

代號 Code	連接方式 Connection Rating
F1	JIS 10K
F2	JIS 20K
FA	ANSI Class 150
FB	ANSI Class 300
P1	PN10
P2	PN16
P3	PN25

閥門原理　Theory of Valve

・驅動部與多條彈簧隔膜運行系統設計為一體，易調整，值得信賴。
・與流體，例如蒸氣、水、油、氣體等相匹配的設計及高性能的運行。
・洩漏量低。
・密封墊片裡，填料環可自由收縮和調整。

- The actuator is designed with multi-springs diaphragm operating type. The Actuator is easy to adjust and highly reliable.
- Providing design with highly performance operating in conformity with general fluid service, i.e., steam, water, oil, and gas.
- Provideing lower seat leakage.
- The parking ring can adjust itself in the gasket.

規格　Specification

閥體

型號：隔膜式三通型
材質：鑄鐵(FC250)，碳鋼(SCPH2)
　　不銹鋼(SCS13A，SCS14A，SCS16A)
　　鎳基合金C，B
連接方式：法蘭(FF，RF)或套焊接口。
公稱壓力：JIS10K，20 K；ANSI Class150，300；DIN PN10，PN16，PN25。
閥蓋：請參照第4頁
上蓋填料：V-特氟隆，石墨
密封片： GYLON，SUS316/石墨。
導引：頂端導引，頂端和底部導引。
　　法蘭端面至端面 ：ISO 5752
控制洩漏分類依據 ：FCI 70-2

body

Type : Diaphragm Operated three-way type
Material : Cast iron(FC250)，Carbon steel (SCPH2)
　　Stainless steel(SCS13A，SCS14A，SCS16A)
　　Cast hastelloy C,B,
End connections : Flanged end (FF，RF) of Butt-welded type
Pressure rating: JIS10K，20 K；ANSI Class 150，300.
　　DIN PN10，PN16，PN25.
Bonnet : Please refer to page 4
Gland packing : V-teflon , Grafoil.
Gaskets: Gylon,SUS316/Graphite
Guiding : Top guide,Top and bottom guide.
Face-to-face : ISO 5752
Leakage class by : FCI 70-2

閥門組件　Trim

・閥桿： SUS304, SUS316, SUS316L
・閥塞特性： 線型和快開型
・閥塞作用： 分流式, 混流式
・材質： SUS304, SUS316, SUS316L, 鎳基合金C, B

- Stem : SUS304, SUS316, SUS316L
- Plug Characteristics : Linear and Quick Opening
- Plug Form : Diverting Form , Mixing Form
- Material : SUS304 , SUS316 , SUS316L , Hastelloy C, B

驅動部 Actuator

・類型: 多彈簧式單隔膜驅動部, 正向或反向
・隔膜材質: 帶纖維片的聚氯丁橡膠
・空氣供應: 1.4 , 2.4 , 2.8 , 3.2kgf/cm²
・彈簧範圍: 0.2 ~ 1.0 kgf/cm² , 0.4 ~ 2.0 kgf/cm² , 0.6 ~ 2.2 kgf/cm² , 0.8 ~ 2.4 kgf/cm²
・溫度 : 20℃ ~ + 70℃

• Type : Multi-springs type ,single diaphragm actuator , forward or reverse.
• Diaphragm Material : Neoprene with fabric insert.
• Air Supply : 1.4 , 2.4 , 2.8 , 3.2kgf/cm²
• Spring Range : 0.2 ~ 1.0 kgf/cm² , 0.4 ~ 2.0 kgf/cm² , 0.6 ~ 2.2 kgf/cm² , 0.8 ~ 2.4 kgf/cm²
• Ambient Temperature : -20℃ ~ + 70℃

