

AMX 系列 SERIES

磁力驅動無軸封泵浦

MAGNETIC DRIVE SEAL-LESS PUMP



榮獲多國發明專利

請參閱協磁公司網站內容

Patented in multiple countries.

Please refer to our website for details.



ASSOMA INC 協磁
<http://www.assoma.com.tw>

AVF

系列
SERIES

Saving Energy 節能減碳
and Reducing Carbon



NEW

AVF 系列是協磁公司最新開發的創新機種，以『節能減碳』為出發點，透過機電整合技術結合泵浦水力設計、創新轉子結構、電機及傳動系統，以整合方案的概念取代單一產品。

AVF使用永磁同步馬達及罐裝無軸封結構，使單位體積效率達到最高，為提高運轉壽命，AVF在軟硬體方面均採取適當措施以防護外部環境侵蝕及過負荷、泵浦空轉等異常狀況。

AVF Series is the latest developed new model from ASSOMA for “saving energy and reducing carbon”. Through integrated technology of mechanics and electrics , combines with hydraulic design of pumps, innovated rotor structure, and electric and drive systems, the integrated solution replaces the concept of a single product.

AVF, using permanent magnet synchronous motors, canned seal-less structure, yields the highest efficiency per unit volume. In the hardware and software aspects AVF takes appropriate measures to protect against erosive external environment, overload, dry-run and other abnormal conditions to enhance operational life.

變頻調速於泵浦輸送系統取代控制閥用以調節壓力/流量已成為主流。ASSOMA 最新產品AVF系列專為變頻調速應用場合開發。

Controlling the capacity and pressure of a pumping system has shifted from using valve control to using inverter control. ASSOMA's AVF series pump is specifically designed to use inverter control.

●採用永磁同步馬達可比感應馬達提高5%~10%電機效率

Uses a permanent magnet synchronous motor to improve efficiency by 5%~10% as compared to an induction motor

●罐裝式無軸封結構，大幅縮小安裝空間

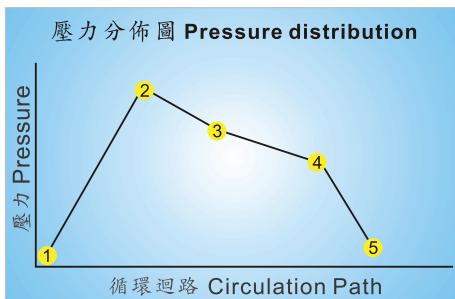
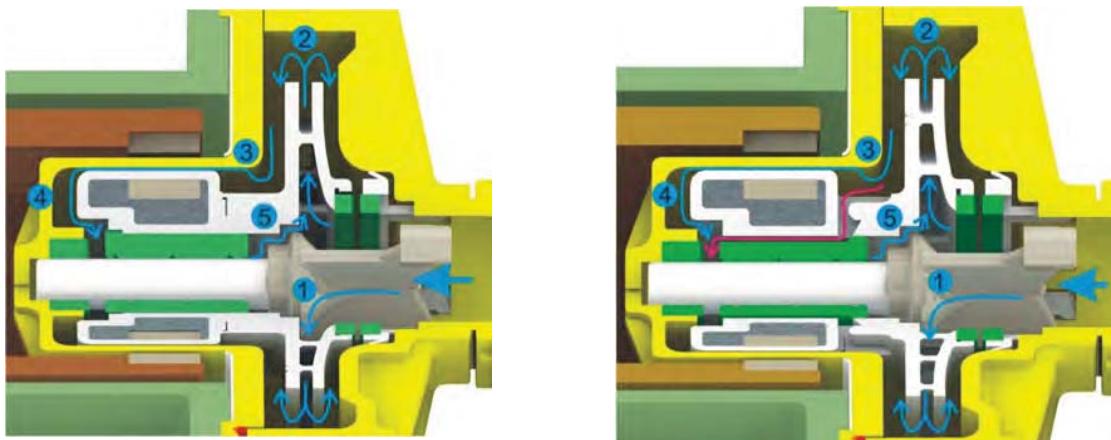
Canned seal-less construction greatly reduces the installed space

AVF 系列不僅達到節能減碳效果，並且可搭配各種製程感測器應用於自動控制系統及利用通訊作遠端串聯監控。詳細資料，請洽協磁公司。

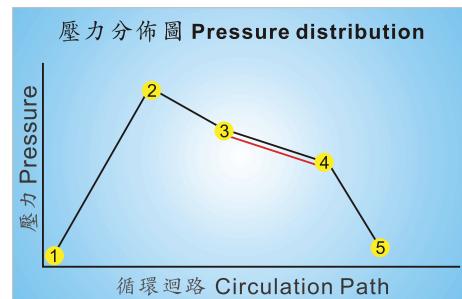
AVF series pumps can widely be used to achieve energy conservation and carbon reduction, also can be connected to production sensors and integrated into an automatic control system and can be monitored and controlled remotely via a communications protocol.

AMX 系列是協磁公司專為克服無軸封泵浦經常遇到的異常現象，如“空轉”，“汽化”等而導致泵浦嚴重損壞所開發的全系列產品。AMX系列已獲得二項國際專利，其優異的機械及水力性能除在實驗室長期驗證外並參加多項國際性展覽（*ACHEMA/Frankfurt am Main, KPCA/Seoul, CPCA/Shanghai, Enviro/Sydney, TPCA/Taipei...*），普獲市場好評。馬力數範圍由 $1/2\text{ hp}$ 到 10 hp ($0.4\text{ kW} \sim 7.5\text{ kW}$)。

The AMX Series pumps are specifically designed to withstand common abnormal operations such as dry-running and cavitation which usually would cause severe damages to pumps. This design has multiple unique functions that have earned the pumps two worldwide patents. Its superior mechanical and hydraulic performance has been well tested both in the laboratory and in the marketplace. The series has also received high acclaims at several international trade shows such as Achema (Germany), KPCA (Korea), CPCA (China), Enviro (Australia), and TPCA (Taiwan). The AMX series offers a range from $1/2\text{ hp}$ to 10 hp ($0.4\text{ kW} \sim 7.5\text{ kW}$).



