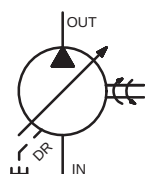


PV Axial Piston Pump

PV 系列可變量軸向柱塞泵



nominal pressure
常壓：350 bar
max. pressure
瞬間：420 bar

1. 新式斜盤轉軸結構、大型補償活塞，使震動噪音、流量震動大幅改善。
2. 鋼性的結構和高轉速低摩擦的構造，使油泵的壽命、效率更佳理想化。
3. 使用模組化設計，使控制機構更加多元化，設計者容易自行變化控制功能。
4. 強力的通軸設計，可雙聯、多聯或與其他油泵連接。
5. 經由省能源泵控制系統的應用，可大幅改善電力消耗、油溫的上升、系統精度與壽命。
6. 廣泛應用於車輛工業、船舶、鍛壓、輪胎機、注塑機、機床、專用機。

1. New type of swash plate and large servo piston with strong bias spring achieves fast response, reduce the noise due to active decompression of system at down stroke.
2. Nine pistons and new precompression technology (precompression filter volume) result in unbeaten low outlet flow pulsation.
3. Complete compensator program offers multiple controls.
4. Rigid and FEM-optimized body design for lowest noise level.
5. Thru drive for 100% nominal torque.
6. Pump combinations (multiple pumps) of same size and model and mounting interface for basically all metric or SAE mounting interfaces.
7. Wide application in automobile industrial, ships, forging machines, tire machines, injection molding machines, machine tools, special-purpose machine.

特性規格表 Quick Reference Data Chart

尺寸 Size	型式 Model	壓 力 Pressure		吐出量 Displacement		Pump Delivery (7 bar) 100 PSI				噪音等級 APPROX. Noise Levels			轉速 Speed		重量 Weight
		常 壓 nominal pressure	瞬間 壓 max. pressure	cm³/rev	In³/rev	1500 RPM		1800 RPM		Db(A) Full Flow and 1500 RPM			Max. RPM	Min. RPM	KG (LB)
						LPM	U.S. GPM	LPM	U.S. GPM	70 bar (1 KSI)	207 bar (3 KSI)	343 bar (5 KSI)			
1	PV016			16	0.98	24	6.3	28.8	7.6	56	60	68	2750		19 (42)
	PV020			20	1.2	30	7.9	36	9.5						
	PV023			23	1.4	34.5	9.1	41.4	10.9						
2	PV032	350	420	32	1.9	48	12.7	57.6	15.2	59	62	69	2400		30 (66)
	PV040			40	2.4	60	15.9	72	19						
	PV046			46	2.8	69	18.2	82.2	21.9						
	PV056	280	350	56	3.41	84	22.1	100.8	26.6						
	PV065	250	315	65	3.96	97.5	25.7	117	30.9						
3	PV063	350	420	63	3.8	94.5	25	113.4	30	66	70	74	2100	300	60 (132)
	PV071			71	4.3	107	28.3	128.7	34				2100		
	PV080			80	4.8	120	31.7	144	38				2000		
	PV092			92	5.6	138	36.5	165.6	43.8				1900		
	PV110	250	280	110	6.7	165	43.6	198	52.3				1900		
	PV125	250	280	125	7.6	187.5	49.5	225	59.4				1900		
4	PV140	350	420	140	8.5	210	55.5	252.1	66.6	70	74	76	2200		90 (198)
	PV180			180	11	270	71.3	324	85.6	71	75	77			
	PV210	300	350	210	12.8	315	83.1	378	99.8	73	77	79	2100		
5	PV270	350	420	270	16.5	405	107	486	128.4	77	79	89	1800		172 (379)

1. 油泵使用安裝位置，洩油口朝上，管路背壓低於2bar單獨回油箱。
2. 最高壓力使用，每一循環時間不超過6秒，液壓油清潔規範，請參見使用說明書。
3. 油昇提供多聯油泵，亦可與其他型式油泵聯結，聯結方式採用標準的公制連接尺寸和SAE尺寸。

1. Outlet port is on the top, the pipe pressure should be less than 2 bar.
2. The usage of max. Pressure for each circle never exceed 6 seconds. Please see the General Installation Information for hydraulic oil cleanliness manual.
3. YEOSHE offers tandem pump or other types of pump connection. The mounting has Metric and SAE dimensions.

PV Axial Piston Pump

PV 系列可變量軸向柱塞泵



型號說明 Order No.

PV	063	GA	3	R	M	1	A	0	N	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
系列 Series	規格排量 Size and Displacement	調節器 Compensator	壓力範圍 Pressure adjusting	旋轉方向 Rotation	連接型式 Mounting	螺紋 Threads	通軸裝配 Thru drive & 2nd pump	電壓 Voltage	油封 Seals	設計番號 Design No.

E	功率 Horse power 定馬力調節器 (P開頭) 使用
④	

系列 Series

①	PV	高壓結構型可變排量軸向柱塞泵 Axial piston pump variable displacement high pressure version	nominal pressure 常壓：350 bar	max. pressure 瞬間：420 bar
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規格排量 Size and Displacement

代號 Code	016	020	023	032	040	046	056	065	063	071	080	092	110	125	140	180	210	270
② 尺寸 Size	1			2					3					4			5	
排量 cm ³ /rev	16	20	23	32	40	46	56	65	63	71	80	92	110	125	140	180	210	270
Displacement in ³ /rev	0.98	1.2	1.4	1.9	2.4	2.8	3.41	3.96	3.8	7.3	4.8	5.6	6.6	7.6	8.5	11	12.6	16.5

調節器 Compensator

③	A0	標準型壓力調節器 Standard Pressure compensator
	LN	無調節器 (定量泵) (系統需另加總壓保護) None Pressure Compensator (fixed displacement) (pressure protection required)
	LS	電控兩段流量控制 (系統需另加總壓保護) Electrical 2-stages Pressure control (pressure protection required)
	LC	定量自壓兩段流量調節器 (系統需另加總壓保護) Fixed Displacement 2 stages Flow compensator (pressure protection required)
	遙控型 Remote Type	
	GM	遙控型調節器 (含NG6介面) Remote Pressure compensator with NG6 interface
	GA	遙控型調節器+溢流閥 Remote Pressure compensator +Relief valve
	GJ	遙控型調節器+比例壓力 Remote Pressure compensator + Proportional Pressure valve
	電控卸載型 Electrical unloading Type	
	GR	遙控型調節器+電控洩載 Remote Pressure compensator + Electrical unloading
	GB	遙控型調節器+電控兩段壓力 Remote Pressure compensator + 2-stages pressure control
	GC	遙控型調節器+電控洩載+兩段壓力 Remote Pressure compensator + electrical unloading + 2-stages Pressure control
	負載感應型 Load-sensing Type	
	HM	負載感應型調節器 (含NG6介面) Load-sensing compensator with NG6 interface
	HA	負載感應型調節器+溢流閥 Load-sensing compensator + Relief valve
	HJ	負載感應型調節器+比例壓力 Load-sensing compensator + Proportional Pressure valve
	負載感應+電控卸載型 Load-sensing + Electrical unloading Type	
	HR	負載感應型調節器+電控洩載 Load-sensing compensator + Electrical unloading
	HB	負載感應型調節器+電控兩段壓力 Load-sensing compensator + 2-stages Pressure control
	HC	負載感應型調節器+電控洩載+兩段壓力 Load-sensing compensator + Electrical unloading+ 2-stages Pressure control
	比例壓力、流量型 Proportional Pressure, flow Type	
	HQ	負載感應型調節器+比例流量+溢流閥 Load-sensing compensator + Proportional Flow valve+ Relief valve
	HK	負載感應型調節器+比例壓力+比例流量 Load-sensing compensator + Proportional Pressure valve+ Proportional Flow valve
	BQ	無段流量變速控制 (油壓缸型) None-stage Flow compensator (Cylinder)
	疊式雙閥負載感應型 2-Valve Load-sensing Type	
	VM	雙閥負載感應型調節器 (含NG6介面) 2-Valve load-sensing compensator with NG6 interface
	VA	雙閥負載感應型調節器+溢流閥 2-Valve load-sensing compensator + Relief Valve
	VJ	雙閥負載感應型調節器+比例壓力 2-Valve load-sensing compensator + Proportional Pressure valve
	雙閥比例壓力、流量型 2-Valve Proportional Pressure, flow Type	
	VQ	雙閥負載感應型調節器+比例流量+溢流閥 2-Valve load-sensing compensator + Proportional Flow valve+ Relief Valve
	VK	雙閥負載感應型調節器+比例壓力+比例流量 2-Valve load-sensing compensator + Proportional Pressure valve+ Proportional Flow valve
	高速比例壓力、流量回饋型 Proportional compensation Type	
	FV	雙閥負載感應型調節器+高響應比例流量+流量回饋+溢流閥 2-Valve load-sensing compensator + High Reacted Proportional Flow Valve+ Flow Feed Back+ Relief Valve
	FG	雙閥負載感應型調節器+高響應比例流量+比例壓力+壓力流量回饋 2-Valve load-sensing compensator + High Reacted Proportional Flow Valve+ Proportional Pressure+ Flow& Pressure Feed Back

PV Axial Piston Pump

PV 系列可變量軸向柱塞泵



型號說明 Order No.

PV	063	GA	3	R	M	1	A	0	N	
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
系列 Series	規格排量 Size and Displacement	調節器 Compensator	壓力範圍 Pressure adjusting	旋轉方向 Rotation	連接型式 Mounting	螺紋 Threads	通軸裝配 Thru drive & 2nd pump	電壓 Voltage	油封 Seals	設計番號 Design No.

E	功率 Horse power 定馬力調節器 (P開頭) 使用
④	

調節器 Compensator

恆功率、定馬力型 Horse power Type

PM	定馬力型調節器 (含NG6介面) Horse Power Compensator with NG6 interface
PA	定馬力型調節器+溢流閥 Horse Power Compensator + Relief Valve
PH	定馬力負載感應型調節器+溢流閥 Horse Power Load-sensing Compensator + Relief valve
PQ	定馬力負載感應型調節器+比例流量+溢流閥 Horse Power Load-sensing Compensator + Proportional Flow valve+ Relief valve
PJ	疊式定馬力+比例壓力應調節器Horse power compensator + proportional pressure control
PR	疊式定馬力+溢流閥+電控卸載調節器Horse power compensator + relief valve + electrical unloading
PS	疊式定馬力+比例壓力+負載感應調節器Horse power compensator + proportional pressure valve + load-sensing compensator

壓力調整範圍 Pressure adjustment

2	10~140 bar (145~2030 PSI)	3	40~210 bar (580~3045 PSI)	4	50~350 bar (1015~5075 PSI)
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功率Horse power 定馬力調節器 (調節器P開頭) 使用 Horse Power compensator : Start with P control

排量 Displacement 馬力Horse power (詳細請參閱定馬力功率曲線圖 P.3-34)

排量 Displacement	馬力Horse power (詳細請參閱定馬力功率曲線圖 P.3-34)															
PV016~PV023	A 3 KW	B 4 KW	C 5.5 KW	D 7.5 KW	E 11 KW											
PV032~PV046,56,65			C 5.5 KW	D 7.5 KW	E 11 KW	F 15 KW	G 18.5 KW	H 22 KW								
PV063~PV092,110,125	E 11 KW	F 15 KW	G 18.5 KW	H 22 KW	I 30 KW	J 45 KW	K 45 KW									
PV140			G 18.5 KW	H 22 KW	I 30 KW	J 45 KW	K 45 KW	L 55 KW								
PV180,210	H 22 KW	I 30 KW	J 37 KW	K 45 KW	L 55 KW	M 75 KW	N 90 KW									
PV270			J 37 KW	K 45 KW	L 55 KW	M 75 KW	N 90 KW	O 110 KW	P 132 KW							

旋轉方向 Rotation (※從軸端看) (※From the shaft-side view)

R	順時針方向 clockwise	L	逆時針方向 counter clockwise
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連接方式 Mounting

	M	公制規格 鍵型軸心 Metric ISO 3019/2 cylind, key		K	公制規格 花齒型軸心 Metric ISO 3019/2 splined, DIN 5480
	N F	英制規格 鍵型軸心 Inch ISO 3019/2 cylind, key		D G	英制規格 花齒型軸心 Inch ISO 3019/2 splined, SAE

(詳細尺寸請參閱外觀尺寸圖)

螺紋 Threads

1	BSPP (G)	2	PT (RC)	3	UNF (SAE)	7	ISO 6149 (M)
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通軸裝配 Thru drive & 2nd pump

排量 Displacement	代碼 code															
PV016~PV270	A 單泵 Single pump															
	B 通軸為雙連準備 Prepared for thru drive															
PV016~PV023	C	D	E					I	J	K						
PV032~PV046,56,65		D	E	F				I	J	K	L					
PV063~PV092,110,125		D	E	F	G			I	J	K	L	M				
PV140~PV180,210		D	E	F	G				J	K	L	M				
PV270		D	E	F	G	H			J	K	L	M	N			

尺寸 Dimensions			
C	SAE AA, Ø50.8 mm	I	Metric, Ø63 mm
D	SAE A, Ø82.55 mm	J	Metric, Ø80 mm
E	SAE B, Ø101.6 mm	K	Metric, Ø100 mm
F	SAE C, Ø127 mm	L	Metric, Ø125 mm
G	SAE D, Ø152.4 mm	M	Metric, Ø160 mm
H	SAE E, Ø165.1 mm	N	Metric, Ø200 mm

(接受其他尺寸訂購) Other pumps are acceptable to order

電壓 Voltage

0	無電壓 None	A	AC100V (50/60HZ)	B	AC110V (60HZ)	C	AC200V (50/60HZ)
D	AC220V (60HZ)	E	DC 12V	F	DC 24V		

油封 Seals

N	NBR 丁腈橡膠	V	VITON, FPM 氟橡膠	E	Ethylen-propylene 乙烯-丙烯
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PV Axial Piston Pump

調節器 Compensator

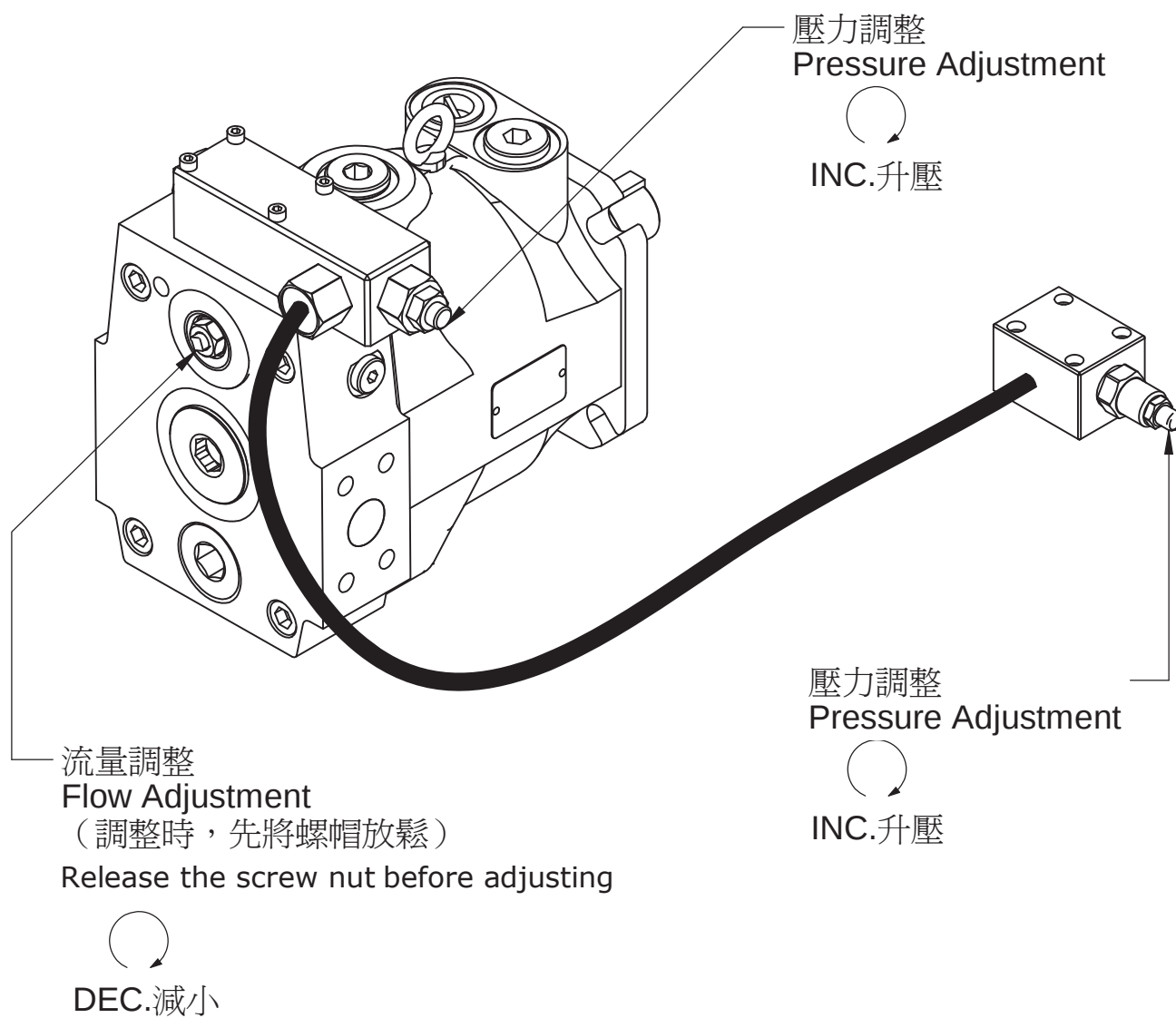
調節器 Compensator

A0	標準型壓力調節器 Standard Pressure compensator	Page 3-01
LN	無調節器 (定量泵) (系統需另加總壓保護) None Pressure Compensator (fixed displacement) (pressure protection required)	Page 3-02
LS	電控兩段流量控制 (系統需另加總壓保護) Electrical 2-stages Pressure control (pressure protection required)	Page 3-03
LC	定量自壓兩段流量調節器 (系統需另加總壓保護) Fixed Displacement 2 stages Flow compensator (pressure protection required)	Page 3-04
	遙控型 Remote Type	
GM	遙控型調節器 (含NG6介面) Remote Pressure compensator with NG6 interface	Page 3-05
GA	遙控型調節器+溢流閥 Remote Pressure compensator +Relief valve	Page 3-06
GJ	遙控型調節器+比例壓力 Remote Pressure compensator + Proportional Pressure valve	Page 3-07
	電控卸載型 Electrical unloading Type	
GR	遙控型調節器+電控洩載 Remote Pressure compensator + Electrical unloading	Page 3-08
GB	遙控型調節器+電控兩段壓力 Remote Pressure compensator + 2-stages pressure control	Page 3-09
GC	遙控型調節器+電控洩載+兩段壓力 Remote Pressure compensator + electrical unloading + 2-stages Pressure control	Page 3-10
	負載感應型 Load-sensing Type	
HM	負載感應型調節器 (含NG6介面) Load-sensing compensator with NG6 interface	Page 3-11
HA	負載感應型調節器+溢流閥 Load-sensing compensator + Relief valve	Page 3-12
HJ	負載感應型調節器+比例壓力 Load-sensing compensator + Proportional Pressure valve	Page 3-13
	負載感應+電控卸載型 Load-sensing + Electrical unloading Type	
HR	負載感應型調節器+電控洩載 Load-sensing compensator + Electrical unloading	Page 3-14
HB	負載感應型調節器+電控兩段壓力 Load-sensing compensator + 2-stages Pressure control	Page 3-15
HC	負載感應型調節器+電控洩載+兩段壓力 Load-sensing compensator + Electrical unloading+ 2-stages Pressure control	Page 3-16
	比例壓力、流量型 Proportional Pressure, Flow Type	
HQ	負載感應型調節器+比例流量+溢流閥 Load-sensing compensator + Proportional Flow valve+ Relief valve	Page 3-17
HK	負載感應型調節器+比例壓力+比例流量 Load-sensing compensator + Proportional Pressure valve+ Proportional Flow valve	Page 3-18
BQ	無段流量變速控制 (油壓缸型) None-stage Flow compensator (Cylinder)	Page 3-19
	疊式雙閥負載感應型 2-Valve Load-sensing Type	
VM	雙閥負載感應型調節器 (含NG6介面) 2-Valve load-sensing compensator with NG6 interface	Page 3-20
VA	雙閥負載感應型調節器+溢流閥 2-Valve load-sensing compensator + Relief Valve	Page 3-21
VJ	雙閥負載感應型調節器+比例壓力 2-Valve load-sensing compensator + Proportional Pressure valve	Page 3-22
	雙閥比例壓力、流量型 2-Valve Proportional Pressure, Flow Type	
VQ	雙閥負載感應型調節器+比例流量+溢流閥 2-Valve load-sensing compensator + Proportional Flow valve+ Relief Valve	Page 3-23
VK	雙閥負載感應型調節器+比例壓力+比例流量 2-Valve load-sensing compensator + Proportional Pressure valve+ Proportional Flow valve	Page 3-24
	高速比例壓力、流量回饋型 Proportional Compensator Type	
FV	雙閥負載感應型調節器+高響應比例流量+流量回饋+溢流閥 2-Valve load-sensing compensator + High Reacted Proportional Flow Valve+ Flow Feed Back+ Relief Valve	Page 3-25
FG	雙閥負載感應型調節器+高響應比例流量+比例壓力+壓力流量回饋 2-Valve load-sensing compensator + High Reacted Proportional Flow Valve+ Proportional Pressure+ Flow& Pressure Feed Back	Page 3-26
	恆功率、定馬力型 Horse power Type	
PM	定馬力型調節器 (含NG6介面) Horse Power Compensator with NG6 interface	Page 3-27
PA	定馬力型調節器+溢流閥 Horse Power Compensator + Relief Valve	Page 3-28
PH	定馬力負載感應型調節器+溢流閥 Horse Power Load-sensing Compensator + Relief valve	Page 3-29
PQ	定馬力負載感應型調節器+比例流量+溢流閥 Horse Power Load-sensing Compensator + Proportional Flow valve+ Relief valve	Page 3-30
PJ	疊式定馬力+比例壓力應調節器 Horse power compensator + proportional pressure control	Page 3-31
PR	疊式定馬力+溢流閥+電控卸載調節器 Horse power compensator + relief valve + electrical unloading	Page 3-32
PS	疊式定馬力+比例壓力+負載感應調節器 Horse power compensator + proportional pressure valve + load-sensing compensator	Page 3-33

PV Axial Piston Pump 調節器 Compensator



壓力、流量調整操作說明 Pressure & Flow Adjustment



PV Axial Piston Pump

調節器 Compensator

A0 標準型壓力調節器

Standard Pressure compensator

標準型壓力調節器 A0

滿足泵浦排量的實際消耗並使預先設定的系統壓力保持不變。

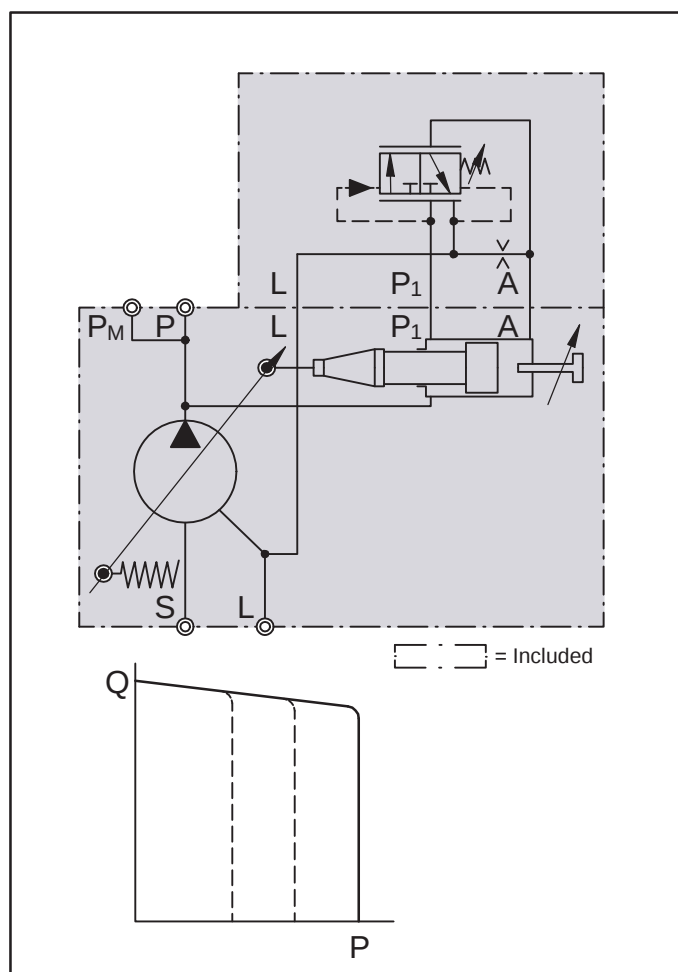
只要泵的出口壓力P低於設定壓力（調節閥的彈簧所調定的值），調節閥的工作油口A就與油箱相通並且調節活塞面積大的一端失壓。重定彈簧使泵保持在全流量狀態。

當系統壓力達到調節器的彈簧所調定的值時，調節閥的P1與A相通並在調節活塞上產生一個壓力使擺角減小，從而調節排量直接地滿足系統要求的設定壓力。

The standard pressure compensator adjusts the pump displacement according to the actual need of the system in order to keep the pressure constant.

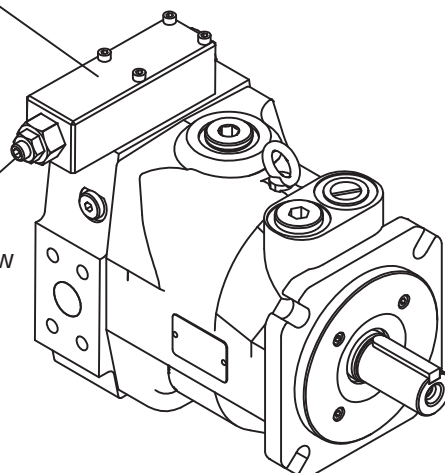
As long as the system pressure at outlet port P is lower than the set pressure (set as spring preload of the compensator spring) the working port A of the compensator valve is connected to the case drain and the piston area is unloaded. Bias spring and system pressure on the annulus area keep the pump at full displacement.

When the system pressure reaches the set pressure the compensator valve spool connects port P1 to A and builds up a pressure at the servo piston resulting in a downstroking of the pump. The displacement of the pump is controlled in order to match the flow requirement of the system.

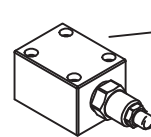
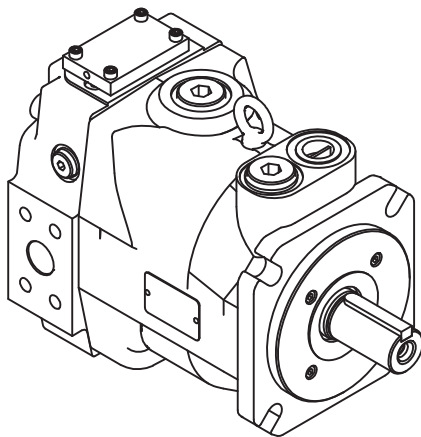
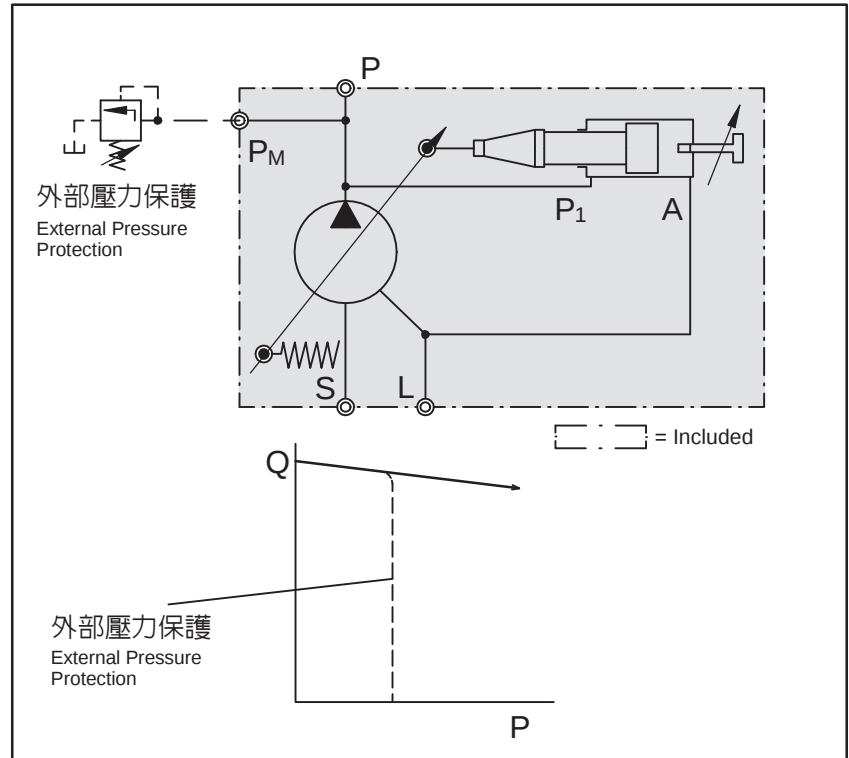


標準型壓力調整器
Standard pressure compensator

壓力調整螺絲
Pressure adjustment screw



Notice: External Pressure Protection is necessarily added at port PM to limit the pressure; otherwise the system pressure will be over high .