閥功能 Valve Service

分流, 混流
Diverting Service , Mixing Service

附件 Accessory

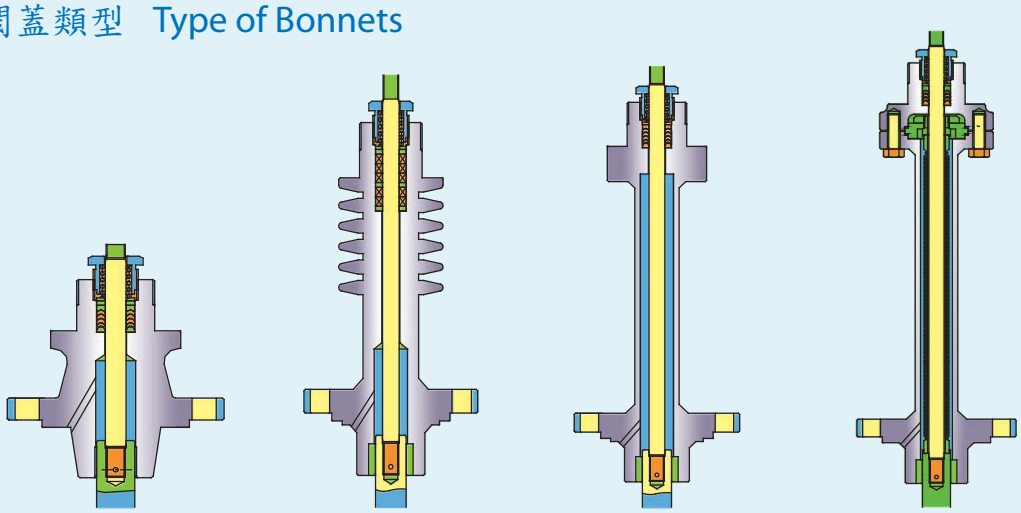
手輪, 定位器, 電磁閥, 極限開關, 空氣調節器或其他.
Handwheel , Positioner , Solenoid Valve , Limit Switch , Air Set or Others.

特性 Performance

・幅度範圍 : 1/2″~1″ 30:1 , 1-1/2″~6″ 50:1
・容許洩漏 :
金屬座 : 小於額定CV的0.01%
FCI 70-2
規定軟座 : FCI 70-2

Rangeability:1/2″through 1″ 30:1,1-1-2″through 6″ 50:1
Allowable seat leakage:
Metal seat:less than 0.01% of rated Cv by FCI 70-2
Soft seat : FCI 70-2

閥蓋類型 Type of Bonnets



標準型	散熱型	加長型	伸縮囊管型
Standard	Radiator Fin	Extension	Bellows Seal
-17℃~+210℃	-20℃~+300℃	-196℃~+280℃	-196℃~+350℃

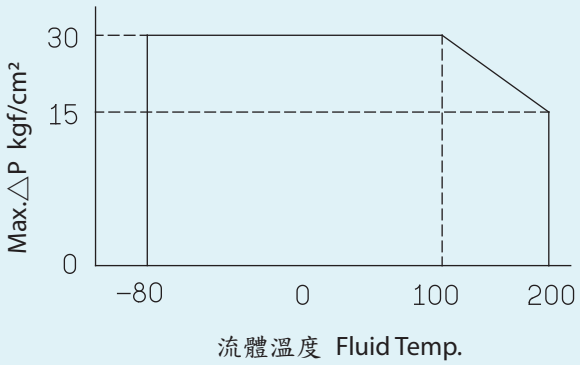
基本的組合材質 Typical Combination of Materials

零件名稱 Parts Name		材質 Materials			
閥體 Body		FC250	SCPH2	SCS13A	SCS14A
Trim 閥門組件	閥座 Seat	CF8	CF8M	CF8M	CF8M
	閥塞 Valve Plug	SUS304	SUS304	SUS304	SUS316
	閥桿 Valve Stem	SUS304	SUS316	SUS316	SUS316
	導向襯套 Guide Bushing	F-920	SUS630	Nitroic 60	Nitroic 60
雙頭螺栓和螺帽 Stud Bolt & Nut		Grade 8.8	A193 B7/A194 2H	A193 B8/A194 8	A193 B8/A194 8

組合材質對閥體，閥塞，和運行溫度的限制
Combination of Materials for Valve Body , Plug & Operating Temperature Limit

閥體材質 Body Material	閥塞材質 Plug Material	運行溫度限制 Operating Temp. Limit
鑄鐵 Cast Iron FC250	不鏽鋼 Stainless Steel SUS304	0℃ ~ +230℃
碳鋼 Carbon Steel SCPH2	不鏽鋼 Stainless Steel SUS304	-20℃ ~ +200℃
碳鋼 Carbon Steel SCPH2	不鏽鋼 Stainless Steel SUS630	+201℃ ~ +380℃
不鏽鋼 Stainless Steel SCS13A	不鏽鋼 Stainless Steel SUS304	-196℃ ~ +427℃
不鏽鋼 Stainless Steel SCS14A	不鏽鋼 Stainless Steel SUS316	-196℃ ~ +427℃

