



全懋精機股份有限公司
CAMEL PRECISION CO., LTD.

Internal Gear Pump

內嚙合齒輪泵





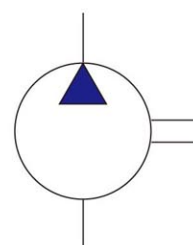
Internal Gear Pump

內嚙合齒輪泵



油壓記號

SYMBOL



型式號碼 / Model Code

IGC - 4F - 032 - R - 20

設計番號

Design No.

回轉方向 (由軸側方向觀之)

Direction of Rotation (View from shaft end)

R: 順時針方向

R: Clockwise

L: 逆時針方向

L: Counterclockwise

排量: c.c./rev

Displacement

安裝方式

Mounting Type

F: ISO type flange

法蘭 L: ISO type foot 腳座

E: DIN type flange

法蘭 S: Secondary Pump 多聯式後段泵

系列號碼:

Series No.

內嚙合齒輪泵系列

Internal Gear Pump Series

IGC: 系列, 最高 175 kgf/cm² Max. 175 kgf/cm²

產品特性:

1. 最高轉速可達2500 rpm
2. 噪音低, 提供極佳的操作環境
3. 低脈衝, 運轉平順
4. 徑向及軸向壓力補償, 效率超高
5. 優異的吸力, 作動油黏度範圍廣泛
6. 流量範圍20 to 125 cc/rev
7. 只需低轉速50 rpm, 即可達到140kgf/cm²保壓壓力
8. 注塑機伺服節能適用本產品

FEATURE:

1. Max. speed could be up to 2500 rpm
2. Low noise to provide a comfortable working environment
3. Low pulsation, Smooth rotation.
4. High overall efficiency through axial & radial pressure compensation.
5. Good suction attribute and wide oil viscosity range.
6. Displacement form 20 to 125 cc/rev.
7. High efficiency. 50 rpm can reach 140 kgf/cm² to hold pressure.
8. Servo-Energy saving system for injection molding machine is applicable to IGC series.



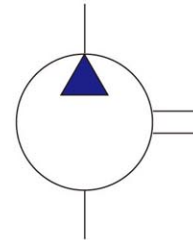
Internal Gear Pump

內啮合齒輪泵



油壓記號

SYMBOL



型式號碼 / Model Code

IGH - 4F - 32 - R - 20

設計番號

Design No.

回轉方向 (由軸側方向觀之)

Direction of Rotation (View from shaft end)

R: 順時針方向

R: Clockwise

L: 逆時針方向

L: Counterclockwise

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安裝方式

Mounting Type

F: ISO type flange

法蘭 L: ISO type foot 腳座

E: DIN type flange

法蘭 S: Secondary Pump 多聯式後段泵

系列號碼:

Series No.

內啮合齒輪泵系列

Internal Gear Pump Series

IGH:

H: 系列, 最高 300 kgf/cm², H:Series,Max. 300 kgf/cm²

IGM:

M: 系列, 最高 250 kgf/cm², M:Series,Max. 250 kgf/cm²

產品特性:

1. 高壓力, 最高300 kgf/cm².
2. 極靜音, 完全符合低音工作環境要求.
3. 低脈衝, 運轉平順.
4. 徑向及軸向壓力補償, 效率超高
5. 優異的吸力, 作動油黏度範圍廣泛,
6. 流量範圍廣, 從3.5c.c 到125c.c.
7. 可以多聯式泵浦連結使用, 應用在多重迴路中.

FEATURE:

1. High Pressure, max.pressure 300 kgf/cm².
2. Extremely low noise.
3. Low pulsation, Smooth rotation.
4. High overall efficiency through axial & radial pressure compensation.
5. Good suction attribute and wide oil viscosity range.
6. Displacement from 3.5 to 125 c.c. and multiple stage pumps are available.



Internal Gear Pump

內嚙合齒輪泵

技術資料 / Technical Data

型式 MODEL	泵排量 Theoretical Displacement c.c/rev.	最高壓力 MAX. Pressure kgf/cm ² 持續Cont. 瞬間Peak.		容許回轉速 Shaft Speed Min. Max.		重量 WEIGHT Kg	入口 Inlet Port	出口 Outlet Port
IGC-4	20	140	175	200	2500	9.5	1-1/4"	3/4"
	25	140	175	200	2500	10.0	1-1/4"	3/4"
	32	140	175	200	2500	10.5	1-1/4"	3/4"
IGC-5	40	140	175	100	2200	19.0	1-1/2"	1"
	50	140	175	100	2200	20.0	1-1/2"	1"
	64	140	175	100	2200	21.0	1-1/2"	1"
IGC-6	80	140	175	100	2000	39.0	2"	1-1/2"
	100	140	175	100	2000	41.0	2"	1-1/2"
	125	140	175	100	2000	43.0	2"	1-1/2"
IGM-2	3.5	220	250	600	2000	2.4	1/2"	1/2"
	5	220	250	600	2000	2.5	1/2"	1/2"
	6.5	220	250	600	2000	2.6	1/2"	1/2"
	8	220	250	600	2000	2.8	1/2"	1/2"
IGM-3	10	220	250	600	2000	4.8	1"	1/2"
	13	220	250	600	2000	5.0	1"	1/2"
	16	220	250	600	2000	5.3	1"	1/2"
IGM-4	20	220	250	600	2000	9.5	1-1/4"	3/4"
	25	220	250	600	2000	10.0	1-1/4"	3/4"
	32	220	250	600	2000	10.5	1-1/4"	3/4"
IGM-5	40	220	250	600	2000	19.0	1-1/2"	1"
	50	220	250	600	2000	20.0	1-1/2"	1"
	64	220	250	600	2000	21.0	1-1/2"	1"
IGM-6	80	220	250	600	2000	39.0	2"	1-1/2"
	100	220	250	600	2000	41.0	2"	1-1/2"
	125	220	250	600	2000	43.0	2"	1-1/2"
IGH-2	3.5	250	300	600	2000	2.4	1-1/2"	1/2"
	5	250	300	600	2000	2.5	1-1/2"	1/2"
	6.5	250	300	600	2000	2.6	1-1/2"	1/2"
	8	250	300	600	2000	2.8	1-1/2"	1/2"
IGH-3	10	250	300	600	2000	4.8	1"	1/2"
	13	250	300	600	2000	5.0	1"	1/2"
	16	250	300	600	2000	5.3	1"	1/2"
IGH-4	20	250	300	600	2000	9.5	1-1/4"	3/4"
	25	250	300	600	2000	10.0	1-1/4"	3/4"
	32	250	300	600	2000	10.5	1-1/4"	3/4"
IGH-5	40	250	300	600	2000	19.0	1-1/2"	1"
	50	250	300	600	2000	20.0	1-1/2"	1"
	64	250	300	600	2000	21.0	1-1/2"	1"



Internal Gear Pump

內嚙合齒輪泵

馬力-流量特性 / Delivery & Power Rating

轉速 SPEED	ITEMS PRESSURE MODEL	吐出量 DELIVERY L/min.						輸入馬力 POWER INPUT (kw)					
		7	70	140	210	250	300	7	70	140	210	250	300
1000 rpm	IG※-2-3.5	3.59	3.48	3.39	3.28	3.24	3.16	0.13	0.61	1.10	1.60	1.89	2.26
	-5	5.32	5.09	4.95	4.79	4.70	4.61	0.14	0.77	1.44	2.22	2.58	3.13
	-6.5	6.54	6.36	6.20	6.04	5.94	5.82	0.16	0.95	1.78	2.74	3.19	3.87
	-8	8.18	7.95	7.74	7.55	7.42	7.28	0.16	1.17	2.20	3.38	3.93	4.77
	IG※-3-10	10.1	9.95	9.7	9.4	9.3	9.1	0.17	1.56	2.68	4.17	4.96	6.0
	-13	13.1	13.0	12.6	12.4	12.2	12.0	0.26	1.98	3.50	5.25	6.17	7.58
	-16	15.7	15.3	15.0	14.7	14.5	14.2	0.32	2.32	4.15	6.23	7.33	9.01
	IG※-4-20	20.6	20.1	19.7	19.2	19.0	18.7	0.42	3.07	5.45	8.08	9.61	11.5
	-25	25.6	25.1	24.6	24.1	23.8	23.5	0.48	3.72	6.76	10.1	11.9	14.3
	-32	32.6	31.5	30.9	30.3	30.0	29.6	0.54	4.62	8.50	12.6	15.0	18.0
	IG※-5-40	40.7	39.8	38.9	38.1	37.6	37.0	1.1	6.06	10.7	16.0	18.9	23.3
	-50	50.2	49.2	48.3	47.3	46.8	46.1	1.2	7.28	13.3	19.7	23.3	28.0
	-64	63.9	62.5	61.4	60.2	59.5	58.6	1.3	9.14	16.9	25.0	30.3	35.6
	IG※-6-80	81.0	79.5	77.8	76.0	75.0	73.8	1.98	11.6	21.8	32.2	38.4	46.6
	-100	101.5	99.4	97.7	95.9	94.7	93.0	2.42	14.5	27.4	40.5	48.1	57.6
	-125	125.9	123.1	120.9	118.5	117.2	115.4	2.94	17.8	34.0	50.0	59.6	71.4
1500 rpm	IG※-2-3.5	5.40	5.24	5.11	4.97	4.90	4.80	0.19	0.94	1.65	2.41	2.83	3.39
	-5	7.85	7.65	7.44	7.25	7.13	6.98	0.22	1.15	2.17	3.25	3.78	4.60
	-6.5	9.1	9.58	9.35	9.13	8.99	8.84	0.23	1.44	2.68	4.01	4.67	5.67
	-8	12.2	11.8	11.60	11.35	11.2	11.0	0.25	1.75	3.30	4.95	5.76	7.00
	IG※-3-10	15.2	14.8	14.5	14.2	14.0	13.8	0.26	2.27	4.07	6.10	7.26	8.82
	-13	19.8	19.4	19.0	18.7	18.5	18.2	0.40	2.89	5.31	7.78	9.26	11.4
	-16	23.6	23.1	22.6	22.2	22.0	21.7	0.49	3.39	6.30	9.35	11.0	13.5
	IG※-4-20	30.9	30.3	29.7	29.2	28.8	28.4	0.61	4.61	8.17	12.2	14.4	17.3
	-25	38.4	37.7	37.1	36.5	36.1	35.7	0.77	5.58	10.2	15.1	17.9	21.5
	-32	48.3	47.5	46.7	45.9	45.4	44.9	1.02	6.93	12.8	18.9	22.5	27.0
	IG※-5-40	61.1	59.9	58.8	57.6	56.9	56.2	1.80	9.33	16.3	24.2	28.7	35.3
	-50	75.4	74.0	72.8	71.6	70.8	70.0	2.0	11.2	20.1	29.8	35.4	42.5
	-64	95.4	94.1	92.5	91.0	90.0	89.0	2.1	14.1	25.5	37.9	45.0	54.0
	IG※-6-80	121.9	119.4	117.2	115.0	113.5	111.8	3.15	18.3	33.2	48.9	58.4	70.8
	-100	152.4	149.6	147.3	144.7	143.2	141.3	3.85	22.6	41.2	61.4	73.0	87.5
	-125	188.8	185.4	182.3	179.3	177.5	175.4	4.69	27.4	51.2	76.0	90.4	108.0