■ 傳統循環迴路
Traditional Circulation Path



■ 協磁專利循環迴路
ASSOMA Patented Circulation Path
For Cooling

可任意調整螺孔方向的組合式RF型法蘭，除提供配管方便性以外，更可避免配管應力造成法蘭變形引起的洩漏問題。

Our adjustable flange can be rotated easily to align with the opposite flange for easy installation. Furthermore, the two-piece flange design will provide a leak-free and secure seal against possible flange distortion.

組合式法蘭
Flange Assembly



渦卷式流道
Volute Flow Path

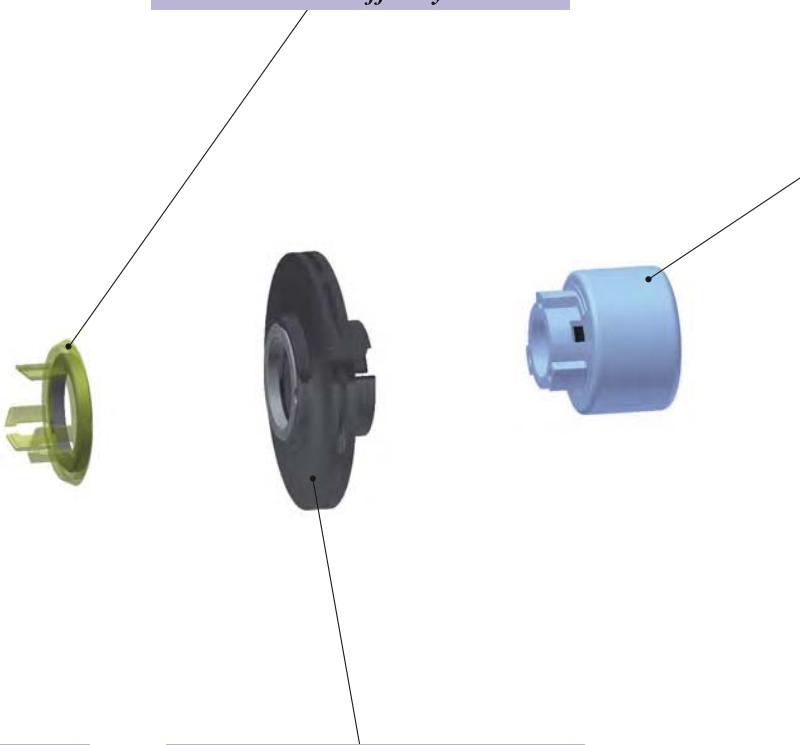
可使葉輪對輸送液所作的流功能被充分保存，使泵殼內流體流動更趨向「自由渦流」，降低不必要的衝擊損失及水流噪音，並順利將流體動能轉化為壓力能。同時亦平衡葉輪在泵殼中所受徑向力，降低軸承負荷。

The volute flow path is designed to allow the fluid to emulate a free vortex to reduce unnecessary frictional loss and noise. This will maximize the pump's efficiency in converting flow kinetic energy into pressure potential energy. It will also minimize the radial forces experienced by the impeller and reduce the loading on the bearing.

獨具創意的動態緩衝座，除具備緩衝作用以吸收泵浦葉輪在吸入條件惡劣時之振動外，並提供止推環與葉輪磨損環間一動態式的平面接觸，藉以保持摩擦面之有效接觸面積，並大幅提高止推環及磨損環之可靠度及使用壽命，可降低疲勞損害。

Our innovative dynamic buffer is specially designed to absorb vibration and shock caused by adverse operating conditions. At the same time, the dynamic buffer is self-adjusting, allowing a better face to face contact between the thrust ring and the wear ring, thus, minimizing wear and prolonging their service life.

專利緩衝止推系統
Patented Buffer System



高效率水力設計
High Efficient Flow Design

由泵浦流力設計軟體計算出最佳流道幾何，配合流場分析，掌握流動特性，使流力損失降為最低，提高葉片流力效率。

The geometry of impeller and casing are generated by professional hydraulic design programs. In addition, Computerized Fluid Dynamic (CFD) method is used to control stream pattern, thus reducing hydraulic loss and increasing pump efficiency.

AMX 的軸承潤滑迴路，首創雙面對流冷卻設計，在同樣的潤滑流量下，可帶走更多熱量，即使空轉時，也可降低熱平衡溫度，提高抗空轉能力。



The revolutionized bearing design with dual-channel circulation on both inner and outer surfaces of bearing contributes to rapidly heat dissipation.

The internal circulation of the pump is fully utilized to reinforce convectional heat transfer that lowers thermal balancing temperature and prevents damage even under dry running.

專利耐空轉結構 Patented Dry-run Design



結合CAD/CAE的科技產品 Integrate CAD/CAE System

以電腦輔助設計及分析來強調最佳化及可靠度，引領協磁產品成功進入高科技產業。



Using fully computer aided design and analysis to optimize our product performance and reliability, earning us a place within high-tech industries.

