



Innovation • Professionalism • Service



50Hz

 Innovation • Professionalism • Service
HCP PUMP MANUFACTURER CO., LTD.
<http://www.hcppump.com.tw>

We reserve the right to alter specifications of product at any time without giving prior notice.

Agent :

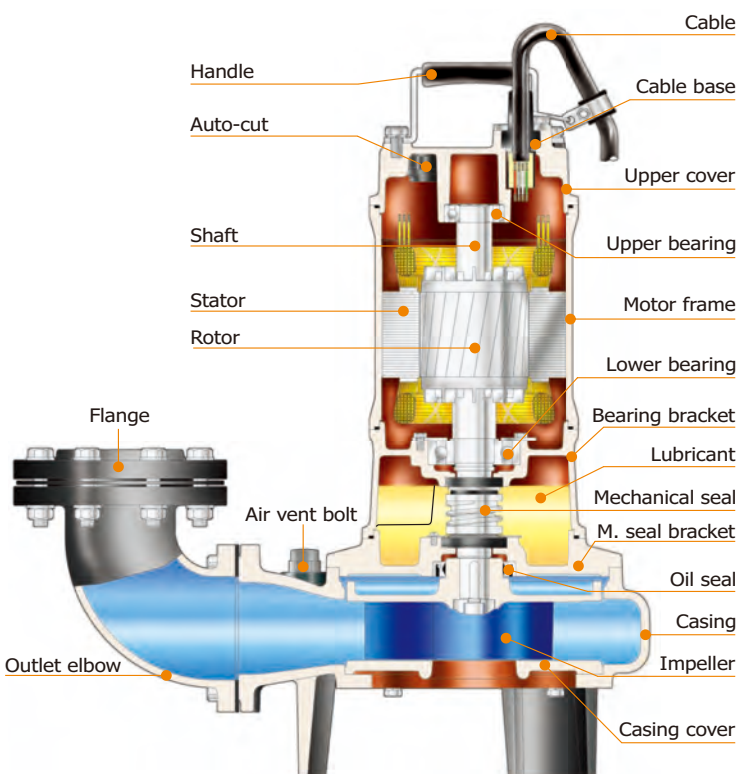
DGCEN5-1303A

GENERAL CATALOGUE



FEATURE

- International standard design : Epoxy Resin Sealed cable, Auto Cut (MTS: Miniature Thermal Sensor equip to >15HP model), dry-motor, silicon carbide mechanical seal, high grade cast iron offering highest quality and performance.
- P/U/C/E multiple impellers designed to handle sewage solids and/or fibrous substances.
- Double Mechanical Seal: Superior abrasion resistant mechanical seal manufactured with silicon carbide to ensure the best seal effect.
- Mechanical Seal Bracket designed with Oil Elevating Chip to enhance the lubricant, and extend the lifetime of the Mechanical Seal.
- Full range offering low to high head and flow capabilities, with compact and easy installation. Also, available with Guide Rail System, which allows automatic remote connection and disconnection without entering the pit.
- AFC Pump is designed with 6 lobes input, equipped with double tungsten blade; which can strongly cut off the foreign materials and avoid the impeller clog.



APPLICATIONS

- Drainage of waste water from the attenuation tank, purifying tank and sewage tank in water treatment plant.
- Drainage of waste water containing fibrous additives from leather factory, dyeing factory and food processing factory.
- Sewage management, accumulated water, septic tank, stock farm.
- Pumping sewage from hotels, restaurants, schools and public buildings.
- Sewage management, accumulated water, septic tank, stock farm.
- Pumping sewage from hotels, restaurants, schools and public buildings.

IMPELLER TYPE

P Type Impeller

Semi-open (Single or Two Vane Impeller):

Excellent to use with waste materials to prevent from clogging.



C Type Impeller

Semi-open:

Equipped with Tungsten Blade. Excellent to use with waste materials to prevent from clogging.



U Type Impeller

Semi-open (Vortex Impeller):

Produces a vortex (whirlpool effect) allowing long fibrous materials and other solid waste to pass through, without contact with the impeller.



Note: The vortex impeller will cause higher amperage when operated in reverse direction.

E Type Impeller

Enclosed Channel impeller :

High impeller efficiency and clog-resistant design, primarily used for large pump applications.



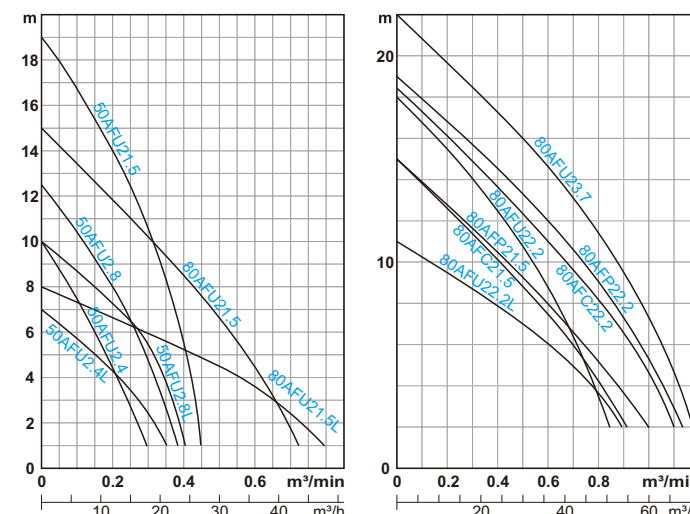
PRODUCT NOMENCLATURE

80	AF	P	2	1.5
Discharge mm	Type	Impeller type (P/C/U)	Pole	kW

SPECIFICATIONS

Discharge (mm)		50 • 80
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	Wastewater • Sewage
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor
	Insulation	Class F (½~3HP: Class B)
	Protection	IP68
	Protector	Auto-cut
	Bearing	Ball Type
	M.seal	Double M.seals
Material	Impeller	Semi-open • Vortex
	Upper Cover	FC-200
	Motor Frame	FC-200
	Main Shaft	SUS410 (2~5HP : SUS403)
	M.seal	Upper: Carbon/Ceramic • Lower: Silicon/Silicon
	Casing	FC-200
	Impeller	FC-200 (AFC: FC200 Heat Treatment + Tungsten)
Optional	Cable	VCT or H07RN-F or SJOW/SOW
	Pumps can be customized to fit specifications	

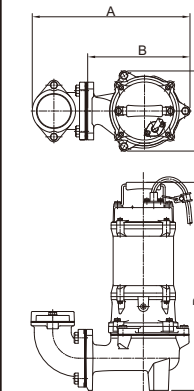
PERFORMANCE CURVES



PERFORMANCE SPEC.

Pole	Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)				
							m³/min	m³/h		1Ø	3Ø	A	B	C	D	
																1Ø
2P	50AFU2.4	½ (0.4)	2" (50)	1 3	Capacitor Direct	6	0.15	9	35	19	18	236	155	418	418	
	50AFU2.4L	½ (0.4)	2" (50)	1 3	Capacitor Direct	4	0.22	13.2	50	20	19	306	201	163	448	
	50AFU2.8	1 (0.75)	2" (50)	1 3	Capacitor Direct	8	0.2	12	35	20	19	236	155	418	418	
	50AFU2.8L	1 (0.75)	2" (50)	1 3	Capacitor Direct	6.5	0.25	15	50	22	21	306	201	163	448	
	50AFU21.5	2 (1.5)	2" (50)	1 3	Capacitor Direct	14	0.2	12	35	33	29	288	202	532	477	
	80AFU21.5	2 (1.5)	3" (80)	1 3	Capacitor Direct	8.5	0.4	24	50	35	32	379	241	202	575	
	80AFU21.5L	2 (1.5)	3" (80)	1 3	Capacitor Direct	4.5	0.5	30	76	38	34	443	443	255	700	
	80AFU22.2	3 (2.2)	3" (80)	1 3	Capacitor Direct	12.5	0.4	24	50	38	34	379	241	202	607	
	80AFU22.2L	3 (2.2)	3" (80)	1 3	Capacitor Direct	7	0.5	30	76	40	36	538	422	289	695	
	80AFU23.7	5 (3.7)	3" (80)	3	Direct	16	0.5	30	56	44	478	362	220	588	588	
	80AFP21.5	2 (1.5)	3" (80)	1 3	Capacitor Direct	8	0.6	36	35	37	33	413	275	260	576	
	80AFP22.2	3 (2.2)	3" (80)	1 3	Capacitor Direct	12	0.6	36	35	40	35	413	275	260	608	
	80AFC21.5	2 (1.5)	3" (80)	1 3	Capacitor Direct	7.5	0.6	36	Max. 63	37	33	413	275	260	576	
	80AFC22.2	3 (2.2)	3" (80)	1 3	Capacitor Direct	11	0.6	36	Max. 63	40	40	413	275	260	608	

Note: Weight Without Cable

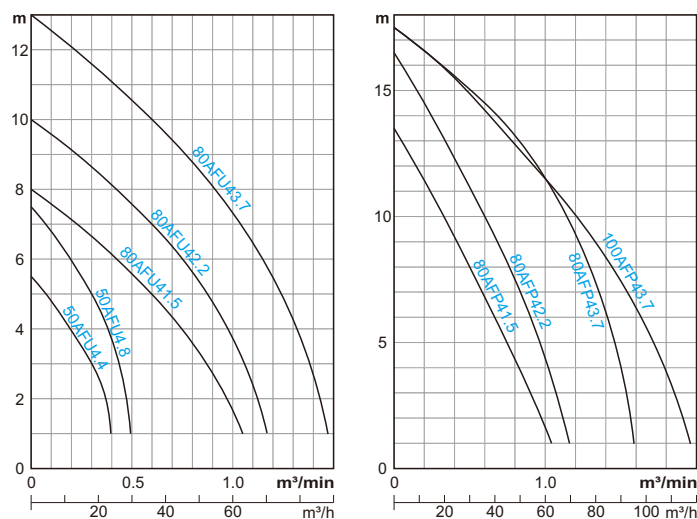




PRODUCT NOMENCLATURE

80	AF	U	4	2.2
Discharge mm	Type	Impeller type (P/U)	Pole	kW

PERFORMANCE CURVES



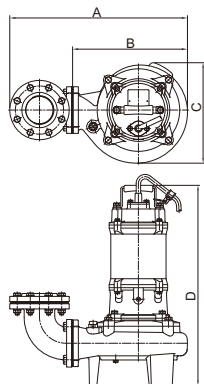
SPECIFICATIONS

Discharge (mm)		50 • 80 • 100
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	Wastewater • Sewage
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	4P (1500RPM) • Dry Motor
	Insulation	Class B (5HP: Class F)
	Protection	IP68
	Protector	Auto-cut
	Bearing	Ball Type
	M.seal	Double M.seals
	Impeller	Semi-open (P) • Vortex (U)
	Upper Cover	FC-200
	Motor Frame	FC-200
Material	Main Shaft	SUS420J2 (½~1HP : SUS403)
	M.seal	Upper: Carbon/Ceramic Lower: Silicon/Silicon
	Casing	FC-200
	Impeller	FC-200
	Cable	VCT or H07RN-F or SJOW/SOW
	Optional	Pumps can be customized to fit specifications

PERFORMANCE SPEC.

