



Variable Displacement Vane Pump

變量葉片泵系列

Variable Displacement Vane Pump Series



變量葉片泵

Variable Displacement
Vane Pump



INDEX

- 01 小型化附止回變量葉片泵
COMPACT VARIABLE DISPLACEMENT
VANE PUMP WITH CHECK VALVE SFN
- 05 變量葉片泵附冷卻循環泵
VARIABLE DISPLACEMENT VANE PUMP WITH
COOLING CIRCULATION PUMP
- 11 變量葉片泵
VARIABLE DISPLACEMENT VANE PUMP
- 21 注意事項
NOTICE

小型化附止回變量葉片泵

Compact Variable
Displacement
Vane Pump with Check
Valve SFN



特性

- 高效率、節能：藉由高精度的緊密配差，有效降低內洩量，減少能源損失，提高泵效率達到節能效果。
- 重量輕、小型化：相同吐出量之產品，泵體積更縮減，搭配專用電機設計，比以往的電機+泵組合，體積更小重量更輕。
- 低噪音：特殊的一字鍵設計在泵及電機連結時，可調整偏心的問題，減少運轉時產生的噪音。
- 使用壽命長：特殊的一字鍵與自潤軸承設計，在連結泵與電機時，可以受到液壓油的潤滑保護，減少磨損損壞，增加使用的壽命。

應用

- 適合長時間保壓之數控機床。
- 替換性高易於更換維修。

FEATURE

- High efficiency and energy saving: With precise machining & proper tolerance, not only the internal leakage is effectively reduced, but also the pump efficiency is greatly improved.
- Less weight & minimized: specially designed motor and downsized pump make the overall dimension more compact as compared with other ones with same flow rate.
- Low noise: Through special tang shaft design, the concentricity can be well secured to avoid misalignment, hence the total noise and the temperature rise will be minimized.
- Durable service life: Special design allows the shaft to be always lubricated with hydraulic oil during operation, this substantially lower the chance of abrasion for the pump shaft.

APPLICATION

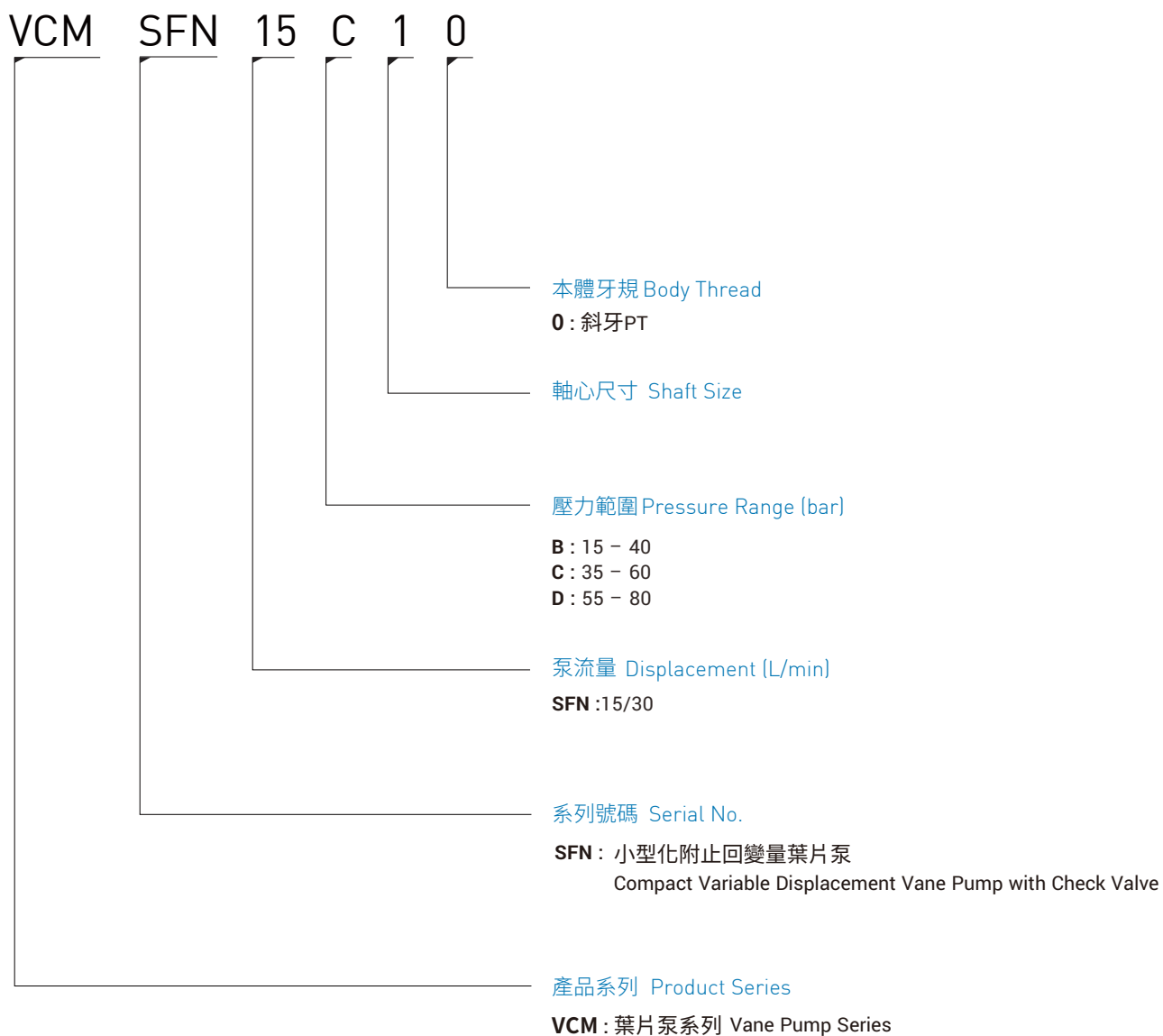
- Suitable for long-time pressure holding CNC machine tools.
- Easy to replace and maintain.

形式編碼

MODEL CODE

小型化附止回變量葉片泵

Compact Variable Displacement Vane Pump with Check Valve SFN



備註: 泵流量為1800rpm下的測試數值。

Remark: The pump displacement is the test value at 1800rpm

技術資料

TECHNICAL DATA

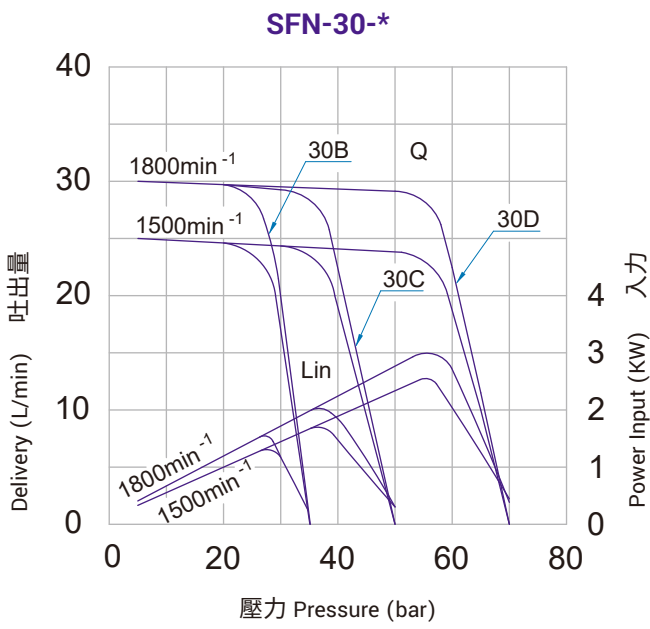
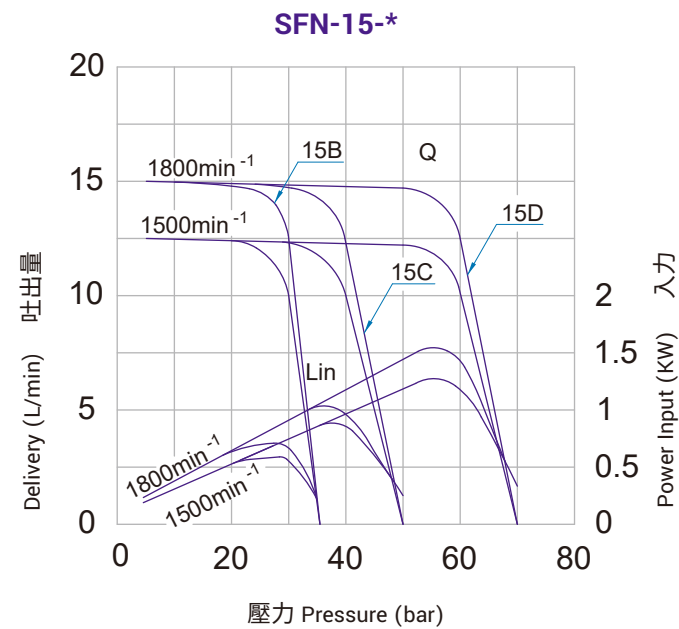
小型化附止回變量葉片泵 Compact Variable Displacement Vane Pump with Check Valve SFN							
型式 Model	泵流量(無負荷時) Delivery at no load (L/min)		壓力調整範圍 Pressure Adjustment Range (bar)	容許回轉速 Shaft Speed Range (rpm)		最高壓力 Max. Pressure (bar)	重量 Weight (kg)
	1800rpm	1500rpm		最高MAX.	最低MIN.		
SFN-15B	15	12	15~40	1800	800	40	6
SFN-15C			35~60	1800	800	60	6
SFN-15D			55~80	1800	800	80	6
SFN-30B	30	24	15~40	1800	800	40	6
SFN-30C			35~60	1800	800	60	6
SFN-30D			55~80	1800	800	80	6