測試條件: Testing Condition

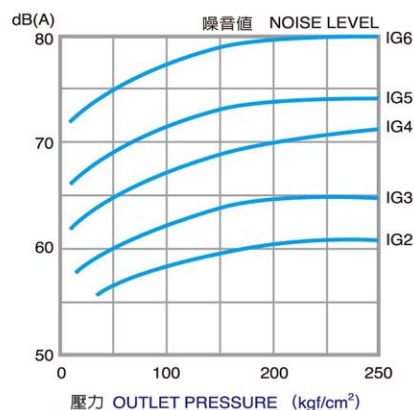
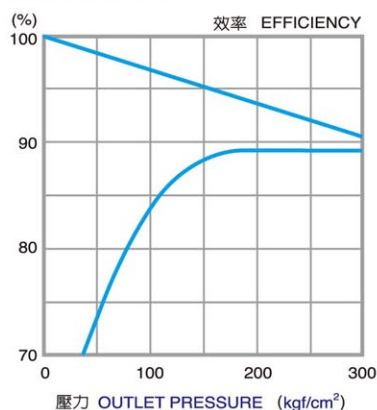
油溫: Oil Temperature 40°C ±5

作動油: Operating Fluid: ISO VG68

性能曲線 / Performance Curve

回轉速 Revolving Speed: 1200min⁻¹

作動油 Operating Fluid: ISO VG68

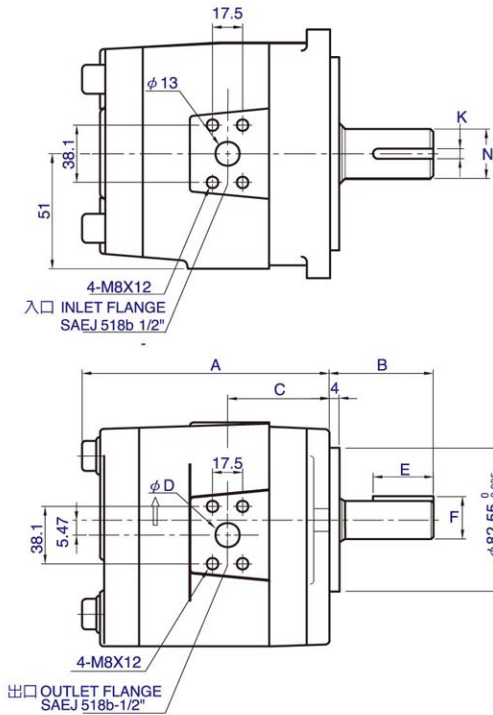




Internal Gear Pump

内嚙合齒輪泵

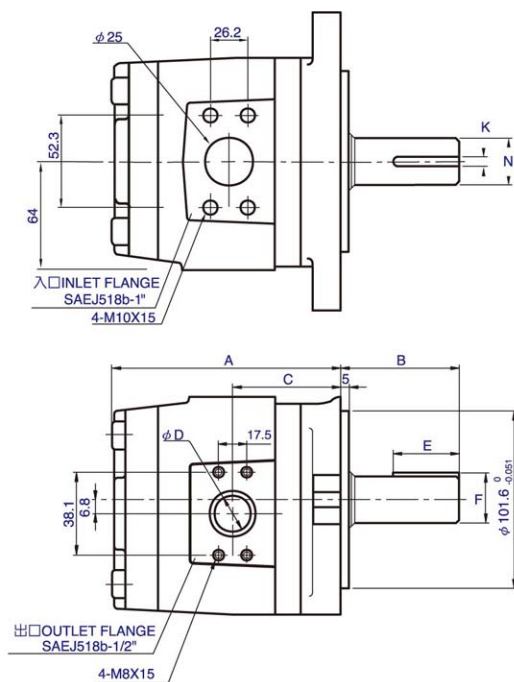
● IG※-2E※法蘭型（順時針方向回轉） Flange Type (Clockwise Rotation)



型式Model	A	C	ØD
IG*-2*-3.5	107	51	Ø8.9
IG*-2*-5	112	53.5	Ø11
IG*-2*-6.5	116	55.5	Ø12
IG*-2*-8	121	58	Ø13

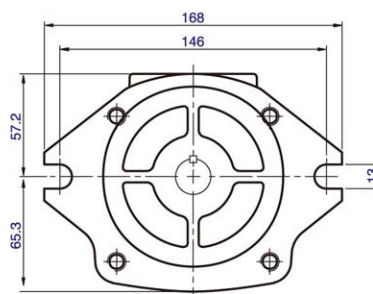
型式Model	B	E	F	K	N
IG*-2E-*	41	30	20.5	6/h7	18/h7

● IG※3E(F)-※法蘭型（順時針方向回轉） Flange Type (Clockwise Rotation)



型式Model	A	C	ØD
IG*-3*-10	130	60	Ø14
IG*-3*-13	136	63	Ø17
IG*-3*-16	141	65.5	Ø18

型式Model	B	E	F	K	N
IG*-3E-*	41	30	22.5	6/h7	20/h7
IG*-3F-*	65	38	21.25	4.76/h7	19.05/h7

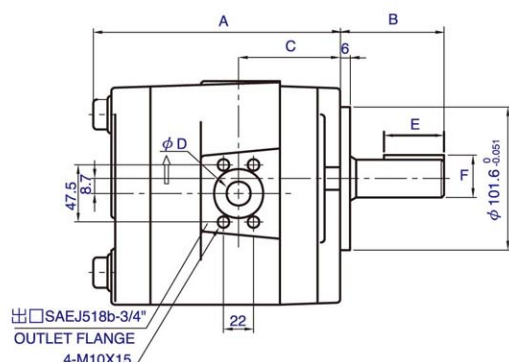
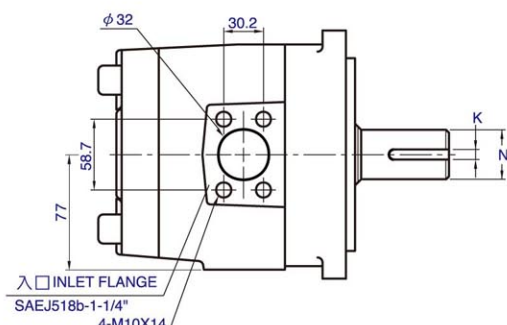




Internal Gear Pump

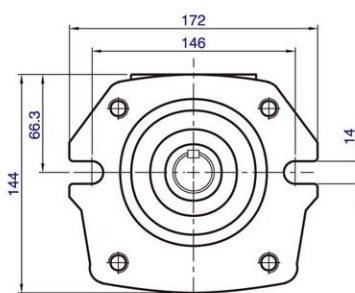
內啮合齒輪泵

● IG※4E(F)-※法蘭型 (順時針方向回轉) Flange Type (Clockwise Rotation)

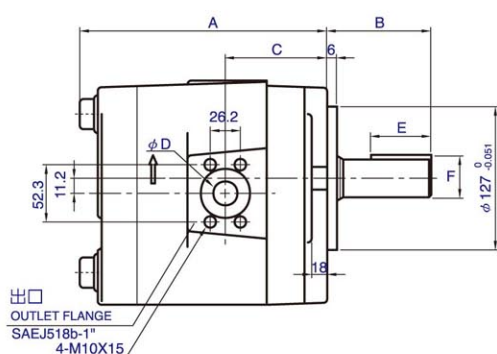
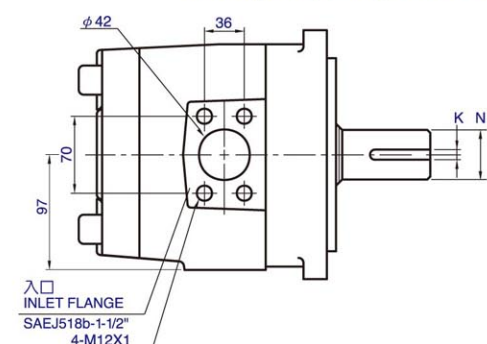


型式Model	B	E	F	K	N
IG*-4E-*	72	45	28	8/h7	25/h7
IG*-4F-*	78	60	27.85	6.375/h7	25.385/h7

型式Model	A	C	ØD
IG*-4*-20	164	71	Ø18
IG*-4*-25	170	74	Ø20
IG*-4*-32	178	78	Ø24

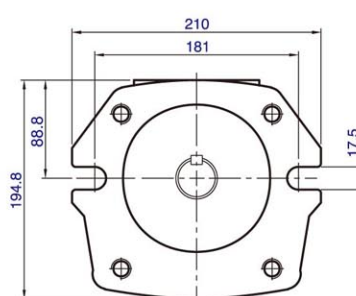


● IG※5E(F)-※法蘭型 (順時針方向回轉) Flange Type (Clockwise Rotation)



型式Model	B	E	F	K	N
IG*-5E-*	89	50	35	10/h7	32/h7
IG*-5F-*	85	50	35.33	7.938/h7	31.75/h7

型式Model	A	C	ØD
IG*-5*-40	199	91	Ø24
IG*-5*-50	206	94.5	Ø26
IG*-5*-64	216	99.5	Ø28

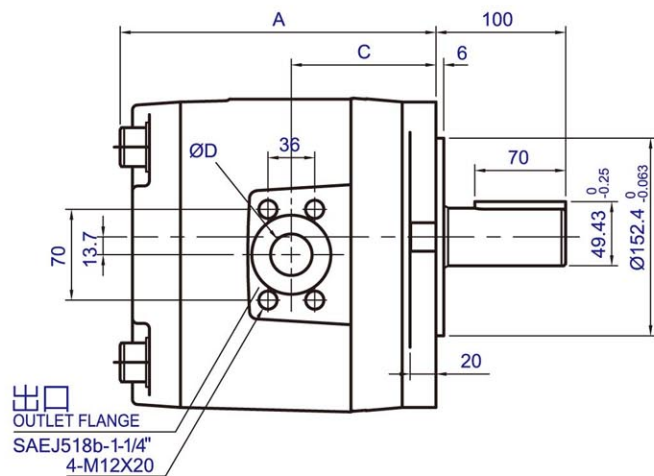
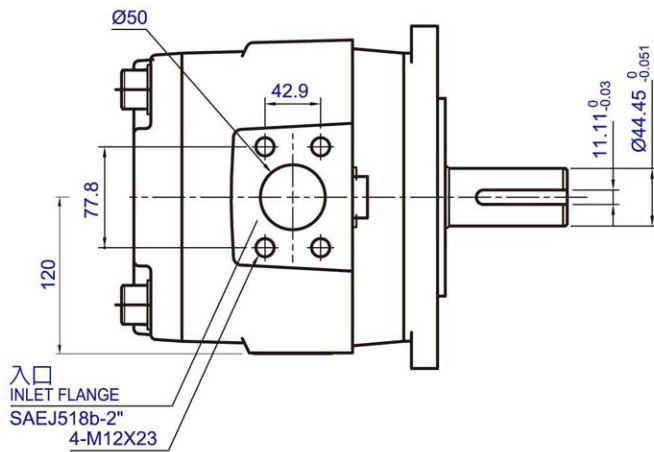




