



PRE-FILL VALVES

Flange-clamped type

蝶式預充閥

A Specialized Manufacturer of
Various Hydraulic Control Valves.



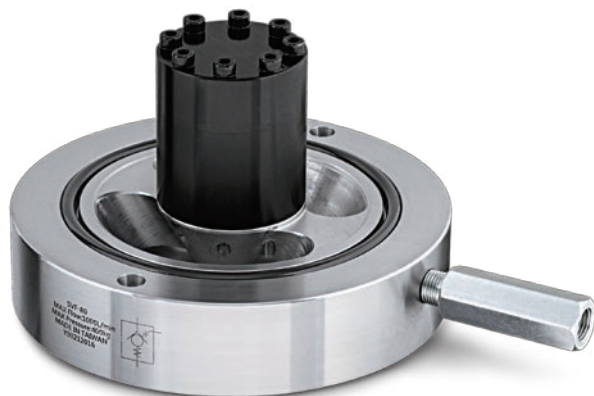
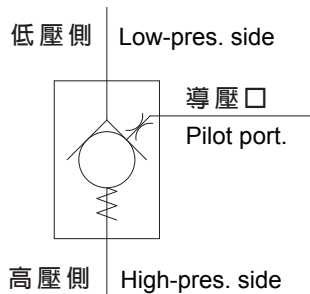
油力油壓工業股份有限公司
YUATSUSEIKI HYDRAULIC INDUSTRIAL CO.,LTD.

Pre-Fill Valves (Flange-clamped type)

碟式預充閥

Pre-Fill Valves 碟式預充閥

Pipe Flanges 配管法蘭



Special Features 特性

※	Small size and easy to install.	體積小，易於拆裝。
※	Low pressure loss with high flow capacity.	低壓損，流量大。
※	Compact and robust.	構造簡單，耐久性佳。
※	Good to directly intergrated onto integrated onto the cylinder cap side.	可直接裝置於油缸蓋側。

Features Data 特性數據

Model 型式	Flow Qmx 最大流量 (L/min)	Oper. Pressure Pmax. 使用壓力 (bar)	Pilot ratio 導壓比	Flange bolts 固定法蘭螺絲		Pipe size 配管直徑	Weight 閥重 (kg)
				Number 支數	Nor. Diameter 尺寸		
SVF-32	160	400	3.6	4	M16	2"	1.3
SVF-40	250		3.3	4	M20	2.5"	2.2
SVF-50	400		3.8	6	M16 / M24	3"	2.9
SVF-63	630		4.2	8	M16 / M24	3.5"	4.5
SVF-80	1000		4.3	8	M16 / M24	4"	6.2
SVF-100	1600		4.3	8	M22 / M30	5"	12.3
SVF-125	2500		4.3	12	M24 / M30	8"	23
SVF-160	4000		4.2	16	M30	10"	50
SVF-200	7000		4.1	20	M30	12"	85

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Ordering Code 選購型號

SVF - 100 - ※※

1 2 3

1	SERIES 系列號	SVF: Steel body 鋼體本質 SCM4, SPF: Steel body 鋼體本質 SCM4
2	SIZE 規格	SVF-32 to 200, SPF-50 to 300
3	DESIGN NUMBER 設計編號	

Features Data 特性數據

Model 型式	Flow Qmx 最大流量 (L/min)	Oper. Pressure Pmax. 使用壓力 (bar)	Pilot ratio 導壓比	Flange bolts 固定法蘭螺絲		Mounting bolts 安裝螺絲		Pipe size 配管直徑	Weight 閥重 (kg)
				Number 支數	Nor. Dia. 尺寸	Number 支數	Nor. Dia. 尺寸		
SPF-50	250	400	3.4	4	M10 x 35L	4	M16 x 45L	2"	3.4
SPF-80	400		4.4	6	M12 x 40L	6	M16 x 55L	3"	8.7
SPF-90	630		4.6	6	M12 x 40L	6	M18 x 60L	3-1/2"	12.1
SPF-100	1000		4.4	6	M12 x 40L	6	M20 x 65L	4"	16.5
SPF-125	1600		4.2	6	M12 x 50L	12	M20 x 75L	5"	27.1
SPF-150	2500		4	8	M12 x 50L	16	M20 x 90L	6"	39.6
SPF-200	4000		5.1	8	M16 x 55L	16	M30 x 120L	8"	110
SPF-300	7000		5.1	10	M16 x 55L	20	M30 x 130L	12"	160