備註：泵流量為1800rpm下的測試數值。

Remark: The pump displacement is the test value at 1800rpm

性能曲線

PERFORMANCE CURVE

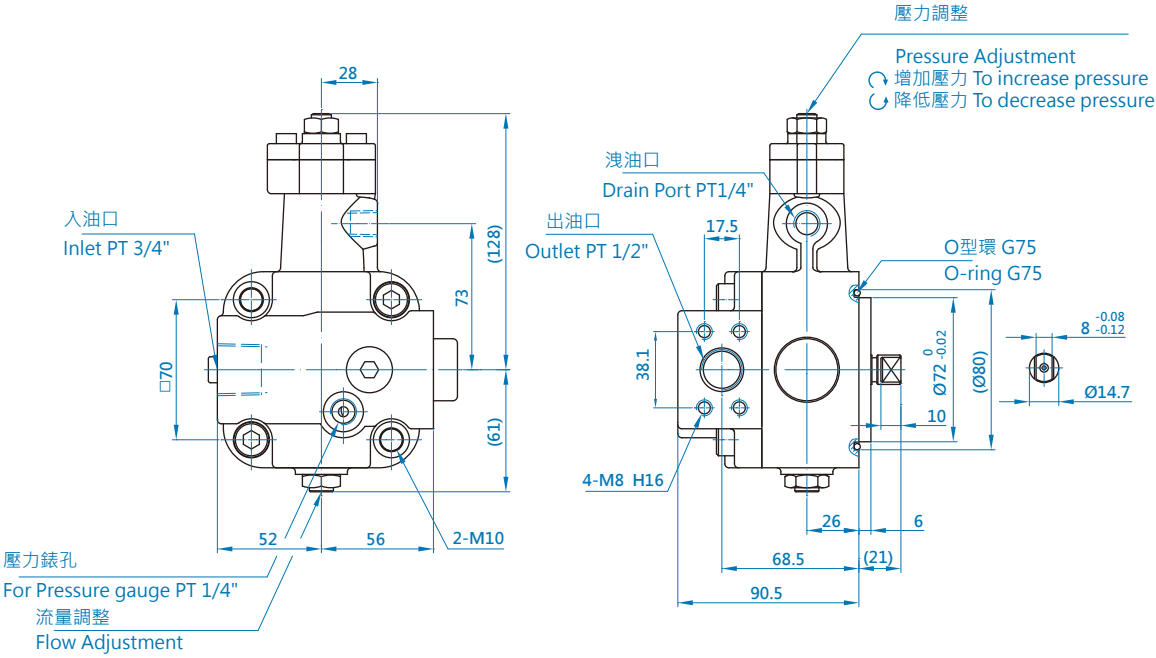


測試條件	Testing condition
操作用油	Hydraulic oil : ISO VG32
油溫	Oil temperature : 40°C

外型尺寸

MEASUREMENT

VCM-SFN- 15 - 10
30



單位 Unit: mm

變量葉片泵附冷卻循環泵

Variable Displacement Vane Pump with Cooling Circulation Pump



特性

- 獨一無二的專利連結設計，縮短變量葉片泵和冷卻循環泵長度，體積更小，造型更輕巧。冷卻循環泵吸取油箱內的液壓油，輸送到冷卻系統後回到油箱，不斷循環，有效達到降低油溫的功能。
- 冷卻循環泵內建壓力設定，輸出壓力保持在 3 bar，有效保護冷卻系統管路。
- 經實驗證明，搭配合適的冷卻器，降溫效果比傳統冷卻回油(Drain)更加明顯。
- 油箱小型化，節省空間，減少液壓油容量，降低成本。
- 環境友善度高，減少耗材，延長產品壽命長。
- 有效控制油溫，穩定運作情形，提高加工精準度。

應用

- 應用於長時間、高頻率作動的機器。
- 藉由變量泵附冷卻循環泵的特性，使油箱小型化，節省機台內部空間。

FEATURE

- Unique and patented attachment design, it reduces overall length and dimension after attached to a variable displacement vane pump, the entire combination became more compact. This cooling circulation pump sucks in heated oil from the tank and delivers to radiator. It effectively reduced oil temperature under continuous process of circulation.
- Cooling circulation pump has built-in pressure setting, maintaining pressure at 3 bar, protect pipeline of cooling system.
- Proven by tests, to combine with proper cooler, it performs a lot better cooling efficiency than cooling only the oil from drain port.
- By reducing size of reservoir, it could save space and volume of hydraulic oil. At the end, it saved cost.
- Eco-friendly, reducing consumption supplies, and extending product life.
- Effectively restrain oil temperature, stabilize operation conditions, and improve machining accuracy.

APPLICATION

- Used for long working time, frequent active machines.
- With the feature of Variable pump with cooling circulation pump, the oil tank can be miniaturized and the internal space of the machine is saved.

形式編碼
MODEL CODE

變量葉片泵附冷卻循環泵系列

Variable Displacement Vane Pump with Cooling Circulation Pump

VCM	SF	20	C	4CG	1	0	
							本體牙規 Body Thread
							0 : 斜牙PT 1 : 直牙BSPP 2 : 管牙NPT
							軸心尺寸 Shaft Size
							SF 12/20 2 : Ø12.7mm 無調流 (No Flow Adjust)
							SM 2 : Ø19.05mm
							30/40 3 : Ø19.05mm
							冷卻循環泵系列 Cooling Circulation Pump (L/min)
							4CG : 4 L/min 6CG : 6 L/min
							壓力範圍 Pressure Range (bar)
							SF : A: 10 - 20 B: 15 - 35 C: 30 - 55 D: 50 - 70
							SM : 30 A: 15 - 35 B: 20 - 70 C: 50 - 105 D: 70 - 140
							40 A: 15 - 35 B: 20 - 70
							泵流量 Displacement (L/min)
							SF : 12/20/30/40 SM : 30/40
							系列號碼 Serial No.
							SF : 低壓變量葉片泵 Low Pressure Variable Displacement Vane Pump
							SM : 中壓變量葉片泵 Medium Pressure Variable Displacement Vane Pump
							產品系列 Product Series
							VCM : 葉片泵系列 Vane Pump Series

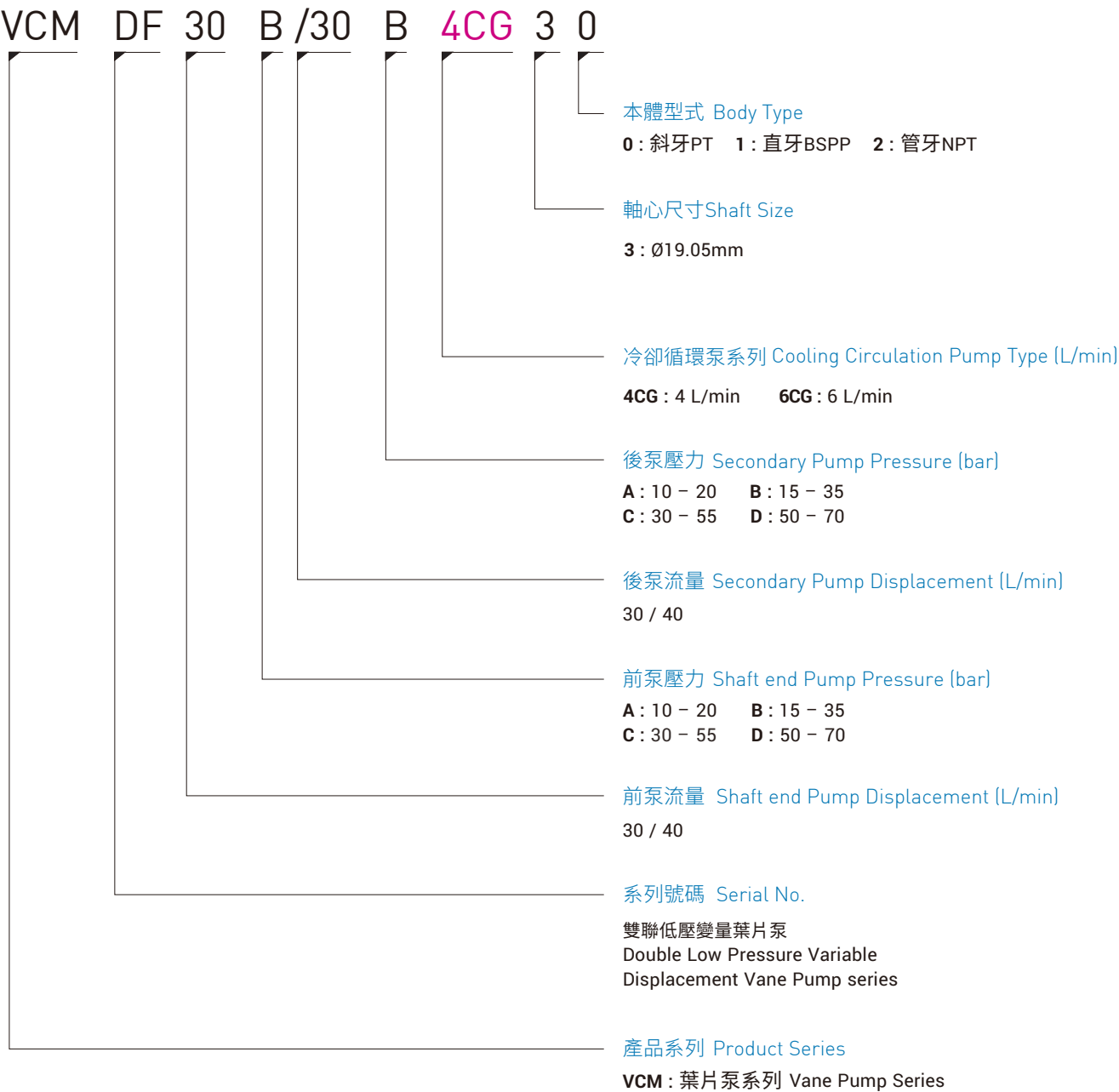
備註: 泵流量為1800rpm下的測試數值。
Remark: The pump displacement is the test value at 1800rpm

形式編碼

MODEL CODE

雙聯低壓變量葉片泵系列與附冷卻循環泵系列

Double Low Pressure Variable Displacement Vane Pump series with Cooling Circulation Pump series



備註：泵流量為1800rpm下的測試數值。
Remark: The pump displacement is the test value at 1800rpm

技術資料

TECHNICAL DATA

變量葉片泵附冷卻循環泵 Variable Displacement Vane Pump with Cooling Circulation Pump

型式 Model	泵流量 (無負荷時) Delivery At No Load (L / min)		壓力設定 Setting Pressure (bar)	容許回轉速 Shaft Speed Range (rpm)	
	1800rpm	1500rpm		最高 MAX.	最低 MIN.
4CG	4	3	3	1800	800
6CG	6	4			

壓力與流量請參考變量葉片泵技術資料表P14。

For Pressure and Displacement please check technical data on Page 14.