外部壓力保護
External Pressure
Protection
溢流閥
Relief valve
(系統另加)

PV Axial Piston Pump 調節器 Compensator

LS 電控兩段流量控制 (系統需另加總壓保護) Electrical Dual Flow compensator (Pressure protection required)

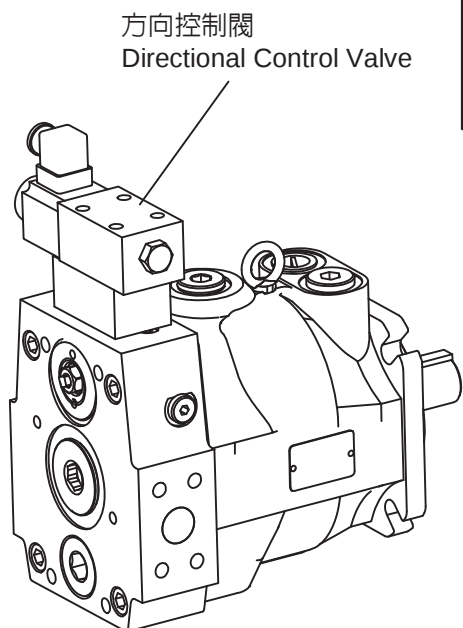
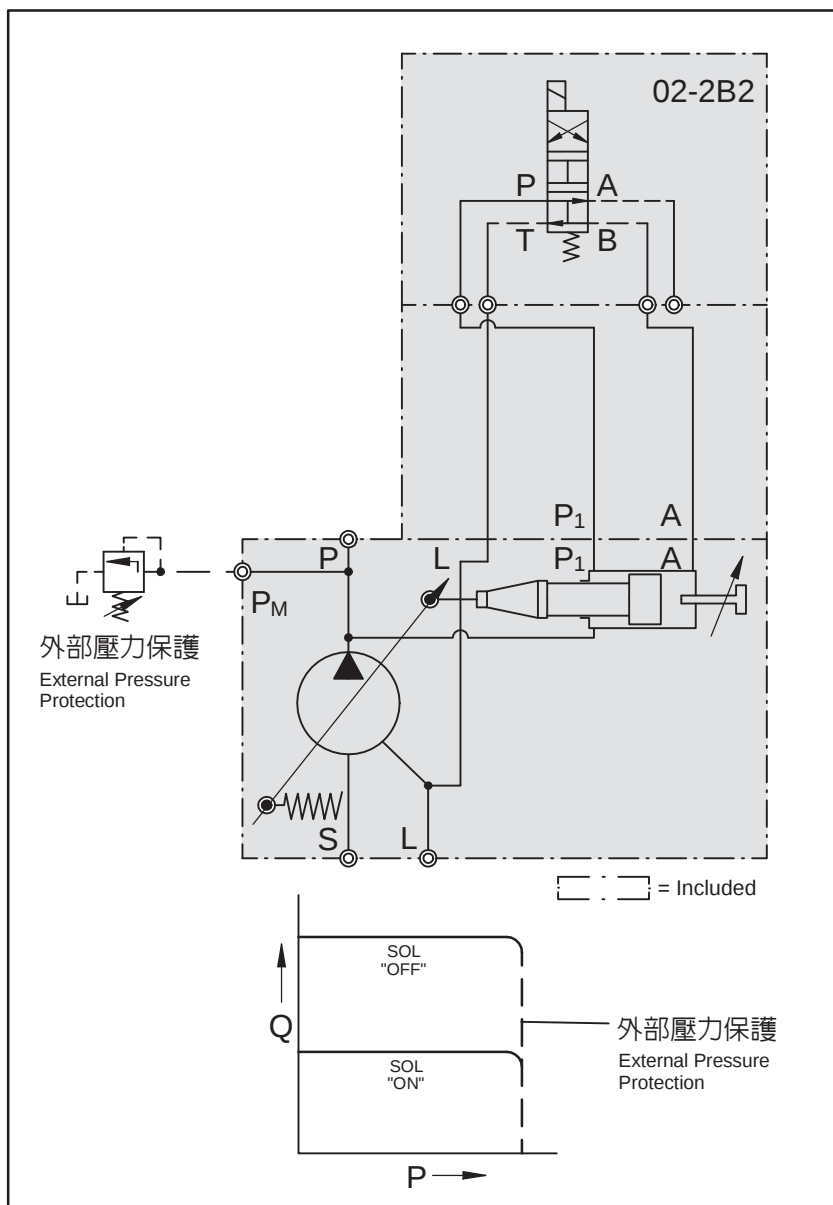
電控兩段流量控制
(系統需另加總壓保護) LS

利用方向控制閥來控制油路改變，達到大流量與小流量的切換。

適用於兩段行程，速度不同的系統使用。

必須注意的是，要在PM口加裝外部壓力保護，來限制使用壓力，若無使用壓力保護可能造成系統壓力過高。

Control the hydraulic circuit change by using Directional Control Valve. LS control is applied to two-stage stroke and different speed system. Notice: External Pressure Protection is necessarily added at port PM to limit the pressure; otherwise the system pressure will be over high.



PV Axial Piston Pump 調節器 Compensator

LC 定量自壓兩段流量調節器（系統需另加總壓保護） Fixed Displacement 2 stages Flow compensator (pressure protection required)

定量自壓兩段流量調節器
（系統需另加總壓保護） LC

利用系統壓力設定來控制油路改變，
達到大流量與小流量的切換。

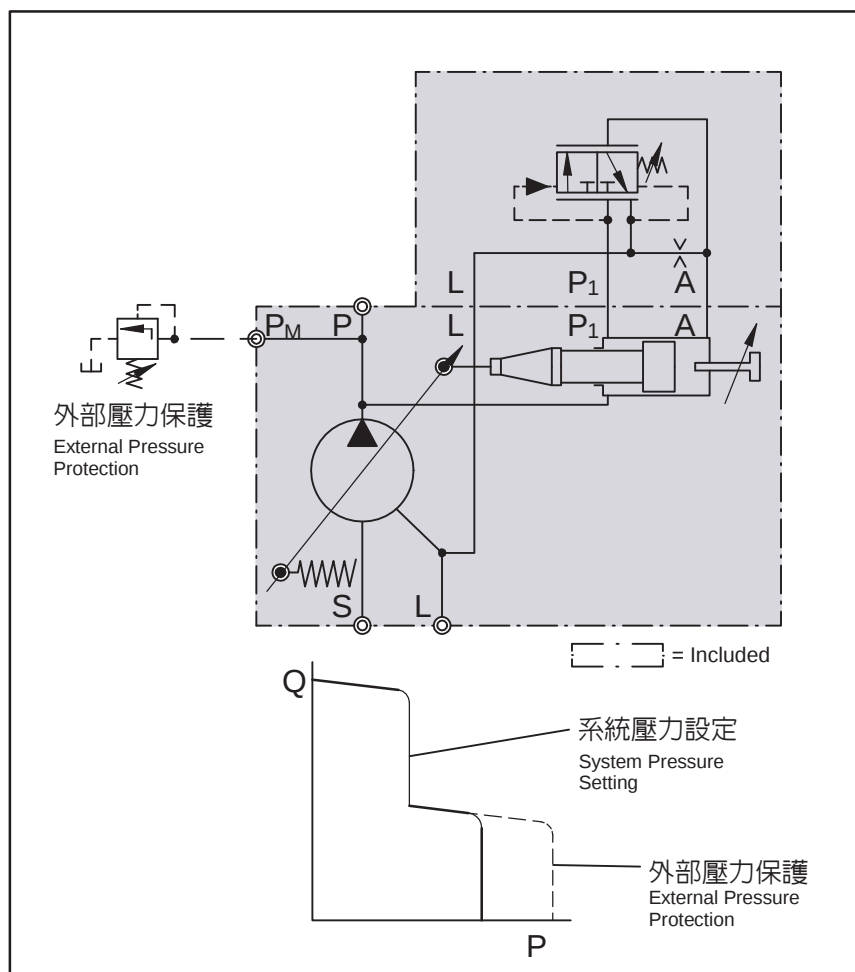
適用於兩段行程，速度不同的系統使用。

必須注意的是，要在PM口加裝外部壓力保護，來限制使用壓力，若無使用壓力保護可能造成系統壓力過高。

Control the hydraulic circuit change by using Directional Control Valve.

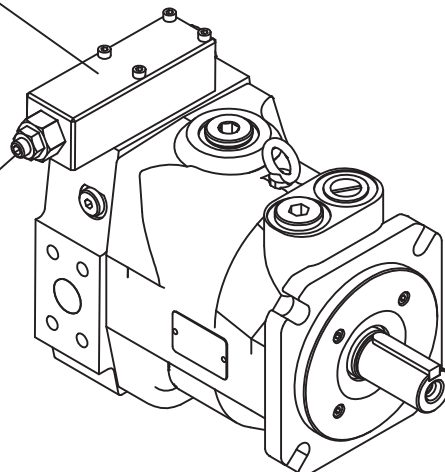
LS control is applied to two-stage stroke and different speed system.

Notice: External Pressure Protection is necessarily added at port PM to limit the pressure; otherwise the system pressure will be over high.



定量自壓兩段流量調節器
Fixed Displacement 2 stages Flow compensator
(pressure protection required)

壓力調整螺絲
Control screw



PV Axial Piston Pump 調節器 Compensator

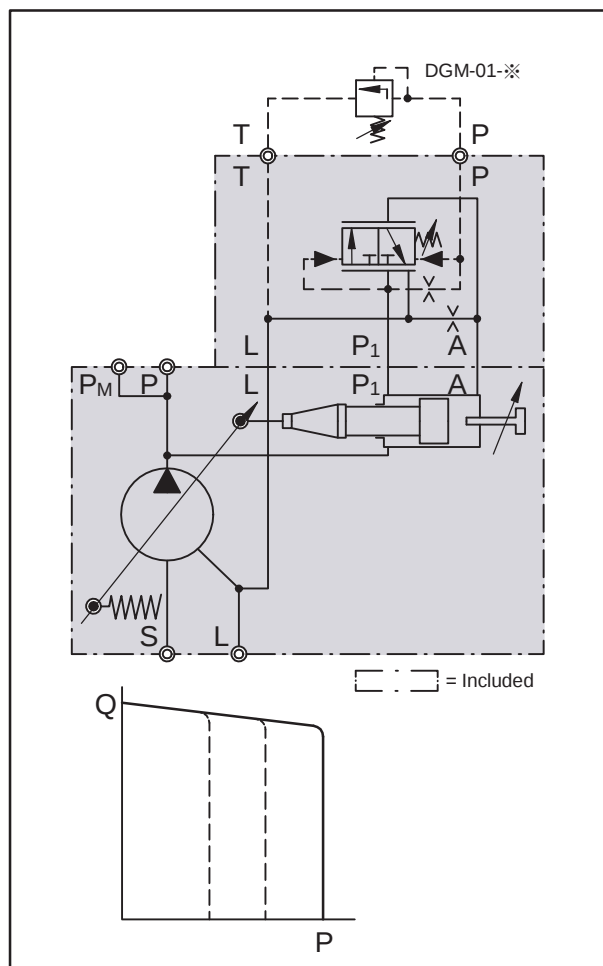
GM 遙控型調節器(含NG6介面) Remote Pressure compensator with NG6 interface

遙控型調節器(含NG6介面) GM

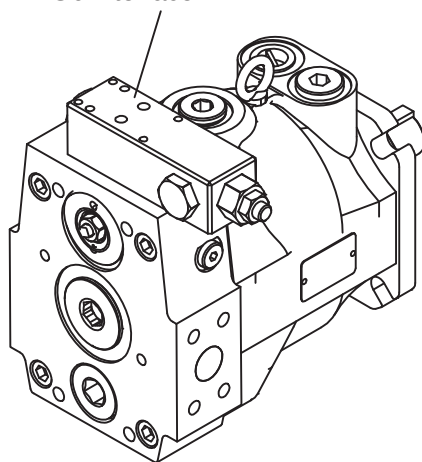
在其調節閥的上方預留一個NG6的介面。
在此介面上可以直接安裝一個先導閥。除了採用手動調節以外，電液調節也可以實現連續的壓力控制。
油昇提供多種配裝在調節器的附件。疊式遙控型調節器有約15bar的出廠設定壓力。在泵浦出油口的壓力會在先導閥的調節值之上。

若在NG6介面配裝上YEOSHE比例壓力閥，即可達成電控比例控制。

Version GM of the remote pressure compensator provides on its top side an interface NG6, DIN24340 (CETOP 03 at RP35H, NFPA D03).
This interface allows a direct mounting of a pilot valve.
Beside manual or electrohydraulic operated valves, it is also possible to mount complete multiple pressure circuits directly on the compensator body. YEOSHE offers a variety of these compensator accessories ready to install.
All remote pressure compensator have a factory setting of 15 bar differential pressure.
With this setting, the controlled pressure at the pump outlet is higher than the pressure controlled by the pilot valve.



遙控型調節器(含NG6介面)
Remote Pressure compensator with
NG6 interface



PV Axial Piston Pump 調節器 Compensator

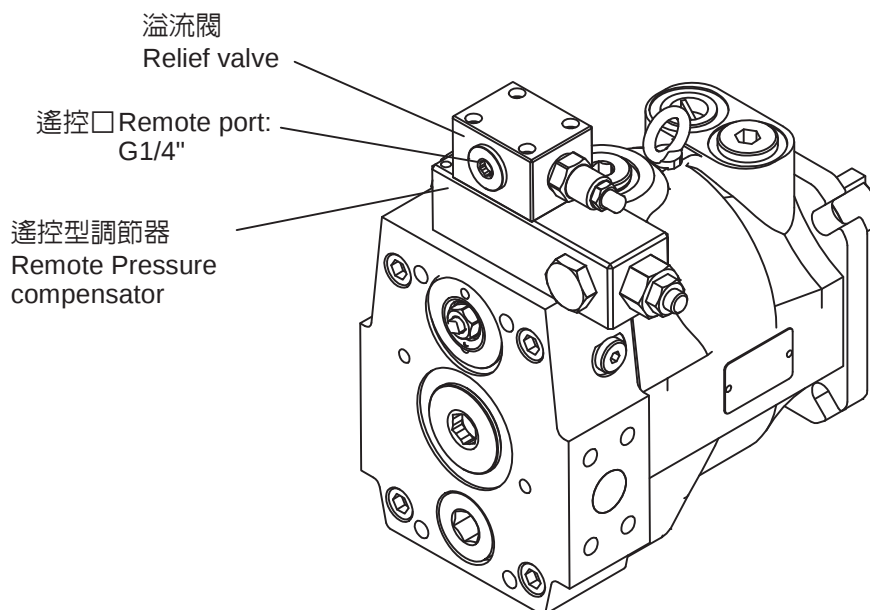
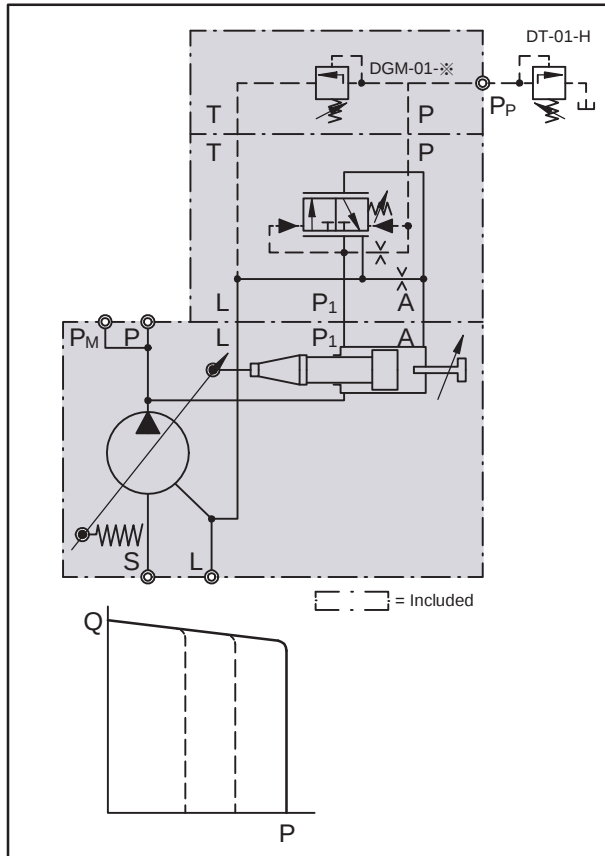
GA 遙控型調節器+溢流閥 Remote Pressure compensator +Relief valve

遙控型調節器+溢流閥 GA

滿足泵浦排量的實際消耗並使預先設定的系統壓力保持不變。並在其調節閥的上方安裝一個先導溢流閥，增加一個壓力先導調節功能。

可以加裝遙控接口PP進行遠距離的壓力調節，比如可以從系統控制台進行壓力調節。控制壓力之液壓油來自調節器的內部。控制油流約為1-1.5 l/min。

The pressure is set directly at the compensator spring, and the setting of remote pressure compensator can be achieved by any suitable pilot pressure valve connected to pilot port PP. The pilot valve can be installed remote from the pump in some distance. That allows pressure setting, e.g. from the control panel of the machine. The pilot flow supply is internal through the valve spool, and the pilot flow is 1~1.5 L/min.



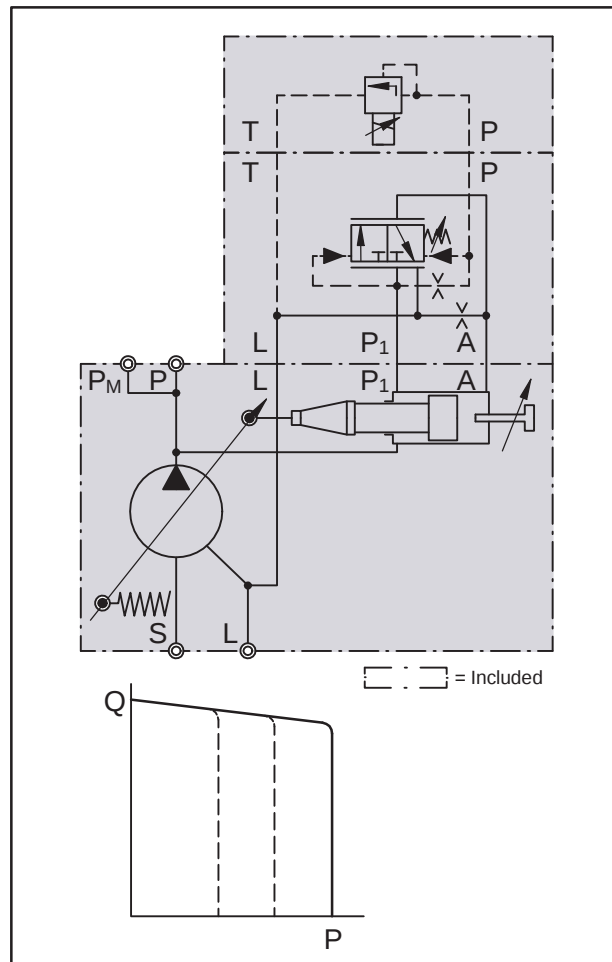
PV Axial Piston Pump 調節器 Compensator

GJ 遙控型調節器+比例壓力 Remote Pressure compensator + Proportional Pressure valve

遙控型調節器+比例壓力 GJ

滿足泵浦排量的實際消耗並使預先設定的系統壓力保持不變。並在其調節閥的上方安裝一個 YEOSHE 比例壓力閥，實現電控比例壓力控制。

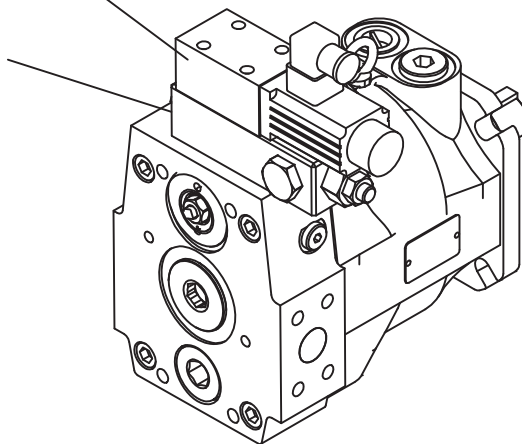
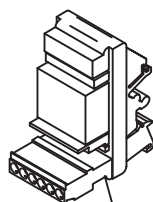
Fulfill the actual displacement and maintain the preset system pressure.
By adding YEOSHE proportional pressure valve, Electrical proportional pressure control is available.



比例閥
Proportional pressure valve

遙控型調節器
Remote Pressure compensator

電子控制電路板(放大器)
Electronic Amplifier P-C Board



PV Axial Piston Pump 調節器 Compensator

GB 遙控型調節器+電控兩段壓力 Remote Pressure compensator + 2-stages pressure control

遙控型調節器+電控兩段壓力 GB

在其調節器上方加裝一個兩段壓力溢流閥及電磁式方向控制閥，可調節高低兩個不同的限壓壓力，並且達到電控兩段壓力變換。

適用於油壓缸在恒定速度下，設定兩段工作壓力時使用。

By adding a Relief Valve and Directional Control Valve on the compensator makes it adjust two different stage limited pressure.

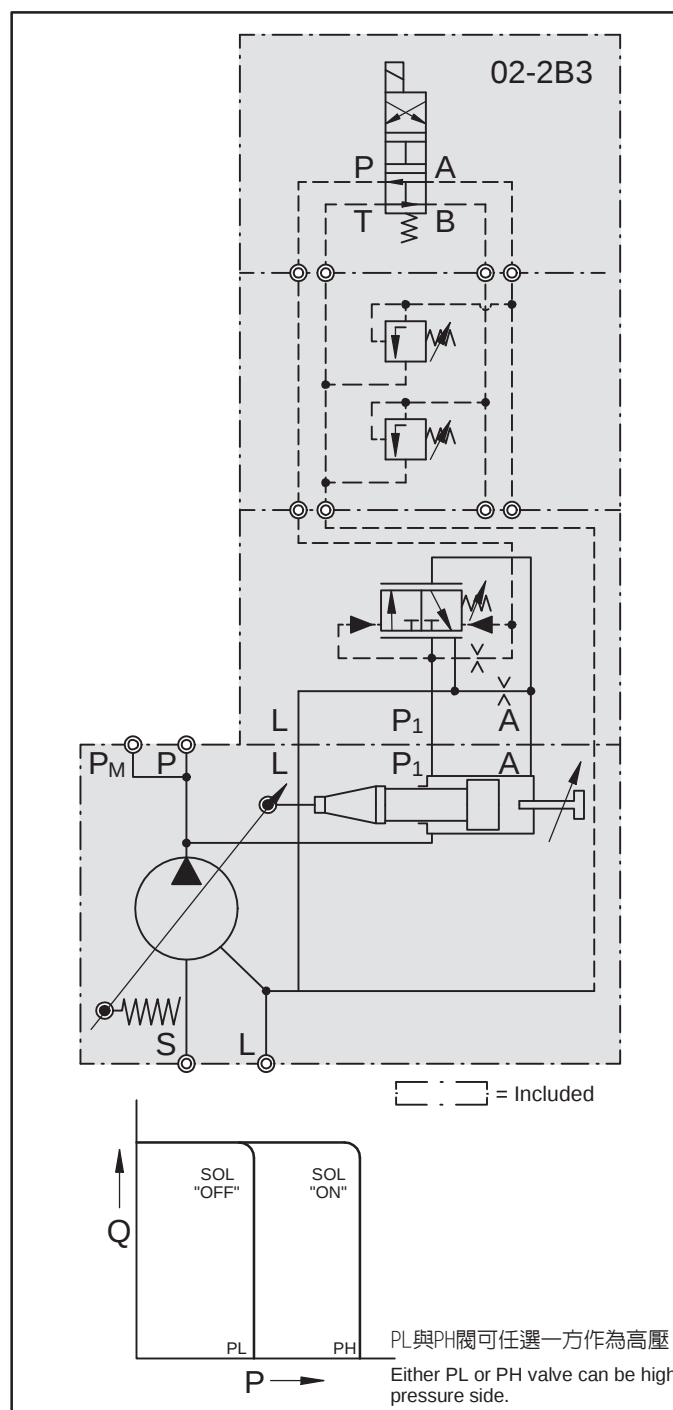
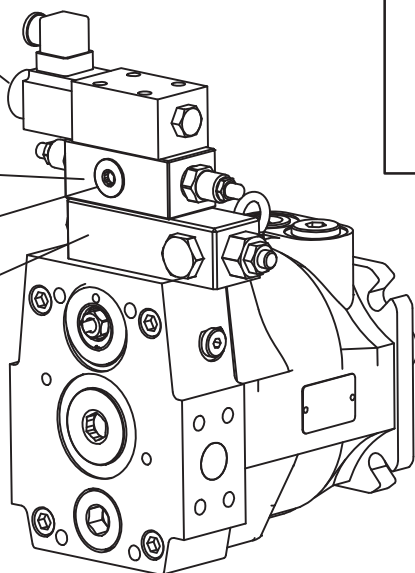
GB control is for two-stage working pressure under the constant cylinder speed.

方向控制閥
Directional Control Valve

溢流閥
Relief valve

遙控口 Remote port:
G1/8"

遙控型調節器
Remote pressure
compensator



PV Axial Piston Pump 調節器 Compensator

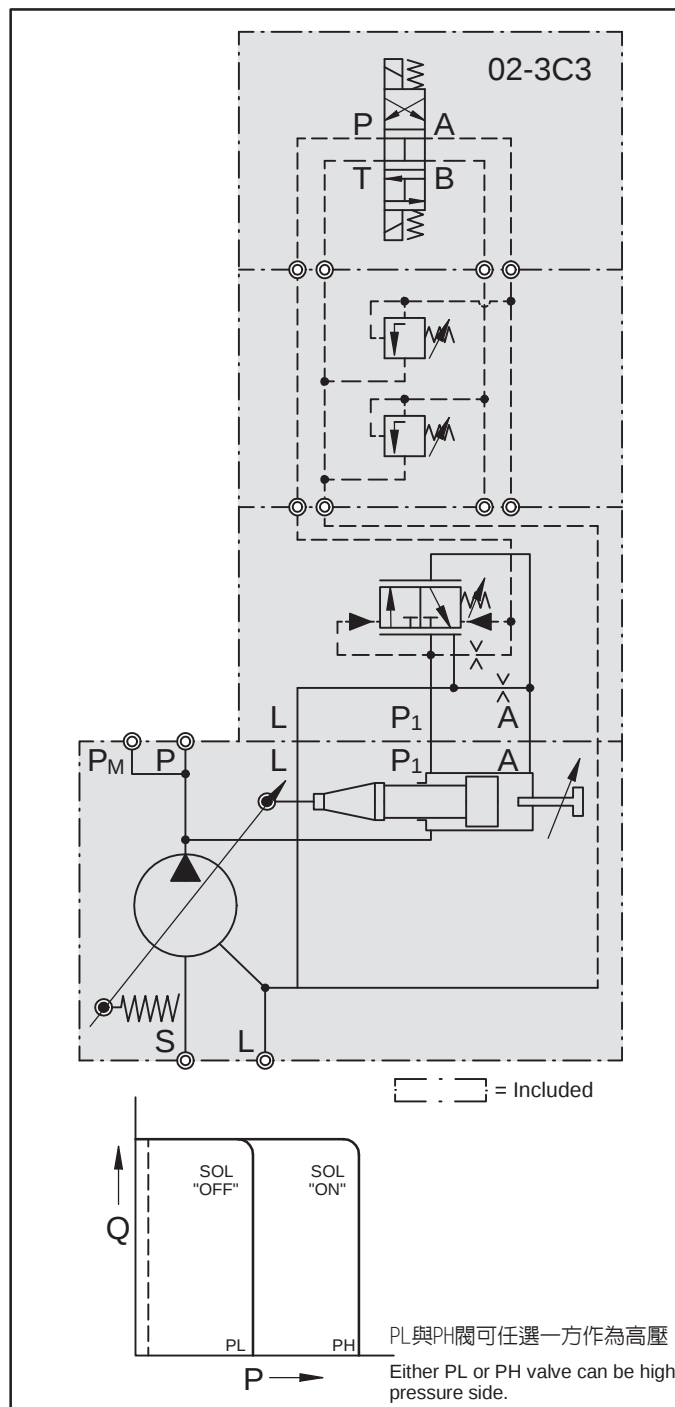
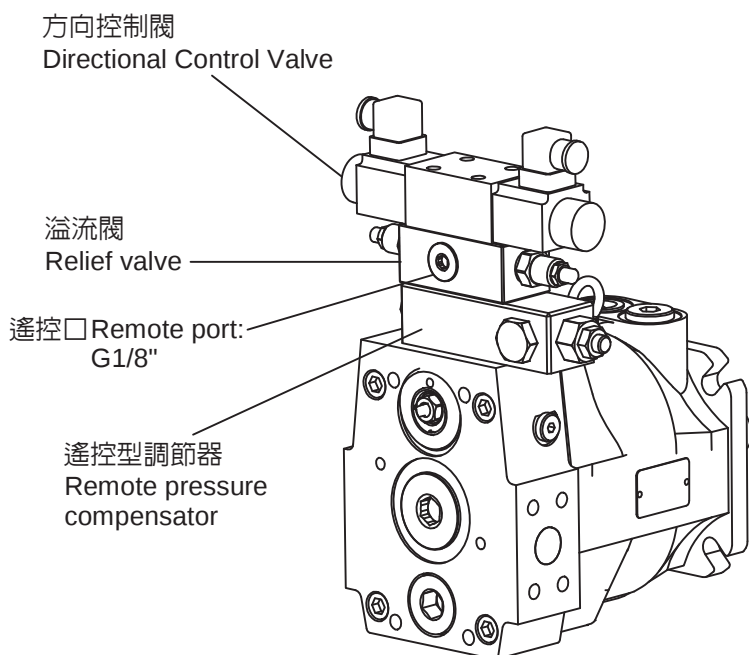
GC 遙控型調節器+電控洩載+兩段壓力 Remote Pressure compensator + electrical unloading + 2-stages Pressure control

遙控型調節器+電控洩載+兩段壓力 GC

利用電磁式方向控制閥，控制高低兩個不同的限壓壓力，並追加卸載機能，系統停機時，利用泵浦的卸載，可保持較低的油溫和噪音。

適用於油壓缸在恒定速度下，設定兩段工作壓力，及卸壓時間長的情況下使用。

Control two different-stage limited pressure by adding Directional Control Valve, and unloading function.
When the system stops, oil temperature and noise maintain low level by unloading function.
Usable for stable cylinder speed, two-stage pressure, and long unloading situation.