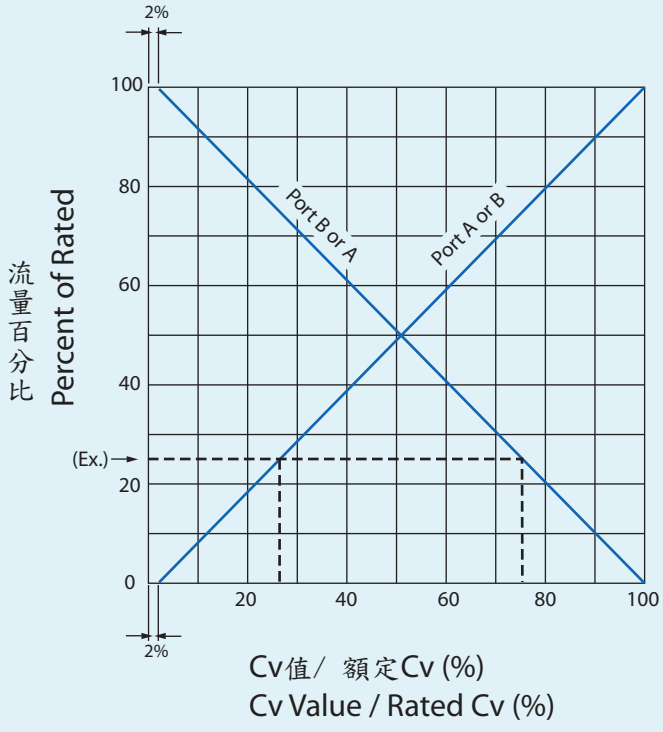
軟座對運行溫度和差壓的限制
Operating Temperature & Pressure Differential Limit of Soft Seat



Cv值對照表 Rate Cv Value

閥體尺寸 Body Size	mm	15A	20A	25A	40A	50A	65A	80A	100A	125A	150A
	Inch	1/2″	3/4″	1″	1-1/2″	2″	2-1/2″	3″	4″	5″	6″
行程 Stroke		20					30		35	60	
分流Cv Diverting Cv		4.3	7	14	31	55	85	109	205	293	395
混流Cv Mixing Cv				13	30.5	53.8	70.5	103	195	293	377

額定流體特性曲線
Flow Rate Characteristic Curve

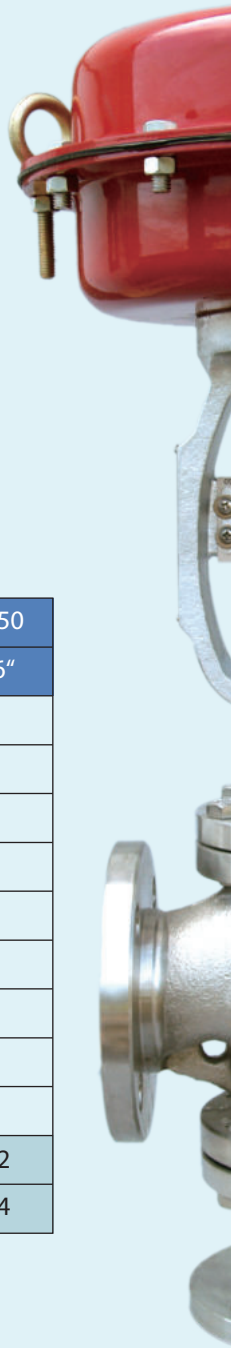


舉例:

當閥門開啟至整個流程的25%, 大約有總流量的76%從AB Port流出至 B Port, 而剩下的24%會流出至A Port. 當流程繼續增長, B Port流量會減少, A Port流量會增加.

Example

When the valve is opened 25% of the full travel, approx. 76% of total flow rate in upper port AB flows out through down port B, and the rest 24% flows out through another down port A. As the travel increases further, the flow rate decreases through port B, andincreases through port A.