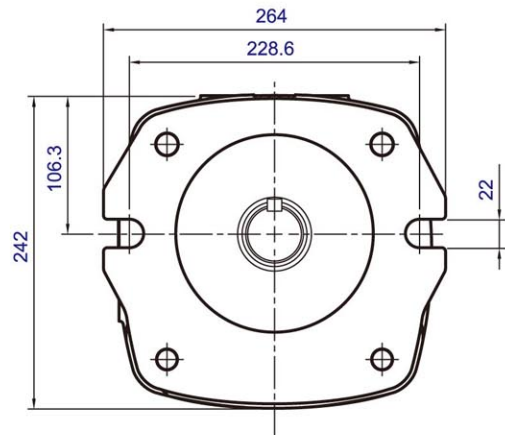
Internal Gear Pump

内啮合齒輪泵

- IG※6F -※法蘭型（順時針方向回轉）
Flange Type (Clockwise Rotation)



型式Model	A	C	ØD
IG*-6*-80	242.5	111.5	Ø32
IG*-6*-100	252.5	116.5	Ø36
IG*-6*-125	264.5	122.5	Ø38



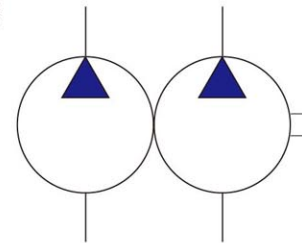


Internal Gear Pump 內啮合齒輪泵



油壓記號

SYMBOL



型式號碼 / Model Code

IGH - 4E - 32 - R / IGH - 4S - 25 / IGM - 3S - 16

參照第二個泵

Refer to the secondary Pump

後泵排量

Displacement of shaft end pump

後泵系列號碼

Series No. of Secondary Pump

內啮合齒輪泵系列號碼

Internal gear pump series

回轉方向 (由軸側方向觀之)

Direction of Rotation (Viewed from shaft end)

R: 順時針方向

R: Clockwise

L: 逆時針方向

L: Counterclockwise

前泵排量

Displacement of shaft end pump

前泵安裝方式

Mounting type of shaft end pump

E: 僅限DIN 法蘭型

E: DIN type flange only

前泵系列號碼

Series No. of shaft end pump

內啮合齒輪泵系列號碼

Internal Gear Pump Series

IGH:

H: 系列, 最高 300 kgf/cm², H: Series, Max. 300 kgf/cm²

IGM:

M: 系列, 最高 250 kgf/cm², M: Series, Max. 250 kgf/cm²

IGC:

C: 系列, 最高 175 kgf/cm², C: Series, Max. 175 kgf/cm²

說明:

多聯泵之前端必須為最大流量的泵，
若流量相同則前泵必須是壓力最高的泵。
同理亦適用於第二及以後的泵。

Remark:

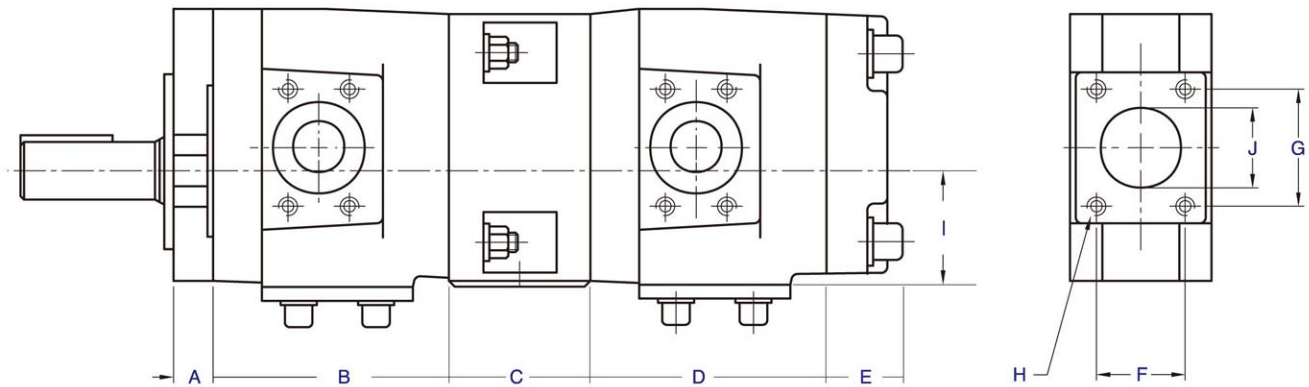
The shaft end pump of multiple stage pump should have the largest displacement. It is also the maximum pressure of all pumps in multiple pump when the displacement is the same with all pumps.
Likewise the secondary pump should have the second largest displacement of all pumps.



Multiple Stage Internal Gear Pump

多聯式內嚙合齒輪泵

尺寸圖 / Dimensions



相關尺寸說明 \ Dimensions

型式Model	IG※2				IG※3			IG※4			IG※5			IG※6		
Displacement	3.5	5.5	6.5	8	10	13	16	20	25	32	40	50	64	80	100	125
A	19	19	19	19	18	18	18	20	20	20	22	22	22	26	26	26
B,D	64	69	73	78	84	90	95	102	108	116	138	145	155	171	181	193
E	24	24	24	24	28	28	28	42	42	42	39	39	39	45	45	45

連接座尺寸 \ Dimensions of Connected Housing

型式Model	C	F	G	H	I	J	Inlet Flange
No.2	60	22.2	47.6	M8x12	54.5	Ø20	3/4"
No.3	70	30.2	58.7	M10x14	70.2	Ø31	1-14"
No.4	70	36	70	M12x20	74.3	Ø40	1-1/2"
No.5	90	50.8	89	M12x20	90	Ø60	2-1/2"
No.6	110	61.9	106.3	M16x23	108.3	Ø76	3"

單位 unit: mm

連接座尺寸說明:

No.2, 適用於 IG*-2E /IG*-2S

No.3, 適用於 IG*-3E /IG*-3S(2S)

No.4, 適用於 IG*-4E /IG*-4S(3S, 2S)

No.5, 適用於 IG*-5E /IG*-5S(4S, 3S, 2S)

No.6, 適用於 IG*-6E /IG*-6S(5S, 4S)

Remark of Connected Housing :

No.2, applicable to IG*-2E(S)/IG*-2S

No.3, applicable to IG*-3E(S)/IG*-3S(2S)

No.4, applicable to IG*-4E(S)/IG*-4S(3S, 2S)

No.5, applicable to IG*-5E(S)/IG*-5S(4S, 3S, 2S)

No.6, applicable to IG*-6E(S)/IG*-6S(5S, 4S)



Multiple Stage Internal Gear Pump

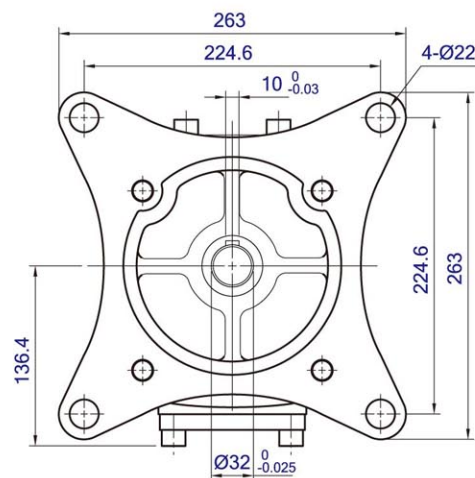
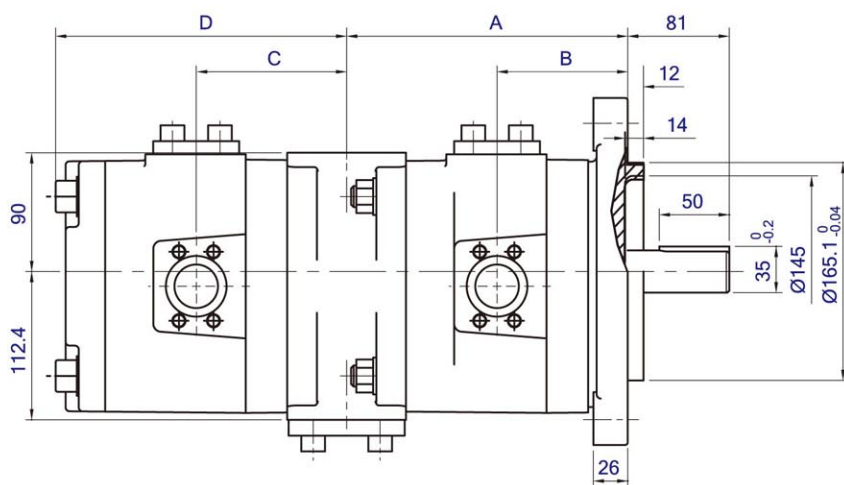
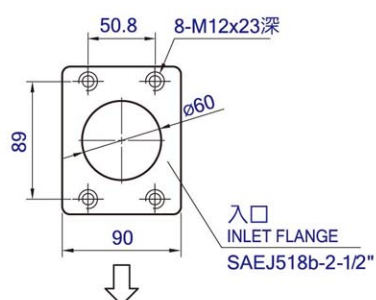
多聯式內嚙合齒輪泵

尺寸圖 / Dimensions

- IG※5+5,(5+4)

相關尺寸說明 \ Dimensions

型式Model	IG※5			IG※4		
Displacement	40	50	64	20	25	32
A	213	220	230			
B	99	102.5	107.5			
C	114	117.5	122.5	96	99	103
D	222	229	239	189	195	203





