ASSOMA

AMA 系列 SERIES

磁力驅動無軸封泵浦

MAGNETIC DRIVE SEAL-LESS PUMP

榮獲
PATENTED IN
德國、台灣
GERMANY, TAIWAN (R.O.C.),
美國、日本、大陸
USA, JAPAN, CHINA (P.R.C.),
韓國、英國新型專利
KOREA, UK.
其他國家專利申請中
Other countries are pending.

http：//www.assoma.com.tw

壽命測試 Life test

- 設計驗證
  Design verification
- 耐久測試
  Durability test
- 可測試高溫、高壓或汽化等惡劣條件下之連續運轉狀況
  Tests of continuous operations under severe operating conditions, such as high temperature, high pressure or vaporizing, etc.

耐壓測試 Pressure test

- 靜水壓測試
  Hydrostatic pressure test
- 最大測試壓力可達40bar
  Maximal test pressure up to 40bar.
- 最高測溫度可達90℃
  Maximal test temperature up to 90℃

水力性能測試 Hydraulic performance test

- 電腦化標準泵浦性能測試台
  Computerized standard pump performance test bench
- 符合ISO 9906泵浦測試規範
  Performance test is compliant with ISO 9906.
- 閉迴路測試系統
  Closed loop testing system
- 可量測流量、揚程、電功率、泵浦效率、NPSHr、轉速及振動
  Performance tests include flow rate, head, electric power, pump efficiency, NPSHr, RPM and vibrations, etc.

AMA系列

是以國際標準組織ISO規範（2858, 3661及2084）為設計依據，並參考ISO 5199及ANSI B73.5所開發完成的磁力驅動無軸封泵浦。馬力範圍從5.5kw至18.5kw（7.5Hp～25Hp），最高揚程可達78m (60Hz)，最大流量至1800l/min，最高操作溫度至95℃(實測值)。

AMA series

The AMA are designed according to ISO 2858, 3661 & 2084, and made reference to ISO 5199 and ANSI B73.5. Horsepower ranges from 5.5kw～18.5kw (7.5Hp～25Hp) with maximal head up to 78m and maximal flow up to 1800 l/min. Its maximal operating temperature is up to 95℃ (real tested).

優化的系列設計

AMA系列產品依照操作條件的額定需求分為兩種結構，一為固定軸且無軸承框設計的AMA-CT及EP機型，馬達出力範圍為5.5kw～7.5kw (7.5Hp～10Hp)。另一種為轉動軸搭配軸承框設計的AMA-DT及FP機型，馬達出力範圍為11kw～18.5kw (15Hp～25Hp)。兩種結構的設計均以能承受高溫、高壓、耐蝕、耐用、安全及易保養為原則。

Optimization of the series designed

There are two structure designs on AMA series according to their rated demand of the operating condition. One design is AMA-EP / CT model with stationary shaft and no bearing frame, where horsepower ranges from 5.5kw to 7.5kw (7.5Hp～10Hp). The other one is AMA-DT / FP model with rotational shaft and bearing frame, of which horsepower ranges from 11kw to 18.5kw (15Hp～25Hp). The structure of both designs is catered to operate under tough conditions of high temperature, high pressure and of resistance to corrosion. Furthermore, it also assures the durability, safety and easy maintenance of the pumps.

完整的產品開發環境

全系列產品開發依循縝密的設計管制程序，結合CAD/CAE/CAM電腦化工具的應用，不但可縮短開發的時程、降低開發成本，並且可有效提高產品的可靠度。

A complete product developing environment

The design control process is carried out carefully in the whole series of product development. Integrating computerized tool of CAD / CAE / CAM in pump design application enables us to shorten the developing schedule, lower cost, and to improve product reliability and durability.