Pole	Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)					
							m³/min	m³/h		1Ø	3Ø	A	B	C	D		
															1Ø	3Ø	
4P	50AFU4.4	½ (0.4)	2" (50)	1 3	Capacitor Direct	3.5	0.25	15	50	30	28	346	241	204	516	516	
	50AFU4.8	1 (0.75)	2" (50)	1 3	Capacitor Direct	5	0.3	18	50	30	29	346	241	204	516	516	
	80AFU41.5	2 (1.5)	3" (80)	1 3	Capacitor Direct	5	0.6	36	76	47	47	443	305	255	700	622	
	80AFU42.2	3 (2.2)	3" (80)	3	Direct	7	0.6	36	76		57	538	422	289		675	
	80AFU43.7	5 (3.7)	3" (80)	3	Direct	10	0.6	36	76		65	538	422	289		695	
	80AFP41.5	2 (1.5)	3" (80)	1 3	Capacitor Direct	8	0.5	30	50	47	47	472	334	290	645	567	
	80AFP42.2	3 (2.2)	3" (80)	3	Direct	10	0.6	36	50		58	553	437	313		623	
	80AFP43.7	5 (3.7)	3" (80)	3	Direct	14.5	0.6	36	50		67	553	437	313		643	
	100AFP43.7	5 (3.7)	4" (100)	3	Direct	11.5	1.0	60	50		82	571	437	313		643	

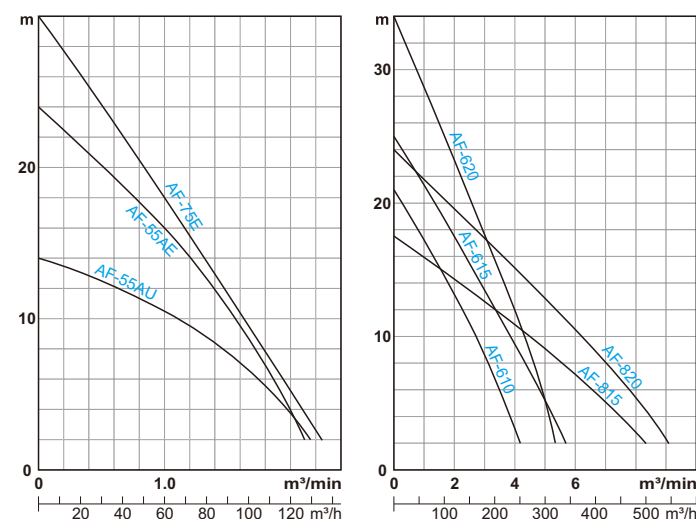
Note: Weight Without Cable



PRODUCT NOMENCLATURE

AF	55	A	U
Type	kW	Style	Impeller type (E/U)
AF	6	10	
Type	Discharge inch	HP	

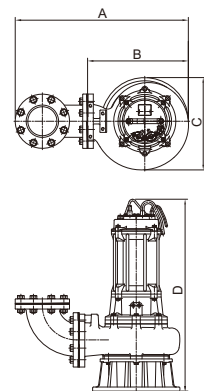
PERFORMANCE CURVES



PERFORMANCE SPEC.

Pole	Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)					
							m³/min	m³/h		1Ø	3Ø	A	B	C	D		
															1Ø	3Ø	
4P	AF-55AU	7½ (5.5)	4" (100)	3	Direct	10.5	1	60	25		115	687	453	405		795	
	AF-55AE	7½ (5.5)	4" (100)	3	Direct	16	1	60	40		124	687	453	405		795	
	AF-75E	10 (7.5)	4" (100)	3	Direct	18	1	60	40		138	687	453	405		816	
	AF-610	10 (7.5)	6" (150)	3	Direct	11	2.5	150	70		183	888	559	449		870	
	AF-615	15 (11)	6" (150)	3	Direct Y-Δ	15.5	2.5	150	70		224	895	566	477		988	
	AF-620	20 (15)	6" (150)	3	Direct Y-Δ	20.5	2.5	150	76		153	895	566	477		988	
	AF-815	15 (11)	8" (200)	3	Direct Y-Δ	10	4.5	270	75		225	1045	661	501		994	
	AF-820	20 (15)	8" (200)	3	Direct Y-Δ	14	4.5	270	75		193	1045	661	501		994	

Note: Weight Without Cable



F SEWAGE/EFFLUENT SUBMERSIBLE PUMPS

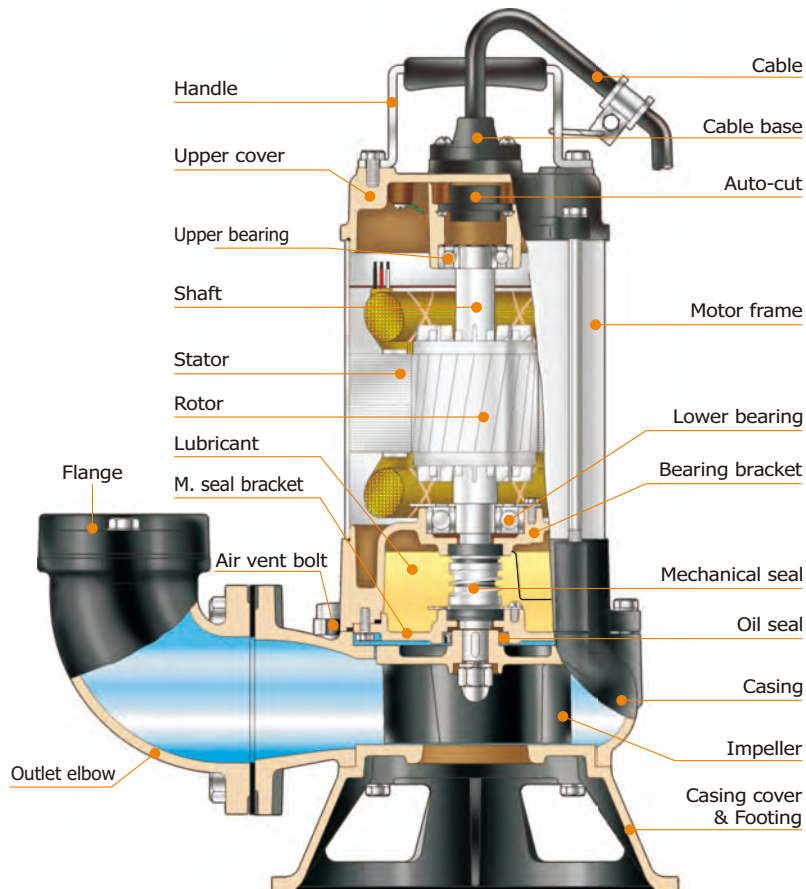


FEATURE

- A precision manufactured motor is achieved by utilizing the highest standard of quality control. All rotors adopt heat treatment methods for drive shaft assembling, and stator winding impregnated with varnish that is heat dried in an industrial oven. The Water Resistance for Pump can reach IP68 Grade.
- HCP's professional assembly line, complimented with a synthesized production test, ensures the highest level of final pump quality.
- Standard accessories include : cable with an epoxy resin sealed water-resistant cable base, AC thermal motor protector, dual mechanical seals and lip seal design.
- The F-05A is an extremely practical pump, with an oil filled motor and single seal design (CA/CE).

APPLICATIONS

- Drainage of sewage from the building basements, hotel industry, and waste water from factories.
- Drainage of sewage from industrial process factories.
- Emptying of septic tanks, cesspits and sewage pump stations.
- Pumping surface and drainage water from garages and sprinkler systems.



P Type Impeller

Semi-open (Single Vane Impeller):
Excellent to use with waste materials to prevent from clogging.



U Type Impeller

Semi-open (Vortex Impeller):
Produces a vortex (whirlpool effect) allowing long fibrous materials and other solid waste to pass through, without contact with the impeller.

Note: The vortex impeller will cause higher amperage when operated in reverse direction.