PV Axial Piston Pump

調節器 Compensator

HM 負載感應型調節器 (含NG6介面) Load-sensing compensator with NG6 interface

負載感應型調節器 (含NG6介面) HM

在其調節閥的上方預留一個NG6的介面。

疊式負載感應型調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。

若在NG6介面加裝一個先導閥，則可增加一個壓力調節功能。

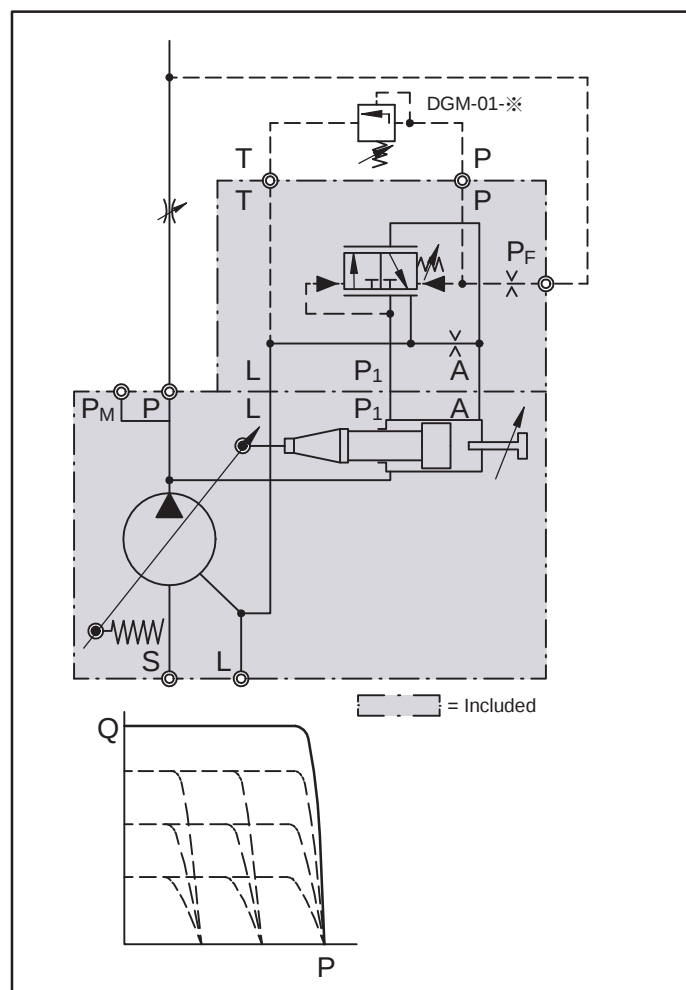
若在NG6介面加裝一個YEOSHE比例壓力閥，則可達成電控比例壓力控制。

Version HM of remote pressure compensator provides an interface NG6 on its top side.

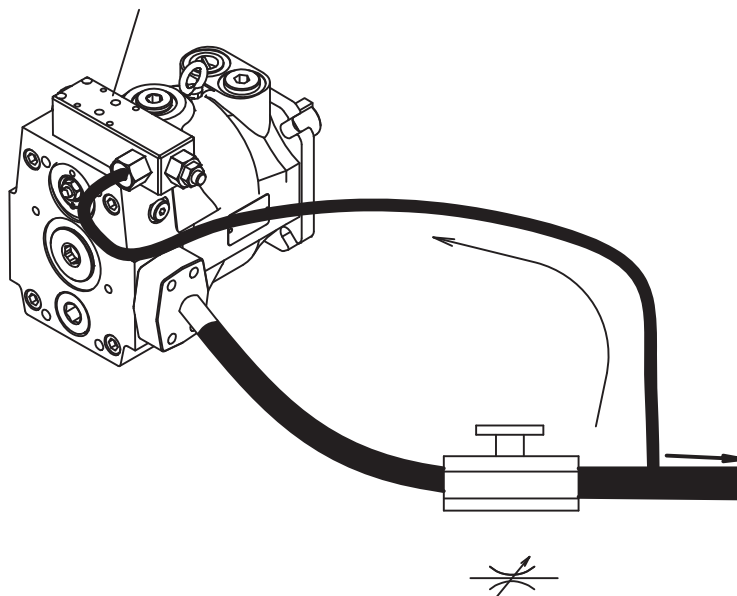
The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10 bar.

The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant. A variable input speed or a varying load(-pressure) has consequently no influence on the output flow of the pump and the speed of the actuator.

By adding YEOSHE proportional pressure valve, Electrical proportional pressure control is available.



負載感應型調節器 (含NG6) 介面
Load-sensing compensator with NG6 interface



PV Axial Piston Pump 調節器 Compensator

HA 負載感應型調節器+溢流閥 Load-sensing compensator + Relief valve

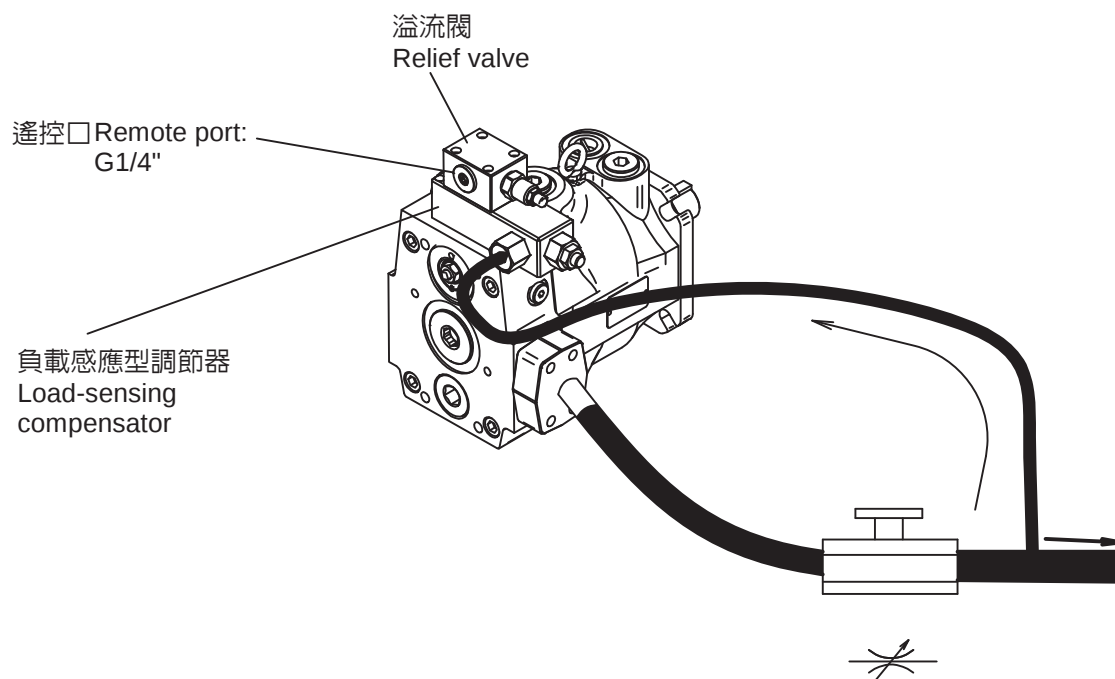
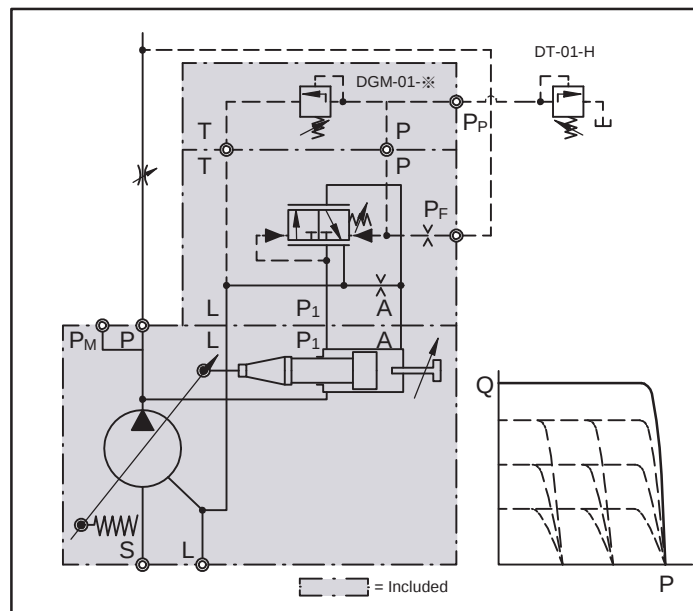
負載感應型調節器+溢流閥 HA

疊式負載感應型調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。先導溢流閥，可進行力調節功能。

可以加裝遙控接口PP進行遠距離的壓力調節，比如可以從系統控制台進行壓力調節。控制壓力之液壓油來自調節器的內部。控制油流約為1-1.5 l/min。

The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant. A variable input speed or a varying load(-pressure) has consequent no influence on the output flow of the pump and the speed of the actuator. Relief valve has adjustment function.

The pilot valve can be installed remote from the pump in some distance. That allows pressure setting, e.g. from the control panel of the machine. The pilot flow supply is internal through the valve spool, and the pilot flow is 1-1.5 L/min.



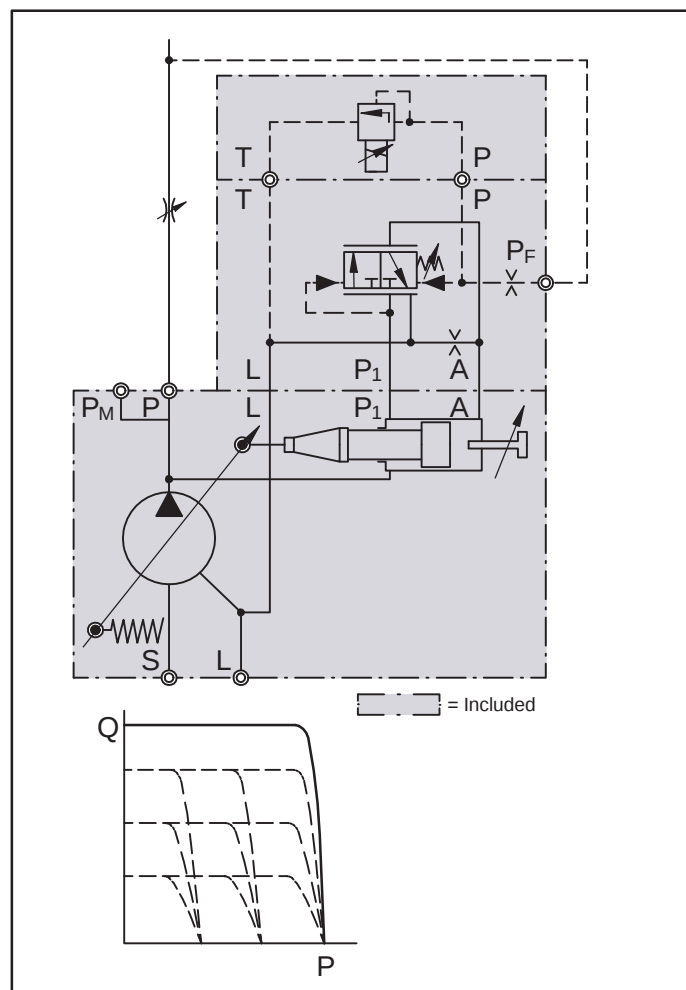
HJ 負載感應型調節器+比例壓力 Load-sensing compensator + Proportional Pressure valve

負載感應型調節器+比例壓力 HJ

疊式負載感應型調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。

當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。先導比例壓力閥，可進行電控比例壓力控制。

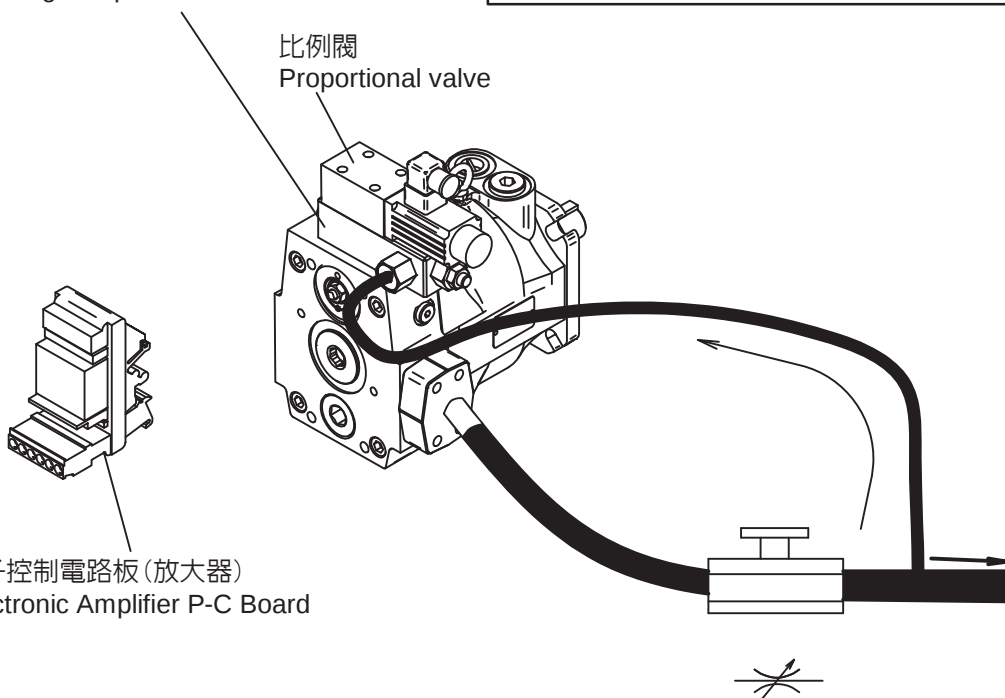
The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow and the speed of the actuator. Proportional pressure valve is for electrical proportional pressure control.



負載感應型調節器
Load-sensing compensator

比例閥
Proportional valve

電子控制電路板(放大器)
Electronic Amplifier P-C Board



PV Axial Piston Pump

調節器 Compensator

HR 負載感應型調節器+電控洩載 Load-sensing compensator + Electrical unloading

負載感應型調節器+電控洩載 HR

負載感應型調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現現在第一條管路上對泵的流量進行調節。

當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。

通過加一個節流孔（直徑0.8mm）和一個壓力-先導閥可增加一個壓力調節功能。此型式為簡單式之負載感應。

在其調節器上方加裝一個溢流閥及電磁式方向控制閥，增加壓力先導調節功能，及電控卸載機能。

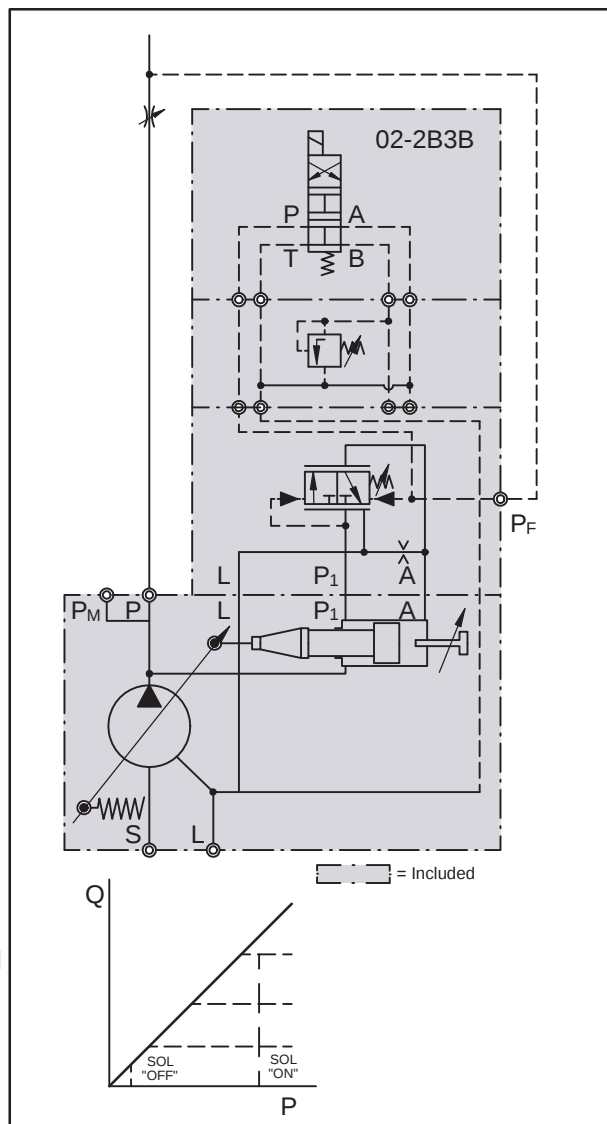
適用於卸壓時間長的情況。

系統停機時，通過泵的卸壓運轉，油溫 and 噪音可保持較低水平。

The load-sensing compensator has all external pilot pressure supply. Factory setting for the differential pressure is 10bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant. A variable input speed or a varying (load -pressure) has consequently on the output flow of the pump and speed of the actuator.

By adding a pilot orifice ($\Phi 0.8\text{mm}$) and a pressure pilot valve pressure compensation can be added to the flow control function. See the circuit diagram left.

By adding a relief valve and a directional control valve on the compensator makes the pump have both function. HR control is for long unloading situation. When the system stops, oil temperature and noise maintain low level while being through the unloading.



方向控制閥
Directional Control Valve

溢流閥
Relief valve

遙控口 Remote port:
G1/8"

負載感應型調節器
Load-sensing compensator

負載感應接口 Load-sensing port

G 1/4 BSPP (threads code: 1)

7/16-20 UNF (threads code: 3)

M12xP1.5 ISO 6149-1 (threads code: 7)

PV Axial Piston Pump

調節器 Compensator

HB 負載感應型調節器+電控兩段壓力 Load-sensing compensator + 2-stages Pressure control

負載感應型調節器+電控兩段壓力 HB

負載感應型調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。

當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。

通過加一個節流孔（直徑0.8mm）和一個壓力-先導閥可增加一個壓力調節功能。此型式為簡單式之負載感應。

在其調節器上方加裝一個兩段壓力溢流閥及電磁式方向控制閥，可調節高低兩個不同的限壓壓力，並且達到電控兩段壓力變換。

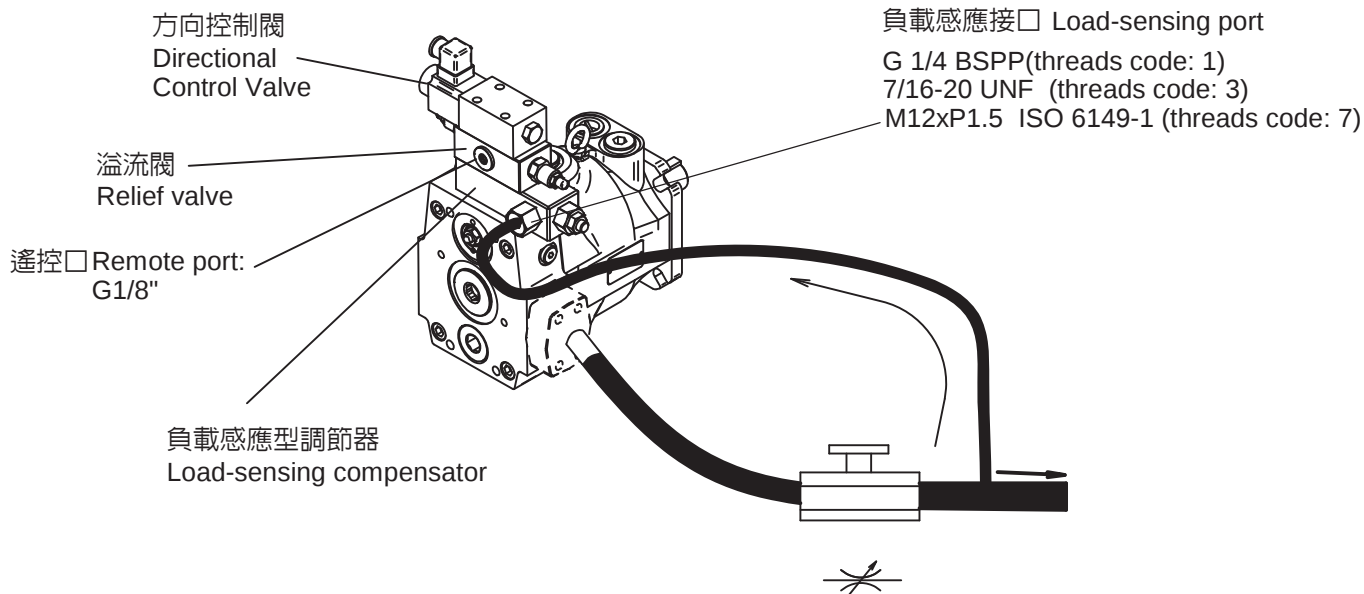
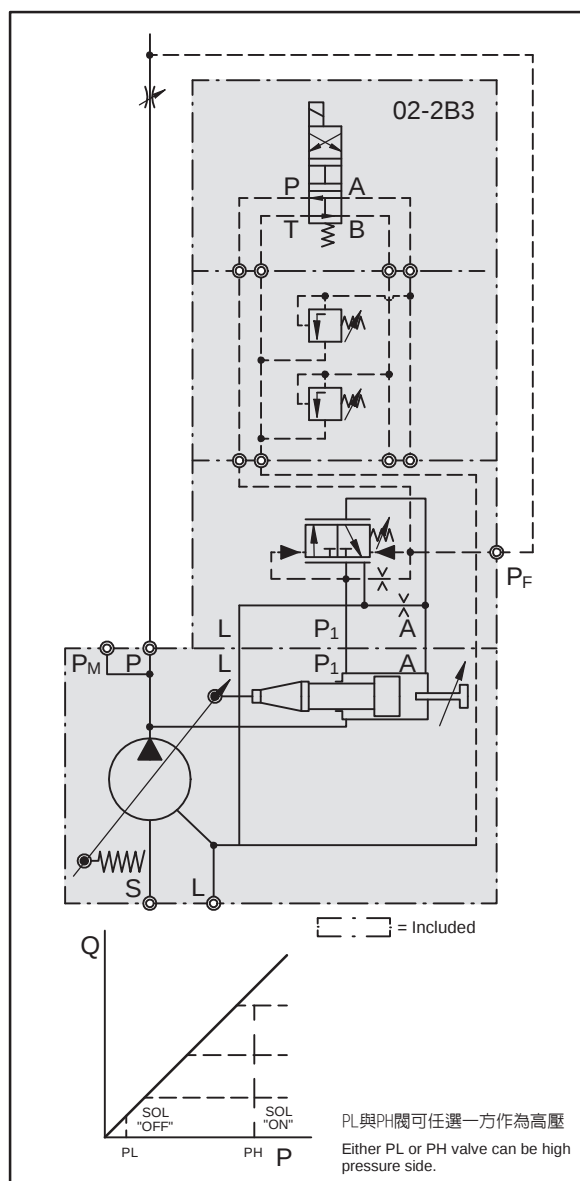
適用於油壓缸在恒定速度下，設定兩段工作壓力時使用。

The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant. A variable input speed or a varying (load -pressure) has consequently on the output flow of the pump and speed of the actuator.

By adding a pilot orifice ($\Phi 0.8\text{mm}$) and a pressure pilot valve pressure compensation can be added to the flow control function. See the circuit diagram left.

By adding a relief valve and directional control valve on the compensator makes it adjust two different stage limited pressure.

HB control is for two-stage working pressure under the constant cylinder.



PV Axial Piston Pump

調節器 Compensator

HC 負載感應型調節器+電控洩載+兩段壓力 Load-sensing compensator + Electrical unloading+ 2-stages Pressure control

負載感應型調節器+電控洩載+兩段壓力 HC

負載感應型調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。通過加一個節流孔（直徑0.8mm）和一個壓力-先導閥可增加一個壓力調節功能。此型式為簡單式之負載感應。

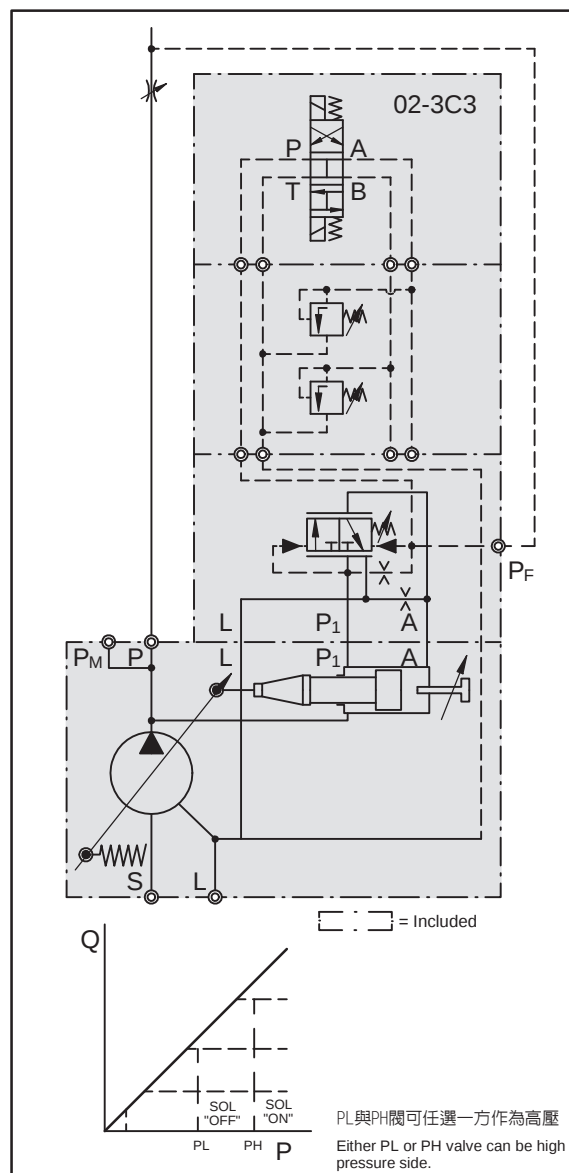
在其調節器上方加裝一個兩段壓力溢流閥及電磁式方向控制閥，可調節高低兩個不同的限壓壓力，並且達到電控兩段壓力變換。並追加卸載機能，系統停機時，利用泵浦的卸載，可保持較低的油溫 and 噪音。

適用於油壓缸在恒定速度下，設定兩段工作壓力及卸壓時間長的情況下使用。

The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant. A variable input speed or a varying (load -pressure) has consequently on the output flow of the pump and speed of the actuator.

By adding a pilot orifice ($\Phi 0.8\text{mm}$) and a pressure pilot valve pressure compensation can be added to the flow control function. See the circuit diagram left.

By adding a relief valve and a directional control valve on the compensator makes the pump have both function. HC control is for long unloading situation. When the system stops, oil temperature and noise maintain low level while being through the unloading.