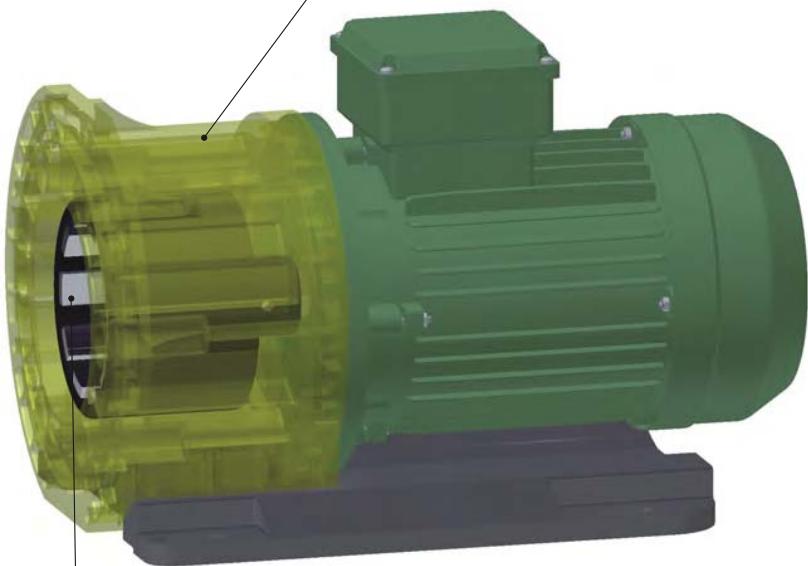
可以適應腐蝕性環境，防止泵浦出口配管藥液滴落或維修保養時泵浦內殘餘藥液侵蝕金屬托架。塑膠結構與剛性均經過嚴密計算與耐荷重測試。

(鑄鐵托架搭配不鏽鋼底座亦可依客戶需求提供)

The engineering plastic brackets can be used in a corrosive environment and will not be affected by chemicals that may come in contact with the bracket during routine maintenance. Both the construction and rigidity of the bracket are carefully calculated and the brackets are load and stress tested to ensure they are safe and durable.

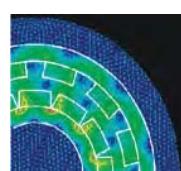