性能曲線

PERFORMANCE CURVE

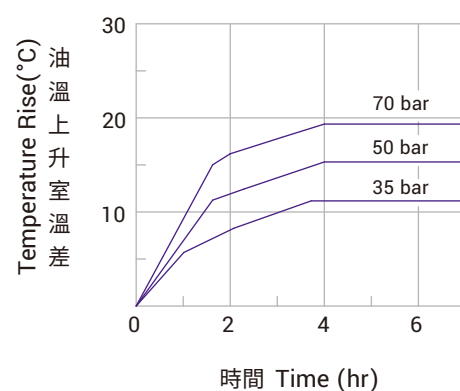
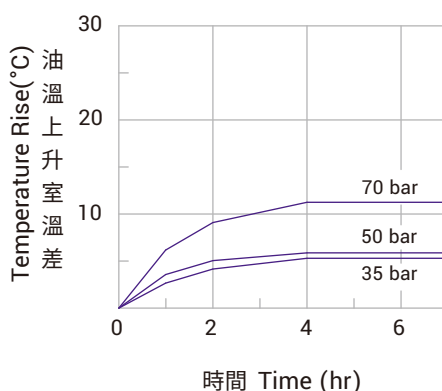
VCM-SF-30+4CG*

連續運轉
Continuous operating

連續操作 CYLINDER (Ø20XØ40X250mm)
作動頻率12次往返/每分鐘
Continuous operated cylinder (Ø20XØ40X250mm)
W/cylinder working cycle: 12 strokes/min

測試條件 Testing condition

操作用油 Hydraulic oil : ISO VG32
馬達轉速 Speed : 1800 rpm
油箱容積 Capacity (Fuel tank) : 30L
室溫 Ambient Temperature : 30°C



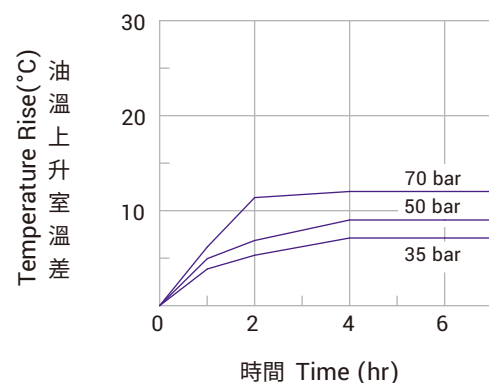
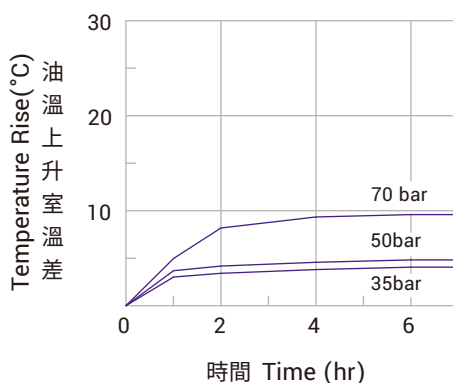
VCM-SF-1220+4CG*

連續運轉
Continuous operating

連續操作 CYLINDER (Ø20XØ40X250mm)
作動頻率12次往返/每分鐘
Continuous operated cylinder (Ø20XØ40X250mm)
W/cylinder working cycle: 12 strokes/min

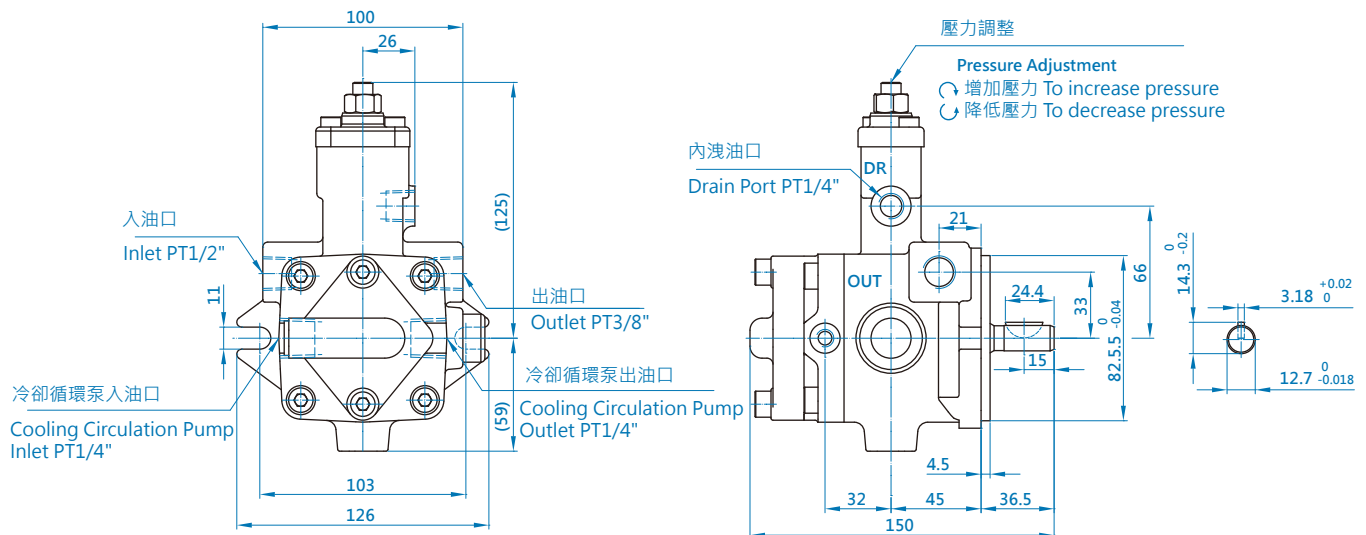
測試條件 Testing condition

操作用油 Hydraulic oil : ISO VG32
馬達轉速 Speed : 1800 rpm
油箱容積 Capacity (Fuel tank) : 30L
室溫 Ambient Temperature : 30°C



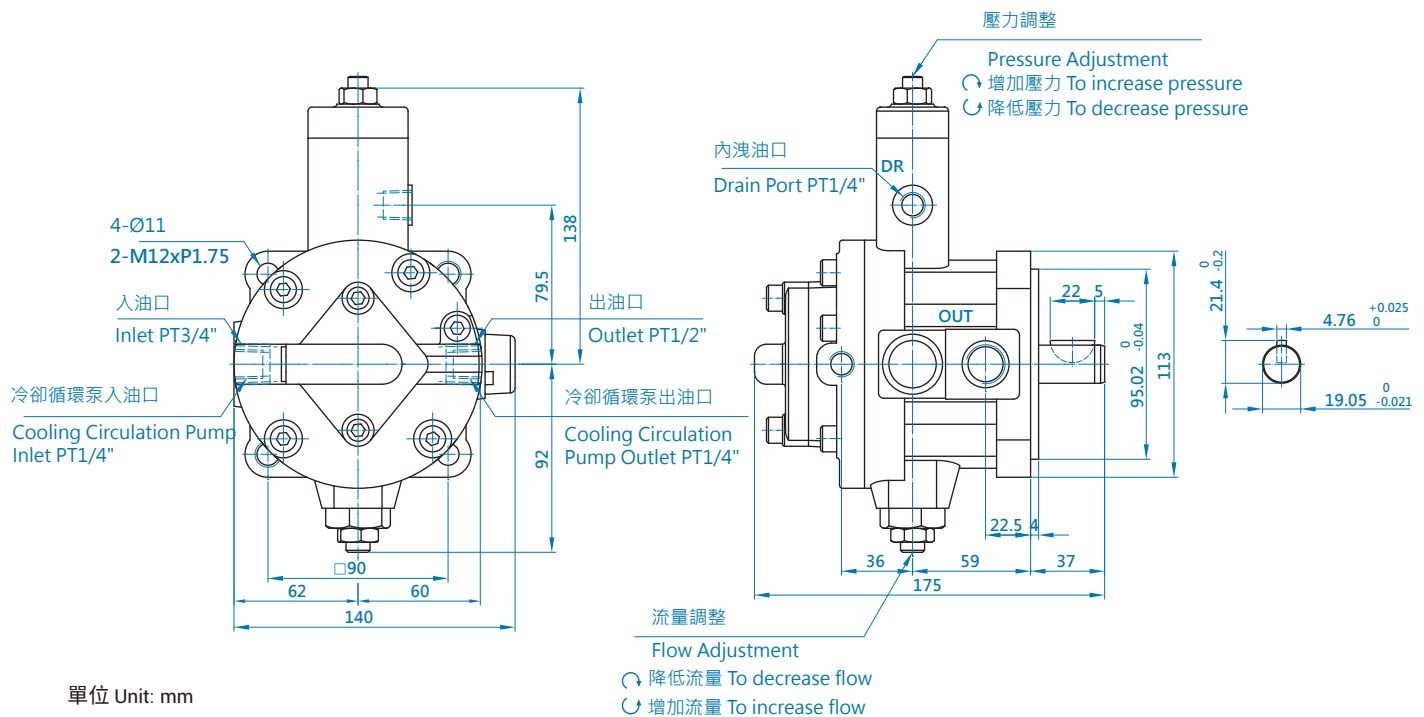
外型尺寸 MEASUREMENT

VCM-SF- $\frac{12}{20}$ - * - $\frac{4CG}{6CG}$ -20



單位 Unit: mm

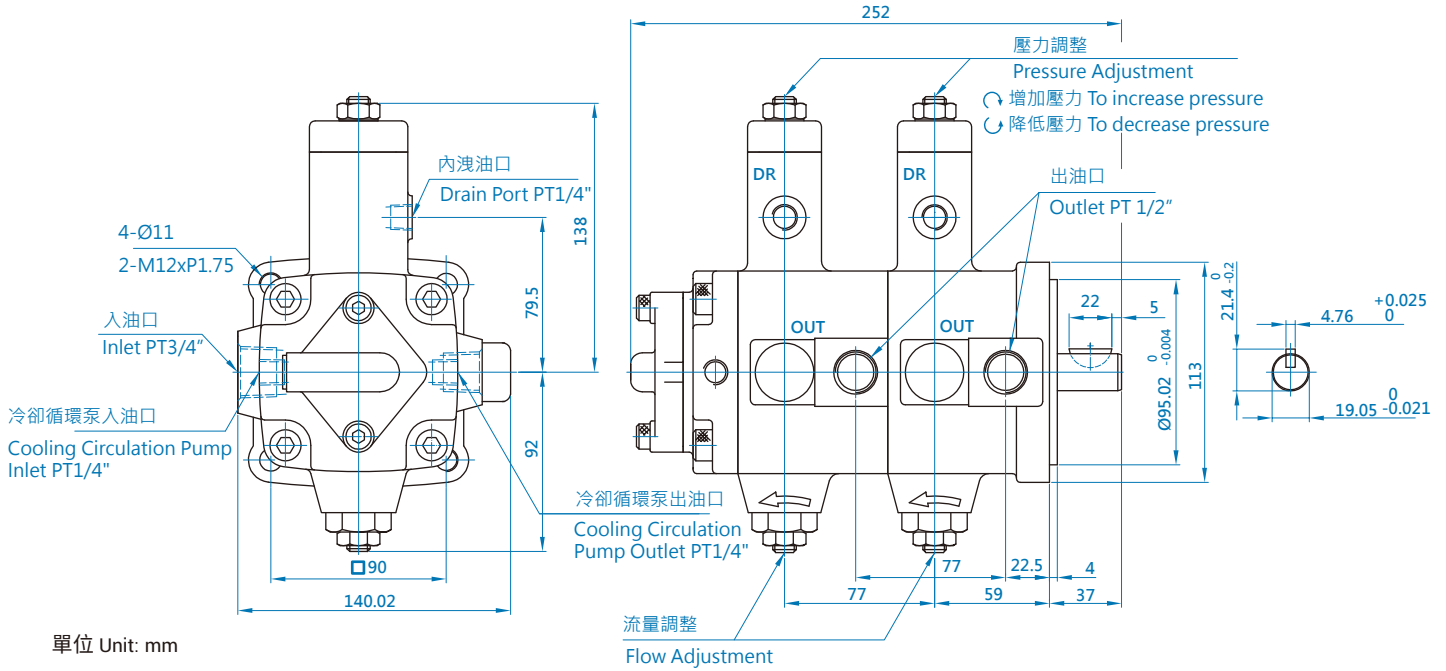
VCM-SF- $\frac{30}{40}$ - * - $\frac{4CG}{6CG}$ -30