方向控制閥
Directional Control Valve

溢流閥
Relief valve

遙控口 Remote port:
G1/8"

負載感應型調節器
Load-sensing compensator

負載感應接口 Load-sensing port

G 1/4 BSPP (threads code: 1)

7/16-20 UNF (threads code: 3)

M12xP1.5 ISO 6149-1 (threads code: 7)

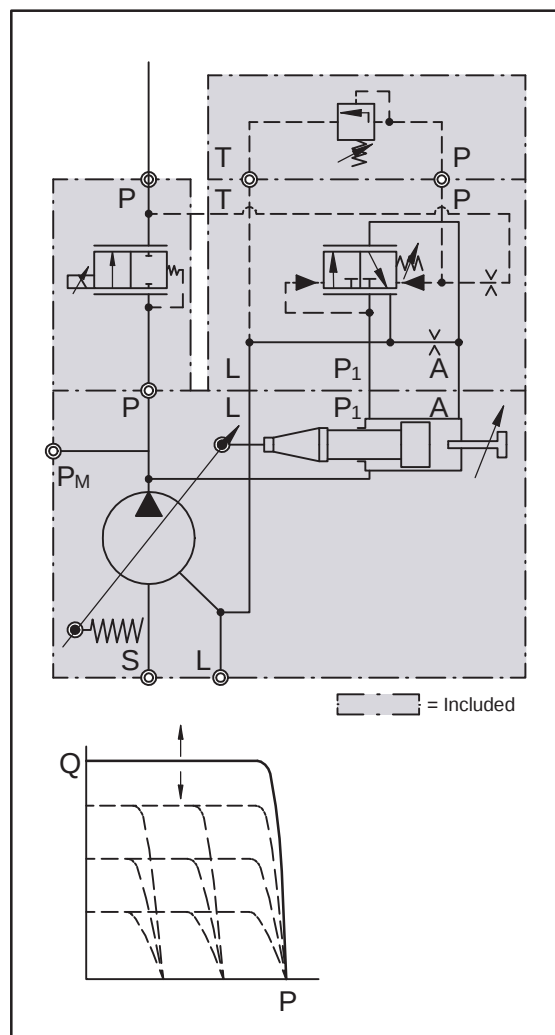
PV Axial Piston Pump 調節器 Compensator

HQ 負載感應型調節器+比例流量+溢流閥 Load-sensing compensator + Proportional Flow valve+ Relief valve

負載感應型調節器+比例流量+溢流閥 HQ

負載感應型+比例流量調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。
加裝一個YEOSHE比例流量閥，可達成電控比例流量。

The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant.
By adding YEOSHE proportional flow valve, Electrical proportional flow control is available.



負載感應型調節器
Load-sensing compensator

溢流閥
Relief valve

比例流量閥
Proportional flow control

電子控制電路板(放大器)
Electronic Amplifier P-C Board

PV Axial Piston Pump

調節器 Compensator

HK 負載感應型調節器+比例壓力+比例流量 Load-sensing compensator + Proportional Pressure valve+ Proportional Flow valve

負載感應型調節器+比例壓力+比例流量 HK

HK型具有節能的特性，它可依系統要求，提供所需求的最小壓力和流量，可節省不必要的能源耗費。

當待機時柱塞泵吐出流量近似零，電機功率損耗輸出近似零；當系統壓力升高到設定值時，柱塞泵的流量會自動減少，只補充系統所需流量，而壓力維持不變大幅減低油溫上升。

與一般葉片泵、齒輪泵+PQ閥所配合的油路相互比較約可節省電力30%~50%能源。油箱容積亦可較小。

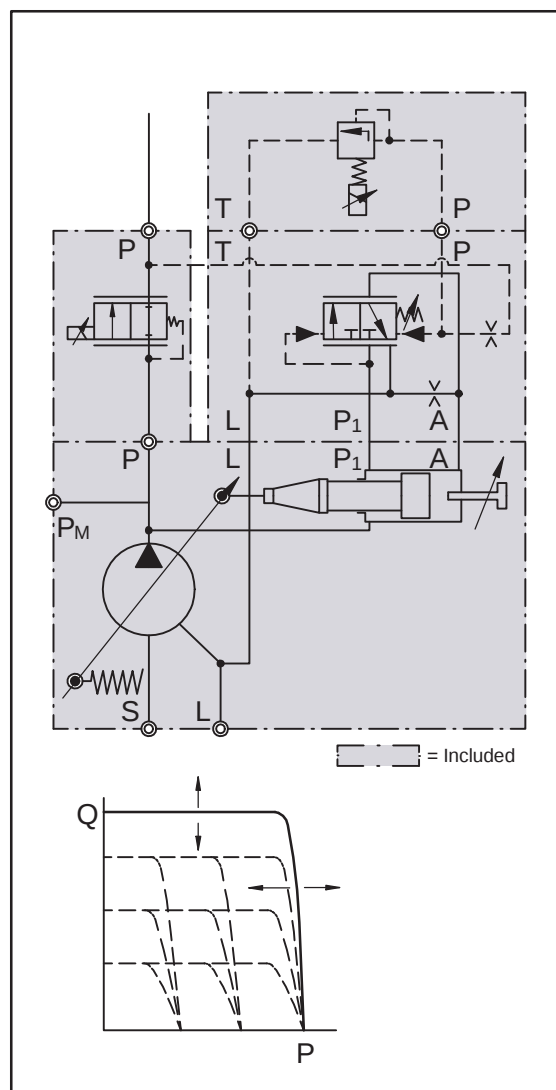
負載感應型+比例流量調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。

在調節器的上方，加裝一個油昇比例壓力調節器，達到電控比例壓力，P口加裝一個YEOSHE比例流量閥可達成電控比例流量

HK is for saving energy. It offers the smallest pressure and flow according to the different requirement.

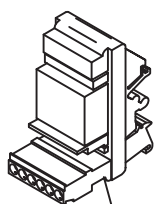
The displacement is nearly zero when the system stands by, and the motor output is also nearly zero. When the system reaches setting pressure, the pump displacement will reduce by itself. It only needs to add the system required flow, and the pressure remains the same which control the oil temperature.

Compared with vane pump, gear pump +PQ valve can save 30%-50% energy. The load-sensing compensator+ Proportional flow valve has all external pilot pressure supply. Factory setting for the differential pressure is 10 bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow of the pump and the speed of the actuator. Proportional pressure valve is for electrical proportional pressure control.

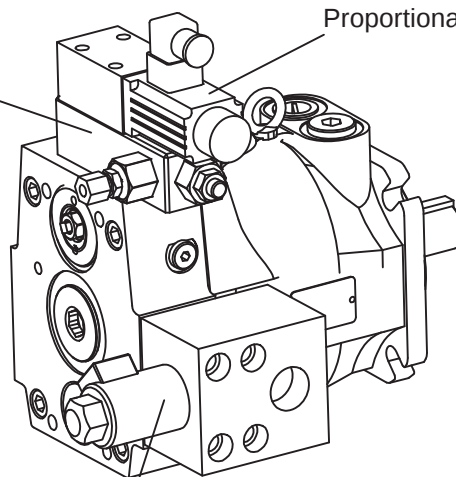


負載感應型調節器
Load-sensing compensator

比例閥
Proportional valve



電子控制電路板(放大器)
Electronic Amplifier P-C Board



比例流量閥
Proportional flow control

PV Axial Piston Pump 調節器 Compensator

BQ 無段流量變速控制 (油壓缸型) None-stage Flow compensator (Cylinder)

無段流量變速控制 (油壓缸型) BQ

利用加載油壓缸，由外部油壓控制前進後退，推動泵浦斜盤角度變化大小，可達到無段流量變速控制。

流量可從零調至最大，作多段變化，壓力保持在設定壓力。

機械作動的流量控制，相對於電磁式比例流量，價格較低，維護容易。

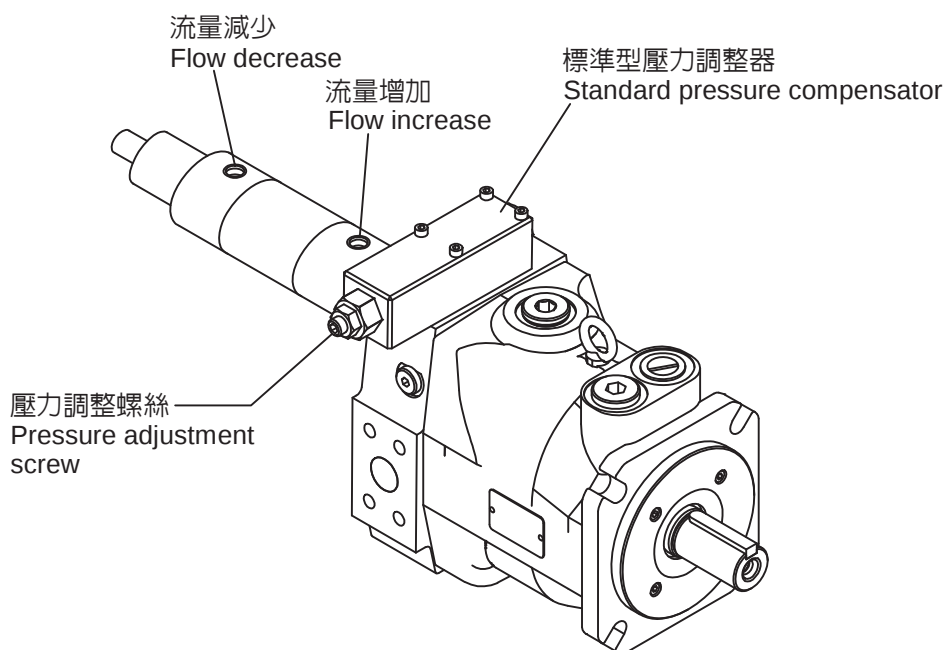
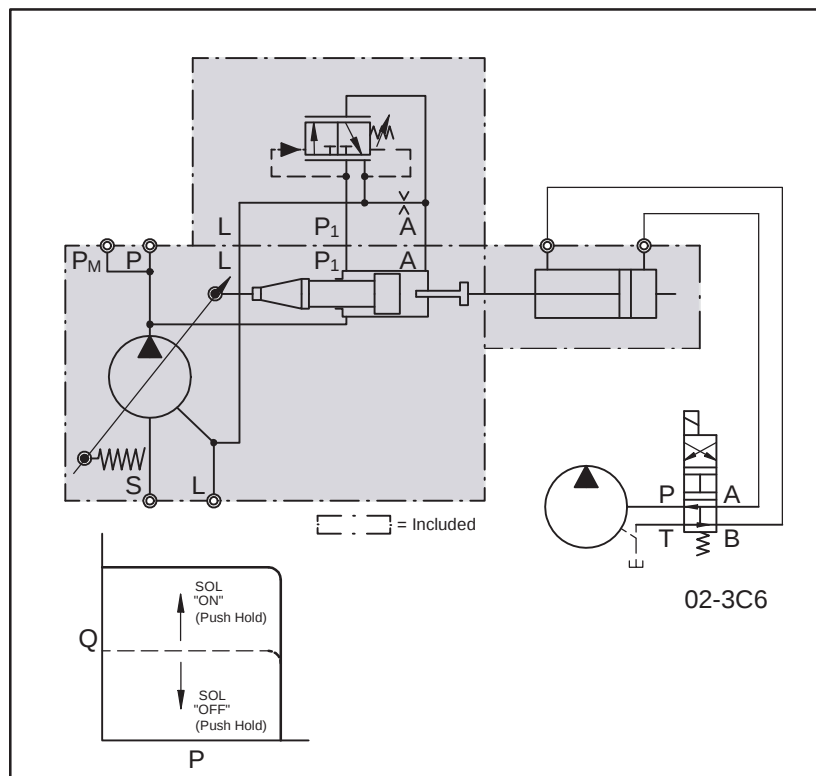
外部控制若利用電磁方向閥或手動換向閥，可使整個系統更自動化。

Using added cylinder, external pilot pressure controls the forward and backward, and push the swash plate to change directions and make the single-stage pressure control.

Displacement can be zero to Max, and pressure remains on setting pressure.

Automatous flow control is much easier to repair, and cheaper than electrical proportional flow control.

External control is more automated by using solenoid valve or hydraulic directional valve.



PV Axial Piston Pump 調節器 Compensator

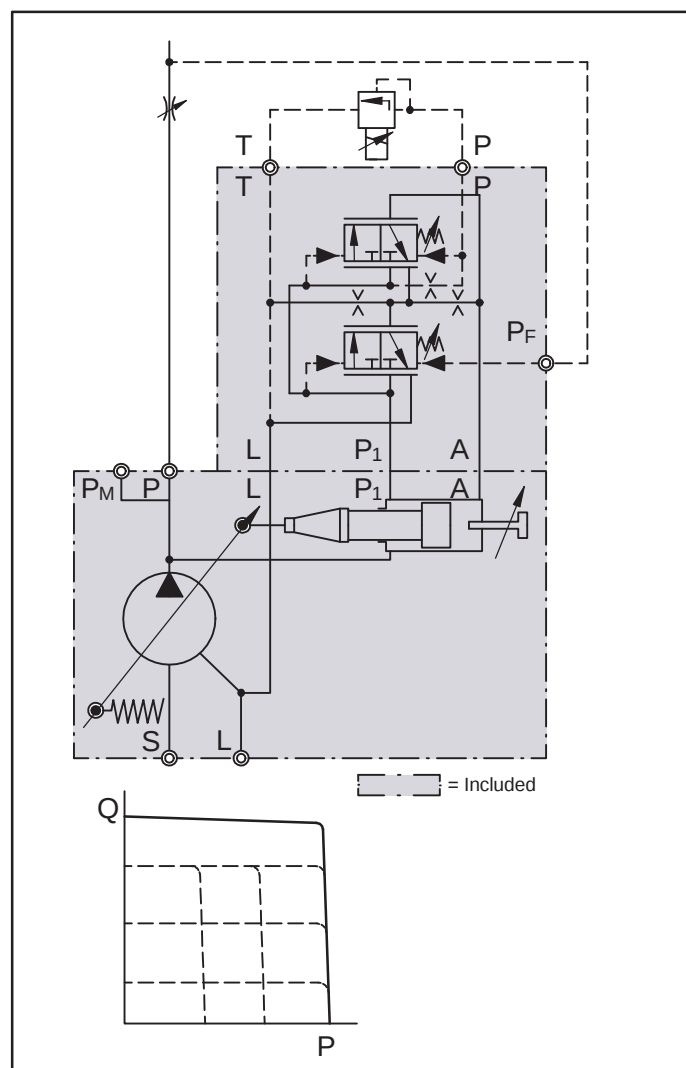
VM 雙閥負載感應型調節器(含NG6介面) 2-Valve load-sensing compensator with NG6 interface

雙閥負載感應型調節器(含NG6介面) VM

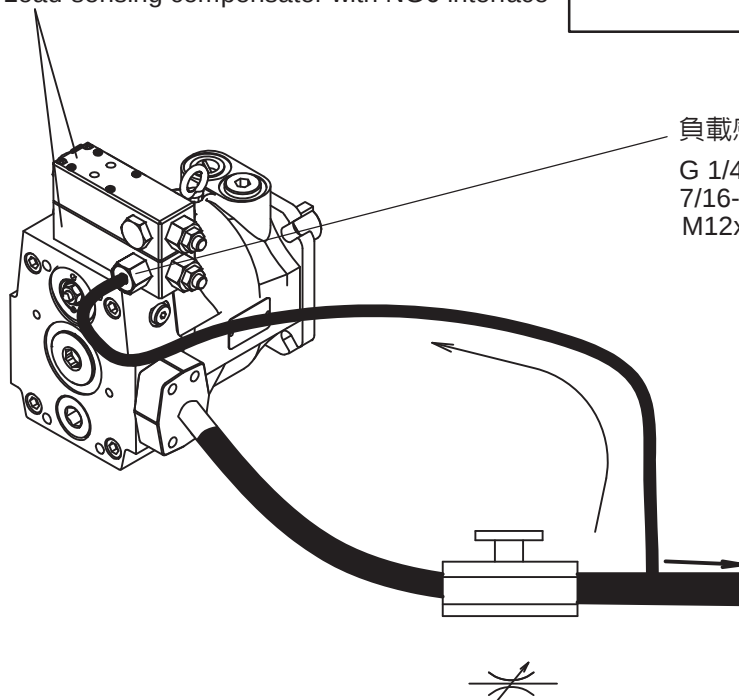
如果希望準確的限制壓力，可以選擇疊式雙閥負載傳感調節器。回路示意圖如右圖所示。
為了消除壓力與流量相互影響，使用兩個分開的調節閥用於流量調節和壓力調節。

疊式雙閥負載感應型調節器，在其調節閥的上方，預留一個NG6的介面。
若在NG6介面加裝一個先導閥，則可增加一個壓力調節功能。
若在NG6介面加裝一個YEOSHE比例壓力閥，則可達成電控比例壓力控制。

Two-valve loading-sensing compensator with NG6 interface is an option for limiting pressure precisely. By eliminating the impact between pressure and flow, the pump should add two different valves to control flow and pressure.
Version VM provides on its top side an interface NG6 which has pressure-adjusted function. If adding a YEOSHE proportional pressure control valve, Electrical Proportional Pressure control is available.



雙閥負載感應型調節器(含NG6介面)
2-valve Load-sensing compensator with NG6 interface



負載感應接口 Load-sensing port
G 1/4 BSPP (threads code: 1)
7/16-20 UNF (threads code: 3)
M12xP1.5 ISO 6149-1 (threads code: 7)

PV Axial Piston Pump 調節器 Compensator

VA 雙閥負載感應型調節器+溢流閥 2-Valve load-sensing compensator + Relief Valve

雙閥負載感應型調節器+溢流閥 VA

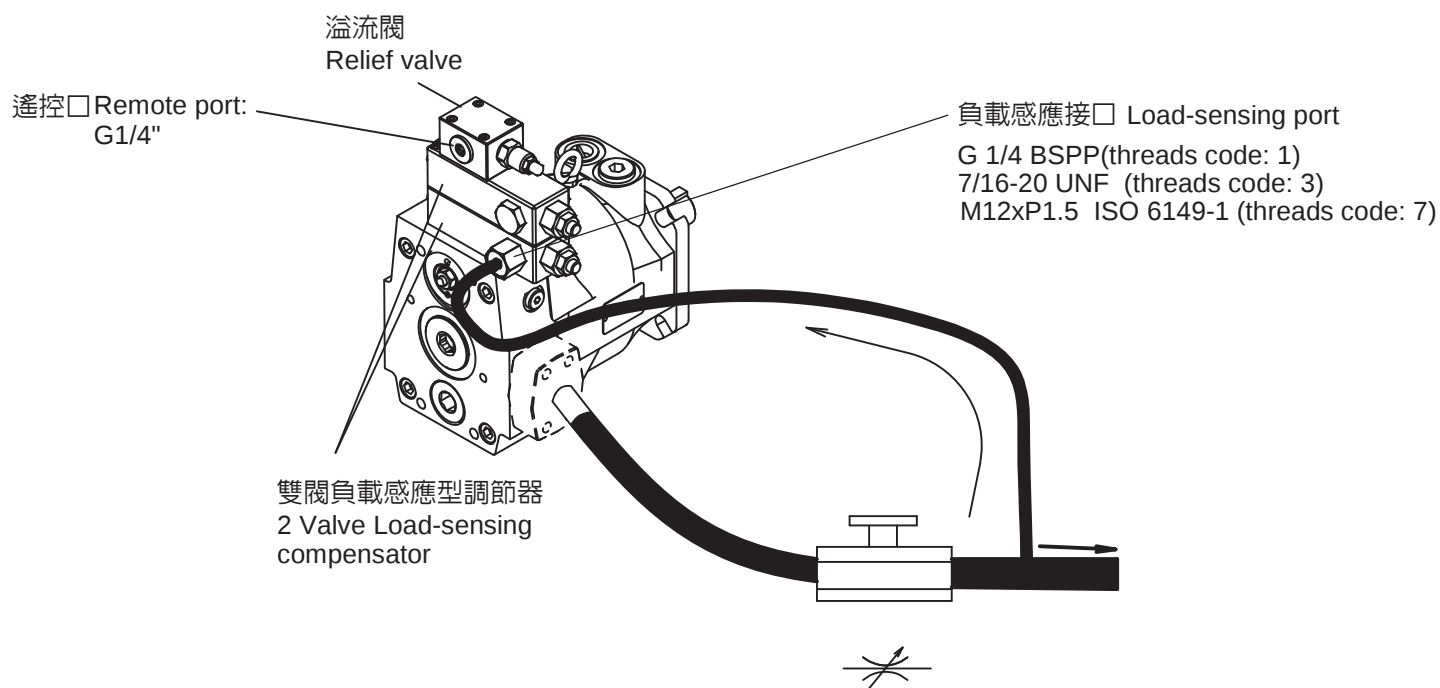
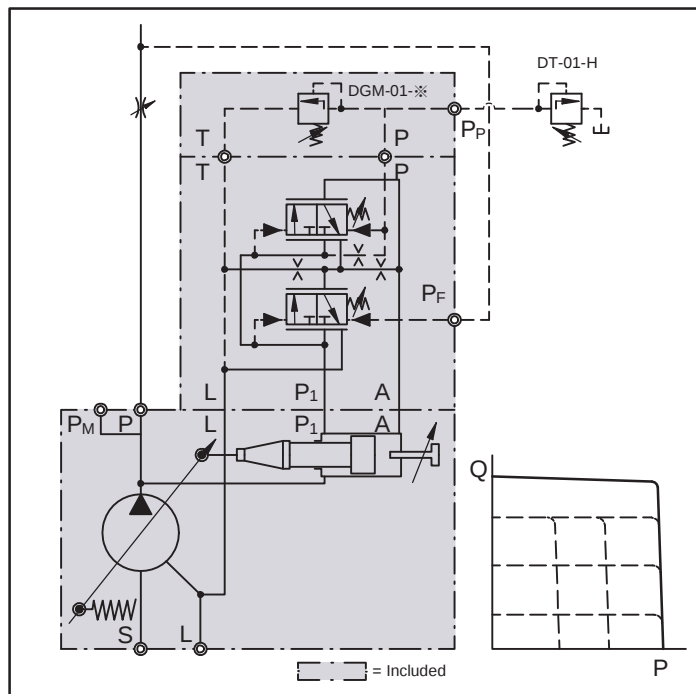
如果希望準確的限制壓力，可以選擇疊式雙閥負載傳感調節器。回路示意圖如右圖所示。為了消除壓力與流量相互影響，使用兩個分開的調節閥用於流量調節和壓力調節。

疊式雙閥負載感應型調節器，在其調節閥的上方，加裝一個先導閥，增加一個壓力調節功能。

可以加裝遙控接口PP進行遠距離的壓力調節，比如可以從系統控制台進行壓力調節。控制壓力之液壓油來自調節器的內部。控制油流約為1-1.5 l/min。

Two-valve loading-sensing compensator with NG6 interface is an option for limiting pressure precisely. By eliminating the impact between pressure and flow, the pump should add two different valves to control flow and pressure.

The pilot valve is free to be installed to remote in some distance. That allows pressure setting e.g. from the control panel of the machine. The pilot flow supply is internal through the valve spool, and the pilot flow is 1-1.5 L/min.



PV Axial Piston Pump 調節器 Compensator

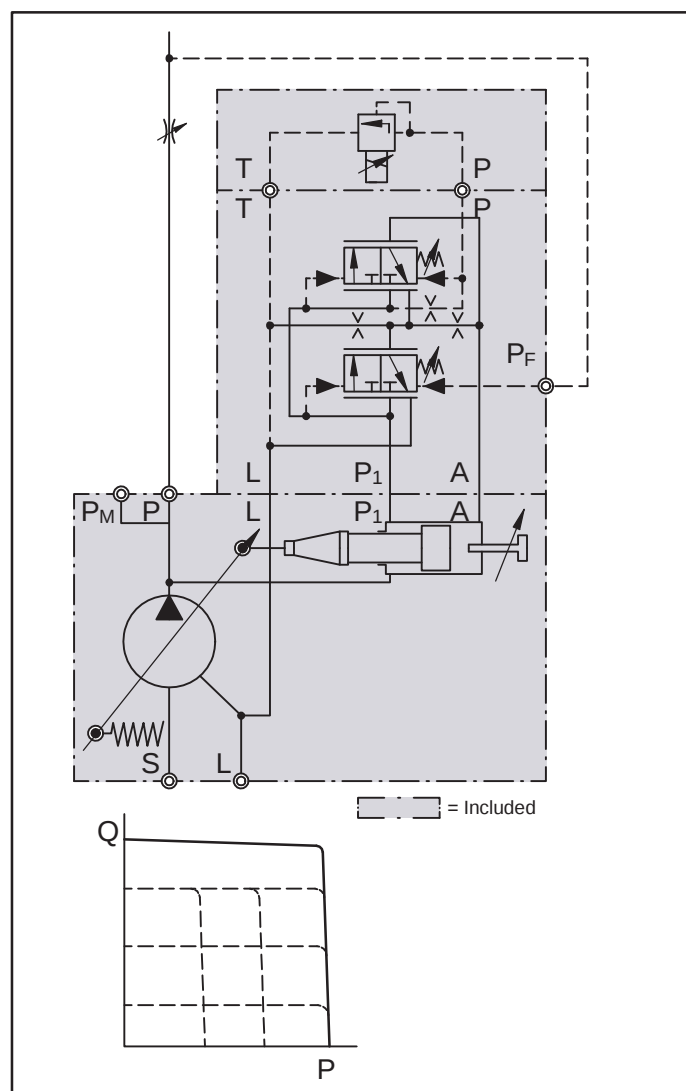
VJ 雙閥負載感應型調節器+比例壓力 2-Valve load-sensing compensator + Proportional Pressure valve

雙閥負載感應型調節器+比例壓力 VJ

如果希望準確的限制壓力，可以選擇疊式雙閥負載傳感調節器。回路示意圖如右圖所示。
為了消除壓力與流量相互影響，使用兩個分開的調節閥用於流量調節和壓力調節。

疊式雙閥負載感應型調節器，在其調節閥的上方，加裝一個YEOSHE比例壓力閥，達到電控比例壓力控制的目的。

Two-valve loading-sensing compensator with NG6 interface is an option for limiting pressure precisely. By eliminating the impact between pressure and flow, the pump should add two different valves to control flow and pressure. Electrical proportional and pressure control is available by adding a YEOSHE proportional pressure valve on the Load-sensing compensator.