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Installation For Reference 安裝示意僅供參考

Suction Side Pipe 油箱側低壓配管	Pressure Rating 壓力額定值 20 kg/cm ²
Low-pres. Side Flange 低壓側法蘭	FGT
Pre-fill. Valves 碟式預充閥	SVF/SCF
High-pres. Side Flange 高壓側法蘭	FGP
Pilot Port Adaptor 導壓口接頭	SPA
Cylinder Side Pipe 油缸側高壓配管	Pressure Rating 壓力額定值 250 and 400 kg/cm ²

- Left side installation / The pre-fill valve is fitted directly on the bottom hydraulic cylinder.
- Right side installation / In line installations.
- 左式安裝/預充閥直接安裝在液壓缸底部。
- 右式安裝/直接管式安裝。

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Typical application circuit (For reference) 油路運用例 (僅供參考)

Operation 動作	SOL				
	a	b	c	PS	SVF SCF
Rapid Descent 下降快速	✓		✓		Suction 自吸
Pressurized Descent 下降加壓	✓		✓		Closed 關閉
Clamping 出力保壓				Timing 計時 ✓	Closed 關閉
Ascent 上升動作		✓			Closed 開導回油

Example For Model Selection 預充閥選型範本

1. Given 已知條件

※ Main cylinder Dia: $\phi 350$ mm	主液壓缸，直徑 $\phi 350$ mm。
※ Ascending cylinder: 2-B $\phi 63 \times R \phi 35$	上升液壓缸，內徑 $\phi 63 \times$ 桿徑 $\phi 35$ ，計 2 支。
※ Weight of platen W: 1500 kg	滑板中座重量 W: 1500 kg。
※ Pump capacity: 25 L/min	泵浦流量: 25 L/min。

2. Analysis Estimated 分析計算

※ Area of main cylinder: 961.625 cm ² .	主液壓缸面積: 961.625 cm ² 。
※ Tow ascending cylinder area: 43.081 cm ² .	上升液壓缸側桿面積: 43.081 cm ² 。(計 2 支)。
※ Ascension velocity: 580 cm/min. (96.6 mm/sec)	上升速度: 580 cm/min (96.6 mm/sec)。
※ Flow thru pre-fill valve to tank: 558 L/min.	上升預充閥排油量: 558 L/min。
※ Selectable model : SVF-63 The induced pressure in ascending cylinder is 34.8 kg/cm ² .	由型錄上的適用型號: SVF-63。依滑板中座重量與上升液壓缸面積關係，得知感應壓力。
※ For a free descending operation, the flow capacity SVF-63 for 630 L/min, will allow a descending speed at 650 cm/min (108 mm/sec).	約 34.8 kg/cm ² ，可達成滑板中座，自重落下的具備條件。下降的速度以 SVF-63 630 流量 L/min 下降速度最快為 650 cm/min (108 mm/sec)。

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General Application 一般應用

1. Application 應用

※	As Check valves for free flow in one direction and blocked flow in the opposite direction. As Pre-Fill valves in the press controllers for further-suction and emptying the press cylinders when closing and opening in rapid traverse. Zero leakage in the blocked direction.	作為單向閥，液體可在一個方向自由流動，而反方向則是液體阻斷。作為預充閥，在壓機控制器中用於補充供油，並在關閉時排空壓機的液壓缸內的油液，而快進時打開供油。在阻斷方向實現無洩漏的密封。
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2. Surge-Free Decompression Function With Pre-Fill Valves 作為預充閥時無卸壓功能

※	Pre-Fill valves are available without and optionally with hydraulic pre-relief. In the case of the standard version without pre-relief, decompression takes place via a directional control valve with an up-stream orifice or throttle until there is complete decompression in the cylinder. Decompression takes place automatically in valves with.	預充閥標準型常規不帶預卸壓或根據選配規格，選擇液控預卸壓功能。於不帶卸壓的標準型結構中，卸壓是透過方向閥帶阻壓孔，或是於液壓缸上節流來完成減壓。帶有預卸壓的預充閥結構中，會呈現自動卸壓功能。
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3. Installation 安裝