F-05A

F-05U/21U

F-05P/21P

F-31U

F-32/33

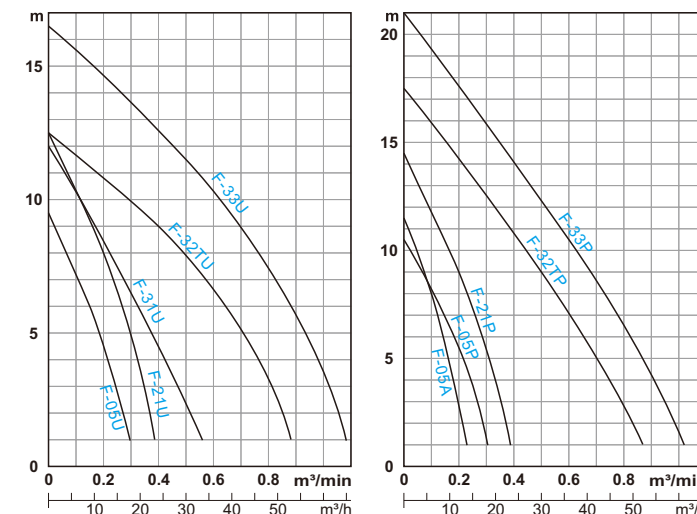
PRODUCT NOMENCLATURE

F	05	A	
Type	HP	Style	
F	2	1	P
Type	Discharge inch	HP	Impeller type (P/U)

SPECIFICATIONS

Discharge (mm)		50 • 80
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	General wastewater • Sewage water and industrial waster
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor (F-05A: Oil Motor)
	Insulation	Class B
	Protection	IP68
	Protector	Auto-cut (F-05A 3Ø: none, F-05A/U 1Ø: Overheat)
	Bearing	Ball Type
	M.seal	Double M.seals (F-05A: Single M.seal)
Material	Impeller	Semi-open
	Upper Cover	FC-200
	Motor Frame	SUS304
	Main Shaft	SUS410 (2~3HP: SUS403)
	M.seal	Upper: Carbon/Ceramic Lower: Silicon/Silicon (F-05A: Carbon/Ceramic)
	Casing	FC-200
	Impeller	FC-200 (F-05A: PA)
Cable		VCT or H07RN-F or SJOW/SOW
Optional		Pumps can be customized to fit specifications

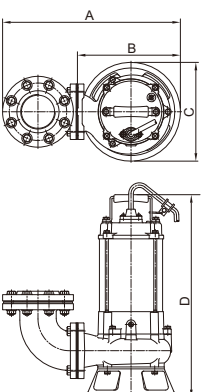
PERFORMANCE CURVES



PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)					
						m³/min	m³/h		1Ø	3Ø	A	B	C	D		
														1Ø	3Ø	
F-05U	½ (0.4)	2" (50)	1 3	Capacitor Direct	6	0.15	9	35	16	15	237	154	427	427		
F-21U	1 (0.75)	2" (50)	1 3	Capacitor Direct	8	0.2	12	35	17	16	237	154	427	427		
F-31U	1 (0.75)	3" (80)	1 3	Capacitor Direct	6.5	0.3	18	30	18	17	278	173	457	457		
F-32TU	2 (1.5)	3" (80)	1 3	Capacitor Direct	9	0.4	24	25	38	33	408	270	258	610	530	
F-33U	3 (2.2)	3" (80)	1 3	Capacitor Direct	11.5	0.5	30	25	40	34	408	270	258	610	530	
F-05P	½ (0.4)	2" (50)	1 3	Capacitor Direct	5.5	0.2	12	22	16	15	274	235	440	440		
F-21P	1 (0.75)	2" (50)	1 3	Capacitor Direct	9	0.2	12	26	18	17	274	235	440	440		
F-32TP	2 (1.5)	3" (80)	1 3	Capacitor Direct	9	0.5	30	32	38	34	408	270	258	610	530	
F-33P	3 (2.2)	3" (80)	1 3	Capacitor Direct	10.5	0.6	36	35	40	34	408	270	258	610	530	
F-05A	½ (0.4)	2" (50)	1 3	Capacitor Direct	8	0.1	6	10	12	11	226	161	352	350		

Note: Weight Without Cable



50AL21.5
50AL22.280AL21.5
80AL22.2

80AL23.7

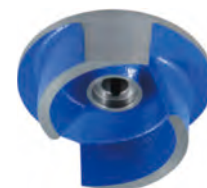
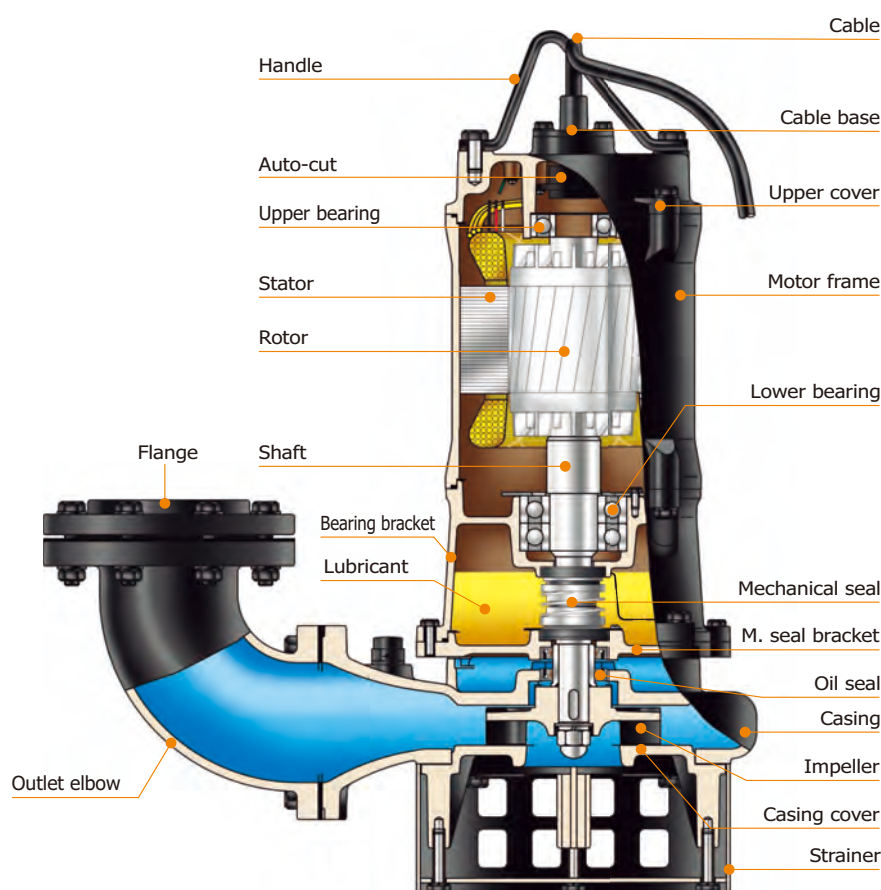
100AL25.5
100AL27.5

FEATURE

- Equipped with Auto-cut, silicon carbide double mechanical seal, epoxy cable base treatment.
- Pump Water Resistance can reach IP68 Grade.
- Entire cast iron structure and compact design.
- High head and efficiency for wide range design.
- 7½HP and 10HP Triangular Handle design, for easy handling on guide rail system.

APPLICATIONS

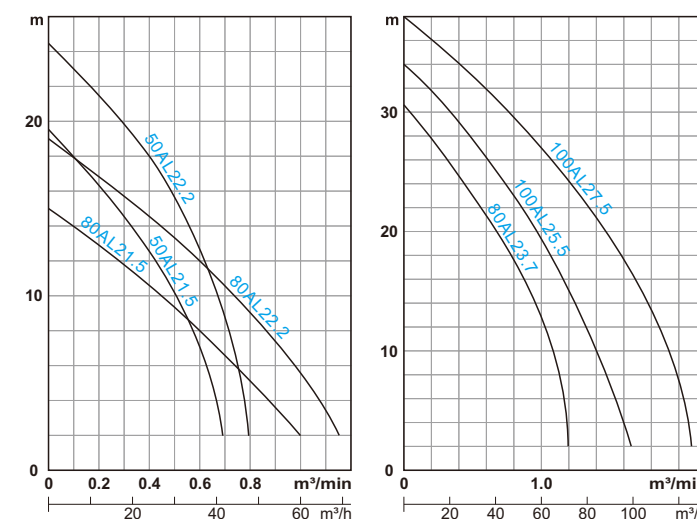
- Waste water drainage for all industries.
- Pumping surface water, drainage water and flood water.
- Extraction of water from river and lake.
- Pressure - Reducing Design.

80AL21.5
80AL22.2100AL25.5
100AL27.5

PRODUCT NOMENCLATURE

80	AL	2	1.5
Discharge mm	Type	Pole	kW

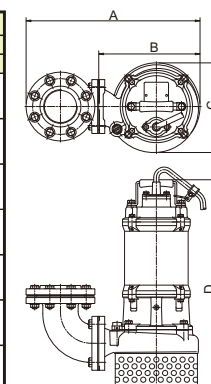
PERFORMANCE CURVES



PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)				
						m³/min	m³/h		1Ø	3Ø	A	B	C	D	
50AL21.5	2 (1.5)	2" (50)	3	Capacitor	12.5	0.4	24	20	35	31	279	206	565	514	
50AL22.2	3 (2.2)	2" (50)	3	Capacitor	18	0.4	24	20	38	34	279	206	598	514	
80AL21.5	2 (1.5)	3" (80)	3	Capacitor	8	0.6	36	20	37	32	385	247	207	575	524
80AL22.2	3 (2.2)	3" (80)	3	Capacitor	12	0.6	36	20	39	35	385	247	207	608	524
80AL23.7	5 (3.7)	3" (80)	3	Direct	23	0.5	30	14	46	468	352	242	565		
100AL25.5	7½ (5.5)	4" (100)	3	Direct	23	0.8	48	20	96	597	307	307	723		
100AL27.5	10 (7.5)	4" (100)	3	Direct	27	1.0	60	20	102	597	307	307	723		

Note: Weight Without Cable



SPECIFICATIONS

Limits Of Use	Discharge (mm)	50 • 80 • 100
	Liquid Temp.	0~40°C (32~104°F)
	Applications	Wastewater Sewage and Drainage water
Type	Submersion Depth	30m (100feet)
	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor
Material	Insulation	Class B (5~10HP: Class F)
	Protection	IP68
	Protector	Auto-cut
Optional	Bearing	Ball Type
	M.seal	Double M.seals
	Impeller	Semi-open
Upper Cover	Upper Cover	FC-200
	Motor Frame	FC-200
	Main Shaft	SUS403 (7½~10HP : SUS420J2)
Casing	M.seal	Upper: Carbon/Ceramic Lower: Silicon/Silicon
	Casing	FC-200
	Impeller	FC-200
Cable	Cable	VCT or H07RN-F or SJOW/SOW
	Optional	Pumps can be customized to fit specifications