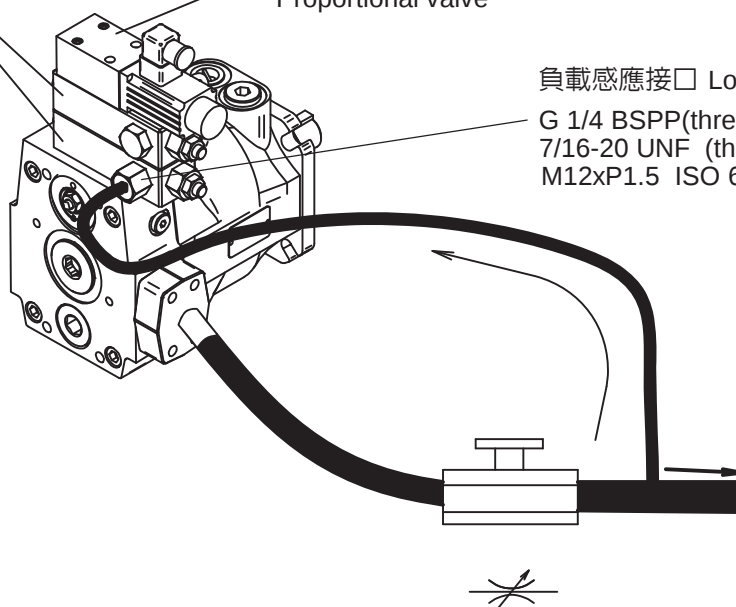
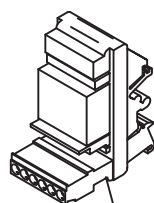


雙閥負載感應型調節器
2-valve Load-sensing
compensator with

比例閥
Proportional valve

負載感應接口 Load-sensing port
G 1/4 BSPP (threads code: 1)
7/16-20 UNF (threads code: 3)
M12xP1.5 ISO 6149-1 (threads code: 7)

電子控制電路板 (放大器)
Electronic Amplifier P-C Board



PV Axial Piston Pump

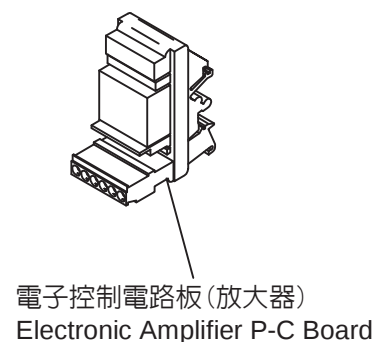
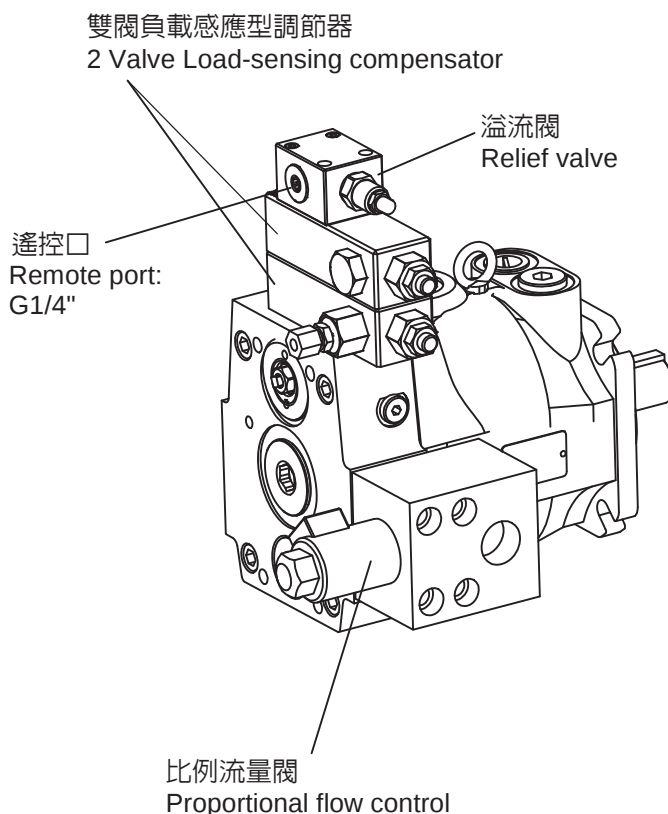
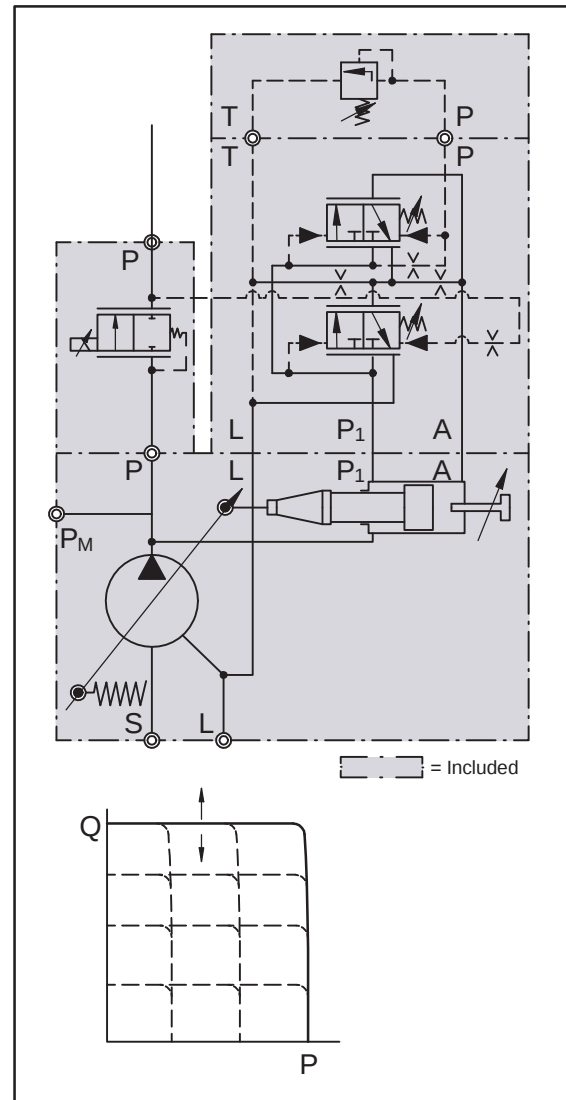
調節器 Compensator

VQ 雙閥負載感應型調節器+比例流量+溢流閥 2-Valve load-sensing compensator + Proportional Flow valve+ Relief Valve

雙閥負載感應型調節器+比例流量+溢流閥 VQ

雙閥負載感應型+比例流量調節器，能夠更精確的限制壓力。控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。加裝一個油昇比例流量閥，可達成電控比例流量。

Type VQ is an option for limiting pressure precisely. The load-sensing compensator has an external pilot pressure supply. Factory setting for the differential pressure is 10bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow, because the compensator keeps the pressure drop at the main stream resistor constant. A variable input speed or a varying load (-pressure) consequently has no influence on the output flow of the pump and the speed of the actuator. Electrical proportional flow control is available by adding a YEOSHE proportional flow control valve.



PV Axial Piston Pump

調節器 Compensator

VK 雙閥負載感應型調節器+比例壓力+比例流量 2-Valve load-sensing compensator + Proportional Pressure valve+ Proportional Flow valve

雙閥負載感應型調節器+比例壓力+比例流量 VK

雙閥壓力調節器，能夠更精確的控制限制壓力。與HK型同樣具有節能的特性，它可依系統要求，提供所需求的最小壓力和流量，可節省不必要的能源耗費。當待機時柱塞泵吐出流量近似零，電機功率損耗輸出近似零；當系統壓力升高到設定值時，柱塞泵的流量會自動減少，只補充系統所需流量，而壓力維持不變大幅減低油溫上升。

與一般葉片泵、齒輪泵+PQ閥所配合的油路相互比較約可節省電力30%~50%能源。油箱容積亦可較小。

負載感應型+比例流量調節器，控制壓力油從外部回饋。調節器有約10bar的由廠家調節的壓差。壓差可做為主回路上的控制信號。因為調節器的壓差保持主油路的阻力不變，以此實現在第一條管路上對泵的流量進行調節。

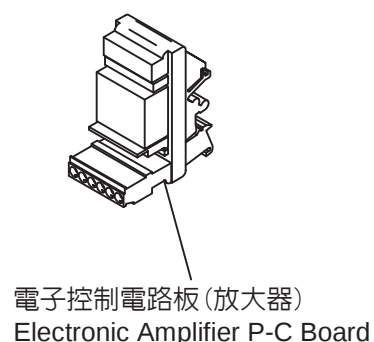
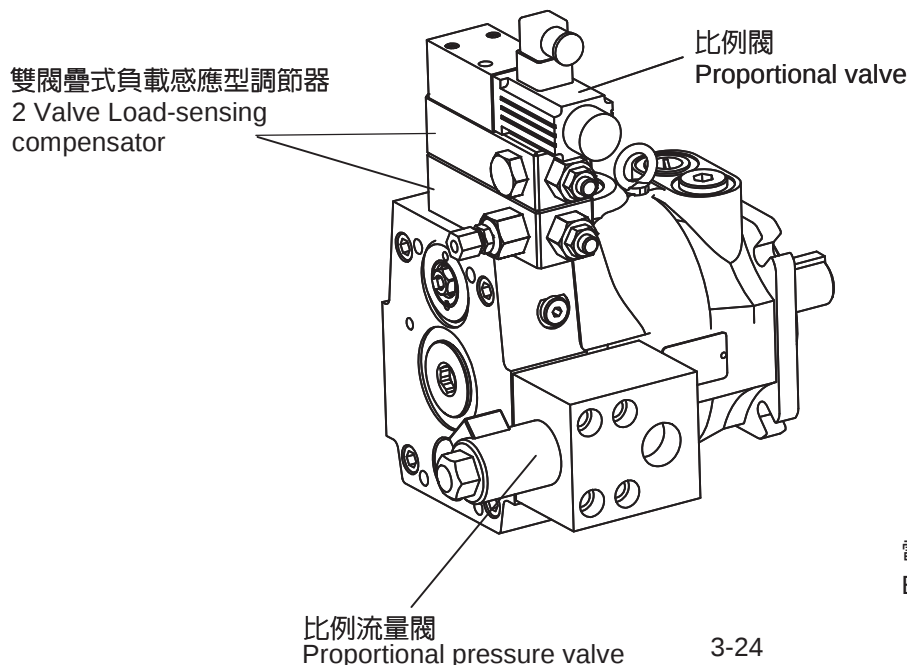
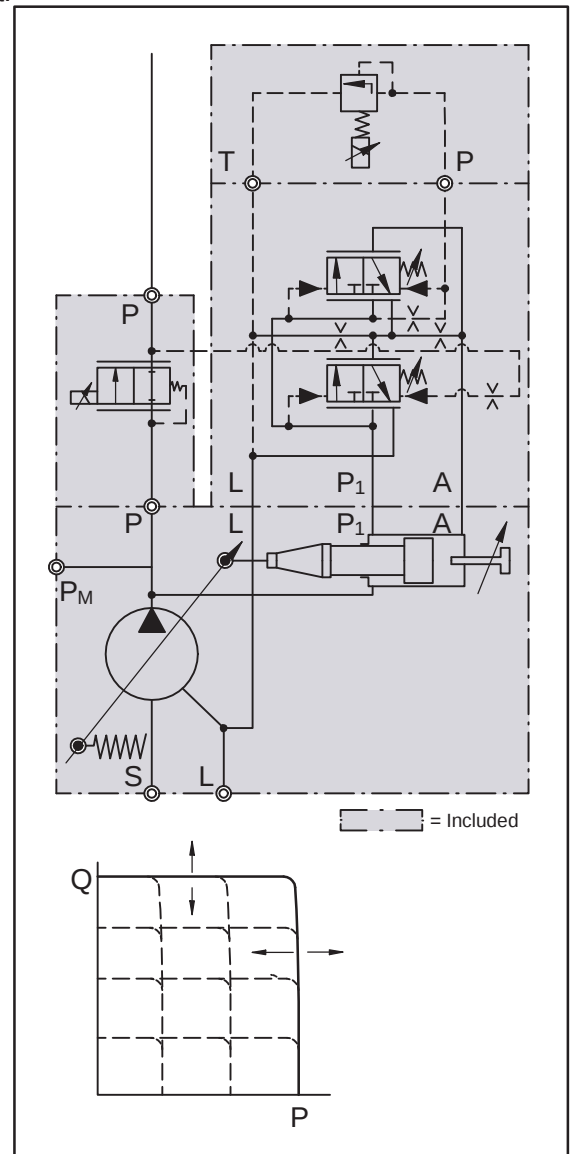
當傳動轉速發生變化或負載發生波動時，在一個較寬的工作範圍內不會影響執行元件的速度。

在調節器的上方，加裝一個油昇比例壓力調節器，達到電控比例壓力，P口加裝一個油昇比例流量閥可達成電控比例流量。

VK control has the same characters as HK control for saving energy. It offers the smallest pressure and flow according to the different request.

The displacement is nearly zero when the system stands by, and the motor output is also nearly zero. When the system reaches setting pressure, the pump displacement will reduce by itself. It only needs to add the system required flow, and the pressure remains the same which control the oil temperature.

Compared with vane pump, gear pump +PQ valve can save 30%-50% energy. The load-sensing compensator+ Proportional flow valve has external pilot pressure supply. Factory setting for the differential pressure is 10 bar. The input signal to the compensator is the differential pressure at the main stream resistor. A load-sensing compensator represents mainly a flow control for the pump output flow of the pump and the speed of the actuator. Proportional pressure valve is for electrical proportional pressure control.



PV Axial Piston Pump

調節器 Compensator

FV 雙閥負載感應型調節器+高響應比例流量+流量回饋+溢流閥 2-Valve load-sensing compensator + High Reacted Proportional Flow Valve+ Flow Feed Back+ Relief Valve

雙閥負載感應型調節器+高響應比例流量+流量回饋+溢流閥 FV

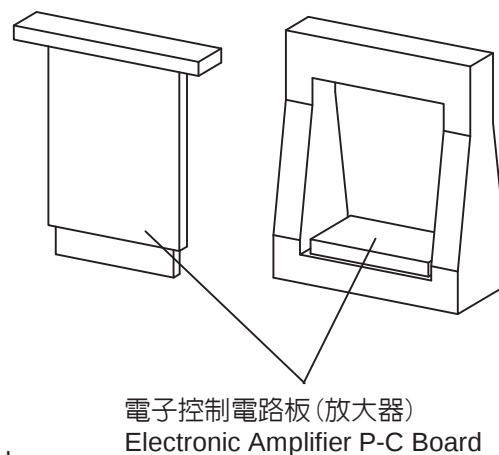
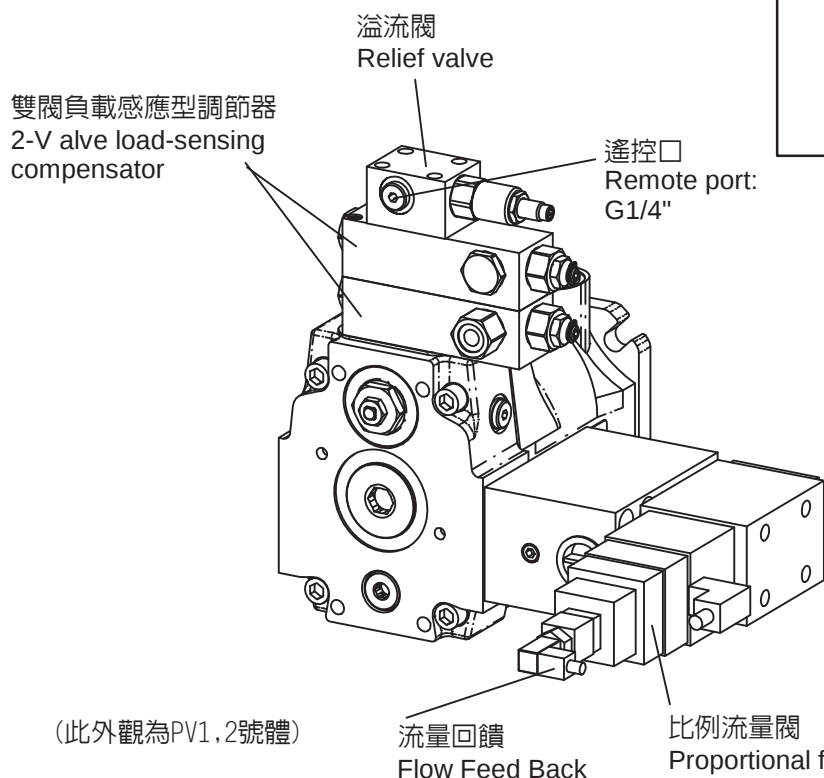
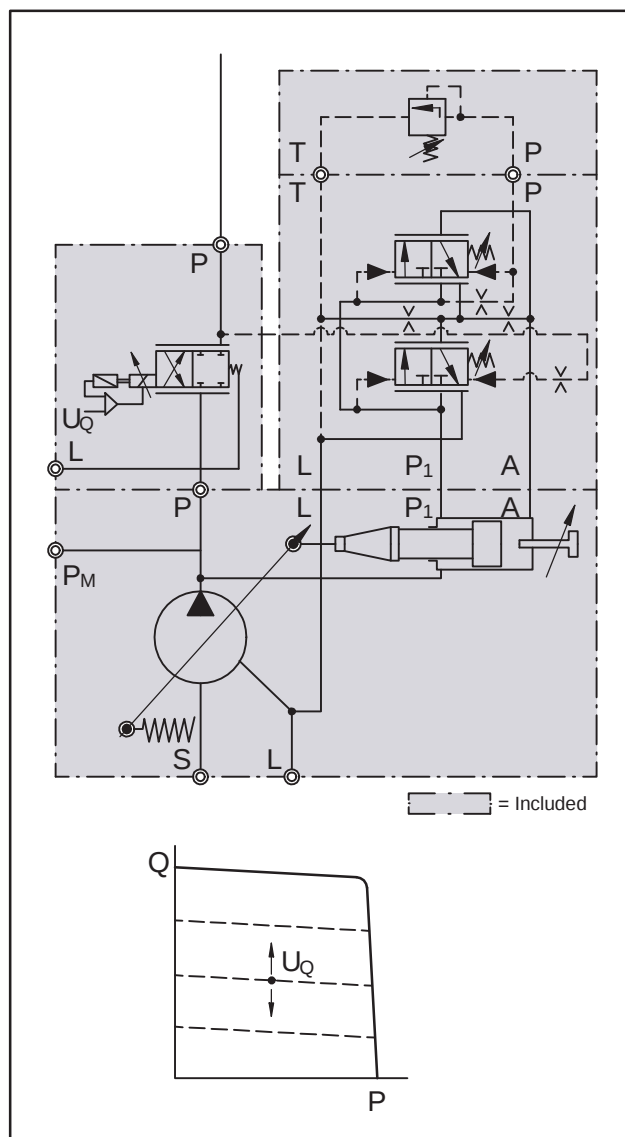
準確的限制壓力，使用疊式雙閥負載傳感調節器。
回路示意圖如右圖所示。
為了消除壓力與流量相互影響，使用兩個分開的調節閥用於流量調節和壓力調節。

疊式雙閥負載感應型調節器，在其調節閥的上方，加裝一個先導閥，增加一個壓力調節功能。

採用超高響應電液比例流量閥，除了可以無段電控流量外，可以感測流量控制器位置，連續不斷的將位置數據回饋予電控箱，與預先給定值進行比較，偏差值產生控制電流信號進行流量調節，達到實際流量準確符合給定流量。

此控制型式可使用在精確控制系統上，精準的流量控制可達到精密行程控制。

FV control is an option for limiting pressure precisely. By eliminating the impact between pressure and flow, the pump should add two different valves to control flow and pressure. The electrical control permanently compares input command and actual displacement and powers the proportional flow solenoid of the control valve. A deviation from the commanded displacement leads to a modulation of the input current to the solenoid. The control valve changes the control pressure until the correct displacement is adjusted.



PV Axial Piston Pump

調節器 Compensator

FG 雙閥負載感應型調節器+高響應比例流量+比例壓力+壓力流量回饋 2-Valve load-sensing compensator + High Reacted Proportional Flow Valve+ Proportional Pressure+ Flow& Pressure Feed Back

雙閥負載感應型調節器+高響應比例流量+比例壓力+壓力流量回饋 FG

準確的限制壓力，使用疊式雙閥負載傳感調節器。回路示意圖如右圖所示。為了消除壓力與流量相互影響，使用兩個分開的調節閥用於流量調節和壓力調節。

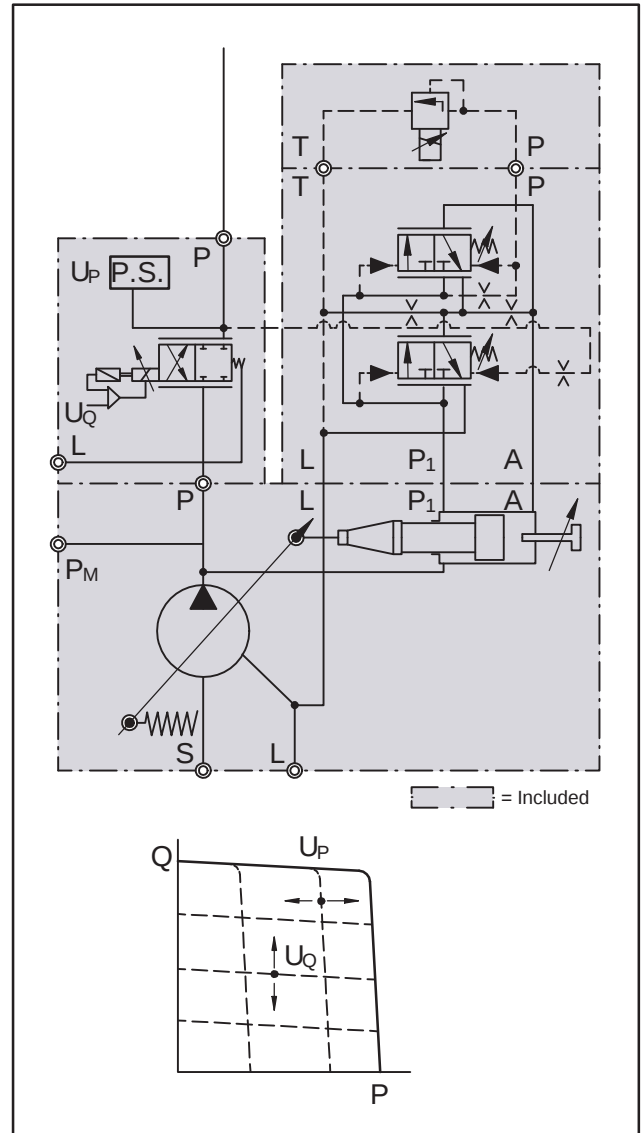
疊式雙閥負載感應型調節器，在其調節閥的上方，加裝一個油昇比例壓力閥，達到電控比例壓力控制的目的。

採用超高響應電液比例流量閥，除了可以無段電控流量外，可流量控制器位置，連續不斷的將位置數據回饋予電控箱，與預先給定值進行比較，偏差值產生控制電流信號進行流量調節，達到實際流量準確符合給定流量。

此控制型式可使用在精確控制系統上，精準的流量控制可達到精密行程控制。

加裝壓力感應器，達到壓力回饋控制運用。

FG control is an option for limiting pressure precisely. By eliminating the impact between pressure and flow, the pump should add two different valves to control flow and pressure. By adding a YEOSHE proportional pressure valve, it would be Electrical Proportional Pressure Control. The electrical control permanently compares input command and actual displacement and powers the proportional flow solenoid of the control valve. A deviation from the commanded displacement leads to a modulation of the input current to the solenoid. The control valve changes the control pressure until the correct displacement is adjusted. Adding a pressure sensor achieves pressure feedback control.



雙閥負載感應型調節器
2-V alve load-sensing compensator

比例壓力閥
Proportional Pressure

壓力感應器
Pressure Measurement

流量回饋
Flow Feed Back

比例流量閥
Proportional flow control

電子控制電路板(放大器)
Electronic Amplifier P-C Board

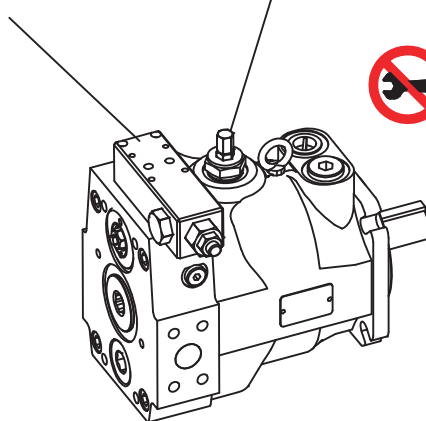
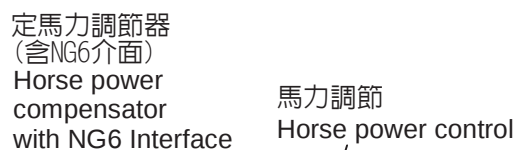
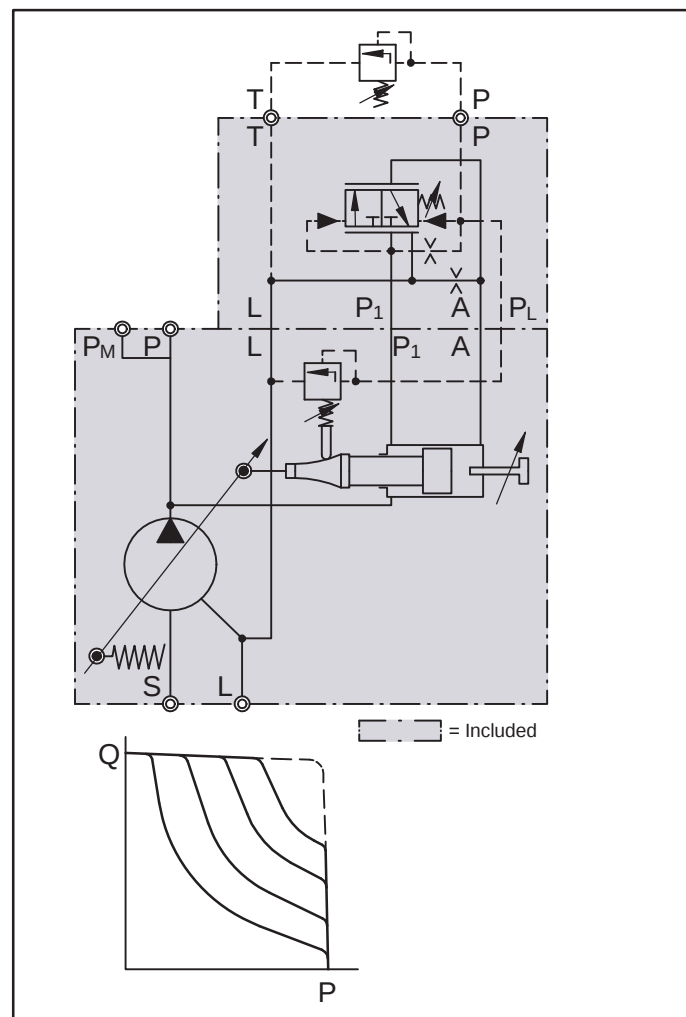
(此外觀為PV1,2號體)

定馬力型調節器(含NG6介面) PM

恆定馬達功率，是由定馬力調節器和先導閥進行調節，泵浦內部液壓做動產生機械式調節，泵浦排量與壓力之間產生穩定的聯繫。大排量時的作用壓力低於小排量時的作用壓力。進而達到恆定馬達功率的作用。

疊式定馬力調節器，於調節器上方預留一個NG6介面，可裝配油昇壓力先導閥，進行壓力調節。若裝配YEOSHE比例壓力閥，則可達到電控比例壓力控制。

The hydraulic- mechanical horse power compensator consists of a modified remote pressure compensator or of a modified load-sensing compensator and a pilot valve. This pilot valve is integrated into the pump and is adjusted by a cam sleeve. The cam sleeve has a contour that is designed and machined for the individual displacement and the nominal horse power setting. At a large displacement the opening pressure (given by the cam sleeve diameter) is lower than at small displacements. This makes the pump compensate along a constant horse power (torque) curve. Horse power is optional when order. Working pressure can be adjusted by adding YEOSHE pressure leading valve. Adding the proportional pressure valve achieves the Electrical Proportional Pressure Control.



PV Axial Piston Pump

調節器 Compensator



YEOSHE

PA 定馬力型調節器+溢流閥 Horse Power Compensator + Relief Valve

定馬力型調節器+溢流閥 PA

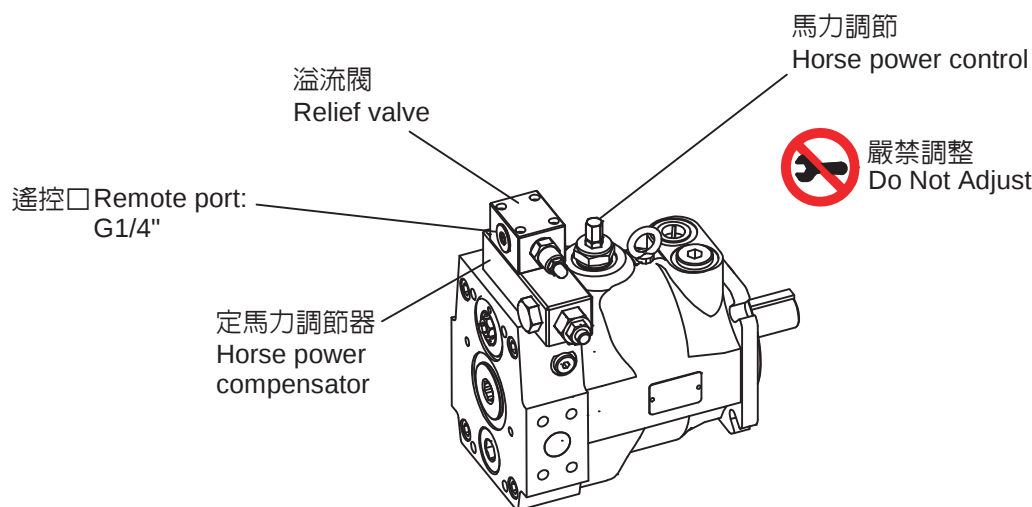
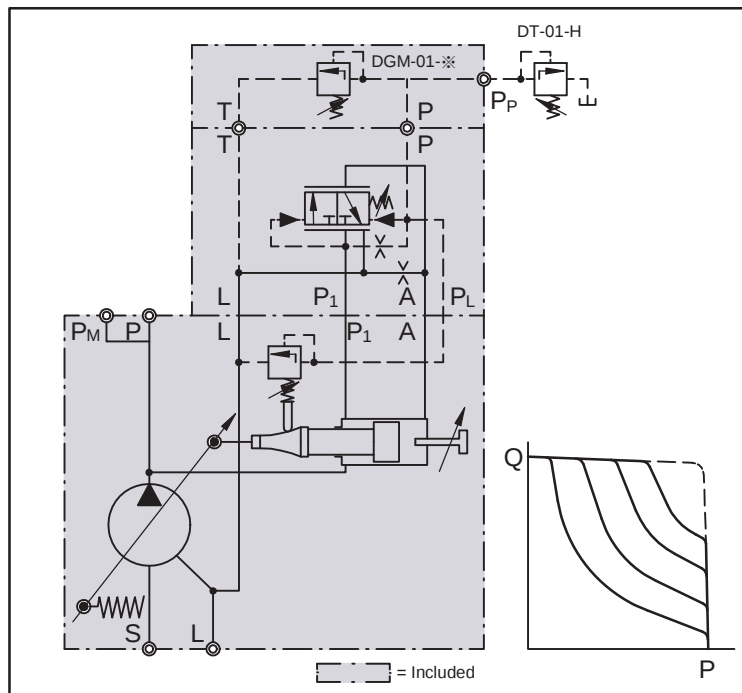
恆定馬達功率，是由定馬力調節器和先導閥進行調節，泵浦內部液壓做動產生機械式調節，泵浦排量與壓力之間產生穩定的聯繫。大排量時的作用壓力低於小排量時的作用壓力。進而達到恆定馬達功率的作用。

疊式定馬力調節器，於調節器上方裝配油昇壓力先導閥，可進行壓力先導調節。若裝配油昇比例壓力閥，則可達到電控比例壓力控制。

可以加裝遙控接口PP進行遠距離的壓力調節，比如可以從系統控制台進行壓力調節。控制壓力之液壓油來自調節器的內部。控制油流約為1-1.5 l/min

The hydraulic- mechanical horse power compensator consists of a modified remote pressure compensator or of a modified load-sensing compensator and a pilot valve. This pilot valve is integrated into the pump and is adjusted by a cam sleeve. The cam sleeve has a contour that is designed and machined for the individual displacement and the nominal horse power setting. At a large displacement the opening pressure (given by the cam sleeve diameter) is lower than at small displacements. This makes the pump compensate along a constant horse power (torque) curve. Horse power is optional when order. Working pressure can be adjusted by adding YEOSHE pressure leading valve. Adding the proportional pressure valve achieves the Electrical Proportional Pressure Control.

