

# AMS Submersible Canned Motor



## PT. Archimedes Global Pump

Kawasan Pusat Niaga Terpadu

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For Deep Well Pump

# エバラ 水中キャンドモータ

## SUBMERSIBLE CANNED MOTOR

PSC & PSCI models,  
can be easily started under a low voltage environment  
(50% from rated voltage)





### ZBH4N Type Submersible Canned Motor for Deep Well

This motor is intended to be used with a directly connected submersible pump for deep well. Considering its usage environments, our own technology backed up with long term experience in designing and manufacturing of the submersible motor has been fully reflected in the areas of configuration and parts structure.

#### ■ Welding encapsulated structure

Stator room where stator coil exists is in welding encapsulated structure (canned state) so that the stator coil can be completely isolated from the exterior.

#### ■ Enclosure liquid

The motor is filled up with propylene glycol water solution.  
Lubrication for radial bearing and thrust bearing.  
Protection of parts within the motor from the rust.  
Distribution of heat inside the motor and prevention of local heat generation.  
Propylene glycol is also used as a food additive which proves it to be safe liquid.

#### ■ Shaft seal

The oil seal is used at shaft seal section in order to avoid replacing enclosure liquid with outside water. Also, the sand slinger is used to avoid entry of sand into the motor.

#### ■ Connector Lead Wire

Power supply Lead Wire and connector section are combined together with rubber mold for high durability water resistance.

#### ■ Stainless steel for liquid surface

Stainless steel is used as liquid surface material for high corrosion resistance.

#### (Usage conditions)

Maximum water depth : 100 m

Minimum allowable velocity of cooling water : 0.063 m/s

Liquid characteristics : Fresh water (PH 5.8 to 8.6)

Temperature : 0 to 40 °C

**ZBH4N PSC 4" 50Hz 3Wire ( Single Phase ) [ EBARA Control Box r equired ]**

kW	HP	Volts	Wire	Poles	A	RPM	H(mm)	Kg	Thrust Load (N)	Liquid Type	☒	Max Depth (m)	Key Shaft Spline Shaft
0.37	0.5	220/230	3	2	3.1/3.1	2870/2880	262	8.4	1500	Clean Water	☒	100	NEMA
0.55	0.75	220/230	3	2	4.3/4.3	2860/2875	292	9.5	1500				
0.75	1	220/230	3	2	5.5/5.5	2860/2870	319	10.5	3000				
1.1	1.5	220/230	3	2	7.6/7.4	2860/2870	379	13.1	3000				
1.5	2	220/230	3	2	10.3/10.2	2850/2870	409	14.5	3000				
2.2	3	220/230	3	2	14.9/14.7	2855/2870	484	17.6	3000				

**ZBH4N PSCI 4" 50Hz ( Single Phase )**

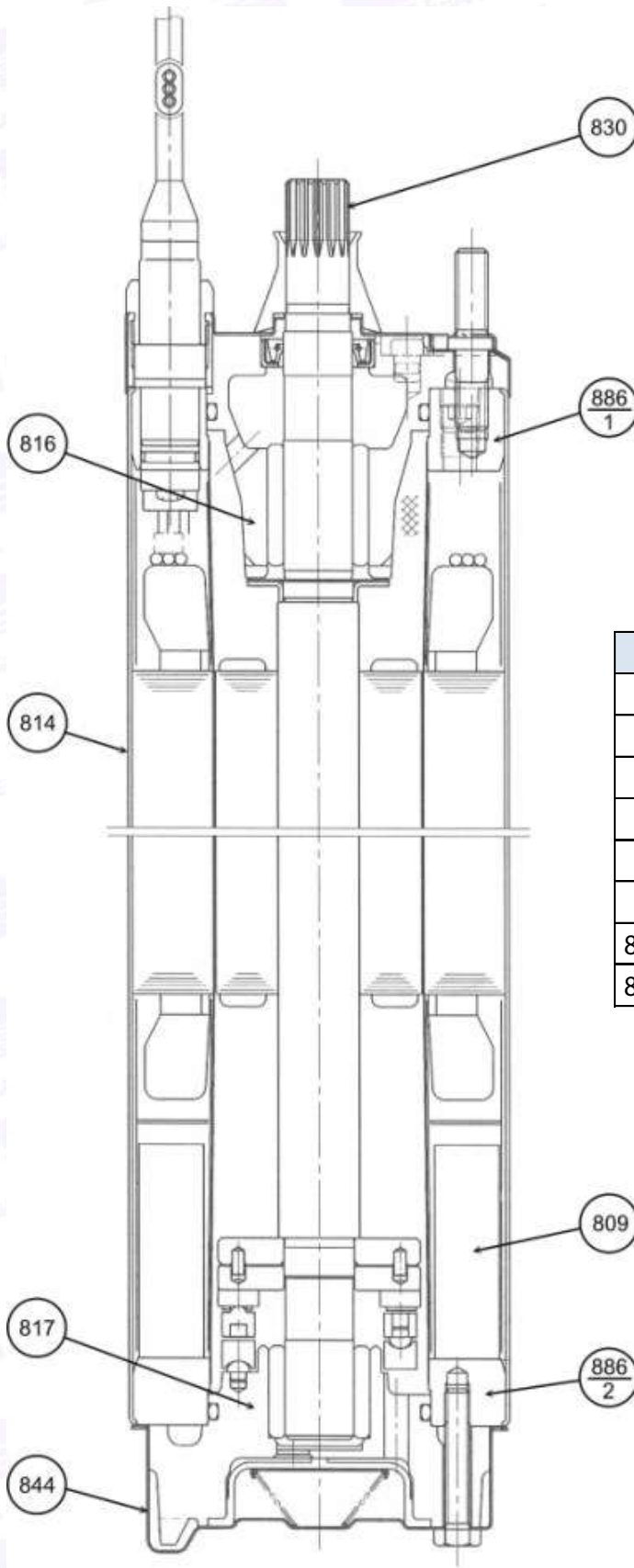
kW	HP	Volts	Wire	Poles	A	RPM	H(mm)	Kg	Thrust Load (N)	Liquid Type	☒	Max Depth (m)	Key Shaft Spline Shaft
0.37	0.5	220/230	3	2	3.1/3.1	2870/2880	298	8.5	1500	Clean Water	☒	100	NEMA
0.55	0.75	220/230	3	2	4.3/4.3	2860/2875	328	9.8	1500				
0.75	1	220/230	3	2	5.5/5.5	2860/2870	348	10.85	3000				
1.1	1.5	220/230	3	2	7.6/7.4	2860/2870	421	13.5	3000				
1.5	2	220/230	3	2	10.3/10.2	2850/2870	451	14.8	3000				