Multiple Stage Internal Gear Pump

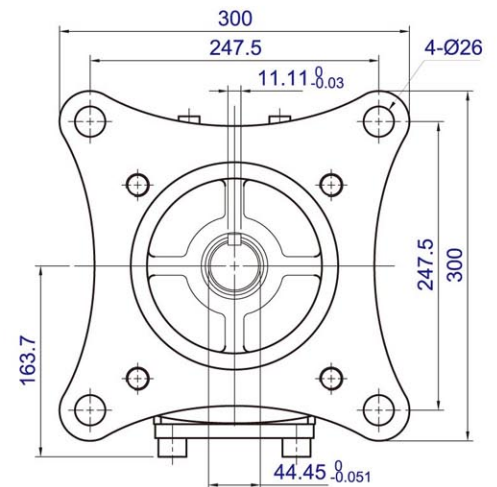
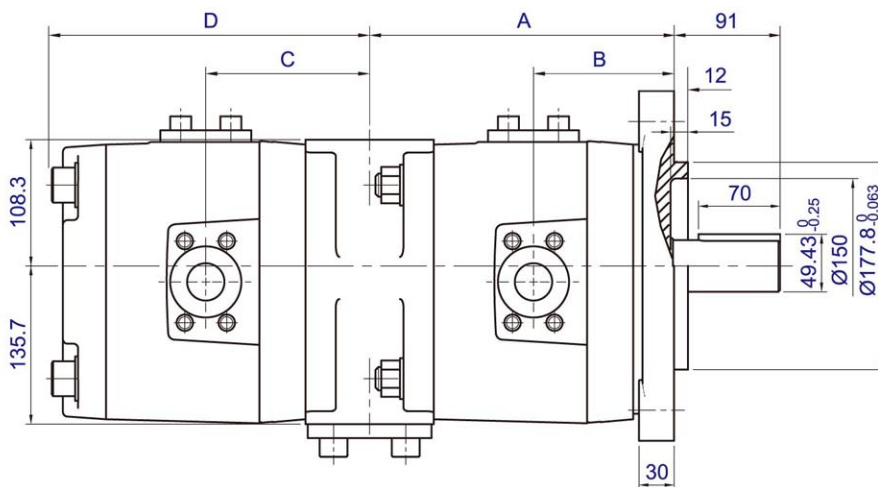
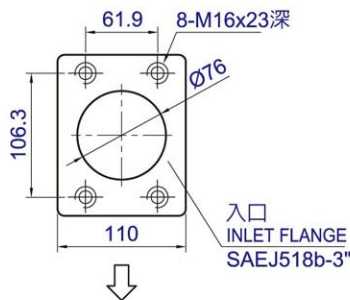
多聯式內嚙合齒輪泵

尺寸圖 / Dimensions

- IG※6+6,(6+5,6+4)

相關尺寸說明 \ Dimensions

型式Model	IG※6			IG※5			IG※4		
Displacement	80	100	125	40	50	64	20	25	32
A	261	271	283						
B	120.5	125.5	131.5						
C	140.5	145.5	151.5	124	127.5	132.5	106	109	113
D	272	282	294	232	239	249	199	205	213





操作指南:

1. 液壓油: 符合DIN第2及第3部份之HLP油, 黏度為ISO 46-68。
最適操作黏度: 20-100 cSt。
最大作動黏度: 1500 cSt。
最小黏度: 15 cSt。
2. 操作溫度範圍: 5 to 70°C。
3. 吸入壓力: Absolute 0.8-1.3 kgf/cm²。
4. 過濾器: 吸入口過濾器 100µm。
回油過濾器: 25µm。
壓油清潔度, NAS 1638 第9級。
5. 流速: 吸油管: 2M /sec。
壓力管: 5M /sec。
回油管: 3M /sec。
6. 運轉: 傳動軸不得承受任何徑向或軸向壓力。
請使用彈性連軸器, 泵和馬達傳動軸必須緊密連接。
安裝時不得使用敲擊或任何不當之強力方式。
請注意泵及馬達之轉動方向是否配合。
其他藉由鏈條或皮帶傳動時請向我方查詢。
7. 泵之安裝方向不限, 但請注意在首次操作時務必將空氣排除。
8. 泵之啟動及停止前請先確定是在無負載狀況下方能為之。
9. 吸油管及壓力管之連結切勿過緊。
10. 運轉及初次啟動: 在遵循以上指示後請確認系統及連接機器之設備完全符合國家標準後方得啟動泵。
a. 檢查電動馬達之空轉及其轉動方向。
b. 泵運轉時應注意油槽之油量是否足夠。
不足時請先填滿油, 再運轉。
c. 泵啟動時應於無負載狀況下運轉。
d. 重覆短暫啟動泵 (寸動), 直到泵開始供油。
e. 在泵開始負載前, 應將系統中的空氣全部排除, 使運轉時不會產生空蝕現象及噪音。
f. 注意溫度變化, 當泵表面溫度明顯高於油溫時, 請立刻停止運轉並檢查相關機械設備。
g. 液壓設備在修理過程或首次啟動時系統會產生大量污損, 因此應使設備在無負載狀況下運轉並在運轉100小時後更換過濾器, 在更換泵時應特別留意壓油及設備組件之清潔。
h. 液壓設備之操作應由經驗豐富及合格之專業人員為之。

Operating Instruction:

1. Hydraulic Oil:
Use the hydraulic oil viscosity as same as ISO 46-68.
(Viscosity over 90 cSt). The hydraulic oil cleanness should be kept within NAS 1638, the 9th degree.
Optimal Operation Viscosity : 20-100 cSt
Maximum Operation Viscosity: 1500 cSt.
Minimum Operation Viscosity: 15 cSt.
2. Operating temperature: 5 to 70°C.
3. Suction Pressure: Absolute 0.8-1.3 kgf/cm²
4. Filter: Suction strainer 100µm.
Return filter: 25µm.
Hydraulic oil cleanness: NAS 1638 the 9th degree.
5. Flow speed: Suction Line: 2 M/ Sec.
Pressure Line: 5 M/sec.
Return Line: 3 M/sec.
6. Rotation:
Do not cause any axial or radial pressure to the drive shaft.
Use flexible coupling. Tighten closely the pump shaft and motor shaft. Do not use improper way to instal the pump, such as hitting. Be aware of the rotating direction of pump and motor.
Any other request of installation, please consult with the suppliers.
7. Bleed the air when pump runs for the first time.
8. Please make sure the pump is on no-load state when start and stop operation.
9. Do not fasten too tight when being connect with the suction line and pressure line.
10. Start-up operation: Following the instruction and all other requirements before start up operation.
a. Make sure the rotation of electric motor is correct.
b. Check the oil level of oil tank before starting and filling the oil when it is insufficient.
c. Repeat power on and off when pump is first running until the pump starts to supply oil.
d. Pump should be run under no load state when starting operation.
e. Before starting, run the pump under no-load state, bleed the air out of the circuit to prevent noise and cavitation.
f. Be aware of the temperature variation: Once the temperature of pump is apparently higher than oil, Stop pump running and check all equipment closely.
g. When starting running of pump at the first time or after repair, whole hydraulic system are liable to be contaminated. Please run the pump under no-load state and replace or clean all filters after 100 hours.
h. Operation of hydraulic system should be handled by professionals.





變量葉片泵

▲ Variable Displacement Vane Pump



內啮合齒輪泵

▲ Internal Gear Pump



外啮合齒輪泵

▲ External Gear Pump



電磁方向控制閥

▲ Solenoid Operated Directional Valve



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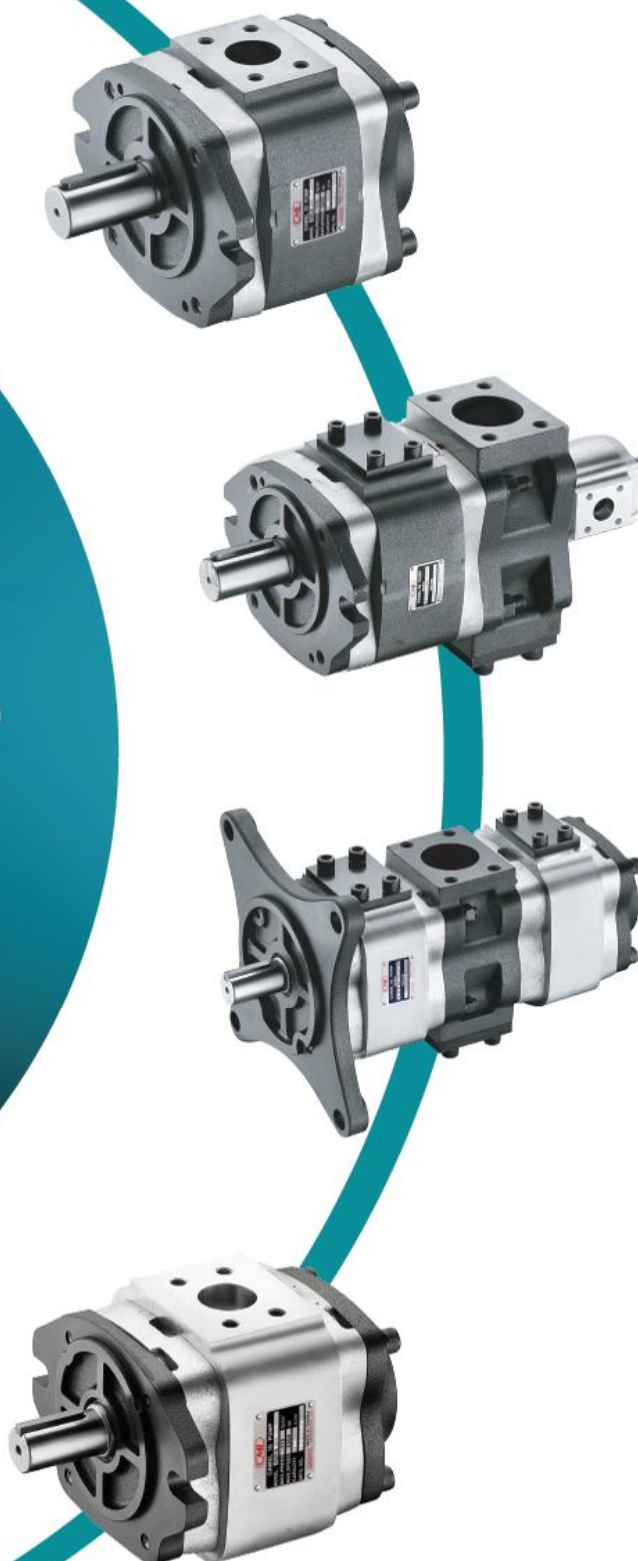
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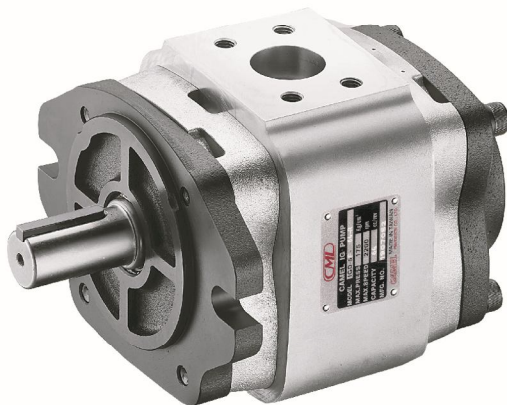
Internal Gear Pump
內嚙合齒輪泵



IGP

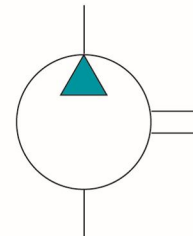
Internal Gear Pump

內嚙合齒輪泵



油壓記號

SYMBOL



型式號碼 / Model Code

IGP - 4 F - 32 - R - 20

設計番號 Design No.