(FC bracket with stainless steel base is still available on request)

工程塑膠托架 Engineering Plastic Bracket



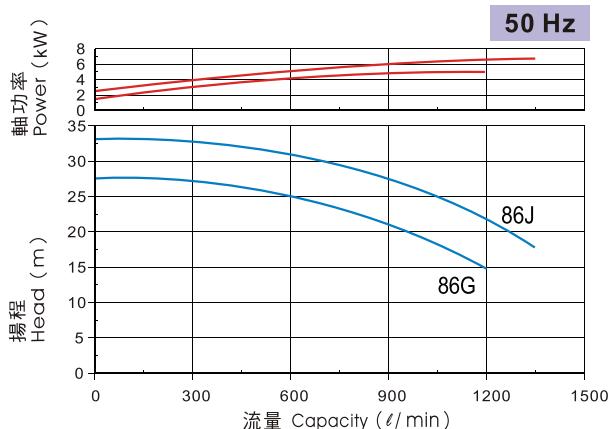
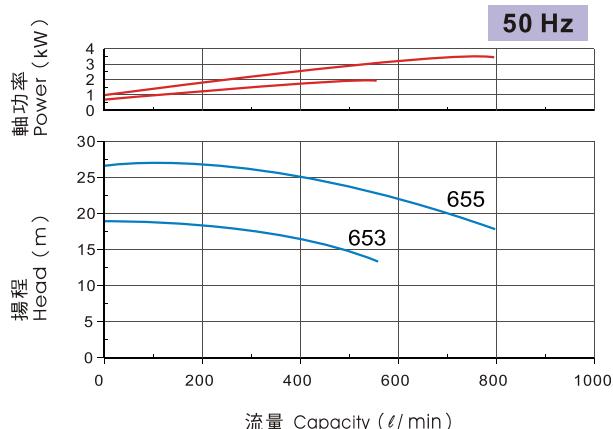
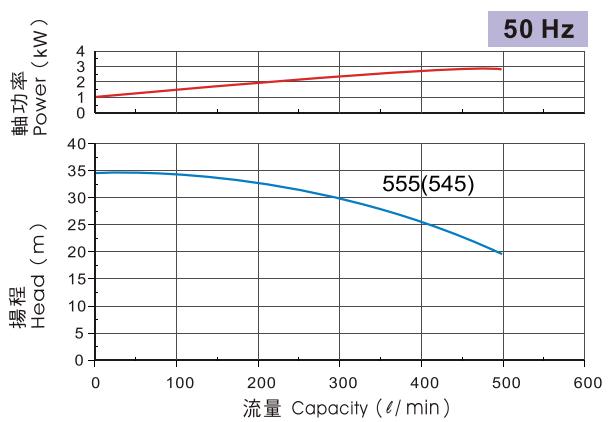
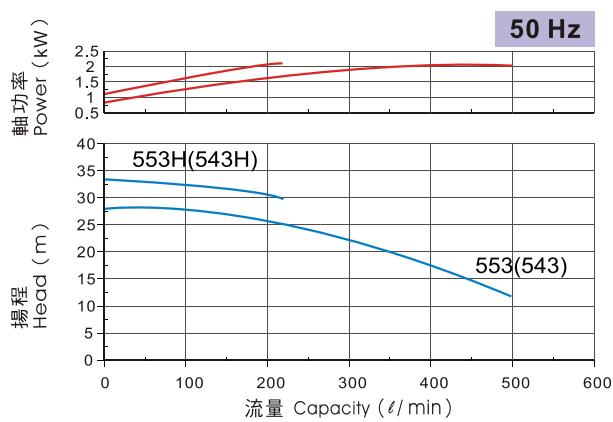
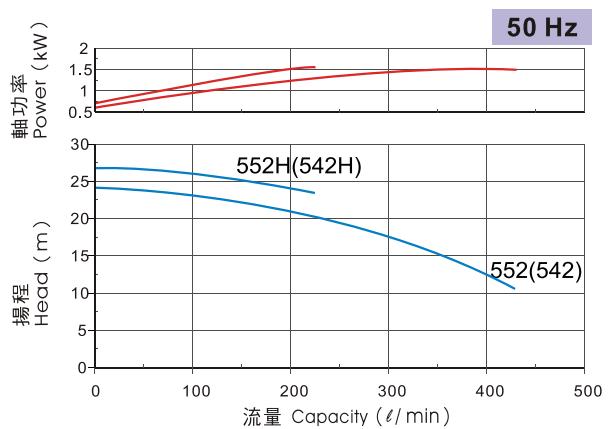
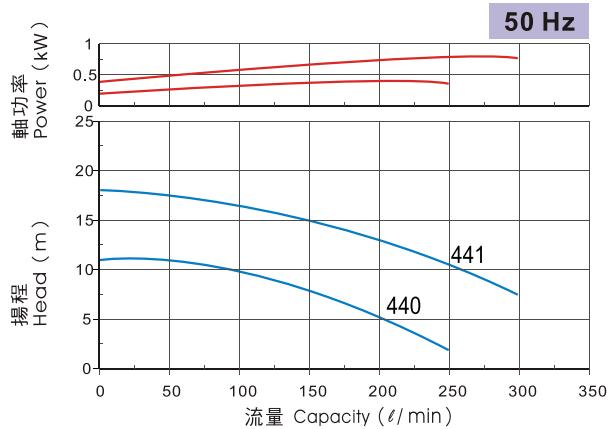
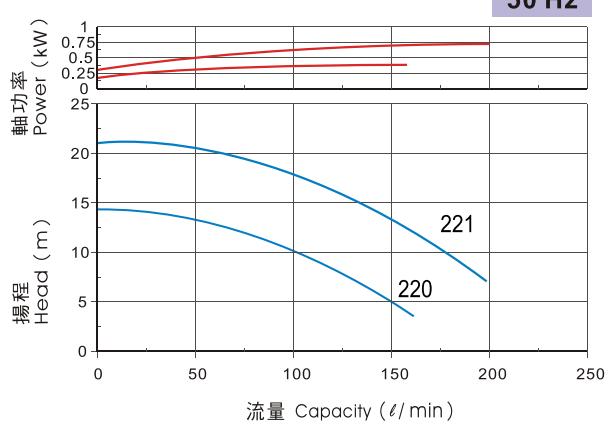
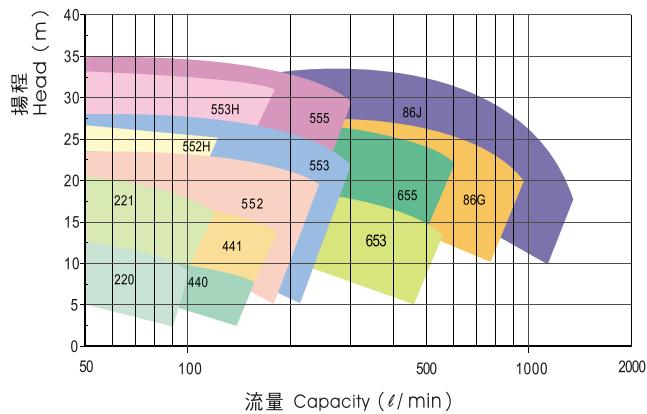
高性能磁偶合器 High Performance Magnetic Coupling