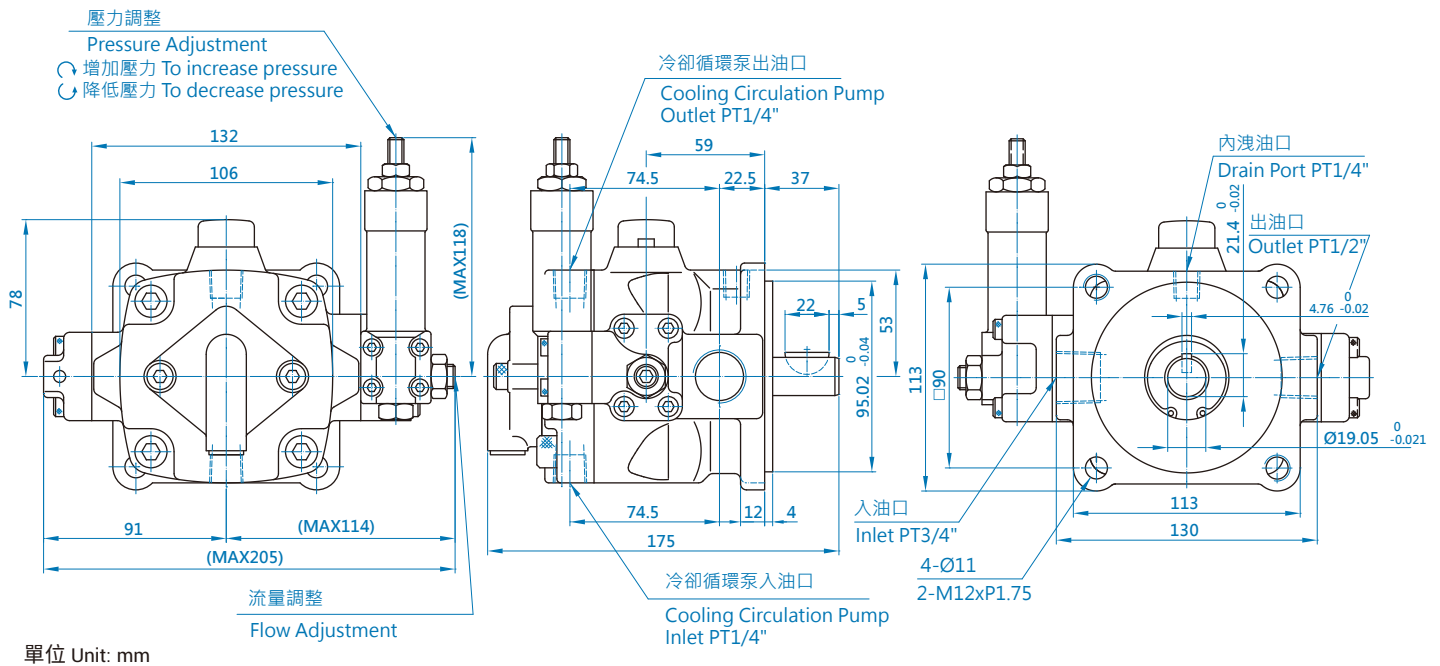
單位 Unit: mm

外型尺寸 MEASUREMENT

VCM-DF- 30 - *- 30 - *- 4CG - 30
40 40 6CG



VCM-SM- 30 - *- 4CG - 20
40 40 6CG



變量葉片泵

Variable Displacement Vane Pump



特性

- 高壓力、高效率、運轉平順。
- 低噪音、低振動，符合低噪音工作環境要求。
- 反應靈敏，動作精確度高。
- 容易操作及維護。
- 結構穩固，使用壽命長。

應用

- 適用於數控機床，如CNC車床、CNC銑床、CNC磨床、夾治具等。
- 適用於多類專用機械、圓鋸機、加工機、內外徑研磨機等。
- 製鞋類液壓機械應用。

FEATURE

- High efficiency, high-pressure, smooth operation.
- Extremely low vibration and noise level.
- Instant and stable response for precise machining.
- Easy adjustment in handling and maintenance.
- Sturdy structure for high efficiency and long service life.

APPLICATION

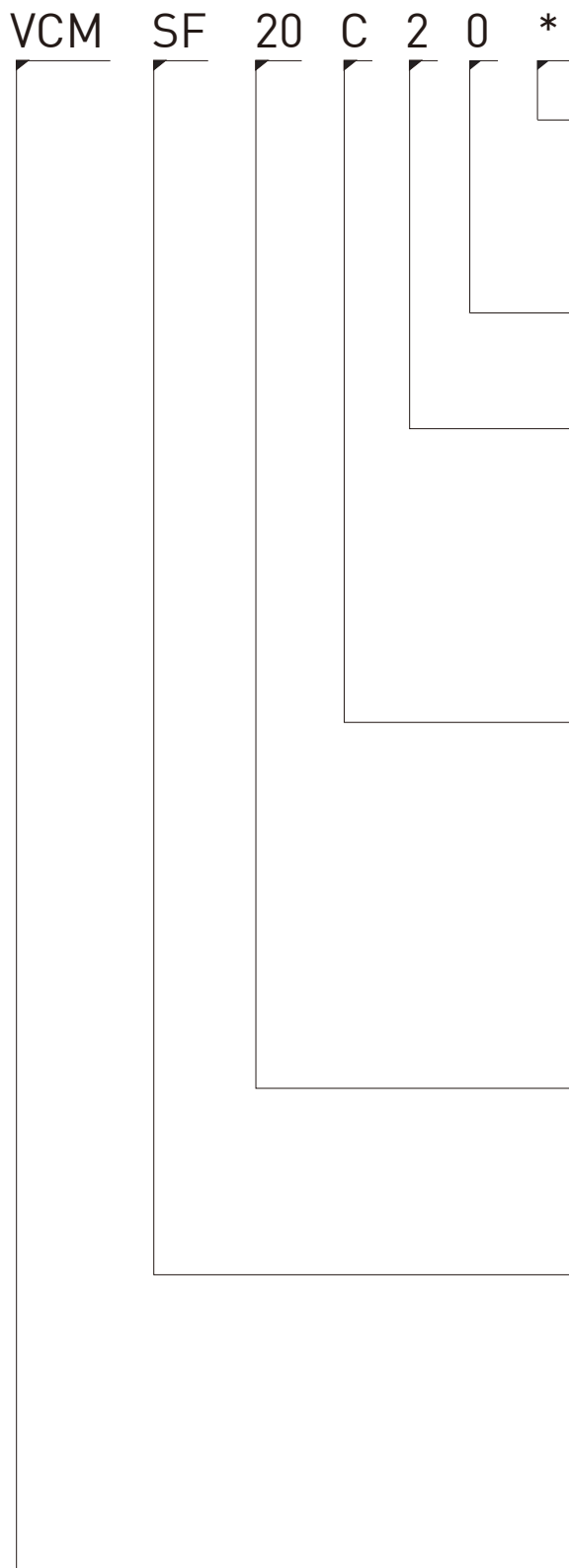
- Suitable for CNC machine tools, such as CNC lathes, CNC milling machines, CNC grinders, fixtures, etc.
- Applicable to various types of machinery, circular sawing machines, processing machines, inner and outer diameter grinding machines, etc.
- Application of shoemaking machinery hydraulics.

形式編碼

MODEL CODE

變量葉片泵

Variable Displacement Vane Pump



軸心型式 Shaft Type

無：標準型 **None**: Standard
A : 7T (僅供應12,20L / only for 12,20 litter)
B : 9T

本體牙規 Body Thread

0 : 斜牙PT **1** : 直牙BSPP **2** : 管牙NPT

軸心尺寸 Shaft Size

SFC : **1** : Ø19.05mm
SM : **2** : Ø19.05mm
SF : **12/20**
1 : Ø12.7mm
2 : Ø12.7mm 無調流 (No Flow Adjust)
3 : Ø15.875mm
4 : Ø15.875mm 無調流 (No Flow Adjust)
30/40
1 : Ø19.05mm, 方體 Square Type
2 : Ø19.05mm, 圓體 Standard Type

壓力範圍 Pressure Range (bar)

SFC : **A** : 10-20
B : 15-35
C : 30-55
D : 50-70
SF : **AS** : 5-10
A : 10-20
B : 15-35
C : 30-55
D : 50-70
SM : **30** **A** : 15-35
B : 20-70
C : 50-105
D : 70-140
SM : **40** **A** : 15-35
B : 20-70

泵流量 Displacement (L/min)

SFC : 30/40 **SF** : 12/20/30/40
SM : 30/40

系列號碼 Serial No.

SFC : 附止回型變量葉片泵
Variable Vane Pump with
Built-in Check Valve
SF : 低壓變量葉片泵
Low Pressure Variable
Displacement Vane Pump
SM : 中壓變量葉片泵
Medium Pressure Variable
Displacement Vane Pump