關閉壓力 Allowable Shut-off Pressure
無硬化處理，四級洩漏 (Class4 Leakage For Non-Hardening Trim)

驅動部尺寸 Act. Size	失衡力 Off-Balance	15	20	25	40	50	65	80	100	125	150
		1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"
250	0.2 kgf/cm²	15	15	9							
	0.4 kgf/cm²	20	20	13							
	0.8 kgf/cm²	25	25	14							
300	0.2 kgf/cm²				9	8	4				
	0.4 kgf/cm²				12	9	5				
	0.8 kgf/cm²				14	11	6				
350	0.2 kgf/cm²							4	2		
	0.4 kgf/cm²							5	3		
	0.8 kgf/cm²							6	4		
460	0.8 kgf/cm²									3	2
	1.2 kgf/cm²									4.5	4

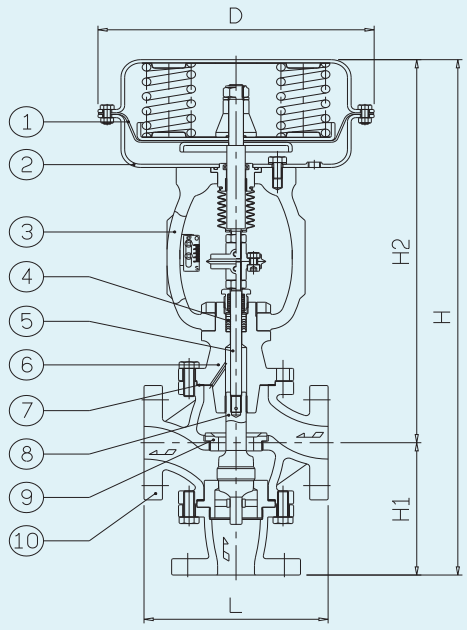
流量Cv值 Flow Coefficient Cv

閥門組件形式：線型
Trim Form : Linear

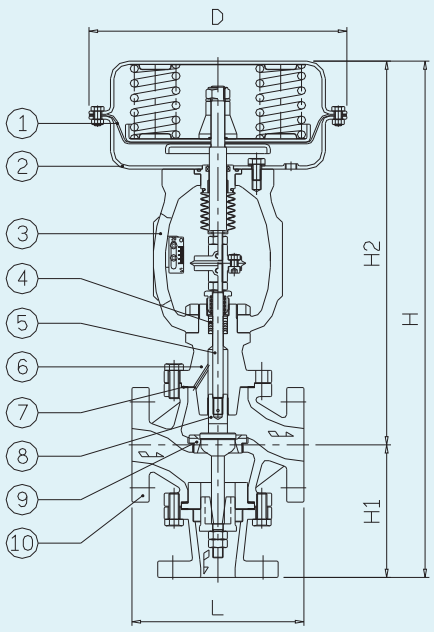
閥體尺寸 Body Size	口徑尺寸 Port Size	移動 Lift mm	閥作用 Act.	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15A	19.0	20	D/M	0.42	0.87	1.35	1.73	2.23	2.7	3.1	3.4	3.9	4.3
20A	19.0	20	D/M	0.84	1.46	2.11	2.81	3.37	3.86	4.38	4.9	5.7	7
25A	27.0	20	D	1.4	2.8	4.2	5.6	7	8.4	9.8	11.2	12.6	14
			M	1.56	2.98	4.14	5.45	6.18	7.41	8.29	9.05	10.72	13
40A	40.0	20	D	2.98	5.94	8.92	12.1	15.51	18.64	21.81	24.93	27.97	31
			M	4.92	9.02	12.34	15.77	18.69	20.47	22.78	24.71	27.43	30.5
50A	50.0	20	D	6.1	11.6	17.2	23.3	29.4	35	40.3	45.4	50	55
			M	5.66	10.63	16.64	23.15	28.26	34.58	39.21	45.64	49.5	53.8
65A	63.0	30	D	8.85	16.14	23.35	32.27	40.11	49.06	58.81	68.85	75.76	85
			M	9.94	16.68	23.76	29.11	37.16	42.87	48.61	54.31	62.32	70.5
80A	76.0	30	D	11	21.8	32.3	44.27	55.08	65.81	77.05	87.75	98.25	109
			M	10.38	20.42	30.33	43.94	54.75	65.76	73.89	85.75	94.92	103
100A	100	35	D	20.5	41	61.5	82	105	125	143.5	164	184.5	205
			M	16.57	30.69	45.55	62.32	81.53	101.3	126.3	149.5	168.5	195
125A	125	60	M	30.48	62.41	96.88	128.9	159.4	178	200.2	229	259.9	293
150A	150	60	M	31.02	63.62	100.3	144.9	193.1	223.1	257.6	300.5	339.9	377
150A	150	60	D	36	75	115	156	203	260	300	330	370	395