**Remarks:**

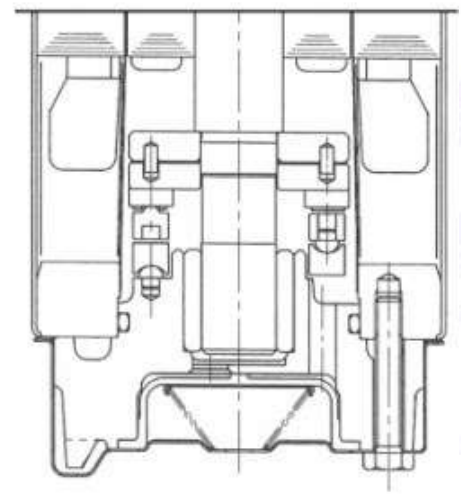
Control Box is NOT required for PSCI model.



ZBH4N 4"PSC 、 PSCI Sectional View



Pos	Description	Material
809	Capacitor	—
814	Frame	SUS304
816	Power Side Bracket	FC200
817	Opposite Side Bracket	FC200
830	Shaft	SUS431Q
844	End Cover	SUS304
886-1	Power Side Plate	SS400
886-2	Opposite Side Plate	SS400



PSCI with capacitor

PSC w/o capacitor

ZBH4N PSC 4" Technical Data

Technical Data - 4" 50Hz

Type	Volts	Freq.	Thrust Load	Output	Output	Full Load	Locked Rotor	Efficiency	Power Factor	Speed	Run Capacitor	Start Capacitor	Starting Method
	V	HZ	N	HP	KW	Amps	Amps	%	%	min-1	µF	µF	
Single Phase 3-Lead	220	50	1500	0.5	0.37	3.1	9.3	58.3	80	2870	20	-	PSC
			1500	0.75	0.55	4.3	13.9	63	66	2860	25	-	PSC
			3000	1	0.75	5.5	17.1	66.5	56	2860	30	-	PSC
			3000	1.5	1.1	7.6	21.5	70.4	46	2860	40	-	PSC
			3000	2	1.5	10.3	32.8	71.1	41	2850	50	-	PSC
			4000	3	2.2	14.9	48.3	72.3	41	2855	70	-	PSC

ZBH4N PSCI 4" Technical Data

Technical - 4" 50Hz

Type	Volts	Freq.	Thrust Load	Output	Output	Full Load	Locked Rotor	Efficiency	Power Factor	Speed	Run Capacitor	Start Capacitor	Starting Method
	V	HZ	N	HP	KW	Amps	Amps	%	%	min-1	µF	µF	
Single Phase 3-Lead *(Ground wire included)	220	50	1500	0.5	0.37	3.1	9.3	58.3	80	2870	20	-	PSCI
			1500	0.75	0.55	4.3	13.9	63	66	2860	25	-	PSCI
			3000	1	0.75	5.5	17.1	66.5	56	2860	30	-	PSCI
			3000	1.5	1.1	7.6	21.5	70.4	46	2860	40	-	PSCI
			3000	2	1.5	10.3	32.8	71.1	41	2850	50	-	PSCI

PSC&PSCI models can be easily started under a low voltage environment (50% from rated voltage).

# SUBMERSIBLE CANNED MOTOR

## 水中キャンドモータ



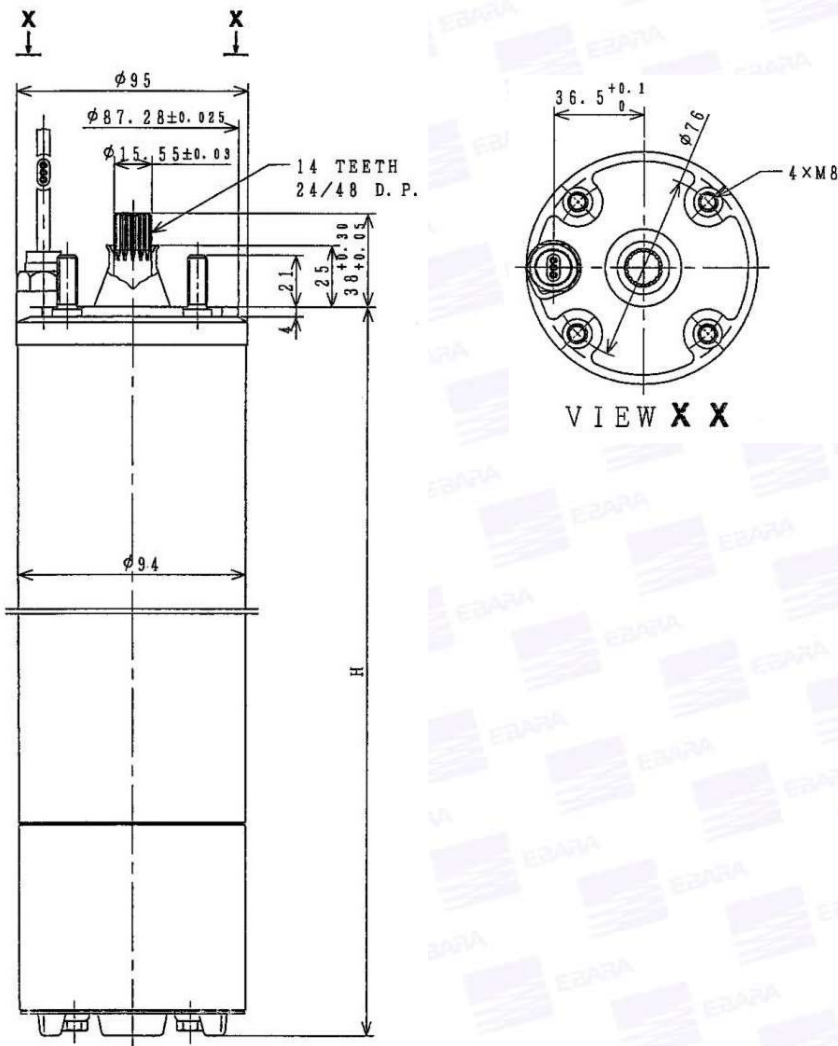
**ZBH4N 4" 50Hz Data (Single Phase ) [ EBARA Control Box r equired ]**