產品系列 Product Series

VCM : 葉片泵系列 Vane Pump Series

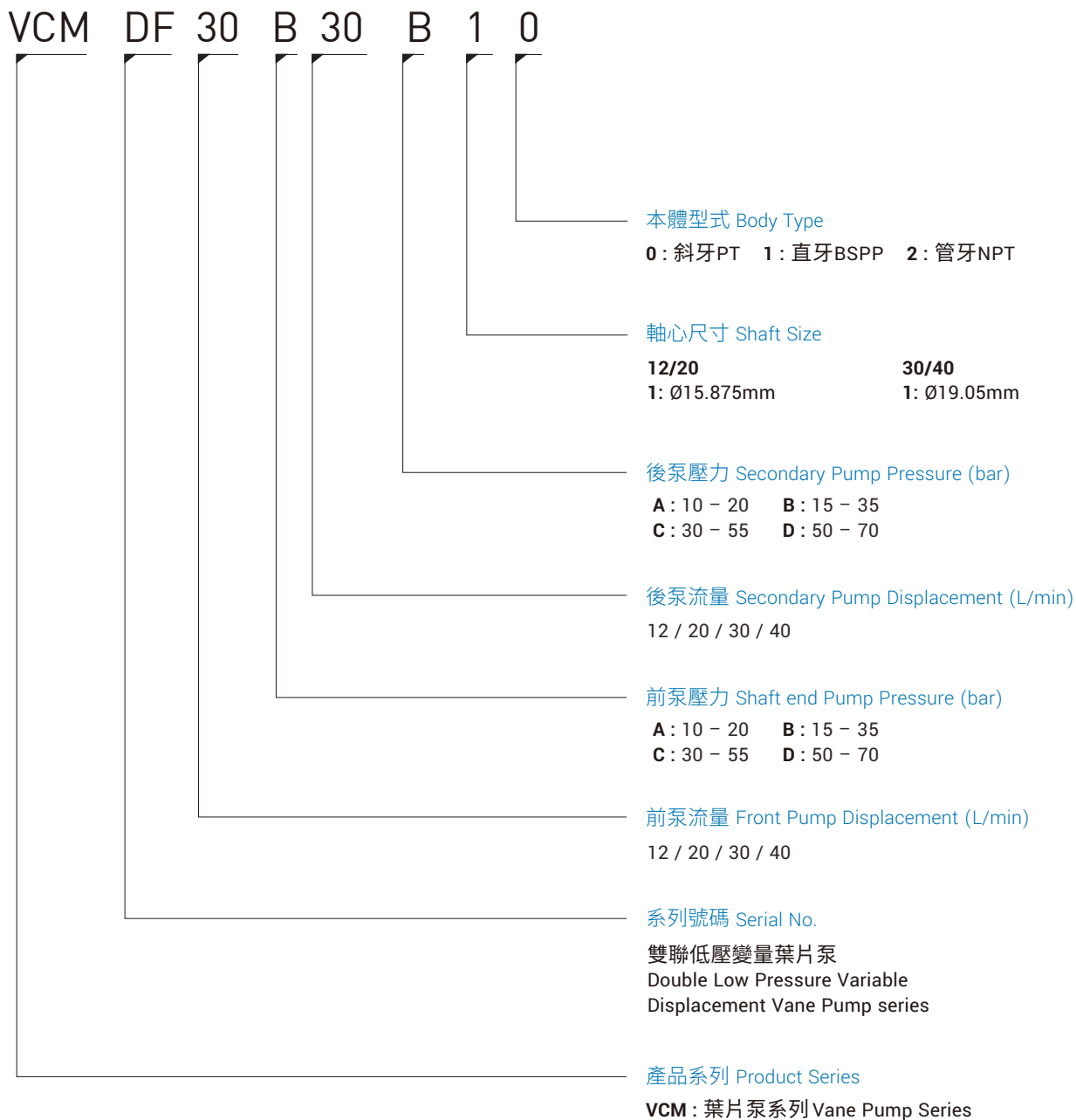
備註：泵流量為1800rpm下的測試數值。

Remark: The pump displacement is the test value at 1800rpm

形式編碼 MODEL CODE

雙聯低壓變量葉片泵系列

Double Low Pressure Variable Displacement Vane Pump series



備註：泵流量為1800rpm下的測試數值。

Remark: The pump displacement is the test value at 1800rpm

技術資料

TECHNICAL DATA

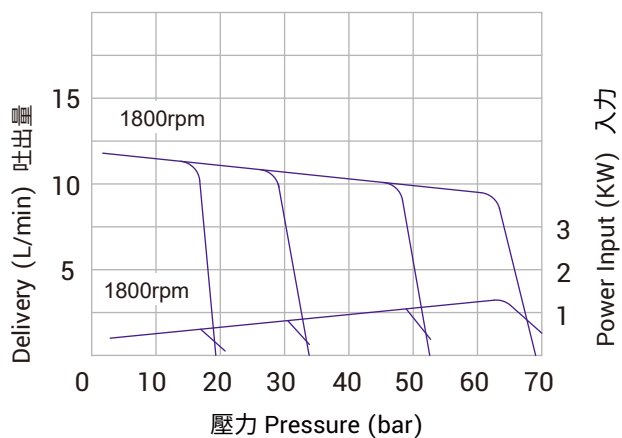
型式 Model	泵流量 (無負荷時) Delivery At No Load (L / min)		壓力調整範圍 Pressure Adjustment Range(bar)	容許回轉速 Shaft Speed Range (rpm)		最高壓力 MAX. Pressure (bar)	重量 Weight (kg)
	1800rpm	1500rpm		最高 MAX.	最低 MIN.		
低壓變量葉片泵 Low Pressure Variable Displacement Vane Pump SF							
SF - 12AS	12	10	5 - 10	1800	800	10	5.5
SF - 12A			10 - 20			20	5.5
SF - 12B			15 - 35			35	5.5
SF - 12C			30 - 55			55	5.5
SF - 12D			50 - 70			70	5.5
SF - 20AS	20	17	5 - 10	1800	800	10	5.5
SF - 20A			10 - 20			20	5.5
SF - 20B			15 - 35			35	5.5
SF - 20C			30 - 55			55	5.5
SF - 20D			50 - 70			70	5.5
SF - 30AS	30	25	5 - 10	1800	800	10	9.5
SF - 30A			10 - 20			20	9.5
SF - 30B			15 - 35			35	9.5
SF - 30C			30 - 55			55	9.5
SF - 30D			50 - 70			70	9.5
SF - 40AS	40	35	5 - 10	1800	800	10	9.5
SF - 40A			10 - 20			20	9.5
SF - 40B			15 - 35			35	9.5
SF - 40C			30 - 55			55	9.5
SF - 40D			50 - 70			70	9.5
附止回型變量葉片泵 Variable Vane Pump with Built-in Check Valve SFC							
SFC - 30A	30	25	10 - 20	1800	800	20	9.6
SFC - 30B			15 - 35			35	9.6
SFC - 30C			30 - 55			55	9.6
SFC - 30D			50 - 70			70	9.6
SFC - 40A	40	35	10 - 20	1800	800	20	9.6
SFC - 40B			15 - 35			35	9.6
SFC - 40C			30 - 55			55	9.6
SFC - 40D			50 - 70			70	9.6
中壓變量葉片泵 Medium Pressure Variable Displacement Vane Pump SM							
SM - 30A	30	25	15 - 35	1800	800	35	10
SM - 30B			20 - 70			70	10
SM - 30C			50 - 105			105	10
SM - 30D			70 - 140			140	10
SM - 40A	40	35	15 - 35	1800	800	35	10
SM - 40B			20 - 70			70	10

備註 / Remark: 壓力在5-10bar的AS系列無冷卻循環泵(CG)的搭配, 泵流量為1800rpm下的測試數值。
Low pressure pump with Code AS (5-10 bar) does not have a cooling circulation pump (CG). The pump displacement is the test value at 1800rpm.