D：分流　　D : Diverting
M：混流　　M : Mixing

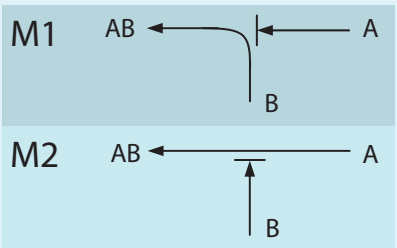
型號 Model :WY – D 0 4 T M



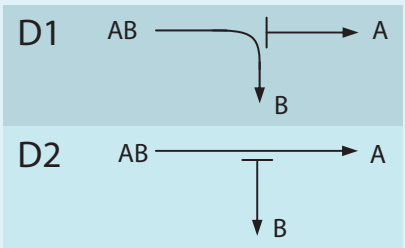
型號 Model :WY – D 0 4 T D



混流型 Mixing



分流型 Diverting



零件與材質 Parts & Material

編號 No.	零件名稱 Part Name	材質 Material (FC250)	材質 Material (SCS13A)
1	隔膜 Diaphragm	NBR	NBR
2	外殼 Case	SPHC	SPHC
3	支架 Yoke	FC250	FC250
4	中座襯墊 Gland Packing	PTFE	PTFE
5	閥塞連桿 Plug Stem	SUS316	SUS316
6	閥蓋 Bonnet	FC250	SUS304
7	密封墊片 Gasket	*Graphite/316SS	*Graphite/316SS
8	閥塞 Plug	SUS304	SUS304
9	閥座 Seat	CF8	CF8M
10	閥體 Body	FC250	SCS13A

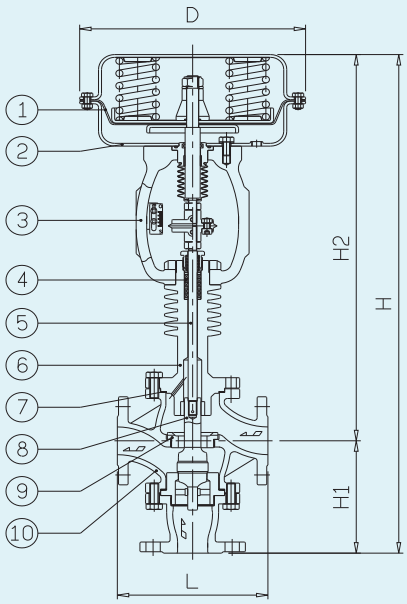
尺寸 Dimensions

單位 Unit : mm

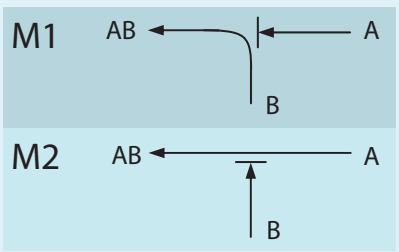
閥 Valve		L	H1	H2	H	D
mm	inch					
15	1/2″	130	140	414	554	250
20	3/4″	150	140	414	554	250
25	1″	160	140	414	554	250
40	1-1/2″	200	162	469	631	300
50	2″	230	170	476	646	300
65	2-1/2″	290	195	492	687	300
80	3″	310	215	556	771	350
100	4″	350	240	575	815	350
125	5″	400	265	769	1034	460
150	6″	480	305	801	1106	460

(*)可選用
(*)Option(Gylon for Air)