※	When directly fitted onto the cylinder, the valves are clamped between the cylinder base and welding neck flange.	當直接安裝到液壓缸時，充液閥會被夾緊在液壓缸底座，與焊接法蘭頸部凸緣之間。
※	For line installation, they are positioned between front face of the welding neck flanges, the seal diameters are selected: 1. Normal flanges are used. 2. Based on material yield point is not exceed, when used on the permissible operating pressure.	管式結構安裝，焊接位置在法蘭頸部凸緣，與前端表面之間，而選擇密封件的直徑： 1. 使用標準法蘭。 2. 充液閥於工作壓力允許範圍內運作，以不超過材料屈服點為選擇依據。

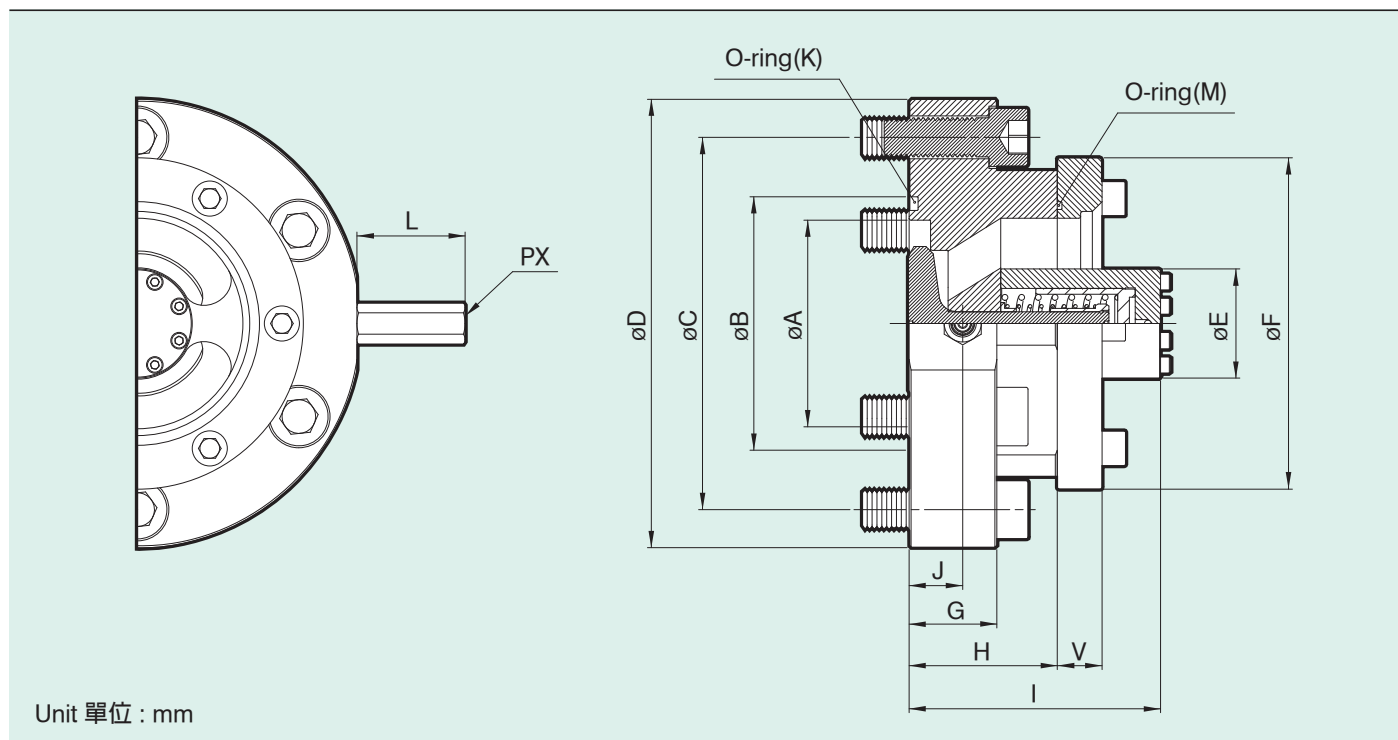
4. Working Principles 工作原理

※	<p>Damping with pre-fill valve</p> <p>The unblocking operation of the pre-fill valves is basically dampened by a built-in orifice, so as to prevent mechanical impacts on the valve parts. This orifice also causes a delayed closing movement, which should be calculated with approx. 0.2~0.7 sec, referred to approx. 60 mm/S² viscosity of the hydraulic oil. In the vast majority of operating instance, this is no problem since the closing operation is completed with in the press system's return time. If you require a faster closing time after triggering, for air cycles unscrew this throttle from the connection piece.</p>	<p>◎ 預充閥的阻尼</p> <p>預充閥的卸壓過程，是基於一個內置的液阻的阻尼作用，以阻止機械式衝擊負載作用於閥件。這個液阻還有起到延緩關閉速度的作用，其依型號的需求，大約需要推算0.2~0.7秒的延遲時間，對應的油液黏度約為60mm/S²。在大多數運行情況並不會產生故障，因為關閉過程已經在壓機反行程成內結束。如果需要發出控制信號後更快的關閉。例如氣動沖程，則將這個液阻從接口塊中取出。</p>