旋轉方向 (由軸側方向觀測之)

Direction of Rotation (view from shaft end)

R: 順時針方向 R: Clockwise

L: 逆時針方向 L: Counterclockwise

排量 c.c./rev Displacement

IGP-4: 16c.c.~32c.c. / IGP-5: 32c.c.~64c.c. / IGP-6: 80c.c.~125c.c.

軸心規格

Shaft Type

F: ISO type 英制軸心

F: ISO type

E: DIN type 公制軸心

E: DIN type

系列號碼: Series No.

IGP-4 / IGP-5 / IGP-6

內嚙合齒輪泵系列: 適用於變轉速電機

Internal Gear Pump Series: For Inverter or Servo motors

產品特性 / Feature

1. 最高轉速可達 3,000 rpm
2. 噪音低, 提供極佳的操作環境
3. 低脈衝, 運轉平順
4. 徑向及軸向壓力補償, 效率超高
5. 優異的吸力, 作動油黏度範圍廣泛
6. 排量範圍 16 至 125 c.c./rev
7. 低轉速、高效率, 可達到保壓效果
8. 可以多聯式泵補連結使用, 應用在多重迴路中
9. 本產品適用於伺服節能驅動之應用

1. Max. Speed could be up to 3,000 rpm.
2. Low noise to provide a comfortable working environment.
3. Low pulsation, Smooth rotation.
4. High overall efficiency through axial & radial pressure compensation.
5. Good suction attribute and wide oil viscosity range.
6. Displacement from 16 to 125 c.c./rev.
7. Efficient pressure output with low RPM.
8. Multi-connected pump combination available for manifold hydraulic circuits.
9. IGP is suitable for Hybrid Servo Energy Saving system.

IGP, IGH

Internal Gear Pump

內啮合齒輪泵



技術資料 / Technical Data

標示的重量不含法蘭 Weight without flange

型式 MODEL	泵排量 Theoretical Displacement c.c./rev.	最高壓力 MAX.Pressure bar 持續Cont. 瞬間Peak.		容許回轉速 Shaft Speed		重量 WEIGHT Kg	入口 Inlet Port	出口 Outlet Port
				Min.	Max.			
IGP-4	16	250	270	400	3,000	9.0	1-1/4"	3/4"
	20	250	270	400	3,000	9.5	1-1/4"	3/4"
	25	230	250	400	3,000	10.0	1-1/4"	3/4"
	32	210	230	400	2,800	10.5	1-1/4"	3/4"
IGP-5	32	250	270	400	3,000	14.0	1-1/2"	1"
	40	250	270	400	2,800	14.5	1-1/2"	1"
	50	230	250	400	2,500	15.0	1-1/2"	1"
	64	210	230	400	2,200	16.0	1-1/2"	1"
IGP-6	80	280	315	400	2,400	34.0	2"	1-1/2"
	100	250	300	400	2,100	36.0	2"	1-1/2"
	125	210	250	400	1,800	38.0	2"	1-1/2"

型式 MODEL	泵排量 Theoretical Displacement c.c./rev.	最高壓力 MAX.Pressure bar 持續Cont. 瞬間Peak.		容許回轉速 Shaft Speed		重量 WEIGHT Kg	入口 Inlet Port	出口 Outlet Port
				Min.	Max.			
IGH-2	3.5	250	300	600	2,000	3.1	1-1/2"	1/2"
	5	250	300	600	2,000	3.2	1-1/2"	1/2"
	6.5	250	300	600	2,000	3.4	1-1/2"	1/2"
	8	250	300	600	2,000	3.5	1-1/2"	1/2"
IGH-3	10	250	300	600	2,000	5.9	1"	1/2"
	13	250	300	600	2,000	6.2	1"	1/2"
	16	250	300	600	2,000	6.4	1"	1/2"
IGH-4	20	250	300	600	2,000	9.5	1-1/4"	3/4"
	25	250	300	600	2,000	10.0	1-1/4"	3/4"
	32	250	300	600	2,000	10.5	1-1/4"	3/4"
IGH-5	40	250	300	600	2,000	19.0	1-1/2"	1"
	50	250	300	600	2,000	20.0	1-1/2"	1"
	64	250	300	600	2,000	21.5	1-1/2"	1"

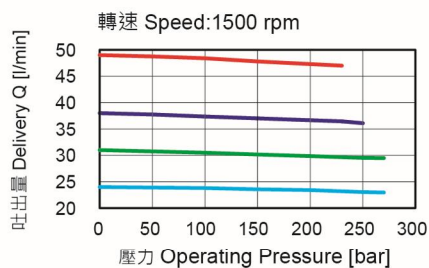
IGP

Internal Gear Pump

內啮合齒輪泵



性能曲線 / Performance Curve



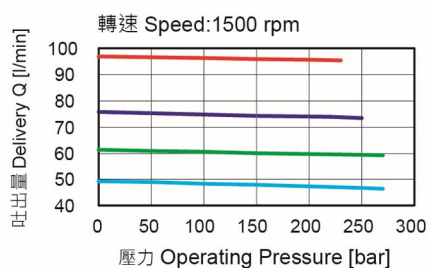
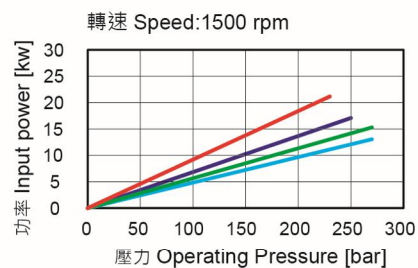
特性曲線 Characteristic Curves :

- IGP-4*-16
- IGP-4*-20
- IGP-4*-25
- IGP-4*-32

測試條件 Testing Condition :

油溫 Oil temperature : $40^{\circ}\text{C} \pm 5$

作動油 Operating Fluid : ISO VG68



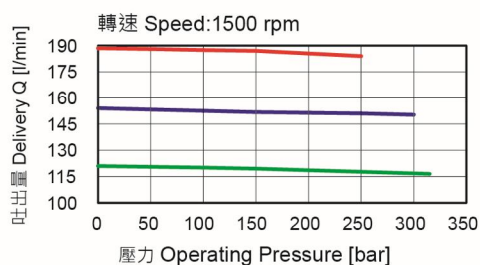
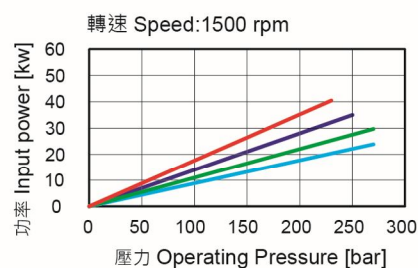
特性曲線 Characteristic Curves :

- IGP-5*-32
- IGP-5*-40
- IGP-5*-50
- IGP-5*-64

測試條件 Testing Condition :

油溫 Oil temperature : $40^{\circ}\text{C} \pm 5$

作動油 Operating Fluid : ISO VG68



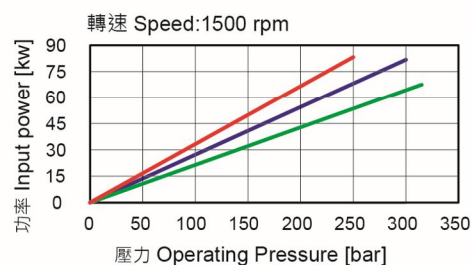
特性曲線 Characteristic Curves :

- IGP-6*-80
- IGP-6*-100
- IGP-6*-125

測試條件 Testing Condition :

油溫 Oil temperature : $40^{\circ}\text{C} \pm 5$

作動油 Operating Fluid : ISO VG68



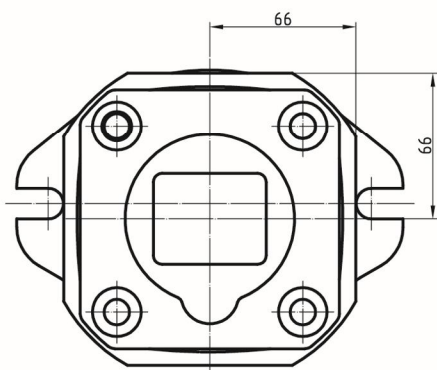
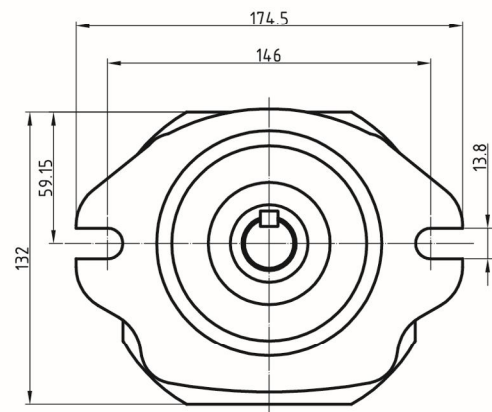
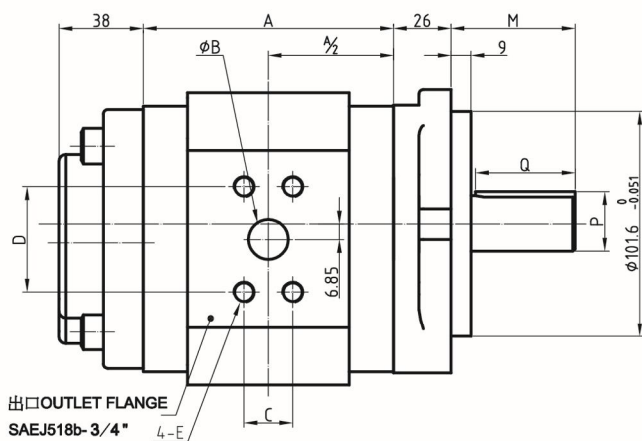
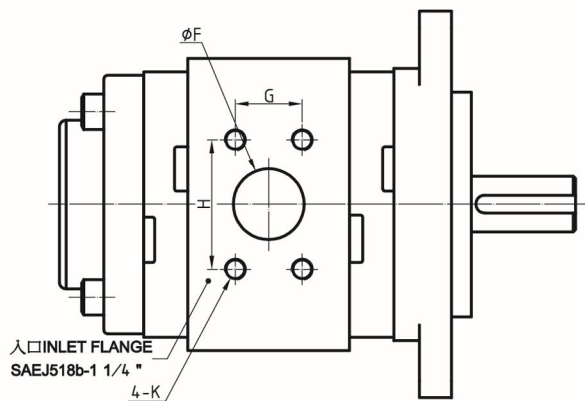
IGP

Internal Gear Pump

內嚙合齒輪泵

外型尺寸 / Measurement

IGP- 4※ (順時針方向旋轉/ Clockwise Rotation)