利用磁場分析軟體計算磁扭矩，提高磁鐵利用率，確保足夠的偶合動力餘裕以避免滑脫。

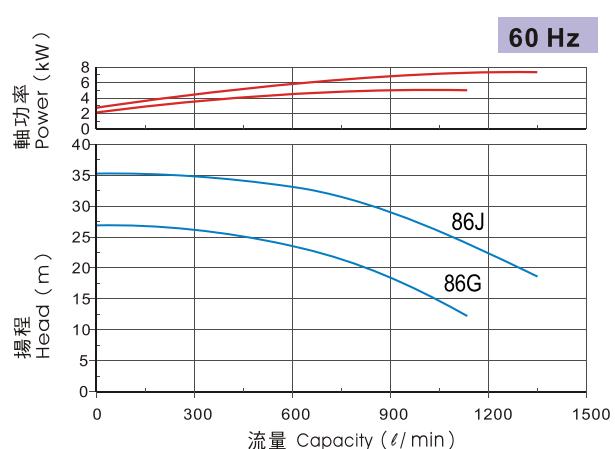
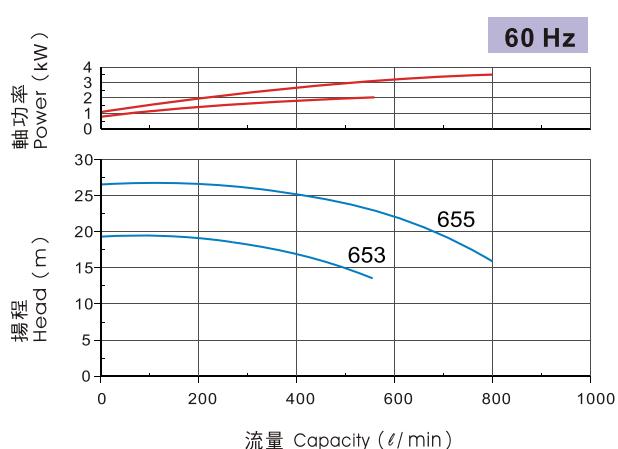
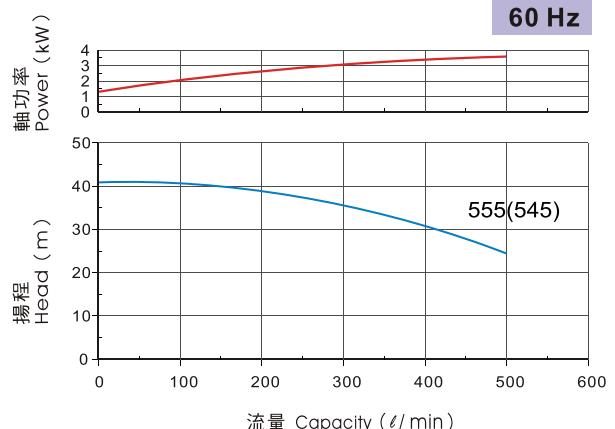
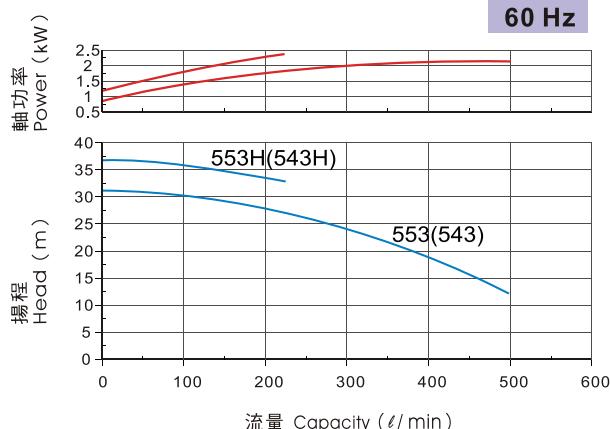
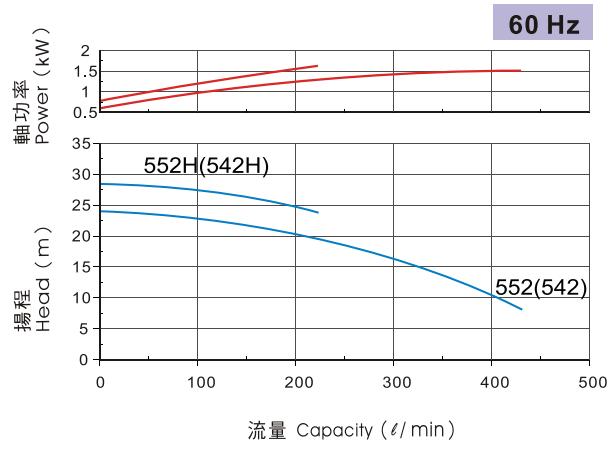
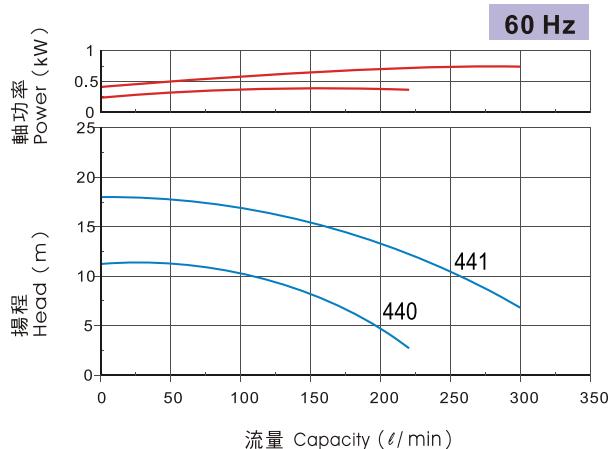
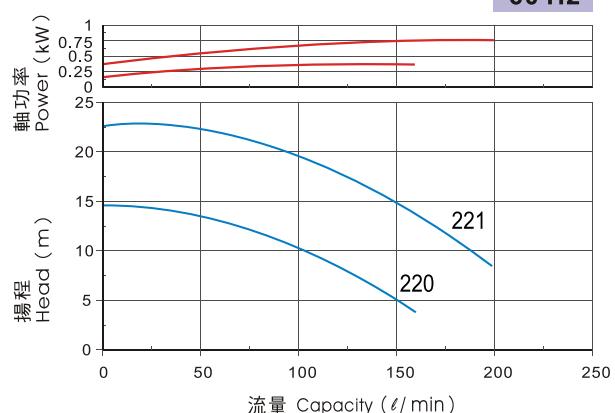
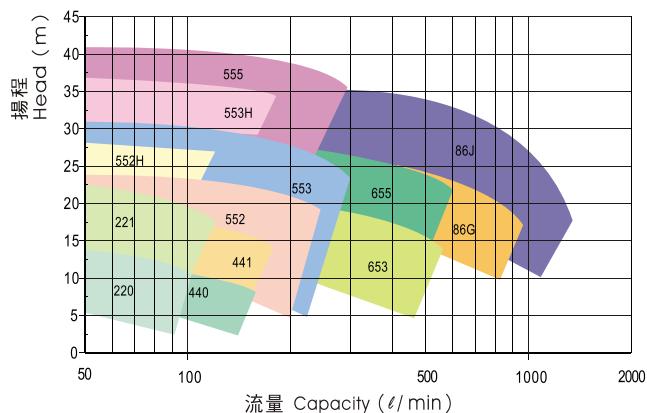


Utilizing magnetic field analysis program, we are able to optimize our magnetic coupling design to provide sufficient torque to prevent decoupling.