The pilot valve can be installed remote from the pump in some distance. That allows pressure setting e.g. from the control panel of the machine. The pilot flow supply is internal through the valve spool and the pilot flow is 1-1.5 L/min.



PV Axial Piston Pump

調節器 Compensator

PH 定馬力負載感應型調節器+溢流閥 Horse Power Low-sensing Compensator + Relief valve

定馬力負載感應型調節器+溢流閥 PH

恆定馬達功率，是由定馬力調節器和先導閥進行調節，泵浦內部液壓做動產生機械式調節，泵浦排量與壓力之間產生穩定的聯繫。大排量時的作用壓力低於小排量時的作用壓力。進而達到恆定馬達功率的作用。

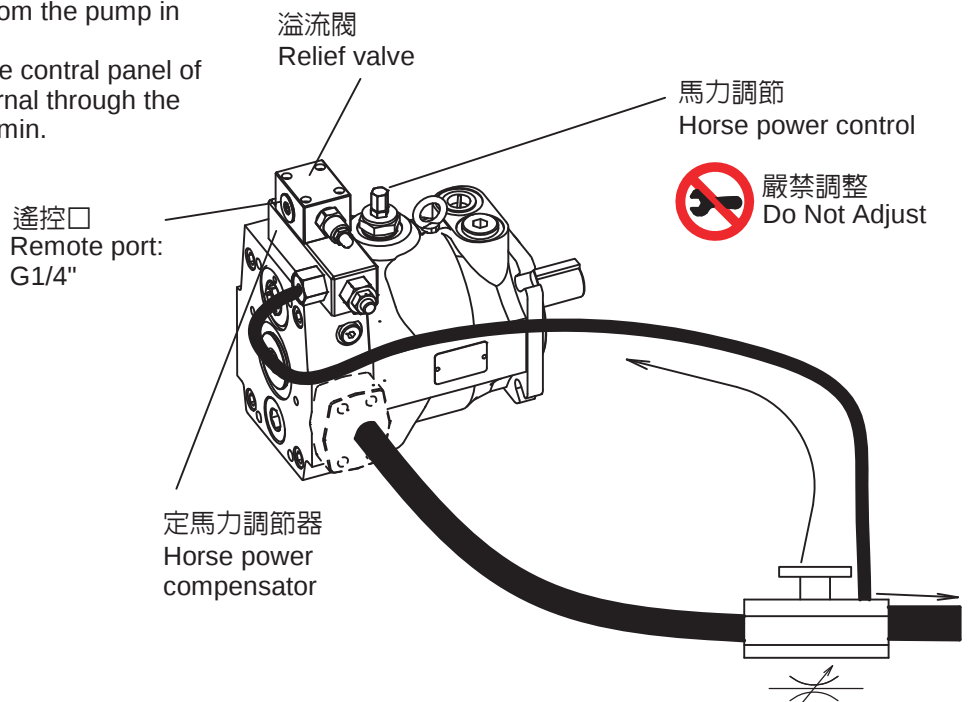
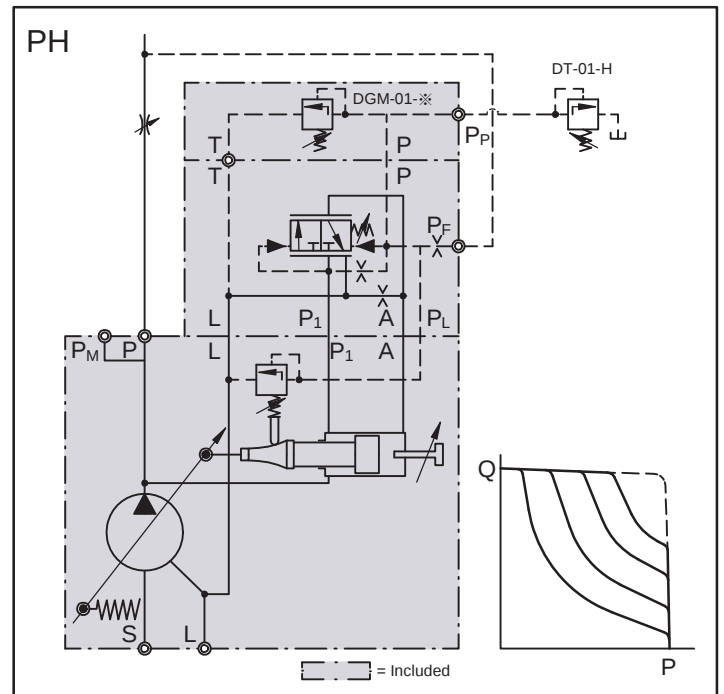
訂貨時可選擇所需的額定功率。（請參照訂購型號說明）

疊式定馬力+溢流閥+負載感應調節器，在其調節器的上方，加裝一個先導閥，增加壓力調節的功能。並在調節器的負載感應接口PF，連接外部回饋，作為主回路上的控制信號實現在第一條管路上對泵的流量進行調節。

可以加裝遙控接口PP進行遠距離的壓力調節，比如可以從系統控制台進行壓力調節。控制壓力之液壓油來自調節器的內部。控制油流約為1-1.5 l/min

The hydraulic- mechanical horse power compensator consists of a modified remote pressure compensator or of a modified load-sensing compensator and a pilot valve. This pilot valve is integrated into the pump and is adjusted by a cam sleeve. The cam sleeve has a contour that is designed and machined for the individual displacement and the nominal horse power setting. At a large displacement the opening pressure (given by the cam sleeve diameter) is lower than at small displacements. This makes the pump compensate along a constant horse power (torque) curve. Horse power is optional when order. Working pressure can be adjusted by adding a leading valve on the compensator, and pump flow can also be adjusted on the first pipe by adding an external feedback on the PF port as a control signal on the main stream. The pilot valve can be installed remote from the pump in some distance.

That allows pressure setting, e.g. from the contral panel of the machine. The pilot flow supply is internal through the valve spool, and the pilot flow is 1~1.5 L/min.



PV Axial Piston Pump 調節器 Compensator

PQ 定馬力負載感應型調節器+比例流量+溢流閥 Horse Power Low-sensing Compensator + Proportional Flow valve+ Relief valve

定馬力負載感應型調節器+比例流量+溢流閥 PQ

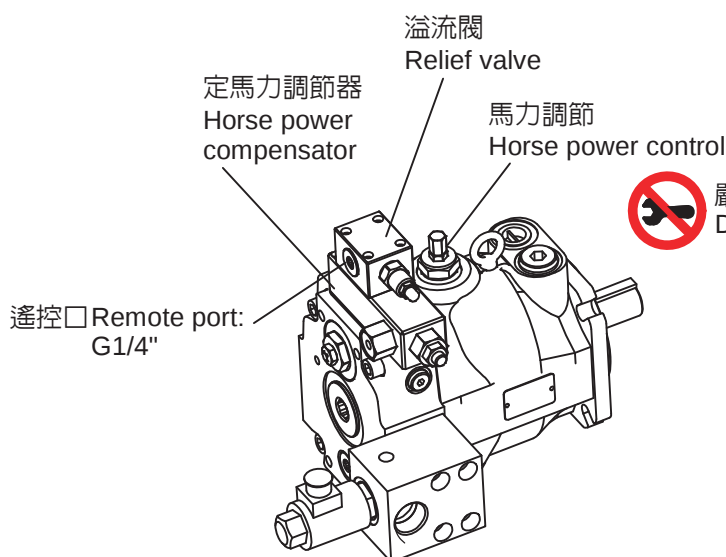
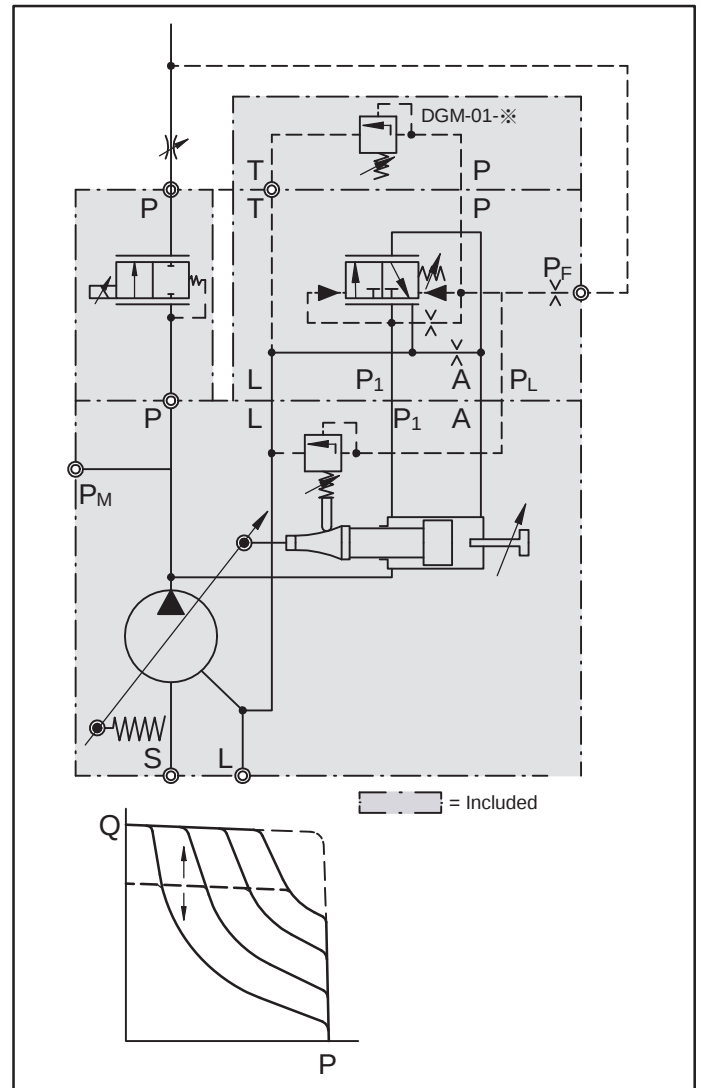
恆定馬達功率，是由定馬力調節器和先導閥進行調節，泵浦內部液壓做動產生機械式調節，泵浦排量與壓力之間產生穩定的聯繫。大排量時的作用壓力低於小排量時的作用壓力。進而達到恆定馬達功率的作用。

在其調節器的上方，加裝一個先導閥，增加壓力調節的功能。並在調節器的負載感應接口，連接回饋，作為主回路上的控制信號實現在第一條管路上對泵的流量進行調節。

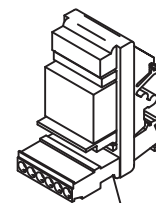
排量出口P加裝一個YEOSHE比例流量閥，可達成電控比例流量。

The hydraulic- mechanical horse power compensator consists of a modified remote pressure compensator or of a modified load-sensing compensator and a pilot valve. This pilot valve is integrated into the pump and is adjusted by a cam sleeve. The cam sleeve has a contour that is designed and machined for the individual displacement and the nominal horse power setting. At a large displacement the opening pressure (given by the cam sleeve diameter) is lower than at small displacements. This makes the pump compensate along a constant horse power (torque) curve.

Pressure can be adjusted by adding a leading valve in the compensator, and pump flow can also be adjusted on the first pipe by adding an external feedback on the PF port as a control signal on the main stream. Adding a proportional flow control valve on the P port achieves Electrical Proportional Flow Control.



嚴禁調整
Do Not Adjust



電子控制電路板(放大器)
Electronic Amplifier P-C Board

PV Axial Piston Pump 調節器 Compensator

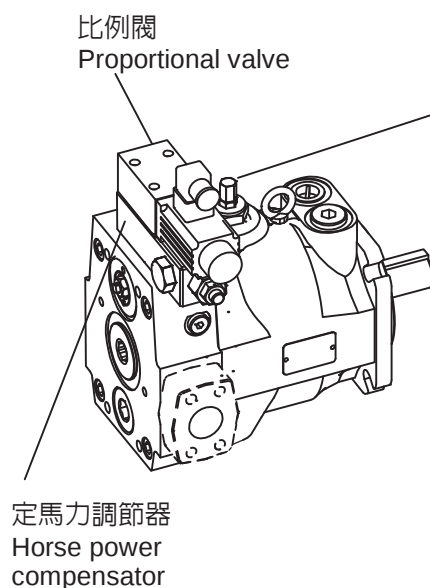
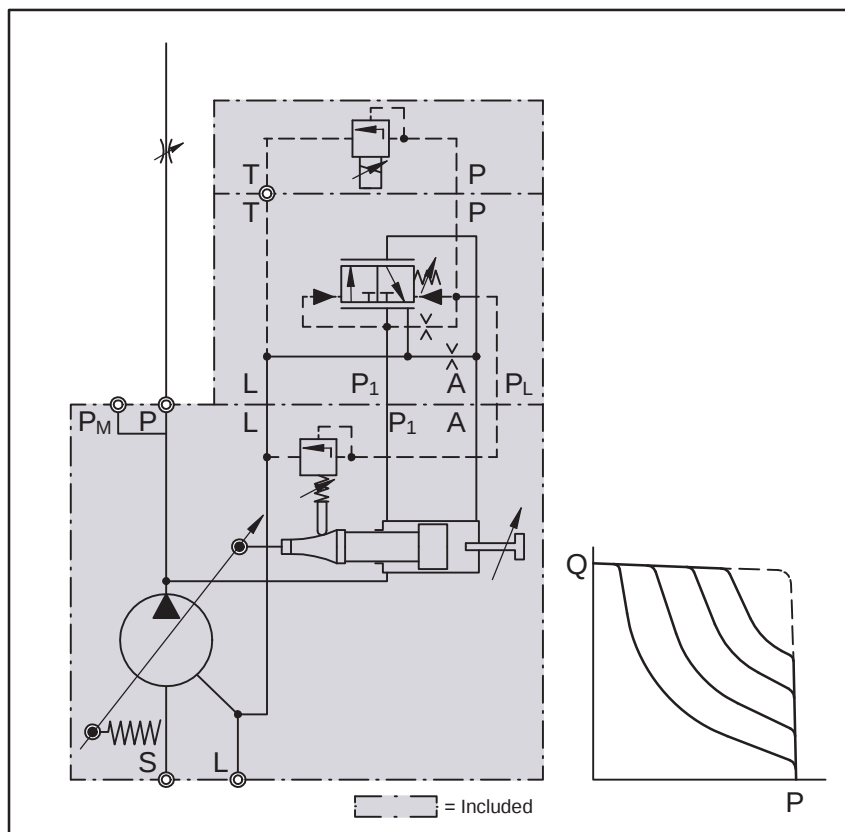
PJ 定馬力型調節器+比例壓力 Horse Power Compensator + Proportional Pressure Valve

定馬力型調節器+比例壓力 PJ

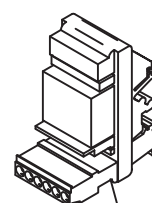
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疊式定馬力+比例壓力調節器，在其調節器的上方，加裝一個先導比例壓力閥，可進行電控比例壓力控制，增加壓力調節的功能。

The hydraulic- mechanical horse power compensator consists of a modified remote pressure compensator or of a modified load-sensing compensator and a pilot valve. This pilot valve is integrated into the pump and is adjusted by a cam sleeve. The cam sleeve has a contour that is designed and machined for the individual displacement and the nominal horse power setting. At a large displacement the opening pressure (given by the cam sleeve diameter) is lower than at small displacements. This makes the pump compensate along a constant horse power (torque) curve. Pressure-adjusted function is optional by adding a leading proportional pressure valve.



馬力調節
Horse power control
 嚴禁調整
Do Not Adjust



電子控制電路板 (放大器)
Electronic Amplifier P-C Board

PV Axial Piston Pump 調節器 Compensator

PR 定馬力型調節器+電控洩載 Horse Power Compensator + Electrical unloading

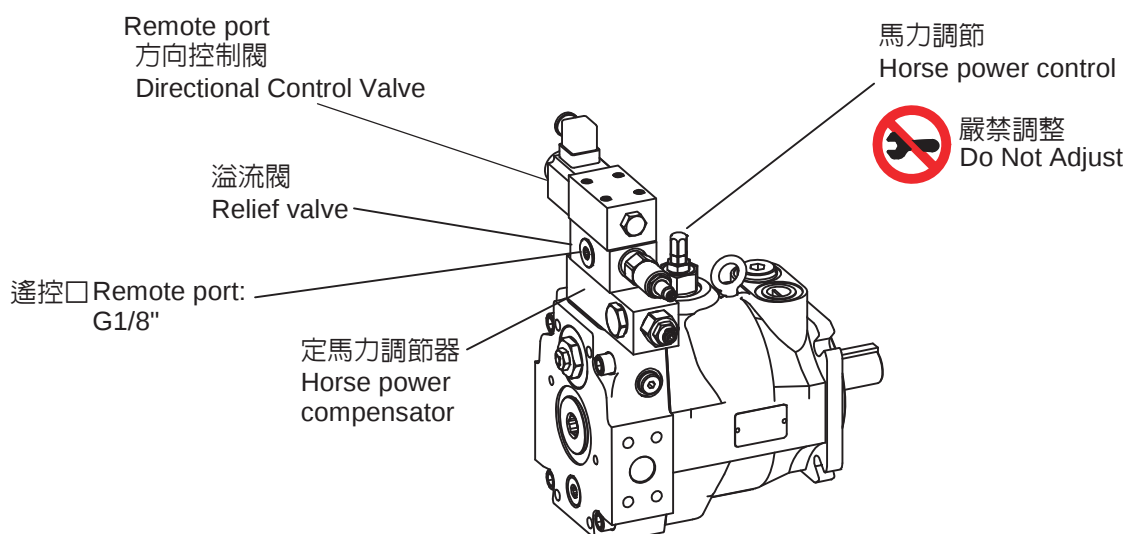
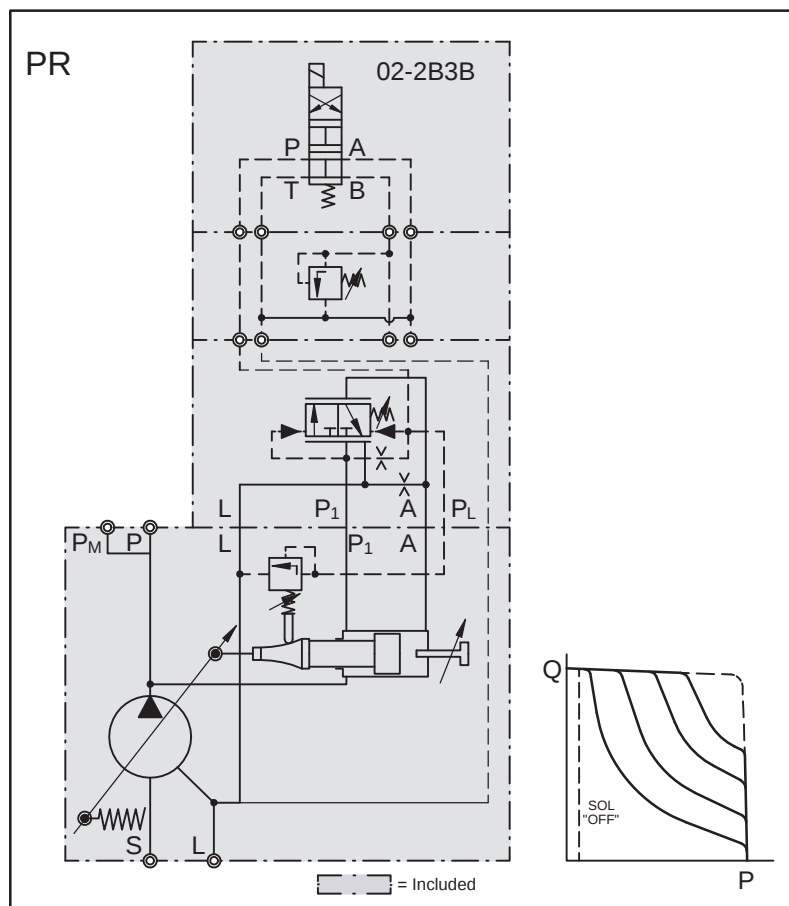
定馬力型調節器+電控洩載 PR

恆定馬達功率，是由定馬力調節器和先導閥進行調節，泵浦內部液壓做動產生機械式調節，泵浦排量與壓力之間產生穩定的聯繫。大排量時的作用壓力低於小排量時的作用壓力。進而達到恆定馬達功率的作用。

在其調節器上方加裝一個電磁式方向控制閥，增加電控卸載機能。

適用於卸壓時間長的情況。
系統停機時，通過泵的卸壓運轉，油溫 and 噪音可保持較低水平。

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PV Axial Piston Pump 調節器 Compensator

PS 定馬力負載感應型調節器+比例壓力 Horse Power Low-sensing Compensator + Proportional Pressure valve

定馬力負載感應型調節器+比例壓力 PS

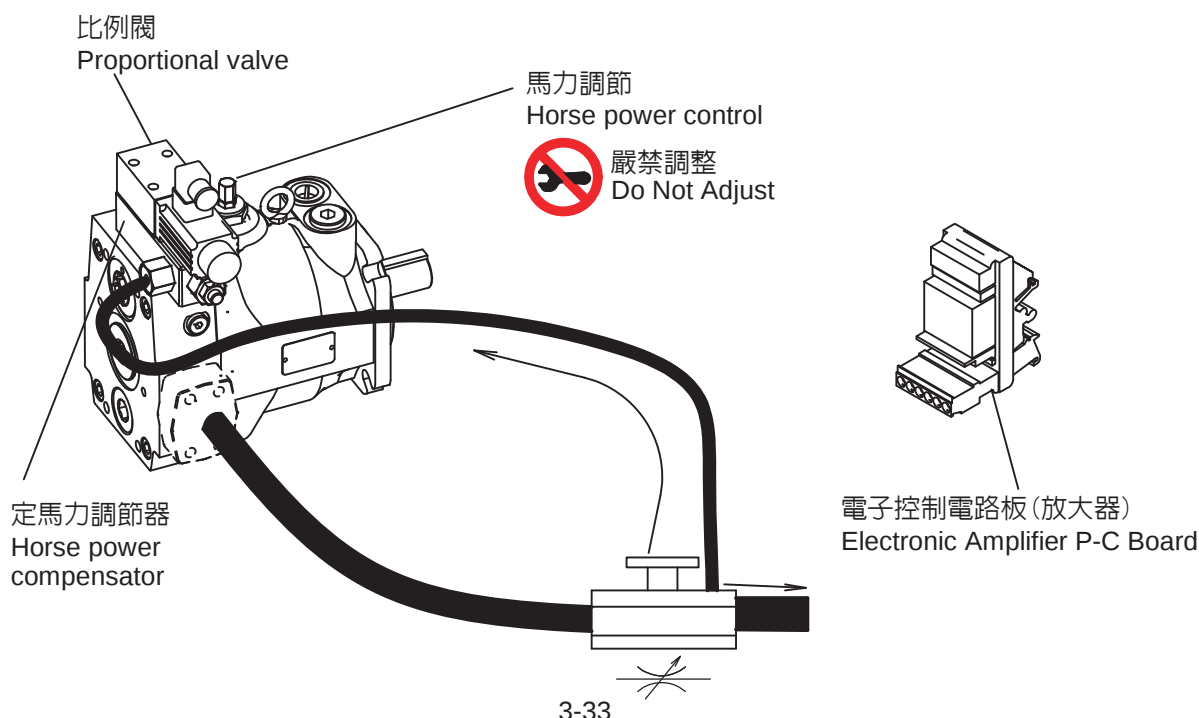
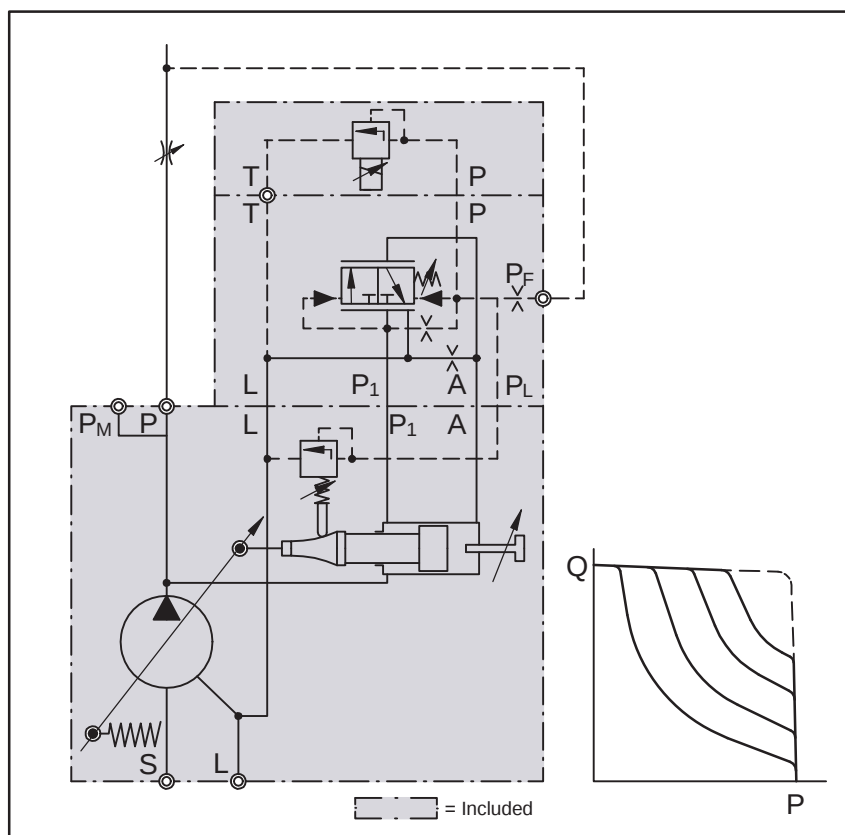
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疊式定馬力+比例壓力+負載感應調節器，在其調節器的上方，加裝一個先導比例壓力閥，可進行電控比例壓力控制，增加壓力調節的功能。

並在調節器的負載感應接口PF，連接外部回饋，作為主回路上的控制信號實現在第一條管路上對泵的流量進行調節。

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Electrical pressure-adjusted function is optional by adding a leading proportional pressure valve, and pump flow can also be adjusted on the first pipe by adding an external feedback on the PF port as a control signal on the main stream.