A WASTEWATER/SUMP SUBMERSIBLE PUMPS

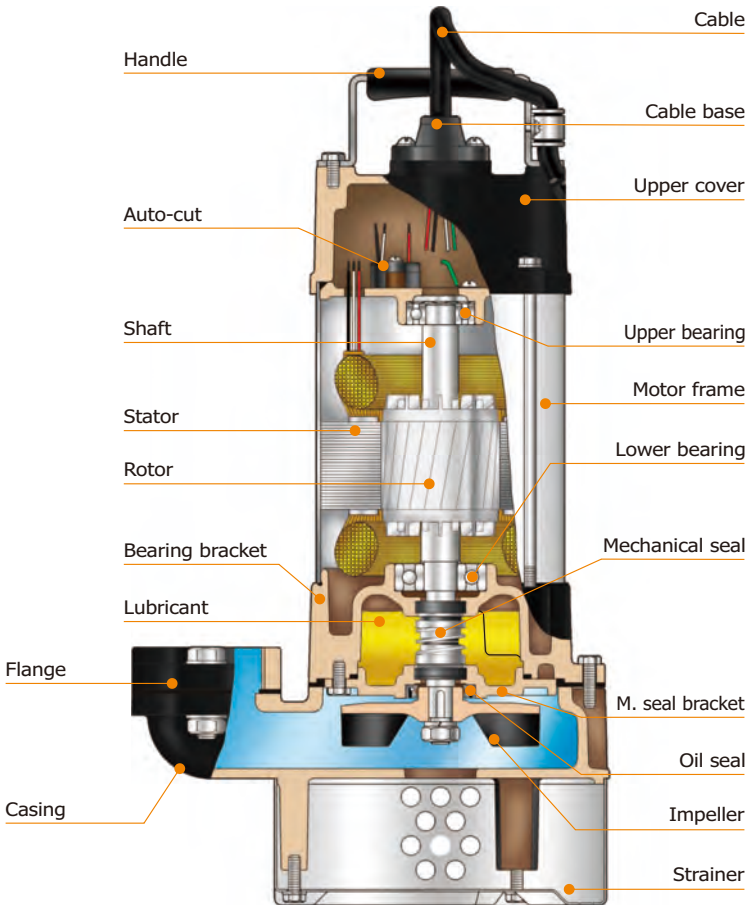


FEATURE

- A precision manufactured motor is achieved by utilizing the highest standard of quality control. All rotors adopt heat treatment methods for drive shaft assembling, and stator winding impregnated with varnish that is heat dried in an industrial oven.
- HCP's professional assembly line, complimented with a synthesized production test, ensures the highest level of final pump quality.
- Standard accessories include : cable with an epoxy resin sealed water resistant cable base, Auto-cut thermal motor protector, dual mechanical seals and lip seal design.
- The A-05A is an extremely practical pump, with a low temperature, oil filled motor and single seal design (CA/CE).

APPLICATIONS

- Waste water.
- Sump drainage.
- Flood control.
- Dewatering for fish pond or basement and cellars.



A-05A



A-05L • A-21 • A-31

Note: The vortex impeller can cause higher amperage when operated in incorrect direction. (A-05A~A31)



A-23 • A-33



A-43



A-05A/B

A-05L/21

A-31

A-32T

A-23

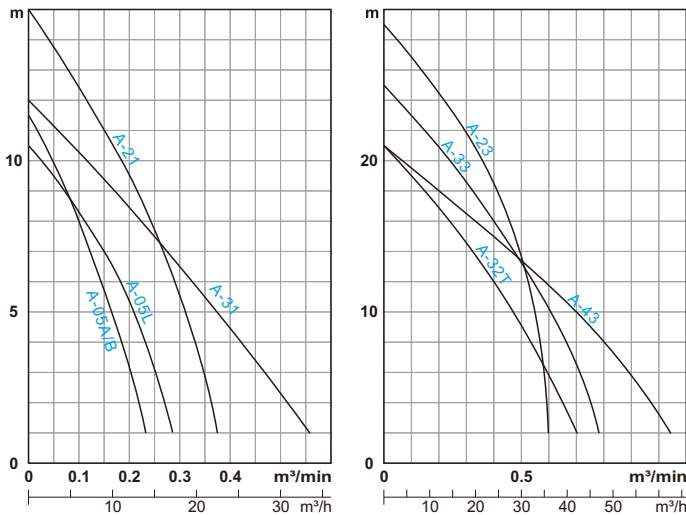
A-33

A-43

PRODUCT NOMENCLATURE

A	—	05	A
Type		HP	Style
A	—	2	1
Type		Discharge inch	HP

PERFORMANCE CURVES



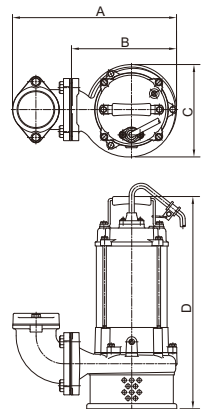
PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)					
						m³/min	m³/h		1Ø	3Ø	A	B	C	1Ø	3Ø	
A-05B	½ (0.4)	2" (50)	1	Capacitor	8	0.1	6	7.5	14	13	227	161	372	372		
A-05L	½ (0.4)	2" (50)	3	Direct	7	0.15	9	8	16	14	245	173	430	430		
			1	Capacitor												
A-21	1 (0.75)	2" (50)	3	Direct	10	0.18	10.8	10	17	15	245	173	430	430		
			1	Capacitor												
A-31	1 (0.75)	3" (80)	3	Direct	6.5	0.3	18	10	18	17	278	173	457	457		
			1	Capacitor												
A-32T	2 (1.5)	3" (80)	3	Direct	12	0.4	24	10.5	37	32	385	216	247	573	485	
			1	Capacitor												
A-23	3 (2.2)	2" (50)	3	Direct	24.5	0.2	12	10.5	38	32	280	216	216	572	493	
			1	Capacitor												
A-33	3 (2.2)	3" (80)	3	Direct	16	0.4	24	10.5	39	33	385	216	247	575	495	
			1	Capacitor												
A-43	3 (2.2)	4" (100)	3	Direct	10	0.7	42	10.5	44	39	385	246	216	575	495	
			1	Capacitor												
A-05A	½ (0.4)	2" (50)	1	Capacitor	8	0.1	6	7.5	12	11	227	161	349	349		
			3	Direct												

Note: Weight Without Cable

SPECIFICATIONS

Discharge (mm)		50 • 80 • 100
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	Wastewater Sewage and Drainage water
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor (A-05A: Oil motor)
	Insulation	Class B
	Protection	IP68
	Protector	Auto-cut (A-05A 3Ø none, A-05A/B/L 1Ø Overheat)
	Bearing	Ball Type
	M.seal	Double M.seals (A-05A: Single M.seal)
Material	Impeller	Semi-open (A-43: Enclosed-Channel)
	Upper Cover	FC-200
	Motor Frame	SUS304
	Main Shaft	SUS410 (2~3HP : SUS403)
	M.seal	Upper: Carbon/Ceramic Lower: Silicon/Silicon (A-05A: carbon/ceramic)
	Casing	FC-200
	Impeller	FC-200 (A-05A/B: PA)
	Cable	VCT or H07RN-F or SJOW/SOW
Optional		Pumps can be customized to fit specifications

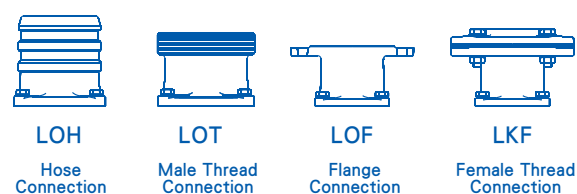


AS SUBMERSIBLE DEWATERING PUMPS



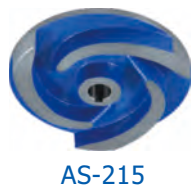
FEATURE

- Designed for civil engineering applications; its easy portability, double outer casing and water cooling motor make it possible to run the pump to low water level.
- Epoxy Resin Cable with IP68 standard for waterproof structure, automatic rest motor protector, and double mechanical seal made of silicon carbide. Equipped with an AC motor protector, to further obtain the best insulated status. It is a very durable and abrasion resistant pump.
- Multi-impeller design with High Chrome Alloy steel (HiCr) impeller, wear plate and wear rings with a hardness 55~60 Rockwell. Its hardest and toughest impeller, among the construction pump, against abrasion, and meets the requirements from low to high head and small to big capacity.
- AS 1.5~7.5kW, equipped with Flange discharge connection. The outer cover is built with high strength stainless steel.



HiCr impeller

High chrome alloy steel (HiCr) hardness of 55-60 RC. impeller to stand high abrasive applications.



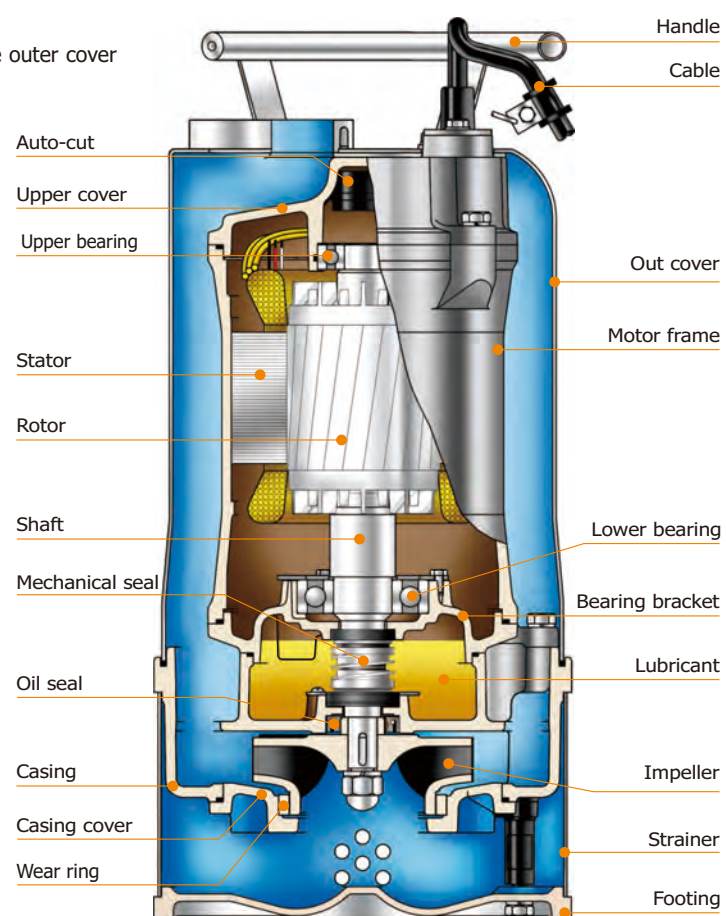
H type impeller



N/L type impeller

APPLICATIONS

- Civil engineering, dewatering of tunneling and ground works, and for use in storm water sewers.
- Dewatering of fluids containing solid sediments.
- Ease of mobility for use by contractors, installers and service industries.