形式 Model	IGP-4E	IGP-4F
R	Ø25	Ø25.385
S	8	6.375
P	26.8	27.85

形式 Model	IGP-4			
Displacement	16	20	25	32
A	93	98	104	113
B	12	12	15	18
C	22	22	22	22
D	47.5	47.5	47.5	47.5
E	M10x15	M10x15	M10x15	M10x15
F	32	32	32	32
G	30.2	30.2	30.2	30.2
H	58.7	58.7	58.7	58.7
K	M10x15	M10x15	M10x15	M10x15
M	56	56	56	56
Q	45	45	45	45

IGP

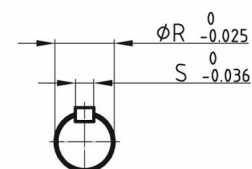
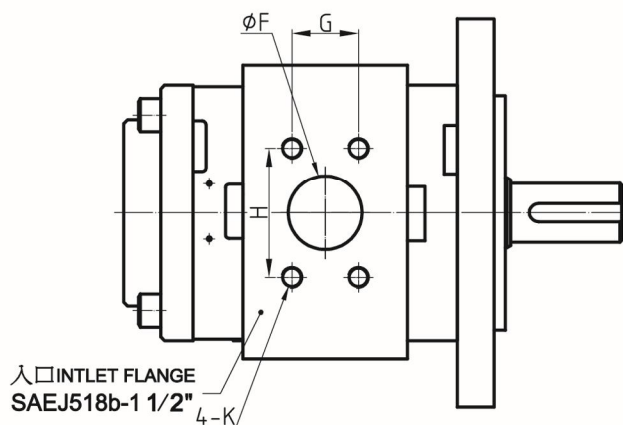
Internal Gear Pump

內嚙合齒輪泵

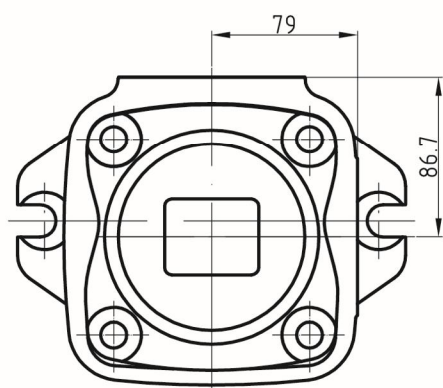
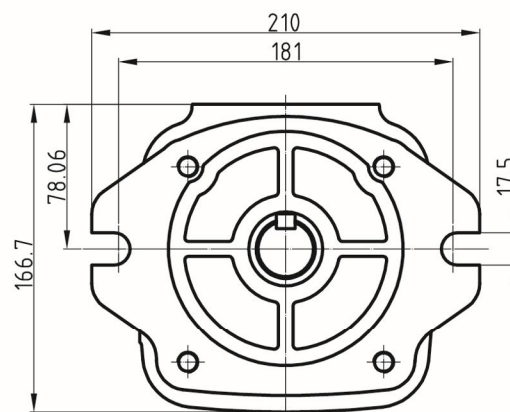
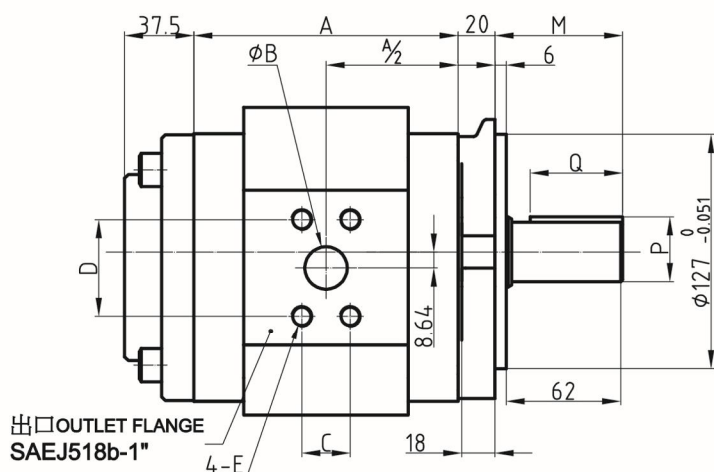
外型尺寸 / Measurement



IGP- 5※ (順時針方向旋轉/ Clockwise Rotation)



心軸尺寸
Shaft Size



形式 Model	IGP-5E	IGP-5F
R	Ø32	Ø31.75
S	10	7.938
P	35	35.33

形式 Model	IGP-5			
Displacement	32	40	50	64
A	119	125	132	143
B	15	15	20	23
C	26.2	26.2	26.2	26.2
D	47.5	52.3	52.3	52.3
E	M10x15	M10x15	M10x15	M10x15
F	32	35	40	40
G	30.2	36	36	36
H	58.7	70	70	70
K	M10x16	M12x20	M12x20	M12x20
M	69	69	69	69
Q	50	50	50	50

IGP

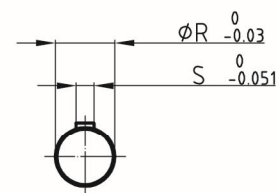
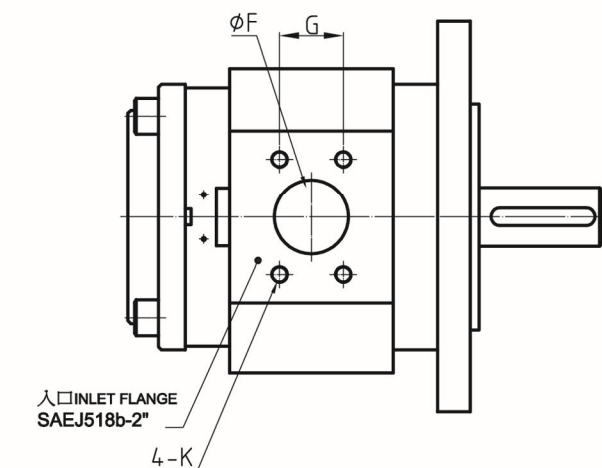
Internal Gear Pump

內嚙合齒輪泵

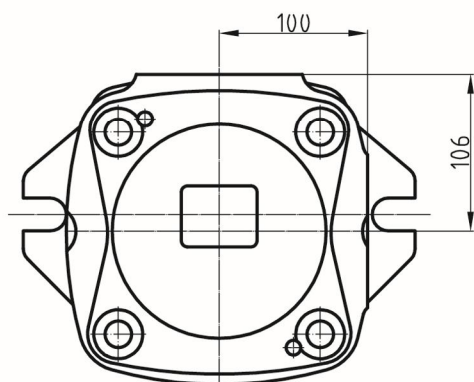
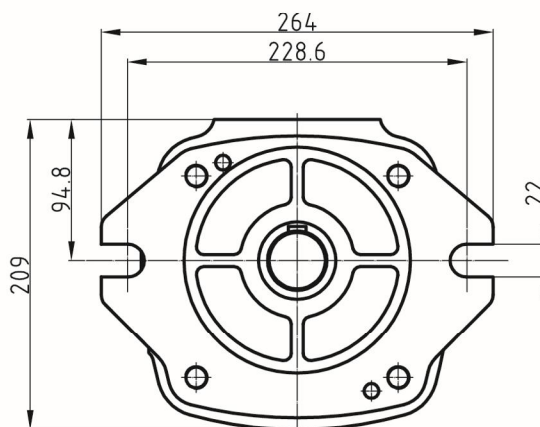
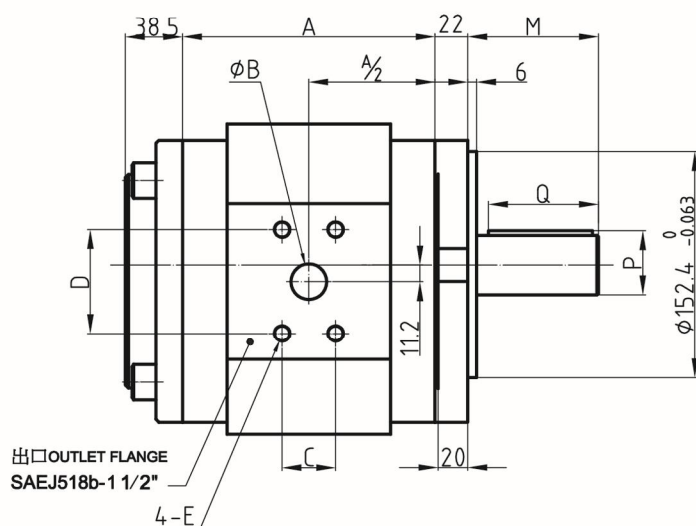
外型尺寸 / Measurement



IGP- 6※ (順時針方向旋轉/ Clockwise Rotation)



心軸尺寸
Shaft Size



形式 Model	IGP-6E	IGP-6F
R	Ø40	Ø44.45
S	12	11.11
P	43	49.43

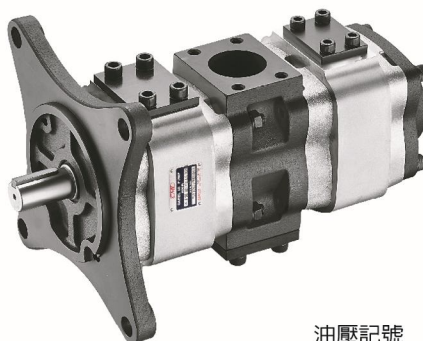
形式 Model	IGP-6		
Displacement	80	100	125
A	148	158	170
B	23	27	30
C	36	36	36
D	70	70	70
E	M12x12	M12x12	M12x12
F	45	50	50
G	42.9	42.9	42.9
H	77.8	77.8	77.8
K	M12x12	M12x12	M12x12
M	88	88	88
Q	74	74	74

IGP, IGH

Multiple Stage Internal Gear Pump

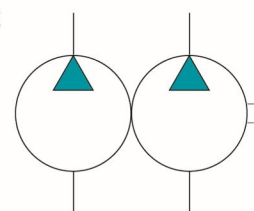


多聯式內啮合齒輪泵



油壓記號

SYMBOL



型式號碼 / Model Code

IGH - 4 E - 32 - R - 4 / IGH - 4 S - 25 / IGH - 3S - 16

參照第二個泵 Refer to the secondary Pump

後泵排量 Displacement of shaft end pump

後泵安裝方式 Mounting type of shaft end pump

S: Secondary Pump 多聯式後段泵

後泵系列號碼 Series No. of Secondary Pump

內啮合齒輪泵系列號碼 Internal gear pump series

取附固定孔 Mounting flange holes

無 None : 2孔 2-hole mounting

4 : 4孔 4-hole mounting (Only for IG×5 & IG×6)

旋轉方向 (由軸側方向觀之)

Direction of Rotation (View from shaft end)