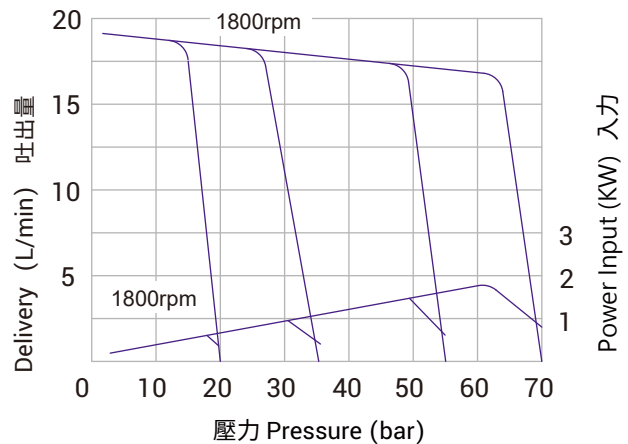
性能曲線

PERFORMANCE CURVE

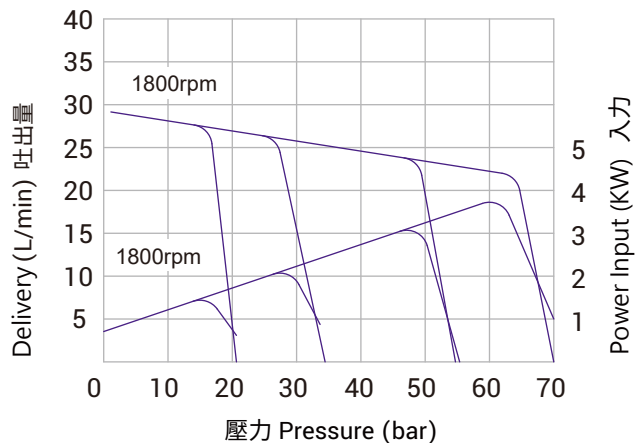
SF-12 * -10



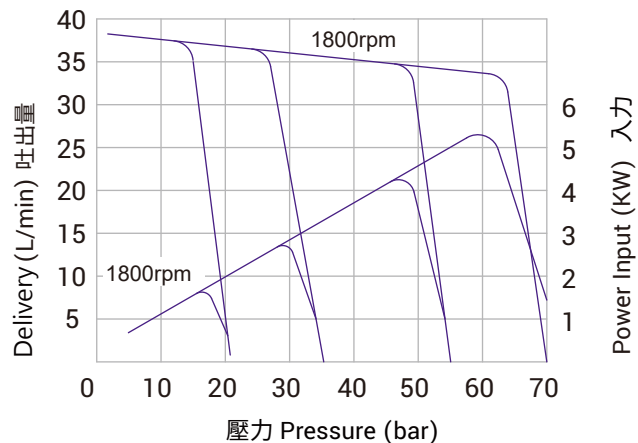
SF-20 * -10



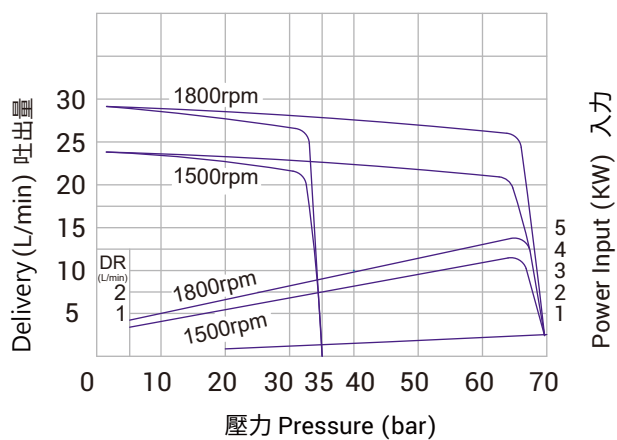
SF-30 * -20



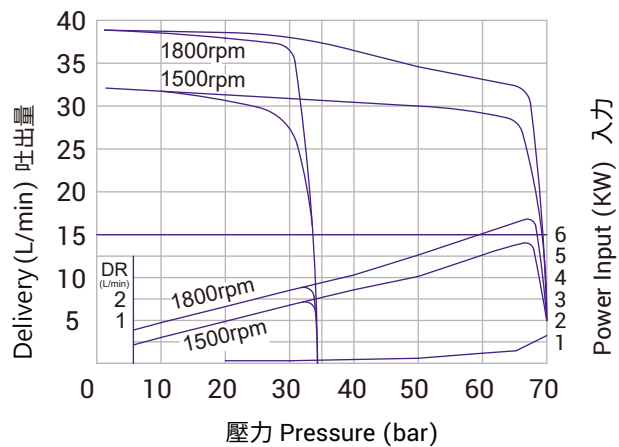
SF-40 * -20



SM-30 * -20



SM-40 * -20

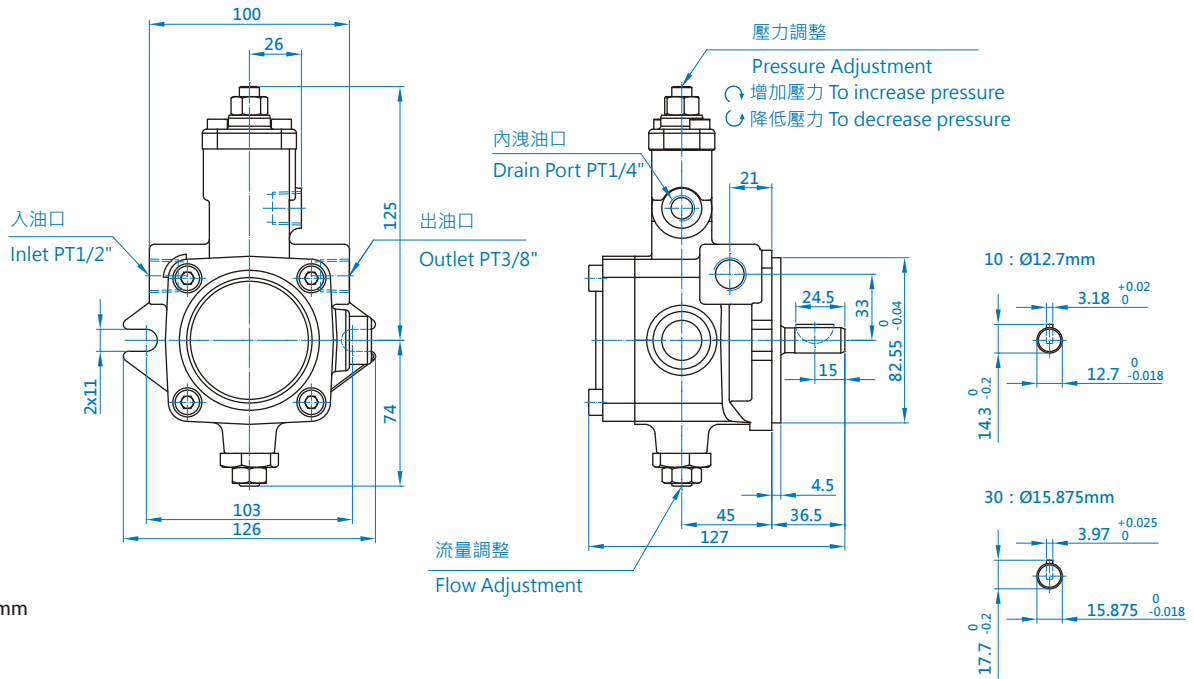


測試條件 Testing condition

液壓油等級 Hydraulic oil : ISO VG46
油溫 Oil temperature : 40 °C ± 5°C

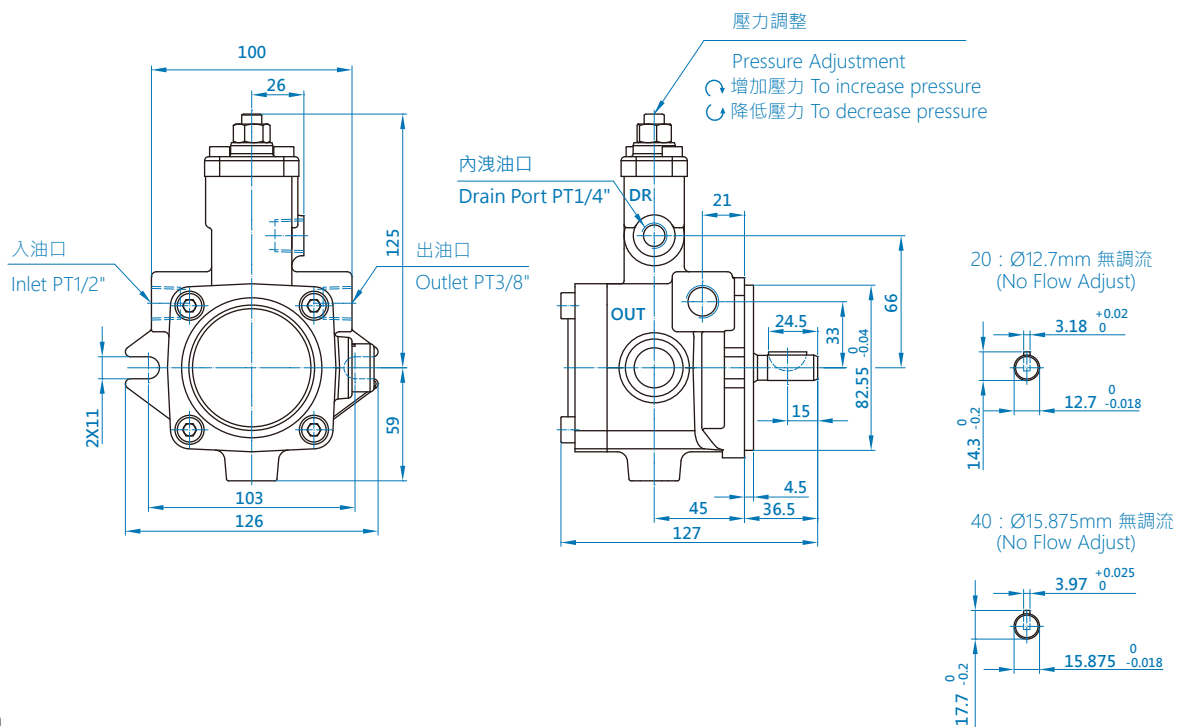
外型尺寸 MEASUREMENT

VCM-SF- $\frac{12}{20}$ - * - $\frac{10}{30}$



單位 Unit: mm

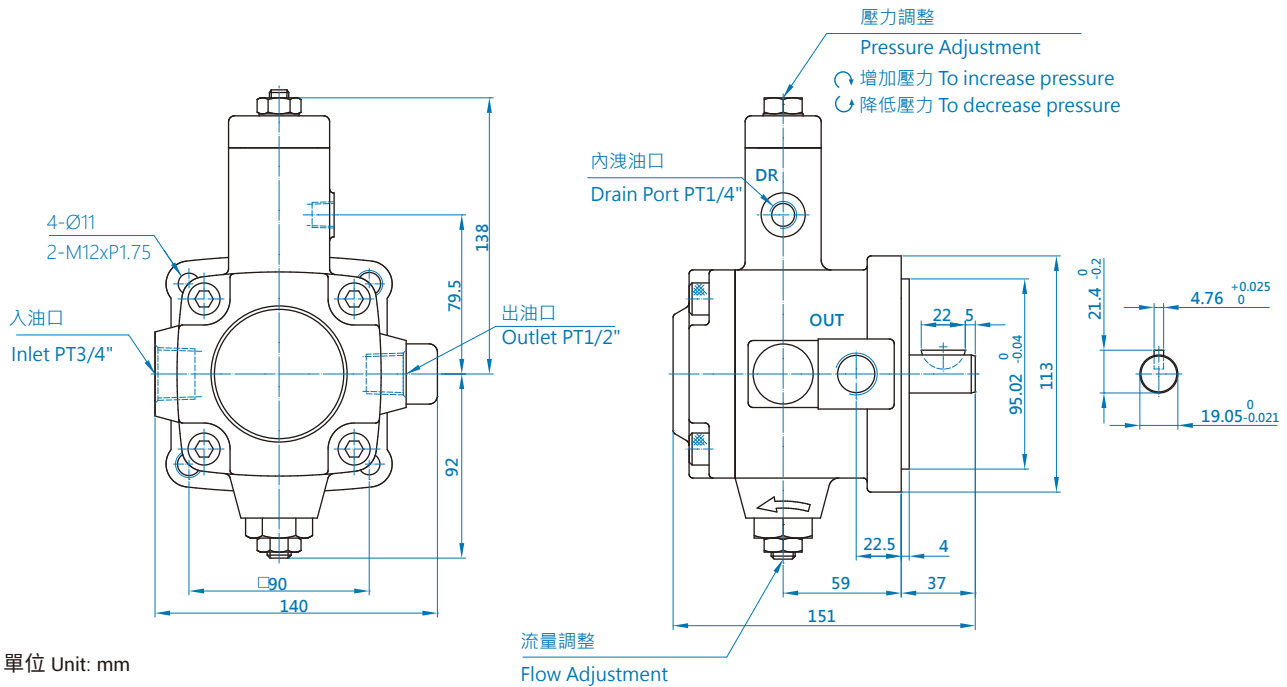
VCM-SF- $\frac{12}{20}$ - * - $\frac{20}{40}$