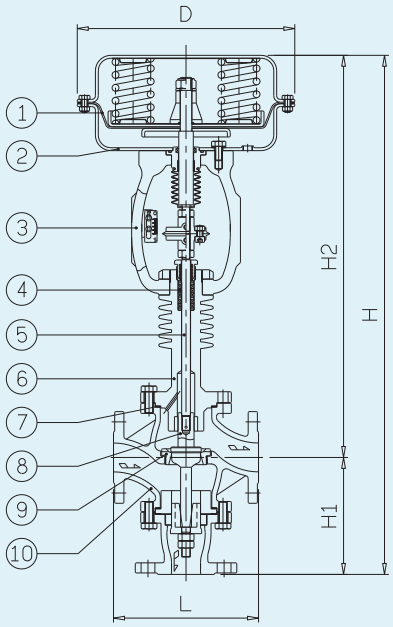
型號 Model :WY – D 2 4 T M



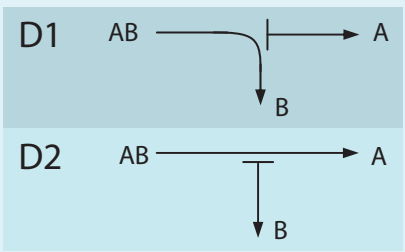
混流型 Mixing



型號 Model :WY – D 2 4 T D



分流型 Diverting



零件與材質 Parts & Material

編號 No.	零件名稱 Part Name	材質 Material (SCPH2)	材質 Material (SCS13A)
1	隔膜 Diaphragm	NBR	NBR
2	外殼 Case	SPHC	SPHC
3	支架 Yoke	FC250	FC250
4	中座襯墊 Gland Packing	Graphite	Graphite
5	閥塞連桿 Plug Stem	SUS630	SUS316
6	閥蓋 Bonnet	S20C	SUS304
7	密封墊片 Gasket	*Graphite/316SS	*Graphite/316SS
8	閥塞 Plug	SUS630	SUS304
9	閥座 Seat	SUS630	CF8M
10	閥體 Body	SCPH2	SCS13A

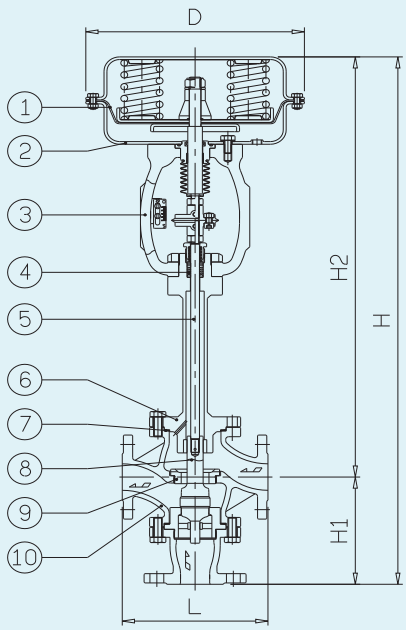
尺寸 Dimensions

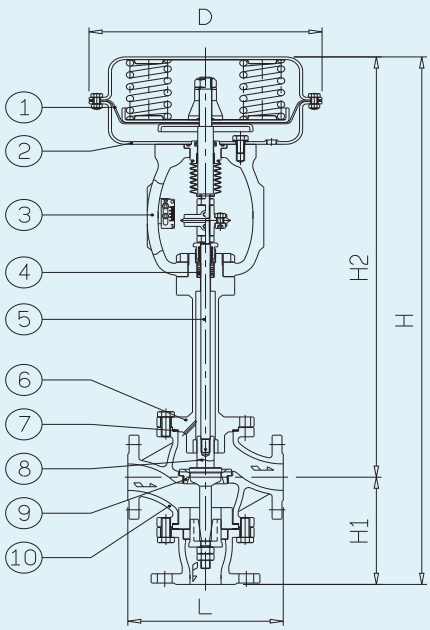
單位 Unit : mm

閥 Valve		L	H1	H2	H	D
mm	inch					
15	1/2″	130	140	489	629	250
20	3/4″	150	140	489	629	250
25	1″	160	140	489	629	250
40	1-1/2″	200	162	557	719	300
50	2″	230	170	564	734	300
65	2-1/2″	290	195	580	775	300
80	3″	310	215	651	866	350
100	4″	350	240	670	910	350
125	5″	400	265	908	1173	460
150	6″	480	305	940	1245	460

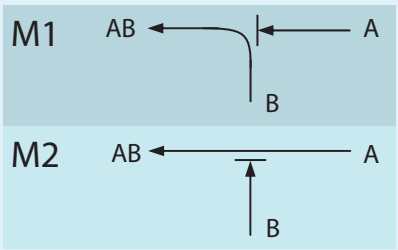
(*)可選用
(*)Option (Gylon for Air)