※	<p>Check valve (Also suctionnig of the per-fill valves)</p> <p>For use as a check valve, ensure that there are no sudden flow rate rises in the opening direction of the type which can be expected, with directional spool valve operations arising from the accumulation capability of the oil volume in lines and consumers during the switching operation. In the case of pilot operated valves, this can be achieved by appropriately setting the switching time. The main purpose of this is to prevent the valves plate being pulled too strongly to it's stroke stop while employing the max. flow rating of the valve and therefore to prevent the valves plate being damaged by excessive inertia forces.</p> <p>Release 1: The speicherwirkung or speicherfaehigkeit, normal refers to the pressurized liq in the closed cavity, due to increage in volume and apply pressure suddenly, resulting in hydraulic impact phenomenon.</p>	<p>◎ 單向閥</p> <p>作為單向閥使用時，應注意避免在開啓方向上體積流量的突然增大，例如在方向滑閥控制時，由於管道和執行器中的油液起蓄能器效應（譯一）所出現的那樣。對於先導控制的潤滑，例如可以通過調節切換時間，來避免流量突然增大現象。由此，將閥用於最大流量範圍時，首要的問題是要避免過分強烈的將閥盆推到行程擋塊，以避免由於遭受過大的質量力而損壞。</p> <p>（譯一：所謂"存儲效應" (Speicherwirkung) 或"蓄能器效應" (Speicherfaehigkeit)，一般是指封閉腔中的受壓液體，由於容積突然增大而施壓，由此產生液壓沖擊現象。</p>

Pre-Fill Valves (Flange-clamped type)

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Installation Dimensions 安裝尺寸



Unit 單位 : mm

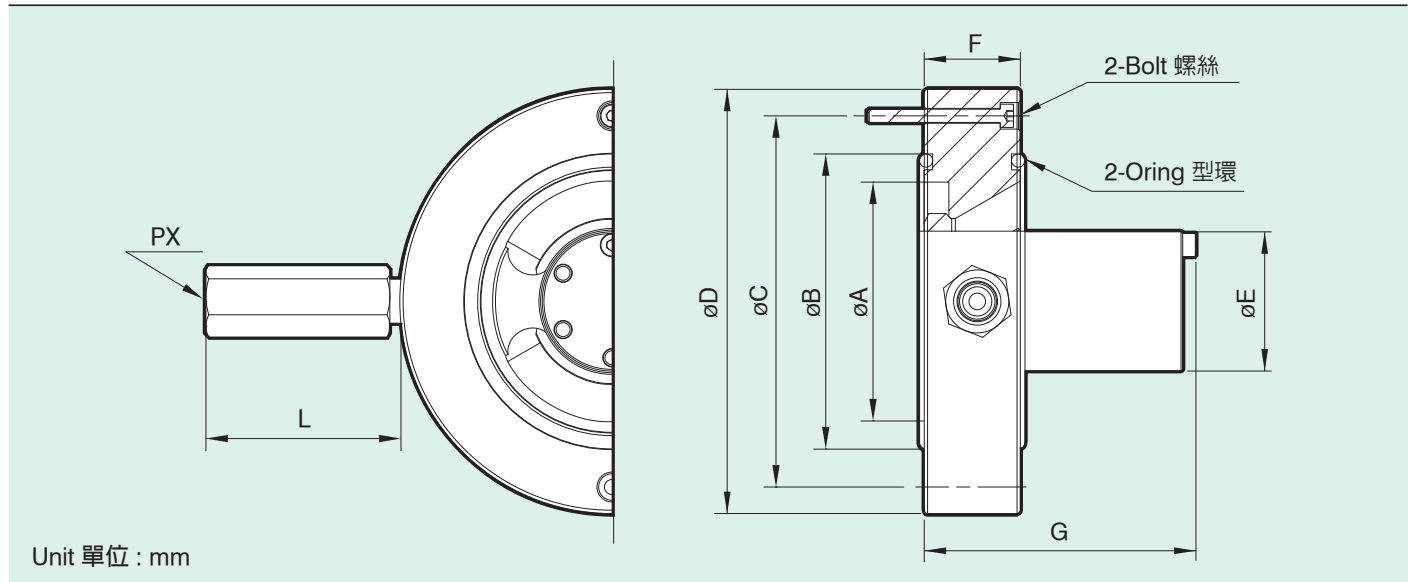
Model 型式	ϕA	ϕB	ϕC	ϕD	ϕE	ϕF	G	H	I	J
SPF-50	48	70	103	133	31	118	22.5	48	73.5	15
SPF-80	71	95	146	180	44	142	30	66	95.5	22.5
SPF-90	88	110	165	200	50	160	39	74	120.5	27.5
SPF-100	106	130	191	230	56	170	41	76	134	27.5
SPF-125	130	155	230	265	69	200	51	85	164	43
SPF-150	168	200	260	300	95.5	225	64	105	201	44.5
SPF-200	220	250	367	422	115	310	73	105	240	56
SPF-300	280	310	442	500	134.5	394	88	120	263	70