AS 1 1/2HP

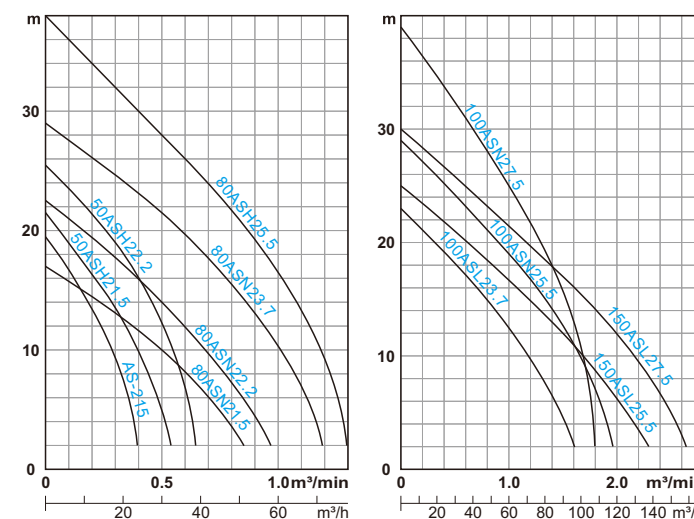
AS 2~7 1/2HP

AS 10HP

PRODUCT NOMENCLATURE

AS	2	15		
Type	Discharge inch	1½HP		
100	AS	N	2	5.5
Discharge mm	Type	Impeller type (H/N/L)	Pole	kW

PERFORMANCE CURVES



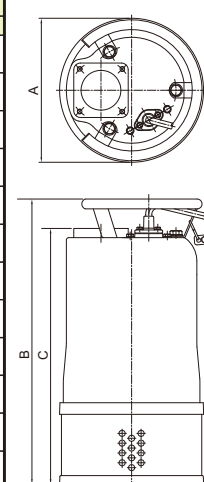
PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)					
						m³/min	m³/h		1Ø	3Ø	A	B	C	1Ø	3Ø	D
AS-215	1 1/2 (1.1)	2" (50)	3	Capacitor Direct	13.5	0.2	12	7.5	28	24	210	482	423	370	429	
50ASH21.5	2 (1.5)	2" (50)	3	Capacitor Direct	15	0.25	15	10	40	36	235	511	466	448	403	
50ASH22.2	3 (2.2)	2" (50)	3	Capacitor Direct	19	0.3	18	10	44	39	235	541	466	478	403	
80ASN21.5	2 (1.5)	3" (80)	3	Capacitor Direct	10	0.5	30	10	40	36	235	511	466	448	403	
80ASN22.2	3 (2.2)	3" (80)	3	Capacitor Direct	14	0.5	30	10	45	39	235	541	466	478	403	
80ASN23.7	5 (3.7)	3" (80)	3	Direct	21.5	0.5	30	10		44	235		496		433	
80ASH25.5	7 1/2 (5.5)	3" (80)	3	Direct	28	0.5	30	10		72	286		610		550	
100ASL23.7	5 (3.7)	4" (100)	3	Direct	12.5	1.0	60	10		44	235		511		448	
100ASN25.5	7 1/2 (5.5)	4" (100)	3	Direct	19	1.0	60	10		75	286		610		550	
100ASN27.5	10 (7.5)	4" (100)	3	Direct	25	1.0	60	10		80	286		610		550	
150ASL25.5	7 1/2 (5.5)	6" (150)	3	Direct	12	1.5	90	10		78	286		610		550	
150ASL27.5	10 (7.5)	6" (150)	3	Direct	17	1.5	90	10		81	286		610		550	

Note: Weight Without Cable

SPECIFICATIONS

Discharge (mm)		50 • 80 • 100 • 150
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	Construction sites • Basins dewatering
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor
	Insulation	Class F (1/2~3HP: Class B)
	Protection	IP68
	Protector	Auto-cut
	Bearing	Ball Type
	M.seal	Double M.seals
Material	Impeller	Semi-open(H) • Enclosed-channel(N/L)
	Outer Cover	SUS304
	Upper Cover	FC-200
	Motor Frame	FC-200 (1 1/2~5HP: SUS304)
	Main Shaft	SUS20J2 (1 1/2~3HP: SUS403)
	M.seal	Upper: Carbon/Ceramic • Lower: Silicon/Silicon
	Casing	FC-200
	Impeller	HiCr
	Wear Ring/Plate	HiCr
Cable		VCT or H07RN-F or SJOW/SOW
Optional		Pumps can be customized to fit specifications

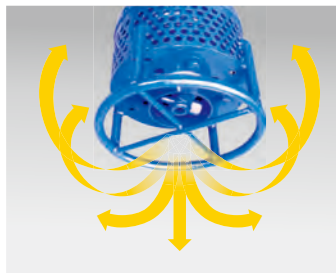


FEATURE

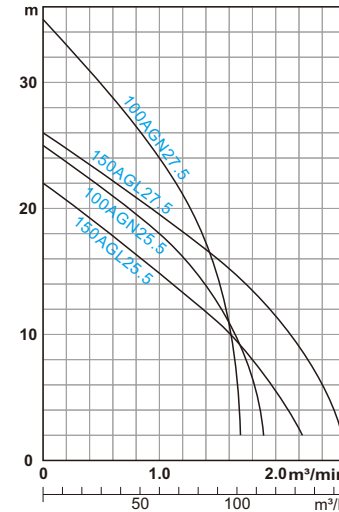
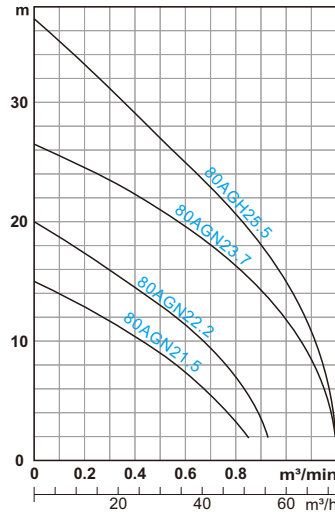
- Designed for civil engineering. Its light weight for easy portability, double outer casing and water cooling motor make it possible to run the pump to low water level.
- Best waterproof structure, automatic reset motor protector and double mechanical seals made of silicon carbide. Durable and leakproof.
- Compact, strong design and easy operation in any place.
- Impeller made of high chrome alloy (HiCr) steel with a hardness of 55~60 Rc. Harden and abrasion resistant.
- Equipped with a cast iron (FCD-700) agitator to create powerful stirring and pumping action for slurry.

APPLICATIONS

- Civil engineering, dewatering for tunnel engineering, and use for manhole sewer.
- Dewatering fluid, containing solid sediment.
- Mobile use for contractors, installers and industry.



PERFORMANCE CURVES



PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)				
						m³/min	m³/h		1Ø	3Ø	A	B	C	D	3Ø
80AGN21.5	2 (1.5)	3" (80)	1	Capacitor	9	0.5	30	10	41	36	260	596	547	544	499
80AGN22.2	3 (2.2)	3" (80)	3	Direct	13	0.5	30	10	45	40	260	622	547	574	499
80AGN23.7	5 (3.7)	3" (80)	3	Direct	21	0.5	30	10	45	260	577	529			
80AGH25.5	7½ (5.5)	3" (80)	3	Direct	27	0.5	30	10	73	286	683	623			
100AGN25.5	7½ (5.5)	4" (100)	3	Direct	18	1.0	60	10	76	286	683	623			
100AGN27.5	10 (7.5)	4" (100)	3	Direct	24	1.0	60	10	81	286	683	623			
150AGL25.5	7½ (5.5)	6" (150)	3	Direct	11	1.5	90	10	79	286	683	623			
150AGL27.5	10 (7.5)	6" (150)	3	Direct	16	1.5	90	10	82	286	683	623			

Note: Weight Without Cable

FEATURE

- Best structure design, dry motor, double mechanical seals, equipped with Auto-cut protector, pumps casting, outer cover adopts stainless steel material, and acid-resistant silicon carbide seals.
- This series is suitable for all, light acid, corrosive and/or sea water applications. For Strong Acid purpose, please use the specified chemical pump.

APPLICATIONS

- Water drainage for industries.
- Sanitary sewer, single and multi-family drainage.
- Water drainage for chemical, pharmaceutical and metal processing factory.

Investment Casting

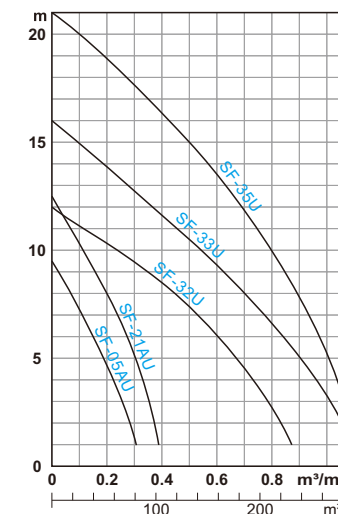
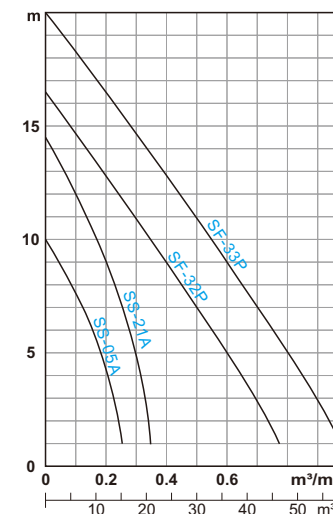
- Precision casting with the use of an advanced, stainless investment casting method that produces the highest quality with a smooth surface finish.

Viton O-ring

- Viton O-rings are used throughout the pump to give better pump life in corrosive, acid and aggressive media.