PV Axial Piston Pump

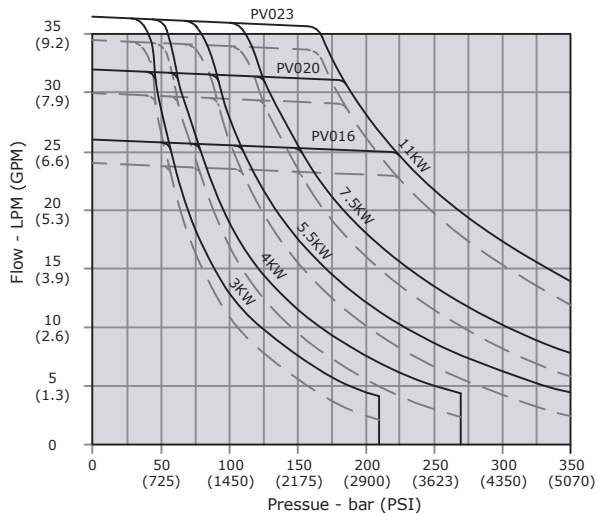
調節器 Compensator



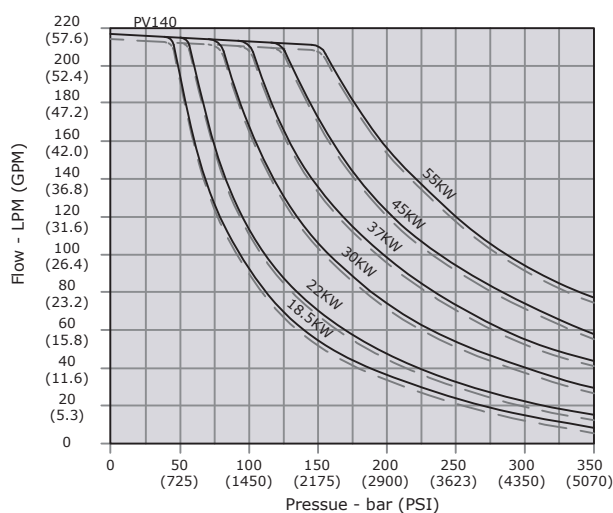
定馬力調節器/功率曲線圖

Horse Power Compensator, diagrams

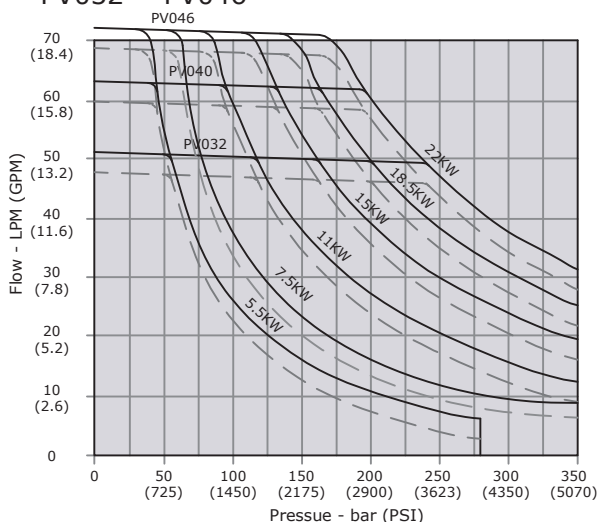
PV016 ~ PV023



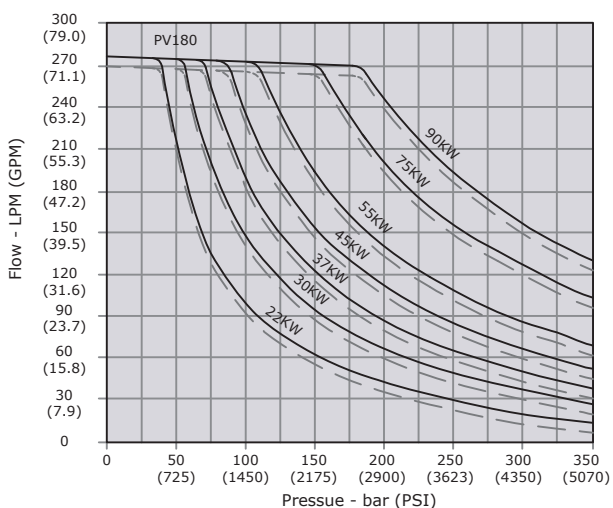
PV140



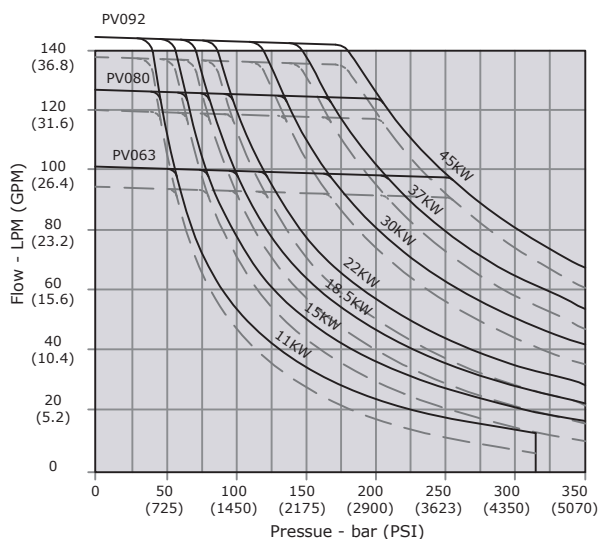
PV032 ~ PV046



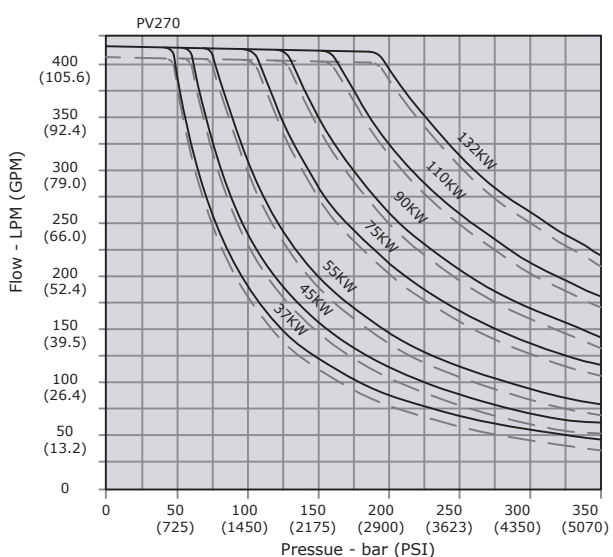
PV180



PV063 ~ PV092



PV270



所畫出的曲線適用於下列狀況：

速度：1500(---)和1800(——)

溫度：t=50℃

介質：HLP, ISO VG46

黏度：v=46mm²/s, 40℃時

The diagrams are only valid for the following working conditions:

speed: n=1500 (---) and 1800 (——) rev/min

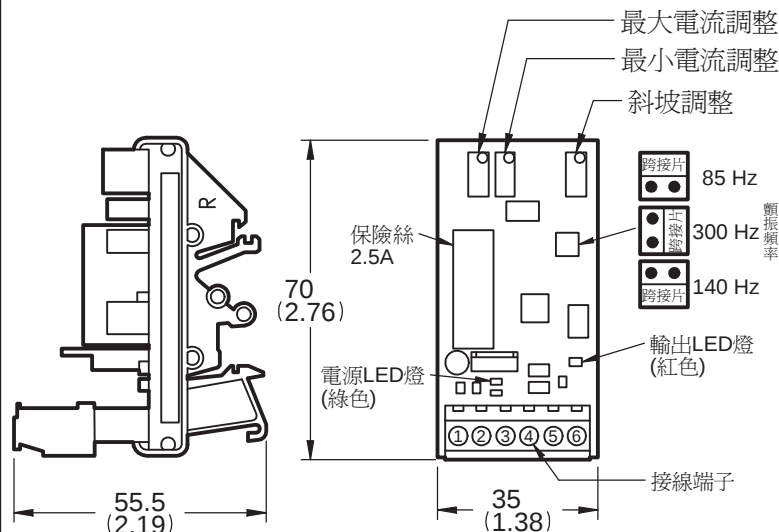
temperature: t=50℃

fluid: mineral oil HLP, ISO VG46

viscosity: v=46 mm²/s at 40℃

比例閥控制板

PCB-2600



單位：mm
(inch)

非常重要注意事項

當控制板輸入電源時，請務必保持控制板與比例閥線圈接線（線圈與端子間⑤⑥保持接線狀態）如此才能再去調整此控制板，以避免控制板迴路產生錯誤的輸入/輸出信號。

設定用法說明

電源輸入顯示：綠色LED燈

斜坡調整(RAMP)：（作動範圍：0秒~5秒）
順時針旋轉，可加長加速時間；反時針旋轉，可減短加速時間

最大電流調整：

順時針旋轉，增大電流；反時針旋轉，減少電流，此設定可同時調整使用者輸入信號的斜率；例如：輸入DC 10V信號時，輸出的電流值為300 mA 或 600 mA.....

最小電流調整：

順時針旋轉，增大電流；反時針旋轉，減少電流，此設定主要提供需要保持最小輸出電流時（儘管輸入信號為0，而輸出仍會保有最小電流）

顫振頻率調整：

為了讓比例閥擁有快速的反應速度及減少遲滯，因此可選擇85、140、300Hz等3種頻率

技術資料

輸入電源： 10-35 VDC

最大輸出電流： 0-2600 mA 可調型
使用DC 12 V 或 DC 24 V 線圈
(輸出為 PWM-DC)

最小電流設定： 0-600 mA 可調型

斜坡調整(加、減速)： 0~5 Sec.

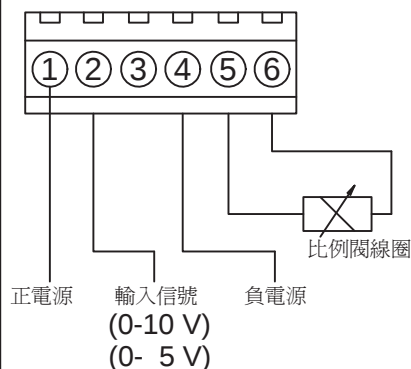
顫振頻率調整： 使用"跨接片"可選擇 85, 140, 300 Hz (出廠預設值140 Hz)

環境溫度範圍： -15~140 °F
-10~60 °C

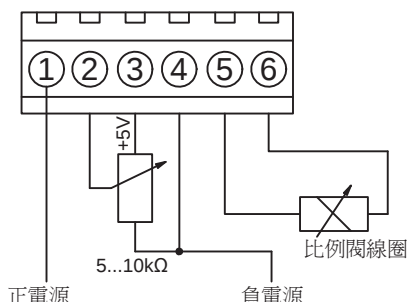
重量： 0.05 kg

接線方法

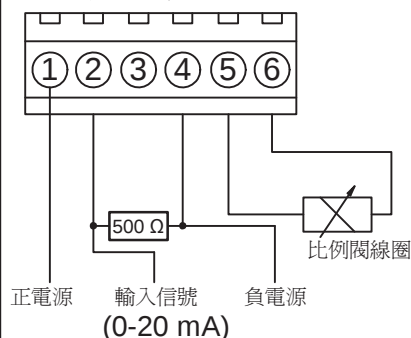
外部電壓信號控制



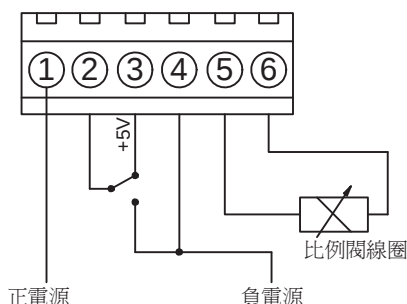
可變電阻外部調整



外部電流信號控制



兩接點控制



• 夾式連接端子台

- 端子1=正電源（10-35 VDC）
- 端子2=輸入控制電壓（+信號）
- 端子3=輔助電壓（+5 VDC）
- 端子4=負電源（接地）
- 端子5=接比例閥線圈（-）
- 端子6=接比例閥線圈（+）

• 可變電阻

順時針轉動可增加電流或延長斜坡（加、減速）時間（全部約可調10圈）

• 保險絲

標準20mm玻璃管保險絲2.5（安培）AT

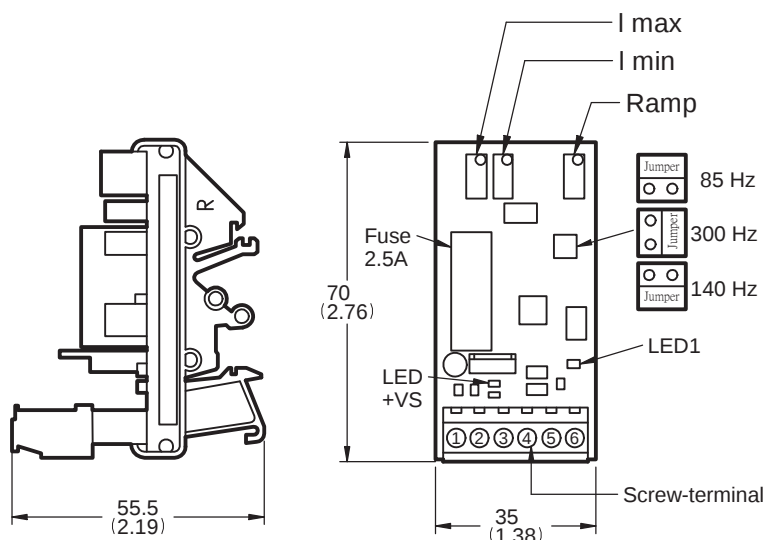
• LED燈

電源LED燈（綠色）：
當輸入電源時燈亮，並表示保險絲正常。

輸出LED燈（紅色）：
有電流輸出至線圈時，則燈的亮度會隨著電流大小而改變。

PROPORTIONAL AMPLIFIER

PCB-2600



UNIT:mm
(inch)

NOTICE

Do not remove the amplifier from the coil while the power is on.
This will cause a failure in the internal circuits of the amplifier, resulting in loss of output to the coil.

INSTRUCTIONS FOR SETTING

SUPPLY Green LED

RAMP Ramping up/down time adjustment.
For long ramping times, turn potentiometers clockwise, for short ramping times, turn potentiometers counter-clockwise.

MAX/MIN I max / I min

There are multi-course potentiometers for adjustment of min-max and also ramp time.

FREQUENCY ADJ.

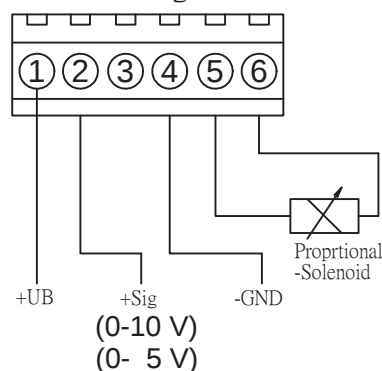
The dither frequency can be set with a Jumper to 85, 140, or 300 Hz.

TECHINCAL DATA

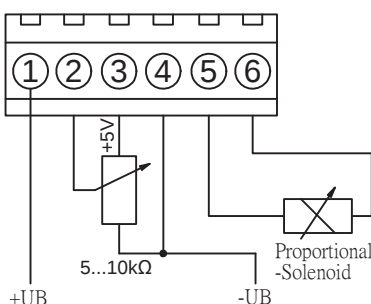
Supply Voltage :	10-35	VDC
Max. Current :	0-2600 mA adjustable for 12 and 24 VDC (Output is a PWM-DC)	
Min. Current :	0-600 mA adjustable	
Ramp Adjustment :	0~5	Sec.
Dither Frequency :	85, 140, 300 Hz to be set by jumper(Standard 140 Hz)	
Ambient Operating temperature	-15~140 °F	-10~60 °C
Weight :	0.05	Kg

Connections

External Voltage Control



Potentiometer Control

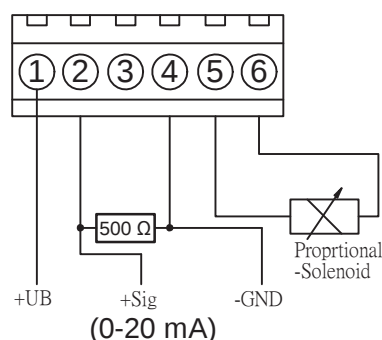


- . Clamp Connections plug in connector
- Pin 1 = + UB; Supply voltage (10-35 VDC)
- Pin 2 = control voltage (+ Sig)
- Pin 3 = Auxiliary voltage (+ 5 VDC)
- Pin 4 = Ground (GND)
- Pin 5 = Solenoid (-)
- Pin 6 = Solenoid (+)

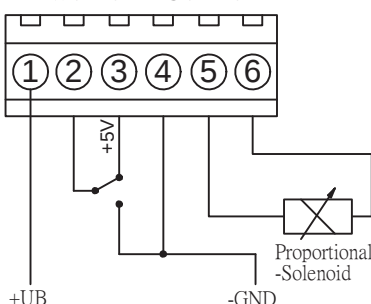
. Potentiometer

Turn clockwise means increasing current or Extension of ramp time
App. 10 turns for complete range

External Current Control



Two Point Control



.Fuse

Standard 20 mm Glass fuse 2.5 A T

.LED's

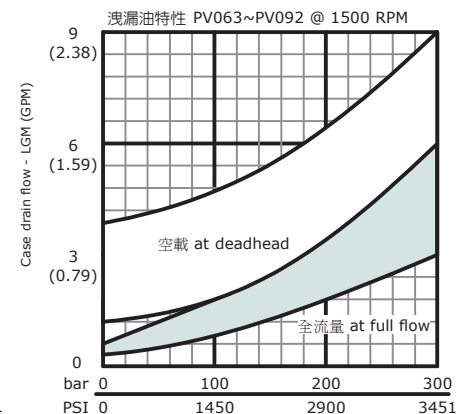
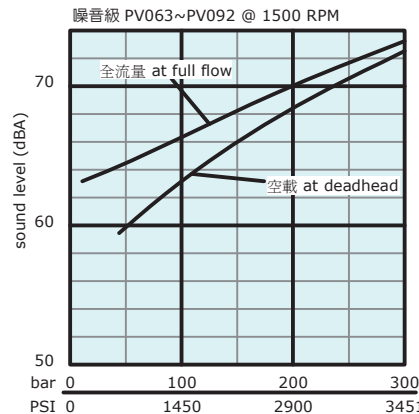
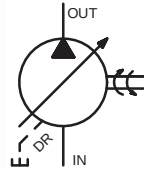
LED +VS (green) = lights, when voltage supply and fuse are in order
LED1 (red) = lights, if there is an output to the solenoid

PV Axial Piston Pump

效率和洩漏油特性 Efficiency and case drain flows

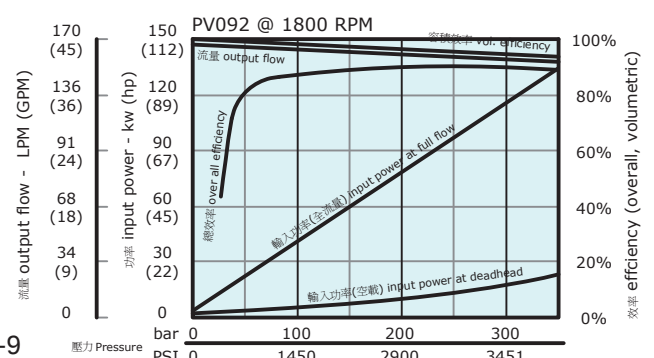
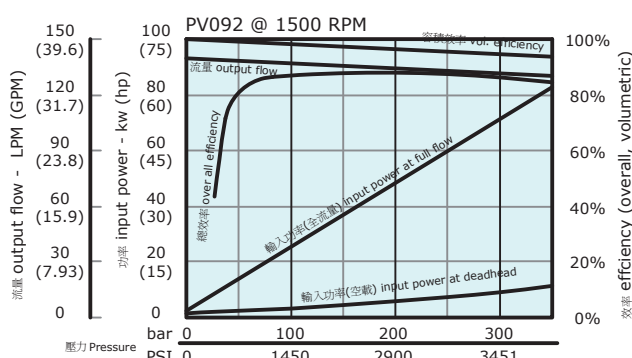
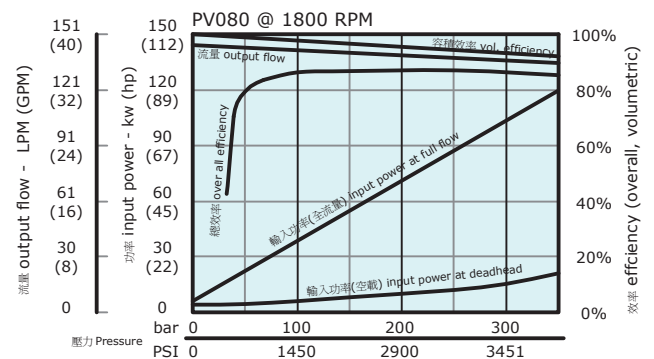
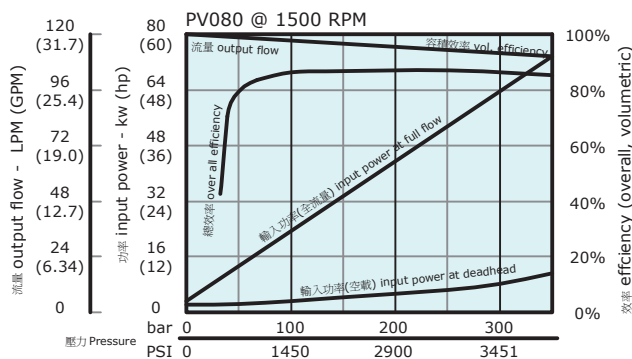
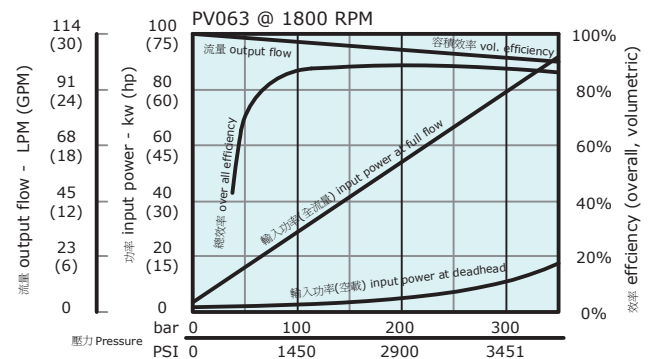
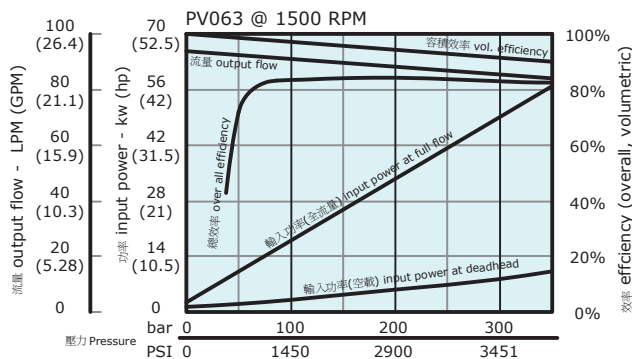


PV063 ~ PV092, PV110, PV125 (3號體)



效率特性曲線圖是在傳動轉速 $n = 1500$ RPM，溫度為 40°C ，液壓油黏度為 $46 \text{ mm}^2/\text{s}$ 等條件下測定的。泵浦洩漏油和調節器的控制油，通過泵的迴油口流回油箱，對於先導式調節器（代號G開頭、H開頭、定馬力恆功率調節器P開頭）來說，先導閥的控制油流入泵體內，該圖所表示的值得高出1-1.2 l/min。請您注意：該圖所表示的洩漏值僅適用於靜態負荷，若為動態負荷時，在快速調節的過程中，控制活塞所排出的液壓油也同樣地經過泵的迴油口流回油箱，該動態調節的流量，瞬間可達 80 l/min 。所以洩漏油管路的截面積應為所有接口的節面積總和，並盡可能直達且短距離地與油箱連接。

The efficiency and power graphs are measured at an input speed of $n = 1500$ RPM, a temperature of 40°C and a fluid viscosity of $46 \text{ mm}^2/\text{s}$. Case drain flow and compensator control flow leave via the drain port of the pump. To the values shown are to be added 1 to 1.2 l/min, if at pilot operated compensators (codes G*, H*, P*, horse power compensator and p/Q-control) the control flow of the pressure pilot valve also goes through the pump. Please note: The values shown below are only valid for static operation. Under dynamic conditions and at rapid compensation of the pump the volume displaced by the servo piston also leaves the case drain port. This dynamic control flow can reach up to 80 l/min ! Therefore the case drain line is to lead to the reservoir at full size and without restrictions as short and direct as possible.



PV Axial Piston Pump

外型尺寸 Dimension

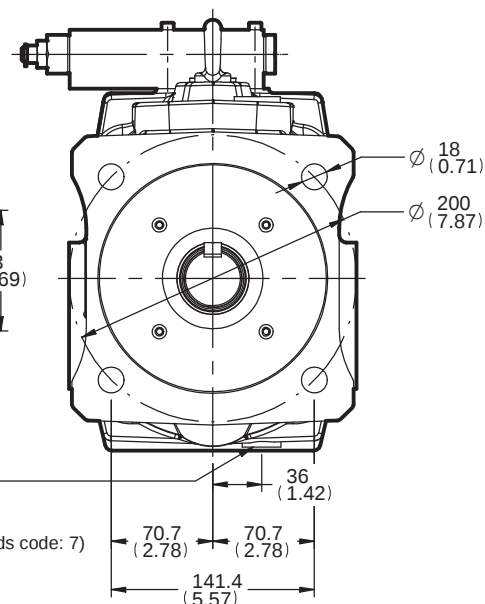
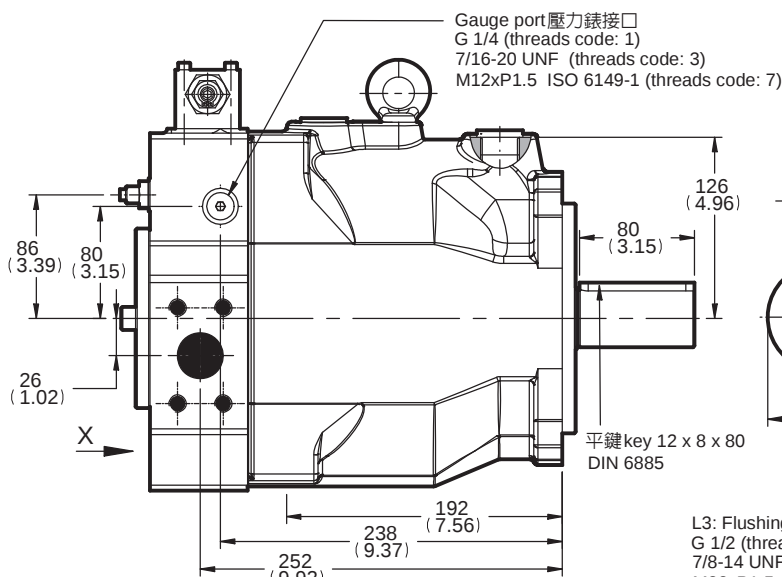
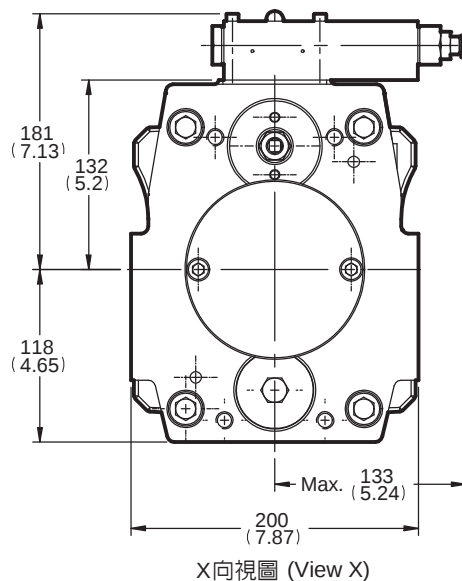
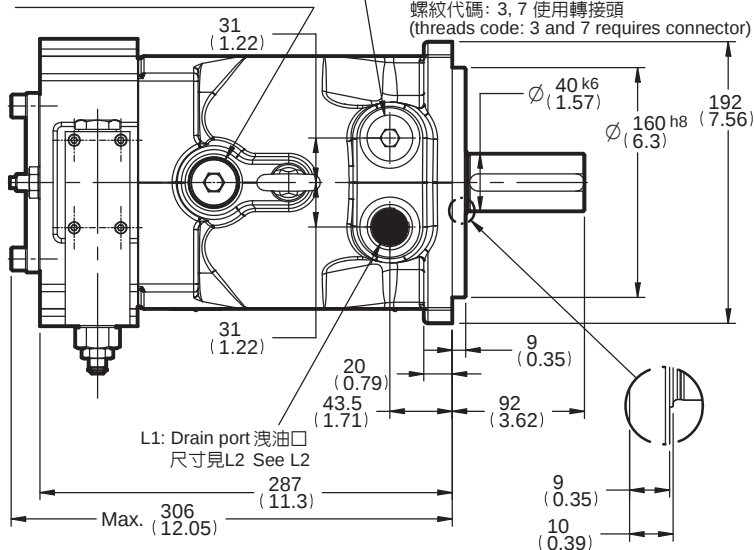


PV063 ~ PV092, PV110, PV125 (3號體) 公制連結 metric version

連接代碼 Mounting: M, K

用於功率調節器或排量反饋的 LVDT
Mounting hole for horse power
compensator pilot or displacement
feedback LVDT

L2: Drain port 洩油口
G 3/4 (threads code: 1)
1 1/16-12 UNF (threads code: 3)
M27xP2.0 ISO 6149-1 (threads code: 7)
螺紋代碼: 3, 7 使用轉接頭
(threads code: 3 and 7 requires connector)



Gauge port 壓力錶接口
G 1/4 (threads code: 1)
7/16-20 UNF (threads code: 3)
M12xP1.5 ISO 6149-1 (threads code: 7)