Model 型式	K	L	M	PX	V
SPF-50	P-60	62	G-60	PT 1/4"	20
SPF-80	P-85	62	G-85	PT 1/4"	23
SPF-90	P-95	62	G-105	PT 1/4"	23
SPF-100	P-120	62	G-120	PT 1/4"	23
SPF-125	P-145	62	G-145	PT 1/4"	32
SPF-150	P-185	70	G-170	PT 3/8"	32
SPF-200	P-235	85	P-235	PT 1/2"	43
SPF-300	P-295	85	P-295	PT 1/2"	48

Pre-Fill Valves (Flange-clamped type) 碟式預充閥



Installation Dimensions 安裝尺寸



Model 型式	øA	øB	øC	øD	øE	F	G	L	PX	Fixing screws 固定螺絲	O-Ring
SVF-32	48	70	—	82	33	28	70	62	PT 1/4"	—	P-60
SVF-40	56.5	77	91	107	39	28	66.5			M4 x 30	P-67
SVF-50	72	95	112	128	42	29	83			M4 x 30	P-85
SVF-63	87	106	125	143	50	33.5	92			M5 x 35	P95
SVF-80	108	130	150	169	57	38.5	108			M5 x 40	P120
SVF-100	130	155	185	210	70	44	134			M6 x 45	P145
SVF-125	170	200	226	248	89	51	173			M6 x 60	P185
SVF-160	218	250	284	310	120	70	204.5	70	PT 3/8"	M8 x 70	P235
SVF-200	272	310	355	390	145	95	300	85	PT 1/2"	M10 x 95	P295