ISO 9001品保認證

在劣幣驅逐良幣的市場假象陰影下，協磁公司認為唯有落實TQM並進行持續不斷的改善，藉以消除浪費、縮短交期，並全面提升品質，才是提升競爭力並確保顧客持續滿意的基石與保障。

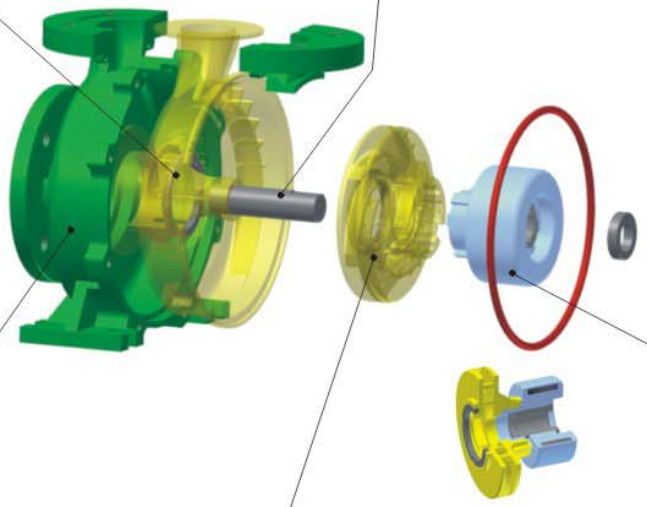
ISO 9001 quality insurance certified

Under the unpredictable market situation, sometimes, bad money drives out good. ASSOMA believes that only through implementing TQM and carrying out constant improvement to eliminate waste, shorten lead time and improve quality in all aspect, is the way to enhance its competitiveness, and to be the foundation and the guarantee for assuring customer continuous satisfaction.

AMA-CT / EP 泵浦特點 Features

獨具創意的動態式緩衝座(專利)，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，並大幅提高止推環可靠度及使用壽命，可降低疲勞損害。(僅AMA-CT具有此結構)
Our innovative dynamic buffer (patented) is specially designed to absorb vibrations 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. (Only model AMA-CT equipped with this structure)

強壯的固定軸結合兩端支撐結構設計，提供轉動件堅固而平穩的運轉條件。依需求可提供高純度SiC(或高純度鋁陶瓷)軸心及軸向/徑向軸承，超耐磨耗及耐腐蝕。
The compact structural design of strong stationary shaft with two ends support provides rotational parts with rigid and stable operational condition. SiC (or Al_2O_3 Ceramic) shaft and axial/radial thrust bearings are available upon request for both superior abrasion and corrosion resistance.

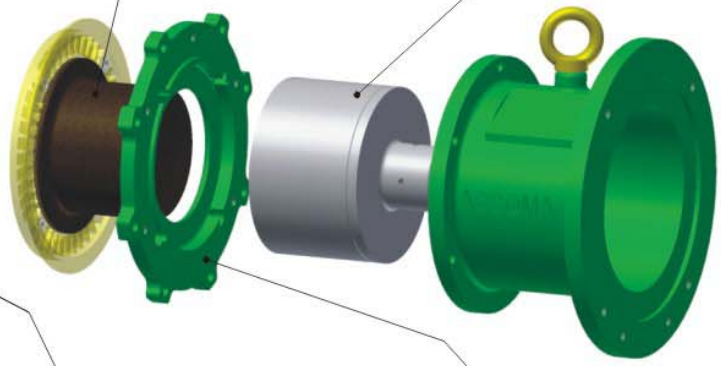


球狀石墨鑄鐵前蓋護體內襯碳纖維強化ETFE氟素塑酯，兼顧結構強度及泛用化學藥液的抵抗。護體外層塗佈環氧樹酯底漆及PU樹酯面漆，兼俱耐蝕及耐候性。
Ductile iron casing armour with carbon fiber-reinforced ETFE casing lining provides nearly universal corrosion resistance and structural strength. Casing armour is coated with premium epoxy primer and PU top coat.

由泵浦流力設計軟體計算出最佳流道幾何，將流力損失降至最低，提高葉輪流力效率。
The geometry of impeller and casing are fine tuned by professional hydraulic design program to reduce hydraulic loss and increase pump efficiency.