kW	HP	Volts	Wire	Poles	A	RPM	H (mm)	Kg	Thrust Load (N)	Liquid Type	∅	Max Depth (m)	Key Shaft Spline Shaft
0.37	0.5	220/230	3	2	4.2/4.2	2860/2870	262	9.05	1500	Clean Water	0~40	100	NEMA
0.55	0.75	220/230	3	2	6.4/6.5	2870/2890	292	10.35	1500	Clean Water	0~40	100	NEMA
0.75	1	220/230	3	2	7.8/7.7	2840/2860	319	11.3	3000	Clean Water	0~40	100	NEMA
1.1	1.5	220/230	3	2	9.5/9.3	2840/2860	379	14.05	3000	Clean Water	0~40	100	NEMA
1.5	2	220/230	3	2	12.0/12.0	2850/2870	409	15.3	3000	Clean Water	0~40	100	NEMA
2.2	3	220/230	3	2	16.8/16.8	2860/2880	484	18.6	3000	Clean Water	0~40	100	NEMA
3.7	5	220/230	3	2	17.1/17.1	2820/2840	680	29	6500	Clean Water	0~40	100	NEMA

**ZBH4N 4" 50Hz Data (Three Phase )**

kW	HP	Volts	Wire	Poles	A	RPM	H (mm)	Kg	Thrust Load (N)	Liquid Type	∅	Max Depth (m)	Key Shaft Spline Shaft
0.37	0.5	220/230	3	2	2.3/2.4	2850/2860	237	7.6	1500	Clean Water	0~40	100	NEMA
		380/400/415	3	2	1.3/1.4/1.5	2850/2860/2870	237	7.6	1500	Clean Water	0~40	100	NEMA
0.55	0.75	220/230	3	2	3.0/3.1	2850/2860	252	8.3	1500	Clean Water	0~40	100	NEMA
		380/400/415	3	2	1.8/1.8/1.9	2850/2860/2870	252	8.3	1500	Clean Water	0~40	100	NEMA
0.75	1	220/230	3	2	3.8/3.7	2830/2850	289	9.65	3000	Clean Water	0~40	100	NEMA
		380/400/415	3	2	2.2/2.2/2.2	2830/2850/2860	289	9.65	3000	Clean Water	0~40	100	NEMA
1.1	1.5	220/230	3	2	5.3/5.2	2820/2840	319	10.85	3000	Clean Water	0~40	100	NEMA
		380/400/415	3	2	3.1/3.0/3.1	2820/2840/2850	319	10.85	3000	Clean Water	0~40	100	NEMA
1.5	2	220/230	3	2	6.8/6.8	2830/2840	354	12.45	3000	Clean Water	0~40	100	NEMA
		380/400/415	3	2	3.9/3.9/4.0	2830/2840/2850	354	12.45	3000	Clean Water	0~40	100	NEMA
2.2	3	220/230	3	2	9.8/9.6	2780/2810	408	14.65	4000	Clean Water	0~40	100	NEMA
		380/400/415	3	2	5.7/5.6/5.6	2780/2810/2820	408	14.65	4000	Clean Water	0~40	100	NEMA
2.2	3	380/400	3	2	5.7/5.6	2780/2810	448.5	14.65	6500	Clean Water	0~40	100	NEMA
3.7	5	220/230	3	2	16.3/16.2	2820/2840	555.5	22.75	6500	Clean Water	0~40	100	NEMA
		380/400/415	3	2	9.4/9.4/9.5	2820/2840/2850	555.5	22.75	6500	Clean Water	0~40	100	NEMA
5.5	7.5	220/230	3	2	24/-	2810/-	680.5	29	6500	Clean Water	0~40	100	NEMA
		380/400/415	3	2	13.9/13.7/-	2810/2830/-	680.5	29	6500	Clean Water	0~40	100	NEMA