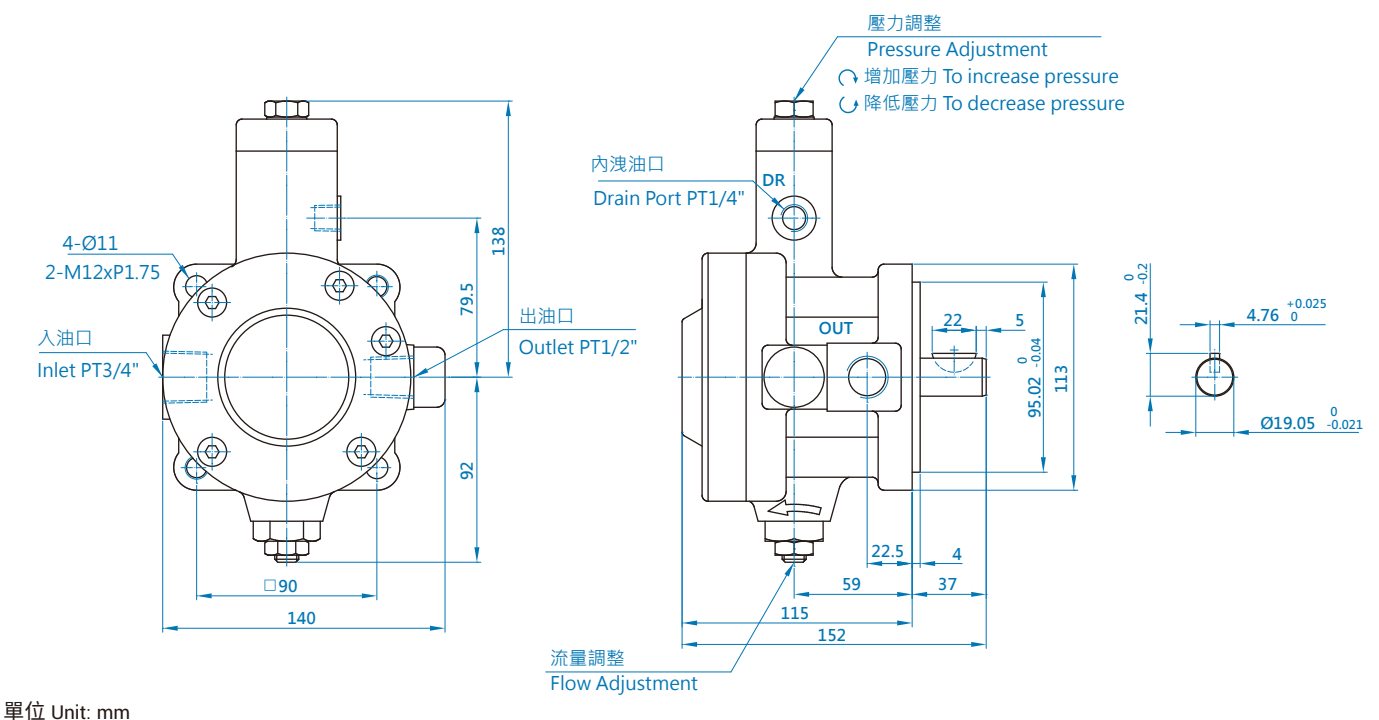
單位 Unit: mm

外型尺寸 MEASUREMENT

VCM-SF- $\frac{30}{40}$ -*-10

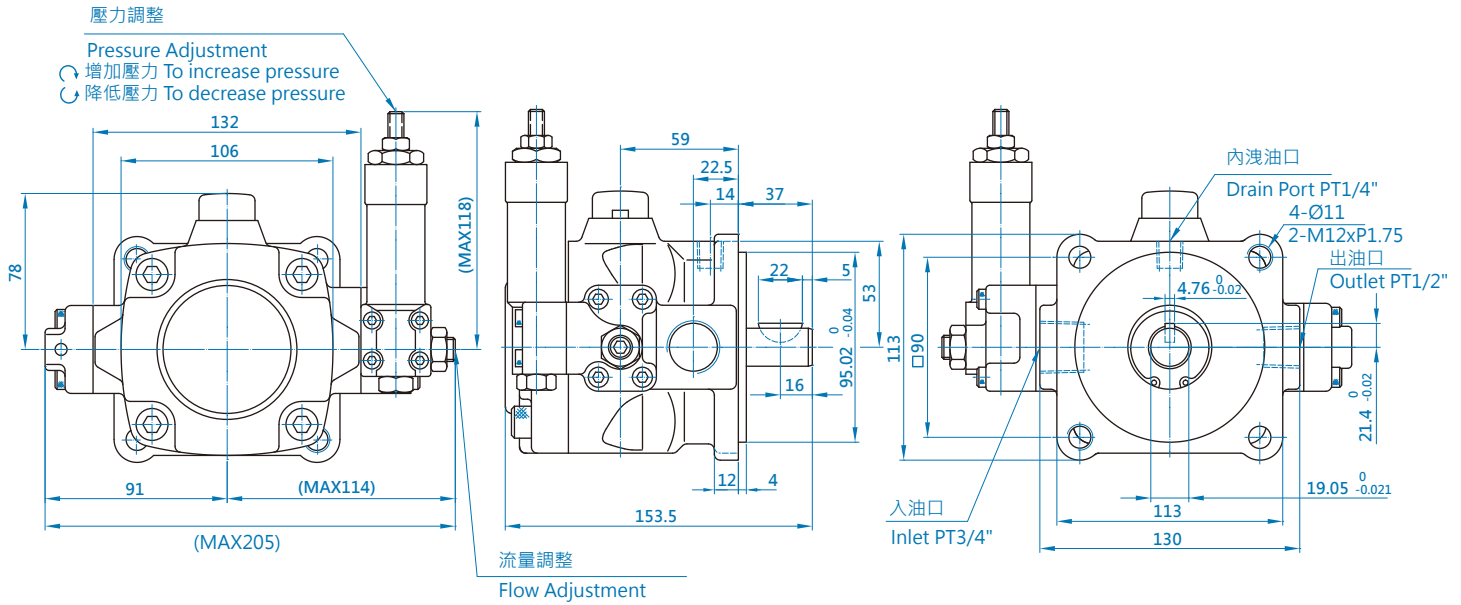


VCM-SF- $\frac{30}{40}$ -*-20



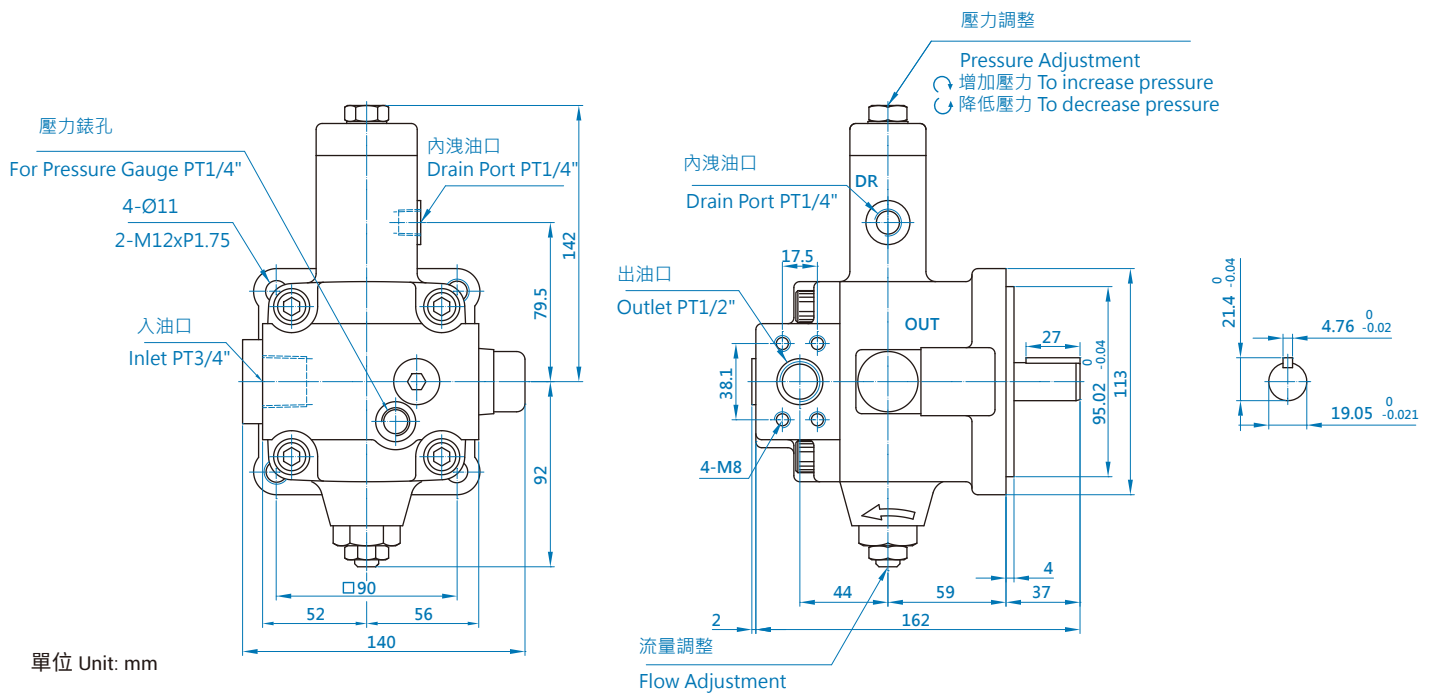
外型尺寸 MEASUREMENT

VCM-SM- 30 - 20
40



單位 Unit: mm

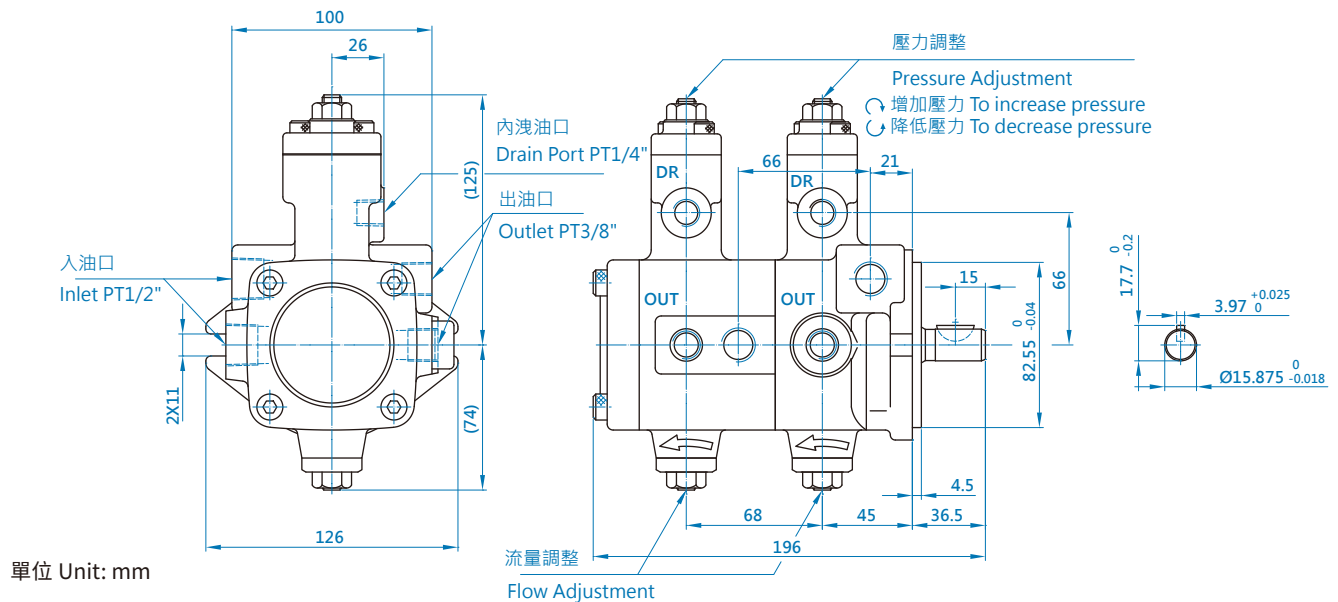
VCM-SFC- 30 - * -10
40



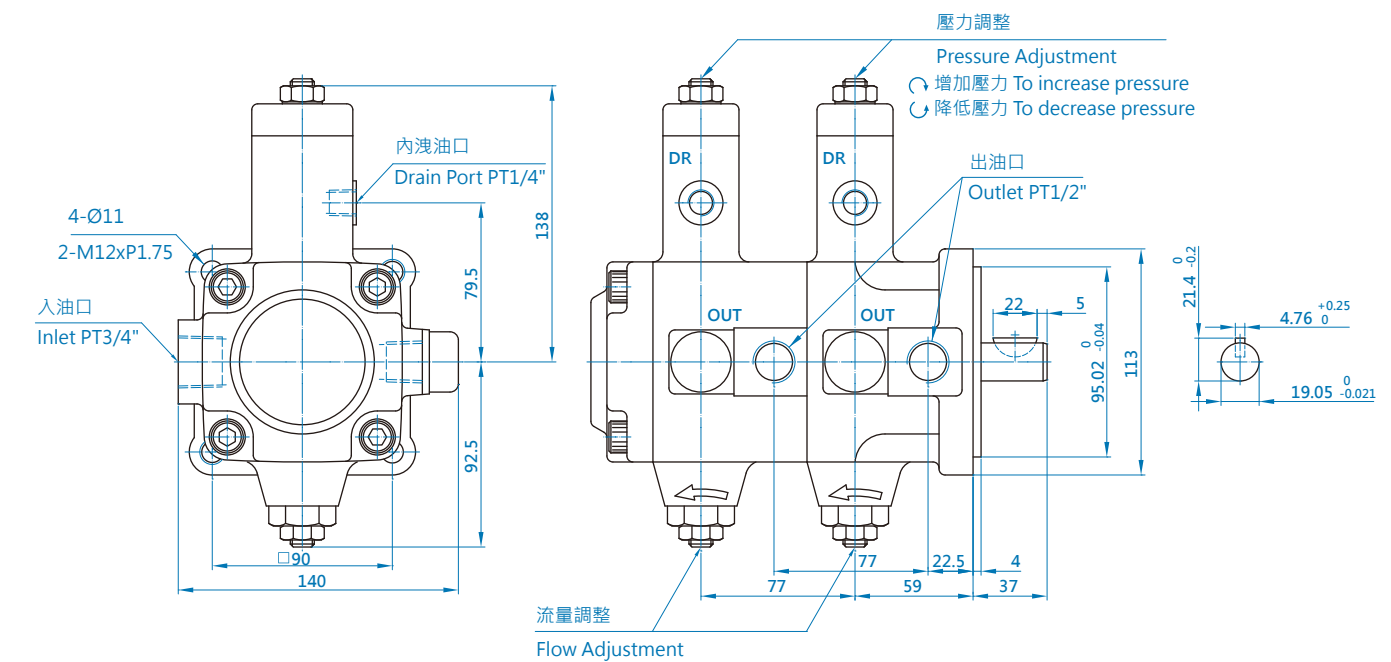
單位 Unit: mm

外型尺寸 MEASUREMENT

VCM-DF- $\frac{12}{20}$ - * - $\frac{12}{20}$ - *-10

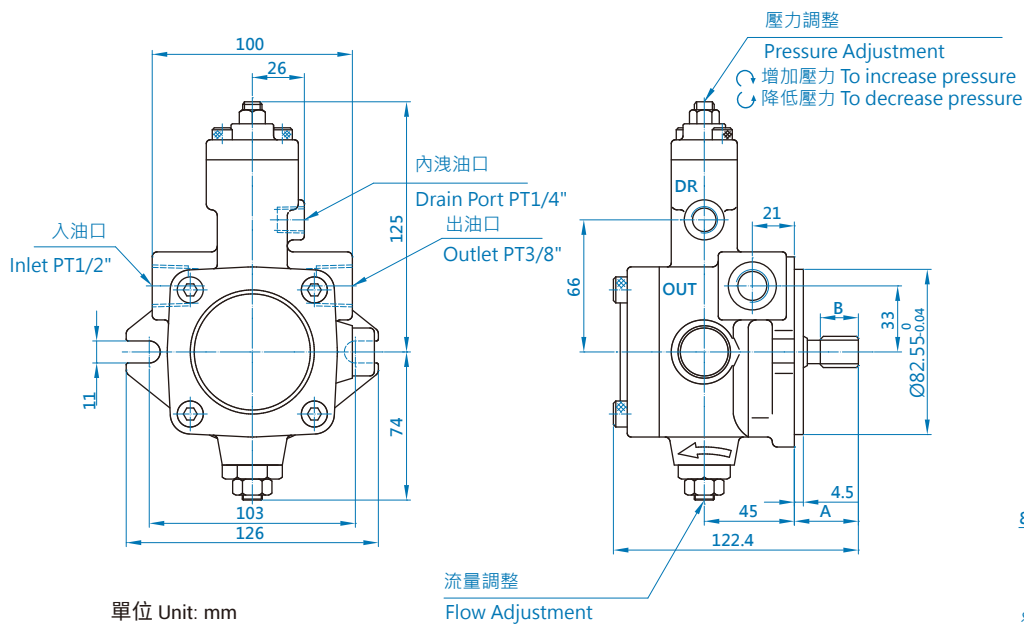


VCM-DF- $\frac{30}{40}$ - * - $\frac{30}{40}$ - *-10



外型尺寸 MEASUREMENT

VCM-SF- $\frac{12}{20}$ - *-10 $\frac{A}{B}$ (7T/9T 外花鍵Splined Shaft)



備註：此產品僅有7齒型的軸心附聯軸器，9齒沒有附。

Remark: only 7 teeth shaft will supply coupling

依美國 ANSI B92.1規範 精度等級:5級

According to the US ANIS B92.1 specifications

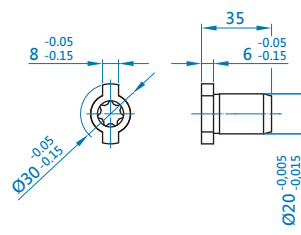
Class of accuracy:Class 5

模數	Module	D.P16/32	D.P16/32
壓力角	Pressure Angle	30°	30°
尺數	Number of Teeth	7	9
節圓直徑	Pitch Diameter	Ø11.113	Ø14.2875
最大直徑	Maximum Diameter	Ø12.7 ⁰ _{-0.05}	Ø15.875 ⁰ _{-0.05}
最小直徑	Minimum Diameter	Ø3.636 (MAX)	Ø11.811 (MAX)

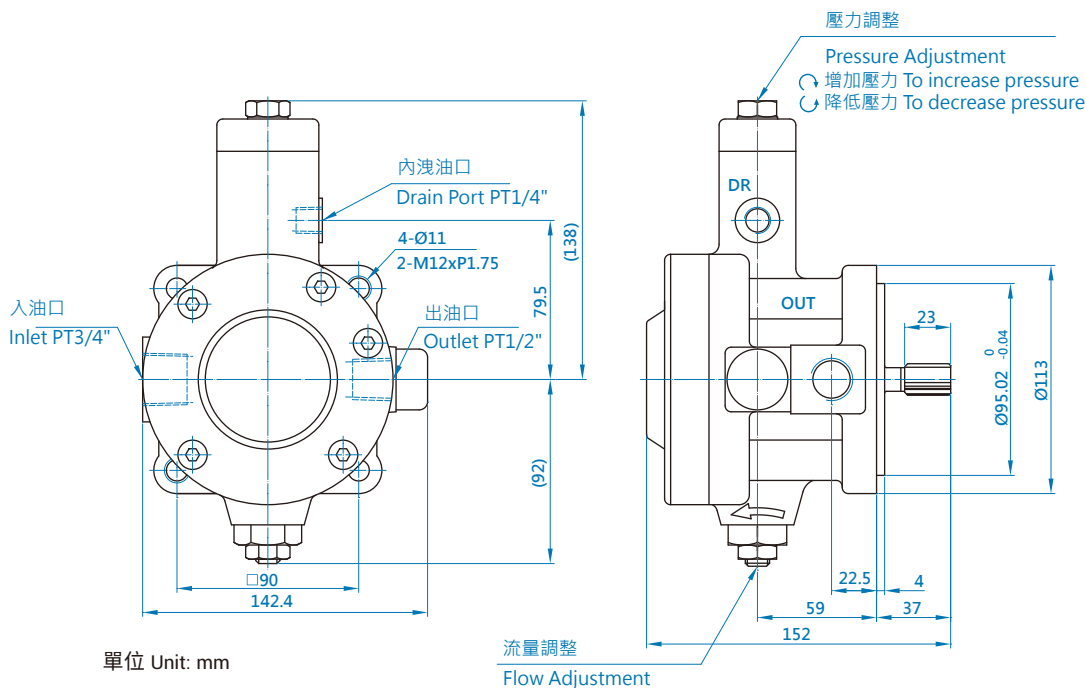


	7T	9T
A	37.1	32.1
B	26.5	19

7T聯軸器Coupling



VCM-SF- $\frac{30}{40}$ - *-20 B (9T 外花鍵Splined Shaft)



依美國 ANSI B92.1規範 精度等級:5級

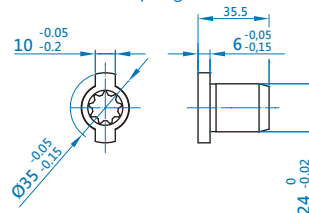
According to the US ANIS B92.1 specifications

Class of accuracy:Class 5

模數	Module	D.P16/32
壓力角	Pressure Angle	30°
尺數	Number of Teeth	9
節圓直徑	Pitch Diameter	Ø14.2875
最大直徑	Maximum Diameter	Ø15.875 ⁰ _{-0.05}
最小直徑	Minimum Diameter	Ø11.811 (MAX)



9T聯軸器Coupling



注意事項

Notice

一、轉動方向

- 標準油泵的回轉方向乃以從軸心方向時正視為順時針方向。

二、液壓油

- 黏度建議使用 ISO VG 32 或 ISO VG 46。

三、洩油管

- 洩油管請務必連接到油箱液面下，背壓請保持在 0.3 bar 以下。回油管請插入油箱液面下，並盡量遠離吸油口管，或以隔板隔離。

四、工作油溫

- 連續運轉溫度約為 15-60°C。

五、軸心配差