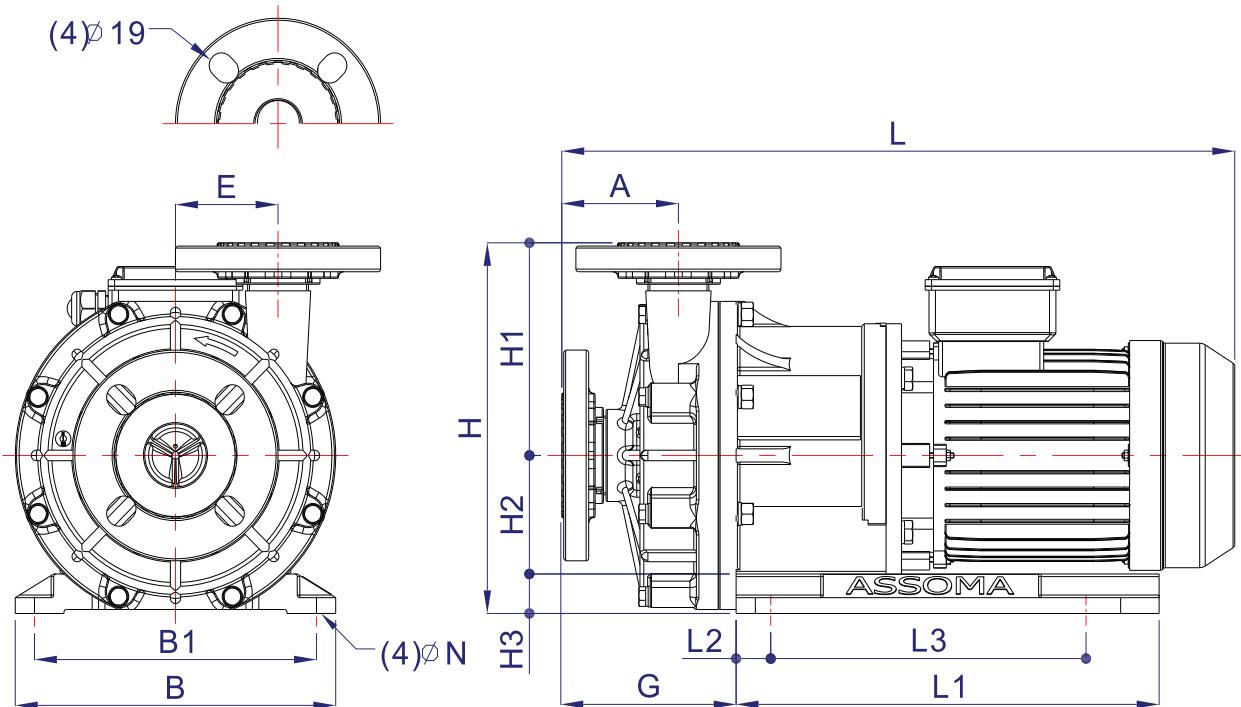
性能曲線圖 PERFORMANCE CURVES - 50 Hz



性能曲線圖 PERFORMANCE CURVES - 60 Hz



外型尺寸圖 DIMENSIONS
(PPG托架及底座PPG BRACKET AND BASE)



項目 Item	尺寸 Dimension (mm)														口徑 Bore(mm)		法蘭 Flange(mm)	
	A	B	B1	E	G	H	H1	H2	H3	L	L1	L2	L3	N	Inlet	Outlet	Inlet	Outlet
型式 Model																		
AMX-220	90				65	138	255	140	85	449					21	21	25	25
AMX-440	87.5				54	137	225.5	130.5	65	443					36	36	40	40
AMX-221	90				65	138	255	140	85	474	203	35	128	12	21	21	25	25
AMX-441	105.5				72	153.5	257.5	142.5		490					40		40	40
AMX-542(H)						282.5	162.5			499								50
AMX-552(H)	91					281.5	161.5	90		525					40	50		50
AMX-543(H)						282.5	162.5			30					50			40
AMX-553(H)						281.5	161.5			330	27	246	14					50
AMX-653	92				131	331	169			532					65	50	65	
AMX-545	91					324.5	162.5	132		593					50	40	50	40
AMX-555						323.5	161.5			600								50
AMX-655	92				131	331	169								65	50	65	
AMX-86G	140	310	280	90	190	440	210	185	45	728	500	30	440	14	78	65	80	65
AMX-86J																		