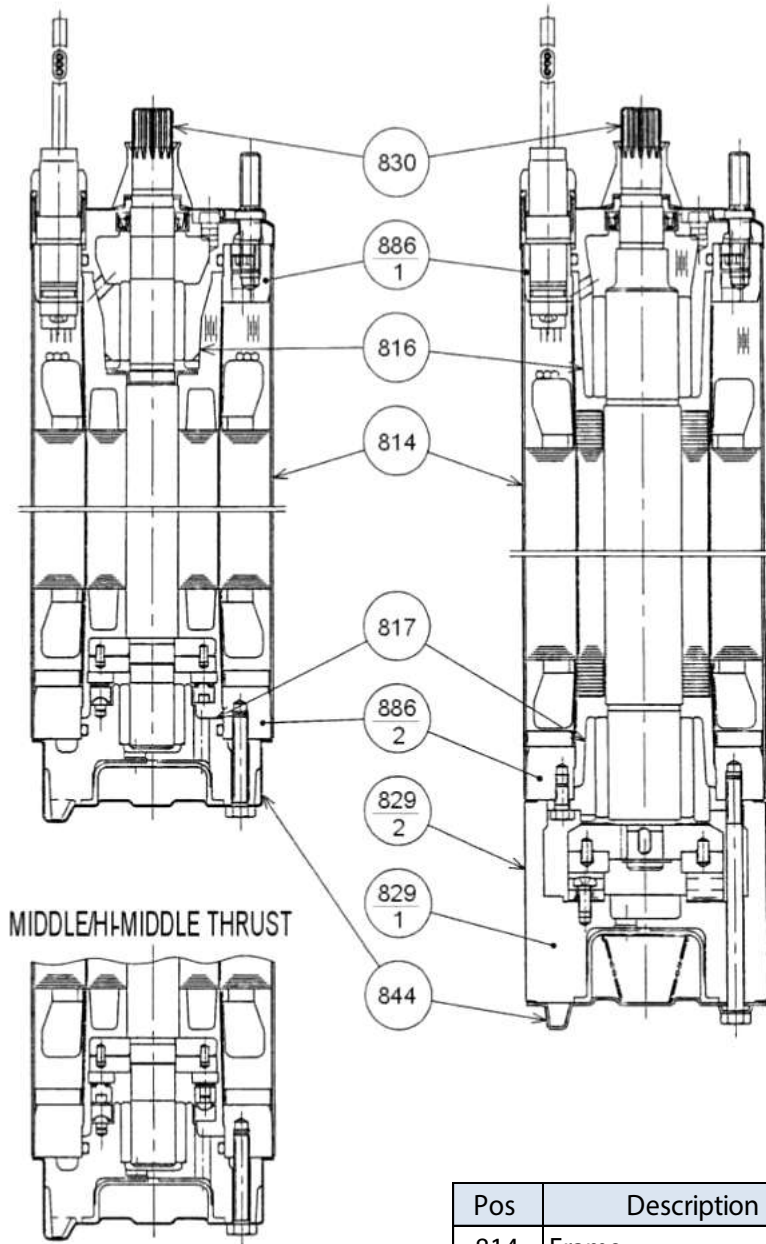
ZBH4N 4" Dimensions



Frame Size	Phase	Power		H (mm)	Thrust Load (N)	Liquid Type	☒	Max Depth(m)	Remarks	
		kW	HP							
M4	1 (3wire)	CSIR	0.37	0.5	262	1500	Clean Water	0~40	100	NEMA
			0.55	0.75	292					
			0.75	1	319					
		CSCR	1.1	1.5	379	3000				
			1.5	2	409					
			2.2	3	484					
	3		3.7	5	680	6500				
			0.37	0.5	237	1500				
			0.55	0.75	252					
			0.75	1	289	3000				
			1.1	1.5	319					
			1.5	2	354	4000				
			2.2	3	408					
			3.7	5	555.5	6500				
5.5	7.5	680.5								

LOW THRUST

HIGH THRUST



Pos	Description	Material
814	Frame	SUS304
816	Power Side Bracket	FC200
817	Opposite Side Bracket	FC200
829-1	Thrust Case	FC200
829-2	Thrust Case Cover	SUS304
830	Shaft	SUS431Q
844	End Cover	SUS304
886-1	Power Side Plate	SS400
886-2	Opposite Side Plate	SS400

ZBH4N 4" 50Hz Technical Data

Technical Data - 4" 50Hz

Type	Volts	Freq.	Thrust Load	Output	Output	Full Load	Locked Rotor	Efficiency	Power Factor	Speed	Run Capacitor	Start Capacitor	Starting Method
	V	HZ	N	HP	KW	Amps	Amps	%	%	min-1	µF	µF	
Three Phase 3-Lead	220	50	1500	0.5	0.37	2.3	8.5	64	73	2850	-	-	-
			1500	0.75	0.55	3.0	10.6	67	76	2850	-	-	-
			3000	1	0.75	3.8	15.2	68	80	2830	-	-	-
			3000	1.5	1.1	5.3	24.1	72	80	2820	-	-	-
			3000	2	1.5	6.8	19.1	72	82	2830	-	-	-
			4000	3	2.2	9.8	45	71	85	2780	-	-	-
			6500	3	2.2	9.8	45	71	85	2780	-	-	-
			6500	5	3.7	16.3	95.6	71	81	2820	-	-	-
			6500	7.5	5.5	24	108	77	81	2810	-	-	-
	380	50	1500	0.5	0.37	1.3	4.9	64	73	2850	-	-	-
			1500	0.75	0.55	1.8	6.1	67	76	2850	-	-	-
			3000	1	0.75	2.2	8.8	68	80	2830	-	-	-
			3000	1.5	1.1	3.1	13.9	72	80	2820	-	-	-
			3000	2	1.5	3.9	16.8	72	82	2830	-	-	-
			4000	3	2.2	5.7	26	71	85	2780	-	-	-
			6500	3	2.2	5.7	26	71	85	2780	-	-	-
			6500	5	3.7	9.4	55.2	71	81	2820	-	-	-
			6500	7.5	5.5	13.9	62.2	77	81	2810	-	-	-
	400	50	1500	0.5	0.37	1.4	5	62	69	2860	-	-	-
			1500	0.75	0.55	1.8	6.6	66	71	2860	-	-	-
			3000	1	0.75	2.2	9.1	67	74	2850	-	-	-
			3000	1.5	1.1	3.0	14.3	72	75	2840	-	-	-
			3000	2	1.5	3.9	17.1	73	79	2840	-	-	-
			4000	3	2.2	5.6	26.4	71	82	2810	-	-	-
			6500	3	2.2	5.6	26.4	71	82	2810	-	-	-
			6500	5	3.7	9.4	58.8	71	79	2840	-	-	-
			6500	7.5	5.5	13.7	63.8	76	79	2830	-	-	-
	Single Phase 3-Lead	220	50	1500	0.5	0.37	4.2	16.8	56	76	2860	0	43-53
1500				0.75	0.55	6.4	25.3	56	77	2870	0	59-71	CSIR
3000				1	0.75	7.8	32.5	58	77	2840	0	86-103	CSIR
3000				1.5	1.1	9.5	39.3	65	82	2840	10	105-126	CSCR
3000				2	1.5	12.0	52.9	65	84	2850	20	189-227	CSCR
3000				3	2.2	16.8	67.4	68	88	2860	35	270-324	CSCR
230		50	1500	0.5	0.37	4.2	17.8	57	72	2870	0	43-53	CSIR
			1500	0.75	0.55	6.5	26.6	57	72	2890	0	59-71	CSIR
			3000	1	0.75	7.7	34.3	59	72	2860	0	86-103	CSIR
			3000	1.5	1.1	9.3	42.7	65	79	2860	10	105-126	CSCR
			3000	2	1.5	12.0	56.5	66	78	2870	20	189-227	CSCR
			3000	3	2.2	16.8	73.2	69	83	2880	35	270-324	CSCR