強固的雙重樹酯後蓋：一體成形碳纖維強化ETFE氟素塑酯後蓋內襯，兼顧強度及耐蝕性。外層後蓋採用高強度碳纖維複合材料，提供最佳的耐壓及耐衝擊特性，耐壓可至35kg/cm²以上，確保泵浦的安全運轉與壽命。無渦電流損失，不致對藥液加熱。
Non metallic rigid casing with cover. One-piece carbon fiber-reinforced ETFE molding is for a combination of strength and chemical resistance. Outer pressure cover molded from a carbon fiber / vinyl ester composite provides the best combination of pressure and shock resistance. Pressure resistance is up to 35kg/cm² for assuring safe operation and durability. There is no additional heating of the pumped liquid due to no eddy current loss.

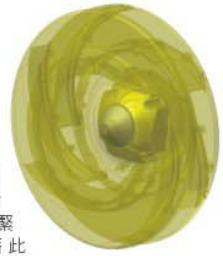
利用磁場分析軟體計算磁扭矩，提高磁鐵利用率，確保足夠的耦合動力餘裕以避免滑脫。
Magnetic field analysis program enables us to calculate magnetic torque to maximize magnet utilization and ensure sufficient torque margin to prevent decoupling.



軸承潤滑迴路，首創雙面對流冷卻設計，在同樣的潤滑熱量下，可帶走更多流量，即空轉時,也可降低熱平衡溫度，提高抗空轉能力(協磁專利冷卻迴路)。
The revolutionized bearing design with dual-channel circulation on both inner and outer surfaces of bearing (patented) contributes to rapidly heat dissipation. The circulation leakage of sealless pump is fully utilized to reinforce convectional heat transfer that lowers thermal balancing temperature and prevents damage even under dry running.

高負荷設計球狀石墨鑄鐵後蓋背板，用以協助後蓋與前蓋作精密對心。與托架作分離式設計，當泵浦以後拉式作托架及馬達保養時，可免做泵浦的拆除。
An extra heavy duty back-up plate made of ductile iron precisely aligns and supports the rear casing with the front casing. Back-up plate is disparate from the bracket; thus, allows pull-out servicing of the motor and bracket without opening the liquid end of the pump.

AMA-DT / FP泵浦特點 Features

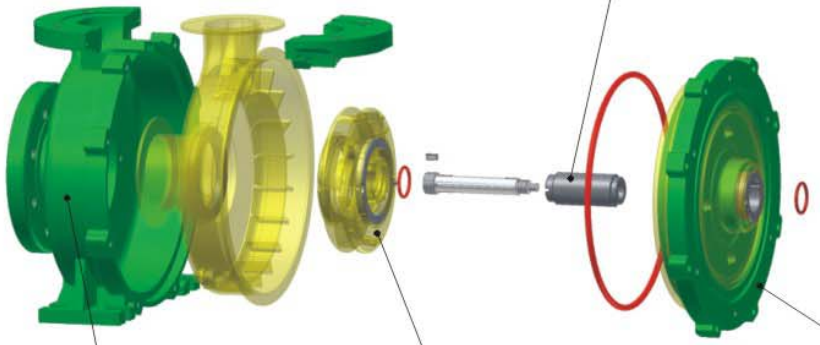


設計包含葉輪固定栓的一體成形葉輪，可加強不鏽鋼軸心對葉輪之緊固力，藉此增強葉輪密封o-ring之密封性，並延長其使用壽命。
Integrated one piece impeller enhances locking power with the metallic shaft to provide o-ring with better sealing and longer service life.

對於較大馬力重負荷的應用領域，以不鏽鋼軸心結合SiC(或高純度鋁陶瓷)軸心襯套，藉由軸固定螺帽緊固葉輪與內輪所形成的複合傳動結構設計，可以讓磁偶合扭力平穩地傳遞並驅動葉輪。藉由金屬軸心高強度的特性來支撐SiC(或高純度鋁陶瓷)軸心襯套，以充分確保轉動件的平穩與耐用性。軸心兩端防止逆轉結構設計可有效防止葉輪因為馬達錯誤轉向所可能造成的損壞。
The design on a composite transmission structure, made of rigid stainless steel shaft, SiC(or Al_2O_3 Ceramic)shaft sleeve, impeller, magnet capsule which are tight locked together by shaft nut, provides stable torque transmission to the impeller for heavy duty application. Stainless steel shaft supports SiC (or Al_2O_3 Ceramic)shaft sleeve with its high strength to enable stable and durable operation of the rotating parts. Design on anti-reverse structure at both shaft ends could prevent possible impeller damages from the reverse rotation of the motor.