- 油泵與馬達軸心偏心誤差須在 0.05 mm 以下，角度誤差 1°，在泵軸上不能有徑向力。當軸心不一致時，會產生異音、震動、溫升，造成油泵故障原因。

六、濾油器

- 液壓油的汙染及濾油器的堵塞，是油泵故障以及壽命降低的原因，請充分注意液壓油的汙染，控制污染度在 NAS9 級以內。(註：建議吸油濾油器的過濾精度在150目。)

七、初次使用

- 請在無負載狀況下先行反覆啟動馬達，以排除管路及油泵中的空氣，為確保油泵系統當中所含空氣已排除，請讓油泵在無負載狀況下運轉 10 分鐘。

1. Direction of rotation

- The rotation of VCM-SF pump is clockwise when viewed from the shaft end .

2. Hydraulic oil

- Suggested viscosity of oil is ISO VG 32 or ISO VG 46.

3. Drain piping

- The drain pipe is directly connected to the oil tank and the position must be below the oil level. Let the oil return pipe set under the oil level of the tank , keep it away from suction pipe or isolate them with a bulkhead .

4. Working oil temperature

- Continuous operating temperature is about 15-60 °C.

5. Alignment and insolation of pumps

- For proper alignment of pump and electric motor shaft , the eccentricity between them must be kept within 0.05 mm and the eccentric angle difference between them must be kept within 1° .
If centering between the driving shaft and pump shaft is incorrect , the bearing and oil seal may be doomed and noise and vibration may occur , which cause problems to the pump .

6. Filter

- When first time operation , the pump should be at no-load state on delivery side. Repeated inching the electric motor a number of times to make sure the air have been bled out of the system.
Cleaning level of NAS 9 and filtering of 150 mesh is recommended.

7. Cautions for starting

- Do not operate the pump with full speed right away , Instead , inch the motor on & off several times so as to bleed the air out of the pipes , then operate it continuously , It is suggested to run the pump without load for 10 minutes before normal pressure output .

Passion Drives

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