#### ■ ZBH6U Submersible Canned Motor for Deep Well

Water cooled motors with encapsulated resin filled stator.

Coupling dimensions and flange according to NEMA standard.

#### ■ ZBH6U MOTOR TECHNICAL FEATURES

Motor casing and shaft made of stainless steel

High resistance coated cast iron upper and lower bracket

Water lubricated Kingsbury type thrust bearings

Standard mechanical seal SiC -SiC type

Sand slinger protection

Pressure equalizing diaphragm

Insulation class F, protection IP68

Removable cable connector 4m long

Starting method for motors available in

D.O.L. and star-delta

#### ■ OPERATING LIMITS

Maximum voltage fluctuation admissible vs. normal rated voltage: +10%/ -10%

Maximum water temperature: 35 °C with at least 0.15m/s of water flow speed

Maximum motor startings per hour: 20 times for D.O.L. type

Maximum immersion depth: 300m

Standard mounting position: Vertical

#### ■ VERSIONS

Power range from 3.7 kW to 45 kW

Nominal voltage: 380-415V@50Hz, 200-460V@60Hz

Maximum axial thrust:

7,840 N ( S type from 3.7kW to 11kW )

15,500 N ( M type from 3.7 kW to 22kW )

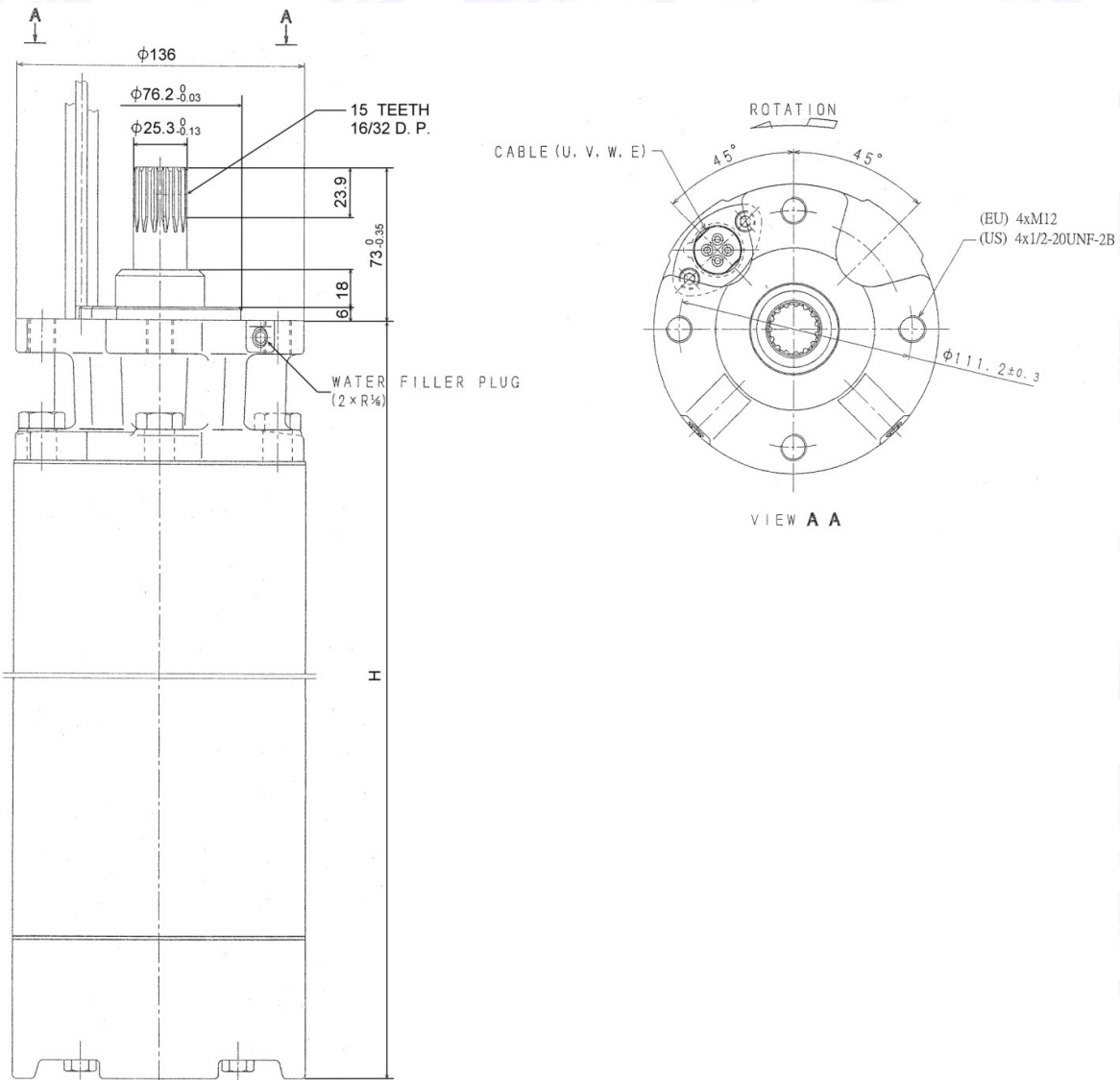
22,250 N ( L type from 30kW to 45 kW )