型號 Model : WY – D 1 4 T M　型號 Model : WY – D 1 4 T D

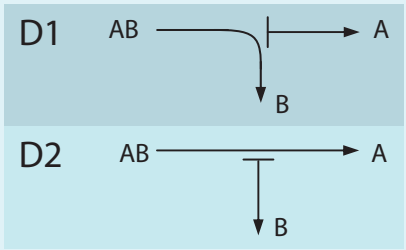




混流型 Mixing



分流型 Diverting



零件與材質 Parts & Material

編號 No.	零件名稱 Part Name	材質 Material (SCPH2)	材質 Material (SCS13A)
1	隔膜 Diaphragm	NBR	NBR
2	外殼 Case	SPHC	SPHC
3	支架 Yoke	FC250	FC250
4	中座襯墊 Gland Packing	Graphite	Graphite
5	閥塞連桿 Plug Stem	SUS3630	SUS316
6	閥蓋 Bonnet	S20C	SUS304
7	密封墊片 Gasket	*Graphite/316SS	*Graphite/316SS
8	閥塞 Plug	SUS630	SUS304
9	閥座 Seat	SUS630	CF8M
10	閥體 Body	SCPH2	SCS13A

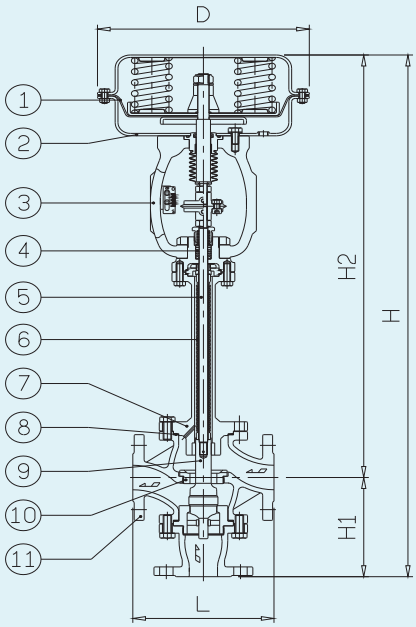
(*)可選用
(*)Option (Gylon for Air)

尺寸 Dimensions

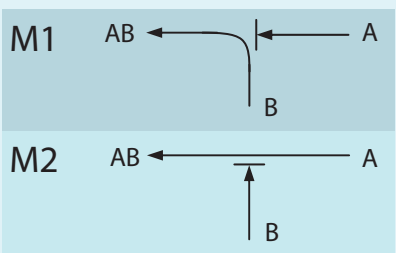
單位 *Unit : mm*

閥 Valve		L	H1	H2	H	D
mm	inch					
15	1/2″	130	140	585	725	250
20	3/4″	150	140	585	725	250
25	1″	160	140	585	725	250
40	1-1/2″	200	162	635	797	300
50	2″	230	170	642	812	300
65	2-1/2″	290	195	671	866	300
80	3″	310	215	743	958	350
100	4″	350	240	762	1002	350
125	5″	400	265	943	1208	460
150	6″	480	305	975	1280	460