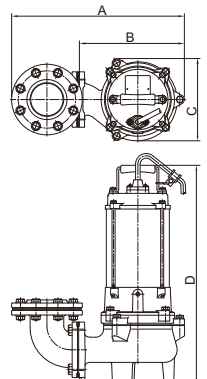
PERFORMANCE CURVES



PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)				
						m³/min	m³/h		1Ø	3Ø	A	B	C	D	3Ø
SS-05A	½(0.4)	2" (50)	1	Capacitor	7	0.12	7.2	10	14	14	245	174	439	439	
SS-21A	1(0.75)	2" (50)	3	Direct	10	0.17	10.2	10	16	15	245	174	439	439	
SF-05AU	½(0.4)	2" (50)	1	Capacitor	6	0.15	9	35	15	14	237	154	427	427	
SF-21AU	1(0.75)	2" (50)	3	Direct	8	0.2	12	35	16	15	237	154	427	427	
SF-32U	2(1.5)	3" (80)	3	Direct	8.5	0.4	24	35	29	441	325	250	538		
SF-33U	3(2.2)	3" (80)	3	Direct	10.5	0.5	30	35	31	441	325	250	563		
SF-35U	5(3.7)	3" (80)	3	Direct	15	0.5	30	38	38	453	337	216	572		
SF-32P	2(1.5)	3" (80)	3	Direct	8	0.45	27	35	29	441	325	250	538		
SF-33P	3(2.2)	3" (80)	3	Direct	9	0.6	36	30	31	441	325	250	563		

Note: Weight Without Cable



SPECIFICATIONS

Discharge (mm)		50 • 80
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	Corrosive • Food processing liquids
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor
	Insulation	Class B (5HP: Class F)
	Protection	IP68
	Protector	Auto-cut
	Bearing	Ball Type
Material	M.seal	Double M.seals
	Impeller	Semi-open
	Upper Cover	SCS14 (½HP: SCS13)
	Motor Frame	SUS316
	Main Shaft	SUS316
	M.seal	Upper: Carbon/Ceramic Lower: Silicon/Silicon
	O-ring	Viton
	Casing	SCS14 (½HP: SCS13)
	Impeller	SUS14
	Cable	VCT or H07RN-F or SJOW/SOW
Optional		Pumps can be customized to fit specifications

IC SUBMERSIBLE DEWATERING PUMPS



IC-215

IC-32B~45B

IC-48~610



FEATURE

- The internal die casting is treated with high solid painting, which can double the duration of anti-rusting, and extend the lifetime of the product.
- Standard design, incorporating a dry motor with thermal auto-cut that prevents the motor from over heating, and a cast iron motor frame for a faster heat dissipation. As well as an abrasion resistant double mechanical seal and an additional oil seal.
- Water cooled motor to ensure a long life in continuous and intermittent operation, with high efficiency and energy savings.
- An exceptional High-lift and suction impeller design, which allow for dewatering of underground or circulating water applications.
- For above or below surface water applications; the IC pump strainer can be easily removed and replaced with a check valve, which allows for dewatering up to max. 8m deep of underground water and water circulation applications. (W-Well Type)
- New casing cover, with metric thread bolt hole that is easier for valve and adapter connection.
- The Chrome Steel impeller has adopted for IC-32B~610, with Hardness of HRC 25~30, better anti-corrosion, and extend the product lifetime.



IC-43B
W Type

APPLICATIONS

- Aquiculture water supply and drainage.
- Water supply for agricultural irrigation systems and underground water pumping.
- Landscape, water feature and horticulture irrigation.
- Extraction of water from rivers, lakes and reservoirs.



IC-215
Bronze

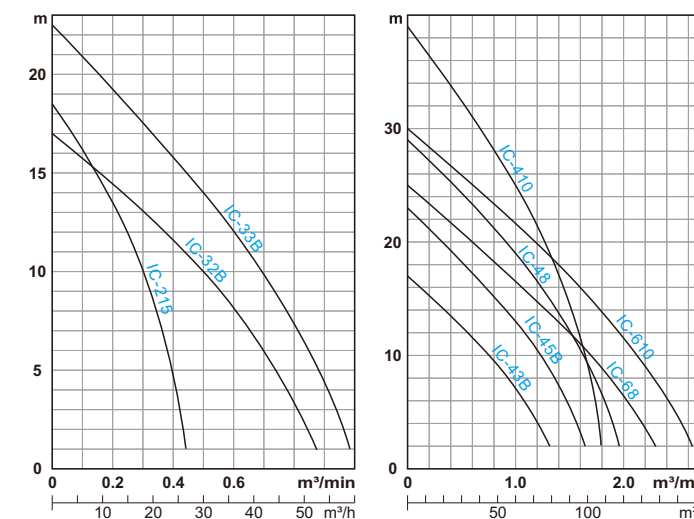


IC-32B~610
Chrome Steel

PRODUCT NOMENCLATURE

IC	-	3	2	B
Type		Discharge inch	HP	Style

PERFORMANCE CURVES



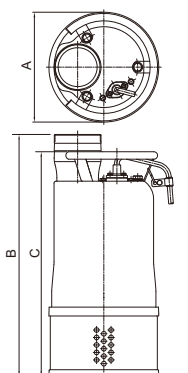
SPECIFICATIONS

Discharge (mm)		50 • 80 • 100 • 150
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	Agriculture irrigation Circulating water • Dewatering
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor
	Insulation	Class F (1½~3HP: Class B)
	Protection	IP68
	Protector	Auto-cut
	Bearing	Ball Type
	M.seal	Double M.seals
	Impeller	Enclosed-channel
Material	Outer Cover	SUS304
	Upper Cover	FC-200
	Motor Frame	SUS304
	Main Shaft	SUS403
	M.seal	Upper: Carbon/Ceramic • Lower: Silicon/Silicon
	Casing	FC-200
	Impeller	Chrome Steel (IC-215 : Bronze)
Cable		VCT or H07RN-F or SJOW/SOW
Optional		Pumps can be customized to fit specifications

PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)					
						m³/min	m³/h		1Ø	3Ø	A	B	C	D	1Ø	3Ø
IC-215	1½ (1.1)	2" (50)	1/3	Capacitor Direct	13.5	0.2	12	3.5	28	24	210	482	423	370	429	
IC-32B	2 (1.5)	3" (80)	1/3	Capacitor Direct	10	0.5	30	10	40	36	235	548	503	511	466	
IC-33B	3 (2.2)	3" (80)	1/3	Capacitor Direct	14	0.5	30	10	45	39	235	578	503	541	466	
IC-43B	3 (2.2)	*3" (80) *3½" (90) 4" (100)	1/3	Capacitor Direct	9.5	0.8	48	10	45	39	235	593	518	556	481	
IC-45B	5 (3.7)	*3½" (90) 4" (100)	3	Direct	13	1	60	10		44	235		548		511	
IC-48	7½ (5.5)	4" (100)	3	Direct	19	1	60	10		75	286		550		610	
IC-410	10 (7.5)	4" (100)	3	Direct	25	1	60	10		80	286		550		610	
IC-68	7½ (5.5)	6" (150)	3	Direct	12	1.5	90	10		78	286		550		610	
IC-610	10 (7.5)	6" (150)	3	Direct	17	1.5	90	10		81	286		550		610	

Note: Weight Without Cable, *3" (80mm) & *3½" (90mm) optional by request

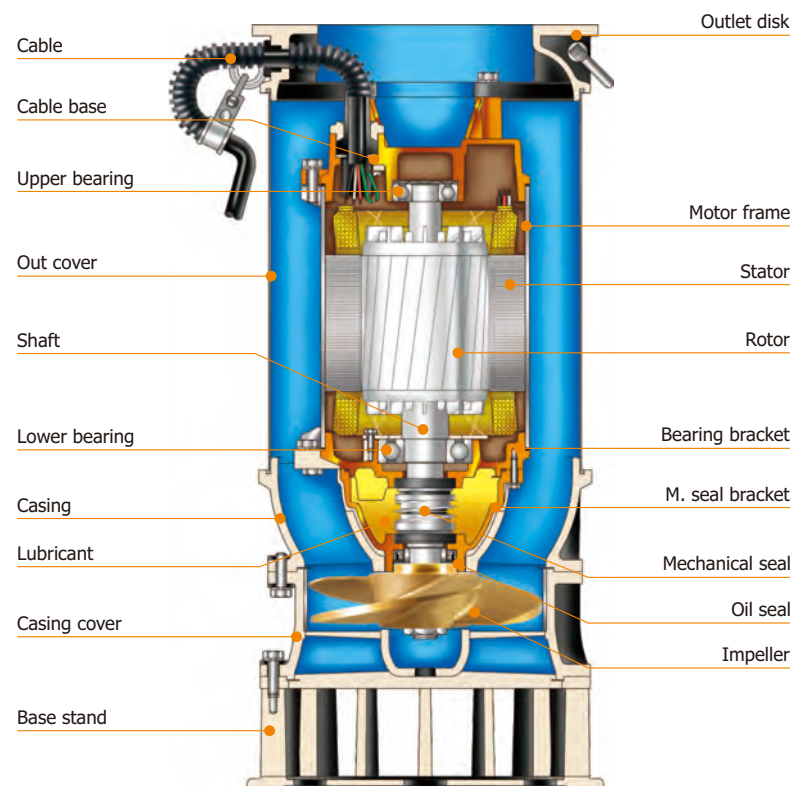


L LARGE VOLUME SUBMERSIBLE PUMPS



FEATURE

- Large flow capacities achieved with almost no vibration, or noise, by use of the axial and mix flow design.
- Robust construction and compact design with a dry motor, double mechanical seals and impeller flow guide vane for high efficiency.
- Easy handling, energy saving and low maintenance.
- High efficiency motor directly connects to impeller, to achieve the best energy savings.
- Pump manufactured with heavy duty housing, cable leads are isolated by hardened epoxy for water proofing, and double mechanical seals.
- Shaft and impeller are precisely balanced for quiet and long life performance
- Casted ALBC3 material (Aluminum Bronze) impeller, has a great abrasion and corrosion resistance.
- The internal dies casting for L-305A~63A is treated with high solid painting, and the installation of Anode plate; which can improve the anti-corrosion and extend the product lifetime.



APPLICATIONS

- Aquiculture water pumping and drainage, for large volume water applications.
- Water supply for landscape, water features, cooling in the power plant or drainage for industry.
- Water extraction from rivers, lakes and reservoirs.
- Flood control or used for large volume dewatering.
- Others : Extraction of water from dock and river.