強固的雙重樹酯後蓋：一體成形碳纖維強化ETFE氟素塑酯後蓋內襯，兼顧強度及耐蝕性。外層後蓋採用高強度碳纖/乙烯酯樹脂維複合材料，提供最佳的耐壓及耐衝擊特性，耐壓可至35kg/cm²以上，確保泵浦的安全運轉與壽命。無渦電流損失，不致對藥液加熱。
Non metallic rigid casing with cover：One-piece carbon fiber-reinforced ETFE molding is for a combination of strength and chemical resistance. Outer pressure cover molded from a carbon fiber / vinyl ester composite provides the best combination of pressure and shock resistance. Pressure resistance is up to 35kg/cm² for assuring safe operation and durability. There is no additional heating of the pumped liquid due to no eddy current loss.

磁力偶合驅動器採用高磁能積的稀土類磁鐵，偶合扭矩高，防脫磁。
Magnetic coupling, made of strong rare earth magnet, with its high torque design prevents pump from de-coupling with its high torque design.



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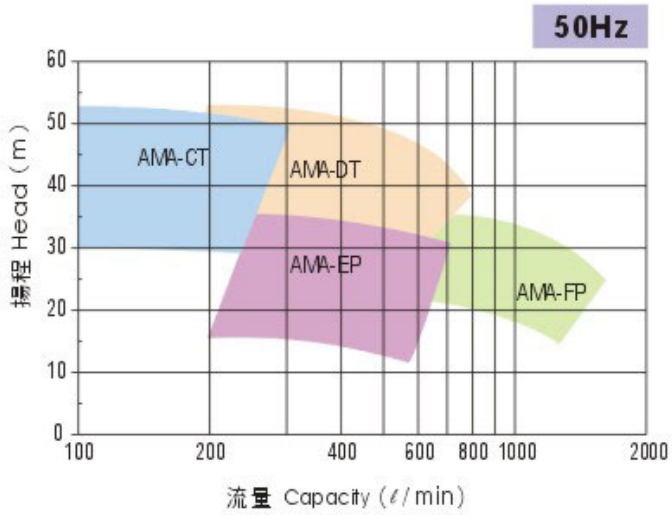
Ductile iron casing armour with carbon fiber-reinforced ETFE casing lining provides nearly universal corrosion resistance and structural strength. Casing armour is coated with premium epoxy primer and PU top coat.

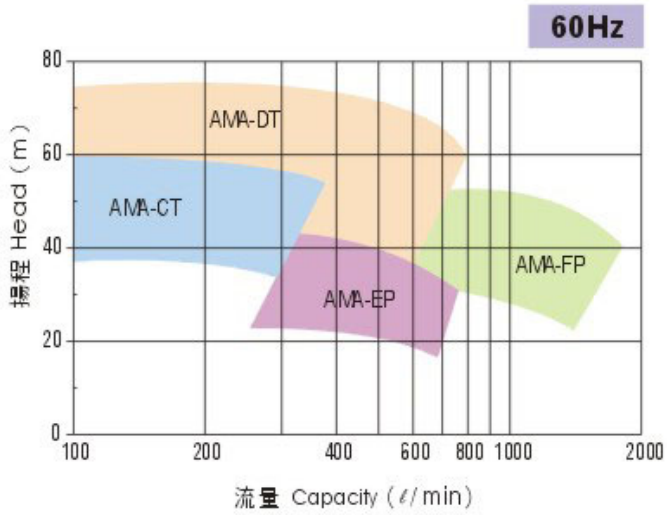
利用專用之流力設計軟體建構出高效率的水力模型。
We use professional design software to perform flow analysis to calculate best geometry for fluid flow, resulting in high pump efficiency.