備註: * 泵浦外形尺寸將因馬達供應商和安裝方式之不同而有所區別。

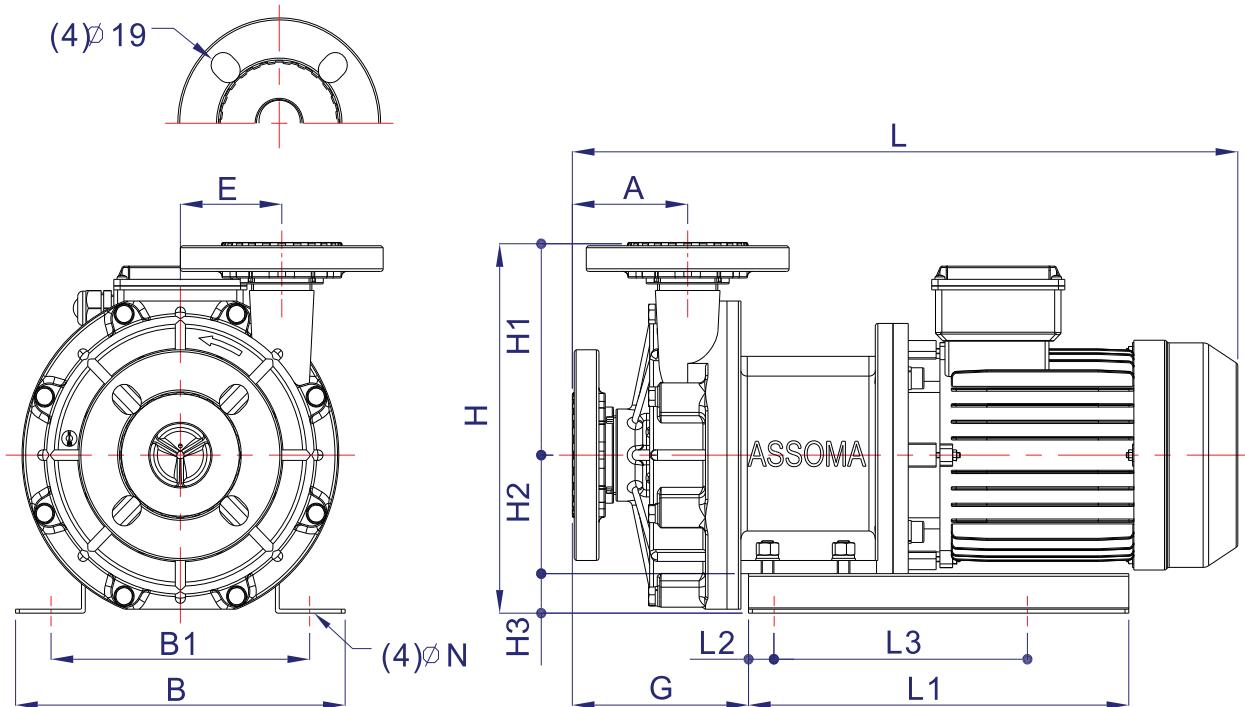
* * AMX-86G及AMX-86J底座為不鏽鋼材質。

Note: * Dimension of the pump will differ depending on the brand and installation of the motor.

* * The material of base of AMX-86G and 86J is SUS304.

外型尺寸圖 DIMENSIONS

(鑄鐵托架及不鏽鋼底座FC BRACKET AND SUS304 BASE)



項目 Item	尺寸 Dimension (mm)														口徑 Bore(mm)		法蘭 Flange(mm)	
	A	B	B1	E	G	H	H1	H2	H3	L	L1	L2	L3	N	Inlet	Outlet	Inlet	Outlet
型式 Model																		
AMX-220	90	160	130	65	136	255	140	85	30	449	210	35	130		21	21	25	25
AMX-440	87.5	140	110	54	130.5	225.5	130.5	75	20	443	200	20	98		36	36	40	40
AMX-221	90	160	130	65	136	255	140	85		474	210	35	130	12	21	21	25	25
AMX-441	105.5			72	151.5	257.5	142.5			490					40	40	40	40
AMX-542(H)						282.5	162.5											
AMX-552(H)	91	260	204		139	281.5	161.5	90		499	300	20	200	30	50	40	50	50
AMX-543(H)						282.5	162.5			525								
AMX-553(H)						281.5	161.5											
AMX-653	92	250	220			126	331	169		532	360	30	300	14	65	50	65	50
AMX-545						324.5	162.5	117		593				50	40	50	40	
AMX-555						323.5	161.5			600				65	50	65	50	
AMX-655	92					123	331	169										

備註: * 水浦外形尺寸將因馬達供應商和安裝方式之不同而有所區別。

Note: * Dimension of the pump will differ depending on the brand and installation of the motor.

規格表 SPECIFICATIONS

機型 Model	入口x出口配管 Suction x Discharge mm x mm	頻率 Frequency	額定流量 Rated Capacity l/min	額定揚程 Rated Head m	最大流量 Max. Capacity l/min	最高揚程 Max. Head m	馬達輸出功率 Motor Output kW
AMX-220	25 x 25	50Hz	80	10.6	150	14.0	0.4
		60Hz	80	11.8		14.8	
AMX-440	40 x 40	50Hz	100	9.9	240	11.0	0.4
		60Hz	100	10.3		11.4	
AMX-221	25 x 25	50Hz	100	17.8	200	21.1	0.75
		60Hz	100	19.6		22.7	
AMX-441	40 x 40	50Hz	150	15.0	300	18.0	0.75
		60Hz	150	15.4		18.2	
AMX-542	50 x 40	50Hz	200	21.1	430	24.1	1.5
AMX-552	50 x 50	60Hz	200	20.3		24.4	
AMX-542H	50 x 40	50Hz	100	25.8	225	26.7	1.5
AMX-552H	50 x 50	60Hz	100	27.2		28.2	
AMX-543	50 x 40	50Hz	250	24.1	500	28.1	2.2
AMX-553	50 x 50	60Hz	250	25.9		31.1	
AMX-543H	50 x 40	50Hz	150	31.7	220	33.3	2.2
AMX-553H	50 x 50	60Hz	150	34.8	225	37.1	
AMX-545	50 x 40	50Hz	250	31.4	500	34.7	3.75
AMX-555	50 x 50	60Hz	250	37.4		40.9	
AMX-653	65 x 50	50Hz	450	15.7	560	18.9	2.2
		60Hz	450	15.9		19.6	
AMX-655	65 x 50	50Hz	500	23.9	800	26.9	3.75
		60Hz	500	23.9		26.8	
AMX-86G	80 x 65	50Hz	800	22.7	1140	27.6	5.5
		60Hz	800	20.4		26.9	
AMX-86J	80 x 65	50Hz	800	29.0	1350	33.1	7.5
		60Hz	800	30.5		35.2	