Pre-fill valves pilot port adaptor 預充閥導壓口接頭

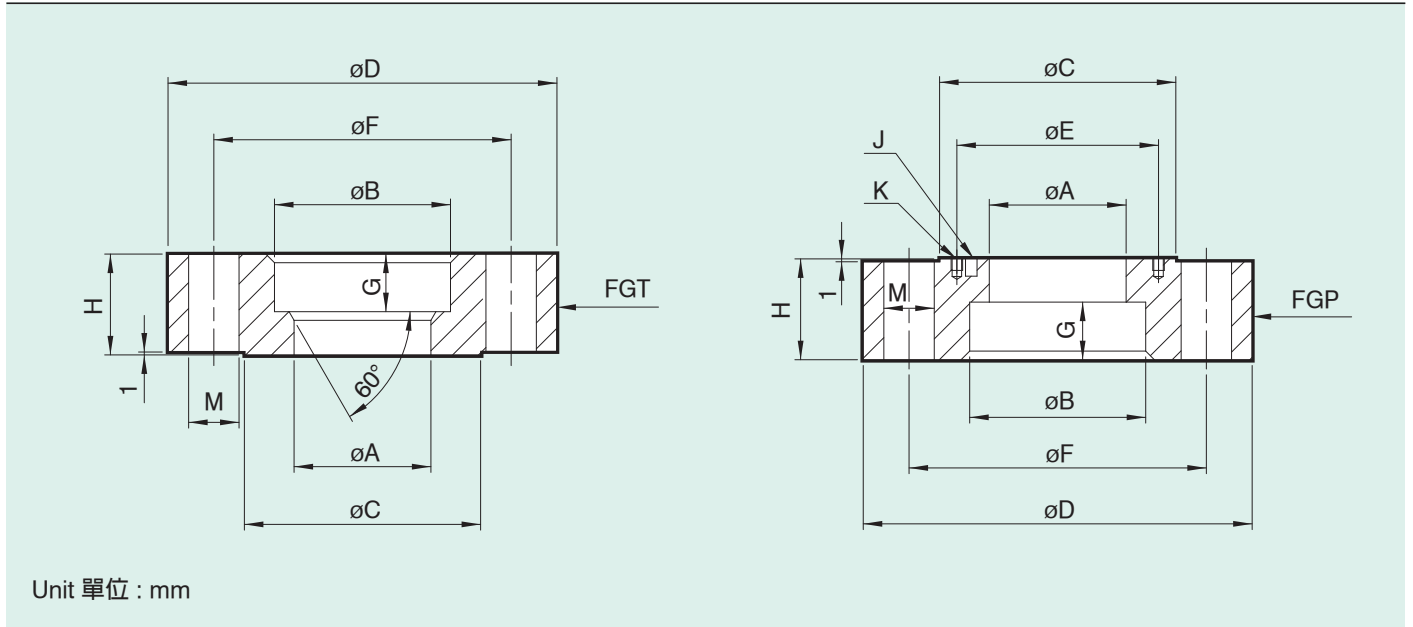
Orifice Plug
節流孔塞頭

Model 型式	Orifice 節流孔	Plug 塞孔
SVF(SCF)-32、40、50	0.7 mm	PT 1/8"
SVF(SCF)-63	0.8 mm	PT 1/8"
SVF(SCF)-80	1.0 mm	PT 1/8"
SVF(SCF)-100	1.2 mm	PT 1/8"
SVF(SCF)-125、160	1.5 mm	PT 1/8"
SVF(SCF)-200	1.8 mm	PT 1/4"

Pre-Fill Valves (Flange-clamped type)

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Flanges Dimensions (mm) 碟式預充閥安裝法蘭參考尺寸