平鍵 key 12 x 8 x 80
DIN 6885

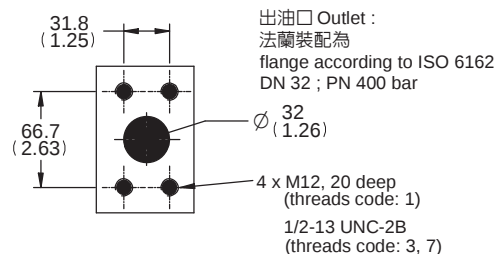
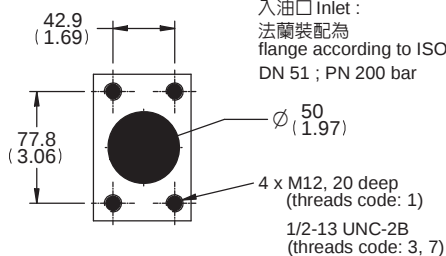
L3: Flushing port 漏油口
G 1/2 (threads code: 1)
7/8-14 UNF (threads code: 3)
M22xP1.5 ISO 6149-1 (threads code: 7)

入油口 Inlet:

法蘭裝配為
flange according to ISO 6162
DN 51 ; PN 200 bar

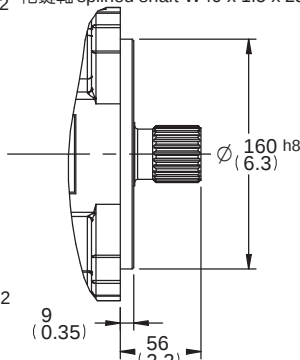
連結代碼 Mounting code: K

花鍵軸 splined shaft W40 x 1.5 x 25 x 8f DIN 5480



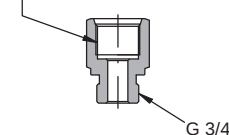
出油口 Outlet:

法蘭裝配為
flange according to ISO 6162
DN 32 ; PN 400 bar

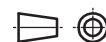


洩油口轉接頭
connector for L2 drain port

1 1/16-12 UNF (threads code: 3)
M27xP2.0 ISO 6149-1 (threads code: 7)



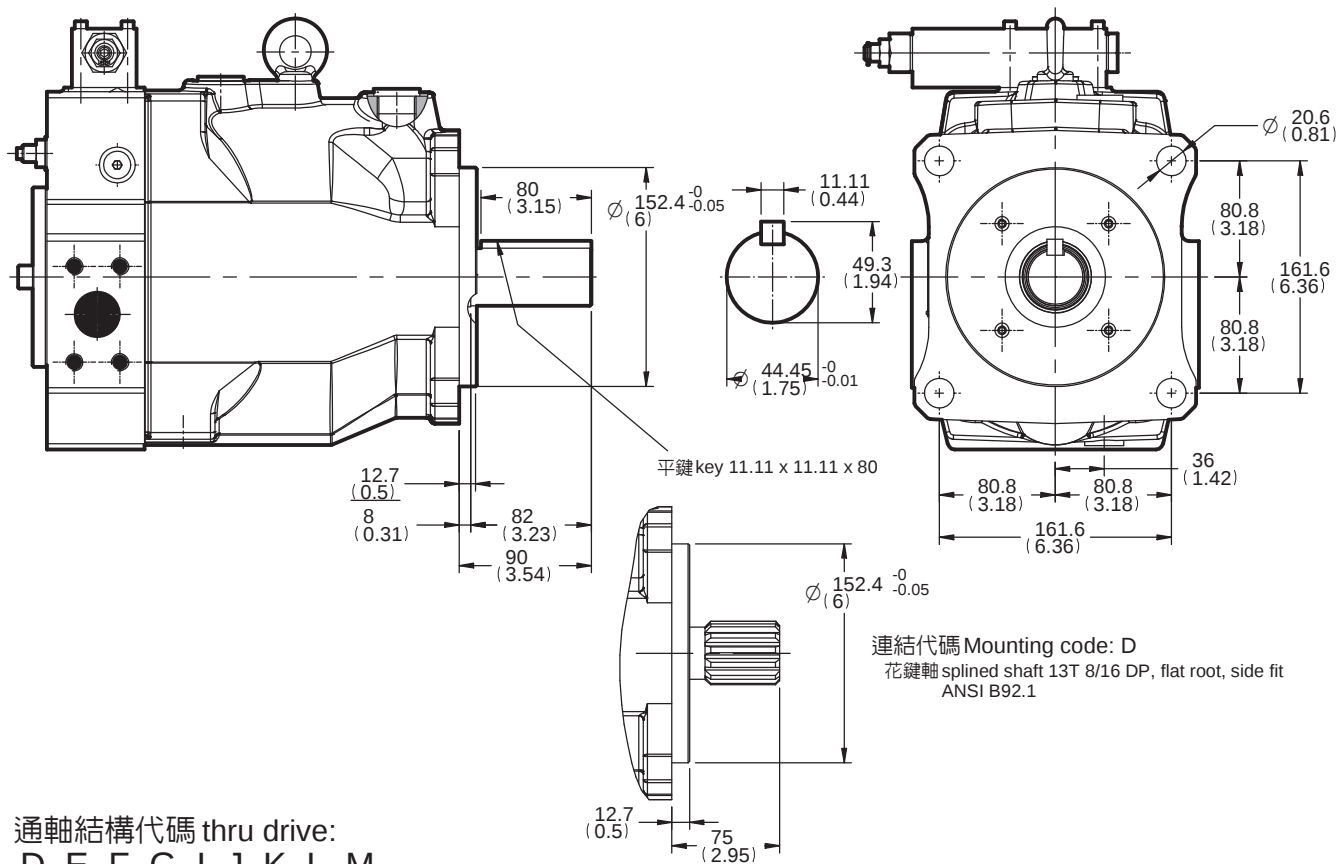
螺紋代號: 3, 7 為非標準品
未提供現貨, 須特別訂購
threads code: 3 and 7
Non standard, no stock,
specially fabricate.



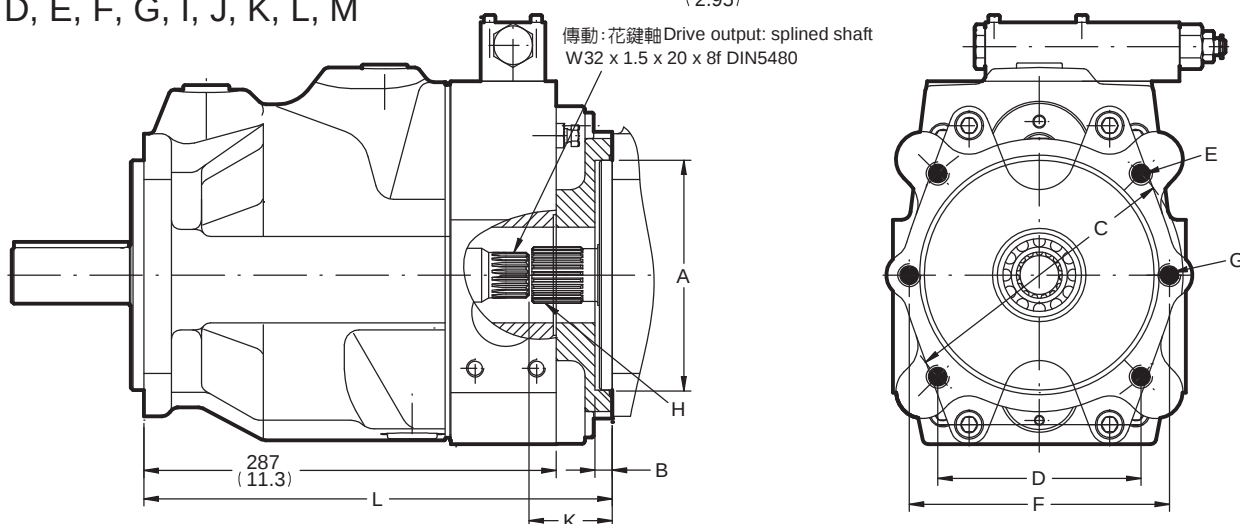
PV Axial Piston Pump

外型尺寸 Dimension

PV063 ~ PV092, PV110, PV125 (3號體) SAE 連結和通軸結構 SAE version and thru drive
 連接代碼 Mounting: N, D



通軸結構代碼 thru drive:
 D, E, F, G, I, J, K, L, M



通軸轉接件可按照下列連接尺寸供貨 Thru shaft adaptors are available with the following dimensions:									
thru code	A	B	C	D	E	F	G	K	L
I	63	10	85	-	M8	100	M8	58	326
J	80	10	103	-	M8	109	M10	58	326
K	100	12	125	-	M10	140	M12	58	326
L	125	12	160	-	M12	180	M16	58	326
M	160	12	200	-	M16	n. avail.	n. avail.	58	326
D	82.55	10	-	-	-	106	M10	58	326
E	101.6	12	-	89.8	M10	146	M12	58	326
F	127	14	-	114.5	M12	181	M16	58	326
G	152.4	14	-	161.6	M16	n. avail.	n. avail.	78	346

螺紋代號選擇3和7時，尺寸
 E, G用UNC-2B螺紋
 Thread codes are 3 and 7
 the dimensions E and G are
 UNC-2B threads

螺紋代號: 3, 7 為非標準品
 未提供現貨，須特別訂購
 threads code: 3 and 7 Not
 standard, not in stock
 require special requests.

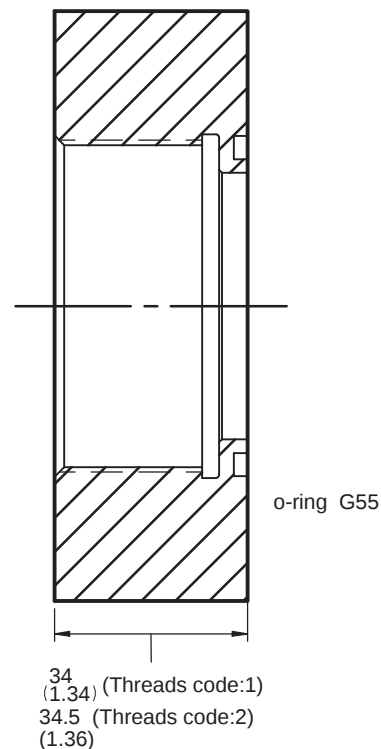
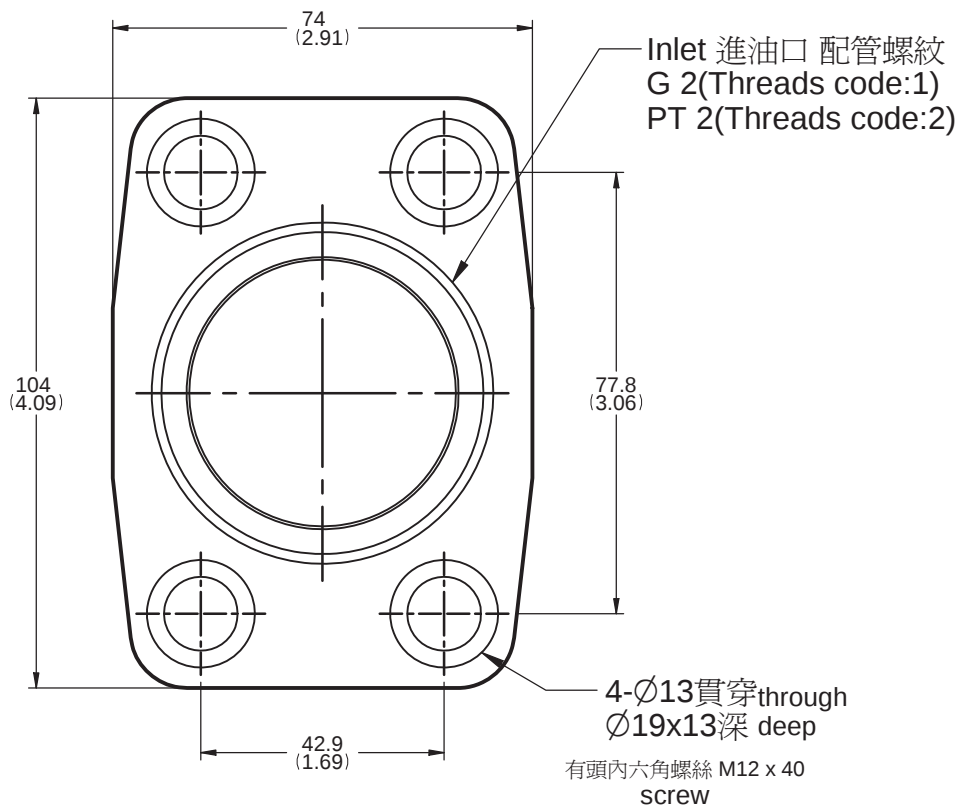


PV Axial Piston Pump

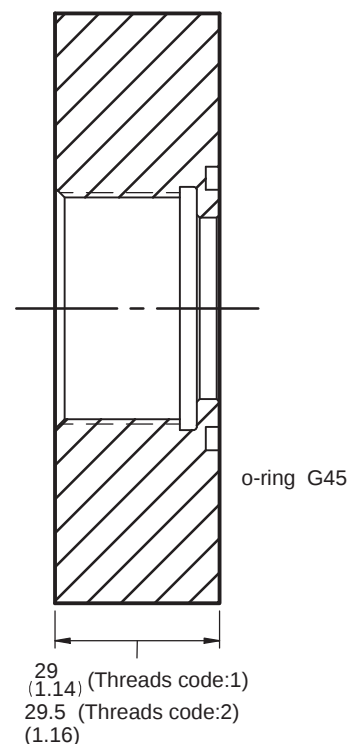
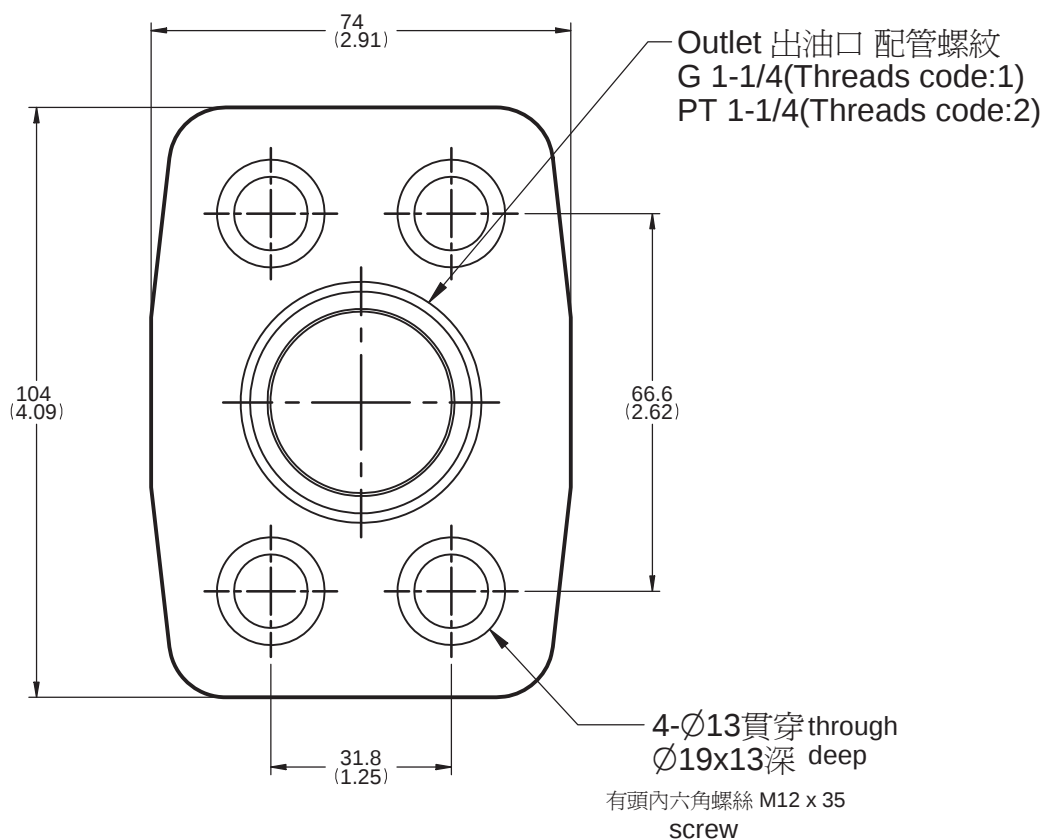
外型尺寸 Dimension

PV063 ~ PV092, PV110, PV125 (3號體) 進出油法蘭

Inlet Flange 進油法蘭



Outlet Flange 出油法蘭



1、液壓油

推薦採用高品質的礦物油基液壓油，像符合 DIN 51524 標準中第 2 部分規定的 H-LP 油液。在 50°C 時，粘度應為 25 至 50mm²/s，溫度範圍-10 至 70°C。對於其他的油液，像磷酸酯之類須進一步查詢。

2、齒封件

以礦物油基液壓油作為工作介質則採用標準的丁睛橡膠(Nitril)密封件。對於像磷酸酯之類的油液必須使用碳氟密封件。

3、過濾與油管配置

如果通過十分有效的過濾使得油液的清潔度符合規定的純淨度等級(例如：符合 ISO 4406)的話，那麼，泵和其他元件的功能的可靠性和使用壽命會得到不同程度的提高。濾芯應符合 ISO 標準的品質要求。

(1) 過濾精度 X(μ m)的最低要求，保障一般液壓設備的功能可靠性：

等級 19/15，按照 ISO 4406 標準。

X=25 μ m (β 25 $\geq$ 75)按照 ISO 4572 標準。

(2) 保障設備具有高的功能可靠性和長的元件使用壽命：

等級 16/13，按照 ISO 4406 標準。

X=10 μ m (β 10 $\geq$ 75)按照 ISO 4572 標準。

推薦採用油昇為不同的使用場合和安裝方式生產的回油過濾器或壓力油過濾器。應儘量避免使用吸油過濾器，特別是對快速響應的泵。吸油口可使用 100 目(149 μ m)濾網，濾網尺寸須大於吸口 2 倍以上。為達到最好的過濾效果，旁路過濾是最好的選擇。

(3) 安裝和裝配

水平安裝：

吸油口和壓力油口在側面，泄漏油口朝上，或者軸轉 90 度，壓力油口朝上，吸油口朝下。絕對不能反過來，因為泄漏油口必須總是位於儘可能高的位置上。

垂直安裝：軸朝上。

進口(吸油端)

泵和吸油管路應這樣設置，使真空度不超過 0.8 bar(絕對的)。吸油管路應儘可能的短和直。當泵安裝在油箱上時應將吸油口切成 45 度以改善吸油條件。注意要絕對的密封。空氣進入吸油管路會引起氣蝕，噪音和損害泵。

4、傳動

泵的軸和電機的軸必須在 0.25mm T.I.R.公差範圍內同軸線，最大允許角度誤差小於 0.2 度。應該使用帶間隙誤差補償和角度誤差補償的回轉柔性聯軸器。必須遵守聯軸器生產廠家的安裝規定。

當傳動引起泵軸的徑向載荷時必須與廠家磋商。泵軸的軸向載荷是不允許的。

5、啟動

在第一次試運行時，泵(通過泄漏油管路)應該被充滿了油。當第一次啟動時，系統在無壓的狀態下運行，為的是迅速充油並且使泵和管路排氣。當全部的空氣排空時，壓力就建立起來。

短時開、關利於排氣並能使泵快速充油。(注意：檢查電機的旋轉方向。)

6、工作噪音

泵和正常工作噪音和液壓傳動系統的工作噪音的測定與泵和整個傳動系統安裝在哪裡和怎樣安裝有關。

管路連接形式、尺寸和結構也經常會引起不應有的高噪音。

泵和電機之間的連接形式和結構也經常會引起不應有的高噪音，即使受到安裝空間的限制，安裝時應該採用相應的措施和結構部件來達到最佳的降低工作噪音效果。

降低工作噪音：

結構部件通過彈性連接可以防止將泵的震動傳給其他的元件並且也可以避免將泵的震動加劇。例如：

(1) 泵的支架：採用硫化迷宮式封的減震法蘭。①

(2) 旋轉彈性：聯軸器。②

(3) 減震架③：或用於安裝電機的圓形支架或泵支架的腳架法蘭。

(4) 泵的進口、出口和洩漏油口採用柔性的管路連接(軟管)。

(5) 僅進油管路採用氣密的硬管連接。

(6) 管路連接應使用盡可能大的橫截面以及相應的連接螺紋或法蘭。

7、洩漏油管路

洩漏油管路必須直接地和無節流地引入油箱。不能與其他的回油管路連接在一起。洩漏油管路的末端必須在油箱的最低液面以下並且儘可能遠離吸油口。借此可使在停車狀態下泵體內部油液不會排空且混有空氣的發熱油液不會重複循環。出於同一原因，把泵安裝在油箱內部時，洩漏油管路的安裝也應保證虹吸的產生，以選取並選用有最大直徑的直速型低壓接頭，保證泵的殼體能被充滿油液。殼體-(洩漏油)-壓力不能超過 1bar。管路最長 2000mm，最小直徑應按接口尺寸相符並使用低壓-螺紋連接。

	PV16 PV20 PV23	PV32 PV40 PV46	PV63~92	PV140~180
油管接管尺寸	3/8 (ϕ 8.5 以上)	1/2 (ϕ 12 以上)	3/4 ϕ (16 以上)	1" ϕ 19
油管內徑	ϕ 12 以上	ϕ 15 以上	ϕ 19 以上	ϕ 25
洩漏管長	1m 以下	1m 以下	1m 以下	1m 以下

A. Fluid recommendations

Premium quality hydraulic mineral oil fluids are recommended, like H-LP oils to DIN 51524, part2. The viscosity range should be 25 to 50 mm²/s (cSt) at 50° C. Operating temperatures –10 to +70°C. For other fluids such as phosphoric acid esters or for other operating conditions, please consult with YEOSHE for assistance.

B. Seals

NBR (Nitrile) seals are used for operation with hydraulic fluids based on mineral oil. For synthetic fluid, as perhaps phosphoric acid esters, Fluorocarbon seals are required. Please consult with YEOSHE for assistance.

C. Filtration

For maximum pump and system component functionability and life, the system should be protected from contamination by effective filtration.

Fluid cleanliness should be in accordance with ISO classification ISO 4406. The quality of filter elements should be in accordance with ISO standards.

(1) Minimum requirement for filtration rate $\times$ (mm):

General hydraulic systems for satisfactory operation:

Class 19/15, to ISO 4406 $X=25 \mu m$ ($\beta 25 \geq 75$) to ISO 4572

(2) Hydraulic systems with maximum component life and functionability:

Class 16/13, to ISO 4406 $X=10 \mu m$ ($\beta 10 \geq 75$) to ISO 4572

It is recommended to use return line or pressure filters. YEOSHE Filter Division offers a wide range of these filters for all common applications and mounting styles. The use of suction filters should be avoided, especially with fast response pumps.

Bypass filtration is a good choice for best filter efficiency.

D. Installation and mounting

Horizontal mounting:

Outlet port-side or top. Inlet port-side or bottom, drain port always uppermost.

Vertical mounting: Shaft pointing upwards.

Install pump and suction line in such way that the maximum inlet vacuum never exceeds 0.8 bar absolute. The inlet line should be as short and as straight as possible. A short suction line cut to 45° is recommended when the pump is mounted inside the reservoir, to improve the inlet conditions. All connections should be leak-free, otherwise the air in the suction line will cause cavitations, noise, and damage to the pump.

E. Shaft rotation and alignment

Pump and motor shafts must be aligned within 0.25mm T.I.R. maximum. A floating coupling must be used. Bellhousings and couplings can be ordered at manufacturers listed in this catalog. Please follow the coupling manufacturer's installation instructions. Please consult with YEOSHE for assistance on radial load type drives.

F. Start up

Prior to start up, the pump case must be filled with hydraulic fluid (use case drain port). Initial start up should be at zero pressure with an open circuit to enable the pump to prime. Pressure should only be increased once the pump has been fully primed.

Attention: Check motor rotation direction.

G. Operating noise of pumps

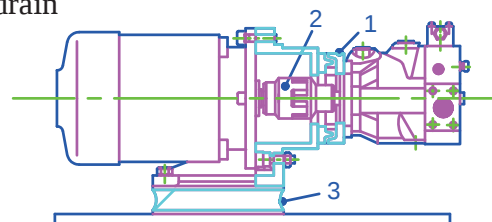
The normal operating noise of a pump and constantly-operation noise of the entire hydraulic system is largely determined by where and how the pump is mounted and how it is connected to the down stream hydraulic system. Besides, size, style, and installation of hydraulic tube are the major influence on the overall noise emitted by a hydraulic system.

H. Noise reduction measures

Flexible elements help to prevent pump body vibration from being transmitted to other construction elements, where amplification may occur. Such elements can be:

Bell housing with elastic dampening flange with vulcanized labyrinth

- (1) Floating and flexible coupling
- (2) Damping rails
- (3) Or silent blocks for mounting the electric motor or the foot mounting flange
- (4) Flexible tube connections (compensators) or hoses on inlet, outlet, and drain port of the pump.
- (5) Exclusive use of gas tight tube fittings for inlet connections to avoid ingress of air causing cavitations and excessive noise.



I. Drain line

The drain line must lead directly to the reservoir without restriction. The drain line must not be connected to any other return line. The end of the drain line must be below the lowest fluid level in the reservoir and as far away as possible from the pump inlet line. This ensures that the pump is not empty itself when it's not in operation and the hot aireated oil will not be recirculated.

For the same reason, when the pump is mounted inside the reservoir, the drain line should be arranged in such a way that a siphon is created. This ensures that the pump is always filled with fluid. The drain pressure must not exceed 1 bar. Drain line length should not exceed 2 meters. Minimum diameter should be selected according to the port size and a straight low pressure fitting with maximized bore should be used.

	PV016~PV023	PV032~PV046	PV063~PV092	PV140~PV180	PV270
Size of pipe joints	3/8(φ8.5 or more)	1/2(φ12 or more)	3/4(φ16 or more)	1(φ19 or more)	1-1/4(φ22 or more)
I.D. of pipes	φ12 more	φ15 more	φ19 more	φ25 more	φ32 more
Length of drain	Under 1m	Under 1m	Under 1m	Under 1m	Under 1m

PV Axial Piston Pump

PV 系列可變量軸向柱塞泵



通軸結構，軸上的載荷限制 Thru drive, shaft load limitations

不同的軸最大允許扭矩(Nm)為 The max. Transferable torque in Nm for the different shafts options are:

軸的代號 Shaft code	PV16-23	PV32-46 PV56&65	PV63-125	PV140-180	PV270
N	300	550	1320	2000	2000
D	300	610	1218	2680	2680
F	-	-	-	1320	-
G	-	-	-	1640	-
M	300	570	1150	1900	2850
K	405	675	1400	2650	3980

重要提示 Important notice

不能超過傳動軸的最大允許扭矩。當為雙聯泵時沒有問題，為 100%通軸傳動。然而，當為三聯(和多聯)組合時會超過傳動軸的扭矩。因此，必須弄清總載荷并與允許的極限值進行比較。

The max. allowable torque of the individual shaft must not be exceeded. For 2-pump combinations, there is no problem because PV series offers 100% thru torque. For 3-pump combinations(or more), the limit torque will be reached or exceeded.

Therefore, it is necessary to calculate the torque factor and compare with the allowed torque limit factor in the table.

條件: 所算出的載荷值 < 極限值
Requirement: calculated torque factor < torque factor

為了盡可能簡便地對允許的總載荷進行必要的復核，所以在表中給出了各自的泵和軸的結構所規定的極限值。

To make the necessary calculations easier and more user friendly it is not required to calculate actual torque requirements in Nm and compare them with the shaft limitations. The table on the right shows limit factors that include material specification, safety factors and conversion factors.

所算出的總載荷應是各個泵載荷值的總和。

The total torque factor is represented by the sum of the individual torque factors of all pumps in the complete pump combination.

每一個單個泵的載荷值可以由最大工作壓力 P (bar)乘以最大排量 $V_g(\text{cm}^3/\text{rev})$ 而得到。

The torque factor of each individual pump is calculated by multiplying the max. operating pressure p of the pump (in bar) with the max. displacement V_g of the pump (in cm^3/rev)

泵 pump	軸 shaft	極限值 torque limit factor
PV016-PV023	N	17700
	D	17700
	M	17700
	K	20130
PV32-46 PV56&65	N	32680
	D	36380
	M	33810
	K	40250
PV063-PV092	N	77280
	D	72450
	M	67620
	K	83720
PV140-PV180	N	118400
	D	158760
	F	78750
	G	97650
	M	113400
	K	157500
PV270	N	119000
	D	159700
	M	170100
	K	236250

多聯泵的總載荷=各個泵載荷的總和
Total torque factor of the combination =
sum of individual torque factors of all pumps

單個泵的載荷值 = $p \times V_g$
Torque factor of any pump = $p \times V_g$
(pressure in bar x displacement in cm^3/rev)