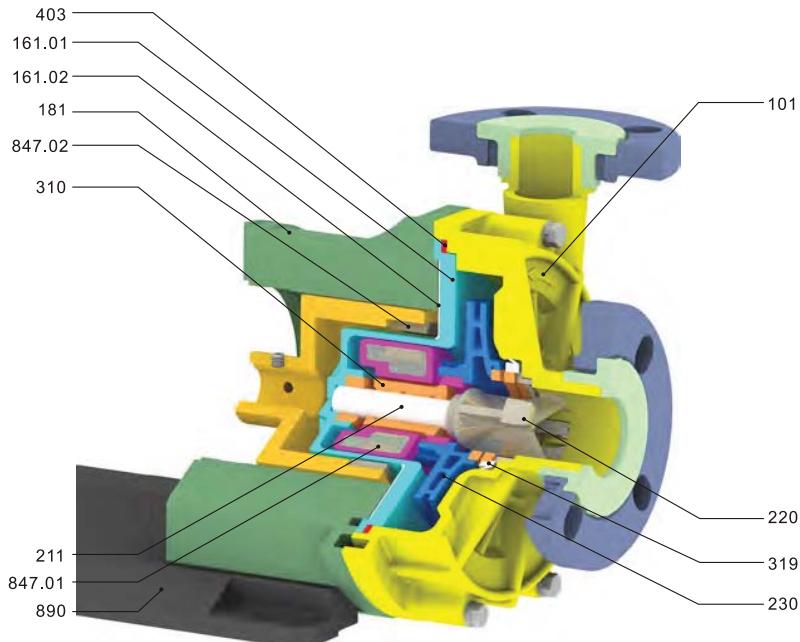
型式表示 PUMP IDENTIFICATION

AMX - 5 4 2 F E A C V - 0

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① 系列名稱 Series Symbol	AMX 系列 Series	⑥ 本體材質 Casing Material	E : ETFE+CF G : PP+GF
② 入口口徑 Suction Size	2 : 25A(1") 4 : 40A(1½") 5 : 50A(2") 6 : 65A(2½") 8 : 80A(3")	⑦ 軸心材質 Shaft Material	A : 995 Al ₂ O ₃ S : SSiC
③ 出口口徑 Discharge Size	2 : 25A(1") 4 : 40A(1½") 5 : 50A(2") 6 : 65A(2½")	⑧ 軸承材質 Bearing Material	A : 995 Al ₂ O ₃ C : CARBON R : PTFE+CF S : SSiC
④ 馬力數 Motor Power	0 : 1/2 hp (0.4 kW) 1 : 1 hp (0.75 kW) 2 : 2 hp (1.5 kW) 3 : 3 hp (2.2 kW) 5 : 5 hp (3.75 kW) G : 7.5 hp (5.5kW) J : 10 hp (7.5kW)	⑨ 密封材質 O-Ring Material	E : EPDM V : FKM P : PTFE+FKM
⑤ 配管形式 Type of Connection	F : 法蘭 Flange U : 由任 Union	⑩ 馬達型式 Motor Type	0 : IP54 1 : IP55 2 : eG3安全增防爆型 Explosion proof eG3 3 : d2G4耐壓防爆型 Explosion proof d2G4 S : 特殊馬達 Special motor

材質構造圖 MATERIAL



編號 Part code	名稱 Part name		可選用材質 Available Materials
101	前蓋法蘭組 *** Pump casing assembly ***	前蓋 Pump casing	PP+GF / ETFE+CF
		入口活動法蘭 * *Inlet adjustable flange * *	PP+GF / ETFE+CF
		出口活動法蘭 * *Outlet adjustable flange * *	PP+GF / ETFE+CF
		入口法蘭連結件 Inlet flange adaptor	PP+GF / ETFE+CF
		出口法蘭連結件 Outlet flange adaptor	PP+GF / ETFE+CF
161.01	後蓋止推組 Rear casing / thrust ring	後蓋 Rear casing	PP+GF / ETFE+CF
		後止推環 Rear thrust ring	995 Al ₂ O ₃ / SSiC
161.02	後蓋背板 Backup plate		SUS304
181	托架 Bracket *		PP+GF / FC
211	軸心 Shaft		995 Al ₂ O ₃ / SSiC
220	前軸心支撐 Front support, shaft		ETFE+CF
230	葉片磨損環組 Impeller wear ring assembly	葉片組 Impeller	PP+GF / ETFE+CF
		前磨損環 Front wear ring	CARBON/SSiC/PTFE+CF
310	軸承 Bearing		995 Al ₂ O ₃ / CARBON / SSiC/PTFE+CF
319	止推環組 Thrust ring & buffer	前緩衝座 Front buffer (86G/J除外 Except 86G/J)	ETFE
		前止推環 Front thrust ring	995 Al ₂ O ₃ / SSiC
403	密封墊片 Gasket		EPDM / FKM / PTFE+FKM
847.01	包膠內輪 Magnet capsule *** *		PP / ETFE , Nd-Fe-B
847.02	外輪 Drive magnet *** *		Nd-Fe-B
890	底座 Base plate *		PP+GF / SUS304

備註 Note :

- * AMX系列托架及底座標準材質為PP+GF，但可依客戶需求提供鑄鐵材質托架搭配不鏽鋼底座。
- ** AMX系列泵浦法蘭結構為一獨特結構設計(含連結件及活動法蘭)。因連結件是接液部件，活動法蘭為非接液部件，所以AMX系列活動法蘭標準材質均可為PP+GF；但活動法蘭材質亦可依客戶需求選擇與泵殼本體相同的材質，詳情請洽協磁公司。
- *** 86G及86J前蓋法蘭組、後蓋、托架、軸心支撐及葉片組僅提供PP+GF材質；包膠內輪僅提供PP材質；底座僅提供SUS304材質。
- **** 1/2 及 1 hp 的磁體材質為鐵氧體
 - * Standard material of bracket and base of AMX series is PP+GF. FC bracket and SUS304 base can be offered in accordance with customer's requirement.
 - ** The AMX Series has a unique 2-piece flange design, the flange adaptor and adjustable flange. Since the flange itself is Not a wetted part, we offer PP+GF as material for the flange. ETFE+CF flanges are available by request only.
 - *** We offer only PP+GF as material for Pump casing assembly, Rear casing, Bracket, Front support, and Impeller, PP as material for Magnet capsule, and SUS304 as material for Base plate of 86G and 86J.
 - **** 1/2 and 1 hp pumps use Ferrite metals for the magnets.

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