高強度支撐軸承結構體：加大軸承框軸承支撐面積，配合高扭矩安全及高純度SiC軸向及徑向軸承的採用，超耐磨耗及腐蝕。
High strength bearing support structure: Bearing frame with large support area is for supporting the bearing bushing for stable operation. High purity SiC axial and radial thrust bearing with high torsional security design provide superior abrasion and corrosion resistance.

高負荷設計球狀石墨鑄鐵後蓋背板，用以協助後蓋與前蓋作精密對心。與托架作分離式設計，當泵浦以後拉式作托架及馬達保養時，可免做泵浦的拆除。
An extra heavy duty back-up plate made of ductile iron precisely aligns and supports the rear casing with the front casing. Back-up plate is disparate from the bracket, thus, allows pull-out servicing of the motor and bracket without opening the liquid end of the pump.

性能曲線圖 PERFORMANCE CURVES





規格表 SPECIFICATIONS

機型 Model	入口 x 出口口徑(mm) Inlet x Outlet bore size (mm)	50Hz 葉輪尺寸 Impeller diameter (mm)	50Hz 流量 Capacity (l/min)	50Hz 全揚程 Total head (m)	50Hz 軸功率 Shaft power (kW)	60Hz 葉輪尺寸 Impeller diameter (mm)	60Hz 流量 Capacity (l/min)	60Hz 全揚程 Total head (m)	60Hz 軸功率 Shaft power (kW)	馬達 Motor (kW)
AMA-CT	50 x 32 (50 x 40)	200	300	49.9	4.9	175	300	56.3	5.8	5.5 or 7.5
		190	300	46.3	4.5	170	300	52.5	5.3	
		180	300	41.5	3.9	160	300	46.6	4.6	
		170	300	36.6	3.4	150	300	40.7	3.9	
		160	300	32.0	2.9	140	300	33.6	3.2	
AMA-DT	65 x 40	200	400	50. 9	8.0	200	400	73.3	12.3	11, 15 or 18.5
		190	400	44.3	7.0	190	400	63.7	10.6	
		180	400	39.4	5.9	180	400	56.6	9.3	
		170	400	33.6	5.5	170	400	48.9	8.3	
		160	400	28.4	4.7	160	400	41.8	7.1	
AMA-EP	65 x 50	165	500	32.3	4.9	150	500	37.6	5.9	5.5 or 7.5
		160	500	30.0	4.5	145	500	34.6	5.4	
		155	500	28.3	4.1	140	500	31.4	4.9	
		150	500	26.2	3.8	135	500	28.3	4.5	
		145	500	24.2	3.5	130	500	26.1	4.1	
AMA-FP	80 x 65	170	1000	34.9	9.2	170	1000	51.3	14.4	11, 15 or 18.5
		160	1000	29.1	8.0	160	1000	43.4	12.4	
		150	1000	23.6	6.4	150	1000	35.8	10.2	
		140	1000	21.4	6.0	140	1000	27.7	8.3	

型式表示 PUMP IDENTIFICATION

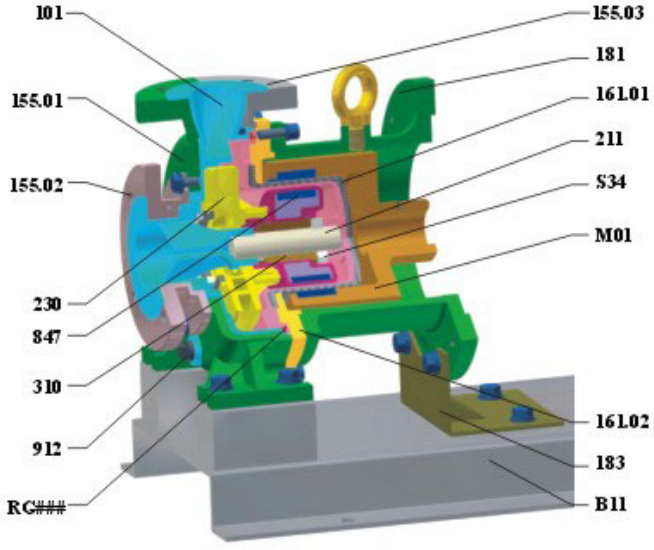
AMA – FP F E S S V – T 0
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① 泵浦系列 Series	AMA 系列 AMA Series
② 機型表示 Pump model	對應 ISO 2858 之泵浦命名 Pump designation according to ISO 2858 CT：50-32-200 DT：65-40-200 EP：65-50-160 FP：80-65-160
③ 配管形式 Type of connection	F：法蘭 Flange
④ 本體材質 Casing material	E：ETFE+CF
⑤ 軸心材質 (CT/EP) Shaft material 軸心襯套材質 (DT/FP) Shaft sleeve material	A：995 Al_2O_3 S：SSiC