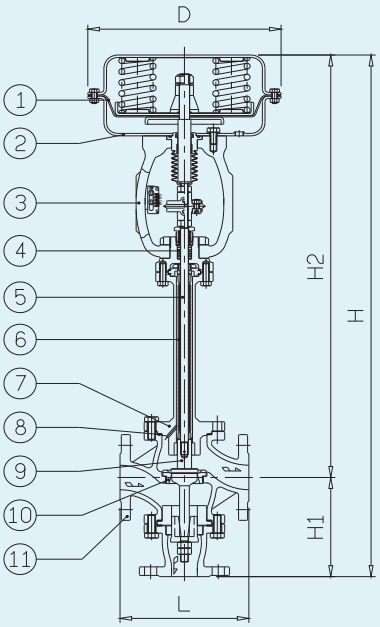
型號 Model : WY – D 3 4 T M



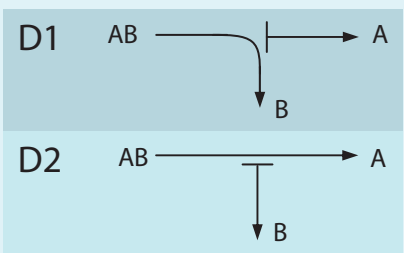
混流型 Mixing



型號 Model : WY – D 3 4 T D



分流型 Diverting



零件與材質 Parts & Material

編號 No.	零件名稱 Part Name	材質 Material (SCPH2)	材質 Material (SCS13A)
1	隔膜 Diaphragm	NBR	NBR
2	外殼 Case	SPHC	SPHC
3	支架 Yoke	FC250	FC250
4	中座襯墊 Gland Packing	Graphite	PTFE
5	閥塞連桿 Plug Stem	SUS630	SUS316
6	伸縮囊管 Bellow Seal	SUS316Ti	SUS316Ti
7	閥蓋 Bonnet	S20C	SUS304
8	密封墊片 Gasket	*Graphite/316SS	*Graphite/316SS
9	閥塞 Plug	SUS630	SUS304
10	閥座 Seat	SUS630	CF8M
11	閥體 Body	SCPH2	SCS13A

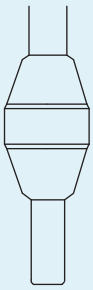
尺寸 Dimensions

單位 Unit : mm

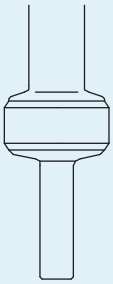
閥 Valve		L	H1	H2	H	D
mm	inch					
15	1/2″	130	140	624	764	250
20	3/4″	150	140	624	764	250
25	1″	160	140	624	764	250
40	1-1/2″	200	162	666	828	300
50	2″	230	170	673	843	300
65	2-1/2″	290	195	723	918	300
80	3″	310	215	761	976	350
100	4″	350	240	780	1020	350
125	5″	400	265	1213	1478	460
150	6″	480	305	1213	1518	460

(*)可選用
(*)Option (Gylon for Air)

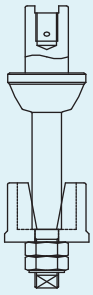
閥塞的種類 Characteristic of Plug



直線型
Linear

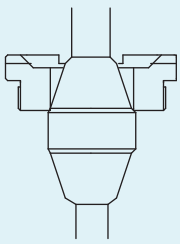


快開型
Quick Opening

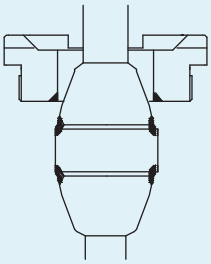


直線分流型
Linear Diverting

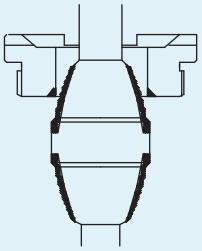
閥塞的加工 Treatment of Plug



金屬閥座
Metal Seat

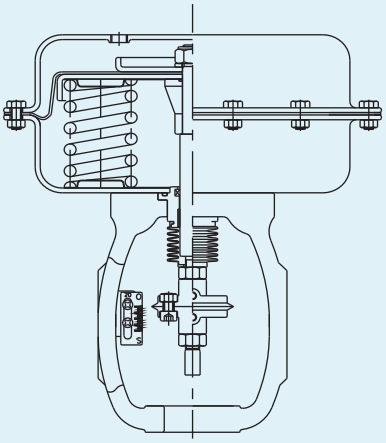


閥座表面硬化
Hardening on Seat Face

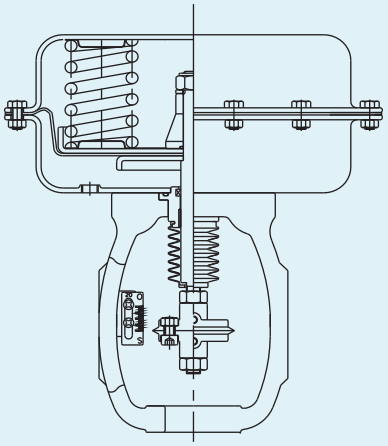


全閥組鍍鉻硬化
Hardening on Full Bore

多彈簧式隔膜驅動部 Multi-Spring Type Diaphragm Actuator



Air to Extend



Air to Retract

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