R: 順時針方向 R: Clockwise

L: 逆時針方向 L: Counterclockwise

前泵排量 Displacement of shaft end pump

前泵 軸心規格 Shaft Type of end pump

E: 僅DIN type 公制軸心 E: DIN type only

前泵系列號碼 Series No. of shaft end pump

內啮合齒輪泵系列號碼 Internal gear pump series

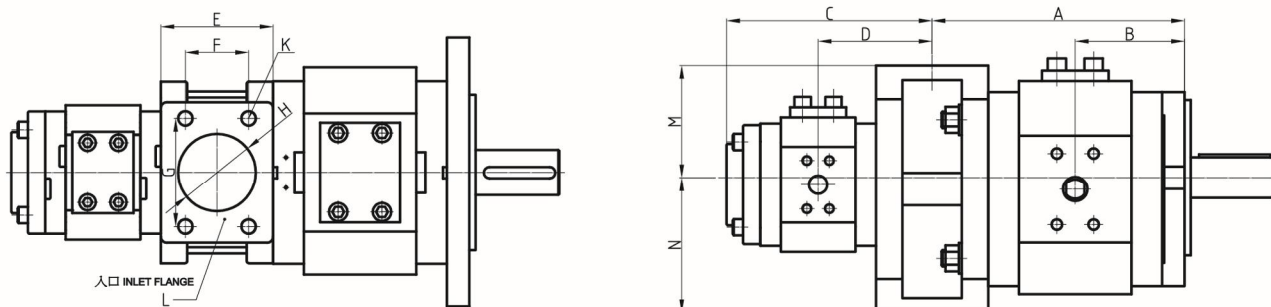
IGH or IGP 規格請參照第2頁, 第3頁
Please See Page 2 and 3 for Technical Data

說明 / Remark

多聯泵之前端必須為最大流量的泵，若流量相同則前泵必須是壓力最高的泵，同理亦適用於第二及以後的泵。

The shaft end pump of multiple stage pump should have the largest displacement. It is also the maximum pressure of all pumps in multiple pump when the displacement is the same with all pumps. Likewise the secondary pump should have the second largest displacement of all pumps.

IGP 2孔取附 / 2-hole Mounting Flange



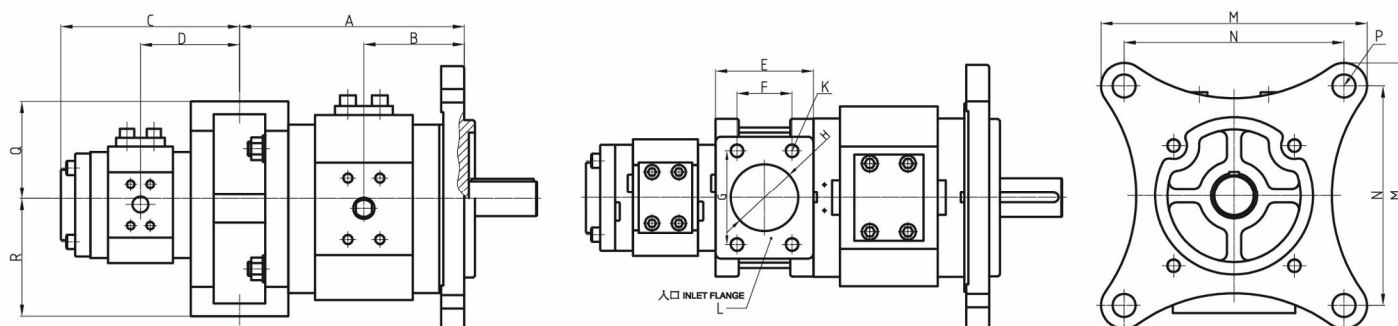
IGP 2孔取附尺寸 / IGP 2-hole Mounting Measurement

形式 Model	IGP-4E				IGP-5E						IGP-6E								
形式 Model	IGP-4S				IGP-4S			IGP-5S			IGP-4S			IGP-5S			IGP-6S		
Displacement	16	20	25	32	20	25	32	40	50	64	20	25	32	40	50	64	80	100	125
A	154	159	165	174	-	-	-	190	197	208	-	-	-	-	-	-	225	235	247
B	72.5	75	78	82.5	-	-	-	82.5	86	91.5	-	-	-	-	-	-	96	101	107
C	81.5	84	87	91.5	94	97	101.5	107.5	111	116.5	186	192	201	217.5	224.5	235.5	240.5	250.5	262.5
D	165	170	176	185	176	182	191	207.5	214.5	225.5	104	107	111.5	117.5	121	126.5	129	134	140

連接中座尺寸 / Housing Measurement

形式 Model	IGP-4E	IGP-5E		IGP-6E		
形式 Model	IGP-4S	IGP-4S	IGP-5S	IGP-4S	IGP-5S	IGP-6S
E	70	90		110		
F	36	50.8		61.9		
G	36	89		106.3		
H	Ø40	Ø60		Ø76		
M	72.15	82		110		
N	72.85	99.28		132.4		
K	M12x23			M16x23		
L	SAEJ518B-2 1/2”			SAEJ518B-3”		

IGP 4孔取附 / IGP 4-hole Mounting Flange



IGP 4孔取附尺寸 / IGP 4-hole Mounting Measurement

形式 Model	IGP-5E						IGP-6E								
形式 Model	IGP-4S			IGP-5S			IGP-4S			IGP-5S			IGP-6S		
Displacement	20	25	32	40	50	64	20	25	32	40	50	64	80	100	125
A	-	-	-	190	197	208	-	-	-	-	-	-	225	235	247
B	-	-	-	82.5	86	91.5	-	-	-	-	-	-	96	101	107
C	94	97	101.5	107.5	111	116.5	186	192	201	217.5	224.5	235.5	240.5	250.5	262.5
D	176	182	191	207.5	214.5	225.5	104	107	111.5	117.5	121	126.5	129	134	140

連接中座尺寸

Housing Measurement

形式 Model	IGP-5E		IGP-6E		
形式 Model	IGP-4S	IGP-5S	IGP-4S	IGP-5S	IGP-6S
E	90		110		
F	50.8		61.9		
G	89		106.3		
H	Ø60		Ø76		
Q	82		110		
R	99.28		132.4		
K	M12x23		M16x23		
L	SAEJ518B-2 1/2"		SAEJ518B-3"		

4孔取附尺寸

4-hole Mounting flange Measurement

形式 Model	IGP-5E		IGP-6E		
形式 Model	IGP-4S	IGP-5S	IGP-4S	IGP-5S	IGP-6S
M	26.3		299.5		
N	224.6		247.5		
P	Ø22		Ø26		

Internal Gear Pump

內啮合齒輪泵



操作指南 / Operating Instruction

1. 液壓油: 符合DIN第2及第3部份之HLP油, 黏度為ISO 46-68。
最適操作黏度: 20 - 100 cSt。
最大作動黏度: 1500 cSt。
最小黏度: 15cSt。
 2. 操作溫度範圍: 5 to 70°C。
 3. 吸入壓力: Absolute 0.8 - 1.3 bar。
 4. 過濾器: 吸入口過濾器 100µm。
回油過濾器: 25µm。
壓油清潔度, NAS 1638 第9級。
 5. 流速: 吸油管: 2 m/sec。
壓力管: 5 m/sec。
回油管: 3 m/sec。
 6. 運轉: 傳動軸不得承受任何徑向或軸向壓力。
請使用彈性聯軸器, 泵和馬達傳動軸必須緊密連接。
安裝時不得使用敲擊或任何不當之強力方式。
請注意泵與馬達之轉動方向是否配合。
其他藉由鍊條或皮帶傳動時請向我方查詢。
 7. 泵之安裝方向不限, 但請注意在首次操作時務必將空氣排除。
 8. 泵之啟動及停止前請先確定是在無負載狀況下方能為之。
 9. 吸油管及壓力管之連結切勿過緊。
 10. 運轉及初次啟動: 在遵循以上指示後請確認系統及連接機器之設備完全符合國家標準後方得啟動泵。
 - a. 檢查電動馬達之空轉及其轉動方向。
 - b. 泵運轉時應注意油槽之油量是否足夠, 不足時請先填滿油, 再運轉。
 - c. 泵啟動時應於無負載狀況下運轉。
 - d. 重覆短暫啟動泵(寸動), 直到泵開始供油。
 - e. 在泵開始負載前, 應將系統中的空氣全部排除, 使運轉時不會產生空蝕現象及噪音。
 - f. 注意溫度變化, 當泵表面溫度明顯高於油溫時, 請立刻停止運轉並檢查相關機械設備。
 - g. 液壓設備在修理過程或首次啟動時系統會產生大量汙損, 因此應使設備在無負載狀況下運轉並在運轉100小時後更換過濾器, 在更換泵時應特別留意液壓油及設備組件之清潔。
 - h. 液壓設備之操作應由經驗豐富及合格之專業人員為之。
1. Hydraulic Oil:
Use the hydraulic oil viscosity as same as ISO 46-68.
(Viscosity over 90 cSt). The hydraulic oil cleanness should be kept within NAS 1638, the 9th degree.
Optimal Operation Viscosity : 20-100 cSt.
Maximum Operation Viscosity : 1500 cSt.
Minimum Operation Viscosity : 15 cSt.
 2. Operating temperature: 5 to 70°C
 3. Suction Pressure: Absolute 0.8-1.3 bar.
 4. Filter:
Suction strainer: 100µm.
Return filter: 25µm.
Hydraulic oil cleanness: NAS 1638 the 9th degree.
 5. Flow speed:
Suction Line: 2 m/sec.
Pressure Line: 5 m/sec.
Return Line: 3 m/sec.
 6. Rotation:
Do not cause any axial or radial pressure to the drive shaft. Use flexible coupling. Tighten closely the pump shaft and motor shaft. Do not use improper way to instal the pump, such as hitting. Be aware of rotating direction of pump and motor. Any other request of installation , please consult with the suppliers.
 7. Bleed the air when pump runs for the first time.
 8. Please make sure the pump is on no-load state when start and stop operation.
 9. Do not fasten too tight when being connect with the suction line and pressure line.
 10. Start-up operation: Following the instruction and all other requirements before start up operation.
 - a. Make sure the rotation of electric motor is correct.
 - b. Check the oil level of oil tank before starting and filling the oil when it is insufficient.
 - c. Repeat power on and off when pump is first running until the pump starts to supply oil.
 - d. Pump should be run under no load state when starting operation.
 - e. Before strating , run the pump under no-load state , bleed the air out of the circuit to prevent noise and cavitation.
 - f. Be aware of the temperature variation: Once the temperature of pump is apparently higher than oil , stop pump running and check all equipment closely.
 - g. When starting running of pump at the first time or after repair , whole hydraulic system are liable to be contaminated. Please run the pump under no-load state and replace or clean all filters after 100 hours.
 - h. Operation of hydraulic system should be handled by professionals.