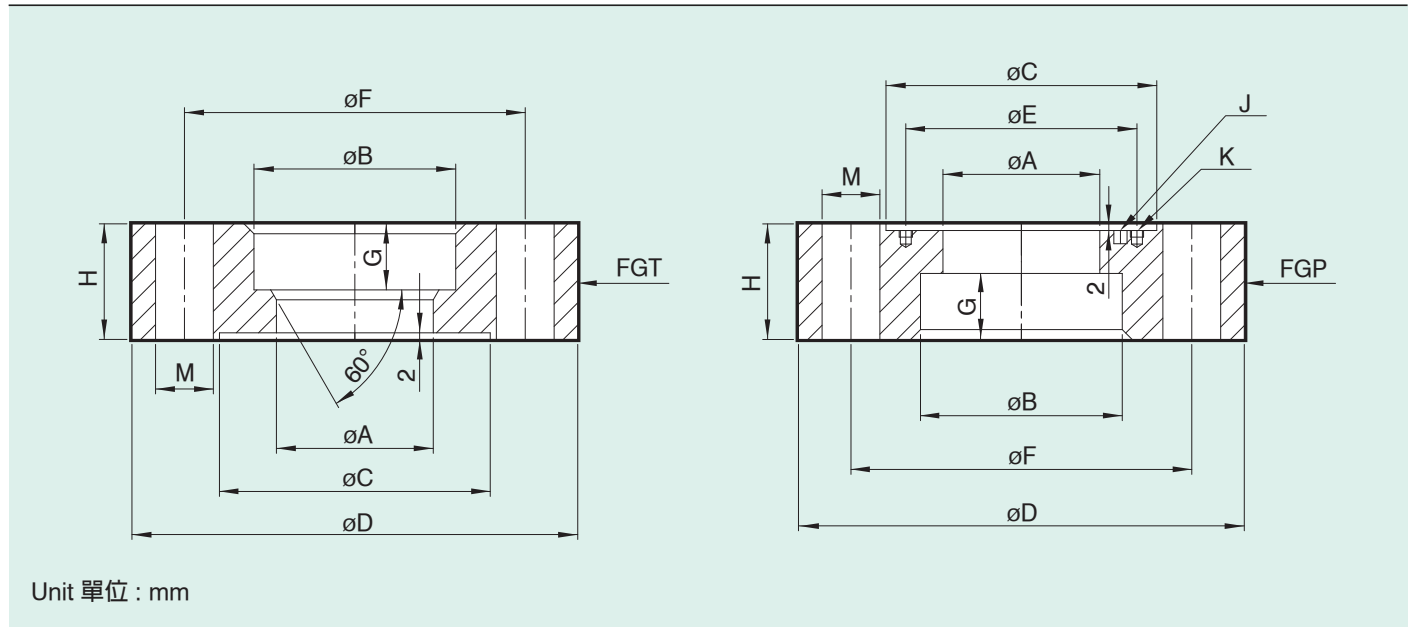
Model 型式	ϕD	ϕF	ϕB	ϕA	ϕE	ϕC	H	G	J	K	M
FGP-32-2-M16/2B	135	103.2	61.1	47.5	-	82	35	20	-	-	4- $\phi 17.5$
FGT-32-2-M16/2B											
FGP-40-2-M20/2.5B	165	130.1	77.1	57	91	107	44	22	10	2-M4	4- $\phi 22$
FGT-40-2-M20/2.5B											
FGP-50-2-M16/3B	180	146	90	73	112	125	40	20	10	2-M4	6- $\phi 18$
FGT-50-2-M16/3B											
FGP-50-4-M24/3B	198	154	90	73	112	125	50	25	10	2-M4	6- $\phi 26$
FGT-50-4-M24/3B							45				
FGP-63-2-M16/3.5B	198	161	102.2	88	125	140	42	20	10	2-M5	8- $\phi 18$
FGT-63-2-M16/3.5B							35				
FGP-63-4-M24/3.5B	214	169	102.2	88	125	140	65	27	10	2-M5	8- $\phi 26$
FGT-63-4-M24/3.5B							50				
FGP-80-2-M16/4B	220	187	115.2	108.5	150	166	45	20	10	2-M5	8- $\phi 18$
FGT-80-2-M16/4B							35				
FGP-80-2-M24/4B	240	195	115.2	108.5	150	166	65	27	10	2-M5	8- $\phi 26$
FGT-80-2-M24/4B							55				
FGP-100-2-M22/5B	280	236	141	132	185	210	65	25	10	2-M6	8- $\phi 23$
FGT-100-2-M22/5B							55				
FGP-100-4-M30/5B	300	244	141	132	185	210	80	30	10	2-M6	8- $\phi 33$
FGT-100-4-M30/5B							70				

Pre-Fill Valves (Flange-clamped type)