⑥ 軸承材質 Bearing material	C：CARBON S：SSiC
⑦ O 形環材質 O-ring material	E：EPDM V：VITON
⑧ 馬力數 Motor power	AMA-CT/EP G：5.5kW（7.5Hp） J：7.5kW（10Hp） AMA-DT/FP O：11kW（15Hp） T：15kW（20Hp） Y：18.5kW（25Hp）
⑨ 馬達防護等級 Protection	0：IP54 1：IP55 2：eG3 安全增防爆 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

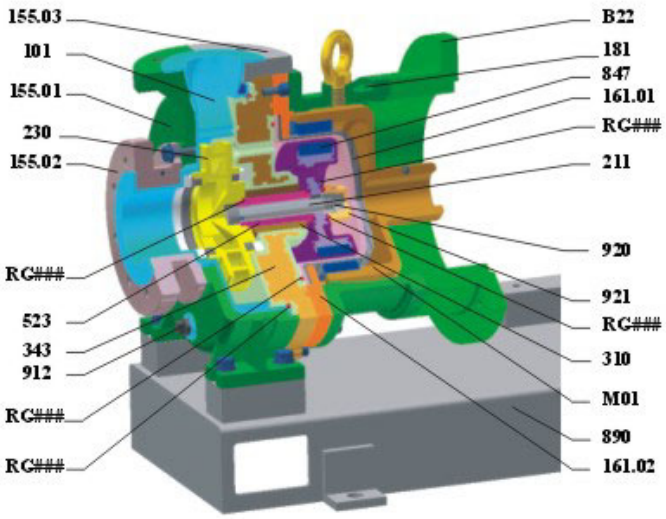
◆AMA-CT/EP



編號 Part code	名稱 Part name		ACE	ACV	SSE	SSV
101	前蓋組 Pump casing assembly	前蓋 Pump casing	ETFE+CF			
		前止推環 Front thrust ring	995 CERAMIC		SSiC	
155.01	前蓋護體 Casing armour		FCD			
155.02	入口護體 Inlet armour		FCD			
155.03	出口護體 Outlet armour		FCD			
161.01	後蓋被覆組 Rear casing with cover		ETFE+CF,CARBON FRP			
161.02	後蓋背板 Backup plate		FCD			
181	托架 Bracket		FC			
183	托架支撐 Bracket foot		SUS304			
211	軸心 Shaft		995 CERAMIC		SSiC	
230	葉片磨損環組 Impeller wear ring assembly	葉片組 Impeller	ETFE+CF			
		前磨損環 Front wear ring	CARBON		SSiC	
310	軸承 Bearing		CARBON		SSiC	
847	內軸包覆 Magnet capsule		ETFE , Nd-Fe-B			
912	排洩栓 Drain plug		ETFE+CF			
B11	底座 Base plate		SUS304			
M01	外軸 Drive magnet		Nd-Fe-B			
RG###	O 形環 O-ring		EPDM	VITON	EPDM	VITON
S34	後止推環 Rear thrust ring		995 CERAMIC		SSiC	

※PVDF+CF需要料內補、AFLAS或全氟化橡膠密封件，可依客戶需求提供。
Pump lining material with PVDF+CF, and AFLAS or FFKM o-ring are available upon customer's request.