ZBH6U 6" 50Hz (Three Phase )

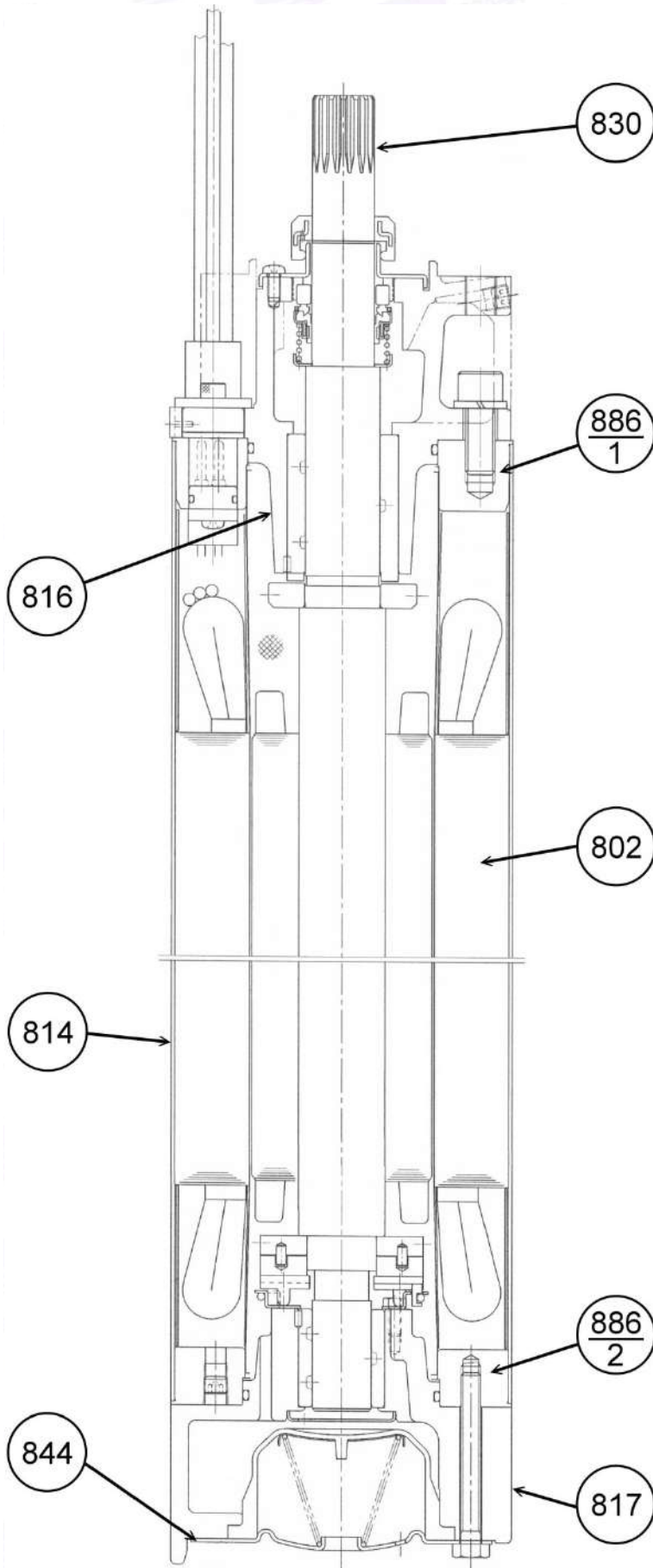
kW	HP	Volts	Wire	Poles	A	RPM (r/min)	H (mm)	Kg	Thrust Load (N)	Liquid Type	☒	Max. Depth (m)	Key shaft Spline Shaft					
3.7	5	380	4	2	9.1	2800	462	32.5	7840 (S Type)	Clean Water	0~35	300	NEMA					
		400	4	2	9	2820	462	32.5										
		415	4	2	9	2840	462	32.5										
5.5	7.5	380	4	2	12.8	2810	504	36.5										
		400	4	2	12.6	2820	504	36.5										
		415	4	2	12.6	2840	504	36.5										
7.5	10	380	4	2	17.8	2800	559	42										
		400	4	2	17.6	2820	559	42										
		415	4	2	17.4	2840	559	42										
11	15	380	4	2	25.6	2810	625	48.5										
		400	4	2	24.6	2830	625	48.5										
		415	4	2	24.2	2850	625	48.5										
3.7	5	380	4	2	9.1	2800	571.5	44.5						15550 (M Type)	Clean Water	0~35	300	NEMA
		400	4	2	9	2820	571.5	44.5										
		415	4	2	9	2840	571.5	44.5										
5.5	7.5	380	4	2	12.8	2810	613.5	47.5										
		400	4	2	12.6	2820	613.5	47.5										
		415	4	2	12.6	2840	613.5	47.5										
7.5	10	380	4	2	17.8	2800	668.5	51										
		400	4	2	17.6	2820	668.5	51										
		415	4	2	17.4	2840	668.5	51										
11	15	380	4	2	25.6	2810	734.5	56										
		400	4	2	24.6	2830	734.5	56										
		415	4	2	24.2	2850	734.5	56										
15	20	380	4	2	34	2810	819.5	64.5										
		400	4	2	32.8	2830	819.5	64.5										
		415	4	2	32.3	2850	819.5	64.5										
18.5	25	380	4	2	41	2820	891.5	71										
		400	4	2	39.5	2830	891.5	71										
		415	4	2	39	2840	891.5	71										
22	30	380	4	2	46	2880	971.5	83.5										
		400	4	2	44	2890	971.5	83.5										
		415	4	2	43	2900	971.5	83.5										
30	40	380	4	2	62.5	2860	1061.5	91.5	22250 (L Type)	Clean Water	0~35	300	NEMA					
		400	4	2	60.4	2880	1061.5	91.5										
		415	4	2	59.2	2900	1061.5	91.5										
37	50	380	4	2	77.6	2840	1131.5	99.5										
		400	4	2	74.8	2860	1131.5	99.5										
		415	4	2	73	2870	1131.5	99.5										