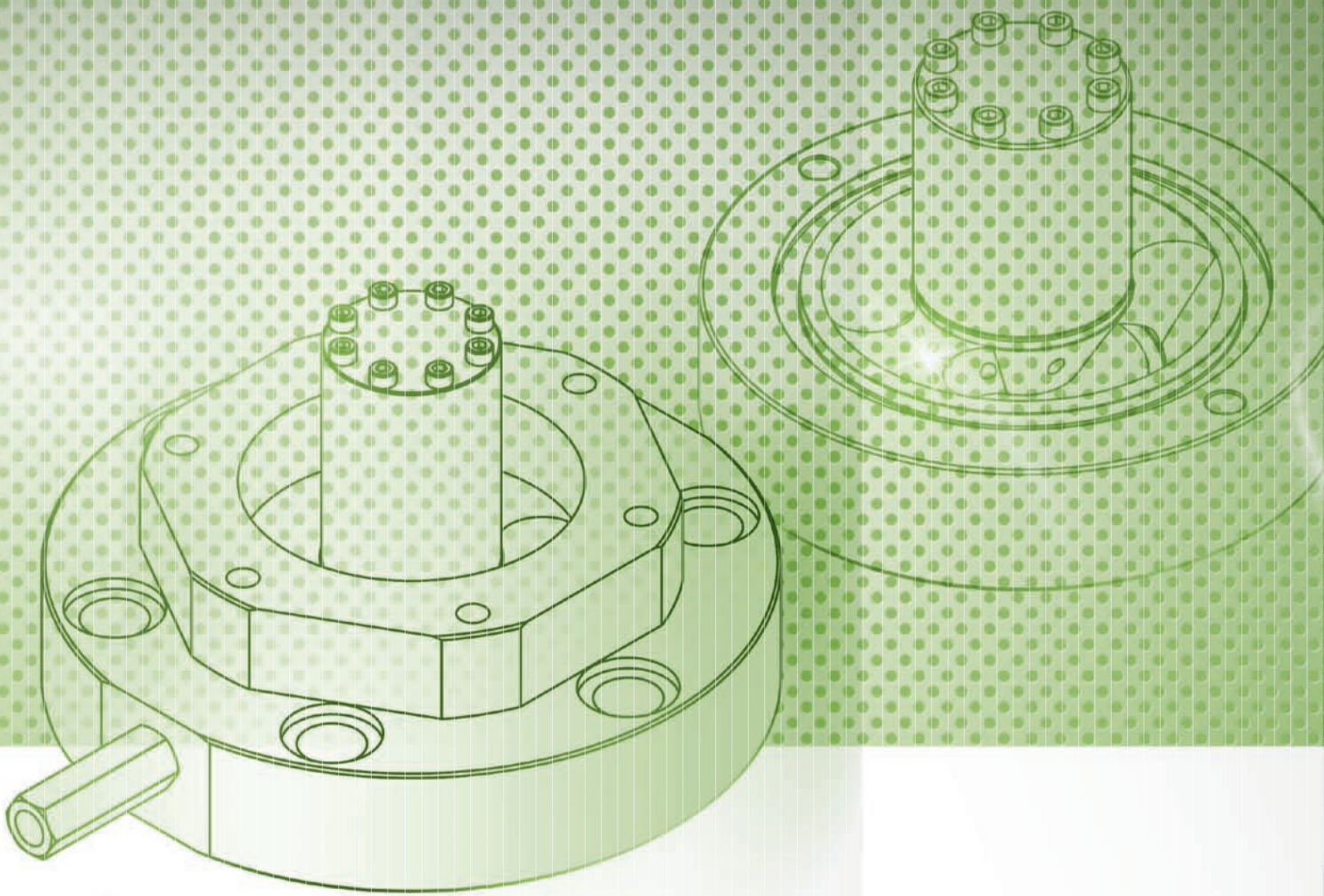
碟式預充閥



Flanges Dimensions (mm) 碟式預充閥安裝法蘭參考尺寸



Model 型式	øD	øF	øB	øA	øE	øC	H	G	J	K	M
FGP-125-M24/8B	350	300	219	168	226	249	70	35	15	2-M6	12-ø26
FGT-125-M24/8B							60	25			
FGP-125-4-M30/8B	354	300	219	168	226	249	90	50	15	2-M6	12-ø32
FGT-125-4-M30/8B							80	30			
FGP-160-4-M30/10B	422	367	270	218	284	311	90	40	15	2-M8	16-ø32
FGT-160-4-M30/10B							80	30			
FGP-200-2-M30/12B	510	442	321	270	355	391	100	40	20	2-M10	20-ø32
FGT-200-2-M30/12B							90	35			
FGP-250-2-M30/18B	632	555	460	348	445	495	110	55	20	2-M10	24-ø32
FGT-250-2-M30/18B							100	40			



油力油壓工業股份有限公司
YUATSUSEIKI HYDRAULIC INDUSTRIAL CO.,LTD.

公司：41468 台中市烏日區太明路 145 巷 9 號

OFFICE & FACTORY :

No.9, LANE 145, TAI MING RD., WU ZIH DIST., TAICHUNG CITY, TAIWAN 41468

TEL : 886-4-2335 8996

FAX : 886-4-2335 8997

Http://www.yuli-yuya.com

E-mail : sales@yuli-yuya.com.tw

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