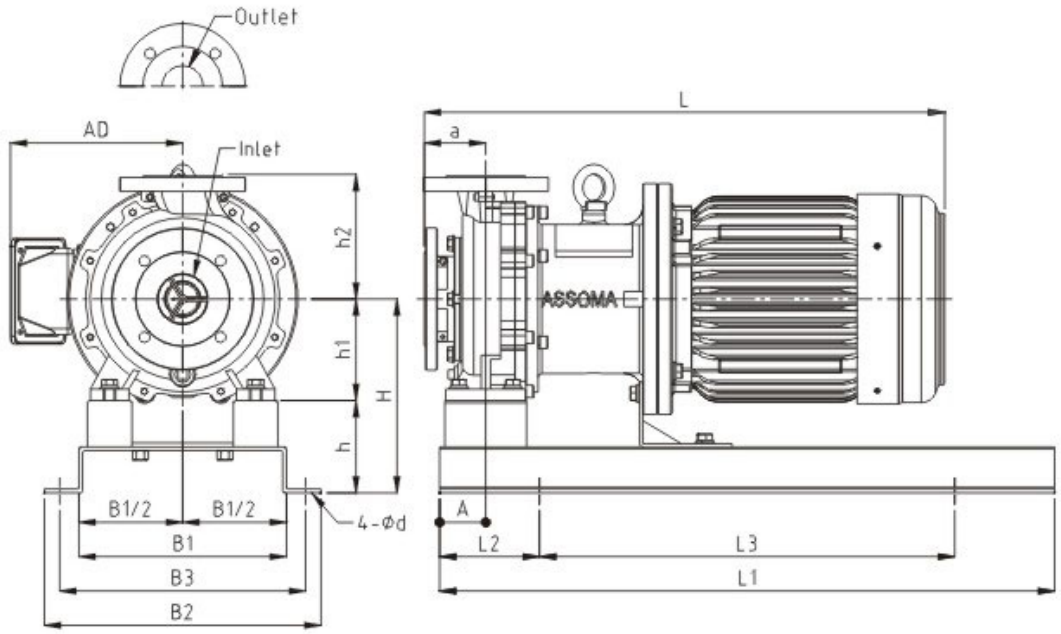
◆AMA-DT/FP



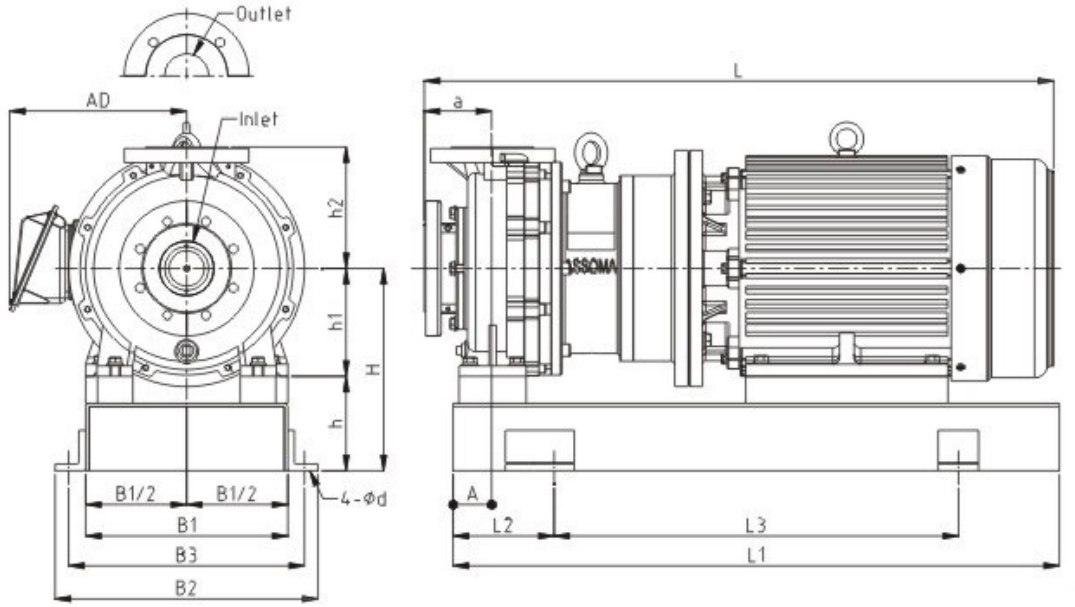
編號 Part code	名稱 Part name		ACE	ACV	SSE	SSV
101	前蓋組 Pump casing assembly	前蓋 Pump casing	ETFE+CF			
		前止推環 Front thrust ring	CERAMIC		SSiC	
155.01	前蓋護體 Casing armour		FCD			
155.02	入口護體 Inlet armour		FCD			
155.03	出口護體 Outlet armour		FCD			
161.01	後蓋被覆組 Rear casing with cover		ETFE+CF,CARBON FRP			
161.02	後蓋背板 Backup plate		FCD			
181	托架 Bracket		FC			
211	軸心 Shaft		SUS303			
230	葉片磨損環組 Impeller wear ring assembly	葉片組 Impeller	ETFE+CF			
		前磨損環 Front wear ring	CARBON		SSiC	
		後磨損環 Rear wear ring	CARBON		SSiC	
310	軸承 Bearing		CARBON		SSiC	
343	軸承框組 Bearing frame assembly	軸承框 Bearing frame	FC			
		後止推環 Rear thrust ring	CERAMIC		SSiC	
523	軸心襯套 Shaft sleeve		CERAMIC		SSiC	
847	內轴包覆 Magnet capsule		ETFE,Nd-Fe-B			
890	底座 Base plate		SUS304			
912	排洩栓 Drain plug		ETFE+CF			
920	固定螺帽&華司 Nut & washer		SUS304			
921	軸固定螺帽 Shaft nut		ETFE			
B22	托架連結件 Bracket adapter		FC			
M01	外轴 Drive magnet		Nd-Fe-B			
RG###	O形環 O-ring		EPDM	VITON	EPDM	VITON

※PVDF+CF葉素材內襯、AFLAS或全氟化橡膠密封件，可依客戶需求提供。
Pump lining material with PVDF+CF, and AFLAS or FFKM o-ring are available upon customer's request.