### ZBH6U 6" Dimensions

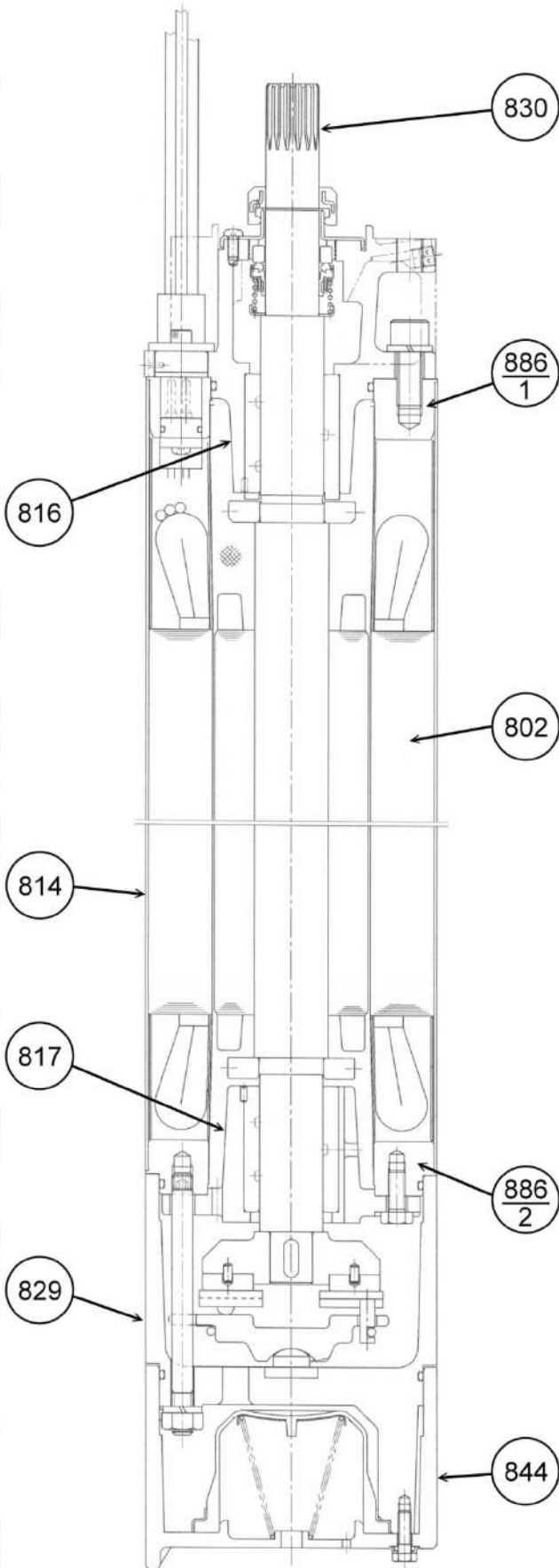


Frame Size	Phase	Power		H (mm)	Thrust Load(N)	Liquid Type	☒	Max. Depth (m)	Remarks		
		kW	HP								
ZBH6U	1	3.7	5	559	7840 (S-Type)	Clean Water	0~35	300	NEMA		
		5.5	7.5	625							
		7.5	10	710							
		11	15	862	15550 (M-Type)						
		3.7	5	668.5							
		5.5	7.5	734.5							
	3	3	7.5	10	819.5					7840 (S-Type)	
			11	15	971.5						
			3.7	5	462						
			5.5	7.5	504						
		3	3	7.5	10					559	15550 (M-Type)
				11	15					625	
				3.7	5					571.5	
				5.5	7.5					613.5	
				7.5	10					668.5	22250 (L-Type)
				11	15					734.5	
				15	20					819.5	
				18.5	25					891.5	
22	30	971.5									
30	40	1061.5									
37	50	1131.5									
45	60	1131.5									

ZBH6U -S Type Sectional View



Pos	Description	Material
802	Stator	50A1300
814	Frame	SUS304
816	Power Side Bracket	FC200
817	Opposite Side Bracket	FC200
830	Shaft	SUS431
844	End COVER	SUS304
886-1	Power Side Plate	SS400
886-2	Opposite Side Plate	SS400



Pos	Description	Material
802	Stator	50A1300
814	Frame	SUS304
816	Power Side Bracket	FC200
817	Opposite Side Bracket	FC200
829	Thrust Case	FC200
830	Shaft	SUS431
844	End Cover	FC200
886-1	Power Side Plate	SS400
886-2	Opposite Side Plate	SS400



#### ■ ZBH8N Submersible Motors Series

Water cooled motors with encapsulated resin filled stator.

Coupling dimensions and flange according to NEMA standard.