Internal Gear Pump

內啮合齒輪泵



使用須知 / 安裝說明

使用須知：

1. 檢查液壓單元是否正確及仔細的安裝。
2. 填充液壓油時，必須按規定要求使用濾網。
3. 檢查旋轉方向是否正確。
4. 在無負載狀況下，寸動運轉油泵確保油泵充份潤滑。
5. 絕對禁止無油狀況下空轉。
6. 在壓力產生前必須完全排放系統內部的空氣。
7. 如果油泵運轉 20秒後仍有氣泡產生，請查明原因。
8. 一旦達成系統要求的各項工作數值，請檢查管路之連接是否有洩漏，同時也請檢查操作溫度。

排氣：

1. 在初次運轉前，我們建議在油泵中先注油，這會確保運轉的安全及防止不當安裝所造成的磨損。
2. 在初次運轉時必須在低壓無負載狀態下，事先排放管線內的空氣，請稍微放鬆壓力側法蘭(為防止液壓油濺出，我們建議必須有防護設施)，直到液壓油中不再有氣泡產生後再以扭力扳手，按照設定的扭力鎖緊螺絲。

性能曲線：

選用馬達時，請特別注意特性中所示之性能曲線。

通則：

1. 所有油泵在出廠前已經過性能及功能測試，任何對油泵所做的修改，本公司不予任何保證。
2. 所有油泵的維修僅限於本廠及經過授權之經銷商，任何非經授權之維修行為，本公司不予保證。

重要附記：

1. 油泵的安裝、維護及整修必須經由受過專業訓練的人員處理。
2. 油泵只允許在設定之規範下運作。
3. 油泵必須在沒有瑕疵的狀況下運作。
4. 在未開始工作前，請注意系統必須保持在無壓狀態。
5. 任何會影響油泵安全性及功能所做的改變及調整皆不被允許。
6. 在既有的安全護套未被移除之前，必須做好齒輪的保護措施(如:加裝連軸器護套)。
7. 經常檢查螺絲是否按照標準扭力確實鎖緊。
8. 確保一般安全及意外事故之防護。

設計相關數據說明：

當您使用內啮合齒輪泵在液壓系統上時，我們建議您注意以下事項

所有相關數據說明：

所有相關之值取決於製造過程之允差標準，在特定外部條件下取得標準數據，相對的在在條件(如:黏度及溫度)變數產生的情況下可能會影響數據的變化。

Commissioning instructions Project / Processing instructions

Commissioning

1. Check whether the unit has been carefully and correctly mounted.
2. Fill with pressure fluid only using a filter with the required minimum retention rate.
3. Observe the arrow indicating the correct sense of rotation.
4. Start up the pump in no-load operation and run without pressure for a few seconds to ensure sufficient lubrication.
5. Never allow the pump to run without oil.
6. The pump has to be bleed before building up pressure against a valve. Wear is covered by running dry.
7. If the pumped oil still contains bubbles of air after appr. 20 seconds, investigate the cause.
8. Once the target operating values have been reached, check the pipe connections for leaks. Also check the operating temperature.

Venting

1. Prior to initial commissioning, we recommend filling the pump housing with oil. This enhances operating safety and prevents wear in the event of unfavorable mounting conditions.
2. On initial commissioning, drain off oil containing bubbles during pressure-less circulation of the oil by carefully opening the pressure flange (it may be advisable to provide a splash guard). Only when the emerging oil is free of bubbles should the screw union be tightened with the specified tightening torque.

Characteristic curves

When configuring the drive motor, please pay attention to the maximum possible application data as indicated in the characteristic curves.

General

1. Pumps supplied by us have been performance and function tested. Any attempts to modify the pump in any way will result in loss of warranty cover!
2. Repairs may only be performed by the manufacturer or by authorized dealers and branches. No warranty can be accepted for unauthorized repairs.

Important remarks

1. Installation, maintenance and repair of pumps may only be performed by suitably qualified and authorized personnel who have received the relevant instruction.
2. Pumps may only be operated in accordance with the specified ratings.
3. The pump may only be operated when in flawless condition.
4. Before performing any work on the pump, always depressurize the system.
5. Any conversions or modifications of the pump which affect safety or functional characteristics are not permissible.
6. Ensure that the necessary protective gear (such as coupling safeguards) is in place and that existing safeguards are not removed.
7. Always check the firm fit of all fastening screws (observe the specified tightening torque).
8. Ensure that the generally applicable safety and accident prevention regulations are observed.

Project processing instructions

When using internal gear pumps, we recommend paying particular attention to the following information:

Internal Gear Pump

內啮合齒輪泵



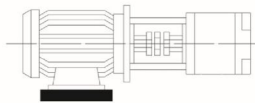
使用須知 / 安裝說明

噪音值：

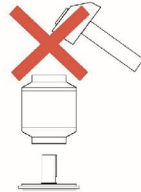
1. 在內啮合齒輪泵的使用上，由於低脈衝來自液壓閥的激磁，管路及機械元件的噪音影響最小(大約2~3%)，此外，若受到來自環境的影響，整體的噪音值可能比油泵的噪音值高5到10 dB(A)。
2. 當油泵產生噪音時，檢查是否吸入空氣；需徹底將吸入口空氣排除，以避免噪音和對油泵的損害。

驅動系統：

馬達 + 油泵連接座 + 連軸器 + 油泵

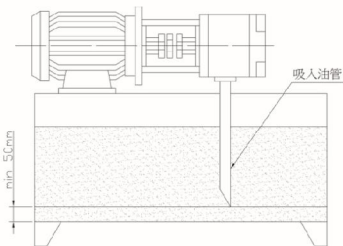


1. 驅動軸上不能承受任何徑向及軸向之壓力。
2. 馬達及油泵的同心度必須仔細調整校正。
3. 請使用連軸器以補償心軸之偏心量。
4. 安裝連軸器時必須避免產生軸向壓力，嚴禁使用敲擊或強壓方式安裝。



油箱：

1. 調整油量，油量必須足夠系統動作時使用。
2. 油溫必須控制在要求範圍內，必要時請加裝冷卻器。



管路及連接：

1. 取下所有油泵上保護用的塞子。
2. 建議使用無縫鋼管(符合DIN 0.61)，及可拆式接頭。
3. 選擇合適的油管及接頭(最大吸入流速1~1.5 m/s)。
4. 絕對進油壓力最大 2bar。
5. 組裝前必須仔細清理油管及接頭，且將接頭內毛邊清除。

管路設計建議：

1. 回油管中之液壓油在任何迴路下禁止直接經由入油管回到系統中，並確保吸油管及回油管之間保持最大間隔 1m以上。
2. 回油管必須保持在液面下。
3. 安裝油管時必須注意入口及出口的油封是否緊密配合。

Commissioning instructions Project / Processing instructions

Characteristic values

All specified characteristic values are dependent upon production tolerances and apply under certain outline conditions.

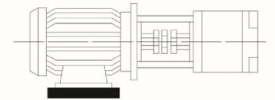
Please note that variance is accordingly possible, and that certain outline conditions (such as viscosity or temperature) and also characteristic values can alter.

Noise

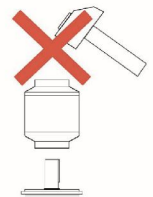
1. In the case of internal gear pumps, the excitation of valves, pipelines, machine parts etc. is minimal due to the low discharge flow pulsation (appr. 2 – 3%).
2. Despite this, however, under unfavourable circumstances the sound pressure level at the mounting location of the unit can be 5 to 10 dB(A) higher than the value for the pump itself.

Drive system

Electric motor + pump mount + coupling + pump

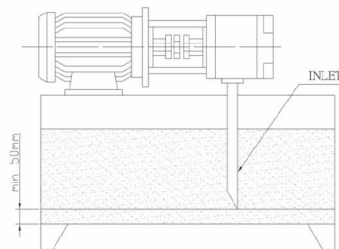


1. No radial or axial forces may be permitted to act on the pump drive shaft.
2. The motor and pump must be precisely aligned.
3. Always use a coupling which will permit compensation for any shaft displacement.
4. When mounting the coupling, avoid applying axial force, i.e. never attempt to press or knock into place using a hammer or similar instrument.



Fluid tank

1. Adjust the useful volume of the tank to the operating conditions.
2. Never exceed the admissible fluid temperature. If necessary, provide a cooler.



Pipes and connections

1. Remove the protective plug at the pump
2. We recommend using seamless precision steel pipes in compliance with DIN 2391 and detachable pipe connectors.
3. Select a suitable clear width for pipes and connections (intake speed max. 1–1.5 m/s).
4. Absolute admission pressure max. 2 bar.
5. Carefully clean pipelines and screw unions prior to mounting.

Internal Gear Pump

內啮合齒輪泵



使用須知 / 安裝說明

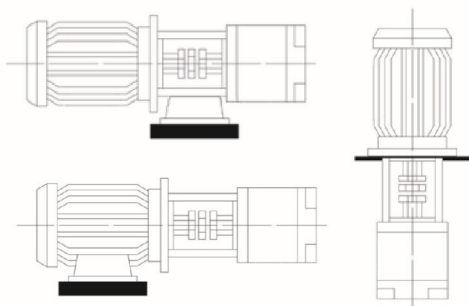
過濾器：

建議使用回油過濾器或壓力過濾器，若使用吸入口過濾器時必須搭配真空開關或汙染指示器。

液壓油：

1. 建議使用 68# 或 46# 液壓油。
2. 不同種類的液壓油切勿混合使用，容易造成分解及減低潤滑效果
3. 液壓油必須依系統使用狀況時更換，更換時必須清理油箱內部。

安裝位置：



Commissioning instructions Project / Processing instructions

Pipe routing recommendation

1. Return line fluid must not under any circumstances be permitted to directly re-enter the system via the intake pipe, i.e. ensure the greatest possible distance between the intake and the return line pipe.
2. Return line pipe has to be under oil level at all times.
3. When assembling pipelines, ensure that the suction and pressure seal is completely intact.

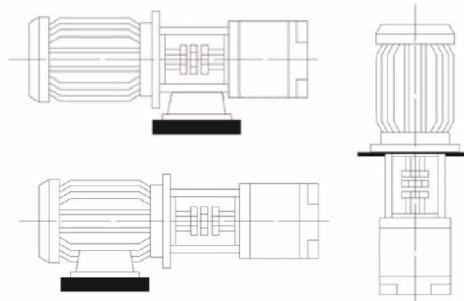
Filters

Wherever possible use return or pressure filters (use suction filters only in conjunction with vacuum switches / dirt accumulation indicators).

Pressure fluid

1. We recommend using 68# or 46# hydraulic oils.
2. Different oil types must not be mixed, as this can result in decomposition and a reduction of lubrication capability.
3. Depending on the operating conditions, the fluid must be renewed at certain intervals. When changing the fluid, the tank must be cleaned of residues.

Mounting positions





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