SACRIFICIAL ANODE

The positive Aluminum Anode will dissolve slowly in brine and release electrons, which can prevent the oxidization of the pump until it is exhausted.



L-305A~63A



L-200A/250A



L-300A/1220



L-305A/41A

L-62A/63A

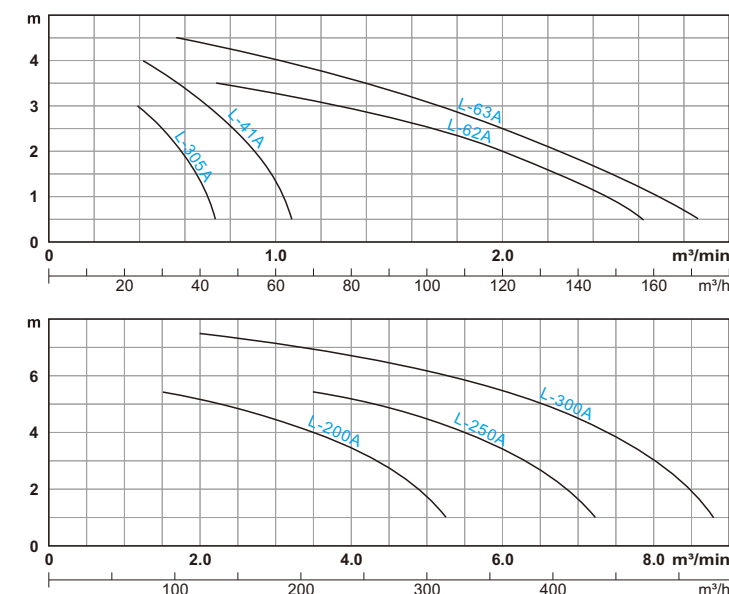
L-200A/250A

L-300A

PRODUCT NOMENCLATURE

L	4	1	A
Type	Discharge inch	HP	Style
L	200	A	
Type	Discharge mm	Style	

PERFORMANCE CURVES



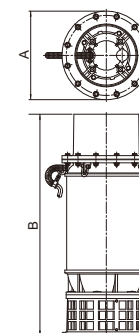
PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)		
						m³/min	m³/h		1Ø	3Ø	A	1Ø	3Ø
L-305A	½ (0.4)	3" (80)	1	Capacitor	2.5	0.5	30	10	25	25	225	484	484
L-41A	1 (0.75)	*3½" (90)	1	Capacitor	3.0	0.7	42	10	26	26	220	484	484
L-62A	2 (1.5)	6" (150)	3	Direct	2.0	2.0	120	20		51	285		597
L-63A	3 (2.2)	6" (150)	3	Direct	2.5	2.0	120	20		52	285		597
L-200A	7½ (5.5)	8" (200)	3	Direct	4	3.5	210	22		116	340		923
L-250A	10 (7.5)	10" (250)	3	Direct	4	5.5	330	22		157	380		1015
L-300A	15 (11)	12" (300)	3	Direct	4.5	7	420	23		201	430		1077

Note: Weight Without Cable, *3½" (90mm) optional by request

SPECIFICATIONS

Discharge (mm)		80 • 100 • 150 • 200 • 250 • 300
Limits Of Use	Liquid Temp.	0~40°C (32~104°F)
	Applications	Agriculture irrigation Aquiculture water • River water
	Submersion Depth	30m (100feet)
Type	Frequency	50Hz
	Motor	½~1HP 2P (3000RPM) • Dry Motor 2~20HP 4P (1500RPM) • Dry Motor
	Insulation	Class B (7½~15HP: Class F)
	Protection	IP68
	Protector	Auto-cut (7½~15HP: None)
	Bearing	Ball Type
	M.seal	Double M.seals
Material	Impeller	Axial-flow (15HP: Mix-flow)
	Outer Cover	SUS304
	Upper Cover	FC-200 (7½~15HP: BC6)
	Motor Frame	FC-200 (7½~15HP: SUS304)
	Main Shaft	SUS403
	M.seal	Upper: Carbon/Ceramic Lower: Silicon/Silicon (7½~15HP Lower: Carbon/Ceramic)
	Casing	FC-200
	Impeller	ALBC3
	Cable	VCT or H07RN-F or SJOW/SOW
Optional		Pumps can be customized to fit specifications



GF SUBMERSIBLE GRINDER PUMPS



32GF21.0 32GF21.5/21.5H 50GF22.2/23.7
32GF22.2



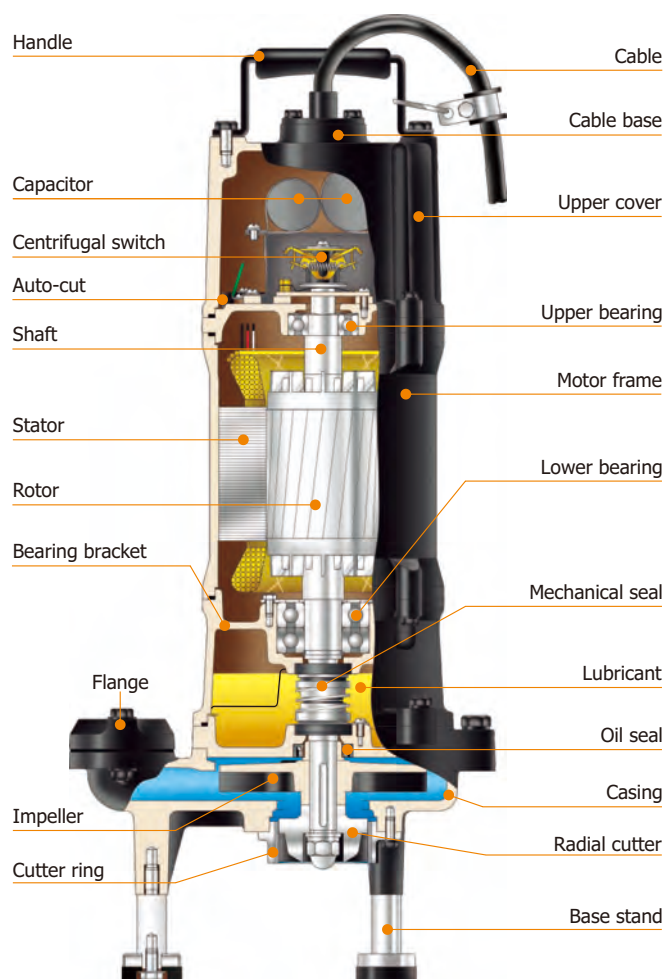
FEATURE

- Standard accessories include : epoxy resin cable base, dry motor, double mechanical seals, auto-cut protection, double ball bearing support shaft and rotor.
- Vortex impeller design prevents clogging by cutting up articles.
- Radial cutter and cutter ring : corrosion resistant material, hardened to 55-60 Rockwell C.
- Specific single phase design for starting torque, and its torque is five times stronger than General capacitor pump. The impeller can prevent from clogging when grinding the objectives.

APPLICATIONS

- Used in pressure sewage system.
- Drainage of wastewater from individual residences, apartment buildings, recreational developments, motels.
- Transferring wastewater of commercial buildings, industrial plants, wastewater sampling, small hospitals.
- Schools, federal, state and local parks, wastewater drainage.
- To transfer various wastewater and sewage.

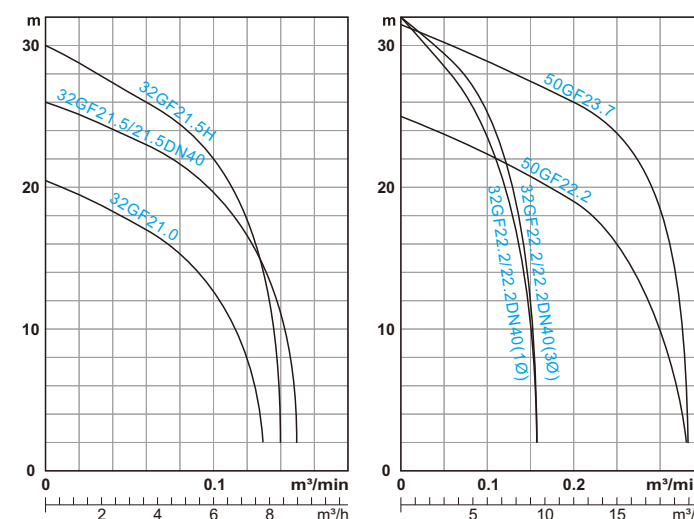
Super Powerful Grinding Ability. 5 times



PRODUCT NOMENCLATURE

32	GF	2	1.5
Discharge mm	Type	Pole	kW

PERFORMANCE CURVES



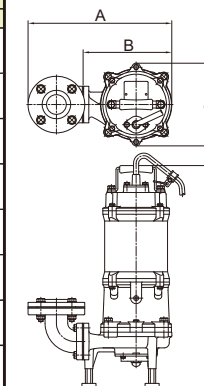
PERFORMANCE SPEC.

Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)		Dimension (mm)				
						m³/min	m³/h		1Ø	3Ø	A	B	C	D	
32GF21.0	1 1/3 (1.0)	1 1/4" (32)	1	Capacitor	17	0.06	3.6		27	25	249	177	555	530	
32GF21.5	2 (1.5)	1 1/4" (32)	3	Direct	23	0.06	3.6		36	32	285	203	597	546	
32GF21.5H	2 (1.5)	1 1/4" (32)	1	Capacitor	26	0.06	3.6		36	32	285	203	597	546	
32GF21.5DN40	2 (1.5)	1 1/4" (32)	3	Direct	23	0.06	3.6		36	32	285	203	596	546	
32GF22.2	3 (2.2)	1 1/4" (32)	1	Capacitor	28	0.06	3.6		38	35	285	203	630	546	
32GF22.2DN40	3 (2.2)	1 1/4" (32)	3	Direct	29	0.06	3.6		38	35	285	203	630	546	
50GF22.2	3 (2.2)	2" (50)	3	Direct	19	0.2	12		51	393	226	226	616		
50GF23.7	5 (3.7)	2" (50)	3	Direct	26	0.2	12		53	393	226	226	616		

Note: Weight Without Cable

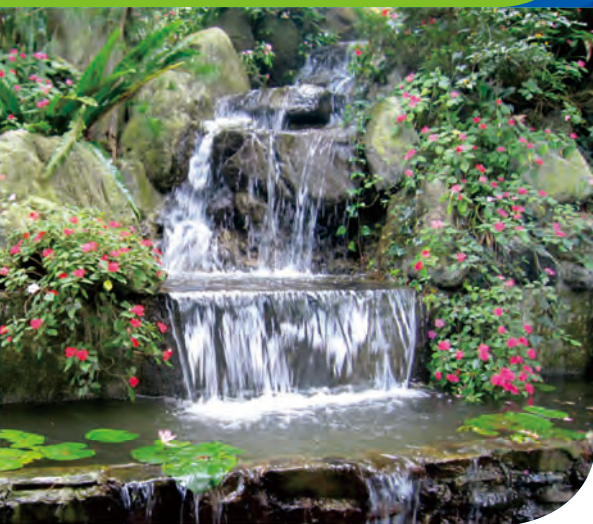
SPECIFICATIONS

Discharge (mm)		32 • 50
Type	Liquid Temp.	0~40°C (32~104°F)
	Applications	Residential wastewater • Sewage
	Submersion Depth	30m (100feet)
	Frequency	50Hz
	Motor	2P (3000RPM) • Dry Motor
Material	Insulation	Class B (5HP: Class F)
	Protection	IP68
	Protector	Auto-cut
	Bearing	Ball Type
	M.seal	Double M.seals
	Impeller	Semi-open
	Upper Cover	FC-200
	Motor Frame	FC-200
	Main Shaft	SUS403
	M.seal	Upper: Carbon/Ceramic Lower: Silicon/Silicon
Optional	Casing	FC-200
	Impeller	FC-200
	Radial Cutter	SUS440C
	Cutter Ring	SUS440C
	Cable	VCT or H07RN-F or SJOW/SOW
Optional		Pumps can be customized to fit specifications



POND

RESIDENTIAL SUMP PUMPS



POND-S250



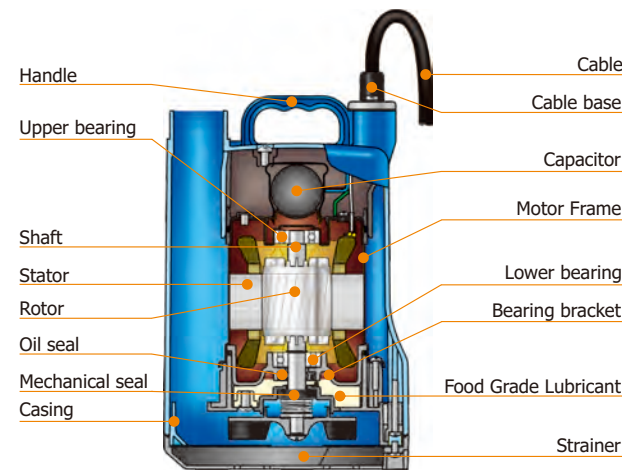
POND-100A
POND-150A



POND-F



POND-FV



■ FEATURE

■ Pond-A adopts the ionic electroplating for its aluminium frame, which can prevent the corrosion and extend the product lifetime.

■ Pond-S adopts the stainless steel frame, which can be used in sea water, fish pond, and water circulation for seafood.

■ The strong structure design: High efficiency motor and Vortex impeller, waterproof Epoxy cable, mechanical seal and oil seal, overheat protector.

■ Outlet discharge for Pond-A is available with 15mm (1/2"), 20mm (3/4"), 25mm (1"), and additional 32mm (1 1/4") with 150W model.

■ Pond-S can be equipped with outlet discharge of 32mm and 40mm.

■ Optional accessories: Standard Quest Float Switch (F), Vertical Float switch (FV) for confined application.

■ Food Grade Lubricant: Clear and odorless oil, which meets the standards of US FDA and EU REACH. It is toxic free, environmental friendly, and harmless to the human body.



POND-A

POND-S

■ PERFORMANCE SPEC.

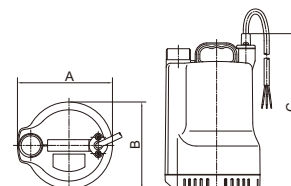
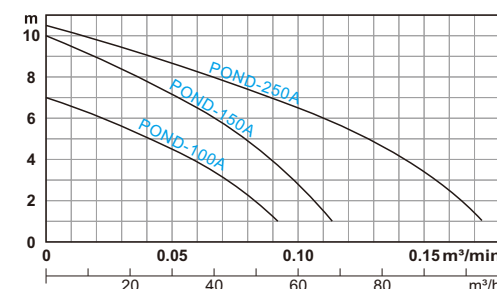
Model	HP(kW)	Discharge Inch(mm)	Phase Ø	Start Method	Head (m)	Capacity		Solid Passage (mm)	Weight (kg)	Dimension (mm)		
						m³/min	m³/h			A	B	C
POND-100A	1/7 (100)	1" (25)	1	Direct	4.5	0.05	3	4	4.0	164	153	256
POND-150A	1/5 (150)	1" (25)	1	Direct	6.5	0.06	3.6	4	4.4	164	153	256
POND-S250	1/3 (250)	1 1/4" (32)	1	Direct	6.5	0.1	6	4	4.1	164	150	268

Note: Weight Without Cable

■ SPECIFICATIONS

Model	Pond-A	Pond-S
Discharge(mm)	15 • 20 • 25 • 32(150W)	32 • 40
Limits Of Use	Liquid Temp. 0~40°C (32~104°F)	
Applications	Fresh Water • Basins And Tanks	Seawater • Marine Culture
Max. Depth	10m (33feet)	
Frequency	50Hz	
Motor	2P (3000RPM) • Dry Motor	
Insulation	Class B	
Protection	IP68	
Protector	Overheat Protector	
Bearing	Ball Type	
M.seal	M.seal	
Impeller	Semi-open	
Upper Cover	AAS	PP
Motor Frame	ADC12 (ED Coating)	SUS304
Main Shaft	SUS410	
M.seal	Carbon/Ceramic	
Lubricant	Food Grade Lubricant (White Mineral Oil)	
Casing	AAS	PP
Casing Cover		SUS304
Impeller	ABS+GF	PA
Cable	H05RN-F or SJTW	

■ PERFORMANCE CURVES



■ OTHER SERIES



AF Type Heavy Duty Sewage Pumps

30HP(22kW)~60HP(45kW)

Performance: Max. Head: 42m

Max. Capacity: 30m³/min

Features: Complete cast iron, high efficiency motor and large solid handling design for high performance and durability.

Applications: General large-scale sewage and wastewater pumping and drainage for usage at reservoirs, power plants, sewage water treatment plants or industrial waste plants.



LA Type Axial Pumps

50HP(37kW)~100HP(75kW)

Performance: Max. Head: 6m

Max. Capacity: 120m³/min

Features: High efficiency and energy saving direct drive motor design, offers the highest flow rate for all large scale water pumping applications.

Applications: All types of large volume water applications including: Large volume water pumping required for industrial water supply or drainage. Water supply for power plants and agricultural irrigation. Drainage of flood water or flood control stations.



Submersible Pump Guide Rail Systems

Features: HCP Pump Guide Rail Systems allow for quick and convenient pump systems installation, removal, replacement and maintenance without the hassle of manually handling the pumps.

Applications: Sewage and wastewater pumping, and drainage where pumps must be regularly maintained and service, such as: wastewater treatment plant and sewage plant.



Jet Pumps

Performance: Max. Operating Depth: 6m

Max Air Volume: 105m³/hr

Features: A strong jet flow of mixed air and water. Water is supplied with air through a suction pipe that mixes the water as it enters an expansion pipe. Air is introduced as tiny bubbles in the jet stream, oxygenating and aerating the water.

Applications: Oxygen aeration of wastewater for wastewater treatment. Oxygenated water for aquaculture such as fish farming or hydroponics applications.



Float Switch Pumps

Features: Optional wide angle on/off level control float switch for easy and simple automatic operation.

Model: 100W~2.2kW single-phase

0.4~2.2Kw 3-phase

Unit of measurements:

HP	1 HP=0.746kW 1 kW=1.34 HP	
Length	1m=100cm 1cm=10mm	1inch=2.54cm 1ft=0.3048m
Capacity	1m³/min=1000 l/min 1gal/min=3.785 l/min(USA) CMD= m³/day CMH= m³/hr CMM= m³/min CMS= m³/sec LPM=l/min GPM= gal/min	
Disc.diameter	Discharge	Suggesting capacity
	1"(25mm)	0.04 m³/min
	1 1/4"(32 mm)	0.06 m³/min
	1 1/2"(40mm)	0.1 m³/min
	2"(50mm)	0.2 m³/min
	2 1/2"(65mm)	0.4 m³/min
	3"(80mm)	0.5 m³/min
	4"(100mm)	1.0 m³/min
	5"(125mm)	1.5 m³/min
	6"(150mm)	2.0 m³/min
	8"(200mm)	4.0 m³/min
	10"(250mm)	6.0 m³/min
	12"(300mm)	10.0 m³/min
Insulation class	E class120°C F class155°C	B class130°C H class180°C

Protector & Sensor

Auto-cut Protector

The Auto-cut protector is an automatic cut-off switch, installed inside the motor. The switch automatically cuts off power to the motor, in the event of a power surge or overheating. The switch automatically restarts the motor once the temperature drops to about 60~70°C.



Overheat Protector

The overheat protector is an automatic cut-off switch built into the single-phase motor, to monitor the temperature of the inner motor. The switch automatically cuts off power if the motor temperature exceeds the maximum allowable operating temperature (insulator class max. temperature). The switch automatically restarts the motor once the temperature drops to about 60~70°C.



Miniature Thermal Sensor (MTS)

MTS is embedded in every phase of the motor winding, and transmits a signal to the control panel. Control can be setup to cut off power when MT is activated, and restart when MT is deactivated.



MOISTURE SENSOR (MS)

Moisture sensor is used to detect moisture leakage through the mechanical seals. This occurs when the seal has been worn down or damaged; if moisture is found, the sensor will then trigger and transmit a signal to control panel. The control panel will then set off a warning signal and/or power off, to protect pump motor. If this occurs, schedule pump maintenance to replace mechanical seal.