#### ■ ZBH8N MOTORS TECHNICAL FEATURES

Motors stainless type

Water lubricated Kingsbury type thrust bearings

Standard oil seal type

Sand slinger protection

Pressure equalizing diaphragm

Insulation class F, protection IP68

Removable cable connector 5M long

Starting method for motors: D.O.L.

#### ■ OPERATION LIMITS

Maximum voltage fluctuation admissible vs. nominal rated voltage: +10% / -10%

Maximum water temperature: 30 °C

With at least 0.15 m/s of water flow speed

Maximum motor startings per hour: 20 times for D.O.L. type

Maximum immersion depth: 300m

Standard mounting position: Vertical

#### ■ VERSIONS

Power range from 30kW to 55kW

Nominal Voltage: 380~415V @50Hz , 380~460V @60Hz

Maximum axial thrust: 45,000N (from 30kW to 55kW)

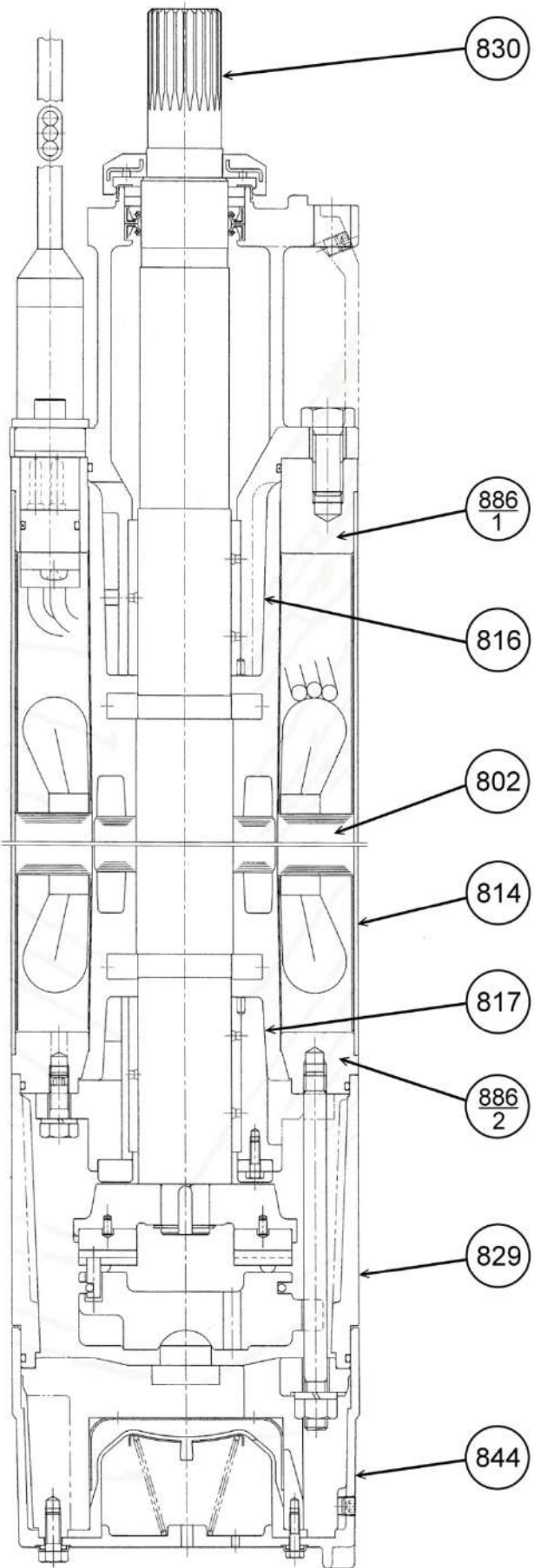
**ZBH8N 8" 50Hz**

kW	HP	Volts	Wire	Poles	A	RPM (r/min)	H (mm)	Kg	Thrust Load (N)	Liquid Type	∅	Max. Depth (m)	Key shaft Spline Shaft
30	40	380	3	2	63	2890	1050	155	45000	Clean Water	0~30	300	NEMA
		400	3	2	62	2900	1050	155					
		415	3	2	62	2905	1050	155					
37	50	380	3	2	78	2895	1115	173					
		400	3	2	77	2900	1115	173					
		415	3	2	77	2905	1115	173					
45	60	380	3	2	88	2915	1180	183					
		400	3	2	84	2925	1180	183					
		415	3	2	82	2930	1180	183					
55	75	380	3	2	108	2920	1270	195					
		400	3	2	104	2925	1270	195					
		415	3	2	102	2930	1270	195					

**ZBH8N 8" 60Hz**

kW	HP	Volts	Wire	Poles	A	RPM (r/min)	S.F.	S.F.(A)	H(mm)	Kg	Thrust Load (N)	Liquid Type	∅	Max. Depth (m)	Key shaft Spline Shaft
30	40	380	3	2	62	3470	1.15	70	1050	155	45,000	Clean Water	0~30	300	NEMA
		400	3	2	59	3480		67	1050	155					
		460	3	2	55	3505		61	1050	155					
37	50	380	3	2	76	3470		86	1115	173					
		400	3	2	73	3480		82	1115	173					
		460	3	2	68	3495		75	1115	173					
45	60	380	3	2	89	3500		101	1180	183					
		400	3	2	84	3505		95	1180	183					
		460	3	2	74	3530		83	1180	183					
55	75	380	3	2	108	3500		122	1270	195					
		400	3	2	103	3510		115	1270	195					
		460	3	2	92	3525		102	1270	195					



**ZBH8N 8" Sectional View**


Pos	Description	Material
802	Stator	Silicon steel
814	Frame	SUS304
816	Power Side Bracket	SCS13
817	Opposite Side Bracket	FC200
829	Thrust Case	SCS13
830	Shaft	SUS431
844	End Cover	SCS13
886-1	Power Side Plate	SUS304
886-2	Opposite Side Plate	SUS304