外型尺寸圖 DIMENSIONS



MODEL	A	a	AD	B1	B2	B3	d	H	h	h1	h2	L	L1	L2	L3	Inlet	Outlet	OUTPUT
AMA-CT	60	80	224**	270	360	320	18	280	120	160	180	*	800	130	540	50A	32A/40A***	5.5kW
																		7.5kW
AMA-EP	60	80	224**	270	360	320	18	252	120	132	160	*	800	130	540	65A	50A	5.5kW
																		7.5kW



MODEL	A	a	AD	B1	B2	B3	d	H	h	h1	h2	L	L1	L2	L3	Inlet	Outlet	OUTPUT
AMA-DT	60	100	263**	300	390	350	20	300	140	160	180	*	900	150	600	65A	40A	11kW 15kW 18.5kW
AMA-FP	60	100	263**	300	390	350	20	300	140	160	180	*	900	150	600	80A	65A	11kW 15kW 18.5kW

備註Note:

* 泵浦全長將依照馬達供應商和馬力數之不同而有區別。
The total length of the pump will differ depending on the brand and power output (Hp) of the motor.

** 依照馬達供應商和安裝方式之不同而有區別。
Dimension will be varied depending on the brand and installation of the motor.

*** 泵浦入出口法蘭規格可依客戶不同規格需求（ISO、ANSI、JIS）承製。
Pump flanges are available with standards of ISO, ANSI, and JIS upon customer's request.

DN		n	d	D	DN		n	d	D	DN		n	d	D
32A	ISO	4	100mm	140mm	50A	ISO	4	125mm	165mm	80A	ISO	8	160mm	200mm
	JIS		100mm			JIS		120mm			JIS		150mm	
						ANSI		4 ¼"			ANSI		6"	
40A	ISO	4	110mm	150mm	65A	ISO	4	145mm	185mm					
	JIS		105mm			JIS		140mm						
	ANSI		3 7/8"			ANSI		5 ½"						